Cessna

SERVICE MANUAL

1969 thru 1976

MODEL 206 & T206 SERIES

Member of GAMA

THIS REPRINT OF BASIC SERVICE MANUAL D2007-13, DATED 15 OCTOBER 1972, INCORPORATES CHANGE 1, DATED 15 OCTOBER 1973; CHANGE 2, DATED 1 SEPTEMBER 1974; CHANGE 3, DATED 1 OCTOBER 1975; TEMPORARY CHANGE 1, DATED 5 SEPTEMBER 1977; AND TEMPORARY CHANGE 2, DATED 22 JANUARY 1978.

D2007-3-13
(RGI-100-10/01)

15 OCTOBER 1972
CHANGED 1 OCTOBER 1975

TEMPORARY REVISION NUMBER 7

DATE July 1, 2007

MANUAL TITLE	**Model 206 and T206 (1969-1976) Service Manual**
MANUAL NUMBER - PAPER COPY	**D2007-3-13**
MANUAL NUMBER - AEROFICHE	**D2007-3-13AF**
TEMPORARY REVISION NUMBER	**D2007-3TR7**

MANUAL DATE **15 October 1972** **REVISION NUMBER** **3** **DATE** **1 October 1975**

This Temporary Revision consists of the following pages, which affect and replace existing pages in the paper copy manual and supersede aerofiche and CD information.

SECTION	PAGE	AEROFICHE FICHE/FRAME	SECTION	PAGE	AEROFICHE FICHE/FRAME
5	4A	1D19			
5	4A1	ADD			
5	4A2	ADD			
5	4A3	ADD			

REASON FOR TEMPORARY REVISION

1. Incorporated inspection of flat spring main landing gear (Section 5).

FILING INSTRUCTIONS FOR THIS TEMPORARY REVISION

1. For Paper Publications, file this cover sheet behind the publication's title page to identify the inclusion of the Temporary Revision into the manual. Insert the new pages into the publication at the appropriate locations and remove and discard the superseded pages.

2. For Aerofiche Publications, draw a line with permanent red ink marker, through any aerofiche frame (page) affected by the Temporary Revision. This will be a visual identifier that the information on the frame (page) is no longer valid and the Temporary Revision should be referenced. For "added" pages in a Temporary Revision, draw a vertical line between the applicable frames. Line should be wide enough to show on the edges of the pages. Temporary Revisions should be collected and maintained in a notebook or binder near the aerofiche library for quick reference.

3. For CD publications, mark the temporary revision part number on the CD label with permanent red marker. This will be a visual identifier that the temporary revision must be referenced when the content of the CD is being used. Temporary revisions should be collected and maintained in a notebook or binder near the CD library for quick reference.

Cessna
A Textron Company

TEMPORARY REVISION NUMBER 6

DATE 5 April 2004

MANUAL TITLE	Model 206 & T206 Series 1969 Thru 1976 Service Manual
MANUAL NUMBER - PAPER COPY	D2007-3-13
MANUAL NUMBER - AEROFICHE	D2007-3-13AF
TEMPORARY REVISION NUMBER	D2007-3TR6

MANUAL DATE 15 October 1972 **REVISION NUMBER** 3 **DATE** 1 October 1975

This Temporary Revision consists of the following pages, which affect and replace existing pages in the paper copy manual and supersede aerofiche information.

SECTION	PAGE	FICHE/FRAME	SECTION	PAGE	FICHE/FRAME
2	24	1/B12			
2	27	1/B15			

REASON FOR TEMPORARY REVISION

1. To add the cleaning interval of the engine fuel injection nozzles.

FILING INSTRUCTIONS FOR THIS TEMPORARY REVISION

1. For Paper Publications, file this cover sheet behind the publication's title page to identify the inclusion of the Temporary Revision into the manual. Insert the new pages into the publication at the appropriate locations and remove and discard the superseded pages.

2. For Aerofiche Publications, draw a line with permanent red ink marker, through any aerofiche frame (page) affected by the Temporary Revision. This will be a visual identifier that the information on the frame (page) is no longer valid and the Temporary Revision should be referenced. For "added" pages in a Temporary Revision, draw a vertical line between the applicable frames. Line should be wide enough to show on the edges of the pages. Temporary Revisions should be collected and maintained in a notebook or binder near the aerofiche library for quick reference.

Cessna
A Textron Company

TEMPORARY REVISION NUMBER 5

DATE 6 January 2003

MANUAL TITLE	Model 206 & T206 Series 1969 Thru 1976 Service Manual
MANUAL NUMBER - PAPER COPY	D2007-3-13
MANUAL NUMBER - AEROFICHE	D2007-3-13AF
TEMPORARY REVISION NUMBER	D2007-3TR5

MANUAL DATE 15 October 1972 **REVISION NUMBER** 3 **DATE** 1 October 1975

This Temporary Revision consists of the following pages, which affect and replace existing pages in the paper copy manual and supersede aerofiche information.

SECTION	PAGE	FICHE/FRAME	SECTION	PAGE	FICHE/FRAME
2	24	1/B12			
2	24A/Delete	N/A			
2	25	1/B13			
2	26	1/B14			
2	26A/Delete	N/A			
2	27	1/B15			
2	28	Added			
2	29	Added			
2	30	Added			
16	18C	Added			
16	18D	Added			

REASON FOR TEMPORARY REVISION

1. To add a Component Time Limits section and a fuel quantity indicating system operational test.

FILING INSTRUCTIONS FOR THIS TEMPORARY REVISION

1. For Paper Publications, file this cover sheet behind the publication's title page to identify the inclusion of the Temporary Revision into the manual. Insert the new pages into the publication at the appropriate locations and remove and discard the superseded pages.

2. For Aerofiche Publications, draw a line with permanent red ink marker, through any aerofiche frame (page) affected by the Temporary Revision. This will be a visual identifier that the information on the frame (page) is no longer valid and the Temporary Revision should be referenced. For "added" pages in a Temporary Revision, draw a vertical line between the applicable frames. Line should be wide enough to show on the edges of the pages. Temporary Revisions should be collected and maintained in a notebook or binder near the aerofiche library for quick reference.

TEMPORARY REVISION NUMBER 4

DATED 15 May 2000

MANUAL TITLE MODEL 206 & T206 SERIES 1969 THRU 1976 SERVICE MANUAL

MANUAL NUMBER - PAPER COPY D2007-3-13 **AEROFICHE** D2007-3-13AF

TEMPORARY REVISION NUMBER PAPER COPY D2007-3TR4 **AEROFICHE** N/A

MANUAL DATE 15 OCTOBER 1972 **REVISION NUMBER** 3 **DATE** 1 OCTOBER 1975

This Temporary Revision consists of the following pages, which affect existing pages in the paper copy manual and supersede aerofiche information.

SECTION	PAGE	AEROFICHE FICHE/FRAME	SECTION	PAGE	AEROFICHE FICHE/FRAME
2	24A	Added			
2	26A	Added			

REASON FOR TEMPORARY REVISION

To include the inspection requirements of Cessna Service Bulletin SEB99-18.

FILING INSTRUCTIONS FOR THIS TEMPORARY REVISION

For Paper Publications:

File this cover sheet behind the publication's title page to identify the inclusion of the Temporary Revision into the manual. Insert the new pages into the publication at the appropriate locations. Draw a line, with a permanent red ink marker, through any superceded information.

For Aerofiche Publications:

Draw a line through any aerofiche frame (page) affected by the Temporary Revision with a permanent red ink marker. This will be a visual identifier that the information on the frame (page) is no longer valid and the Temporary Revision should be referenced. For "added" pages in a Temporary Revision, draw a vertical line between the applicable frames which is wide enough to show on the edges of the pages. Temporary Revisions should be collected and maintained in a notebook or binder near the aerofiche library for quick reference.

TEMPORARY REVISION NUMBER 3

DATED 3 October 1994

MANUAL TITLE MODEL 206 & T206 SERIES 1969 THRU 1976 SERVICE MANUAL

MANUAL NUMBER - PAPER COPY D2007-3-13 **AEROFICHE** D2007-3-13AF

TEMPORARY REVISION NUMBER - PAPER COPY D2007-3TR3-13 **AEROFICHE** N/A

MANUAL DATE 15 OCTOBER 1972 **REVISION NUMBER** 3 **DATE** 1 OCTOBER 1975

This Temporary Revision consists of the following pages, which affect and replace existing pages in the paper copy manual and supersede aerofiche information.

SECTION	PAGE	AEROFICHE FICHE/FRAME	SECTION	PAGE	AEROFICHE FICHE/FRAME
16	17	2 C21			
16	18	2 C22			
16	18A	2 C23			
16	18B	added			
16	18C/D	added			

REASON FOR TEMPORARY REVISION

1. To revise procedure to incorporate both Stewart Warner and Rochester fuel gage transmitter calibration.
2. To revise procedures to incorporate both electrically and pressure controlled oil temperature.
3. To add tables to aid in trouble shooting the cylinder head and oil temperature gages.

FILING INSTRUCTIONS FOR THIS TEMPORARY REVISION

For Paper Publications:

File this cover sheet behind the publication's title page to identify the inclusion of the Temporary Revision into the manual. Insert the new pages into the publication at the appropriate locations and remove and discard the superseded pages.

For Aerofiche Publications:

Draw a line through any aerofiche frame (page) affected by the Temporary Revision with a permanent red ink marker. This will be a visual identifier that the information on the frame (page) is no longer valid and the Temporary Revision should be referenced. For "added" pages in a Temporary Revision, draw a vertical line between the applicable frames which is wide enough to show on the edges of the pages. Temporary Revisions should be collected and maintained in a notebook or binder near the aerofiche library for quick reference.

LIST OF EFFECTIVE PAGES

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original . . . 0 . . . 15 October 1972 Change . . . 2 1 September 1974
Change . . . 1 . . . 15 October 1973 Change . . . 3 1 October 1975

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 556, CONSISTING OF THE FOLLOWING:

Page No.	Change No.
*Title	3
*A	3
*i thru ii	3
iii	0
iv Blank	0
1-1	0
1-2	2
*1-3	3
1-4	0
1-5	2
1-6 Blank	2
*2-1	3
2-2	2
*2-3 thru 2-4	3
2-5	0
*2-6	3
2-7	2
2-8	0
*2-9	3
2-10 thru 2-11	0
*2-12 thru 2-14	3
2-15 thru 2-17	1
2-18	0
*2-19	3
2-20 thru 2-25	1
2-26	2
*2-27	3
*2-28 Blank	3
3-1	2
3-2	0
*3-3 thru 3-6	3
*3-6A	3
3-6B	2
*3-7 thru 3-8	3
3-8A	2
3-8B Blank	2
*3-9	3
3-10 thru 3-11	1
*3-12	3
3-13 thru 3-14	1
*3-14A	3
*3-14B Blank	3
3-15 thru 3-20	1
3-21	0
*3-22	3
*3-22A	3
3-22B	2
3-23	0
3-24	2
*3-25	3
3-26 thru 3-29	0
3-30 Blank	0
*4-1 thru 4-2	3
4-3	1
*4-4 thru 4-6	3
4-7	1
4-8 Blank	1
*5-1	3
5-2	0
*5-3 thru 5-4	3
*5-4A thru 5-4C	3
*5-4D Blank	3
5-5	2
*5-6	3
5-7	2

Page No.	Change No.
*5-8	3
*5-8A	3
*5-8B Blank	3
*5-9 thru 4-13	3
5-14 thru 5-17	0
5-18	2
5-19 thru 5-21	0
5-22	1
*5-22A thru 5-22B	3
5-23 thru 5-24	0
*6-1	3
6-2	0
6-3	1
6-4	2
*6-5	3
6-6	1
6-7	0
*6-8	3
7-1	1
7-2	0
*7-3	3
7-4 thru 7-6	1
7-7 thru 7-8	0
7-9	2
*7-10 thru 7-12	3
*7-12A	3
*7-12B Blank	3
7-13	2
*7-14	3
*8-1	3
8-2 thru 8-7	2
*8-8 thru 8-9	3
*8-10 Blank	3
9-1 thru 9-2	1
9-2A thru 9-2B	1
9-3 thru 9-4	1
*9-4A	3
*9-4B Blank	3
9-5	1
*9-6	3
9-7 thru 9-12	1
9-12A	1
*9-12B	3
9-13	1
*9-14 thru 9-15	3
*9-16 Blank	3
10-1	1
10-2	0
10-3	1
10-4	0
*10-5	3
10-6	0
10-7	1
10-8	0
10-9	1
10-10 Blank	1
11-1 thru 11-4	2
*12-1 thru 12-4	3
12-5	1
12-6	0
12-7	1
12-8 thru 12-10	2
*12-11	3
12-12 thru 12-13	1
12-14 thru 12-15	0

Page No.	Change No.
12-16 thru 12-17	2
12-18	1
12-19 thru 12-20	0
*12-21	3
12-22	1
12-23	0
12-24	1
*12-25	3
12-26 thru 12-27	0
12-28	2
12-29	1
12-30	0
12-31 thru 12-34	1
*12-35	3
12-36	1
*12A-1	3
12A-2	1
12A-3	2
12A-4 thru 12A-8	0
12A-8A	1
12A-8B Blank	1
12A-9	1
12A-10 thru 12A-13	0
*12A-14 thru 12A-15	3
12A-16	0
12A-17 thru 12A-18	1
12A-19	0
*12A-20	3
12A-21	1
12A-22 thru 12A-27	0
12A-28	1
*12A-29	3
12A-30 thru 12A-32	0
*13-1	3
13-2	2
13-3	0
13-4	2
13-5 thru 13-8	0
*13-9	3
13-10 thru 13-11	Deleted
13-12	1
13-13 thru 13-14	2
13-15	1
13-16 thru 13-17	0
*13-18 thru 13-20	3
14-1 thru 14-2	1
14-3	0
14-4	1
14-5	0
14-6	1
14-7	0
14-8 thru 14-10	1
15-1	0
*15-2	3
*15-2A	3
*15-2B Blank	3
15-3	0
*15-4 thru 15-5	3
15-6 thru 15-12	0
16-1	1
16-2	2
16-3	1
16-4	0
16-5	1

Page No.	Change No.
16-6	0
*16-7	3
16-8	1
16-9	0
16-10	1
*16-11 thru 16-12	3
*16-12A thru 16-12B	3
16-13 thru 16-14	1
16-14A	1
16-14B Blank	1
16-15 thru 16-17	0
16-18	1
16-18A	1
16-18B Blank	1
16-19 thru 16-20	1
16-21 thru 16-22	0
16-23 thru 16-24	1
*17-1 thru 17-2	3
17-3 thru 17-6	1
*17-6A	3
17-6B	1
17-7 thru 17-11	1
17-12	0
17-13	1
17-14 thru 17-16	0
17-17	1
17-18	2
17-19	1
*17-20 thru 17-24	3
*17-24A	3
*17-24B Blank	3
17-25 thru 17-26	0
*17-27 thru 17-28	3
17-29	0
17-30 thru 17-32	1
17-33 thru 17-34	0
17-35	1
17-36	0
17-37 thru 17-38	2
17-39	0
17-40 thru 17-42	2
17-42A	2
17-42B Blank	2
17-43	1
17-44 thru 17-45	0
*17-46 thru 17-52	3
17-53	2
17-54 Blank	2
18-1	1
18-2 thru 18-5	2
18-6	0
*18-7	3
18-8 thru 18-28	0
*18-29	3
18-30	0
18-31	2
18-32 Blank	2
*19-1 thru 19-2	3
*20-1 thru 20-3	3
20-4 thru 20-5	0
*20-6	3
20-7 thru 20-10	1
*20-11 thru 20-12	3
*20-12A	3
*20-12B Blank	3

Page No.	Change No.
20-13	1
*20-14	3
20-15 thru 20-16	1
*20-17	3
20-18 thru 20-19	1
*20-20	3
20-21 thru 20-25	1
20-26	2
20-26A	2
20-26B Blank	2
20-27 thru 20-28	1
*20-29	3
20-30 thru 20-32	1
*20-33 thru 20-36	3
20-37 thru 20-42	1
20-43	2
*20-44	3
20-44A	2
20-44B Blank	2
20-45 thru 20-47	1
*20-48 thru 20-51	3
20-52 thru 20-53	1
*20-54	3
20-55 thru 20-56	1
*20-57	3
20-58 thru 20-59	1
*20-60 thru 20-61	3
20-62 thru 20-63	1
*20-64	3
20-65 thru 20-68	1
20-69 thru 20-70	2
*20-70A thru 20-70B	3
*20-71 thru 20-73	3
20-74 thru 20-76	1
*20-77	3
20-78	1
*20-79	3
20-80	1
*20-81 thru 20-82	3
20-83	1
20-84 thru 20-86	2
20-86A	2
20-86B Blank	2
20-87 thru 20-88	1
*20-89	3
20-90	1
*20-91	3
20-92	1
*20-93	3
20-94	2
*20-94A	3
*20-94B Blank	3
20-95 thru 20-99	1
*20-100 thru 20-101	3
20-102 thru 20-103	1
*20-104	3
20-105 thru 20-106	1
*20-107	3
20-108	1
*20-109 thru 20-110	3
20-111	1
*20-112	3
20-113 thru 20-115	1
20-116	2
20-116A	2
20-116B Blank	2
*20-117 thru 20-118	3

Upon receipt of the second and subsequent changes to this book, personnel responsible for maintaining this publication in current status should ascertain that all previous changes have been received and incorporated.

* The asterisk indicates pages changed, added or deleted by the current change.

TABLE OF CONTENTS

CROSS REFERENCE LISTING OF POPULAR NAME VS. MODEL NUMBERS AND SERIALS

All aircraft, regardless of manufacturer, are certificated under model number designations. However, popular names are often used for marketing purposes. To provide a consistent method of referring to the various aircraft, model numbers will be used in this publication unless names are required to differentiate between versions of the same basic model. The following table provides a cross reference listing popular name vs. model number.

POPULAR NAME	MODEL YEAR	MODEL	SERIALS BEGINNING	SERIALS ENDING
SKYWAGON 206 TURBO SKYWAGON 206	1969	U206D TU206D	U206-1235	U206-1444
SUPER SKYLANE TURBO-SYSTEM SUPER SKYLANE	1969	P206D TP206D	P206-0520	P206-0603
SKYWAGON 206 TURBO SKYWAGON 206	1970	U206E TU206E	U20601445	U20601587
SUPER SKYLANE TURBO SUPER SKYLANE	1970	P206E	P20600604	P20600647
STATIONAIR TURBO STATIONAIR	1971	U206E	U20601588	U20601700
STATIONAIR TURBO STATIONAIR	1972	U206F	U20601701	U20601874
STATIONAIR TURBO STATIONAIR	1973	U206F	U20601875	U20602199
STATIONAIR TURBO STATIONAIR	1974	U206F	U20602200	U20602579
STATIONAIR STATIONAIR II TURBO STATIONAIR TURBO STATIONAIR II	1975	U206F	U20602580	U20603020
STATIONAIR STATIONAIR II TURBO STATIONAIR TURBO STATIONAIR II	1976	U206F	U20603021	

FOREWORD

This manual contains factory recommended procedures and instructions for ground handling, servicing and maintaining Cessna Stationair, Skywagon and Super Skylane 206-Series aircraft. Also included are the turbocharged versions of these aircraft.

In addition to this book serving as a reference for the experienced mechanic, it also covers step-by-step procedures for the less experienced man. This manual should be kept in a handy place for ready reference. If properly used, it will better enable the mechanic to maintain Cessna 206 Series aircraft and thereby establish a reputation for reliable service.

The information in this book is based on data available at the time for publication, and is supplemented and kept current by service letters and service news letters published by Cessna Aircraft Company. These are sent to all Cessna Dealers so that they have the latest authoritative recommendations for servicing Cessna aircraft. Therefore, it is recommended that Cessna owners utilize the knowledge and experience of the factory-trained Dealer Service Organization.

In addition to the information in this Service Manual, a group of vendor publications is available from the Cessna Service Parts Center which describe complete disassembly, overhaul, and parts breakdown of some of the various vendor equipment items. A listing of the available publications is issued periodically in service letters.

Information for Nav-O-Matic Autopilots, Electronic Communications and Navigation Equipment are not included in this manual. These systems are described in separate manuals, available from the Cessna Service Parts Center.

SECTION 1

GENERAL DESCRIPTION

TABLE OF CONTENTS Page

1-1. GENERAL DESCRIPTION.

1-2. SKYWAGON AND TURBO SKYWAGON 206-SERIES.

1-3. DESCRIPTION. Cessna Skywagon and Turbo Skywagon 206-Series aircraft, described in this manual, are single-engine, high-wing, strut-braced monoplanes of all-metal, semimonocoque construction. These aircraft are equipped with a fixed tricycle landing gear employing spring-steel main landing gear struts and a steerable nose gear with an air/hydraulic fluid shock strut. Wing flaps are electrically-actuated. Both the Skywagon and Turbo Skywagon 206-Series aircraft are equipped with large double cargo doors on the right side of the fuselage and an entrance door on the left side of the cabin. The pilot's seat only is standard, but provisions are made for the addition of optional seats to make a six-place aircraft. Skywagon and Turbo Skywagon 206-Series aircraft are powered by a six-cylinder, horizontally opposed, air-cooled, fuel-injection Continental engine, driving an all-metal, constant speed propeller. In addition, Turbo Skywagon 206-Series aircraft engines are turbocharged.

1-4. SUPER SKYLANE AND TURBO SUPER SKYLANE 206-SERIES.

1-5. DESCRIPTION. Cessna Super Skylane and Turbo Super Skylane 206-Series aircraft, described in this manual, are single-engine, high-wing, strut-braced monoplanes of all-metal, semimonocoque construction. These aircraft are equipped with a fixed tricycle landing gear employing spring-steel main landing gear struts and a steerable nose gear with an air/hydraulic fluid shock strut. Wing flaps are electrically-actuated. Both the Super Skylane and the Turbo Super Skylane 206-Series aircraft are equipped with an entrance door on each side of the cabin, and a baggage door on the left side of the fuselage. The seating arrangement of these aircraft consists of six individual seats. Super Skylane and Turbo Super Skylane 206-Series aircraft are powered by a six-cylinder, horizontally opposed, air-cooled, fuel-injection Continental engine, driving an all-metal constant speed propeller. In addition, Turbo Super Skylane 206-Series engines are turbocharged.

1-6. STATIONAIR AND TURBO STATIONAIR-SERIES.

1-7. DESCRIPTION. Cessna Stationair and Turbo-Stationair-Series aircraft, described in this manual, are single-engine, high-wing, strut-braced monoplanes of all-metal, semimonocoque construction. These aircraft are equipped with a fixed tricycle landing gear employing spring-steel main landing gear struts and a steerable nose gear with an air/hydraulic fluid shock strut. Wing flaps are electrically-actuated. Both the Stationair and Turbo Stationair-Series aircraft are equipped with large double cargo doors on the right side of the fuselage and an entrance door on the left side of the cabin. The seating arrangement of these aircraft consists of six individual seats. Stationair and Turbo Stationair-Series aircraft are powered by a six-cylinder, horizontally opposed, air-cooled, fuel-injection Continental engine, driving an all-metal, constant speed propeller. In addition, Turbo Stationair engines are turbocharged.

1-8. AIRCRAFT SPECIFICATIONS. Leading particulars of these aircraft, with dimensions based on gross weight, are given in figure 1-1. If these dimensions are used for constructing a hangar or computing clearances, remember that such factors as nose gear strut inflation, tire pressures, tire sizes and load distribution may result in some dimensions that are considerably different from those listed.

1-9. STATIONS. A station diagram is shown in figure 1-2 to assist in locating equipment when a written description is inadequate or impractical.

1-10. TORQUE VALUES. A chart of recommended nut torque values is shown in figure 1-3. These torque values are recommended for all installation procedures contained in this manual, except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

GROSS WEIGHT	3600 lb
FUEL CAPACITY	
Standard Wing (Total)	65 gal.
Standard Wing (Usable)	63 gal.
Long-Range Wing (Total)	84 gal.
Long-Range Wing (Usable)	80 gal.
OIL CAPACITY	
(Without External Filter)	12 qt
(With External Filter)	13 qt
ENGINE MODEL	
P206 (Refer to Section 12 for Engine Data)	CONTINENTAL IO-520 SERIES
TP206 (Refer to Section 12A for Engine Data)	CONTINENTAL TSIO-520 SERIES
PROPELLER	
Standard (Two Blades)	82" McCAULEY
Optional (Three Blades)	80" McCAULEY
MAIN WHEEL TIRES (Standard)	6.00 x 6, 6-ply rating
Pressure	42 psi
MAIN WHEEL TIRES (Optional)	8.00 x 6, 6-ply rating
Pressure	35 psi
NOSE WHEEL TIRE (Standard)	5.00 x 5, 6-ply rating
Pressure	49 psi
NOSE WHEEL TIRE (Optional)	6.00 x 6, 6-ply rating
Pressure	29 psi
NOSE GEAR STRUT PRESSURE (Strut Extended)	80 psi
WHEEL ALIGNMENT	
Camber	4° ± 1° 30'
Toe-In	0" to .06"
AILERON TRAVEL	
Up	21° ± 2°
Down	14° 30' ± 2°
WING FLAP TRAVEL (Electrically-Operated)	0° to 40°, + 1° -2°
RUDDER TRAVEL (Measured parallel to water line)	
Right	24° ± 1°
Left	24° ± 1°
RUDDER TRAVEL (Measured perpendicular to hinge line)	
Right	27° 13' ± 1°
Left	27° 13' ± 1°
ELEVATOR TRAVEL	
Up	21° ± 1°
Down	17° ± 1°
ELEVATOR TRIM TAB TRAVEL	
Up	25°, +1° -0°
Down	5°, +1° -0°
PRINCIPAL DIMENSIONS	
Wing Span (Conventional Wing Tip)	36' 7"
Wing Span (Conical-Camber Wing Tip)	35' 10"
Tail Span	13'
Length	28' 3"
Fin Height (Maximum with Nose Gear Depressed and Flashing Beacon Installed on Fin)	9' 7-1/2"
Track Width	8' 1-3/4"
BATTERY LOCATION	Left Side of Firewall

Figure 1-1. Aircraft Specifications (Sheet 1 of 2)

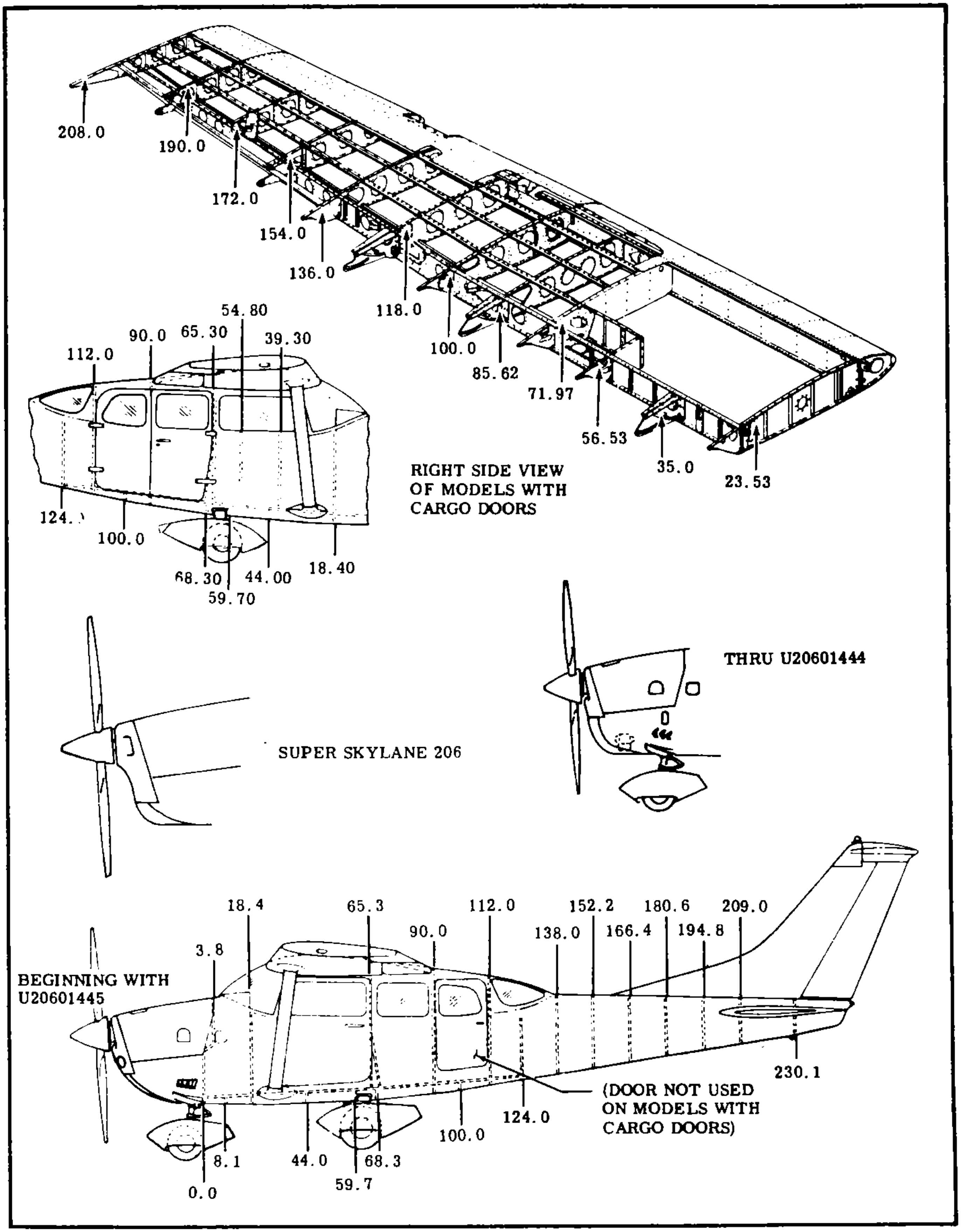


Figure 1-2. Wing and Fuselage Reference Stations

GROSS WEIGHT	3600 lb
FUEL CAPACITY	
Standard Wing (Total)	65 gal. ⎫ When not modified by Cessna
Standard Wing (Usable)	63 gal. ⎪ Single-Engine Service Letter
Long-Range Wing (Total)	84 gal. ⎪ SE75-7 and prior to
Long-Range Wing (Usable)	80 gal. ⎭ U20602127
Standard Wing (Total)	61 gal. ⎫ When modified by Cessna
Standard Wing (Usable)	59 gal. ⎪ Single-Engine Service
Long-Range Wing (Total)	80 gal. ⎪ Letter SE75-7 and be-
Long-Range Wing (Usable)	76 gal. ⎭ ginning with U20602127
OIL CAPACITY	
(Without External Filter)	12 qt
(With External Filter)	13 qt
ENGINE MODEL	
U206 (Refer to Section 12 for Engine Data)	CONTINENTAL IO-520 SERIES
TU206 (Refer to Section 12A for Engine Data)	CONTINENTAL TSIO-520 SERIES
PROPELLER	
Standard (Two Blades)	82" McCAULEY
Optional (Three Blades)	80" McCAULEY
MAIN WHEEL TIRES (Standard)	6.00 x 6, 6-ply rating
Pressure	42 psi
MAIN WHEEL TIRES (Optional)	8.00 x 6, 6-ply rating
Pressure	35 psi
NOSE WHEEL TIRE (Standard)	5.00 x 5, 6-ply rating
Pressure	49 psi
NOSE WHEEL TIRE (Optional)	6.00 x 6, 6-ply rating
Pressure	29 psi
NOSE GEAR STRUT PRESSURE (Strut Extended)	80 psi
WHEEL ALIGNMENT	
Camber	4° ± 1° 30'
Toe-In	0" to .06"
AILERON TRAVEL	
Up	21° ± 2°
Down	14° 30' ± 2°
WING FLAP TRAVEL (Electrically-Operated)	0° to 40°, +1° -2°
RUDDER TRAVEL (Measured parallel to water line)	
Right	24° ± 1°
Left	24° ± 1°
RUDDER TRAVEL (Measured perpendicular to hingeline)	
Right	27° 13' ± 1°
Left	27° 13' ± 1°
ELEVATOR TRAVEL	
Up	21° ± 1°
Down	17° ± 1°
ELEVATOR TRIM TAB TRAVEL	
Up	25° +1 -0°
Down	5° +1 -0°
PRINCIPAL DIMENSIONS	
Wing Span (Conventional Wing Tip)	36' 7" (Add 2" for strobe lights)
Wing Span (Conical-Camber Wing Tip)	35' 10" (Add 2" for strobe lights)
Tail Span	13'
Length	28'
Fin Height (Maximum with Nose Gear Depressed and Flashing Beacon Installed on Fin)	9' 7-1/2"
Track Width	8' 1-3/4"
BATTERY LOCATION (12V)	Left side of firewall
(24V) (Thru 1973)	Below engine in nose wheel tunnel
(24V) (Beginning with 1974)	Left side of firewall

Figure 1-1. Aircraft Specifications (Sheet 2 of 2)

RECOMMENDED NUT TORQUES

THE TORQUE VALUES STATED ARE POUND-INCHES, RELATED ONLY TO STEEL NUTS ON OIL-FREE CADMIUM PLATED THREADS.

FINE THREAD SERIES				
TAP SIZE	TENSION		SHEAR	
	TORQUE		TORQUE	
	STD (NOTE 1)	ALT (NOTE 2)	STD (NOTE 3)	ALT (NOTE 2)
8-36	12-15		7-9	
10-32	20-25	20-28	12-15	12-19
1/4-28	50-70	50-75	30-40	30-48
5/16-24	100-140	100-150	60-85	60-106
3/8-24	160-190	160-260	95-110	95-170
7/16-20	450-500	450-560	270-300	270-390
1/2-20	480-690	480-730	290-410	290-500
9/16-18	800-1000	800-1070	480-600	480-750
5/8-18	1100-1300	1100-1600	660-780	660-1060
3/4-16	2300-2500	2300-3350	1300-1500	1300-2200
7/8-14	2500-3000	2500-4650	1500-1800	1500-2900
1-14	3700-5500	3700-6650	2200-3300	2200-4400
1-1/8-12	5000-7000	5000-10000	3000-4200	3000-6300
1-1/4-12	9000-11000	9000-16700	5400-6600	5400-10000
COARSE THREAD SERIES				
	(NOTE 4)		(NOTE 5)	
8-32	12-15		7-9	
10-24	20-25		12-15	
1/4-20	40-50		25-30	
5/16-18	80-90		48-55	
3/8-16	160-185		95-100	
7/16-14	235-255		140-155	
1/2-13	400-480		240-290	
9/16-12	500-700		300-420	
5/8-11	700-900		420-540	
3/4-10	1150-1600		700-950	
7/8-9	2200-3000		1300-1800	
1-8	3700-5000		2200-3000	
1-1/8-8	5500-6500		3300-4000	
1-1/4-8	6500-8000		4000-5000	

NOTES

1. Covers AN310, AN315, AN345, AN363, MS20365, MS21042, MS21044, MS21045 and MS21046.
2. When using AN310 or AN320 castellated nuts where alignment between the bolt and cotter pin slots is not reached using normal torque values, use alternate torque values or replace the nut.
3. Covers AN316, AN320, MS20364 and MS21245.
4. Covers AN363, MS20365, MS21042, MS21043, MS21044, MS21045 and MS21046.
5. Covers AN340.

CAUTION

DO NOT REUSE SELF-LOCKING NUTS.

The above values are recommended for all installation procedures contained in this manual, except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

Figure 1-3. Torque Values

SECTION 2

GROUND HANDLING, SERVICING, CLEANING, LUBRICATION AND INSPECTION

TABLE OF CONTENTS

2-1. GROUND HANDLING.

2-2. TOWING. Moving the aircraft by hand is accomplished by using the wing struts and landing gear struts as push points. A tow bar attached to the nose gear should be used for steering and maneuvering the aircraft. When no tow bar is available, press down at the horizontal stabilizer front spar, adjacent to the fuselage, to raise the nose wheel off the ground. With the nose wheel clear of the ground, the aircraft can be turned by pivoting it about the main wheels.

CAUTION

When towing the aircraft, never turn the nose wheel more than 35 degrees either side of center or the nose gear will be damaged. Do not push on control surfaces or outboard empennage surfaces. When pushing on the tailcone, always apply pressure at a bulkhead to avoid buckling the skin.

2-3. HOISTING. The aircraft may be lifted with a hoist of two-ton capacity, either by using hoisting rings (optional equipment) or by using suitable slings. The front sling should be hooked to the engine lifting eye, and the aft sling should be positioned around the fuselage at the first bulkhead forward of the leading edge of the stabilizer. If the optional hoisting rings are used, a minimum cable length of 60 inches for each cable is required to prevent bending of the eyebolt type hoisting rings. If desired, a spreader jig may be fabricated to apply vertical force to the eyebolts.

2-4. JACKING. Refer to figure 2-2 for jacking procedures.

CAUTION

When using the universal jack point, flexibility of the gear strut will cause the main wheel to slide inboard as the wheel is raised, tilting the jack. The jack must then be lowered for a second jacking operation. Jacking both wheels simultaneously with universal jack points is not recommended.

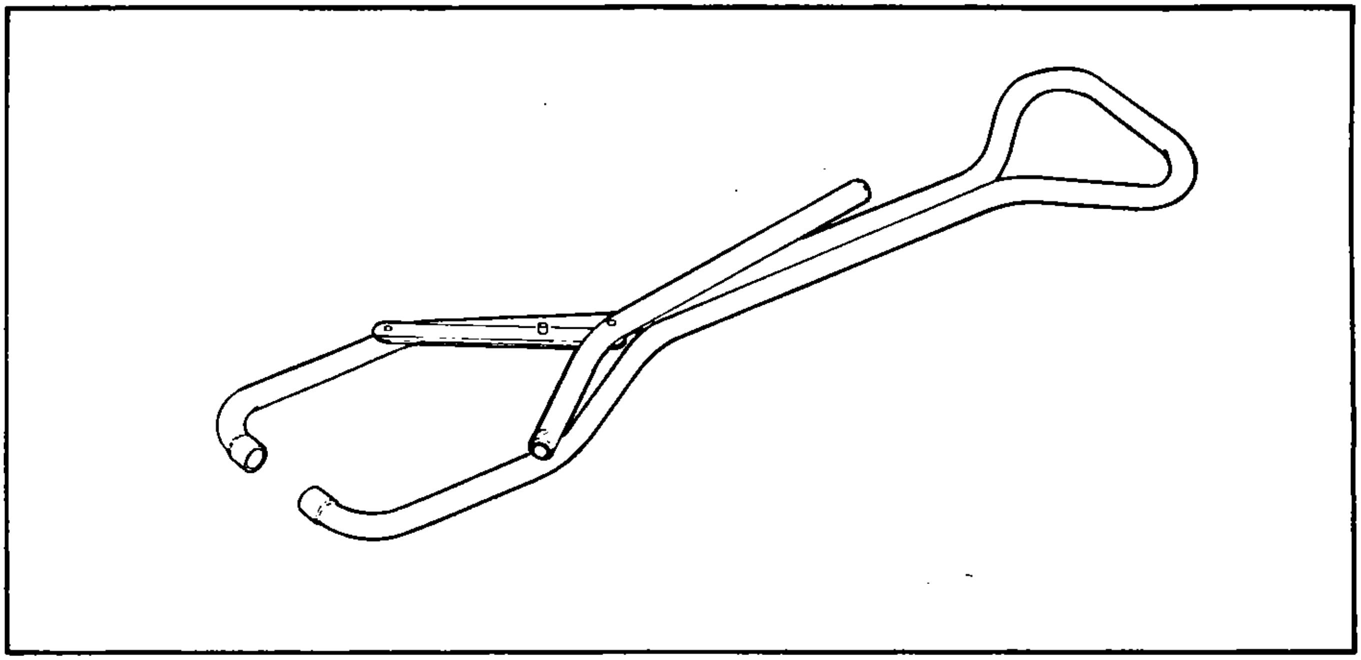


Figure 2-1. Typical Tow Bar

2-5. PARKING. Parking precautions depend principally on local conditions. As a general precaution, it is wise to set the parking brake or chock the wheels, and install the control lock. In severe weather, and high wind conditions, tie down the aircraft as outlined in paragraph 2-6 if a hangar is not available.

2-6. TIE-DOWN. When mooring the aircraft in the open, head into the wind if possible. Secure control surfaces with the internal control lock and set brakes.

CAUTION

Do not set parking brakes during cold weather when accumulated moisture may freeze the brakes or when the brakes are overheated.

a. Tie ropes, cables or chains to the wing tie-down fittings, located at the upper end of each wing strut. Secure the opposite ends of ropes, cables or chains to ground anchors.
b. Secure a tie-down rope (no chains or cables) to upper trunnion of the nose gear, and secure opposite end of rope to ground anchor.
c. Secure the middle of a rope to the tail tie-down ring. Pull each end of rope away at a 45-degree angle and secure to ground anchors at each side of tail.
d. Secure control lock on pilot control column. If control lock is not available, tie pilot control wheel back with front seat belt.
e. These aircraft are equipped with a spring-loaded steering bungee which affords protection against normal wind gusts. However, if extremely high wind gusts are anticipated, additional locks may be installed.

2-7. FLYABLE STORAGE. Flyable storage is defined as a maximum of 30 days non-operational storage and/or the first 25 hours of intermittent engine operation.

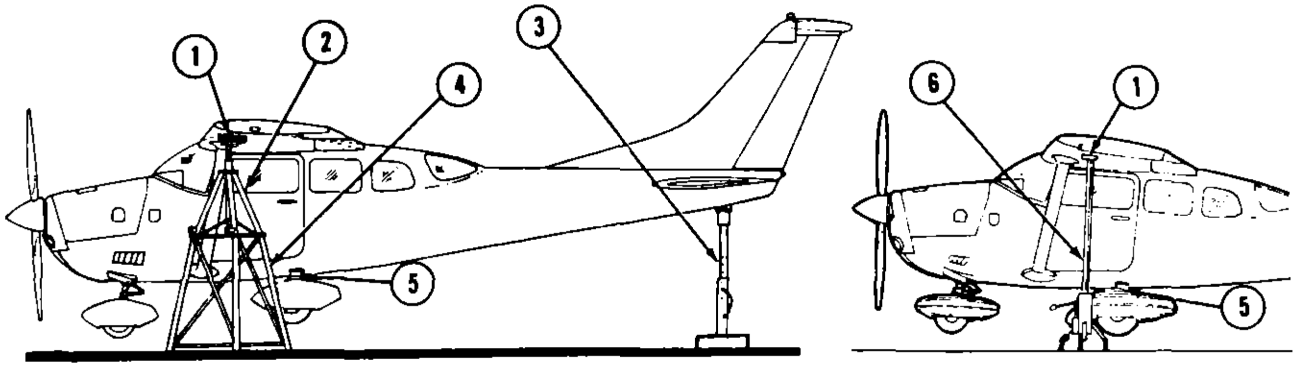
NOTE

The aircraft is delivered from Cessna with a Corrosion Preventive Aircraft Engine Oil (Military Specification MIL-C-6529 Type II Rust Ban). This engine oil is a blend of aviation grade straight mineral oil and a corrosion preventive compound. This engine oil should be used for the first 25 hours of engine operation. Refer to paragraph 2-20 for oil changes during the first 50 hours of operation.

During the 30 day non-operational storage or the first 25 hours of intermittent engine operation, the propeller shall be rotated through five revolutions every seventh day, without running the engine. If the aircraft is stored outside, tie it down in accordance with paragraph 2-6. In addition, the pitot tube, static air vents, openings in the engine cowling, and other similar openings shall have protective covers installed to prevent entry of foreign material. After 30 days, aircraft should be flown for 30 minutes or ground run-up until oil has reached operating temperature.

2-8. RETURNING AIRCRAFT TO SERVICE. After flyable storage, returning the aircraft to service is accomplished by performing a thorough pre-flight inspection. At the end of the first 25 hours of engine operation, drain engine oil, clean oil screens and change external oil filter element. Service engine with correct grade and quantity of oil. Refer to figure 2-4 and paragraph 2-20 for correct grade of engine oil.

2-9. TEMPORARY STORAGE. Temporary storage is defined as aircraft in a non-operational status for



ITEM NUMBER	TYPE AND PART NUMBER	REMARKS
1	Block (Jack point not available)	1x4x4 padded with 1/4 " rubber
2	Jack	Any short jack of capable capacity
3	Cessna #SE-767	Universal tail stand (SEE NOTE 1)
4	Cessna #SE-576 (41-1/2" high)	Universal jack stand (FOR USE WITH ITEM 2)
5	Cessna #10004-98	Jack point (SEE NOTE 2)
6	#2-170 Basic jack #2-109 Leg Extension #2-70 Slide tube extension	Closed height: 69-1/2 inches: extended height: 92" Insert slide tube extension into basic jack)

1. Weighted adjustable stand attaches to tie-down ring.
2. Cessna #10004-98 jack point may be used to raise only one wheel thru U20602579. Brake line fairing will prevent jacking aircraft beginning with U20602580 at strut. Do not use brake casting as a jack point.
3. Items (3), (4), (5) and (6) are available from the Cessna Service Parts Center.

JACKING PROCEDURE

a. Lower aircraft tail so that wing jack can be placed under front spar just outboard of wing strut.
b. Raise aircraft tail and attach tail stand to tie-down ring. BE SURE the tail stand weighs enough to keep the tail down under all conditions and is strong enough to support aircraft weight.
c. Raise jacks evenly until desired height is reached.

When using the universal jack point, flexibility of the gear strut will cause the main wheel to slide inboard as the wheel is raised, tilting the jack. The jack must be lowered for a second operation. Jacking both main wheels simultaneously with universal jack points is not recommended.

Figure 2-2. Jacking Details

a maximum of 90 days. The aircraft is constructed of corrosion resistant alclad aluminum, which will last indefinitely under normal conditions if kept clean, however, these alloys are subject to oxidation. The first indication of corrosion on unpainted surfaces is in the form of white deposits or spots. On painted surfaces, the paint is discolored or blistered. Storage in a dry hangar is essential to good preservation and should be procured if possible. Varying conditions will alter the measures of preservation, but under normal conditions in a dry hangar, and for storage periods not to exceed 90 days, the following methods of treatment are suggested:

a. Fill fuel tanks with correct grade of gasoline.
b. Clean and wax aircraft thoroughly.
c. Clean any oil or grease from tires and coat tires with a tire preservative. Cover tires to protect against grease and oil.
d. Either block up fuselage to relieve pressure on tires or rotate wheels every 30 days to change supporting paints and prevent flat spotting the tires.
e. Lubricate all airframe items and seal or cover all openings which could allow moisture and/or dust to enter.

NOTE

The aircraft battery serial number is recorded in the aircraft equipment list. To assure accurate warranty records, the battery should be re-installed in the same aircraft from which it was removed. If the battery is returned to service in a different aircraft, appropriate record changes must be made and notification sent to the Cessna Claims Department.

f. Remove battery and store in a cool dry place; service the battery periodically and charge as required.

NOTE

An engine treated in accordance with the following may be considered protected against normal atmospheric corrosion for a period not to exceed 90 days.

g. Disconnect spark plug leads and remove upper and lower spark plugs from each cylinder.

NOTE

The preservative oil must be Lubricating Oil - Contact and Volatile, Corrosion Inhibited, MIL-L-46002. Grade 1 or equivalent. The following oils are approved for spraying operations by Teledyne Continental Motors, Nucle Oil 105 - Daubert Chemical Co., 4700 So. Central Ave., Chicago, Illinois, Petratect VA - Pennsylvania Refining Co., Butler, Pennsylvania, Ferro-Gard 1009G - Ranco Laboratories, Inc., 3617 Brownsville Rd., Pittsburg, Pennsylvania.

h. Using a portable pressure sprayer, atomize spray preservative oil through the upper spark plug hole of each cylinder with the piston in a down position. Rotate crankshaft as each pair of cylinders is sprayed.
i. After completing step "h," rotate crankshaft so that no piston is at a top position. If the aircraft is to be stored outside, stop two-bladed propeller so that blades are as near horizontal as possible to provide maximum clearance with passing aircraft.
j. Again spray each cylinder without moving the crankshaft to thoroughly cover all interior surfaces of the cylinder above the piston.
k. Install spark plugs and connect spark plug leads.
l. Apply preservative oil to the engine interior by spraying approximately two ounces of the preservative oil through the oil filler tube.
m. Seal all engine openings exposed to the atmosphere using suitable plugs or non-hygroscopic tape. Attach a red streamer at each point that a plug or tape is installed.
n. If the aircraft is to be stored outside, perform the procedures outlined in paragraph 2-6. In addition, the pitot tube, static source vents, air vents, openings in the engine cowling and other similar openings should have protective covers installed to prevent entry of foreign material.
o. Attach a warning placard to the propeller to the effect that the propeller shall not be moved while the engine is in storage.

2-10. INSPECTION DURING STORAGE.
a. Inspect airframe for corrosion at least once a month and remove dust collections as frequently as possible. Clean and wax as required.
b. Inspect the interior of at least one cylinder through the spark plug hole for corrosion at least once a month.

NOTE

Do not move crankshaft when inspecting interior of cylinder for corrosion.

c. If at the end of the 90 day period, the aircraft is to be continued in non-operational storage, again perform the procedural steps "g thru o" of paragraph 2-9.

2-11. RETURNING AIRCRAFT TO SERVICE. After temporary storage, use the following procedures to return the aircraft to service.
a. Remove aircraft from blocks and check tires for proper inflation. Check for proper nose gear strut inflation.
b. Check battery and install.
c. Check that oil sump has proper grade and quantity of engine oil.
d. Service induction air filter and remove warning placard from propeller.
e. Remove materials used to cover openings.
f. Remove, clean, and gap spark plugs.
g. While spark plugs are removed, rotate propeller several revolutions to clear excess rust preventive oil from cylinders.
h. Install spark plugs and torque to value specified in Section 12 or 12A.
i. Check fuel strainer. Remove and clean filter screen if necessary. Check fuel tanks and fuel lines

for moisture and sediment, drain enough fuel to eliminate moisture and sediment.

j. Perform a thorough pre-flight inspection, then start and warm-up engine.

2-12. INDEFINITE STORAGE. Indefinite storage is defined as aircraft in a non-operational status for an indefinite period of time. Engines treated in accordance with the following may be considered protected against normal atmosphere corrosion, provided the procedures outlined in paragraph 2-13 are performed at the intervals specified.

a. Operate engine until oil temperature reaches normal operating range. Drain engine oil sump and close drain valve or install drain plug.

b. Fill oil sump to normal operating capacity with corrosion preventive mixture which has been thoroughly mixed and pre-heated to a minimum of 221°F at the time it is added to the engine.

NOTE

Corrosion-preventive mixture consists of one part compound MIL-C-6529, Type I, mixed with three parts new lubricating oil of the grade recommended for service. Continental Motors Corporation recommends Cosmoline No. 1223, supplied by E. F. Houghton & Co., 305 W. LeHigh Avenue, Philadelphia, Pa. During all spraying operations corrosion mixture is pre-heated to 221° to 250°F.

c. Immediately after filling the oil sump with corrosion preventive mixture, fly the aircraft for a period of time not to exceed a maximum of 30 minutes.

d. After flight and with engine operating at 1200 to 1500 rpm and induction air filter removed, spray corrosion preventive mixture into induction airbox, at the rate of one-half gallon per minute, until heavy smoke comes from the exhaust stack, then increase the spray until engine is stopped.

CAUTION

Injecting corrosion-preventive mixture too fast can cause a hydrostatic lock.

e. Do not rotate propeller after completing step "d."

f. Remove all spark plugs and spray corrosion-preventive mixture, which has been pre-heated to 221° to 250°F., into all spark plug holes to thoroughly cover interior surfaces of cylinders.

g. Install spark plugs or solid plugs in the lower spark plug holes and install dehydrator plugs in the upper spark plug holes. Be sure that dehydrator plugs are blue in color when installed.

h. Cover spark plug lead terminals with shipping plugs (AN4060-1) or other suitable covers.

i. With throttle in full open position, place a bag of desiccant in the induction air intake and seal opening with moisture resistant paper and tape.

j. Place a bag of desiccant in the exhausts tailpipe (s) and seal openings with moisture resistant tape.

k. Seal cold air inlet to the heater muff with moisture resistant tape.

l. Seal engine breather tube by inserting a protex plug in the breather and clamping in place.

m. Seal all other engine openings exposed to atmosphere using suitable plugs or non-hygroscopic tape.

NOTE

Attach a red streamer to each place plugs or tape is installed. Either attach red streamers outside of the sealed area with tape or to the inside of the sealed area with safety wire to prevent wicking of moisture into the sealed area.

n. Drain corrosion-preventive mixture from engine sump and reinstall drain plug or close drain valve.

NOTE

The corrosion-preventive mixture is harmful to paint and should be wiped from painted surfaces immediately.

o. Attach a warning placard on the throttle control knob to the effect that the engine contains no lubricating oil. Placard the propeller to the effect that it should not be moved while the engine is in storage.

o. Prepare airframe for storage as outlined in paragraph 2-9 thru step "f."

NOTE

As an alternate method of indefinite storage, the aircraft may be serviced in accordance with paragraph 2-9 providing the aircraft is run-up at maximum intervals of 90 days and then reserviced per paragraph 2-9.

2-13. INSPECTION DURING STORAGE. Aircraft in an indefinite storage shall be inspected as follows:

a. Inspect cylinder protex plugs each 7 days.

b. Change protex plugs if their color indicates an unsafe condition.

c. If the protex plugs have changed color in one half of the cylinders all desiccant material in the engine shall be replaced with new material.

d. Every 6 months respray the cylinders interior with corrosion-preventive mixture.

NOTE

Before spraying, inspect the interior of one cylinder for corrosion through the spark plug hole and remove at least one rocker box cover and inspect the valve mechanism.

2-14. RETURNING AIRCRAFT TO SERVICE. After indefinite storage, use the following procedure to return the aircraft to service.

a. Remove aircraft from blocks and check tires for correct inflation. Check for correct nose gear strut inflation.

b. Check battery and install.

c. Remove all materials used to seal and cover openings.

d. Remove warning placards posted at throttle and

propeller.
e. Remove and clean engine oil screen, then reinstall and safety. On aircraft equipped with an external oil filter, install new filter element.
f. Remove oil sump drain plug or open drain valve and drain sump. Install or close drain valve and safety.

NOTE

The corrosion-preventive mixture will mix with the engine lubricating oil, so flushing the oil system is not necessary. Draining the oil sump will remove enough of the corrosion-preventive mixture.

g. Service and install the induction air filter.
h. Remove protex plugs and spark plugs or plugs installed in spark plug holes and rotate propeller by hand several revolutions to clear corrosion-preventive mixture from the cylinders.
i. Clean, gap and install spark plugs. Torque plugs to value specified in Section 12 or 12A.
j. Check fuel strainer. Remove and clean filter screen. Check fuel tanks and fuel lines for moisture and sediment, and drain enough fuel to eliminate.
k. Perform a thorough pre-flight inspection, then start and warm-up engine.
l. Thoroughly clean aircraft and flight test aircraft.

2-15. LEVELING. Reference point for leveling the aircraft longitudinally is the top centerline of the tailcone between the rear window and vertical fin. Corresponding points on front seat rails may be used to level the aircraft laterally.

2-16. SERVICING.

2-17. DESCRIPTION. Servicing requirements are shown in figure 2-4. The following paragraphs supplement this figure by adding details not included in the figure.

2-18. FUEL. Fuel cells should be filled immediately after flight to lessen condensation in the cells and lines. Cell capacities are listed in figure 1-1. The recommended fuel grade to be used is given in figure 2-4.

2-19. FUEL DRAINS. Drains are located at various places throughout the fuel system. Refer to Section 13 for locations of the various drains in the system. The strainer drain valve is an integral part of the fuel strainer assembly. The strainer drain is equipped with a control which is located adjacent to the oil dipstick. Access to the control is gained through the oil dipstick access door. Remove drain plugs and open drain valves at the intervals specified in figure 2-4. Also, during daily inspection of the fuel strainer, if water is found in the strainer, there is a possibility that the wing cell sumps or fuel lines contain water. Therefore, all fuel plugs should be removed and all water drained from the fuel system. On aircraft equipped with rubberized fuel cells, a fuel sampler cup is furnished. To activate drain valve for fuel sampling, place cup to valve and depress valve with rod protruding from cup. (Refer to figure 13-5.)

2-20. ENGINE OIL. Check engine lubricating oil with the dipstick five to ten minutes after the engine has been stopped. The aircraft should be in as near a level position as possible when checking the engine oil so that a true reading is obtained. Engine oil should be drained while the engine is still hot, and the nose of the aircraft should be raised slightly for more positive draining of any sludge which may have collected in the engine oil sump. Engine oil should be changed every six months, even though less than the specified hours have accumulated. Reduce these intervals for prolonged operations in dusty areas in cold climates where sludging conditions exist, or where short flights and long idle periods are encountered, which cause sludging conditions. Always change oil, clean oil screens and clean and/or change external filter element whenever oil on the dipstick appears dirty. Ashless dispersant oil, conforming to Continental Motors Specification No. MHS-24A, shall be used in these engines. Multi-viscosity oil may be used to extend the operating temperature range, improve cold engine starting and lubrication of the engine during the critical warm-up period, thus permitting flight through wider ranges of climate change without the necessity of changing oil. The multi-viscosity grades are recommended for aircraft engines subjected to wide variations in ambient air temperatures when cold starting of the engine must be accomplished at temperatures below 30°F.

NOTE

New or newly overhauled engines should be operated on aviation grade straight mineral oil until the first oil change. The aircraft is delivered from Cessna with straight mineral oil (MIL-C-6529, Type II, RUST BAN.) If oil must be added during the first 25 hours, use only aviation grade straight mineral oil conforming to Specification MIL-6082. After the first 25 hours of operation, drain engine oil sump and clean both the oil suction strainer and the oil pressure screen. If an optional oil filter is installed, change filter element at this time. Refill sump with straight mineral oil and use until a total of 50 hours have accumulated or oil consumption has stabilized, then change to ashless dispersant oil.

When changing engine oil, remove and clean oil screens, or install a new filter element on aircraft equipped with an external oil filter. An oil quick-drain valve may be installed. This valve provides a quick and cleaner method of draining the engine oil. This valve is installed in the oil drain port of the oil sump. To drain the oil, proceed as follows:
a. Operate engine until oil temperature is at normal operating temperature.
b. (With Quick-Drain Valve) Attach a hose to the

quick-drain valve in oil sump. Push up on quick-drain valve until it locks open, and allow oil to drain through hose into a container.

c. (Without Quick-Drain Valve) Remove oil drain plug from engine sump and allow oil to drain into a container.

d. After oil has drained, close quick-drain valve, if installed, and remove hose. Install and safety drain plug.

e. Remove and clean oil screen.

f. Service engine with correct quantity and grade of engine oil.

NOTE

Refer to inspection charts for intervals for changing oil and filter elements. Refer to figure 2-4 for correct grade of engine oil, and refer to figure 1-1 for correct capacities.

2-21. ENGINE INDUCTION AIR FILTER. The induction air filter keeps dust and dirt from entering the induction system. The value of maintaining the air filter in a good clean condition can never be overstressed. More engine wear is caused through the use of a dirty or damaged air filter than is generally believed. The frequency with which the filter should be removed, inspected and cleaned will be determined primarily by aircraft operating conditions. A good general rule, however, is to remove, inspect and clean the filter at least every 50 hours of engine operating time, and more frequently if warranted by operating conditions. Some operators prefer to hold spare induction air filters at their home base of operation so that a clean filter is always readily available for use. Under extremely dusty conditions, daily servicing of the filter is recommended. To service the induction filter, proceed as follows:

a. Remove filter from aircraft.

NOTE

Use care to prevent damage to filter element when cleaning filter with compressed air.

b. Clean filter by blowing with compressed air (not over 100 psi) from direction opposite of normal air flow. Arrows on filter case indicate direction of normal air flow.

CAUTION

Do not use solvent or cleaning fluids to wash filter. Use only a water and household detergent solution when washing the filter.

c. After cleaning as outlined in step "b", the filter may be washed, if necessary, in a solution of warm water and a mild household detergent. A cold water solution may be used.

NOTE

The filter assembly may be cleaned with compressed air a maximum of 30 times or it may be washed a maximum of 20 times. A new filter should be installed after using 500 hours of engine operating time or one year, whichever should occur first. However, a new filter should be installed anytime the existing filter is damaged. A damaged filter may have sharp or broken edges in the filtering panels which would allow unfiltered air to enter the induction system. Any filter that appears doubtful, shall have a new filter installed in its place.

d. After washing, rinse filter with clear water until rinse water draining from filter is clear. Allow water to drain from filter and dry with compressed air (not over 100 psi).

NOTE

The filtering panels of the filter may become distorted when wet, but they will return to their original shape when dry.

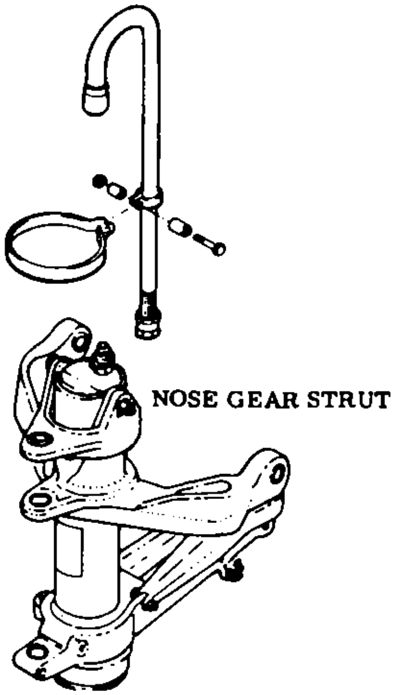
e. Be sure airbox is clean, and inspect filter. If filter is damaged, a new filter should be installed.

f. Install filter at entrance to airbox with gasket on aft face of filter frame and with flow arrows on filter frame pointed in the correct direction.

2-22. VACUUM SYSTEM AIR FILTER. The vacuum system central air filter keeps dust and dirt from entering the vacuum operated instruments. Inspect the filter element every 200 hours of operating time for damage. Change the central air filter element when damaged or at every 500 hours of operating time and whenever the suction gage reading drops below 4.6 inches of mercury. Also, do not operate the vacuum system with the filter element removed or a vacuum line disconnected as particles of dust or other foreign matter may enter the system and damage the vacuum operated instruments.

2-23. BATTERY. Battery servicing involves adding distilled water to maintain the electrolyte even with the horizontal baffle plate or split ring at the bottom of the filler holes, checking cable connections, and neutralizing and cleaning off any spilled electrolyte or corrosion. Use bicarbonate of soda (baking soda) and clean water to neutralize electrolyte or corrosion. Follow with a thorough flushing with clean water. Do not allow bicarbonate of soda to enter battery. Brighten cable and terminal connection with a wire brush, then coat with petroleum jelly before connecting. Check the battery every 50 hours (or at least every 30 days), oftener in hot weather. Add only distilled water, not acid or "rejuvenators," to maintain electrolyte level in the battery. Inspect the battery box and clean and remove any evidence of corrosion.

2-24. TIRES. Maintain tire pressure at the value specified in figure 1-1. When checking pressure, examine tires for wear, cuts, bruises and slippage. Remove oil, grease and mud from tires with soap and water.



NOTE

Valve core remains in strut valve. An internal flexible cable, in the valve extension, is used to depress the valve core in strut valve.

Figure 2-3. Strut Filler Valve Extension

NOTE

Recommended tire pressures should be maintained. Especially in cold weather, remember that any drop in temperature of the air inside a tire causes a corresponding drop in air pressure.

2-25. NOSE GEAR STRUT. The nose gear strut requires periodic checking to ascertain that the strut is filled with hydraulic fluid and is inflated to the correct air pressure. To fill the nose gear strut with hydraulic fluid and air, proceed as follows:

a. Weight tail to raise nose wheel off ground.

b. Remove filler valve cap from filler valve or from lower end of valve extension, and depress valve core to completely deflate nose strut.

c. Remove valve core from filler valve. It will be necessary to disconnect filler valve extension from valve at top of strut.

d. Attach a rubber hose to the filler valve.

e. With other end of rubber hose in a container of clean hydraulic fluid, compress and extend strut several times. This will draw fluid from container into the strut, filling strut with hydraulic fluid.

f. After strut has been cycled several times, allow strut to extend. Holding end of rubber hose above fluid level in container, slowly compress strut, allowing excess fluid to be drained into container.

g. While strut is compressed, remove hose and install valve core in filler valve. Connect valve extension to valve.

h. Inflate strut to the pressure specified in figure 1-1.

NOTE

The nose landing gear shock strut will normally require only a minimum amount of service. Maintain the strut extension pressure as shown in Section 1. Lubricate landing gear as shown in figure 2-5. Check the landing gear daily for general cleanliness, security of mounting, and for hydraulic fluid leakage. Keep machined surfaces wiped free of dirt and dust, using a clean lint-free cloth saturated with hydraulic fluid (MIL-H-5606) or kerosene. All surfaces should be wiped free of excessive hydraulic fluid.

2-26. NOSE GEAR SHIMMY DAMPENER. The shimmy dampener should be serviced at least every 100 hours. The dampener must be filled completely with hydraulic fluid, free of entrapped air with the compensating piston bottomed in the rod. Check that piston is completely bottomed as follows:

a. Remove shimmy dampener from the aircraft.

b. While holding the shimmy dampener in a vertical position with the filler plug pointed upward, loosen the filler plug.

c. Allow the spring to bottom out the floating piston inside the shimmy dampener rod.

d. When the fluid stops flowing, insert a length of stiff wire through the air bleed hole in the setscrew at the end of the piston rod until it touches the floating piston. The depth of insertion should be 3-13/16 inches.

NOTE

If the wire insertion is less than 3-13/16 inches, the floating piston is lodged in the shaft. If the wire cannot be used to free the piston, the rod assembly and piston should be replaced.

Service the shimmy dampener as follows:

a. Remove filler plug from dampener.

b. Move piston completely to opposite end from filler plug.

c. Fill dampener with clean hydraulic fluid completely full.

d. Reinstall filler plug and safety.

e. Wash dampener in solvent and wipe dry with a cloth.

f. Reinstall shimmy dampener in aircraft.

NOTE

Keep shimmy dampener, especially the exposed portions of the dampener piston shaft, clean to prevent collection of dust and grit which could cut the seals in the dampener barrel. Keep machined surfaces wiped free of dirt and dust, using a clean lint-free cloth saturated with hydraulic fluid (MIL-H-5606) or kerosene. All surfaces should be wiped free of excessive hydraulic fluid.

2-27. HYDRAULIC BRAKE SYSTEMS. Check brake master cylinders and refill with hydraulic fluid as required every 200 hours. Bleed the brake system of entrapped air whenever there is a spongy response to the brake pedals. Refer to Section 5 for filling and bleeding the brake systems.

2-28. OXYGEN SYSTEM. Refer to Section 15.

2-29. FACE MASKS. Refer to Section 15.

2-30. CLEANING.

2-31. GENERAL DESCRIPTION. Keeping the aircraft clean is important. Besides maintaining the trim appearance of the aircraft, cleaning lessens the possibility of corrosion and makes inspection and maintenance easier.

2-32. UPHOLSTERY AND INTERIOR. Cleaning prolongs the life of upholstery fabrics and interior trim. To clean the interior, proceed as follows:

a. Empty all the ash trays.

b. Brush out or vacuum clean the upholstery and carpeting to remove dirt.

c. Wipe leather and plastic surfaces with a damp cloth.

d. Soiled upholstery fabrics and carpet may be cleaned with a foam-type detergent, used according to the manufacturer's instructions.

e. Oily spots and stains may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place in the fabric to be cleaned. Never saturate the fabric with a volatile solvent; it may damage the packing and backing material.

f. Scrape off sticky materials with a dull knife, then spot clean the area.

2-33. PLASTIC TRIM. The instrument panel, plastic trim and control knobs need only be wiped off with a damp cloth. Oil and grease on the control wheel and control knobs can be removed with a cloth moistened with Stoddard solvent.

CAUTION

Do not use gasoline, alcohol, benzene, acetone, carbon tetrachloride, fire extinguisher fluid, de-icer fluid, lacquer thinner or glass window cleaning spray. These solvents will soften and craze the plastic.

2-34. WINDSHIELD AND WINDOWS. These surfaces should be cleaned carefully with plenty of fresh water and a mild detergent, using the palm of the hand to feel and dislodge any caked dirt or mud. A sponge, soft cloth, or chamois may be used, but only as a means of carrying water to the plastic. Rinse thoroughly, then dry with a clean moist chamois. Do not rub the plastic with a dry cloth as this builds up an electrostatic charge which attracts dust. Oil and grease may be removed by rubbing lightly with a soft cloth moistened with Stoddard solvent.

CAUTION

Do not use gasoline, alcohol, benzene, acetone, carbon tetrachloride, fire extinguisher fluid, de-icer fluid, lacquer thinner or glass window cleaning spray. These solvents will soften and craze the plastic.

After washing, the plastic windshield and windows should be cleaned with an aircraft windshield cleaner. Apply the cleaner with soft cloths and rub with moderate pressure. Allow the cleaner to dry, then wipe it off with soft flannel cloths. A thin, even coat of wax, polished out by hand with soft flannel cloths, will fill in minor scratches and help prevent further scratching. Do not use a canvas cover on the windshield or windows unless freezing rain or sleet is anticipated since the cover may scratch the plastic surface.

2-35. ALUMINUM SURFACES. The aluminum surfaces require a minimum of care, but should never be neglected. The aircraft may be washed with clean water to remove dirt and may be washed with non-alkaline grease solvents to remove oil and/or grease. Household-type detergent soap powders are effective cleaners, but should be used cautiously since some of them are strongly alkaline. Many good aluminum cleaners, polishes and waxes are available from commercial suppliers of aircraft products.

2-36. PAINTED SURFACES. The painted exterior surfaces of the aircraft, under normal conditions, require a minimum of polishing or buffing. Approximately 15 days are required for acrylic paint to cure completely; in most cases, the curing period will have been completed prior to delivery of the aircraft. In the event that polishing or buffing is required within the curing period, it is recommended that the work be done by an experienced painter. Generally, the painted surfaces can be kept bright by washing with water and mild soap, followed by a rinse with water and drying with cloths or a chamois. Harsh or abrasive soaps or detergents which cause corrosion or make scratches should never be used. Remove stubborn oil and grease with a cloth moistened with Stoddard solvent. After the curing period, the aircraft may be waxed with a good automotive wax. A heavier coating of wax on the leading edges of the wings and tail and on the engine nose cap will help reduce the abrasion encountered in these areas.

2-37. ENGINE COMPARTMENT. Cleaning is essential to minimize any danger of fire, and for proper inspection of engine components. The engine and engine compartment may be washed down with a suitable solvent, such as Stoddard solvent or equivalent, then dried thoroughly.

CAUTION

Particular care should be given to electrical equipment before cleaning. Solvent should not be allowed to enter magnetos, starters, alternators, voltage regulators, and the like. Hence, these components should be protected before saturating the engine with solvent. Any oil, fuel, and air openings on the engine and accessories should be covered before washing the engine with solvent. Caustic cleaning solutions should be used cautiously and should always be properly neutralized after their use.

2-38. PROPELLER. The propeller should be wiped occasionally with an oily cloth to remove grass and bug stains. In salt water areas, this will assist in corrosion-proofing the propeller.

2-39. WHEELS. The wheels should be washed periodically and examined for corrosion, chipped paint and cracks or dents in the wheel castings. Sand smooth, prime and repaint minor defects. Cracked wheel halves shall be replaced.

2-40. LUBRICATION.

2-41. GENERAL DESCRIPTION. Lubrication requirements are outlined in figure 2-5. Before adding lubricant to a fitting, wipe the fitting free of dirt. Lubricate until grease appears around part being lubricated and wipe excess grease from parts. The following paragraphs supplement figure 2-5 by adding details not shown in the figure.

2-42. NOSE GEAR TORQUE LINKS. Lubricate torque links every 50 hours. When operating in dusty conditions, more frequent lubrication is recommended.

2-43. TACHOMETER DRIVE SHAFT. Refer to Section 16 for lubrication instructions.

2-44. WHEEL BEARING LUBRICATION. Clean and repack wheel bearings at the first 100-hour inspection and at each 500-hour inspection thereafter. If more than the usual number of take-off and landings are made, extensive taxiing is required or the aircraft is operated in dusty areas or under seacoast conditions, clean and lubricate wheel bearings at each 100-hour inspection.

2-45. WING FLAP ACTUATOR

a. On aircraft prior to P20600648 and U20601673 which have not been modified by Service Kit SK150-37, proceed as follows:

1. At each 100 hour inspection, inspect wing flap actuator jack screw and ball retainer assembly for lubrication, and lubricate if required. Also, remove, clean and lubricate jack screw whenever actuator slippage is experienced. If lubrication is required, proceed as follows:

a. Gain access to actuator by removing appropriate inspection plates on lower surface of wing.

b. Expose jack screw by operating flaps to full-down position.

c. Wipe a small amount of lubricant from jack screw with a rag and examine for condition. Lubricant should not be dirty, sticky, gummy or frothy in appearance.

d. Inspect wiped area on jack screw for presence of hard scale deposit. Previous wiping action, will have exposed bare metal if no deposit is present.

e. If any of the preceding conditions exist, clean and relubricate jack screw as outlined in steps "f" thru "n".

f. Remove actuator from aircraft in accordance with procedures outlined in Section 7.

g. Remove all existing lubricant from jack screw and torque tube by running the nut assembly to the end of the jack screw away from the gearbox, and soaking the nut assembly and jack screw in Stoddard solvent.

NOTE

Care must be taken to prevent solvent from entering gearbox. The gearbox lubricant is not affected and should not be disturbed.

h. After soaking, clean entire length of jack screw with a wire brush, rinse with solvent and dry with compressed air.

NOTE

Do not disassemble nut and ball retainer assembly.

i. Relubricate jack screw with MIL-G-21164 (Molybdenum Disulfide Grease) as outlined in steps "j" thru "m".

j. Rotate nut down screw toward the motor.

k. Coat screw and thread end of nut with grease and run nut to full extension.

l. Repeat the process and pack lubricant in the cavity between the nut and ball retainer at the threaded end of the nut.

m. Repeat the process and work nut back and forth several times.

n. Remove excess grease.

o. Reinstall actuator in aircraft in accordance with instructions outlined in Section 7.

b. On aircraft prior to Serials P20600648 and U206-601673 which have been modified by Service Kit SK150-37 proceed as follows:

1. At each 100-hour inspection, expose jack screw by operating flaps to full-down position, and inspect wing flap actuator jack screw for proper lubrication. If lubrication is required, proceed as follows:

a. Clean jack screw with solvent rag, if necessary, and dry with compressed air.

b. Relubricate jack screw with MIL-G-

21164 (Molybdenum Disulfide Grease) as required.

c. On aircraft beginning with Serial U20601673, clean and lubricate wing flap actuator jack screw each 100 hours as follows:

1. Expose jack screw by operating flaps to full-down position.

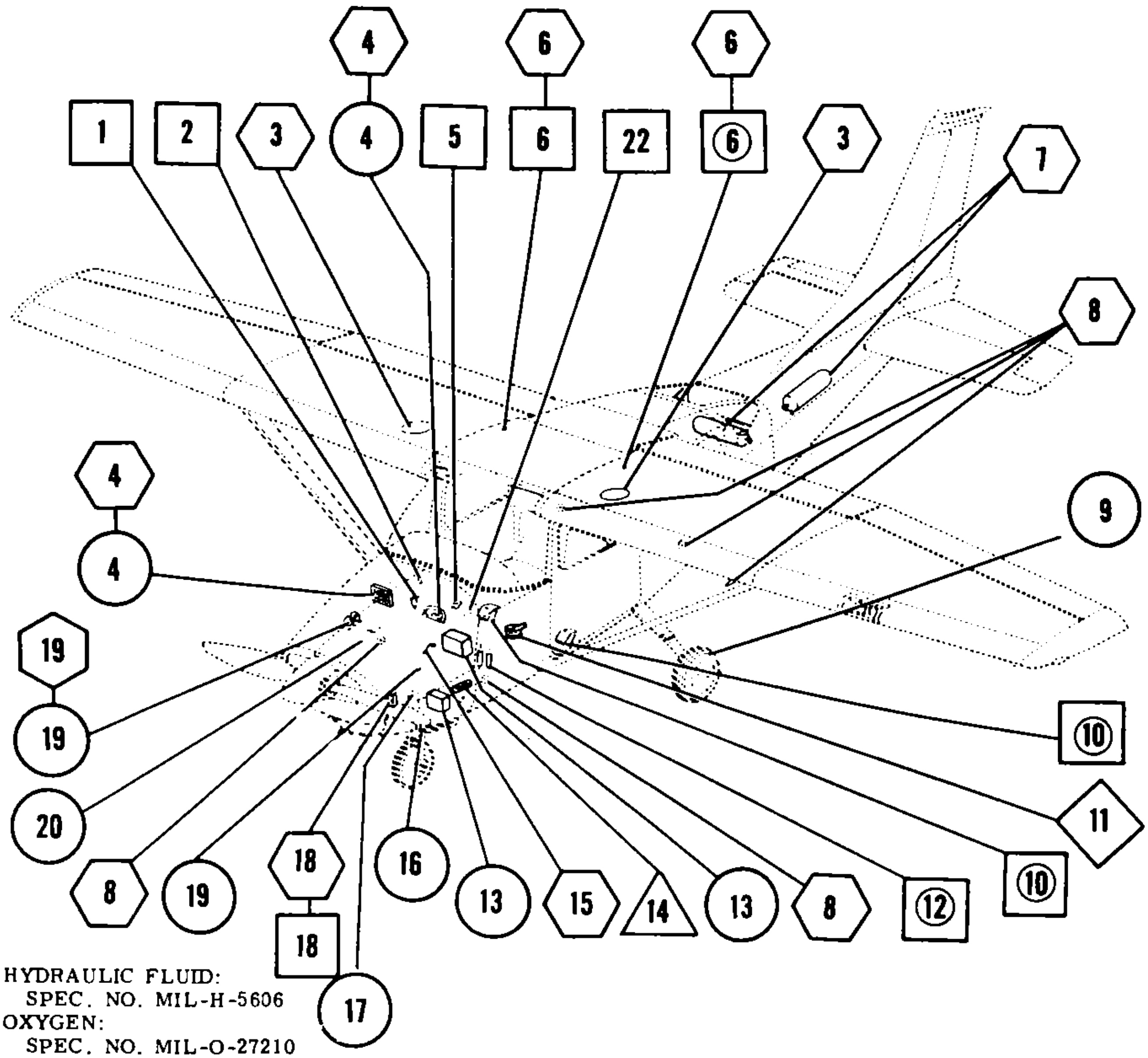
2. Clean jack screw threads with solvent rag and dry with compressed air.

NOTE

It is not necessary to remove actuator from aircraft to clean or lubricate threads.

3. With oil can, apply light coat of No. 10 weight, non-detergent oil to threads of jack screw.

SHOP NOTES:



HYDRAULIC FLUID:
  SPEC. NO. MIL-H-5606
OXYGEN:
  SPEC. NO. MIL-O-27210

RECOMMENDED FUEL:

ENGINE MODEL IO-520 Series CONTINENTAL

FUEL: Compliance with conditions stated in Continental aircraft engine Service Bulletins M74-6 and M75-2 and supplements or revisions thereto, are recommended when using alternate fuel.

1. MINIMUM: 100/130 Aviation Grade
2. ALTERNATE:
a. 115/145 Aviation Grade (with lead content limited to a maximum of 4.6 cc Tetraethyl lead per gallon.)

Figure 2-4. Servicing (Sheet 1 of 3)

RECOMMENDED ENGINE OIL:

ENGINE MODEL IO-520-Series CONTINENTAL

AVIATION GRADE:

40°F	SAE 50
40°F	SAE 30

Aviation grade ashless dispersant oil, conforming to Continental Motors Specification MHS-24 and all revisions and supplements thereto, must be used except as noted in paragraph 2-20. Refer to Continental aircraft Engine Service Bulletin M75-2 and any superseding bulletins, revisions or supplements thereto, for further recommendations.

DAILY

3 FUEL CELLS:
Service after each flight. Keep full to retard condensation. Refer to paragraph 2-18 for details.

6 FUEL CELL SUMP DRAINS:
Drain off any water and sediment before first flight of the day.

18 FUEL STRAINER:
Drain off any water and sediment before first flight of the day.

15 OIL DIPSTICK:
Check on preflight. Add oil as necessary. Refer to paragraph 2-20 for details. Check that filler cap is tight and oil filler is secure.

8 PITOT AND STATIC PORTS:
Check for obstructions before first flight of the day.

7 OXYGEN CYLINDERS:
Check for anticipated requirements before each flight. Refer to Section 15 for details.

4 INDUCTION AIR FILTER:
Inspect and service under dusty conditions. Refer to paragraph 2-21 for details.

FIRST 25 HOURS

19 ENGINE OIL SYSTEM:
Refill with straight mineral oil, non-detergent, and use until a total of 50 hours have accumulated or oil consumption has stabilized, then change to ashless dispersant oil.

50 HOURS

4 INDUCTION AIR FILTER:
Clean per paragraph 2-21. Replace as required.

13 BATTERY:
Check electrolyte level and clean battery compartment each 50 hours or 30 days.

19 ENGINE OIL SYSTEM:
Change oil each 50 hours if engine is NOT equipped with external filter; if equipped with external oil filter, change filter element each 50 hours and oil at least at each 100 hours, or every 6 months.

16 SHIMMY DAMPENER:
Check fluid level and refill as required in accordance with paragraph 2-26.

9 TIRES:
Maintain correct tire inflation as listed in figure 1-1. Refer to paragraph 2-24.

Figure 2-4. Servicing (Sheet 2 of 3)

50 HOURS (Cont.)

17 NOSE GEAR SHOCK STRUT:
Keep strut filled and inflated to correct pressure. Refer to paragraph 2-25.

20 SPARK PLUGS:
Remove, clean and re-gap all spark plugs. Refer to Section 12 or 12A.

100 HOURS

1 VACUUM SYSTEM OIL SEPARATOR:
Remove, flush with solvent, and dry with compressed air.

2 FUEL/AIR CONTROL UNIT SCREEN:
Remove and clean screen.

5 VACUUM RELIEF VALVE FILTER SCREEN:
Remove, flush with solvent and dry with compressed air.

18 FUEL STRAINER:
Disassemble and clean strainer bowl and screen.

22 ALTERNATOR SUPPORT BRACKET:
Check alternator support bracket for security and cracking.
Also refer to Service Letter SE71-42.

200 HOURS

6 FUEL CELL SUMP DRAINS:
Drain off any water or sediment.

10 FUEL RESERVOIR TANK AND/OR SELECTOR VALVE DRAINS:
Remove plugs and drain off any water and sediment. Reinstall and resafety plugs.

12 BRAKE MASTER CYLINDERS:
Check fluid level and fill as required with hydraulic fluid.

500 HOURS

11 VACUUM SYSTEM CENTRAL AIR FILTER:
Replace every 500 hours.

AS REQUIRED

14 GROUND SERVICE RECEPTACLE:
Connect to 12-volt, or 24-volt if aircraft is equipped with a 24-volt battery, DC, negative-ground power unit for cold weather starting and lengthy ground maintainance of the aircraft electrical equipment with the exception of electronic equipment. Master switch should be turned on before connecting a generator type or battery type external power source.

NOTE

The ground power receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground service plug is connected correctly to the aircraft.

Figure 2-4. Servicing (Sheet 3 of 3)

FREQUENCY (HOURS)

50 100 500 1000

METHOD OF APPLICATION

HAND GREASE GUN OIL CAN SYRINGE (FOR POWDERED GRAPHITE)

WHERE NO INTERVAL IS SPECIFIED, LUBRICATE AS REQUIRED AND WHEN ASSEMBLED OR INSTALLED.

NOTE

The military specifications listed below are not mandatory, but are intended as guides in choosing satisfactory materials. Products of most reputable manufacturers meet or exceed these specifications.

LUBRICANTS

PG	SS-G-659	POWDERED GRAPHITE
GR	MIL-G-81322A	GENERAL PURPOSE GREASE
GH	MIL-G-23827A	AIRCRAFT AND INSTRUMENT GREASE
GL	MIL-G-21164C	HIGH AND LOW TEMPERATURE GREASE
OG	MIL-L-7870A	GENERAL PURPOSE OIL
PL	VV-P-236	PETROLATUM
GS	MIL-S-8660	DC4 (DOW CORNING)
GP		NO. 10-WEIGHT, NON-DETERGENT OIL

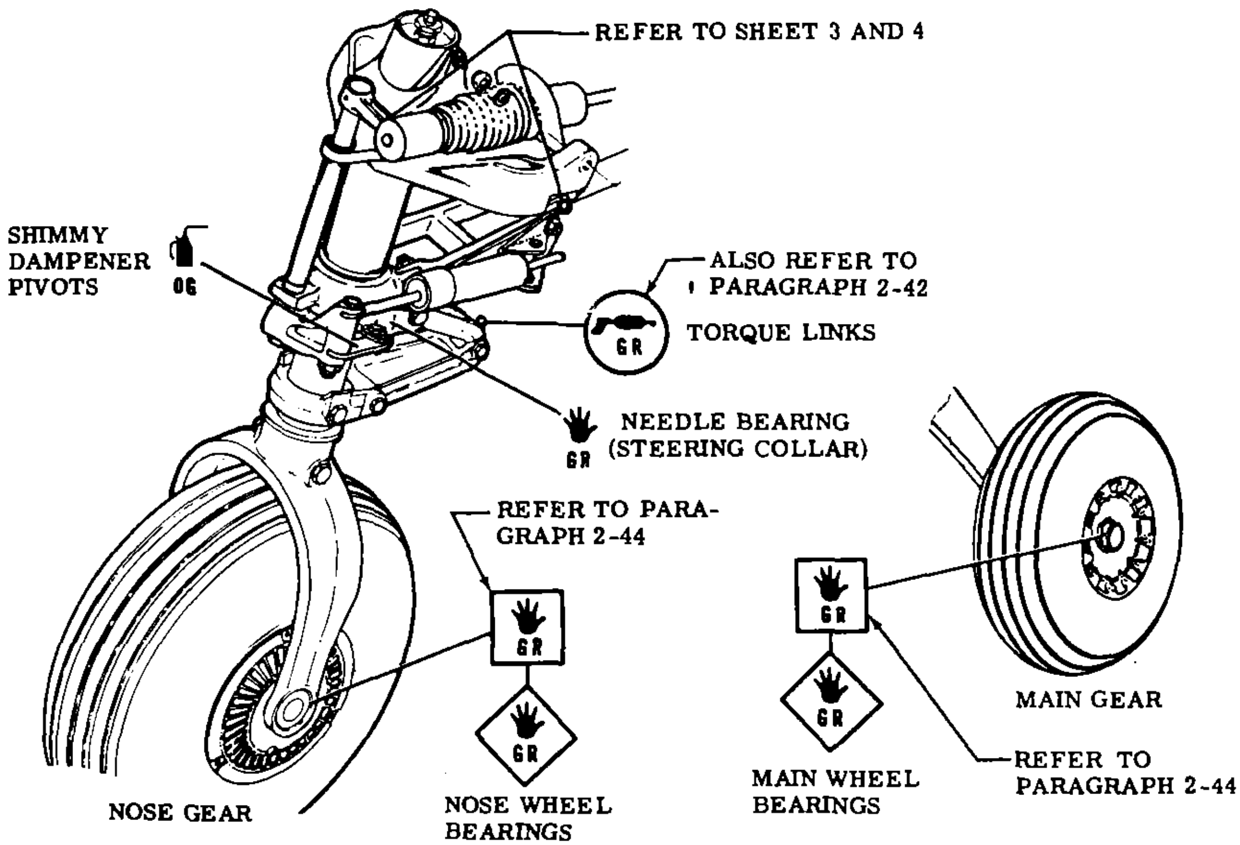


Figure 2-5. Lubrication (Sheet 1 of 4)

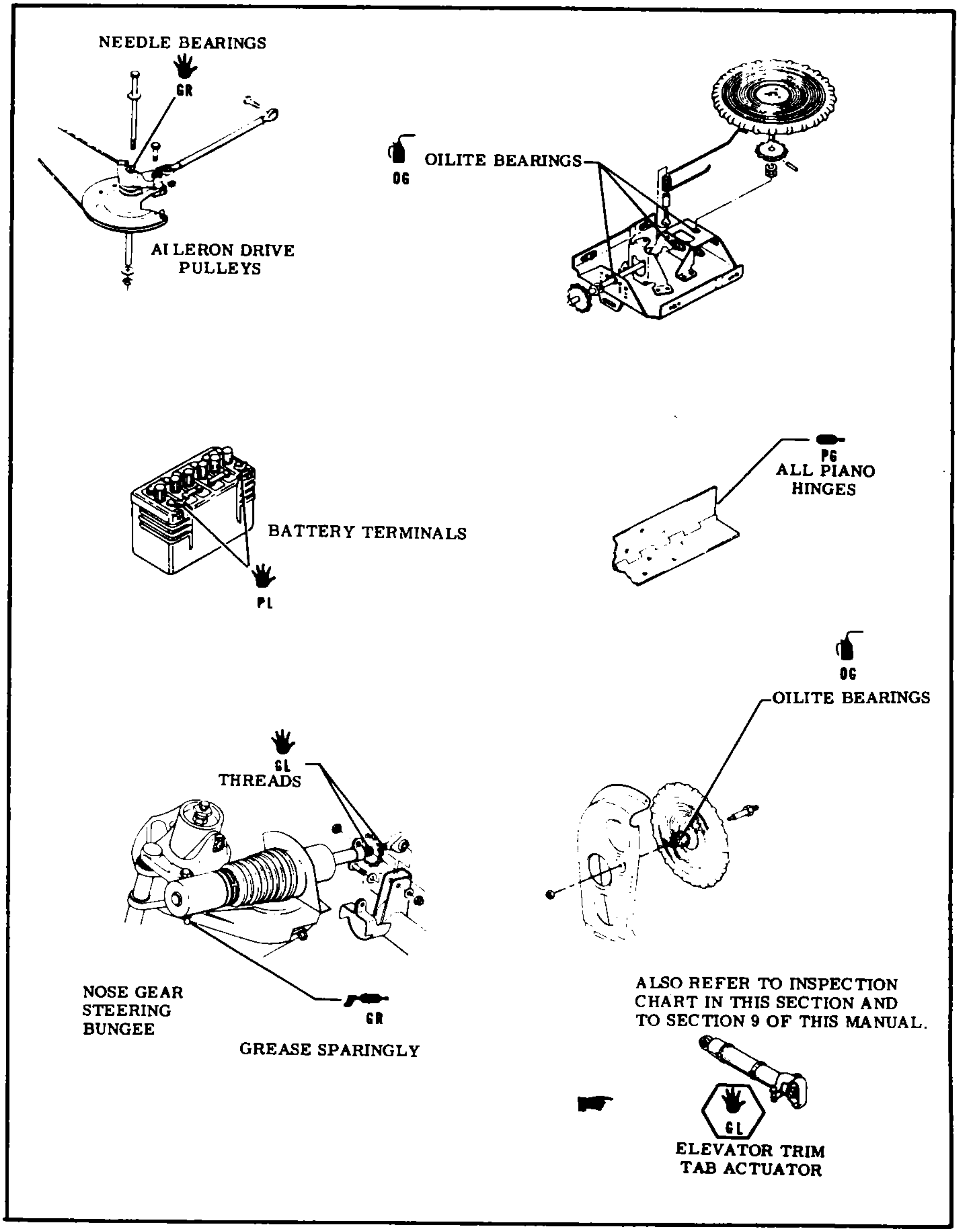


Figure 2-5. Lubrication (Sheet 2 of 4)

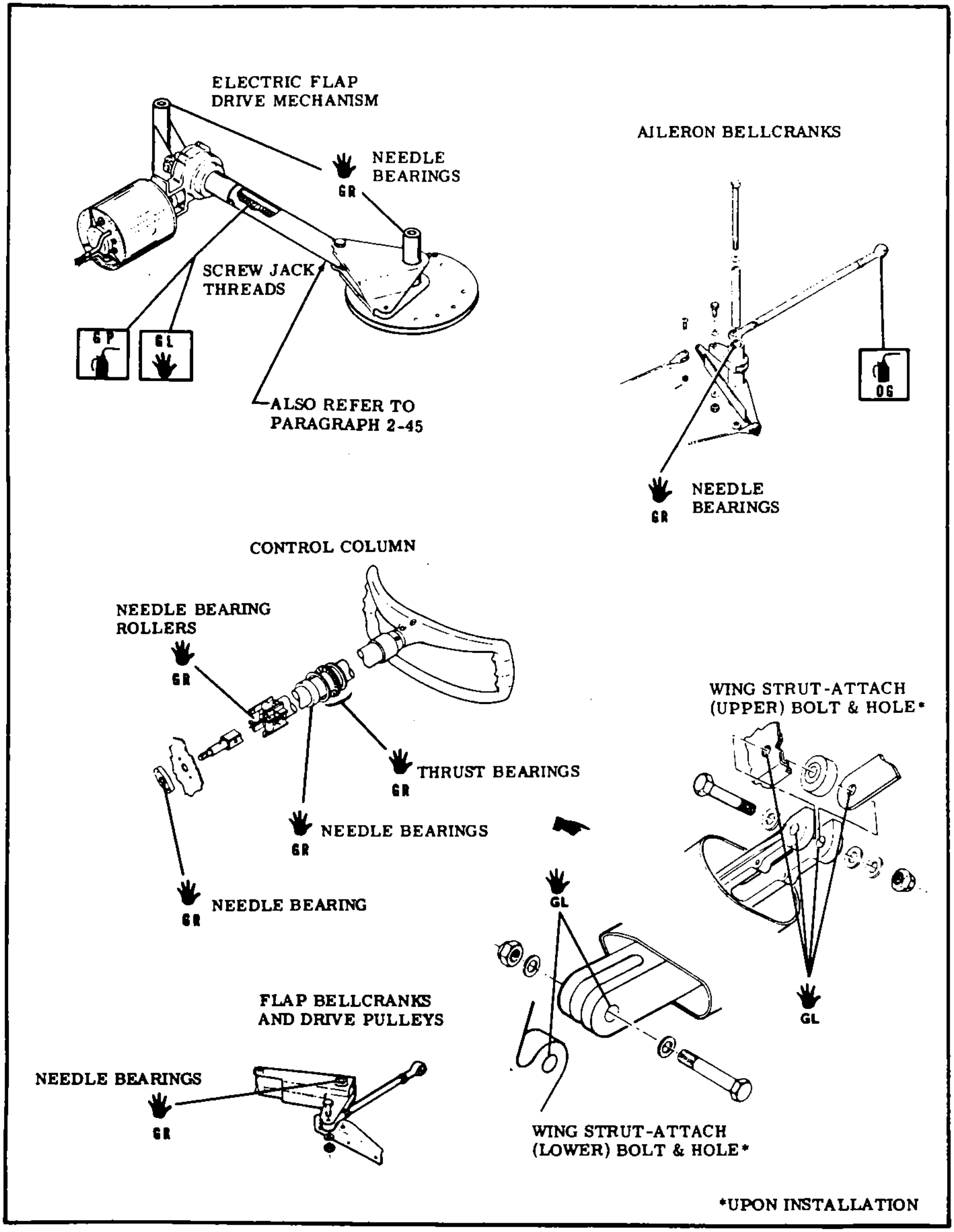
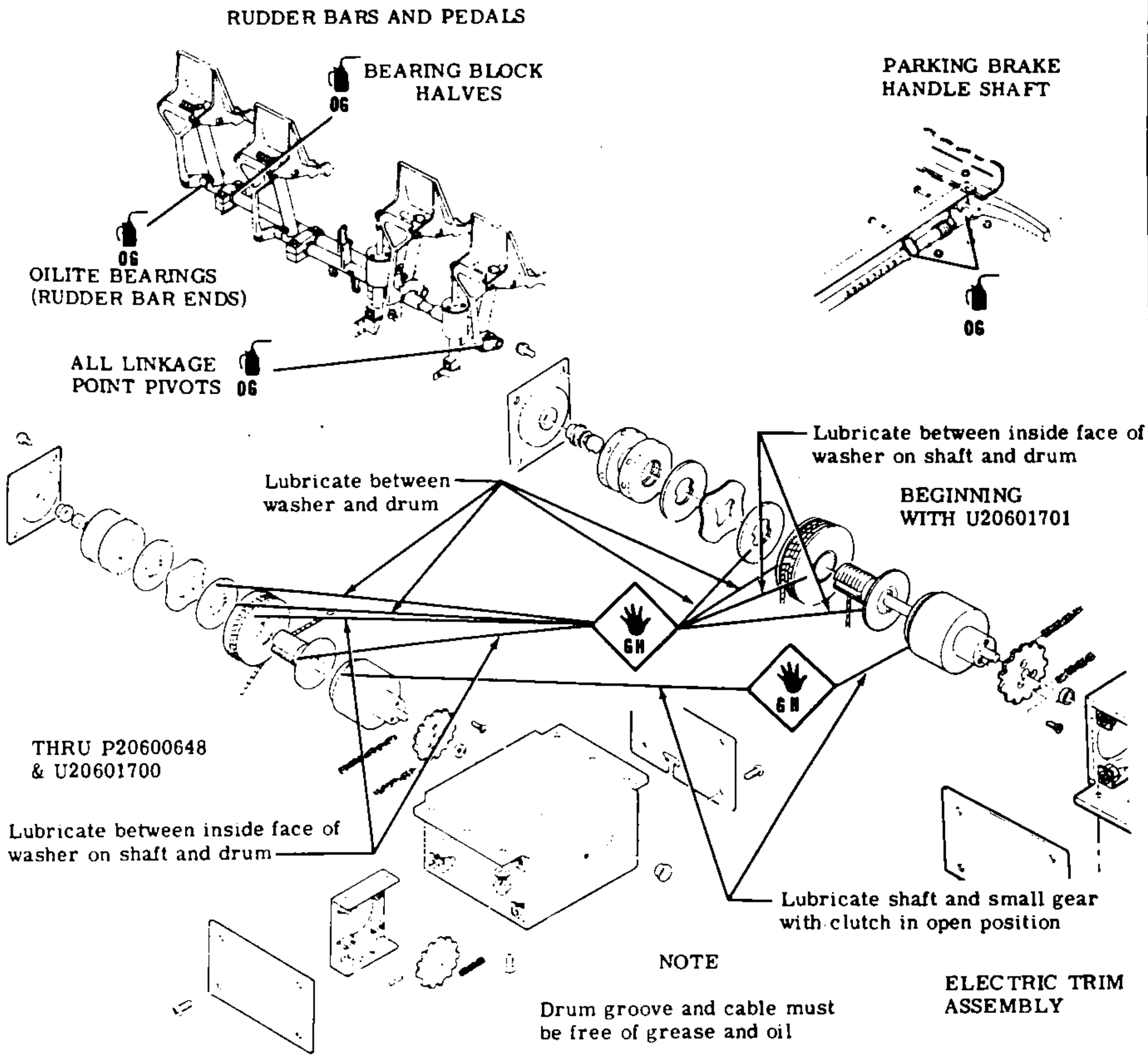


Figure 2-5. Lubrication (Sheet 3 of 4)



NOTES

Sealed bearings require no lubrication.

McCauley propellers are lubricated at overhaul and require no other lubrication.

Do not lubricate roller chains or cables except under seacoast conditions. Wipe with a clean, dry cloth.

Lubricate unsealed pulley bearings, rod ends, Oilite bearings, pivot and hinge points, and any other friction point obviously needing lubrication, with general purpose oil every 1000 hours or oftener if required.

Paraffin wax rubbed on seat rails will ease sliding the seats fore and aft.

Lubricate door latching mechanism with MIL-G-81322A or equivalent lubricant, applied sparingly to friction points, every 1000 hours or oftener if binding occurs. No lubrication is recommended on the rotary clutch.

Figure 2-5. Lubrication (Sheet 4 of 4)

I INSPECTION REQUIREMENTS.

As required by Federal Aviation Regulations, all civil aircraft of U.S. registry must undergo a COMPLETE INSPECTION (ANNUAL) each twelve calendar months. In addition to the required ANNUAL inspection, aircraft operated commercially (for hire) must also have a COMPLETE AIRCRAFT INSPECTION every 100 hours of operation.

In lieu of the above requirements, an aircraft may be inspected in accordance with a progressive inspection schedule, which allows the work load to be divided into smaller operations that can be accomplished in shorter time periods.

Therefore, the Cessna Aircraft Company recommends PROGRESSIVE CARE for aircraft that are being flown 200 hours or more per year, and the 100 HOUR inspection for all other aircraft.

II INSPECTION CHARTS.

The following charts show the recommended intervals at which items are to be inspected.

As shown in the charts, there are items to be checked each 50 hours, each 100 hours, each 200 hours, and also Special Inspection items which require servicing or inspection at intervals other than 50, 100 or 200 hours.

a. When conducting an inspection at 50 hours, all items marked under EACH 50 HOURS would be inspected, serviced or otherwise accomplished as necessary to insure continuous airworthiness.

b. At each 100 hours, the 50 hour items would be accomplished in addition to the items marked under EACH 100 HOURS as necessary to insure continuous airworthiness.

c. An inspection conducted at 200 hour intervals would likewise include the 50 hour items and 100 hour items in addition to those at EACH 200 HOURS.

d. The numbers appearing in the SPECIAL INSPECTION ITEMS column refer to data listed at the end of the inspection charts. These items should be checked at each inspection interval to insure that applicable servicing and inspection requirements are accomplished at the specified intervals.

e. A COMPLETE AIRCRAFT INSPECTION includes all 50, 100 and 200 hour items plus those Special Inspection Items which are due at the time of the inspection.

III INSPECTION PROGRAM SELECTION.

AS A GUIDE FOR SELECTING THE INSPECTION PROGRAM THAT BEST SUITS THE OPERATION OF THE AIRCRAFT, THE FOLLOWING IS PROVIDED.

1. **IF THE AIRCRAFT IS FLOWN LESS THAN 200 HOURS ANNUALLY.**

a. IF FLOWN FOR HIRE

An aircraft operating in this category must have a COMPLETE AIRCRAFT INSPECTION each 100 hours and each 12 calendar months of operation. A COMPLETE AIRCRAFT INSPECTION consists of all 50, 100, 200 and Special Inspection Items shown in the inspection charts as defined in paragraph II above.

b. IF NOT FLOWN FOR HIRE

An aircraft operating in this category must have a COMPLETE AIRCRAFT INSPECTION each 12 calendar months (ANNUAL). A COMPLETE AIRCRAFT INSPECTION consists of all 50, 100, 200 and Special Inspection Items shown in the inspection charts as defined in paragraph II above. In addition, it is recommended that between annual inspections, all items be inspected at the intervals specified in the inspection charts.

2. IF THE AIRCRAFT IS FLOWN MORE THAN 200 HOURS ANNUALLY.
Whether flown for hire or not, it is recommended that aircraft operating in this category be placed on the CESSNA PROGRESSIVE CARE PROGRAM. However, if not placed on Progressive Care, the inspection requirements for aircraft in this category are the same as those defined under paragraph III 1. (a) and (b).

Cessna Progressive Care may be utilized as a total concept program which insures that the inspection intervals in the inspection charts are not exceeded. Manuals and forms which are required for conducting Progressive Care inspections are available from the Cessna Service Parts Center.

IV INSPECTION GUIDE LINES.

(a) MOVABLE PARTS for: lubrication, servicing, security of attachment, binding, excessive wear, safetying, proper operation, proper adjustment, correct travel, cracked fittings, security of hinges, defective bearings, cleanliness, corrosion, deformation, sealing and tension.

(b) FLUID LINES AND HOSES for: leaks, cracks, dents, kinks, chafing, proper radius, security, corrosion, deterioration, obstruction and foreign matter.

(c) METAL PARTS for: security of attachment, cracks, metal distortion, broken spotwelds, corrosion, condition of paint and any other apparent damage.

(d) WIRING for: security, chafing, burning, defective insulation, loose or broken terminals, heat deterioration and corroded terminals.

(e) BOLTS IN CRITICAL AREAS for: correct torque in accordance with torque values given in the chart in Section 1, when installed or when visual inspection indicates the need for a torque check.

NOTE

Torque values listed in Section 1 are derived from oil-free cadmium-plated threads, and are recommended for all installation procedures contained in this book except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

(f) FILTERS, SCREENS & FLUIDS for: cleanliness, contamination and/or replacement at specified intervals.

(g) AIRCRAFT FILE.

Miscellaneous data, information and licenses are a part of the aircraft file. Check that the following documents are up-to-date and in accordance with current Federal Aviation Regulations. Most of the items listed are required by the United States Federal Aviation Regulations. Since the regulations of other nations may require other documents and data, owners of exported aircraft should check with their own aviation officials to determine their individual requirements.

To be displayed in the aircraft at all times:
1. Aircraft Airworthiness Certificate (FAA Form 8100-2).
2. Aircraft Registration Certificate (FAA Form 8050-3).
3. Aircraft Radio Station License, if transmitter is installed (FCC Form 556).

To be carried in the aircraft at all times:
1. Weight and Balance, and associated papers (Latest copy of the Repair and Alteration Form, FAA Form 337, if applicable).
2. Aircraft Equipment List.

To be made available upon request:
1. Aircraft Log Book and Engine Log Book.

(h) ENGINE RUN-UP.

Before beginning the step-by-step inspection, start, run up and shut down the engine in accordance with instructions in the Owner's Manual. During the run-up, observe the following, making note of any discrepancies or abnormalities:

1. Engine temperatures and pressures.
2. Static rpm. (Also refer to Section 12 or 12A of this Manual.)
3. Magneto drop. (Also refer to Section 12 or 12A of this Manual).
4. Engine response to changes in power.
5. Any unusual engine noises.
6. Fuel selector and/or shut-off valve; operate engine(s) on each tank (or cell) position and OFF position long enough to ensure shut-off and/or selector valve functions properly.
7. Idling speed and mixture; proper idle cut-off.
8. Alternator and ammeter.
9. Suction gage.
10. Fuel flow indicator.

After the inspection has been completed, an engine run-up should again be performed to determine that any discrepancies or abnormalities have been corrected.

SHOP NOTES:

IMPORTANT

READ ALL INSPECTION REQUIREMENTS PARAGRAPHS PRIOR TO USING THESE CHARTS.

Item	EACH 50 HOURS	EACH 100 HOURS	EACH 200 HOURS	SPECIAL INSPECTION ITEM
PROPELLER				
1. Spinner	●			
2. Spinner bulkhead			●	
3. Blades	●			
4. Bolts and Nuts			●	
5. Hub			●	
6. Governor and control			●	
ENGINE COMPARTMENT				
Check for evidence of oil and fuel leaks, then clean entire engine and compartment, if needed, prior to inspection.				
1. Engine oil screen, filler cap, dipstick, drain plug and external filter element	●			1
2. Oil Cooler		●		
3. Induction air filter	●			2
4. Induction airbox, air valves, doors and controls		●		
5. Cold and hot air hoses			●	
6. Engine baffles	●			
7. Cylinders, rocker box covers and push rod housings		●		
8. Crankcase, oil sump, accessory section and front crankshaft seal		●		
9. Hoses, metal lines and fittings	●			3
10. Intake and exhaust systems	●			4
11. Ignition harness		●		
12. Spark plugs		●		
13. Compression check			●	
14. Crankcase and vacuum system breather lines			●	
15. Electrical wiring		●		
16. Vacuum pump		●		
17. Vacuum relief valve filter			●	5
18. Engine controls and linkage	●			6
19. Engine shock mounts, mount structure and ground straps			●	

Item	EACH 50 HOURS	EACH 100 HOURS	EACH 200 HOURS	SPECIAL INSPECTION ITEM
20. Cabin heat valves, doors and controls			•	
21. Starter, solenoid and electrical connections		•		
22. Starter brushes, brush leads and commutator			•	
23. Alternator and electrical connections		•		
24. Alternator brushes, brush leads, and commutator or slip ring				7
25. Voltage regulator mounting and electrical leads		•		
26. Magnetos (external) and electrical connections		•		
27. Magneto timing				8
28. Fuel-air (metering) control unit		•		
29. Firewall			•	
30. Fuel injection system	•			
31. Engine cowl flaps and controls	•			
32. Engine cowling		•		
33. Turbocharger			•	9
34. All oil lines to turbocharger, waste gate and controller		•		
35. Waste gate, actuator and controller		•		
36. Turbocharger pressurized vent lines to fuel pump, discharge nozzles and fuel flow gage	•			
37. Turbocharger mounting brackets and linkage	•			
38. Alternator support bracket for security (Refer to Service Letter SE71-42)	•			
FUEL SYSTEM				
1. Fuel strainer, drain valve and control, cell vents, caps and placards	•			
2. Fuel strainer screen and bowl		•		
3. Fuel injector screen	•			
4. Fuel reservoirs			•	
5. Drain fuel and check cell interior, attachment and outlet screens				5
6. Fuel cells and sump drains			•	
7. Fuel selector valve and placards	•			
8. Auxiliary fuel pump		•		

Item	EACH 50 HOURS	EACH 100 HOURS	EACH 200 HOURS	SPECIAL INSPECTION ITEM
9. Engine-driven fuel pump		•		
10. Fuel quantity indicators and transmitters	•			
11. Vapor return line and check valve		•		
12. Turbocharger vent system		•		
13. Engine primer		•		
14. Perform a fuel quantity indicating system operational test. Refer to Section 16 for detailed accomplishment instructions.				17
15. Fuel injection nozzles				19
LANDING GEAR				
1. Brake fluid, lines and hoses, linings, disc, brake assemblies and master cylinders		•		
2. Main gear wheels	•			
3. Wheel bearings				10
4. Main gear springs		•		
5. Tires	•			
6. Torque link lubrication	•			
7. Parking brake system			•	
8. Nose gear strut and shimmy dampener (service as required)	•			
9. Nose gear wheel	•			
10. Nose gear fork			•	
11. Nose gear steering system			•	
12. Parking brake and toe brakes operational test	•			
AIRFRAME				
1. Aircraft exterior	•			
2. Aircraft structure			•	
3. Windows, windshield, doors and seals	•			
4. Seat stops, seat rails, upholstery, structure and mounting			•	
5. Control column bearings, pulleys, cables, chains and turnbuckles			•	
6. Seat belts and shoulder harnesses	•			
7. Control lock, control wheel and control mechanism			•	
8. Instruments and markings	•			
9. Gyros central air filter			•	11

Item	EACH 50 HOURS	EACH 100 HOURS	EACH 200 HOURS	SPECIAL INSPECTION ITEM
10. Magnetic compass compensation				18
11. Instrument wiring and plumbing			•	
12. Instrument panel, shock mounts, ground straps, cover, decals and labeling			•	
13. Defrosting, heating and ventilating systems and controls	•			
14. Cabin upholstery, trim, sun visors and ash trays			•	
15. Area beneath floor, lines, hose, wires and control cables			•	
16. Lights, switches, circuit breakers, fuses, and spare fuses	•			
17. Exterior lights	•			
18. Pitot and static systems			•	
19. Stall warning unit and pitot heater			•	
20. Radios, radio controls, avionics and flight instruments	•			
21. Antennas and cables			•	
22. Battery, battery box and battery cables	•			
23. Battery electrolyte				12
24. Emergency locator transmitter		•		13
25. Oxygen system			•	
26. Oxygen supply, masks and hose	•			14
27. Inspect all fluid carrying lines and hoses in the cabin and wing areas for leaks, damage, abrasion, and corrosion		•		

CONTROL SYSTEMS

In addition to the items listed below, always check for correct direction of movement, correct travel and correct cable tension.

Item	EACH 50 HOURS	EACH 100 HOURS	EACH 200 HOURS	SPECIAL INSPECTION ITEM
1. Cables, terminals, pulleys, pulley brackets, cable guards, turnbuckles and fairleads			•	
2. Chains, terminals, sprockets and chain guards			•	
3. Trim control wheels, indicators, actuator and bungee	•			
4. Travel stops			•	
5. Decals and labeling			•	
6. Flap control switch, flap rollers and flap position indicator	•			
7. Flap motor, transmission, limit switches, structure, linkage, bellcranks etc.			•	
8. Flap actuator jackscrew threads				15
9. Elevators, trim tab, hinges and push-pull tube	•			
10. Elevator trim tab actuator lubrication and tab free-play inspection				16

Item	Each 50 Hours	Each 100 Hours	Each 200 Hours	Special Inspection Item
11. Rudder pedal assemblies and linkage			•	
12. External skins of control surfaces and tabs	•			
13. Internal structure of control surfaces			•	
14. Balance weight attachment			•	

SPECIAL INSPECTION ITEMS

1. First 25 hours: Use mineral oil confirming with MIL-C-6529 Type II for the first 25 hours of operation or until oil consumption has stabilized, or six months, whichever occurs first. If oil consumption has not stabilized in this time, drain and replenish the oil and replace the oil filter. After the oil consumption has stabilized, change to an ashless dispersant oil, refer to Teledyne Continental Service Information Letter SIL99-2, or latest revision for a current listing of lubricants authorized by TCM. Change oil each 25 hours if engine is NOT equipped with external oil filter; if equipped with an external oil filter, change oil filter element and oil at each 50 hours of operation or every six months, whichever occurs first. Refer to the latest edition of the TCM engine operator/maintenance manual for the latest oil change intervals and inspection procedures.

2. Clean filter per paragraph 2-21. Replace as required.

3. Replace engine compartment hoses per the following schedule:

   A. Cessna Installed Flexible Fluid Carrying Rubber Hoses; replace every 5 years or at engine overhaul, whichever occurs first.

   B. Cessna Installed Flexible Fluid Carrying Teflon Hoses, replace every 10 years or at engine overhaul, whichever occurs first.

   C. TCM Installed Engine Compartment Flexible Fluid Carrying Hoses, refer to Teledyne Continental Service Bulletin SB97-6 or latest revision for hose replacement intervals.

4. General inspection every 50 hours. Refer to Section 12 and 12A for 100 hour inspection.

5. Each 1000 hours, or at engine overhaul, whichever occurs first.

6. Each 50 hours for general condition and freedom of movement. These controls are not repairable, replace throttle, propeller, and mixture controls at each engine overhaul.

7. Each 500 hours.

8. Internal timing and magneto-to-engine timing are described in detail in Section 12.

9. Remove insulation blanket or heat shields and inspect for burnt area, bulges or cracks. Remove tailpipe and ducting; inspect turbine for coking, carbonization, oil deposits and turbine impeller for damage.

10. First 100 hours and each 500 hours thereafter. More often if operated under prevailing wet of dusty conditions.

11. Replace each 500 hours.

12. Check electrolyte level and clean battery compartment each 50 hours or 30 days, whichever occurs first.

13. Refer to Section 17.

14. Inspect masks, hose and fittings for condition, routing and support. Test, operate, and check for leaks.

15. Refer to paragraph 2-45 for detailed instructions for various serial ranges.

16. Replacement or overhaul of the actuator is required each 1000 hours and/or 3 years, whichever comes first. Refer to figure 2-5 for grease specifications.

    NOTE: Refer to Section 9 of this service manual and Cessna Single Engine Service Letter SE73-25, or latest revision, for free-play limits, inspection, replacement and/or repair information.

17. Fuel quantity indicating system operational test is required every 12 months. Refer to Section 16 for detailed accomplishment instructions.

18. Every 2 years, or anytime components are added or removed which have the potential to affect the magnetic accuracy and/or variation of the compass calibration, or anytime the accuracy of the compass is in question. If required, refer to AC 43.13-1B for compass swing procedures.

19. At the first 100-hour inspection on new, rebuilt or overhauled engines, remove and clean the fuel injection nozzles. Thereafter, the fuel injection nozzles must be cleaned at 300-hour intervals or more frequently if fuel stains are found.

2-46. COMPONENT TIME LIMITS

1. General

   A. Most components listed throughout Section 2 should be inspected as detailed elsewhere in this section and repaired, overhauled or replaced as required. Some components, however, have a time or life limit, and must be overhauled or replaced on or before the specified time limit.

   NOTE: The terms overhaul and replacement as used within this section are defined as follows:

   Overhaul - Item may be overhauled as defined in FAR 43.2 or it can be replaced.

   Replacement - Item must be replaced with a new item or a serviceable item that is within its time and serviceable life limits or has been rebuilt as defined in FAR 43.2.

   B. This section provides a list of items which must be overhauled or replaced at specific time limits. Table 1 lists those items which Cessna has mandated must be overhauled or replaced at specific time limits. Table 2 lists component time limits which have been established by a supplier to Cessna for the supplier's product.

   C. In addition to these time limits, the components listed herein are also inspected at regular time intervals set forth in the Inspection Charts, and may require overhaul/replacement before the time limit is reached, based on service usage and inspection results.

2. Cessna-Established Replacement Time Limits.

   A. The following component time limits have been established by Cessna Aircraft Company.

Table 1: Cessna-Established Replacement Time Limits

COMPONENT	REPLACEMENT TIME	OVERHAUL
Restraint Assembly Pilot, Copilot, and Passenger Seats	10 years	NO

COMPONENT	REPLACEMENT TIME	OVERHAUL
Trim Tab Actuator	1,000 hours or 3 years, whichever occurs first	YES
Vacuum System Filter	500 hours	NO
Vacuum System Hoses	10 years	NO
Pitot and Static System Hoses	10 years	NO
Vacuum Relief/Regulator Valve Filter (If Installed)	500 hours	NO
Engine Compartment Flexible Fluid-Carrying Teflon Hoses (Cessna-Installed) Except Drain Hoses (Drain hoses are replaced on condition)	10 years or at engine overhaul, whichever occurs first (Note 1)	NO
Engine Compartment Flexible Fluid-Carrying Rubber Hoses (Cessna-Installed) Except Drain Hoses (Drain hoses are replaced on condition)	5 years or at engine overhaul, whichever occurs first (Note 1)	NO
Engine Air Filter	500 hours or 36 months, whichever occurs first (Note 9)	NO
Engine Mixture, Throttle, and Propeller Controls	At engine TBO	NO
Check Valve (Turbocharger Oil Line Check Valve)	Every 1,000 hours of operation (Note 10)	NO
Oxygen Bottle - Lightweight Steel (ICC-3HT, DOT-3HT)	Every 24 years or 4380 cycles, whichever occurs first	NO
Oxygen Bottle - Composite (DOT-E8162)	Every 15 years	NO
Engine-Driven Dry Vacuum Pump Drive Coupling (Not lubricated with engine oil)	6 years or at vacuum pump replacement, whichever occurs first	NO
Engine-Driven Dry Vacuum Pump (Not lubricated with engine oil)	500 hours (Note 11)	NO
Standby Dry Vacuum Pump	500 hours or 10 years, whichever occurs first (Note 11)	NO

3. Supplier-Established Replacement Time Limits

A. The following component time limits have been established by specific suppliers and are reproduced as follows:

Table 2: Supplier-Established Replacement Time Limits

COMPONENT	REPLACEMENT TIME	OVERHAUL
ELT Battery	(Note 3)	NO
Vacuum Manifold	(Note 4)	NO
Magnetos	(Note 5)	YES
Engine	(Note 6)	YES
Engine Flexible Hoses (TCM Installed)	(Note 2)	NO
Auxiliary Electric Fuel Pump	(Note 7)	YES
Propeller	(Note 8)	YES

NOTES:

Note 1: This life limit is not intended to allow flexible fluid-carrying Teflon or rubber hoses in a deteriorated or damaged condition to remain in service. Replace engine compartment flexible Teflon (AE3663819BXXXX series hose) fluid-carrying hoses (Cessna-installed only) every ten years or at engine overhaul, whichever occurs first. Replace engine compartment flexible rubber fluid-carrying hoses (Cessna-installed only) every five years or at engine overhaul, whichever occurs first (this does not include drain hoses). Hoses which are beyond these limits and are in a serviceable condition, must be placed on order immediately and then be replaced within 120 days after receiving the new hose from Cessna.

Note 2: Refer to Teledyne Continental Service Bulletin SB97-6, or latest revision.

Note 3: Refer to FAR 91.207 for battery replacement time limits.

Note 4: Refer to Airborne Air & Fuel Product Reference Memo No. 39, or latest revision, for replacement time limits.

Note 5: For airplanes equipped with Slick magnetos, refer to Slick Service Bulletin SB2-80C, or latest revision, for time limits.

For airplanes equipped with TCM/Bendix magnetos refer to Teledyne Continental Motors Service Bulletin No. 643, or latest revision, for time limits.

Note 6: Refer to Teledyne Continental Service Information Letter SIL98-9, or latest revision, for time limits.

Note 7: Refer to Cessna Service Bulletin SEB94-7 Revision 1/Dukes Inc. Service Bulletin NO. 0003, or latest revision.

Note 8: Refer to the applicable McCauley Service Bulletins and Overhaul Manual for replacement and overhaul information.

Note 9: The air filter may be cleaned, refer to Section 2 of this service manual and for airplanes equipped with an air filter manufactured by Donaldson, Refer to Donaldson Aircraft Filters Service Instructions P46-9075 for detailed servicing instructions.
The address for Donaldson Aircraft Filters is:
Customer Service
115 E. Steels Corners RD
Stow OH. 44224

Do not overservice the air filter, overservicing increases the risk of damage to the air filter from excessive handling. A damaged/worn air filter may expose the engine to unfiltered air and result in damage/excessive wear to the engine.

Note 10: Replace the turbocharger oil line check valve every 1,000 hours of operation (Refer to Cessna Service Bulletin SEB91-7 Revision 1, or latest revision).

Note 11: Replace engine driven dry vacuum pump not equipped with a wear indicator every 500 hours of operation, or replace according to the vacuum pump manufacturer's recommended inspection and replacement interval, whichever occurs first.

Replace standby vacuum pump not equipped with a wear indicator every 500 hours of operation or 10 years, whichever occurs first, or replace according to the vacuum pump manufacturer's recommended inspection and replacement interval, whichever occurs first.

For a vacuum pump equipped with a wear indicator, replace pump according to the vacuum pump manufacturer's recommended inspection and replacement intervals.

SECTION 3

FUSELAGE

TABLE OF CONTENTS Page

3-1. FUSELAGE.

3-2. WINDSHIELD AND WINDOWS.

3-3. DESCRIPTION. The windshield and windows are single-piece acrylic plastic panels set in sealing strips and held by formed retaining strips secured to the fuselage with screws and rivets. Presstite No. 579.6 sealing compound used in conjunction with a felt seal is applied to all edges of the windshield and windows with the exception of the wing root area. The wing root fairing has a heavy felt strip that completes the windshield sealing.

3-4. CLEANING. (Refer to Section 2.)

3-5. WAXING. Waxing will fill in minor scratches in clear plastic and help protect the surface from further abrasion. Use a good grade of commercial wax applied in a thin, even coat. Bring the wax to a high polish by rubbing lightly with a clean, dry flannel cloth.

3-6. REPAIRS. Damaged window panels and windshield may be removed and replaced if damage is extensive. However, certain repairs as prescribed in the following paragraphs can be made successfully without removing damaged part from aircraft. Three types of temporary repairs for cracked plastic are possible. No repairs of any kind are recommended on highly-stressed or compound curves where repair would be likely to affect pilot's field of vision. Curved areas are more difficult to repair than flat areas and any replaced area is both structurally and optically inferior to the original surface.

3-7. SCRATCHES. Scratches on clear plastic surfaces can be removed by hand-sanding operations followed by buffing and polishing, if steps below are followed carefully.

a. Wrap a piece of No. 320 (or finer) sandpaper or abrasive cloth around a rubber pad or wood block. Rub surface around scratch with a circular motion, keeping abrasive constantly wet with clean water to prevent scratching surface further. Use minimum pressure and cover an area large enough to prevent formation of "bull's-eyes" or other optical distortions.

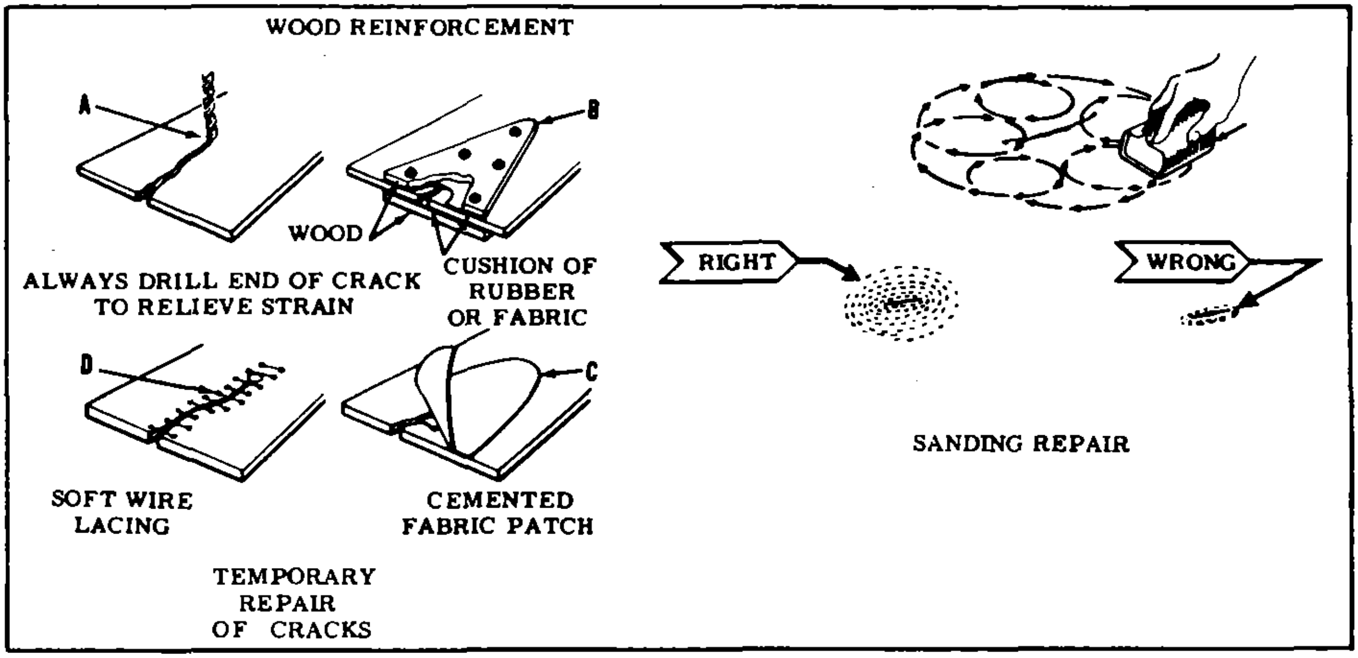


Figure 3-1. Repair of Windshield and Windows

CAUTION

Do not use a coarse grade of abrasive. No. 320 is of maximum coarseness.

b. Continue sanding operation, using progressively finer grade abrasives until scratches disappear.

c. When scratches have been removed, wash area thoroughly with clean water to remove all gritty particles. The entire sanded area will be clouded with minute scratches which must be removed to restore transparency.

d. Apply fresh tallow or buffing compound to a motor-driven buffing wheel. Hold wheel against plastic surface, moving it constantly over damaged area until cloudy appearance disappears. A 2000-foot-per-minute surface speed is recommended to prevent overheating and distortion. (Example: 750 rpm polishing machine with a 10 inch buffing bonnet.)

NOTE

Polishing can be accomplished by hand but will require a considerably longer period of time to attain the same result as produced by a buffing wheel.

e. When buffing is finished, wash area thoroughly and dry with a soft flannel cloth. Allow surface to cool and inspect area to determine if full transparency has been restored. Apply a thin coat of hard wax and polish surface lightly with a clean flannel cloth.

NOTE

Rubbing plastic surface with a dry cloth will build up an electrostatic charge which attracts dirt particles and may eventually cause scratching of surface. After wax has hardened, dissipate this charge by rubbing surface with a slightly damp chamois. This will also remove dust particles which have collected while wax is hardening.

f. Minute hairline scratches can often be removed by rubbing with commercial automobile body cleaner or fine-grade rubbing compound. Apply with a soft, clean, dry cloth or imitation chamois.

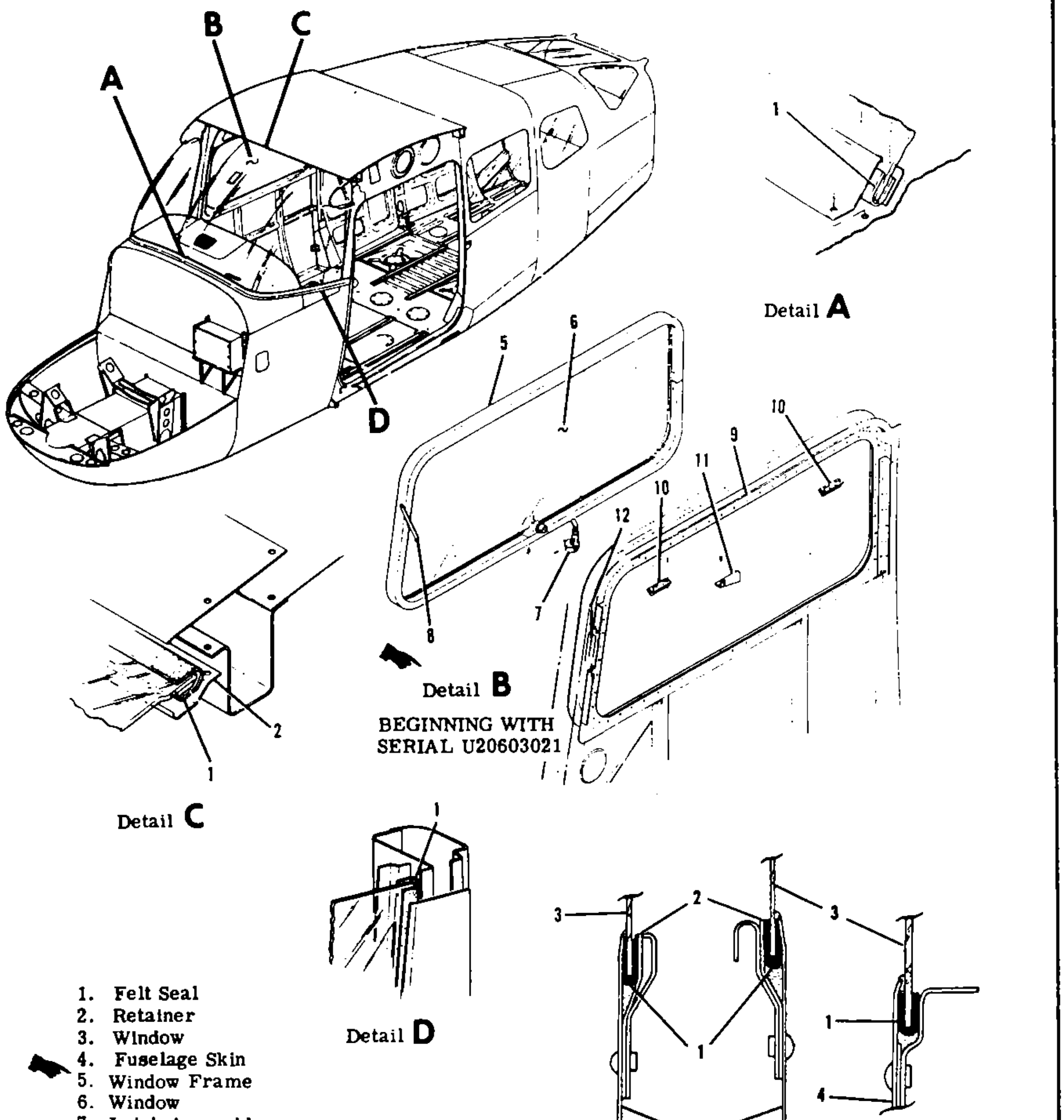
3-8. CRACKS. (Refer to figure 3-1.)

a. When a crack appears, drill a hole at end of crack to prevent further spreading. Hole should be approximately 1/8 inch in diameter, depending on length of crack and thickness of material.

b. Temporary repairs to flat surfaces can be accomplished by placing a thin strip of wood over each side of surface and inserting small bolts through wood and plastic. A cushion of sheet rubber or aircraft fabric should be placed between wood and plastic on both sides.

c. A temporary repair can be made on a curved surface by placing fabric patches over affected areas. Secure patches with aircraft dope, Specification No. MIL-D-5549, or lacquer, Specification No. MIL-L-7178. Lacquer thinner, Specification No. MIL-T-6094 can also be used to secure patch.

d. A temporary repair can be made by drilling small holes along both sides of crack 1/4 to 1/8 inch apart and lacing edges together with soft wire. Small-stranded antenna wire makes a good temporary lacing material. This type of repair is used as a temporary measure ONLY, and as soon as facilities are available, panel should be replaced.



1. Felt Seal
2. Retainer
3. Window
4. Fuselage Skin
5. Window Frame
6. Window
7. Latch Assembly
8. Stop
9. Fuselage Structure
10. Hinge
11. Striker Plate
12. Spring

NOTE

Presstite No. 579.6 sealer should be applied to all edges of windshield and windows where felt sealing strip (1) is used.

Figure 3-2. Windshield and Window Installation.

3-9. WINDSHIELD. (Refer to figure 3-2.)

3-10. REMOVAL AND INSTALLATION.

a. Drill out rivets securing top retainer strip.

b. Remove screws securing front retainer strip.

c. Remove wing fairings over windshield edges.

d. Pull windshield straight forward, out of side retainers.

e. Reverse preceding steps for reinstallation. Apply felt strip and sealing compound to all edges of windshield to prevent leaks. Check fit and carefully file or grind away excess plastic.

3-11. WINDOWS.

3-12. MOVABLE. (Refer to figure 3-2.) A movable window hinged at the top is installed in the left cabin door thru 1975 models and beginning with 1976 models in the RH forward side window position. The window assembly is a tinted plastic and frame unit which may be replaced by removing hinge pins and disconnecting window stop. To remove plastic panel from frame, drill out blind rivets at frame splice. When replacing plastic panel, ensure an adequate coating of Presstite 579.6 sealing compound is applied to all edges of panel.

3-13. FIXED. (Refer to figure 3-2.) Fixed windows, mounted in sealing strips and sealing compound, are held in place by various retainer strips. To replace side windows, remove upholstery and trim panels as necessary and drill out rivets securing retainers.

3-14. REAR. (Refer to figure 3-2.) The curved triangular rear side windows are mounted in retaining and sealing strips. Windows are removed from inside the cabin after rivets securing strips are drilled out. Removal of the rectangular rear window requires drilling out three rows of rivets immediately forward and above the window. Remove screws securing retainer strips at each side of the window and deflect strips up and aft from skin splice above the window. Remove the window from inside the aircraft. Reverse the preceding procedure for installation. Check fit of the new window and carefully file or grind away excess plastic. Apply felt strips and sealing compond to all edges.

3-15. CABIN DOORS. (Refer to figure 3-3.)

3-16. REMOVAL AND INSTALLATION. Removal of cabin doors is accomplished by removing screws which attach hinges and door stop or by removing hinge pins attaching door and door stop. If permanent hinge pins are removed from door hinges, they may be replaced by clevis pins secured with cotter pins or new hinge pins may be installed and "spin-bradded." When fitting a new door, some trimming of door skin at edges and some forming of door edges with a soft mallet may be necessary to achieve a good fit. Forming of the flanges on the bonded door is not permissible as forming of the flanges could cause damage to the bonded area.

3-17. ADJUSTMENT. Cabin doors should be adjusted so skin fairs with fuselage skin. Slots at latch plate permit repositioning of striker plate. Depth of latch engagement may be changed by adding or removing washers or shims between striker plate and doorpost.

3-18. WEATHERSTRIP. Rubber seals are installed around the edges of the cabin door. Beginning with serial U20602790 an improved type door seal is used which has a hollow center and small flutes extending along its length. When replacing door seals ensure mating surfaces are clean, dry and free of oil and grease. Position butt ends of seal at door low point and cut a small notch in the hollow seal for drainage. Apply a thin, even coat of EC-880 adhesive (3M Co) or equivalent to each surface and allow to dry until tacky before pressing into place.

3-19. WEDGE ADJUSTMENT. Wedges at upper forward edge of door aid in preventing air leaks at this point. They engage as door is closed. Several attaching holes are located in wedges and holes which gives best results should be selected.

3-20. CABIN DOOR LATCHES. (Refer to figure 3-6.)

3-21. DESCRIPTION. The cabin door latch is a push-pull bolt type, utilizing a rotary clutch for positive bolt engagement. As door is closed, teeth on underside of bolt engage gear teeth on clutch. The clutch gear rotates in one direction only and holds door until handle is moved to LOCK position, driving bolt into slot.

3-22. ADJUSTMENT. Adjustment of latch or clutch cover is afforded by oversize and/or slotted holes. This adjustment ensures sufficient gear-to-bolt engagement and proper alignment. To adjust bolt (item 2) figure 3-6, loosen the four latch base bolts (item 29) sufficient to move latch base plate aft to extend the bolt or forward to retract the bolt.

CAUTION

Close the door carefully after adjustment and check for clearance between door jamb and bolt and alignment with clutch assembly.

NOTE

Lubricate door latch per Section 2. No lubrication is recommended for rotary clutch.

3-23. LOCK. In addition to interior locks, a cylinder and key type lock is installed on left door. If lock is to be replaced, the new one may be modified to accept original key. This is desirable, as the same key is used for ignition switch and cabin door lock. After removing old lock from door, proceed as follows:

a. Remove lock cylinder from new housing.

b. Insert original key into new cylinder and file off any protruding tumblers flush with cylinder. Without removing key, check that cylinder rotates freely in housing.

c. Install lock assembly in door and check lock operation with door open.

d. Destroy new key and disregard code number on cylinder.

3-24. INDEXING INSIDE HANDLE. (Refer to figure 3-6.) When inside door handle is removed, install in relation to position of bolt (2) which is spring-loaded to CLOSE position. The following procedure may be used:

a. THRU SERIALS P20600647 AND U20602199. (Refer to figure 3-6, sheet 1.)

1. Temporarily install handle (15) on shaft assembly (19) approximately vertical.

2. Move handle (15) back and forth until handle centers in spring-loaded position.

3. Without rotating shaft assembly (19), remove handle and install spring (9) and escutcheon (13).

4. Install handle (15) in vertical position and install clip (16).

5. Ensure bolt (2) clears doorpost and teeth engage clutch gear (26) when handle (15) is in CLOSE position.

b. BEGINNING WITH SERIALS U20602200. (Refer to figure 3-6, sheet 2.) These models feature an inside door handle positioned forward on the door. The handle folds into the armrest when in the "LOCKED" position.

1. Complete steps 1 and 2 as outlined in step "a."

2. Without rotating shaft assembly (19), remove handle and install spring (9) and nylon washer (10).

3. Install handle (15) to align with CLOSE position on upholstery panel (12).

4. Complete step "5" as outlined in step "a."

5. Readjust handle on serrated shaft as necessary to position the forward end of the handle approx. 8° above the handle shaft centerline when in the LOCKED position.

3-24A. ASSIST STRAPS. (Refer to figure 3-3A)

3-24B. REMOVAL AND INSTALLATION. Figure 3-3A may be used as a guide for removal and installation of the assist straps.

3-25. BAGGAGE DOOR. (Refer to figure 3-4.)

3-26. REMOVAL AND INSTALLATION.

a. Disconnect door stop (2) at door.

b. Remove hinge pins (3) securing door to hinges (4).

c. Reverse preceding steps for installation.

3-27. CARGO DOORS. (Refer to figure 3-5.)

3-28. DESCRIPTION. U206 and TU206 aircraft are equipped with two cargo doors located on the right side of fuselage. The aft door is hinged at fuselage station 112 and is a structural, load-carrying member when closed and locked. The aft door handle is located in forward edge of door and is inaccessible with forward door closed, preventing inadvertent opening during flight. As rear door handle is moved to CLOSED position, hooks engage latch plates on upper and lower door sills holding door tightly closed. Telescoping door stops, with detent positions, are used to hold doors open. An entrance step is located on fuselage, below front cargo door. Flight with doors removed is only permissible when an optional spoiler kit is installed. This spoiler kit consists of a spoiler assembly which attaches to front door hinge points and deflects air away from door opening. Addition of screws to rear wall is required with installation of spoiler kit.

NOTE

A flap interrupt switch is installed to prevent operation of flaps with cargo doors open. Switch adjustment is provided by means of slotted holes on front cargo door frame. A switch depressor is provided with spoiler kit to retain use of flaps.

3-29. REMOVAL AND INSTALLATION.

a. Remove cotter pins and hinge pins from door hinges.

b. Disconnect door stops from doors.

c. Reverse preceding steps for installation.

3-30. LATCHES. (Refer to figures 3-5 and 3-6.)

3-31. REMOVAL AND INSTALLATION. Figures 3-5 and 3-6 show details of cargo door latches and may be used as guides during removal, disassembly, assembly and installation.

3-32. RIGGING. (Refer to figure 3-5.)

a. Three results must be obtained by rigging.

1. Hooks (8) must fully engage latch plates (3), but must clear them .05" minimum as door is opened.

2. Load-carrying pins (7) must fully engage their sockets when door is locked.

3. Door must be flush with fuselage skin when door is locked.

NOTE

Adjusting door slightly less than flush is permissible if air leaks around door seal are encountered.

b. There are four sets of adjustments for rigging:

1. Adjusting bolts (10). These determine depth of hook engagement and clearance of hooks as door is opened.

2. Slots in latch plates (3). Plates may be moved inboard or outboard as necessary for full load-carrying pin engagement.

3. Washers under socket (6). These may be added as required to make door flush with fuselage skins.

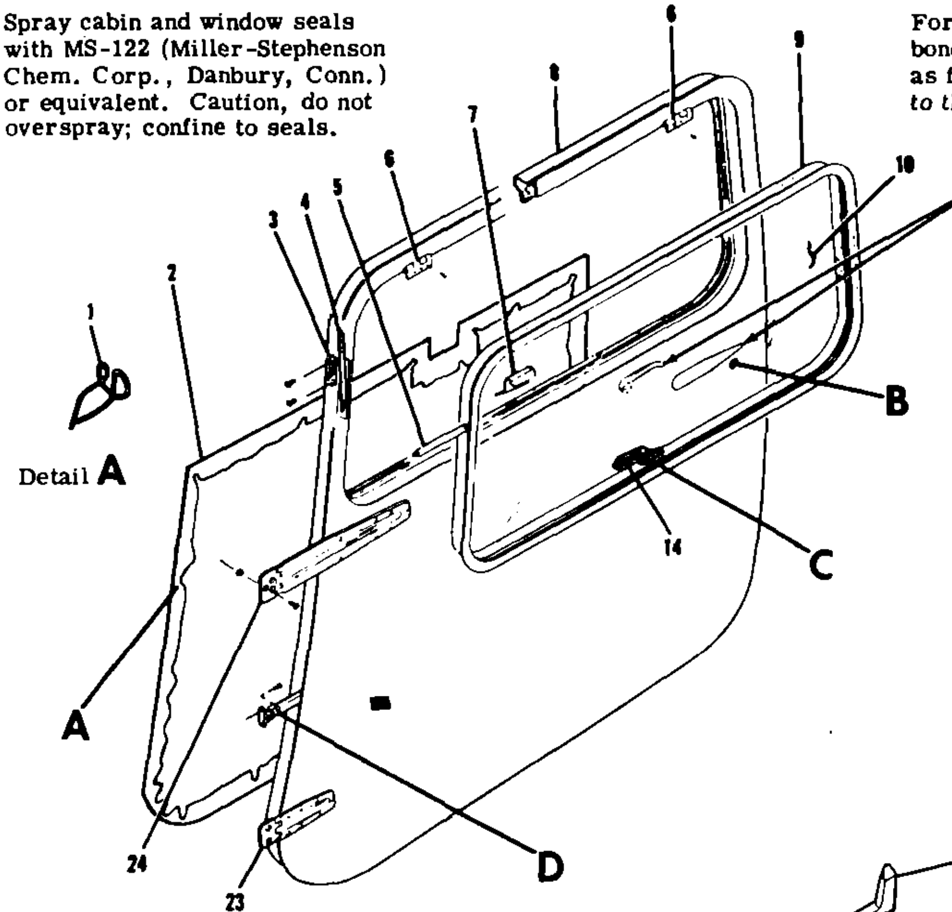
4. Turnbuckles (11). These must be adjusted to cause both hooks to pull door closed tightly. Handle should snap over-center snugly, but excessive force should not be required for handle operation.

NOTE

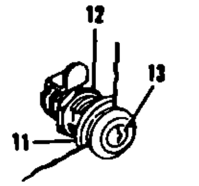
Spray cabin and window seals with MS-122 (Miller-Stephenson Chem. Corp., Danbury, Conn.) or equivalent. Caution, do not overspray; confine to seals.

NOTE

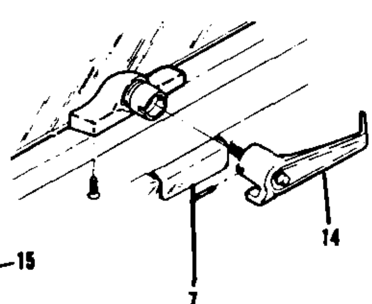
Forming of the flanges on the bonded door is not permissible as forming could cause damage *to the bonded area.*



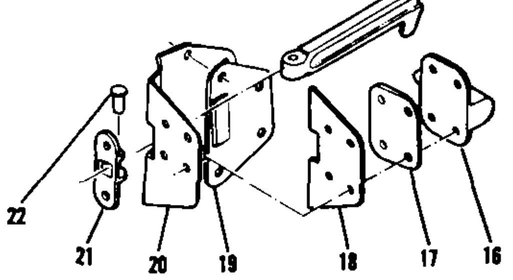
DOOR INSTALLATION
THRU AIRCRAFT
SERIAL U20602199



Detail B

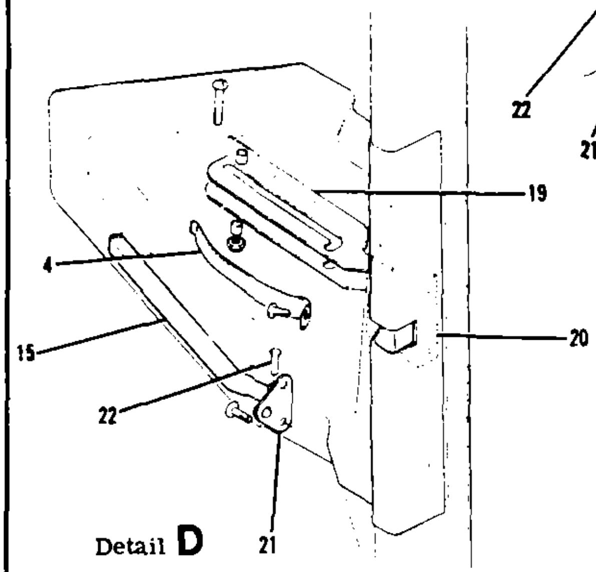


Detail C



Detail D

THRU 1972

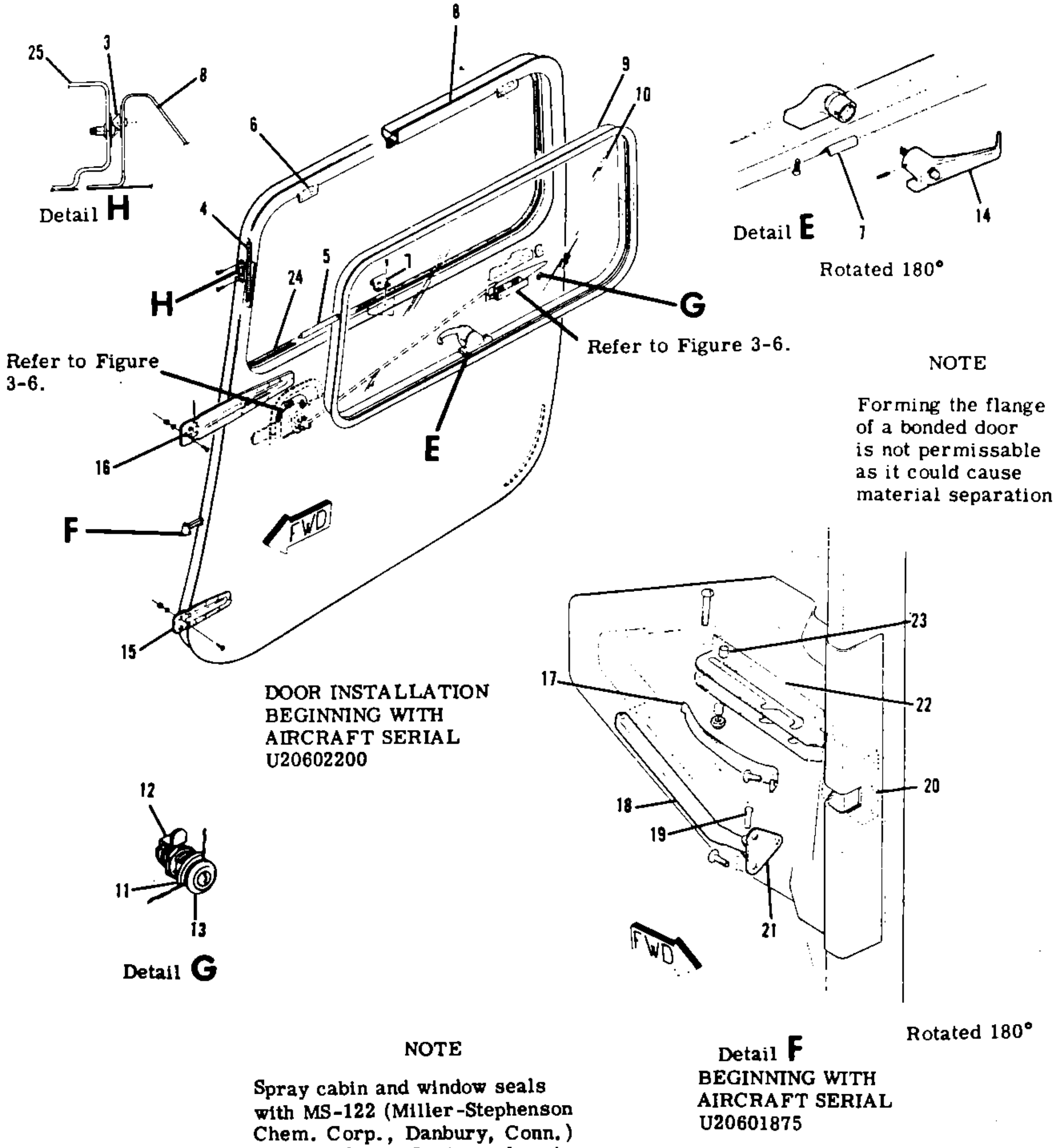


Detail D

BEGINNING WITH
AIRCRAFT SERIAL
U20601875

1. Upholstery Clip
2. Upholstery Panel
3. Wedge
4. Spring
5. Window Stop
6. Window Hinge
7. Latch Plate
8. Cabin Door
9. Window Frame
10. Window
11. Washer
12. Nut
13. Lock Assembly
14. Latch Assembly
15. Door Stop Arm
16. Spring-Loaded Plunger
17. Wedge
18. Spacer
19. Stop Assembly
20. Reinforcement
21. Hinge
22. Pin
23. Lower Hinge
24. Upper Hinge
25. Door Jamb

Figure 3-3. Cabin Door Installation (Sheet 1 of 2).



NOTE

Forming the flange of a bonded door is not permissable as it could cause material separation.

NOTE

Spray cabin and window seals with MS-122 (Miller-Stephenson Chem. Corp., Danbury, Conn.) or equivalent. Caution, do not overspray; confine to seals

Figure 3-3. Cabin Door Installation (Sheet 2 of 2)

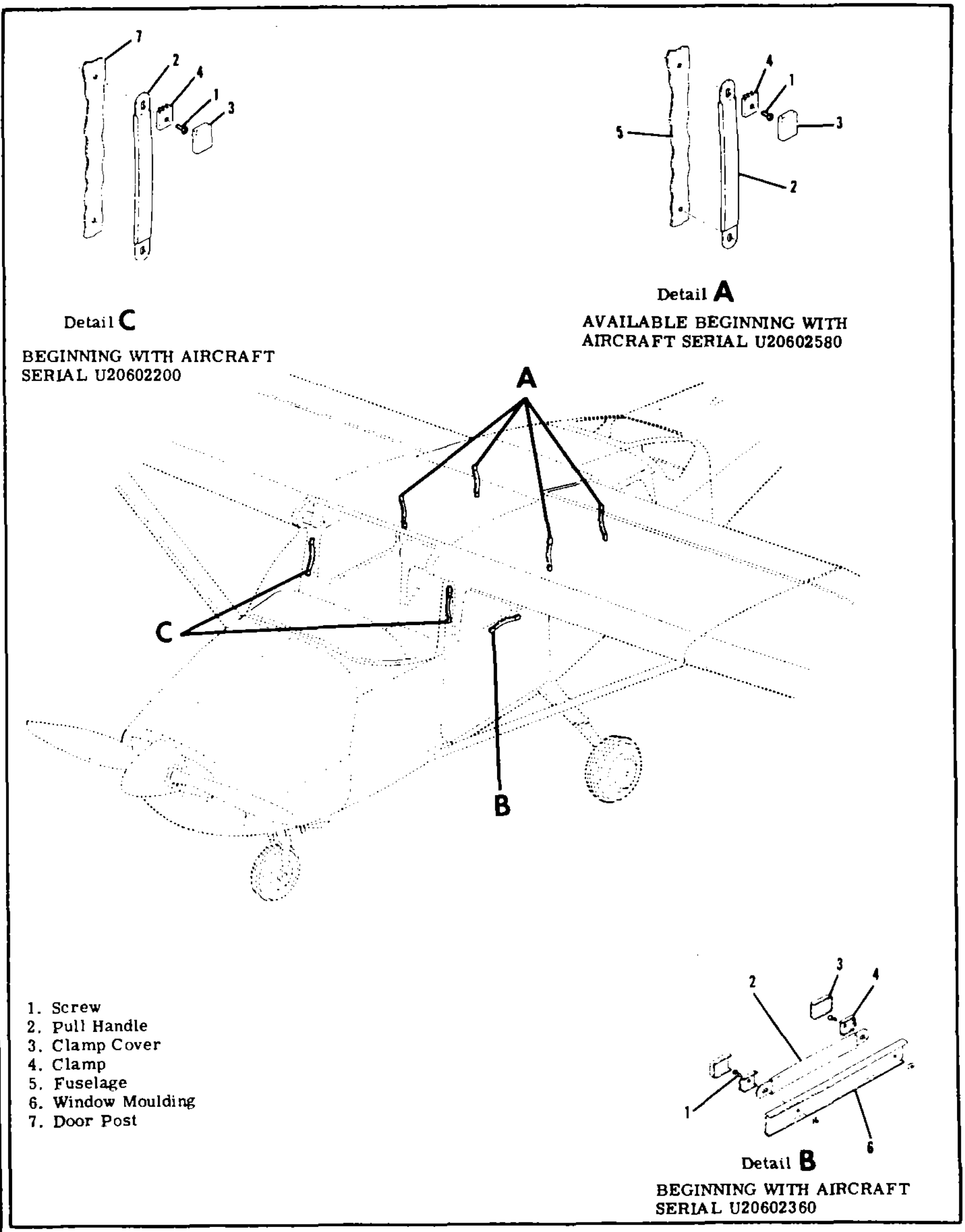


Figure 3-3A. Assist Strap Installation

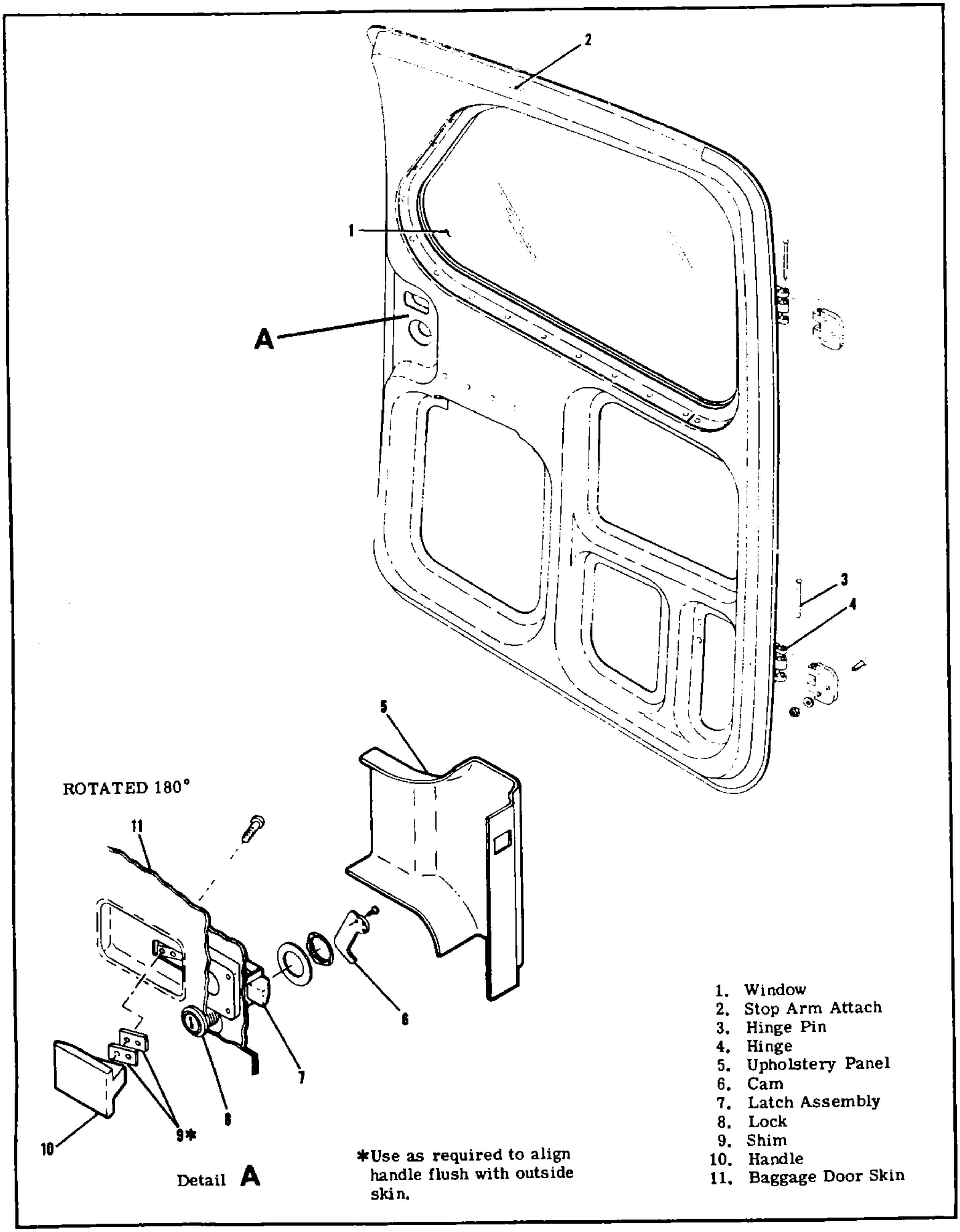
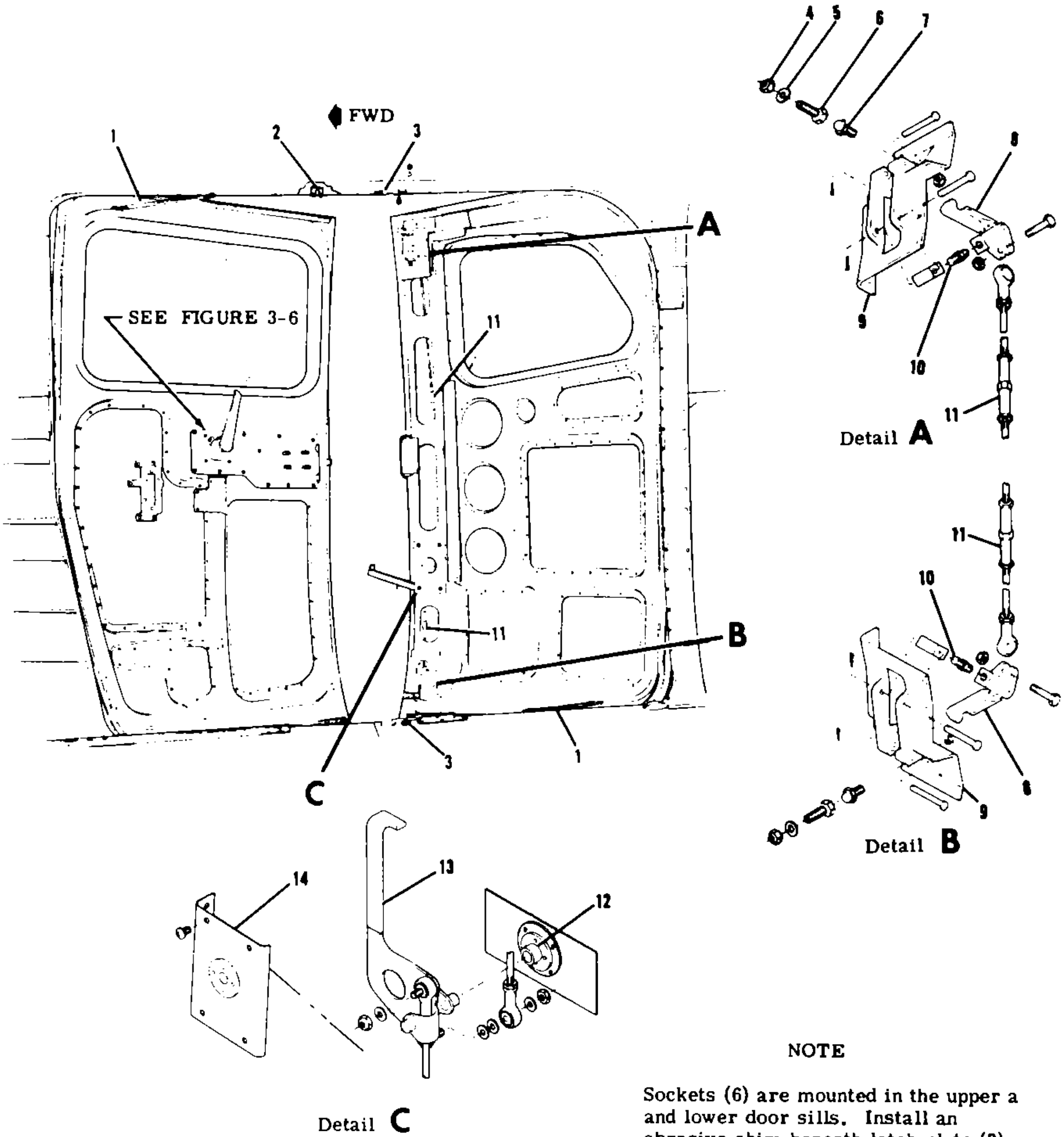


Figure 3-4. Baggage Door Installation



NOTE

Sockets (6) are mounted in the upper a and lower door sills. Install an abrasive shim beneath latch plate (3) to prevent latch plate from slipping.

To aid in cargo loading, the center seat bolt attach points on the floor are designed to fold flat.

A tee handle is stowed in the glove compartment. The front cargo door may be locked and unlocked externally through a hole opposite the inside handle.

1. Door Stop
2. Flap Interrupt Switch
3. Latch Plate
4. Nut
5. Washer
6. Socket
7. Load Carrying Pin
8. Upper Hook
9. Upper Latch Carrier
10. Adjusting Bolt
11. Turnbuckle
12. Bushing
13. Handle
14. Cover

Figure 3-5. Cargo Door Installation

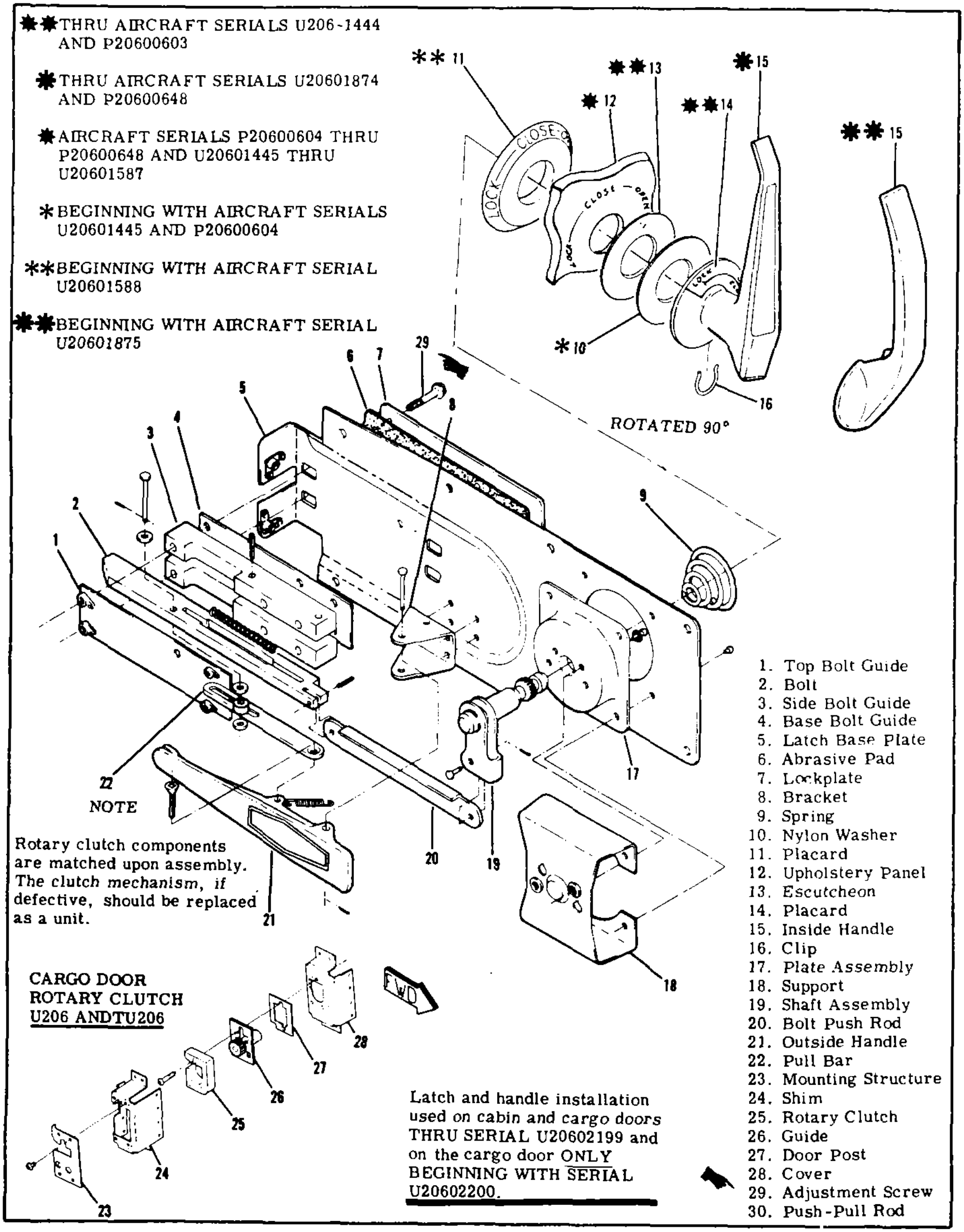


Figure 3-6. Door Latch and Rotary Clutch Components (Sheet 1 of 2)

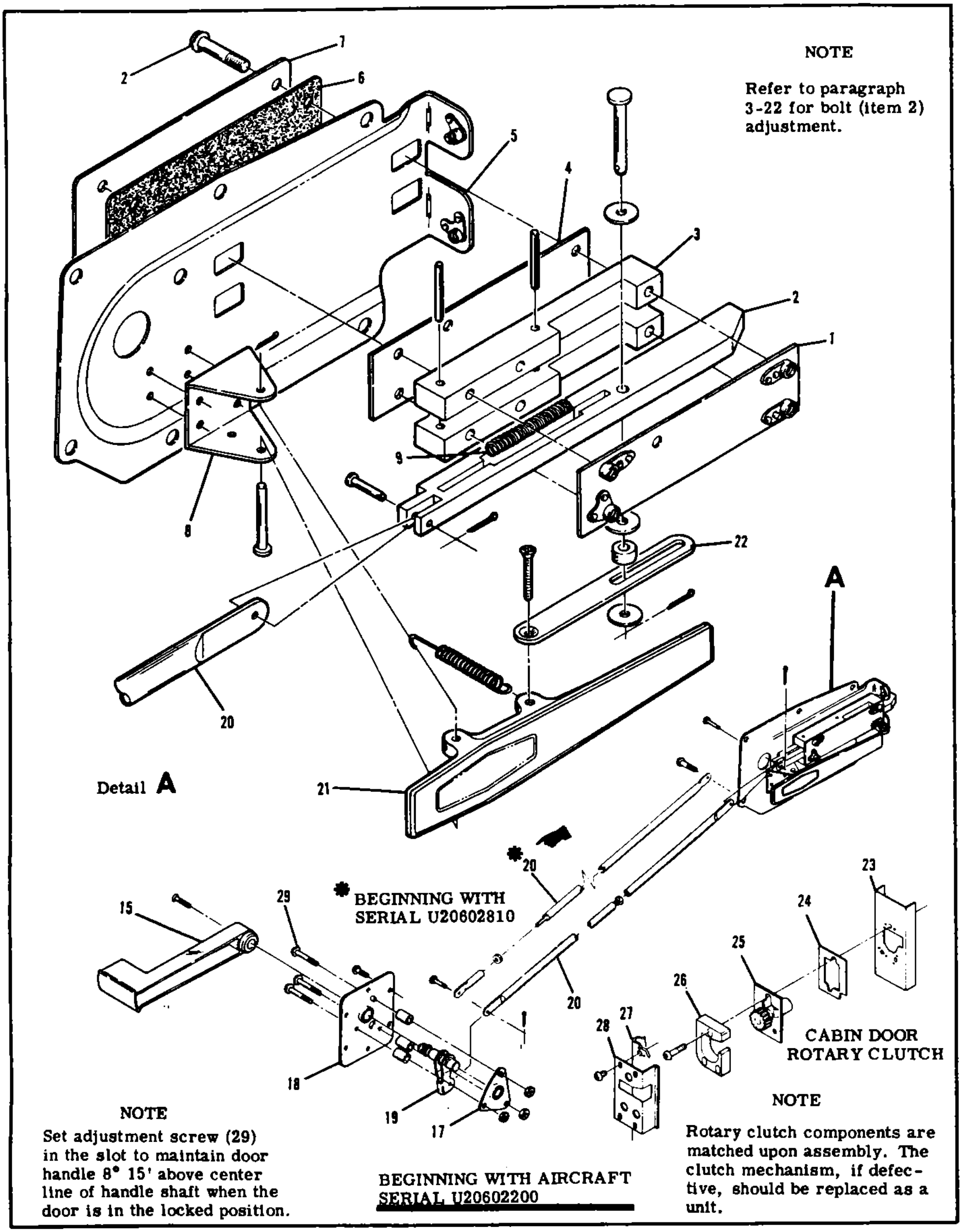


Figure 3-6. Door Latch and Rotary Clutch Components (Sheet 2 of 2)

3-33. SEATS. (Refer to figure 3-7.)

3-34. PILOT AND COPILOT.

a. RECLINING BACK. (Standard pilot/Optional copilot.)

b. RECLINING BACK/VERTICAL ADJUST. (Optional 1969 ONLY.)

c. ARTICULATING RECLINE/VERTICAL ADJUST. (Optional 1970 AND ON.)

3-35. DESCRIPTION. These seats are manually-operated throughout their full range of operation. Seat stops are provided to limit fore-and-aft travel. Install seat stops on rails as follows:

1. Pilots seat: inbd rail fwd and aft.
2. Copilots seat: outbd rail fwd and aft.
3. Center L H seat: outbd rail fwd and aft.
4. Center R H seat: outbd rail fwd and inbd rail aft.
5. Aft L H seat: outbd rail fwd and aft.
6. Aft R H seat: outbd rail aft only.

3-36. REMOVAL AND INSTALLATION.

a. Remove seat stops from rails.

b. Slide seat fore-and-aft to disengage seat rollers from rails.

c. Lift seat out.

d. Reverse the preceding steps for installation. Ensure all seat stops are reinstalled.

WARNING

It is extremely important that pilot's seat stops are installed, since acceleration and deceleration could possibly permit seat to become disengaged from seat rails and create a hazardous situation, especially during take-off and landing.

3-37. CENTER AND REAR.

a. RECLINING BACK/FORE-AND-AFT ADJUST.

b. NON-RECLINING BACK/FORE-AND-AFT ADJUST.

3-38. DESCRIPTION. These seats are provided with fore-and-aft adjustment provisions. Seat stops are installed to limit travel. Removal and installation is outlined in paragraph 3-36.

3-39. REPAIR. Replacement of defective parts is recommended in repair of seats. However, a cracked framework may be welded, provided crack is not in an area of stress concentration (close to a hinge or bearing point). The square-tube framework is 6061 aluminum, heat-treated to a T-6 condition. Use a heliarc weld on these seats, as torch welds will destroy heat-treatment of frame structure. Figure 3-8 outlines instructions for replacing defective cams on reclining seat backs.

3-40. CABIN UPHOLSTERY. Due to the wide selection of fabrics, styles and colors, it is impossible to depict each particular type of upholstery. The following paragraphs describe general procedures which will serve as a guide in removal and replacement of upholstery. Major work, if possible, should be done by an experienced mechanic. If work must be done by a mechanic unfamiliar with upholstery practices, the mechanic should make careful notes during removal of each item to facilitate its replacement later.

3-41. MATERIALS AND TOOLS. Materials and tools will vary with job. Scissors for trimming upholstery to size and a dull-bladed putty knife for wedging material beneath retainer strips are the only tools required for most trim work. Use industrial rubber cement to hold soundproofing mats and fabric edges in place. Refer to Section 18 for thermo-plastic repairs.

3-42. SOUNDPROOFING. The aircraft is insulated with spun glass mat-type insulation and a sound deadener compound applied to inner surfaces of skin in most areas of cabin and baggage compartment. All soundproofing material should be replaced in its original position any time it is removed. A soundproofing panel is placed in the gap between the wing and fuselage and held in place by the wing root fairing.

3-43. CABIN HEADLINER. (Refer to figure 3-10.)

3-44. REMOVAL.

a. Remove sun visors, all inside finish strips and plates, door post upper shields, front spar trim shield, dome light console and any other visible retainers securing headliner.

b. Work edges of headliner free from metal teeth which hold fabric.

c. Starting at front of headliner, work headliner down, removing screws through metal tabs which hold wire bows to cabin top. Pry loose outer ends of bows from retainers above doors. Detach each bow in succession.

NOTE

Always work from front to rear when removing headliner.

d. Remove headliner assembly and bows from aircraft.

NOTE

Due to difference in length and contour of wire bows, each bow should be tagged to assure proper location in headliner.

e. Remove spun glass soundproofing panels.

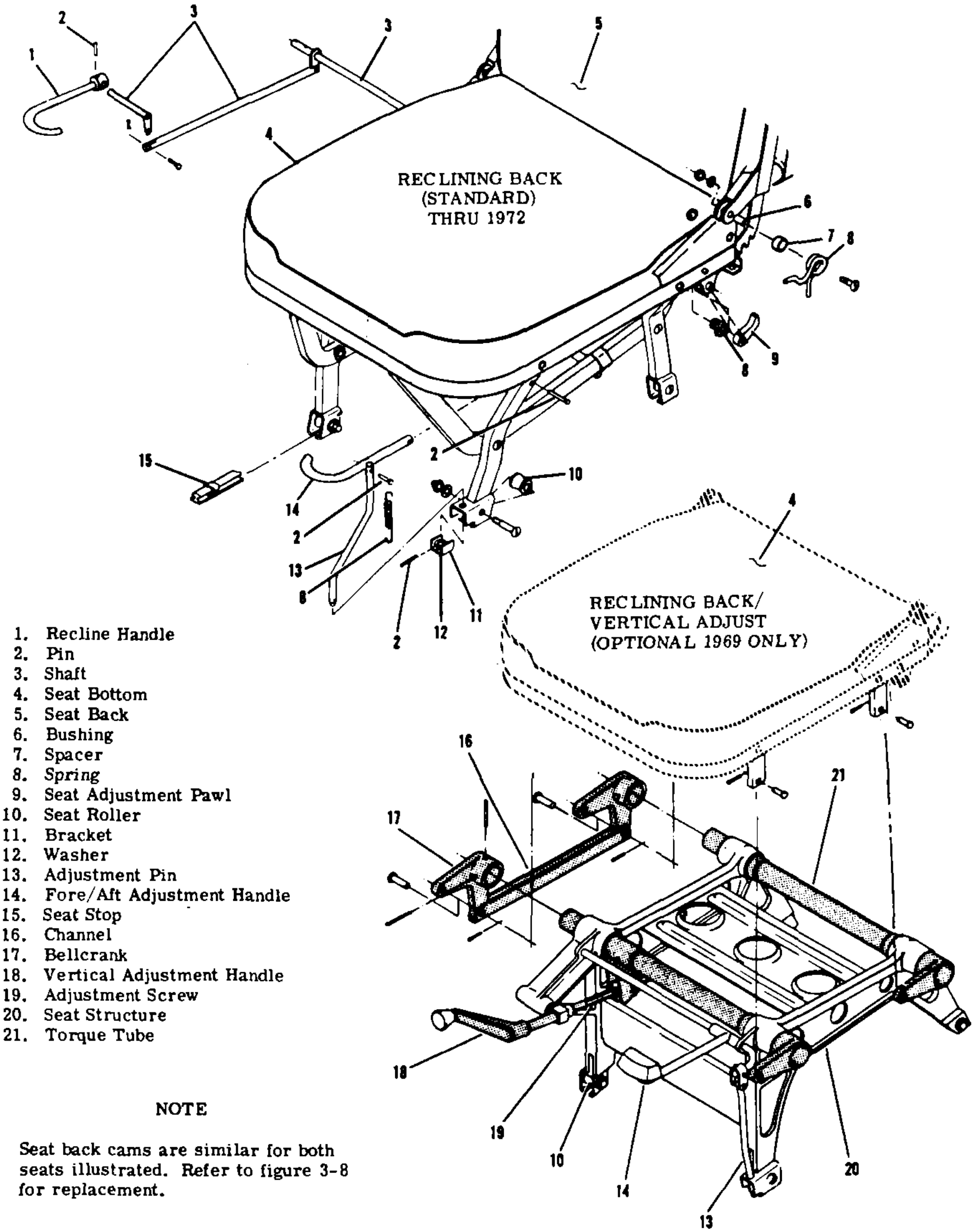
NOTE

The lightweight soundproofing panels are held in place with industrial rubber cement.

3-45. INSTALLATION.

a. Before installation, check all items concealed by headliner for security. Use wide cloth tape to secure loose wires to fuselage and to seal openings in wing roots. Straighten tabs bent during removal of headliner.

PILOT AND COPILOT SEATS



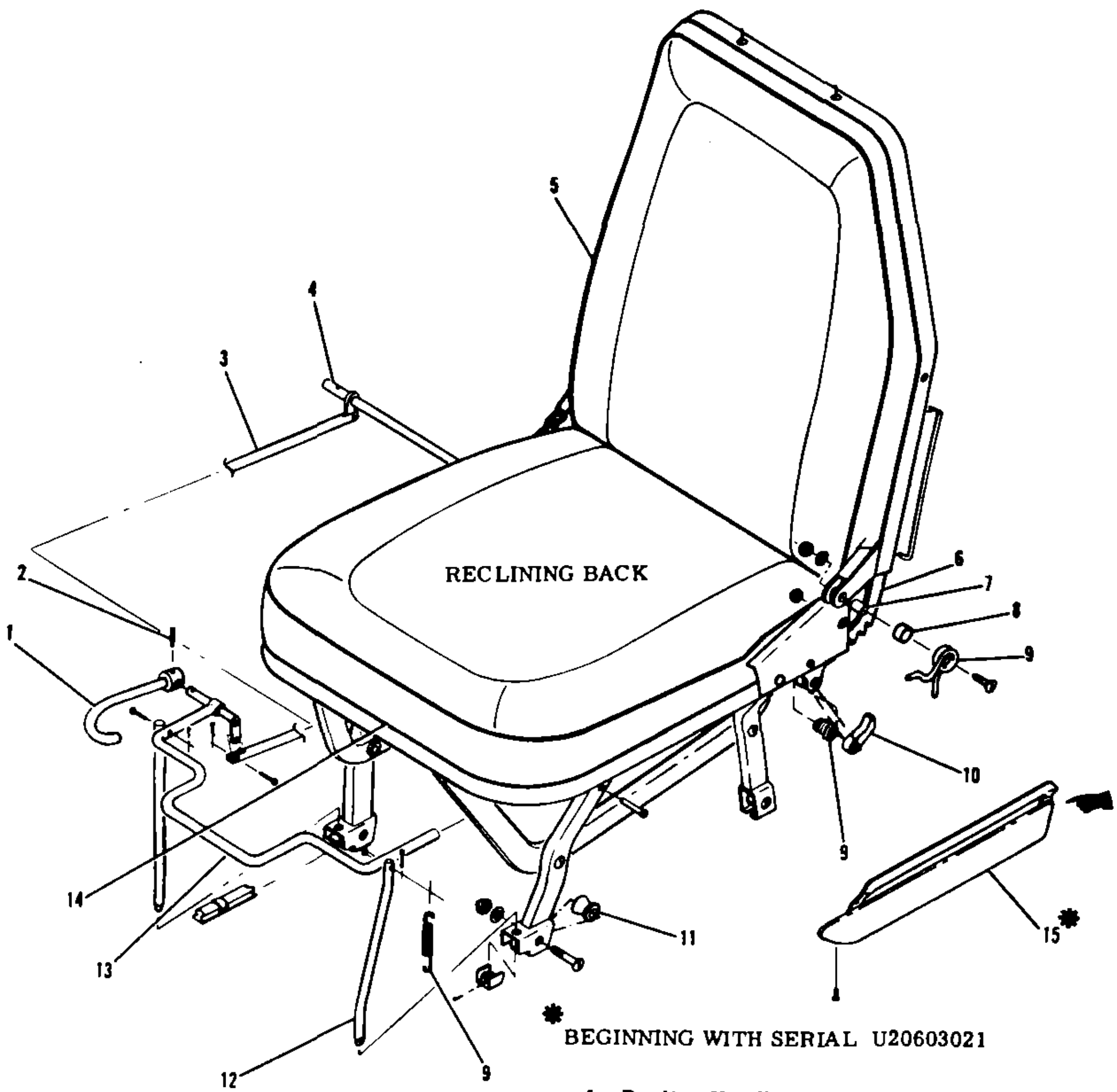
1. Recline Handle
2. Pin
3. Shaft
4. Seat Bottom
5. Seat Back
6. Bushing
7. Spacer
8. Spring
9. Seat Adjustment Pawl
10. Seat Roller
11. Bracket
12. Washer
13. Adjustment Pin
14. Fore/Aft Adjustment Handle
15. Seat Stop
16. Channel
17. Bellcrank
18. Vertical Adjustment Handle
19. Adjustment Screw
20. Seat Structure
21. Torque Tube

NOTE

Seat back cams are similar for both seats illustrated. Refer to figure 3-8 for replacement.

Figure 3-7. Seat Installation (Sheet 1 of 11)

PILOT AND COPILOT SEAT
(STANDARD BEGINNING WITH 1973)

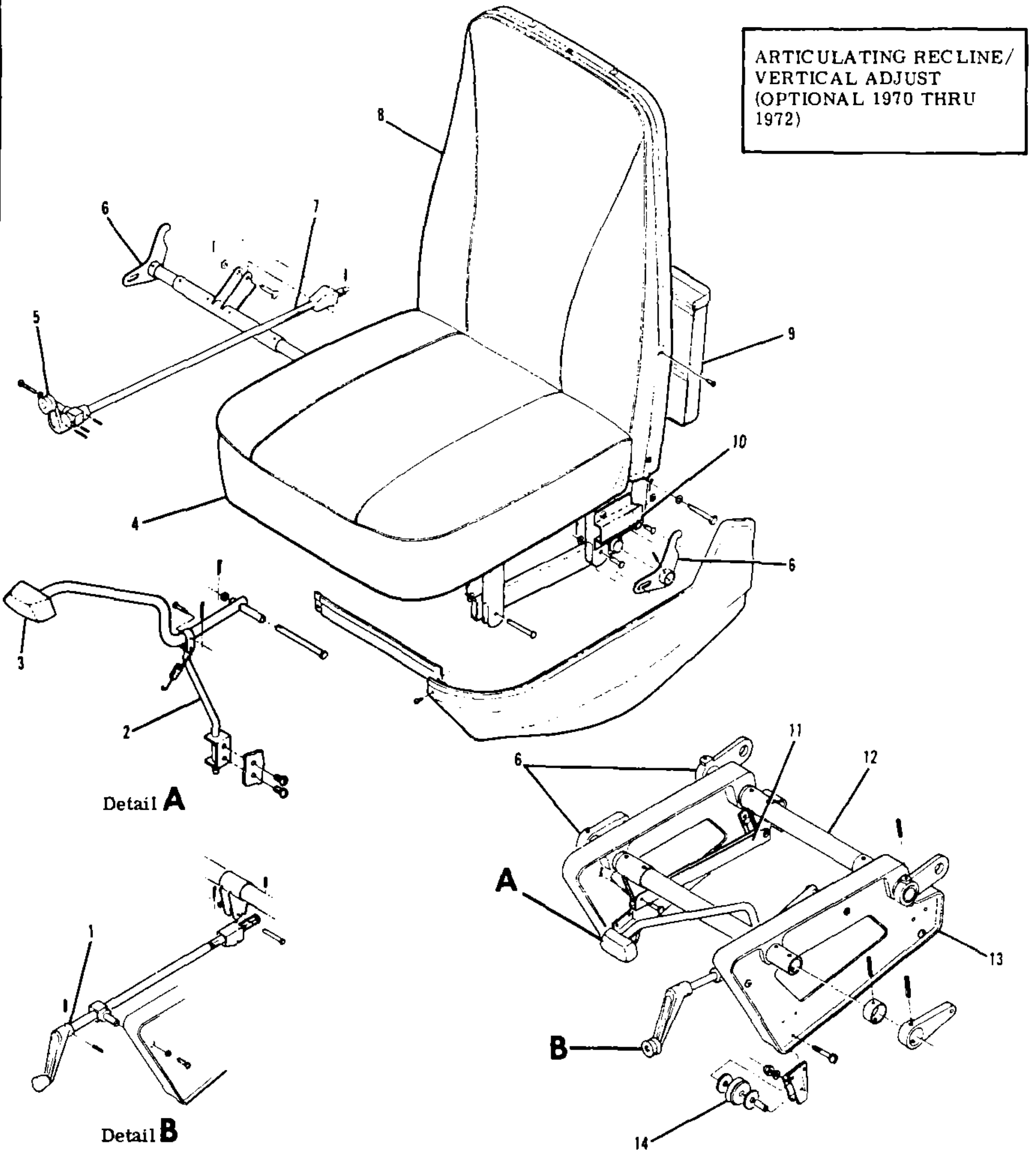


* BEGINNING WITH SERIAL U20603021

1. Recline Handle
2. Pin
3. Link Assembly
4. Torque Tube
5. Seat Back
6. Recline Cam
7. Bushing
8. Spacer
9. Spring
10. Pawl
11. Roller
12. Adjustment Pin
13. Fore/Aft Adjustment Handle
14. Seat Bottom
15. Seat Belt Retainer

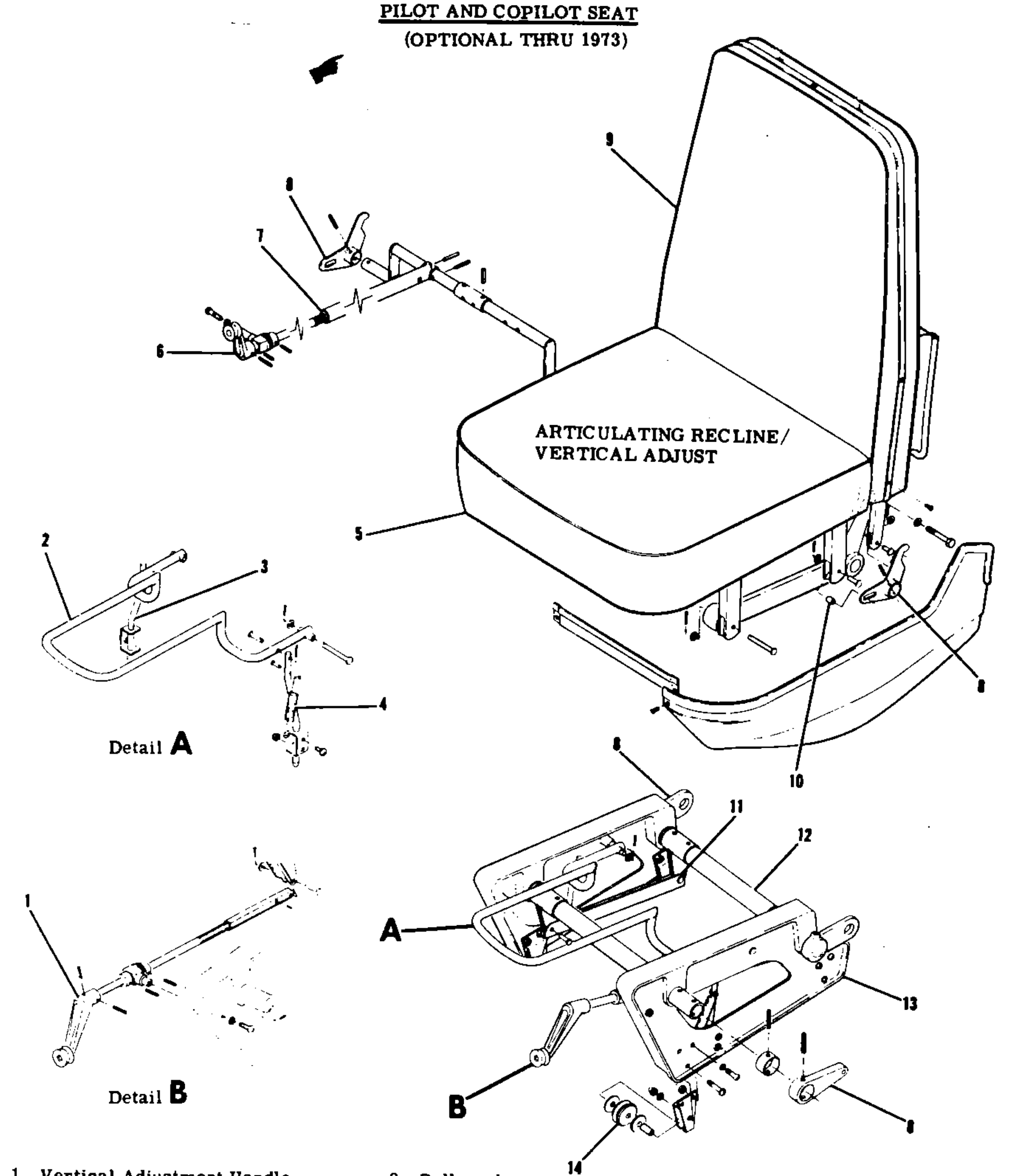
Figure 3-7. Seat Installation (Sheet 2 of 11)

PILOT AND COPILOT SEAT



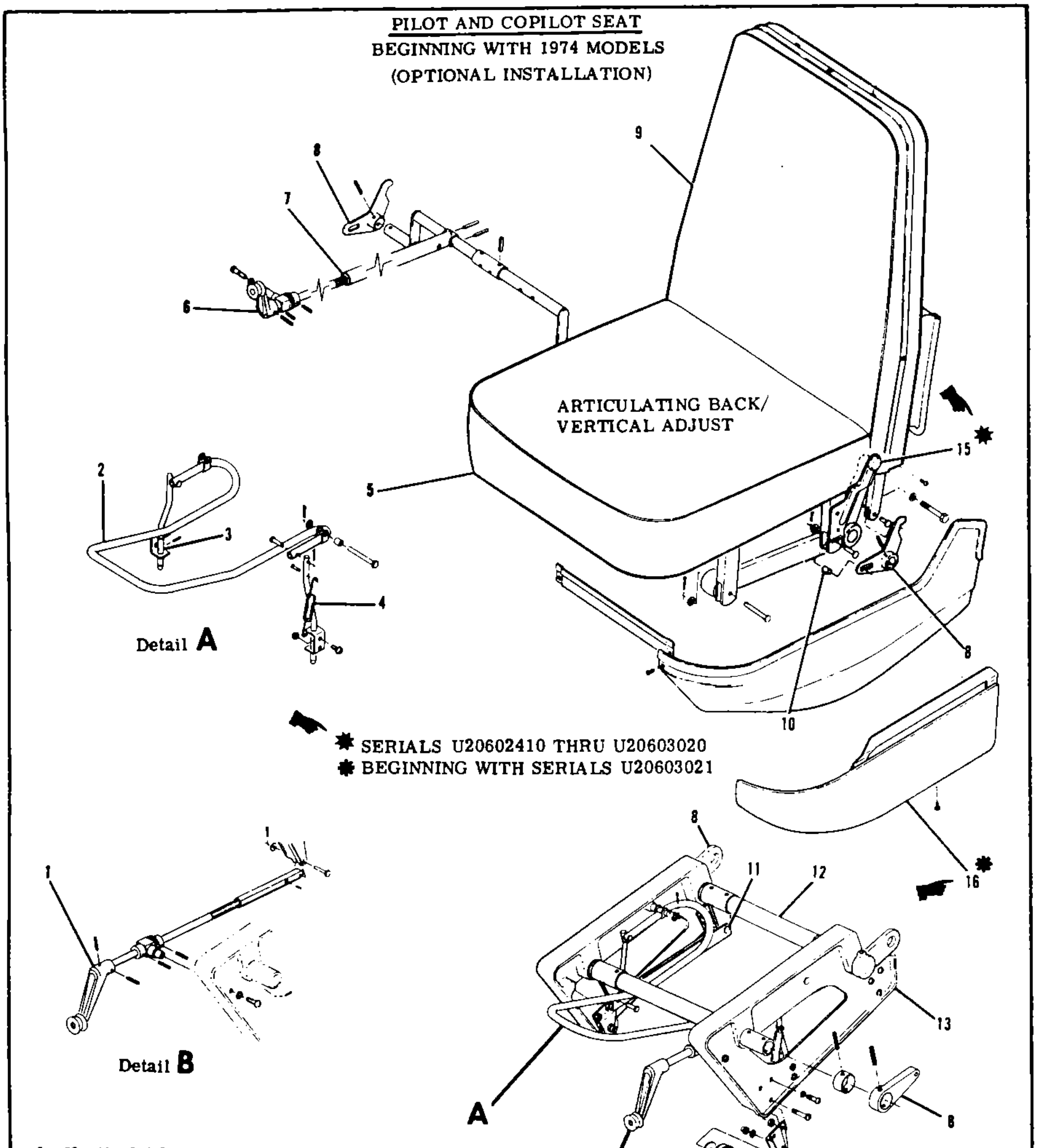
1. Vertical Adjustment Handle
2. Adjustment Pin
3. Fore-and-Aft Adjustment Handle
4. Seat Bottom
5. Articulating Adjustment Handle
6. Bellcrank
7. Adjustment Screw
8. Seat Back
9. Magazine Pocket
10. Trim Bracket
11. Channel
12. Torque Tube
13. Seat Structure
14. Roller

Figure 3-7. Seat Installation (Sheet 3 of 11)



1. Vertical Adjustment Handle
2. Fore/Aft Adjustment Handle
3. Adjustment Pin
4. Spring
5. Seat Bottom
6. Articulating Adjustment Handle
7. Adjustment Screw
8. Bellcrank
9. Seat Back
10. Spacer
11. Channel
12. Torque Tube
13. Seat Structure
14. Roller

Figure 3-7. Seat Installation (Sheet 4 of 11)



1. Vertical Adjustment Handle
2. Fore/Aft Adjustment Handle
3. Adjustment Pin
4. Spring
5. Seat Bottom
6. Articulating Adjustment Handle
7. Adjustment Screw
8. Bellcrank
9. Seat Back
10. Spacer
11. Channel
12. Torque Tube
13. Seat Structure
14. Roller
15. Stiffner
16. Seat Belt Retainer

Figure 3-7. Seat Installation (Sheet 5 of 11).

CENTER

1. Reclining Adjustment Handle
2. Spacer
3. Seat Bottom
4. Torque Tube
5. Link
6. Bellcrank
7. Fore/Aft Adjustment Handle
8. Fore/Aft Adjustment Pin
9. Spring
10. Spring Positioning Support
11. Reclining Adjustment Pawl
12. Bushing
13. Bushing
14. Seat Back

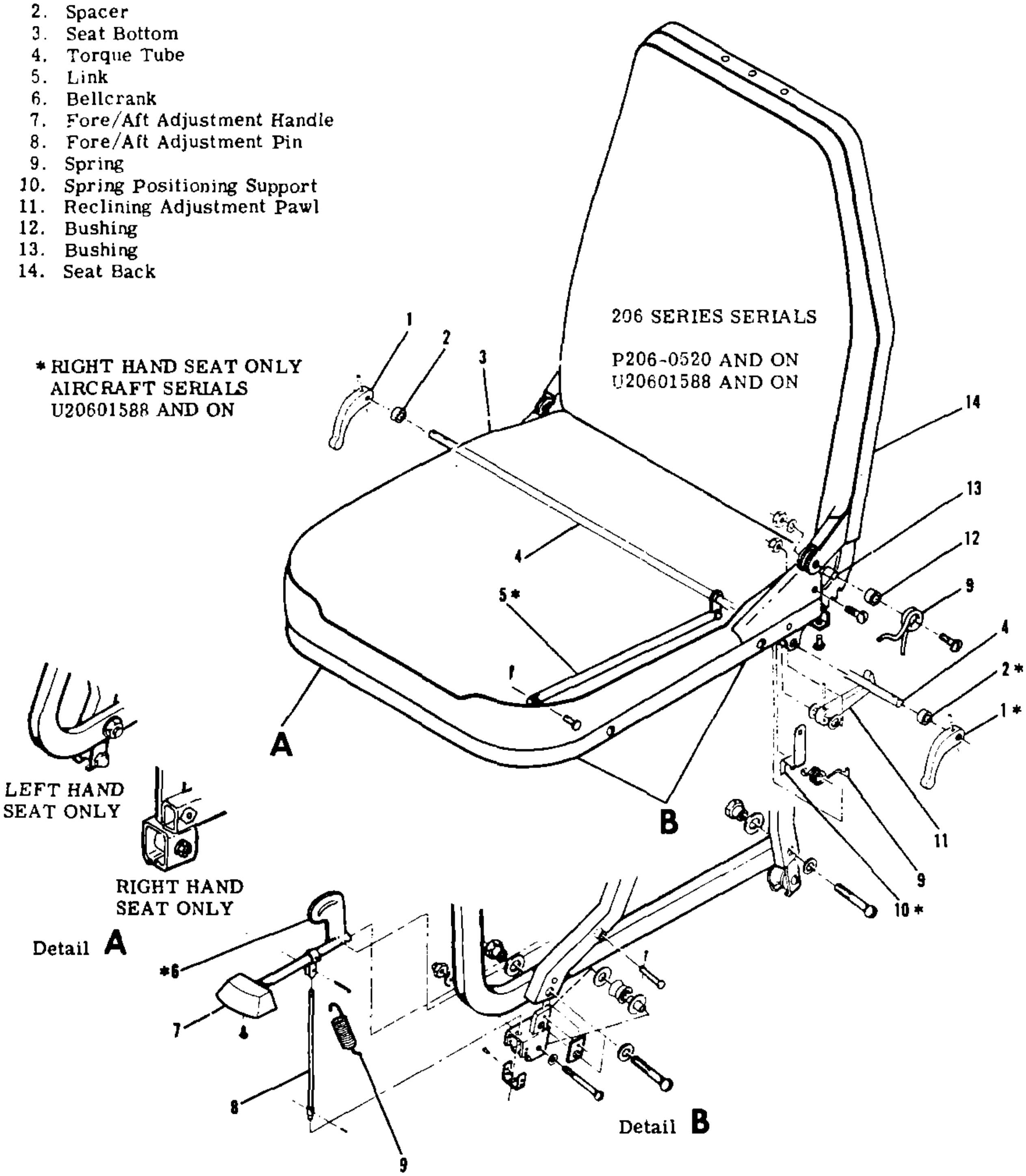
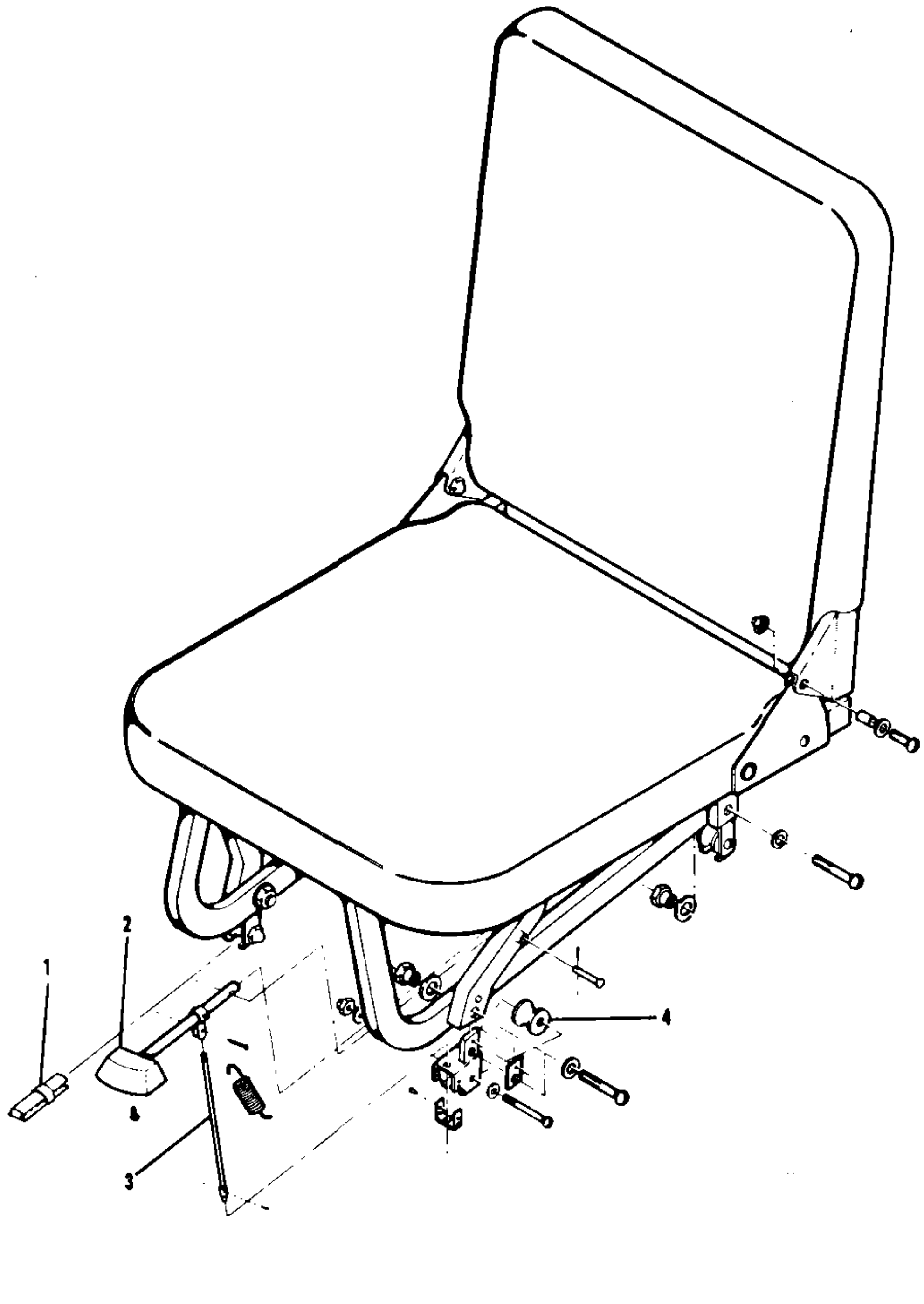


Figure 3-7. Seat Installation (Sheet 6 of 11)

CENTER

U206 AND TU206

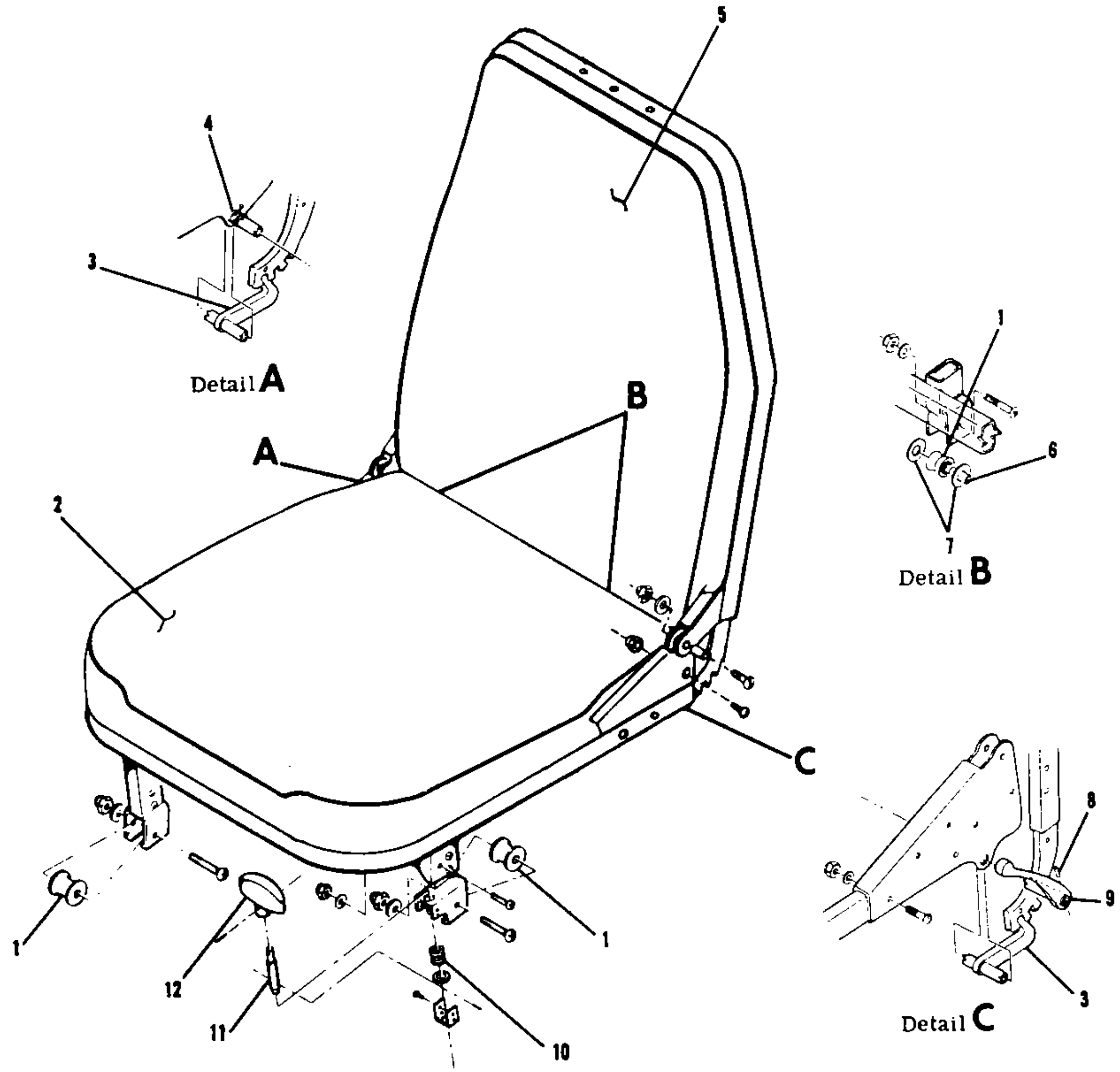


1. Seat Stop
2. Fore/Aft Adjustment Handle
3. Adjustment Pin
4. Roller

Figure 3-7. Seat Installation (Sheet 7 of 11)

REAR

1969
P206 AND TP206

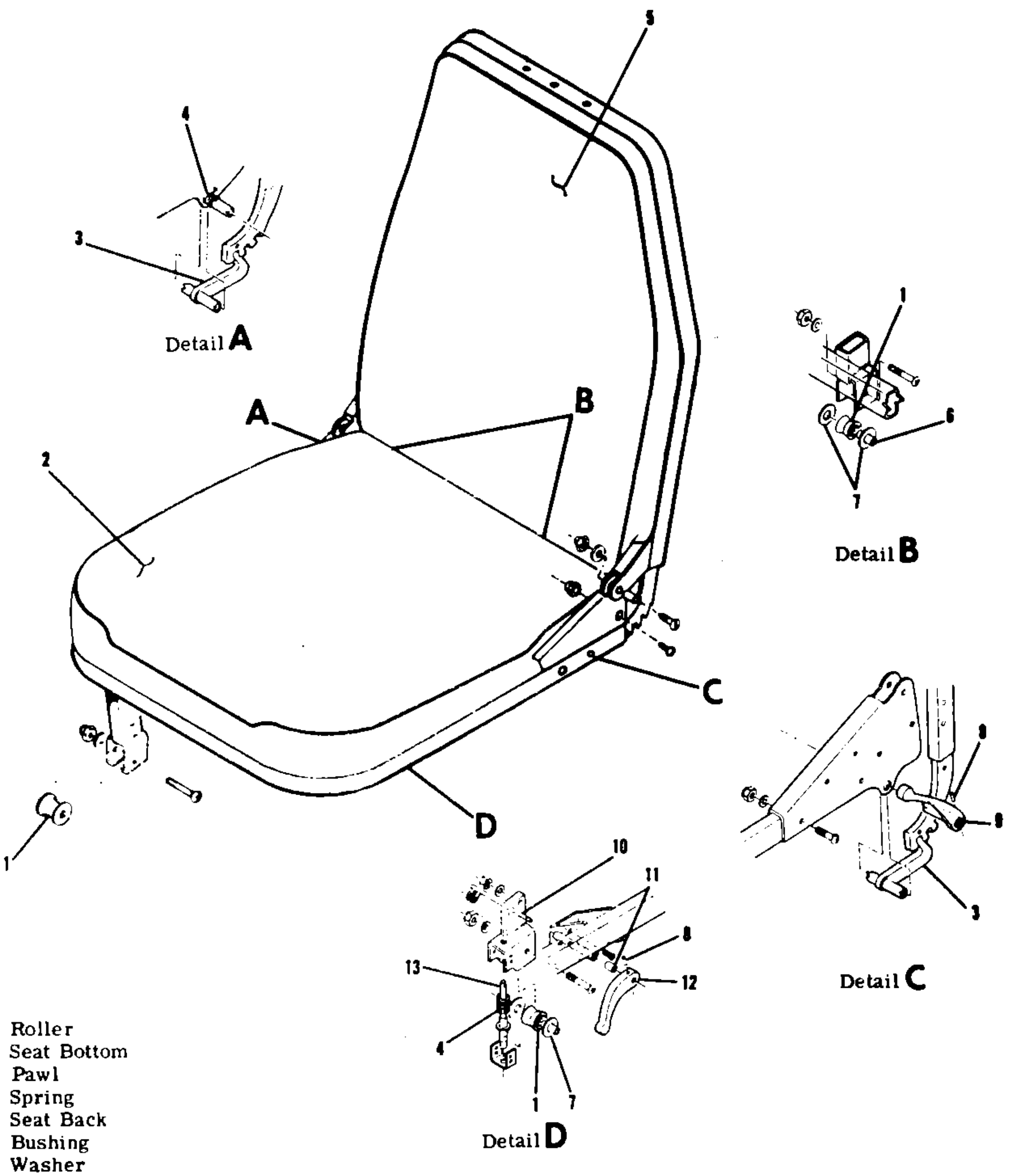


1. Roller
2. Seat Bottom
3. Pawl
4. Spring
5. Seat Back
6. Bushing
7. Washer
8. Pin
9. Handle
10. Spring
11. Adjustment Pin
12. Handle

Figure 3-7. Seat Installation (Sheet 8 of 11)

REAR

1970
P206 AND TP206



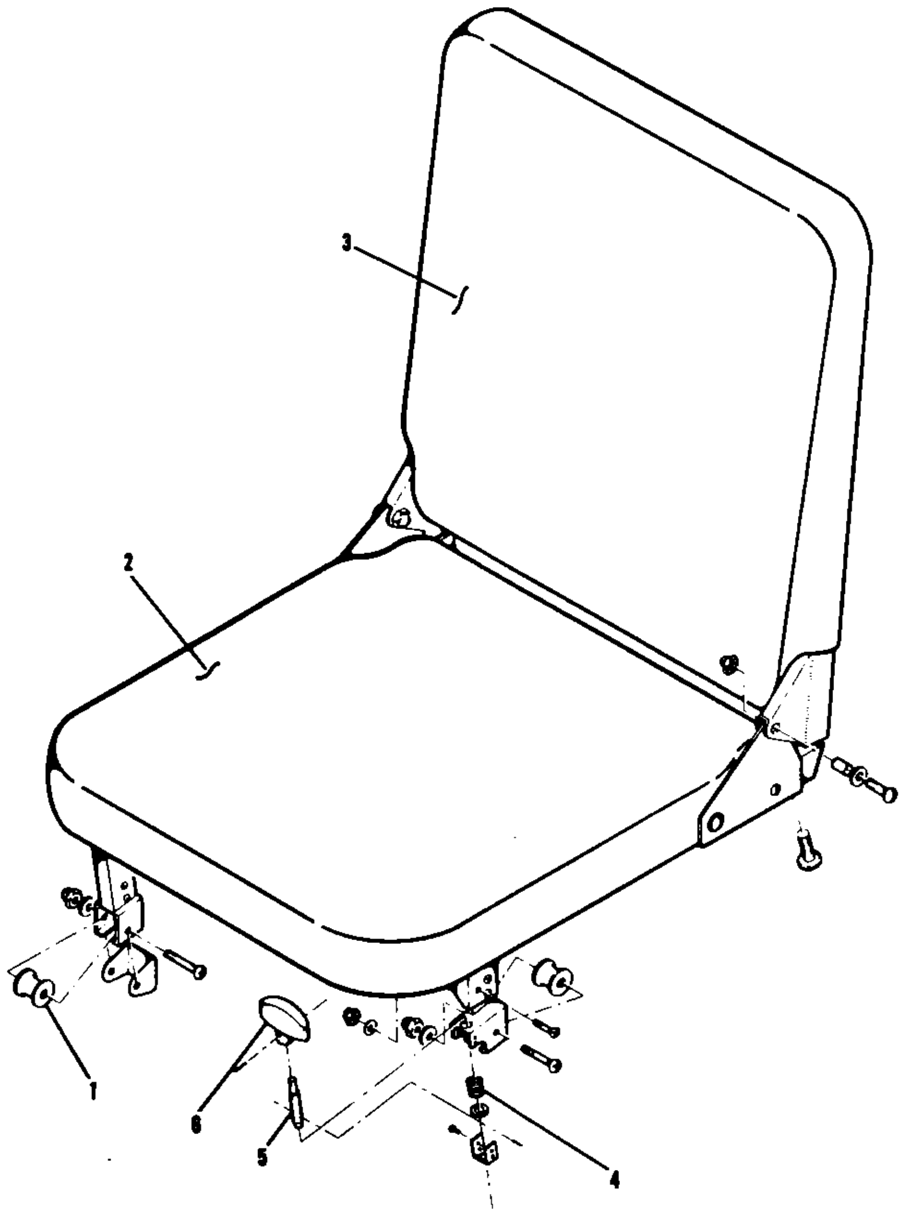
1. Roller
2. Seat Bottom
3. Pawl
4. Spring
5. Seat Back
6. Bushing
7. Washer
8. Pin
9. Reclining Adjustment Handle
10. Adjustment Arm
11. Spacer
12. Fore/Aft Adjustment Handle
13. Adjustment Pin

Figure 3-7. Seat Installation (Sheet 9 of 11)

REAR

1969

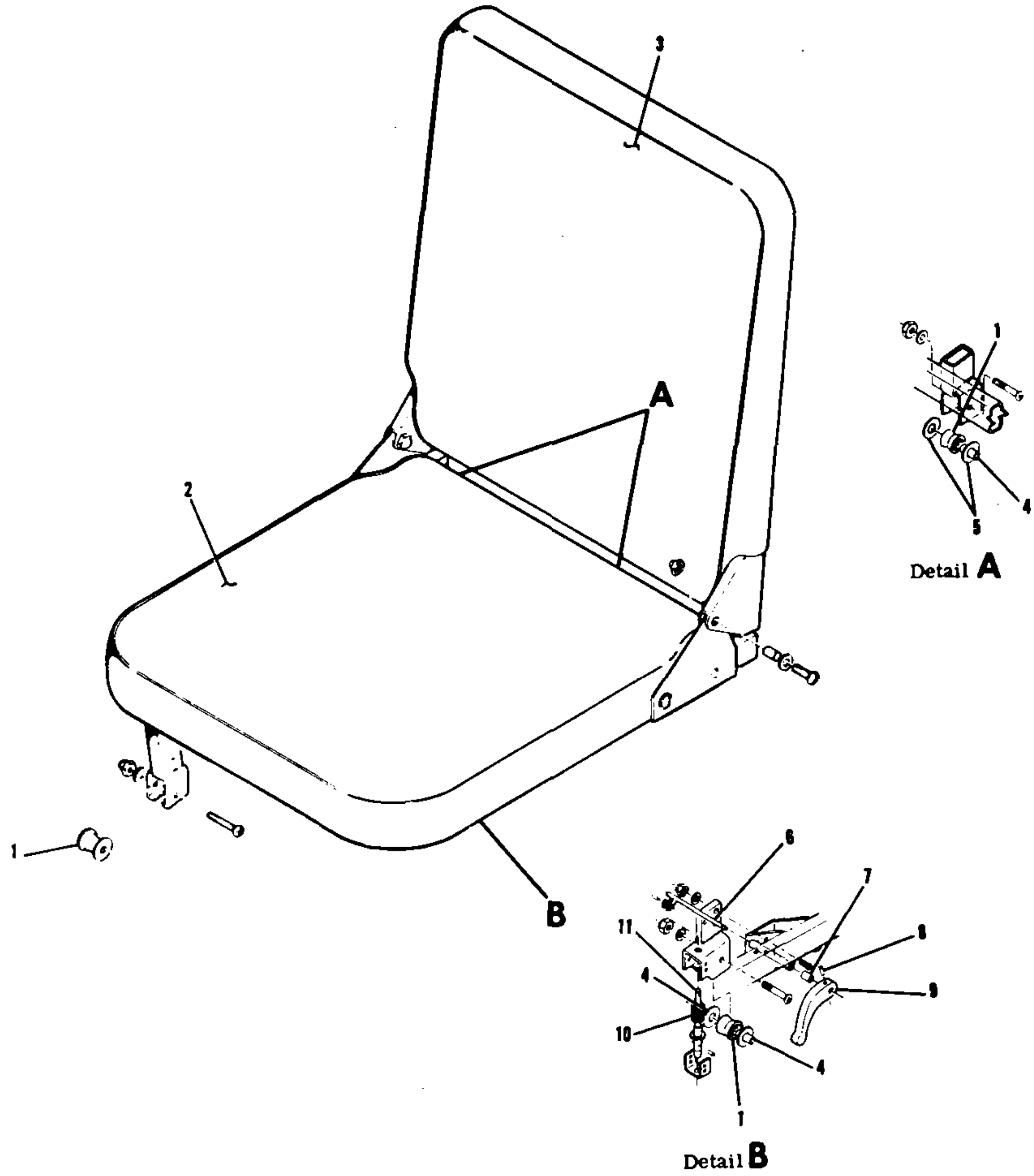
U206 AND TU206



1. Roller
2. Seat Bottom
3. Seat Back
4. Spring
5. Adjustment Pin
6. Fore/Aft Adjustment Handle

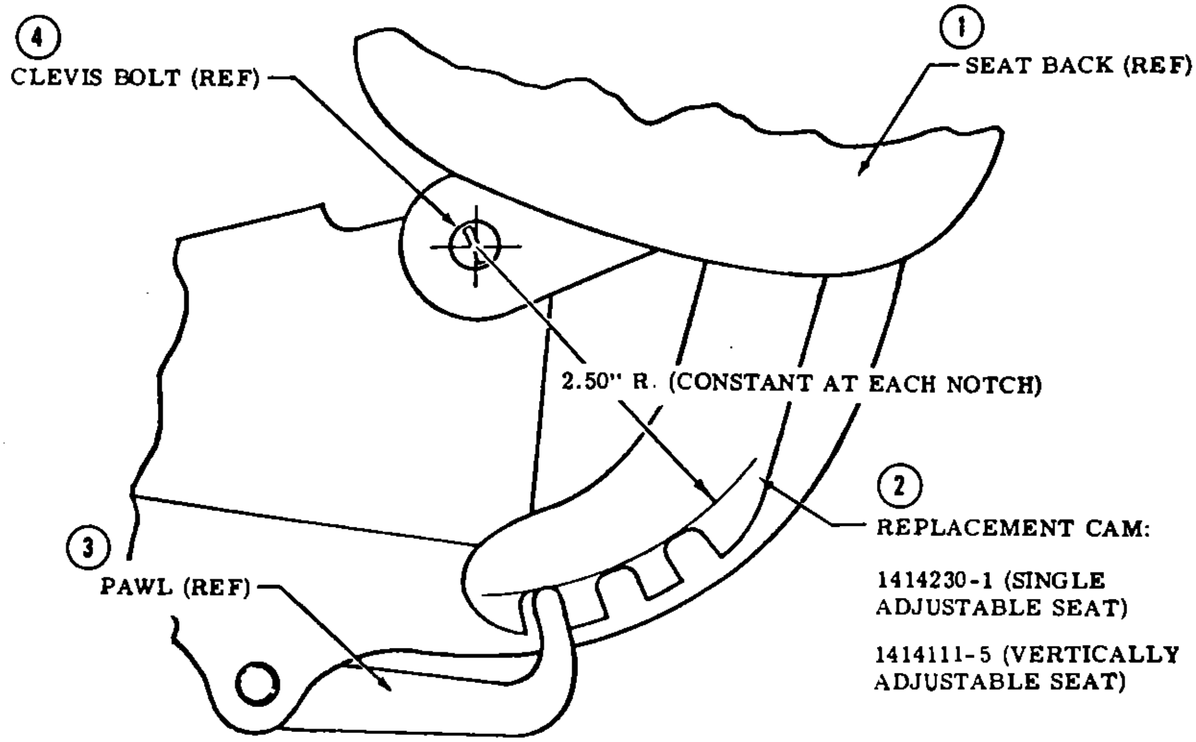
Figure 3-7. Seat Installation (Sheet 10 of 11)

REAR
1970
U206 AND TU206



1. Roller
2. Seat Bottom
3. Seat Back
4. Bushing
5. Washer
6. Adjustment Arm
7. Spacer
8. Pin
9. Handle
10. Spring
11. Adjustment Pin

Figure 3-7. Seat Installation (Sheet 11 of 11)



REPLACEMENT PROCEDURE:

a. Remove seat from aircraft.

b. Remove plastic upholstery panels from aft side of seat back, then loosen upholstery retaining rings and upholstery material as required to expose the rivets retaining the old cam assembly.

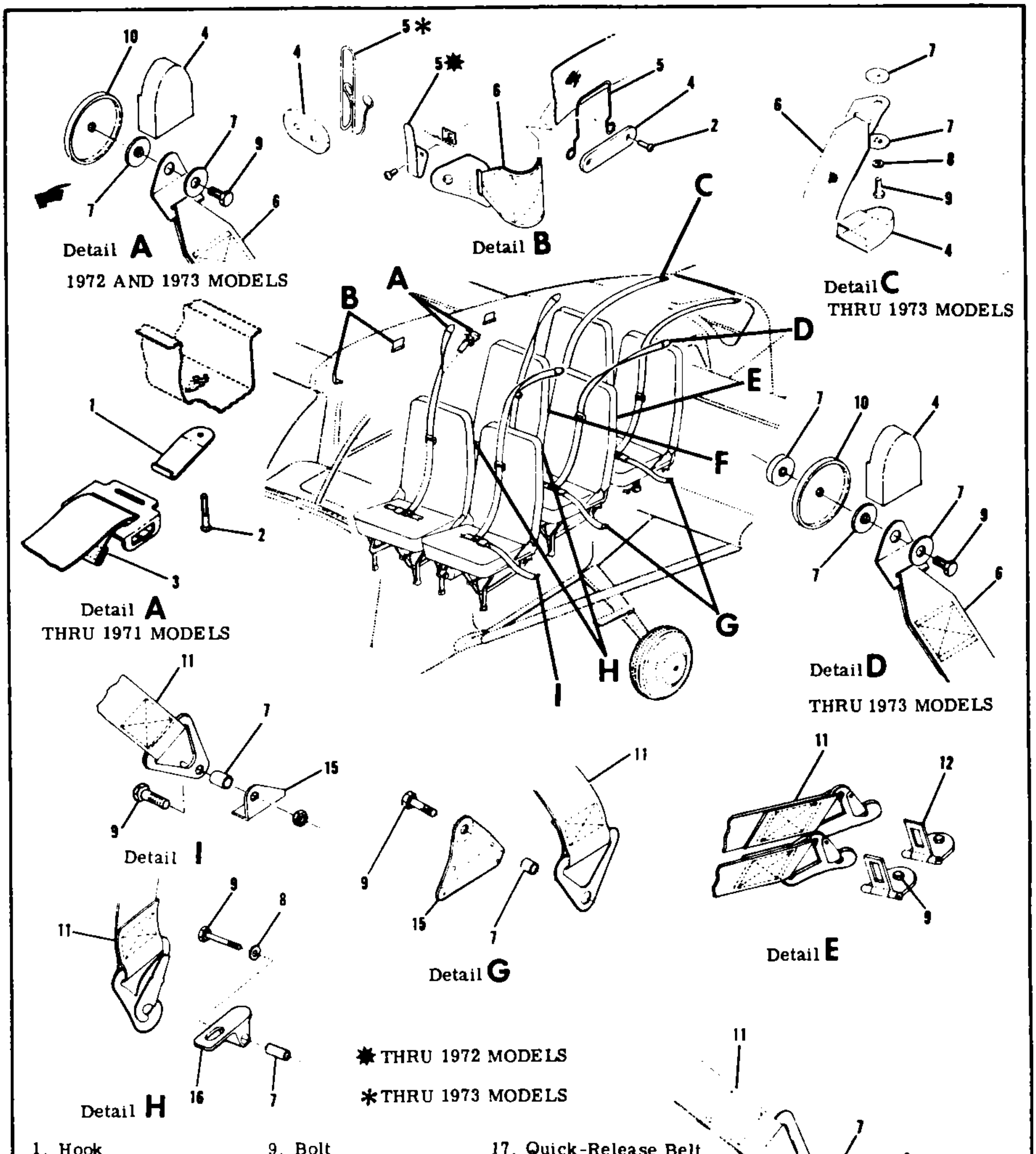
c. Drill out existing rivets and insert new cam assembly (2). Position seat back so that pawl (3) engages first cam slot as shown.

d. Position the cam so each slot bottom aligns with the 2.50" radius as shown.

e. Clamp securely in this position and check travel of cam. Pawl must contact bottom of each cam slot. Using existing holes in seat frame, drill through new cam and secure with MS20470AD6 rivets.

f. Reinstall upholstery, upholstery panels and seat.

Figure 3-8. Seat Back Cam Replacement



1. Hook	9. Bolt	17. Quick-Release Belt
2. Screw	10. Cup	18. Stowage Tray
3. Shoulder Harness	11. Seat Belt	19. Inertia Reel
4. Cover	12. Latch Assembly	20. Attaching Plate
5. Clip	13. Eye Bolt	21. Aircraft Structure
6. Shoulder Harness	14. Nut	22. Inertia Reel Cover
7. Spacer	15. Bracket	
8. Washer	16. Fitting	

Figure 3-9. Seat Belt and Shoulder Harness Installation (Sheet 1 of 3)

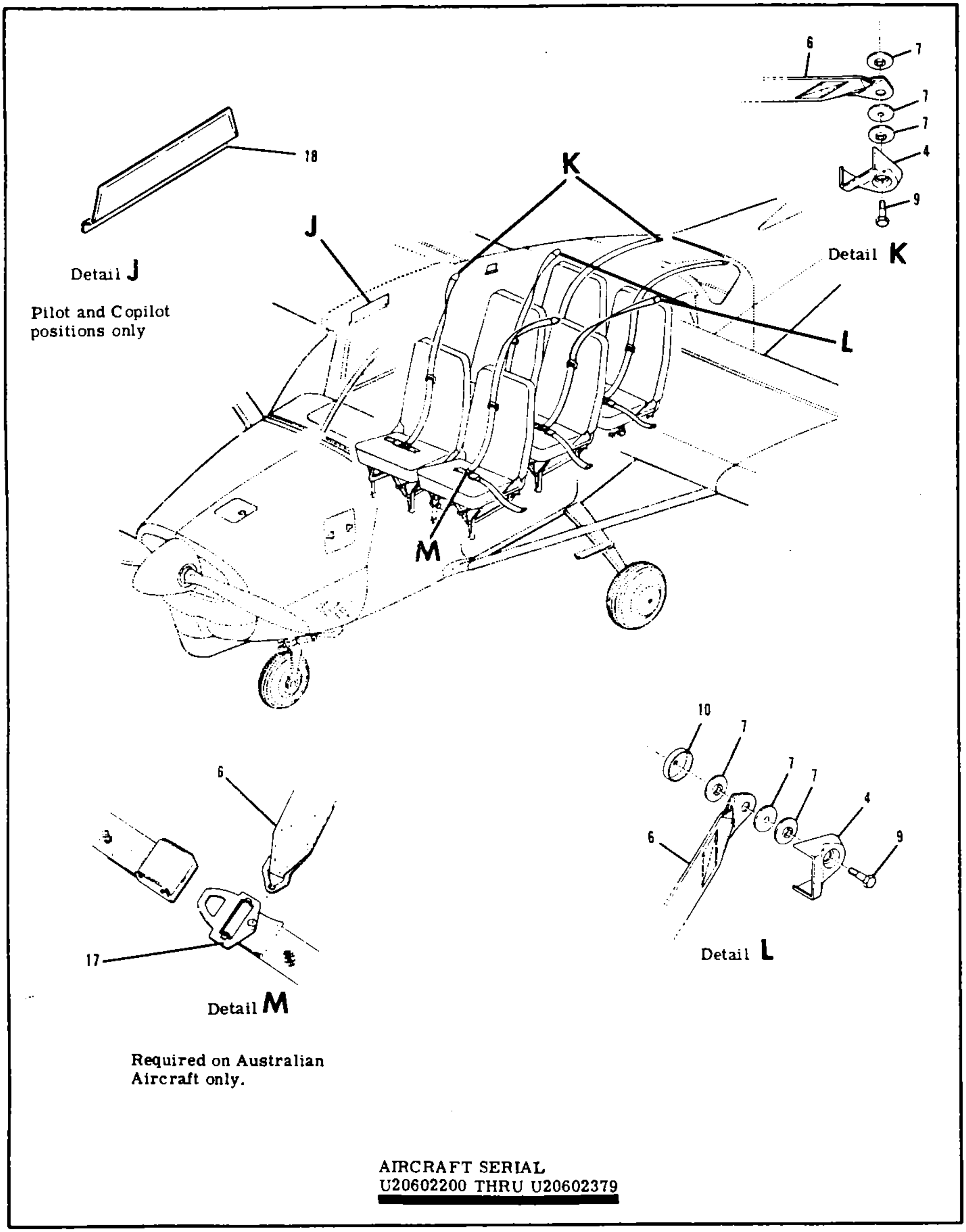
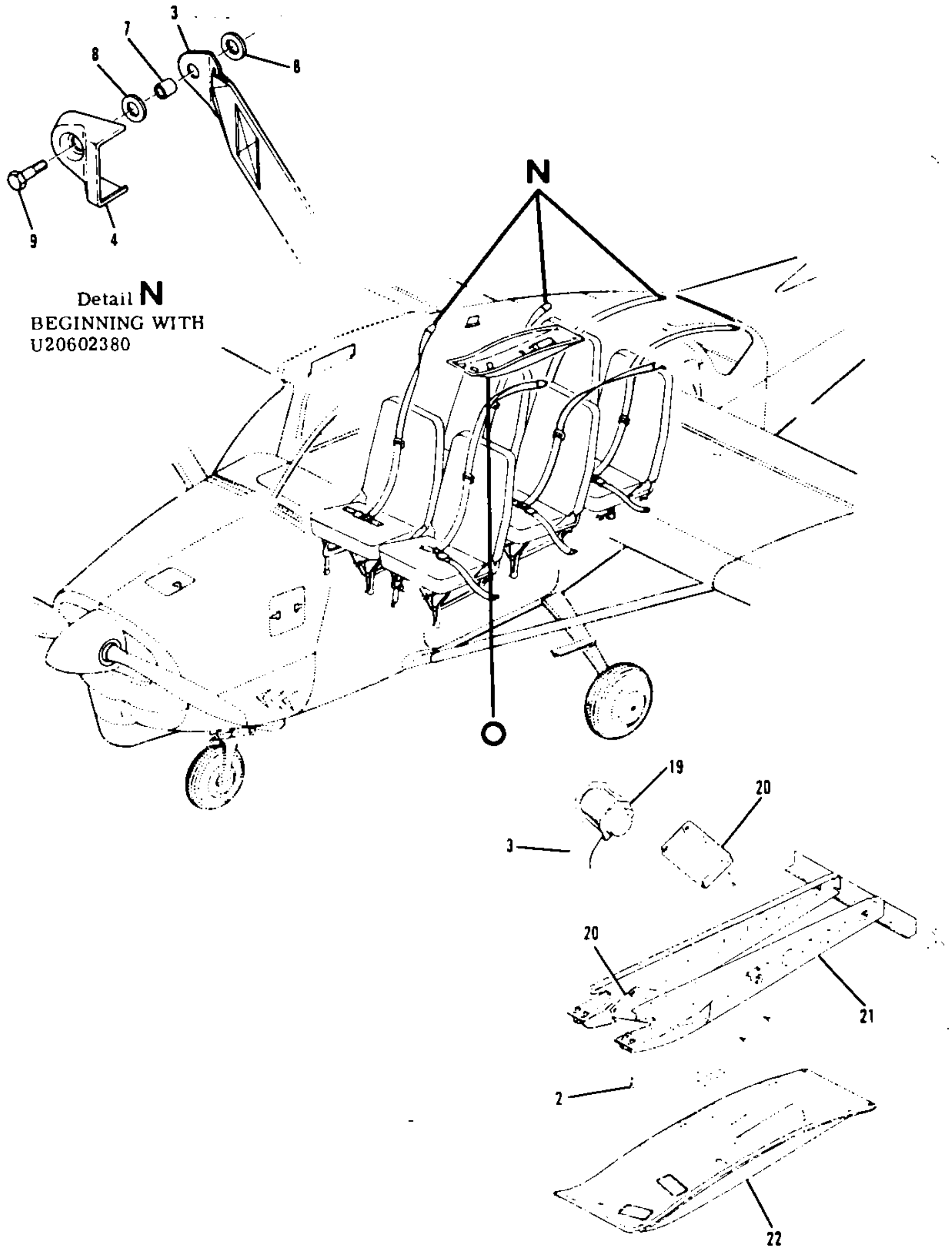


Figure 3-9. Seat Belt and Shoulder Harness Installation (Sheet 2 of 3)



Detail N
BEGINNING WITH
U20602380

Detail O
INERTIA REEL INSTALLATION
BEGINNING WITH U20602580

Figure 3-9. Seat Belt and Shoulder Harness Installation(Sheet 3 of 3)

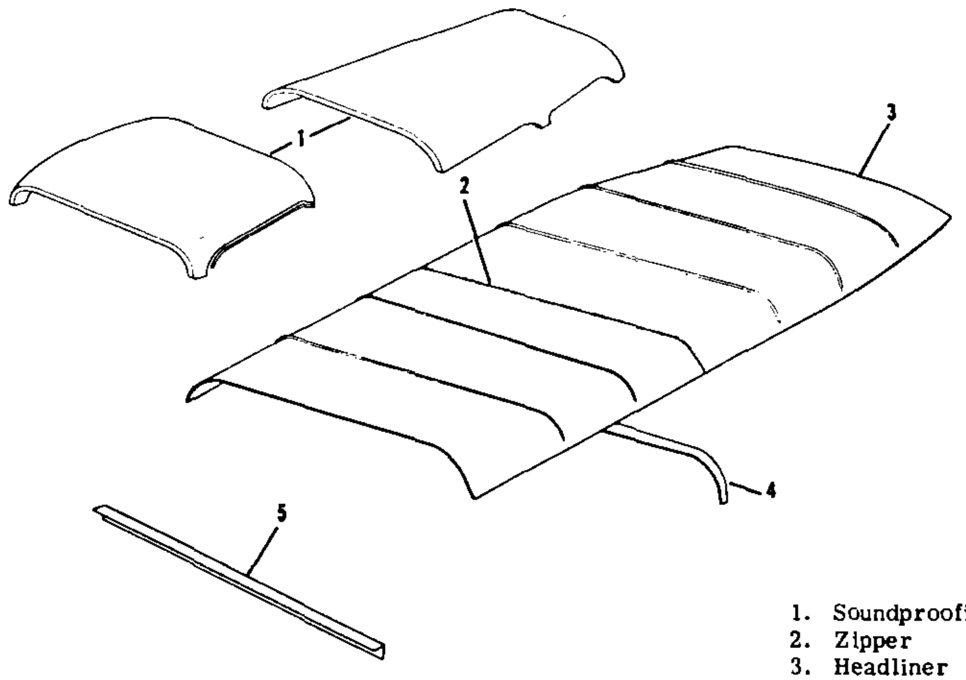


Figure 3-10. Cabin Headliner

b. Apply cement to inside of skin in areas where soundproofing panels are not supported by wire bows and press soundproofing in place.

c. Insert wire bows into headliner seams and secure rearmost edges of headliner after positioning two bows at rear of headliner. Stretch material along edges to ensure it is properly centered, but do not stretch enough to destroy ceiling contours or distort wire bows. Secure edges of headliner with metal teeth or rubber cement.

d. Work headliner forward, installing each wire bow in place with tabs. Wedge ends of wire bows into retainer strips. Stretch headliner just taut enough to avoid wrinkles and maintain a smooth contour.

e. When all bows are in place and fabric edges are secured, trim off excess fabric and reinstall all items removed.

3-46. UPHOLSTERY SIDE PANELS. Removal of upholstery side panels is accomplished by removing seats for access, then removing parts attaching panels. Remove screws, retaining strips, arm rests and ash trays as required to free panels. Automotive type spring clips attach most door panels. A dull putty knife makes an excellent tool for prying loose clips. When installing upholstery side panels, do not over-tighten sheet metal screws. Larger screws may be used in enlarged holes as long as area behind hole is checked for electrical wiring, fuel lines and other components which might be damaged by using a longer screw.

3-47. WINDLACE (DOOR SEAL). To furnish an ornamental edging for door opening and to provide additional sealing, a windlace is installed between upholstery panels or trim panels and doorpost structure. The windlace is held in place by sheet metal screws.

3-48. CARPETING. Cabin area and baggage compartment carpeting is held in place by rubber cement, small sheet metal screws and retaining strips. When fitting a new carpet, use old one as a pattern for trimming and marking screw holes.

3-49. SAFETY PROVISIONS.

3-50. CARGO TIE-DOWNS. Cargo tie-downs are used to ensure baggage cannot enter seating area during flight. Methods of attaching tie-downs are illustrated in figure 3-11. The eyebolt and nutplate can be located at various points. The sliding tie-down lug also utilizes eyebolt and attaches to a seat rail. Different combinations of all four may be used.

3-51. SAFETY BELTS. Safety belts should be replaced if frayed or cut, latches are defective or stitching is broken. Attaching parts should be replaced if excessively worn or defective. (Refer to figure 3-9.)

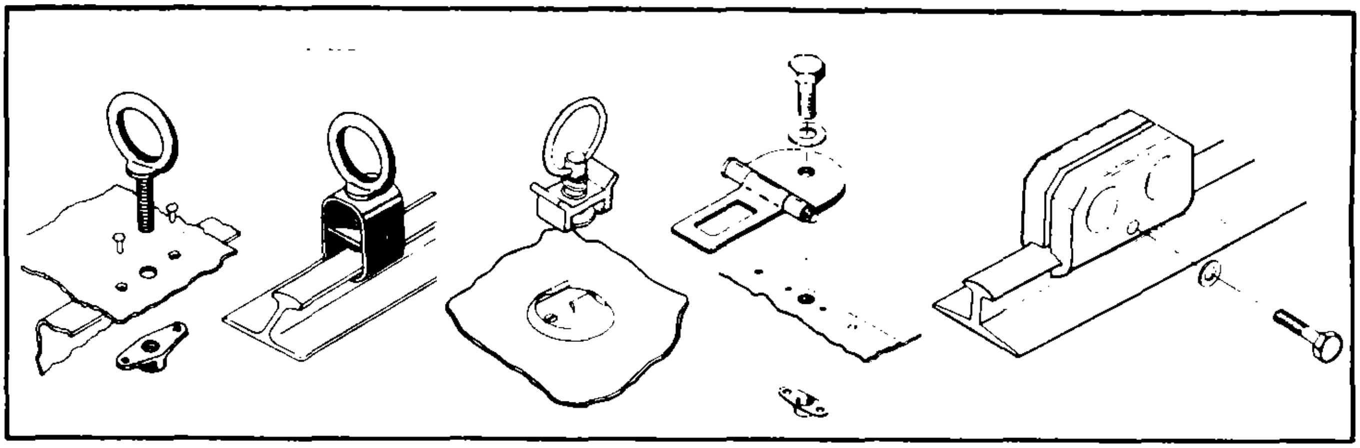


Figure 3-11. Cargo Tie-Down Rings

3-52. SHOULDER HARNESS. Individual shoulder harnesses may be installed at each seat. Each harness is connected to the upper fuselage structure and to the seat safety belt buckle. Component parts should be replaced as outlined in the preceding paragraph. (Refer to figure 3-9.) Beginning with aircraft U20602580, an inertia reel installation is offered. Refer to figure 3-9 for installation.

3-53. GLIDER TOW-HOOK. A glider tow-hook, which is mounted in place of tail tie-down ring, is available for all models.

3-54. REAR VIEW MIRROR. A rear view mirror may be installed on cowl deck above instrument panel. Figure 3-11 shows details of rear view mirror installation.

3-55. CARGO PACK.

3-56. REMOVAL.

a. Remove screws, fairing and seal from around each landing gear spring.
b. Position a suitable support under pack.
c. Remove screws attaching pack to aircraft and remove pack.

NOTE

If aircraft is to be returned to its original configuration (minus cargo pack), the four small panels which enclose area around nose gear shock strut and drag brace may be left installed instead of the two larger panels. However, the control extension and cowl flap baffles must be removed as outlined in paragraph 3-59.

3-57. INSTALLATION. Prior to positioning pack under aircraft, inspect all rivnuts in bottom of fuselage for obstructions. Also check the small panels which enclose area around nose gear shock strut and drag brace. Two panels are provided in this area on standard aircraft; these are to be replaced by four smaller panels when a cargo pack is installed. If not previously removed, remove standard panels by unsnapping quick-release fasteners. Install the smaller panels furnished with cargo pack.

NOTE

Install the rearmost panels first, right hand panel lapping over left hand panel along aircraft centerline. Install the forward panels in a similar manner.

a. Move pack into position under aircraft. Raise aft end of pack and place a support under it.
b. Raise forward end of pack and align two forward holes in pack rim with two front rivnuts. Install two screws to support forward end of pack.

NOTE

Install lock washers and flat washers under heads of all pack attaching screws.

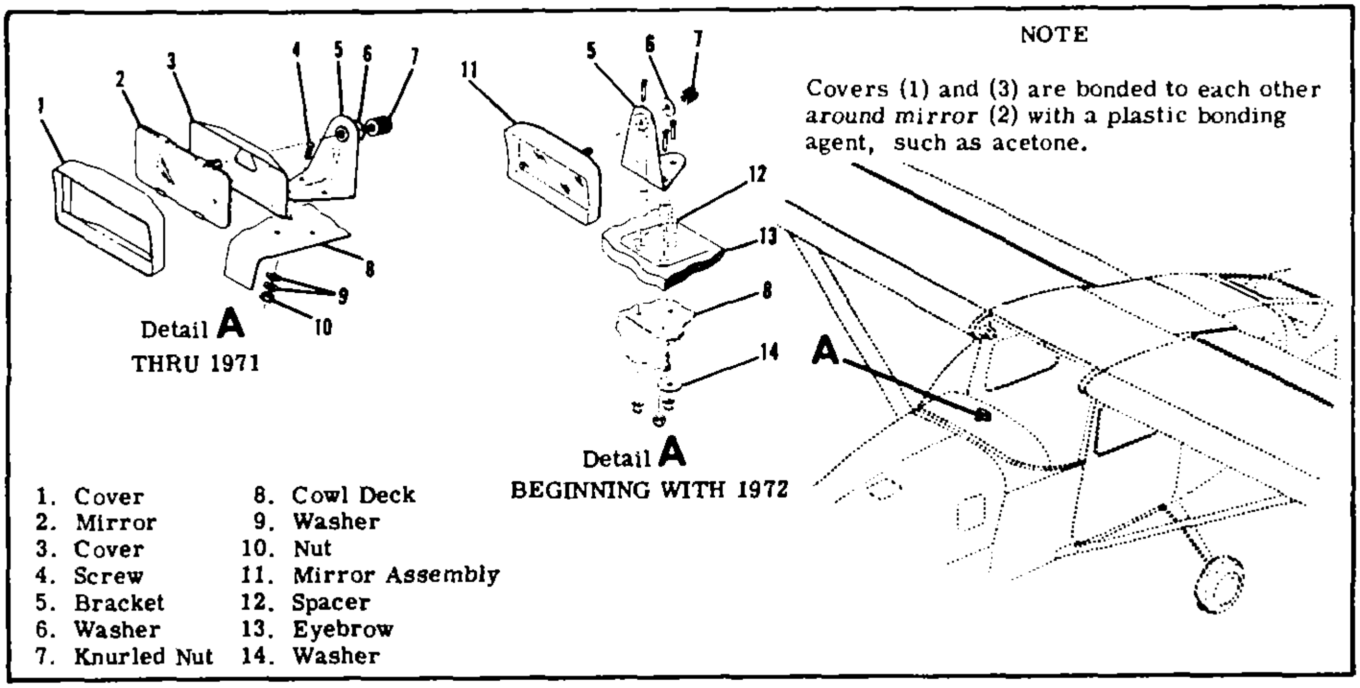
c. Raise aft end of pack and install two attaching screws.
d. Check pack for proper alignment, install and tighten all remaining screws, except for one screw just forward and aft of each landing gear spring. These two screws will be utilized later to help secure fairing which covers each landing gear opening.
e. Position rubber seal and fairing around each main landing gear spring by spreading these components, at their split side, enough to slip them over gear spring. When installed, split should be at back of gear spring. Check alignment and proper fit of fairing, then install fairing retaining screws.

NOTE

Seven screws are used to secure fairing at each landing gear. Two screws, previously mentioned in step "d," secure top of fairing and rim of cargo pack, in this area, to fuselage. Five additional screws secure and seal sides and bottom of each fairing to pack.

f. Install cowl flap baffles and control extensions in accordance with paragraph 3-60.

3-58. COWL FLAP BAFFLES AND CONTROL EXTENSIONS. (Refer to figure 3-13.)



NOTE

Covers (1) and (3) are bonded to each other around mirror (2) with a plastic bonding agent, such as acetone.

1. Cover
2. Mirror
3. Cover
4. Screw
5. Bracket
6. Washer
7. Knurled Nut
8. Cowl Deck
9. Washer
10. Nut
11. Mirror Assembly
12. Spacer
13. Eyebrow
14. Washer

Figure 3-12. Rear View Mirror Installation

3-59. REMOVAL.

a. Disconnect cowl flap control clevises (7) from flaps and take off baffles (1) by removing screws (3) and nuts (2).

b. Remove clevis (7) and link (5) from each control end (8) and reinstall clevises.

c. Rig cowl flaps on standard aircraft per Section 12 and turbocharged aircraft per Section 12A.

3-60. INSTALLATION.

a. Disconnect cowl flap control clevises (7) from flaps and remove clevises. Leave jam nuts (4) on control ends (8).

b. Install links (5) on control ends (8), install jam nuts (6) on links and attach clevises (7) to links. Do not tighten jam nuts.

c. Position baffles (1) along sides of cowl flaps so attaching holes are aligned and install attaching screws and nuts.

NOTE

Each baffle is designed for installation on a specific cowl flap. Determine correct baffle for each flap. Turbocharged aircraft have baffles as standard equipment. Note that flanges on baffles are turned toward inside of each cowl flap opening.

d. Check to ensure flexible controls reach their internal stops in each direction. Mark controls so full control travel can readily be checked and maintained during remaining rigging procedure.

e. Place cowl flap control lever in "OPEN" position and connect control ends (8) to flaps, but do not secure at this time.

f. On standard aircraft, measure distance from trailing edge of cowl skin. Disconnect clevises and adjust links (5) and clevises (7) so each cowl flap opens 6.00 inches with cockpit control OPEN and 1.05 inches with cockpit control CLOSED. On turbocharged aircraft, adjust clevis to obtain measurements of 8.00 inches (cockpit control OPEN) and 2.50 inches (cockpit control CLOSED), then secure clevises. These measurements are made in a straight line from the aft edge of cowl flap, just outboard of cutout to lower edge of firewall. Do not measure from aft corners of cowl flap. If either control needs to be lengthened or shortened, the lower clamp may be loosened and housing slipped in clamp or lower clevis may be adjusted. Maintain sufficient thread engagement of clevis.

g. Check that locknuts are tight, clamps are secure, then cycle cowl flaps several times, checking operation.

3-61. CASKET CARRIER. (Refer to figure 3-14.)

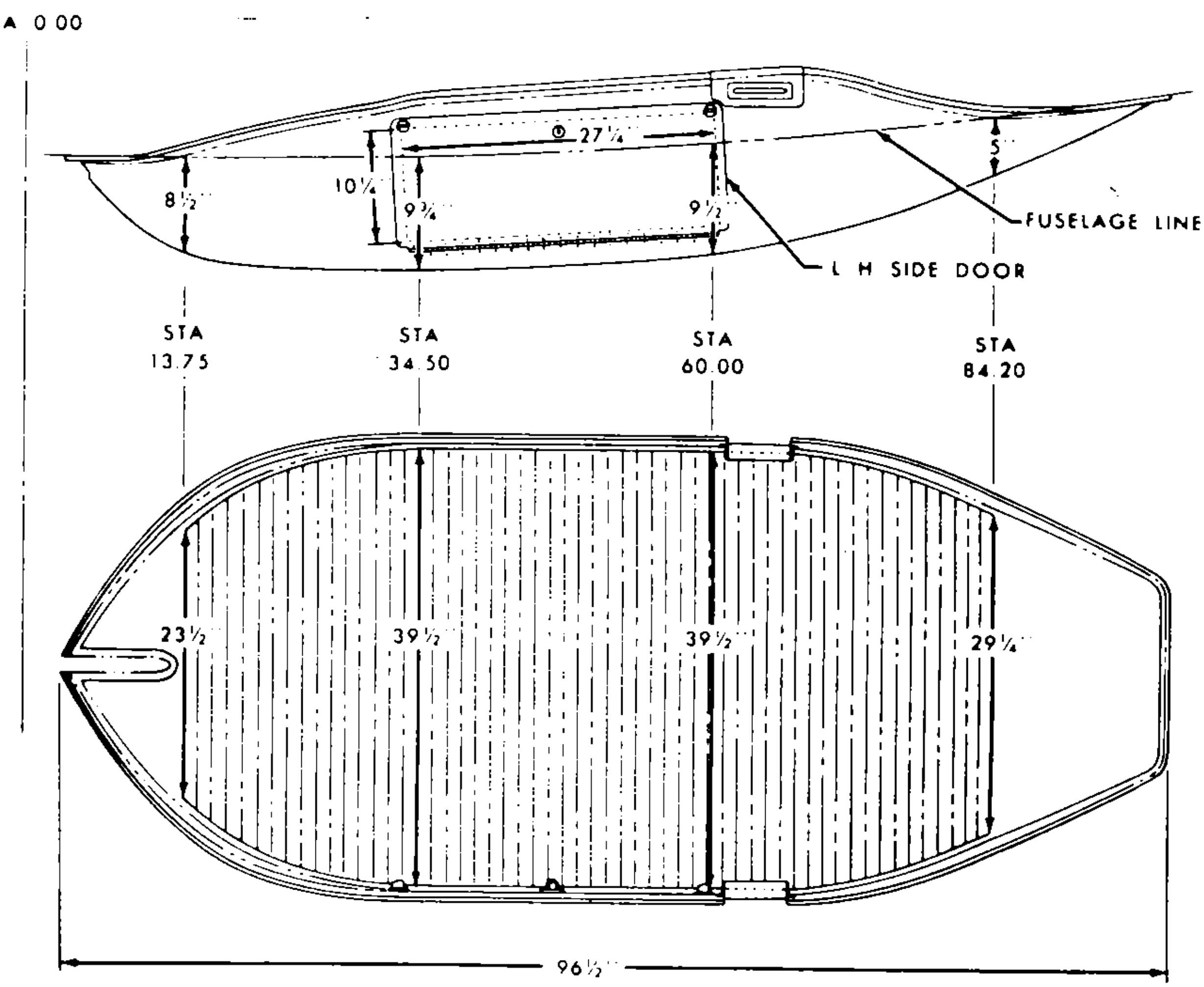
3-62. DESCRIPTION. An optional mortuary kit consists of a casket carrier platform, rack assembly and belt tie-down assemblies. The kit provides aircraft modification instructions and parts required to make the installation.

3-63. INSTALLATION. The following instructions may be used to install platform, rack and tie-down belts, and to load and secure casket:

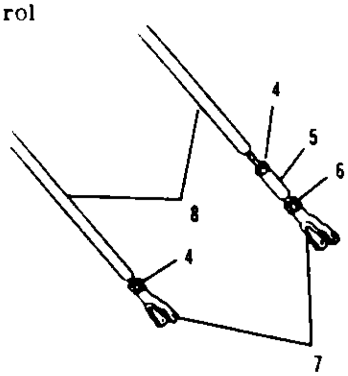
a. Remove all seats and safety belts except pilot's and copilot's.

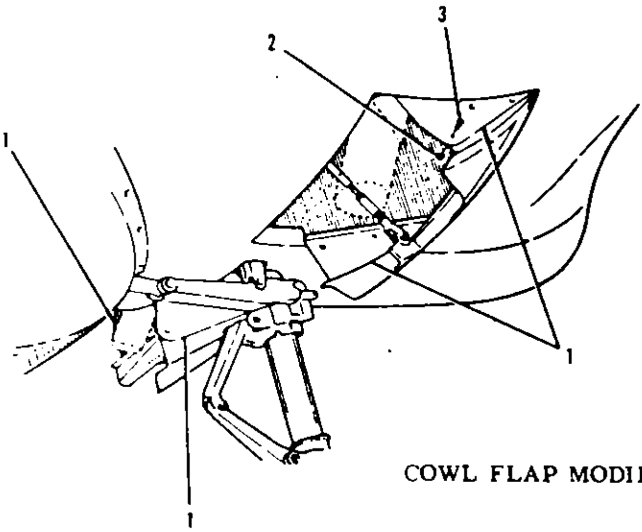
b. Move pilot's and copilot's seats forward to their limit of travel.

c. Attach belt assemblies to existing left forward and left aft seat attach brackets as shown in detail "G."



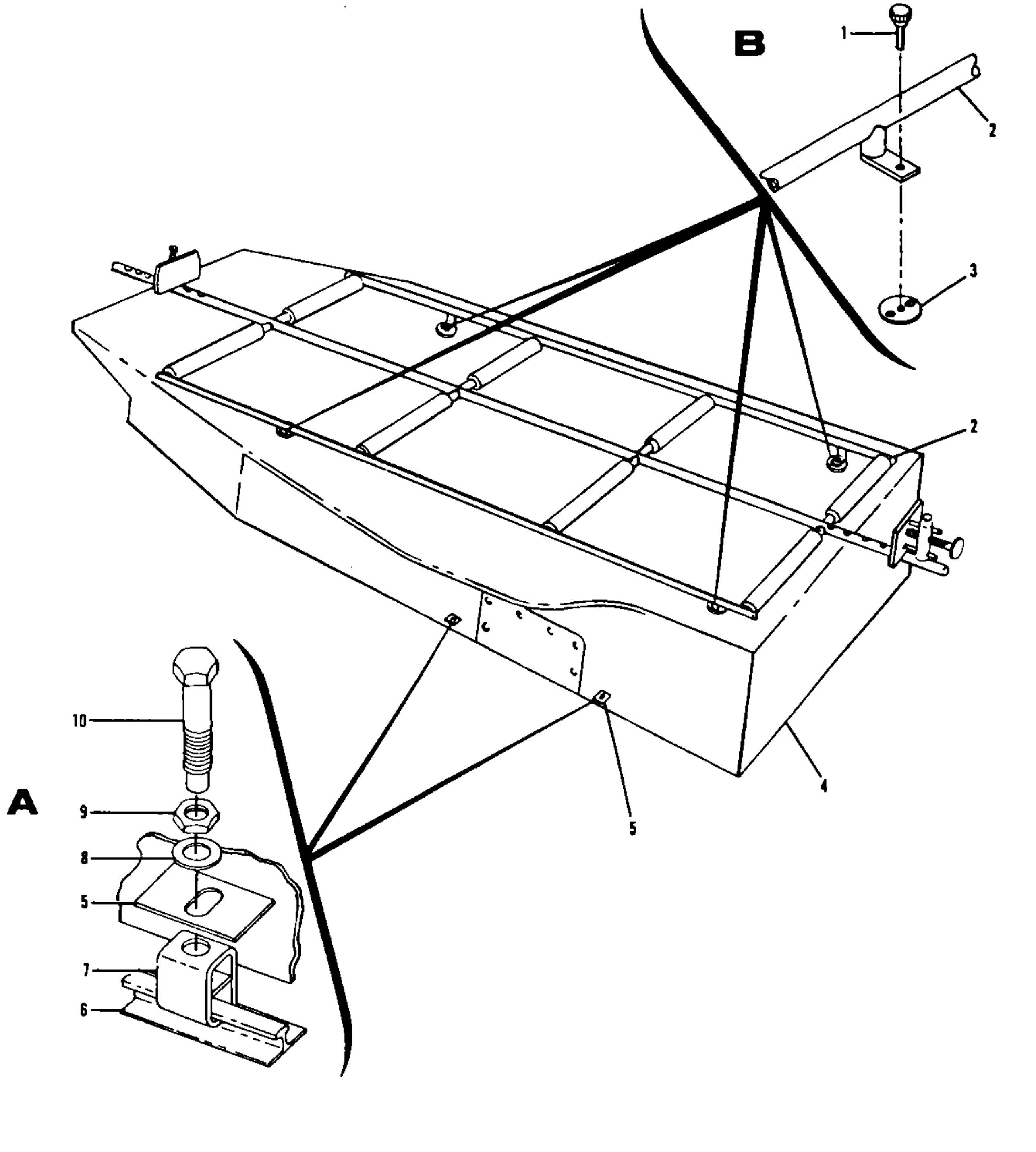
1. Baffles
2. Nut
3. Screw
4. Jam Nut
5. Link
6. Jam Nut
7. Clevis
8. Control





COWL FLAP MODIFICATION

Figure 3-13. Cargo Pack Installation



1. Thumb Screw
2. Rack Assembly
3. Pad
4. Platform
5. Bracket
6. Seat Rail
7. Weld Assembly
8. Washer
9. Nut
10. Bolt

Figure 3-14. Casket Carrier Installation (Sheet 1 of 2)

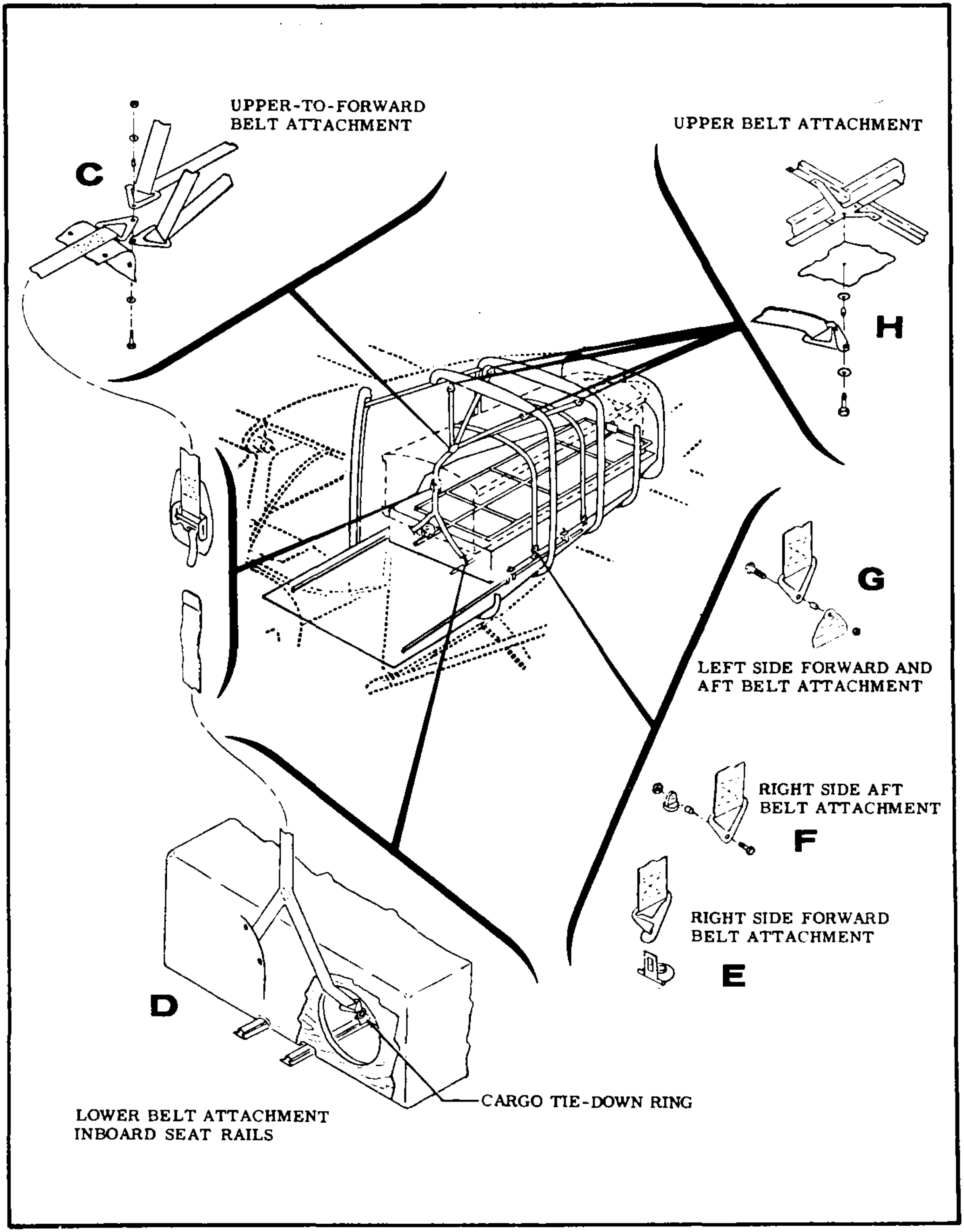


Figure 3-14. Casket Carrier Installation (Sheet 2 of 2)

d. Place platform in cabin and butt aft end of platform against step.
e. Secure both sides of platform to outboard seat rails as shown in detail "A."
f. Install rack on platform as shown in detail "B."
g. Install cargo tie-down rings on inboard seat rails and attach lower belt as shown in detail "D."

NOTE

The cargo tie-down ring on left inboard seat rail is tightened down against seat rail, since no seat adjusting hole exists in rail at this point. The cargo tie-down ring on right inboard seat rail will engage an existing seat adjustment hole.

h. Attach upper belt at four points as shown in detail "H."
i. Attach upper belt to forward belt as shown in detail "C."
j. Attach right forward and right aft belts to existing seat belt attach points as shown in details "E" and "F."
k. Remove pilot's seat back by removing quick-release pins.
l. Load casket, adjusting end plates on rack according to casket length. Tighten forward end plate snugly.
m. Tighten all belts securely and recheck all tie-down attachments.
n. Reinstall pilot's seat back.

3-64. REMOVAL. After casket has been removed, platform, rack, and belts may be removed by reversing installation procedure.

SHOP NOTES:

SECTION 4

WINGS AND EMPENNAGE

TABLE OF CONTENTS Page

4-1. WINGS AND EMPENNAGE.

4-2. WINGS. (See figure 4-1.)

4-3. DESCRIPTION. Each all-metal wing panel is a semicantilever, semimonocoque type, with two main spars and suitable ribs for attachment of the skin. Skin panels are riveted to ribs, spars and stringers to complete the structure. Beginning with U20601701 the leading edge skins are bonded. An all-metal, balanced aileron, a flap, and a detachable wing tip are mounted on each wing assembly. A single rubberized bladder-type fuel cell is mounted between the wing spars at the inboard end of each wing and the leading edge of the left wing, thru 1971 models, has landing and taxi lights installed. Beginning with 1972 models the landing and taxi lights are mounted in the lower engine nose cowl. Navigation/strobe lights are mounted at each contoured wing tip.

4-4. REMOVAL. Wing panel removal is most easily accomplished if four men are available to handle the wing. Otherwise, the wing should be supported with a sling or maintenance stand when the fastenings are loosened.

a. Remove wing gap fairings and screws securing cabin top skin to the wing top skin.
b. Remove all wing inspection plates.
c. Drain fuel from cell of wing being removed.
d. Disconnect:
   1. Electrical wires at wing root disconnects.
   2. Fuel lines at wing root. (Refer to precautions outlined in paragraph 13-3.)
   3. Pitot line (left wing only) at wing root.
   4. Cabin ventilator hose at wing root.
e. Slack off tension on flap and aileron cables by loosening turnbuckles, then disconnect cables at flap and aileron bellcranks.

NOTE

To ease rerouting the cables, a guide wire may be attached to each cable before it is pulled free of the wing. Cable may then be disconnected from wire. Leave guide wire routed through the wing; it may be attached again to the cable during reinstallation and used to pull the cable into place.

f. Support wing at outboard end and disconnect strut at wing fitting. Tie strut up with wire to prevent it from swinging down and straining strut-to-fuselage fittings. If the fuselage fitting projects from the fuselage and is covered by the strut fairing, loosen the fairing and slide it up the strut; the strut may then be lowered without damage.

NOTE

It is recommended that flap be secured in streamlined position with tape during wing removal to prevent damage, since flap will swing freely.

g. Mark position of wing attachment eccentric bushings (refer to figure 4-1); these bushings are used to rig out "wing-heaviness."
h. Remove nuts, washers, bushings and bolts attaching wing spars to fuselage fittings.

NOTE

It may be necessary to rock the wing slightly while pulling attaching bolts, or to use a long drift punch to drive out attaching bolts.

i. Remove wing and lay on padded stand.

4-5. REPAIR. A damaged wing panel may be repaired in accordance with instructions outlined in Section 18. Extensive repairs of wing skin or structure are best accomplished using the wing repair jig, which may be obtained from Cessna. The wing jig serves not only as a holding fixture, making work on the wing easier, but also assures absolute alignment of the repaired wing.

4-6. INSTALLATION.

a. Hold wing in position and install bolts, bushings, washers and nuts attaching wing spars to fuselage fittings. Ensure eccentric bushings are positioned as marked when removed.

b. Install bolts, spacers and nuts to secure upper and lower ends of wing strut to wing and fuselage fittings.

c. Route flap and aileron cables, using guide wires. (See note in paragraph 4-4.)

d. Connect:

1. Electrical wires at wing root disconnects.
2. Fuel lines at wing root. (Refer to precautions outlined in paragraph 13-3.)
3. Pitot line (if left wing is being installed.)
4. Wing leveler vacuum line, if installed, at wing root.
5. Ventilator hose at wing root.

e. Rig aileron system (Section 6).

f. Rig flap system (Section 7).

g. Refuel fuel cell and check for leaks.

h. Check operation of navigation/strobe also landing and taxi lights thru 1971 models.

i. Check operation of fuel quantity indicator.

j. Install wing gap fairings.

NOTE

Be sure to insert soundproofing panel in wing gap, if such a panel was installed originally, before replacing wing root fairings.

k. Install all wing inspection plates, interior panels and upholstery.

l. Test operate flap and aileron systems.

4-7. ADJUSTMENT (CORRECTING "WING-HEAVY" CONDITION). If considerable control wheel pressure is required to keep the wings level in normal flight, a "wing-heavy" condition exists.

a. Remove wing fairing strip on "wing-heavy" side of aircraft.

b. (See figure 4-1.) Loosen nut (7) and rotate bushings (5) simultaneously until the bushings are positioned with the thick side of the eccentrics up. This will lower the trailing edge of the wing, and decrease "wing-heaviness" by increasing the angle-of-incidence of the wing.

CAUTION

Be sure to rotate the eccentric bushings simultaneously. Rotating them separately will destroy the alignment between the off-center bolt holes in the bushings, thus exerting a shearing force on the bolt, with possible damage to the hole in the wing spar.

c. Tighten nut and reinstall fairing strip.

d. Test-fly the aircraft. If the "wing-heavy" condition still exists, remove fairing strip on the "lighter" wing, loosen nut and rotate bushings simultaneously until the bushings are positioned with the thick side of the eccentric down. This will raise the trailing edge of the wing, thus increasing "wing heaviness" to balance heaviness in the opposite wing.

e. Tighten nut, install fairing strip and repeat flight test.

4-8. WING STRUTS. (See figure 4-2.)

4-9. DESCRIPTION. Each wing has a single lift strut which transmits a part of the wing load to the lower portion of the fuselage. The strut consists of a streamlined tube riveted to two end fittings for attachment at the fuselage and wing.

4-10. REMOVAL AND INSTALLATION.

a. Thru U20602501 remove screws from strut fairings and slide fairing along strut. Beginning with U20602501 the upper strut fairing is split along the aft edge and attached together with screws for easy removal.

b. Remove fuselage and wing inspection plates at strut junction points.

c. Support wing securely, then remove nut and bolt securing strut to fuselage.

d. Remove nut, bolt and spacer used to attach strut to wing, then remove strut from aircraft.

e. Reverse preceding steps to install strut.

4-11. REPAIR. Wing strut repair is limited to replacement of tie-downs and attaching parts. A badly dented, cracked or deformed wing strut must be replaced.

4-12. VERTICAL FIN. (See figure 4-3.)

4-13. DESCRIPTION. The fin is primarily of metal construction, consisting of ribs and spars covered with skin. Fin tips are of glass fiber of ABS construction. Hinge brackets at the rear spar attach the rudder.

4-14. REMOVAL AND INSTALLATION. A fin may be removed without first removing the rudder. However, for access and ease of handling, the rudder may be removed by following procedures outlined in Section 10.

a. Remove fairings on either side of fin.

b. Disconnect flashing beacon lead, tail navigation light lead, antennas and antenna leads, and rudder cables, if rudder has not been removed.

c. Remove screws attaching dorsal to fuselage.

d. Remove bolts attaching fin front and rear spars to fuselage, and remove vertical fin.

e. Install fin by reversing preceding steps. Be sure to check and reset rudder and elevator travel if any stop bolts were removed or settings disturbed.

4-15. REPAIR. Fin repair should be accomplished in accordance with applicable instructions outlined in Section 18.

4-16. HORIZONTAL STABILIZER (See figure 4-4.)

4-17. DESCRIPTION. The horizontal stabilizer is primarily of metal construction, consisting of ribs and a front and rear spar which extend throughout the full spars and ribs. Stabilizer tips are of ABS construction. The elevator tab actuator screw is contained within the horizontal stabilizer assembly, and is supported by a bracket riveted to the rear spar. The underside of the stabilizer contains a covered opening which provides access to the elevator tab actuator screw. Hinge brackets at the rear spar support the elevators.

4-18. REMOVAL AND INSTALLATION.

a. Remove elevators and rudder in accordance with procedures outlined in Sections 8 and 10.

b. Remove vertical fin in accordance with procedures outlined in paragraph 4-14.

c. Disconnect elevator trim control cables at clevis and turnbuckle inside tailcone, remove pulleys which route aft cables into horizontal stabilizer, and pull cables out of tailcone.

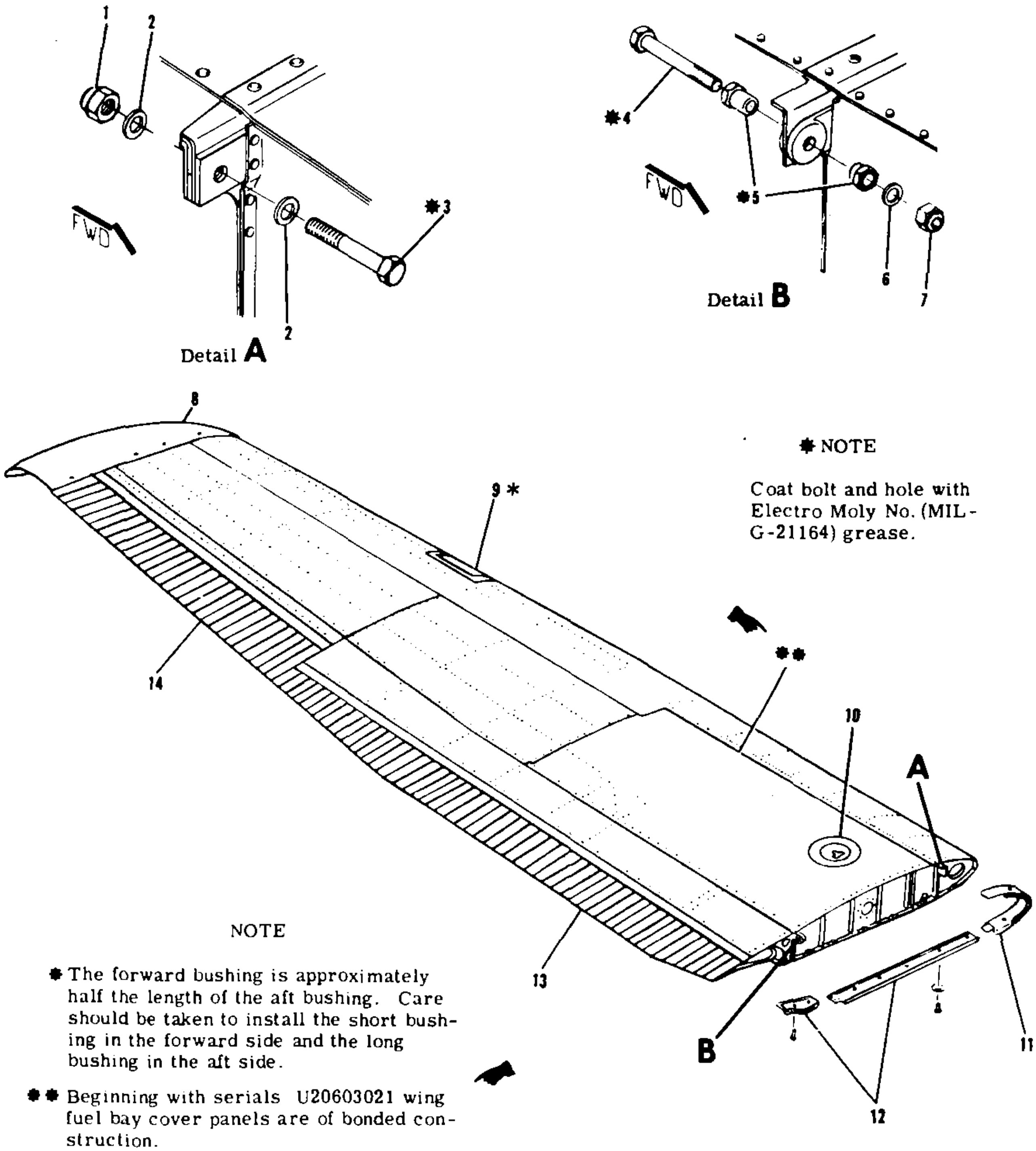
d. Remove bolts securing horizontal stabilizer to fuselage.

e. Remove horizontal stabilizer.

f. Install horizontal stabilizer by reversing preceding steps. Rig control systems as necessary. Check operation of tail navigation light and flashing beacon.

4-19. REPAIR. Horizontal stabilizer repair should be accomplished in accordance with applicable procedures outlined in Section 18.

SHOP NOTES:



✱ NOTE

Coat bolt and hole with Electro Moly No. (MIL-G-21164) grease.

NOTE

✱ The forward bushing is approximately half the length of the aft bushing. Care should be taken to install the short bushing in the forward side and the long bushing in the aft side.

✱✱ Beginning with serials U20603021 wing fuel bay cover panels are of bonded construction.

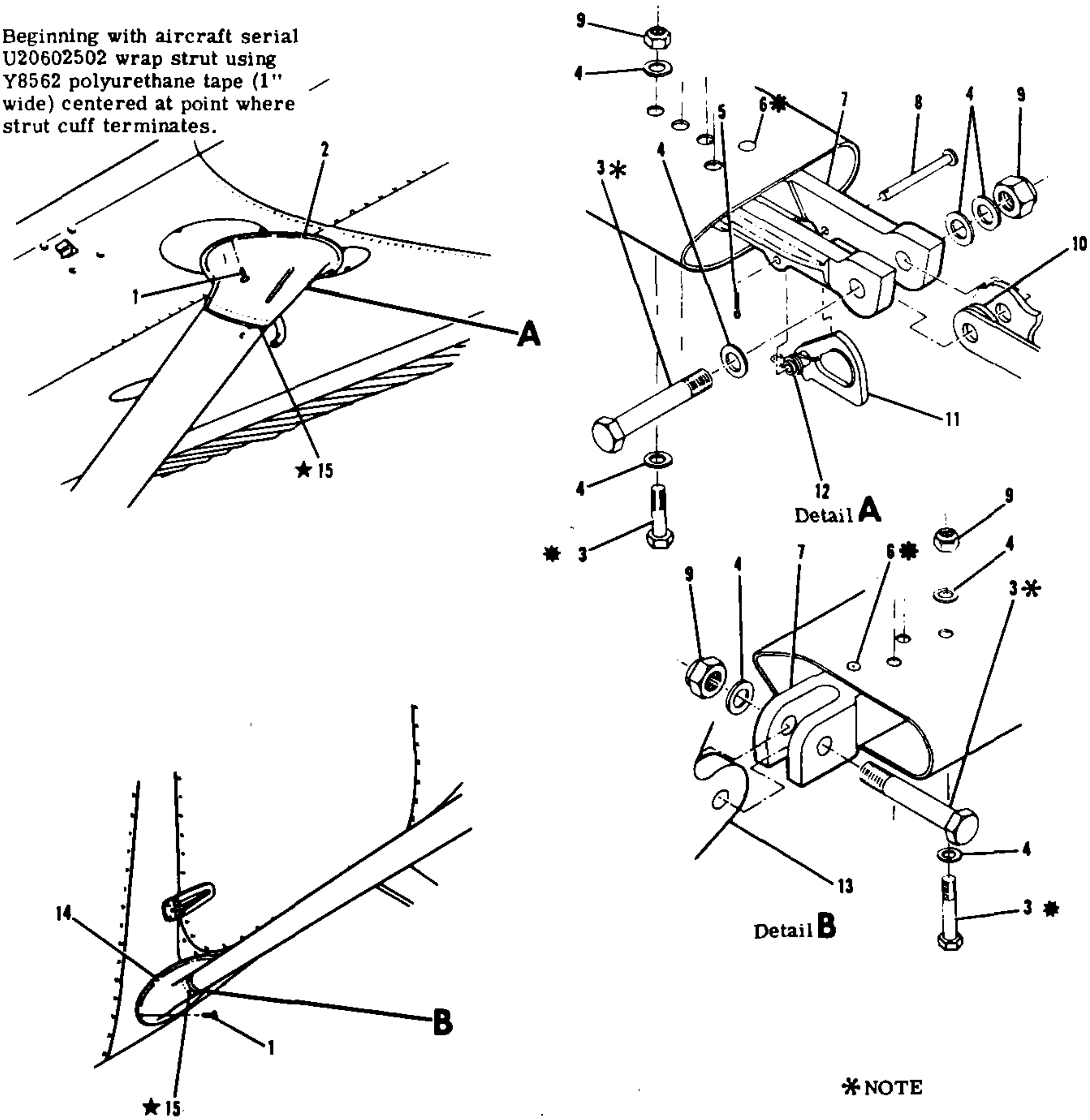
* THRU AIRCRAFT SERIAL U20601700

1. Nut
2. Washer
3. Bolt
4. Bolt
5. Bushing
6. Washer
7. Nut
8. Tip Assembly
9. Landing and Taxi Light
10. Fuel Filler Cap
11. Fillet
12. Fairing
13. Flap
14. Aileron

Figure 4-1. Wing Installation

★ NOTE

Beginning with aircraft serial U20602502 wrap strut using Y8562 polyurethane tape (1" wide) centered at point where strut cuff terminates.



✱ THRU U20601700

✱ BEGINNING WITH U20601701

✱NOTE

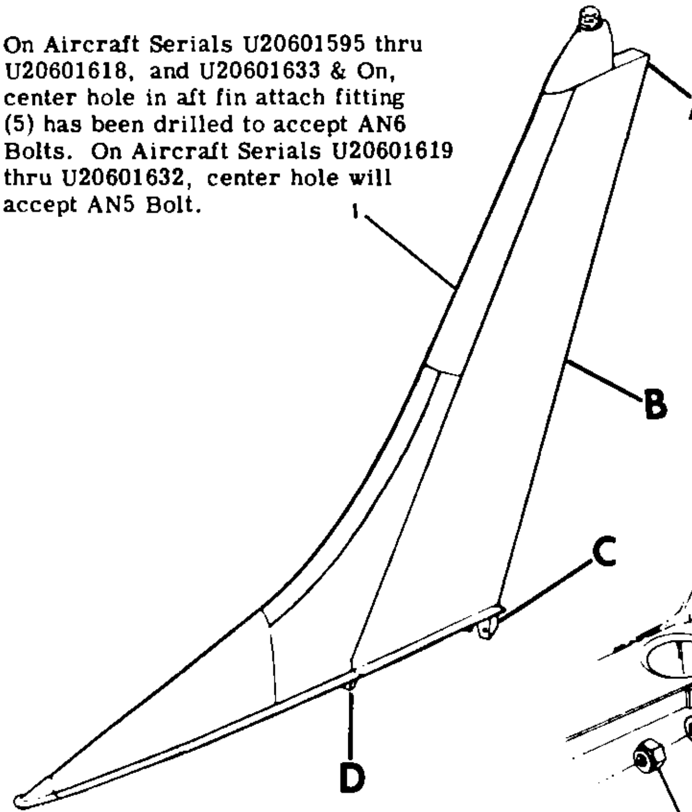
Coat bolt and hole with Electro Moly No. (MIL-G-21164) grease.

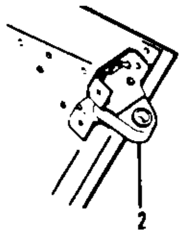
1. Screw
2. Upper Fairing
3. Bolt
4. Washer
5. Cotter Pin
6. Rivet
7. Strut Fitting
8. Pin
9. Nut
10. Spacer
11. Mooring Ring
12. Spring
13. Fuselage Fitting
14. Lower Fairing
15. Tape

Figure 4-2. Wing Strut Installation

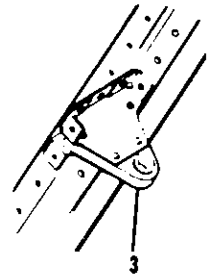
NOTE

On Aircraft Serials U20601595 thru U20601618, and U20601633 & On, center hole in aft fin attach fitting (5) has been drilled to accept AN6 Bolts. On Aircraft Serials U20601619 thru U20601632, center hole will accept AN5 Bolt.

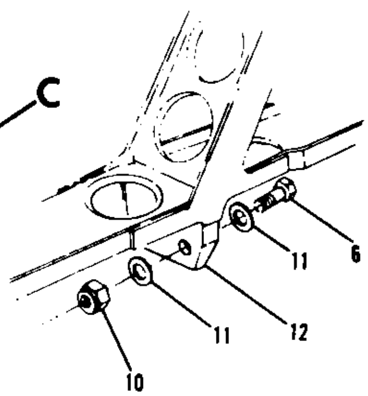




Detail A

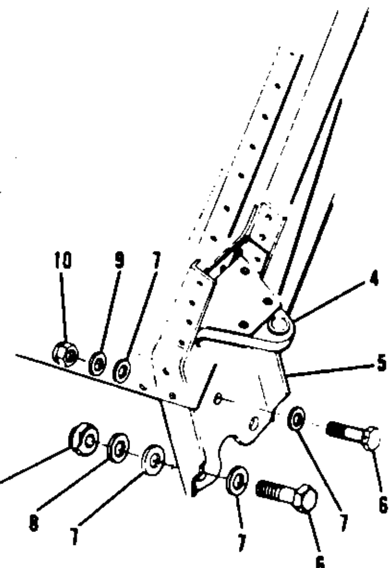


Detail B



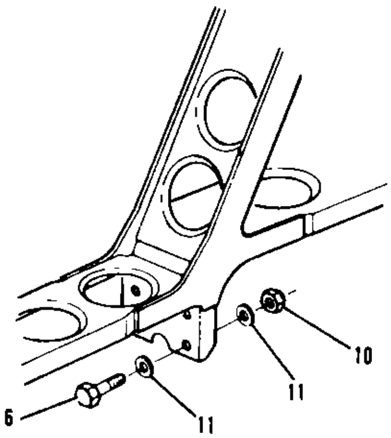
THRU U20601905

Detail D



* THRU U20601905

Detail C

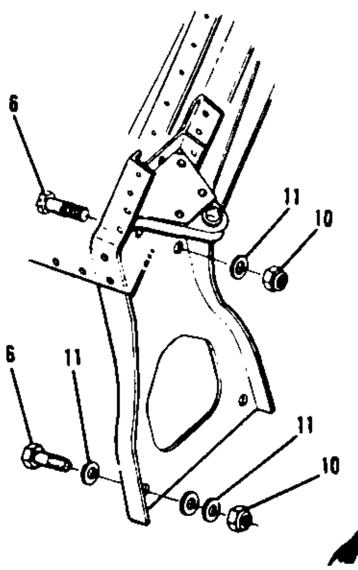


BEGINNING WITH U20601906

Detail D

*THRU AIRCRAFT SERIAL P20600648 and U20601587 when not modified per Single-engine Service Letter SE71-29, Dated October 15, 1971, use washers (7) and (8) on rear fin fitting. Use washers (7), (8) and (9) when modified by installation of new bulkhead, and all Service Parts. Use washers (7) when modified by reaming of bolt holes.

AIRCRAFT SERIALS U20601588 THRU U20601904, use washers (7), (8) and (9).



BEGINNING WITH U20601906

Detail C

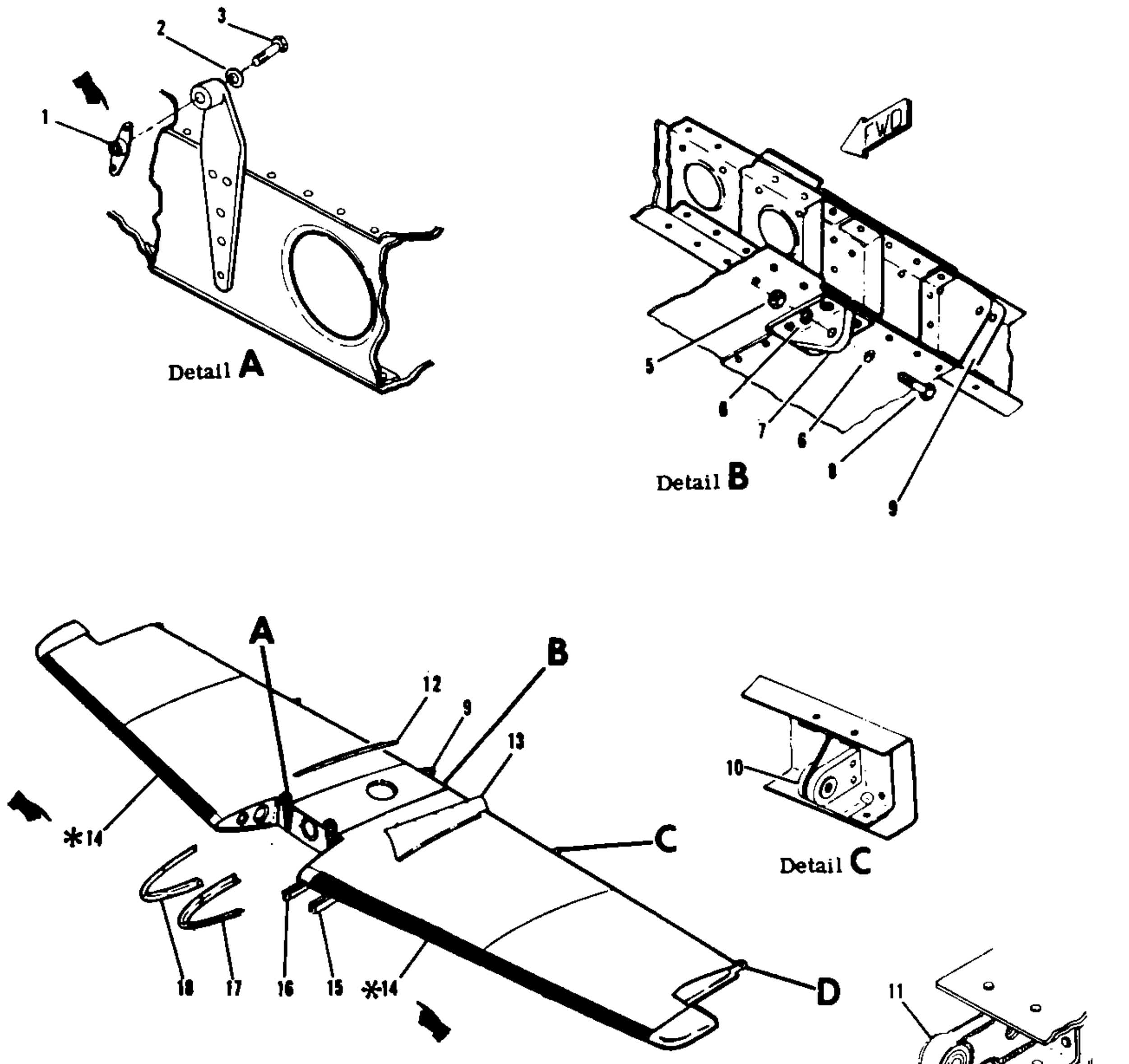
1. Fin Assembly
2. Upper Rudder Hinge
3. Center Rudder Hinge
4. Lower Rudder Hinge
5. Aft Attach Fitting
6. Bolt
7. Washer
8. Washer
9. Washer
10. Nut
11. Washer
12. Fwd Attach Fitting

TORQUE AN5 BOLTS TO 140-225 LB IN.
TORQUE AN6 BOLTS TO 190-390 LB IN.
TORQUE AN7 BOLTS TO 500-840 LB IN.

NOTE

Beginning with 1962 Models, Cessna Single-engine Service Letter SE72-3 dated, February 11, 1972 should be complied with.

Figure 4-3. Vertical Fin Installation



*NOTE

An abrasion boot kit may be obtained from the Cessna Service Parts Center.

1. Nutplate
2. Washer
3. Bolt
4. Bracket
5. Nut
6. Washer
7. Bracket
8. Bolt
9. Elevator Pylon Bracket
10. Elevator Inboard Hinge
11. Elevator Outboard Hinge
12. Upper Right Fairing
13. Upper Left Fairing
14. Abrasion Boot
15. Lower Left Moulding
16. Lower Right Moulding
17. Forward Left Fairing
18. Forward Right Fairing

Figure 4-4. Horizontal Stabilizer

SECTION 5

LANDING GEAR AND BRAKES

TABLE OF CONTENTS

5-1. LANDING GEAR.

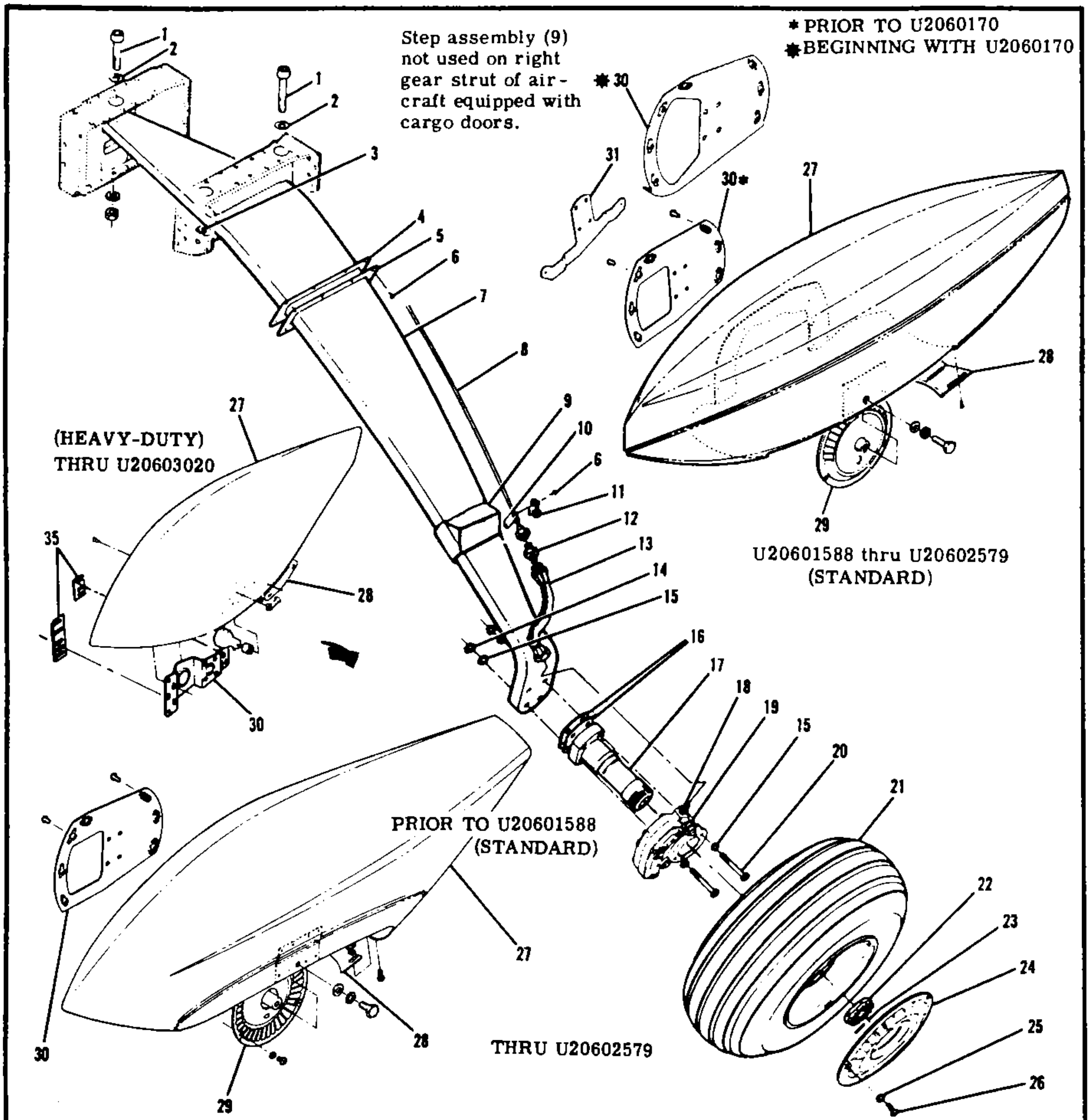
5-2. DESCRIPTION. These aircraft are equipped with non-retractable, tricycle landing gear, utilizing flat spring-steel main gear struts. Disc-type brakes and tube-type tires are installed on the axle at the lower end of the strut. Speed fairings or heavy-duty wheels may be installed on some aircraft. The nose gear is a combination of a conventional air/oil (oleo) strut and fork, incorporating a shimmy dampener. The nose wheel is steerable with the rudder pedals up to a maximum pedal deflection, after which it becomes free-swiveling up to a maximum travel right or left of center. Through the use of the brakes, the aircraft can be pivoted around the outer wing strut fitting. A speed fairing or a heavy-duty shock strut and wheel may be installed on some aircraft.

5-3. MAIN LANDING GEAR.

5-4. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
AIRCRAFT LEANS TO ONE SIDE.	Incorrect tire inflation.	Inflate to correct pressure.
	Landing gear attaching parts not tight.	Tighten loose parts; replace defective parts.
	Sprung landing gear spring.	Replace spring.
	Bent axle.	Replace axle.
	Different quantity of fuel in wing cells.	Refuel aircraft.
	Structural damage to landing gear bulkhead components.	Replace damaged parts.
UNEVEN OR EXCESSIVE TIRE WEAR.	Incorrect tire inflation.	Inflate to correct pressure.
	Wheels out of alignment.	Align wheels. See figure 5-2.
	Wheels out of balance.	Refer to paragraph 5-16.
	Sprung landing gear spring.	Replace spring.
	Bent axle.	Replace axle.
	Dragging brake.	Refer to paragraph 5-48.
	Wheel bearings not adjusted properly.	Tighten axle nut properly.
WHEEL BOUNCE EVIDENT EVEN ON SMOOTH SURFACE.	Out of balance condition.	Correct in accordance with 5-16.

SHOP NOTES:



1. Bolt
2. Countersunk Washer
3. Channel
4. Gasket
5. Fairing
6. Screw
7. Main Gear Strut
8. Brake Line
9. Step
10. Clip
11. Clamp
12. Union
13. Hose
14. Nut
15. Washer
16. Alignment Shims
17. Axle
18. Nipple
19. Brake Assembly
20. Bolt
21. Wheel Assembly
22. Nut
23. Cotter Pin
24. Hub Cap
25. Washer
26. Screw
27. Speed Fairing
28. Scraper
29. Hub Cap
30. Plate Assembly
31. Stiffener
32. Doubler
33. Brake Fairing
34. Deleted
35. Shim

Figure 5-1. Main Landing Gear (Sheet 1 of 2)

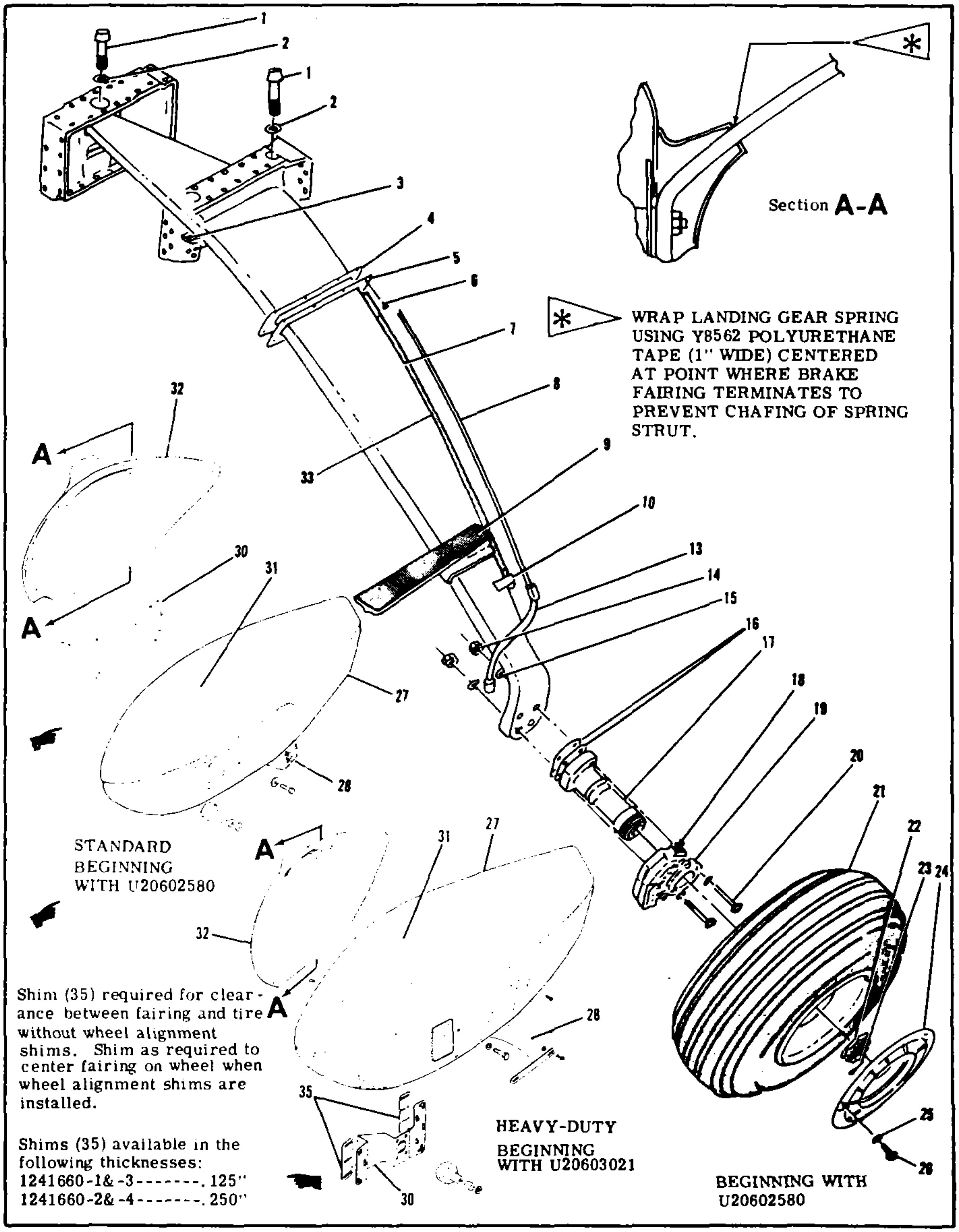


Figure 5-1. Main Landing Gear (Sheet 2 of 2)

5-5. REMOVAL. (Refer to figure 5-1.)

a. Remove floorboard access covers over spring strut being removed.
b. Hoist or jack aircraft as outlined in Section 2.
c. Remove brake bleeder screw and drain hydraulic brake fluid from gear being removed.
d. Disconnect and cap or plug brake line at bulkhead fitting in fuselage,
e. Remove screws attaching landing gear strut fairing and gasket to fuselage.
f. Remove inboard bolt, loosen two outboard bolts and work strut out to remove.

NOTE: Use care when removing strut to prevent damage to hydraulic brake line. Retain any shims under inboard bolt.

5-5A. CORROSION CONTROL ON LANDING GEAR SPRINGS.

a. General
   (1) The main landing gear springs are made from high strength steel that is shot peened on the lower surface to increase the fatigue life of the part.
   (2) The shot peened layer is between 0.010 and 0.020 inch thick.
   (3) If the protective layer of paint is chipped, scratched, or worn away, the steel may corrode (rust).

   NOTE: Corrosion pits that extend past the shot peen layer of the gear spring will cause a significant decrease in the fatigue life of the spring.

   (4) Operation from unimproved surfaces increases the possibility of damage.
b. Corrosion removal and repair.

WARNING: Do not use chemical rust removers or paint strippers on landing gear springs. High-strength steel parts are very susceptible to hydrogen embrittlement. Acidic solutions, such as rust removers and paint strippers, can cause hydrogen embrittlement. Hydrogen embrittlement is an undetectable, time-delayed process. Since the process is time delayed, failure can occur after the part is returned to service.

   (1) Examine for signs of corrosion (red rust) if damage to the paint finish of the landing gear spring is found.
   (2) Carefully remove any rust by light sanding.
      (a) The sanding must blend the damage into the adjacent area in an approximate 20:1 ratio.
      EXAMPLE: An 0.005-inch deep pit. The pit must be blended to a 0.10-inch radius or 0.20-inch diameter.
      (b) Make sure the last sanding marks are along an inboard-to-outboard direction, or along the long dimension of the spring.
   (3) After the sanding is complete, measure the depth of the removed material from the damaged area.

   NOTE: The maximum combined depth of removed material to the top and bottom or leading and trailing edge is not to be more than 0.063 inch at any two opposite points on the gear spring. This measurement limitation includes areas that have previously been damaged and repaired.

      (a) Make sure the depth of the damage area on the bottom of the gear spring is not more than 0.012 inch deep.
         1 If the damage is deeper than 0.012 inch deep and less than 0.063 inch deep, replace or shot peen the gear spring. The gear spring must be removed and sent to an approved facility to be shot peened.
            a The shot peen specification is to be Almen intensity of 0.012 to 0.016 with 330 steel shot.

(b) Make sure the depth of any damage on the leading edge, trailing edge, or top of the gear spring is not more than 0.063 inch deep.

1 If the damage is deeper than 0.063 inch deep, replace the gear spring.

(4) Touch-up paint as required.

NOTE: Additional information regarding corrosion control can be found in FAA Documents AC-43-4, Chapter 6, or AC43.13-1B Chapter 6.

c. Axle bolt hole corrosion.

(1) Operation of an airplane on skis increases the loads on the lower part of the gear spring because of the unsymmetrical and twisting loads.

(a) The increased loads have produced spring fractures that originate from pits in the axle attach holes.

1 Catastrophic failures can occur from fatigue cracks as small as 0.003 to 0.010-inch long that originated at pits.

NOTE: Although operation on skis causes more loads, the criteria apply to all airplanes.

(2) There is no maximum damage depth for pits that develop in the axle bolt holes. If pits or corrosion is found, ream to remove it, subject to the following limitations:

(a) Remove the minimum material necessary to repair the damage.

(b) Make sure the diameter of the axle attachment holes are no more than 0.383 inch for 3/8- inch bolts.

(c) Make sure the diameter of the axle attachment holes are no more than 0.321 inch for 5/16- inch bolts.

(d) If reaming to the maximum dimension does not remove all signs of corrosion, discard the landing gear spring.

5-6. INSTALLATION. (Refer to figure 5-1.)

To install the main landing gear, reverse the procedures outlined in paragraph 5-5. Special attention should be paid to the following:

a. When installing main landing gear strut, the outboard channel attaching bolts should be tightened to a torque value of 600 - 750 pound-inches.

NOTE: The convex surface of the outboard channel is installed against the lower side of the strut, When channel attaching bolts are torqued to 600 - 750 pound-inches, the channel should have a minimum of 80 percent contact with the lower side of the strut.

b. After installation, fill and bleed affected brake system in accordance with paragraph 5-60.

5-6A. REMOVAL AND INSTALLATION OF MAIN LANDING GEAR BRAKE FAIRINGS. (Refer to figure 5-1, sheet 2.)

a. Remove screws from perimeter of fairing.
b. Remove screws from nutplates holding fairing together.
c. Flex brake fairing over landing gear spring strut to remove.
d. Reverse preceding steps to install brake fairing.

5-7. REMOVAL AND INSTALLATION OF STANDARD MAIN WHEEL SPEED FAIRINGS.

Main wheel speed fairings are removed by removing the screws attaching the inboard side of the fairing to the adapter plate, and removing the bolt securing the outboard side to the axle nut. Installation is the reverse of removal. Refer to Service Kit SK182- 12 for repair of speed fairings installed on models prior to 1971. Standard main wheel speed fairing scraper-to-tire clearance should be adjusted for a minimum clearance of 0.25- inch to a maximum clearance of 0.38-inch. Optional heavy-duty main wheel scraper-to-tire clearance should be adjusted to 0.40 to 0.60-inch. Elongated holes in the scraper are provided so the scraper may be adjusted.

CAUTION: Always check scraper-to-tire clearance after installing speed fairing, whenever a tire has been changed and whenever scraper adjustment has been disturbed. Wipe fuel and oil from the speed fairings to prevent stains and deterioration. If the aircraft is flown from surfaces with mud, snow or ice, fairings should be checked to make sure there is no accumulation which could prevent normal wheel rotation.

5-7A. MAIN WHEEL AND TIRE ASSEMBLY.

5-7B. DESCRIPTION.
The aircraft may be equipped with either Cleveland or McCauley wheel and tire assemblies. Separate disassembly, inspection and reassembly instructions are provided for each type. Basic differences of the two types are discussed in paragraph 5-11D, and thru-bolt nut and capscrew torque valves are listed in figure 5-11A.

CAUTION: Use of recapped tires is not recommended. However, if recapped tires are used on the aircraft, make sure there is sufficient clearance between tire and wheel fairings, if fairings are installed. Ensure that speed fairing scraper-to-tire clearance is adjusted to the values specified in paragraph 5-7.

5-8. REMOVAL OF MAIN WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-11.)

NOTE: It is not necessary to remove main wheels to reline brakes or remove brake parts other than the brake disc or torque plate.

a. Using universal jack point, jack wheel as outlined in Section 2.
b. Remove speed fairing as outlined in paragraph 5-7.
c. Remove cotter pin and axle nut after removing hub cap.
d. Remove bolts and washers attaching back plate; remove back plate.
e. Pull wheel from axle.

5-9. DISASSEMBLY OF CLEVELAND MAIN WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-11.)

a. Deflate tire and break tire beads loose.

CAUTION: Avoid damaging wheel flanges when breaking tire beads loose. A scratch, gouge or nick may cause wheel failure.

b. Remove thru-bolts and separate wheel halves, removing tire, tube and brake disc.
c. Remove grease seal rings, felts and bearing cones from wheel halves.

(This page intentionally left blank.)

NOTE

Bearing cups are a press-fit in the wheel halves and should not be removed unless replacement is necessary to remove bearing cups, heat wheel half in boiling water for 15 minutes. Using an arbor press, if available, press out bearing cup and press in new cup while wheel is still hot.

5-10. INSPECTION AND REPAIR OF CLEVELAND MAIN WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-11.)

a. Clean all metal parts and grease seal felts in cleaning solvent and dry thoroughly.

b. Inspect wheel halves for cracks. Cracked wheel halves shall be discarded and new parts used. Sand out small nicks, gouges and corroded areas. When the protective coating has been removed, the area should be cleaned thoroughly, primed with zinc chromate and painted with aluminum lacquer.

c. If excessively warped or scored, or worn to a thickness of .340-inch, brake disc should be replaced with a new part. Sand smooth small nicks and scratches.

d. Carefully inspect bearing cones and cups for damage and discoloration. After cleaning, pack bearing cones with clean aircraft wheel bearing grease (Section 2) before installing in the wheel.

5-11. REASSEMBLY OF CLEVELAND MAIN WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-11.)

a. Insert thru-bolts through brake disc and position in the inner wheel half, using the bolts to guide disc. Assure that the disc is bottomed in wheel half.

b. Position the tire and tube with the inflation valve through hole in outboard wheel half. Place the inner wheel half in position. Apply a light force to bring wheel halves together. Maintaining the light force, assemble a washer and nut on one thru-bolt and tighten snugly. Assemble the remaining nuts and washers on thru-bolts and torque to value specified in figure 5-11A.

CAUTION

Uneven or improper torque of thru-bolt nuts may cause failure of bolts, with resultant wheel failure.

c. Clean and repack bearing cones with clean aircraft wheel bearing grease (Section 2).

d. Assemble the bearing cones, grease seal felts, and rings into the wheel halves.

e. *Inflate tire to seat tire beads, then adjust to correct pressure.*

5-11A. DISASSEMBLY OF McCAULEY MAIN WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-11.)

a. Remove screws attaching hub cap; remove hub cap.

WARNING

Injury can result from attempting to remove wheel flanges with the tire and tube inflated. Avoid damaging wheel flanges when breaking tire beads loose. A scratch, gouge or nick in wheel flanges could cause wheel failure.

b. Remove valve core and deflate tire and tube. Break tire beads loose from wheel flanges.

c. Remove cap screws.

d. Remove brake disc.

e. Separate wheel flanges from wheel hub. Retain spacers on each side of wheel hub.

f. Remove wheel hub from tire.

g. Remove retainer rings and remove grease seal retainers, grease seal felts and bearing cones.

NOTE

The bearing cups (races) are a press-fit in the wheel hub and should not be removed unless a new part is to be installed. To remove the bearing cup, heat wheel in boiling water for 30 minutes or in an oven to exceed 121°C (250°F). Using an arbor press, if available, press out the bearing cup and press in the new bearing cup while the wheel hub is still hot.

5-11B. INSPECTION AND REPAIR OF McCAULEY MAIN WHEEL AND TIRE ASSEMBLY. (Refer to figure 9-11.)

a. Clean all metal parts, grease seal felts and mylar spacers in cleaning solvent and dry thoroughly.

b. Inspect wheel flanges and wheel hub for cracks. Cracked wheel flanges or hub shall be discarded and new parts installed. Sand out smooth nicks, gouges and corroded areas. When the protective coating has been removed, the area should be cleaned thoroughly, primed with zinc chromate and painted with aluminum lacquer.

c. If excessively warped or scored, or worn to a thickness of 0.190-inch, brake disc should be replaced with a new part. Sand smooth small nicks and scratches.

d. Carefully inspect bearing cones and cups for damage and discoloration. After cleaning, pack bearing cones with clean aircraft wheel bearing grease (refer to Section 2) before installing in the wheel hub.

5-11C. REASSEMBLY OF McCAULEY WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-11.)

a. Place wheel hub in tire and tube with tube inflation stem in cutout of wheel hub.

b. Place spacer and wheel flange on inboard side of wheel hub (opposite of tube inflation stem), then place washer under head of each capscrew and start capscrews into wheel hub threads.

c. Place spacer and wheel flange on other side and align valve stem in cutout in wheel flange.

d. Place washer under head of each capscrew and start capscrews into hub threads.

CAUTION

Be sure that spacers and wheel flanges are seated on flange of wheel hub. Uneven or improper torque of capscrews can cause failure of capscrews, with resultant wheel failure.

e. Tighten capscrews evenly and torque to the value specified in figure 5-11A.
f. Clean and pack bearing cones with clean aircraft wheel bearing grease.
g. Assemble bearing cones, grease seal felts and retainers into wheel hub.
h. Inflate tire to seat tire beads, then adjust to correct tire pressure. Refer to Section 1 for correct tire pressure.

5-11D. MAIN AND NOSE WHEEL THRU-BOLT NUT OR CAPSCREW TORQUE VALUES. (Refer to figure 5-11A.) During assembly of the main and nose wheel, the thru-bolt nuts or capscrews should be tightened evenly and torqued to the values specified in figure 5-11A. To facilitate identification of wheel manufacturers, solid wheels are manufactured by Cleveland Aircraft Products Co., and webbed wheels are manufactured by McCauley Industrial Corporation. Cleveland wheels are also identified by having two wheel halves as shown in figure 5-4 and figure 5-11. McCauley wheels are identified by having two wheel flanges and a hub as shown in figure 5-4 and figure 5-11.

5-12. INSTALLATION OF MAIN WHEEL AND TIRE ASSEMBLY.
a. Place wheel on axle.
b. Install axle nut and tighten until a slight bearing drag is obvious when the wheel is rotated. Back off nut to nearest castellation and install cotter pin.
c. Place brake back plate in position and secure with bolts and washers. Safety wire the bolts.
d. Install speed fairing as outlined in paragraph 5-7.

CAUTION

Always check scraper-to-tire clearance after installing speed fairings, whenever a tire has been changed, and whenever scraper adjustment has been disturbed. The standard main wheel speed fairing scraper-to-tire clearance should be adjusted for a minimum clearance of 0.25 inch to a maximum clearance of 0.38 inch. The optional heavy-duty main wheel fairing scraper-to-tire clearance should be adjusted to 0.40 to 0.60 inch. Elongated holes in the scraper are provided so that scraper may be adjusted. Wipe fuel and oil from the speed fairings to prevent stains and deterio-

SHOP NOTES:

ration. If the aircraft is flown from surfaces with mud, snow, or ice, the fairings should be checked to make sure there is no accumulation which could prevent normal wheel rotation.

5-13. REMOVAL OF MAIN WHEEL AND AXLE.
a. Remove speed fairing in accordance with paragraph 5-7.
b. Remove wheel in accordance with paragraph 5-8.
c. Disconnect, drain, and plug the hydraulic brake line at the brake cylinder.
d. Remove four nuts and bolts securing axle and brake components to spring strut.

NOTE

When removing axle from spring strut, note number and position of the wheel alignment shims. Mark these shims or tape them together carefully so they can be reinstalled in exactly the same position to ensure that wheel alignment is not disturbed.

5-14. INSTALLATION OF MAIN WHEEL AND AXLE.
a. Secure axle and brake components to spring sturt, making sure that wheel alignment shims and speed fairing mounting plate are reinstalled in their original positions.
b. Install wheel assembly on axle in accordance with paragraph 5-12.
c. Connect hydraulic brake line to brake cylinder.
d. Fill and bleed affected brake system in accordance with paragraph 5-60.

5-15. MAIN WHEEL ALIGNMENT. Correct main wheel alignment is obtained through the use of tapered shims between the gear strut and the flange of the axle. See figure 5-2 for procedure to use in checking alignment. Wheel shims, and the correction imposed on the wheel by the various shims, are listed in the illustration.

NOTE

Failure to obtain acceptable wheel alignment through the use of the shims indicates a deformed main gear strut or strut attaching bulkhead out of alignment.

5-16. WHEEL BALANCING. Since uneven tire wear is usually the cause of wheel unbalance, replacing the tire probably will correct this condition. Tire and tube manufacturing tolerances permit a specified amount of static unbalance. The lightweight point of the tire is marked with a red dot on the tire sidewall and the heavyweight point of the tube is marked with a contrasting color line (usually near the valve stem). When installing a new tire, place these marks adjacent to each other. If a wheel becomes unbalanced during service, it may be statically rebalanced. Wheel balancing equipment is available from the Cessna Service Parts Center.

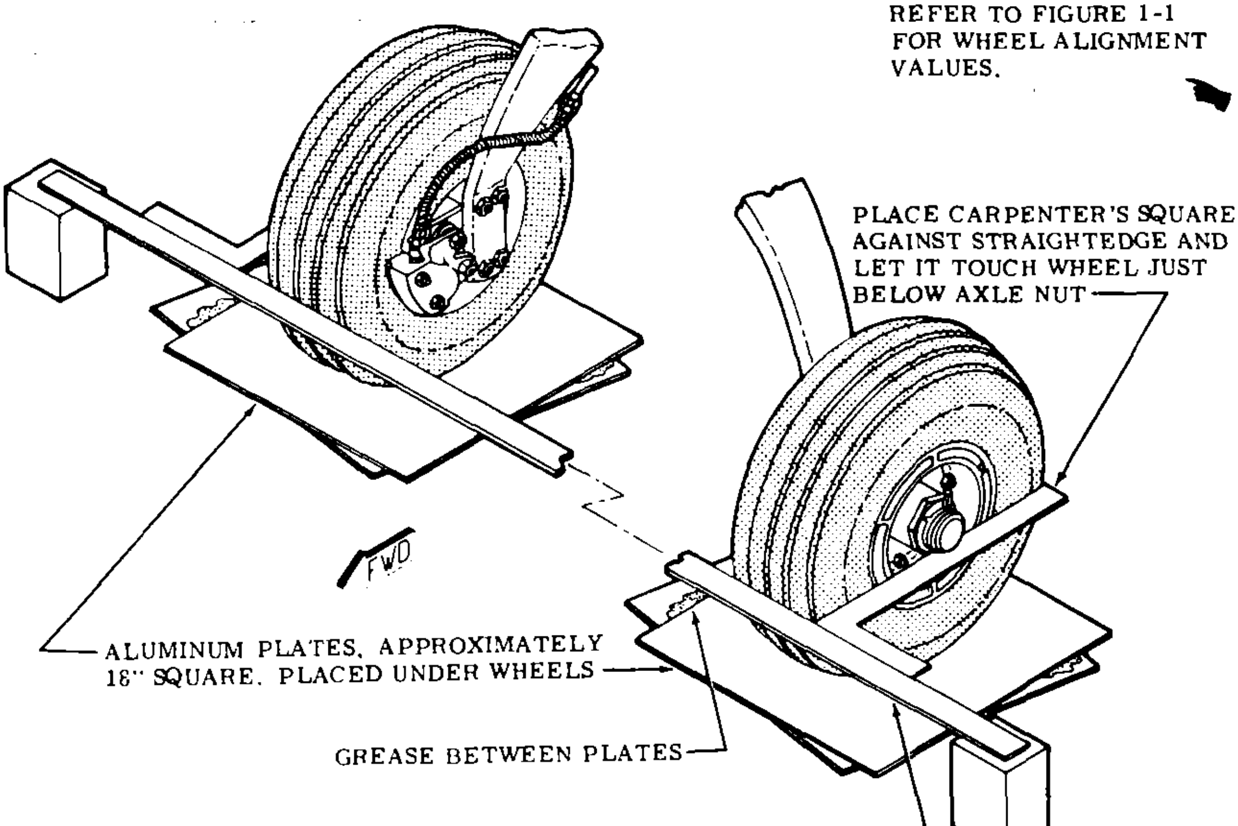
5-17. STEP BRACKET INSTALLATION.

NOTE

The step bracket is secured to the landing gear spring strut with EA9309, or a similar epoxy base adhesive.

a. Mark the position of the bracket so that the replacement bracket will be installed in approximately the same position.
b. Remove all traces of the original adhesive as well as any rust, paint, or scale with a wire brush and coarse sandpaper.
c. Leave surfaces slightly roughened or abraided, but deep scratches or nicks should be avoided.
d. Clean the surfaces to be bonded thoroughly. If a solvent is used, remove all traces of the solvent with a clean, dry cloth. It is important for the surfaces to be clean and dry.
e. Check the fit of the step bracket on the spring. A gap of not more than 1/32 inch is permissible.
f. Mix the adhesive carefully according to manufacturer's directions.
g. Spread a coat of adhesive on the surfaces to be bonded, and place step bracket in position on the spring. Tap the bracket upward to insure a tight fit.
h. Form a small fillet of the adhesive at all edges of the bonded surfaces. Remove excess adhesive with lacquer thinner.
i. Allow the adhesive to cure thoroughly according to manufacturer's recommendations before flexing the gear spring or applying loads to the step.
j. Repaint gear spring and step bracket after curing is complete.

5-17A. BRAKE LINE FAIRING REPLACEMENT. (Refer to figure 5-1, sheet 2.)
a. Disconnect brake line (13) at brake assembly (19) and drain fluid, or plug line to avoid draining.
b. Work brake line and split hose out of clip (10) and flex line (8) away from spring strut (7).
c. Remove all traces of original adhesive as well as any rust, paint or scale with a wire brush and sandpaper. Sand inner surface of fairing strip (33), running sandpaper marks lengthwise; leave primer on spring strut (7).
d. Thoroughly clean surfaces to be bonded. If a solvent is used, remove all traces of the solvent with a clean dry cloth. It is important for the surfaces to be clean and dry. Solvent should not be used on the vinyl fairing strip (33).
e. Leave surfaces slightly roughened or abraded. Deep scratches or nicks should be avoided.
f. Mix the adhesive (A-1186-B, B. F. Goodrich, Akron, Ohio 44318), according to manufacturer's directions.
g. Apply a thin uniform coat of adhesive to each bonding surface. Work life of A-1186-B is approximately 8 hours at 75°F. The material will cure in 24 hours at 75° or in 20 minutes at 200°F.
h. Press brake line (8) into groove of fairing strip (33) and raise line and strip to attach to aft side of spring strut (7) and fit into clip (10).
i. Immediately wrap fairing strip (33) and spring strut (7) with masking tape in five equally-spaced

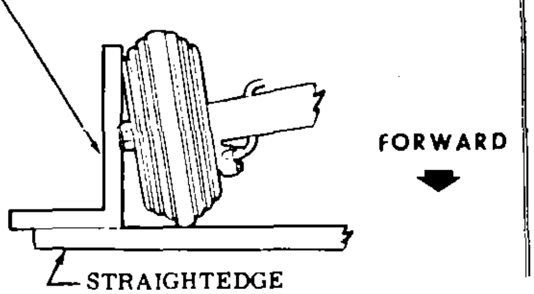


NOTE

Rock wheels before checking wheel alignment.

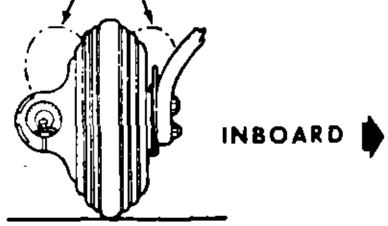
TOP VIEW OF TOE-IN CHECK

Measure toe-in at edges of wheel flange. Difference in measurements is toe-in for one wheel. (half of total toe-in.)



FRONT VIEW OF CAMBER CHECK

Measure camber by reading protractor level held vertically against outboard flanges of wheel.



NOTE

Setting toe-in and camber within these tolerances while the cabin and fuel tanks are empty will give approximately zero toe-in and zero camber at gross weight. Therefore, if normal operation is at less than gross weight and abnormal tire wear occurs, realign the wheels to attain the ideal setting for the load conditions. Refer to sheet 2 of this figure for shims availability and their usage. Always use the least number of shims possible to obtain the desired result.

Figure 5-2. Main Wheel Alignment (Sheet 1 of 2)

SHIM CHART					
SHIM PART NO.	POSITION OF THICKEST CORNER OR EDGE OF SHIM	CORRECTION IMPOSED ON WHEEL			
		TOE-IN	TOE-OUT	POS. CAMBER	NEG. CAMBER
0541157-1	AFT FWD	.06" ----	---- .06"	---- 0°3'	0°3' ----
0541157-2	UP DOWN	.006" ----	---- .006"	0°30' ----	---- 0°30'
1241061-1	UP & FWD UP & AFT DOWN & FWD DOWN & AFT	.008" .04" ---- ----	---- ---- .04" .008"	2°50' 2°49' ---- ----	---- ---- 2°49' 2°50'
0441139-5	UP & FWD UP & AFT DOWN & FWD DOWN & AFT	---- .12" ---- .11"	.11" ---- .12" ----	0°25' 0°11' ---- ----	---- ---- 0°11' 0°25'
0441139-6	UP & FWD UP & AFT DOWN & FWD DOWN & AFT	---- .24" ---- .22"	.22" ---- .24" ----	0°50' 0°22' ---- ----	---- ---- 0°22' 0°50'

SHIM NO.	1241061-1	0441139-6	0441139-5	0541157-2	0541157-1
1241061-1	0	0	0	0	0
0441139-6	0	0	0	1	1
0441139-5	0	0	1	1	2
0541157-2	0	1	1	2	2
0541157-1	0	1	1	2	2
SHIM NO.	Max. number of shims to be used with shims in column 1.				
COLUMN 1	COLUMN 2				

Figure 5-2. Wheel Alignment (Sheet 2 of 2)

places. Excessive adhesive may be removed with solvents.

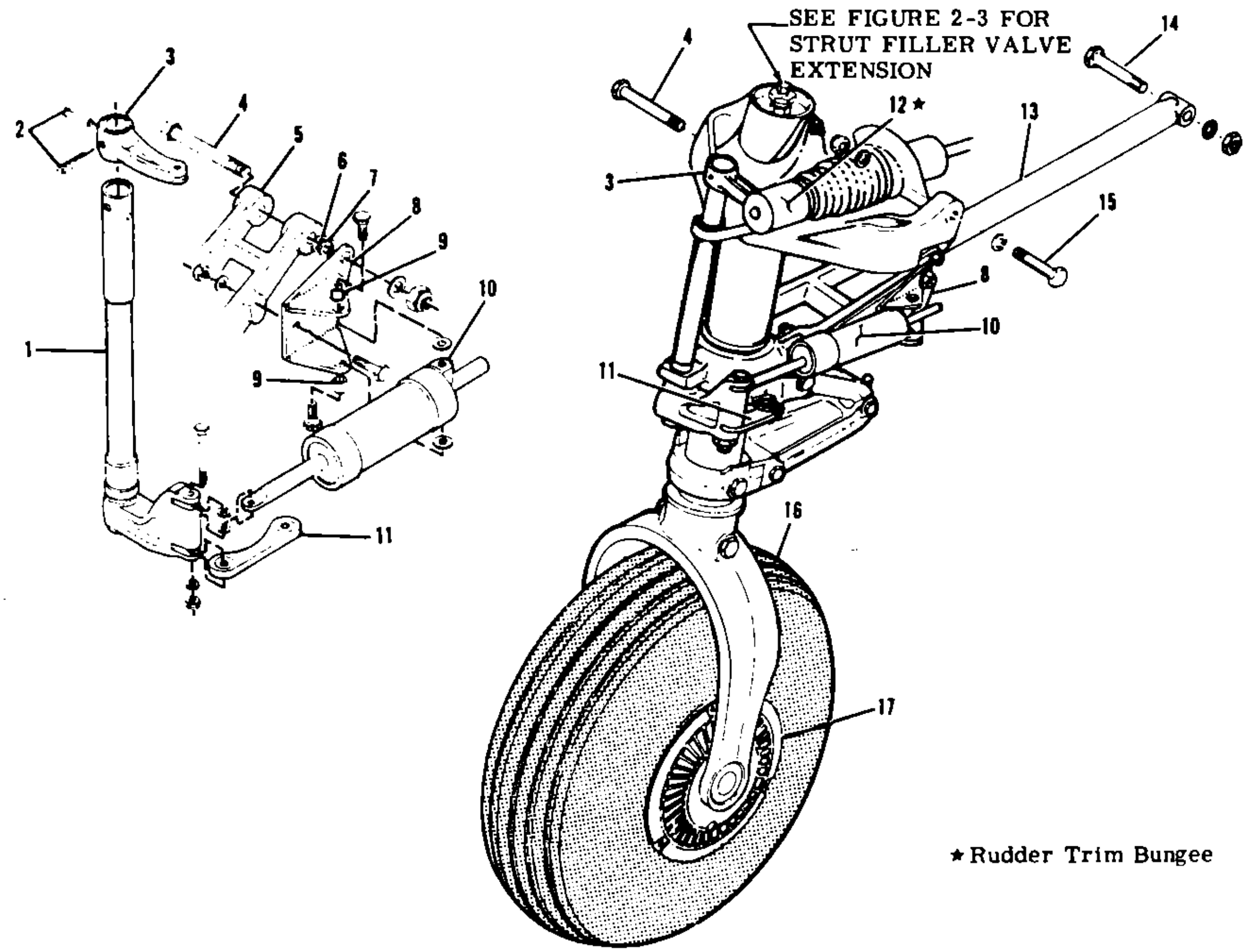
j. Allow adhesive to cure thoroughly according to manufacturer's directions before flexing the gear.

k. After recommended curing time, remove tape and connect brake line.

l. If necessary, prime spring strut with White Rust Inhibitive Primer - 32W6 (Kansas Paint Co., Wichita, Kansas), and repaint to original color.

m. Fill and bleed brake system.

n. Wrap landing gear spring with polyurethane tape as noted in Section A-A.



1. Steering Shaft
2. Roll Pin
3. Steering Arm
4. Bolt
5. Lower Trunnion
6. Thin Washer
7. Thick Washer
8. Bracket
9. Bushing
10. Shimmy Dampener
11. Link
★12. Steering Bungee
13. Drag Link
14. Bolt
15. Bolt
16. Nose Wheel
17. Hub Cap
18. Cover Plate
19. Standard Speed Fairing
20. Tow Bar Spacer
21. Wheel Scraper
22. Axle Ferrule
23. Access Door
24. Heavy-Duty Fairing

Figure 5-3. Nose Landing Gear (Sheet 1 of 2)

5-18. NOSE GEAR.

5-19. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
TIRES WEAR EXCESSIVELY.	Loose torque links.	Add shim washers and replace parts as necessary.
NOSE WHEEL SHIMMY.	Nose strut attachment loose.	Secure attaching parts.
	Shimmy dampener lacks fluid.	Service as outlined in Section 2.

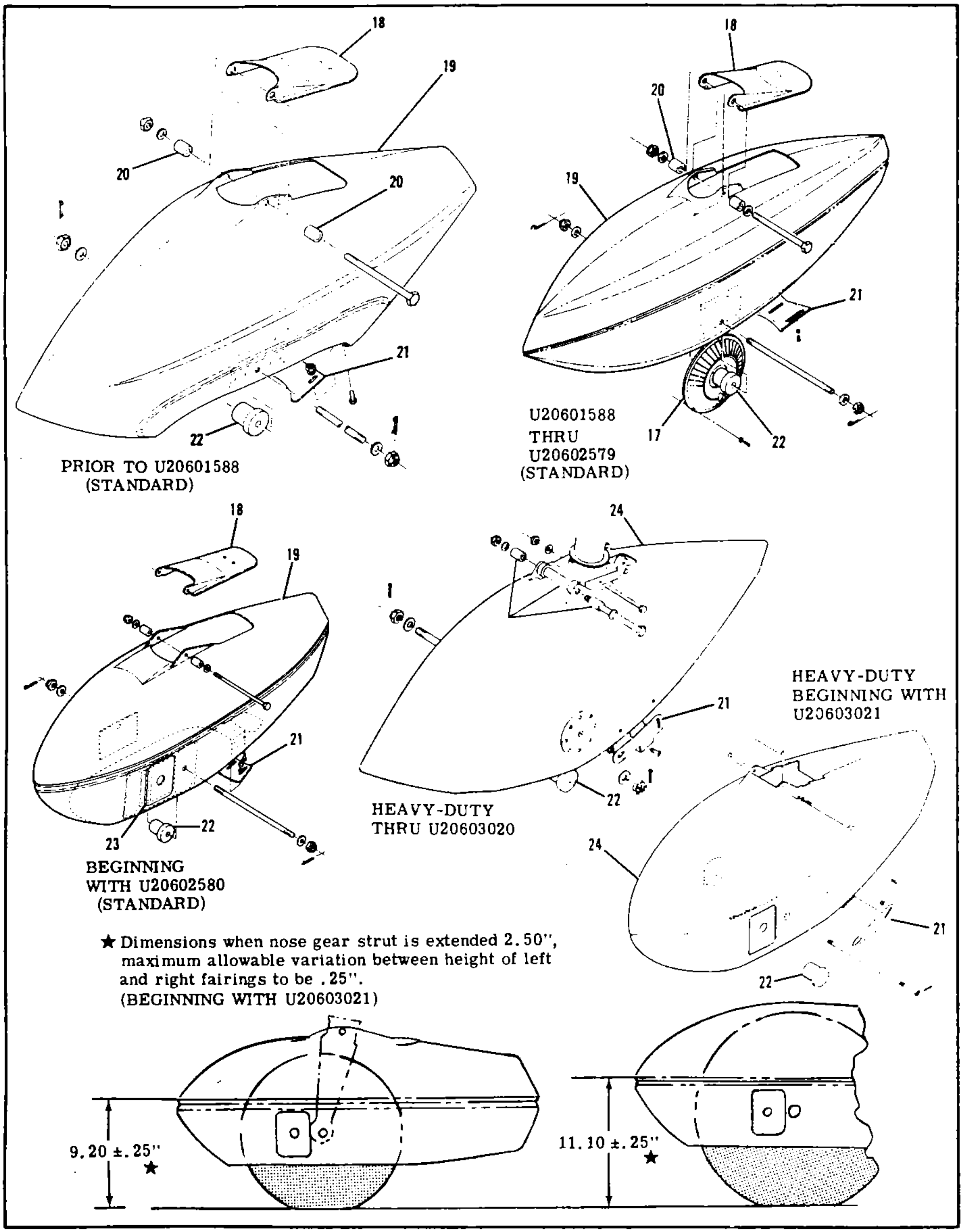


Figure 5-3. Nose Landing Gear (Sheet 2 of 2)

TROUBLE	PROBABLE CAUSE	REMEDY
TIRES WEAR EXCESSIVELY (Cont).	Defective shimmy dampener.	Repair or replace dampener.
	Loose or worn steering components.	Tighten loose parts; replace if defective.
	Loose torque links.	Add shim washers and replace parts as necessary.
	Loose wheel bearings.	Replace bearings if defective; tighten axle nut properly.
	Nose wheel out of balance.	Refer to paragraph 5-39.
HYDRAULIC FLUID LEAKAGE FROM NOSE GEAR STRUT.	Defective strut seals and/or defects in lower strut.	Replace defective seals; stone out small defects in lower strut. Replace lower strut if badly scored or damaged.
NOSE GEAR STRUT WILL NOT HOLD AIR PRESSURE.	Defective air filler valve or valve not tight.	Check gasket and tighten loose valve. Replace defective valve.
	Defective O-ring at top of strut.	Replace O-ring.
	Result of fluid leakage at bottom of strut.	Replace defective seals; stone out small defects in lower strut. Replace lower strut if badly scored or damaged.

5-20. REPLACEMENT OF NOSE GEAR. (See figure 5-3.)

a. Weight tail of the aircraft to raise nose wheel off the ground and remove access plates around nose gear.

b. Disconnect nose gear steering bungee from steering arm.

c. Remove bolt and washers to disconnect drag strut at forward end. Note position of washers during removal of bolt.

d. Remove bolts to disconnect upper trunnion from fuselage structure. Access to bolts is obtained from inside the cabin after removing carpet on each side of tunnel at firewall.

e. Install the nose gear by reversing the preceding steps. Be sure to install washers in the position shown.

5-21. STANDARD NOSE WHEEL SPEED FAIRING REPLACEMENT. (See figure 5-3.)

a. Weight the tail of the aircraft to raise the nose wheel off the ground.

b. Remove nose wheel axle stud.

c. Deflate strut completely.

WARNING

Be sure strut is deflated completely before removing bolt that attaches speed fairing to strut or disconnecting the torque link.

d. Disconnect lower torque link from lower strut and allow strut to extend.

e. Remove bolt attaching speed fairing to strut and remove cover plate. This is the bolt that attaches the fork as well as the tow-bar spacers.

f. Slide speed fairing up and remove the nose wheel. Loosen scraper if necessary. Use a rod or long punch inserted through one ferrule to tap the opposite one out of the fork. Remove both ferrules and pull the nose wheel from the fork.

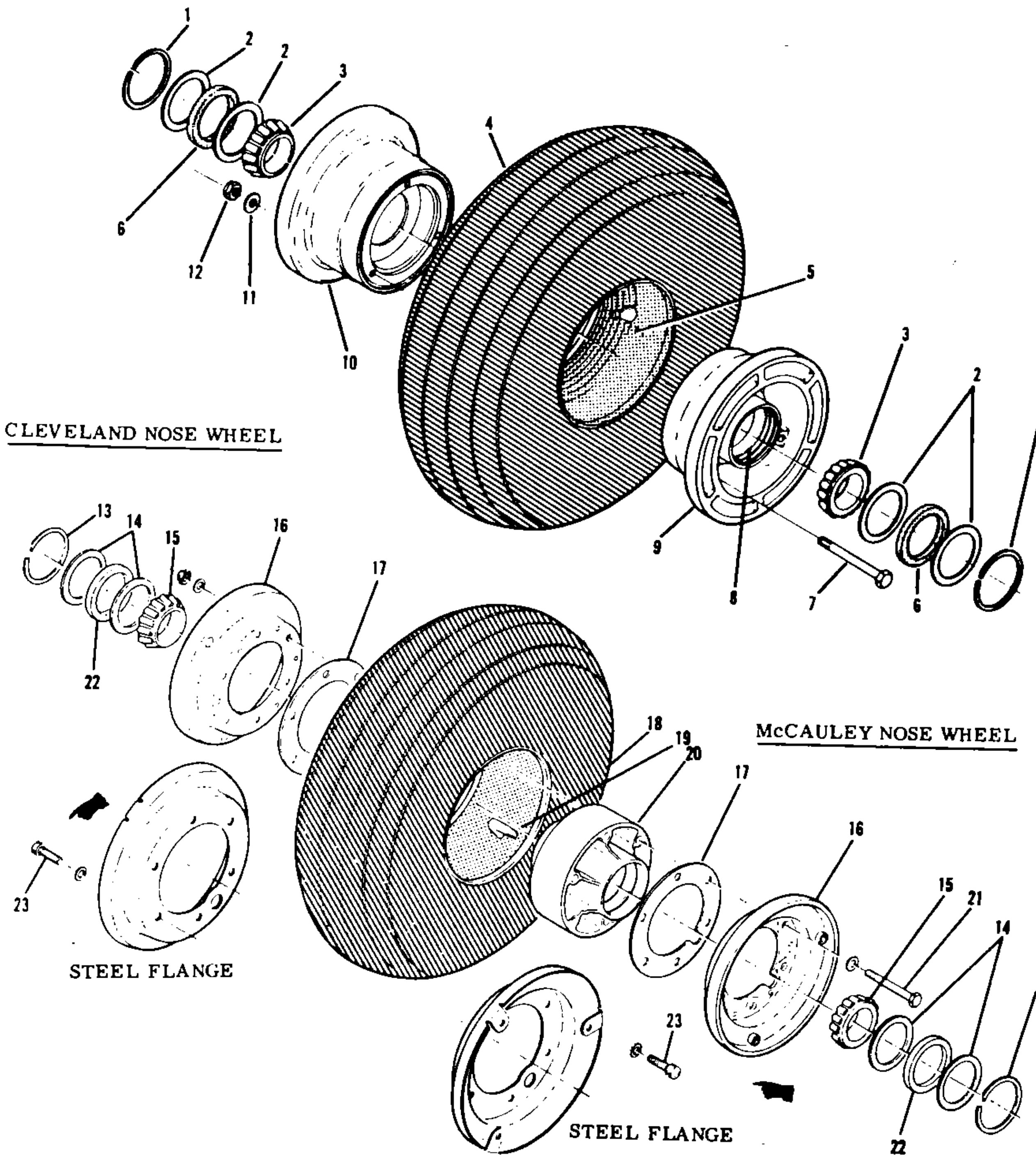
g. Rotate speed fairing 90° and work it down over the nose gear fork.

h. Install speed fairing by reversing the preceding steps. Tighten axle stud until a slight bearing drag is obvious when the wheel is turned. Back off the nut to the nearest castellation and install cotter pins.

i. Service shock strut after installation has been completed.

CAUTION

Always check scraper clearance after installing speed fairings, whenever a tire has been changed, and whenever scraper adjustments has been disturbed. Set clearance between tire and scraper at 0.38 inch. Elongated holes in scraper are provided for adjustment. Wipe fuel and oil from the speed fairings to prevent stains and deterioration. If the aircraft is flown from surfaces with mud, snow, or ice, the fairings should be checked to make sure



1. Snap Ring
2. Grease Seal Ring
3. Bearing
4. Tire
5. Tube
6. Grease Seal Felt
7. Thru-Bolt
8. Bearing Cup
9. Male Wheel Half
10. Female Wheel Half
11. Washer
12. Nut
13. Retaining Ring
14. Grease Seal Ring
15. Bearing
16. Wheel Flange
17. Spacer
18. Tire
19. Tube
20. Hub Assembly
21. Thru-Bolt
22. Grease Seal Felt
23. Capscrew

Figure 5-4. Nose Wheels

there is no accumulation which could prevent normal wheel rotation.

5-22. HEAVY-DUTY NOSE WHEEL SPEED FAIRING REPLACEMENT.

a. Weight the tail of the aircraft to raise nose wheel off the ground.
b. Remove nose wheel axle stud.
c. Deflate strut and disconnect lower torque link from fork hub.

WARNING

Be sure strut is deflated completely before disconnecting torque link.

d. Remove bolt securing speed fairing to fork hub. The speed fairing is attached to the lugs on the forward side of the fork hub and the tow-bar spacers are also attached with same bolt.
e. Slide speed fairing up and remove the nose wheel. Loosen scraper if necessary. Use a rod or long punch inserted through one ferrule to tap the opposite one out of the fork. Remove both ferrules and pull the nose wheel from the fork.
f. Remove bolts attaching wheel fork to lower strut and remove fork and speed fairing.
g. Install speed fairing by reversing the preceding steps. Tighten axle stud until a slight bearing drag is obvious when the wheel is turned. Back off the nut to the nearest castellation and install cotter pins.
h. Service shock strut after installation has been completed.

CAUTION

Always check scraper clearance after installing speed fairing, when ever a tire has been changed, and whenever scraper adjustment has been disturbed. Set clearance between tire and scraper at 0.38 inch. Elongated holes in the scraper are provided for adjustment. Wipe fuel and oil from the speed fairings to prevent stains and deterioration. If the aircraft is flown from surfaces with mud, snow, or ice, the fairings should be checked to make sure there is no accumulation which could prevent normal wheel rotation.

5-22A. NOSE WHEEL AND TIRE ASSEMBLY.

5-22B. DESCRIPTION. The aircraft may be equipped with either Cleveland or McCauley wheel assemblies. Separate disassembly, inspection and reassembly instructions are provided for each type. Basic differences of the two types are discussed in paragraph 5-11D, and thru-bolt nut and capscrew torque values are listed in figure 5-11A.

CAUTION

Use of recapped tires is not recommended. However, if recapped tires are used on the aircraft, make sure there is sufficient clearnace between tire and wheel fairings, if fairings are installed. Ensure that speed fairing scraper-to-tire clearance is adjusted to values specified in paragraph 5-21 or 5-22.

5-23. REMOVAL OF NOSE WHEEL AND TIRE ASSEMBLY. Removal of nose wheel and tire assembly may be accomplished as outlined in paragraph 5-21 or 5-22.

5-24. DISASSEMBLY OF CLEVELAND NOSE WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-4.)

a. Completely deflate the tire and break tire beads loose.

WARNING

Injury can result from attempting to separate wheel halves with tire inflated. Avoid damaging wheel flanges when breaking tire beads loose.

b. Remove thru-bolts and separate wheel halves.
c. Remove tire and tube.
d. Remove bearing retaining rings, grease seals and bearing cones.

NOTE

The bearing cups are a press fit in the wheel halves and should not be removed unless replacement is necessary. To remove, heat wheel half in boiling water for 15 minutes. Using an arbor press, if available, press out the bearing cup and press in the new one while the wheel is still hot.

5-25. INSPECTION AND REPAIR OF CLEVELAND NOSE WHEEL AND TIRE ASSEMBLY. Procedures outlined in paragraph 5-10 for the main wheel and tire assemblies may be used as a guide for inspection and repair of the nose wheel and tire assembly.

5-26. REASSEMBLY OF CLEVELAND NOSE WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-4.)

a. Place tire and tube on wheel half. Insert thru-bolts, position other wheel half, and secure with nuts and washers. Torque nuts to value specified in figure 5-11A.

CAUTION

Uneven or improper torque of the thru-bolt nuts may cause bolt failure with resultant wheel failure.

b. Clean and repack bearing cones with clean wheel bearing grease.
c. Assemble bearing cones, seals, and retainers into the wheel halves.
d. Inflate tire to seat tire beads, then adjust to correct pressure.

5-27. DISASSEMBLY OF McCAULEY NOSE WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-4.)

a. Remove screws attaching hub caps; remove hub caps.

WARNING

Injury can result from attempting to remove wheel flanges with tire and tube inflated. Avoid damaging wheel flanges when breaking tire beads loose. A scratch, gouge or nick in wheel flange could cause wheel failure.

b. Completely deflate tire and break tire beads loose at wheel flanges.
c. If the wheel and tire assembly is equipped with thru-bolts, remove thru-bolt nuts and washers, remove thru-bolts and separate wheel flanges from wheel hub. Retain spacers between wheel flanges and wheel hub.
d. If the wheel and tire assembly is equipped with capscrews, remove capscrews and washers and separate wheel flanges from wheel hub. Retain spacers on each side of wheel hub.
e. Remove wheel hub from tire and tube.
f. Remove retainer rings and remove grease seal retainers, grease seal felts and bearing cones from wheel hub.

NOTE

The bearing cups (races) are a press-fit in the wheel hub and should not be removed unless a new part is to be installed. To remove the bearing cup, heat wheel hub in boiling water for 30 minutes, or in an oven not to exceed 121°C (250°F). Using an arbor press, if available, press out the bearing cup and press in the new bearing cup while the wheel hub is still hot.

5-28. INSPECTION AND REPAIR OF McCAULEY NOSE WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-4.)
a. Clean all metal parts, grease seal felts and mylar spacers in cleaning solvent and dry thoroughly.
b. Inspect wheel flanges and wheel hub for cracks. Cracked wheel flanges or hubs shall be discarded and new parts will be installed. Sand out smooth nicks, gouges and corroded areas. When the protective coating has been removed, the area should be cleaned thoroughly, primed with zinc chromate and painted with aluminum lacquer.
c. Carefully inspect bearing cones and cups for damage and discoloration. After cleaning, pack bearing cones with clean aircraft wheel bearing grease before installing in the wheel hub. (Refer to Section 2 for grease type.)

5-29. REASSEMBLY OF McCAULEY NOSE WHEEL AND TIRE ASSEMBLY. (Refer to figure 5-4.)
a. Install tube in tire, aligning index marks on tire and tube.
b. Place wheel hub in tire with valve stem in cutout of wheel hub.
c. If the wheel and tire assembly is equipped with thru-bolts, place spacer and wheel flange on one side of wheel hub. With washer under head of thru-bolt, insert bolt through wheel flange and wheel hub. Place spacer and wheel flange on other side and align valve stem in cutout in wheel flange. Install washers and nuts on thru-bolts.
d. If the wheel and tire assembly is equipped with capscrews, place spacer and wheel flange on one side of wheel hub. Place washer under head of each capscrew, insert capscrew through wheel flange and spacer and start capscrews into wheel hub threads. Place spacer and wheel flange on other side of wheel hub and align valve stem in cutout in wheel flange. Place washer under head of each capscrew, insert capscrew through wheel flange and spacer and start capscrews into wheel hub threads.

CAUTION

Be sure that spacers and wheel flanges are seated on flange of wheel hub. Uneven or improper torque of thru-bolts or capscrews can cause failure of the thru-bolts capscrews or hub threads with resultant wheel failure.

e. Tighten thru-bolts or capscrews evenly and torque to the value specified in figure 5-11A.
f. Clean and pack bearing cones with clean aircraft wheel bearing grease. (Refer to Section 2 for grease type.)
g. Assemble bearing cones, grease seal felts and retainer into wheel hub.
h. Inflate tire to seat tire beads, then adjust to correct pressure specified in figure 1-1.

5-30. INSTALLATION OF NOSE WHEEL AND TIRE ASSEMBLY. Procedures are outlined in paragraphs 5-21 or 5-22.

5-31. STANDARD NOSE GEAR STRUT.

5-32. DESCRIPTION. The standard nose gear shock strut is shown in figure 5-5. The optional heavy-duty shock strut is shown in figure 5-6. Replacement of the nose gear is accomplished as outlined in paragraph 5-20.

5-33. STANDARD NOSE GEAR DISASSEMBLY. (See figure 5-5.) The following procedure applies to the nose gear shock strut after it has been removed from the aircraft, and the speed fairing and nose wheel have been removed. In many cases, separating the upper and lower struts will permit inspection and parts replacement without removal or complete disassembly.

WARNING

Deflate strut completely before removing bolt (3), lock ring (30), or bolt (32). Also deflate strut before disconnecting torque links.

a. Remove torque links. Note position of washers, shims, spacers, and bushings.
b. Remove shimmy dampener.
c. Remove steering shaft by driving out roll pins and removing steering arm.
d. Remove lock ring from groove inside of lower end of upper strut. A small hole is provided in the lock ring groove to facilitate removal.

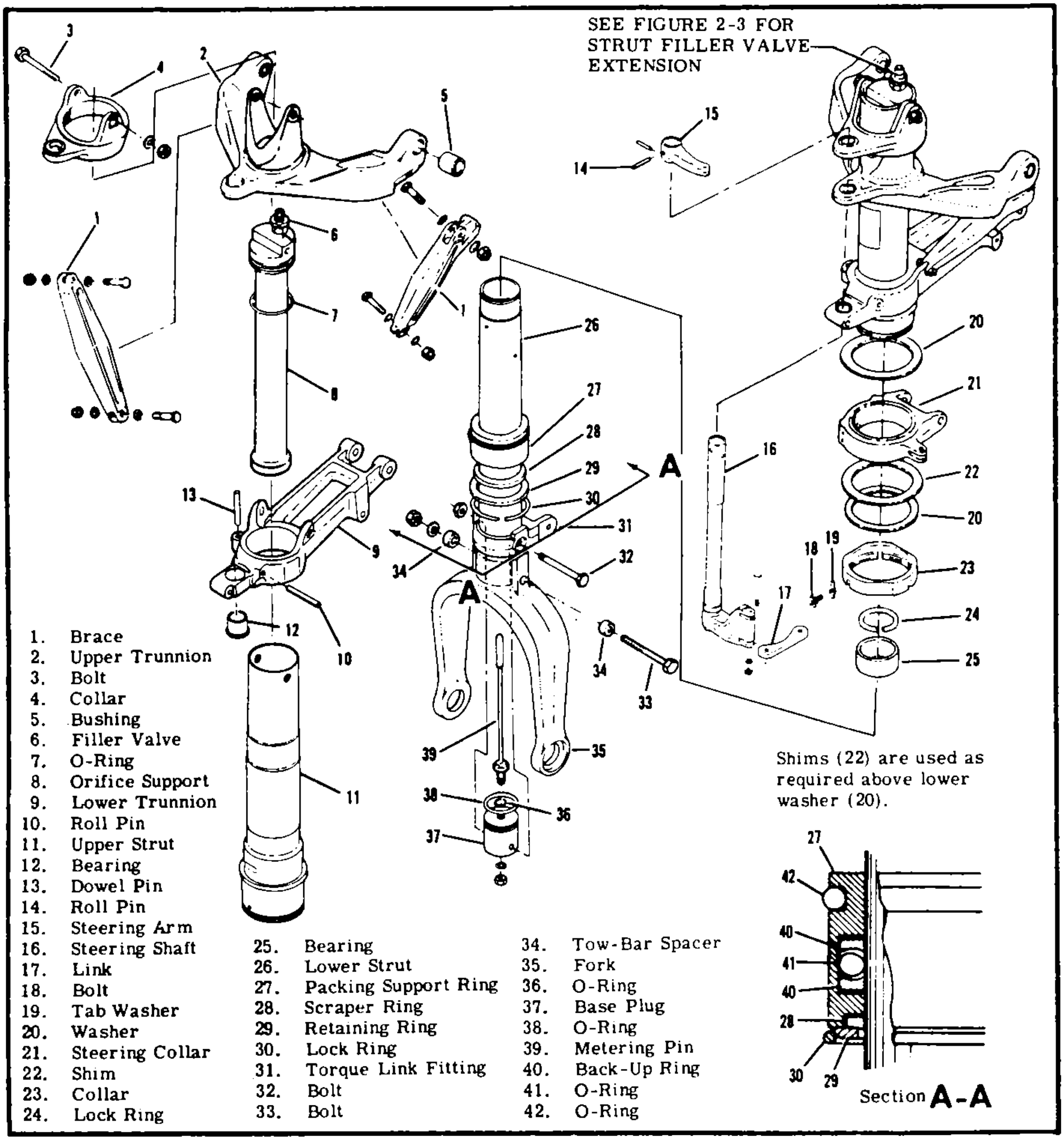


Figure 5-5. Standard Nose Gear Shock Strut

NOTE

Hydraulic fluid will drain from strut as lower strut is pulled from the upper strut.

e. Using a straight, sharp pull, remove lower strut from upper strut. Invert lower strut and drain hydraulic fluid from strut.

f. Remove lock ring and bearing from top of lower strut.

g. Slide packing support ring, scraper ring, retaining ring, and lock ring from lower strut. Note relative position and top side of each ring and bearing to aid in reassembly.

h. Remove and discard O-rings and back-up rings from packing support ring.

i. Remove bolt and slide torque link fitting from lower strut.

j. Remove metering pin and base plug. Remove O-rings and metering pin from base plug.

NOTE

Lower strut and fork are a press fit, drilled on assembly. Separation of these parts is not recommended except for replacement of parts.

k. Remove bolt, tab washer, and unscrew collar, and remove shim(s), washers, and steering collar from upper strut.
l. Remove clamp attaching the filler extension valve to strut and disconnect from filler valve at top of the strut.
m. Remove bolt at top of strut, and remove collar and orifice support. Remove O-ring and valve from orifice support.
n. Bushings and bearings in lower trunnion, upper trunnion and collar may be replaced as required. Needle bearing in steering collar should not be replaced; replace the steering collar if needle bearing is defective.

NOTE

Upper and lower trunnions are press-fitted to the upper strut, with braces installed during assembly. Pin is also press-fitted to the lower trunnion.

5-34. STANDARD NOSE GEAR STRUT ASSEMBLY.
a. Thoroughly clean all parts in solvent and inspect them carefully. Replace all worn or defective parts and all O-rings, seals, and back-up rings with new parts.
b. Assemble the strut by reversing the order of the procedure outlined in paragraph 5-33 with the exception that special attention must be paid to the following procedures.
c. Sharp metal edges should be smoothed with No. 400 emery paper, then thoroughly cleaned with solvent.
d. Used sparingly, Dow Corning DC-4 compound is recommended for O-ring lubrication. All other internal parts should be liberally coated with hydraulic fluid during assembly.

NOTE

Cleaniness and proper lubrication, along with careful workmanship are important during assembly of the shock strut.

e. Lubricate needle bearings as shown in Section 2 before installing.
f. When installing collar, screw it onto the upper strut until it is flush with the lower end of the strut, to the nearest one-third turn. Use shims as required above lower washer, to fill gap between collars. Shims are available from the Cessna Service Parts Center as follows:

1243030-5	0.006"
-6	0.012"
-7	0.020"

Use a new tab washer to safety bolt.
g. Install the contoured back-up ring, one on each side of O-ring with concave surface of back-up ring next to the O-ring.
h. When installing bearing at top of lower strut, be sure that beveled edge of bearing is installed up next to lock ring.
i. When installing lock ring, position the lock ring so that one of its ends covers the small access hole in the lock ring groove at the bottom of upper strut.
j. When installing shimmy dampener, do not tighten attaching bolts to a torque value in excess of 10 lb-in.
k. Tighten torque link center bolt snug. Then tighten to next castellation and install cotter pin.
l. Service the shock strut with hydraulic fluid and compressed air. Install strut filler valve extension and install strut in aircraft.

NOTE

It is easier to service the shock strut just before installation, although it may be serviced after installation if desired. Refer to Section 2.

5-35. HEAVY-DUTY NOSE GEAR STRUT.

5-36. DESCRIPTION. The heavy-duty nose gear is shown in figure 5-6, which may be used as a guide during maintenance. Replacement procedures are the same as those given in paragraph 5-20. Refer to paragraph 5-22 for speed fairing replacement.

5-37. HEAVY-DUTY NOSE GEAR DISASSEMBLY. (See figure 5-6.) This paragraph outlines complete disassembly of the heavy-duty nose gear shock strut after it has been removed from the aircraft, and the nose wheel and speed fairing have been removed from the strut. In many cases, separating the upper and lower struts will permit inspection and parts replacement without removal or complete disassembly.

WARNING

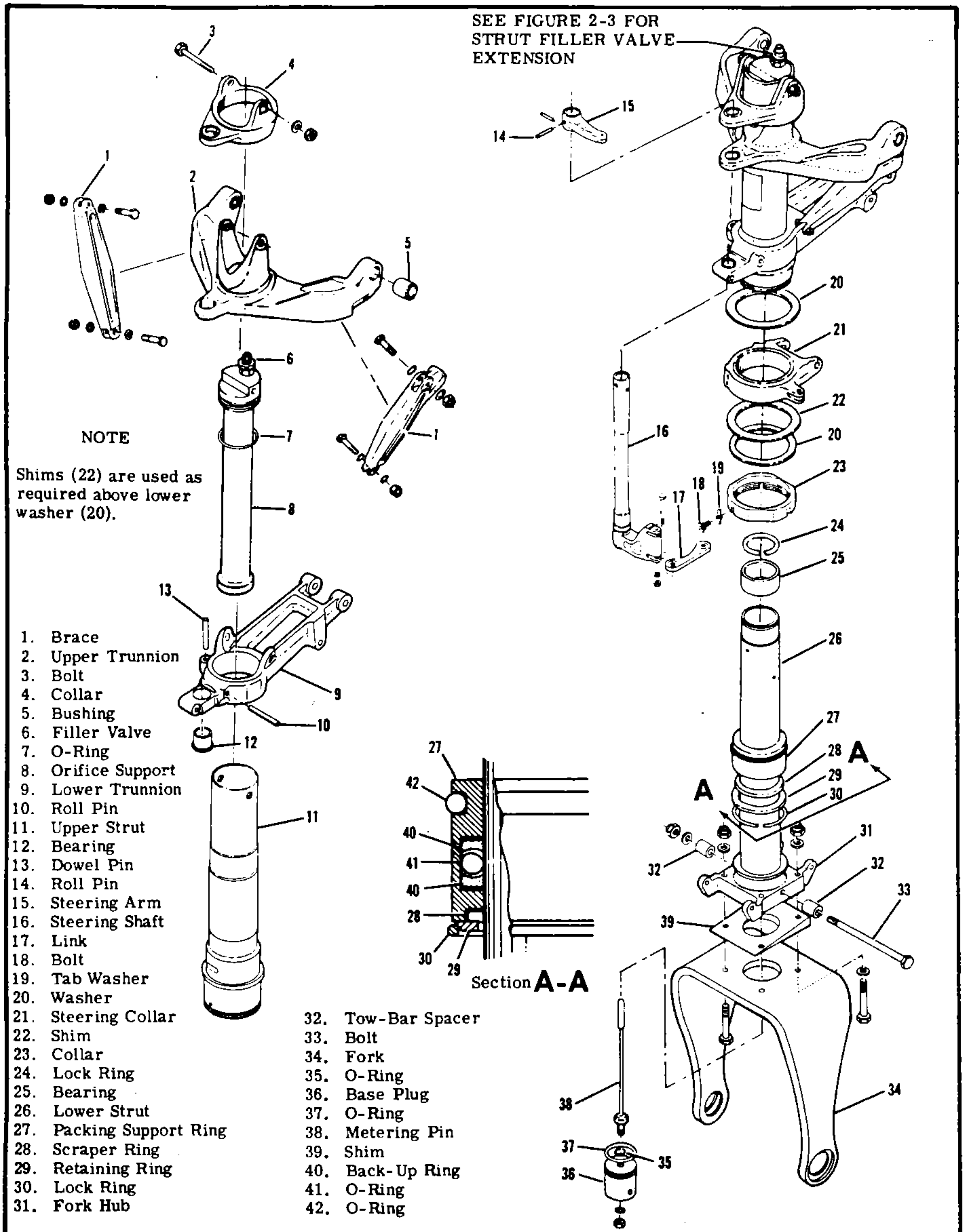
Deflate strut completely before removing bolt (3), lock ring (30), or bolt (33). Also deflate strut before disconnecting torque links.

a. Remove torque links. Note position of washers, shims, spacers, and bushings.
b. Remove shimmy dampener.
c. Remove link from steering shaft and collar.
d. Remove steering shaft by driving out roll pins and removing steering arm.
e. Remove lock ring from groove inside of lower end of upper strut. A small hole is provided in the lock ring groove to facilitate removal.

NOTE

Hydraulic fluid will drain from strut as lower strut is pulled from the upper strut.

f. Using a straight, sharp pull, remove lower strut from upper strut. Invert lower strut and drain hydraulic fluid from strut.
g. Remove lock ring and bearing from top end of lower strut.
h. Slide packing support ring, scraper ring, retaining ring, and lock ring from lower strut. Note



NOTE

Shims (22) are used as required above lower washer (20).

1. Brace
2. Upper Trunnion
3. Bolt
4. Collar
5. Bushing
6. Filler Valve
7. O-Ring
8. Orifice Support
9. Lower Trunnion
10. Roll Pin
11. Upper Strut
12. Bearing
13. Dowel Pin
14. Roll Pin
15. Steering Arm
16. Steering Shaft
17. Link
18. Bolt
19. Tab Washer
20. Washer
21. Steering Collar
22. Shim
23. Collar
24. Lock Ring
25. Bearing
26. Lower Strut
27. Packing Support Ring
28. Scraper Ring
29. Retaining Ring
30. Lock Ring
31. Fork Hub
32. Tow-Bar Spacer
33. Bolt
34. Fork
35. O-Ring
36. Base Plug
37. O-Ring
38. Metering Pin
39. Shim
40. Back-Up Ring
41. O-Ring
42. O-Ring

Figure 5-6. Heavy-Duty Nose Gear Shock Strut relative position and top side of each bearing and ring to aid in reassembly.

i. Remove and discard O-rings and back-up rings from packing ring support.

j. Remove four bolts, washers, and nuts attaching fork to fork hub and remove shim.

k. Remove bolt securing metering pin and base plug. Remove O-rings and metering pin from base plug.

NOTE

Fork hub and lower strut are a press-fit, drilled on assembly. Separation of these parts is not recommended, except for replacement of parts.

l. Remove bolt and tab washer, unscrew collar, and remove washers, shim, and steering collar.

m. Remove clamp attaching the filler valve extension valve to strut and disconnect from filler valve at top of strut.

n. Remove bolt at top of upper strut, and remove collar and orifice support. Remove O-ring and filler valve from orifice support.

o. Bushings and bearings in lower trunnion, upper trunnion, and collar may be replaced as required. Needle bearings in steering collar should not be replaced; replace the steering collar if needle bearing is defective.

NOTE

Upper and lower trunnions are press-fitted to upper strut, with braces installed during assembly. Pin is also press-fitted to the lower trunnion.

5-38. HEAVY-DUTY NOSE GEAR ASSEMBLY. (See figure 5-6.)

a. Thoroughly clean all parts in solvent and inspect them carefully. Replace all worn or defective parts and all O-rings, seals, and back-up rings with new parts.

b. Assemble the strut by reversing the order of the procedure outlined in paragraph 5-37 with the exception that special attention must be paid to the following procedures.

c. Sharp metal edges should be smoothed with No. 400 emery paper, then thoroughly cleaned with solvent.

d. Used sparingly, Dow Corning DC-4 compound is recommended for O-ring lubrication. All other internal parts should be liberally coated with hydraulic fluid during assembly.

NOTE

Cleanliness and proper lubrication, along with careful workmanship are important during assembly of the shock strut.

e. Lubricate needle bearings as shown in Section 2 before installing.

f. When installing collar, screw it onto the upper strut until it is flush with bottom end of the strut, to the nearest one-third turn. Use shim as required above lower washer to fill gap between collars. Refer to paragraph 5-34 for the available shims. Use a new tab washer to safety bolt.

g. Install the contoured back-up rings, one on each side of O-ring, with concave surface of back-up ring next to the O-ring.

h. When installing bearing at top of lower strut, be sure that beveled edge of bearing is installed up next to lock ring.

i. When installing lock ring, position the lock ring so that one of its ends covers the small access hole in the lock ring groove in the bottom of the upper strut.

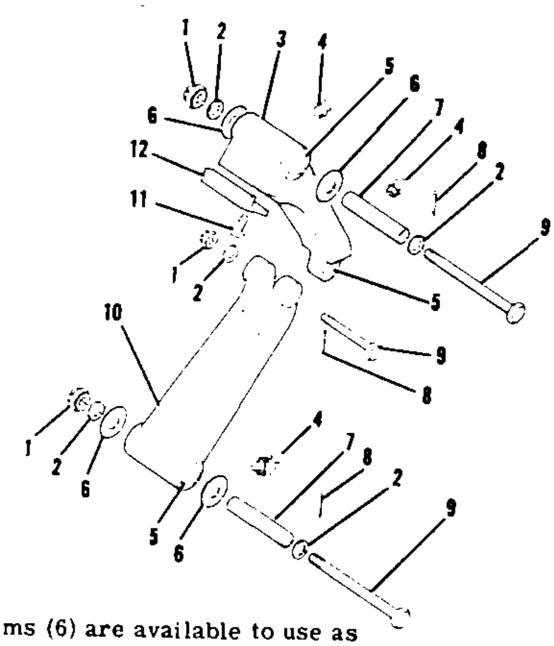
j. When installing shimmy dampener, do not tighten attaching bolts to a torque value in excess of 10 lb-in.

k. Tighten torque link center bolt snug, then tighten to next castellation and install cotter pin.

l. Service the shock strut with hydraulic fluid and compressed air. Install strut filler valve extension and install strut in aircraft.

NOTE

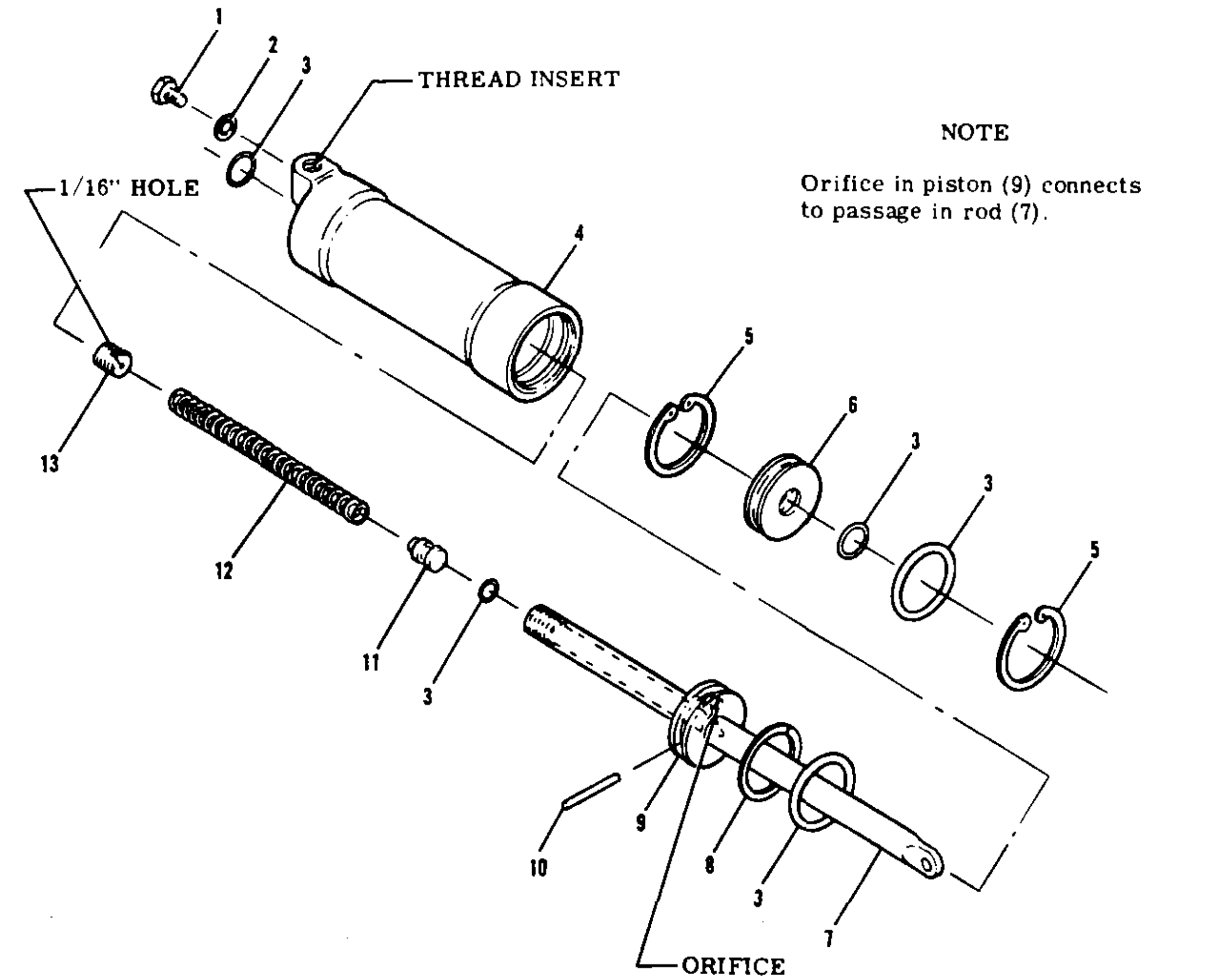
It is easier to service the shock strut just before installation, although it may be serviced after installation if desired. Refer to Section 2.



Shims (6) are available to use as required between torque link and nose gear fork to remove any looseness.

1. Nut	7. Spacer
2. Washer	8. Cotter Pin
3. Upper Torque Link	9. Bolt
4. Grease Fitting	10. Lower Torque Link
5. Bushing	11. Bolt
6. Shim	12. Centering Lug

Figure 5-7. Torque Link



1. Filler Plug
2. Stat-O-Seal
3. O-Ring
4. Barrel
5. Retainer
6. Bearing Head
7. Rod
8. Back-Up Ring
9. Piston
10. Roll Pin
11. Floating Piston
12. Spring
13. Set Screw

Figure 5-8. Shimmy Dampener

5-39. WHEEL BALANCING. Refer to paragraph 5-16 for wheel balancing.

5-40. TORQUE LINKS. The torque links are illustrated in figure 5-7, which may be used as a guide for disassembly and assembly. Grease fittings and torque link bushings should not be removed except for replacement. Excessively worn parts should be replaced. Always deflate nose gear strut before disconnecting torque links.

5-41. SHIMMY DAMPENER. The shimmy dampener is illustrated in figure 5-8, which may be used as a guide for disassembly and assembly. Replace any parts found defective. When assembling shimmy dampener, use new O-rings and back-up rings. Lubricate parts during assembly with clean hydraulic fluid. Refer to Section 2 for servicing procedures. When installing dampener, do not tighten attaching bolts to a torque value in excess of 10 pound-inches.

5-42. NOSE WHEEL STEERING SYSTEM. (Refer to figure 5-9.)

5-43. DESCRIPTION. The nose wheel steering system links the rudder pedals to the nose wheel steering arm, affording steering control through the use of the rudder pedals and brakes. When moving the aircraft by hand, never turn the nose wheel more than 35 degrees either side of center.

5-44. REMOVAL AND INSTALLATION. Figure 5-9 shows details of the nose wheel steering system and may be used as a guide during replacement of parts. Refer to Section 2 for lubrication.

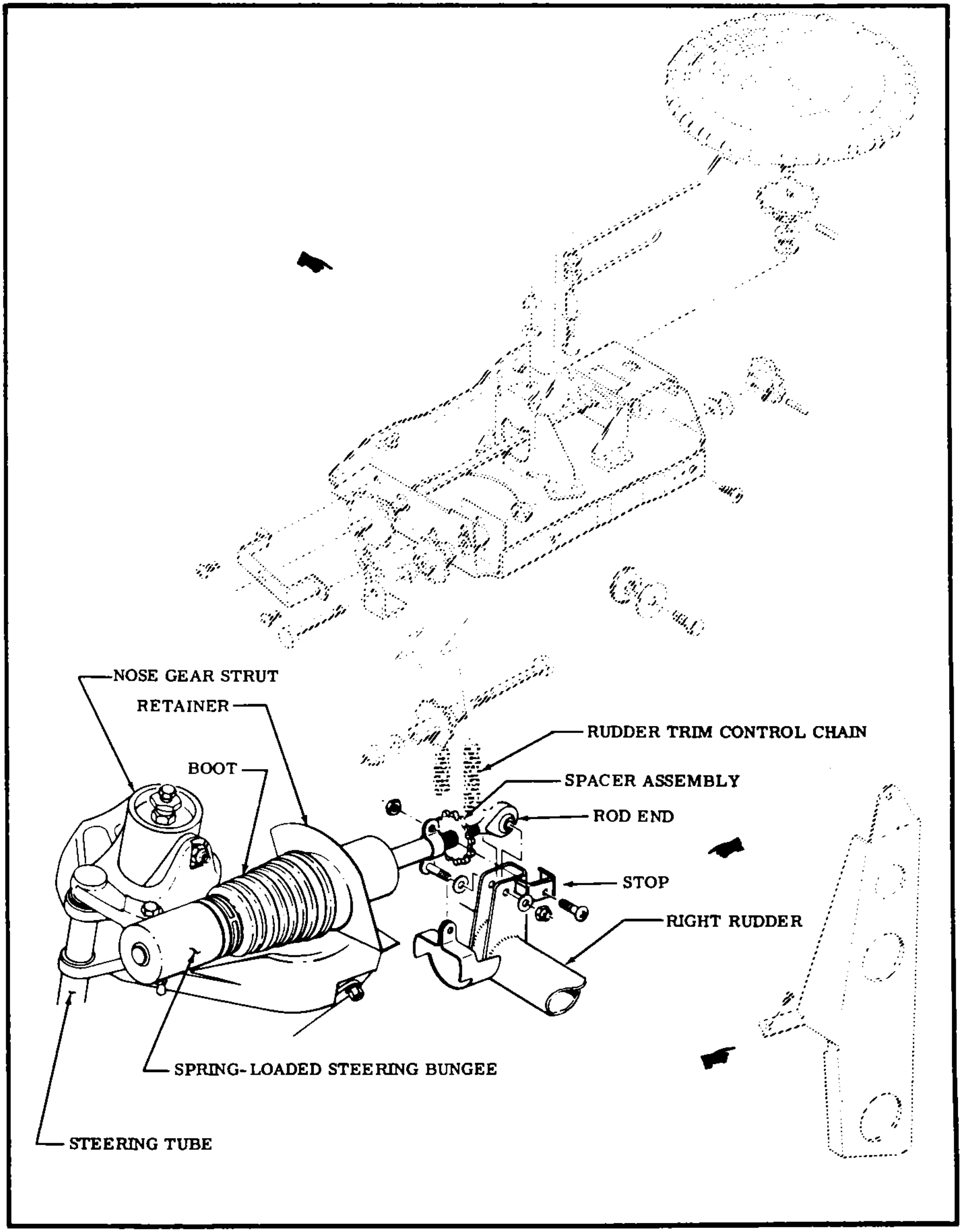


Figure 5-9. Nose Wheel Steering System

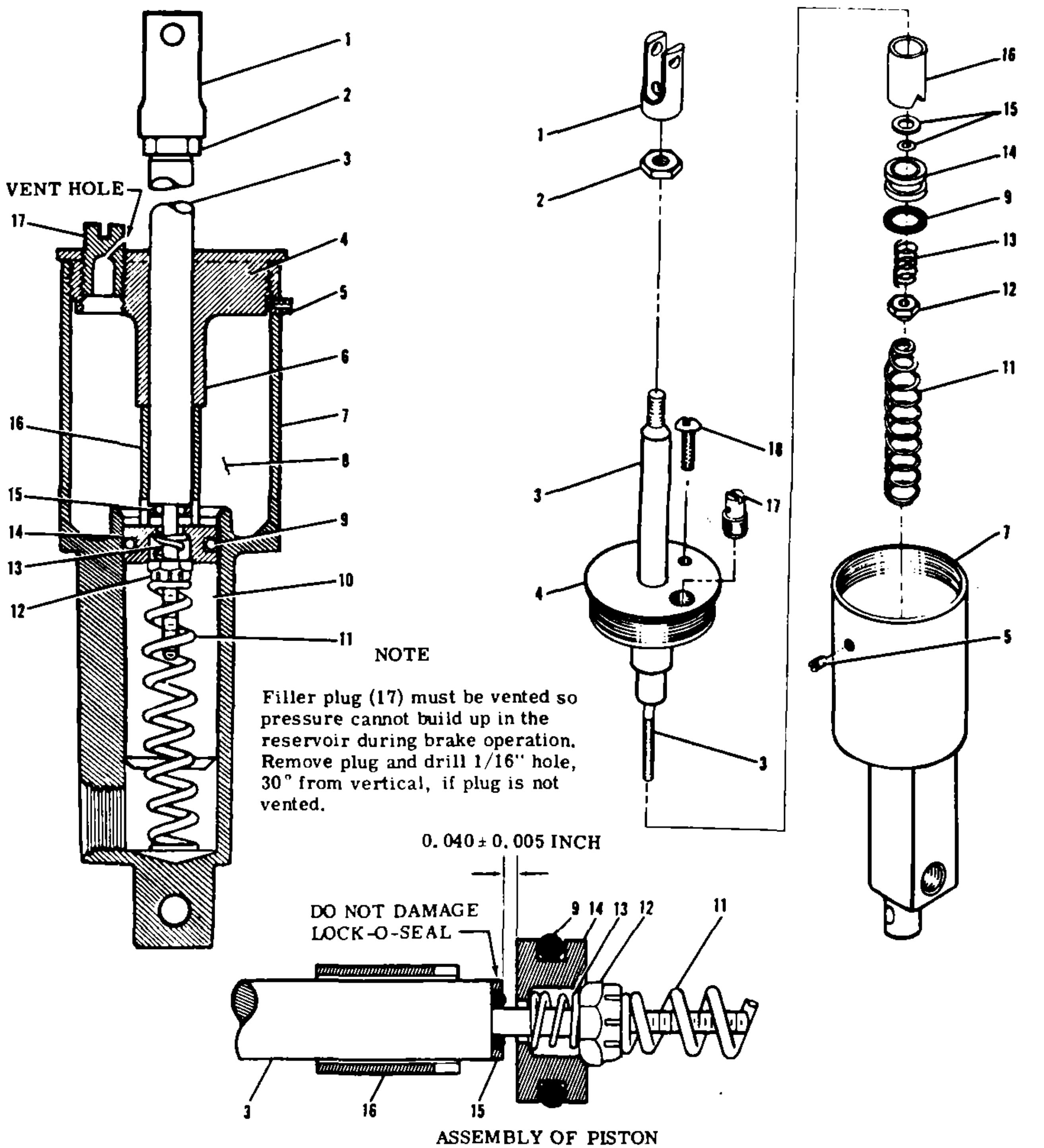
5-45. RIGGING. Since the nose wheel steering system is connected to the rudder control system, refer to Section 10 for rigging procedures.

5-46. BRAKE SYSTEM.

5-47. DESCRIPTION. The hydraulic brake system is comprised of two master cylinders, located immediately forward of the rudder pedals, brake lines connecting each master cylinder to its wheel brake cylinder, and the single disc, floating cylinder-type brake assembly, located at each main landing gear wheel.

5-48. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
DRAGGING BRAKES.	Brake pedal binding.	Check and adjust properly.
	Parking brake linkage holding brake pedal down.	Check and adjust properly.
	Worn or broken piston return spring. (In master cylinder.)	Repair or replace master cylinder.
	Insufficient clearance at Lock-O-Seal in master cylinder.	Adjust as shown in figure 5-10.
	Restriction in hydraulic lines or restriction in compensating port in master brake cylinders.	Drain brake lines and clear the inside of the brake line with filtered compressed air. Fill and bleed brakes. If cleaning the lines fails to give satisfactory results, the master cylinder may be faulty and should be repaired.
	Worn, scored or warped brake discs.	Replace brake discs and linings.
	Damage or accumulated dirt restricting free movement of wheel brake parts.	Clean and repair or replace parts as necessary.
BRAKES FAIL TO OPERATE.	Leak in system.	If brake master cylinders or wheel brake assemblies are leaking, they should be repaired or replaced.
	Air in system.	Bleed system.
	Lack of fluid in master cylinders.	Fill and bleed if necessary.
	Master cylinder defective.	Repair or replace master cylinder.



1. Clevis
2. Jamb Nut
3. Piston Rod
4. Cover
5. Setscrew
6. Cover Boss
7. Body
8. Reservoir
9. O-Ring
10. Cylinder
11. Piston Return Spring
12. Nut
13. Piston Spring
14. Piston
15. Lock-O-Seal
16. Compensating Sleeve
17. Filler Plug
18. Screw

Figure 5-10. Brake Master Cylinder

5-49. BRAKE MASTER CYLINDERS. The brake master cylinders, located just forward of the pilot's rudder pedals, are actuated by applying toe pressure at the top of the rudder pedals. A small reservoir is incorporated into each master cylinder to supply it with fluid. Where dual brakes are installed, mechanical linkage permits the copilot's pedals to operate the master cylinders.

5-50. REMOVAL AND INSTALLATION OF BRAKE MASTER CYLINDERS.

a. Remove bleeder screw at wheel brake assembly and drain hydraulic fluid from brake system.
b. Remove front seats and rudder bar shield for access to brake master cylinders.
c. Disconnect parking brake linkage and brake master cylinders from rudder pedals.
d. Disconnect brake master cylinders at bottom attach points.
e. Disconnect hydraulic hoses from brake master cylinders and remove cylinders.
f. Plug or cap hydraulic fittings, lines, and hoses to prevent entry of foreign materials.
g. Reverse the preceding steps to install brake master cylinders, then fill and bleed brake system in accordance with paragraph 5-60.

5-51. DISASSEMBLY AND REPAIR OF BRAKE MASTER CYLINDERS. Figure 5-10 may be used as a guide during disassembly and assembly of the brake master cylinders. Repair is limited to replacement of parts, cleaning, and adjustment. Use clean hydraulic fluid as a lubricant during assembly of the cylinders.

5-52. HYDRAULIC BRAKE LINES. The lines are of rigid tubing, except for flexible hose used at the brake master cylinders and at the wheel cylinders. A separate line is used to connect each brake master cylinder to its corresponding wheel brake cylinder.

5-53. WHEEL BRAKE ASSEMBLIES. The wheel brake assemblies use a disc which is attached to the main wheel with the wheel thru-bolts, and a floating brake assembly. See figure 5-11.

5-54. REMOVAL OF WHEEL BRAKES. Wheel brake assemblies are a floating type and can be removed after disconnecting the brake line and removing the back plates.

NOTE

The brake disc can be removed after wheel removal and disassembly. To remove the torque plate, remove the wheel and axle in accordance with paragraph 5-13.

5-55. INSPECTION AND REPAIR OF WHEEL BRAKES.

a. Clean all parts except brake linings and O-rings in dry cleaning solvent and dry thoroughly.
b. O-rings are usually replaced at each overhaul. If their re-use is necessary, they should be wiped with a clean cloth soaked in hydraulic fluid and inspected for damage.

NOTE

Thorough cleaning is important. Dirt and chips are the greatest single cause of malfunctions in the hydraulic brake system.

c. Check brake linings for deterioration and maximum permissible wear. See paragraph 5-58.
d. Inspect brake cylinder bore for scoring. A scored cylinder may leak or cause rapid O-ring wear. A scored brake cylinder should be replaced.
e. If the anchor bolts on the brake assemblies are nicked or gouged, they should be sanded smooth to prevent binding with the pressure plate or torque plate. When the anchor bolts are replaced they should be pressed out. New bolts can be installed by tapping in place with a soft hammer.
f. Inspect brake disc. If excessively warped or scored, or worn to a thickness of .340-inch, the brake disc should be replaced with a new part. Sand smooth small nicks and scratches.

5-56. ASSEMBLY OF WHEEL BRAKES. Lubricate parts with hydraulic fluid and assemble components with care to prevent damage to O-rings. Refer to figure 5-11 during assembly of wheel brakes.

5-57. INSTALLATION OF WHEEL BRAKES. Place the brake assembly in position with pressure plate in place, then install back plate and safety the attaching bolts. If the torque plate was removed, install as the wheel and axle are installed. If the brake disc was removed from the wheel, install as the wheel is assembled.

5-58. CHECKING BRAKE LININGS. The brake linings should be replaced when they are worn to a minimum thickness of 3/32 inch. Visually compare a 3/32-inch strip of material held adjacent to each lining to measure the thickness of the lining. The shank end of correct size drill bits make excellent tools for checking minimum thickness of brake linings.

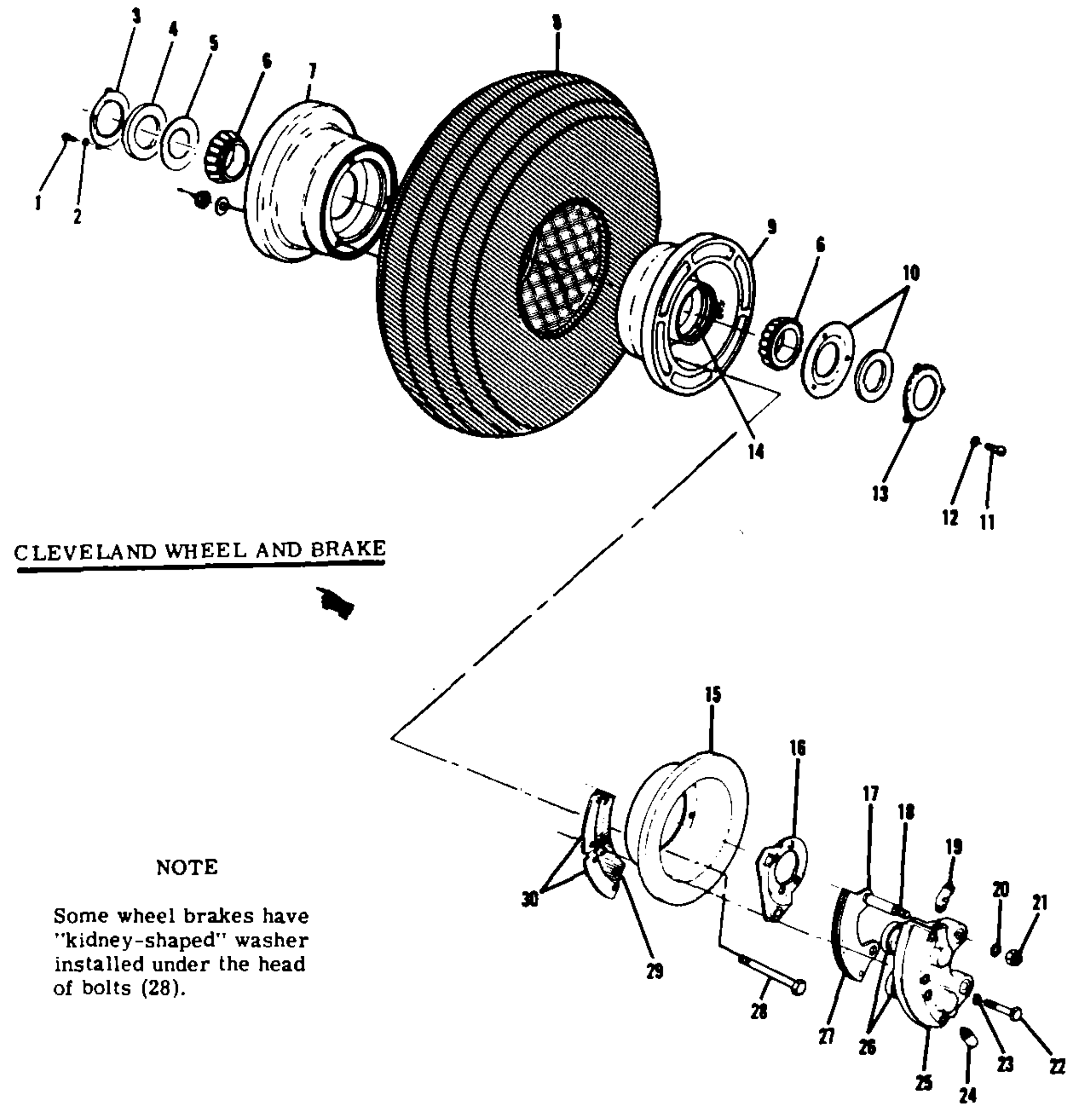
5-59. BRAKE LINING REPLACEMENT. (See figure 5-11.)

a. Remove bolts, washers, and back plate.
b. Pull the brake cylinder out of torque plate and slide pressure plate off anchor bolts.
c. Place back plate on a table with lining side down flat. Center a 9/64 inch (or slightly smaller) punch in the rolled rivet, and hit the punch crisply with a hammer. Punch out all rivets securing the linings to the back plate and pressure plate in the same manner.

NOTE

A rivet setting kit, Part No. R561, is available from the Cessna Service Parts Center. This kit consists of an anvil and punch.

d. Clamp the flat sides of the anvil in a vise.
e. Align new lining on back plate and place brake rivet in hole with the rivet head in the lining. Place rivet head against the anvil.
f. Center the rivet setting punch on the lips of the

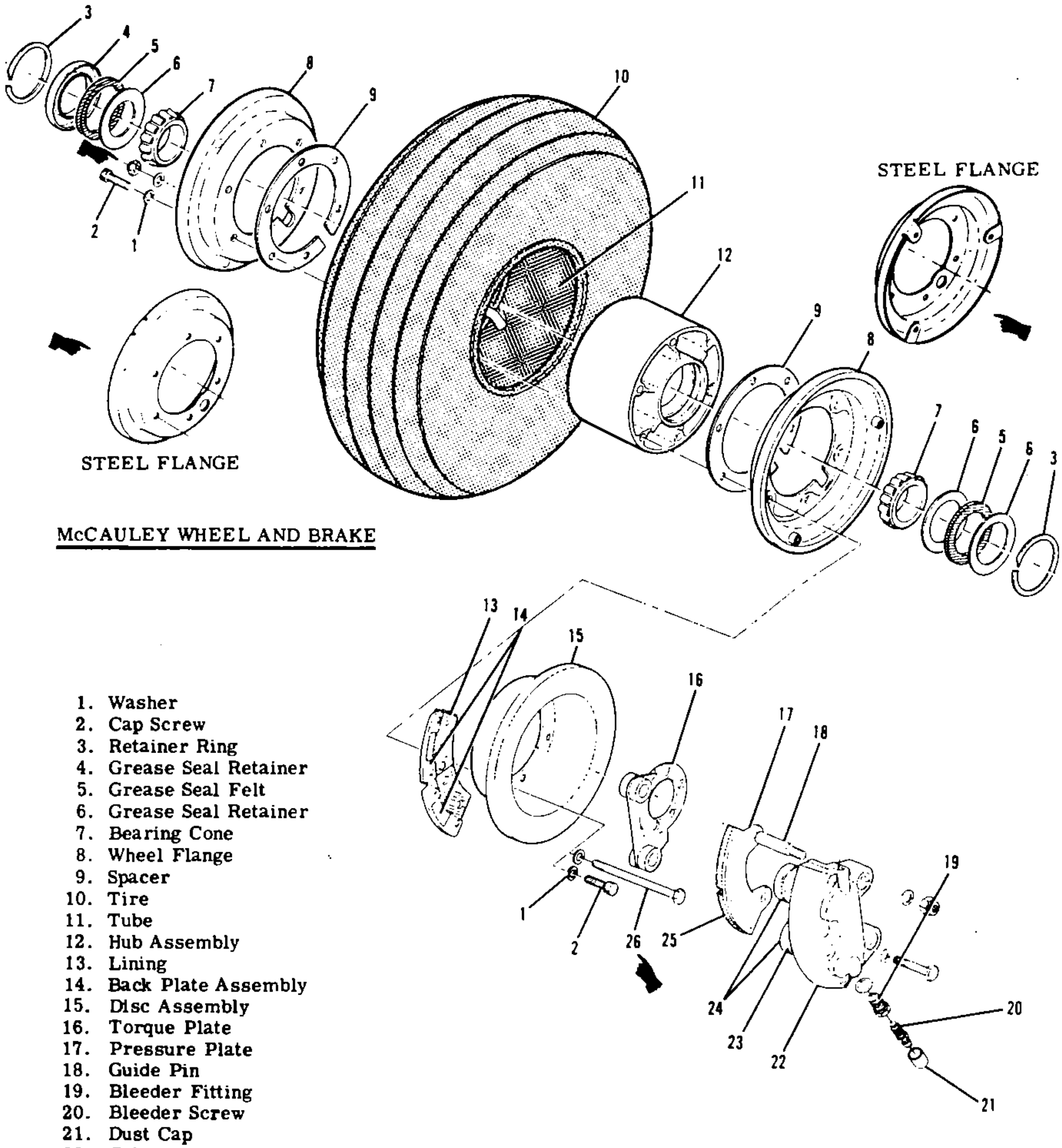


NOTE

Some wheel brakes have "kidney-shaped" washer installed under the head of bolts (28).

1. Screw
2. Lockwasher
3. Grease Seal Ring
4. Felt Seal
5. Grease Seal Ring
6. Bearing Cone
7. Outer Wheel Half
8. Tire and Tube
9. Inner Wheel Half
10. Grease Seal Plate and Felt
11. Screw
12. Washer
13. Grease Seal Ring
14. Bearing Cup
15. Brake Disc
16. Torque Plate
17. Pressure Plate
18. Anchor Bolt
19. Hydraulic Fitting
20. Washer
21. Nut
22. Bolt
23. Washer
24. Bleeder Cap
25. Brake Cylinder
26. Piston
27. Brake Lining
28. Bolt
29. Brake Lining
30. Back Plate

Figure 5-11. Wheels and Brakes (Sheet 1 of 2)



1. Washer
2. Cap Screw
3. Retainer Ring
4. Grease Seal Retainer
5. Grease Seal Felt
6. Grease Seal Retainer
7. Bearing Cone
8. Wheel Flange
9. Spacer
10. Tire
11. Tube
12. Hub Assembly
13. Lining
14. Back Plate Assembly
15. Disc Assembly
16. Torque Plate
17. Pressure Plate
18. Guide Pin
19. Bleeder Fitting
20. Bleeder Screw
21. Dust Cap
22. Cylinder
23. O-Ring
24. Piston
25. Lining
26. Thru-Bolt

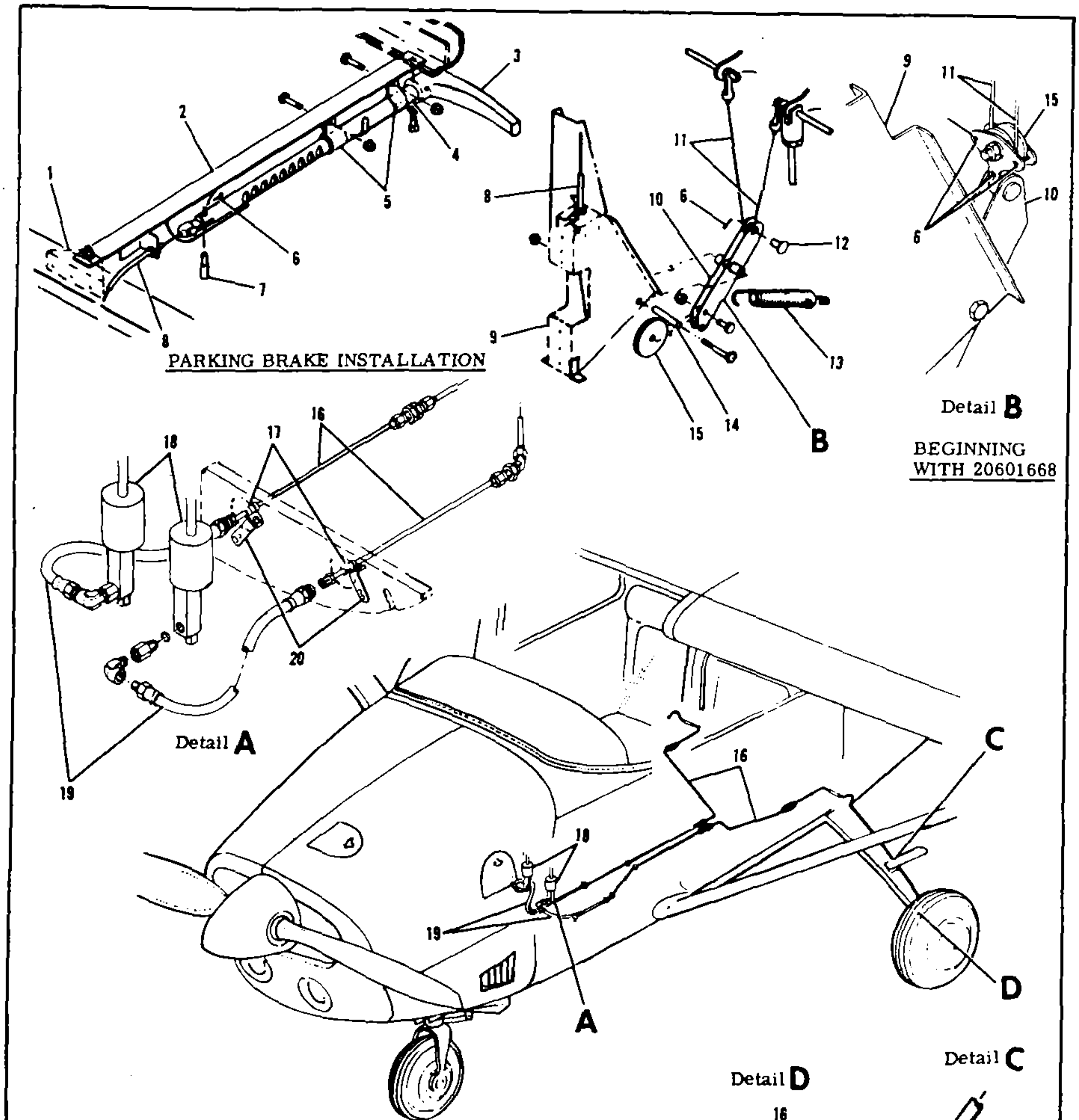
Figure 5-11. Wheels and Brakes (Sheet 2 of 2)

MAIN GEAR	NOSE GEAR	WHEEL NUMBER	TIRE SIZE	MANUFACTURER	NUT/CAPSCREW TORQUE	WHEEL HALF FLANGE
X		C163001-0301	6.00X6	CLEVELAND	150 lb-in.	MAGNESIUM
X		C163001-0302	8.00X6	CLEVELAND	150 lb-in.	MAGNESIUM
X		C163002-0103	6.00X6	McCAULEY	90-100 lb-in.	ALUMINUM
X		C163002-0104	8.00X6	McCAULEY	90-100 lb-in.	ALUMINUM
X		C163004-0102	6.00X6	McCAULEY	*190-200 lb-in.	ALUMINUM
X		C163004-0101	8.00X6	McCAULEY	*190-200 lb-in.	ALUMINUM
	X	1241156-12	5.00X5	CLEVELAND	90 lb-in.	MAGNESIUM
	X	1241156-11	6.00X6	CLEVELAND	150 lb-in.	MAGNESIUM
	X	C163002-0201	5.00X5	McCAULEY	90-100 lb-in.	ALUMINUM
	X	C163003-0201	5.00X5	McCAULEY	*90-100 lb-in.	STEEL
	X	C163003-0301	6.00X6	McCAULEY	*190-200 lb-in.	STEEL
	X	C163003-0401	5.00X5	McCAULEY	*190-200 lb-in.	STEEL

Figure 5-11A. Landing Gear Wheel Thru-Bolt Nut and Capscrew Torque Values

*Capscrews

SHOP NOTES:



1. Attaching Angle
2. Stiffener Angle
3. Parking Brake Handle
4. Housing
5. Clamp
6. Cotter Pin
7. Positioning Pin
8. Cable Assembly
9. Bracket
10. Bellcrank
11. Cable
12. Pin
13. Spring
14. Spacer
15. Pulley
16. Brake Line
17. Clamp
18. Brake Master Cylinder
19. Brake Hose
20. Bracket
21. Elbow
22. Nut
23. Gasket

Figure 5-12. Brake System

rivet. While holding the back plate down firmly against the lining, hit the punch with a hammer to set the rivet. Repeat blows on the punch until lining is firmly against the back plate.

g. Realign the lining on the back plate and install rivets in remaining holes.

h. Install a new lining on pressure plate in the same manner.

i. Position pressure plate on anchor bolts, and place cylinder in position so the anchor bolts slide into torque plate.

j. Install the back plates with bolts and washers. Safety wire the bolts.

5-60. BRAKE BLEEDING. Standard bleeding, with a clean hydraulic pressure source connected to the wheel cylinder bleeder, is recommended.

a. Remove brake master cylinder filler plug and screw a flexible hose with a suitable fitting into the filler hole. Immerse the free end of the hose in a container with enough hydraulic fluid to cover the end of the hose.

b. Connect a clean hydraulic pressure source, such as a hydraulic hand pump or Hydro Fill unit, to the bleeder valve in the wheel cylinder.

c. As fluid is pumped into the system, observe the immersed end of the hose at the brake master cylinder for evidence of bubbles being forced from the brake system. When bubbling has ceased, remove the bleeder source from the brake wheel cylinder and tighten the bleeder valve.

NOTE

Ensure that the free end of the hose from the brake master cylinder remains immersed during the entire bleeding process.

d. Remove hose from brake master cylinder and replace filler plug. Be sure vent hole in filler plug is open.

5-61. PARKING BRAKE SYSTEM.

5-62. DESCRIPTION. The parking brake system is essentially a ratchet-held handle which depresses and holds the brake master cylinders in the compressed position. No adjustment is provided in the system. Replacement of worn or defective parts will restore the system to its correct operation. Figure 5-12 may be used as a guide for replacement of parts.

SHOP NOTES:

SECTION 6

AILERON CONTROL SYSTEM

TABLE OF CONTENTS Page

6-1. *AILERON CONTROL SYSTEM. (Refer to figure 6-1.)*

6-2. DESCRIPTION. The aileron control system is *comprised of push-pull rods, bellcranks, cables,* pulleys, quadrants and components forward of the instrument panel, all of which, link the control wheels to the ailerons.

6-3. TROUBLE SHOOTING.

NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 6-17.

TROUBLE	PROBABLE CAUSE	REMEDY
LOST MOTION IN CONTROL WHEEL.	Loose control cables.	Check cable tension. Adjust cables to proper tension.
	Broken pulley or bracket, cable off pulley or worn rod end bearings.	Check visually. Replace worn or broken parts, install cables correctly.
RESISTANCE TO CONTROL WHEEL MOVEMENT.	Cables too tight.	Check cable tension. Adjust cables to proper tension.
	Pulleys binding or cable off.	Observe motion of the pulleys. Check cables visually. Replace defective pulleys. Install cables correctly.
	Bellcrank distorted or damaged.	Check visually. Replace defective bellcrank.
	Defective quadrant assembly.	Check visually. Replace defective quadrant.
	Clevis bolts in system too tight.	Check connections where used. Loosen, then tighten properly and safety.

6-3. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
CONTROL WHEELS NOT LEVEL WITH AILERONS NEUTRAL.	Improper adjustment of cables.	Refer to paragraph 6-17.
	Improper adjustment of aileron push-pull rods.	Adjust push-pull rods to obtain proper alignment.
DUAL CONTROL WHEELS NOT COORDINATED.	Cables improperly adjusted.	Refer to paragraph 6-17.
INCORRECT AILERON TRAVEL.	Push-pull rods not adjusted properly.	Refer to paragraph 6-17.
	Incorrect adjustment of travel stop bolts.	Refer to paragraph 6-17.

6-4. CONTROL COLUMN. (Refer to figure 6-2.)

6-5. DESCRIPTION. Rotation of the control wheel rotates four bearing roller assemblies (3) on the end of the control wheel tube (4), which in turn, rotates a square control tube assembly (18) inside and extending from the control wheel tube (4). Attached to this square tube (18) is a quadrant (32) which operates the aileron system. This same arrangement is provided for both control wheels. Synchronization of the control wheels is obtained by the interconnect cable (38), turnbuckle (37) and adjustment terminals (35). The forward end of the square control tube (18) is mounted in a bearing block (27) on firewall (33) and does not move fore-and-aft, but rotates with the control wheel. The four bearing roller assemblies (3) on the end of the control wheel tube reduce friction as the control wheel is moved fore-and-aft for elevator system operation. A sleeve weld assembly (7), containing bearings which permit the control wheel tube to rotate within it, is secured to the control wheel tube by a sleeve and retaining ring in such a manner it moves fore-and-aft with the control wheel tube. This movement allows the push-pull tube (19) attached to the sleeve weld assembly (7) to operate an elevator arm assembly (22), to which one elevator cable (39) is attached. A torque tube (21) connects this arm assembly (22) to the one on the opposite end of the torque tube (21), to which the other elevator cable is attached. When dual controls are installed, the copilot's control wheel is linked to the aileron and elevator control systems in the same manner as the pilot's control wheel.

6-6. REMOVAL AND INSTALLATION.

a. THRU AIRCRAFT SERIAL 20601700. (Refer to figure 6-2, sheet 1.) Remove screws attaching control wheel (2) to control wheel tube assembly (4) and remove wheel. Disconnect electrical wiring to map light and mike switch, if installed.

b. BEGINNING WITH AIRCRAFT SERIAL 20601701. (Refer to figure 6-2, sheet 2.) Slide cover (2) toward instrument panel to expose adapter (3). Remove screws securing adapter (3) to control wheel tube assembly (1) and remove control wheel assembly. Disconnect electrical wiring to map light, mike switch and electric trim switch at connector (18), if installed. Slide cover (2) off control wheel tube assembly (1).

c. (Refer to figure 6-2, sheet 1.) Remove decorative cover from instrument panel.

d. Remove screw securing adjustable glide plug (16) to control tube assembly (18) and remove plug (16) and glide (17).

e. Disconnect push-pull tube (19) at sleeve weld assembly (7).

f. THRU AIRCRAFT SERIAL 20601700. (Refer to figure 6-2, sheet 1.) Remove screws securing cover plate (15 or 24) at instrument panel.

g. BEGINNING WITH AIRCRAFT SERIAL 20601701. (Refer to figure 6-2, sheet 2.) Remove screws securing cover plate (20) at instrument panel.

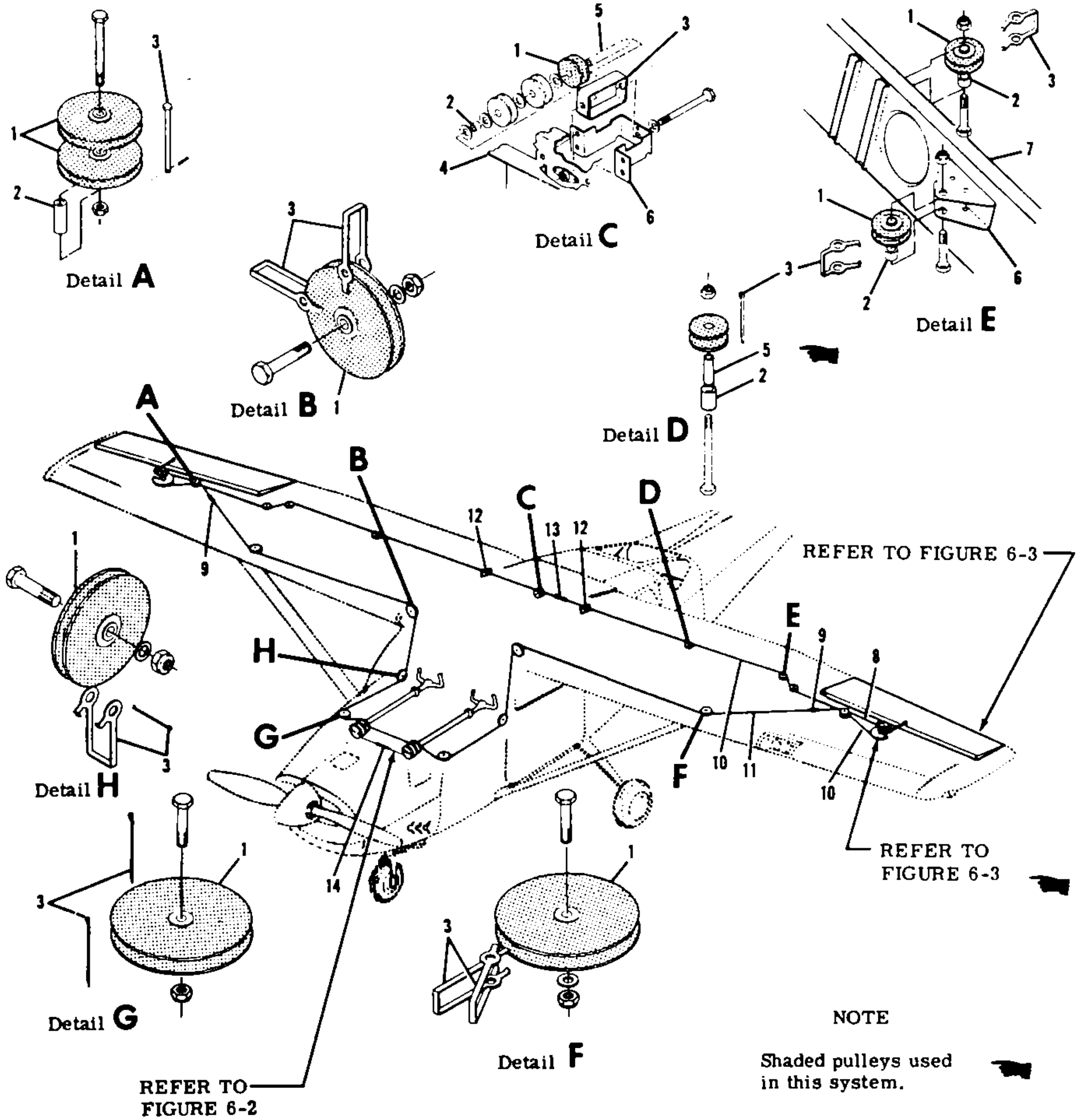
h. (Refer to figure 6-2, sheet 1.) Using care, pull control wheel tube assembly (4) aft and work assembly out through instrument panel.

NOTE

To ease removal of control wheel tube assembly (4), snap ring (11) may be removed from its locking groove to allow sleeve weld assembly (7) additional movement.

● If removal of control tube assembly (18) or quadrant (32) is necessary, proceed to step "i."

i. Remove safety wire and relieve direct cable tension at turnbuckles (index 9, figure 6-1).



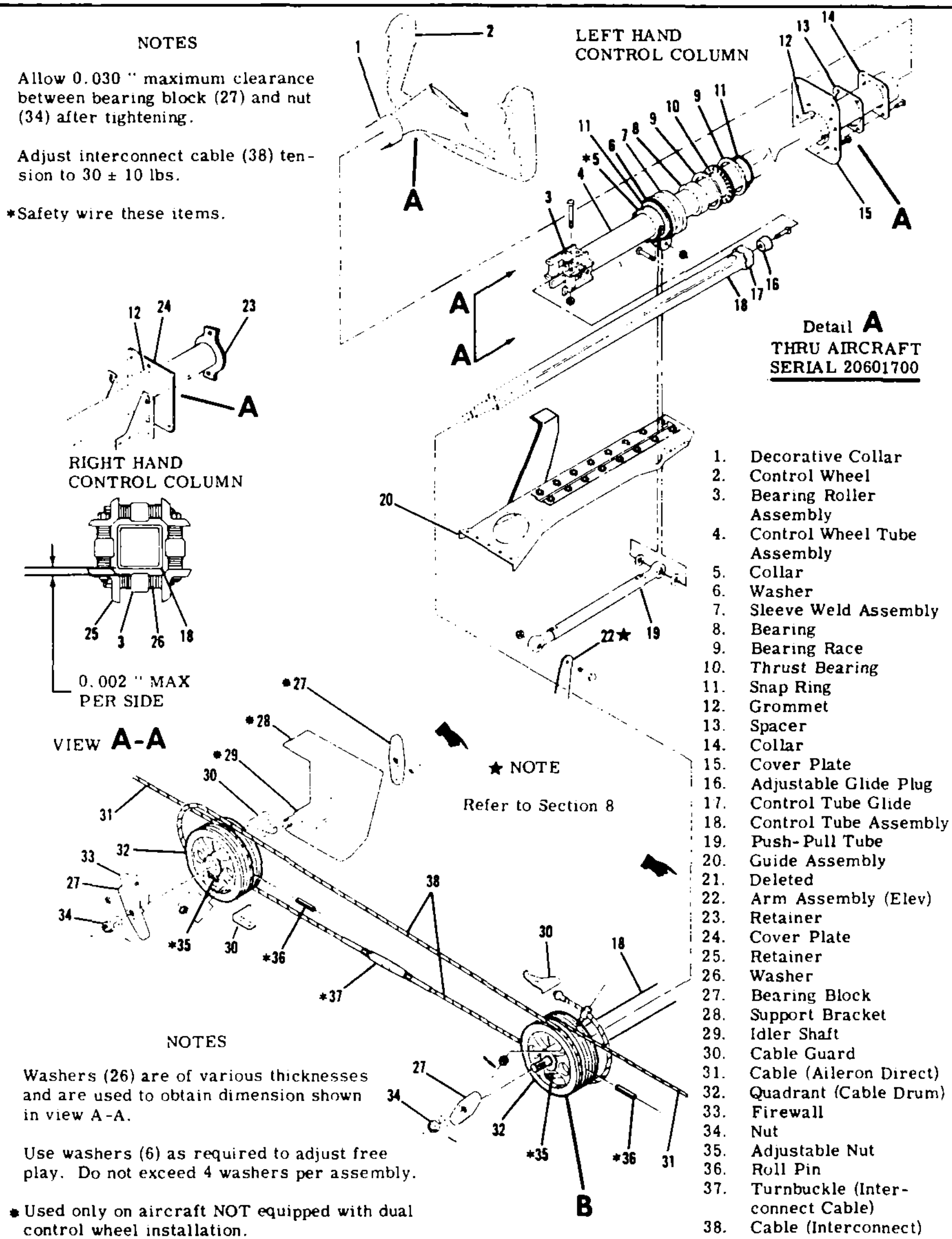
CAUTION

MAINTAIN PROPER CONTROL CABLE TENSION.

1. Pulley
2. Spacer
3. Cable Guard
4. Rear Carry-Thru Spar
5. Bushing
6. Bracket
7. Wing Spar
8. Cable (Outboard Direct)
9. Turnbuckle (Direct Cable)
10. Cable (Carry-Thru)
11. Cable (Inboard Direct)
12. Rub Strip
13. Turnbuckle (Carry-Thru Cable)
14. Turnbuckle (Interconnect Cable)

CABLE TENSION:
40 LBS ± 10 LBS ON AILERON CARRY-THRU CABLE (AT AVERAGE TEMPERATURE FOR THE AREA.)
REFER TO FIGURE 1-1 FOR TRAVEL.

Figure 6-1. Aileron Control System



NOTES

Allow 0.030 " maximum clearance between bearing block (27) and nut (34) after tightening.

Adjust interconnect cable (38) tension to 30 ± 10 lbs.

*Safety wire these items.

NOTES

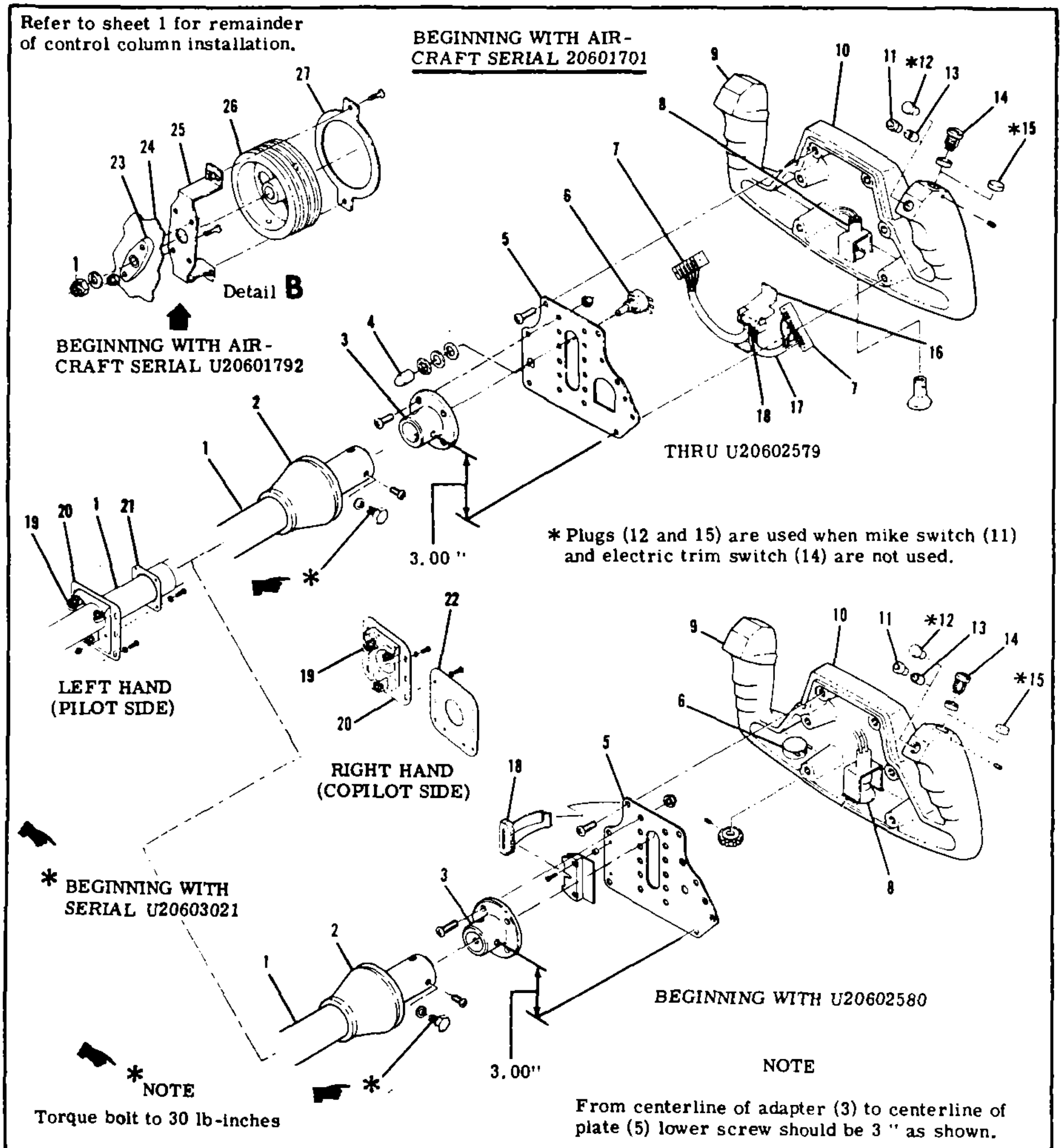
Washers (26) are of various thicknesses and are used to obtain dimension shown in view A-A.

Use washers (6) as required to adjust free play. Do not exceed 4 washers per assembly.

● Used only on aircraft NOT equipped with dual control wheel installation.

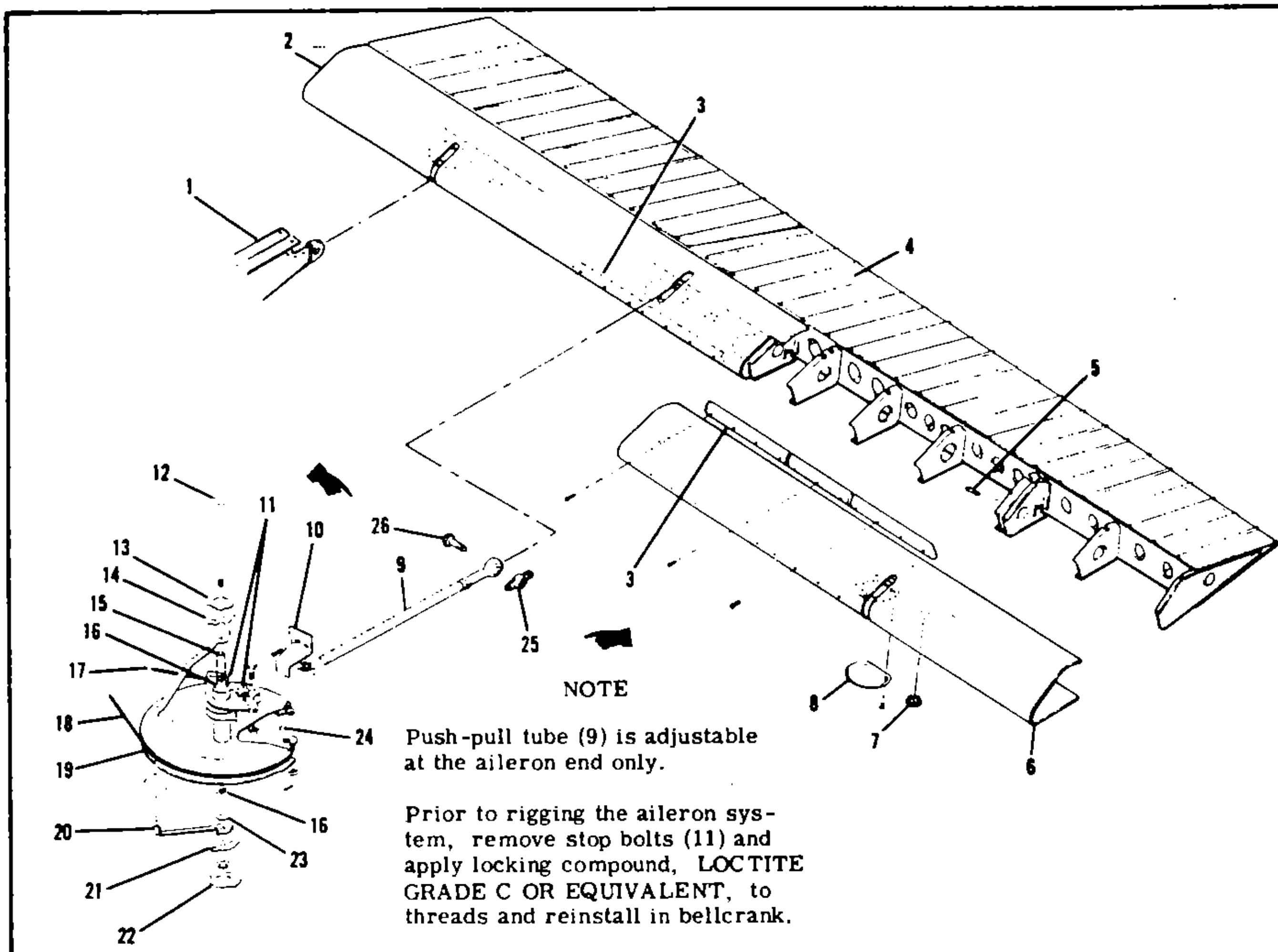
1. Decorative Collar
2. Control Wheel
3. Bearing Roller Assembly
4. Control Wheel Tube Assembly
5. Collar
6. Washer
7. Sleeve Weld Assembly
8. Bearing
9. Bearing Race
10. Thrust Bearing
11. Snap Ring
12. Grommet
13. Spacer
14. Collar
15. Cover Plate
16. Adjustable Glide Plug
17. Control Tube Glide
18. Control Tube Assembly
19. Push-Pull Tube
20. Guide Assembly
21. Deleted
22. Arm Assembly (Elev)
23. Retainer
24. Cover Plate
25. Retainer
26. Washer
27. Bearing Block
28. Support Bracket
29. Idler Shaft
30. Cable Guard
31. Cable (Aileron Direct)
32. Quadrant (Cable Drum)
33. Firewall
34. Nut
35. Adjustable Nut
36. Roll Pin
37. Turnbuckle (Interconnect Cable)
38. Cable (Interconnect)

Figure 6-2. Control Column Installation (Sheet 1 of 2)



1.	Tube Assembly	10.	Pad	19.	Bearing Assembly
2.	Cover	11.	Mike Switch	20.	Cover Plate
3.	Adapter	12.	Plug	21.	Collar
4.	Rubber Cover	13.	Insulator	22.	Single Controls Cover Plate
5.	Plate	14.	Electric Trim Switch	23.	Bearing Block
6.	Map Light Rheostat	15.	Plug	24.	Firewall
7.	Terminal Block	16.	Bracket	25.	Guard Assembly
8.	Map Light Assembly	17	Cable	26.	Quadrant
9.	Control Wheel	18.	Connector	27.	Cover Strap

Figure 6-2. Control Column Installation (Sheet 2 of 2)



NOTE

Push-pull tube (9) is adjustable at the aileron end only.

Prior to rigging the aileron system, remove stop bolts (11) and apply locking compound, LOCTITE GRADE C OR EQUIVALENT, to threads and reinstall in bellcrank.

1. Hinge Support
2. Aileron Assembly
3. Balance Weight
4. Upper Skin
5. Bolt
6. Leading Edge Skin
7. Plug Button
8. Access Plate
9. Push-Pull Tube
10. Retainer
11. Travel Stop Bolt
12. Pivot Bolt
13. Upper Wing Skin
14. Upper Aileron Bellcrank Bracket
15. Bushing
16. Bearing
17. Cable (Outboard Direct)
18. Cable (Carry-Thru)
19. Bellcrank
20. Cable Guard
21. Lower Aileron Bellcrank Bracket
22. Lower Wing Skin
23. Brass Washer
24. Cable Lock
25. Nutplate
26. Bolt

Figure 6-3. Aileron Installation

j. Remove safety wire, relieve interconnect cable tension at turnbuckle (37) and remove cables from quadrant (32).

k. Remove safety wire and remove roll pin (36) through quadrant (32) and control tube assembly (18).

l. Remove pin, nut (34) and washer from control tube assembly (18) protruding through bearing block (27) on forward side of firewall (33).

m. Using care, pull control tube assembly (18) aft and remove quadrant (32).

n. Reverse the preceding steps for reinstallation. Rig aileron and elevator control systems in accordance with paragraphs 6-17 and 8-13 respectively. Safety turnbuckles and all other items previously safetied. Tighten nut (34) securing control tube assembly (18) to firewall snugly, then loosen nut to 0.030" maximum clearance between nut and bearing block, align cotter pin hole and install pin.

6-7. REPAIR. Worn, damaged or defective shafts, bearings, quadrants, cables or other components should be replaced. Refer to Section 2 for lubrication requirements.

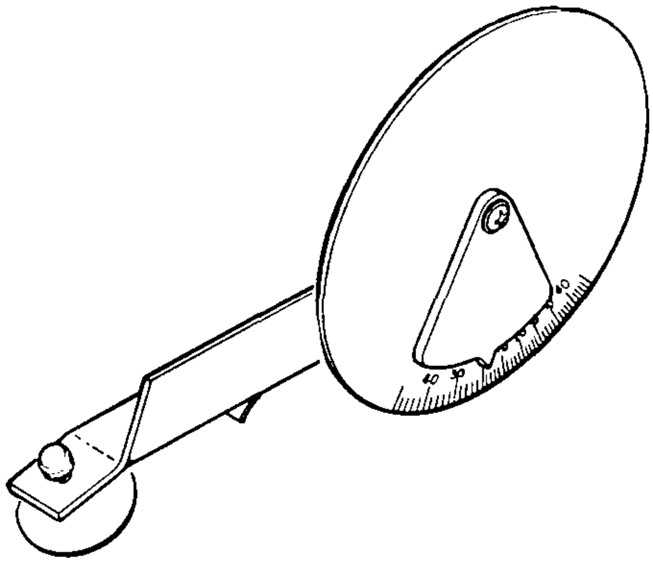


Figure 6-4. Inclinometer for Measuring Control Surface Travel

6-8. BEARING ROLLER ADJUSTMENT. (BEGINNING WITH AIRCRAFT SERIAL 20601701.) (Refer to figure 6-2.) Each bearing assembly (index 19, sheet 2) has an 0.062" eccentric adjustment when installed, for aligning the control tube weld assembly (index 7, sheet 1) and push-pull tube (index 19, sheet 1) with the guide assembly (index 20, sheet 1). For alignment, proceed as follows:

a. Remove control wheel assembly in accordance with paragraph 6-6.
b. Install cover plate (index 20, sheet 2) backwards (bearings on aft side) and leave loose with instrument panel.
c. Align control wheel tube assembly (index 4, sheet 1) for free travel of push-pull tube (index 19, sheet 1) along full length of guide assembly (index 20, sheet 1).
d. Center cover plate (index 20, sheet 2) over tube and bearing assembly and secure plate to instrument panel.
e. Adjust each bearing (index 19, sheet 2) to control wheel tube assembly and tighten bearings in place.
f. Remove cover plate and reinstall with bearings facing forward.

6-9. AILERON BELLCRANK. (Refer to figure 6-3.)

6-10. REMOVAL AND INSTALLATION.

a. Remove access plate inboard of each bellcrank (19) on underside of wing.
b. Remove safety wire and relieve cable tension at turnbuckles (index 9, figure 6-1).
c. Disconnect control cables from bellcrank (19).
d. Disconnect push-pull tube (9) at bellcrank (19).
e. Remove bolt securing bellcrank to wing structure.
f. Remove bellcrank through access opening, using care that bushing (15) is not dropped from bellcrank.

NOTE

Brass washers (23) may be used as shims between lower end of bellcrank and lower bracket (21). Retain these shims. Tape open ends of bellcrank to prevent dust and dirt from entering bellcrank needle bearings (16).

g. Reverse the preceding steps for reinstallation. Rig system in accordance with paragraph 6-17, safety turnbuckles and reinstall all items removed for access.

6-11. REPAIR. Repair of bellcranks consists of replacement of defective parts. If needle bearings are dirty or in need of lubrication, clean thoroughly and lubricate as outlined in Section 2.

6-12. CABLES AND PULLEYS. (Refer to figure 6-1.)

6-13. REMOVAL AND INSTALLATION.

a. Remove access plates, wing root fairings and upholstery as required.
b. Remove safety wire and relieve cable tension at turnbuckles (9 and 13).
c. Disconnect cables from aileron bellcranks (index 19, figure 6-3) and quadrants (index 32, figure 6-2).
d. Remove cable guards and pulleys as necessary to work cables free of aircraft.

NOTE

To ease routing of cables, a length of wire may be attached to end of cable before being withdrawn from aircraft. Leave wire in place, routed through structure; then attach cable being installed and use to pull cable into position.

e. Reverse the preceding steps for reinstallation.
f. After cables are routed in position, install pulleys and cable guards. Ensure cables are positioned in pulley grooves before installing guards.
g. Re-rig aileron system in accordance with paragraph 6-17, safety turnbuckles and install access plates, fairings and upholstery removed in step "a."

6-14. AILERONS. (Refer to figure 6-3.)

6-15. REMOVAL AND INSTALLATION.

a. Remove access plates (8) and plug buttons (7) from underside of aileron.
b. Disconnect push-pull tube (9) at ailerons.
c. Remove bolts (5) attaching ailerons to hinge supports (1).
d. Using care, pull ailerons out and down.
e. Reverse the preceding steps for reinstallation.

NOTE

If rigging was correct and push pull tube adjustment was not disturbed, it should not be necessary to re-rig system.

f. Check aileron travel and alignment, re-rig if necessary, in accordance with paragraph 6-17.

6-16. REPAIR. Aileron repair may be accomplished in accordance with instructions outlined in Section 18. Before installation, ensure balance weights and hinges are securely attached.

6-17. RIGGING.

a. (Refer to figure 6-1.) Remove access plates and upholstery as required.
b. Remove safety wire and relieve cable tension at turnbuckles (9 and 13).
c. (Refer to figure 6-3.) Disconnect push-pull tubes (9) at ailerons (2).
d. (Refer to figure 6-2.) Adjust turnbuckle (37) and adjustment nuts (35) on interconnect cable (38) to remove slack, acquire proper tension (30±10 pounds) and position both control wheels level (synchronized).
e. Tape a bar across both control wheels to hold them in neutral position.
f. (Refer to figure 6-1.) Adjust direct cable turnbuckles (9) and carry-thru cable turnbuckle (13) to position bellcranks (index 19, figure 6-3) approximately in neutral while maintaining proper cable tension.
g. Streamline ailerons with reference to flaps (flaps full UP positions), then adjust push-pull tubes (index 9, figure 6-3) to fit and install.
h. With ailerons streamlined, mount an inclinometer on trailing edge of aileron and set pointer to 0°.
i. Remove bar from control wheels and adjust travel stops (index 11, figure 6-3) to obtain travel specified in figure 1-1.
j. Ensure all turnbuckles are safetied, all cables and cable guards are properly installed, all jam nuts are tight and replace all parts removed for access.

WARNING

Be sure ailerons move in correct direction when operated by the control wheels.

SHOP NOTES:

SECTION 7

WING FLAP CONTROL SYSTEM

TABLE OF CONTENTS Page

7-1. WING FLAP CONTROL SYSTEM. (Refer to figure 7-1.)

7-2. DESCRIPTION. The wing flap control system consists of an electric motor and transmission assembly, drive pulleys, synchronizing push-pull tubes, bellcranks, push-pull rods, cables, pulleys and a follow-up control. Power from the motor and transmission assembly is transmitted to the flaps by a system of drive pulleys, cables and synchronizing tubes. Electrical power to the motor is controlled by two microswitches mounted on a "floating" arm, a control lever and a follow-up control. As the control lever is moved to the desired flap setting, a switch is tripped actuating the flap motor. As the flaps move, the floating arm is rotated by the follow-up control until the active switch clears the control lever cam, breaking the circuit. To reverse the direction of flap travel, the control lever is moved in the opposite direction. When the control lever cam contacts the second switch the flap motor is energized in the opposite direction. Likewise, the follow-up control moves the floating arm until the second switch is clear of the control lever cam.

7-3. OPERATIONAL CHECK.

a. Operate flaps through their full range of travel, observing for uneven or jumpy motion, binding and lost motion in the system. Ensure flaps are moving together through their full range of travel.

b. THRU AIRCRAFT SERIALS P20600648 AND U20601673 WHEN NOT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. Check for positive shut-off of motor at the flap travel extremes, the motor should NOT continuously freewheel at travel extremes.

c. BEGINNING WITH AIRCRAFT SERIAL U206-01674 AND ALL AIRCRAFT MODIFIED IN ACCORDANCE WITH FIGURE 7-2 SHEET 3. Check for positive shut-off of motor at the flap travel extremes, FLAP MOTOR MUST STOP OR DAMAGE WILL RESULT.

d. Check flaps for sluggishness in operation. In flight at 110 MPH (THRU AIRCRAFT SERIALS P206-00648 AND U20601700) and 120 MPH (BEGINNING WITH AIRCRAFT SERIAL U20601701), indicated airspeed, flaps should fully extend in approximately 15.5 seconds and retract in approximately 7.5 seconds. On the ground, with engine running, the flaps should extend in approximately 8 seconds and retract in approximately 7.5 seconds.

e. With flaps full UP, mount an inclinometer on one flap and set to 0°. Lower flaps to full DOWN position and check flap angle as specified in figure 1-1. Check approximate mid-range percentage setting against degrees as indicated on inclinometer. Repeat the same procedure for the opposite flap.

NOTE

An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center. Refer to figure 6-4.

f. Remove access plates and attempt to rock drive pulleys and bellcranks to check for bearing wear.

g. Inspect flap rollers and tracks for evidence of binding and defective parts.

7-4. TROUBLE SHOOTING.

NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraphs 7-21 and 7-22.

TROUBLE	PROBABLE CAUSE	REMEDY
BOTH FLAPS FAIL TO MOVE.	Popped circuit breaker.	Reset and check continuity. Replace breaker if defective.
	Defective switch.	Place jumper across switch. Replace switch if defective.
	Defective motor.	Remove and bench test. Replace motor if defective.
	Broken or disconnected wires.	Run continuity check of wiring. Connect or repair wiring as necessary.
	Disconnected or defective transmission.	Connect transmission. Remove, bench test and replace transmission if defective.
	Defective limit switch.	Check continuity of switches. Replace switches found defective.
	Follow-up control disconnected or slipping.	Secure control or replace if defective.
BINDING IN SYSTEM AS FLAPS ARE RAISED AND LOWERED.	Cables not riding on pulleys.	Open access plates and observe pulleys. Route cables correctly over pulleys.
	Bind in drive pulleys.	Check drive pulleys in motion. Replace drive pulleys found defective.
	Broken or binding pulleys.	Check pulleys for free rotation or breaks. Replace defective pulleys.
	Frayed cable.	Check condition of cables. Replace defective cables.
	Flaps binding on tracks.	Observe flap tracks and rollers. Replace defective parts.
LEFT FLAP FAILS TO MOVE.	Disconnected or broken cable.	Check cable tension. Connect or replace cable.
	Disconnected push-pull rod.	Attach push-pull rod.
FLAPS FAIL TO RETRACT.	Disconnected or defective UP limit switch.	Check continuity of switch. Connect or replace switch.

7-4. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
FLAPS FAIL TO EXTEND.	Disconnected or defective DOWN limit switch.	Check continuity of switch. Connect or replace switch.
INCORRECT FLAP TRAVEL.	Incorrect rigging.	Refer to paragraphs 7-21 and 7-22.
	Defective limit switch.	Check continuity of switches. Replace switches found defective.

7-5. FLAP MOTOR AND TRANSMISSION ASSEMBLY.

7-6. REMOVAL AND INSTALLATION.

a. THRU AIRCRAFT SERIALS P20600648 AND U20601673 WHEN NOT MODIFIED IN ACCORDANCE WITH SK150-37 AND WHEN NOT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. (Refer to figure 7-2, sheet 1.)

1. Run flaps to full DOWN position.
2. Disconnect battery cables at the battery and insulate cable terminals as a safety precaution.
3. Remove access plates adjacent to drive pulley and motor assembly on right wing.

NOTE

Remove motor (1), transmission (4), hinge assembly (2) and actuating tube (8) from the aircraft as a unit.

4. Remove bolt (20) securing actuating tube (8) to drive pulley (16).
5. Screw actuating tube (8) IN toward transmission (4) by hand to its shortest length.
6. Remove bolt (3) securing flap motor hinge assembly (2) to wing, or remove bolt (5) securing transmission (4) to hinge assembly (2). Retain brass washer between lower end of hinge and wing structure. Remove hinge assembly (2) through access opening, using care not to drop bushing from hinge. Tape open ends of hinge to protect bearings.
7. Disconnect motor electrical wiring (21) at quick-disconnects.
8. Using care, work assembly from wing through access opening.
9. Reverse the preceding steps for reinstallation. If the hinge (2) was removed from the transmission for any reason, ensure the short end of hinge is reinstalled toward the top.
10. Complete an operational check as outlined in paragraph 7-3 and re-rig flap system in accordance with paragraphs 7-21 and 7-22.

b. THRU AIRCRAFT SERIALS P20600648 AND U20601673 WHEN MODIFIED IN ACCORDANCE WITH SK150-37 AND WHEN NOT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. (Refer to figure 7-2, sheet 2.)

1. Complete steps 1, 3 and 4 of subparagraph "a."
2. Run flap motor to place actuating tube (8) IN to its shortest length.
3. Complete steps 2, 6, 7, 8, 9 and 10 of subparagraph "a."

c. BEGINNING WITH AIRCRAFT SERIAL U20601674 AND ALL AIRCRAFT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. (Refer to figure 7-2, sheets 2 and 3.)

1. Complete steps 1 thru 7 of subparagraph "a."
2. Disconnect electrical wiring at limit switches (31 and 34). Tag wires for reference on reinstallation.
3. Complete steps 8, 9 and 10 of subparagraph "a."

7-7. REPAIR. Repair consists of replacement of motor, transmission, coupling, actuating tube and associated hardware. Bearings in hinge assembly may also be replaced. Lubricate as outlined in Section 2.

7-8. FLAP CONTROL LEVER.

7-9. REMOVAL AND INSTALLATION.

a. THRU AIRCRAFT SERIALS P20600648 AND U20601700. (Refer to figure 7-3, sheet 1.)

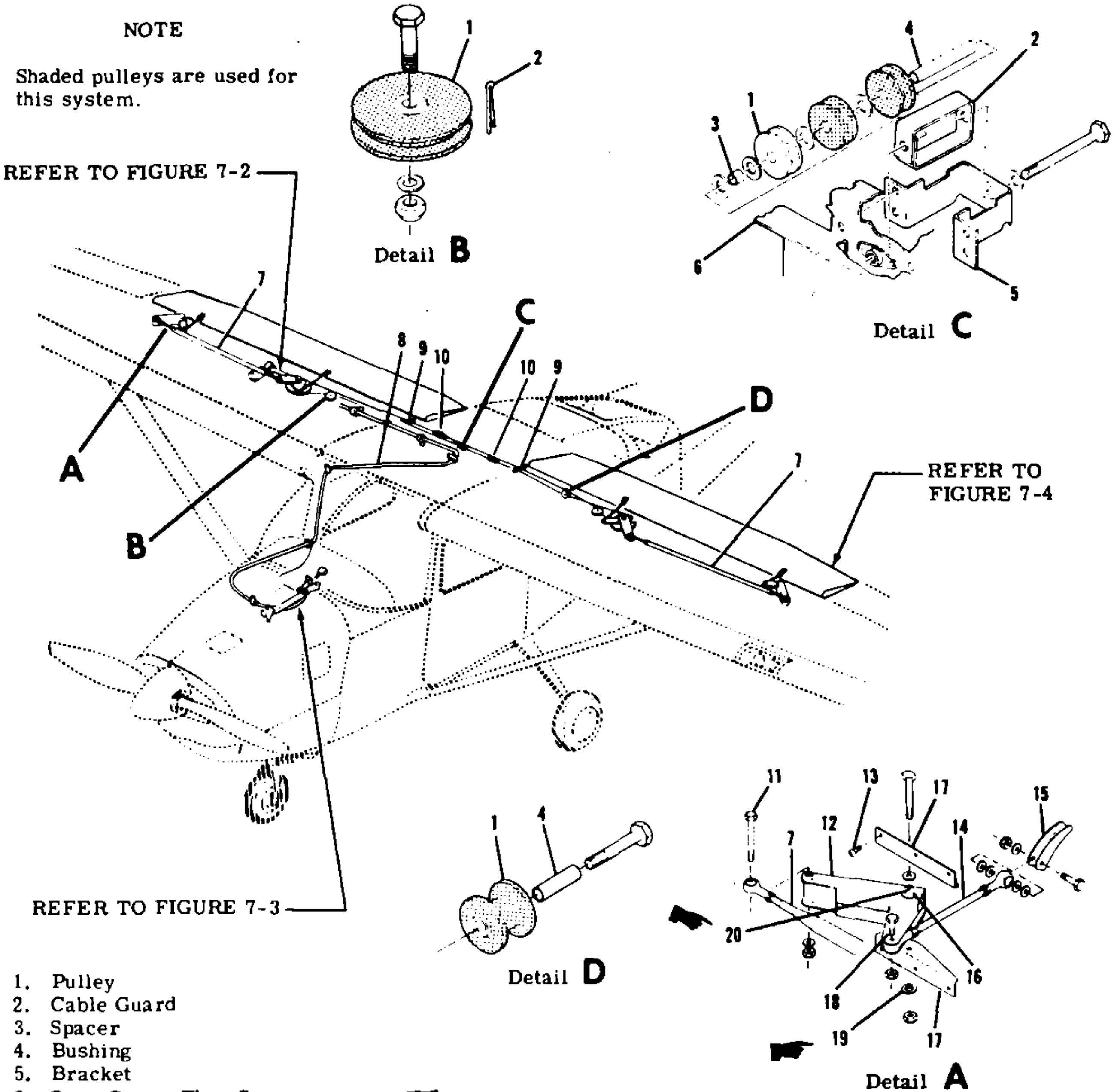
1. Remove follow-up control (1) from switch mounting arm (14).
2. Remove flap operating switches (11 and 13) from switch mounting arm (14). DO NOT disconnect electrical wiring at switches.
3. Remove knob (9) from control lever (8).
4. Remove remaining items by removing bolt (17). Use care not to drop parts into tunnel area.
5. Reverse the preceding steps for reinstallation. Do not overtighten bolt (17) causing lever (8) to bind. Rig system in accordance with paragraphs 7-21 and 7-22.

b. BEGINNING WITH AIRCRAFT SERIAL U20601701. (Refer to figure 7-3, sheet 2 and 3.)

1. Disconnect follow-up control bellcrank (24) from switch mounting arm (8).
2. Remove flap operating switches (15 and 16) from switch mounting arm (8). DO NOT disconnect electrical wiring at switches.

NOTE

Shaded pulleys are used for this system.



1. Pulley
2. Cable Guard
3. Spacer
4. Bushing
5. Bracket
6. Rear Carry-Thru Spar
7. Synchronizing Push-Pull Tube
8. Follow-Up Control
9. Rub Strip
10. Turnbuckle
11. Bolt
12. Bellcrank
13. Bolt
14. Push-Pull Rod
15. Attach Bracket
16. Bearing
17. Support
18. Bolt
19. Washer
20. Bushing

CAUTION

MAINTAIN PROPER CONTROL CABLE TENSION.

CABLE TENSION:
70 LBS ± 10 LBS (AT AVERAGE TEMPERATURE FOR THE AREA)
REFER TO FIGURE 1-1 FOR TRAVEL.

Figure 7-1. Wing Flap Control System

3. Remove knob (11) from control lever (12).

4. Remove remaining items by removing bolt (18). Use care not to drop parts into tunnel area.

5. Reverse the preceding steps for reinstallation. Do not overtighten bolt (18) causing lever (12) to bind. Rig system in accordance with paragraphs 7-21 and 7-22.

7-10. DRIVE PULLEYS. (Refer to figure 7-2.)

7-11. REMOVAL AND INSTALLATION.

a. Remove access plates adjacent to drive pulley (16) in right wing.

b. Unzip or remove headliner as necessary for access to turnbuckles (index 10, figure 7-1), remove safety wire and loosen turnbuckles.

c. Remove bolt (18) securing flap push-pull rod (14) to drive pulley (16).

d. Remove bolt (10) securing synchronizing push-pull tube (9) to drive pulley (16) and lower RIGHT flap gently.

e. Remove bolt (20) securing actuating tube (8) to drive pulley (16) and lower LEFT flap gently. Retain bushing.

f. Remove cable locks (13) securing control cables to drive pulley (16). Tag cables for reference on reinstallation.

g. THRU AIRCRAFT SERIALS P20600648 AND U20601700. Remove bolt (11) attaching follow-up control bellcrank (17) to drive pulley (16).

h. Remove bolt (12) attaching drive pulley (16) to wing structure.

i. Using care, remove drive pulley through access opening, being careful not to drop bushing. Retain brass washer between drive pulley and wing structure for use on reinstallation. Tape open ends of drive pulley after removal to protect bearings.

j. To remove left wing drive pulley, use this same procedure omitting steps "e" and "g."

k. Reverse the preceding steps for reinstallation. Rig system in accordance with paragraphs 7-21 and 7-22, safety turnbuckles and reinstall all items removed for access.

7-12. REPAIR. Repair is limited to replacement of bearings. Cracked, bent or excessively worn drive pulleys must be replaced. Lubricate drive pulley bearings as outlined in Section 2.

7-13. BELLCRANKS. (Refer to figure 7-1.)

7-14. REMOVAL AND INSTALLATION.

a. Run flaps to full DOWN position.

b. Remove access plate adjacent to bellcrank (12).

c. Remove bolt (18) securing outboard push-pull rod (14) to bellcrank (12).

d. Remove bolt (11) securing synchronizing push-pull tube (7) to bellcrank (12).

e. Remove bolts (13) securing upper and lower Supports (17).

f. Work bellcrank out through access opening.

g. Reverse the preceding steps for reinstallation. Rig system in accordance with paragraphs 7-21 and 7-22.

7-15. REPAIR. Repair is limited to replacement of bearings. Cracked, bent or excessively worn bellcranks must be replaced. Lubricate bearings as outlined in Section 2.

7-16. FLAPS. (Refer to figure 7-4.)

7-17. REMOVAL AND INSTALLATION.

a. Run flaps to full DOWN position.

b. Remove access plates (5) from top leading edge of flap.

c. Disconnect push-pull rods at flap brackets (4).

d. Remove bolts (12) at each flap track, pull flap aft and remove remaining bolt. As flap is removed from wing, all washers, rollers and bushings will fall free. Retain these for reinstallation.

e. Reverse the preceding steps for reinstallation. If push-pull rod adjustment is not disturbed, re-rigging of system should not be necessary. Check flap travel and rig in accordance with paragraphs 7-21 and 7-22, if necessary.

7-18. REPAIR. Flap repair may be accomplished in accordance wtih instructions outlined in Section 18.

7-19. CABLES AND PULLEYS. (Refer to figure 7-1.)

7-20. REMOVAL AND INSTALLATION.

a. Remove access plates, fairings, headliner and upholstery as necessary for access.

b. Remove safety wire, relieve cable tension, disconnect turnbuckles (10) and carefully lower LEFT flap.

c. Disconnect cables at drive pulleys, remove cable guards and pulleys as necessary to work cables free of aircraft.

NOTE

To ease routing of cables, a length of wire may be attached to the end of cable being withdrawn from the aircraft. Leave wire in place, routed through structure; then attach the cable being installed and use wire to pull cable into position.

d. Reverse the preceding steps for reinstallation.

e. After cables are routed in position, install pulleys and cable guards. Ensure cables are positioned in pulley grooves before installing guards.

f. Re-rig flap system in accordance with paragraphs 7-21 and 7-22, safety turnbuckles and reinstall all items removed in step "a."

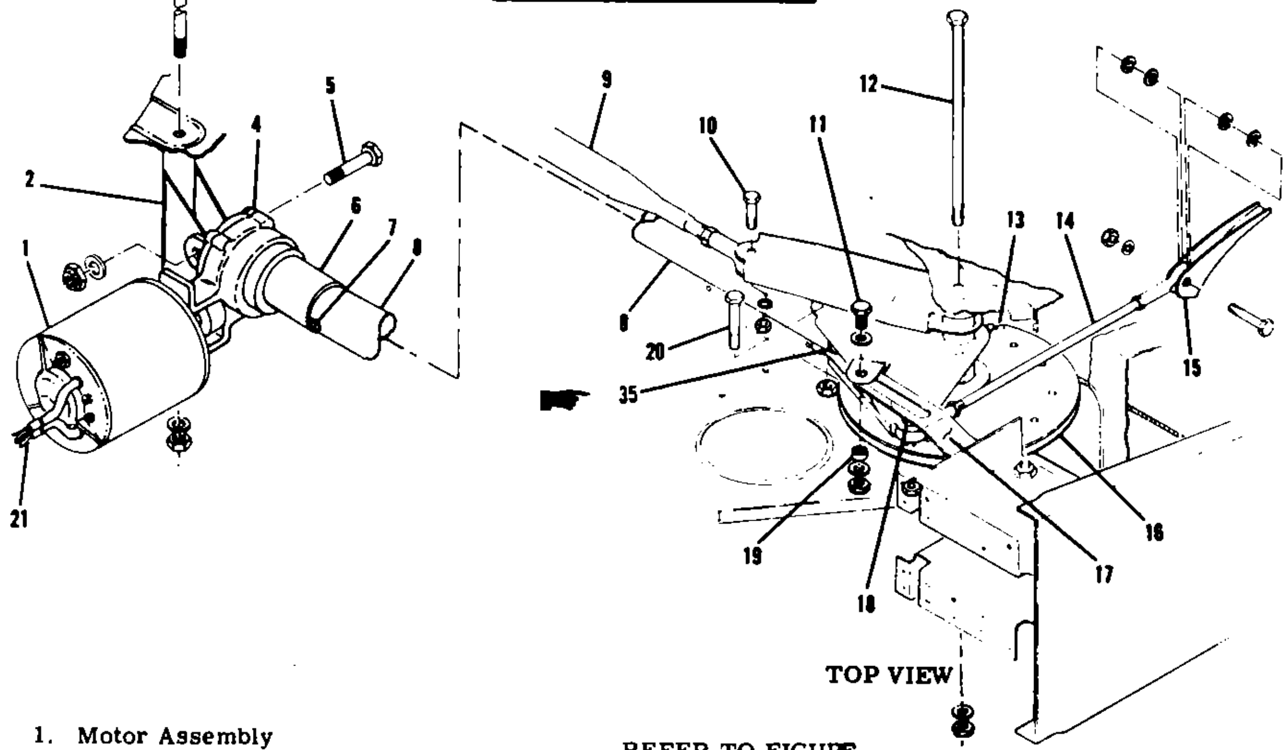
7-21. RIGGING-FLAPS. (Refer to figure 7-2.)

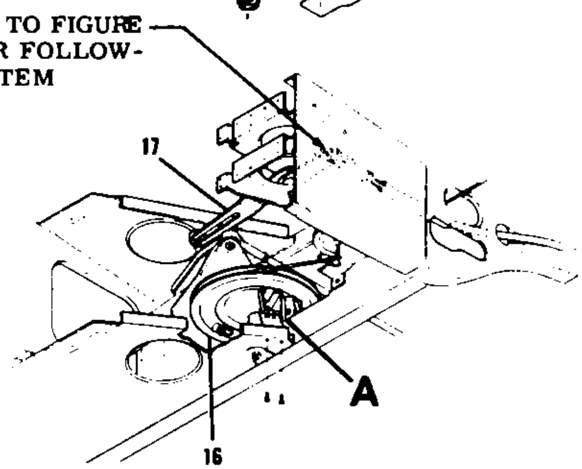
a. Unzip or remove headliner as necessary for access to turnbuckles (index 10, figure 7-1).

b. Remove safety wire, relieve cable tension, disconnect turnbuckles and carefully lower LEFT flap.

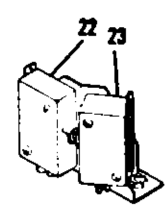
c. Remove bolt (18) securing flap push-pull rod (14) to drive pulleys (16) in both wings.

THRU AIRCRAFT SERIALS
P20600648 AND U20601673





BOTTOM VIEW



Detail A

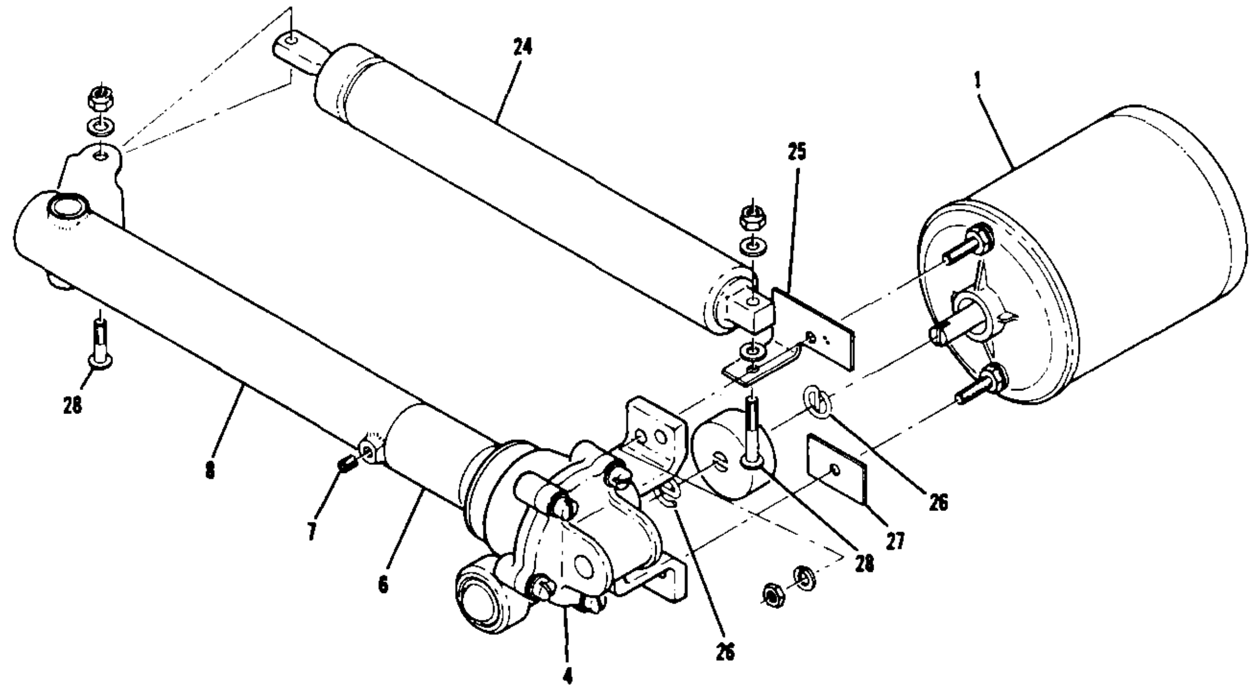
1. Motor Assembly
2. Hinge Assembly
3. Pivot Bolt
4. Transmission Assembly
5. Bolt
6. Nut and Ball Assembly
7. Setscrew
8. Actuating Tube
9. Synchronizing Push-Pull Tube
10. Bolt
11. Bolt
12. Pivot Bolt
13. Cable Lock
14. Push-Pull Rod
15. Attach Bracket
16. Drive Pulley
17. Bellcrank
18. Bolt
19. Spacer
20. Bolt
21. Electrical Wiring
22. Down-Limit Switch
23. Up-Limit Switch
24. Snubber Assembly
25. Bracket
26. Spacer
27. Shim
28. Screw
29. Setscrew
30. Switch Adjusting Block
31. Up-Limit Switch
32. Switch Actuating Collar
33. Switch Support
34. Down-Limit Switch
35. Bushing

NOTE

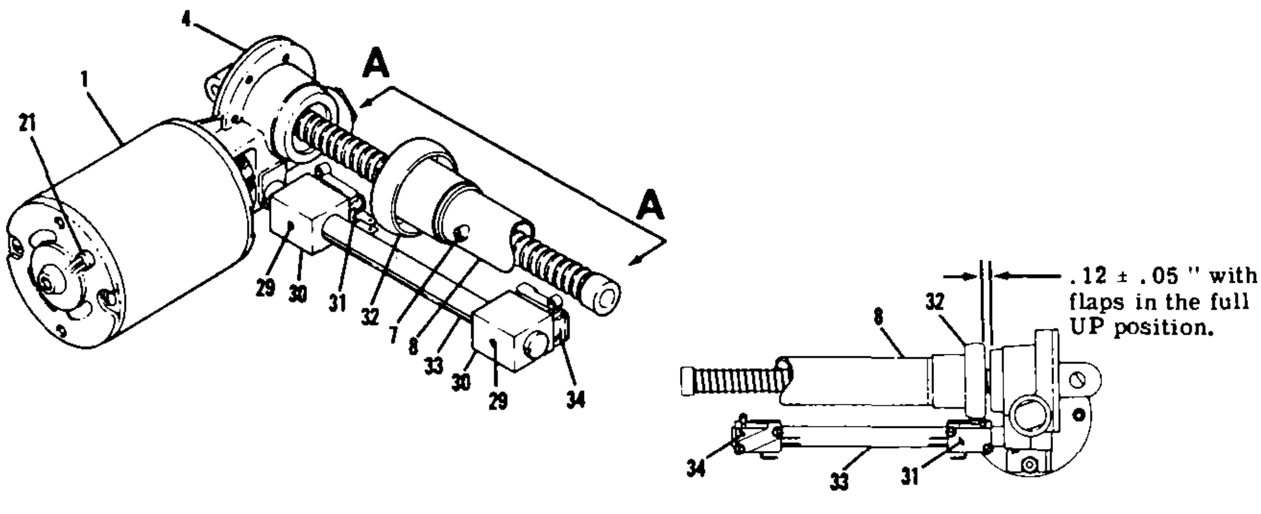
Use Loctite Sealant, Grade "C" on threads of setscrew (7) after final adjustment.

Ensure shortest end of hinge (2) is at top.

Figure 7-2. Flap Motor and Transmission Assembly (Sheet 1 of 3)



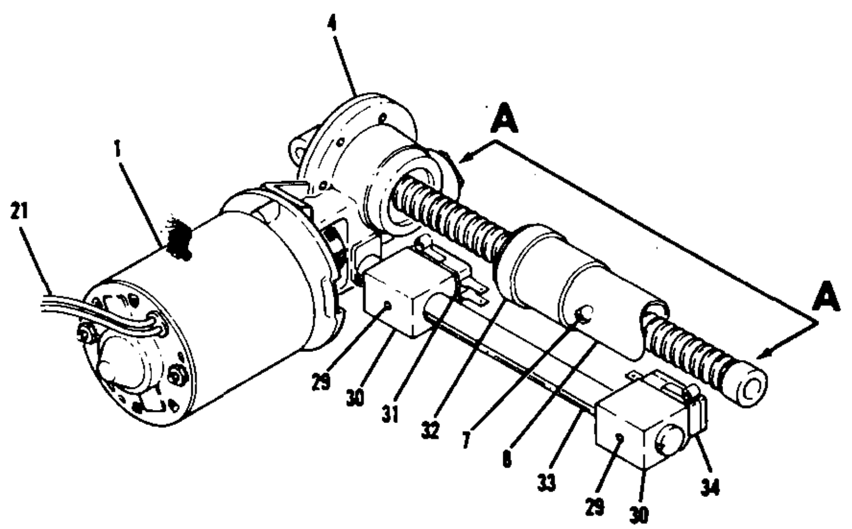
THRU AIRCRAFT SERIALS P20600648 AND U20601673
WHEN MODIFIED IN ACCORDANCE WITH SK150-37

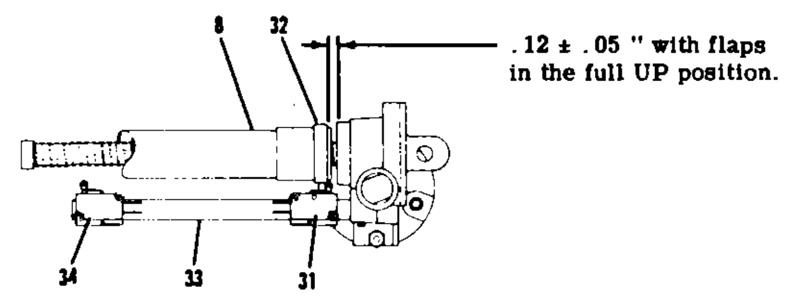


VIEW A-A

BEGINNING WITH AIRCRAFT
SERIAL U20601674

Figure 7-2. Flap Motor and Transmission Assembly (Sheet 2 of 3)





VIEW **A-A**

THIS FLAP ACTUATOR INSTALLATION IS EFFECTIVE THRU AIRCRAFT SERIALS P20600648 AND U20601673 WHEN USED AS A REPLACEMENT SPARE FOR SK150-37 OR PRODUCTION FLAP ACTUATOR INSTALLATIONS PRIOR TO U20601674

Figure 7-2. Flap Motor and Transmission Assembly (Sheet 3 of 3)

d. Remove bolt (10) securing synchronizing push-pull tube (9) to drive pulley (16) in right wing and carefully lower RIGHT flap.
e. Remove bolt securing synchronizing push-pull tube to drive pulley in left wing.
f. Disconnect outboard flap push-pull rods from bellcranks in both wings.
g. Disconnect actuating tube (8) from drive pulley (16).

NOTE

Ensure that the 3/32 inch retract cable is connected to the forward side of the right drive pulley and to the aft side of the left drive pulley and that the 1/8 inch direct cable is connected to the aft side of the right drive pulley and to the forward side of the left drive pulley. Ensure that the right drive pulley rotates clockwise, when viewed from below, as the flaps are extended. (Refer to figure 7-5.)

h. Adjust synchronizing push-pull tube (9) in RIGHT wing to 48.69 inches between centers of rod end holes, tighten jam nuts and connect to bellcrank and drive pulley.
i. THRU AIRCRAFT SERIALS P20600648 AND U20601673 WHEN NOT MODIFIED IN ACCORDANCE WITH SK150-37 AND WHEN NOT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. (Refer to figure 7-2, sheet 1.) Screw actuating tube (8) IN toward transmission (4) by hand to its shortest length (flaps full up position). Loosen setscrew (7) securing actuating tube to nut and ball assembly (6), hold nut and ball assembly so that it will not move and adjust actuating tube IN or OUT as necessary to position the RIGHT drive pulley so that the centerline of bolt hole for the inboard push-pull rod attachment is 4.20 inches aft of fuel well bulkhead (refer to figure 7-5). Tighten setscrew (7) and secure actuating tube to drive pulley with bolt (20).
j. THRU AIRCRAFT SERIALS P20600648 AND U20601673 WHEN MODIFIED IN ACCORDANCE WITH SK150-37 AND WHEN NOT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. Operate flap motor until actuating tube (8) is IN to its shortest length (flaps full up position). Loosen setscrew (7) securing actuating tube to nut and ball assembly (6), hold nut and ball assembly so that it will not move and adjust actuating tube IN or OUT as necessary to position the RIGHT drive pulley so that the centerline of bolt hole for the inboard push-pull rod attachment is 4.20 inches aft of fuel well bulkhead (refer to figure 7-5). Tighten setscrew (7) and secure actuating tube to drive pulley with bolt (20).
k. BEGINNING WITH AIRCRAFT SERIAL U206-01674 AND ALL AIRCRAFT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3. Screw actuating tube (8) IN toward transmission (4) by hand to .12±.05 inches between switch actuating collar (32) and transmission as illustrated in figure 7-2, VIEW A-A. Loosen setscrew (7) securing actuating collar (32). Hold actuating collar to maintain .12±.05" and adjust actuating tube (8) IN or OUT as necessary to align RIGHT drive pulley so that the centerline of bolt hole for inboard push-pull rod is 4.20 inches aft of fuel well bulkhead (refer to figure 7-5). Tighten setscrew (7) in accordance with procedures outlined in the following note and secure actuating tube to drive pulley with bolt (20).

NOTE

Thru Aircraft Serial U20602223: Tighten setscrew (7). Aircraft Serials U20602224 thru U20602376: Apply grade CV sealant to setscrew (7) threads and torque to 45 lb-in. Beginning with Aircraft Serial U20602377: Apply grade CV sealant to setscrew (7) threads and torque to 60 lb-in.

l. Manually holding RIGHT flap full up, adjust push-pull rods to align with drive pulley and bellcrank attachment holes. Connect push-pull rods and tighten locknuts.

NOTE

The right flap and actuator MUST be correctly rigged before cables and left flap can be rigged.

m. Mount an inclinometer on trailing edge of RIGHT flap.

NOTE

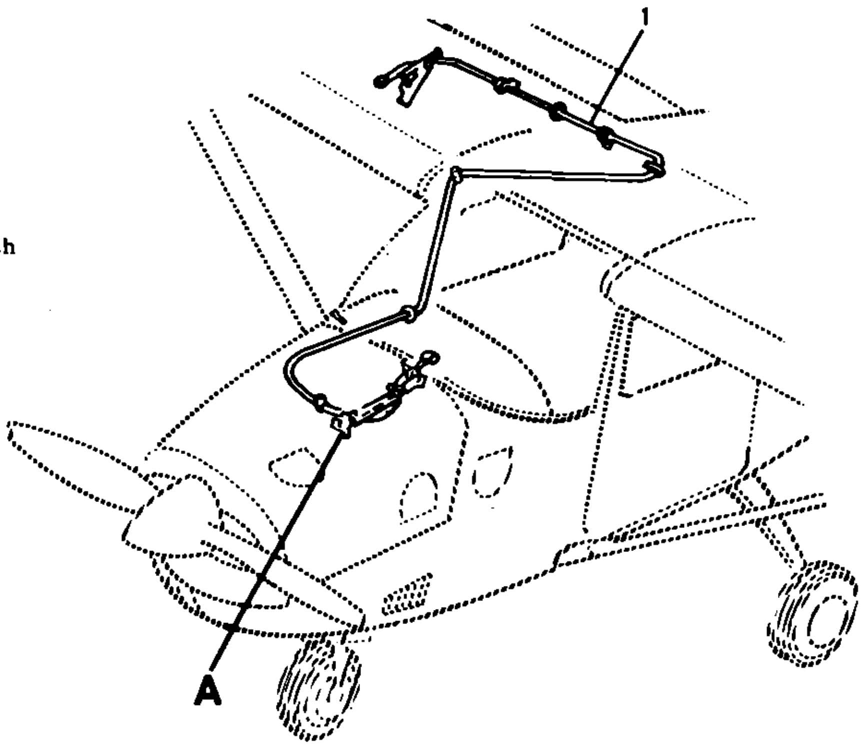
An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center. Refer to figure 6-4.

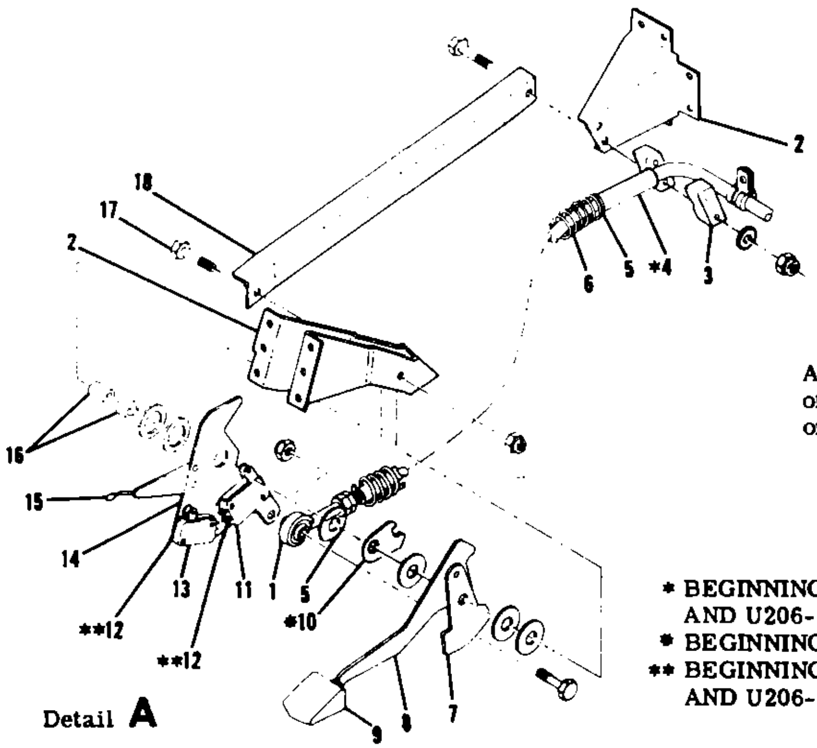
n. THRU AIRCRAFT SERIALS P20600648 AND U20601673 AND ALL AIRCRAFT NOT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3.
1. With RIGHT flap in full UP position, adjust UP-LIMIT switch (23) to operate and shut-off electrical power to motor at degree of travel specified in figure 1-1.
2. Run RIGHT flap to DOWN position and adjust DOWN-LIMIT switch (22) to operate and shut-off electrical power to motor at degree of travel specified in figure 1-1.

o. BEGINNING WITH AIRCRAFT SERIAL U206-01674 AND ALL AIRCRAFT MODIFIED IN ACCORDANCE WITH FIGURE 7-2, SHEET 3.
1. With RIGHT flap in full UP position, loosen setscrew (29) and slide UP-LIMIT switch (31) adjustment block (30) to operate switch and shut-off electrical power to motor at degree of travel specified in figure 1-1. Tighten setscrew (29).
2. Run RIGHT flap to DOWN position and adjust DOWN-LIMIT switch (34) adjustment block (30) to operate switch and shut-off electrical power to motor at degree of travel specified in figure 1-1. Tighten setscrew (29).

p. Run RIGHT flap to full UP position.
q. Complete step "h" for synchronizing push-pull tube in LEFT wing.
r. Connect control cables at turnbuckles (index 10, figure 7-1). Adjust turnbuckles to position left drive pulley so that the centerline of bolt hole for the in-

1. Follow-Up Control
2. Bracket
3. Clamp
4. Spacer
5. Washer
6. Spring
7. Cam
8. Control Lever
9. Knob
10. Bracket
11. Flaps DOWN Operating Switch
12. Insulator
13. Flaps UP Operating Switch
14. Switch Mounting Arm
15. Flap Position Indicator
16. Bushing
17. Bolt
18. Stiffener





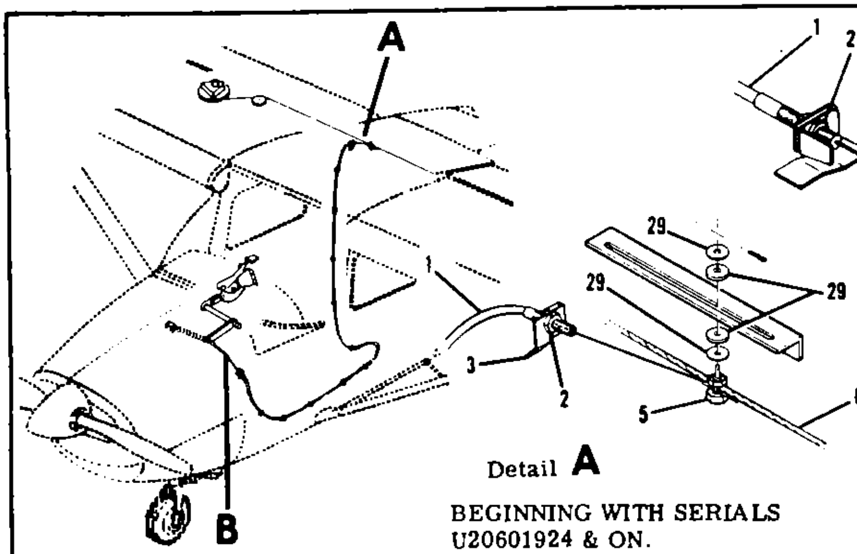
Detail **A**

NOTE

Apply Grade "C" Loctite to threads of control lever (8) upon installation of knob (9).

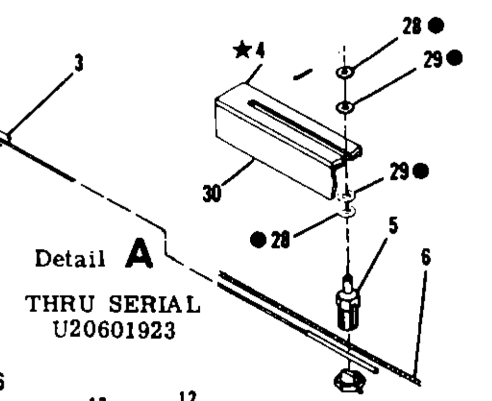
* BEGINNING WITH AIRCRAFT SERIALS P206-0534 AND U206-1237 THRU U20601590
* BEGINNING WITH AIRCRAFT SERIAL U20601633
** BEGINNING WITH AIRCRAFT SERIALS P206-0557 AND U206-1248

Figure 7-3. Flap Control Lever Installation (Sheet 1 of 3)



Detail **A**

BEGINNING WITH SERIALS
U20601924 & ON.



Detail **A**

THRU SERIAL
U20601923

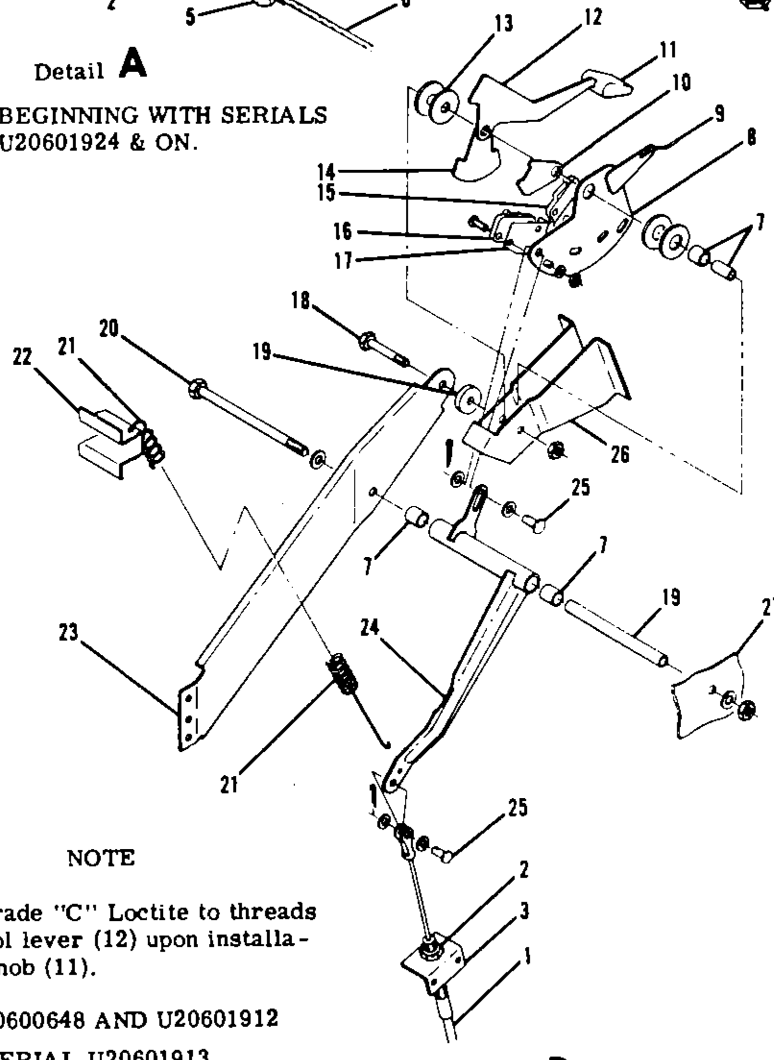
1. Follow-Up Control
2. Control Adjustment Nut
3. Control Bracket
4. Nylon Guide
5. Union Assembly
6. Retract Cable
7. Bushing
8. Arm Assembly
9. Flap Position Indicator
10. Bracket
11. Knob
12. Control Lever
13. Washer
14. Cam
15. Flaps UP Operating Switch
16. Flaps DOWN Operating Switch
17. Insulator
18. Bolt
19. Spacer
20. Bolt
21. Spring
22. Firewall Stiffener
23. Bracket
24. Bellcrank Assembly
25. Pin
26. Bracket
27. Pedestal Structure
28. Metal Washer
29. Nylon Washer
30. Support

NOTE

Apply Grade "C" Loctite to threads of control lever (12) upon installation of knob (11).

★ THRU AIRCRAFT SERIALS P20600648 AND U20601912

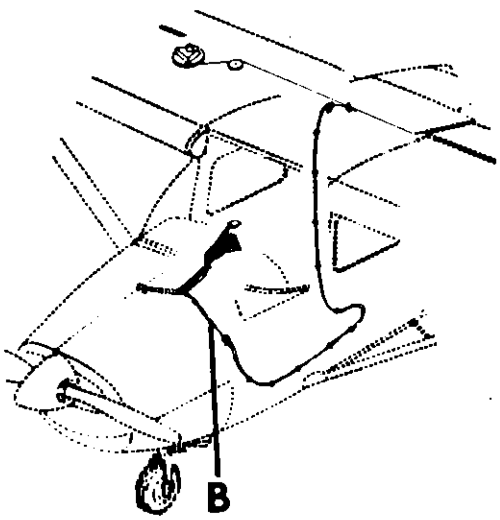
● BEGINNING WITH AIRCRAFT SERIAL U20601913 (Refer to Cessna Service Letter SE 73-8 for additional information).

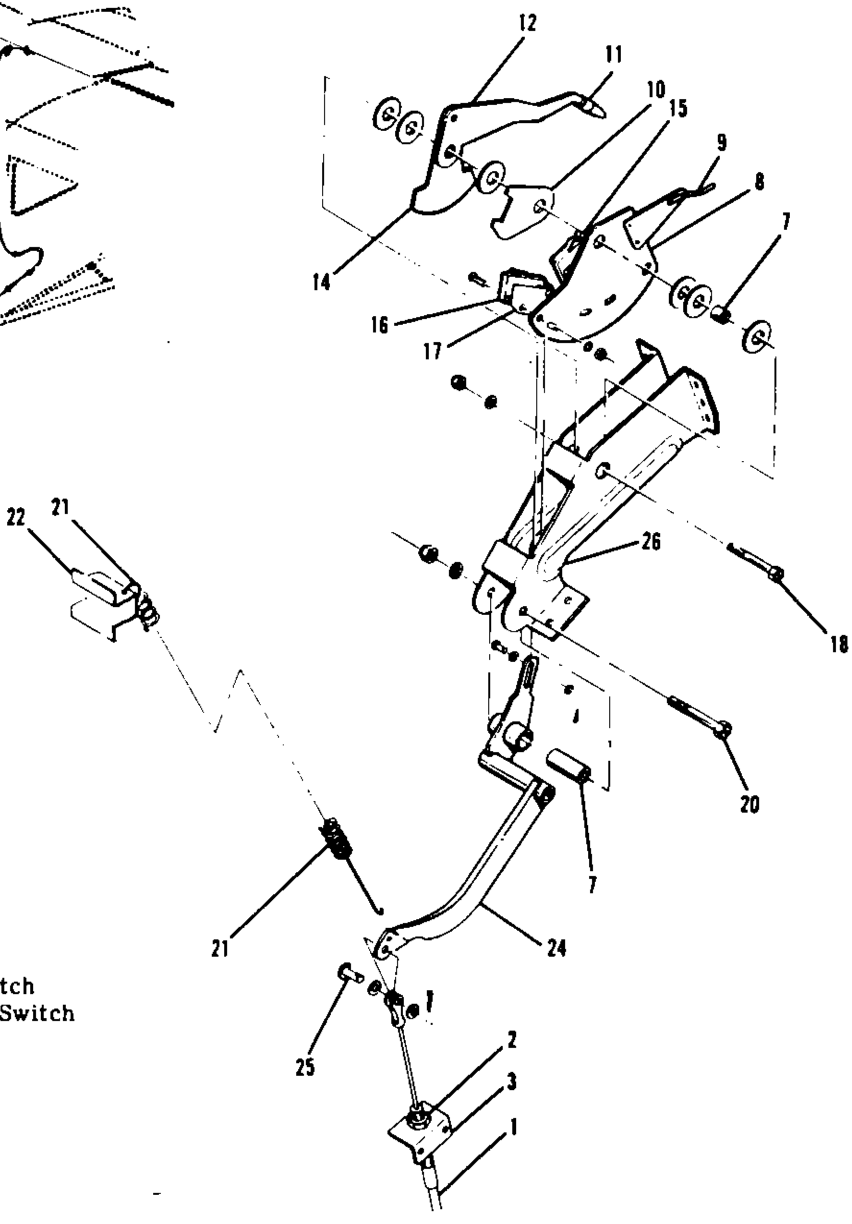


Detail **B**

SERIALS U20601701 THRU U20603020

Figure 7-3. Flap Control Lever Installation (Sheet 2 of 3)



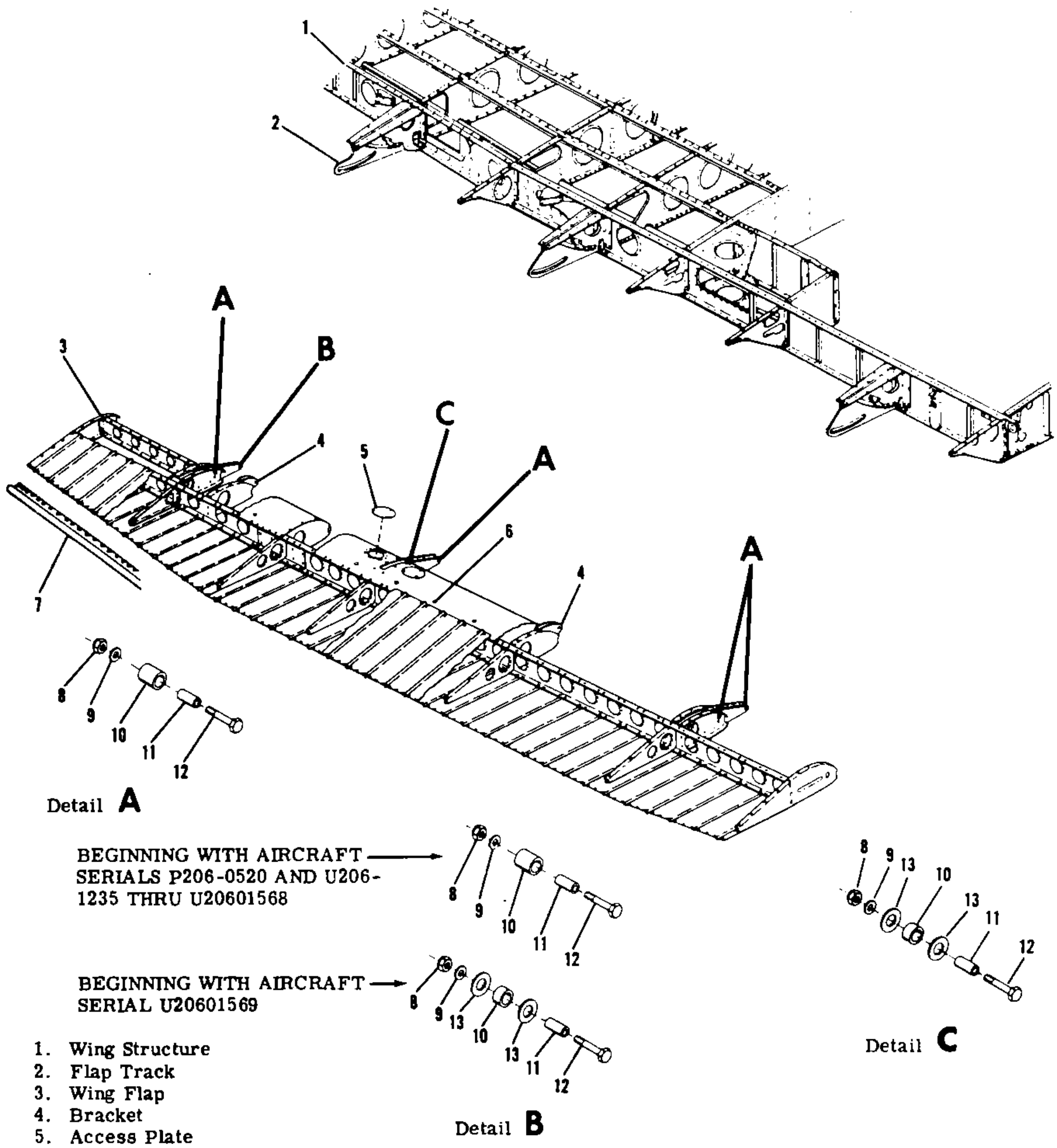


1. Follow-Up Control
2. Control Adjustment Nut
3. Control Bracket
4. Nylon Guide
5. Union Assembly
6. Retract Cable
7. Bushing
8. Arm Assembly
9. Flap Position Indicator
10. Bracket
11. Knob
12. Control Lever
13. Washer
14. Cam
15. Flaps UP Operating Switch
16. Flaps DOWN Operating Switch
17. Insulator
18. Bolt
19. Spacer
20. Bolt
21. Spring
22. Firewall Stiffener
23. Bracket
24. Bellcrank Assembly
25. Pin
26. Bracket
27. Pedestal Structure
28. Metal Washer
29. Nylon Washer
30. Support

Detail **B**

BEGINNING WITH SERIAL
U20603021

Figure 7-3. Flap Control Lever Installation (Sheet 3 of 3)



1. Wing Structure
2. Flap Track
3. Wing Flap
4. Bracket
5. Access Plate
6. Nylon Plug Button
7. Stiffener
8. Nut
9. Washer
10. Roller
11. Bushing
12. Bolt
13. Spacer

NOTE

Bushings (11), rollers (10) and spacers (13) are first positioned through slots in flap tracks, then are secured to the flap roller supports with attaching bolts, washers and nuts. Nylon plug buttons (6) prevent flap from chafing wing trailing edge.

Figure 7-4. Flap Installation

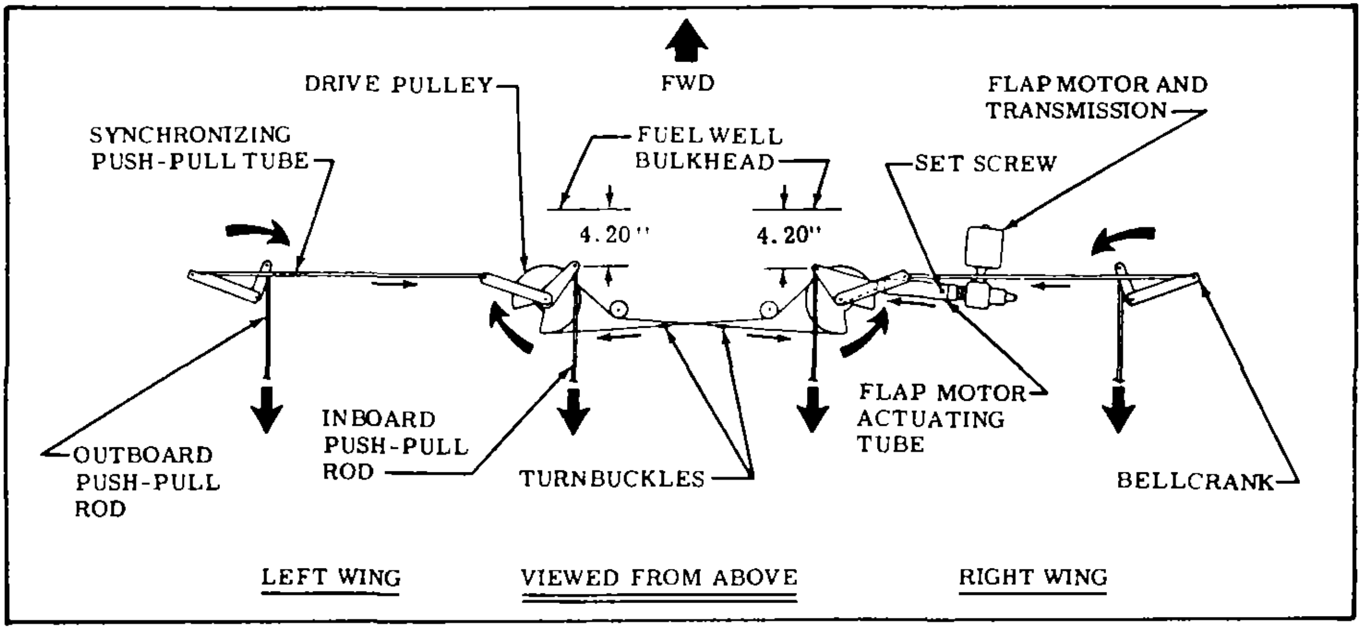


Figure 7-5. Flap System Schematic

board push-pull rod attachment is 4.20 inches aft of fuel well bulkhead, maintaining 70±10 pounds tension. Adjust retract cable first.

NOTE

Ensure cables are positioned in pulley grooves and cable ends are positioned correctly at drive pulleys before tightening turnbuckles.

s. Manually holding LEFT flap full UP, adjust push-pull rods to align with drive pulley and bell-crank attachment holes. Connect push-pull rods and tighten locknuts.

t. After completion of steps "a" thru "s", operate flaps and check for positive shut-off of flap motor through several cycles. Check for specified flap travel with inclinometer mounted on each flap separately.

NOTE

Since the flap rollers may not bottom in the flap tracks with flaps fully extended, some free play may be noticed in this position.

7-22. RIGGING-FLAP CONTROL LEVER AND FOLLOW-UP.

a. THRU AIRCRAFT SERIALS P20600648 AND U20601700. (Refer to figure 7-3, sheet 1.)

1. Disconnect follow-up control rod end (1) at switch mounting arm (14).

2. Move control lever (8) to full UP position, then without moving control lever, move switch mounting arm (14) until cam (7) is centered between switches (11 and 13). Adjust follow-up control rod end (1) to align with the attaching hole in the switch mounting arm and secure rod end to mounting arm maintaining this position.

3. Mount an inclinometer on trailing edge of one flap and set to 0°. Turn master switch ON and move control lever to the 10° position. If flap travel is more than 10°, adjust flaps DOWN operating switch (11) away from cam (7) and recycle flaps. If flap travel is less than 10°, adjust flaps DOWN operating switch (11) closer to cam (7) and recycle flaps.

NOTE

An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center. Refer to figure 6-4.

4. Adjust flaps UP operating switch (13) in slotted holes for .062 inch clearance between switch roller and cam (7) when the flaps DOWN operating switch has just opened in the 10° and 20° position.

NOTE

Flap travel on UP cycle may deviate a maximum of 4° from indicated position.

5. Turn master switch ON and run flaps through several cycles, stopping at various mid-range settings and checking that cable tension is within limits. Retract cable tension may increase to 90 pounds when flaps are fully retracted.

6. Check all rod ends and clevis ends for sufficient thread engagement, all jam nuts are tight and reinstall all items removed for access.

7. Flight test aircraft and check that follow-up control does not cause automatic cycling of flaps. If cycling occurs, readjust operating switches as necessary per steps 2, 3 and 4.

b. BEGINNING WITH AIRCRAFT SERIAL U20601701. (Refer to figure 7-3, sheet 2 and 3.)

1. Run flaps to full UP position.
2. Remove upholstery and headliner as necessary for access.
3. Pull all slack from follow-up control cable and with position indicator (9) in the full UP position, secure follow-up cable to retract cable (6) with union assembly (5). Ensure union assembly is at end of support (30).
4. Connect spring (21) to bellcrank (24).
5. Make minor cable length adjustments at brackets (3) by adjusting nuts (2).
6. With control lever (12) in full UP position, adjust switches (15 and 16) in slotted holes until cam (14) is centered between switch rollers. Be sure control lever (12) is in full UP position during this adjustment.
7. Mount an inclinometer on trailing edge of one flap and set to 0°. Turn master switch ON and move control lever to 10° position. If flap travel is more than 10°, adjust flaps DOWN operating switch (16) away from cam (14) and recycle flaps. If flap travel is less than 10°, adjust flaps DOWN operating switch (16) closer to cam (14) and recycle flaps.

NOTE

An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center. Refer to figure 6-4.

8. Adjust flaps UP operating switch (15) in slotted holes for .062 inch clearance between switch roller and cam (14) when the flaps DOWN operating switch has just opened in the 10° and 20° position.

NOTE

Flap travel on UP cycle may deviate a maximum of 4° from indicated position.

9. Turn master switch ON and run flaps through several cycles, stopping at various mid-range settings and checking that cable tension is within limits. Retract cable tension may increase to 90 pounds when flaps are fully retracted.

SHOP NOTES:

SECTION 8

ELEVATOR CONTROL SYSTEM

TABLE OF CONTENTS

8-1. ELEVATOR CONTROL SYSTEM. (THRU U20602579) (Refer to figure 8-1.)

8-2. DESCRIPTION. The elevators are operated by power transmitted through fore-and-aft movement of the pilot or copilot control wheels. The system is comprised of control columns, an elevator torque tube, cables and pulleys. The elevator control cables, at their aft ends, are attached to a bellcrank mounted on a bulkhead in the tailcone. A push-pull tube connects this bellcrank to the elevator arm assembly, installed between the elevators. An elevator trim tab is installed in the trailing edge of the right elevator and is described in Section 9.

8-2A. ELEVATOR CONTROL SYSTEM BEGINNING WITH AIRCRAFT SERIAL U2062580. (Refer to figure 8-1A.)

8-2B. DESCRIPTION. Beginning with aircraft serial U20602580 and on. the single large elevator down spring is replaced by two smaller springs which attach to each side of the elevator bellcrank and anchor to the lower forward face of the tailcone bulkhead. The elevator up and down cables are re-routed from the elevator control arm assembly through the fuselage to the elevator bellcrank in the tailcone. The elevator up cable is routed to the top turnbuckle connected to the elevator bellcrank.

8-3. TROUBLE SHOOTING.

NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 8-14.

TROUBLE	PROBABLE CAUSE	REMEDY
NO RESPONSE TO CONTROL WHEEL FORE-AND-AFT MOVEMENT.	Forward or aft end of push-pull tube disconnected.	Check visually. Attach push-pull tube correctly.
	Cables disconnected.	Check visually. Attach cables and rig system in accordance with paragraph 8-14.

8-3. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
BINDING OR JUMPY MOTION FELT IN MOVEMENT OF ELEVATOR SYSTEM.	Defective bellcrank or arm assembly pivot bearings or push-pull tube attach bearings.	Move bellcrank or arm to check for play or binding. Disconnect push-pull tube and check that bearings rotate freely. Replace defective parts.
	Cables slack.	Check and adjust to tension specified in figure 8-1.
	Cables not riding correctly on pulleys.	Check visually. Route cables correctly over pulleys.
	Nylon grommet on instrument panel binding.	Replace grommet.
	Defective control column bearing rollers.	Check visually. Replace defective rollers.
	Defective control column torque tube bearings.	Disconnect necessary items and check that bearings rotate freely. Replace defective bearings.
	Control guide on aft end of control square tube adjusted too tightly.	Loosen screw and tapered plug in end of control tube enough to eliminate binding.
	Defective elevator hinges.	Disconnect push-pull tube and move elevators by hand. Replace defective hinges.
	Defective pulleys or cable guards.	Check visually. Replace defective parts and install guards properly.
ELEVATORS FAIL TO ATTAIN PRESCRIBED TRAVEL.	Stops incorrectly set.	Rig in accordance with paragraph 8-14.
	Cables tightened unevenly.	Rig in accordance with paragraph 8-14.
	Interference at instrument panel.	Rig in accordance with paragraph 8-14.

8-4. CONTROL COLUMN. (Refer to figure 6-2.) Section 6 outlines removal, installation and repair of control column.

8-5. ELEVATORS. (Refer to figure 8-2.)

8-6. REMOVAL AND INSTALLATION.

a. Remove stinger.

b. Disconnect trim tab push-pull tube at tab actuator. (Refer to Section 9.)

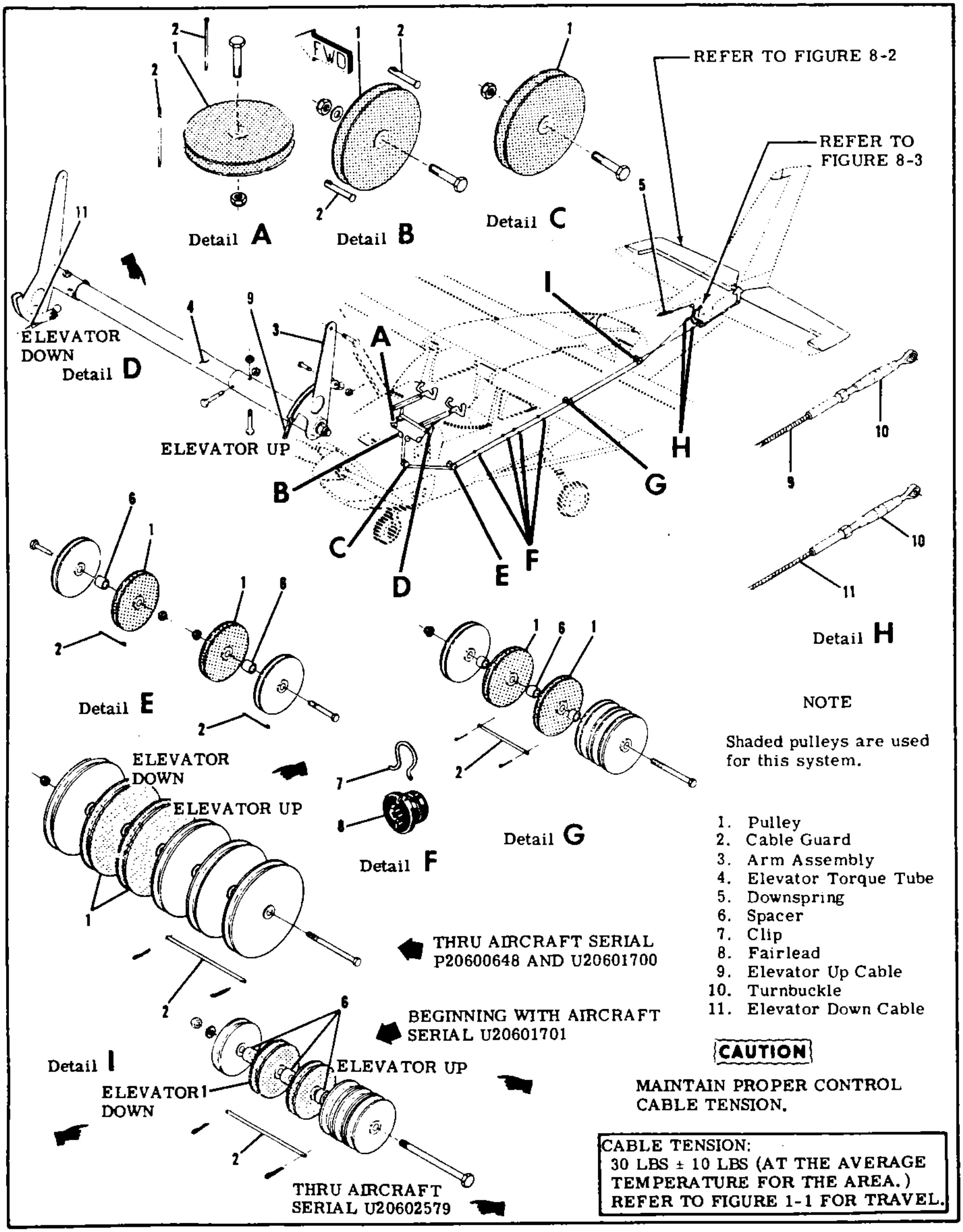
NOTE

If trim system is not moved and actuator screw is not turned, re-rigging of trim system should not be necessary after reinstallation of elevator.

c. Remove bolts (13) securing elevator torque tubes (7) to arm assembly (8).

d. Remove bolts (6) from elevator hinges (5).

e. Using care, remove elevator.



NOTE

Shaded pulleys are used for this system.

1. Pulley
2. Cable Guard
3. Arm Assembly
4. Elevator Torque Tube
5. Downspring
6. Spacer
7. Clip
8. Fairlead
9. Elevator Up Cable
10. Turnbuckle
11. Elevator Down Cable

CAUTION

MAINTAIN PROPER CONTROL CABLE TENSION.

CABLE TENSION:
30 LBS ± 10 LBS (AT THE AVERAGE TEMPERATURE FOR THE AREA.)
REFER TO FIGURE 1-1 FOR TRAVEL.

Figure 8-1. Elevator Control System

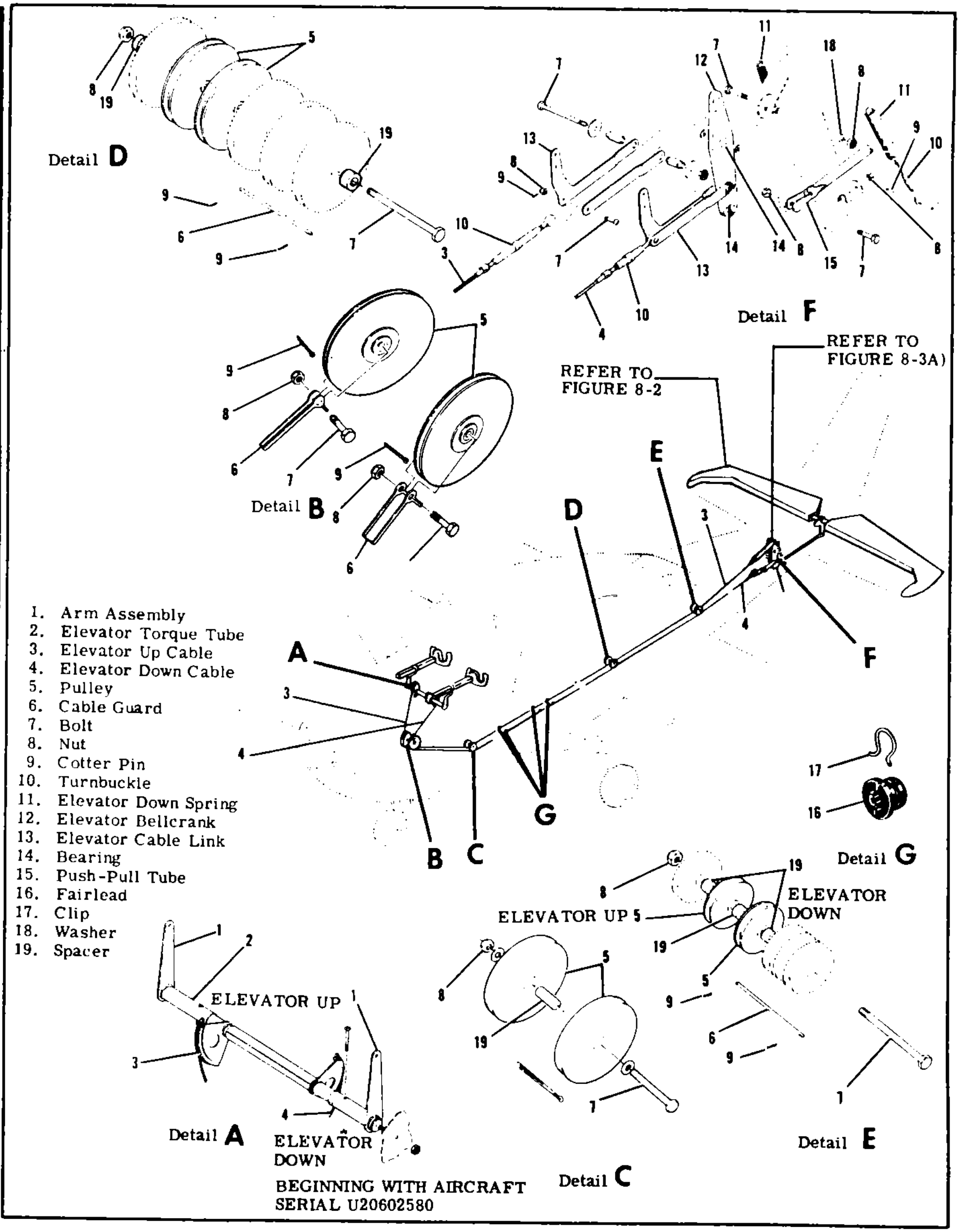
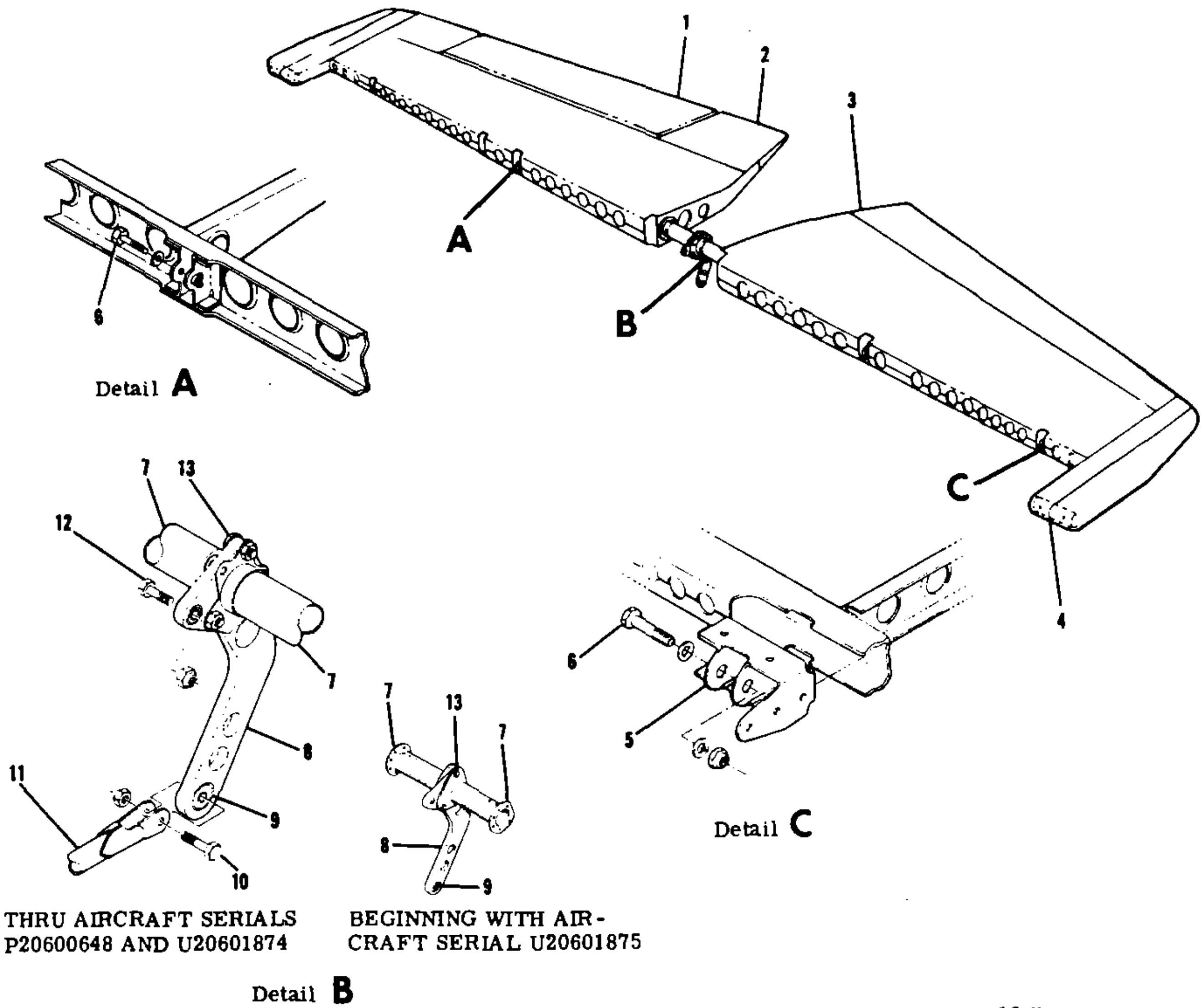
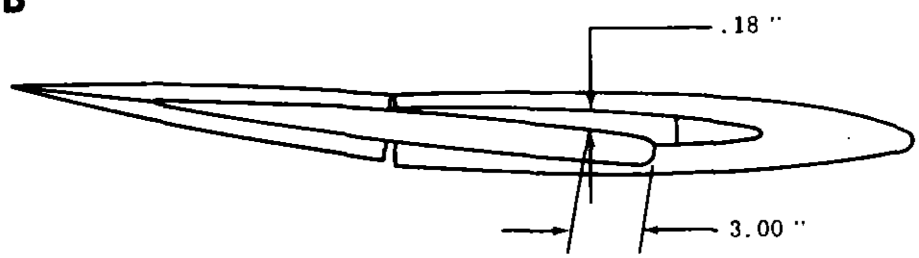


Figure 8-1A. Elevator Control System





THIS VIEW APPLIES TO THE RIGHT HAND ELEVATOR WHEN THE LEFT HAND ELEVATOR IS STREAMLINED

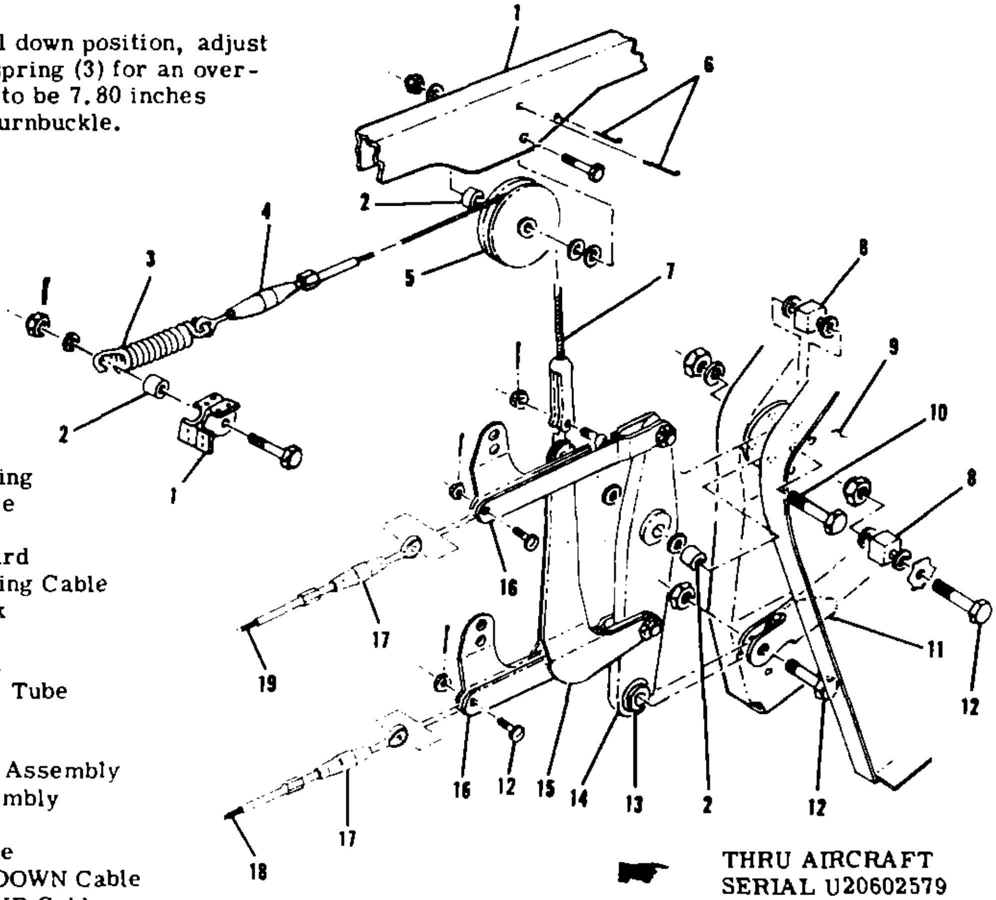
1. Trim Tab
2. Right Elevator
3. Left Elevator
4. Balance Weight
5. Hinge Assembly
6. Bolt
7. Torque Tube
8. Arm Assembly
9. Needle Bearing
10. Bolt
11. Push-Pull Tube
12. Pivot Bolt
13. Bolt

NOTE

Do not attempt to align the elevator trailing edges as there is a 0° 54' twist designed into the connecting torque tube. This twist causes the right elevator to be higher than the left.

Figure 8-2. Elevator Installation

With elevators in the full down position, adjust turnbuckle (4) and downspring (3) for an overall length of downspring to be 7.80 inches (71±3 lbs); safety wire turnbuckle.



1. Bracket
2. Spacer
3. Down-Spring
4. Turnbuckle
5. Pulley
6. Cable Guard
7. Down-Spring Cable
8. Stop Block
9. Bracket
10. Pivot Bolt
11. Push-Pull Tube
12. Bolt
13. Bearing
14. Bellcrank Assembly
15. Link Assembly
16. Link
17. Turnbuckle
18. Elevator DOWN Cable
19. Elevator UP Cable

THRU AIRCRAFT SERIAL U20602579

With elevators in the full down position, adjust turnbuckle (4) and downspring (3) to a length of 10.45 inches at 36±1 lbs spring tension(measured from centerline of turnbuckle fork to outside of spring loop); safety wire turnbuckle.

BEGINNING WITH AIRCRAFT SERIAL U20602580

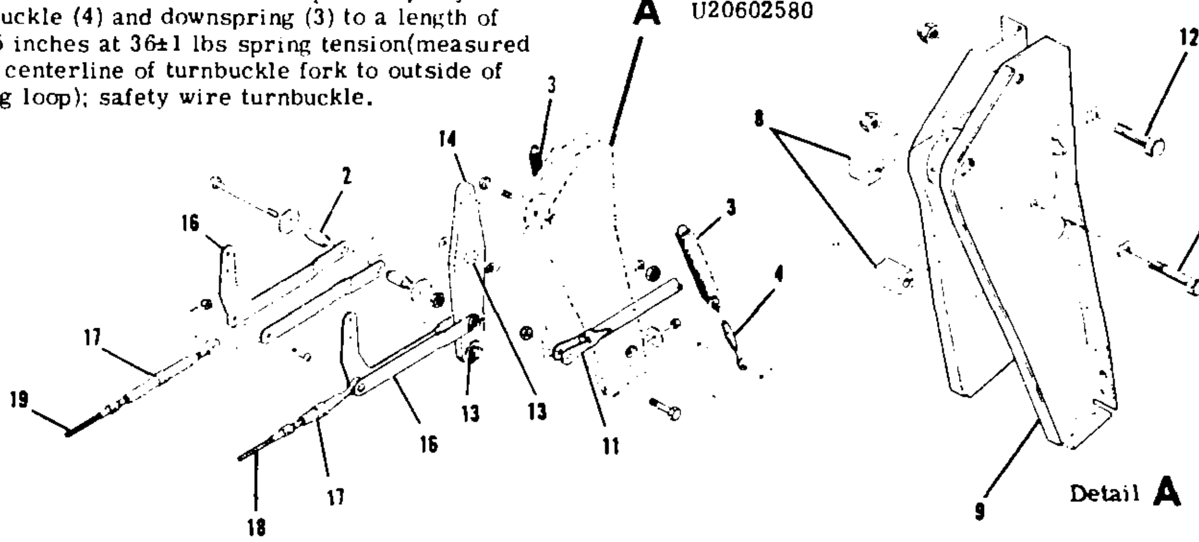


Figure 8-3. Elevator Bellcrank Installation

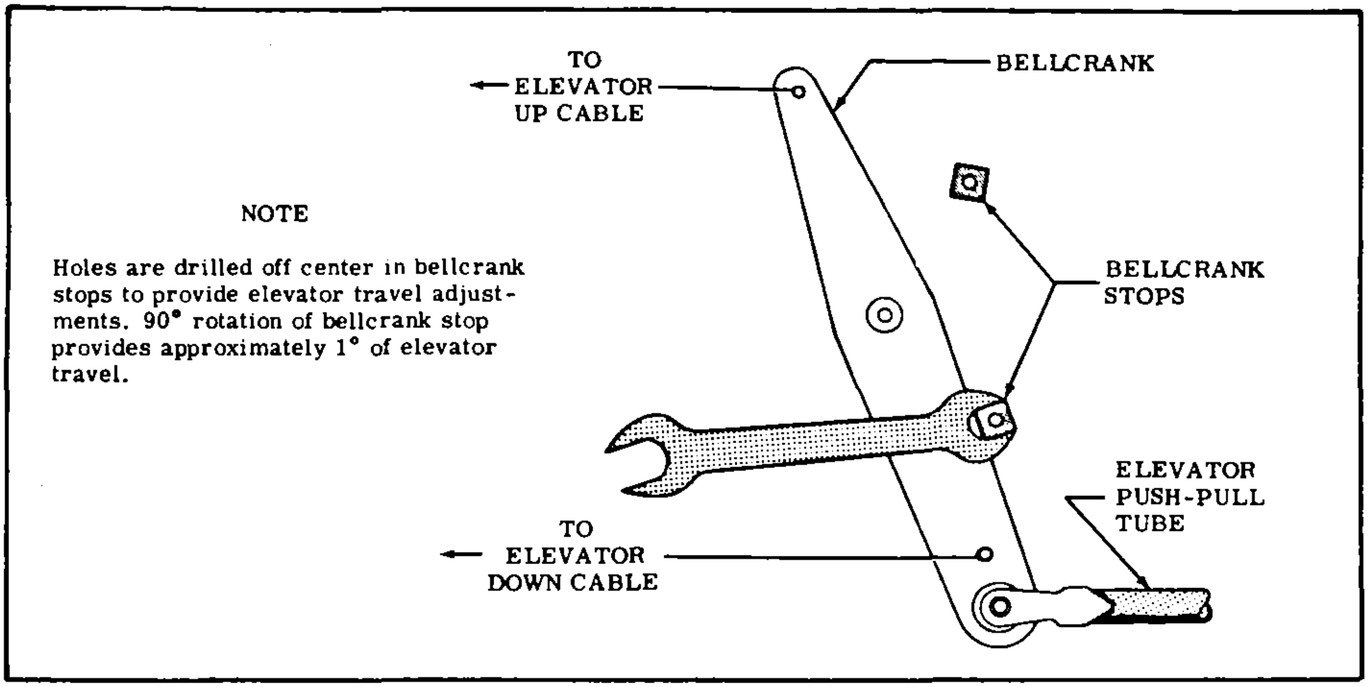


Figure 8-4. Elevator Bellcrank Travel Stop Adjustment

f. To remove left elevator use same procedure, omitting step "b."

g. Reverse the preceding steps for reinstallation.

8-7. REPAIR. Repair may be accomplished as outlined in Section 18. Hinge bearings may be replaced as necessary. If repair has affected static balance, check and rebalance as required.

8-8. BELLCRANK. (Refer to figure 8-3.)

8-9. REMOVAL AND INSTALLATION.

a. Remove access plate below bellcrank on tailcone.

CAUTION

Position a support stand under tail tie-down ring to prevent the tailcone from dropping while working inside.

b. Remove safety wire, relieve cable tension at turnbuckles (17) and disconnect turnbuckle eyes at bellcrank links (16).

c. Remove safety wire, relieve cable tension at turnbuckle (4) and disconnect cable (7) at link assembly (15).

d. Remove bolt (12) securing push-pull tube (11) to bellcrank (14).

e. Remove pivot bolt (10) attaching bellcrank (14) to brackets (9) and remove bellcrank.

f. Reverse the preceding steps for reinstallation. Rig system in accordance wtih paragraph 8-14, safety turnbuckles and reinstall all items removed for access.

8-10. ARM ASSEMBLY. (Refer to figure 8-2.)

8-11. REMOVAL AND INSTALLATION.

a. Remove stinger.

b. Remove bolt (10) securing push-pull tube (11) to arm assembly (8).

c. Remove bolts (13) attaching elevator torque tubes (7) to arm assembly (8).

d. Remove pivot bolt (12) securing arm assembly (8) and slide assembly from between elevator torque tubes.

e. Reverse the preceding steps for reinstallation and reinstall all items removed for access.

8-12. CABLES AND PULLEYS. (Refer to figure 8-1.)

8-13. REMOVAL AND INSTALLATION.

CAUTION

Position a support stand under tail tie-down ring to prevent the tailcone from dropping while working inside.

a. Remove seats, upholstery and access plates as necessary.

b. Remove safety wire and relieve cable tension at turnbuckles (10).

c. Disconnect cables at control column arm assemblies (3).

d. Disconnect cables at bellcrank links (index 16, figure 8-3).

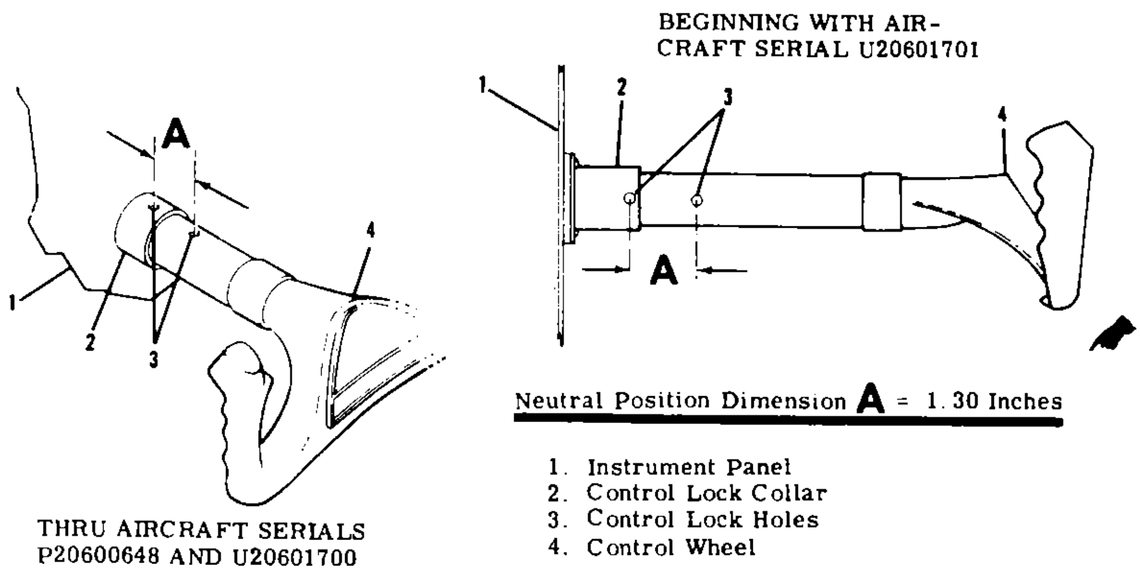


Figure 8-5. Control Column Neutral Rigging Position.

e. Remove fairleads, cable guards and pulleys as necessary to work cables free of aircraft.

NOTE

To ease routing of cables, a length of wire may be attached to the end of cable being withdrawn from aircraft. Leave wire in place, routed through structure; then attach the cable being installed and pull cable into position.

f. Reverse the preceding steps for reinstallation.
g. After cables are routed in position, install pulleys and cable guards. Ensure cables are positioned in pulley grooves before installing guards.
h. Re-rig system in accordance with paragraph 8-14, safety turnbuckles and reinstall all items removed in step "a."

8-14. RIGGING. (Thru U20602579) (Refer to figure 8-3.)

CAUTION

Position a support stand under tail tie-down ring to prevent tailcone from dropping while working inside.

a. Lock control column in neutral position. (Refer to figure 8-5)
b. Adjust turnbuckles (17) equally to streamline LEFT elevator with horizontal stabilizer and to obtain 30±10 lbs cable tension. (RIGHT elevator will be higher than the left elevator) as illustrated in figure 8-2.) Safety turnbuckles.

NOTE

Disregard counterweight areas of elevators when streamlining. These areas are contoured to be streamlined at cruising speed (elevators approximately 3° down).

c. With elevators in the full down position, adjust turnbuckle (4) and downspring (3) for an overall length of downspring to be 7.80 inches (71±3 lbs); safety wire turnbuckle (4).
d. With LEFT elevator streamlined, mount an inclinometer on elevator and set to 0°.

NOTE

An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center (refer to figure 6-4.)

e. Adjust bellcrank travel stop blocks (8) to obtain degree of elevator travel as specified in figure 1-1.

NOTE

Bellcrank stop blocks (8) are four-sided bushings, drilled off-center so they may be rotated to any one of four positions to attain correct elevator travel. Each 90-degree rotation of the stop changes the elevator travel approximately one degree.

f. Move control wheel through full range of travel and check cable tension in various positions. Tension should not be less than 20 pounds or more than 40 pounds in any position.

g. Check to see that all turnbuckles are safetied and all parts are secured, then reinstall all parts removed for access.

WARNING

Be sure elevators move in the correct direction when operated by the control wheels.

8-14A. RIGGING. (Beginning with U20602580).

CAUTION

Position a support stand under tail tie-down ring to prevent the tailcone from dropping while working inside.

a. Place contour block on left hand elevator and lock control column in neutral position. (Refer to figure 8-5.)
b. With elevators in the full down position, adjust turnbuckles (4) and downspring (3) to a length of 10.45 inches at 36±1 lbs spring tension (measured from centerline of turnbuckle fork to outside of spring loop; safety wire turnbuckles (4).
c. Install turnbuckles (4) and downsprings (3) to elevator bellcrank and elevator control cables.
d. With left elevator in streamlined position, mount an inclinometer on elevator and set to 0°.

NOTE

An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center. Refer to figure 6-4.

e. Adjust bellcrank travel stop blocks (16) to obtain of elevator travel as specified in figure 1-1.)
f. Move control wheel through full range of travel and check cable tension in various positions. Tension should not be less than 20 pounds or more than 40 pounds in any position.
g. Ensure that all turnbuckles are safetied and all parts secured, then re-install all parts removed for access.

WARNING

Be sure elevators move in the correct direction when operated by the control wheels.

SHOP NOTES:

SECTION 9

ELEVATOR TRIM TAB CONTROL SYSTEM

TABLE OF CONTENTS

9-1. ELEVATOR TRIM TAB CONTROL SYSTEM. (Refer to figure 9-1.)

9-2. DESCRIPTION. The elevator trim tab, located on the trailing edge of the right elevator, is controlled by a trim wheel mounted in the pedestal. Power to operate the tab is transmitted from the trim control wheel by means of roller chains, cables, an actuator and a push-pull tube. A mechanical pointer, adjacent to the trim wheel indicates nose attitude of the aircraft. Forward rotation of the wheel trims the nose down and aft rotation of the wheel trims the nose up. An electric trim assist may be installed and is described in paragraph 9-16. When de-energized the electric trim assist has no effect on manual operation.

9-3. TROUBLE SHOOTING.

NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 9-14.

TROUBLE	PROBABLE CAUSE	REMEDY
TRIM CONTROL WHEEL MOVES WITH EXCESSIVE RESISTANCE.	Cable tension too high.	Check cable tension and adjust.
	Pulleys binding or rubbing.	Check pulleys visually. Repair or replace as necessary.
	Cables not in place on pulleys.	Check visually. Install cables correctly.
	Trim tab hinge binding.	Disconnect actuator and move tab up and down to check hinge resistance. Lubricate or replace hinge as necessary.
	Defective trim tab actuator.	Remove chain from actuator sprocket and operate actuator manually. Replace defective actuator.
	Rusty chain.	Check visually. Replace rusty chain.

9-3. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
TRIM CONTROL WHEEL MOVES WITH EXCESSIVE RESISTANCE (CONT).	Damaged sprocket.	Check visually. Replace damaged sprockets.
	Bent sprocket shaft.	Observe motion of sprockets. Replace defective shafts.
LOST MOTION BETWEEN CONTROL WHEEL AND TRIM TAB.	Cable tension too low.	Check cable tension and adjust.
	Broken pulley.	Check visually. Replace defective pulley.
	Cables not in place on pulleys.	Check visually. Install cables correctly.
	Worn trim tab actuator.	Disconnect trim tab and check for play in actuator. Replace defective actuator.
	Actuator attachment loose.	Check actuator for security and tighten.
TRIM INDICATION INCORRECT.	Indicator incorrectly engaged on wheel track.	Check visually. Reset indicator.
INCORRECT TRIM TAB TRAVEL.	Stop blocks loose or incorrectly adjusted.	Adjust stop blocks on cables. Refer to figure 9-4.
	Incorrect rigging.	Refer to paragraph 9-14.

9-4. TRIM TAB. (Refer to figure 9-2.)

9-5. REMOVAL AND INSTALLATION.

a. Disconnect push-pull tube (9) from horn assembly (6).

NOTE

If trim system is not moved and actuator screw is not turned, re-rigging of system should not be necessary after reinstallation of tab.

b. Remove screw (11) securing hinge pin (10), pull pin until free of tab and remove tab.

NOTE

It is not necessary to completely remove hinge pin.

c. Reverse the preceding steps for reinstallation. Rig system, if necessary, in accordance with paragraph 9-14.

9-6. TRIM TAB ACTUATOR. (Refer to figure 9-1.)

9-7. REMOVAL AND INSTALLATION.

a. Relieve cable tension at turnbuckle (11).

CAUTION

Position a support stand under tail tie-down ring to prevent tailcone from dropping while working inside.

b. Disconnect push-pull tube (15) at actuator (19).
c. Remove access plate beneath actuator.
d. Remove chain guard (21) and disengage roller chain (23) from actuator sprocket (20).
e. Remove screws attaching clamps (22) to bracket (18) and remove actuator (19) through access opening.
f. Reverse the preceding steps for reinstallation. Rig system in accordance with paragraph 9-14, safety turnbuckle and reinstall all items removed for access.

9-7A. DISASSEMBLY. (Refer to figure 9-2A.)

a. Remove actuator in accordance with paragraph 9-7.

b. Disassemble actuator assembly (1) as illustrated in Detail A as follows:

1. Remove chain guard (3) if not previously removed in step "e" of paragraph 9-7.
2. Using suitable punch and hammer, remove roll pins (8) securing sprocket (5) to screw (9) and remove sprocket from screw.
3. Unscrew threaded rod end (15) and remove rod end from actuator.
4. Remove roll pins (10) securing bearings (6 and 14) at the housing ends.
5. Lightly tap screw (9) toward the sprocket end of housing, remove bearing (6) and collar (7).
6. Lightly tap screw (9) in the opposite direction from sprocket end, remove bearing (14), O-ring (13) and collar (7).
7. It is not necessary to remove retaining rings (11).

9-7B. CLEANING, INSPECTION AND REPAIR. (Refer to figure 9-2A.)

a. DO NOT remove bearing (16) from threaded rod end (15) unless replacement of bearing is necessary.

b. Clean all component parts, except bearing (16), by washing Stoddard solvent or equivalent. Do not clean sealed bearing (16).

c. Inspect all component parts for obvious indications of damage such as stripped threads, cracks, deep nicks and dents.

d. Check bearings (6 and 14), screw (9) and threaded rod end (15) for excessive wear and scoring. Dimensions of the parts are as follows:

BEARING (6)	
INSIDE DIAMETER	0.370" MIN.
INSIDE DIAMETER	0.373" MAX.
BEARING (14)	
INSIDE DIAMETER	
SMALL HOLE	0.248" MIN.
SMALL HOLE	0.253" MAX.
LARGE HOLE	0.373" MIN.
LARGE HOLE	0.380" MAX.
THREADED ROD END (15)	
OUTSIDE DIAMETER	
(SHANK)	0.242" MIN.
	0.246" MAX.
SCREW (9)	
OUTSIDE DIAMETER	0.367" MIN.
	0.370" MAX.

NOTE

Relative linear movement between internal threaded screw (9) and bearing (14) should be 0.004 to 0.010 inch at room temperature.

e. Examine threaded rod end (15) and screw (9) for damaged threads or dirt particles that may impair smooth operation.

f. Check sprocket (5) for broken, chipped and/or worn teeth.

g. Check bearing (16) for smoothness of operation.

h. DO NOT attempt to repair damaged or worn parts of the actuator assembly. Discard all defective items and install new parts during reassembly.

9-7C. REASSEMBLY. (Refer to figure 9-2A.)

a. Always discard the following items and install new parts during reassembly.

1. Bearings (6 and 14)
2. Roll pins (8 and 10)
3. O-Ring (13)
4. Nuts (2).

b. During reassembly, lubricate collars (7), screw (9) and threaded rod end (15) in accordance with Section 2.

c. Press sprocket (5) into the end of screw (9), align roll pin holes and install new roll pins (8).

d. Slip bearing (6) and collar (7) on screw (9) and slide them down against sprocket (5).

e. Insert screw (9), with assembled parts, into housing (12) until bearing (6) is flush with the end of housing.

NOTE

When inserting screw (9) into housing (12), locate the sprocket (5) at the end of housing which is farther away from the groove for retaining ring (11).

● The bearings (6 and 14) are not pre-drilled and must be drilled on assembly. The roll pins (10) are 1/16 inch in diameter, therefore, requiring a 1/16 (0.0625) inch drill.

f. With bearing (6) flush with end of housing (12), carefully drill bearing so the drill will emerge from the hole on the opposite side of housing (12). DO NOT ENLARGE HOLES IN HOUSING.

g. Press new roll pins (10) into pin holes.

h. Insert collar (7), new O-ring (13) and bearing (14) into opposite end of housing (12).

i. Complete steps "f" and "g" for bearing (14).

j. If a new bearing (16) is required, a new bearing may be pressed into the boss. Be sure force bears against the outer race of bearing.

k. Screw the threaded rod end (15) into screw (9).

l. Install retaining rings (11), if they were removed.

m. Test actuator assembly by rotating sprocket (5) with fingers while holding threaded rod end (15). The threaded rod end should travel in and out smoothly, with no indication of binding.

n. Reinstall actuator assembly in accordance with paragraph 9-7.

9-7D. TRIM TAB FREE-PLAY INSPECTION.

a. Place elevators and trim tab in the neutral position.

b. Using moderate pressure, move the trim tab trailing edge up and down by hand to check free-play.

c. A maximum of .166", (total motion up and down) measured at the trim tab trailing edge is permissible.

d. If the trim tab free-play is less than .166", the system is within prescribed limits.

e. If the trim tab free-play is more than .166", check the following items for looseness while moving the trim tab up and down.

1. Check push-pull tube to trim tab horn assembly attachment for looseness.

2. Check push-pull tube to actuator assembly threaded rod end attachment for looseness.

3. Check actuator assembly threaded rod end for looseness in the actuator assembly with push-pull tube disconnected.

f. If looseness is apparent while checking steps e-1 and e-2, repair by installing new parts.

g. If looseness is apparent while checking step e-3, refer to paragraphs 9-6 through 9-7C. Recheck trim tab free-play.

SHOP NOTES:

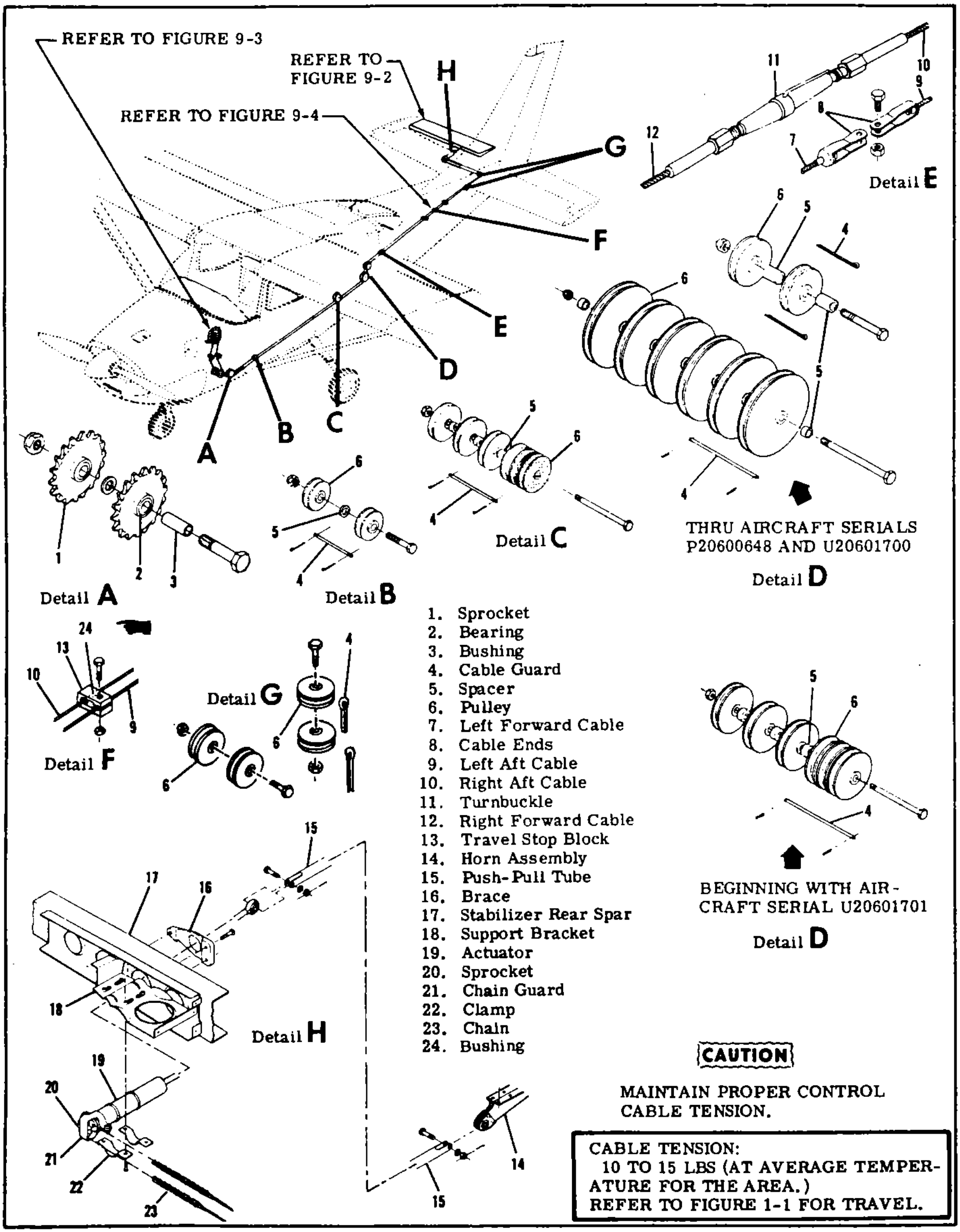


Figure 9-1. Elevator Trim Tab Control System

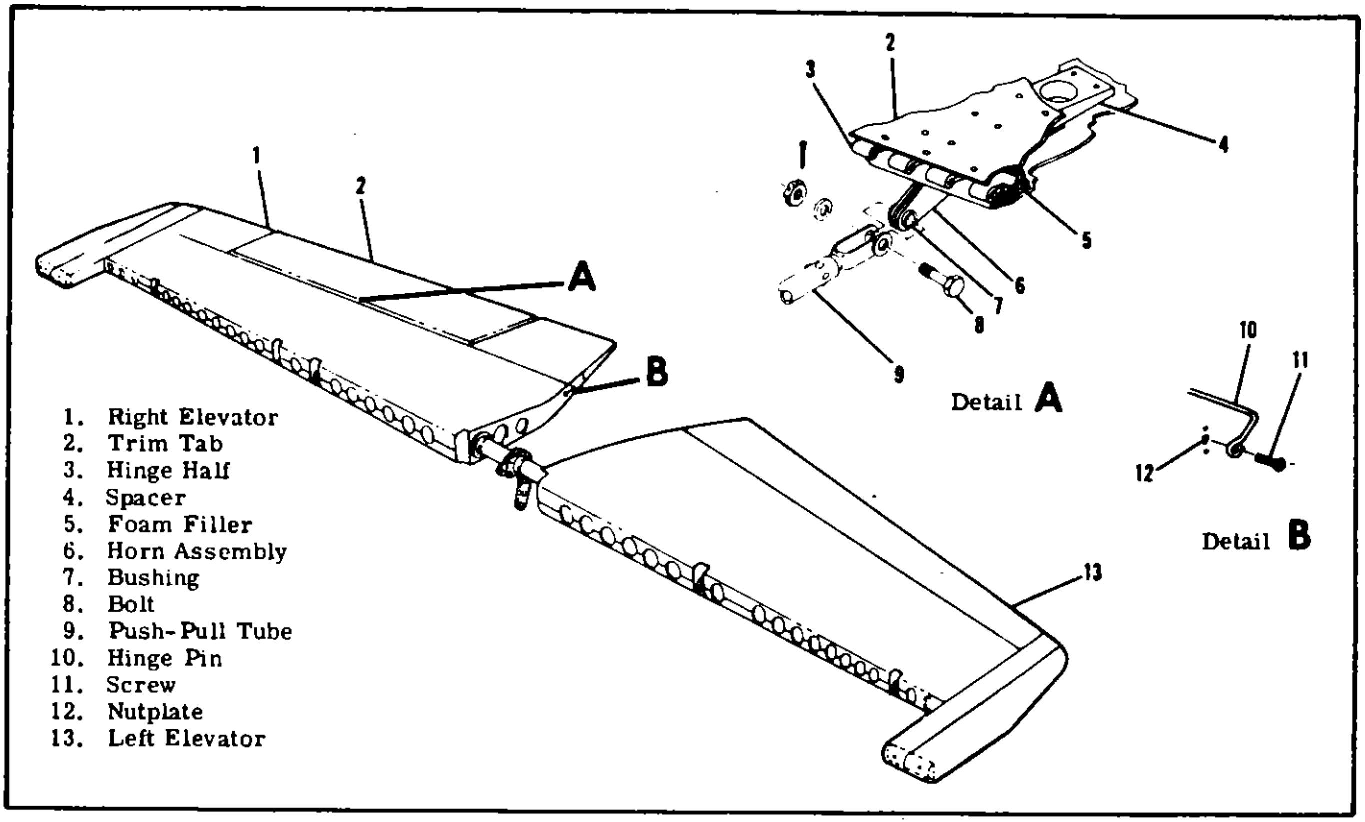


Figure 9-2. Elevator Trim Tab Installation

9-8. TRIM TAB CONTROL WHEEL. (Refer to figure 9-3.)

9-9. REMOVAL AND INSTALLATION.

a. Remove pedestal cover as outlined in paragraph 9-13.

b. Remove screws (8) and nuts (6) securing chain guard (7) to pedestal structure (9).

c. Remove nut (4) securing indicator (2) to pivot stud (1). Retain washers (3) for reinstallation.

d. Loosen bolts (12) securing idler sprockets (11) to pedestal structure (9), slide idler sprockets in slotted holes and disengage chain (13) from sprockets.

e. Remove bolts (12) and remove chain guard (7) using care not to bend indicator (2) or drop parts into tunnel area.

f. Remove roller chain (13) from trim wheel sprocket and carefully slide wheel (5) from pivot stud (20).

g. Reverse the preceding steps for reinstallation. Remove roller chain (13) slack by adjusting idler sprockets (11) in slotted holes and reinstall all items removed for access.

9-10. CABLES AND PULLEYS.

9-11. REMOVAL AND INSTALLATION.

a. FORWARD CABLE. (WITHOUT ELECTRIC TRIM.) (Refer to figure 9-1.)

1. Peel back carpeting as necessary to expose access plates in cabin and baggage areas and remove plates.

2. Remove safety wire, relieve cable tension and disconnect turnbuckle (11).

3. Disconnect cable ends (8).

4. (Refer to figure 9-3.) Remove pedestal cover as outlined in paragraph 9-13.

5. Remove lower pedestal panel (19) and disengage roller chain (15) from drive sprocket assembly (16).

6. Remove cable guards and pulleys as necessary to work cable free of aircraft.

NOTE

To ease routing of cable, a length of wire may be attached to the end of cable before being withdrawn from aircraft. Leave wire in place, routed through structure; then attach the cable being installed and pull cable into position.

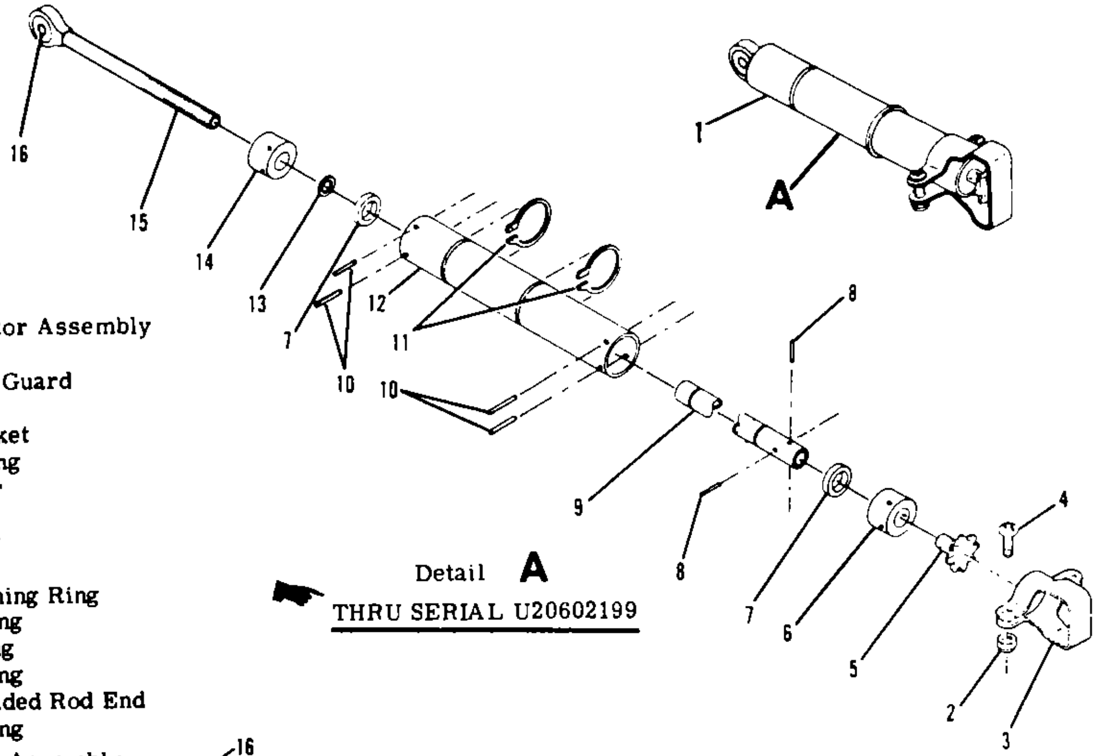
7. Reverse the preceding steps for reinstallation.

8. After cable is routed in position, install pulleys and cable guards. Ensure cable is positioned in pulley grooves before installing guards. Ensure roller chain (15) is positioned correctly over drive sprocket (16).

9. Re-rig system in accordance with paragraph 9-14, safety turnbuckle (index 11, figure 9-1) and reinstall all items removed for access.

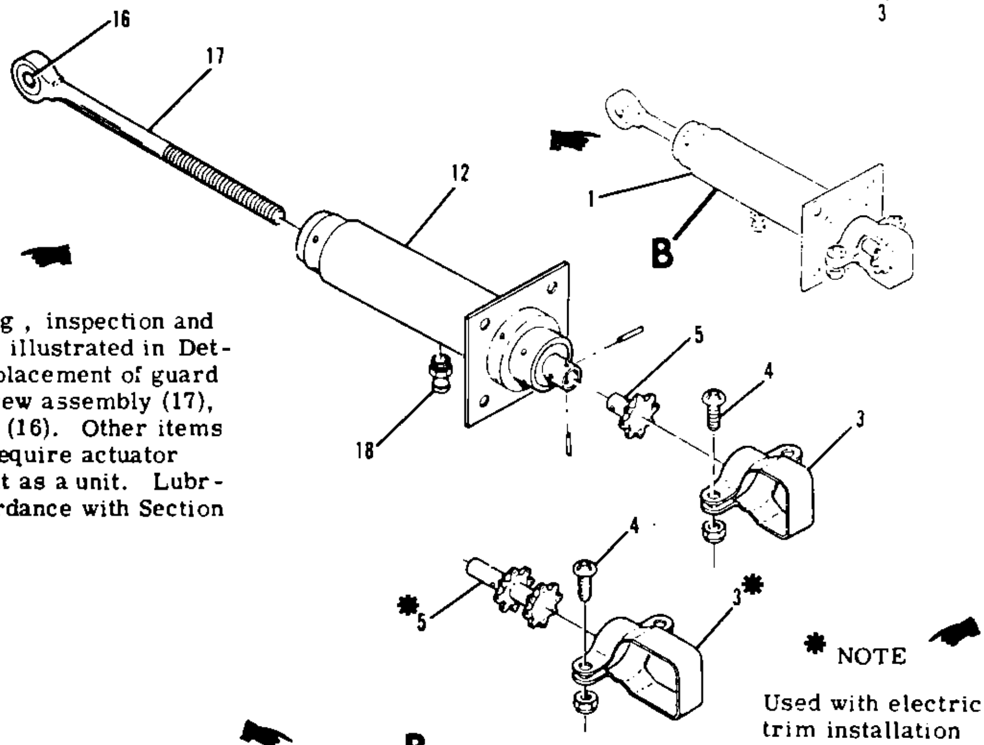
b. FORWARD CABLE. (WITH ELECTRIC TRIM.) (THRU AIRCRAFT SERIALS P20600648 AND U206-01700.) (Refer to figure 9-5.)

1. Actuator Assembly
2. Nut
3. Chain Guard
4. Screw
5. Sprocket
6. Bearing
7. Collar
8. Pin
9. Screw
10. Pin
11. Retaining Ring
12. Housing
13. O-Ring
14. Bearing
15. Threaded Rod End
16. Bearing
17. Screw Assembly
18. Grease Zerk



Detail **A**

THRU SERIAL U20602199



NOTE

Disassembly, cleaning , inspection and repair of tab actuator illustrated in Detail B is limited to replacement of guard (3), sprocket (5), screw assembly (17), zerk (18) and bearing (16). Other items found defective will require actuator assembly replacement as a unit. Lubrcate actuator in accordance with Section 2.

* NOTE

Used with electric trim installation

Detail **B**

BEGINNING WITH SERIAL U20602200

Figure 9-2A. Elevator Trim Tab Actuator Assembly

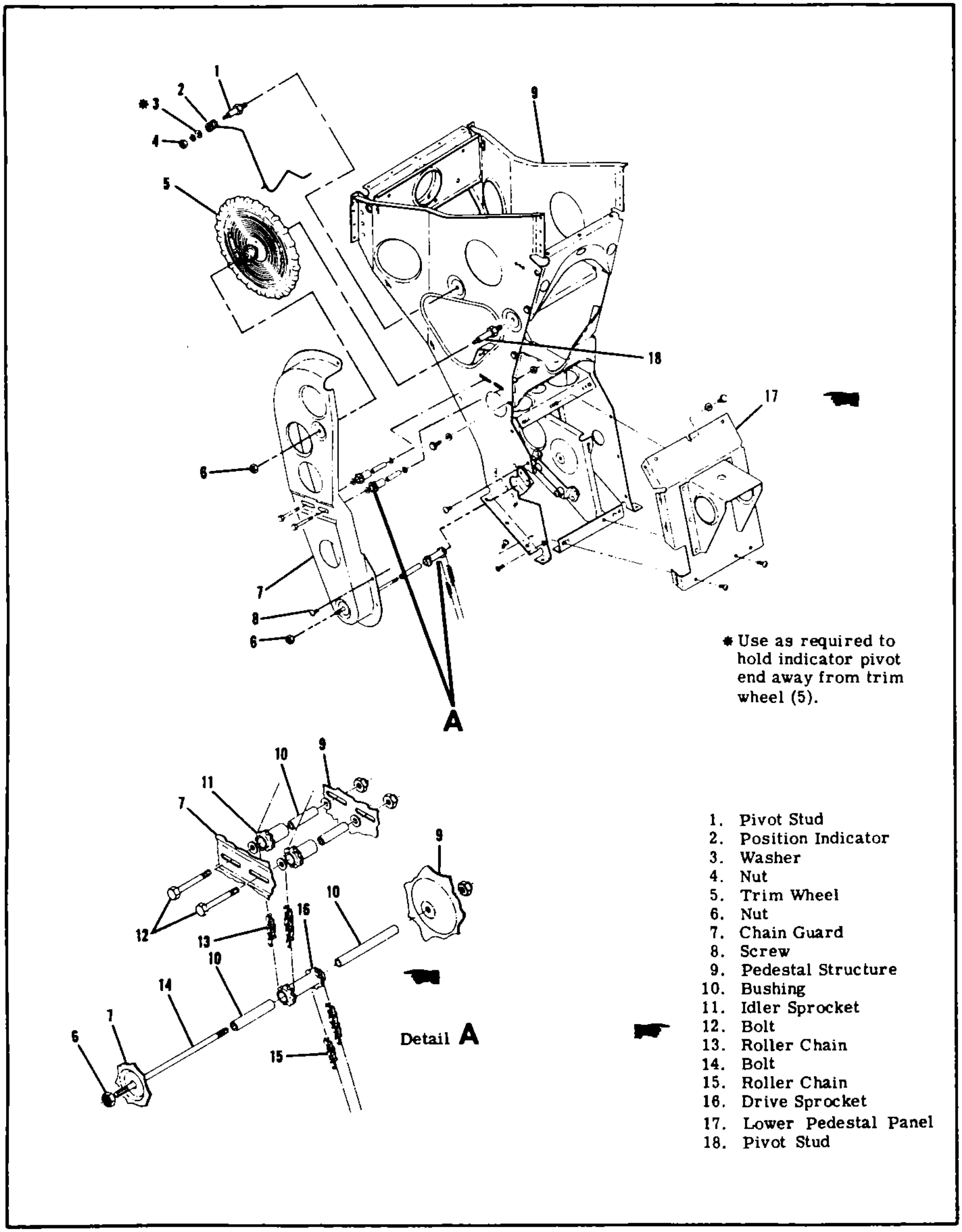
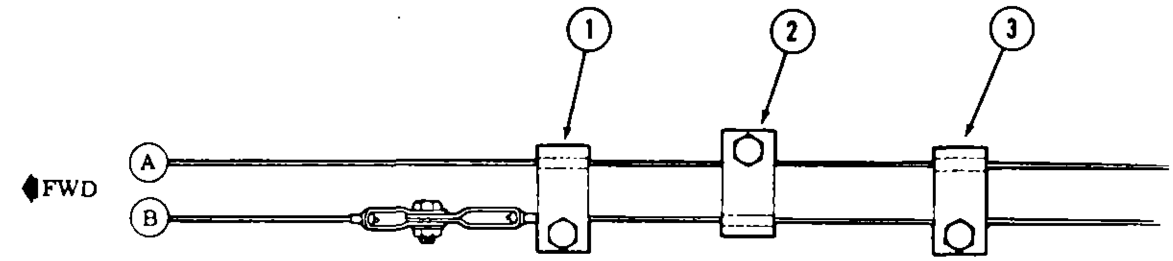


Figure 9-3. Elevator Trim Wheel Installation



1. With elevators in neutral, set trim tab to neutral (streamlined).
2. Position stop block (1) against clevis on cable B and secure to cable B.
3. Place inclinometer on trim tab and lower tab to degree specified in figure 1-1.
4. Position stop block (2) against stop block (1) and secure to cable A.
5. Raise trim tab to specified degree, place stop block (3) against stop block (2) and secure to cable B.

Figure 9-4. Elevator Trim Tab Travel Stop Adjustment

1. Peel back carpeting as necessary to expose access plates in cabin and baggage areas and remove plates.
2. Remove safety wire, relieve cable tension and disconnect turnbuckle (6).
3. Disconnect cable ends (9) shown in Detail B forward of the electric trim installation.
4. Complete steps 4 thru 9 of subparagraph "a."

c. FORWARD CABLE. (WITH ELECTRIC TRIM.) (BEGINNING WITH AIRCRAFT SERIAL U20601701.) (Refer to figure 9-6.)

1. Peel back carpeting as necessary to expose access plates in cabin and baggage areas and remove plates.
2. Remove safety wire, relieve cable tension and disconnect turnbuckle (28).
3. Disconnect clamps and keepers (36) from left forward cable (30).
4. Disconnect cables (29 and 30) at cable ends.
5. Complete steps 4 thru 9 of subparagraph "a."

d. AFT CABLE. (WITHOUT ELECTRIC TRIM.) (Refer to figure 9-1.)

1. Remove rear baggage compartment wall.
2. Remove safety wire, relieve cable tension and disconnect turnbuckle (11).

CAUTION

Position a support stand under tail tie-down ring to prevent tailcone from dropping while working inside.

3. Disconnect cable ends (8).
4. Remove travel stop blocks (13).
5. Remove access plate beneath trim tab actuator (19) and remove chain guard (21).
6. Disengage roller chain (23) from actuator sprocket (20).
7. Remove cable guards and pulleys as necessary to work cable free of aircraft.

NOTE

To ease routing of cable, a length of wire may be attached to the end of cable before being withdrawn from aircraft. Leave wire in place, routed through structure; then attach the cable being installed and pull cable into position.

8. Reverse the preceding steps for reinstallation.
9. After cable is routed in position, install pulleys and cable guards. Ensure cable is positioned in pulley grooves before installing guards. Ensure roller chain (23) is positioned correctly over actuator sprocket (20). Ensure bushing (24) is positioned in stop blocks (13).
10. Re-rig system in accordance with paragraph 9-14, safety turnbuckle (11) and reinstall all items removed for access.

e. AFT CABLE (WITH ELECTRIC TRIM.) (THRU AIRCRAFT SERIALS P20600648 AND U20601700.) (Refer to figure 9-5.)

1. Complete step 1 of subparagraph "d."
2. Remove safety wire, relieve cable tension and disconnect turnbuckle (6).

CAUTION

Position a support stand under tail tie-down ring to prevent tailcone from dropping while working inside.

3. Disconnect cable ends (9) shown in Detail B aft of the electric trim installation.

4. Remove travel stop blocks (3).

5. (Refer to figure 9-1.) Complete steps 6 thru 11 of subparagraph "d."

f. AFT CABLE. (WITH ELECTRIC TRIM.) (BEGINNING WITH AIRCRAFT SERIAL U20601701.) (Refer to figure 9-6.)

1. Complete steps 1 and 2 of subparagraph "d."

2. Remove safety wire, relieve cable tension and disconnect turnbuckle (28).

CAUTION

Position a support stand under tail tie-down ring to prevent tailcone from dropping while working inside.

3. Disconnect cables (29 and 30) at cable ends.

4. Remove travel stop blocks (2).

5. (Refer to figure 9-1.) Complete steps 6 thru 11 of subparagraph "d."

9-12. PEDESTAL COVER.

9-13. REMOVAL AND INSTALLATION.

a. Turn fuel selector valve to OFF position and drain fuel from strainer and lines.

b. Remove knurled nut from engine primer if installed and pull plunger from primer body. Protect primer from dirt.

c. Remove fuel selector handle and placard.

d. Remove cowl flap handle knob.

e. Remove electric trim circuit breaker nut and microphone mounting bracket, if installed.

f. Fold carpet back as necessary and remove screws securing cover to floor and pedestal.

g. Disconnect electrical wiring to pedestal lights.

h. Carefully work cover from pedestal to prevent damage.

i. Reverse the preceding steps for reinstallation.

9-14. RIGGING - STANDARD TRIM SYSTEM. (Refer to figure 9-1.)

CAUTION

Position a support stand under tail tie-down ring to prevent tailcone from dropping while working inside.

a. Remove rear baggage compartment wall and access plates as necessary.

b. Loosen travel stop blocks (13) on trim tab cables (9 and 10).

c. Disconnect push-pull tube (15) from actuator (19).

d. Check cable tension for 10-15 pounds and readjust turnbuckle (11), if necessary.

NOTE

If roller chains and/or cables are being installed, permit actuator screw to rotate freely as roller chains and cables are connected. Adjust cable tension and safety turnbuckle (11).

e. (Refer to figure 9-3.) Rotate trim control wheel (5) full forward (nose down). Ensure pointer (2) does not restrict wheel movement. If necessary to reposition pointer, proceed as follows:

1. Remove pedestal cover as outlined in paragraph 9-13.

2. Loosen nut (6) at trim wheel pivot stud (20).

3. Loosen screws (8) securing chain guard (7) far enough that trim wheel (5) can be moved approximately 1/8 inch, then reposition pointer (2) using a thin screwdriver to pry trailing leg of pointer out of groove in trim wheel. Reposition pointer as required.

4. Tighten nut (6) and screws (8), but do not reinstall pedestal cover until rigging is complete.

NOTE

Full forward (nose down) position of trim wheel is where further movement is prevented by the roller chain or cable ends contacting sprockets or pulleys.

f. With elevator and trim tab both in neutral (streamlined), mount an inclinometer on trim tab and set to 0°. Disregard counterweight areas of elevators when streamlining. These areas are contoured so they will be approximately 3° down at cruising speed.

NOTE

An inclinometer for measuring control surface travel is available from the Cessna Service Parts Center. Refer to figure 6-4.

g. Rotate actuator screw in or out as required to place trim tab up with a maximum of 2° overtravel, with actuator screw connected to push-pull tube (index 15, figure 9-1).

h. Rotate trim wheel to position trim tab up and down, readjusting actuator screw as required to obtain overtravel in both directions.

i. Position stop blocks and adjust as illustrated in figure 9-4 to degree of trim tab travel specified in figure 1-1.

j. Install pedestal cover and adjust trim tab pointer (2) as follows:

1. Rotate trim control wheel (5) to place tab at 10° up position.

2. Locate the pointer (2) at the "TAKE-OFF" triangle as viewed from the pilot seat. (Refer to step "e," and reposition pointer if necessary.)

3. Bend pointer (2) as required to clear pedestal cover. (Pointer must NOT rub against pedestal cover or clear cover more than .125 inch maximum.)

k. Safety Turnbuckle and reinstall all items removed in step "a".

WARNING

Be sure trim tab moves in correct direction when operated by trim control wheel. Nose down trim corresponds to tab up position.

9-15. ELECTRIC TRIM ASSIST INSTALLATION. (Refer to figure 9-5, 9-6 and 9-7.)

9-16. DESCRIPTION. AIRCRAFT SERIALS P206-00648 THRU U20602199. The electric trim assist is operated by a control wheel-mounted switch. The servo unit includes a motor and a chain driven, solenoid-operated, adjustable clutch. The trim tab UP cable enters the servo housing and double wraps around a drive drum. When the clutch is not energized, the drive drum "free wheels" and has no effect on manual operation. AIRCRAFT BEGINNING WITH SERIAL U20602200 (Refer to figure 9-7.) The electric trim assist is operated by two switches mounted on control wheel one switch operating the disengage switch, the other switch operating electric trim assist. The electric trim circuit breaker is mounted on pedestal cover, the electrical wiring is routed thru cabin and fuselage to Sta. 209.00 then routed UP thru elevator to voltage regulator and drive assembly. The drive assembly includes a gear motor and two sprockets that operates a chain driven, solenoid-operated, adjustable clutch. The actuator assembly has dual sprockets. The manual trim tab UP cable connects to the actuator around the AFT sprocket. The drive assembly connects to the actuator by a chain around the FWD sprocket. When the clutch is not energized, the drive drum "free wheels" and has no effect on manual operation.

9-17. TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
SYSTEM INOPERATIVE.	Circuit breaker out.	Check visually. Reset breaker.
	Defective circuit breaker.	Check continuity. Replace defective breaker.
	Defective wiring.	Check continuity. Repair wiring.
	Defective trim switch.	Check continuity. Replace defective switch.
	Defective trim motor.	Remove and bench test. Replace defective motor.
TRIM MOTOR OPERATING - TRIM TAB FAILS TO MOVE.	Defective clutch solenoid.	Check continuity. Replace solenoid.
	Improperly adjusted clutch tension.	Check and adjust spanner nuts for proper tension.
	Disconnected or broken cable.	Operate manual trim wheel. Connect or replace cable.
	Defective actuator.	Check actuator operation. Replace actuator.

9-18. REMOVAL AND INSTALLATION.

a. THRU AIRCRAFT SERIALS P20600648 AND U20601700. (Refer to figure 9-5.)

1. Remove aft baggage compartment wall.
2. Remove safety wire and relieve cable tension at turnbuckle (6).

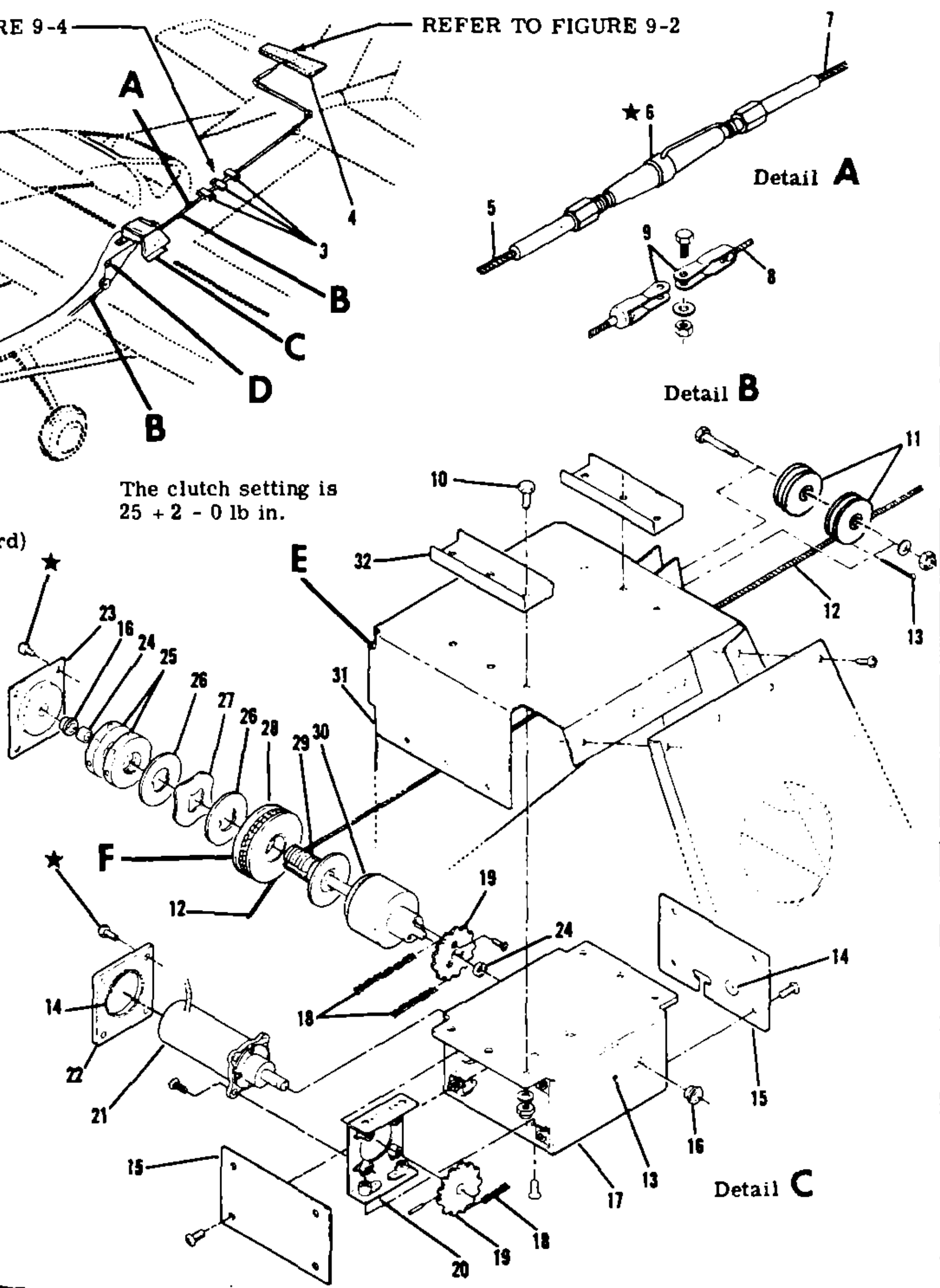
NOTE

Position a support stand under tail tie-down ring to prevent the tailcone from dropping while working inside.

3. Disconnect left center cable (12) at both cable ends (9).
4. Disconnect electrical wiring to servo unit.
5. Remove mounting bolts (10) and remove unit from aircraft.
6. Reverse the preceding steps for reinstallation. Rig system in accordance with paragraph 9-21, safety turnbuckle (6) and reinstall all items removed for access.

b. BEGINNING WITH AIRCRAFT SERIAL U20601701 THRU U20602199 (Refer to figure 9-6.)

1. Remove aft baggage compartment wall.
2. Disconnect electric trim assist cable (35) at both ends by removing clamps and keepers (36).
3. Remove cable guard (25) from bracket (26).
4. Disconnect electrical wiring to servo unit.
5. Remove mounting bolts (22) and remove unit from aircraft.
6. Reverse the preceding steps for reinstallation. Check system rigging in accordance with paragraph 9-21 and re-rig, if necessary.



1. Circuit Breaker
2. Trim Switch
3. Travel Stop Block
4. Trim Tab
5. Cable (Right Forward)
6. Turnbuckle
7. Cable (Right Aft)
8. Cable (Left Aft)
9. Cable Ends
10. Mounting Bolt
11. Pulley
12. Cable (Left Center)
13. Cable Guard
14. Grommet
15. Cover
16. Bearing
17. Housing
18. Roller Chain
19. Sprocket
20. Motor Support
21. Motor
22. Motor Cover
23. Clutch Cover
24. Bushing
25. Spanner Nut
26. Washer
27. Friction Washer
28. Drive Drum
29. Shaft Assembly
30. Solenoid Clutch
31. Support Structure
32. Stiffener
33. Spacer
34. Voltage Regulator
35. Connector
36. Spring Scale

THRU AIRCRAFT SERIALS
P20600648 AND U20601700

CAUTION

MAINTAIN PROPER CONTROL CABLE TENSION.

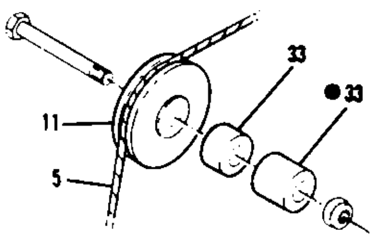
★ Safety wire these items.

Remainder of the elevator trim system is illustrated in figure 9-1.

Refer to Section 2 for lubrication requirements.

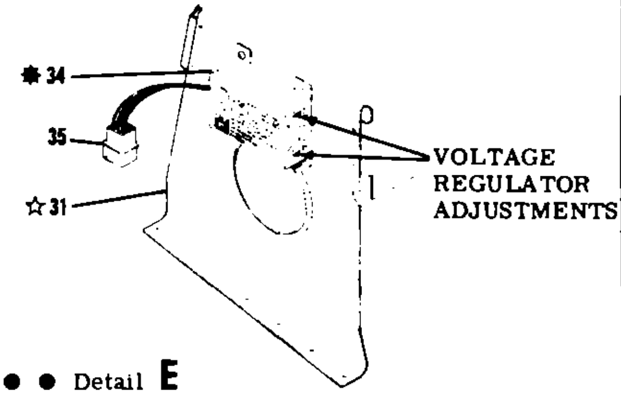
CABLE TENSION:
20 LBS + 5 - 0 LBS (AT AVERAGE TEMPERATURE FOR THE AREA.)
REFER TO FIGURE 1-1 FOR TRAVEL.

Figure 9-5. Electric Elevator Trim System thru P20600648 & U20601700 (Sheet 1 of 2)



Detail **D**

● Spacer (33) replaces the pulley normally installed in the standard system when the electric trim system is installed in the aircraft.

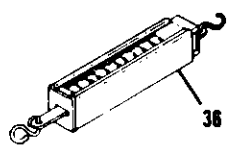


● ● Detail **E**

☆ Support (31) is rotated 90° to expose voltage regulator (34).

NOTE

Beginning with aircraft serial U20601588 a 24 volt electrical system may be installed.



NOTE

✱ With an external power source supplying 27.5 volts to the aircraft, adjust the voltage regulator (34) to 10 volts output in both directions.

NOTE

● ● Detail E applies only to aircraft serials U20601588 thru U20601700 when equipped with a 24 volt electrical system and an electric trim system. Detail E does not apply to 12 volt systems equipped with electric trim.

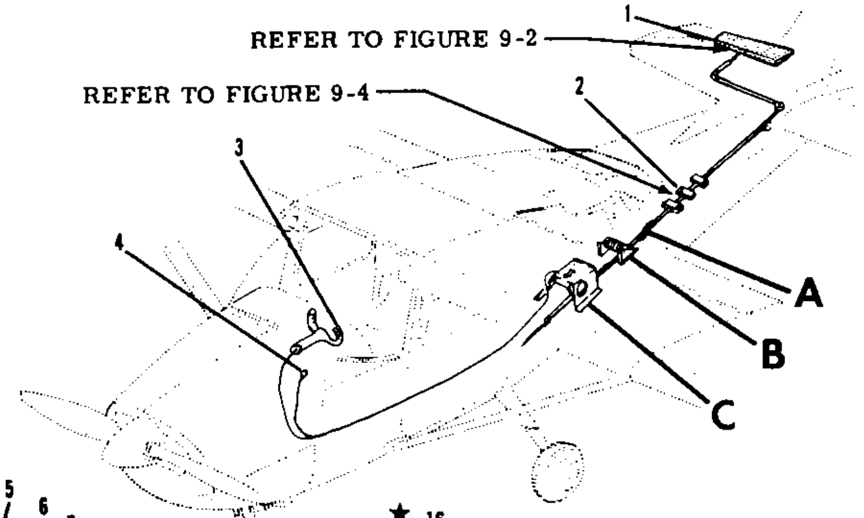
Figure 9-5. Electric Elevator Trim System thru P20600648 & U20601700 (Sheet 2 of 2)

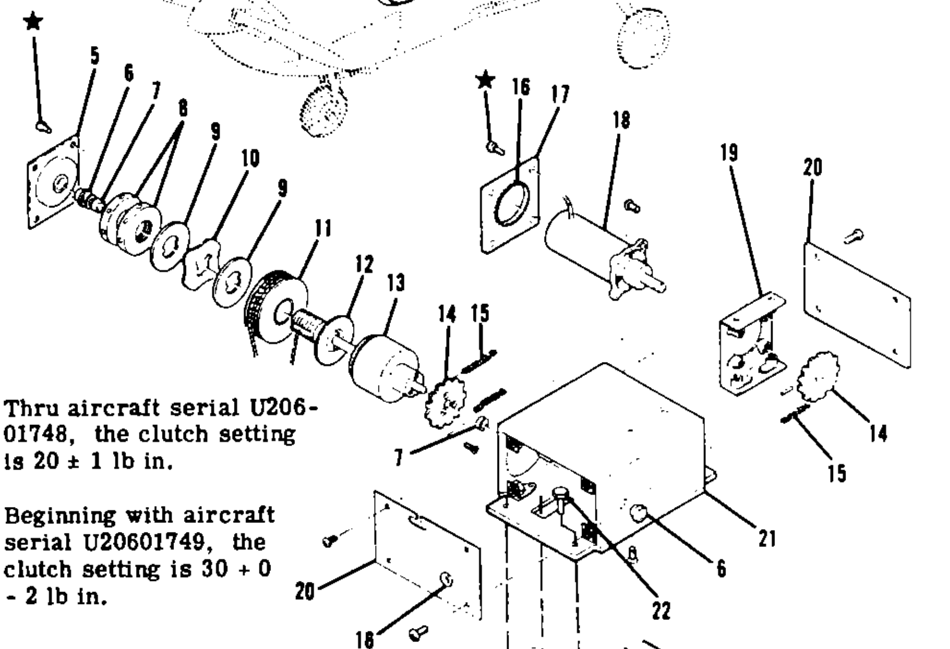
1. Trim Tab
2. Travel Stop Block
3. Trim Switch
4. Circuit Breaker
5. Clutch Cover
6. Bearing
7. Bushing
8. Spanner Nut
9. Washer
10. Friction Washer
11. Drive Drum
12. Shaft Assembly
13. Solenoid Clutch
14. Sprocket
15. Roller Chain
16. Grommet
17. Motor Cover
18. Motor
19. Motor Support
20. Cover
21. Housing
22. Mounting Bolt
23. Support Assembly
24. Pulley
25. Cable Guard
26. Bracket
27. Cable (Right Aft)
28. Turnbuckle
29. Cable (Left Aft)
30. Cable (Left Forward)
31. Cable (Right Forward)
32. Spacer
33. Voltage Regulator
34. Swaged Ball
35. Assist Cable
36. Clamp and Keeper
37. Connector
38. Spring Scale

★ Safety wire these items.

Remainder of elevator trim system is illustrated in figure 9-1.

Refer to Section 2 for lubrication requirements.

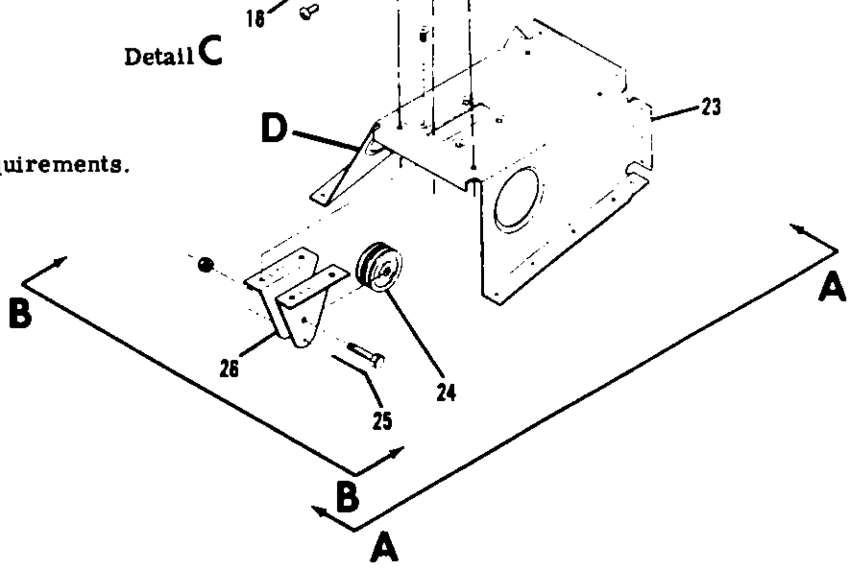


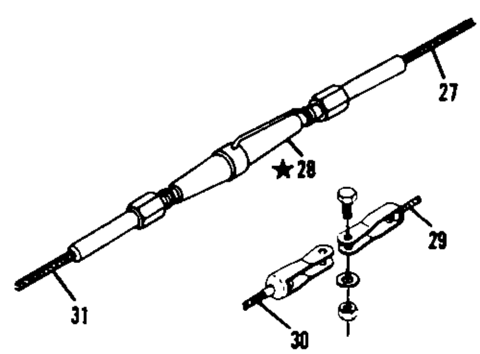


Thru aircraft serial U20601748, the clutch setting is 20 ± 1 lb in.

Beginning with aircraft serial U20601749, the clutch setting is 30 + 0 - 2 lb in.

Detail C

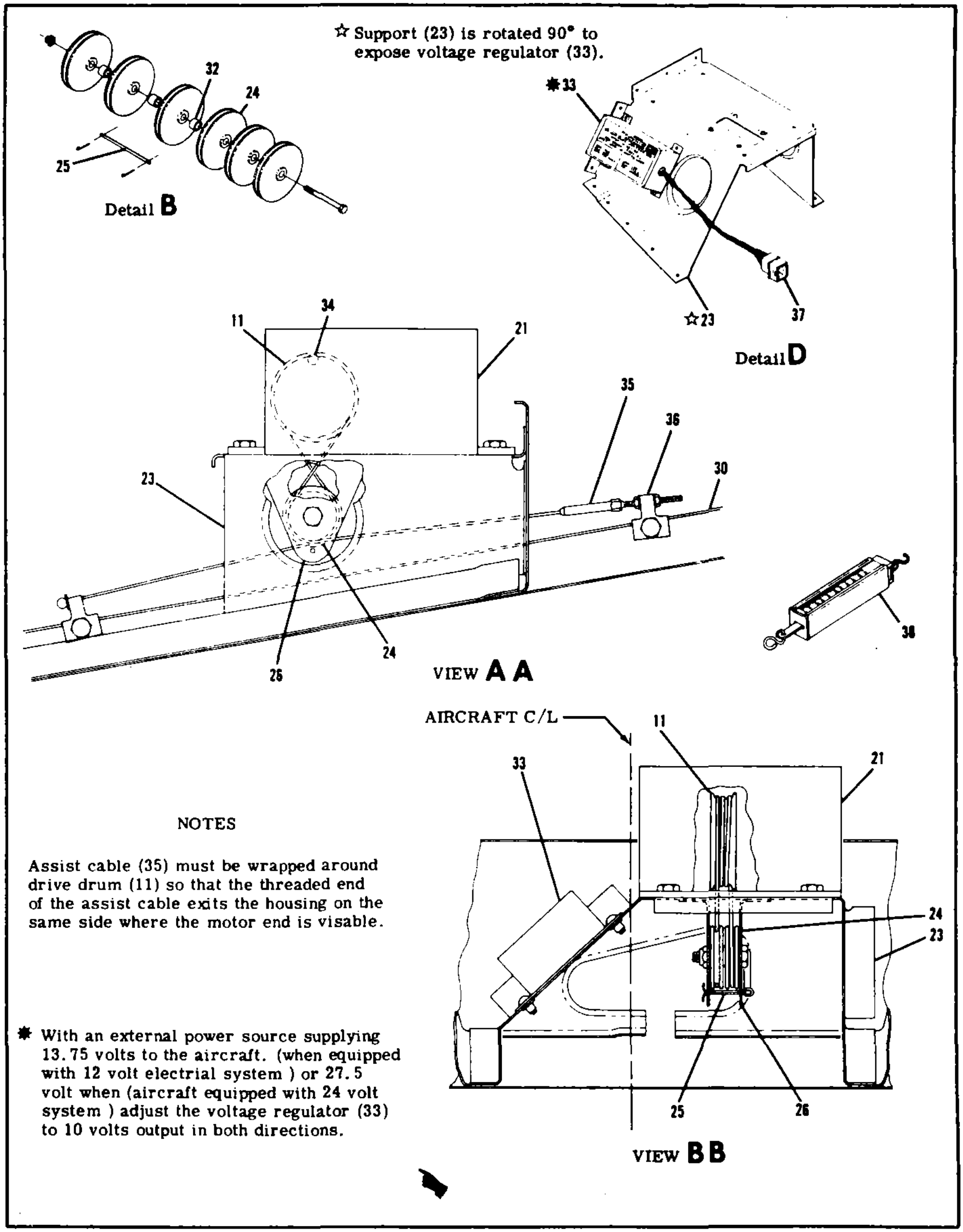




Detail A

BEGINNING WITH AIRCRAFT SERIAL U20601701 THRU U20602199

Figure 9-6. Electric Elevator Trim System Beginning U20601701 Thru U20602199 (Sheet 1 of 2)

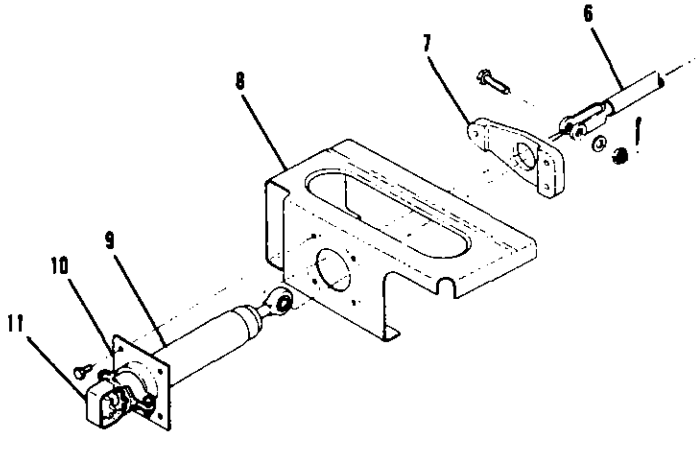


NOTES

Assist cable (35) must be wrapped around drive drum (11) so that the threaded end of the assist cable exits the housing on the same side where the motor end is visable.

✱ With an external power source supplying 13.75 volts to the aircraft. (when equipped with 12 volt electrial system) or 27.5 volt when (aircraft equipped with 24 volt system) adjust the voltage regulator (33) to 10 volts output in both directions.

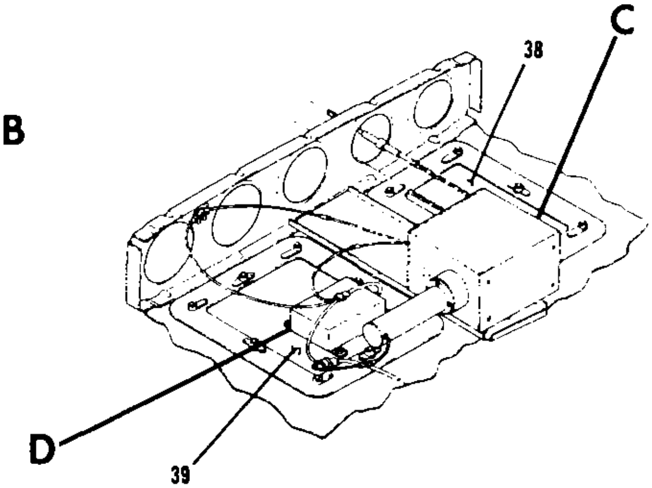
Figure 9-6. Electric Elevator Trim System Beginning U20601701 (Sheet 2 of 2)



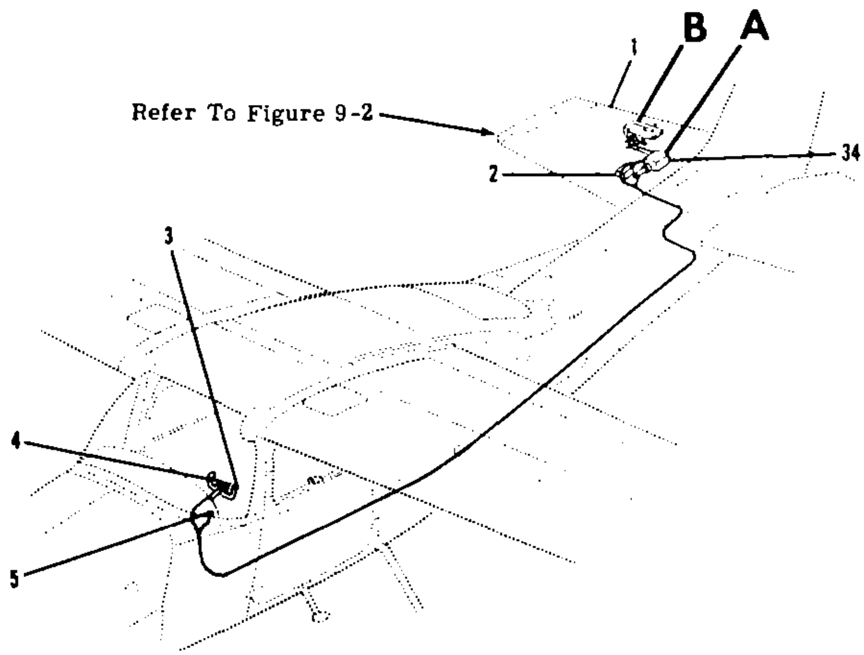
Detail B

1. Trim Tab
2. Voltage Regulator
3. Trim Switch
4. Disengage Switch
5. Circuit Breaker
6. Push-Pull Tube
7. Brace
8. Mounting Bracket Assembly
9. Actuator Assembly
10. Mounting Plate - FWD.
11. Sprocket Guard
12. Washer
13. Shaft
14. Sprocket
15. Chain Assembly
16. Washer Assembly
17. Spring Washer
18. Washer
19. Nut
20. Shaft Assembly
21. Clutch
22. Cover Assembly
23. Rub Strip
24. Sprocket
25. Bushing
26. Chain
27. Gear Motor
28. Mounting Plate
29. Sprocket
30. Pin
31. Housing Assembly
32. Cover
33. Mounting Plate Assembly
34. Drive Assembly
35. CTR1 Adjustment
36. CTR2 Adjustment
37. Connector
38. Cover
39. Cover

* SAFETY WIRE THESE ITEMS

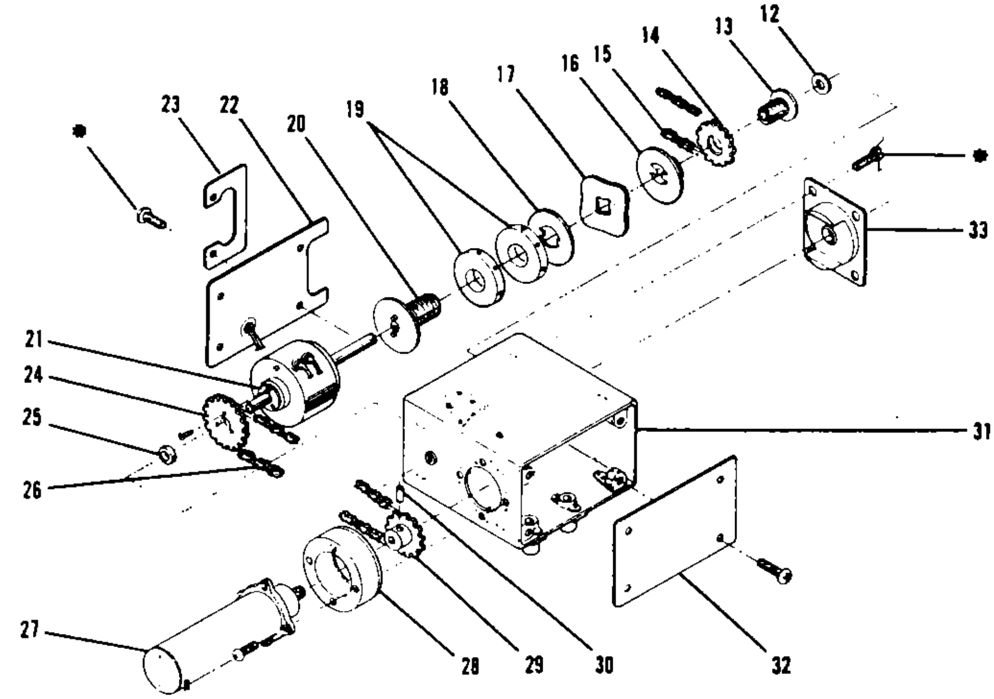


Detail A

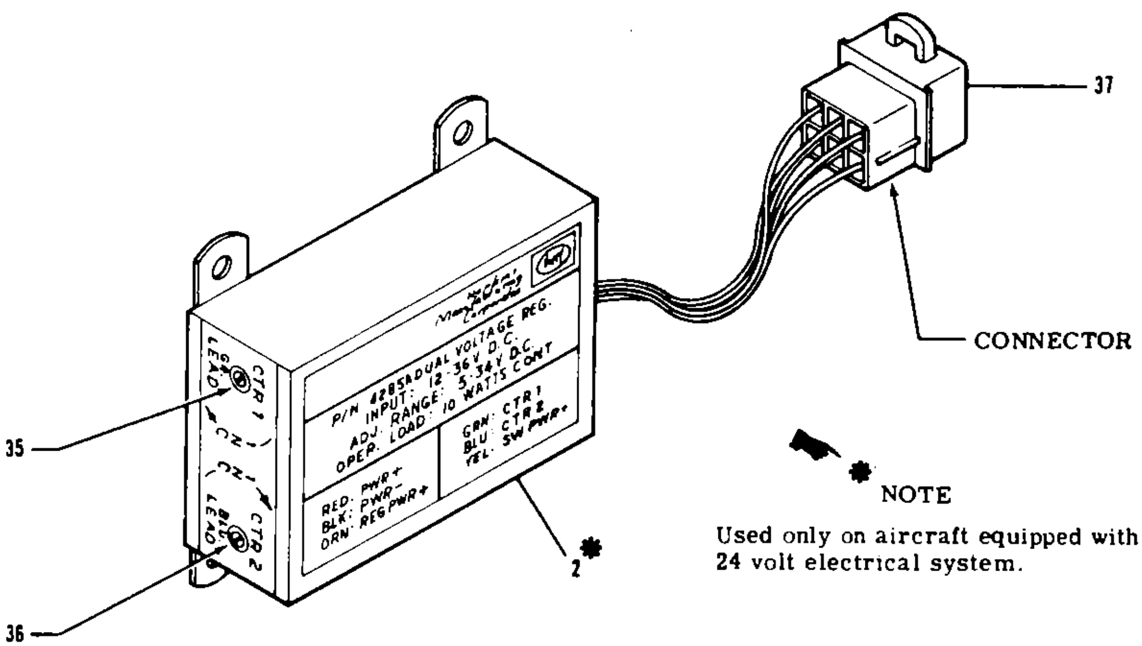


BEGINNING WITH AIRCRAFT SERIAL U20602200

Figure 9-7. Electric Elevator Trim System Beginning U20602200 (Sheet 1 of 2)



Detail C



* NOTE

Used only on aircraft equipped with 24 volt electrical system.

Detail D

Figure 9-7. Electric Elevator Trim System Beginning U20602200 (Sheet 2 of 2)

c. AIRCRAFT WITH OPTIONAL ELECTRIC TRIM ASSIST INSTALLATION BEGINNING WITH SERIAL U20602200 (Refer to figure 9-7.)

1. Remove access plate below actuator and covers (38) & (39).

2. Disconnect electric trim assist cable (37) and three Mate-N-Lok connectors on drive assembly. Remove bolt and nut from ground wire thru rib.

3. Remove sprocket guard (11) from actuator body.

4. Remove mounting bolts from voltage reulator (2) and drive assembly (34) actuator (9) and remove units from aircraft.

5. Reverse the preceding steps for reinstallation. Check system rigging in accordance with paragraph 9-21 and safety wire turnbuckle if re-rigging is necessary.

9-19. CLUTCH ADJUSTMENT.

a. THRU AIRCRAFT SERIALS P20600648 AND U20601700. (Refer to figure 9-5.)

1. Remove aft baggage compartment wall.

2. Remove safety wire and relieve cable tension at turnbuckle (6).

3. Disconnect left center cable (12) at both cable ends (9).

4. Disconnect electrical power to the motor assembly (21) by unplugging the connector installed in the RED wire leading to the motor assembly.

NOTE

Step 4 isolates the motor assembly from the remainder of the electric trim system so it cannot be engaged during clutch adjustment.

5. Remove screws securing cover (15) to housing (17) and slide the cover down over electrical wiring far enough to expose the clutch assembly.

6. Ensure the electric trim circuit breaker on the pedestal cover is pushed IN and place master switch in the ON position.

7. Operate control wheel-mounted switch UP or DOWN to energize the solenoid clutch (30).

8. Attach the spring scale (38) to the left center cable (12) and pull scale slowly until slippage is noticed.

9. Repeat steps 7 and 8 several times to break the initial friction of the clutch, making sure that cable (12) is re-wound on drive drum (28) after each slippage test.

10. Repeat steps 7 and 8 very slowly, carefully watching the indicator on the spring scale (38). Slippage should occur between 28.22 to 30.47 lbs on 12 volt aircraft systems and between 21.44 to 23.70 lbs on 24 volt aircraft systems.

11. If tension is not within tolerance, loosen OUTSIDE spanner nut (25) which acts as a lock. Tighten INSIDE spanner nut to increase clutch tension and loosen nut to decrease clutch tension.

NOTE

Spanner nuts (25) may be loosened or tightened with a suitable hammer and punch.

12. Repeat steps 10 and 11 until tension is in accordance with step 10, then tighten outside spanner nut against inside nut.

13. Connect electrical wiring to motor assembly which was removed in step 4, re-rig trim system in accordance with paragraphs 9-14 and 9-21 and reinstall all items removed for access.

b. BEGINNING WITH AIRCRAFT SERIAL U20601701. THRU U20602199 (Refer to figure 9-6

1. Remove aft baggage compartment wall.

2. Disconnect assist cable (35) at both ends by removing clamps and keepers (36).

3. Disconnect electrical power to the motor assembly (18) by unplugging the connector installed in the RED wire leading to the motor assembly.

NOTE

Step 3 isolates the motor assembly from the remainder of the electric trim system so it cannot be engaged during clutch adjustment.

4. Remove screws securing cover (20) to housing (21) and slide the cover down over electrical wiring far enough to expose the clutch assembly.

5. Ensure the electric trim circuit breaker on the pedestal cover is pushed IN and place master switch in the ON position.

6. Operate control wheel-mounted switch UP or DOWN to energize the solenoid clutch (13).

7. Attach the spring scale (38) to the assist cable (35) and pull scale slowly until slippage is noticed.
Slippage should occur between 33.86 to 37.25 lbs on 12 and 24 volt aircraft systems.

8. Repeat steps 6 and 7 several times to break the initial friction of the clutch, making sure that cable (35) is re-wound on drive drum (11) after each slippage test.

9. Repeat steps 7 and 8 very slowly, carefully watching the indicator on the spring scale (38).

10. If tension is not within tolerance, loosen OUTSIDE spanner nut (8) which acts as a lock. Tighten INSIDE spanner nut to increase clutch tension and loosen nut to decrease clutch tension.

NOTE

Spanner nuts (8) may be loosened or tightened with a suitable hammer and punch.

11. Repeat steps 9 and 10 until tension is in accordance with step 9, then tighten outside spanner nut against inside nut.

12. Connect electrical wiring to motor assembly which was removed in step 3, re-rig trim system in accordance with paragraphs 9-14 and 9-21 and reinstall all items removed for access.

BEGINNING WITH AIRCRAFT SERIAL U20602200
(Refer to figure 9-7.)

1. Remove access plate below actuator and covers (38) & (39).

2. Remove safety wire and relieve cable tension and chain tension at turnbuckles.

3. Disconnect electric motor by unplugging the three Mate-N-Lok connectors leading to the motor assembly.

4. Remove mounting bolts from drive assembly. It is necessary to remove from elevator to make the necessary adjustments to clutch.

NOTE

Step 3 isolates the motor assembly from the remainder of the electric trim system so it cannot be engaged during clutch adjustment.

5. Remove screws securing covers (23) and (22) to housing (31) and slide the cover down over electrical wiring far enough to expose the clutch assembly.

6. Ensure the electric trim circuit breaker on the pedestal cover is pushed in and place master switch in the ON position.

7. Operate control wheel-mounted switch UP or DOWN to energize the solenoid clutch (21).

8. Attach the spring scale (Index (38) in Figure 9-6 to chain and pull scale slowly until slippage is noticed.

9. Repeat Steps 7 & 8 several times to break the initial friction of the clutch.

10. Repeat Steps 8 and 9 very slowly, carefully watching the indicator on the spring scale. Slippage should occur between 29.1 to 32.9 lbs. on 12 and 24 volt aircraft systems.

11. IF tension is not within tolerance, loosen OUTSIDE spanner nut (19) which acts as a lock. Tighten INSIDE spanner nut to increase clutch tension and loosen nut to decrease clutch tension.

NOTE

Spanner nut (19) may be loosened or tightened with a suitable hammer and punch.

12. Repeat Steps 10 and 11 until tension is in accordance with 10. then tighten outside spanner nut against inside nut.

13. Connect electrical wiring to motor assembly which was removed in Step 3, re-rig trim system in accordance with paragraphs 9-14 and 9-21 and re-install all items removed for access.

9-20. DUAL VOLTAGE REGULATOR ADJUSTMENT. (Beginning with aircraft serials U20601588 (24 volt systems only) and U20601701 (12 volt and 24 volt systems.)

a. Remove the aft baggage compartment wall.

b. Connect an external power source of 13.75 volts (aircraft equipped with 12 volt electrical systems) or 27.5 volts (aircraft equipped with 24 volt electrical systems) dc continuous to the aircraft electrical system, or if an external power supply is not available, run the aircraft engine at approximately 1000 rpm to maintain the normal operating aircraft voltage.

c. Disconnect the electrical power leads to the motor by unplugging the connectors installed in the RED and BLACK wires leading to the motor assembly.

d. Connect one lead of a dc voltmeter capable of measuring the aircraft voltage to either the RED or BLACK wire leading to the motor and the other voltmeter lead to a good aircraft ground.

e. Operate the electric trim switch to the NOSE UP and NOSE DOWN positions and check voltage present at the RED and BLACK wires.

f. Adjust CTR 1 and CTR 2 adjustment screws on the voltage regulator counterclockwise (CCW), then slowly turn adjustment screws clockwise (CW) until a 10 volt output is obtained for both (RED and BLACK) leads.

g. Remove voltmeter and reconnect the motor assembly power leads. Be sure to connect RED to RED and BLACK to BLACK when reconnecting leads.

h. Check trim system for proper operation and re-install all items removed for access.

9-20A. DUAL VOLTAGE REGULATOR ADJUSTMENT. (24 VOLT SYSTEM ONLY BEGINNING WITH U20602200)
(Refer to figure 9-7.)

a. Remove access cover (39).

b. Connect an external power source of 13.75 volts (aircraft equipped with 12 volt electrical systems) or 27.5 volts (aircraft equipped with 24 volt electrical systems) dc continuous to the aircraft electrical system, or if an external power supply is not available, run the aircraft engine at approximately 1000 RPM to maintain the normal operating aircraft voltage.

c. Disconnect the electrical power leads to the motor by unplugging the connectors installed in the RED and BLACK wire leading to the motor assembly.

d. Connect one lead of a dc voltmeter capable of measuring the aircraft voltage to either the RED or BLACK wire leading to the motor and the other voltmeter lead to a good aircraft ground.

e. Operate the electric trim switch to the Nose UP and Nose DOWN positions and check voltage present at the RED and BLACK wires.

f. Adjust CTR 1 and CTR 2 adjustment screws on the voltage regulator counterclockwise (CCW), then slowly turn adjustment screws clockwise (CW) until a 13.5 volt output is obtained for both (RED and BLACK) leads.

g. Remove voltmeter and reconnect the motor assembly power leads. Be sure to connect RED to RED and BLACK to BLACK when reconnecting leads.

h. Check to see if full "NOSE UP" to full "NOSE DOWN" and full "NOSE DOWN" to full "NOSE UP" cycle time is 32±3 seconds.

i. Readjust voltage regulator as required to obtain 32±3 seconds cylce time.

j. Check trim system for proper operation and re-install all items removed for access.

CAUTION

The trim motor should be allowed to cool between voltage regulator adjustments for approximately 5 minutes if several actuations of the motor becomes necessary during adjustment.

9-21. RIGGING - ELECTRIC TRIM ASSIST.

a. THRU AIRCRAFT SERIALS P20600648 AND U20601700. (Refer to figure 9-5.)

1. The standard manual elevator trim control system MUST be rigged in accordance with paragraph 9-14 prior to rigging the electric trim assist.

2. Remove rear compartment baggage wall.

3. Remove safety wire and adjust turnbuckle (6) to increase trim system cable tension from 10 to 15 lbs to 20+5-0 lbs.

4. Recheck trim tab travel with an inclinometer for degree of travel specified in figure 1-1, safety turnbuckle (6) and reinstall all items removed for access.

b. AIRCRAFT SERIALS U20601701 THRU U206-01748. (Refer to figure 9-6.)

1. Complete steps 1 and 2 of subparagraph "a."

2. Disconnect assist cable (35) at both ends by removing clamps and keepers (36).

3. Remove safety wire and adjust turnbuckle (28) to increase trim system cable tension from 10 to 15 lbs to 20+5-0 lbs.

4. Rotate trim control wheel to place trim tab in the approximate mid-travel position (10° up).

5. Index the swaged ball (34) to the top of drive drum (11).

6. Connect assist cable (35) to left forward cable (30) and adjust the assist cable to 25+5-0 pounds tension.

7. Recheck trim tab travel with an inclinometer for degree of travel specified in figure 1-1, safety turnbuckle (28) and reinstall all items removed for access.

c. AIRCRAFT SERIAL U20601749 THRU U20602199 (Refer to figure 9-6.)

1. Complete steps 1 thru 5 of subparagraph "b."

2. Connect assist cable (35) to left forward cable (30) and adjust the assist cable to 10+5-0 pounds tension.

d. BEGINNING WITH AIRCRAFT SERIAL U206-02200 (Refer to figure 9-7.)

1. Complete steps 1 and 2 of subparagraph "a".

2. Rig electric trim drive chain as follows:

a. Move elevator trim tab to full "NOSE UP" position.

b. Locate NAS288 terminal on upper side of chain at a point 0.75 inches from drive assembly housing.

c. Adjust AN155 barrel until chain deflection between sprockets is approximatley 0.25 inch.

d. Resafety turnbuckle and reinstall all items removed for access.

SHOP NOTES:

SECTION 10

RUDDER CONTROL SYSTEM

TABLE OF CONTENTS Page

10-1. RUDDER CONTROL SYSTEM. (Refer to figure 10-1.)

10-2. DESCRIPTION. Rudder control is maintained through use of conventional rudder pedals which also control nose wheel steering. The system is comprised of the rudder pedals installation, cables and pulleys, all of which link the pedals to the rudder and nose wheel steering. When dual controls are installed, stowable rudder pedals are provided at the copilot's position.

10-3. TROUBLE SHOOTING.

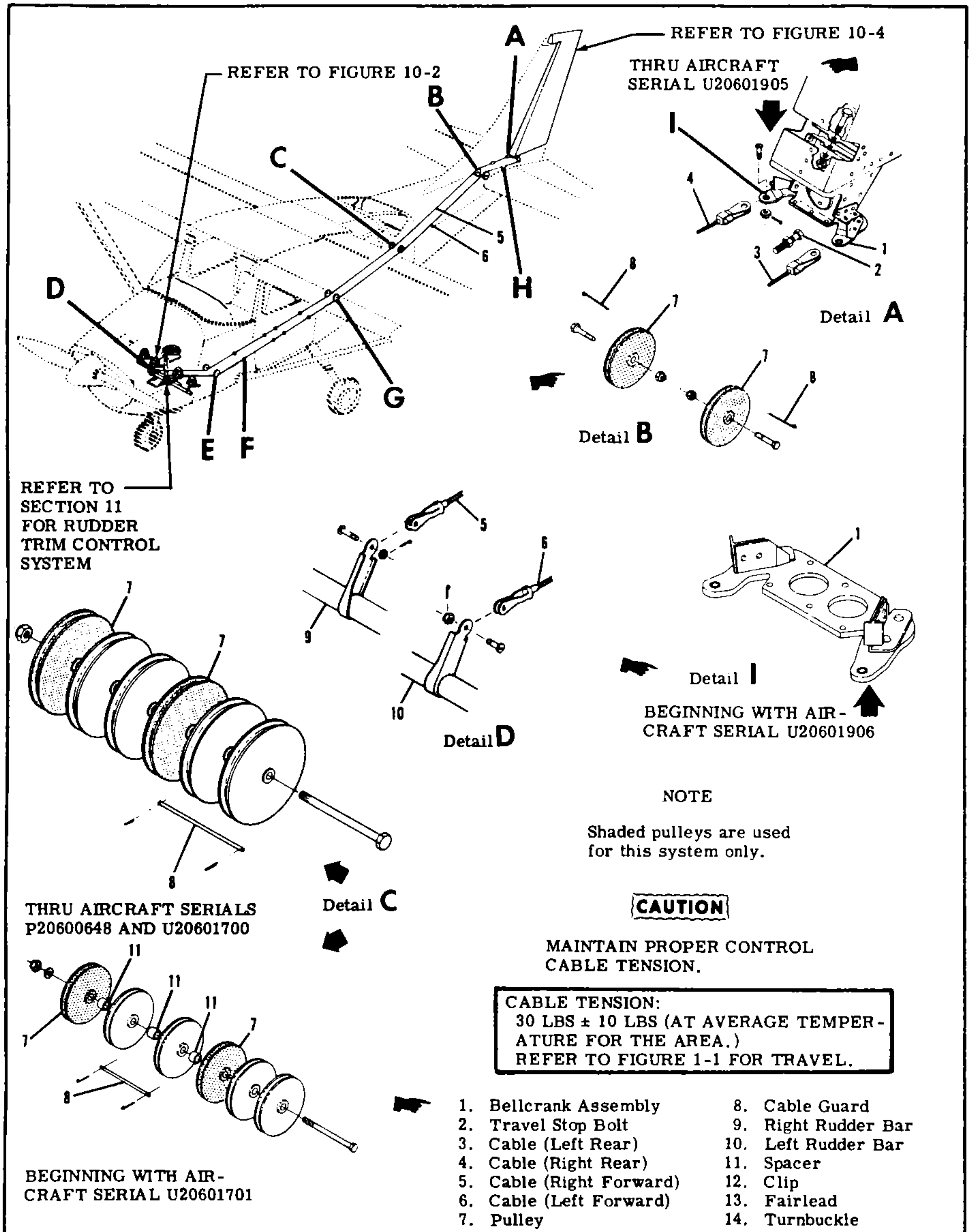
NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 10-11.

TROUBLE	PROBABLE CAUSE	REMEDY
RUDDER DOES NOT RESPOND TO PEDAL MOVEMENT.	Broken or disconnected cables.	Open access plates and check visually. Connect or replace cables.

10-3. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
BINDING OR JUMPY MOVEMENT OF RUDDER PEDALS.	Cables too tight.	Refer to figure 10-1 for cable tension. Rig system in accordance with paragraph 10-11.
	Cables not riding properly on pulleys.	Open access plates and check visually. Route cables correctly over pulleys.
	Binding, broken or defective pulleys or cable guards.	Open access plates and check visually. Replace defective pulleys and install guards properly.
	Pedal bars need lubrication.	Refer to Section 2.
	Defective rudder bar bearings.	If lubrication fails to eliminate binding. Replace bearing blocks.
	Defective rudder hinge bushings.	Check visually. Replace defective bushings.
	Clevis bolts too tight.	Check and readjust bolts to eliminate binding.
	Steering rods improperly adjusted.	Rig system in accordance with paragraph 10-11.
LOST MOTION BETWEEN RUDDER PEDALS AND RUDDER.	Insufficient cable tension.	Refer to figure 10-1 for cable tension. Rig system in accordance with paragraph 10-11.
INCORRECT RUDDER TRAVEL.	Incorrect rigging.	Rig in accordance with paragraph 10-11.
STOWABLE PEDALS DO NOT DISENGAGE.	Broken or defective control.	Disengage control and check manually. Replace control.
STOWABLE PEDALS DO NOT STOW.	Defective cover, catch or latch pin.	Check visually. Replace defective parts.
STOWABLE PEDALS DO NOT RE-ENGAGE.	Binding control.	Check control operation. Repair or replace control.
	Misaligned or bent mechanism.	Check visually. Repair or replace defective parts.



NOTE

Shaded pulleys are used for this system only.

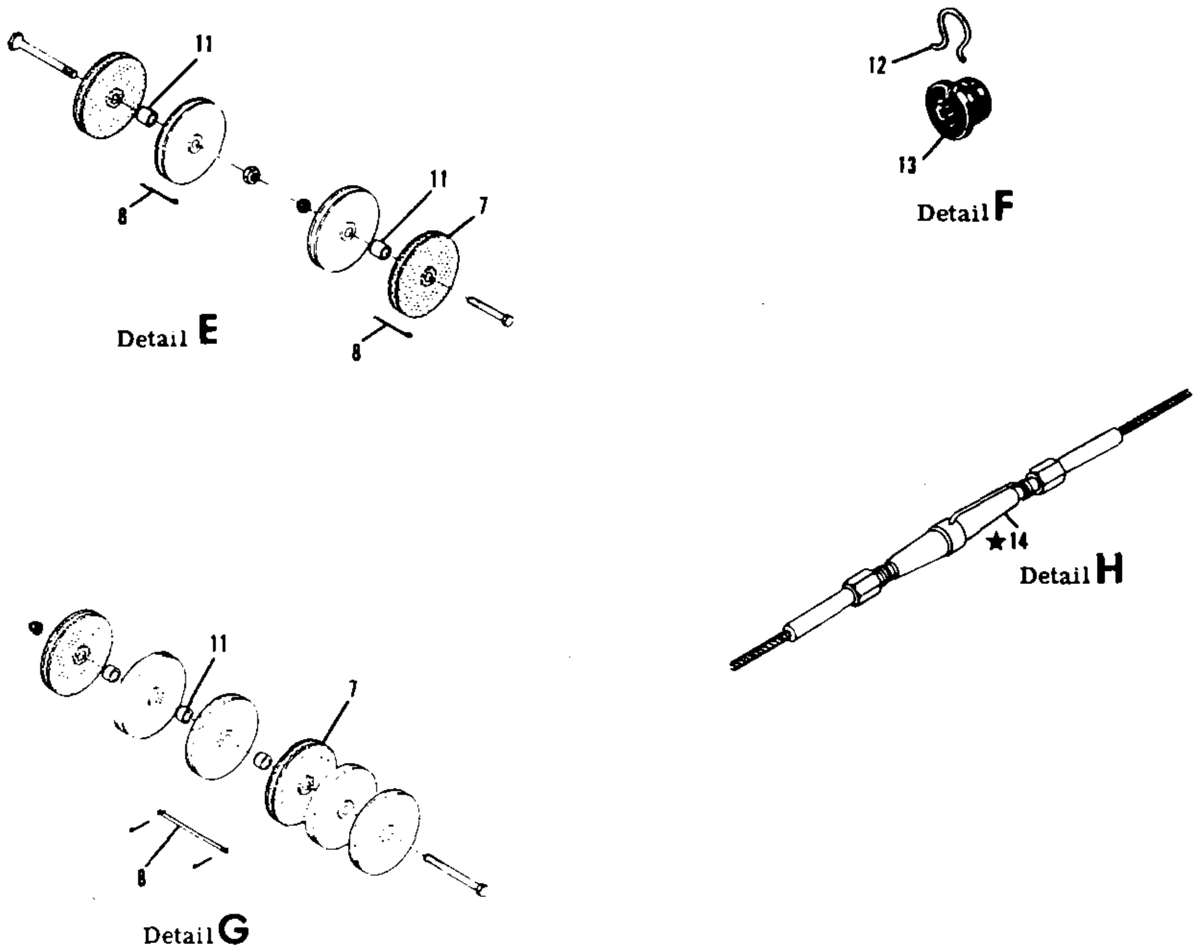
CAUTION

MAINTAIN PROPER CONTROL CABLE TENSION.

CABLE TENSION:
30 LBS ± 10 LBS (AT AVERAGE TEMPERATURE FOR THE AREA.)
REFER TO FIGURE 1-1 FOR TRAVEL.

1. Bellcrank Assembly
2. Travel Stop Bolt
3. Cable (Left Rear)
4. Cable (Right Rear)
5. Cable (Right Forward)
6. Cable (Left Forward)
7. Pulley
8. Cable Guard
9. Right Rudder Bar
10. Left Rudder Bar
11. Spacer
12. Clip
13. Fairlead
14. Turnbuckle

Figure 10-1. Rudder Control System (Sheet 1 of 2)

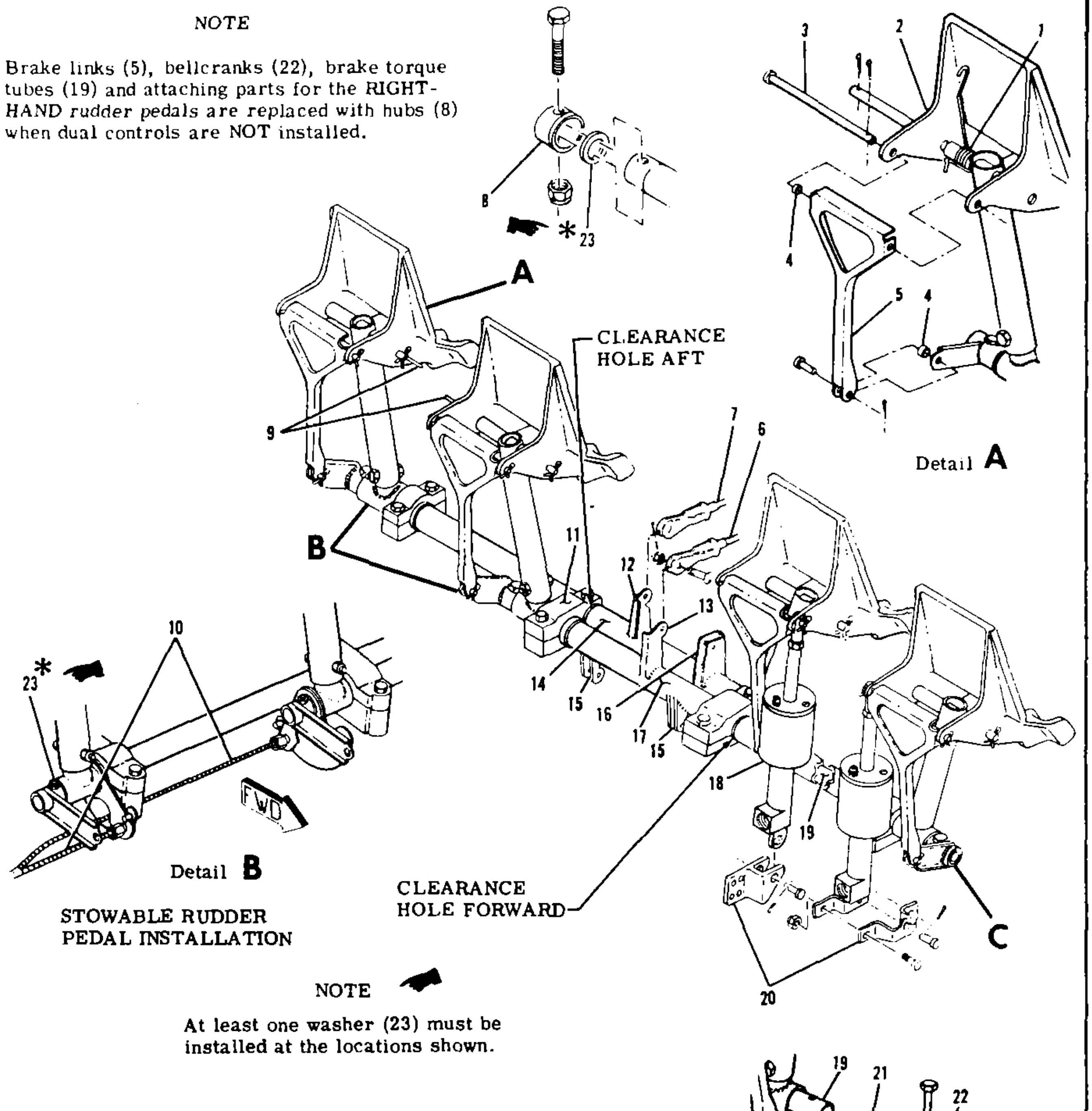


★ Safety wire these items.

Figure 10-1. Rudder Control System (Sheet 2 of 2)

NOTE

Brake links (5), bellcranks (22), brake torque tubes (19) and attaching parts for the RIGHT-HAND rudder pedals are replaced with hubs (8) when dual controls are NOT installed.

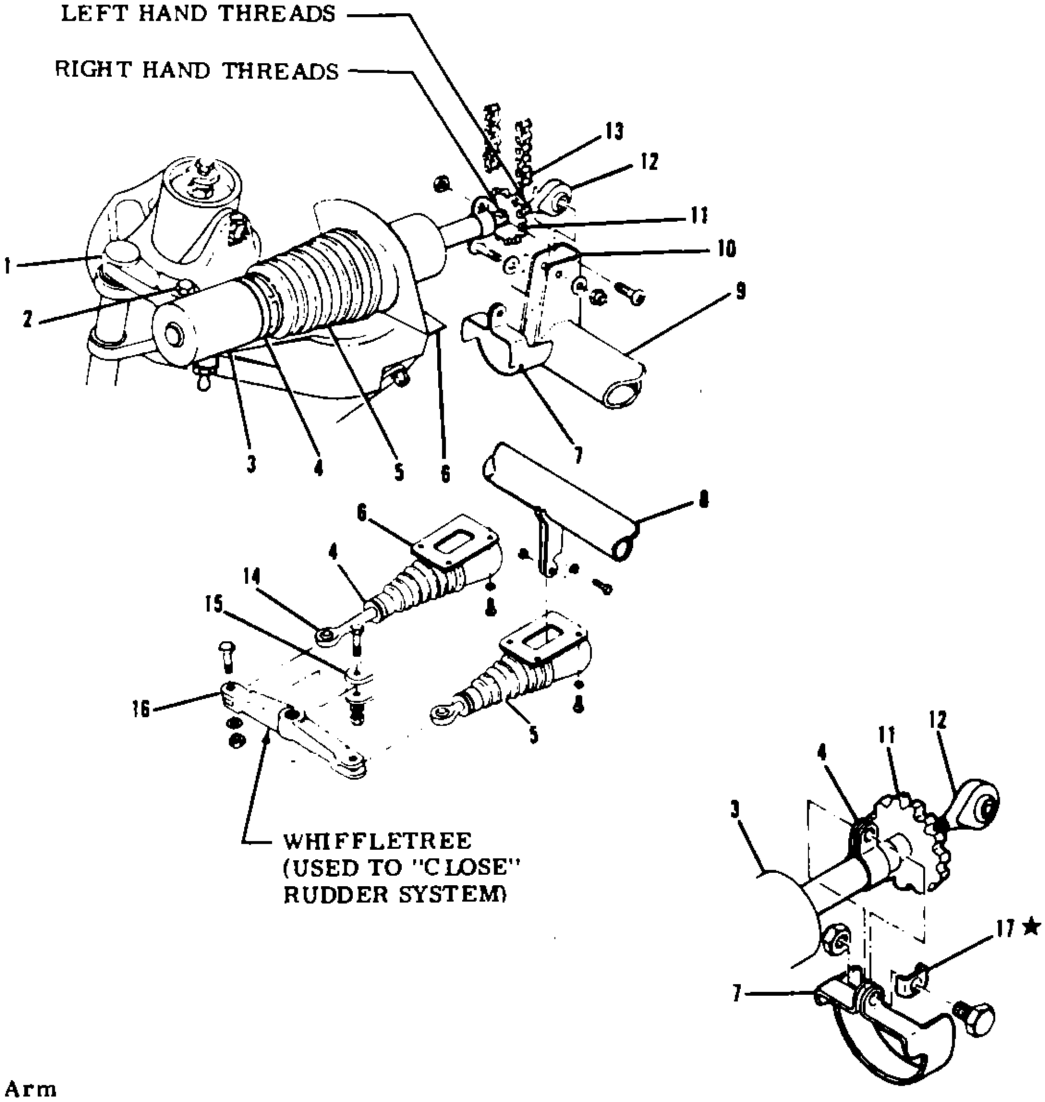


NOTE

At least one washer (23) must be installed at the locations shown.

1. Anti-Rattle Spring
2. Pedal
3. Shaft
4. Spacer
5. Brake Link
6. Cable (Left Forward)
7. Cable (Right Forward)
8. Single Controls Hub
9. Pin (Stowable Pedals Only)
10. Stowable Pedals Controls
11. Bearing Block
12. Right Rudder Cable Arm
13. Left Rudder Cable Arm
14. Aft Rudder Bar
15. Nosewheel Steering Arm
16. Rudder Trim Bungee Arm
17. Forward Rudder Bar
18. Master Cylinder
19. Brake Torque Tube
20. Bracket
21. Bearing
22. Bellcrank
23. Special Washer

Figure 10-2. Rudder Pedals Installation



1. Steering Arm
2. Bolt
3. Steering Bungee
4. Clamp
5. Boot
6. Retainer
7. Cable Guard
8. Left Rudder Bar
9. Right Rudder Bar
10. Bungee Attachment Arm
11. Sprocket
12. Rod End
13. Chain
14. Link Rod Assembly
15. Aircraft Structure
16. Whiffletree
17. Stop

★ Beginning with aircraft serials P206-0532 and U206-1237 (Install with legs around guard ends.)

Figure 10-3. Nosewheel Steering Linkage

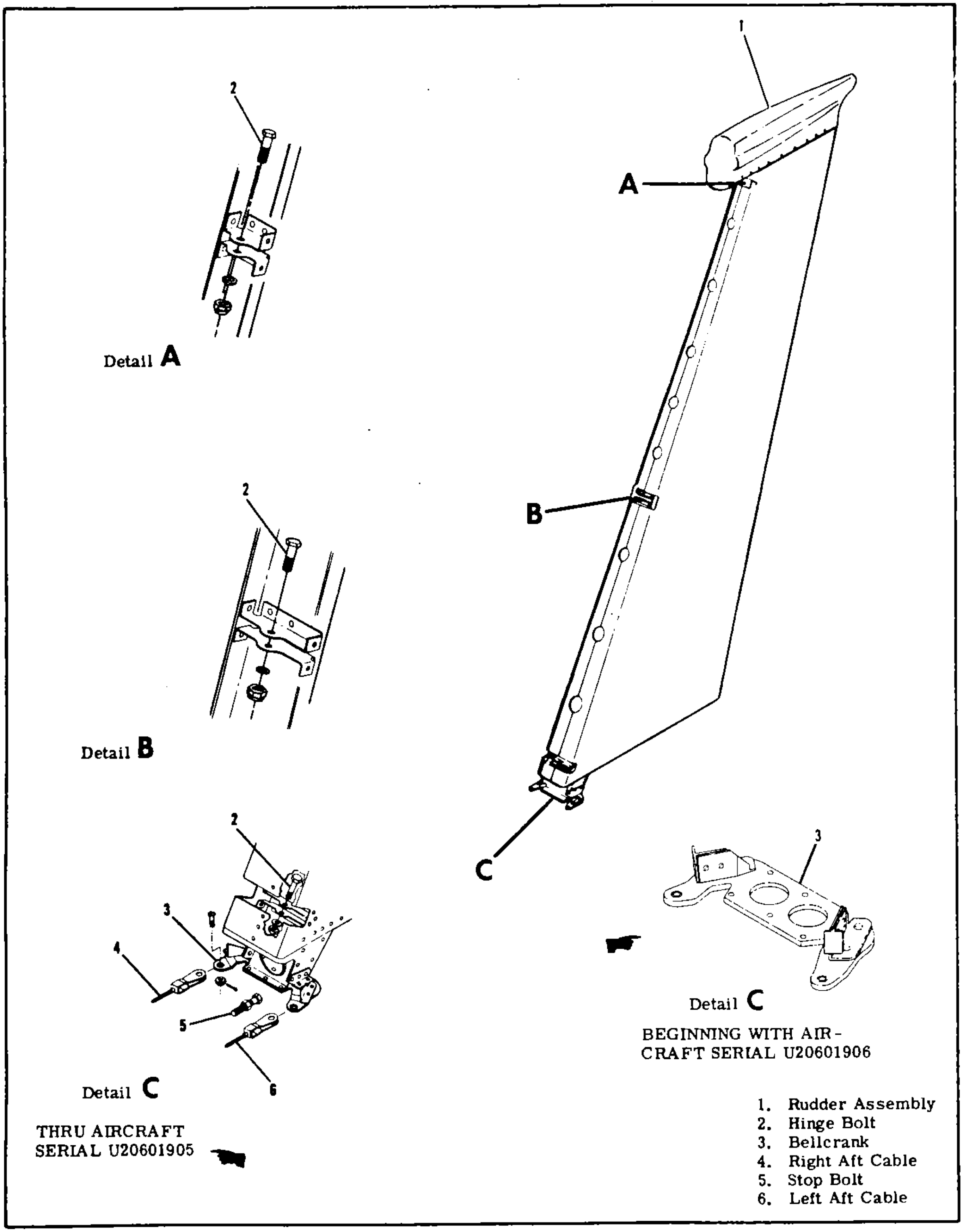
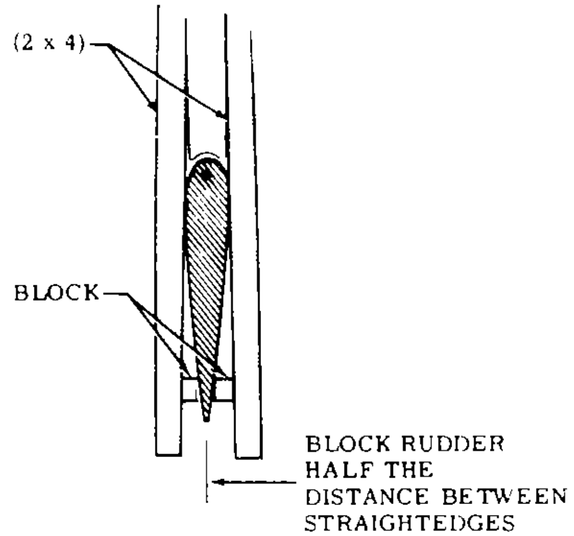
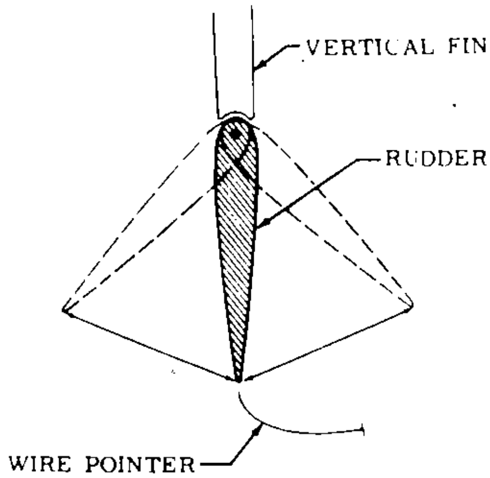


Figure 10-4. Rudder Installation



ESTABLISHING NEUTRAL POSITION OF RUDDER



MEASURING RUDDER TRAVEL

1. Establish neutral position of rudder by clamping straightedge (such as wooden 2 x 4) on each side of fin and rudder and blocking trailing edge of rudder half the distance between straightedges as shown.
2. Tape a length of soft wire to the stinger in such a manner that it can be bent to index at the lower corner of the rudder trailing edge.
3. Using soft lead pencil, mark rudder at point corresponding to soft wire indexing point (neutral).
4. Remove straightedges and blocks.
5. Hold rudder against right, then left, rudder stop. Measure distance from pointer to pencil mark on rudder in each direction of travel. Distance should be between 8.12" and 8.72".

Figure 10-5. Checking Rudder Travel

10-4. RUDDER PEDAL ASSEMBLY.

10-5. REMOVAL AND INSTALLATION. (Refer to figure 10-2.)
a. Remove carpeting, shields and soundproofing from the rudder pedal and tunnel areas as necessary for access.
b. Disconnect brake master cylinders (18) and parking brake cables at pilot's rudder pedals.
c. Remove rudder pedals (2) and brake links (5).
d. Disconnect stowable rudder pedal controls (10).
e. Remove fairing from either side of vertical fin, remove safety wire and relieve cable tension by loosening turnbuckles (index 14, figure 10-1).
f. Disconnect cables (6 and 7) from rudder bar arms (12 and 13).
g. (Refer to figure 10-3.) Disconnect steering bungee (3) from rudder bar arm (10). This is a dual-purpose bungee, serving as both rudder trim and nose gear steering.
h. Disconnect whiffletree push-pull rods (14) at rudder bar arms.
i. (Refer to figure 10-2.) Remove bolts securing bearing blocks (11) and carefully work rudder bars out of tunnel area.

NOTE

The two inboard bearing blocks contain clearance holes for the rudder bars at one end and a bearing hole at the other. Tag these bearing blocks for reference on reinstallation.

j. Reverse the preceding steps for reinstallation. Lubricate rudder bar assemblies as outlined in Section 2. Rig system in accordance with paragraph 10-11, safety turnbuckles and reinstall all items removed for access.

10-6. RUDDER. (Refer to figure 10-4.)

10-7. REMOVAL AND INSTALLATION.
a. Remove stinger.
b. Disconnect tail navigation light wire.
c. Remove fairing from either side of vertical fin, remove safety wire and relieve cable tension by loosening turnbuckles (index 14, figure 10-1.)
d. Disconnect cables (4 and 6) from rudder bellcrank (3).
e. With rudder supported, remove all hinge bolts (2) and using care, lift rudder free of vertical fin.
f. Reverse the preceding steps for reinstallation. Rig system in accordance with paragraph 10-11, safety turnbuckles and reinstall all items removed for access.

10-8. REPAIR. Repair may be accomplished as outlined in Section 18.

10-9. CABLES AND PULLEYS. (Refer to figure 10-1.)

10-10. REMOVAL AND INSTALLATION.
a. Remove seats, upholstery and access plates as necessary.
b. Remove safety wire, relieve cable tension and disconnect cables at turnbuckles (14).
c. Disconnect cables (5 and 6) at rudder bars (9 and 10).
d. Remove cable guards, pulleys and fairleads as necessary to work cables free of aircraft.

NOTE

To ease routing of cables, a length of wire may be attached to end of the cable before being withdrawn from aircraft. Leave wire in place, routed through structure; then attach cable being installed and pull the cable into position.

e. Reverse the preceding steps for reinstallation.
f. After cable is routed in position, install pulleys, fairleads and cable guards. Ensure cable is positioned in pulley grooves before installing guards.
g. Re-rig system in accordance with paragraph 10-11, safety turnbuckles and reinstall all items removed in step "a."

10-11. RIGGING.
a. Remove fairing from either side of vertical fin, remove safety wire and relieve cable tension at turnbuckles (index 14, figure 10-1).
b. Tie down or weight tail to raise nosewheel free of ground.
c. Extend strut and ensure nose gear is centered against the external centering stop.
d. (Refer to figure 10-3.) Disconnect steering bungee adjustable rod end (12) from rudder bar arm (10).
e. Clamp rudder pedals in neutral position.
f. Adjust turnbuckles (index 14, figure 10-1) to streamline rudder with 30±10 lbs tension on cables.
g. Remove clamps from rudder pedals.
h. Adjust travel stop bolts (index 2, figure 10-1) to obtain degree of travel specified in figure 1-1. Figure 10-5 illustrates correct travel and one method of checking.
i. Connect steering bungee and rig trim system as outlined in Section 11.
j. Operate rudder system, checking for ease of movement and full travel. Check cable tension with rudder in various positions. Cable tension should not be less than 20 pounds or more than 40 pounds in any position.
k. Check that all turnbuckles are safetied and reinstall all items removed for access.
l. Lower nosewheel to ground.

WARNING

Be sure rudder moves in the correct direction when operated by the rudder pedals.

SECTION 11

RUDDER TRIM CONTROL SYSTEM

TABLE OF CONTENTS Page

11-1. RUDDER TRIM CONTROL SYSTEM.

11-2. DESCRIPTION. The rudder trim system is operated by a trim control wheel, mounted in the pedestal. A sprocket-operated screw mechanism is incorporated at the aft end of the steering bungee which attaches to the aft rudder bar. The nose gear steering, rudder control system and rudder trim control system are interconnected, therefore, adjustments to one system will affect the others. For maintenance to nose gear steering, other than rigging, refer to Section 5.

11-3. TROUBLE SHOOTING.

NOTE

This trouble shooting chart should be used in conjunction with the trouble shooting chart in paragraph 10-3.

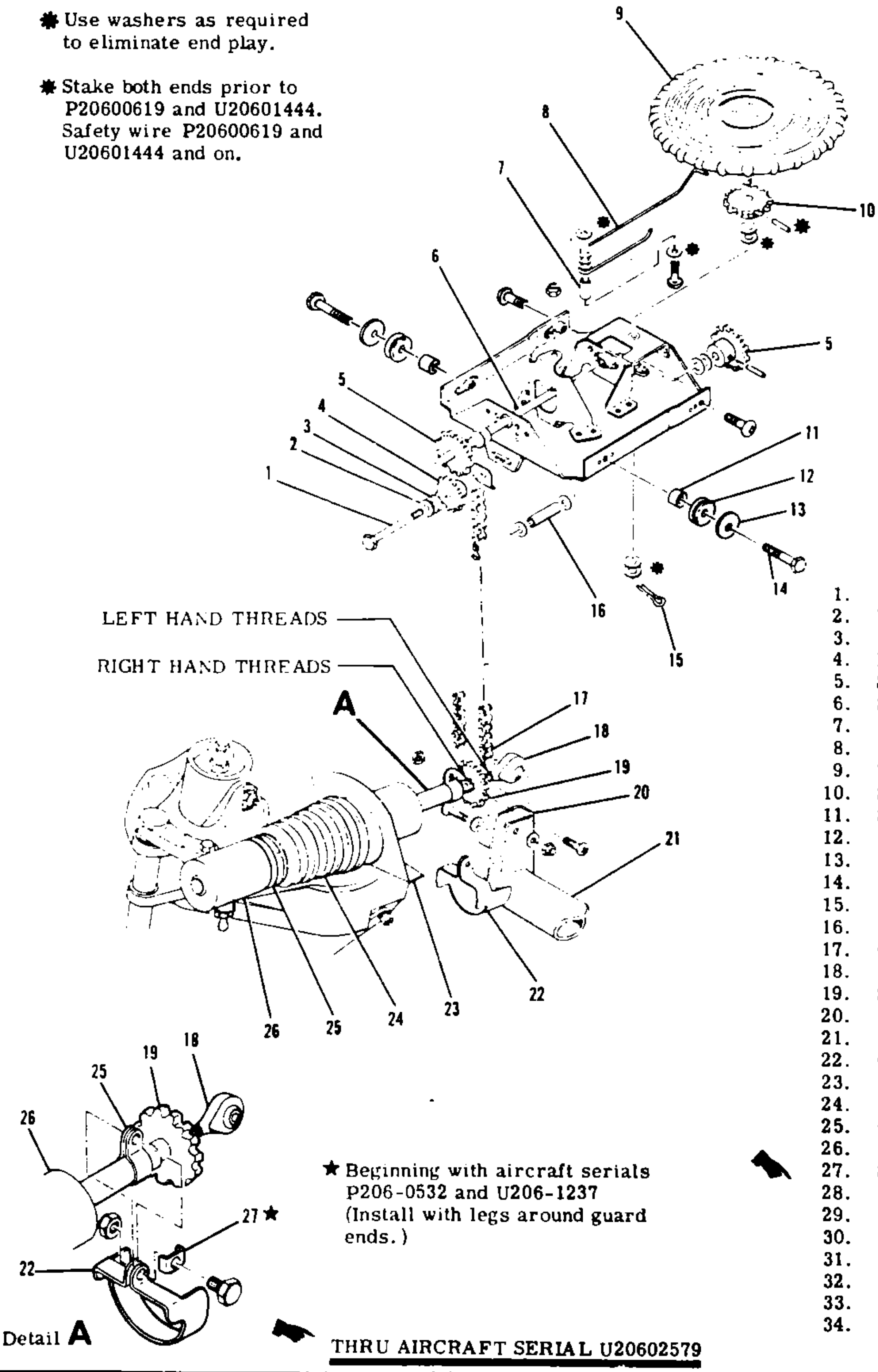
NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 11-8.

TROUBLE	PROBABLE CAUSE	REMEDY
FALSE READING ON TRIM POSITION INDICATOR.	Improper rigging.	Refer to paragraph 11-8.
	Worn, bent or disconnected linkage.	Check visually. Repair or replace parts as necessary.
HARD OR SLUGGISH OPERATION OF TRIM WHEEL.	Worn, bent or binding linkage.	Check visually. Repair or replace parts as necessary.
	Incorrect rudder cable tension.	Check and adjust rudder cable tension.
FULL TRIM TRAVEL NOT OBTAINED.	Rudder trim system improperly rigged.	Refer to paragraph 11-8.

✱ Use washers as required to eliminate end play.

✱ Stake both ends prior to P20600619 and U20601444. Safety wire P20600619 and U20601444 and on.

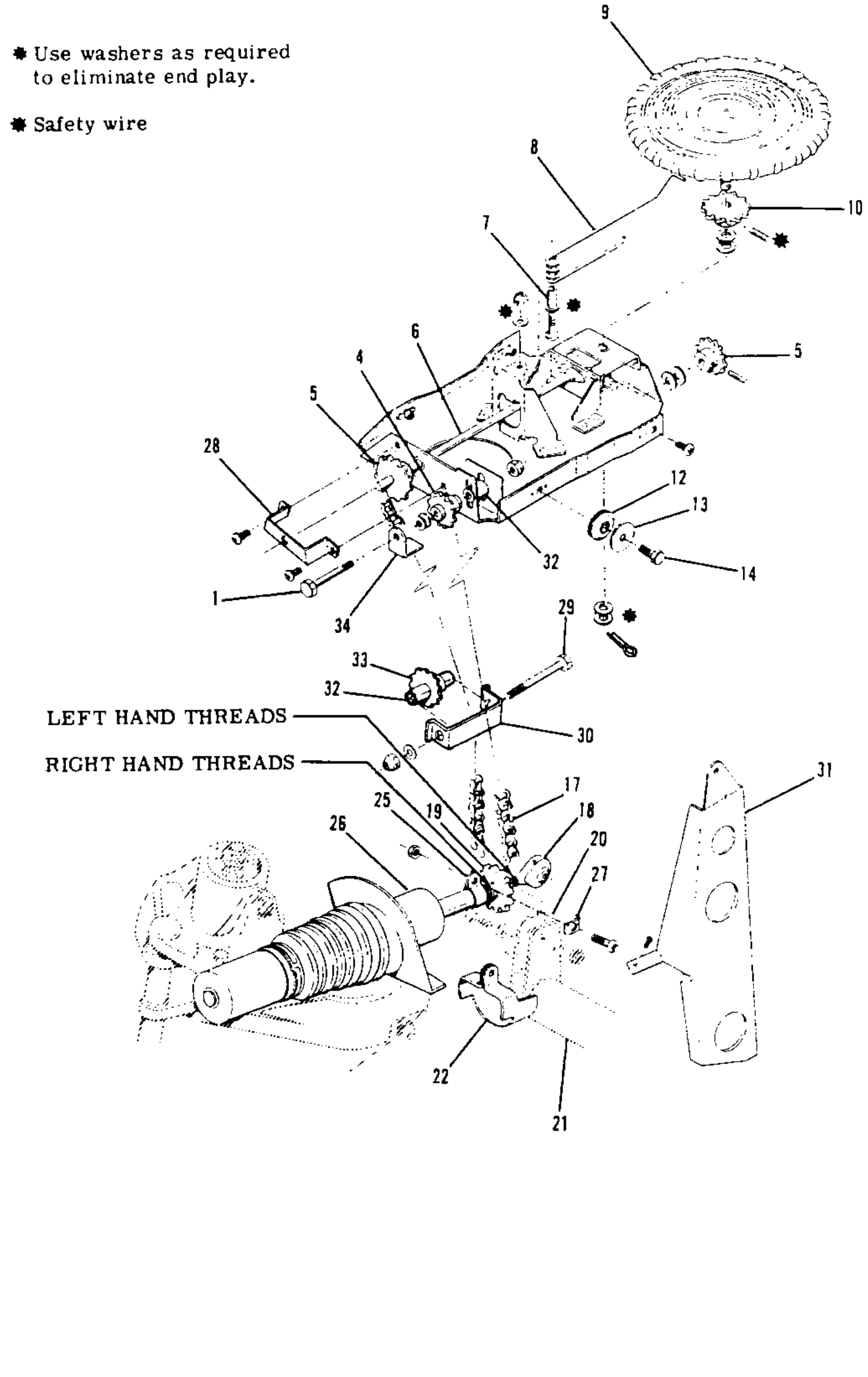


★ Beginning with aircraft serials P206-0532 and U206-1237 (Install with legs around guard ends.)

THRU AIRCRAFT SERIAL U20602579

1. Bolt
2. Washer
3. Bushing
4. Idler Sprocket
5. Sprocket
6. Shaft
7. Bushing
8. Indicator
9. Trim Wheel
10. Sprocket
11. Spacer
12. Grommet
13. Washer
14. Bolt
15. Cotter Pin
16. Bushing
17. Chain
18. Rod End
19. Sprocket
20. Rudder Bar Arm
21. Rudder Bar
22. Chain Guard
23. Retainer
24. Boot
25. Clamp
26. Bungee
27. Stop
28. Guard
29. Bolt
30. Chain Guard
31. Chain Guard
32. Bushing
33. Idler Sprocket
34. Guard

Figure 11-1. Rudder Trim Control System (Sheet 1 of 2)



BEGINNING WITH AIRCRAFT SERIAL U20602580

Figure 11-1. Rudder Trim Control System (Sheet 2 of 2)

11-4. STEERING BUNGEE. (Refer to figure 11-1.)

11-5. REMOVAL AND INSTALLATION. (Refer to figure 11-1).

a. Thru Aircraft Serial U20602579.

1. Remove pedestal cover in accordance with Section 9.
2. Remove pilot's rudder bar shield.
3. Loosen bolt (1) securing idler sprocket (4), slide idler sprocket in the adjustment slot to release tension on chain (17).
4. Disconnect steering bungee adjustable rod end (18) from rudder bar arm (20).
5. Remove chain guard (22) and disengage chain (17) from sprocket (19).
6. Remove clamp (25) at bungee (26).

NOTE

The nose gear must be removed to allow access to steering bungee. Refer to Section 5 for nose gear removal.

7. Reverse the preceding steps for reinstallation. Rig nosewheel steering and rudder trim system in accordance with paragraph 10-11 and 11-8 respectively.

b. Beginning with Aircraft Serial U20602580.

1. Remove pedestal cover in accordance with Section 9.
2. Remove chain guard (31).
3. Complete steps 3 thru 7 under subparagraph a.

11-6. TRIM WHEEL. (Refer to figure 11-1.)

11-7. REMOVAL AND INSTALLATION.

a. Remove pedestal cover in accordance with Section 9.

b. Remove cotter pin (15) and washers.

c. Lift trim wheel (9) up and out using care not to drop washers or bend indicator (8).

NOTE

Removal of sprocket (10) from trim wheel shaft is not recommended except for replacement of parts.

d. Reverse the preceding steps for reinstallation.

11-8. RIGGING.

a. Remove pedestal cover in accordance with Section 9.

b. Remove pilot's rudder bar shield.

c. Disconnect steering bungee rod end (18) at rudder bar arm (20).

d. Tie down or weight tail to raise nosewheel free of ground.

e. Extend strut and ensure nose gear is centered against the external centering stop.

f. Loosen bolt (1) securing idler sprocket (4), slide idler sprocket in the adjustment slot and disengage chain (17) from sprocket (19).

g. Clamp rudder pedals in neutral position.

NOTE

Rudder control system MUST be correctly rigged prior to rigging trim system.

h. Screw bungee sprocket (19) in against bungee shaft, then screw rod end (18) in against sprocket (19) to obtain bungee shortest length.

i. Holding rod end (18) to prevent turning, rotate sprocket (19) until hole in rod end aligns exactly with attaching hole on rudder bar arm (20) and connect.

j. Engage chain (17) on sprockets and tighten idler sprocket (4) so chain is taut but not tight.

k. Remove clamps and run trim wheel (9) through its full range of travel, observing full indicator (8) travel is reached before full bungee extension or contraction.

l. Lower nose gear to ground and install all parts removed for access.

WARNING

Be sure rudder moves in the correct direction when operating trim wheel.

SECTION 12

ENGINE

(NORMALLY ASPIRATED)
REFER TO SECTION 12A FOR TURBOCHARGED ENGINE

TABLE OF CONTENTS Page

12-1. ENGINE COWLING.

12-2. DESCRIPTION. The engine cowling is divided into four major removable segments. The left upper cowling segment has two access doors, one at the upper front provides access to the oil filler neck and one at the left aft side provides access to the oil dipstick. The right and left nose caps are fastened to the lower engine nacelle and to each other with screws. The right and left upper cowl segments are secured with quick-release fasteners and either segment may be removed individually. The lower engine nacelle is an extension of the fuselage.

12-3. REMOVAL AND INSTALLATION.
a. Release the quick-release fasteners attaching the cowling to the fuselage and at the parting surfaces of the left and right segments.
b. Remove screws securing the left and right nose cap together and to the lower engine nacelle.
c. Disconnect air ducts from nose caps and remove caps.
d. Reverse the preceding steps for reinstallation. Ensure the baffle seals are turned in the correct direction to confine and direct air flow around the engine. The vertically installed seals must fold forward and the side seals must fold upwards.

12-4. CLEANING AND INSPECTION. Wipe the inner surfaces of the cowling segments with a clean cloth saturated with cleaning solvent (Stoddard or equivalent). If the inside surface of the cowling is coated heavily with oil or dirt, allow solvent to soak until foreign material can be removed. Wash painted surfaces of the cowling with a solution of mild soap and water and rinse thoroughly. After washing, a coat of wax may be applied to the painted surfaces to prolong paint life. After cleaning, inspect cowling for dents, cracks, loose rivets and spot welds. Repair all defects to prevent spread of damage.

12-5. REPAIR. If cowling skins are extensively damaged, new complete sections of the cowling should be installed. Standard insert-type patches may be used for repair if repair parts are formed to fit contour of cowling. Small cracks may be stop-drilled and small dents straightened if they are reinforced on the inner surface with a doubler of the same material as the cowling skin. Damaged reinforcement angles should be replaced with new parts. Due to their small size, new reinforcement angles are easier to install than to repair the damaged part.

12-6. COWL FLAPS.

12-7. DESCRIPTION. Cowl flaps are provided to aid in controlling engine temperature. Two cowl flaps, operated by a single control in the cabin, are located at the lower aft end of the engine nacelle. The engine exhaust tailpipes extend through cutouts in the aft portion of each cowl flap.

12-8. REMOVAL AND INSTALLATION. (Refer to figure 12-1.)
a. Place control lever (2) in the OPEN position.
b. Disconnect control clevises (13) from shockmounts (14).
c. Remove safety wire securing hinge pins (9) to cowl flaps, pull pins from hinges and remove flaps.
d. Reverse the preceding steps for reinstallation.

NOTE

AIRCRAFT SERIALS THRU U20601775. When cowl flap lever assembly is replaced, the new part will be in a straight condition. It is necessary to bend cowl flap lever (2) assembly to position knob ℄ 2.00" inboard of the knob position when lever assembly projects straight aft.

Rig cowl flaps, if necessary, in accordance with paragraph 12-9.

12-9. RIGGING. (Refer to figure 12-1.)
a. Disconnect control clevises (13) from shockmounts (14).
b. Check to make sure that the flexible controls reach their internal stops in each direction. Mark controls so that full travel can be readily checked and maintained during the remaining rigging procedures.
c. Place control lever (2) in the CLOSED position. If the control lever cannot be placed in the closed position, loosen clamp (5) at upper end of controls and slip housings in clamp or adjust controls at upper clevis (4) to position control lever in bottom hole of position bracket (3).
d. With the control lever in CLOSED position, hold one cowl flap closed (against the rubber bumpers on the fuselage), loosen jam nut and adjust clevis (13) on the control to hold cowl flap in this position and install bolt.

NOTE

If the lower control clevis (13) cannot be adjusted far enough to streamline flap and still maintain sufficient thread engagement, loosen the lower control housing clamp (8) and slide housing in clamp as necessary. Be sure threads are visible in clevis inspection holes.

e. Repeat the preceding step for the opposite cowl flap. Cowl flaps should open approximately 5.00 inches when measured in a straight line from the aft edge of cowl flap, just outboard of cutout to lower edge of firewall.
g. Check that all clamps and jam nuts are tight.

12-10. ENGINE.

12-11. DESCRIPTION. An air cooled, wet-sump, six-cylinder, horizontally-opposed, direct-drive, fuel injected, Continental IO-520 series engine driving a constant-speed propeller is used to power the aircraft. The cylinders, numbered from rear to front are staggered to permit a separate throw on the crankshaft for each connecting rod. The right rear cylinder is number 1 and cylinders on the right side are identified by odd numbers 1, 3 and 5. The left rear cylinder is number 2 and the cylinders on the left side are identified as numbers 2, 4 and 6. Refer to paragraph 12-12 for engine data. For repair and overhaul of the engine, accessories and propeller, refer to the appropriate publications issued by their manufacturer's. These publications are available from the Cessna Service Parts Center.

12-12. ENGINE DATA.

Aircraft Series	P206	U206
Model (Continental)	IO-520-A	IO-520-F
BHP at RPM	285 at 2700	
BHP Maximum for Take-Off (5 Minutes) at RPM BHP Maximum Except Take-Off RPM (Max. Continuous)		300 2850 285 2700
Number of Cylinders	6-Horizontally Opposed	Same
Displacement	520 Cubic Inches	Same
Bore	5.25 Inches	Same
Stroke	4.00 Inches	Same
Compression Ratio	8.5:1	Same
Magnetos	Slick Model No. 662	Same
Right Magneto	Fires 22° BTC Upper Right and Lower Left	Same
Left Magneto	Fires 22° BTC Upper Left and Lower Right	Same
Firing Order	1-6-3-2-5-4	Same
Spark Plugs	18 MM (Refer to current Continental active factory approved spark plug chart.)	Same
Torque	330 ±30 LB-IN.	Same
Fuel Metering System	Continental Fuel Injection	Same
Unmetered Fuel Pressure	9.0 to 11.0 PSI at 600 RPM 29.0 to 32.0 PSI at 2700 RPM	Same 31.0 to 33.0 PSI at 2850 RPM
Oil Sump Capacity	12 U.S. Quarts	Same
With External Filter	13 U.S. Quarts	Same
Tachometer	Mechanical Drive	Same
Oil Pressure (PSI)		
Minimum Idling	10	Same
Normal	30 to 60	Same
Maximum (Cold Oil Starting)	100	Same
Connection Location	Between No. 2 and No. 4 Cylinders	Same
Oil Temperature		
Normal Operating	Within Green Arc	Same
Maximum Permissible	Red Line (240°F)	Same
Probe Location	Below Oil Cooler	Same
Cylinder Head Temperature		
Normal OPerating	Within Green Arc	Within Green Arc
Maximum	Red Line (460° F.)	Red Line (460° F.)
Probe Location	Lower side of Number 1 Cylinder	Lower Side of Number 1 Cylinder thru 1973, Number 2 Cylinder on 1974, and Number 3 Cylinder on 1975 Models. On U20602581 thru 02588, 02590 thru 02693, 02695 thru 02728, 02730 thru 02752, 02754, 02755, 02757 thru 02759, 02763 thru 02766, 02768, 02769, 02774, 02777, 02778, 02781, 02782, 02786, 02790, 02792,

		02796. Refer to Cessna Single-Engine Service Letter SE75-12 Dated June 27, 1975.
Approximate Dry Weight	471 LB. (Weight is approximate and will vary with optional accessories installed.)	Same

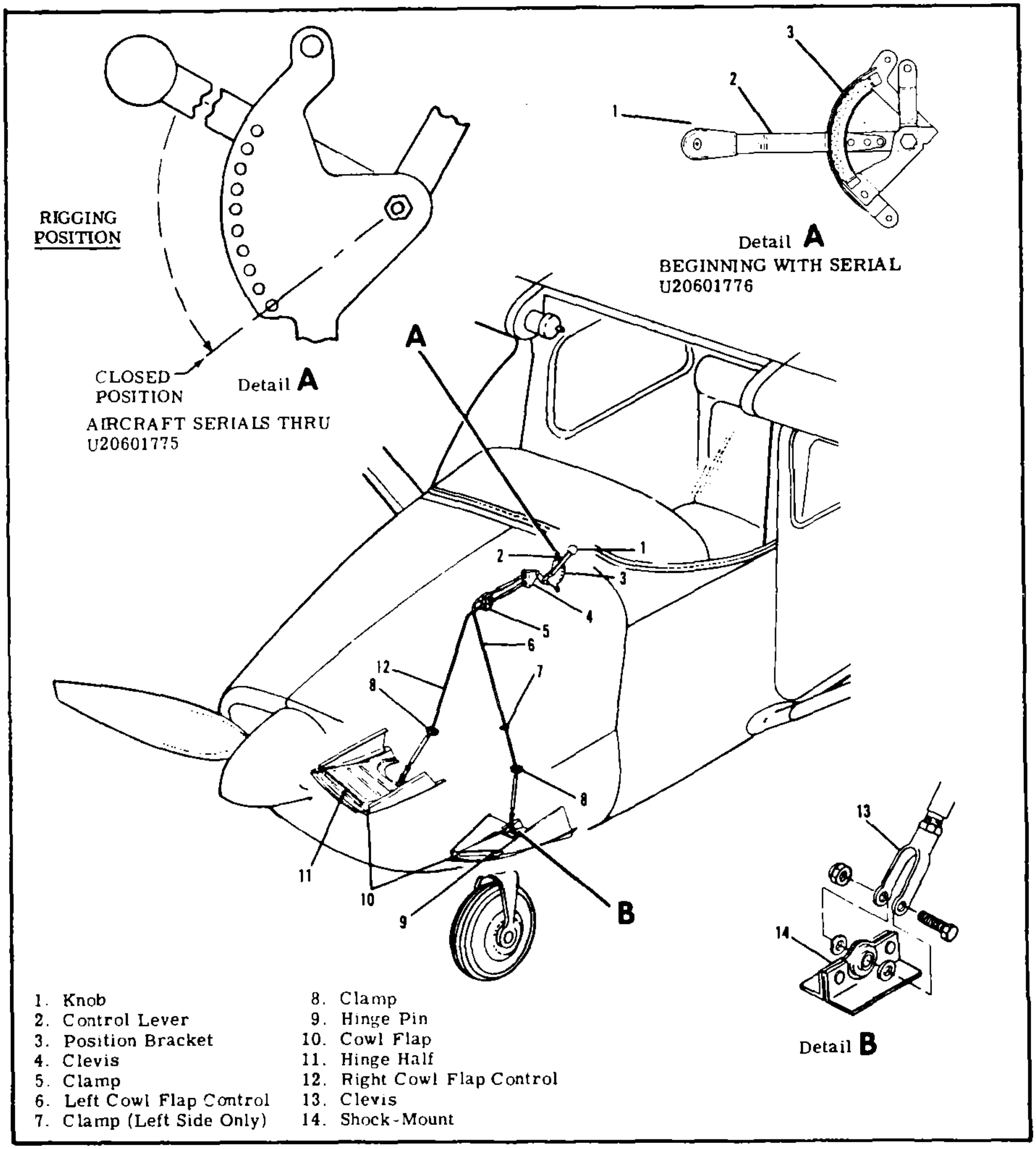
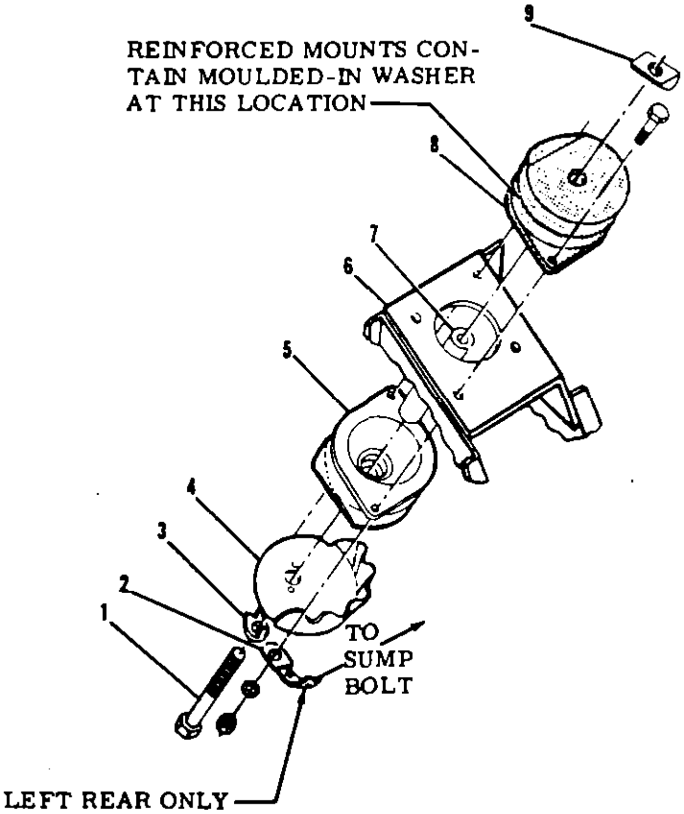


Figure 12-1. Cowl Flaps Installation



Detail **A**

NOTE

BEGINNING WITH AIRCRAFT SERIAL ● P20600604 & U20601445 ON NON-TURBOCHARGED ENGINES.

NOTES

ON ALL MODELS:

It is important that the correct engine mounts be installed in the correct positions. Install upper mounts with beveled edge at the top, except as noted below for turbocharged engines. Install lower mounts with beveled edge at the front, except as noted below for turbocharged engines. In addition, be sure that the two reinforced mounts are used at the upper, forward positions.

To determine which two of the eight mounts are the reinforced ones, use fingernail to feel whether moulded-in washer is present.

Torque bolts (1) to 300 +50 -00 lb-in.

ON TURBOCHARGED ENGINES:

Barrel nuts (9) are replaced with turbine support shafts at the right mounts of turbocharged engines.

Heat shields (10) replace heat deflectors (4) on turbocharged engines.

Install left, forward, lower mount with beveled edges at the front and at the top on turbocharged engines.

If shock-mounts will be re-used, mark each one so it will be reinstalled in exactly the same position. If new shock-mounts will be installed, position them as noted above.

1. Bolt
2. Ground Strap
3. Tab Lockwasher
4. Heat Deflector
5. Lower Mount
6. Engine Mount Support
7. Spacer
8. Upper Mount
9. Barrel Nut
10. Heat Shield

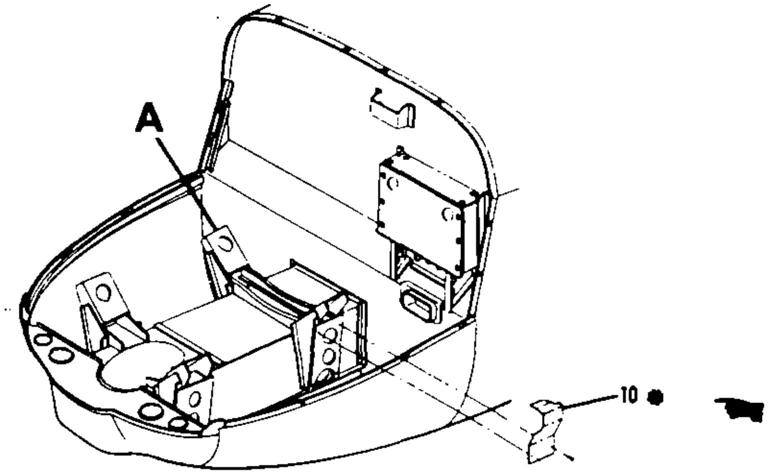


Figure 12-2. Engine Mount Installation

12-12A. TIME BETWEEN OVERHAUL (TBO). Teledyne Continental Motors recommends engine overhaul at 1700 hours operating time for the IO-520 series engines. Refer to Continental Aircraft Engine Service Bulletin M81-22, and to any superseding bulletins, revisions or supplements thereto, for further recommendations. At the time of overhaul, engine accessories should be overhauled. Refer to Section 14 for propeller and governor overhaul periods.

12-12B. OVERSPEED LIMITATIONS. The engine must not be operated above specified maximum continuous RPM. However, should inadvertent overspeed occur, refer to Continental Aircraft Engine Service Bulletin M75-16, and to any superseding bulletins, revisions or supplements thereto, for further recommendations.

12-13. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE FAILS TO START.	Improper use of starting procedure.	Review starting procedure. Refer to Owner's Manual.
	Defective aircraft fuel system.	Refer to Section 13.
	Spark plugs fouled.	Remove and clean. Check gaps and insulators. Use new gaskets. Check cables to persistently fouled plugs.
	Defective magneto switch or grounded magneto leads.	Check continuity, repair or replace switch or leads.
	Defective ignition system.	Refer to paragraph 12-79.
	Excessive induction air leaks.	Check visually. Correct air leaks.
	Dirty screen in fuel control unit or defective fuel control unit.	Check screen visually. Check fuel flow through control unit. Replace defective fuel control unit.
	Defective electric fuel pump.	Refer to Section 13.
	Defective fuel manifold valve or dirty screen.	Check fuel flow through valve. Remove and clean. Replace if defective.
	Clogged fuel injection lines or discharge nozzles.	Check fuel through lines and nozzles. Clean lines and nozzles. Replace if defective.
	Fuel pump not permitting fuel from auxiliary pump to bypass.	Check fuel flow through engine-driven fuel pump. Replace engine-driven pump.
	Vaporized fuel in system.	Refer to paragraph 12-100.
	Fuel tanks empty.	Visually inspect tanks. Fill with proper grade and quantity of gasoline.
	Fuel contamination or water in fuel system.	Open fuel strainer drain and check for water. Drain all fuel and flush out fuel system. Clean all screens, fuel lines, strainer, etc.
	Mixture control in the IDLE CUT-OFF position.	Move control to the full RICH position.
	Engine flooded.	Refer to paragraph 12-100.
	Fuel selector valve in OFF position.	Place selector valve in the ON position to a cell known to contain gasoline.

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE STARTS BUT DIES, OR WILL NOT IDLE.	Idle stop screw or idle mixture incorrectly adjusted.	Refer to paragraph 12-46.
	Spark plugs fouled or improperly gapped.	Remove, clean and regap plugs. Replace if defective.
	Water in fuel system.	Open fuel strainer drain and check for water. If water is present, drain fuel tank sumps, lines and strainer.
	Defective ignition system.	Refer to paragraph 12-79.
	Vaporized fuel. (Most likely to occur in hot weather with a hot engine.)	Refer to paragraph 12-100.
	Induction air leaks.	Check visually. Correct the cause of leaks.
	Manual primer leaking.	Disconnect primer outlet line. If fuel leaks through primer, repair or replace primer.
	Dirty screen in fuel control unit or defective fuel control unit.	Check screen visually. Check fuel flow through control unit. Clean screen. Replace fuel control unit if defective.
	Defective manifold valve or clogged screen.	Check fuel flow through valve. Replace if defective. Clean screen.
	Defective engine-driven fuel pump.	If engine continues to run with electric pump turned on, but stops when it is turned off, the engine-driven pump is defective. Replace pump.
	Defective engine.	Check compression. Listen for unusual engine noises. Engine repair is required.
	Propeller control set in high pitch position (low rpm).	Use low pitch (high rpm) position for all ground operation.
	Defective aircraft fuel system.	Refer to Section 13.
	Restricted fuel injection lines or discharge nozzles.	Check fuel flow through lines and nozzles. Clean lines and nozzles. Replace if defective.
ENGINE RUNS ROUGHLY, WILL NOT ACCELERATE PROPERLY, OR LACKS POWER.	Propeller control in high pitch (low rpm) position.	Use low pitch (high rpm) for all ground operations.
	Restriction in aircraft fuel system.	Refer to Section 13.
	Restriction in fuel injection system.	Clean system. Replace any defective units.

12-13. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE RUNS ROUGHLY. WILL NOT ACCELERATE PROPERLY, OR LACKS POWER. (Cont.)	Engine-driven fuel pump pressure improperly adjusted.	Refer to paragraph 12-61.
	Worn or improperly rigged throttle or mixture control.	Check visually. Rig properly. Replace worn linkage.
	Spark plugs fouled or improperly gapped.	Clean and regap. Replace if defective.
	Defective ignition system.	Refer to paragraph 12-79.
	Defective engine.	Check compression. Listen for unusual engine noises. Engine repair is required.
POOR IDLE CUT-OFF.	Worn or improperly rigged mixture control.	Rig properly. Replace worn linkage.
	Defective or dirty manifold valve.	Operate electric fuel pump and check that no fuel flows through manifold valve with mixture control in IDLE CUT-OFF. Remove and clean. Replace if defective.
	Fuel leakage through primer.	Repair or replace primer.
	Auxiliary fuel pump ON.	Turn to OFF position.
	Defective fuel control unit.	If none of the preceding causes corrects the problem, the control unit is probably at fault. Replace control unit.

12-14. REMOVAL. If an engine is to be placed in storage or returned to the manufacturer for overhaul, proper preparatory steps should be taken for corrosion prevention prior to beginning the removal procedure. Refer to Section 2 for storage preparation. The following engine removal procedure is based upon the engine being removed from the aircraft with the lines and hoses being disconnected at the firewall.

NOTE

Tag each item when disconnected to aid in identifying wires, hoses, lines and control linkages when engine is reinstalled. Likewise, shop notes made during removal will often clarify reinstallation. Protect openings, exposed as a result of removing or disconnecting units, against entry of foreign material by installing covers or sealing with tape.

a. Place all cabin switches in the OFF position.
b. Place fuel selector valve in the OFF position.
c. Remove engine cowling in accordance with paragraph 12-3.
d. Disconnect battery cables and insulate terminals as a safety precaution.
e. Drain fuel strainer and lines with strainer drain control.

NOTE

During the following procedures, remove any clamps or lacings which secure controls, wires, hoses or lines to the engine, engine nacelle or attached brackets, so they will not interfere with engine removal. Some of the items listed can be disconnected at more than one place. It may be desirable to disconnect some of these items at other than the places indicated. The reason for engine removal should be the governing factor in deciding at which point to disconnect them. Omit any of the items which are not present on a particular engine installation.

f. Drain the engine oil sump and oil cooler.
g. Disconnect magneto primary lead wires at magnetos.

WARNING

The magnetos are in a SWITCH ON condition when the switch wires are disconnected. Ground the magneto points or remove the high tension wires from the magnetos or spark plugs to prevent accidental firing.

h. Remove the spinner and propeller in accordance with Section 14. Cover exposed end of crankshaft flange and propeller flange to prevent entry of foreign material.

i. Disconnect throttle, mixture and propeller controls from their respective units. Remove clamps attaching controls to engine and pull controls aft clear of engine. Use care to avoid bending controls too sharply. Note EXACT position, size and number of attaching washers and spacers for reference on reinstallation.

j. Disconnect all hot and cold air flexible ducts and remove.

k. Remove exhaust system in accordance with paragraph 12-96.

l. Disconnect wires and cables as follows:

1. Disconnect tachometer drive shaft at adapter.

CAUTION

When disconnecting starter cable do not permit starter terminal bolt to rotate. Rotation of the bolt could break the conductor between bolt and field coils causing the starter to be inoperative.

2. Disconnect starter electrical cable at starter.
3. Disconnect cylinder head temperature wire at probe.
4. Disconnect oil temperature wire at probe below oil cooler.
5. Disconnect electrical wires and wire shielding ground at alternator.
6. Disconnect exhaust gas temperature wires at quick-disconnects.
7. Disconnect electrical wires at throttle microswitch.
8. Disconnect fuel strainer drain control from strainer.
9. Remove all clamps and lacings attaching wires or cables to engine and pull wires and cables aft to clear engine.

m. Disconnect lines and hoses as follows:

1. Disconnect vacuum hose at firewall.
2. Disconnect oil breather and vacuum system oil separator vent lines where secured to the engine.

WARNING

Residual fuel and oil draining from disconnected lines and hoses constitutes a fire hazard. Use caution to prevent accumulation of such fuel and oil when lines or hoses are disconnected.

3. Disconnect fuel supply and vapor return hoses at fuel pump.
4. Disconnect primer line at firewall fitting.
5. Disconnect fuel-flow gage hose at firewall.
6. Disconnect oil pressure line at firewall fitting.
7. Disconnect manifold pressure hose at firewall.
8. Disconnect manifold and balance tube drain lines.

n. Carefully check the engine again to ensure ALL hoses, lines, wires, cables, clamps and lacings are disconnected or removed which would interfere with the engine removal. Ensure all wires, cables and engine controls have been pulled aft to clear the engine.

CAUTION

Place a suitable stand under tail tie-down ring before removing engine. The loss of engine weight will cause the aircraft to be tail heavy.

o. Attach a hoist to the lifting lug at the top center of the engine crankcase. Lift engine just enough to relieve the weight from the engine mounts.

p. Remove bolts, ground strap and heat deflectors.

q. Slowly hoist engine out of nacelle and clear of aircraft checking for any items which would interfere with the engine removal. Balance the engine by hand and carefully guide the disconnected parts out as the engine is removed.

r. Remove engine shock-mounts.

NOTE

If shock-mounts will be re-used, mark each one so it will be reinstalled in exactly the same position. If new shock-mounts will be installed, position them as illustrated in figure 12-2.

12-14A. STATIC RUN-UP PROCEDURES. In a case of suspected low engine power, a static RPM run-up should be conducted as follows:

a. Run-up engine, using take-off power and mixture settings, with the aircraft facing 90° right and then left to the wind direction.

b. Record the RPM obtained in each run-up position.

NOTE

Daily changes in atmospheric pressure, temperature and humidity will have a slight effect on static run-up.

c. Average the results of the RPM obtained. It should be within 50 RPM of 2775 RPM.

d. If the average results of the RPM obtained are lower than stated above, the following recommended checks may be performed to determine a possible deficiency.

1. Check governor control for proper rigging. It should be determined that the governor control arm travels to the high RPM stop on the governor

and that the high RPM stop screw is adjusted properly. (Refer to Section 14 for procedures).

NOTE

If verification of governor operation is necessary the governor may be removed from the engine and a flat plate installed over the engine pad. Run-up engine to determine that governor was adjusted properly.

2. Check carburetor heat control (carburetor equipped engines) for proper rigging. If partially open it would cause a slight power loss. On fuel injected engines check operation or alternate air door spring or magnetic lock to make sure door will remain closed in normal operation.
3. Check magneto timing, spark plugs and ignition harness for settings and conditions.
4. On fuel injection engines, check fuel injection nozzles for restriction and check for correct unmetered fuel flow.
5. Check condition of induction air filter. Clean if required.
6. Perform an engine compression check (Refer to engine Manufacturer's Manual).

12-15. CLEANING. The engine may be cleaned with Stoddard solvent or equivalent, then dried thoroughly.

CAUTION

Particular care should be given to electrical equipment before cleaning. Cleaning fluids should not be allowed to enter magnetos, starter, alternator, etc. Protect these components before saturating the engine with solvent. All other openings should also be covered before cleaning the engine assembly. Caustic cleaning solutions should be used cautiously and should always be properly neutralized after their use.

12-16. ACCESSORIES REMOVAL. Removal of engine accessories for overhaul or for engine replacement involves stripping the engine of parts, accessories and components to reduce it to the bare engine. During the removal process, removed items should be examined carefully and defective parts should be tagged for repair or replacement with new components.

NOTE

Items easily confused with similar items should be tagged to provide a means of identification when being installed on a new engine. All openings exposed by the removal of an item should be closed by installing a suitable cover or cap over the opening. This will prevent entry foreign material. If suitable covers are not available, tape may be used to cover the openings.

12-17. INSPECTION. For specific items to be inspected, refer to the engine manufacturer's manual.
a. Visually inspect the engine for loose nuts, bolts, cracks and fin damage.
b. Inspect baffles, baffle seals and brackets for cracks, deterioration and breakage.
c. Inspect all hoses for internal swelling, chafing through protective plys, cuts, breaks, stiffness, damaged threads and loose connections. Excessive heat on hoses will cause them to become brittle and easily broken. Hoses and lines are most likely to crack or break near the end fittings and support points.
d. Inspect for color bleaching of the end fittings or severe discoloration of the hoses.

NOTE

Avoid excessive flexing and sharp bends when examining hoses for stiffness.

e. All flexible fluid carrying hoses in the engine compartment should be replaced at engine overhaul or every five years, whichever occurs first.
f. For major engine repairs, refer to the manufacturer's overhaul and repair manual.

12-18. BUILD-UP. Engine build-up consists of installation of parts, accessories and components to the basic engine to build up an engine unit ready for installation on the aircraft. All safety wire, lockwashers, nuts, gaskets and rubber connections should be new parts.

12-19. INSTALLATION. Before installing the engine on the aircraft, install any items which were removed from the engine or aircraft after the engine was removed.

NOTE

Remove all protective covers, plugs, caps and identification tags as each item is connected or installed. Omit any items not present on a particular engine installation.

a. Hoist the engine to a point just above the nacelle.
b. Install engine shock-mounts and ground strap as illustrated in figure 12-2.
c. Carefully lower engine slowly into place on the engine mounts. Route controls, lines, hoses and wires in place as the engine is positioned on the engine mounts.

NOTE

Be sure engine shock-mounts, spacers and washers are in place as the engine is lowered into position.

d. Install engine-to-mount bolts, then remove the hoist and support stand placed under tail tie-down fitting. Torque bolts to 300+50-00 lb-in.
e. Route throttle, mixture and propeller controls to their respective units and connect. Secure controls in position with clamps.

NOTE

Throughout the aircraft fuel system, from the fuel cells to the engine-driven pump, use NS-40 (RAS-4) (Snap-On-Tools Corp., Kenosha, Wisconsin), MIL-T-5544 (Thread Compound Antiseize, Graphite Petrolatum), USP Petrolatum or engine oil as a thread lubricator or to seal a leaking connection. Apply sparingly to male threads only, omitting the first two threads, exercising extreme caution to avoid "stringing" sealer across the end of the fitting. Always ensure that a compound, the residue from a previously used compound, or any other foreign material cannot enter the system.

f. Connect lines and hoses as follows:

1. Connect manifold and balance tube drain lines.
2. Connect manifold pressure hose at firewall.
3. Connect oil pressure line at firewall fitting.
4. Connect fuel-flow gage hose at firewall.
5. Connect primer line at firewall fitting.
6. Connect fuel supply and vapor return hose at firewall.
7. Connect oil breather and vacuum system oil separator vent lines where secured to the engine.
8. Connect vacuum hose at firewall.
9. Install clamps and lacings securing hoses and lines to the engine to prevent chafing.

g. Connect wires and cables as follows:

1. Connect electrical wires and wire shielding ground at alternator.
2. Connect cylinder head temperature wire at probe.

CAUTION

When connecting starter cable, do not permit starter terminal bolt to rotate. Rotation of the bolt could break the conductor between bolt and field coils causing the starter to be inoperative.

3. Connect starter electrical cable at starter.
4. Connect tachometer drive shaft at adapter. Be sure drive cable engages drive in adapter. Torque housing attach nut to 100-lb-in.
5. Connect exhaust gas temperature wires at quick-disconnects.
6. Connect electrical wires at throttle microswitch.
7. Connect oil temperature wire to probe below oil cooler.
8. Connect fuel strainer drain control to strainer.
9. Install clamps and lacings securing wires and cables to engine, engine mount and brackets.

h. Install exhaust system in accordance with paragraph 12-96.

i. Connect all hot and cold air flexible ducts.

j. Install propeller and spinner in accordance with instructions outlined in Section 14.

k. Complete a magneto switch ground-out and continuity check, then connect primary lead wires to the magnetos. Remove the temporary ground or connect spark plug leads, whichever procedure was used during removal.

WARNING

Be sure magneto switch is in OFF position when connecting switch wires to magnetos.

l. Clean and install induction air filter in accordance with Section 2.

m. Service engine with proper grade and quantity of engine oil. Refer to Section 2 if engine is new, newly overhauled or has been in storage.

n. Check all switches are in the OFF position and connect battery cables.

o. Rig engine controls in accordance with paragraphs 12-85, 12-86 and 12-87.

p. Inspect engine installation for security, correct routing of controls, lines, hoses and electrical wiring, proper safetying and tightness of all components.

q. Install engine cowling in accordance with paragraph 12-3.

r. Perform an engine run-up and make final adjustments on the engine controls.

12-20. FLEXIBLE FLUID HOSES.

12-21. PRESSURE TEST.

a. After each 50 hours of engine operation, all flexible fluid hoses in the engine compartment should be pressure tested as follows:

1. Place mixture control in the idle cut-off position.
2. Operate the auxiliary fuel pump in the high position.
3. Examine the exterior of hoses for evidence of leakage or wetness.
4. Hoses found leaking should be replaced.
5. After pressure testing fuel hoses, allow sufficient time for excess fuel to drain overboard from the engine manifold before attempting an engine start.
6. Refer to paragraph 12-17 for detailed inspection procedures for flexible hoses.

12-22. REPLACEMENT.

a. Hoses should not be twisted on installation. Pressure applied to a twisted hose may cause failure or loosening of the nut.

b. Provide as large a bend radius as possible.

c. Hoses should have a minimum of one-half inch clearance from other lines, ducts, hoses or surrounding objects or be butterfly clamped to them.

d. Rubber hoses will take a permanent set during extended use in service. Straightening a hose with a bend having a permanent set will result in hose cracking. Care should be taken during removal so that hose is not bent excessively, and during reinstallation to assure hose is returned to its original position.

e. Refer to AC 43.13, Chapter 10, for additional installation procedures for flexible fluid hose assemblies.

12-23. ENGINE BAFFLES.

12-24. DESCRIPTION. The sheet metal baffles installed on the engine direct the flow of air around the cylinders and other engine components to provide optimum cooling. These baffles incorporate rubber-asbestos composition seals at points of contact with the engine cowling and other engine components to help confine and direct the airflow to the desired area. It is very important to engine cooling that the baffles and seals are in good condition and installed correctly. The vertical seals must fold forward and the side seals must fold upwards. Removal and installation of the various baffle segments is possible with the cowling removed. Be sure that any new baffles seal properly.

12-25. CLEANING AND INSPECTION. The engine baffles should be cleaned with a suitable solvent to remove oil and dirt.

NOTE

The rubber-asbestos seals are oil and grease resistant but should not be soaked in solvent for long periods.

Inspect baffles for cracks in the metal and for loose and/or torn seals. Repair or replace any defective parts.

12-26. REMOVAL AND INSTALLATION. Removal and installation of the various baffle segments is possible with the cowling removed. Be sure that any replaced baffles and seals are installed correctly and that they seal to direct the airflow in the correct direction. Various lines, hoses, wires and controls are routed through some baffles. Make sure that these parts are reinstalled correctly after installation of baffles.

12-27. REPAIR. Repair of an individual segment of engine baffle is generally impractical, since, due to the small size and formed shape of the part, replacement is usually more economical. However, small cracks may be stop-drilled and a reinforcing doubler installed. Other repairs may be made as long as strength and cooling requirements are met. Replace sealing strips if they do not seal properly.

12-28. ENGINE OIL SYSTEM. (Refer to figure 12-3.)

12-29. DESCRIPTION. A wet-sump, pressure-lubricating oil system is employed in the engine. Oil under pressure from the oil pump is fed through drilled crankcase passages which supply oil to the crankshaft main bearings and camshaft bearings. Connecting rod bearings are pressure-lubricated through internal passages in the crankshaft. Valve mechanisms are lubricated through the hollow push-rods, which are supplied with oil from the crankcase oil passages. The propeller is supplied oil, boosted by the governor through the forward end of the crankshaft. Oil is returned by gravity to the engine oil sump. Cylinder walls and piston pins are spray-lubricated by oil escaping from connecting rod bearings. The engine is equipped with an oil cooler and a thermostat valve to regulate engine oil temperature. A pressure relief valve is installed to maintain proper oil pressure at higher engine speeds. Removable oil filter screens are provided within the oil system. An external, replaceable element oil filter is available as optional equipment. The engine may also be equipped with a non-congealing oil cooler.

SHOP NOTES:

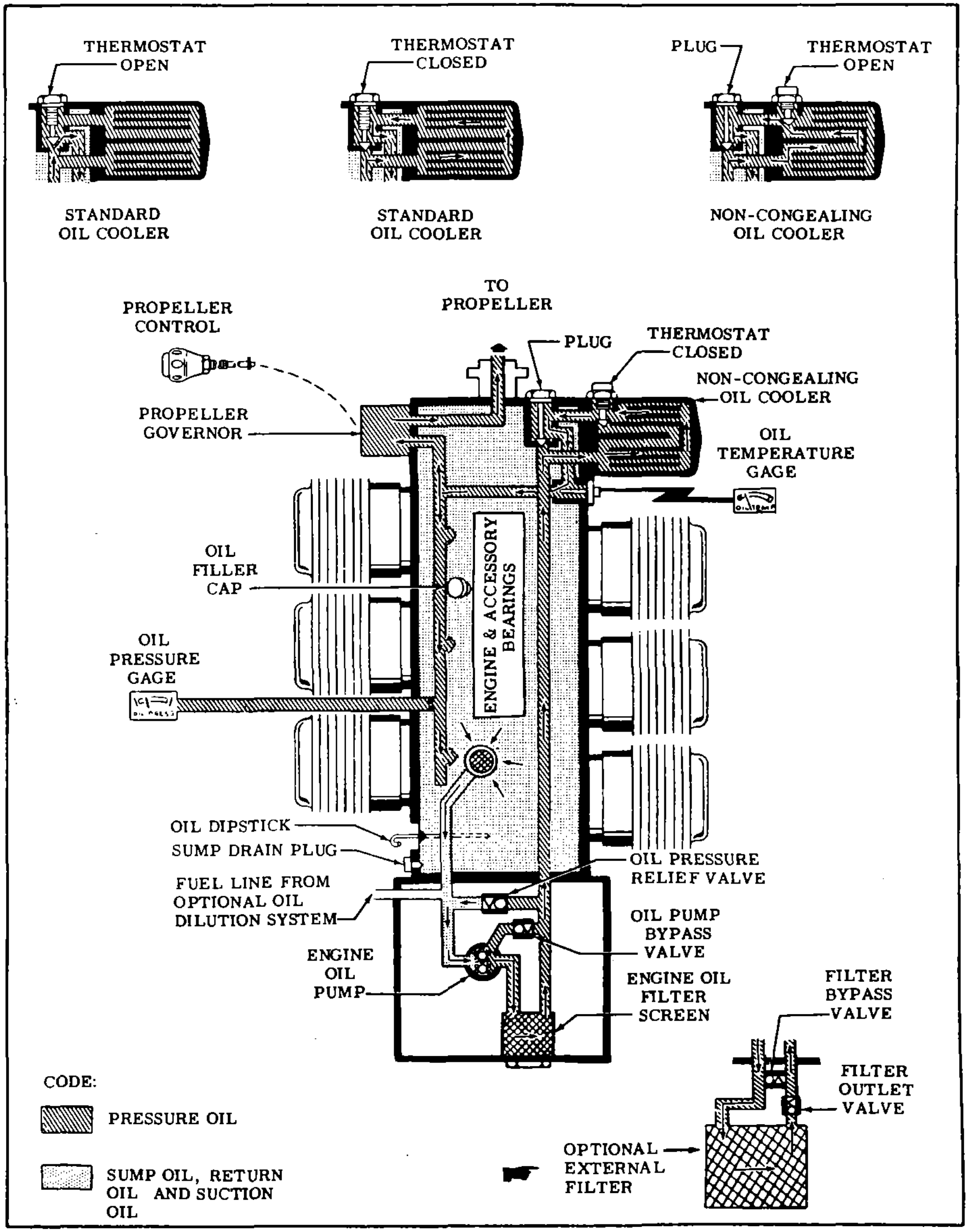


Figure 12-3. Oil System Schematic

12-30. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
NO OIL PRESSURE.	No oil in sump.	Check with dipstick. Fill sump with proper grade and quantity of oil. Refer to Section 2.
	Oil pressure line broken, disconnected or pinched.	Inspect pressure lines. Replace or connect lines as required.
	Oil pump defective.	Remove and inspect. Examine engine. Metal particles from damaged pump may have entered engine oil passages.
	Defective oil pressure gage.	Check with a known good gage. If second reading is normal, replace gage.
	Oil congealed in gage line.	Disconnect line at engine and gage; flush with kerosene. Pre-fill with kerosene and install.
	Relief valve defective.	Remove and check for dirty or defective parts. Clean and install; replace valve if defective.
LOW OIL PRESSURE.	Low oil supply.	Check with dipstick. Fill sump with proper grade and quantity of oil. Refer to Section 2.
	Low viscosity oil.	Drain sump and refill with proper grade and quantity of oil.
	Oil pressure relief valve spring weak or broken.	Remove and inspect spring. Replace weak or broken spring.
	Defective oil pump.	Check oil temperature and oil level. If temperature is higher than normal and oil level is correct, internal failure is evident. Remove and inspect. Examine engine. Metal particles from damaged pump may have entered oil passages.
	Secondary result of high oil temperature.	Observe oil temperature gage for high indication. Determine and correct reason for high oil temperature.
	Dirty oil screens.	Remove and clean oil screens.

12-30. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
HIGH OIL PRESSURE.	High viscosity oil.	Drain sump and refill with proper grade and quantity of oil.
	Relief valve defective.	Remove and check for dirty or defective parts. Clean and install; replace valve if defective.
	Defective oil pressure gage.	Check with a known good gage. If second reading is normal, replace gage.
LOW OIL TEMPERATURE.	Defective oil temperature gage or temperature bulb.	Check with a known good gage. If second reading is normal, replace gage. If reading is similar, the temperature bulb is defective.
	Oil cooler thermostatic bypass valve defective or stuck.	Remove valve and check for proper operation. Replace valve if defective.
HIGH OIL TEMPERATURE.	Oil cooler air passages clogged.	Inspect cooler core. Clean air passages.
	Oil cooler oil passages clogged.	Attempt to drain cooler. Inspect for sediment. Remove cooler and flush thoroughly.
	Thermostatic bypass valve damaged or held open by solid matter.	Feel front of cooler core with hand. If core is cold, oil is bypassing cooler. Remove and clean valve and seat. If still inoperative, replace.
	Low oil supply.	Check with dipstick. Fill sump with proper grade and quantity of oil. Refer to Section 2.
	Oil viscosity too high.	Drain sump and refill with proper grade and quantity of oil.
	Prolonged high speed operation on the ground.	Hold ground running above 1500 rpm to a minimum.
	Defective oil temperature gage.	Check with a known good gage. If second reading is normal. Replace gage.
	Defective oil temperature bulb.	Check for correct oil pressure, oil level and cylinder head temperature. If they are correct, check oil temperature gage for being defective; if similar reading is observed, bulb is defective. Replace bulb.

12-30. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
HIGH OIL TEMPERATURE (Cont.)	Secondary effect of low oil pressure.	Observe oil pressure gage for low indication. Determine and correct reason for low oil pressure.
	Oil congealed in cooler.	This condition can occur only in extremely cold temperatures. If congealing is suspected, use an external heater or a heated hangar to warm the congealed oil.
OIL LEAK AT FRONT OF ENGINE.	Damaged crankshaft seal.	Replace.
OIL LEAK AT PUSH ROD HOUSING.	Damaged push rod housing oil seal.	Replace.

12-31. FULL-FLOW OIL FILTER.

12-32. DESCRIPTION. An external oil filter may be installed on the engine. The filter and filter adapter replace the regular engine oil pressure screen. The filter adapter incorporates a bypass valve which will open allowing pressure oil from the oil pump to flow to the engine oil passages if the filter element should become clogged.

12-33. REMOVAL AND INSTALLATION. (Refer to figure 12-4.)

NOTE

Filter element replacement kits are available from the Cessna Service Parts Center.

a. Remove engine cowling in accordance with paragraph 12-3.
b. Remove both safety wires from filter can and unscrew hollow stud (1) to detach filter assembly from adapter (12) as a unit. Remove filter assembly from aircraft and discard gasket (10). Oil will drain from filter as assembly is removed from adapter.
c. Press downward on hollow stud (1) to remove from filter element (5) and can (4). Discard metal gasket (2) on stud (1).
d. Lift lid (7) off filter can (4) and discard lower gasket (6).
e. Pull filter element (5) out of filter can (4).

NOTE

Before discarding removed filter element (5), remove the outer perforated paper cover; using a sharp knife, cut through the folds of the filter element at both ends. Then, carefully unfold the pleated element and examine the material trapped in the element for evidence of internal engine damage, such as chips or particles from bearings. In new or newly overhauled engines, some small particles or metallic shavings might be found, these are generally of no consequence and should not be confused with particles produced by impacting, abrasion or pressure. Evidence of internal damage found in the oil filter element justifies further examination to determine the cause.

f. Wash lid (7), hollow stud (1) and filter can (4) in solvent and dry with compressed air.

NOTES

When installing a new filter element (5), it is important that all gaskets are clean, lubricated and positioned properly, and that the correct amount of torque is applied to the hollow stud (1). If the stud is undertorqued, oil leakage will occur. If the stud is over-torqued, the filter can might possibly be deformed, again causing oil leakage.

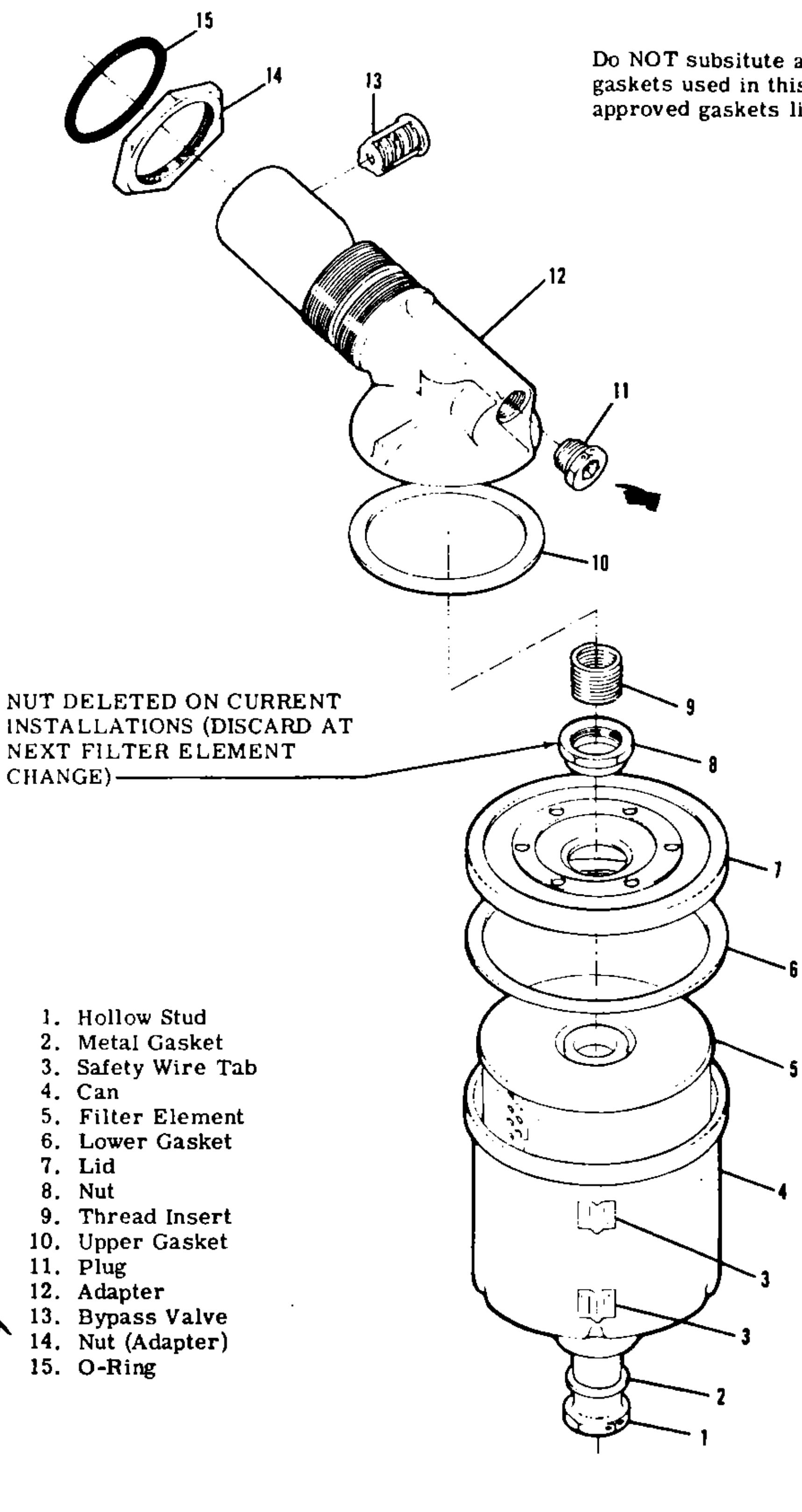
- Lubricate all rubber grommets in the new filter element, lid gaskets and metal gasket with clean engine oil or general purpose grease before installation. Dry gaskets may cause false torque readings, again resulting in oil leakage.

- Before assembly, place a straightedge across bottom of filter can. Check for distortion or out-of-flat condition greater than 0.010 inch. Install a new filter can if either of these conditions exist.

- After installing a new gasket on lid, turn lid over. If gaskets falls, try a different gasket and repeat test. If this gasket falls off, install a new lid.

NOTE

Do NOT subsitute automotive gaskets for any gaskets used in this assembly. Use only approved gaskets listed in the Parts Catalogs.



1. Hollow Stud
2. Metal Gasket
3. Safety Wire Tab
4. Can
5. Filter Element
6. Lower Gasket
7. Lid
8. Nut
9. Thread Insert
10. Upper Gasket
11. Plug
12. Adapter
13. Bypass Valve
14. Nut (Adapter)
15. O-Ring

Figure 12-4. Full-Flow Oil Filter

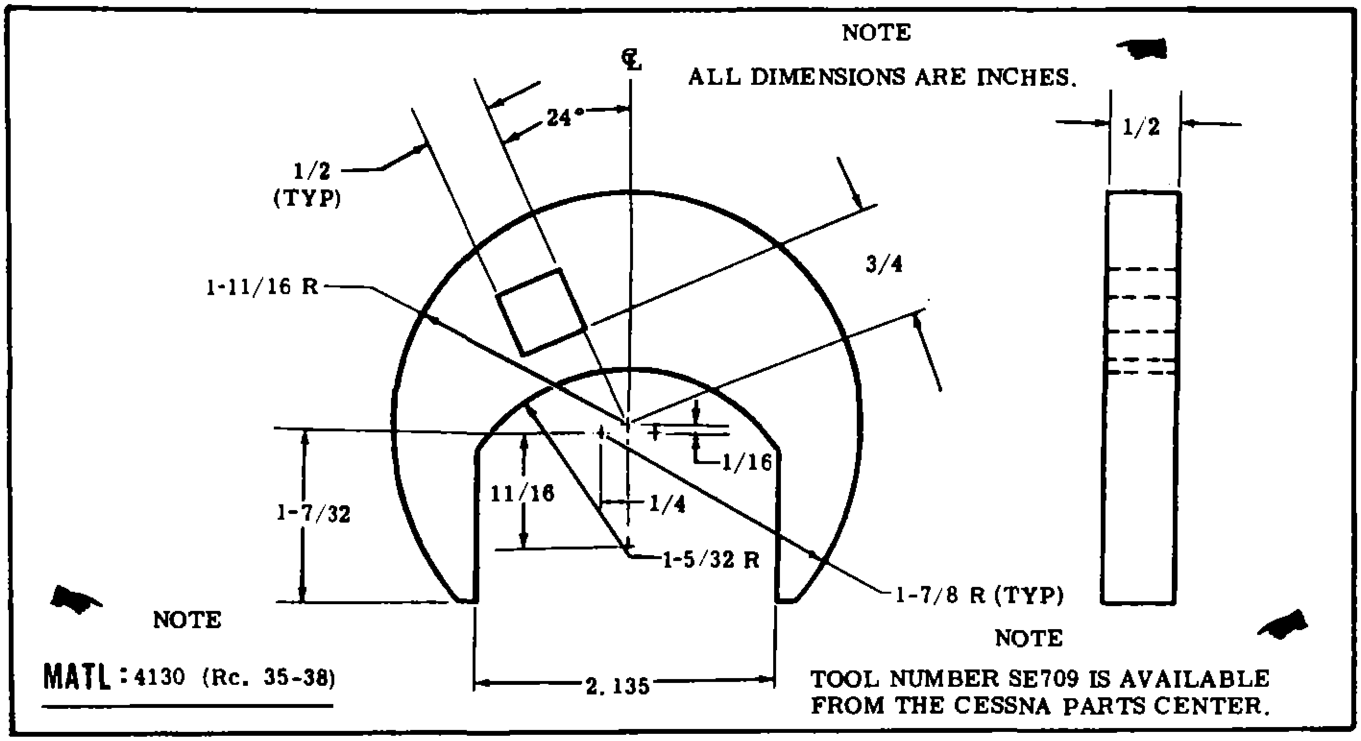


Figure 12-5. Oil Filter Adapter Wrench Fabrication

g. Inspect the adapter gasket seat for gouges, deep scratches, wrench marks and mutilation. If any of these conditions are found, install a new adapter.
h. Place a new filter element (5) in can (4) and insert the hollow stud (1) with a new metal gasket (2) in place, through the filter can and element.
i. Position a new gasket (6) inside flange of lid (7) and place lid in position on filter can.
j. With new gasket (10) on face of lid, install filter can assembly on adapter (12). While holding filter can to prevent turning, tighten hollow stud (1) and torque to 20-25 lb-ft (240-300 lb-in), using a torque wrench.
k. Install all parts removed for access and service the engine with the proper grade and quantity of engine oil. One additional quart of oil is required each time the filter element is changed.
l. Start engine and check for proper oil pressure. Check for oil leakage after warming up the engine.
m. Again check for oil leakage after engine has been run at high power setting (preferably a flight around the field).
n. Check to make sure filter can has not been making contact with any adjacent parts due to engine torque.
o. While engine is still warm, recheck torque on hollow stud (1) then safety stud to lower tab (3) on filter can and safety adapter (12) to upper tab on filter can.

12-34. FILTER ADAPTER.

12-35. REMOVAL. (Refer to figure 12-4.)
a. Remove filter assembly in accordance with paragraph 12-33.

NOTE

A special wrench adapter for adapter nut (15) (Part No. SE-709) is available from the Cessna Service Parts Center, or one may be fabricated as shown in figure 12-5. Remove any engine accessory that interferes with removal of the adapter.

b. Note angular position of adapter (12), then remove safety wire and loosen adapter nut (15).
c. Unscrew adapter and remove from engine. Discard adapter O-ring (16).

12-36. DISASSEMBLY, INSPECTION AND REASSEMBLY. Figure 12-4 shows the relative position of the internal parts of the filter adapter and may be used as a guide during installation of parts. The bypass valve is to be installed as a complete unit, with the valve being staked three places. The heli-coil type insert (9) in the adapter may be replaced, although special tools are required. Follow instructions of the tool manufacturer for their use. Inspect threads

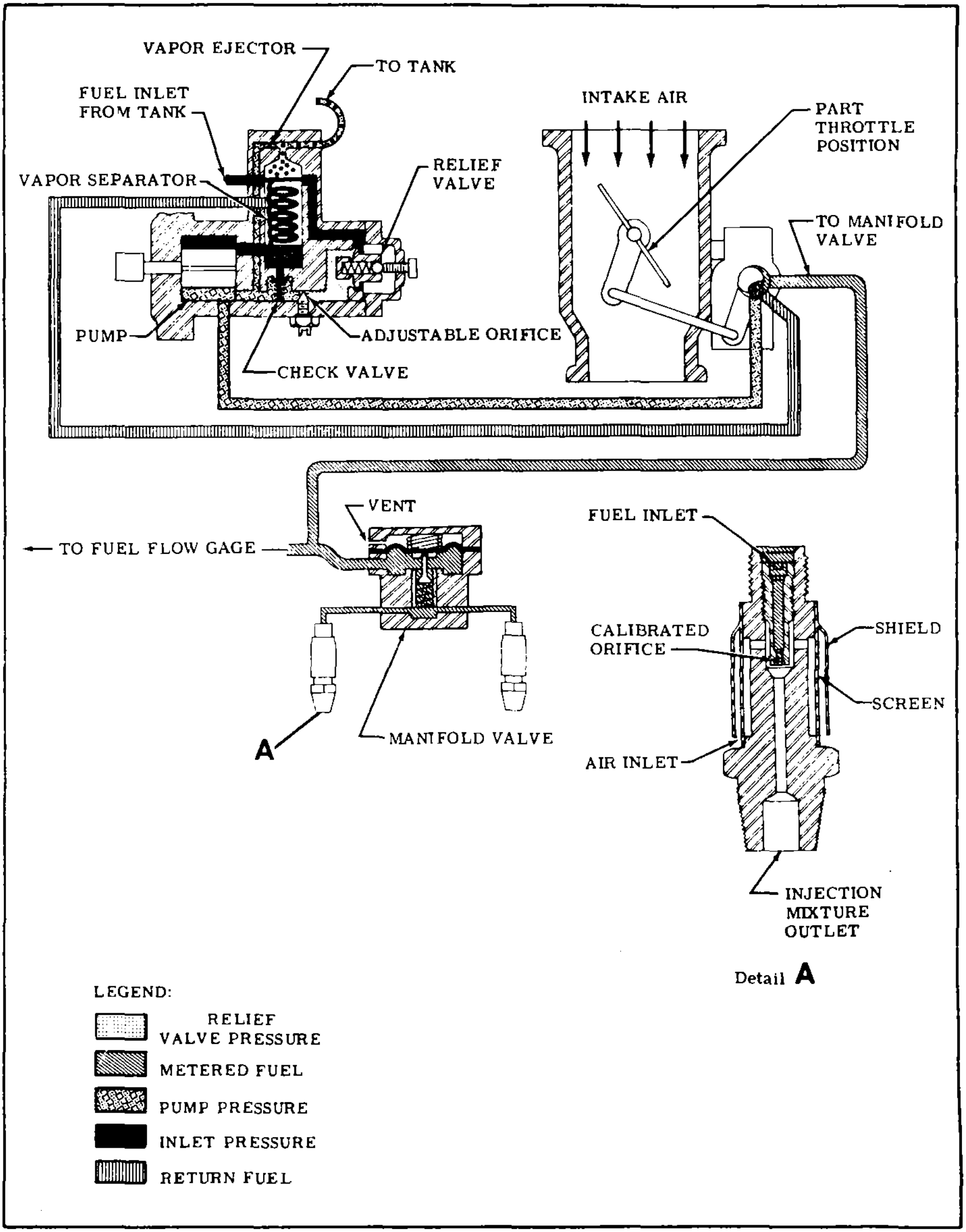


Figure 12-6. Fuel Injection Schematic

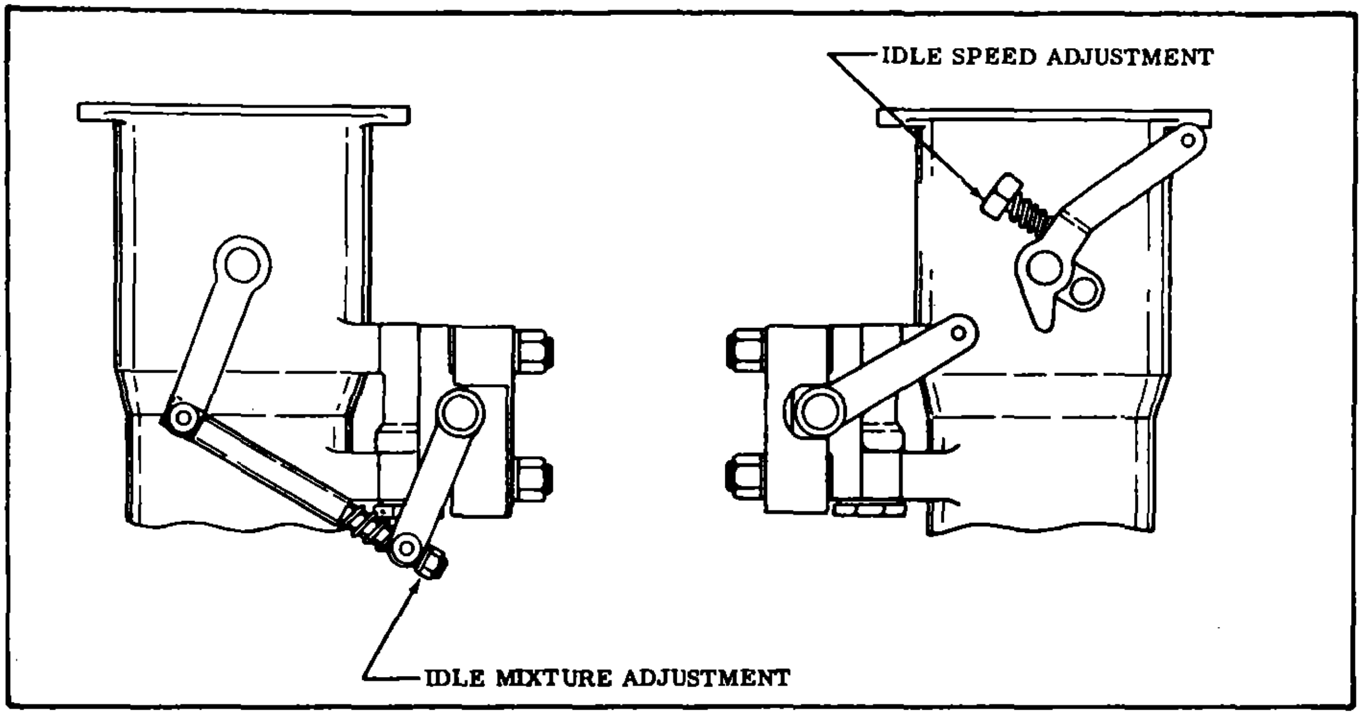


Figure 12-7. Idle Speed and Idle Mixture Adjustment

on adapter and in engine for damage. Clean adapter in solvent and dry with compressed air. Ascertain that all passages in the adapter are open and free of foreign material. Also, check that bypass valve is seated properly.

12-37. INSTALLATION.

a. Assemble adapter nut (15) and new O-ring (16) on adapter (12) in sequence illustrated in figure 12-4.

b. Lubricate O-ring on adapter with clean engine oil. Tighten adapter nut until O-ring is centered in its groove on the adapter.

c. Apply anti-seize compound sparingly to the adapter threads, then simultaneously screw adapter and adapter nut into engine until O-ring seats against engine boss without turning adapter nut (15). Rotate adapter to approximate angular position noted during removal. Do not tighten adapter nut at this time.

d. Temporarily install filter assembly on adapter, and position so adequate clearance with adjacent parts is attained. Maintaining this position of the adapter, tighten adapter nut to 50-60 lb-ft (600-720 lb-in.) and safety. Use a torque wrench, extension and adapter as necessary when tightening adapter nut.

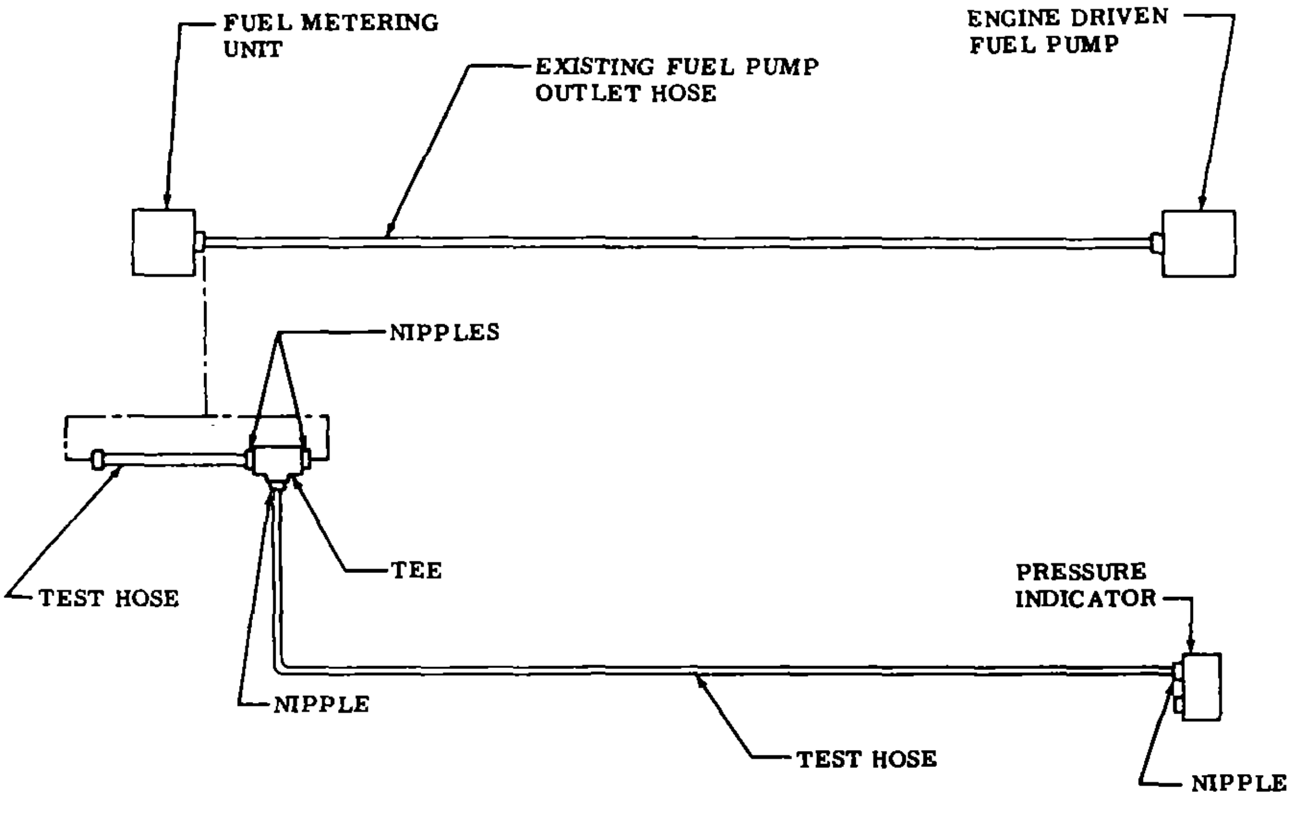
e. Using new gaskets, install filter assembly as outlined in paragraph 12-33. Be sure to service the engine oil system.

12-38. *OIL COOLER.*

12-39. DESCRIPTION. A non-congealing oil cooler may be installed on the aircraft. The cooler is mounted on the right forward side of the engine crankcase directly in front of number five cylinder and has no external oil lines. Ram air passes through the oil cooler and is discharged into the engine compartment. Oil circulating through the engine is allowed to circulate continuously through warm-up passages to prevent the oil from congealing when operating in low temperatures. On the standard and non-congealing oil coolers, as the oil increases to a certain temperature, the thermostat valve closes, causing the oil to be routed to all of the cooler passages for cooling. Oil returning to the engine from the cooler is routed through the internally drilled oil passages.

12-40. ENGINE FUEL SYSTEM. (Refer to figure 12-6.)

12-41. DESCRIPTION. The fuel injection system is a low pressure system of injecting fuel into the intake valve port of each cylinder. It is a multi-nozzle, continuous-flow type which controls fuel flow to match engine airflow. Any change in throttle position, engine speed, or a combination of both, causes changes in fuel flow in the correct relation to engine airflow. A manual mixture control and a fuel flow indicator are provided for leaning at any combination of altitude and power setting. The fuel flow indicator is calibrated in gallons per hour and indicates approximately the gallons of fuel consumed per hour. The continuous-flow system uses a typical rotary vane fuel pump. There are no running parts in this system except for the engine-driven fuel pump.



NOTE

WHEN ADJUSTING UNMETERED FUEL PRESSURE, TEST EQUIPMENT MAY BE "TEED" INTO THE ENGINE-DRIVEN FUEL PUMP OUTLET HOSE AT THE FUEL PUMP OR AT THE FUEL METERING UNIT.

Figure 12-8. Fuel Injection Pump Adjustment Test Harness

NOTE

Throughout the aircraft fuel system, from the fuel cells to the engine-driven pump, use NS-40 (RAS-4) (Snap-On-Tools Corp., Kenosha, Wisconsin), MIL-T-5544 (Thread Compound Antiseize, Graphite Petrolatum), USP Petrolatum or engine oil as a thread lubricator or to seal a leaking connection. Apply sparingly to male threads only, omitting the first two threads, exercising extreme caution to avoid "stringing" sealer across the end of the fitting. Always ensure that a compound, the residue from a previously used compound, or any other foreign material cannot enter the system.

12-42. FUEL-AIR CONTROL UNIT.

12-43. DESCRIPTION. This unit occupies the position ordinarily used for a carburetor, at the intake manifold inlet. The function of this unit is to control engine air intake and to set the metered fuel pressure for proper fuel-air ratio. There are three control elements in this unit, one for air and two for fuel. One of the fuel control elements is for fuel mixture and the other is for fuel metering. Fuel enters the control unit through a strainer and passes to the metering valve. The position of the metering valve controls this fuel passed to the manifold valve and nozzles. A linkage connecting the metering valve to the air throttle proportions airflow to fuel flow. The position of the mixture valve determines the amount of fuel returned to the fuel pump. The fuel control portion of the fuel-air control unit is enclosed in a shroud and is blast-air cooled to help prevent vapor lock.

12-44. REMOVAL AND INSTALLATION.
a. Place all cockpit switches and fuel shut-off valve in the OFF position.
b. Remove cowling in accordance with paragraph 12-3.
c. Remove induction airbox in accordance with paragraph 12-65.
d. Disconnect engine controls at throttle and mixture control arms.

NOTE

Cap all disconnected hoses, lines and fittings.

e. The three fuel lines which attach to the fuel control unit are routed inside flexible tubing to help cool the fuel. Loosen tubing clamps at the control unit and slide tubing back to gain access to the fuel line fittings.
f. Disconnect fuel lines at control unit.
g. Loosen hose clamps which secure the control unit to the right and left intake manifolds.
h. Remove control unit.
i. Cover the open ends of the intake manifold piping to prevent entry of foreign matter.
j. Reverse the preceding steps for reinstallation. Use new gaskets when installing control unit. Rig throttle and mixture controls in accordance with paragraphs 12-85 and 12-86 respectively. Rig throttle-operated microswitch in accordance with Section 13.

12-45. CLEANING AND INSPECTION.
a. Check control connections, levers and linkage for security, safetying and for lost motion due to wear.
b. Remove the fuel screen assembly and clean in solvent (Stoddard or equivalent). Reinstall and safety.
c. Check the air control body for cracks and control unit for overall condition.

12-46. ADJUSTMENTS. (Refer to figure 12-7.) The idle speed adjustment is a conventional spring-loaded screw located in the air throttle lever. The idle mixture adjustment is the locknut at the metering valve end of the linkage. Tightening the nut to shorten the linkage provides a richer mixture. A leaner mixture is obtained by backing off the nut to lengthen the linkage. Idle speed and mixture adjustment should be accomplished after the engine has been warmed up. Since idle rpm may be affected by idle mixture adjustment, it may be necessary to readjust idle rpm after setting the idle mixture correctly.
a. Set the throttle stop screw to obtain 600 ± 25 rpm, with throttle control pulled full out against idle stop.

NOTE

Engine idle speed may vary among different engines. An engine should idle smoothly, without excessive vibration and the idle speed should be high enough to maintain idling oil pressure and to preclude any possibility of engine stoppage in flight when the throttle is closed.

b. Advance throttle to increase engine speed to 1000 rpm.
c. Pull mixture control knob slowly and steadily toward the idle cut-off position, observing tachometer, then return control full IN (RICH) position before engine stops.
d. Adjust mixture adjusting nut to obtain a slight and momentary gain of 25 rpm maximum at 1000 rpm engine speed as mixture control is moved from full IN (RICH) toward idle cut-off position. Return control to full IN (RICH) to prevent engine stoppage.
e. If mixture is set too LEAN, engine speed will drop immediately, thus requiring a richer mixture. Tighten adjusting nut (clockwise) for a richer mixture.
f. If mixture is set too RICH, engine speed will increase above 25 rpm, thus requiring a leaner mixture. Back off adjusting nut (counterclockwise) for a leaner mixture.

NOTE

After each adjustment to the idle mixture, run engine up to approximately 2000 rpm to clear engine of excess fuel to obtain a correct idle speed.

12-47. FUEL MANIFOLD VALVE (FUEL DISTRIBUTOR).

12-48. DESCRIPTION. Metered fuel flows to the fuel manifold valve, which provides a central point for distributing fuel to the individual cylinders. An internal diaphragm, operated by fuel pressure, raises or lowers a plunger to open and close the individual cylinder supply ports simultaneously. A needle valve in the plunger ensures that the plunger fully opens the outlet ports before fuel flow starts and closes the ports simultaneously for positive engine shut-down. A fine-mesh screen is included in the fuel manifold valve.

NOTE

The fuel manifold valves are supplied in two flow ranges. When replacing a valve assembly, be sure the replacement valve has the same suffix letter as the one stamped on the cover of the valve removed.

12-49. REMOVAL.

NOTE

Cap all disconnected lines, hoses and fittings.

a. Disconnect all fuel and fuel injection lines at the fuel manifold.
b. Remove bolts which secure fuel manifold and remove manifold.

12-50. CLEANING.
a. Remove manifold valve from engine in accordance with paragraph 12-49 and remove safety wire from cover attaching screws.

b. Hold the top cover down against internal spring until all four cover attaching screws have been removed, then gently lift off the cover. Use care not to damage the spring-loaded diaphragm below cover.
c. Remove the upper spring and lift the diaphragm assembly straight up.

NOTE

If the valve attached to the diaphragm is stuck in the bore of the body, grasp the center nut, rotate and lift at the same time to work gently out of the body.

CAUTION

Do not attempt to remove needle or spring from inside plunger valve. Removal of these items will disturb the calibration of the valve.

d. Using clean gasoline, flush out the chamber below the screen.
e. Flush above the screen and inside the center bore making sure that outlet passages are open. Use only a gentle stream of compressed air to remove dust and dirt and to dry.

CAUTION

The filter screen is a tight fit in the body and may be damaged if removal is attempted. It should be removed only if a new screen is to be installed.

f. Clean diaphragm, valve and top cover in the same manner. Be sure the vent hole in the top cover is open and clean.
g. Carefully replace diaphragm and valve. Check that valve works freely in body bore.
h. Position diaphragm so that horizontal hole in plunger valve is 90 degrees from the fuel inlet port in the valve body.
i. Place upper spring in position on diaphragm.
j. Place cover in position so that vent hole in cover is 90 degrees from inlet port in valve body. Install cover attaching screws and tighten to 20±1 lb-in. Install safety wire on cover screws.
k. Install fuel manifold valve assembly on engine in accordance with paragraph 12-51 and reconnect all lines and hoses to valve.
l. Inspect installation and install cowling.

12-51. INSTALLATION.
a. Secure the fuel manifold to the crankcase with the two crankcase bolts.
b. Connect the fuel lines and the six fuel injection lines. Inspect completed installation and install cowling.

12-52. FUEL DISCHARGE NOZZLES.

12-53. DESCRIPTION. From the fuel manifold valve, individual, identical size and length fuel lines carry metered fuel to the fuel discharge nozzles located in the cylinder heads. The outlet of each nozzle is directed into the intake port of each cylinder. The nozzle body contains a drilled central passage with a counterbore at each end. The lower end is used as a chamber for fuel-air mixture before the spray leaves the nozzle. The upper bore contains an orifice for calibrating the nozzles. Near the top, radial holes connect the upper counterbore with the outside of the nozzle body for air admission. These radial holes enter the counterbore above the orifice and draw outside air through a cylindrical screen fitted over the nozzle body. This screen prevents dirt and foreign material from entering the nozzle. A press-fit shield is mounted on the nozzle body and extends over the greater part of the filter screen, leaving a small opening at the bottom of the shield. This provides an air bleed into the nozzle which aids in vaporizing the fuel by breaking the high vacuum in the intake manifold at idle rpm and keeps the fuel lines filled. The nozzles are calibrated in several ranges. All nozzles furnished for one engine are the same range and are identified by a number and a suffix letter stamped on the flat portion of the nozzle body. When replacing a fuel discharge nozzle be sure it is of the same calibrated range as the rest of the nozzles in the engine. When a complete set of nozzles is being installed, the number must be the same as the one removed, but the suffix letters may be different, as long as they are the same for all nozzles being installed on a particular engine.

12-54. REMOVAL.

NOTE

Plug or cap all disconnected lines and fittings.

a. Disconnect the fuel injection lines at the fuel discharge nozzles. Remove nozzles with a 1/2 inch deep well socket wrench.

12-55. CLEANING AND INSPECTION. To clean nozzles, immerse in clean solvent and use compressed air to dry them. When cleaning, direct air through the nozzle in the direction opposite of normal fuel flow. Do not remove the nozzle shield or distort it in any way. Do not use a wire or other metal object to clean the orifice or metering jet. After cleaning, check the shield height from the hex portion of the nozzle. The bottom of the shield should be approximately 1/16 inch above the hex portion of the nozzle.

12-56. INSTALLATION.
a. Install nozzles in the cylinders and tighten to a torque value of 60 to 80 lb-in.
b. Connect the fuel lines at discharge nozzles.
c. Check installation for crimped lines, loose fittings, etc.

12-57. FUEL INJECTION PUMP.

12-58. DESCRIPTION. The fuel pump is a positive-displacement, rotating vane type, connected to the accessory drive section of the engine. Fuel enters the pump at the swirl well of the pump vapor separator. Here, vapor is separated by a swirling motion so that only liquid fuel is fed to the pump. The vapor is drawn from the top center of the swirl well by a small pressure jet of fuel and is fed into the vapor return line, where it is returned to the aircraft fuel system. Since the pump is engine-driven, changes in engine speed affects total pump flow proportionally. A check valve allows the auxiliary fuel pump pressure to bypass the engine-driven fuel pump for starting, or in the event of engine-driven fuel pump failure. The pump supplies more fuel than is required by the engine; therefore, a spring-loaded, diaphragm type relief valve is provided, with an adjustable orifice installed in the fuel passage to the relief valve to maintain desired fuel pressure for engine power setting. The adjustable orifice allows the exact desired pressure setting at full throttle. The fuel pump is equipped with a manual mixture control to provide positive mixture control throughout the range required by the injection system. This control limits output of the pump from full rich to idle cut-off. Non-adjustable mechanical stops are located at these positions. The fuel pump is ram-air cooled to help prevent high fuel temperatures. The ram air is picked up at the upper left engine baffle and directed through a flexible tube to the fuel pump shroud. The fuel supply and return lines from the fuel pump to the control unit are routed inside flexible tubes to help prevent vaporized fuel at these points.

12-59. REMOVAL.

a. Place fuel shut-off valve in OFF position and mixture control in IDLE CUT-OFF position.
b. Remove cowling in accordance with paragraph 12-3.
c. Loosen the clamps and slide the flexible tubes free of the horns on the fuel pump shroud to gain access to the fuel lines.
d. Remove the alternator drive belt.
e. Tag and disconnect all lines and fittings attached to the fuel pump.

NOTE

Plug or cap all disconnected lines, hoses and fittings.

f. Remove the shroud surrounding the fuel pump.
g. Remove the nuts and washers attaching the fuel pump to the engine.
h. Remove fuel pump and gasket.

WARNING

Residual fuel draining from lines and hose constitutes a fire hazard. Use caution to prevent accumulation of fuel when lines or hoses are disconnected.

i. If a replacement pump is not being installed immediately, a temporary cover should be installed on the fuel pump mount pad.

12-60. INSTALLATION.

a. Position a new gasket and fuel pump on the mounting studs with fuel pump inlet to the left. Be sure pump drive aligns with drive in the engine.
b. Secure pump to engine with plain washers, internal tooth lock washers and nuts. Tighten nuts evenly.
c. Install cooling shroud on fuel pump.
d. Install all fittings and connect all lines.
e. Install the flexible ram air tube on the air horn of the fuel pump shroud and install clamp
f. Replace the alternator drive belt and tighten the nuts on the adjusting arm so that the drive belt has proper tension. Refer to Section 17.
g. Inspect completed installation.

12-61. ADJUSTMENT. The full rich performance of the fuel injection system is controlled by manual adjustment of the air throttle, fuel mixture and pump pressure at idle and only by pump pressure at full throttle. To make full rich adjustments, proceed as follows:

a. Remove engine cowling in accordance with paragraph 12-3.

NOTE

Inspect the slot-headed adjustable orifice needle valve (located just below the fuel pump inlet fitting) to see if it is epoxy sealed or safety wired to the brass nut. If the needle valve is epoxy sealed, Continental Aircraft Engine Service Bulletin No. 70-10 must be complied with before calibration of the unit can be performed.

b. Disconnect the engine-driven fuel pump outlet fitting or the fuel metering unit inlet fitting and "tee" the test gage into the fuel injection system as illustrated in figure 12-8.

NOTE

Cessna Service Kit No. SK320-2 provides a test gage, line and fittings for connecting the test gage into the system to perform accurate calibration of the enginedriven fuel pump.

c. The test gage MUST be vented to atmosphere and MUST be held as near to the level of the engine-driven fuel pump as possible. Bleed air from test gage line prior to taking readings.

NOTE

The test gage should be checked for accuracy at least every 90 days or anytime an error is suspected. The tachometer accuracy should also be determined prior to making any adjustments to the pump.

d. Start engine and warm-up thoroughly. Set mixture control to full rich position and propeller control full forward (low pitch, high rpm).

e. Adjust engine idle speed to 600 ± 25 rpm and check test gage for 9-11 PSI. Refer to figure 12-7 for idle mixture adjustment.

NOTE

Do not adjust idle mixture until idle pump pressure is obtained.

WARNING

DO NOT make fuel pump pressure adjustments while engine is operating.

f. If the pump pressure is not 9 to 11 PSI, stop engine and turn the fuel pump relief valve adjustment, on the centerline of the fuel pump clockwise (CW) to increase pressure and counterclockwise (CCW) to decrease pressure.
g. Maintaining idle pump pressure and idle RPM, obtain correct idle mixture in accordance with paragraph 12-46.
h. Completion of the preceding steps have provided:
1. Correct idle pump pressure.
2. Correct fuel flow.
3. Correct fuel metering cam to throttle plate orientation.
i. Advance to full throttle and maximum rated engine speed with the mixture control in full rich position and propeller control in full forward (low pitch, high rpm).
j. Check test gage for pressures specified in paragraph 12-12. If pressure is incorrect, stop engine and adjust pressure by loosening locknut and turning the slotheaded needle valve located just below the fuel pump inlet fitting clockwise (CW) to increase pressure and counterclockwise (CCW) to decrease pressure.

NOTE

If at static run-up, rated RPM cannot be achieved at full throttle, adjust pump pressure slightly below limits making certain the correct pressures are obtained when rated RPM is achieved during take-off roll.

k. After correct pressures are obtained, safety adjustable orifice and orifice locknut.
l. Remove test equipment, run engine to check for leaks and install cowling.

12-61A. AUXILIARY ELECTRIC FUEL PUMP FLOW RATE ADJUSTMENT. Refer to Section 13.

12-62. INDUCTION AIR SYSTEM.

12-63. DESCRIPTION. Ram air enters the induction air system through a filter at the upper left engine baffle. A spring-loaded alternate air door is incorporated in the airbox and will open by engine suction if the air filter should become clogged. This permits unfiltered induction air to be drawn from within the engine compartment.

12-64. AIRBOX.

12-65. REMOVAL AND INSTALLATION.
a. Remove cowling in accordance with paragraph 12-3.
b. Remove induction air filter.
c. Disconnect electrical wiring at throttle-operated micro-switch and tape terminals as a safety precaution.
d. Remove clamps attaching lines, wires and controls to airbox.
e. Remove bolts securing airbox to fuel-air control unit and engine and remove airbox and gasket.
f. Install a cover over fuel-air control opening.
g. Reverse the preceding steps for reinstallation. Adjust throttle operated switch in accordance with Section 13.

12-66. CLEANING AND INSPECTION. Clean metal parts of the induction airbox with Stoddard solvent or equivalent. Inspect for cracks, dents, loose rivets, etc. Minor cracks may be stop-drilled. In case of continued or severe cracking, replace airbox. Inspect alternate spring-loaded door for freedom of operation and complete closing.

12-67. INDUCTION AIR FILTER.

12-68. DESCRIPTION. An induction air filter, mounted at the airbox inlet, removes dust particles from the ram air entering the engine.

12-69. REMOVAL AND INSTALLATION.
a. Remove cowling in accordance with paragraph 12-3.
b. Remove bolts securing filter to the upper left engine baffle and induction airbox inlet.
c. Reverse the preceding steps for reinstallation. Make sure the gasket is in place between the filter and airbox intake.

12-70. CLEANING AND INSPECTION. Clean and inspect filter in accordance with instructions in Section 2.

12-71. IGNITION SYSTEM.

12-72. DESCRIPTION. The ignition system is comprised of two magnetos, two spark plugs in each cylinder, an ignition wiring harness, an ignition switch mounted on the instrument panel and required wiring between the ignition switch and magnetos.

12-73. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE FAILS TO START.	Defective ignition switch.	Check switch continuity. Replace if defective.
	Spark plugs defective, improperly gapped or fouled by moisture or deposits.	Clean, regap and test plugs. Replace if defective.
	Defective ignition harness.	If no defects are found by a visual inspection, check with a harness tester. Replace defective parts.
	Magneto "P" lead grounded.	Check continuity. "P" lead should not be grounded in the ON position, but should be grounded in OFF position. Repair or replace "P" lead.
	Failure of impulse coupling.	Impulse coupling pawls should engage at cranking speeds. Listen for loud clicks as impulse couplings operate. Remove magnetos and determine cause. Replace defective magneto.
	Defective magneto.	Refer to paragraph 12-79.
	Broken drive gear.	Remove magneto and check magneto and engine gears. Replace defective parts. Make sure no pieces of damaged parts remain in engine or engine disassembly will be required.
ENGINE WILL NOT IDLE OR RUN PROPERLY.	Spark plugs defective, improperly gapped or fouled by moisture or deposits.	Clean, regap and test plugs. Replace if defective.
	Defective ignition harness.	If no defects are found by a visual inspection, check with a harness tester. Replace defective parts.
	Defective magneto.	Refer to paragraph 12-79.
	Impulse coupling pawls remain engaged.	Listen for loud clicks as impulse coupling operates. Remove magneto and determine cause. Replace defective magneto.
	Spark plugs loose.	Check and install properly.

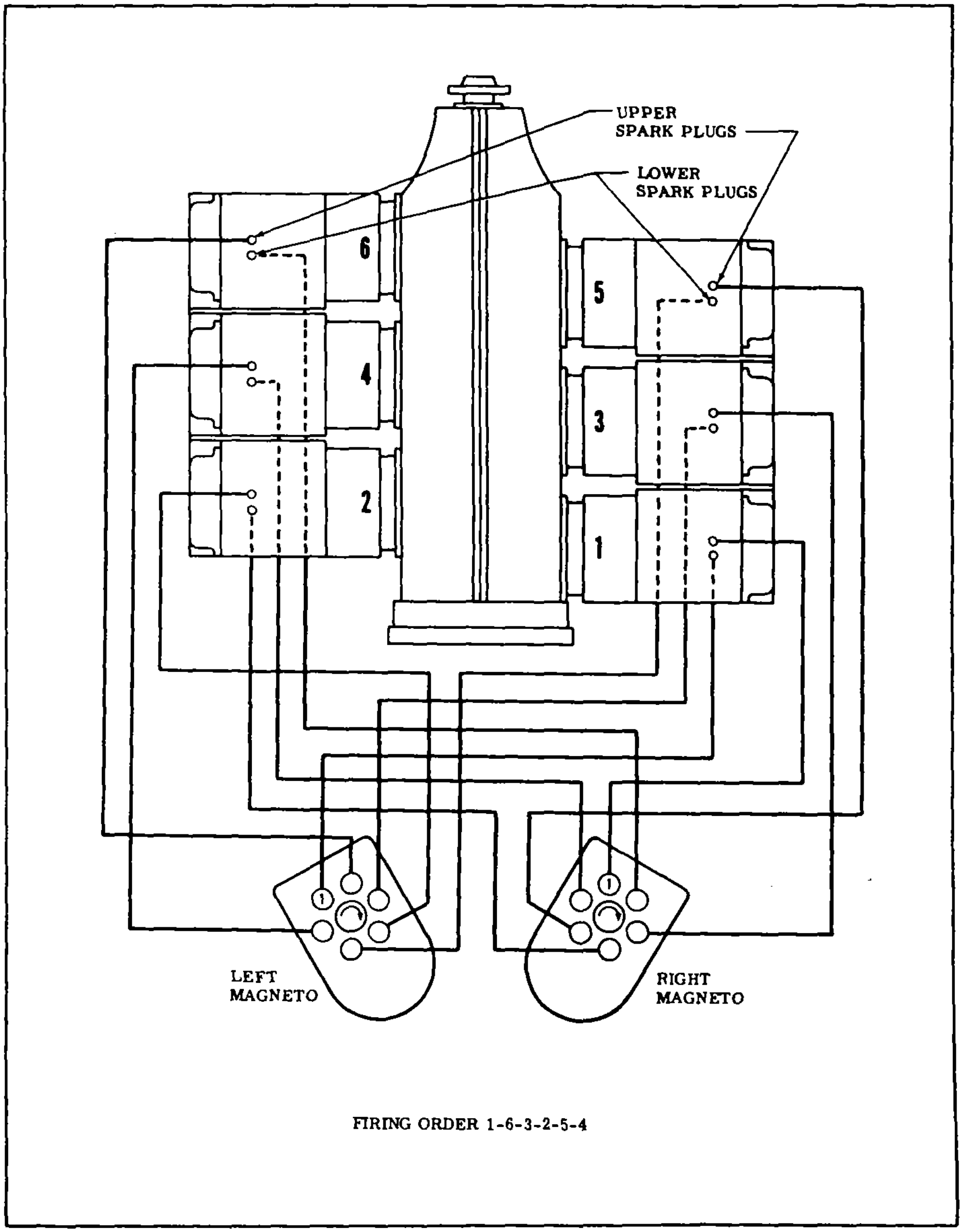


Figure 12-9. Ignition Schematic

12-74. MAGNETOS.

12-75. DESCRIPTION. The magnetos contain a conventional two-pole rotating magnet (rotor), mounted in ball bearings. Driven by the engine through an impulse coupling at one end, the rotor shaft operates the breaker points at the other end of the shaft. The nylon rotor gear drives a nylon distributor gear which transfers high tension current from the wedge-mounted coil to the proper outlet in the distributor block. A coaxial capacitor is mounted in the distributor block housing to serve as the condenser as well as a radio noise suppressor. Both nylon gears are provided with timing marks for clockwise or counterclockwise rotation. The distributor gear and distributor block have timing marks, visible through the air vent holes, for timing to the engine. A timing hole is provided in the bottom of the magneto adjacent to the magneto flange. A timing pin or 6-penny nail can be inserted through this timing hole into the mating hole in the rotor shaft to lock the magneto approximately in the proper firing position. The breaker assembly is accessible only after removing the screws fastening the magneto halves together and disconnecting the capacitor slip terminal. Do not separate magneto halves while it is installed on the engine.

12-76. REMOVAL.

a. Remove engine cowling in accordance with paragraph 12-3.

b. Tag for identification and remove high tension wires from the magneto being removed.

WARNING

The magneto is in a SWITCH ON condition when the switch wire is disconnected. Remove the high tension wires from magneto or disconnect spark plug leads from the spark plugs to prevent accidental firing.

c. Disconnect switch wire from condenser terminal at magneto. Tag wire for identification so it may be installed correctly.

d. Rotate propeller in direction of normal rotation until No. 1 cylinder is coming up on its compression stroke.

NOTE

To facilitate the installation of a replacement magneto, it is good practice to position the crankshaft at the advanced firing angle for No. 1 cylinder during step "d." Any standard timing device or method can be used, or if the magneto being removed is correctly timed to the engine, the crankshaft can be rotated to a position at which the breaker points will be just opening to fire No. 1 cylinder.

e. Remove magneto retainer clamps, nuts and washers and pull magneto from crankcase mounting pad.

NOTE

As the magneto is removed from its mounting, be sure that the drive coupling rubber bushing and retainer do not become dislodged from the gear hub and fall into the engine.

12-77. INTERNAL TIMING.

a. Whenever the gear on the rotor shaft or the cam (which also serves as the key for the gear) has been removed, be sure that the gear and cam are installed so the timing mark on the gear aligns with the "O" etched on the rotor shaft.

b. When replacing breaker assembly or adjusting contact breaker points, place a timing pin (or 0.093 inch 6-penny nail) through the timing hole in the bottom of the magneto next to the flange and into the mating hole in the rotor shaft. Adjusting contact breaker points so they are just starting to open in this position will give the correct point setting. Temporarily assemble the magneto halves and capacitor slip terminal and use a timing light to check that the timing marks, visibly through the ventilation plug holes are approximately aligned.

NOTE

The side of the magneto with the manufacturer's insignia has a red timing mark and the side opposite to the insignia has a black timing mark viewed through the vent plug holes. The distributor gear also has a red timing mark and a black timing mark. These marks are used for reference only when installing magneto on the engine. Do not place red and black lines together on the same side.

c. Whenever the large distributor gear and rotor gear have been disengaged, they must be engaged with their timing marks aligned for correct rotation. Align the timing mark on the rotor gear with the "RH" on the distributor gear. Care must be taken to keep these two gears meshed in this position until the magneto halves are assembled.

12-78. INSTALLATION AND TIMING TO ENGINE. The magneto MUST be installed with its timing marks correctly aligned, with the number one cylinder on its compression stroke and with number one piston at its advanced firing position. Refer to paragraph 12-12 for the advanced firing position of number one piston.

WARNING

The magneto is grounded through the ignition switch, therefore, any time the switch (primary) wire is disconnected from the magneto, the magneto is in a switch ON or HOT condition. Before turning the propeller by hand, remove the high tension wires from the magneto or disconnect all spark plug leads to prevent accidental firing of the engine.

To locate the compression stroke of number one cylinder, remove the lower spark plugs from each cylinder except number one cylinder. Remove the top plug from number one cylinder. Place thumb of one hand over the number one cylinder spark plug hole and rotate the crankshaft in the direction of normal rotation until the compression stroke is indicated by positive pressure inside the cylinder lifting the thumb off the spark plug hole. After the compression stroke is obtained, locate number one piston at its advanced firing position. Locating the advanced firing position of number one cylinder may be obtained by use of a timing disc and pointer, Timrite, protractor and piston locating gage or external engine timing marks alignment.

NOTE

External engine timing marks are located on a bracket attached to the starter adapter, with a timing mark on the alternator drive pulley as the reference point.

In all cases, it must be definitely determined that the number one cylinder is at the correct firing position and on the compression stroke, when the crankshaft is turned in its normal direction of rotation. After the engine has been placed in the correct firing position, install and time the magneto to the engine in the following manner.

NOTE

Install the magneto drive coupling retainer and rubber bushings into the magneto drive gear hub slot. Insert the two rubber bushings into the retainer with the chamfered edges facing toward the front of the engine.

a. Turn the magneto shaft until the timing marks visible through the ventilation plug holes are aligned (red-to-red or black-to-black) and insert a timing pin (or 0.093 inch 6-penny nail) through the timing hole in the bottom of the magneto next to the flange and into the mating hole in the rotor shaft. This locks the magneto approximately in the firing position while installing on the engine.

NOTE

If the magneto drive gear was disengaged during magneto removal, hold the magneto in the horizontal position it will occupy when installed, make certain that the drive gear coupling slot is aligned with the magneto coupling lugs. If it is not aligned, pull the magneto drive gear out of mesh with its drive gear and rotate it to the aligned angle, then push it back into mesh. DO NOT WITHDRAW THE MAGNETO DRIVE GEAR FROM ITS OIL SEAL.

b. After magneto gasket is in place, position the magneto on the engine and secure, then remove the timing pin from the magneto. Be sure to remove this pin before turning the propeller.

c. Connect a timing light to the capacitor terminal at the front of the magneto and to a good ground.

d. Turn propeller back a few degrees (opposite of normal rotation) to close the contact points.

NOTE

Do not turn the propeller back far enough to engage the impulse coupling or the propeller will have to be turned in normal direction of rotation until the impulse coupling releases, then backed up to slightly before the firing position.

e. Slowly advance the propeller in the normal direction of rotation until the timing light indicates the contact points breaking. Magneto mounting clamps may be loosened so that the magneto may be shifted to break the points at the correct firing position.

f. Tighten magneto mounting nuts and recheck timing.

g. Repeat steps "a" through "f" for the other magneto.

h. After both magnetos have been timed, check synchronization of both magnetos. Magnetos must fire at the same time.

i. Remove timing devices from magneto and engine.

j. Connect spark plug leads to their correct magneto outlets.

NOTE

The No. 1 magneto outlet is the one closest to the ventilation plug on the side of the magneto having the manufacturer's insignia. The magneto fires at each successive outlet in clockwise direction. Connect No. 1 magneto outlet to No. 1 cylinder spark plug lead, No. 2 outlet to the next cylinder to fire, etc. Engine firing order is listed in paragraph 12-12.

k. Connect ignition switch (primary) leads to the capacitor terminals on the magnetos.

l. Inspect magneto installation and install engine cowling in accordance with paragraph 12-3.

12-79. MAINTENANCE. At the first 25-hour inspection and at each 100-hour inspection thereafter, the breaker compartment should be inspected. Magneto-to-engine timing should be checked at the first 25-hour inspection, first 50-hour inspection, first 100-hour inspection and thereafter at each 100-hour inspection. If timing is as specified in paragraph 12-12, internal timing need not be checked. If timing is out of tolerance, remove magneto and set internal timing, then install and time to the engine. In the event the magneto internal timing marks are off more than plus or minus five degrees when the breaker points open to fire number one cylinder, remove the magneto and check the magneto internal timing. Whenever the magneto halves are separated the breaker point assembly should always be checked. As long as internal timing and magneto-to-engine timing are within the preceding tolerances, it is recommended that the magneto be checked internally only at 500 hour intervals. It is normal for contact points to burn and the cam to wear a comparable amount so the magneto will remain in time within itself. This is accomplished by having a good area making contact on the surface between the points and the correct amount of spring pressure on the cam. The area on the points should be twenty-five percent of the area making contact. The spring pressure at the cam should be 10.5 to 12.5 ounces. When the contact points burn, the area becomes irregular, which is not detrimental to the operation of the points unless metal transfer is too great which will cause the engine to misfire. Figure 12-10 illustrates good and bad contact points. A small dent will appear on the nylon insulator between the cam follower and the breaker bar. This is normal and does not require replacement.

NOTE

If ignition trouble should develop, spark plugs and ignition wiring should be checked first. If the trouble definitely is associated with a magneto, use the following to help disclose the source of trouble without overhauling the magneto.

a. Moisture Check.

1. Remove magneto from engine and remove screws securing the magneto halves together, disconnect capacitor slip terminal and remove distributor. Inspect for moisture.

2. Check distributor gear finger and carbon brush for moisture.

3. Check breaker point assembly for moisture, especially on the surfaces of the breaker points.

4. If any moisture is evident in the preceding places, wipe with a soft, dry, clean, lint-free cloth.

b. Breaker Compartment Check.

1. Check all parts of the breaker point assembly for security.

2. Check breaker point surface for evidence of excessive wear, burning, deep pits and carbon deposits. Breaker points may be cleaned with a hard-finish paper. If breaker point assembly is defective, install a new assembly. Make no attempt to stone or dress the breaker points. Clean new breaker points with clean, unleaded gasoline and hard-finish paper before installing.

3. Check capacitor mounting bracket for cracks or looseness.

4. Check the carbon brush on the distributor gear for excessive wear. The brush must extend a minimum of 1/32 inch beyond the end of the gear shaft. The spring which the carbon brush contacts should be bent our approximately 20 degrees from vertical, since spring pressure on the brush holds the distributor gear shaft against the thrust bearing in the distributor block.

5. Oil the bearings at each end of the distributor gear shaft with a drop of SAE 20 oil. Wipe excess oil from parts.

6. Make sure internal timing is correct and reassemble magneto. Install and properly time magneto to engine.

12-80. MAGNETO CHECK. Advanced timing settings in some cases, is the result of the erroneous practice of bumping magnetos up in timing in order to reduce RPM drop on single ignition. NEVER ADVANCE TIMING BEYOND SPECIFICATIONS IN ORDER TO REDUCE RPM DROP. Too much importance is being attached to RPM drop on single ignition. RPM drop on single ignition is a natural characteristic of dual ignition design. The purpose of the following magneto check is to determine that all cylinders are firing. If all cylinders are not firing, the engine will run extremely rough and cause for investigation will be quite apparent. The amount of RPM drop is not necessarily significant and will be influenced by ambient air temperature, humidity, airport altitude, etc. In fact, absence of RPM drop should be cause for suspicion that the magneto timing has been bumped up and is set in advance of the setting specified. Magneto checks should be performed on a comparative basis between individual right and left magneto performance.

a. Start and run engine until the oil and cylinder head temperature is in the normal operating range.

b. Place the propeller control in the full low pitch (high rpm) position.

c. Advance engine speed to 1700 rpm.

d. Turn the ignition switch to the "R" position and note the rpm drop, then return the switch to the "BOTH" position to clear the opposite set of plugs.

e. Turn the switch to the "L" position and note the rpm drop, then return the switch to the "BOTH" position.

f. The rpm drop should not exceed 150 rpm on either magneto or show greater than 50 rpm differential between magnetos. A smooth rpm drop-off past normal is usually a sign of a too lean or too rich mixture. A sharp rpm drop-off past normal is usually a sign of a fouled plug, a defective harness lead or a magneto out of time. If there is doubt concerning operation of the ignition system, rpm checks at a leaner mixture setting or at higher engine speeds will usually confirm whether a deficiency exists.

NOTE

An absence of rpm drop may be an indication of faulty grounding of one side of the ignition system, a disconnected ground lead at magneto or possibly the magneto timing is set too far in advance.

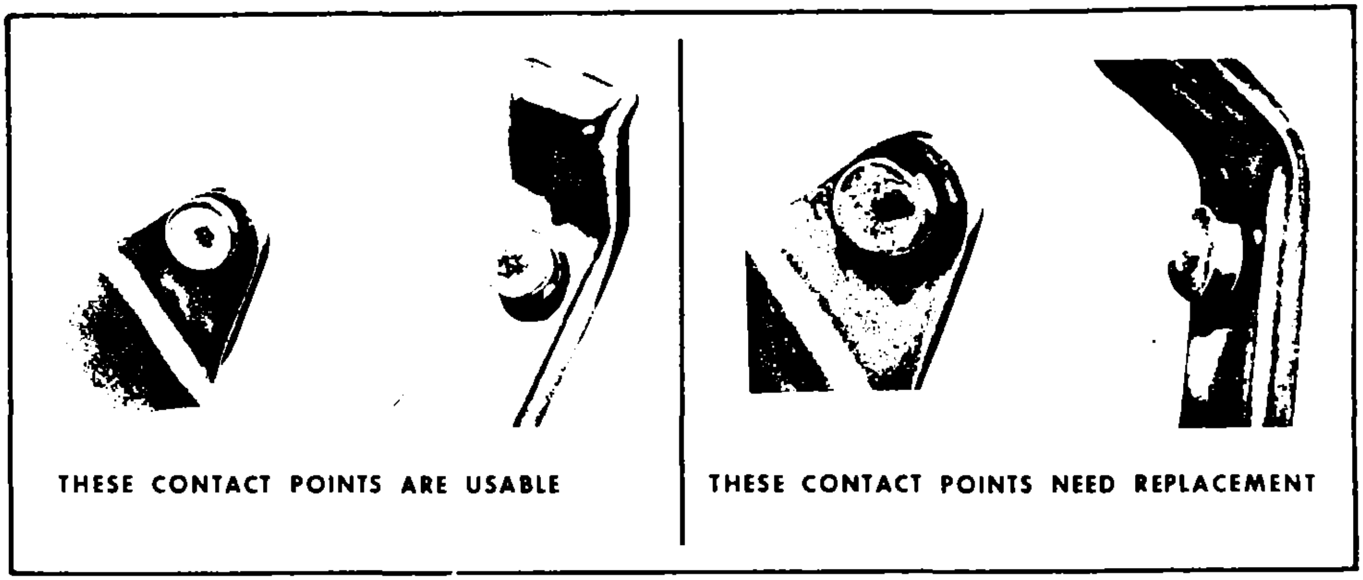


Figure 12-10. Magneto Contact Breaker Points

12-81. SPARK PLUGS. Two spark plugs are installed in each cylinder and screw into helicoil type thread inserts. The spark plugs are shielded to prevent spark plug noise in the radios and have an internal resistor to provide longer terminal life. Spark plug service life will vary with operating conditions. A spark plug that is kept clean and properly gapped will give better and longer service than one that is allowed to collect lead deposits and is improperly gapped.

NOTE

At each 100-hour inspection, remove, clean, inspect and regap all spark plugs. Install lower spark plugs in upper portion of cylinders and install upper spark plugs in lower portion of cylinders. Since deterioration of lower spark plugs is usually more rapid than that of the upper spark plugs, rotating helps prolong spark plug life.

12-82. ENGINE CONTROLS.
(Refer to figure 12-10A)

12-83. DESCRIPTION. The throttle, mixture and propeller controls are of the push-pull type. The propeller and mixture controls are equipped to lock in any position desired. To move the control, the spring-loaded button, located in the end of the control knob, must be depressed. When the button is released, the control is locked. The propeller and mixture controls also have a vernier adjustment. Turning the control knob in either direction will change the control setting. The vernier is primarily for precision control setting. The throttle control has neither a locking button nor a vernier adjustment, but contains a knurled friction knob which is rotated for more or less friction as desired. The friction knob prevents vibration induced "creeping" of the control.

12-84. RIGGING. When adjusting any engine control, it is important to check that the control slides smoothly throughout its full travel, that it locks securely if equipped with a locking device and the arm or lever which it operates moves through its full arc of travel.

CAUTION

Whenever engine controls are being disconnected, pay particular attention to the EXACT *position, size and number of attaching* washers and spacers. Be sure to install attaching parts as noted when connecting controls.

12-85. THROTTLE CONTROL.

a. Push throttle control full in, then pull control out approximately 1/8 inch for cushion.

b. Check that throttle control arm is against the mechanical stop. If necessary, loosen locknut and screw rod end IN or OUT as necessary to align with attachment hole while throttle arm is against the mechanical stop.

c. Pull control full out and check that throttle arm contacts the idle stop.

d. The throttle arm must contact the stops in each direction and the control should have approximately 1/8 inch cushion when pushed full in.

NOTE

Refer to the inspection chart in Section 2 for inspection and/or replacement interval for the throttle control.

12-86. MIXTURE CONTROL.

a. Push mixture control full in, then pull control out approximately 1/8 inch for cushion.

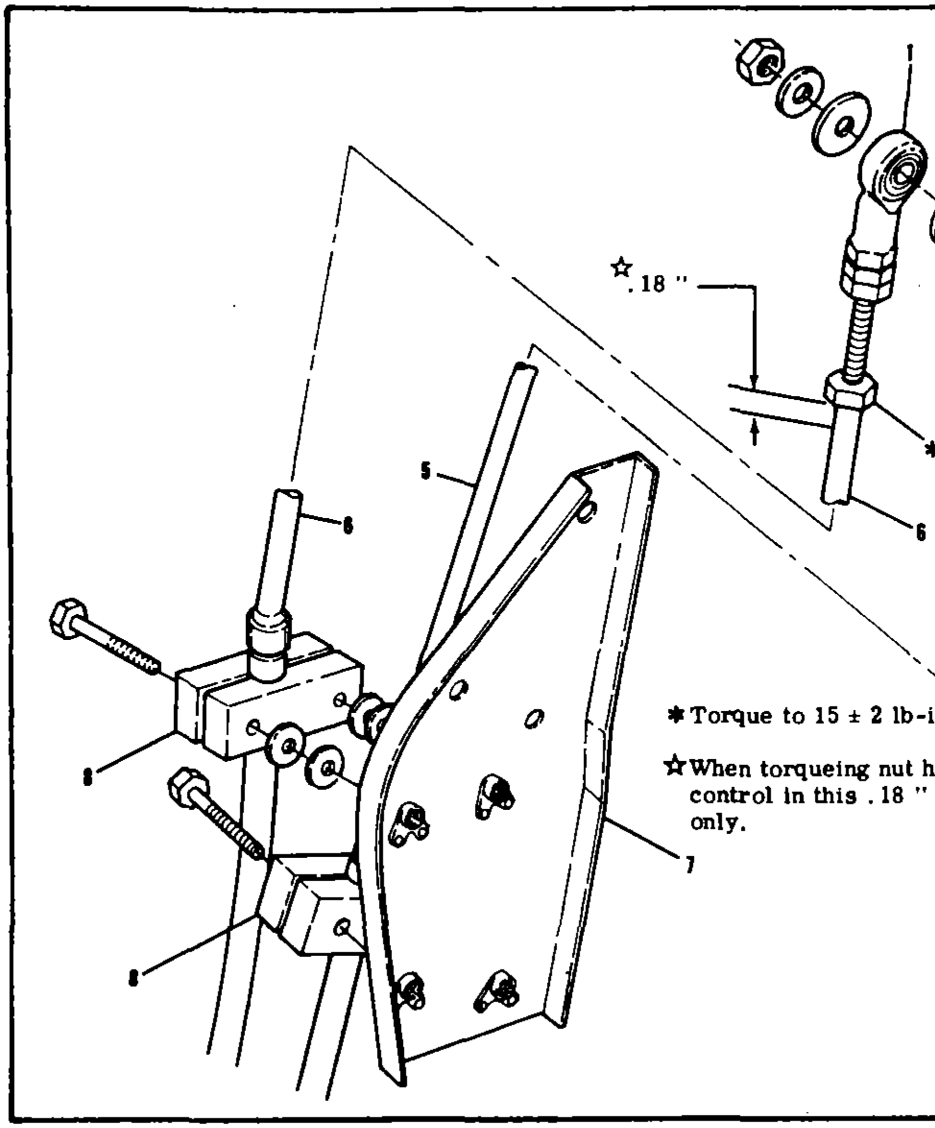


Figure 12-10A Engine Controls

b. Check that mixture control arm is in full rich position (against stop). If necessary, loosen locknut and screw rod end IN or OUT as necessary to align with attachment hole while mixture arm is against the mechanical stop.

c. Pull control full out and check that mixture arm contacts the idle cut-off stop.

d. The mixture arm must contact the stops in each direction and the control should have approximately 1/8 inch cushion when pushed full in.

NOTE

Refer to the inspection chart in Section 2 for inspection and/or replacement interval for the mixture control.

12-86A THROTTLE OPERATED MICROSWITCH. (Refer to Section 13.)

12-87. PROPELLER CONTROL. Refer to Section 14.

12-88. STARTING SYSTEM.

12-89. DESCRIPTION. The automatically-engaged starting system employs an electrical starter motor mounted to a 90-degree adapter. A solenoid is activated by the ignition switch on the instrument panel. When the solenoid is activated, its contacts close and electrical current energizes the motor. Initial rotation of the motor engages the starter through an overrunning clutch in the starter adapter, which incorporates worm reduction gears. The starter motor is located just aft of the right rear cylinder.

CAUTION

Never operate the starter motor more than 12 seconds at a time. Allow starter motor to cool between cranking periods to avoid overheating. Longer cranking periods without cooling time will shorten the life of the starter motor.

12-90. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
STARTER WILL NOT OPERATE.	Defective master switch or circuit.	Check continuity. Install new switch or wires.
	Defective starter switch or switch circuit.	Check continuity. Install new switch or wires.
	Defective starter motor.	Check electrical power to motor. Repair or replace starter motor.
STARTER MOTOR RUNS, BUT DOES NOT TURN CRANK-SHAFT.	Defective overrunning clutch or drive.	Check visually. Install new starter adapter.
	Starter motor shaft broken.	Check visually. Install new starter motor.
STARTER MOTOR DRAGS.	Low battery.	Check battery. Charge or install new battery.
	Starter switch or relay contacts burned or dirty.	Install serviceable unit.
	Defective starter motor power cable.	Check visually. Install new cable.
	Loose or dirty connections.	Remove, clean and tighten all terminal connections.
	Defective starter motor.	Check starter motor brushes, brush spring tension, thrown solder on brush cover. Repair or install new starter motor.
	Dirty or worn commutator.	Check visually. Clean and turn commutator.
STARTER EXCESSIVELY NOISY.	Worn starter pinion.	Remove and inspect. Replace starter drive.
	Worn or broken teeth on crankshaft gears.	Check visually. Replace crankshaft gear.

12-91. PRIMARY MAINTENANCE. The starting circuit should be inspected at regular intervals, the frequency of which should be determined by the amount of service and conditions under which the equipment is operated. Inspect the battery and wiring. Check battery for fully charged condition, proper electrolyte level with approved water and terminals for cleanliness. Inspect wiring to be sure that all connections are clean and tight and that the wiring insulation is sound. Check that the brushes slide freely in their holders and make full contact on the commutator. When brushes are worn to one-half of their original length, install new brushes (compare brushes with new brushes). Check the commutator for uneven wear, excessive glazing or evidence of excessive arcing. If the commutator is only slightly dirty, glazed or discolored, it may be cleaned with a strip of No. 00 or No. 000 sandpaper. If the commutator is rough or worn, it should be turned in a lathe and the mica undercut. Inspect the armature shaft for rough bearing surfaces. New brushes should be properly seated when installing by wrapping a strip of No. 00 sandpaper around the commutator (with sanding side out) 1-1/4 to 1-1/2 times maximum. Drop brushes on sandpaper covered commutator and turn armature slowly in the direction of normal rotation. Clean sanding dust from motor after sanding operations.

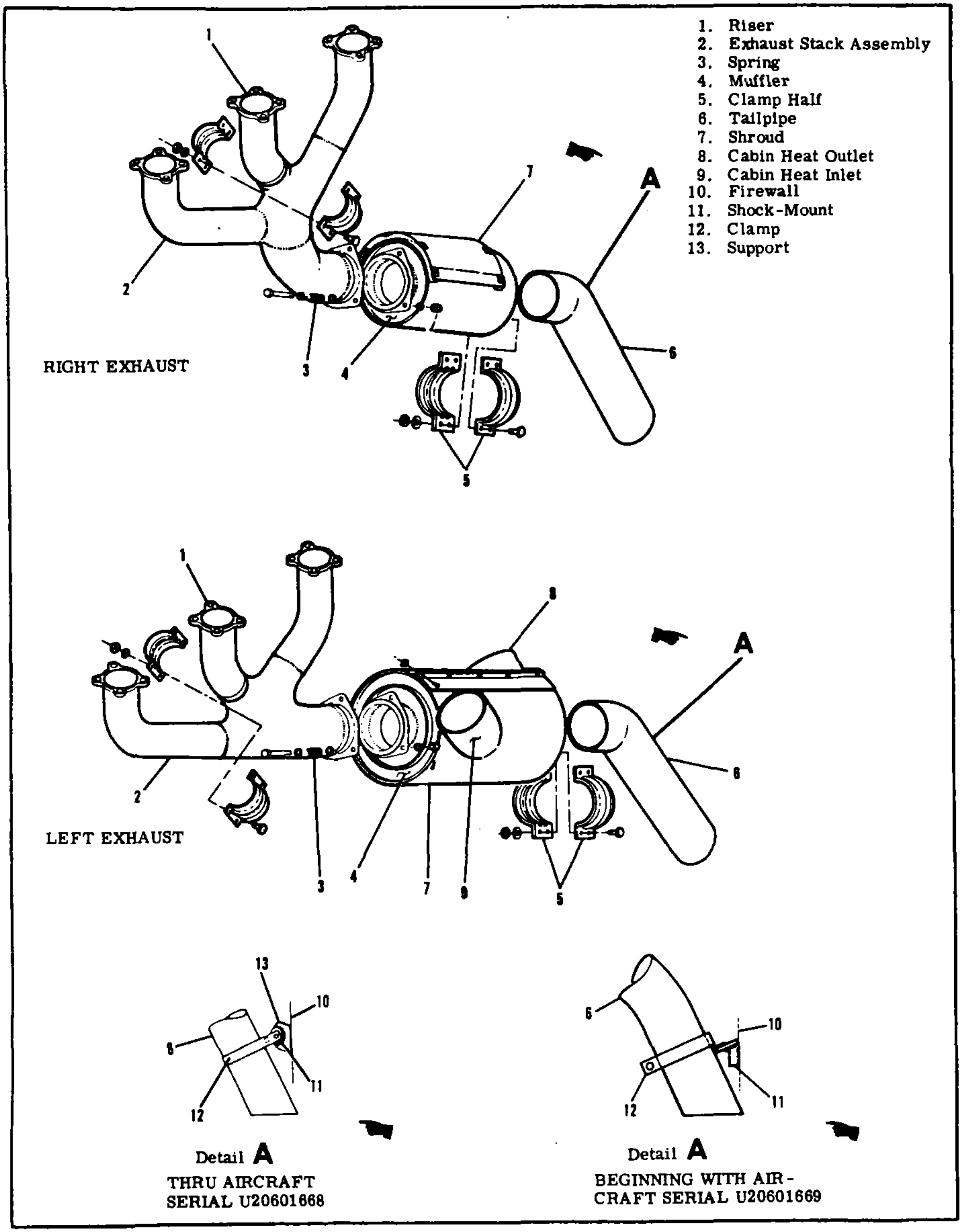


Figure 12-11. Exhaust System

12-92. STARTER MOTOR.

12-93. REMOVAL AND INSTALLATION.

a. Remove engine cowling in accordance with paragraph 12-3.

CAUTION

When disconnecting starter electrical cable, do not permit terminal bolt to rotate. Rotation of the bolt could break the conductor between bolt and field coils causing the starter to be inoperative.

b. Disconnect battery cables and insulate as a safety precaution.

c. Disconnect electrical cable at starter motor.

d. Remove nuts and washers securing motor to starter adapter and remove motor. Refer to engine manufacturer's overhaul manual for adapter removal.

e. Reverse the preceding steps for reinstallation. Install a new O-ring seal on motor, then install motor. Be sure motor drive engages with the adapter drive when installing.

12-94. EXHAUST SYSTEM.

12-95. DESCRIPTION. The exhaust system consists of two exhaust stack assemblies, for the left and right bank of cylinders. Each cylinder has a riser pipe attached to the exhaust port. The three risers at each bank of cylinders are joined together into a collector pipe forming an exhaust stack assembly. The center riser on each bank is detachable, but the front and aft risers are welded to the collector pipe. The left muffler is enclosed in a shroud which captures exhaust heat which is used to heat the cabin.

12-96. REMOVAL AND INSTALLATION. (Refer to figure 12-11.)

a. Remove engine cowling in accordance with paragraph 12-3.

b. Disconnect ducts from heater shroud on left muffler assembly.

c. Disconnect tailpipe braces from shock-mounts at firewall brackets.

d. Remove nuts, springs and bolts attaching tailpipe and muffler to collector pipe and remove muffler and tailpipe assemblies.

e. Remove nuts attaching exhaust stack assemblies to the cylinders and remove exhaust stacks and gaskets.

f. Reverse the preceding steps for reinstallation. Install a new copper-asbestos gasket between each riser and its mounting pad on each cylinder, regardless of apparent condition of those removed. Torque exhaust stack nuts at cylinders to 100-110 pound-inches.

12-97. INSPECTION. Since exhaust systems of this type are subject to burning, cracking and general deterioration from alternate thermal stresses and vibrations, inspection is important and should be accomplished every 100 hours of operation. Also, a thorough inspection of the engine exhaust system should be made to detect cracks causing leaks which could result in loss of engine power. To inspect the engine exhaust system, proceed as follows:

a. Remove engine cowling as required so that ALL surfaces of the exhaust assemblies can be visually inspected.

NOTE

Especially check the areas adjacent to welds and slip joints. Look for gas deposits in surrounding areas, indicating that exhaust gases are escaping through a crack or hole or around the slip joints.

b. After visual inspection, an air leak check should be made on the exhaust system as follows:

1. Attach the pressure side of an industrial vacuum cleaner to the tailpipe opening, using a rubber plug to effect a seal as required.

NOTE

The inside of the vacuum cleaner hose should be free of any contamination that might be blown into the engine exhaust system.

2. With vacuum cleaner operating, all joints in the exhaust system may be checked manually by feel, or by using a soap and water solution and watching for bubbles. Forming of bubbles is considered acceptable, If bubbles are blown away system is not considered acceptable.

c. Where a surface is not accessible for a visual inspection, or for a more positive test, the following procedure is recommended.

1. Remove exhaust stack assemblies.

2. Use rubber expansion plugs to seal openings.

3. Using a manometer or gage, apply approximately 1-1/2 psi (3 inches of mercury) air pressure while each stack assembly is submerged in water. Any leaks will appear as bubbles and can be readily detected.

4. It is recommended that exhaust stacks found defective be replaced before the next flight.

d. After installation of exhaust system components perform the inspection in step "b" of this paragraph to ascertain that system is acceptable

12-98. EXTREME WEATHER MAINTENANCE.

12-99. COLD WEATHER. Cold weather starting will be made easier by the installation of an oil dilution system, an engine primer system and a ground service receptacle. The primer system is manually-operated from the cabin. Fuel is supplied by a line from the fuel strainer to the plunger. Operating the primer forces fuel to the engine. With an external power re-
The following may also be used to assist engine starting in extreme cold weather. After the last flight of the day, drain the engine oil into a clean container so the oil can be preheated. Cover the engine to prevent ice or snow from collecting inside the cowling. When preparing the aircraft for flight or engine runup after these conditions have been followed, preheat the drained engine oil.
ceptacle installed, an external power source may be connected to assist in cold weather or low battery starting. Refer to paragraph 12-103 for use of the external power receptacle.

WARNING

Do not heat the oil above 121°C (250°F). A flash fire may result. Before pulling the propeller through, ascertain that the magneto switch is in the OFF position to prevent accidental firing of the engine.

After preheating the engine oil, gasoline may be mixed with the heated oil in a ratio of 1 part gasoline to 12 parts engine oil before pouring into the engine oil sump. If the free air temperature is below minus 29°C (-20°F), the engine compartment should be preheated by a ground heater. After the engine compartment has been preheated, inspect all engine drain and vent lines for presence of ice. After this procedure has been complied with, pull propeller through several revolutions by hand before attempting to start the engine.

CAUTION

Due to the desludging effect of the diluted oil, engine operation should be observed closely during the initial warm-up of the engine. Engines that have considerable amount of operational hours accumulated since their last dilution period may be seriously affected by the dilution process. This will be caused by the diluted oil dislodging sludge and carbon deposits within the engine. This residue will collect in the oil sump and possibly clog the screened inlet to the oil sump. Small deposits may actually enter the oil sump and be trapped by the main oil filter screen. Partial or complete loss of engine lubrication may result from either condition. If these conditions are anticipated after oil dilution, the engine should be run for several minutes at normal operating temperatures and then stopped and inspected for evidence of sludge and carbon deposits in the oil sump and oil filter screen. Future occurrence of this condition can be prevented by diluting the oil prior to each engine oil change. This will also prevent the accumulation of the sludge and carbon deposits.

12-100. HOT WEATHER. Engine starting in hot weather or with a hot engine is sometimes hampered by vapor formation in the fuel lines. To purge the vapor, move the mixture control to full rich, open the throttle 1-1/2 inches and prime with the auxiliary fuel pump switch in the HI position until the fuel flow indicator reads 4-6 gal/hr. Then shut off the fuel pump switch and engage the starter. As the flooded mixture becomes progressively leaner, reaching a combustible mixture, the engine will start. If the engine tends to die, turn the auxiliary fuel pump switch momentarily to HI at appropriate intervals until vapor is fully cleared and the engine runs smoothly.

CAUTION

Never operate the starting motor more than 12 seconds at a time. Allow starter motor to cool between cranking periods to avoid overheating. Longer cranking periods will shorten the life of the starter motor.

12-101. SEACOAST AND HUMID AREAS. In salt water areas special care should be taken to keep the engine, accessories and airframe clean to prevent oxidation. In humid areas, fuel and oil should be checked frequently and drained of condensation to prevent corrosion.

12-102. DUSTY AREAS. Dust induced into the intake system of the engine is probably the greatest single cause of early engine wear. When operating in high dust conditions, service the induction air filter daily as outlined in Section 2. Also change engine oil and lubricate airframe items more often than specified.

12-103. GROUND SERVICE RECEPTACLE. With the ground service receptacle installed, the use of an external power source is recommended for cold weather starting, low battery starting and lengthy maintenance of the aircraft electrical system. Refer to Section 17 for additional information.

12-104. HAND-CRANKING. A normal hand-cranking procedure may be used to start the engine.

SHOP NOTES:

SECTION 12A

ENGINE
(TURBOCHARGED)

TABLE OF CONTENTS

12A-1. ENGINE COWLING.

12A-2. DESCRIPTION. The engine cowling is similar to that described in Section 12, except it is wider at the front, with additional ram air openings in the right and left nose caps. The opening in the right side supplies ram air to the turbocharger. The opening in the left side supplies ram air to the cabin heating system.

12A-3. REMOVAL AND INSTALLATION. Refer to paragraph 12-3.

12A-4. CLEANING AND INSPECTION. Refer to paragraph 12-4.

12A-5. REPAIR. Refer to paragraph 12-5.

12A-6. COWL FLAPS.

12A-7. DESCRIPTION. The cowl flaps are similar to that described in Section 12, except the overboard exhaust tube for the cabin heater extends through the cutout in the aft portion of the left cowl flap.

12A-8. REMOVAL AND INSTALLATION. Refer to paragraph 12-8.

12A-9. RIGGING. Refer to paragraph 12-9. (Refer to figure 12-1)

12A-10. ENGINE.

12A-11. DESCRIPTION. An air-cooled, horizontally-opposed, direct-drive, fuel-injected, six-cylinder turbocharged Continental TSIO-520 series engine, driving a constant-speed propeller, is used to power the aircraft. The cylinders, numbered from rear to front, are staggered to permit a separate throw on the crankshaft for each connecting rod. The right rear cylinder is number 1 and cylinders on the right side are identified by odd numbers 1, 3 and 5. The left rear cylinder is number 2 and the cylinders on the left side are identified as 2, 4 and 6. Refer to paragraph 12A-12 for engine data. For repair and overhaul of the engine, accessories and propeller, refer to the appropriate publications issued by their manufacturer's. These publications are available from the Cessna Service Parts Center.

SHOP NOTES:

12A-12. ENGINE DATA.

Aircraft Series	TP206	TU206
Model (Continental)	TSIO-520-C	Same
BHP at RPM	285 at 2700	Same
Limiting Manifold Pressure (Sea Level)	32.5 Inches Hg.	Same
Number of Cylinders	6-Horizontally Opposed	Same
Displacement	520 Cubic Inches	Same
Bore	5.25 Inches	Same
Stroke	5.00 Inches	Same
Compression Ratio	7.5:1	Same
Magnetos	Slick Model No. 662	Same
Right Magneto	Fires 20° BTC Upper Right and Lower Left	Same
Left Magneto	Fires 20° BTC Upper Left and Lower Right	Same
Firing Order	1-6-3-2-5-4	Same
Spark Plugs	18 MM (Refer to current Continental factory approved spark plug chart.)	Same
Torque	330±30 Lb-In.	Same
Fuel Metering System	Continental Fuel Injection	Same
Unmetered Fuel Pressure	6 to 7 PSI at 600 RPM	Same
	29 to 32 PSI at 2700 RPM	Same
Oil Sump Capacity	12 U.S. Quarts	Same
With Filter Element Change	13 U.S. Quarts	Same
Tachometer	Mechanical Drive	Same
Oil Pressure (PSI)		
Minimum Idling	10	Same
Normal	30 to 60	Same
Maximum (Cold Oil Starting)	100	Same
Connection Location	Between No. 2 and No. 4 Cylinders	Same
Oil Temperature		
Normal Operating	Within Green Arc	Same
Maximum Permissible	Red Line (240°F)	Same
Probe Location	Below Oil Cooler	Same
Cylinder Head Temperature	Red Line (460°F) Max.	Same
Probe Location	Lower Side No. 1 Cylinder	Same
Approximate Dry Weight With Accessories (Excluding Turbocharger System)	483 Lb. (Weight is approximate and will vary with optional accessories installed.)	Same

12A-12A. TIME BETWEEN OVERHAUL (TBO). Teledyne Continental Motors recommends engine overhaul at 1400 hours operating time for the TSIO-520 series engines. Refer to Continental Aircraft Engine Service Bulletin M81-22 and to any superseding bulletins, revisions or supplements thereto, for further recommendations. At the time of overhaul, engine accessories should be overhauled. Refer to Section 14 for propeller and governor overhaul periods.

12A-12B OVERSPEED LIMITATIONS. Refer to paragraph 12-12B.

12A-13. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE FAILS TO START.	Engine flooded or improper use of starting procedure.	Use proper starting procedure. Refer to Owner's Manual.
	Defective aircraft fuel system.	Refer to Section 13.
	Fuel tanks empty.	Service fuel tanks.
	Spark plugs fouled or defective.	Remove, clean, inspect and regap. Use new gaskets. Check cables to presistently fouled plugs. Replace if defective.
	Magneto impulse coupling failure.	Repair or install new coupling.
	Defective magneto switch or grounded magneto leads.	Repair or replace switch and leads.
	Defective ignition system.	Refer to paragraph 12-79.
	Induction air leakage.	Correct cause of air leakage.
	Clogged fuel screen in fuel control unit or defective unit.	Remove and clean. Replace defective unit.
	Clogged fuel screen in fuel manifold valve or defective valve.	Remove and clean screen. Replace defective valve.
	Clogged fuel injection lines or discharge nozzles.	Remove and clean lines and nozzles. Replace defective units.
	Defective auxiliary fuel pump.	Refer to Section 13.
	Engine-driven fuel pump not permitting fuel from auxiliary pump to bypass.	Install new engine-driven fuel pump.
	Vaporized fuel in system. (Most likely to occur in hot weather with a hot engine.)	Refer to paragraph 12A-114.
ENGINE STARTS BUT DIES, OR WILL NOT IDLE PROPERLY.	Propeller control in high pitch (low rpm) position.	Use low pitch (high rpm) position for all ground operations.
	Improper idle speed or idle mixture adjustment.	Refer to paragraph 12-46.
	Defective aircraft fuel system.	Refer to Section 13.
	Spark plugs fouled or defective.	Remove, clean, inspect and regap. Use new gaskets. Check cables to persistently fouled plugs. Replace if defective.
	Water in fuel system.	Drain fuel tank sumps, lines and fuel strainer.
	Defective ignition system.	Refer to paragraph 12-79.

12A-13. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE STARTS BUT DIES, OR WILL NOT IDLE PROPERLY (CONT).	Induction air leakage.	Correct cause of air leakage.
	Clogged fuel screen in fuel control unit or defective unit.	Remove and clean. Replace defective unit.
	Clogged fuel screen in fuel manifold valve or defective valve.	Remove and clean. Replace defective valve.
	Restricted fuel injection lines or discharge nozzles.	Remove, clean lines and nozzles. Replace defective units.
	Defective engine-driven fuel pump.	Install and calibrate new pump.
	Vaporized fuel in system. (Most likely to occur in hot weather with a hot engine.)	Refer to paragraph 12A-114.
	Manual engine primer leaking.	Disconnect primer outlet line. If fuel leaks through primer, repair or replace primer.
	Obstructed air intake.	Remove obstruction; service air filter, if necessary.
	Discharge nozzle air vent manifolding restricted or defective.	Check for bent lines or loose connections. Tighten loose connections. Remove restrictions and replace defective components.
	Defective engine.	Check compression and listen for unusual engine noises. Check oil filter for excessive metal. Repair engine as required.
ENGINE HAS POOR ACCELERATION, RUNS ROUGHLY AT SPEEDS ABOVE IDLE OR LACKS POWER.	Idle mixture too lean.	Refer to paragraph 12-46.
	Propeller control in high pitch (low rpm) position.	Use low pitch (high rpm) position for all ground operations.
	Incorrect fuel-air mixture, worn control linkage or restricted air filter.	Replace worn elements of control linkage. Service air filter.
	Defective ignition system.	Refer to paragraph 12-79.
	Malfunctioning turbocharger.	Check operation, listen for unusual noise. Check operation of waste-gate valve and for exhaust system defects. Tighten loose connections.
	Improper fuel-air mixture.	Check intake manifold connections for leaks. Tighten loose connections. Check fuel controls and linkage for setting and adjustment.

12A-13. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE HAS POOR ACCELERATION, RUNS ROUGHLY AT SPEEDS ABOVE IDLE OR LACKS POWER (CONT).	Spark plugs fouled or defective.	Remove, clean, inspect and regap. Use new gaskets. Check cables to persistently fouled plugs. Replace if defective.
	Fuel pump pressure improperly adjusted.	Refer to paragraph 12A-62.
	Restriction in fuel injection system.	Clean out restriction. Replace defective items.
	Propeller out of balance.	Check and balance propeller.
	Defective engine.	Check compression, check oil filter for excessive metal. Listen for unusual noises. Repair engine as required.
	Exhaust system leakage.	Refer to paragraph 12A-99.
	Turbocharger wheels rubbing.	Replace turbocharger.
	Improperly adjusted or defective waste-gate controller.	Refer to paragraph 12A-111.
	Leak in turbocharger discharge pressure system.	Correct cause of leaks. Repair or replace damaged parts.
	Manifold pressure overshoot. (Most likely to occur when engine is accelerated too rapidly.)	Move throttle about two-thirds open. Let engine accelerate and peak. Move throttle to full open.
	Engine oil viscosity too high for ambient air.	Refer to Section 2 for proper grade of oil.
POOR IDLE CUT-OFF.	Mixture control linkage improperly rigged.	Refer to paragraph 12-86.
	Defective or dirty fuel manifold valve.	Remove and clean manifold valve.
	Fuel contamination.	Drain all fuel and flush out fuel system. Clean all screens, fuel strainers, fuel manifold valves, nozzles and fuel lines.
	Defective mixture control valve in fuel pump.	Replace fuel pump.
ENGINE LACKS POWER, REDUCTION IN MAXIMUM MANIFOLD PRESSURE OR CRITICAL ALTITUDE.	Incorrectly adjusted throttle control, "sticky" linkage or dirty air filter.	Check movement of linkage by moving control through range of travel. Make proper adjustments and replace worn components. Service air filter.

TROUBLE	PROBABLE CAUSE	REMEDY
ENGINE LACKS POWER, REDUCTION IN MAXIMUM MANIFOLD PRESSURE OR CRITICAL ALTITUDE (CONT).	Defective ignition system.	Inspect spark plugs for fouled electrodes, heavy carbon deposits, erosion of electrodes, improperly adjusted electrode gaps and cracked porcelains. Test plugs for regular firing under pressure. Replace damaged or misfiring plugs.
	Improperly adjusted waste-gate valve.	Refer to paragraph 12A-111.
	Loose or damaged exhaust system.	Inspect entire exhaust system to turbocharger for cracks and leaking connections. Tighten connections and replace damaged parts.
	Loose or damaged manifolding.	Inspect entire manifolding system for possible leakage at connections. Replace damaged components, tighten all connections and clamps.
	Fuel discharge nozzle defective.	Inspect fuel discharge nozzle vent manifolding for leaking connections. Tighten and repair as required. Check for restricted nozzles and lines and clean and replace as necessary.
	Malfunctioning turbocharger.	Check for unusual noise in turbocharger. If malfunction is suspected, remove exhaust and/or air inlet connections and check rotor assembly, for possible rubbing in housing, damaged rotor blades or defective bearings. Replace turbocharger if damage is noted.
BLACK SMOKE EXHAUST.	Turbo coking, oil forced through seal of turbine housing.	Clean or change turbocharger.
HIGH CYLINDER HEAD TEMPERATURE.	Defective cylinder head temperature indicating system.	Refer to Section 16.
	Improper use of cowl flaps.	Refer to Owner's Manual.
	Engine baffles loose, bent or missing.	Install baffles properly. Repair or replace if defective.
	Dirt accumulated on cylinder cooling fins.	Clean thoroughly.
	Incorrect grade of fuel.	Drain and refill with proper fuel.

12A-13. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
HIGH CYLINDER HEAD TEMPERATURE (CONT).	Incorrect ignition timing.	Refer to paragraph 12-78.
	Improper use of mixture control.	Refer to Owner's Manual.
	Defective engine.	Repair as required.
HIGH OR LOW OIL TEMPERATURE OR PRESSURE.		Refer to paragraph 12-30.

NOTE

Refer to paragraph 12A-106 for trouble shooting of controller and waste-gate actuator.

12A-14. REMOVAL. If an engine is to be placed in storage or returned to the manufacturer for overhaul, proper preparatory steps should be taken for corrosion prevention prior to beginning the removal procedure. Refer to Section 2 for storage preparation. The following engine removal procedure is based upon the engine being removed from the aircraft as a complete unit with the turbocharger and accessories installed.

NOTE

Tag each item when disconnected to aid in identifying wires, hoses, lines and control linkages when engine is reinstalled. Likewise, shop notes made during removal will often clarify reinstallation. Protect openings, exposed as a result of removing or disconnecting units, against entry of foreign material by installing covers or sealing with tape.

a. Place all cabin switches in the OFF position.
b. Place fuel selector valve in the OFF position.
c. Remove engine cowling in accordance with paragraph 12-3.
d. Disconnect battery cables and insulate terminals as a safety precaution. Remove battery and battery box for additional clearance, if desired.
e. Drain fuel strainer and lines with strainer drain control.

NOTE

During the following procedures, remove any clamps or lacings which secure controls, wires, hoses or lines to the engine, engine nacelle or attached brackets, so they will not interfere with engine removal. Some of the items listed can be disconnected at more than one place. It may be desirable to disconnect some of these items at other than the places indicated. The reason for engine removal should be the governing factor in deciding at which point to disconnect them. Omit any of the items which are not present on a particular engine installation.

f. Drain the engine oil sump and oil cooler.
g. Disconnect magneto primary lead wires at magnetos.

WARNING

The magnetos are in a SWITCH ON condition when the switch wires are disconnected. Ground the magneto points or remove the high tension wires from the magnetos or spark plugs to prevent accidental firing.

h. Remove the spinner and propeller in accordance with Section 14. Cover exposed end of crankshaft flange and propeller flange to prevent entry of foreign material.
i. Disconnect throttle, mixture and propeller controls from their respective units. Remove clamps attaching controls to engine and pull controls aft clear of engine. Use care to avoid bending controls too sharply. Note EXACT position, size and number of attaching washers and spacers for reference on reinstallation.
j. Disconnect wires and cables as follows:
   1. Disconnect tachometer drive shaft at adapter.

CAUTION

When disconnecting starter cable do not permit starter terminal bolt to rotate. Rotation of the bolt could break the conductor between bolt and field coils causing the starter to be inoperative.

2. Disconnect starter electrical cable at starter.

3. Disconnect cylinder head temperature wire at probe.

4. Disconnect oil temperature wire at probe below oil cooler.

5. Disconnect electrical wires and wire shielding ground at alternator.

6. Disconnect exhaust gas temperature wires at quick-disconnects.

7. Disconnect electrical wires at throttle microswitch.

8. Remove all clamps and lacings attaching wires or cables to engine and pull wires and cables aft to clear engine.

k. Disconnect lines and hoses as follows:

1. Disconnect vacuum hose at vacuum pump and remove oil separator vent line.

WARNING

Residual fuel and oil draining from disconnected lines and hoses constitutes a fire hazard. Use caution to prevent accumulation of such fuel and oil when lines or hoses are disconnected.

2. Disconnect fuel supply and vapor return hoses at fuel pump. Disconnect and remove fuel pump drain line.

3. Disconnect manifold pressure line at intake manifold.

4. Disconnect the fuel-flow gage line at firewall.

5. Disconnect the oil pressure line at the engine.

6. Disconnect and remove the right and left manifold drain lines and the balance tube drain line.

7. Disconnect air and oil lines at the waste-gate controller, located on the firewall.

8. Disconnect the air vent line to fuel-flow gage. at firewall.

9. Disconnect engine primer lines at right and left intake manifolds.

10. Disconnect the oil drain line from oil deflector under external oil filter.

l. Carefully check the engine again to ensure ALL hoses, lines, wires, cables, clamps and lacings are disconnected or removed which would interfere with the engine removal. Ensure all wires, cables and engine controls have been pulled aft to clear the engine.

CAUTION

Place a suitable stand under tail tie-down ring before removing engine. The loss of engine weight will cause the aircraft to be tail heavy.

m. Attach a hoist to the lifting lug at the top center of the engine crankcase. Lift engine just enough to relieve the weight from the engine mounts.

n. Remove mount bolts, ground strap and heat shields.

o. Slowly hoist engine out of nacelle and clear of aircraft checking for any items which would interfere with the engine removal. Balance the engine by hand and carefully guide the disconnected parts out as the engine is removed.

p. Remove engine shock-mounts

NOTE

If shock-mounts will be re-used, mark each one so it will be reinstalled in exactly the same position. If new shock-mounts will be installed, position them as illustrated in figure 12-2.

12A-14A. *STATIC RUN-UP PROCEDURES.* In a case of suspected low engine power, a static RPM run-up should be conducted as follows:

a. Run-up engine, using take-off power and mixture settings, with the aircraft facing 90° right and then left to the wind direction.

b. Record the RPM obtained in each run-up position.

NOTE

Daily changes in atmospheric pressure, temperature and humidity will have a slight effect on static rup-up.

c. Average the results of the RPM obtained. It should be within 50 RPM of 2650 RPM.

d. If the average results of the RPM obtained are lower than stated above, the following recommended checks may be performed to determine a possible deficiency.

1. Check governor control for proper rigging. It should be determined that the governor control arm travels to the high RPM stop on the governor and that the high RPM stop screw is adjusted properly. (Refer to Section 14 for procedures).

NOTE

If verification of governor operation is necessary the governor may be removed from the engine and a flat plate installed over the engine pad. Run-up engine to determine that governor was adjusted properly.

2. Check carburetor heat control (carburetor equipped engines) for proper rigging. If partially open it would cause a slight power loss. On fuel injected engines check operation of alternate air door spring or magnetic lock to make sure door will remain closed in normal operation.

3. Check magneto timing, spark plugs and ignition harness for settings and conditions.

4. On fuel injection engines, check fuel injection nozzles for restriction and check for correct unmetered fuel flow.

5. Check condition of induction air filter. Clean if required.

6. Perform an engine compression check (Refer to engine Manufacturer's Manual).

12A-15. CLEANING. Refer to paragraph 12-15.

12A-16. ACCESSORIES REMOVAL. Refer to paragraph 12-16.

12A-17. INSPECTION. Refer to paragraph 12-17.

12A-18. BUILD-UP. Refer to paragraph 12-18.

12A-19. INSTALLATION. Before installing the engine on the aircraft, install any items which were removed from the engine or aircraft after the engine was removed.

NOTE

Remove all protective covers, plugs, caps and identification tags as each item is connected or installed. Omit any items not present on a particular engine installation.

a. Hoist the engine to a point just above the nacelle.
b. Install engine shock-mounts and ground strap as illustrated in figure 12-2.
c. Carefully lower engine slowly into place on the engine mounts. Route controls, lines, hoses and wires in place as the engine is positioned on the engine mounts.

NOTE

Be sure engine shock-mounts, spacers and washers are in place as the engine is lowered into position.

d. Attach ground strap under engine sump bolt and install engine mount bolts. Torque bolts to 300+50-00 lb-in. Bend tab washers to form lock for mount bolts. Install heat shields.
e. Remove support stand placed under tail tie-down fitting and remove hoist.

NOTE

If the exhaust system was loosened or removed, refer to paragraph 12A-98.

f. Connect flexible ducting on heater shroud and cabin valve.
g. Route propeller governor control along left side of engine and secure with clamps.

SHOP NOTES:

NOTE

Throughout the aircraft fuel system, from the fuel cells to the engine driven fuel pump, use RAS-4 (Snap-On Tools Corp., Kenosha, Wisconsin), MIL-T-5544 (Thread Compound, Antiseize, Graphite-Petrolatum) or equivalent, as a thread lubricant or to seal a leaking connection. Apply sparingly to male fittings only, omitting the first two threads. Always ensure that a compound, the residue from a previously used compound or any other foreign material cannot enter the system. Throughout the fuel injection system, from the engine-driven fuel pump through the discharge nozzles, use only a fuel soluble lubricant, such as engine lubricating oil, on fitting threads. Do not use any other form of thread compound on the fuel injection system fittings.

h. Connect lines and hoses as follows:

1. Install and connect the left and right manifold drain lines and the balance tube drain line.
2. Connect the oil pressure line at its fitting.
3. Connect the fuel-flow gage line at firewall.
4. Connect the fuel supply and the vapor return lines at the fuel pump. Connect and install fuel pump drain line.
5. Connect manifold pressure line at intake manifold.
6. Connect vacuum line at the vacuum pump, and install oil separator vent line.
7. Connect air and oil lines at waste-gate controller on firewall.
8. Connect air vent line to fuel-flow gage line at firewall.
9. Connect engine primer lines at right and left intake manifolds.
10. Connect oil drain line to oil deflector under external oil filter.
11. Install all clamps securing lines and hoses to engine or structure.

i. Connect wires and cables as follows:

1. Connect oil temperature wire at probe below oil cooler.
2. Connect tachometer drive to adapter and torque to 100 lb-in.

WARNING

When connecting starter cable, do not permit starter terminal bolt to rotate. Rotation of the bolt could break conductor between terminal and field coils causing starter to be inoperative.

3. Connect starter electrical lead.
4. Connect cylinder head temperature wire at probe.
5. Connect electrical wires and wire shielding ground to alternator.
6. Connect electrical wires to throttle switch.
7. Connect exhaust gas temperature wires at quick-disconnects.
8. Install clamps that attach wires or cables, to engine or structure.

j. Connect engine controls and install block clamps.

k. Rig engine controls in accordance with paragraphs 12-85, 12-86 and 12-87.

l. Install propeller and spinner in accordance with instructions outlined in Section 14.

m. Complete a magneto switch ground-out and continuity check, then connect primary lead wires to the magnetos. Remove the temporary ground or connect spark plug leads, whichever procedure was used during removal.

WARNING

Be sure magneto switch is in OFF position when connecting switch wires to magnetos.

n. Clean and install induction air filter in accordance with Section 2.

o. Service engine with proper grade and quantity of engine oil. Refer to Section 2 if engine is new, newly overhauled or has been in storage.

p. Check all switches are in the OFF position and connect battery cables.

q. Inspect engine installation for security, correct routing of controls, lines, hoses and electrical wiring, proper safetying and tightness of all components.

NOTE

When installing a new or newly overhauled engine, and prior to starting the engine, disconnect the oil inlet line at the controller and the oil outlet line at the controller. Connect these oil lines to a full-flow oil filter, allowing oil to bypass the controller. With filter connected, operate engine approximately 15 minutes to filter out any foreign particles from the oil. This is done to prevent foreign material from entering the controller.

r. Install engine cowling in accordance with paragraph 12-3.

s. Perform an engine run-up and make final adjustments on the engine controls.

12A-20. FLEXIBLE FLUID HOSES. Refer to paragraph 12-20.

12A-21. PRESSURE TEST. Refer to paragraph 12-21.

12A-22. REPLACEMENT. Refer to paragraph 12-22.

12A-23. ENGINE BAFFLES. Refer to paragraph 12-23.

12A-24. DESCRIPTION. Refer to paragraph 12-24.

12A-25. CLEANING AND INSPECTION. Refer to paragraph 12-25.

12A-26. REMOVAL AND INSTALLATION. Refer to paragraph 12-26.

12A-27. REPAIR. Refer to paragraph 12-27.

12A-28. ENGINE OIL SYSTEM. Refer to figure 12A-1.

12A-29. DESCRIPTION. The engine lubrication system is a full-pressure, wet-sump type. Lubricating oil is drawn from the engine sump to the oil pump through a suction screen and tube. From the pump, oil under pressure is passed to the full-flow oil filter, where it is filtered before entering the passages of the engine. Bypass valves are provided. Oil from the filter is routed through drilled and cored passages to all moving parts requiring lubrication. Oil furnished to the propeller governor for propeller operation is also routed through internal passages. Oil pressure is maintained by an adjustable, spring-loaded relief valve mounted in the lower portion of the pump body. Oil temperature is automatically regulated by an oil cooler and a thermostat control valve. When the oil temperature reaches a predetermined temperature the thermostat valve closes, causing the oil to be routed through the externally mounted cooler. Engine oil is also used to control the waste-gate and lubricate the turbocharger bearings. Oil is returned to the engine sump from the turbocharger by a scavenger pump, which is integral with the engine oil pump. The oil filler neck is located on top of the engine and is reached through an access door in the top of the left cowl. The oil level in the sump is checked on a dipstick at the rear of number two cylinder and is reached through an access door in the side of the left cowl.

12A-30. TROUBLE SHOOTING. Refer to paragraph 12-30.

12A-31. FULL-FLOW OIL FILTER. Refer to paragraph 12-31.

12A-32. DESCRIPTION. Refer to paragraph 12-32.

12A-33. REMOVAL AND INSTALLATION. Refer to paragraph 12-33.

12A-34. FILTER ADAPTER. Refer to paragraph 12-34.

12A-35. REMOVAL. Refer to paragraph 12-35.

12A-36. DISASSEMBLY, INSPECTION AND REASSEMBLY. Refer to paragraph 12-36.

12A-37. INSTALLATION. Refer to paragraph 12-37.

12A-38. OIL COOLER. Refer to paragraph 12-38.

12A-39. DESCRIPTION. Refer to paragraph 12-39.

12A-40. ENGINE FUEL SYSTEM. Refer to figure 12A-2.

12A-41. DESCRIPTION. The fuel injection system is a low pressure system of injecting fuel into the intake valve port of each cylinder. It is a multi-nozzle, continuous-flow type which controls fuel flow to match engine airflow. Any change in throttle position, engine speed, or a combination of both, causes changes in fuel flow in the correct relation to engine airflow. A manual mixture control and a fuel flow indicator are provided for leaning at any combination of altitude and power setting. The fuel flow indicator is calibrated in gallons per hour and indicates approximately the gallons of fuel consumed per hour. The continuous-flow system uses a typical rotary vane fuel pump. There are no running parts in this system except for the engine-driven fuel pump. The four major components of the system are: the fuel injection pump, fuel-air control unit, fuel manifold valve and the fuel discharge nozzles. The fuel injection pump incorporates an adjustable aneroid sensing unit which is pressurized from the discharge side of the turbocharger compressor. Turbocharger discharge air pressure is also used to vent the fuel discharge nozzles and the vent port of the fuel-flow gage.

NOTE

Throughout the aircraft fuel system, from the fuel cells to the engine-driven fuel pump, use RAS-4 (Snap-On Tools Corp., Kenosha, Wisconsin), MIL-T-5544 (Thread Compound, Antiseize, Graphite-Petrolatum) or equivalent, as a thread lubricant or to seal a leaking connection. Apply sparingly to male fittings only, omitting the first two threads. Always ensure that a compound, the residue from a previously used compound or any other foreign material cannot enter the system. Throughout the fuel injection system, from the engine-driven fuel pump through the discharge nozzles, use only a fuel soluble lubricant, such as engine lubricating oil, on the fitting threads. Do not use any other form of thread compound on the injection system fittings.

12A-42. FUEL-AIR CONTROL UNIT. Refer to paragraph 12-42.

12A-43. DESCRIPTION. Refer to paragraph 12-43.

12A-44. REMOVAL.

a. Place all cabin switches and fuel shut-off valve in the OFF position.

b. Remove cowling in accordance with paragraph 12-3.

c. Loosen clamp and disconnect flexible duct from elbow at top of air throttle.

d. Tag and disconnect electrical wires from electric fuel pump microswitch.

e. Disconnect throttle and mixture control rod ends at fuel-air control unit.

NOTE

Cap or plug all disconnected hoses, lines and fittings.

f. Disconnect cooling air blast tube from fuel control valve shroud.

g. Disconnect and tag all fuel lines at the fuel control valve.

h. Remove nuts and washers securing triangular brace to fuel-air control unit and engine, at lower end of control unit. Remove brace.

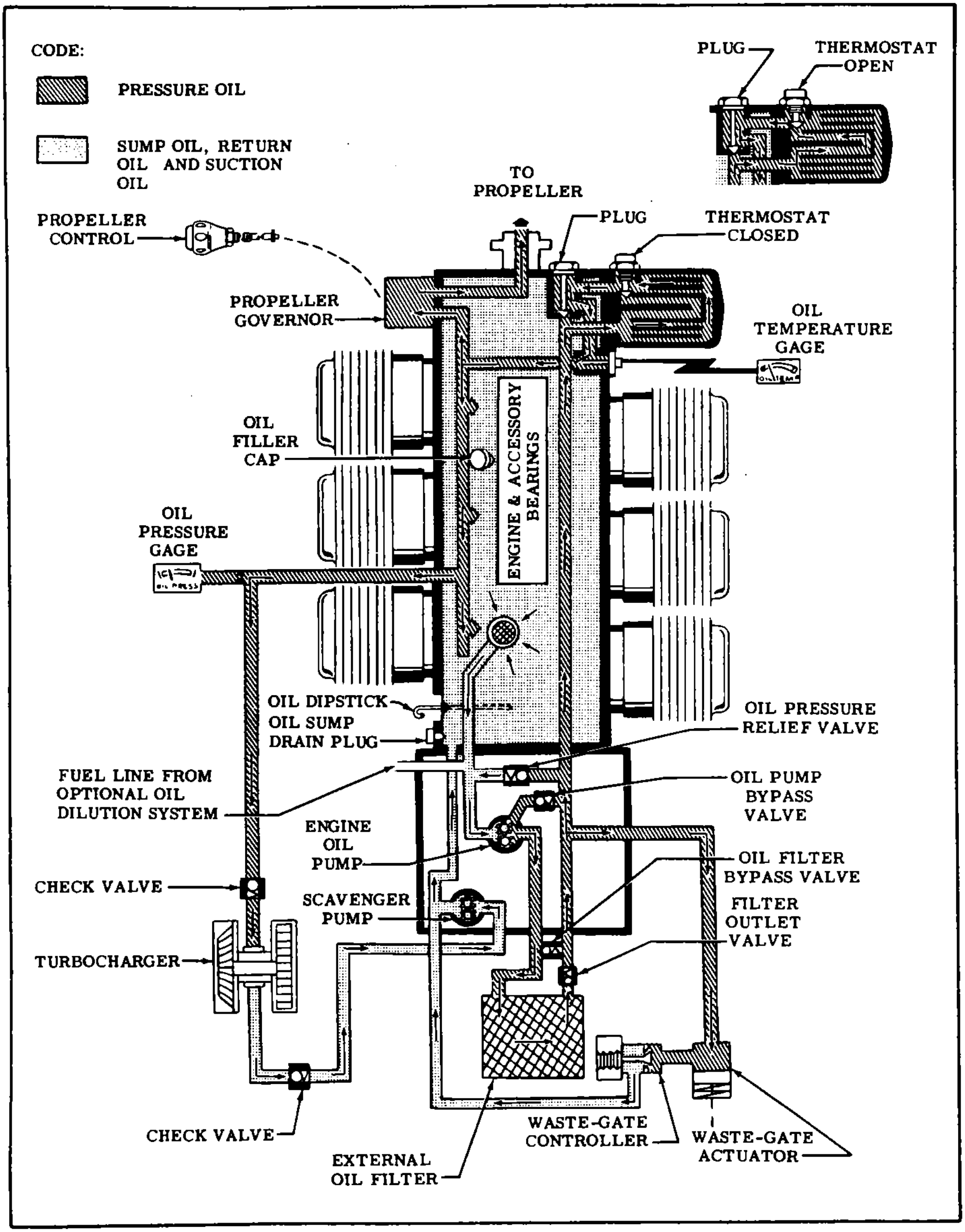


Figure 12A-1. Oil System Schematic

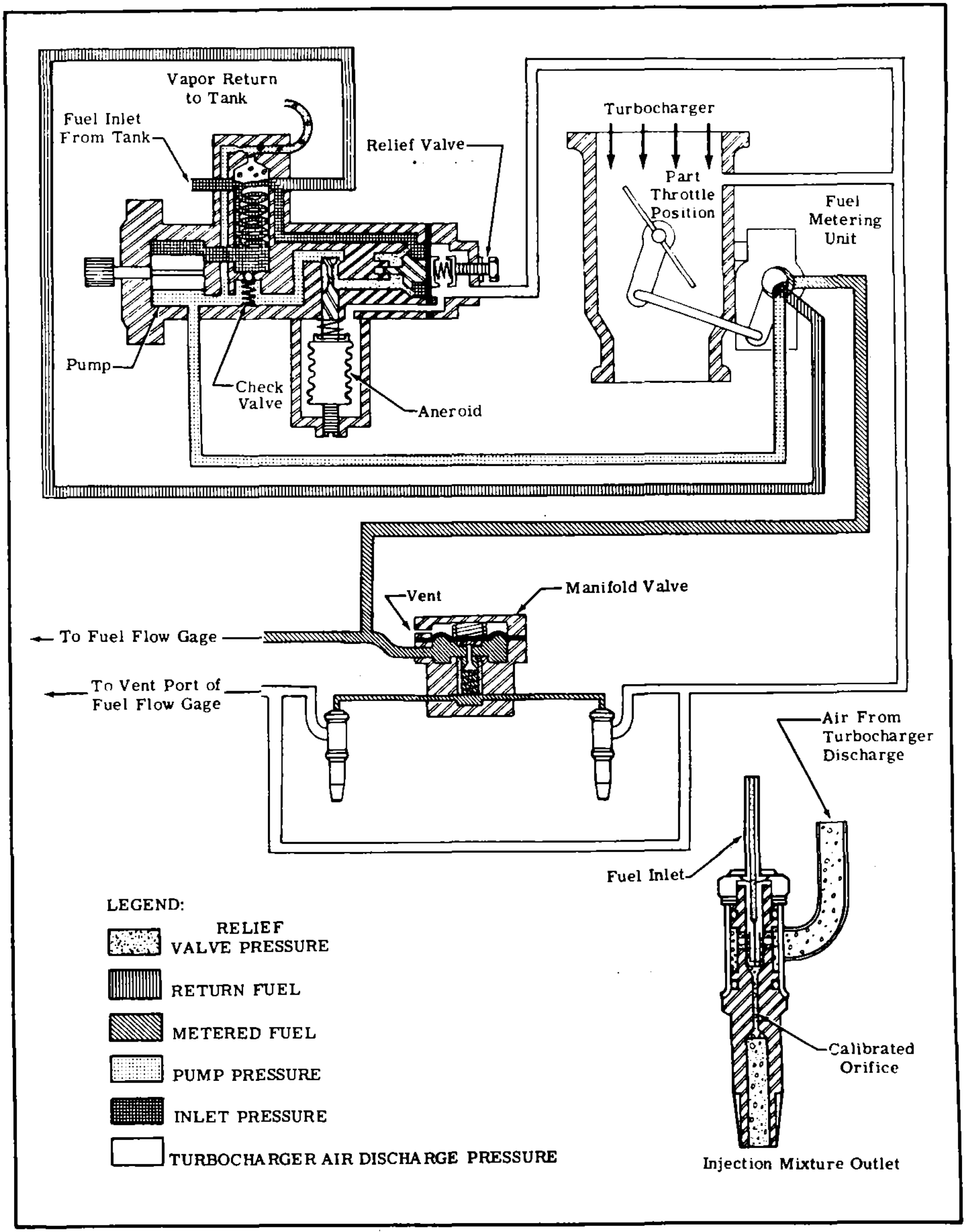


Figure 12A-2. Fuel System Schematic

i. Remove bolt attaching fuel-air control unit to brace at top of control unit.
j. Loosen hose clamps which secure fuel-air control unit to right and left intake manifold assemblies and slip hoses from fuel-air control unit.
k. Remove fuel-air control unit.

12A-45. CLEANING AND INSPECTION. Refer to paragraph 12-45.

12A-46. INSTALLATION.
a. Place control unit in position at rear of engine.
b. Install bolt attaching control unit to brace at top of unit. Ascertain that shock-mount is in place and in good condition.
c. Install triangular brace at lower end of control unit.
d. Install hoses and clamps which secure control unit to right and left intake manifold assemblies. Tighten hose clamps.
e. Connect fuel lines to unit and connect air blast tube at fuel control shroud.
f. Connect throttle and mixture control rod ends to control unit.
g. Connect electrical wires to electric fuel pump microswitch. Check switch rigging in accordance with Section 13.
h. Install induction air duct to elbow at top of control unit.
i. Inspect installation and install cowling.

12A-47. ADJUSTMENTS. Refer to paragraph 12-46.

12A-48. FUEL MANIFOLD VALVE (FUEL DISTRIBUTOR). Refer to paragraph 12-47.

12A-49. DESCRIPTION. Refer to paragraph 12-48.

12A-50. REMOVAL. Refer to paragraph 12-49.

12A-51. CLEANING. Refer to paragraph 12-50.

12A-52. INSTALLATION. Refer to paragraph 12-51.

12A-53. FUEL DISCHARGE NOZZLES.

12A-54. DESCRIPTION. From the fuel manifold valve, individual, identical size and length fuel lines carry metered fuel to the fuel discharge nozzles located in the cylinder heads. The outlet of each nozzle is directed into the intake port of each cylinder. An air bleed and nozzle pressurization arrangement is incorporated in each nozzle to aid in vaporization of the fuel. The nozzles are calibrated in several ranges. All nozzles furnished for one engine are of the same calibrated range and are identified by a number and suffix letter stamped on the flat portion of the nozzle body. When replacing a fuel discharge nozzle, be sure that it is of the same calibrated range as the rest of the nozzles in that engine. When a complete set of nozzles is being replaced, the number must be the same as the one removed but the suffix letter may be different, as long as they are the same for all nozzles being installed in a particular engine.

12A-55. REMOVAL.
a. Remove engine cowling in accordance with paragraph 12-3.

NOTE

Plug or cap all disconnected lines and fittings.

b. Disconnect nozzle pressurization line at nozzles and disconnect pressurization line at "tee" fitting so that pressurization line may be moved away from discharge nozzles.
c. Disconnect fuel injection line at fuel discharge nozzle.
d. Using care to prevent damage or loss of washers and O-rings, lift sleeve assembly from fuel discharge nozzle.
e. Using a standard 1/2-inch deep socket, remove fuel discharge nozzle from cylinder.

12A-56. CLEANING AND INSPECTION. Refer to paragraph 12-55.

12A-57. INSTALLATION.
a. Using a standard 1/2-inch deep socket, install nozzle body in cylinder and tighten to a torque value of 60-80 lb-in.
b. Install O-rings, sleeve assembly and washers.
c. Align sleeve assembly and connect pressurization line to nozzles. Connect pressurization line to "tee" fitting.
d. Install O-ring and washer at top of discharge nozzle and connect fuel injection line to nozzle.
e. Inspect installation for crimped lines and loose fittings.
f. Inspect nozzle pressurization vent system for leakage. A tight system is required, since turbocharger discharge pressure is applied to various other components of the injection system.
g. Install cowling.

12A-58. FUEL INJECTION PUMP.

12A-59. DESCRIPTION. The fuel pump is a positive displacement, rotating vane type. It has a splined shaft for connection to the accessory drive section of the engine. Fuel enters the pump at the swirl well of the pump vapor separator. Here, vapor is separated by a swirling motion so that only liquid fuel is fed to the pump. The vapor is drawn from the top center of the swirl well by a small pressure jet of fuel and is fed into the vapor return line where it is returned to the fuel tank. Since the pump is engine-driven, changes in engine speed affect total pump flow proportionally. A check valve allows the auxiliary fuel pump pressure to bypass the engine-driven pump for starting, or in the event of engine-driven fuel pump failure in flight. The pump supplies more fuel than is required by the engine; therefore, a relief valve is provided to maintain a constant fuel pump pressure. The engine-driven fuel pump is equipped with an aneroid. The aneroid and relief valve are pressurized from the discharge side of the turbocharger compressor to maintain a proper fuel/air ratio at altitude. The aneroid is adjustable for fuel pump outlet pressure at full throttle and the relief valve is adjustable for fuel pump outlet pressure at idle.

12A-60. REMOVAL.

a. Place fuel selector valve handle in OFF position.
b. Remove engine cowling in accordance with paragraph 12-3.
c. Remove alternator and left rear intake elbow.
d. Hoist engine far enough to remove weight from engine mount and remove left rear engine mount leg, shock-mount and alternator bracket.
e. Remove flexible duct and shroud, removing fuel lines and fittings as necessary. Tag each fitting and line for identification and cap or seal to prevent entry of foreign material. Flanges of shroud may be straightened to facilitate removal and installation, but must be re-formed after installation. Note angular position of fittings before removal.
f. Remove nuts and washers attaching fuel pump to engine and pull pump aft to remove. Remove thin gasket.
g. Place temporary cover on pump mounting pad.

12A-61. INSTALLATION.

a. Install and align any fittings removed after pump removal.
b. Using new thin gasket, install pump with aneroid chamber down.
c. Install cooling shroud and remainder of fittings, bending flanges of shroud to their original positions and aligning fittings as noted during removal.
d. Connect all fuel lines and shroud flexible duct.
e. Install alternator bracket, shock-mount and engine mount leg. Remove hoist, then adjust alternator drive belt tension. Refer to Section 17.
f. Install intake elbow.
g. Start engine and perform an operational check, adjusting fuel pump if required.
h. Install cowling.

12A-62. ADJUSTMENT. Adjustments of the fuel injection pump requires special equipment and procedures. Adjustment to the aneroid applies only to the full throttle setting. Adjustment of the idle position is obtained through the relief valve. To adjust the pump to the pressures specified in paragraph 12A-12, proceed as follows:

a. Remove engine cowling in accordance with paragraph 12-3.
b. Disconnect the existing engine-driven fuel pump pressure hose at the fuel metering unit and the existing fuel gage vent hose at the air manifold valve. Connect the test gage pressure hoses. vent hose and fittings into the fuel injection system as illustrated in figure 12A-8.
c. The test gage MUST be vented to upper deck pressure and MUST be held as near to the level of the engine-driven pump as possible. Bleed air from test gage line prior to taking readings.

NOTE

Cessna Service Kit No. SK320-2 provides a test gage, lines and fittings for connecting the test gage into the system to perform accurate calibration of the engine-driven fuel pump.

NOTE

The test gage should be checked for accuracy at least every 90 days or anytime an error is suspected. The tachometer accuracy should also be determined prior to making any adjustments to the pump.

d. Start engine and warm-up thoroughly. Set mixture control to full rich position and propeller control full forward (low pitch, high rpm).
e. Adjust engine idle speed to 600 ± 25 rpm and check test gage for 6-7 PSI. Refer to figure 12-7 for idle mixture adjustment.

NOTE

Do not adjust idle mixture until idle pump pressure is obtained.

WARNING

DO NOT make fuel pump pressure adjustments while engine is operating.

f. If the pump pressure is not 6 to 7 PSI, stop engine and turn the fuel pump relief valve adjustment, on the centerline of the fuel pump clockwise (CW) to increase pressure and counterclockwise (CCW) to decrease pressure.
g. Maintaining idle pump pressure and idle RPM, obtain correct idle mixture in accordance with paragraph 12-46.
h. Completion of the preceding steps have provided:
1. Correct idle pump pressure.
2. Correct fuel flow.
3. Correct fuel metering cam to throttle plate orientation.
i. Advance to full throttle and maximum rated engine speed with the mixture control in full rich position and propeller control in full forward (low pitch, high rpm).
j. Check test gage for pressures specified in paragraph 12A-12. If pressure is incorrect, stop engine and adjust pressure by loosening locknut and turning the adjusting screw located at rear of aneroid counterclockwise (CCW) to increase pressure and clockwise (CW) to decrease pressure.

NOTE

If at static run-up, rated RPM cannot be achieved at full throttle, adjust pump pressure slightly below limits making certain the correct pressures are obtained when rated RPM is achieved during take-off roll.

k. After correct pressures are obtained, tighten locknut.
l. Remove test equipment, run engine to check for leaks and install cowling.

12A-62A. RIGGING THROTTLE OPERATED MICRO-SWITCH. Refer to Section 13,

12A-62B. AUXILIARY ELECTRIC FUEL PUMP FLOW RATE ADJUSTMENT. Refer to Section 13.

12A-63. INDUCTION AIR SYSTEM.

12A-64. DESCRIPTION. Ram air to the engine enters an induction air duct at the right side of the nose cap. The air is filtered through a dry filter, located in the induction airbox. From the filter, the air passes through a flexible duct to the inlet of the turbocharger compressor. The pressurized air is then routed through a duct to the fuel-air control unit mounted behind the engine and is then supplied to the cylinders through the intake manifold piping. The fuel-air control unit is connected to the cylinder intake manifold by elbows, hoses and clamps. The intake manifold is attached to each cylinder by four bolts through a welded flange, which is sealed by a gasket. A balance tube passes around the front side of the engine to complete the manifold assembly. An alternate air door, mounted in the duct between the filter and the turbocharger compressor, is held closed by a small magnet. If the induction air filter should become clogged, suction from the turbocharger compressor will open the door permitting the compressor to draw heated, unfiltered air from within the engine compartment. The alternate air door should be checked periodically for freedom of operation and complete closing. The induction air filter should be removed and cleaned at each 50-hour inspection, more often when operating under dusty conditions. Refer to Section 2.

12A-65. AIRBOX.

12A-66. REMOVAL AND INSTALLATION.
a. Remove engine cowling in accordance with paragraph 12-3.
b. Loosen clamp at lower end of airbox and remove flexible duct.
c. Remove two screws, washers and nuts attaching airbox to upper rear engine baffle.
d. Remove four screws attaching airbox to induction air duct and work airbox and filter from duct.
e. Remove screws attaching clips on duct to clips on rocker box covers.
f. Remove screws attaching lower side of induction air duct to the two front cylinder rocker box covers.
g. Loosen clamp and remove air duct from flexible inlet air duct and remove duct.
h. Reverse the preceding steps for reinstallation.

NOTE

Clean filter and ascertain that induction air ducts and airbox are clean when installing.

12A-67. CLEANING AND INSPECTION. Refer to paragraph 12-66.

12A-68. INDUCTION AIR FILTER.

12A-69. DESCRIPTION. An induction air filter, mounted in the aft end of the airbox removes dust particles from the ram air entering the engine.

12A-70. REMOVAL AND INSTALLATION.
a. Remove right half of engine cowling in accordance with paragraph 12-3.
b. Remove screws attaching airbox to upper rear baffle.
c. Loosen clamp and disconnect flexible air duct to airbox.
d. Remove four screws attaching airbox to forward air duct and work airbox and filter from aircraft.
e. Remove four bolts, washers and nuts attaching filter between airbox halves.

NOTE

When installing filter, note direction of air flow. Inspect and install gasket at aft face of filter assembly. Also, when tightening bolts fastening filter, push inward on lower end of the upper duct (where turbocharger inlet connects to the upper duct). This is done so that inlet hose doesn't chafe against the cowling.

f. Reverse the preceding steps for reinstallation.

12A-71. CLEANING AND INSPECTION. Clean and inspect filter in accordance with Section 2.

12A-72. IGNITION SYSTEM. Refer to paragraph 12-71.

12A-73. DESCRIPTION. Refer to paragraph 12-72.

12A-74. TROUBLE SHOOTING. Refer to paragraph 12-73.

12A-75. MAGNETOS. Refer to paragraph 12-74.

12A-76. DESCRIPTION. Refer to paragraph 12-75.

12A-77. REMOVAL. Refer to paragraph 12-76.

12A-78. INTERNAL TIMING. Refer to paragraph 12-77.

12A-79. INSTALLATION AND TIMING-TO-ENGINE. Refer to paragraph 12-78.

12A-80. MAINTENANCE. Refer to paragraph 12-79.

12A-81. MAGNETO CHECK. Refer to paragraph 12-80.

12A-82. SPARK PLUGS. Refer to paragraph 12-81.

12A-83. ENGINE CONTROLS. Refer to paragraph 12-82.

12A-84. DESCRIPTION. Refer to paragraph 12-83.

12A-85. RIGGING. Refer to paragraph 12-84.

12A-86. THROTTLE CONTROL. Refer to paragraph 12-85.

12A-87. MIXTURE CONTROL. Refer to paragraph 12-86.

12A-88. PROPELLER CONTROL. Refer to Section 14.

12A-89. STARTING SYSTEM. Refer to paragraph 12-88.

12A-90. DESCRIPTION. Refer to paragraph 12-89.

12A-91. TROUBLE SHOOTING. Refer to paragraph 12-90.

12A-92. PRIMARY MAINTENANCE. Refer to paragraph 12-91.

12A-93. STARTER MOTOR.

12A-94. REMOVAL AND INSTALLATION.
a. Remove cowling in accordance with paragraph 12-3.
b. Remove induction airbox in accordance with paragraph 12A-66.
c. Disconnect electrical power cable at starter and insulate terminal as a safety precaution.
d. Remove nuts securing starter and remove starter.
e. Reverse the preceding steps for reinstallation. Install a new O-ring and be sure the starter drive engages with the drive in the adapter.

12A-95. EXHAUST SYSTEM. Refer to figure 12A-3.

12A-96. DESCRIPTION. The exhaust system consists of two exhaust stack assemblies, one for the left and one for the right bank of cylinders. These exhaust stack assemblies are joined together to route the exhaust from all cylinders through the waste-gate or turbine. The three risers on the left bank of cylinders are joined together into a common pipe to form the left stack assembly. The right rear cylinder exhaust is routed down and aft to the rear of the engine where it connects to the left stack assembly. The risers on the two right front cylinders are connected to a common pipe to form the right stack assembly. The right stack assembly connects to the left stack assembly at the front of the engine. Mounting pads for the waste-gate and turbine are provided on the right stack assembly. From the exhaust port of the turbine, a tailpipe routes the exhaust overboard through the lower fuselage. The exhaust port of the waste-gate is routed into the tailpipe so the exhaust gas can be expelled from the system when not needed at the turbine. The waste-gate is actuated by the waste-gate actuator which, in turn, is controlled by the waste-gate controller. Also, sleeving is installed on the fuel hose from the engine-driven pump to the fuel metering body and on the hose from the auxiliary fuel pump to the engine-driven pump. This is to prevent excessive heat on these fuel hoses as they route close to the exhaust stack.

12A-97. REMOVAL.
a. Remove engine cowling and right and left nose caps in accordance with paragraph 12-3.
b. Remove intake manifold balance tube from front of engine.
c. Remove heat shield at front of engine.
d. Loosen clamp and disconnect flexible duct at aft end of cabin heater shroud on left exhaust stack assembly.
e. Remove clamps and bolts securing rear heat shield to engine and remove heat shield.
f. Remove clamps attaching left exhaust stack assembly to riser pipes and to rear crossover pipe on left side of engine.
g. Work left exhaust stack assembly down from risers and out of crossover pipes at front and rear of engine.
h. Remove four nuts and washers attaching exhaust riser pipe to each cylinder on left bank of cylinders and remove riser pipes and gaskets.
i. Remove clamp attaching exhaust tailpipe to exhaust port of turbine.
j. Remove bolts attaching waste-gate to right exhaust stack assembly. Work tailpipe from turbine and lower waste-gate and tailpipe into cowling.
k. Remove bolts attaching turbocharger to mounting brackets.
l. Remove bolts and nuts attaching turbocharger to right exhaust stack assembly. Lower turbocharger into cowling.
m. Remove bolts, nuts and clamps attaching right exhaust stack assembly to riser pipes on right side of engine.
n. Work right exhaust stack assembly down from risers and remove.
o. Remove nuts and washers attaching riser pipes to front two cylinders on right side of engine and remove riser pipes and gaskets.
p. Remove nuts and washers attaching exhaust pipe to rear cylinder on right side of engine and remove pipe and gasket.

12A-98. INSTALLATION.

NOTE

It is important that the complete exhaust system, including the turbocharger and waste-gate, be installed without pre-loading any section of the exhaust stack assembly.

a. Use new gaskets between exhaust stacks and engine cylinders, at each end of waste-gate and between turbocharger and exhaust stack.
b. Place all sections of exhaust stacks in position and torque nuts attaching them to the cylinders evenly to 100-110 lb-in., while riser clamps are loose.
c. Manually check that crossover pipe slip-joints do not bind. Tighten clamp attaching left risers to left stack assembly. Tighten the clamp attaching right stack to right front riser.
d. Raise turbocharger into position and install bolts and nuts attaching turbocharger to right exhaust stack and those attaching turbocharger to front and rear turbocharger supports (figure 12A-5). Tighten bolts securely.

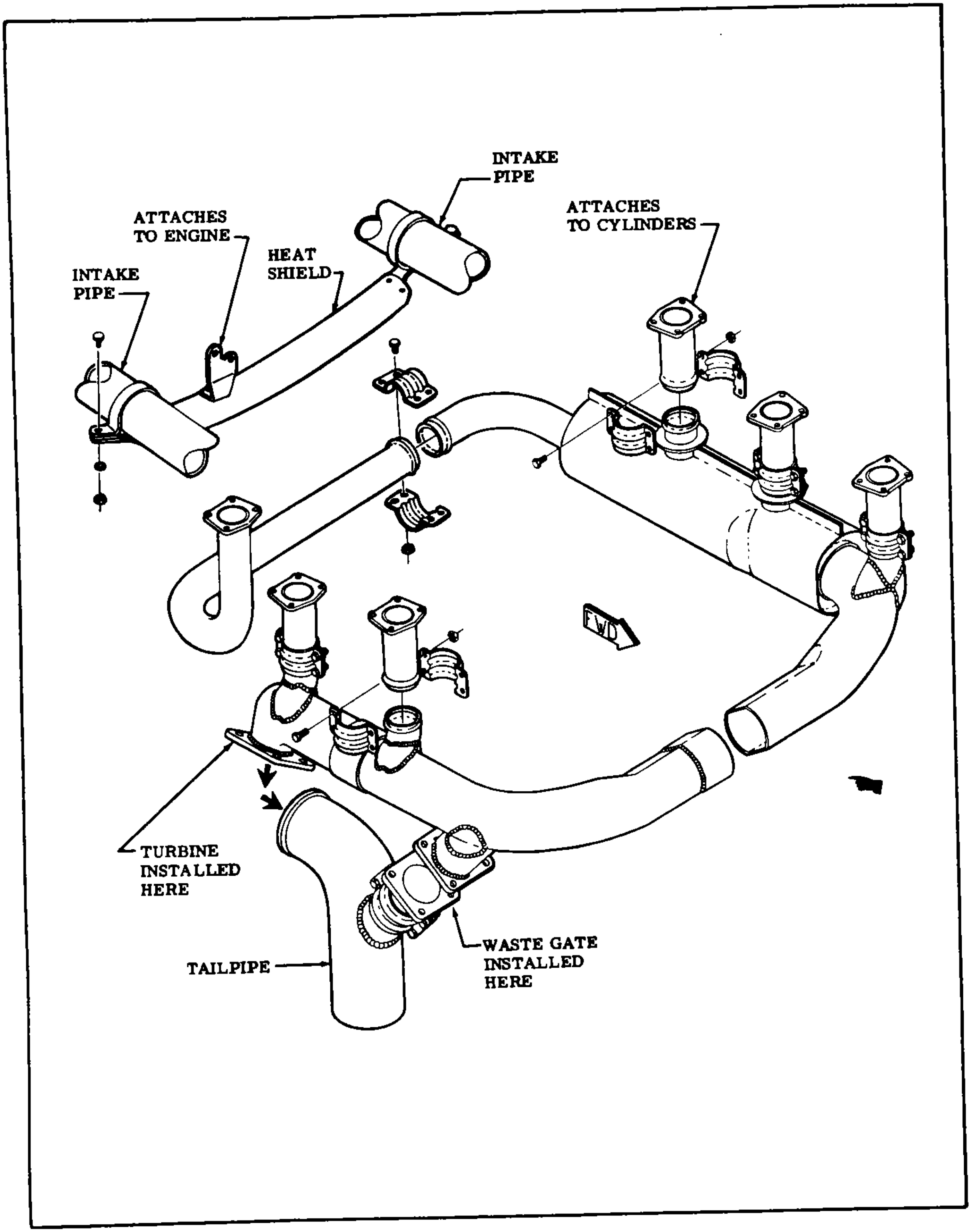
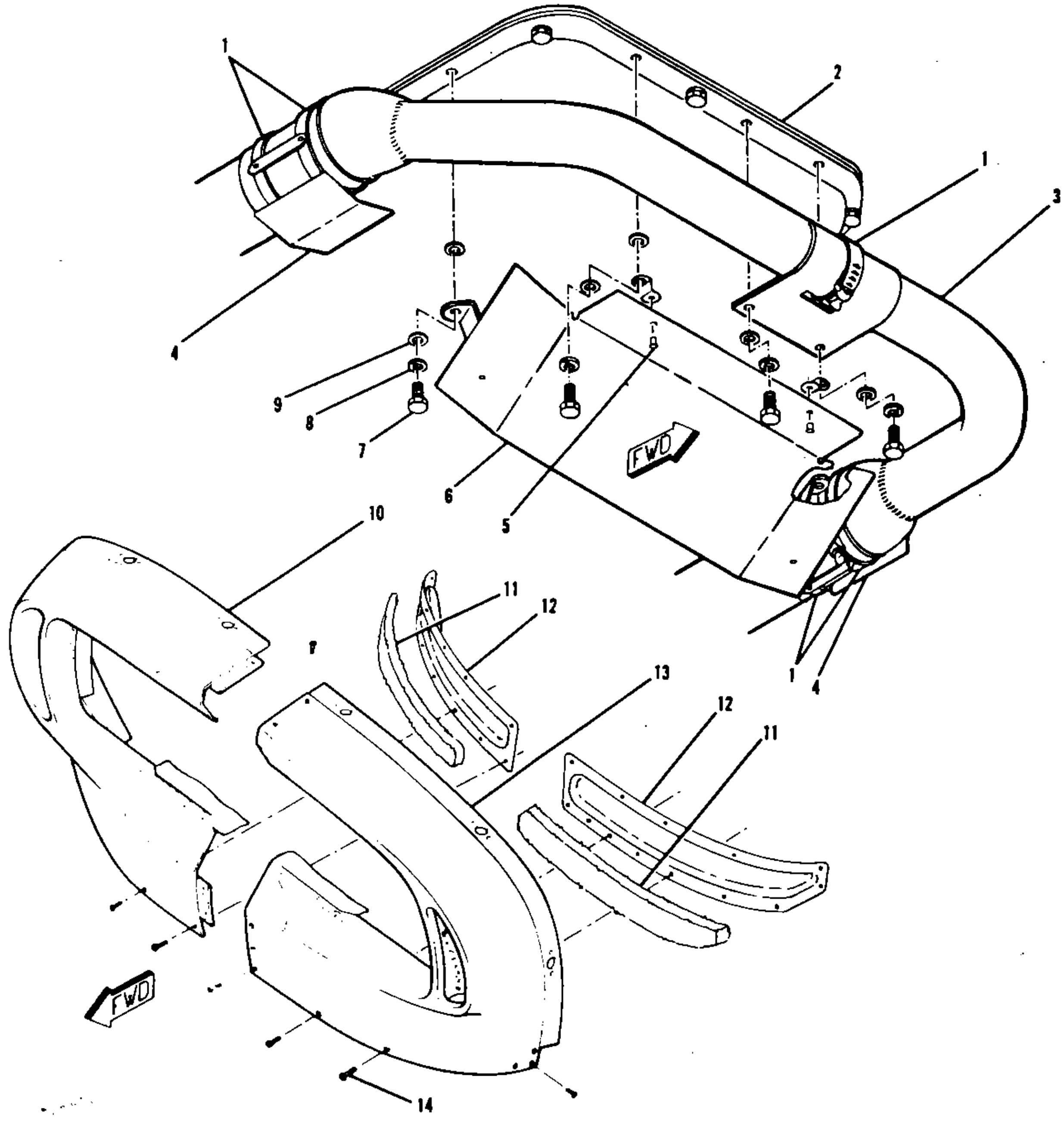


Figure 12A-3. Exhaust System (Sheet 1 of 2)



HEAT DEFLECTORS AND INSULATORS

1. Clamp
2. Crankcase
3. Intake Manifold Balance Tube
4. Heat Deflector
5. Rivet
6. Heat Shield
7. Bolt
8. Lockwasher
9. Washer
10. Right Nosecap
11. Insulation
12. Retaining Skin
13. Left Nosecap
14. Screw

Figure 12A-3. Exhaust System (Sheet 2 of 2)

e. Install bolts and nuts attaching waste-gate to right hand exhaust stack and tighten securely.

f. While applying an upward force of one G to counteract weight of turbocharger and waste-gate assembly, tighten clamp attaching exhaust stack to riser.

g. Tighten clamp securing tailpipe to turbocharger.

h. Be sure all parts are secure and safetied as required, then perform step "b" of paragraph 12A-99 to check for air leaks.

i. Install heater shroud duct and heat shields.

j. Install intake manifold balance tube at front of engine and install heat shields at front of engine, then install nose caps and cowling.

NOTE

The lower sections of turbocharger supports (index 8, figure 12A-5) are supplied as service parts with their upper holes omitted. These undrilled parts are also supplied when a new turbocharger inlet stack, right front stack, or either of the two right front risers is ordered. The following steps outline the proper procedure for drilling and installing the supports.

k. Install all parts but do not tighten attaching clamps or bolts.

l. Torque nuts attaching risers to cylinders evenly to 100-110 lb-in.

m. Tighten bolts and clamps per steps "d" through "g".

NOTE

It is important that weight of turbocharger and waste-gate assembly be counteracted, as listed in step "f", when tightening clamps attaching stacks to risers.

n. Make hole locations in undrilled supports to match existing holes in upper supports.

o. Remove lower supports, leaving all other parts tight.

p. Drill the marked holes with a 3/8-inch drill. On earlier models the holes were 0.257-inch, therefore, it may be necessary to enlarge the holes in upper supports.

q. Reinstall supports, install bolts fastening upper and lower supports together, then tighten all bolts securely. If any exhaust system bolts or clamps were loosened while lower supports were not installed, loosen all clamps and bolts and repeat the installation procedure to be sure no pre-loading is present.

r. Be sure all parts are secure and safetied as required, reinstall any parts removed for access, then install nose caps and cowling.

12A-99. INSPECTION. Since exhaust systems of this type are subject to burning, cracking and general deterioration from alternate thermal stresses and vibrations, inspection is important and should be accomplished every 50 hours of operation. Also, a thorough inspection of the engine exhaust system should be made to detect cracks causing leaks which could result in loss of optimum turbocharger efficiency and engine power. To inspect the engine exhaust system, proceed as follows:

a. Remove engine cowling as required so that ALL surfaces of the exhaust assemblies can be visually inspected.

WARNING

Never use highly flammable solvents on engine exhaust systems. Never use a wire brush or abrasives to clean exhaust systems or mark on the system with lead pencils.

NOTE

Especially check the areas adjacent to welds and slip joints. Look for gas deposits in surrounding areas, indicating that exhaust gases are escaping through a crack or hole or around the slip joints.

b. After visual inspection, an air leak check should be made on the exhaust system as follows:

1. Attach the pressure side of an industrial vacuum cleaner to the tailpipe opening, using a rubber plug to effect a seal as required.

NOTE

The inside of the vacuum cleaner hose should be free of any contamination that might be blown into the engine exhaust system.

2. With vacuum cleaner operating, all joints in the exhaust system may be checked manually by feel, or by using a soap and water solution and watching for bubbles. Forming of bubbles is acceptable, if bubbles are blown away system is not acceptable. Also, some bubbles will appear at the joint of the turbocharger turbine and compressor bearing housing.

c. Where a surface is not accessible for a visual inspection, or for a more positive test, the following procedure is recommended.

1. Remove exhaust stack assemblies.
2. Use rubber expansion plugs to seal openings.
3. Using a manometer or gage, apply approximately 1-1/2 psi (3 inches of mercury) air pressure while each stack assembly is submerged in water. Any leaks will appear as bubbles and can be readily detected.
4. It is recommended that exhaust stacks found defective be replaced before the next flight.

d. After installation of exhaust system components perform the inspection in step "b" of this paragraph to ascertain that sysyem is acceptable.

12A-100. TURBOCHARGER.

12A-101. DESCRIPTION. The turbocharger is an exhaust gas-driven compressor, or air pump, which provides high velocity air to the engine intake manifold. The turbocharger is composed of a turbine wheel, compressor wheel, turbine housing and compressor housing. The turbine, compressor wheel and interconnecting drive shaft comprise one complete assembly and are the only moving parts in the turbocharger. Turbocharger bearings are lubricated with filtered oil supplied from the engine oil system. Engine exhaust gas enters the turbine housing to drive the turbine wheel. The turbine wheel, in turn, drives the compressor wheel, producing a high velocity of air entering the engine induction intake manifold. Exhaust gas is then dumped overboard through the exhaust outlet of the turbine housing and exhaust tailpipe. Air is drawn into the compressor through the induction air filter and is forced out of the compressor housing through a tangential outlet to the intake manifold. The degree of turbocharging is varied by means of a waste-gate valve, which varies the amount of exhaust gas allowed to bypass the turbine.

12A-102. REMOVAL AND INSTALLATION.

a. Remove engine cowling as required.
b. Remove waste-gate to tailpipe clamp.
c. Loosen clamp at turbine exhaust outlet and work tailpipe from turbine outlet.
d. Loosen clamps and remove air inlet and outlet ducts from turbocharger compressor.
e. Disconnect oil pressure and scavenger lines from turbocharger. Plug or cap open oil lines and fittings. Remove clamp on oil supply line to the turbocharger.
f. Loosen clamp and remove induction air inlet elbow at turbocharger compressor.
g. Remove right cowl flap by disconnecting control at cowl flap and removing hinge pin.
h. Cut safety wire and remove two bolts attaching turbine to forward mounting bracket.
i. Remove three bolts attaching turbine to turbine rear mounting bracket.
j. Remove three remaining bolts, washers and nuts attaching turbine to exhaust manifold.
k. Work turbocharger from aircraft through cowl flap opening in lower cowling.
l. Reverse the preceding steps for reinstallation. When installing the turbocharger, install a new gasket between exhaust manifold and turbine exhaust inlet. Reinstall safety wire.

12A-103. CONTROLLER AND WASTE-GATE ACTUATOR.

12A-104. FUNCTIONS. The waste-gate actuator and controller uses engine oil for power supply. The turbocharger is controlled by the waste-gate, waste-gate actuator, the absolute pressure and overboost control valve. The waste-gate bypasses engine exhaust gas around the turbocharger turbine inlet. The waste-gate actuator, which is physically connected to the waste-gate by mechanical linkage, controls the position of the waste-gate butterfly valve. The absolute pressure controller controls the maximum turbocharger compressor discharge pressure, the overboost control valve prevents an excessive pressure increase from the turbocharger compressor.

12A-105. OPERATION. The waste-gate actuator is spring-loaded to position the waste-gate to the normally open position when there is not adequate oil pressure in the waste-gate actuator power cylinder during engine shut down. When the engine is started, oil pressure is fed into the waste-gate actuator power cylinder through the capillary tube. This automatically fills the waste-gate actuator power cylinder and lines leading to the controllers, blocking the flow of oil by normally closed metering and/or poppet valves. As oil pressure builds up in the waste-gate actuator power cylinder, it overcomes the force of the waste-gate open spring, closing the waste-gate. When the waste-gate begins to close, the exhaust gases are routed through the turbocharger turbine. As the engine increases its power and speed, the increase of

SHOP NOTES:

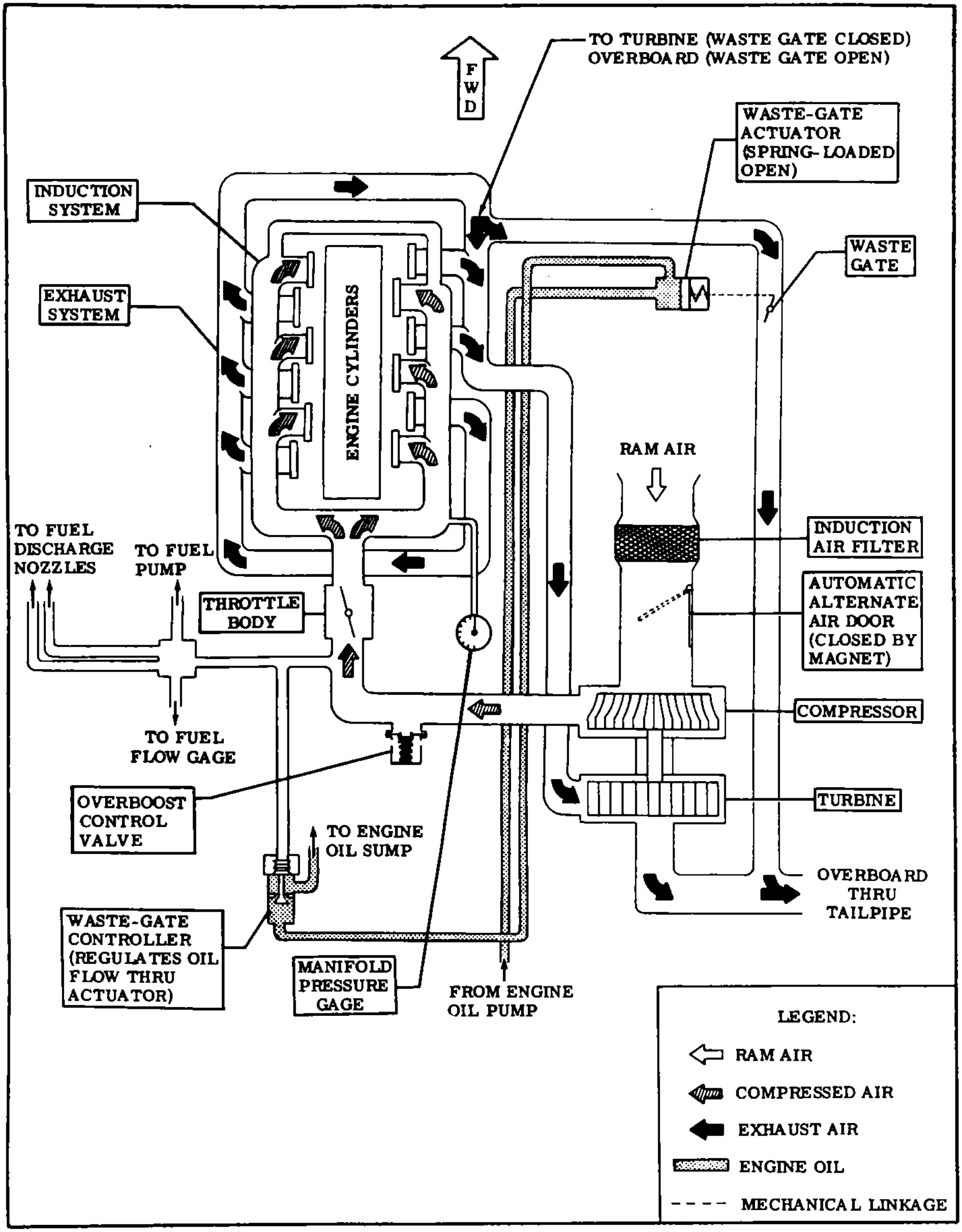


Figure 12A-4. Turbocharger System Schematic temperature and pressure of the exhaust gases causes the turbocharger to rotate faster, raising the turbocharger compressor outlet pressure. As the compressor outlet pressure rises, the aneroid bellows and the absolute pressure controller sense the increase in pressure. When at high engine speed and load and the proper absolute pressure is reached, the force on the aneroid bellows opens the normally closed metering valve. When the oil pressure in the waste-gate actuator power cylinder is lowered sufficiently, the waste-gate actuator open spring forces the mechanical linkage to open the waste-gate. A portion of the exhaust gases then bypasses the turbocharger turbine, thus preventing further increase of turbocharger speed and holding the compressor discharge absolute pressure to the desired valve. Conversely, at engine idle, the turbocharger runs slowly with low compressor pressure output; therefore, the low pressure applied to aneroid bellows is not sufficient to affect the unseating of the normally closed metering valve. Consequently, engine oil pressure keeps the waste-gate closed. The overboost control valve acts as a pressure relief valve and will open to prevent an excessive pressure increase from the turbocharger compressor. Above 19,000 feet, the absolute pressure controller will continue to maintain 32.5±.5 inches of mercury manifold pressure at full throttle. It is necessary to reduce manifold pressure with the throttle to follow the maximum manifold pressure versus altitude schedule shown on the instrument panel placard.

CAUTION

All turbocharged engine installations on Cessna aircraft are equipped with controller systems which automatically control the engine within prescribed manifold pressure limits. Although these automatic controller systems are very reliable and eliminate the need for manual control through constant throttle manipulation, they are not infallible. For instance, such things as rapid throttle manipulation (especially with cold oil), momentary waste-gate sticking, air in the oil system of the controller, etc., can cause overboosting.

Consequently, it is still necessary that the pilot observe and be prepared to control the manifold pressure, particularly during take-off and power changes in flight.

The slight overboosting of manifold pressure beyond established minimums, which is occasionally experienced during initial take-off roll or during a change to full throttle operation in flight, is not considered detrimental to the engine as long as it is momentary. Momentary overboost is generally in the area of 2 to 3 inches and can usually be controlled by slower throttle movement. No corrective action is required where momentary overboosting corrects itself and is followed by normal engine operation. However, if overboosting of this nature persists, or if the amount of overboost goes as high as 6 inches, the controller and overboost control should be checked for necessary adjustment or replacement of the malfunctioning component.

OVERBOOST EXCEEDING 6 INCHES beyond established minimums is excessive and can result in engine damage. It is recommended that overboosting of this nature be reported to your Cessna Dealer, who will be glad to determine what, if any, corrective action needs to be taken.

12A-106. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
UNABLE TO GET RATED POWER BECAUSE MANIFOLD PRESSURE IS LOW.	Controller not getting enough oil pressure to close the waste-gate.	Check oil pump outlet pressure, oil filter and external lines for obstructions. Clean lines and replace if defective. Replace oil filter.
	Controller out of adjustment or defective.	Refer to paragraph 12A-109. Replace controller if defective.
	Defective actuator.	Refer to paragraph 12A-111. Replace actuator if defective.
	Leak in exhaust system.	Check for cracks and other obvious defects. Replace defective components. Tighten clamps and connections.
	Leak in intake system.	Check for cracks and loose connections. Replace defective components. Tighten all clamps and connections.
ENGINE SURGES OR SMOKES.	Defective controller.	Refer to paragraph 12A-109. Replace if not adjustable.
	Waste-gate actuator linkage binding.	Refer to paragraph 12A-111.
	Waste-gate actuator leaking oil.	Replace actuator.
TURBOCHARGER NOISY WITH PLENTY OF POWER.	Turbocharger overspeeding from defective or improperly adjusted controller.	Refer to paragraph 12A-109. Replace if defective.
	Waste-gate sticking closed.	Correct cause of sticking. Refer to paragraph 12A-109. Replace defective parts.
	Controller drain line (oil return to engine sump) obstructed.	Clean line. Replace if defective.
ENGINE POWER INCREASES SLOWLY OR SEVERE MANIFOLD PRESSURE FLUCTUATIONS WHEN THROTTLE ADVANCED RAPIDLY.	Overboost control valve out of adjustment or defective.	Replace if defective.
	Waste-gate operation is sluggish.	Refer to paragraph 12A-111. Replace if defective. Correct cause of sluggish operation.
ENGINE POWER INCREASES RAPIDLY AND MANIFOLD PRESSURE OVERBOOSTS WHEN THROTTLE ADVANCED RAPIDLY.	Overboost control valve out of adjustment or defective.	Replace if defective.
	Waste-gate operation is sluggish.	Refer to paragraph 12A-111. Replace if defective. Correct cause of sluggish operation.

TROUBLE	PROBABLE CAUSE	REMEDY
FUEL PRESSURE DECREASES DURING CLIMB, WHILE MANIFOLD PRESSURE REMAINS CONSTANT.	Compressor discharge pressure line to fuel pump aneroid restricted.	Check and clean out restrictions.
	Leaking or otherwise defective engine-driven fuel pump aneroid.	Replace engine-driven fuel pump.
MANIFOLD PRESSURE DECREASES DURING CLIMB AT ALTITUDES BELOW NORMAL PART THROTTLE CRITICAL ALTITUDE, OR POOR TURBOCHARGER PERFORMANCE INDICATED BY CRUISE RPM FOR CLOSED WASTE-GATE. (Refer to paragraph 12A-107.)	Leak in intake system.	Check for cracks and other obvious defects. Tighten all hose clamps and fittings. Replace defective components.
	Leak in exhaust system.	Check for cracks and other obvious defects. Tighten all clamps and fittings. Replace defective components.
	Leak in compressor discharge pressure line to controller.	Check for cracks and other obvious defects. Tighten all clamps and fittings. Replace defective components.
	Controller seal leaking.	Replace controller.
	Waste-gate actuator leaking oil.	Replace actuator.
	Waste-gate butterfly - closed gap is excessive.	Refer to paragraph 12A-111.
	Intake air filter obstructed.	Service air filter. Refer to Section 2 for servicing instructions.
FUEL FLOW DOES NOT DECREASE AS MANIFOLD PRESSURE DECREASES AT PART-THROTTLE CRITICAL ALTITUDE.	Defective engine-driven fuel pump aneroid mechanism.	Replace engine-driven fuel pump.
	Obstruction or leak in compressor discharge pressure line to engine-driven fuel pump.	Check for leaks or obstruction. Clean out lines and tighten all connections.
FUEL FLOW INDICATOR DOES NOT REGISTER CHANGE IN POWER SETTINGS AT HIGH ALTITUDES.	Moisture freezing in indicator line.	Disconnect lines, thaw ice and clean out lines.
SUDDEN POWER DECREASE ACCOMPANIED BY LOUD NOISE OF RUSHING AIR.	Intake system air leak from hose becoming detached.	Check hose condition. Install hose and hose clamp securely.
MANIFOLD PRESSURE GAGE INDICATION WILL NOT REMAIN STEADY AT CONSTANT POWER SETTINGS.	Defective controller.	Replace controller.
	Waste-gate operation is sluggish.	Refer to paragraph 12A-111. Replace if defective. Correct cause of sluggish operation.

12A-107. CONTROLLER AND TURBOCHARGER OPERATIONAL FLIGHT CHECK. The following procedure details the method of checking the operation of the absolute controller overboost control valve, and a performance check of the turbocharger.

(1) TAKE-OFF-ABSOLUTE CONTROLLER CHECK.

a. Cowl Flaps - Open.
b. Airspeed - 110 MPH IAS.
c. Oil Temperature - Middle of green arc.
d. Engine Speed - 2700 ± 25 RPM.
e. Fuel Flow - 28.0 to 29.5 GPH (168.0 to 177.0 LBS/HR) (Full Rich Mixture).
f. Full Throttle M. P. - Absolute controller should maintain 32.5 ± .5 in. Hg (stabilized).

Climb 2000 feet after take-off to be sure manifold pressure has stabilized. It is normal on the first take-off of the day for full throttle manifold pressure to decrease 1/2 to 1.0 inch of mercury within one minute after the *initial application of full power. Refer to paragraph 12A-109 for absolute controller adjustment.*

(2) CLIMB - ABSOLUTE CONTROLLER AND TURBOCHARGER PERFORMANCE CHECK.

a. Cowl Flaps - Open.
b. Airspeed - 120 MPH IAS.
c. Engine Speed - 2500 RPM.
d. Fuel Flow - Adjust mixture for 20 GPH (120.0 LBS/HR).
e. Part - Throttle M. P. - 27.5 in. Hg.
f. Climb to 20,000 feet - Check part-throttle critical altitude during climb.

This part-throttle critical altitude is where manifold pressure starts decreasing during the climb at a rate of approximately 1.0 inch of mercury per 1000 feet. After noting this altitude and the outside air temperature, the desired manifold pressure should be maintained by advancing the throttle during the remainder of the climb.

Once the climb power setting is established after take-off, the controller should maintain a steady manifold pressure up to the part-throttle critical altitude indicated in the following chart. If part-throttle critical altitude has not been reached by 20,000 feet, discontinue check and proceed to cruise check.

Outside Air Temperature	Part-Throttle Critical Altitude (75% Power)
Standard or Colder	Above 24,000 feet
20°F Above Standard	16,000 to 22,000 feet
40°F Above Standard	10,000 to 16,000 feet

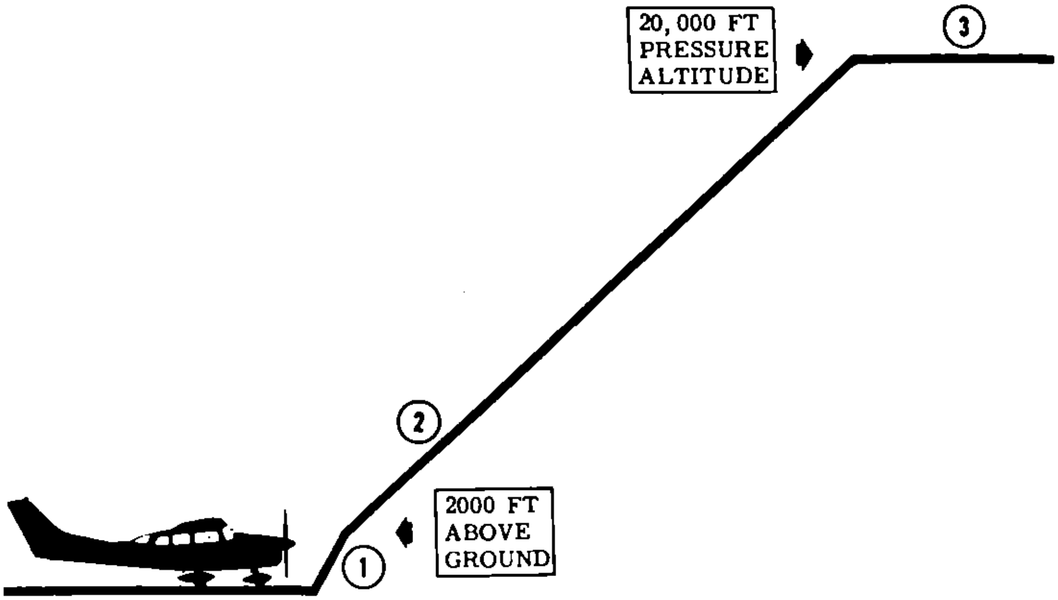
Part-throttle critical altitudes lower than those listed indicate the turbocharger system is not operating properly (refer to the trouble shooting chart in paragraph 12A-106). Critical altitudes above those listed indicate turbocharger performance better than normal. Also check that fuel flow decreases as manifold pressure decreases at critical altitude. Refer to the trouble shooting chart if fuel flow does not decrease.

(3) CRUISE - TURBOCHARGER PERFORMANCE CHECK.

a. Cowl Flaps - Closed.
b. Airspeed - Level flight.
c. Pressure Altitude - 20,000 feet.
d. Engine Speed - 2700 RPM.
e. Part-Throttle M. P. - 27.5 in. Hg.
f. Fuel Flow - Lean to 18 GPH (108.0 LBS/HR).
g. Propeller Control -
   (1) Slowly decrease RPM until manifold pressure starts to drop, indicating waste-gate is closed.
   (2) Note outside air temperature and RPM as manifold pressure starts to drop, which should be in accordance with the following chart.
   (3) After noting temperature and RPM, increase engine speed 50 RPM to stabilize manifold pressure, with the waste-gate modulating exhaust flow to control compressor output.

Outside Air Temperature	RPM where M. P. Starts to Decrease
40°F Above Standard	2700 to 2550
20°F Above Standard	2600 to 2450
Standard Temperature	2500 to 2350
20°F Below Standard	2400 to 2550
40°F Below Standard	2300 to 2150

If the waste-gate is closed at engine speeds higher than those listed, refer to the trouble shooting chart in paragraph 12A-106. Closing of the waste-gate at engine speeds lower than those listed indicates turbocharger performance better than normal.



NOTE

Circled numbers refer to corresponding flight checks required in preceding text.

12A-108. REMOVAL AND INSTALLATION OF TURBOCHARGER CONTROLLER.

a. Disconnect and tag oil lines from controller and plug or cap open lines and fittings.
b. Disconnect compressor outlet pressure sensing line from controller and plug or cap open line and fitting.
c. Remove two bolts attaching controller to mounting bracket on firewall.
d. Remove controller from aircraft, being careful not to drop controller unit.
e. Installation of the controller may be accomplished by reversing the preceding steps. Resafety bolts attaching controller to bracket.

12A-109. ABSOLUTE CONTROLLER ADJUSTMENTS. (Refer to figure 12A-6.)

a. With engine oil temperature at middle of green arc, slowly open throttle and note maximum manifold pressure obtainable. Do not exceed 32.5±.5 in. Hg.
b. Cut safety wire and remove plug from bottom of absolute controller (the vertical unit).
c. Using a flat-bladed screwdriver, rotate metering valve seat clockwise to increase manifold pressure and counterclockwise to decrease manifold pressure. Lightly tap the unit after each adjustment to seat internal parts.

NOTE

When adjusting, rotate in VERY small increments as this is an extremely sensitive adjustment. Approximately 13 degrees rotation will change the manifold pressure reading about one inch Hg.

d. Install and safety plug in absolute unit, then operate engine as in step "a" to ascertain that adjustment has not caused radical change in manifold pressure.

NOTE

When making adjustment on the ground, the hotter the engine gets, the lower the manifold pressure will be.

e. After each adjustment, the aircraft must be flight tested to check results.
f. Repeat this procedure until desired results are obtained.

12A-110. REMOVAL AND INSTALLATION OF WASTE-GATE AND ACTUATOR.

a. Disconnect and tag oil lines from actuator and plug or cap open lines and fittings.

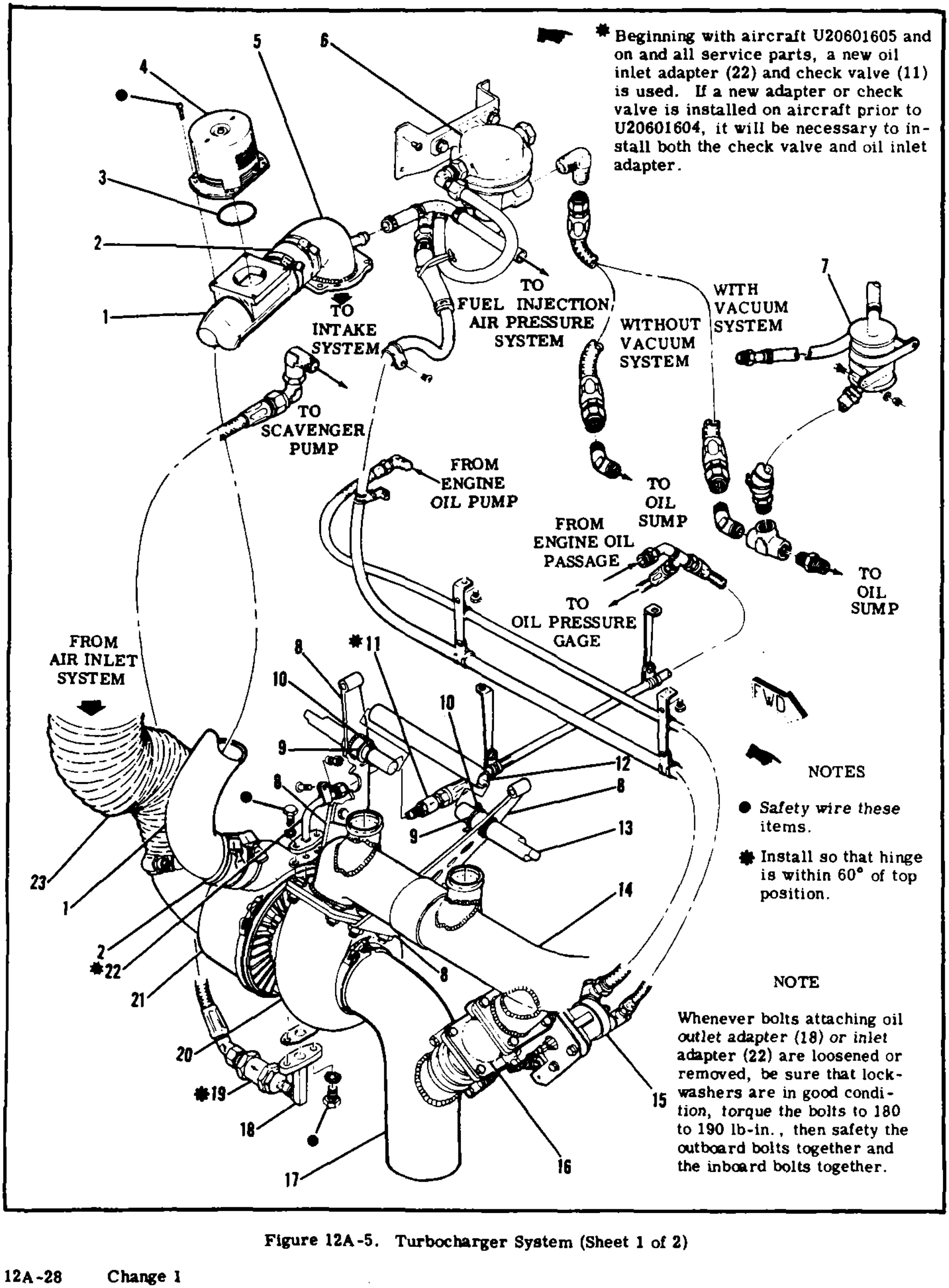
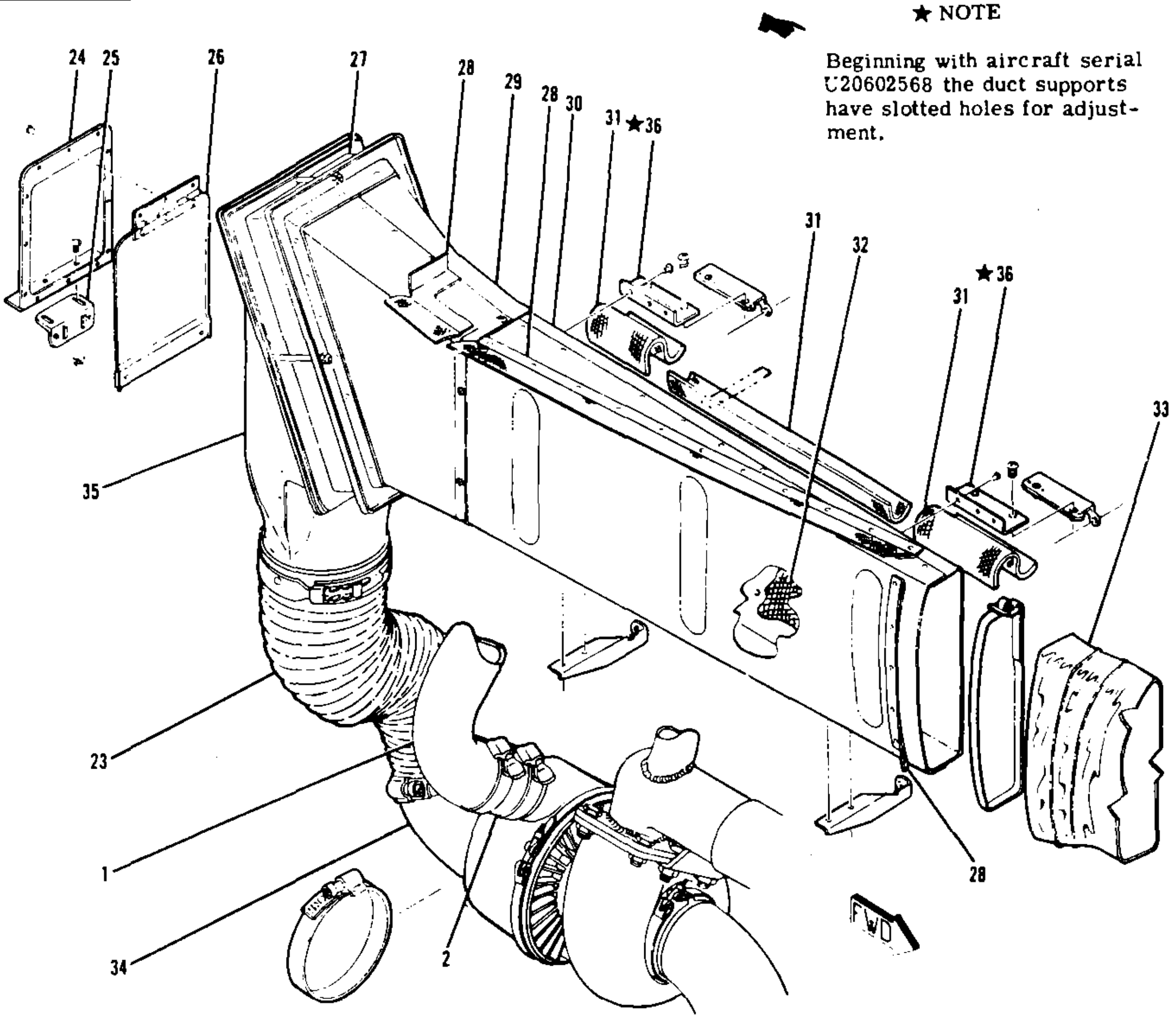


Figure 12A-5. Turbocharger System (Sheet 1 of 2)



1. Turbocharger Discharge Duct
2. Coupler
3. O-Ring Seal
4. Overboost Control Valve
5. Throttle Body Adapter
6. Absolute Controller
7. Vacuum System Oil Separator
8. Turbocharger Support
9. Washer
10. Cotter Pin
11. Check Valve
12. Tube
13. Shaft
14. Exhaust System
15. Waste-Gate Actuator
16. Waste-Gate
17. Tail Pipe
18. Oil Outlet Adapter
19. Check Valve
20. Turbine Housing
21. Compressor Housing
22. Oil Inlet Adapter
23. Turbocharger Inlet Hose
24. Doubler
25. Magnet
26. Door
27. Induction Air Filter
28. Baffle Assembly
29. Center Duct
30. Forward Duct
31. Seal
32. Wire Guard
33. Nose Cap Flexible Duct
34. Turbocharger Inlet Elbow
35. Aft Duct
36. Support

Figure 12A-5. Turbocharger System (Sheet 2 of 2)

b. Remove bolts, washers and nuts attaching waste-gate and actuator assembly to tailpipe.
c. Loosen clamp attaching tailpipe to turbine exhaust outlet and work tailpipe from turbine.
d. Remove bolts, washers and nuts attaching the assembly to the exhaust manifold.
e. Remove the assembly from aircraft, being careful not to drop the unit.
f. Installation may be accomplished by reversing the preceding steps.

NOTE

When installing the assembly, be sure the gaskets at inlet and outlet of valve are installed and are in good condition. Replace gaskets if damaged.

12A-111. ADJUSTMENT OF WASTE-GATE ACTUATOR. (Refer to figure 12A-7.)
a. Remove waste-gate actuator in accordance with paragraph 12A-110.
b. Plug actuator outlet port and apply a 50 to 60 psig air pressure to the inlet port of the actuator.
c. Check for 0.010 + 0-.005 inch gap between butterfly and waste-gate body as shown in figure 12A-7.
d. If adjustment is required, remove pin from actuator shaft.
e. Hold clevis end and turn shaft clockwise to increase gap or counterclockwise to decrease gap of butterfly. Install pin through clevis and shaft, securing pin with washer and cotter pin.
f. After adjusting closed position and with zero pressure in cylinder, check butterfly for a clearance of 1.100 + .000 -.125 inch in the full-open position as shown in figure 12A-7.
g. If adjustment is required, loosen locknut and turn stop screw clockwise to decrease or counterclockwise to increase clearance of butterfly.
h. Recheck butterfly in the closed position to ascertain that gap tolerance has been maintained.

NOTE

To assure correct spring loads, actuate butterfly with air pressure. Actuator shaft and butterfly should move freely. Actuator shaft should start to move at 15±2 psig and fully extend at 35±2 psig. Two to four psi hysteresis is normal, due to friction of O-ring against cylinder wall.

i. Remove air pressure line and plug from actuator.
j. Install waste-gate and actuator as outlined in paragraph 12A-110.

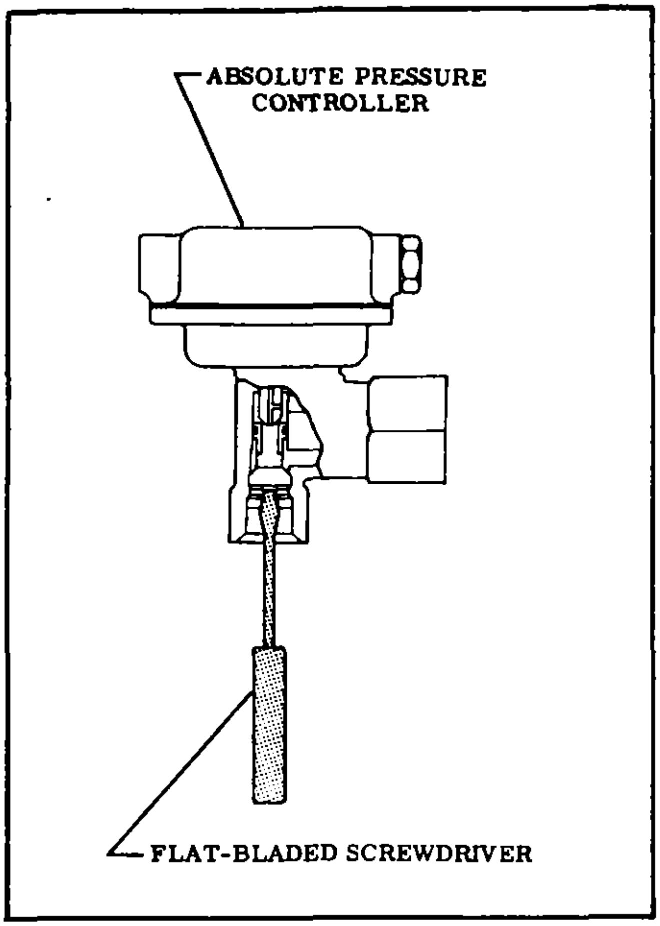


Figure 12A-6. Controller Adjustment

12A-112. EXTREME WEATHER MAINTENANCE. Refer to paragraph 12-98.

12A-113. COLD WEATHER. Refer to paragraph 12-99.

12A-114. HOT WEATHER. When the engine is hot or the outside air temperature is high, the engine may die after running several seconds because the mixture became either too lean due to fuel vapor or too rich due to excessive prime fuel. The following procedure will prevent over-priming and take care of fuel vapor in the system.
a. Set the throttle 1/3 to 1/2 open.
b. When the ignition key is on BOTH and you are ready to engage the starter, turn the fuel pump on HI until the fuel flow comes up to 4-6 gal/hr and then turn the pump off.

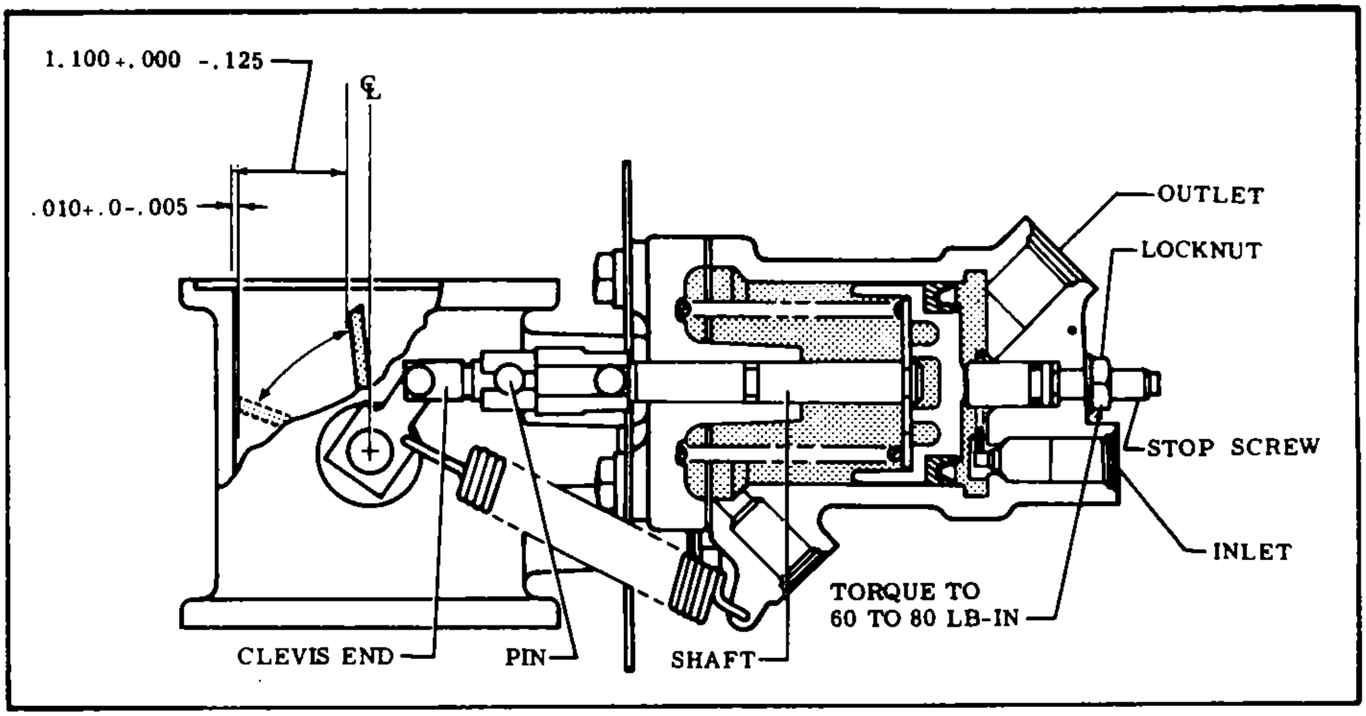


Figure 12A-7. Waste-Gate Adjustment

NOTE

During a restart after a brief shut-down in extremely hot weather, the presence of fuel vapor may require the pump to run on HI for up to 1 minute or more before the vapor is cleared sufficiently to obtain 4-6 gal/hr for starting.

c. Without hesitation, engage the starter and the engine should start in 3 to 5 revolutions. Adjust the throttle for 1200-1400 RPM.

d. If there is fuel vapor in the lines, it will pass into the injector nozzles in 2 to 3 seconds and the engine will gradually slow down and stop. When engine speed starts to decrease, turn the fuel pump on HI for approximately one second to clear out the vapor. Intermittent use of HI boost is needed since prolonged use of HI pump after the vapor is cleared will flood out the engine.

e. Let the engine run at 1200 to 1400 RPM until the vapor is eliminated and the engine idles normally.

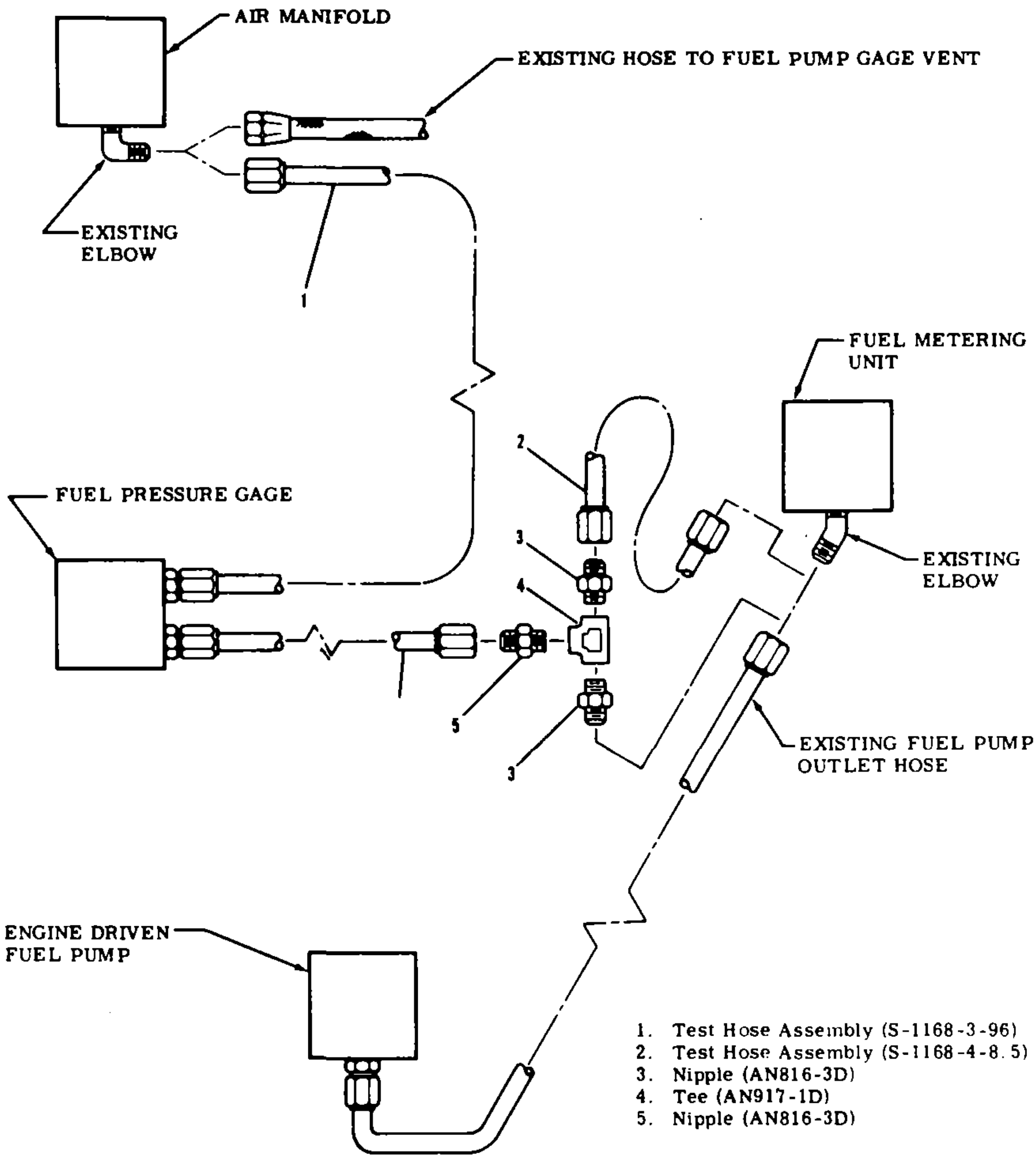
If prolonged cranking is necessary, allow the starter motor to cool at frequent intervals, since excessive heat may damage the armature.

12A-115. SEACOAST AND HUMID AREAS. Refer to paragraph 12-101.

12A-116. DUSTY AREAS. Refer to paragraph 12-102.

12A-117. GROUND SERVICE RECEPTACLE. Refer to paragraph 12-103.

12A-118. HAND CRANKING. Refer to paragraph 12-104.



NOTE

When adjusting the fuel injection pump unmetered fuel pressure, the test equipment may be "teed" into the engine driven fuel pump outlet hose at the fuel metering unit and to the existing elbow on the air manifold.

Figure 12A-8. Fuel Injection Pump Adjustment Test Harness (Turbocharged Engine)

SECTION 13

FUEL SYSTEM

TABLE OF CONTENTS Page

13-1. FUEL SYSTEM.

NOTE

The fuel system as described in this section does not include the fuel injection system. Refer to Section 12 or 12A for that part of the fuel system.

13-2. DESCRIPTION.

Fuel from the cells in the wings is gravity-fed through fuel reservoir tanks installed forward of the front doorpost bulkheads, beneath the cabin floor, to the engine driven fuel pump The fuel line from the lower forward corner of each fuel cell to the reservoir tank serves as a combination fuel feed and vapor return line. The fuel bypasses the electric auxiliary fuel pump when the pump is not in operation. The fuel cells are individually vented overboard through check valves located in each cell.

13-3. PRECAUTIONS.

NOTE

There are certain general precautions and rules concerning the fuel system which should be observed when performing the operations and procedures in this Section. These are as follows:

a. During all fueling. defueling, tank purging, and tank repairing or disassembly, ground the airplane to a suitable ground stake.

b. Residual fuel draining from lines and hoses constitutes a fire hazard. Use caution to prevent the accumulation of fuel when lines or hoses are disconnected.

c. Cap open lines and cover connections to prevent thread damage and the entrance of foreign matter.

NOTE

Throughout the aircraft fuel system, from the fuel cells to the engine-driven fuel pump, use NS-40 (RAS-4) (Snap-On Tools Corp., Kenosha, Wisconsion), MIL-T-5544 (Thread Compound, Antiseize, Graphite Petrolatum), USP Petrolatum, or engine oil as a thread lubricant or to seal a leaking connection. Apply sparingly to male threads only, omitting the first two threads, exercising extreme caution to avoid "stringing" sealer across the end of the fitting. Always ensure that a compound, the residue from a previously used compound, or any other foreign material cannot enter the system. Throughout the fuel injection system, from the engine-driven fuel pump through the discharge nozzles, use only a fuel-soluble lubricant, such as engine oil, on fitting threads. Do not use any other form of thread compound on the injection system.

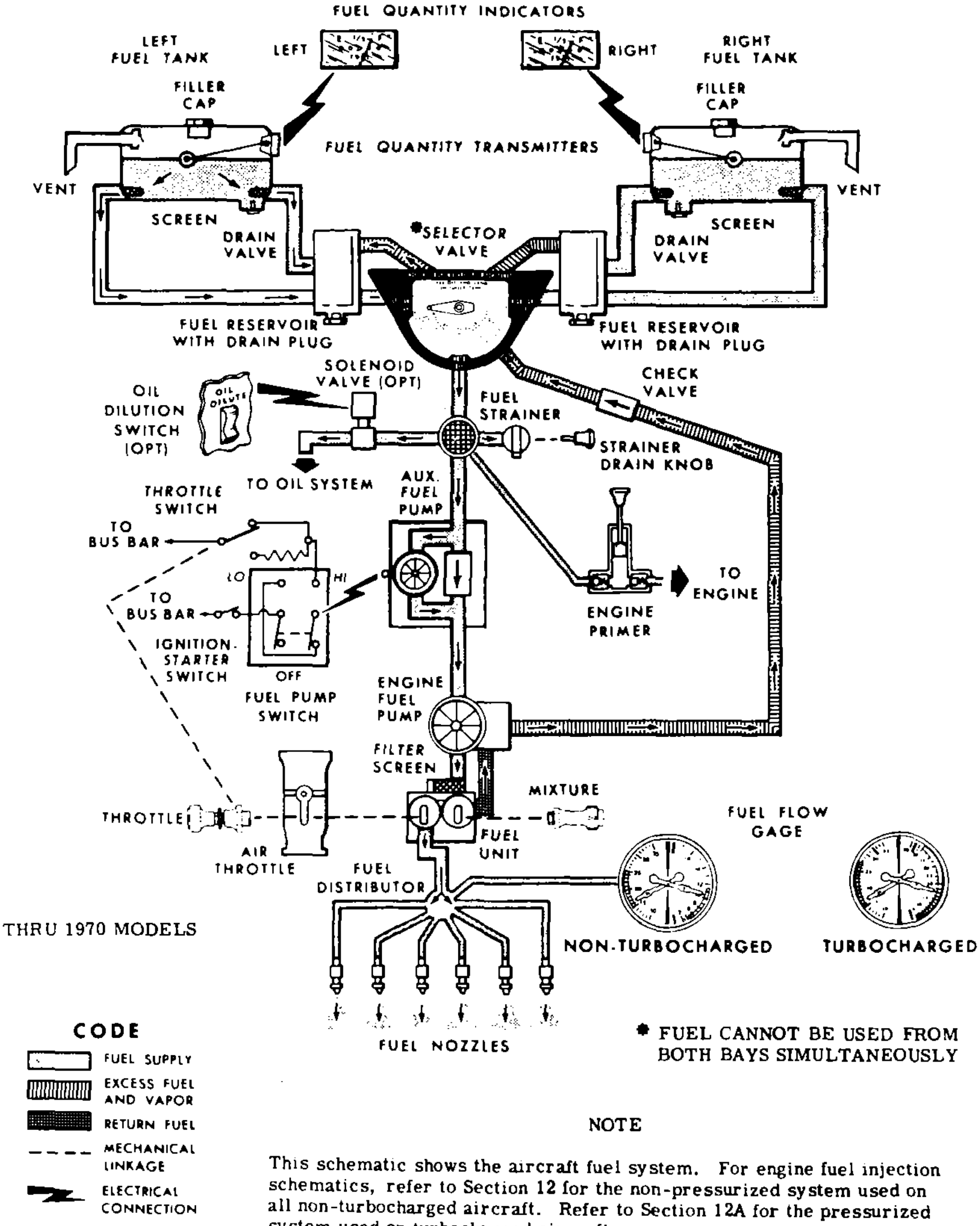
13-4. TROUBLE SHOOTING.

Use this chart in conjunction with the engine trouble shooting charts in Sections 12 and 12A.

TROUBLE	PROBABLE CAUSE	REMEDY
NO FUEL FLOW TO ENGINE-DRIVEN FUEL PUMP.	Fuel selector valve not turned on.	Turn fuel selector valve on.
	Fuel cells empty.	Service with proper grade and amount of fuel.

13-4. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
NO FUEL FLOW TO ENGINE-DRIVEN FUEL PUMP. (Cont).	Fuel line disconnected or broken.	Connect or repair fuel lines.
	Fuel cell screen plugged.	Remove and clean screen. Flush out fuel cell.
	Defective fuel selector valve.	Remove and repair or replace selector valve.
	Plugged fuel strainer.	Remove and clean strainer and screen.
	Defective check valve in electric fuel pump.	Repair or replace electric pump.
	Fuel line plugged.	Disconnect lines as necessary to locate obstructions, then clean.
FUEL STARVATION AFTER STARTING.	Partial fuel flow from the preceding causes.	Use the preceding remedies.
	Malfunction of engine-driven fuel pump or fuel injection system.	Refer to Section 12 or 12A.
	Fuel vents plugged.	See paragraph 13-7.
	Water in fuel.	Drain fuel tank sumps, fuel lines, and fuel strainer.
NO FUEL FLOW WHEN ELECTRIC PUMP OPERATED.	Defective fuel pump switch.	Replace defective switch.
	Open or defective circuit breaker.	Reset. Replace if defective.
	Loose connections or open circuit.	Tighten connections; repair or replace wiring.
	Defective electric fuel pump.	Replace defective pump.
	Defective engine-driven fuel pump bypass or defective fuel injection system.	Refer to Section 12 or 12A.
NO FUEL QUANTITY INDICATION.	Fuel cells empty.	Service with proper grade and amount of fuel.
	Circuit breaker open or defective.	Reset. Replace if defective.
	Loose connections or open circuit.	Tighten connections; repair wiring.
	Defective fuel quantity indicator.	Replace indicator or sending unit.
FLUCTUATING FUEL PRESSURE INDICATIONS. (TURBO AIRCRAFT)	Obstructed filter in fuel inlet strainer of metering unit.	Remove and clean.
	Manifold valve.	Replace.
	Fuel flow indicator.	Replace.

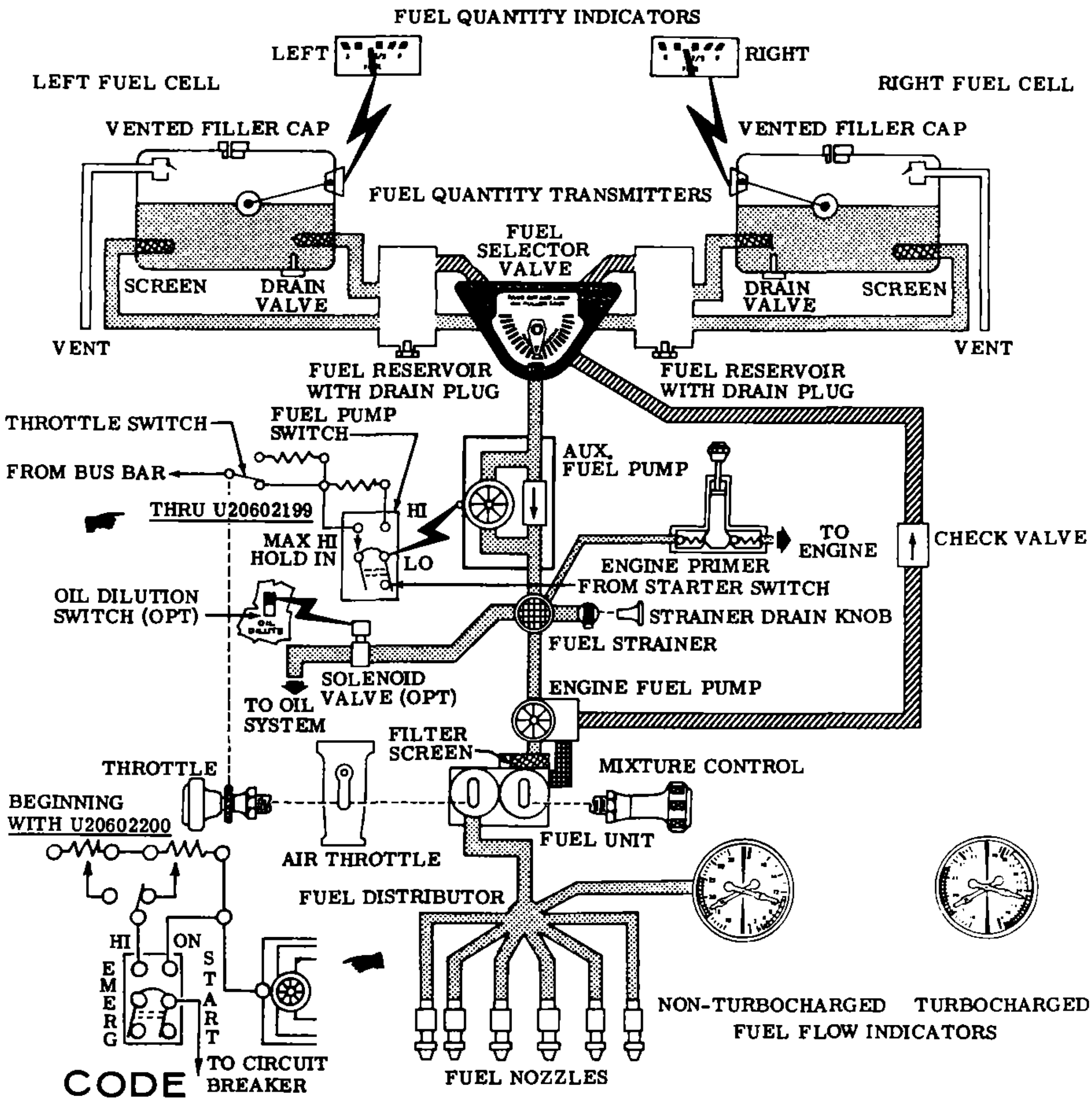


* FUEL CANNOT BE USED FROM BOTH BAYS SIMULTANEOUSLY

NOTE

This schematic shows the aircraft fuel system. For engine fuel injection schematics, refer to Section 12 for the non-pressurized system used on all non-turbocharged aircraft. Refer to Section 12A for the pressurized system used on turbocharged aircraft.

Figure 13-1. Fuel System Schematic (Sheet 1 of 2)



BEGINNING WITH 1971 MODELS

- FUEL SUPPLY
- EXCESS FUEL AND VAPOR
- RETURN FUEL
- MECHANICAL LINKAGE
- ELECTRICAL CONNECTION

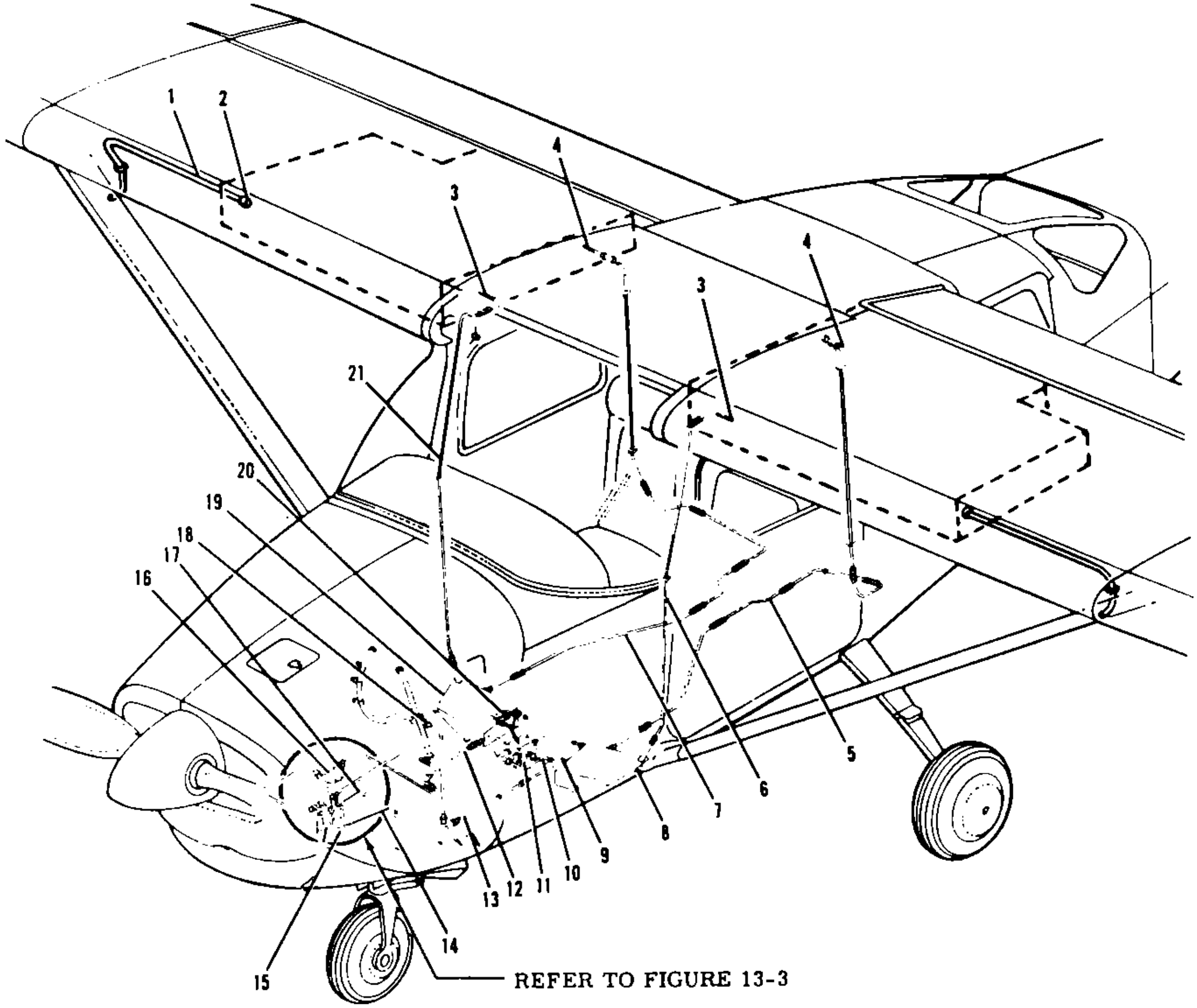
NOTE

This schematic shows the aircraft fuel system. For engine fuel injection schematics, refer to Section 12 for the non-pressurized system used on all non-turbocharged aircraft. Refer to Section 12A for the pressurized system used on turbocharged aircraft.

Fuel pump switch cannot be shown in OFF position, schematically.

Fuel cannot be used from both fuel cells simultaneously.

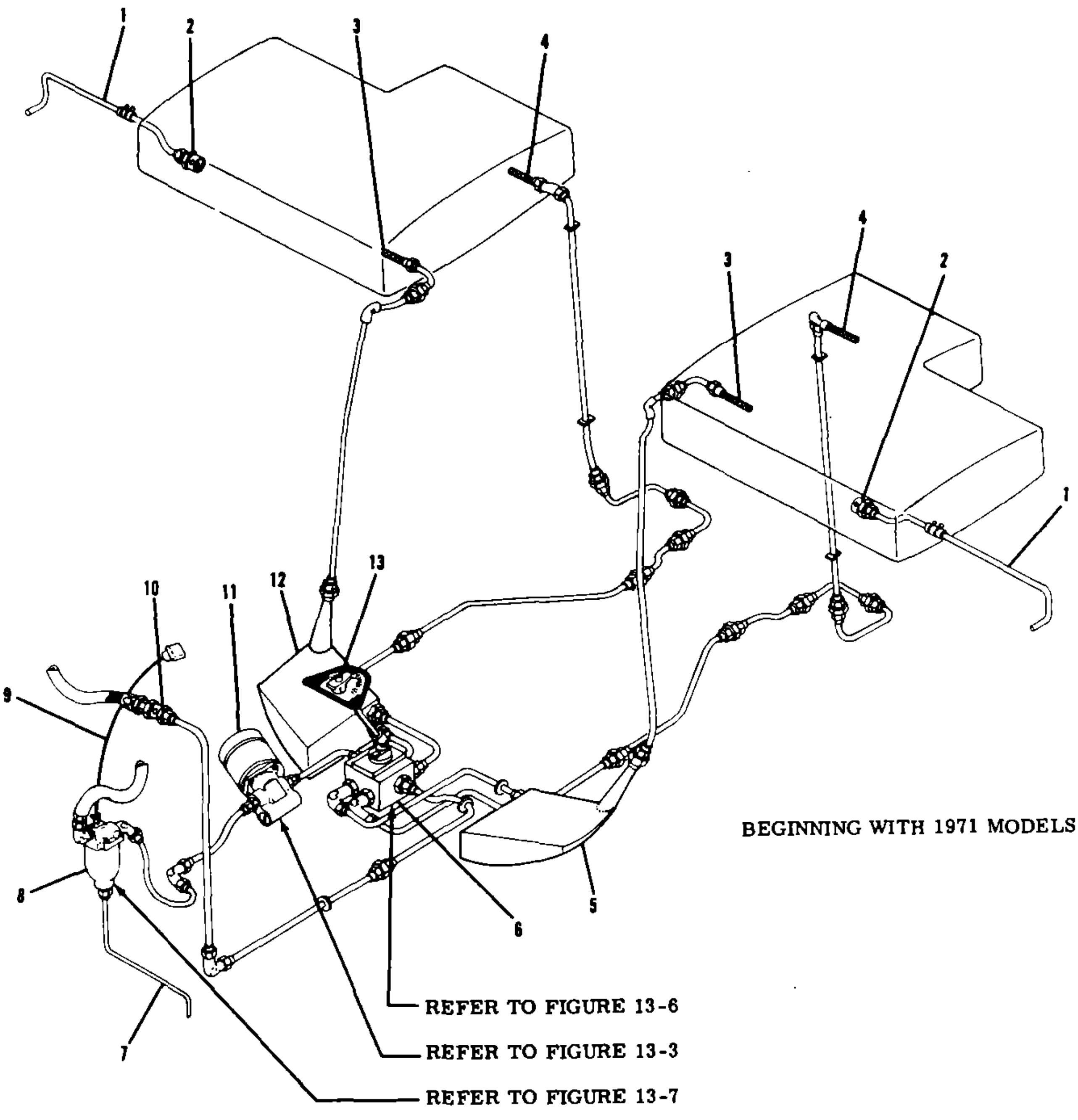
Figure 13-1. Fuel System Schematic (Sheet 2 of 2)



THRU 1970 MODELS

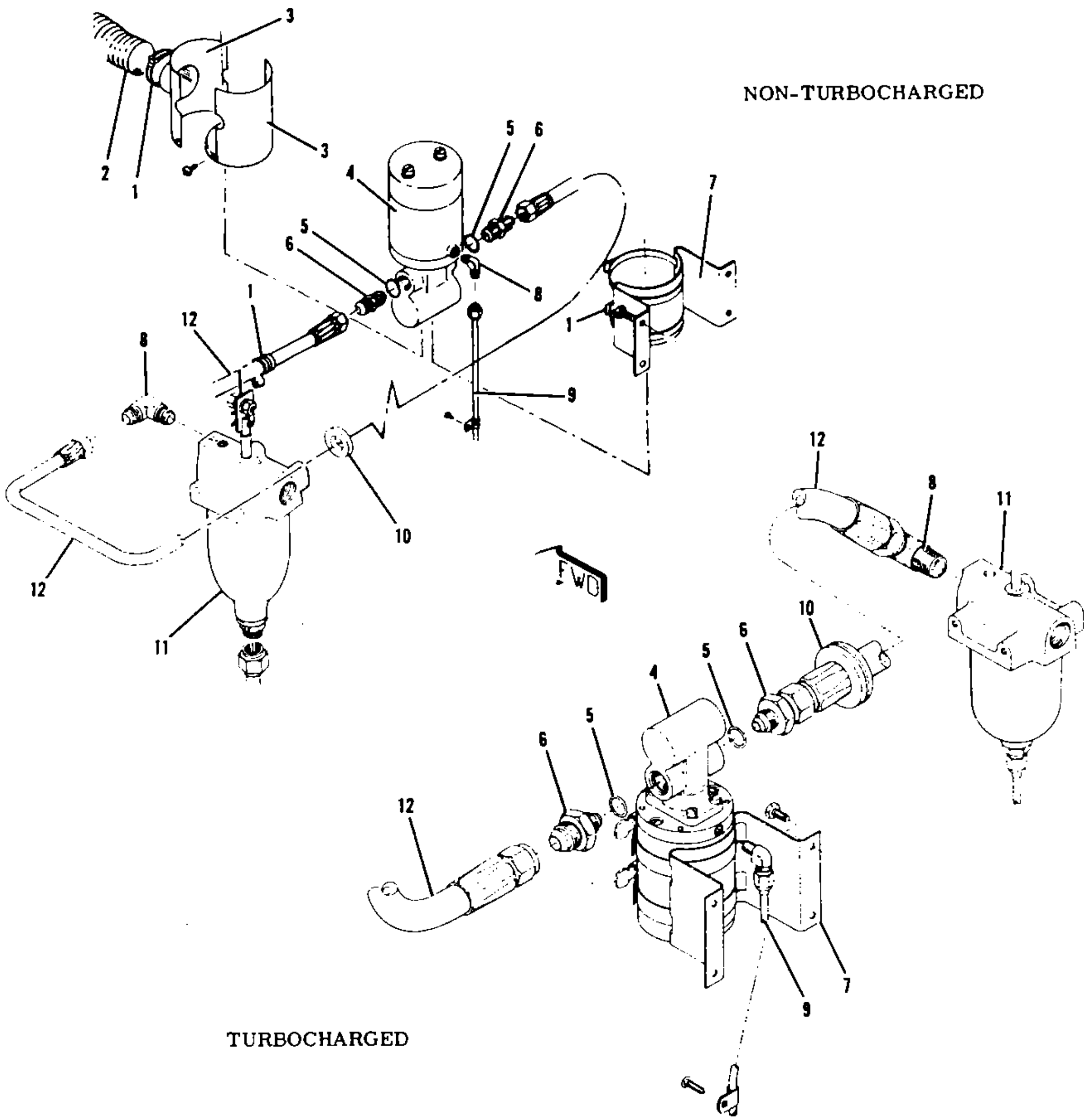
1. Fuel Vent Line
2. Fuel Vent Valve
3. Forward Line Screen
4. Aft Line Screen
5. Aft Fuel Line
6. Forward Fuel Line
7. Aft Fuel Line
8. Left Reservoir
9. Reservoir-to-Selector Valve Line
10. Vapor Return Selector-to-Reservoir Line
11. Selector Valve
12. Selector-to-Strainer Line
13. Vapor Return-to-Selector Line
14. Electric Pump Drain Line
15. Electric Fuel Pump
16. Fuel Strainer
17. Fuel Strainer Drain Line
18. Vapor Return Check Valve
19. Right Reservoir
20. Selector Valve Handle
21. Forward Fuel Line

Figure 13-2. Fuel System (Sheet 1 of 2)



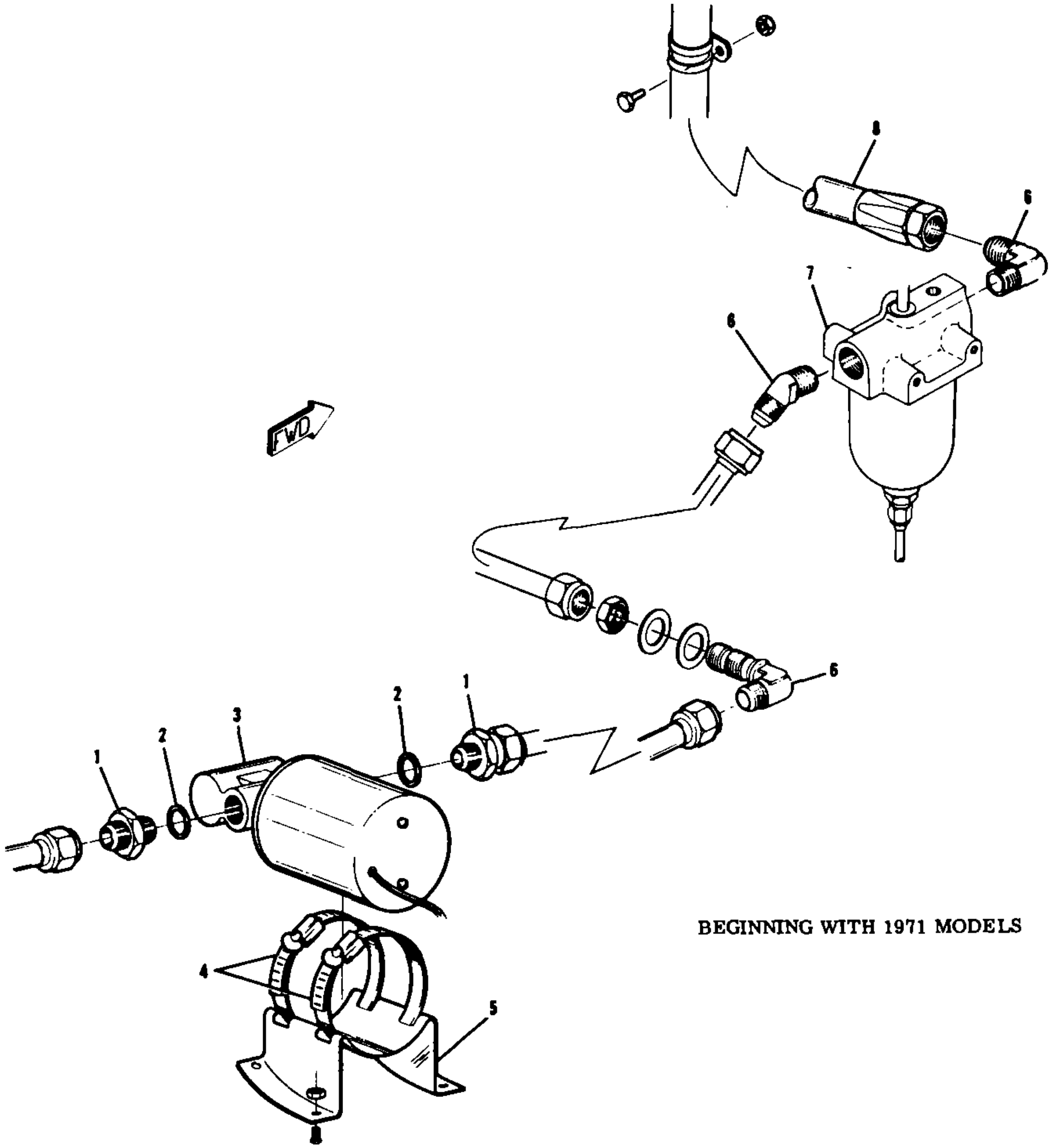
1. Fuel Vent Line
2. Fuel Vent Valve
3. Forward Line Screen
4. Aft Line Screen
5. Left Reservoir
6. Fuel Selector Valve
7. Auxiliary Pump Drain Line
8. Fuel Strainer
9. Strainer Drain Control
10. Vapor Return Check Valve
11. Auxiliary Fuel Pump
12. Right Reservoir
13. Fuel Selector Handle

Figure 13-2. Fuel System (Sheet 2 of 2)



1. Clamp
2. Duct
3. Shroud Half
4. Auxiliary Fuel Pump
5. O-Ring
6. Reducer
7. Pump Bracket
8. Elbow
9. Drain Line
10. Grommet
11. Fuel Strainer
12. Fuel Hose

Figure 13-3. Electric Fuel Pump and Strainer Installation (Sheet 1 of 2)



1. Reducer
2. O-Ring
3. Auxiliary Fuel Pump
4. Clamp
5. Bracket
6. Elbow
7. Fuel Strainer
8. Fuel Hose

Figure 13-3. Electric Fuel Pump and Strainer Installation (Sheet 2 of 2)

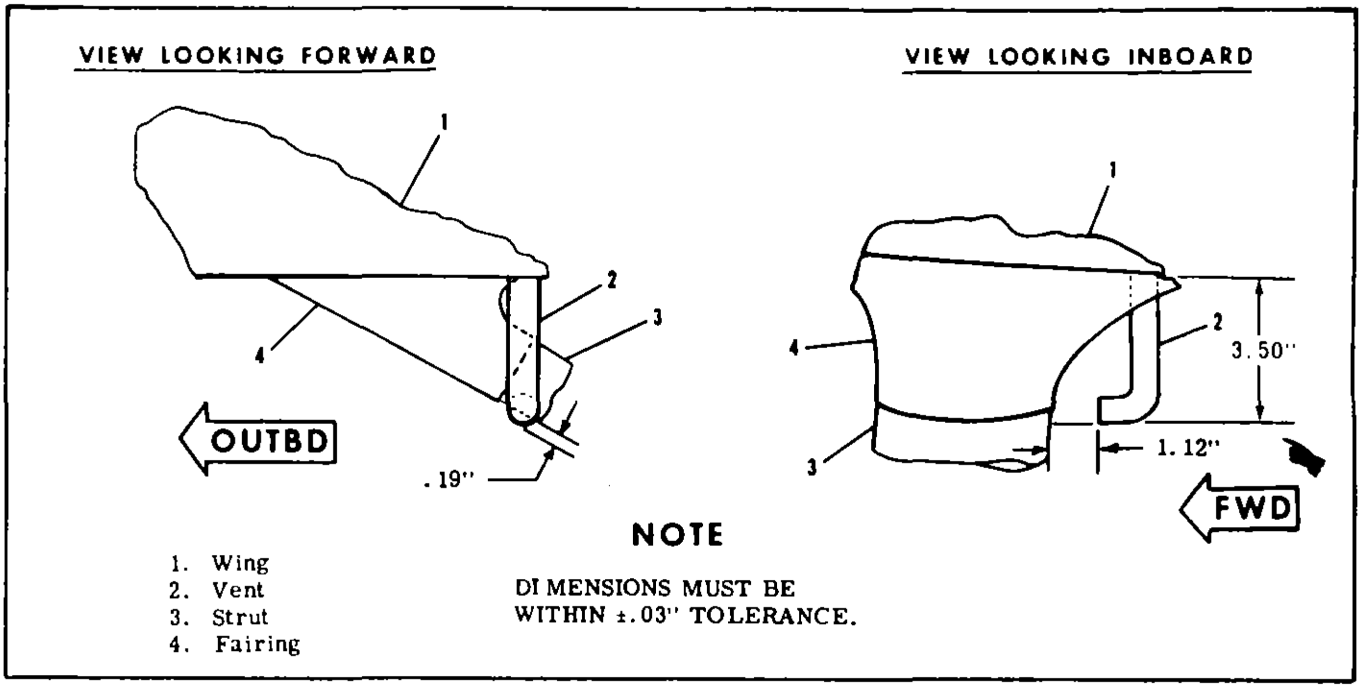


Figure 13-4. Fuel Vent Location

13-5. FUEL VENTS.

13-6. DESCRIPTION. A fuel vent line is installed in the outboard end of each fuel cell. The vent line extends overboard down through the lower wing skin. The inboard end of the vent line extends into the fuel cell, then is offset downward from cell upper surface. A vent valve is installed on the inboard end of the vent line inside the fuel cell.

13-7. CHECKING FUEL VENT. Field experience has demonstrated that fuel vents can become plugged, with possible fuel starvation of the engine, or collapse of fuel cells. Also, the bleed hole in the vent valve assembly could possibly become plugged, allowing pressure from expanding fuel to pressurize the cells. The following procedure may be used to check the vent and bleed hole in the valve assembly.

a. Attach a rubber tube to the end of the vent line beneath one wing.

b. Turn off fuel selector valve.

c. Blow into tube to slightly pressurize the tank. If air can be blown into tank, the vent line is open.

d. After tank is slightly pressurized, insert end of rubber tube into a container full of water and watch for a continuous stream of bubbles, which indicates the bleed hole in valve assembly is open and relieving pressure.

e. Repeat steps "a" through "d" for fuel vent beneath opposite wing.

NOTE

Remember that a plugged vent line or bleed hole can cause either fuel starvation and collapsing of fuel cell or the pressurizing of the cell by fuel expansion.

f. Any fuel vent found plugged or restricted must be corrected prior to returning airplane to service.

NOTE

The fuel vent line protruding beneath the wing near the wing strut must be correctly aligned to avoid possible icing of the vent tube. Dimensions are shown in figure 13-4.

13-8. FUEL CELLS. (RUBBERIZED.)

13-9. DESCRIPTION. Rubberized, bladder-type fuel cells are installed in the inboard bay of each wing panel. These cells are secured by fasteners to prevent collapse of the flexible cells.

13-10. GENERAL PRECAUTIONS. When storing inspecting or handling rubberized, bladder-type fuel cells, the following precautions should be adhered to:

a. Fold cells as smoothly and lightly as possible with a minimum number of folds. Place protective wadding between folds.

b. Wrap cell in moisture-proof paper and place in a suitable container. Do not crowd cell in container. Use wadding to prevent movement.

c. Stack boxed cells to allow access to oldest cells first. Do not allow stacks to crush bottom boxes. Leave cells in boxes until used.

d. Storage area must be cool, +30°F to +85°, and free of exposure to sunlight, dirt and damage.

e. Used cells must be cleaned with soap and warm water prior to storage. Dry and package as outlined in the preceding steps.

f. Do not carry cells by fittings. Maintain original cell contours or folds when refolding for boxing.

13-11. FUEL CELL REMOVAL.

a. Drain fuel from applicable cell.

NOTE

Prior to removal of cell, drain fuel, purge with fresh air, and swab out to remove all traces of fuel.

b. Remove wing root fairings and disconnect fuel lines at wing root.
c. Remove clamps from forward and aft fuel cell bosses at wing root and carefully work fuel strainers and lines from cell bosses.
d. Disconnect electrical lead and ground strap from fuel quantity transmitter and carefully work transmitter from fuel cell and wing rib.
e. Remove screws attaching drain adapter to lower surface of wing.
f. Remove clamps attaching crossover vent line to fuel cells and work vent line out of cell being removed. In aircraft equipped with long-range cells, remove vent extension tube from inside cell. Vent extension tube is attached to the crossover vent bars on the cell.
g. Remove fuel filler adapter and gaskets by removing screws attaching adapter to wing and fuel cell. On aircraft equipped with long-range cells, remove cover plate and gaskets, and remove nylon vent tube from inside cell.
h. Working through filler neck opening, loosen snap fasteners. Tilt snap fasteners slightly when pulling cell free, to prevent tearing rubber.
i. Collapse and carefully fold cell for removal, then work cell out of fuel bay through filler opening in upper wing surface. Use care when removing to prevent damage to cell.
j. Unfold cell and remove fittings, snap fasteners and fuel sump drain adapter.

13-12. FUEL CELL REPAIR.

NOTE

For fuel cell repair information, refer to Cessna Service News Letter dated August 28, 1970. For minor repair, a fuel cell repair kit is available from Goodyear, complete with required materials and instructions.

13-13. Deleted.

13-14. Deleted.

13-15. Deleted.

13-16. Deleted.

13-17. Deleted.

13-18. Deleted.

13-19. FUEL CELL INSTALLATION.
a. Cell compartment must be thoroughly cleaned of all filings, trimmings, loose washers, bolts, nuts, etc.
b. All sharp edges of cell compartment must be rounded off and protective tape applied over any other sharp edges and protruding rivets.
c. Inspect cell compartment just prior to installation of a cell for conditions noted in the preceding steps.
d. Install fuel drain adapter and snap fasteners.
e. Check to ensure cell is warm enough to be flexible and fold as necessary to fit through fuel cell access opening.
f. Place cell in compartment, develop it out to full size and attach fasteners, then reverse procedures outlined in the preceding paragraph for installation. Install all new gaskets when installing cell.
g. On aircraft equipped with long-range cells, install nylon vent tube inside cell, inserting tube through four hangers in top of cell. If a replacement cell is being installed, use nylon vent tube removed from old cell or order tube from applicable Parts Catalog.
h. When tightening screw-type clamps, apply a maximum of 20 pound-inches torque to clamp screws. No oil is to be applied to fittings prior to installation.
i. When installing filler adapter, cover plate and fuel quantity transmitter to the wing and fuel cell, tighten attaching screws evenly. The sealing or compression surfaces must be assembled when absolutely dry (NO SEALING PASTE IS TO BE USED).
j. After installation has been completed, cell should be inspected for final fit within compartment, making certain that cell is extended out to the structure and no corners are folded in.
k. The final inspection, prior to closing the cell, should be a close check to ensure that cell is free of foreign matter such as lint, dust, oil or any installation equipment. If a cell is not thoroughly clean, it should be cleaned with a lint-free cloth, soaked in water, alcohol or kerosene. NO OTHER SOLVENT SHALL BE USED.

NOTE

Throughout the aircraft fuel system, from the cells to the engine-driven fuel pump, use NS-40 (RAS-4) (Snap-On Tools Corp., Kenosha, Wisconsin), MIL-T-5544 (Thread Compound, Antiseize, Graphite-Petrolatum) or equivalent compound as a thread lubricant or to seal a leaking connection. Apply sparingly to male fittings only, omitting the first two threads. Always ensure that a compound, the residue from a previously used compound, or any other foreign material cannot enter the system.

13-20. FUEL QUANTITY TRANSMITTERS.

13-21. DESCRIPTION. Two fuel quantity indicators, located in a cluster on the instrument panel, are actuated individually by an electric fuel quantity transmitter installed in each fuel cell.

13-22. REMOVAL AND INSTALLATION. (Refer to Section 16.)

13-23. REMOVAL AND INSTALLATION OF FUEL RESERVOIR TANKS.
a. Remove front seats, carpeting, and access plates as necessary for access to tank to be removed.
b. Disconnect fuel lines at the tank to be removed.
c. Remove four screws securing tank mounting

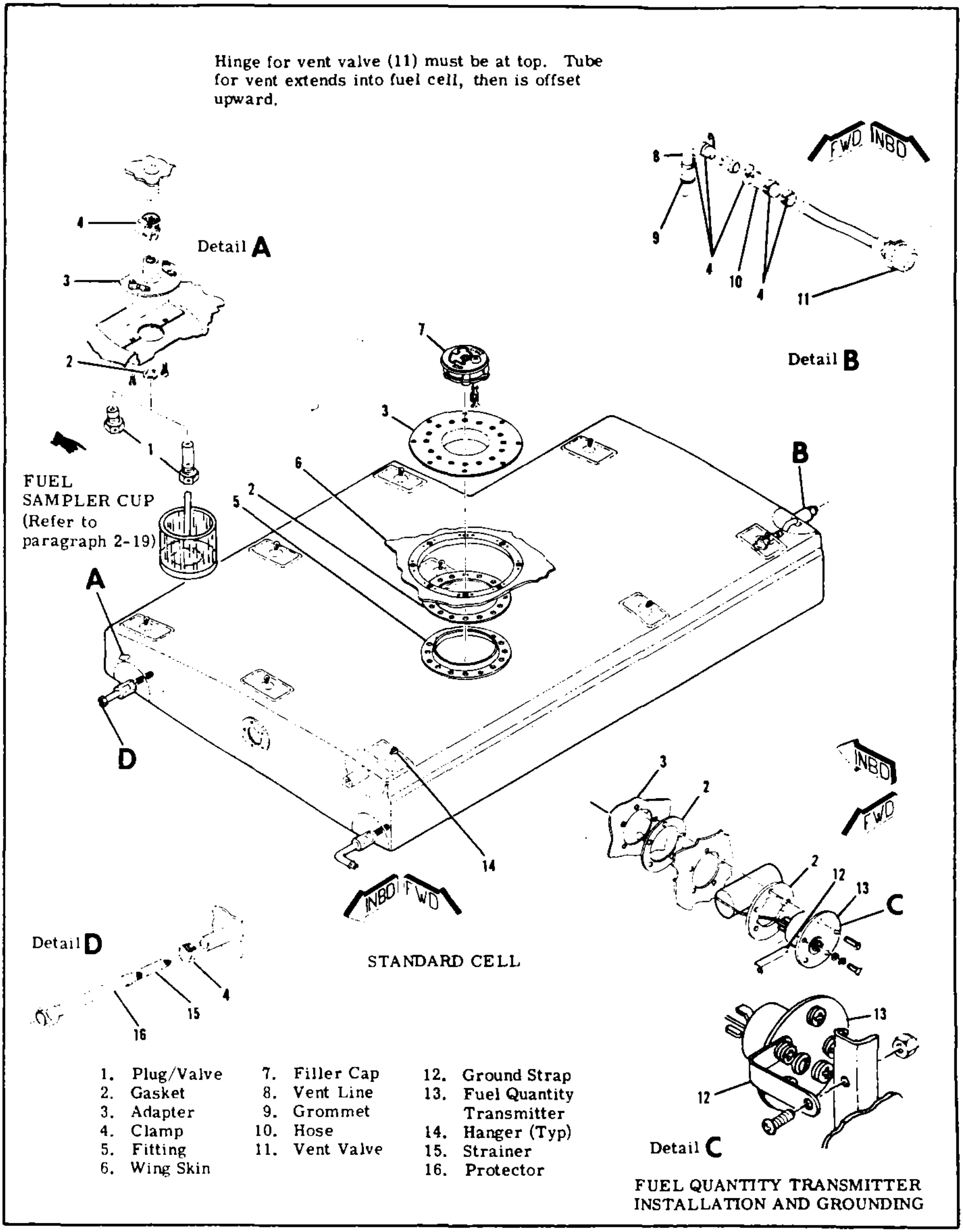
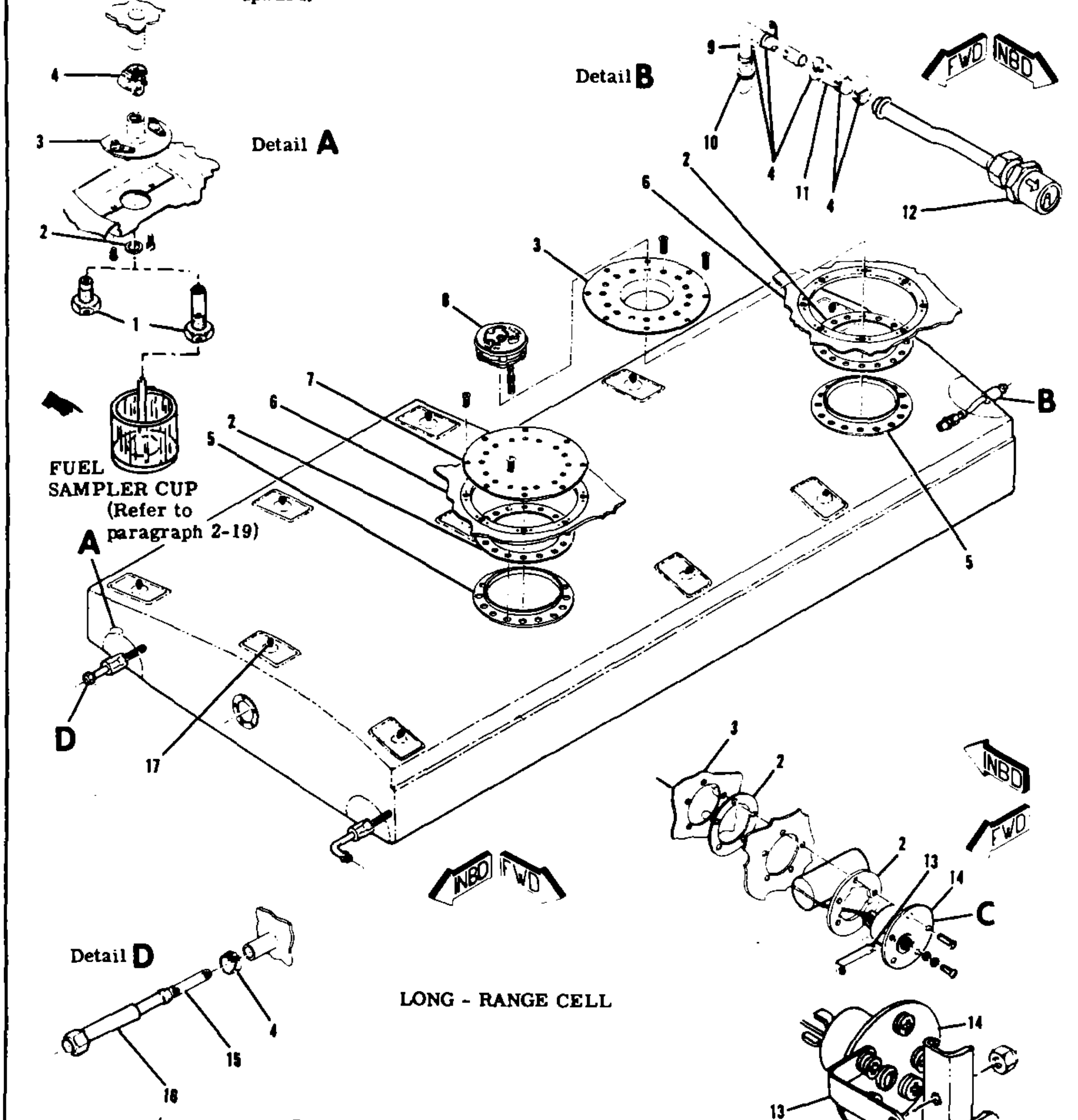


Figure 13-5. Fuel Cell Installation (Sheet 1 of 2)

Hinge for vent valve (12) must be at top. Tube for vent extends into fuel cell, then is offset upward.



1. Plug/Valve	7. Cover Plate	13. Ground Strap
2. Gasket	8. Filler Cap	14. Fuel Quantity Transmitter
3. Adapter	9. Vent Line	15. Strainer
4. Clamp	10. Grommet	16. Protecter
5. Fitting	11. Hose	17. Hanger (Typ)
6. Wing Skin	12. Vent Valve	

Detail C

FUEL QUANTITY TRANSMITTER INSTALLATION AND GROUNDING

Figure 13-5. Fuel Cell Installation (Sheet 2 of 2)

legs to fuselage structure.
d. Lift out the tank.
e. Reverse the preceding steps to install a reservoir tank.

13-24. REMOVAL AND INSTALLATION OF FUEL SELECTOR VALVE.
a. Drain all fuel from wing tanks at fuel tank sump drain plugs. With valve turned to LEFT TANK, drain left fuel lines at selector valve; with valve turned to RIGHT TANK, drain right fuel lines.
b. Remove control pedestal cover. (Refer to section 11 for procedures.)
c. Remove access hole covers in floorboard and fuselage skin in area of fuel selector valve.
d. Disconnect all fuel lines from selector valve.
e. Disconnect square shaft from valve by removing attached roll pin.
f. Remove bolts or screws attaching valve to support bracket and remove valve.
g. Install valve by reversing this procedure.

13-25. FUEL SELECTOR VALVE REPAIR. (See figure 13-6.) The fuel selector valve may be repaired by disassembly, replacement of defective parts, and reassembly as follows:

a. Mark sump plate (23) and body (1) to ensure correct reassembly, then remove sump plate (23) and O-ring (22) after removing four screws.
b. Drive out roll pin (5) securing yoke (6) to shaft. As yoke is lifted off, balls (8) and springs (7) are free. Retain them.
c. Lift off washer (9).
d. Mark cover (4) and body to assure later alignment of parts and remove screws (3).
e. With fine emery paper, sand off any burrs or sharp edges on shaft (21). Apply petrolatum to shaft as a lubricant, then work cover off shaft.
f. Drive back roll pin (13) and remove rotor (12). Teflon seal (14), O-rings (15), washers (16), and springs (17) are now free to be removed. Check all parts carefully to locate any defects.
g. Remove burrs or sharp edges on shaft, lubricate and slide it down, out of body (1). Remove teflon seals (20) and O-rings (19).
h. Remove O-ring (18) within body and O-ring (10) within cover.
i. Replace all O-rings, lap or replace teflon seals, and lubricate O-rings before installation.

CAUTION

Install all parts in the relative position depicted in figure 13-6, otherwise the valve will not operate correctly.

j. Install O-ring (18) in body shaft hole. Install O-rings (19) and teflon seals (20), then slide shaft and rotor into place. Position rotor in exact relative position shown in figure 13-6, then install O-ring (22) and sump plate (23).
k. Install .169" diameter pins in body ports, then slide springs (17), washers (16), O-rings (15) and teflon seals over pins. Slide rotor (12) over shaft. Remove .169" dia. pins and, readjusting rotor vs. shaft position as necessary, tap roll pin (13) into place, letting it protrude on the side depicted.

NOTE

This roll pin serves also as a stop, limiting valve shaft travel.

l. Install O-ring (10) in cover, lubricate shaft (21) with petrolatum, install large O-ring (11), and slide cover down into place.

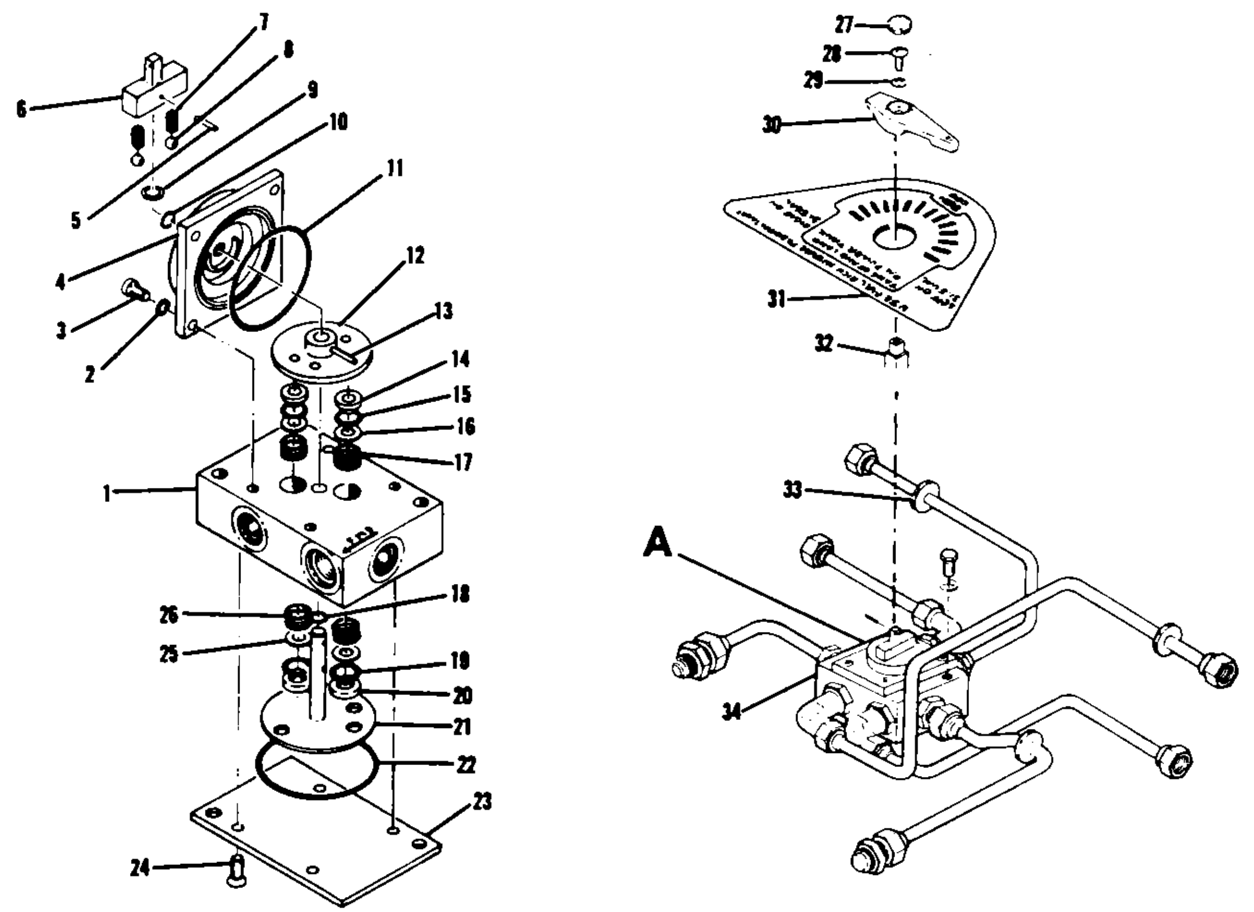
CAUTION

Make sure cover is installed in relative position illustrated. A lug on the cover protrudes to serve as a stop detent and if the cover is not installed correctly, the valve will not operate correctly.

m. Install brass washer (9) and yoke (6). Note the position of the small hole in the squared, upper portion of the yoke. If this is reversed, the valve linkage will not attach properly.

13-26. AUXILIARY ELECTRIC FUEL PUMP. On aircraft Serials U20601619 thru U20601632 and aircraft prior to Serial U20601605, the auxiliary electric fuel pump is mounted on either the left side or right side of the firewall. On aircraft Serials U20601605 thru U20601618 and beginning with U20601633, the auxiliary electric fuel pump is located under the floorboard on the right side of cabin, immediately

SHOP NOTES:



Detail A

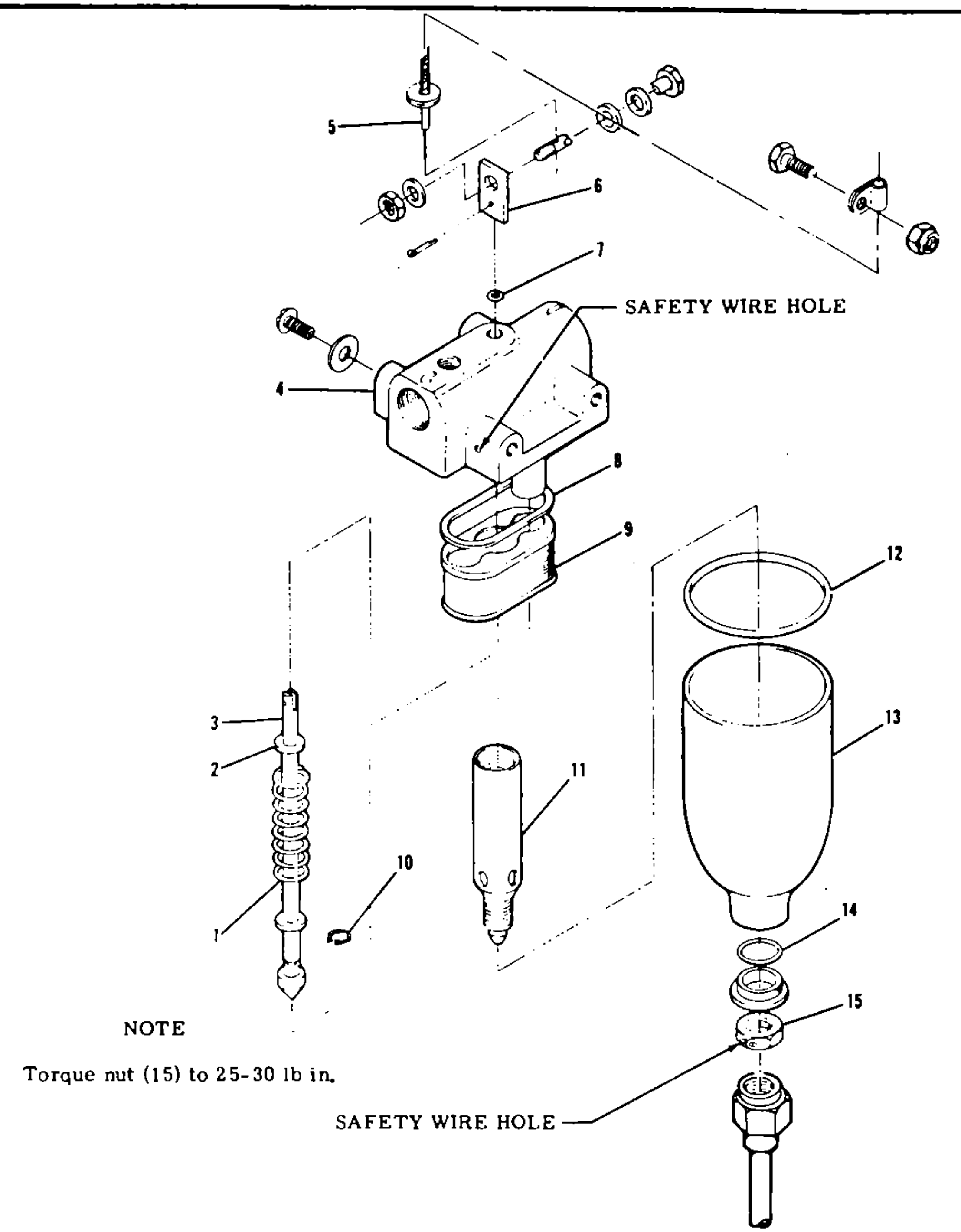
1. Valve Body
2. Lockwasher
3. Screw
4. Cover
5. Roll Pin
6. Yoke
7. Spring
8. Ball
9. Brass Washer
10. O-Ring
11. O-Ring
12. Rotor
13. Roll Pin
14. Seal
15. O-Ring
16. Washer
17. Spring
18. O-Ring
19. O-Ring
20. Seal
21. Rotor
22. O-Ring
23. Sump Plate
24. Screw
25. Washer
26. Spring
27. Cap
28. Screw
29. Washer
30. Handle
31. Placard
32. Selector Shaft
33. Grommet
34. Selector Valve

Figure 13-6. Fuel Selector Valve Assembly

forward of the copilot seat. An integral bypass and check valve permits fuel flow through the pump even when the pump is inoperative, but prevents reverse flow. A separate overboard drain line from the pump prevents entry of fuel into the electric motor, in the event of pump internal leakage.

13-27. REMOVAL AND INSTALLATION.

a. Firewall mounted:
   1. Place fuel selector in OFF position.
   2. Remove top half of cowl for access to pump.
   3. Disconnect all fuel lines and electrical connections from pump.
   4. Loosen clamps securing pump and lift pump out.
   5. Reverse preceding steps for installation.



NOTE

Torque nut (15) to 25-30 lb in.

1. Spring	6. Plate	11. Standpipe
2. Washer	7. O-Ring	12. O-Ring
3. Plunger	8. Gasket	13. Bowl
4. Top	9. Filter	14. O-Ring
5. Drain Control	10. Retainer Ring	15. Nut

Figure 13-7. Fuel Strainer

b. Floor mounted:
1. Place fuel selector in OFF position.
2. Peel back carpet and remove access plate in floorboard immediately forward of copilot seat.
3. Disconnect all fuel lines and electrical connections from pump.
4. Loosen clamps securing pump and lift pump out.
5. Reverse preceding steps for installation.

13-28. ELECTRIC FUEL PUMP CIRCUITS. The electric fuel pump circuit is operated by a split rocker-type switch. The low side of the switch is connected through the "START" position of the ignition switch so that the fuel pump will operate only while the ignition switch is in the "START" position and the low side of the fuel pump switch is turned on. When the ignition key is released, the pump will stop. The high side of the fuel pump switch will operate the pump regardless of ignition switch position. A throttle shaft operated microswitch adds a resistance to the high circuit to slow down the pump when the throttle is retarded to prevent an excessively rich mixture as throttle is retarded while the electric pump is operating in the high position. Refer to the following paragraph for rigging of the microswitch.

12-28A. DESCRIPTION. Thru Serial U20602199, the electric auxiliary fuel pump, which supplies fuel flow for starting and for engine operation if the engine-driven fuel pump should fail, is controlled by the auxiliary fuel pump switch, mounted on the instrument panel. The switch is a split-rocker type; the right half positions are "HI," "LO" and off and the left half positions are "MAX HI" and off. The right half of the switch incorporates an intermediate "LO" position used for normal starting, and a "HI" position (when the top of the switch is fully depressed) for vapor purging during hot engine starts. Maximum fuel flow is produced when the left half of the switch is held in the spring-loaded "MAX HI" position. In the "MAX HI" position, an interlock within the switch automatically trips the right half of the switch to its "HI" position. When the spring-loaded left half of the switch is released, the right half will remain in the "HI" position until manually returned to the off position. With the right half of the switch in the "LO" position, and the starter button depressed, the auxiliary fuel pump will operate at a low flow rate (providing proper fuel mixture for starting) as the engine is being turned over with the starter.

NOTE

The auxiliary fuel pump will not operate in the "LO" position until the starter button is depressed.

With the right half of the switch in the "HI" position, the pump operates at one of the two flow rates that are dependent upon the setting of the throttle. With the throttle open to a cruise setting, the pump is operating at a high capacity to supply sufficient fuel to maintain flight. When the throttle is moved toward the closed position (as during letdown, landing and taxiing), the fuel pump flow rate is automatically reduced, preventing an excessively rich mixture during these periods of reduced engine speed. When the engine-driven fuel pump is functioning and the auxiliary fuel pump is functioning and the auxiliary fuel pump is turned on "HI", a fuel/air ratio considerably richer than the best power is produced unless the mixture is leaned. If the auxiliary fuel pump switch is accidently placed on "HI" (with master switch on) with the engine stopped and the mixture rich, the intake manifold will be flooded.

12-28B. DESCRIPTION. Beginning with U20602200, the yellow right half of the switch is labeled "START", and its upper "ON" position is used for normal starting, minor vapor purging and continued engine operation in the event of an engine-driven pump failure. With the right half of the switch in the "ON" position, the pump operates at one of two flow rates that are dependent upon the setting of the throttle. With the throttle open to a cruise setting, the pump operates high enough capacity to supply sufficient fuel flow to maintain flight with an inoperative engine-driven fuel pump. When the throttle is moved toward the closed position (as during letdown, landing and taxiing), the fuel pump flow rate is automatically reduced, preventing an excessively rich mixture during these periods of reduced engine speed.

NOTE

If the engine-driven fuel pump is functioning and the auxiliary fuel pump switch is placed in the "ON" position, a fuel/air ratio considerably richer than best power is produced unless the mixture is leaned. Therefore, this switch should be turned off during take-off.

CAUTION

If the auxiliary fuel pump switch is accidently placed in the "ON" position with the master switch on and the engine stopped, the intake manifolds will be flooded.

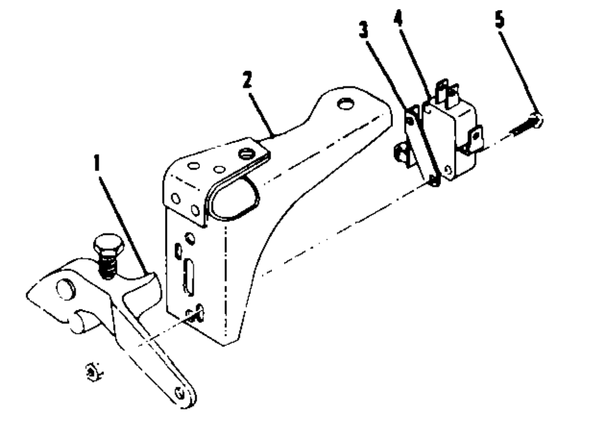
The red left half of the switch is labeled "EMERG", and its upper "HI" position is used in the event of an engine-driven fuel pump failure during take-off or high power operation. The "HI" position may also be used for extreme vapor purging. Maximum fuel flow is produced when the left half of the switch is held in the spring-loaded "HI" position. In this position, an interlock within the switch automatically trips the right half of the switch to the "ON" position. When the spring-loaded left half of the switch is released, the right half will remain in the "ON" position until manually returned to the "OFF" position.

13-29. *RIGGING THROTTLE MICROSWITCH.* (Refer to figure 13-8.) The aircraft is equipped with a throttle-operated microswitch which slows down the electric fuel pump whenever the throttle is retarded while the electric pump is being used. The electric fuel pump microswitch should slow down the pump as the throttle is retarded to approximately 19 inches of mercury manifold pressure (sea level aircraft) and 23 inches of mercury manifold pressure (turbocharged aircraft).

NOTE

These settings must be established during ground run-up only. These values will not apply in flight.

a. Start engine and set throttle to obtain 19 inches of mercury manifold pressure (sea level aircraft) or 23 inches of mercury manifold pressure (turbocharged



1. Throttle Shaft Lever Cam
2. Airbox Bracket
3. Switch Actuator
4. Microswitch
5. Mounting Screw

Figure 13-8. Rigging Throttle Microswitch

aircraft).
b. Mark position of throttle control at instrument panel and shut down engine.
c. Adjust microswitch at the engine throttle shaft lever as required to cause electric fuel pump to slow down as the throttle is retarded to the marked position.
c. With mixture control in "IDLE CUT-OFF," electric fuel pump switch in "HI." and master switch in "ON" position, listen for change in sound of electric fuel pump as the throttle is retard to the marked position.

13-30. FUEL FLOW TEST. (Refer to figure 13-9.)

NOTE

These tests are to be conducted with the engine stopped and external power supplied to the aircraft bus.

a. Apply 13.75 VDC ± .25V (27.75 VDC ± .25V) to aircraft bus.
b. Set mixture control at "FULL RICH."
c. Turn master switch "ON," and yellow auxiliary fuel pump rocker switch "ON."
d. Advance throttle to full open position.
e. Check metered fuel pressure/flow on ship's gage for a flow of 88-96 pounds/hour (14.7-16.0 gallons/hour).
f. Adjust number one resistor (6) if required.
g. Retard throttle slowly from the full "OPEN" position until the speed of the fuel pump can be audibly detected to change due to microswitch activation.
h. Wait momentarily for the fuel flow gage to respond.
i. The metered fuel pressure/flow on the ship's gage should read on the low end red line or approximately one red line width above.
j. Adjust number two resistor (5) if required.

13-31. MAXIMUM HIGH BOOST CHECK. To verify high position function, momentarily depress spring-loaded rocker and verify a noticeable increase in indicated fuel flow on the fuel flow gage.

13-32. FUEL STRAINER. The fuel strainer is located in the nose wheel well. Access to the strainer is gained by removing fairings aft of the nose gear. The fuel strainer drain control is located adjacent to the oil dipstick. Access to the drain control is gained through the oil dipstick cowling door.

13-33. FUEL STRAINER DISASSEMBLY. (Refer to figure 13-7.) To disassemble and assemble the strainer, proceed as follows:
a. Turn off fuel selector valve.
b. Disconnect strainer drain tube and remove safety wire, nut, and washer at bottom of filter bowl and remove bowl.
c. Carefully unscrew standpipe and remove.
d. Remove filter screen and gasket. Wash filter screen and bowl in solvent (Federal Specification P-S-661, or equivalent) and dry with compressed air.
e. Using a new gasket between filter screen and top assembly, install screen and standpipe. Tighten standpipe only finger tight.
f. Using all new O-rings, install bowl. Note that step-washer at bottom of bowl is installed so that step seats against O-ring. Connect strainer drain tube.
g. Turn on fuel selector valve, close strainer drain, and check for leaks. Check for proper operation.
h. Safety wire bottom nut to top assembly. Wire must have right hand wrap, at least 45 degrees.

13-34. ELECTRIC FUEL QUANTITY INDICATORS AND TRANSMITTERS. Refer to Section 16 for description, removal, installation and calibration.

SHOP NOTES:

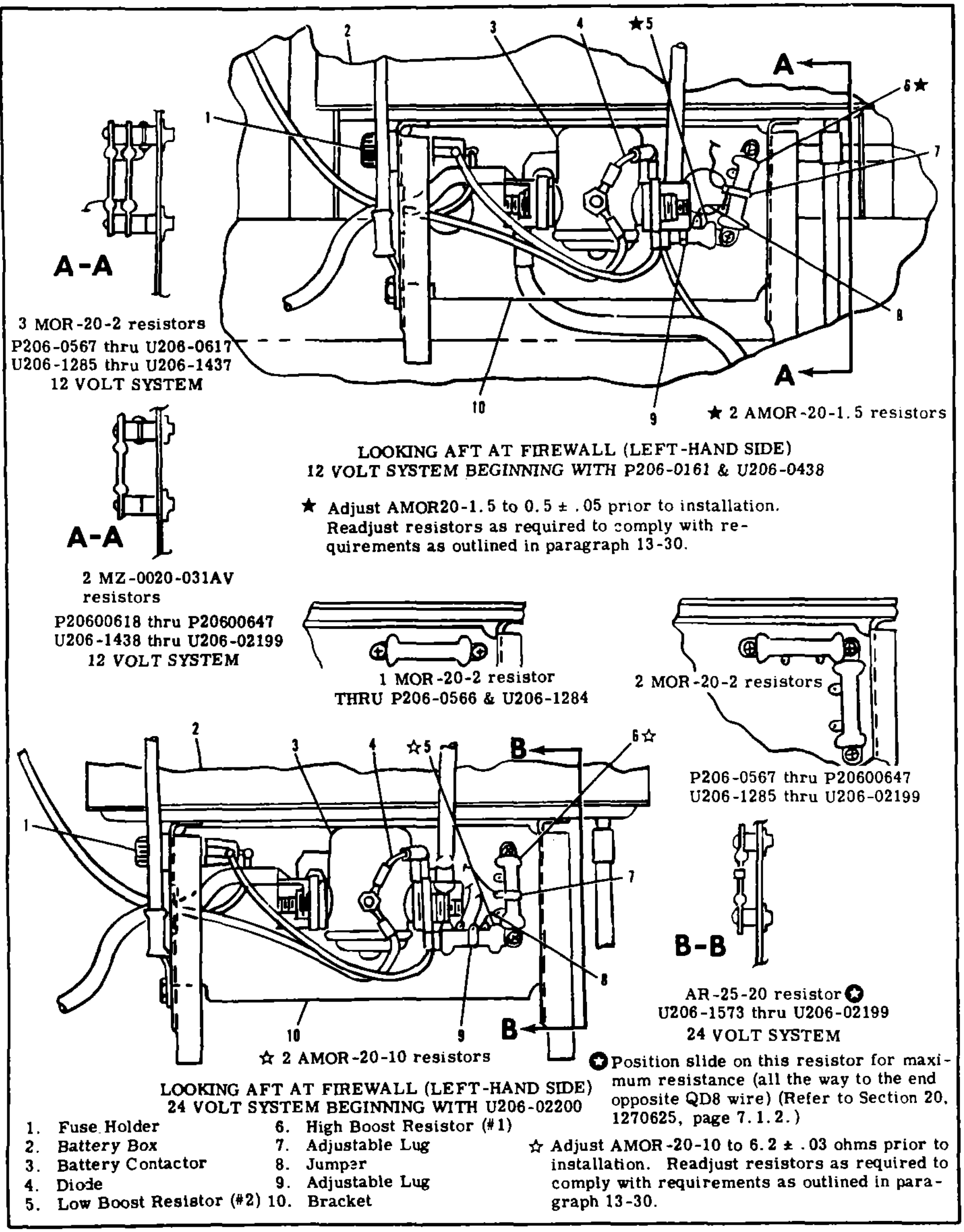


Figure 13-9. Fuel Pump Resistors

SECTION 14

PROPELLERS AND PROPELLER GOVERNORS

TABLE OF CONTENTS Page

14-1. PROPELLERS.

14-2. DESCRIPTION. The aircraft is equipped with an all-metal, constant-speed, governor-regulated propeller. The constant-speed propeller is single-acting, in which engine oil pressure, boosted and regulated by the governor is used to obtain the correct blade pitch for the engine load. Engine lubricating oil is supplied to the power piston in the propeller hub through the crankshaft. The amount and pressure of the oil supplied is controlled by the engine-driven governor. Increasing engine speed will cause oil to be admitted to the piston, thereby increasing the blade pitch. Conversely, decreasing engine speed will result in oil leaving the piston, thus decreasing the blade pitch.

14-3. REPAIR. Metal propeller repair first involves evaluating the damage and determining whether the repair will be a major or minor one. Federal Aviation Regulations, Part 43 (FAR 43), and Federal Aviation Agency, Advisory Circular No. 43.13 (FAA AC No. 43.13), define major and minor repairs, alterations and who may accomplish them. When making repairs or alterations to a propeller FAR 43, FAA AC No. 43.13 and the propeller manufacturer's instructions must be observed.

14-4. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
FAILURE TO CHANGE PITCH.	Governor control disconnected or broken.	Check visually. Connect or replace control.
	Governor not correct for propeller. (Sensing wrong.)	Check that correct governor is installed. Replace governor.
	Defective governor.	Refer to paragraph 14-9.
	Defective pitch changing mechanism inside propeller or excessive propeller blade friction.	Propeller repair or replacement is required.
FAILURE TO CHANGE PITCH FULLY.	Improper rigging of governor control.	Check that governor control arm and control have full travel. Rig control and arm as required.
	Defective governor.	Refer to paragraph 14-9.
SLUGGISH RESPONSE TO PROPELLER CONTROL.	Excessive friction in pitch changing mechanism inside propeller or excessive blade friction.	Propeller repair or replacement is required.
STATIC RPM TOO HIGH OR TOO LOW.	Improper propeller governor adjustments.	Perform static RPM check Refer to section 12 and 12A for procedures.
ENGINE SPEED WILL NOT STABILIZE.	Sludge in governor.	Refer to paragraph 14-9.
	Air trapped in propeller actuating cylinder.	Trapped air should be purged by exercising the propeller several times prior to take-off after propeller has been reinstalled or has been idle for an extended period.
	Excessive friction in pitch changing mechanism inside propeller or excessive blade friction.	Propeller repair or replacement is required.
	Defective governor.	Refer to paragraph 14-9.

SHOP NOTES:

14-4. *TROUBLE SHOOTING (Cont.)*

TROUBLE	PROBABLE CAUSE	REMEDY
OIL LEAKAGE AT PROPELLER MOUNTING FLANGE.	Damaged O-ring and seal between engine crankshaft flange and propeller.	Check visually. Remove propeller and install O-ring seal.
	Foreign material between engine crankshaft flange and propeller mating surfaces or mounting nuts not tight.	Remove propeller and clean mating surfaces; install new O-ring and tighten mounting nuts evenly to torque value in figure 14-1.
OIL LEAKAGE AT ANY OTHER PLACE.	Defective seals, gaskets, threads, etc., or incorrect assembly.	Propeller repair or replacement is required.

14-5. REMOVAL. Refer to figure 14-1.

a. Remove spinner attaching screws (2) and remove spinner (1), spinner support (3) and spacers (4). Retain spacers (4).

b. Remove cowling as required for access to mounting nuts (9).

c. Loosen all mounting nuts (9) approximately 1/4 inch and pull propeller (15) forward until stopped by nuts.

NOTE

As the propeller (15) is separated from the engine crankshaft flange, oil will drain from the propeller and engine cavities.

d. Remove all propeller mounting nuts (9) and pull propeller forward to remove from engine crankshaft (12).

e. If desired, the spinner bulkhead (11) can be removed by removing screws (10) attaching lugs (8) or bolts (19) attaching bulkhead (11) to propeller.

14-6. INSTALLATION.

a. If the spinner bulkhead (11) was removed, position bulkhead so the propeller blades will emerge from the spinner (1) with ample clearance and install spinner bulkhead attaching lugs and screws, or bolts (19) and nuts attaching spinner bulkhead to propeller.

CAUTION

Avoid scraping metal from bore of spinner bulkhead and wedging scrapings between engine flange and propeller. Trim the inside diameter of the bulkhead as necessary when installing a new spinner bulkhead.

b. Clean propeller hub cavity and mating surfaces of propeller and crankshaft.

c. Lightly lubricate a new O-ring (13) and the crankshaft pilot with clean engine oil and install the O-ring in the propeller hub.

d. Align propeller mounting studs and dowel pins with proper holes in engine crankshaft flange and slide propeller carefully over crankshaft pilot until mating surfaces of propeller and crankshaft flange are approximately 1/4 inch apart.

e. Install propeller attaching washers and nuts (9) and work propeller aft as far as possible, then tighten nuts evenly and torque to 660-780 lb-in.

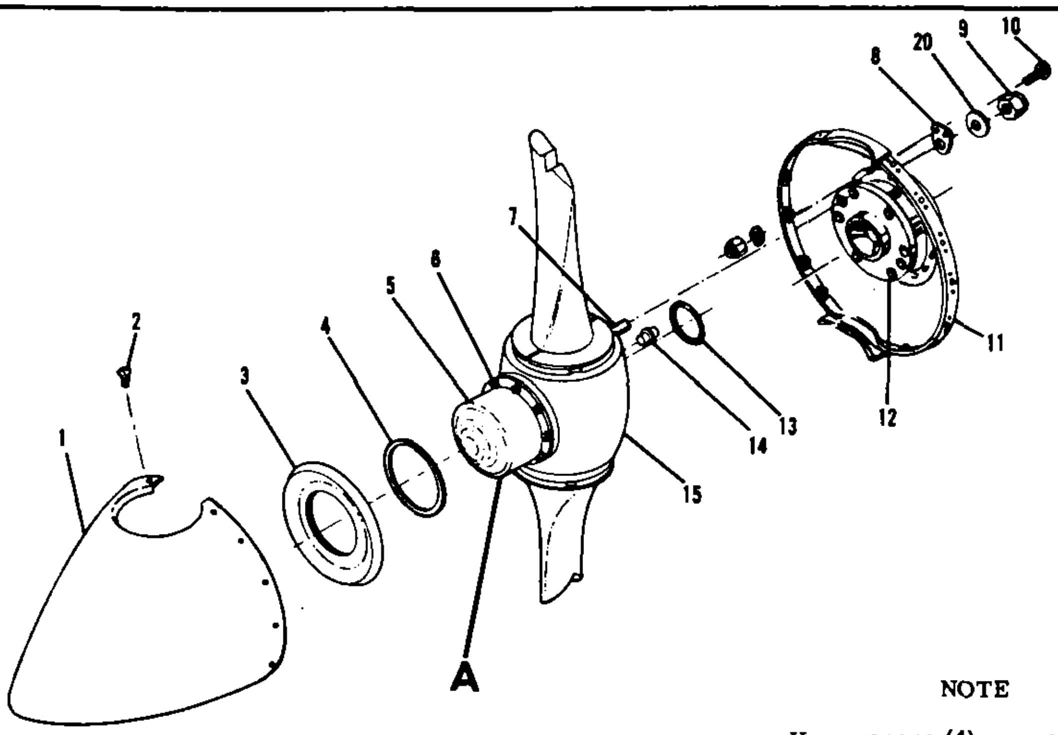
f. Install any spacers (4) used between spinner support and propeller cylinder, then install spinner support and spinner. The spacers are used as required to cause a snug fit between the spinner (1) and the spinner support (3).

14-7. PROPELLER GOVERNORS.

14-8. DESCRIPTION. The propeller governor is a single-acting, centrifugal type, which boosts oil pressure from the engine and directs it to the propeller where the oil is used to increase blade pitch. A single-acting governor uses oil pressure to effect a pitch change in one direction only; a pitch change in the opposite direction results from a combination of centrifugal twisting moment of rotating blades and compressed springs. Oil pressure is boosted in the governor by a gear type oil pump. A pilot valve, fly weight and speeder spring act together to open and close governor oil passages as required to maintain a constant engine speed.

NOTE

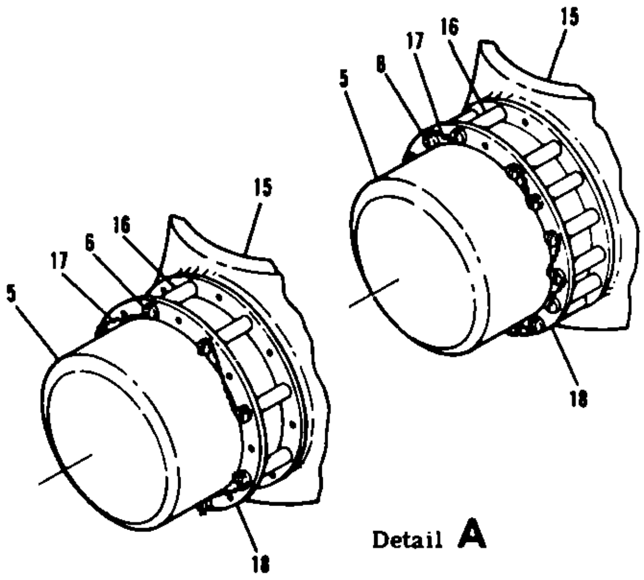
Outward physical appearance of specific governors is the same, but internal parts determine whether it uses oil pressure to increase or decrease blade pitch. The propellers used on these aircraft require governors which "sense" in a certain manner. "Sensing" is determined by the type pilot valve installed inside the governor. Since the basic governor may be set to "sense" oppositely, it is important to ascertain that the governor is correct for the propeller being used.



NOTE

Use spacers (4) as required to ensure a snug fit between spinner (1) and spinner support (3).

Torque propeller mounting nuts (9) to 660 - 780 lb-in.



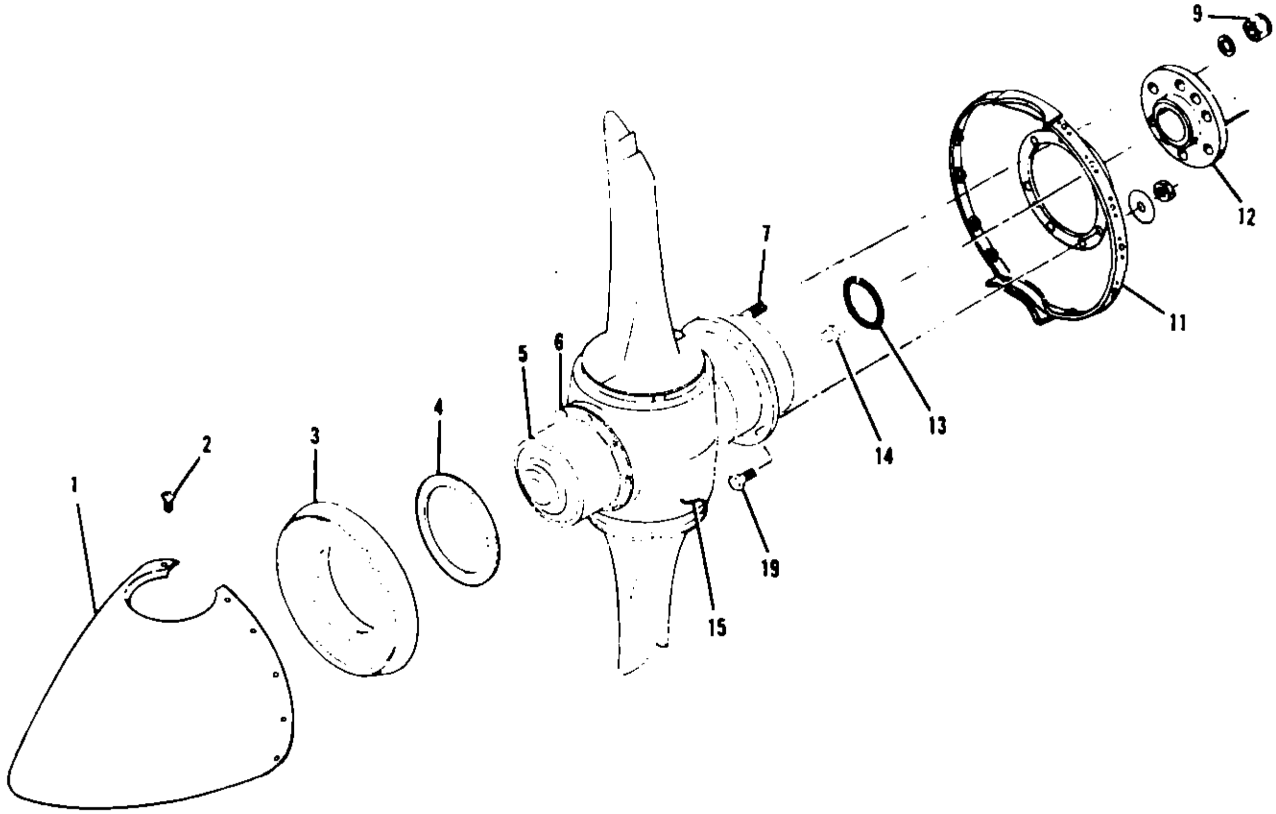
Detail **A**

DETAIL "A" APPLIES TO CYLINDER (4) ATTACHMENT WHEN MODIFIED PER SERVICE LETTER SE71-18

1. Spinner
2. Screw
3. Spinner Support
4. Spacer
5. Cylinder
6. Screw
7. Stud
8. Lug
9. Mounting Nut
10. Screw
11. Spinner Bulkhead
12. Engine Crankshaft
13. O-Ring
14. Dowel Pin
15. Propeller
16. Tube
17. Safety Wire
18. Ring
19. Bolt
20. Washer

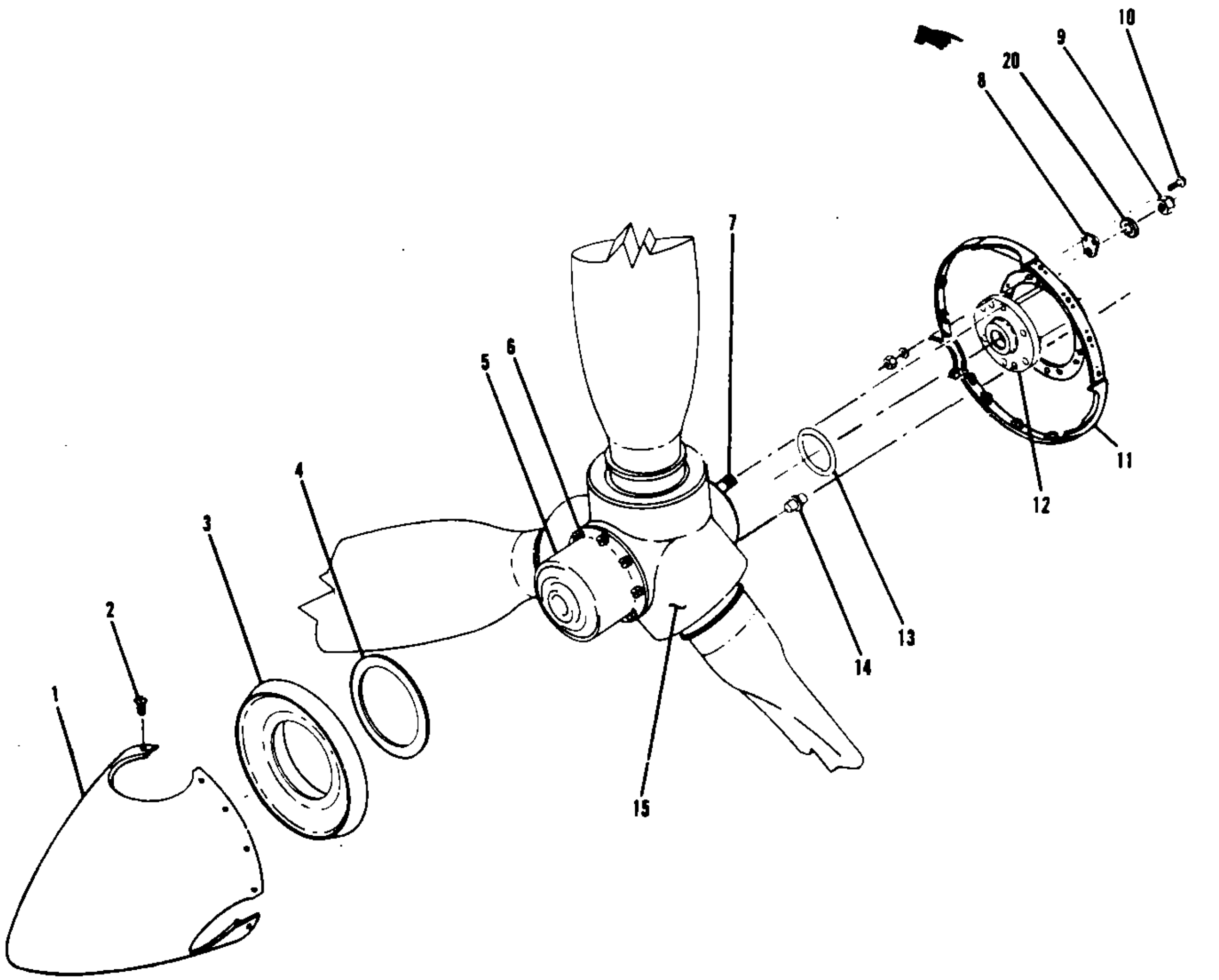
TWO-BLADED PROPELLER

Figure 14-1. Propeller Installation (Sheet 1 of 4)



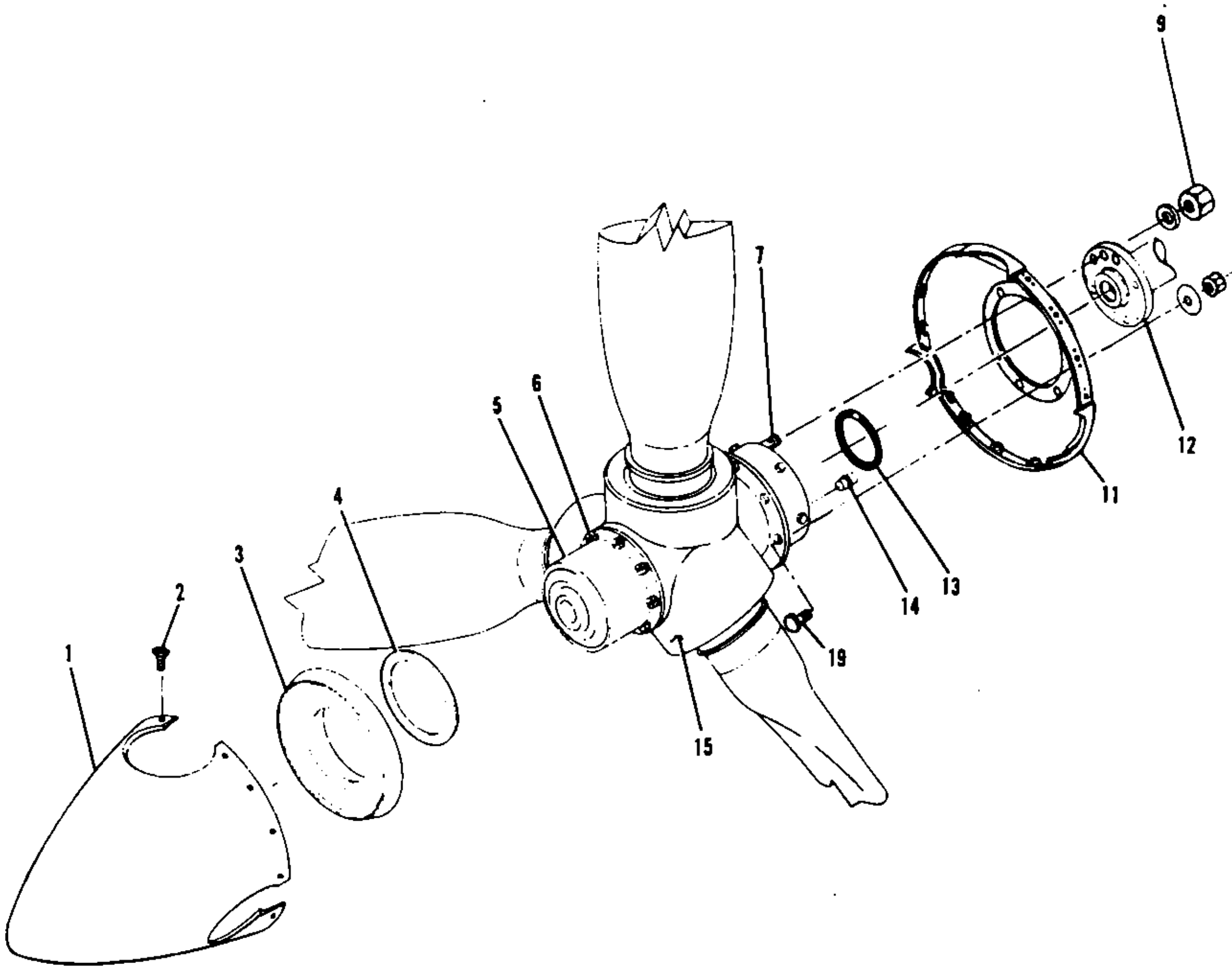
TWO-BLADED, EXTENDED HUB PROPELLER

Figure 14-1. Propeller Installation (Sheet 2 of 4)



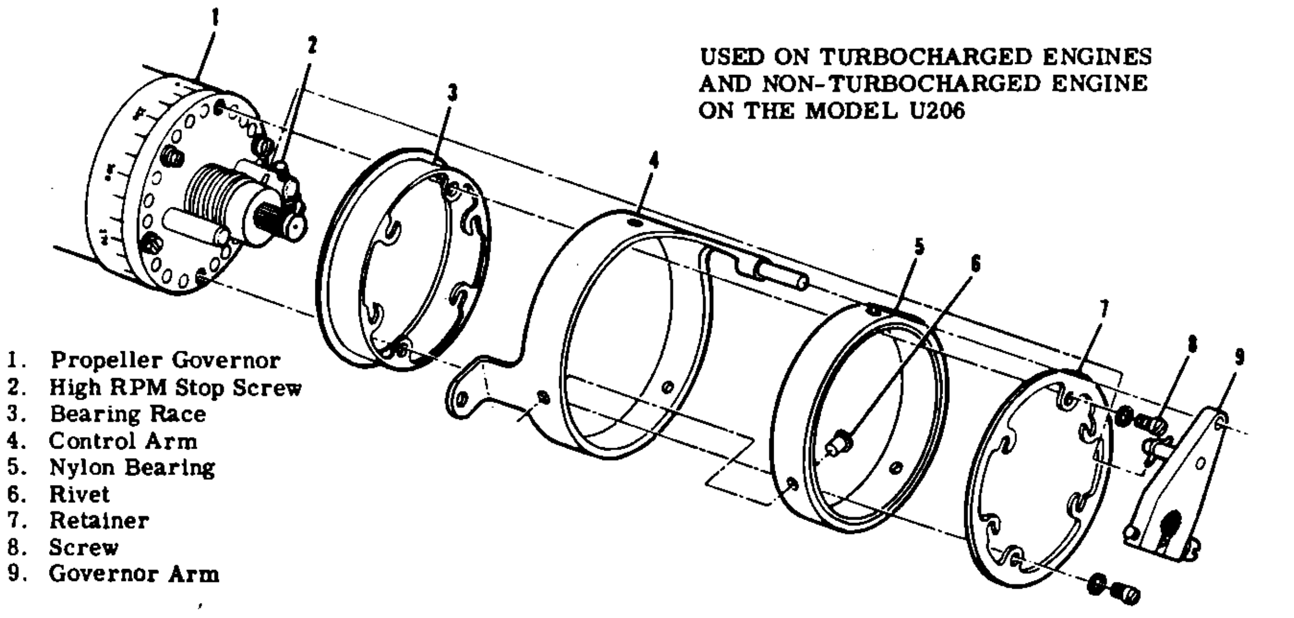
THREE-BLADED PROPELLER

Figure 14-1. Propeller Installation (Sheet 3 of 4)



THREE-BLADED, EXTENDED HUB PROPELLER

Figure 14-1. Propeller Installation (Sheet 4 of 4)



1. Propeller Governor
2. High RPM Stop Screw
3. Bearing Race
4. Control Arm
5. Nylon Bearing
6. Rivet
7. Retainer
8. Screw
9. Governor Arm

Figure 14-2. Governor Control Arm and Bearing Assembly

14-9. TROUBLE SHOOTING. When trouble shooting the propeller-governor combination, it is recommended that a governor known to be in good condition be installed to check whether the propeller or the governor is at fault. Removal and replacement, rigging, high-speed stop adjustment, desludging and replacement of the governor mounting gasket are not major repairs and may be accomplished in the field. Repairs to propeller governors are classed as propeller major repairs in Federal Aviation Regulations, which also define who may accomplish such repairs.

14-10. REMOVAL.

a. Remove cowling, nose cap and engine baffles as required for access to governor.

b. Disconnect governor control from governor.

NOTE

Note EXACT position of all washers so that washers may be installed in the same position on reinstallation.

c. Disconnect intake manifold balance tube at front of engine and move as required for clearance.

d. Remove nuts and washers securing governor to engine and pull governor from mounting studs.

e. Remove gasket from between governor and engine mounting pad.

14-11. CONTROL ARM AND BEARING ASSEMBLY. Refer to figure 14-2.

14-12. REMOVAL AND INSTALLATION.

a. Using a scribe, make aligning index marks on governor arm (9) and end of governor serrated shaft.

NOTE

The governor arm (9) must be installed on the governor shaft in the same serration or the governor speed will be changed approximately 200 rpm.

b. Remove safety wire from governor arm screw and from screws attaching governor head to governor.

c. Remove screws (8) that pass through the non-notched holes in the retainer (7).

d. Loosen, but do not remove, the four remaining screws so that retainer (7) may be rotated.

e. Loosen screw in governor arm (9) so that arm may be slipped toward end of serrated shaft.

f. Slip governor arm toward end of serrated shaft and work retainer (7) and control arm (9) from governor (1).

NOTE

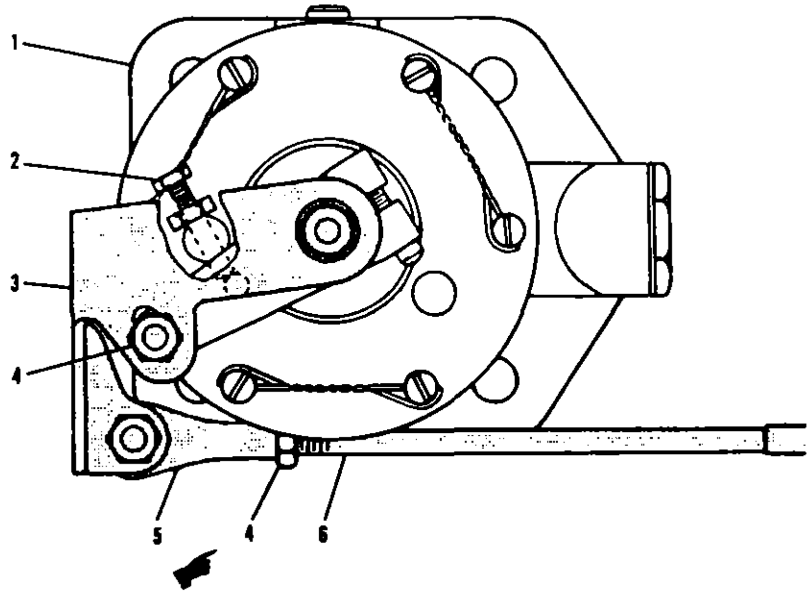
If governor arm (9) becomes disengaged from serrated shaft, align index marks and install arm on serrated shaft. The control arm spring has approximately 1-1/2 turns preload.

g. Rotate and remove bearing race (3) from governor (1).

TYPE A

USED ON NON-TURBOCHARGED ENGINE ON THE MODEL P206

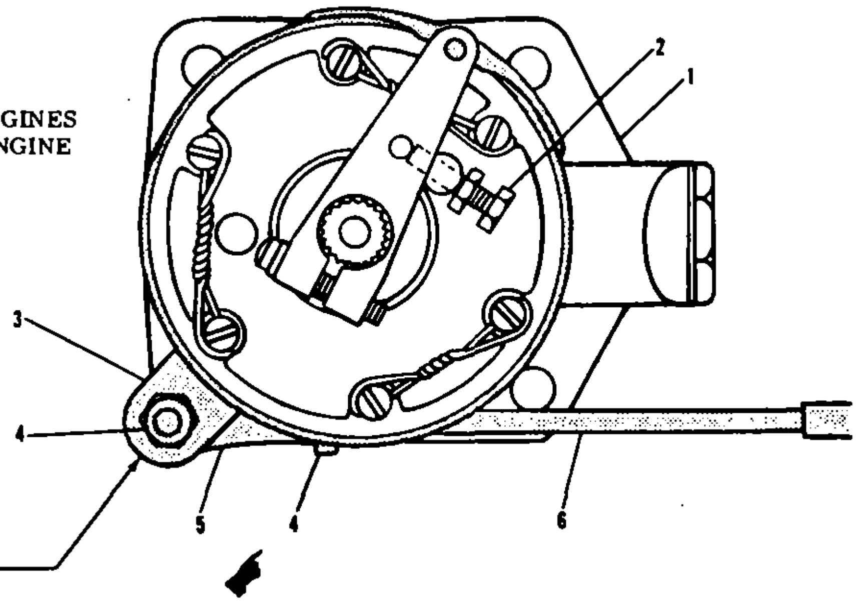
1. Propeller Governor
2. High-RPM Stop Screw
3. Governor Arm Extension
4. Nut
5. Control Rod End
6. Governor Control



TYPE B

USED ON TURBOCHARGED ENGINES AND NON-TURBOCHARGED ENGINE ON THE MODEL U206

1. Propeller Governor
2. High-RPM Stop Screw
3. Arm and Bearing Assembly
4. Nut
5. Control Rod End
6. Governor Control



REFER TO FIGURE 14-2

Figure 14-3. Governor and Control Adjustments

h. Reverse the preceding steps for reinstallation.

14-13. INSTALLATION.

a. Wipe governor and engine mounting pad clean.

b. Install a new gasket on the mounting studs. Install gasket with raised surface of the gasket screen toward the governor.

c. Position governor on mounting studs, aligning governor drive splines with splines in the engine and install mounting nuts and washers. Do not force spline engagement. Rotate engine crankshaft slightly and splines will engage smoothly when properly aligned.

d. Connect governor control to governor and rig control as outlined in paragraph 14-15.

e. Connect intake manifold balance tube, if removed. Ensure all clamps are tight.

f. Reinstall all items removed for access.

14-14. HIGH-RPM STOP ADJUSTMENT. Refer to figure 14-3.

a. Remove engine cowling.

b. (TYPE B.) Disconnect cabin heater inlet air duct from nose cap.

c. (TYPE A.) Remove plug button from left front baffle.

d. Remove safety wire and loosen the high-speed stop screw locknut.

e. Turn the stop screw IN to decrease maximum rpm and OUT to increase maximum rpm. One full turn of the stop screw causes a change of approximately 25 rpm.

f. Tighten stop screw locknut, safety wire stop screw and make propeller control linkage adjustment as necessary to maintain full travel.

g. Install cabin heater inlet air duct or plug button and install cowling.

h. Test operate propeller and governor.

NOTE

It is possible for either the propeller low pitch (high-rpm) stop or the governor high-rpm stop to be the high-rpm limiting factor. It is desirable for the governor stop to limit the high-rpm at the maximum rated rpm for a particular aircraft. Due to climatic conditions, field elevation, low-pitch blade angle and other considerations, an engine may not reach rated rpm on the ground. It may be necessary to readjust the governor stop after test flying to obtain maximum rated rpm when airborne.

14-15. RIGGING PROPELLER GOVERNOR CONTROL.

a. Disconnect control end (5) from governor (1).

b. Place propeller control in cabin, full forward, then pull it back approximately 1/8 inch and lock in this position. This will allow "cushion" to assure full contact with governor high-rpm stop screw.

c. Place governor arm against high-rpm stop screw.

d. Loosen jam nuts and adjust control rod end until attaching holes align while governor arm is against high-rpm stop screw. Be sure to maintain sufficient thread engagement of the control and rod end. If necessary, shift control in the clamps to achieve this.

e. Attach rod end to the governor. Be sure all washers are installed correctly.

f. Operate the control to see that the governor arm bottoms out against the low pitch stop and bottoms out against or a maximum of .12" from the high pitch stop on the governor before reaching the end of control cable travel.

NOTE

Non-turbocharged engines on the Model P206 are equipped with an offset extension to the governor arm. The offset extension has an elongated slot to permit further adjustment. The preceding steps may still be used as an outline in the rigging procedure. The result of rigging, in all cases, is full travel of the governor arm (bottom out against both high and low pitch stops) with some "cushion" at both ends of control travel.

- Refer to the inspection chart in Section 2 for inspection and/or replacement interval for the propeller control.

SHOP NOTES:

SECTION 15

UTILITY SYSTEMS

TABLE OF CONTENTS Page

15-1. UTILITY SYSTEMS.

15-2. HEATING SYSTEM.

15-3. DESCRIPTION. On non-turbocharged aircraft, the heating system is comprised of the heat exchange section of the left exhaust muffler, a heater valve, mounted on the left forward side of the firewall, a duct across the aft side of the firewall, a push-pull control on the instrument panel, and flexible ducts connecting the system. On aircraft with turbocharged engines, the heating system consists of an opening in the left side of the nose cap, an exhaust shroud, a heater valve, mounted on the left forward side of the firewall, to which is attached an adapter and a tube extending downward and overboard. The system also includes a duct across the aft side of the firewall, a push-pull control on the instrument panel, and flexible ducts connecting the system.

15-4. HEATER OPERATION. On airplanes with non-turbocharged engines, ram air is ducted through an engine baffle and the heat exchange section of the left exhaust muffler, to the heater valve at the firewall. On aircraft with turbocharged engines, ram air is ducted through an opening in the left side of the nose cap, through an exhaust shroud, to the heater valve at the firewall. On both models, heated air flows from the heater valve into a duct across the aft side of the firewall, where it is distributed into the cabin. The heater valve, operated by a push-pull control marked "CABIN HEAT", located on the instrument panel, regulates the volume of heated air entering the system. Pulling the heater control full out supplies maximum flow, and pushing it in gradually decreases flow, shutting off flow completely when the control is pushed full in.

15-5. TROUBLE SHOOTING. Most of the operational troubles in the heating system are caused by sticking or binding air valves and their controls, damaged air ducting, or defects in the exhaust muffler. In most cases, valves or controls can be freed by proper lubrication. Damaged or broken parts should be repaired or replaced. When checking controls, be sure valves respond freely to control movement, that they move in the correct direction, and that they move through their full range of travel and seal properly. Check that hose are properly secured and replace hose that are burned, frayed or crushed. If fumes are detected in the cabin, a very thorough inspection of the exhaust muffler should be accomplished. Refer to the applicable paragraph in Section 12 for the non-turbocharged engine exhaust system inspection, or for the turbocharged engine, refer to Section 12A. Since any holes or cracks may permit exhaust fumes to enter the cabin, replacement of defective parts is imperative because fumes constitute an extreme danger. Seal any gaps in heater ducts across the firewall with Pro-Seal #700 (Coast Pro-Seal Co., Los Angeles, California) compound, or equivalent compound.

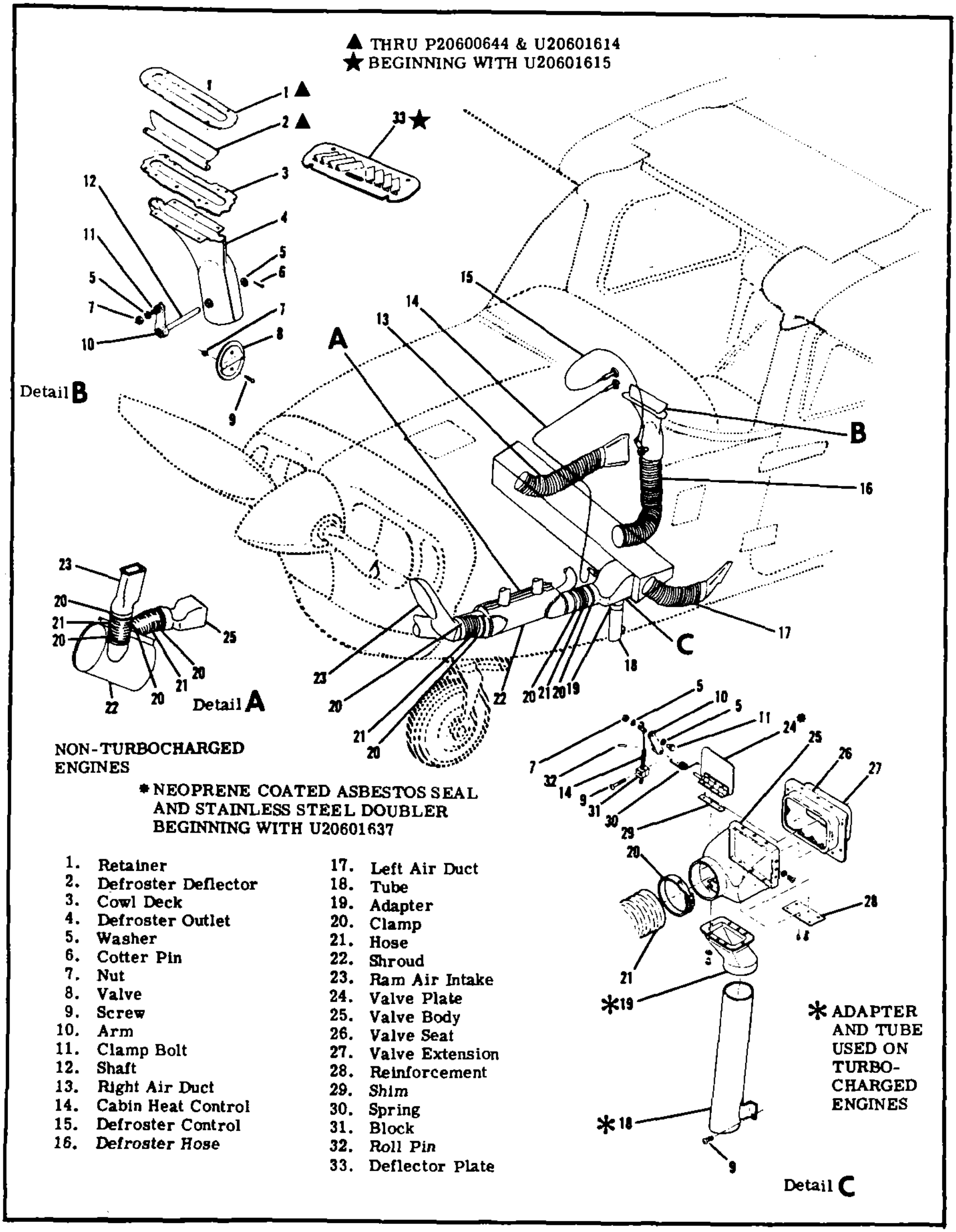
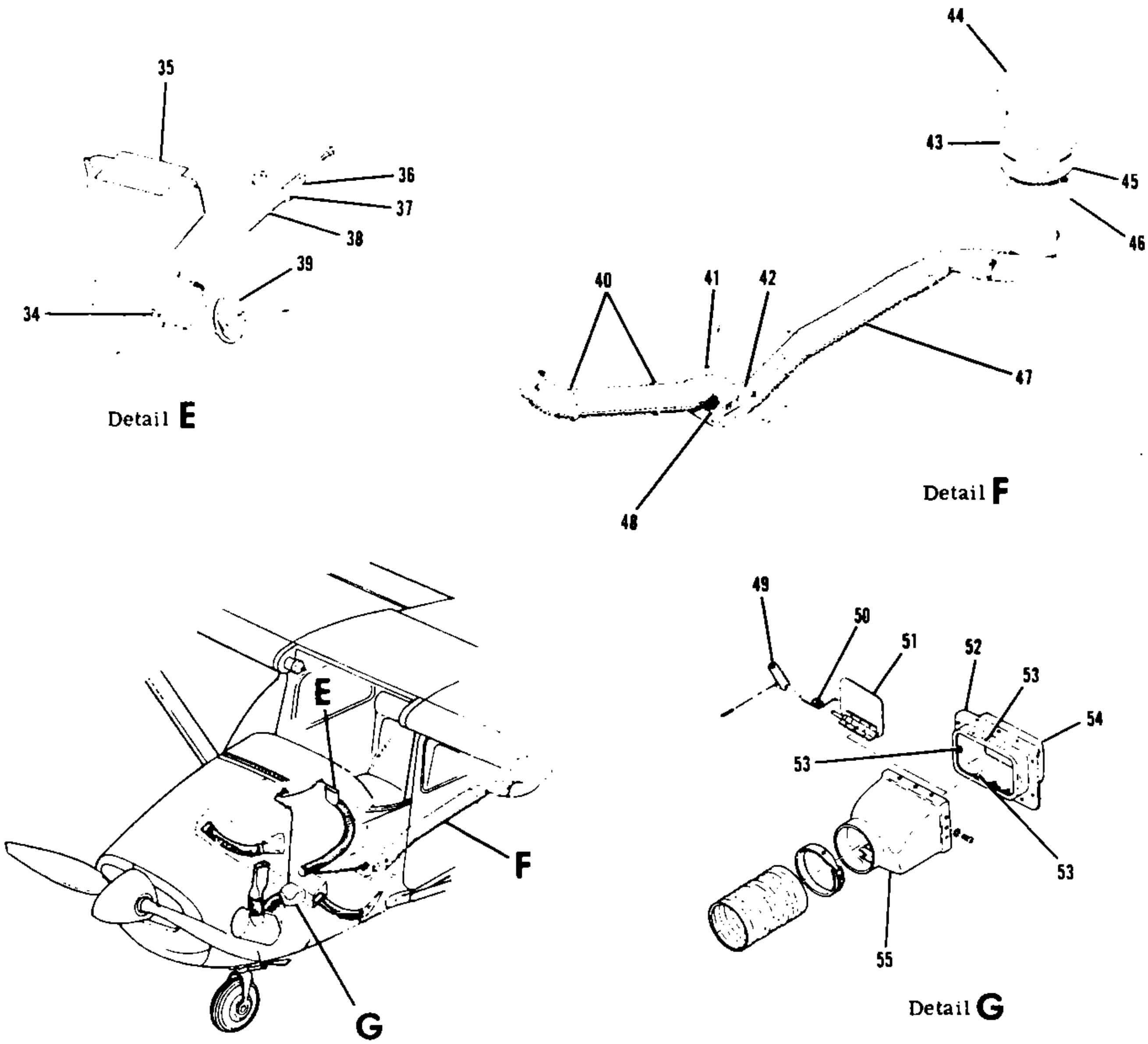


Figure 15-1. Heating and Defrosting Systems (Sheet 1 of 2)



34. Washer
35. Valve and Nozzle
36. Arm Assembly
37. Roll Pin
38. Shaft
39. Valve Assembly
40. Sta-Strap
41. Cover
42. Plenum
43. Retainer
44. Outlet Cover
45. Spacer
46. Screen
47. Hose
48. Clamp
49. Control Arm
50. Spring
51. Valve Plate
52. Valve Seat
53. Nutplate
54. Valve Extension
55. Valve Body

Figure 15-1. Heating and Defrosting Systems (Sheet 2 of 2)

15-6. REMOVAL AND INSTALLATION OF COMPONENTS. Figure 15-1 may be used as a guide for removal and installation of components of the heater system. Cut replacement hose to length and install in the original routing. Trim hose winding shorter than the hose to allow hose clamps to be fitted. Defective heater valves should be repaired or replaced. Check for proper operation of valves and their controls after installation or repair.

15-7. DEFROSTER SYSTEM.

15-8. DESCRIPTION. The system is composed of a duct across the aft side of the firewall, a defroster outlet, mounted in the left side of the cowl deck immediately aft of the windshield, a defroster control knob on the instrument panel, and flexible ducting connecting the system.

15-9. DEFROSTER OPERATION. Air from the duct across the aft side of the firewall flows through a flexible duct to the defroster outlet. The defroster control operates a damper in the outlet to regulate the amount of air deflected across the inside surface of the windshield. The temperature and volume of this air is controlled by the settings of the cabin heating system control.

15-10. TROUBLE SHOOTING. Most of the operational troubles in the defrosting system are caused by sticking or binding of the damper in the defroster outlet or its control. Since the defrosting system depends on proper operation of the cabin heating system, refer to paragraph 15-5 for trouble shooting the heating and defrosting system.

15-11. REMOVAL AND INSTALLATION OF COMPONENTS. Figure 15-1 may be used as a guide for removal and installation of components of the defrosting system. Cut replacement hose to length and install in the original routing. Trim hose winding shorter than the hose to allow hose clamps to be fitted. A defective defroster outlet should be repaired or replaced. Check for proper operation of defroster outlet and its control after installation or repair.

15-12. VENTILATING SYSTEM.

15-13. DESCRIPTION. The system is comprised of two airscoops mounted in the inboard leading edge of each wing, an adjustable ventilator mounted on each side of the cabin near the upper corners of the windshield, two plenum chambers mounted in the left and right rear cabin wing root areas, two fresh airscoop doors, one on each side of the fuselage, just forward of the front seats, a control on the instrument panel for each of these scoop doors and flexible ducting connecting the system.

15-14. VENTILATING SYSTEM OPERATION. Air received from scoops mounted in the inboard leading edges of the wings is ducted to adjustable ventilators mounted on each side of the cabin near the upper corners of the windshield. Rear seat ventilation is provided by plenum chambers mounted in the left and right rear cabin wing root areas. These plenum chambers receive ram air from the airscoops in the inboard leading edges of the wings. Each plenum chamber is equipped with a valve which meters the incoming cabin ventilation air. This provides a chamber for the expansion of cabin air which greatly reduces inlet air noise. Filters at the air inlets are primarily noise reduction filters. Forward cabin ventilation is provided by two fresh airscoop doors, one on each side of the fuselage, just forward of the front seats. The left scoop door is operated by a control in the instrument panel marked "CABIN AIR." and the right scoop door is operated by a control in the instrument panel marked "AUX CABIN AIR." Fresh air from the scoop doors is routed to the duct across the aft side of the firewall, where it is distributed into the cabin. As long as the "CABIN HEAT" control is pushed full in, no heated air can enter the firewall duct; therefore, when the "CABIN AIR" or "AUX CABIN AIR" controls are pulled out, only fresh air from the scoops will flow through the duct into the cabin. As the "CABIN HEAT" control is gradually pulled out, more and more heated air will blend with the fresh air from the scoops and be distributed into the cabin. All of the controls may be set at any position from full open to full closed.

15-15. TROUBLE SHOOTING. Most of the operational troubles in the ventilating system are caused by sticking or binding of the lever in the inlet scoop door or its control. The spring or plate in the plenum chambers could also bind or stick, requiring repair or replacement of the plenum chamber. Check the filter elements in the airscoops in the leading edges of the wings for obstructions. The elements may be removed and cleaned or replaced. Since air passing through the filters is emitted into the cabin, do not use a cleaning solution which would contaminate cabin air. The filters may be removed to increase air flow. However, their removal will cause a slight increase in noise level.

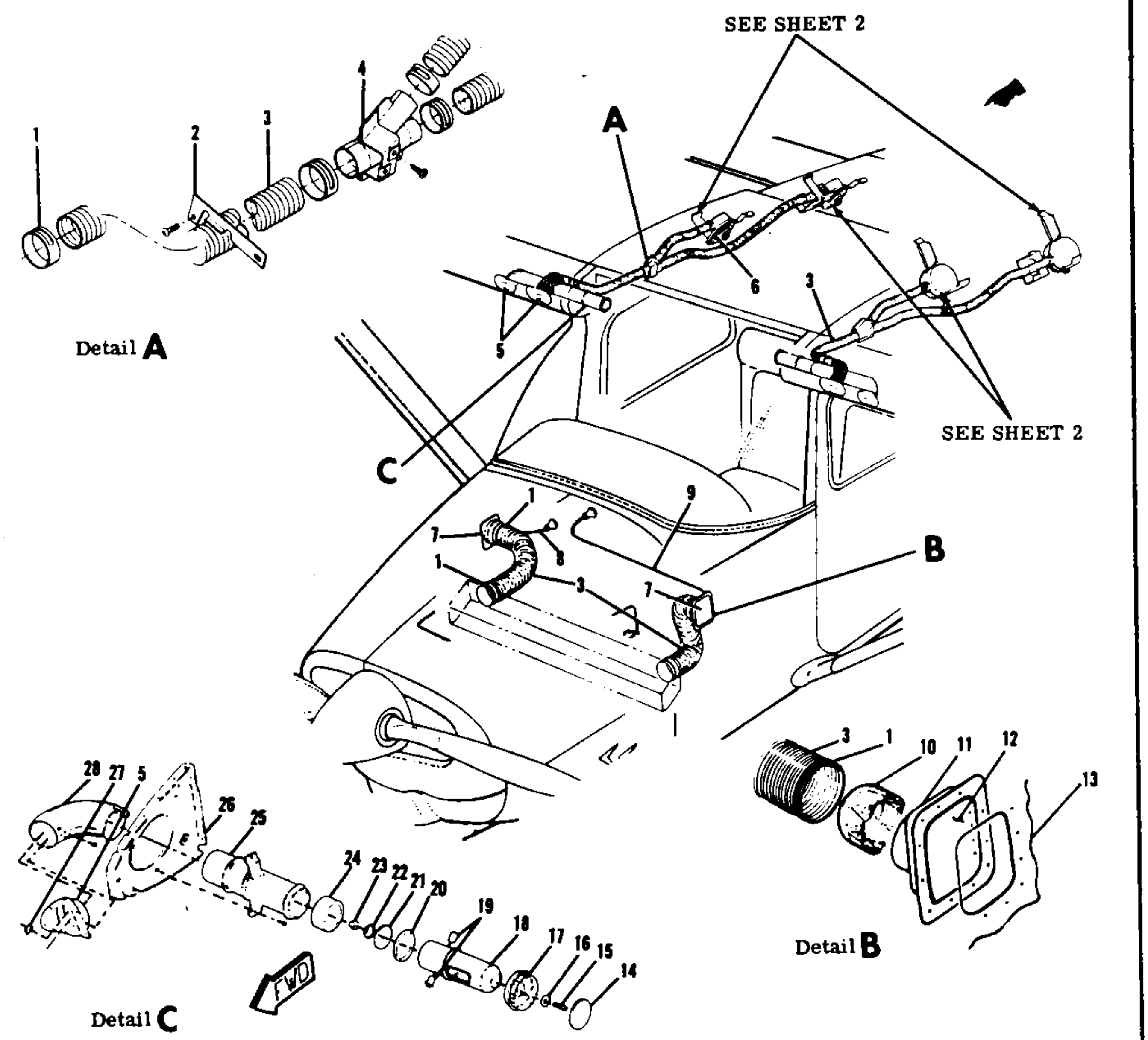
15-16. REMOVAL AND INSTALLATION OF COMPONENTS. Figure 15-2 may be used as a guide for removal and installation of components of the ventilating system. Cut replacement hose to length and install in the original routing. Trim hose winding shorter than the hose to allow hose clamps to be fitted. A defective plenum chamber should be repaired or replaced. Check for proper operation of ventilating controls after installation or repair.

15-17. OXYGEN SYSTEM.

WARNING

Under NO circumstances should the ON-OFF control on the oxygen regulator be turned to the "ON" position with the outlet (low pressure) ports open to atmosphere. Operation of these units in this manner will induce serious damage to the regulators and having the following results:

1. Loss of outlet set pressure.
2. Loss of oxygen flow through the regulator which will result in inadequate oxygen being fed through the aircraft system.
3. Internal leakage of oxygen through the regulator.

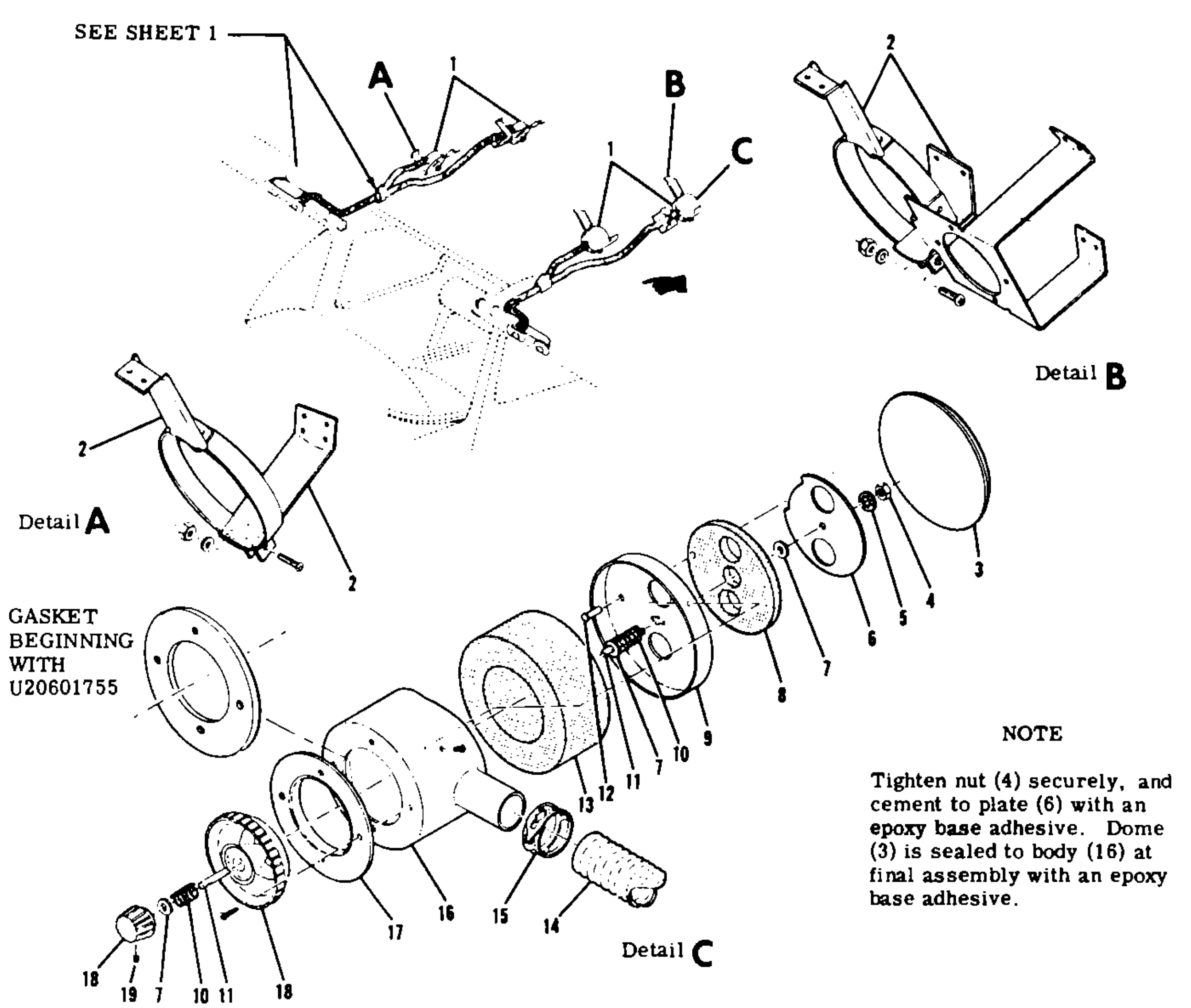


1. Clamp
2. Retainer
3. Hose
4. Fitting Assembly
5. Air Scoop
6. Silencer Assembly
7. Inlet Assembly
8. Auxiliary Cabin Air Control
9. Cabin Air Control
10. Screen
11. Air Valve Assembly
12. Scoop Door
13. Fuselage Skin
14. Insert
15. Screw
16. Washer
17. Knob
18. Outlet Assembly
19. Bullet Catch
20. Seal
21. Washer
22. Washer
23. Nut
24. Seal
25. Tube Assembly
26. Rib
27. Nut Plate
28. Elbow Assembly

Figure 15-2. Forward and Overhead Ventilating System (Sheet 1 of 2)

Opening of the control lever with the outlet ports open to atmosphere, results in an "overshoot" of the regulator metering device due to the extreme flow demand through the regulator. After overshooting, the metering poppet device goes into oscillation, creating serious damage to the poppet seat and diaphragm metering probe. This condition can occur even by turning the control lever on and then turning it quickly off.

A potential hazard exists to aircraft in the field where inexperienced personnel might remove the cylinder and regulator assembly from the aircraft and for some reason, attempt to turn the regulator to the "ON"



1. Silencer Assembly
2. Bracket
3. Dome
4. Nut
5. Star Washer
6. Plate
7. Washer
8. Seal
9. Cap
10. Spring
11. Shaft
12. Spacer
13. Insulator
14. Hose
15. Clamp
16. Valve Body
17. Escutcheon
18. Knob
19. Setscrew

Figure 15-2. Overhead Ventilating System (Sheet 2 of 2)

position with the outlet ports open. Unfortunately, after the units have been improperly operated as noted, there is no outward appearance indicating that damage has occurred.

Testing these regulators should be accomplished only after installation in the aircraft, with the "downstream" low pressure line attached.

15-18. DESCRIPTION. The system is comprised of an oxygen cylinder and regulator assembly, filler valve, pressure lines and six outlets, four in the left and right cabin wing root areas and two in the overhead console, above the pilot and copilot. Oxygen mask and line assemblies are furnished with the system. The pilot's supply line is designed to provide a greater flow of oxygen than the passenger's lines. The pilot's oxygen mask is equipped with a microphone that is keyed by a switch button on the pilot's control wheel. A pressure gage is mounted in the overhead console above the pilot and copilot. An access plate is provided on the left side of the tailcone, just aft of the baggage door for filler valve access on turbocharged aircraft. On non-turbocharged aircraft, the filler valve is located on the rear cabin bulkhead thru 1972 Models. Beginning with 1973, the filler valve is located on the left tailcone.

WARNING

Oil, grease or other lubricants in contact with high-pressure oxygen, create a serious fire hazard and such contact should be avoided. Do not permit smoking or open flame in or near aircraft while work is performed on oxygen systems.

15-19. MAINTENANCE PRECAUTIONS.

a. Working area, tools and hands must be clean.

b. Keep oil, grease, water, dirt, dust and all other foreign matter from system.

c. Keep all lines dry and capped until installed.

d. Use only MIL-T-5542 thread compound or teflon lubricating tape on threads of oxygen valves, tubing connectors, fittings, parts of assemblies which might under any conditions, come in contact with oxygen. The thread compound must be applied sparingly and carefully to only the first three threads of the male fitting. No compound shall be used on aluminum flared fittings or on the coupling sleeves or on the outside of the tube flares. The teflon tape shall be used in accordance with the instructions listed following this step. Extreme care must be exercised to prevent the contamination of the thread compound or teflon tape with oil, grease or other lubricant.

1. Lay tape on threads close to end of fitting. Clockwise on standard threads, opposite on left hand threads.
2. Apply enough tension while winding so tape forms into thread grooves.
3. After wrap is complete, maintain tension and tear tape by pulling apart in direction it was applied. Resulting ragged end is the key to the tape staying in place. (If sheared or cut, tape may unwind.)
4. Press tape well into threads.
5. Make connections.

e. Fabrication of oxygen pressure lines is not recommended. Lines should be replaced by part numbers called out in the aircraft Parts Catalog.

f. Lines and fittings must be clean and dry. One of the following methods may be used.

1. Clean by degreasing with stabilized trichlorethylene, conforming to Federal Specifications O-T-634 or MIL-T-27602. These items can be obtained from American Mineral Spirits of Houston, Texas.

NOTE

Most air compressors are oil lubricated, and a minute amount of oil may be carried by the airstream. If only an oil lu ·icated air compressor is available, drying must be accomplished by heating at a temperature of 250° to 300°F for a suitable period.

NOTE

Cap lines at both ends immediately after drying to prevent contamination.

15-20. REPLACEMENT OF COMPONENTS. Removal, disassembly, assembly and installation of system components may be accomplished while using figure 15-3 as a guide.

CAUTION

The pressure regulator, pressure gage and line and filler valve should be removed and replaced only by personnel familiar with high-pressure fittings. Observe the maintenance precautions listed in the preceding paragraph.

NOTE

Oxygen cylinder and regulator assemblies may not always be installed in the field exactly as illustrated in figure 15-3, which shows factory installation. Important points to remember are as follows.

a. Before removing cylinder, release low-pressure line by opening cabin outlets. Disconnect push-pull control cable, filler line, pressure gage line and outlet line from regulator. CAP ALL LINES IMMEDIATELY.

b. If it is necessary to replace filler valve O-rings, remove parts necessary for access to filler valve. Remove line from quick-disconnect valve at the regulator, then disconnect chain, but do not remove cap from filler valve. Remove screws securing valve and disconnect pressure line. Referring to applicable figure, cap pressure line and seat. Disassemble valve, replace O-rings and reassemble valve. Install filler valve by reversing procedures outlined in this step.

c. A cabin outlet is illustrated in figure 15-3. Repair kit, (part no. C166006-0108), available from the Cessna Service Parts Center, may be used for replacement of components of the outlet assembly.

d. To remove entire oxygen system, headliner must be lowered and soundproofing removed to expose lines. Refer to Section 3 for headliner removal.

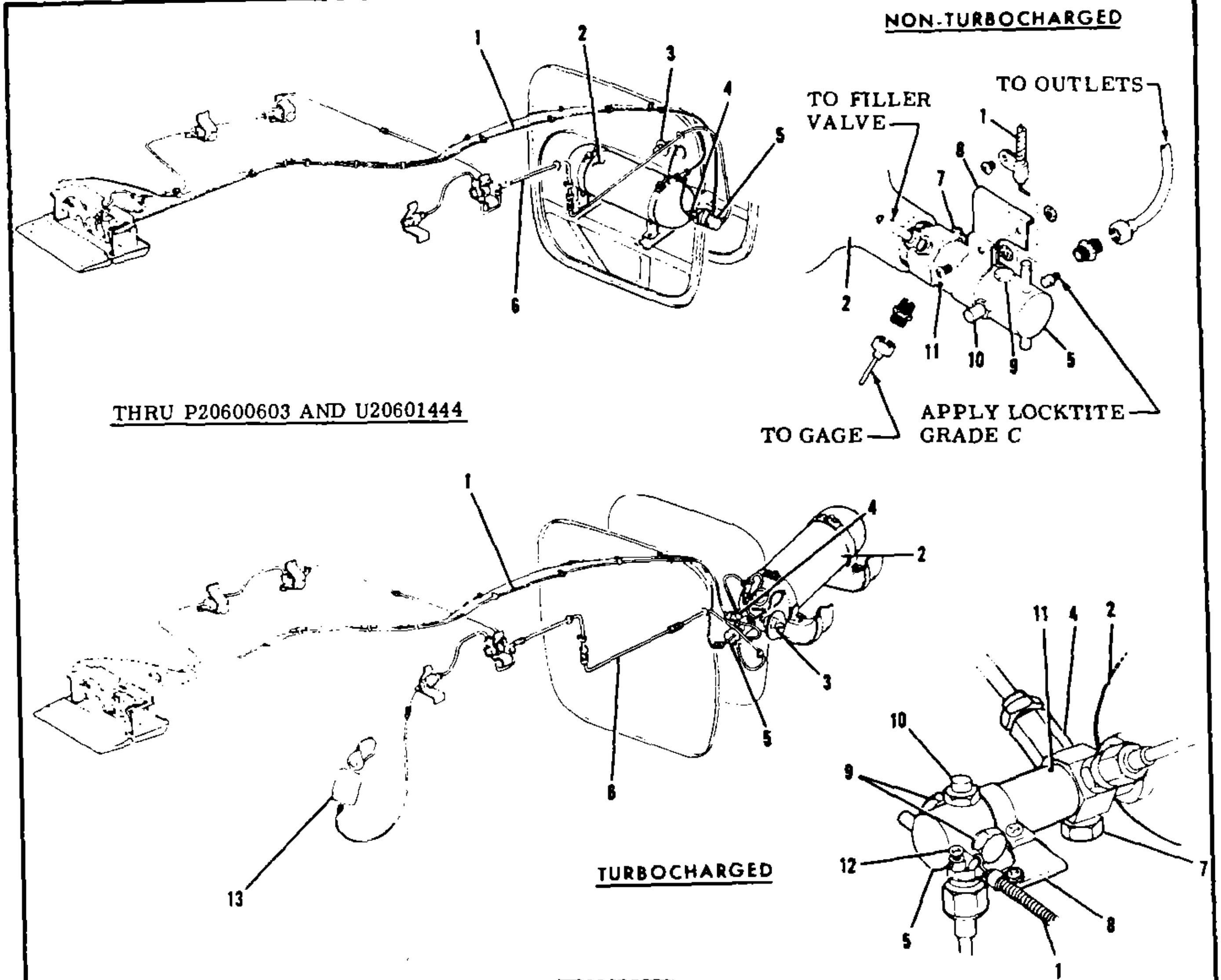
15-21. OXYGEN CYLINDER GENERAL INFORMATION. The following information is permanently steel stamped on the shoulder, top head or neck of each oxygen cylinder:

a. Cylinder specification, followed by service pressure (e.g. "ICC-3AA1800" and "ICC-3HT1850" for standard and light weight cylinders respectively).

NOTE

Effective 1 January, 1970, all newly-manufactured cylinders are stamped "DOT" (Department of Transportation), rather than "ICC" (Interstate Commerce Commission). An example of the new designation would be: "DOT-3HT1850".

b. Cylinder serial number is stamped below or directly following cylinder specification. The symbol of the purchaser, user or maker, if registered with the Bureau of Explosives, may be located di-



CAUTION

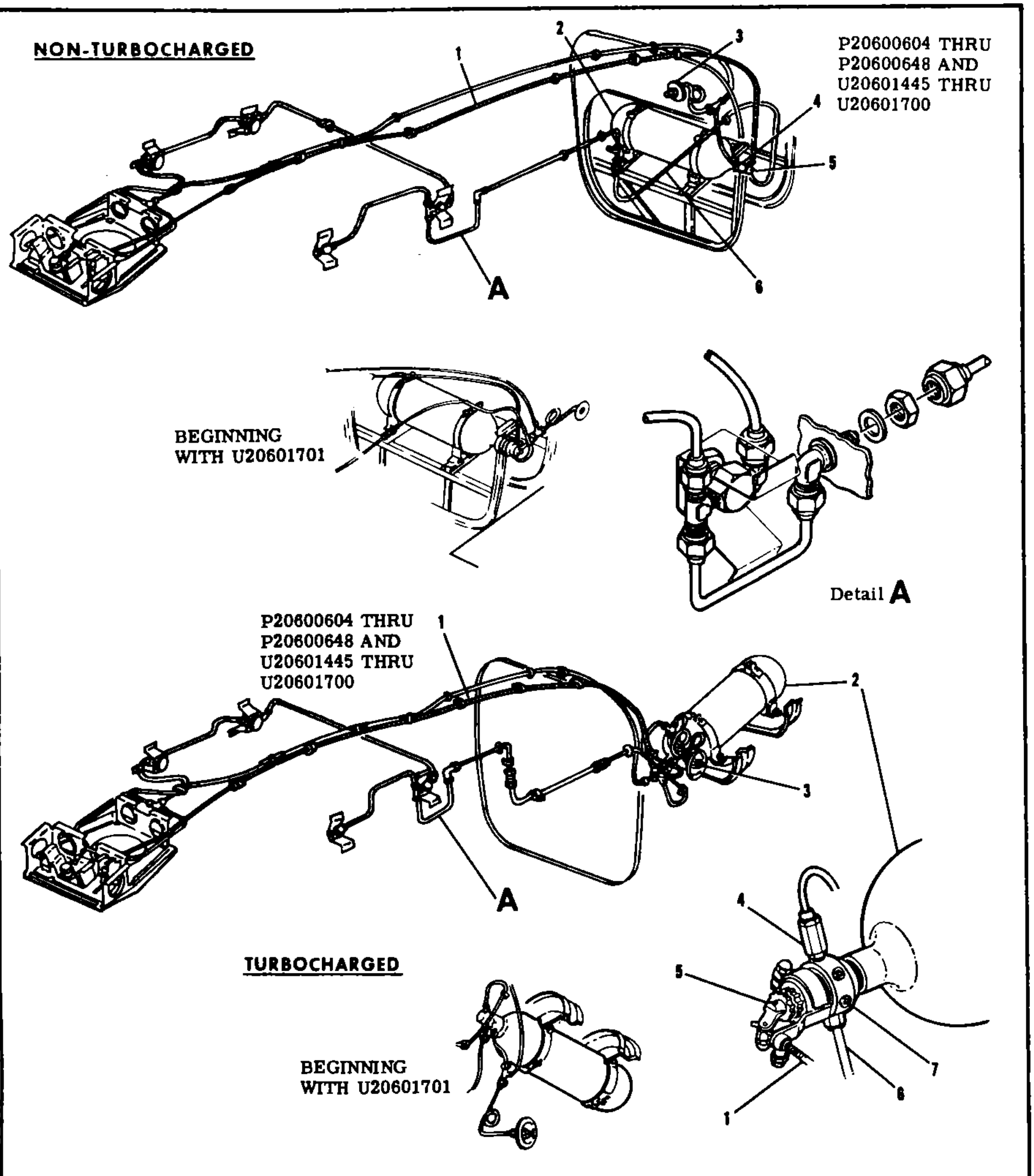
Vent hole (11) in the regulator body must not be covered by control clamp installed around regulator body. Low pressure relief valve (10) should not be removed except for replacement; it is installed in a specific port only. Although the other three ports are common to each other, the low pressure relief valve port is not. High pressure relief valve (7) should not be removed except for replacement. Although all other high pressure ports are common to each other, the thread size is different for the high pressure relief valve.

1. ON-OFF Control
2. Cylinder
3. Filler Valve
4. Quick-Disconnect Valve
5. Regulator
6. Low Pressure Line
7. High Pressure Relief Valve
8. Bracket
9. Plug
10. Low Pressure Relief Valve
11. Atmospheric Vent Hole
12. Clamp
13. Mask Assembly

Figure 15-3. Oxygen System (Sheet 1 of 3)

rectly below or following the serial number. The cylinder serial number may be stamped in an alternate location on the cylinder top head.

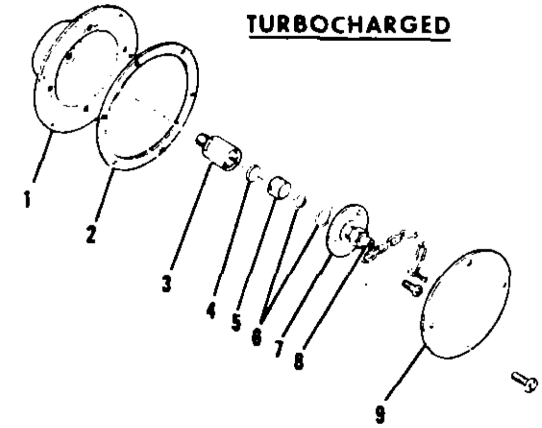
c. Inspector's official mark near serial number.
d. Date of manufacture: This is the date of the first hydrostatic test (such as 4-69 for April 1969). The dash between the month and the year figures may be replaced with the mark of the testing or inspection agency (e.g. 4L69).



1. ON-OFF Control
2. Cylinder
3. Filler Valve
4. Quick-Disconnect Valve
5. Regulator
6. Low-Pressure Line
7. Plug

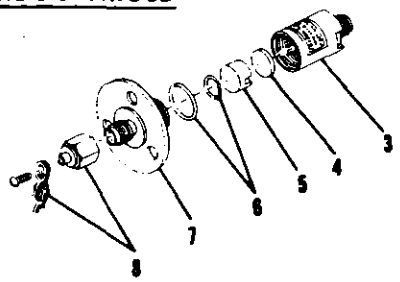
Figure 15-3. Oxygen System (Sheet 2 of 3)

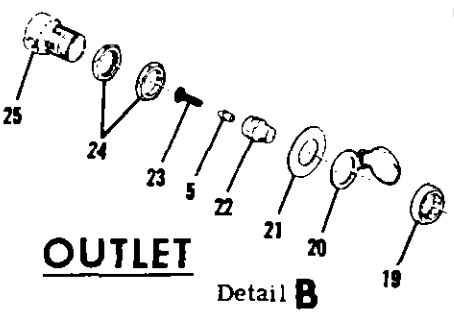
TURBOCHARGED



FILLER VALVE DETAILS

NON-TURBOCHARGED

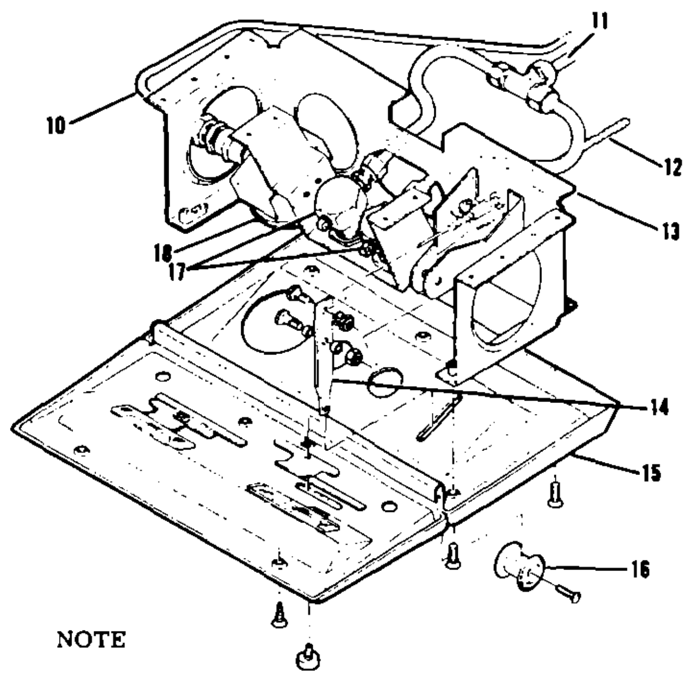




OUTLET

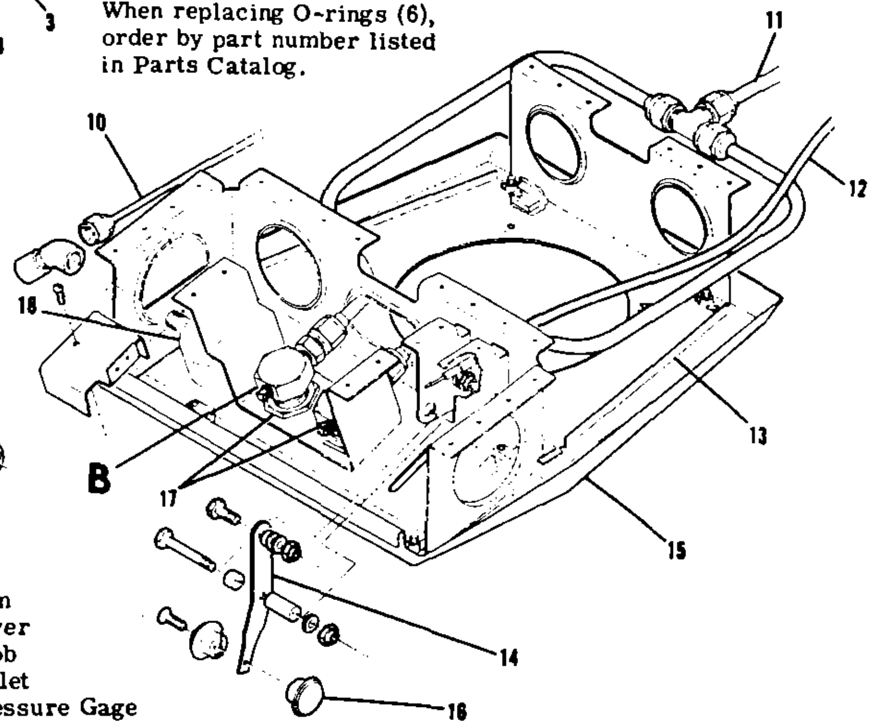
Detail **B**

THRU P20600603 AND U20601444



NOTE

When replacing O-rings (6), order by part number listed in Parts Catalog.



BEGINNING WITH P20600604 AND U20601445

1. Adapter
2. Spacer
3. Housing
4. Filter
5. Poppet
6. O-Ring
7. Flange
8. Cap and Chain Assembly
9. Cover
10. Pressure Gage Line
11. Low Pressure Line
12. ON-OFF Control
13. Bracket
14. Arm
15. Cover
16. Knob
17. Outlet
18. Pressure Gage
19. Lock Ring
20. Cover
21. Escutcheon
22. Core
23. Spring
24. Jam Nut
25. Base

Figure 15-3. Oxygen System (Sheet 3 of 3)

e. Hydrostatic test date: The dates of subsequent hydrostatic tests shall be steel stamped (month and year) directly below the original manufacture date. The dash between the month and year figures can be replaced with the mark of the testing agency.

f. A Cessna identification placard is located near the center of the cylinder body.

g. Halogen test stamp: "Halogen Tested", date of test (month, day and year) and inspector's mark appears directly underneath the Cessna identification placard.

15-22. OXYGEN CYLINDER SERVICE REQUIREMENTS.

a. Hydrostatic test requirements:

1. Standard weight (ICC or DOT-3AA1800) cylinders must be hydrostatically tested to 5/3 their working pressure every five years commencing with the date of the last hydrostatic test.

2. Light weight (ICC or DOT-3HT1850) cylinders must be hydrostatically tested to 5/3 their working pressure every three years commencing with the date of the last hydrostatic test.

b. Service life requirements:

1. Standard weight (ICC or DOT-3AA1800) cylinders have no age life limitations and may continue to be used until they fail hydrostatic test.

2. Light weight (ICC or DOT-3HT1850) cylinders must be retired from service after 12 years or 4,380 filling cycles after date of manufacture, whichever occurs first.

NOTE

These test periods and life limitations are established by the Interstate Commerce Commission Code of Federal Regulations, Title 49, Chapter 1, Para. 73.34.

15-23. OXYGEN CYLINDER INSPECTION REQUIREMENTS.

a. Inspect the entire exterior surface of the cylinder for indication of abuse, dents, bulges and strap chafing.

b. Examine the neck of cylinder for cracks, distortion or damaged threads.

c. Check the cylinders to determine if markings are legible.

d. Check date of last hydrostatic test. If the periodic retest date is past, do not return the cylinder to service until the test has been accomplished.

e. Inspect the cylinder mounting bracket, bracket hold-down bolts and cylinder holding straps for cracks, deformation, cleanliness, and security of attachment.

f. In the immediate area where the cylinder is stored or secured, check for evidence of any types of interference, chafing, deformation or deterioration.

15-24. OXYGEN SYSTEM COMPONENT SERVICE REQUIREMENTS.

a. PRESSURE REGULATOR. The regulator shall be functionally tested every two years or 1,000 hours for aircraft operating under 15,000 ft. and one year for aircraft operating over 15,000 ft. The regulator shall be overhauled every five years ao at time of hydrostatic test.

b. FILLER VALVE. The valve shall be functionally tested every two years and overhauled every five years or at time of hydrostatic test.

c. QUICK-RELEASE COUPLING. The coupling shall be functionally tested every two years and overhauled every five years or at time of hydrostatic test.

d. PRESSURE GAGE. The gage shall be checked for accuracy and overhauled by an FAA approved facility every five years.

e. OUTLETS. The outlets shall be disassembled and inspected and the sealing core replaced, regardless of condition, every five years.

15-25. OXYGEN SYSTEM COMPONENT INSPECTION REQUIREMENTS.

a. Examine all parts for cracks, nicks, damaged threads or other apparent damage.

b. Actuate regulator controls and valve to check for ease of operation.

c. Determine if the gage is functioning properly by observing the pressure build-up and the return to zero when the system oxygen is bled off.

d. Replace any oxygen line that is chafed, rusted, corroded, dented, cracked or kinked.

e. Check fittings for corrosion around the threaded area where lines are joined together. Pressurize the system and check for leaks.

15-26. MASKS AND HOSE.

a. Check oxygen masks for fabric cracks and rough face seals. If the mask is a full-faced model, inspect glass or plastic for cleanliness and state of repair.

b. Flex the mask hose gently over its entirety and check for evidence of deterioration or dirt.

c. Examine mask and hose storage compartment for cleanliness and general condition.

15-27. MAINTENANCE AND CLEANING.

a. Clean and disinfect mask assemblies after use, as appropriate.

NOTE

Use care to avoid damaging microphone assembly while cleaning and sterilizing.

b. Wash mask with a mild soap solution and rinse it with clear water.

c. To sterilize, swab mask thoroughly with a gauze or sponge soaked in a water/merthiolate solution. This solution should contain 1/5 teaspoon of merthiolate per one quart of water. Wipe the mask with a clean cloth and let air dry.

d. Observe that each mask breathing tube end is free of nicks and that the tube end will slip into the cabin oxygen receptacle with ease and will not leak.

e. If a mask assembly is defective (leaks, does not allow breathing or contains a defective microphone) it is advisable to return the mask assembly to the manufacturer or a repair station.

f. Replace hose if it shows evidence of deterioration.

g. Hose may be cleaned in the same manner as the mask.

15-28. SYSTEM PURGING. Whenever components have been removed and reinstalled or replaced, it is advisable to purge the system. Charge oxygen system in accordance with procedures outlined in paragraph 15-31. Plug masks into all outlets and turn the pilot's control to ON position and purge system by allowing oxygen to flow for at least 10 minutes. Smell oxygen flowing from outlets and continue to purge until system is odorless. Refill cylinders as required during and after purging.

15-29. FUNCTIONAL TESTING. Whenever the regulator and cylinder assembly has been replaced or overhauled, perform the following flow and internal leakage tests to check that the system functions properly.

a. Fully charge oxygen system in accordance with procedures outlined in paragraph 15-31.

b. Disconnect line and fitting assembly from pilot's mask and line assembly. Insert outlet end of line and fitting assembly into cabin outlet and attach opposite end of line to a pressure gage (gage should be calibrated in one-pound increments from 0 to 100 PSI). Place control lever in ON position. Gage pressure should read 75±10 PSI.

c. Insert mask and line assemblies into all remaining cabin outlets. With oxygen flowing from all outlets, test gage pressure should still be 75±10 PSI.

d. Place oxygen control lever in OFF position and allow test gage pressure to fall to 0 PSI. Remove all adapter assemblies except the one with the pressure gage. The pressure must not rise above 0 PSI when observed for one minute. Remove pressure gage and adapter from oxygen outlet.

NOTE

If pressures specified in the foregoing procedures are not obtained, the oxygen regulator is not operating properly. Remove and replace cylinder-regulator assembly with another unit and repeat test procedure.

e. Connect mask and line assemblies to each cabin outlet and check each mask for proper operation.

f. Check pilot's mask microphone and control wheel switch for proper operation. After checking, return all masks to mask case.

g. Recharge oxygen system in accordance with procedures outlined in paragraph 15-31.

15-30. SYSTEM LEAK TEST. When oxygen is being lost from a system through leakage, a sequence of steps may be necessary to locate the opening. Leakage may often be detected by listening for the distinct hissing of escaping gas. If this check proves negative, it will be necessary to soap-test all lines and connections with a castile soap and water solution or specially compounded leak-test material. Make the solution thick enough to adhere to the contours of the fittings. At the completion of the leakage test, remove all traces of the leak detector or soap and water solution.

CAUTION

Do not attempt to tighten any connections while the system is charged.

15-31. SYSTEM CHARGING.

WARNING

BE SURE TO GROUND AIRCRAFT AND GROUND SERVICING EQUIPMENT BEFORE CHARGING OXYGEN SYSTEM.

a. Do not attempt to charge oxygen cylinders if servicing equipment fittings or filler valve are corroded or contaminated. If in doubt, clean with stabilized trichlorethylene and let air dry. Do not allow solvent to enter any internal parts.

b. If cylinder is completely empty, do not charge, as the cylinder must then be removed, inspected and cleaned.

CAUTION

A cylinder which is completely empty may well be contaminated. The regulator and cylinder assembly must then be disassembled, inspected and cleaned by an FAA approved facility, before filling. Contamination, as used here, means dirt, dust or any other foreign material, as well as ordinary air in large quantities. If a gage line or filler line is disconnected and the fittings capped immediately, the cylinder will not become contaminated unless temperature variation has created a suction within the cylinder. Ordinary air contains water vapor which could condense and freeze. Since there are very small orifices in the system, it is very important that this condition not be allowed to occur.

c. Connect cylinder valve outlet or outside filler valve to manifold or portable oxygen cascade.

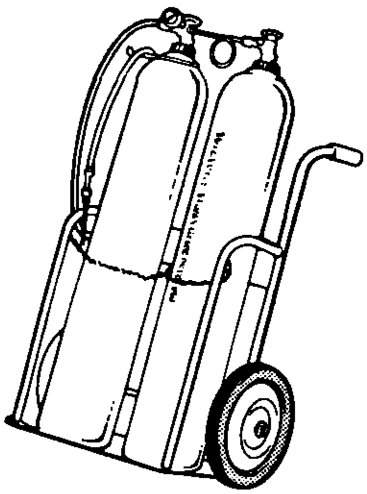
d. Slowly open valve on cascade cylinder or manifold with lowest pressure, as noted on pressure gage, allow pressure to equalize, then close cascade cylinder valve.

e. Repeat this procedure, using a progressively higher pressure cascade cylinder, until system has been charged to the pressure indicated in the chart immediately following step "f" of this paragraph.

f. Ambient temperature listed in the chart is the air temperature in the area where the system is to be charged. Filling pressure refers to the pressure to which aircraft cylinders should be filled. This table gives approximations only and assumes a rise in temperature of approximately 25°F. due to heat of compression. This table also assumes the aircraft cylinders will be filled as quickly as possible and that they will only be cooled by ambient air; no water bath or other means of cooling be used. Example: If ambient temperature is 70°F., fill

NOTE

Each interconnected series of oxygen cylinders is equipped with a single gage. The trailer type cascade may also be equipped with a nitrogen cylinder (shown reversed) for filling landing gear struts, accumulators, etc. Cylinders are not available for direct purchase, but are usually leased and refilled by a local compressed gas supplier.



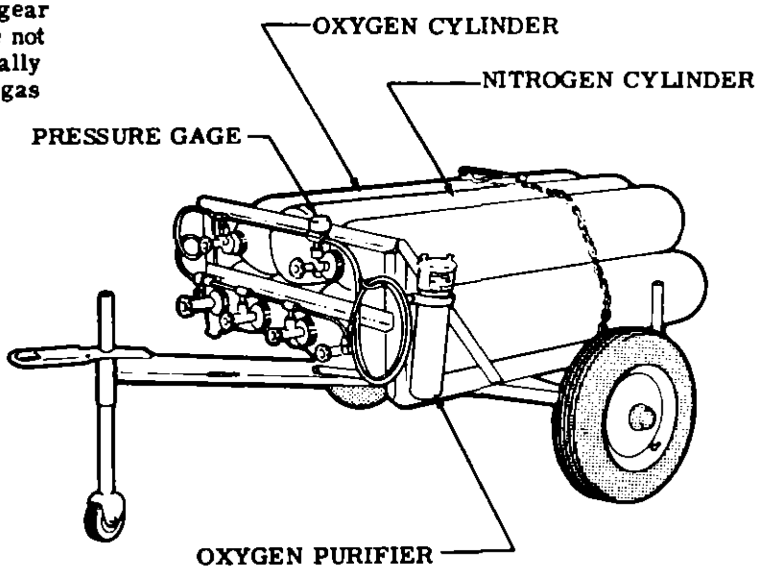


Figure 15-4. Portable Oxygen Cascades

aircraft cylinders to approximately 1,975 psi or as close to this pressure as the gage may read. Upon cooling, cylinders should have approximately 1,850 psi pressure.

TABLE OF FILLING PRESSURES

Ambient Temp. °F	Filling Press. psig	Ambient Temp. °F	Filling Press. psig
0	1650	50	1875
10	1700	60	1925
20	1725	70	1975
30	1775	80	2000
40	1825	90	2050

SHOP NOTES:

SECTION 16

INSTRUMENTS AND INSTRUMENT SYSTEMS

TABLE OF CONTENTS Page

16-1. INSTRUMENT AND INSTRUMENT SYSTEMS.

16-2. GENERAL. This section describes typical instrument installations and the systems operating them, with emphasis on trouble shooting and corrective measures for the systems themselves. It does NOT deal with specific instrument repairs since this usually requires special equipment and data and should be handled by instrument specialists. Federal Aviation Regulations require malfunctioning instruments be sent to an approved instrument overhaul and repair station or returned to manufacturer for servicing. Our concern here is with preventive maintenance on various instrument systems and correction of system faults which result in instrument malfunctions. The descriptive material, maintenance and trouble shooting information in this section is intended to help the mechanic determine malfunctions and correct them, up to the defective instrument itself, at which point instrument technicians should be called in. Some instruments, such as fuel quantity and oil pressure gages, are so simple and inexpensive repairs usually will be more costly than a new instrument. On the other hand, aneroid and gyro instruments usually are well worth repairing. The words "replace instrument" in the text, therefore, should be taken only in the sense of physical replacement in aircraft. Whether replacement is to be with a new instrument, an exchange or original instrument is to be repaired must be decided on basis of individual circumstances.

16-3. INSTRUMENT PANEL. (Refer to figure 16-1.)

16-4. DESCRIPTION. The instrument panel assem-

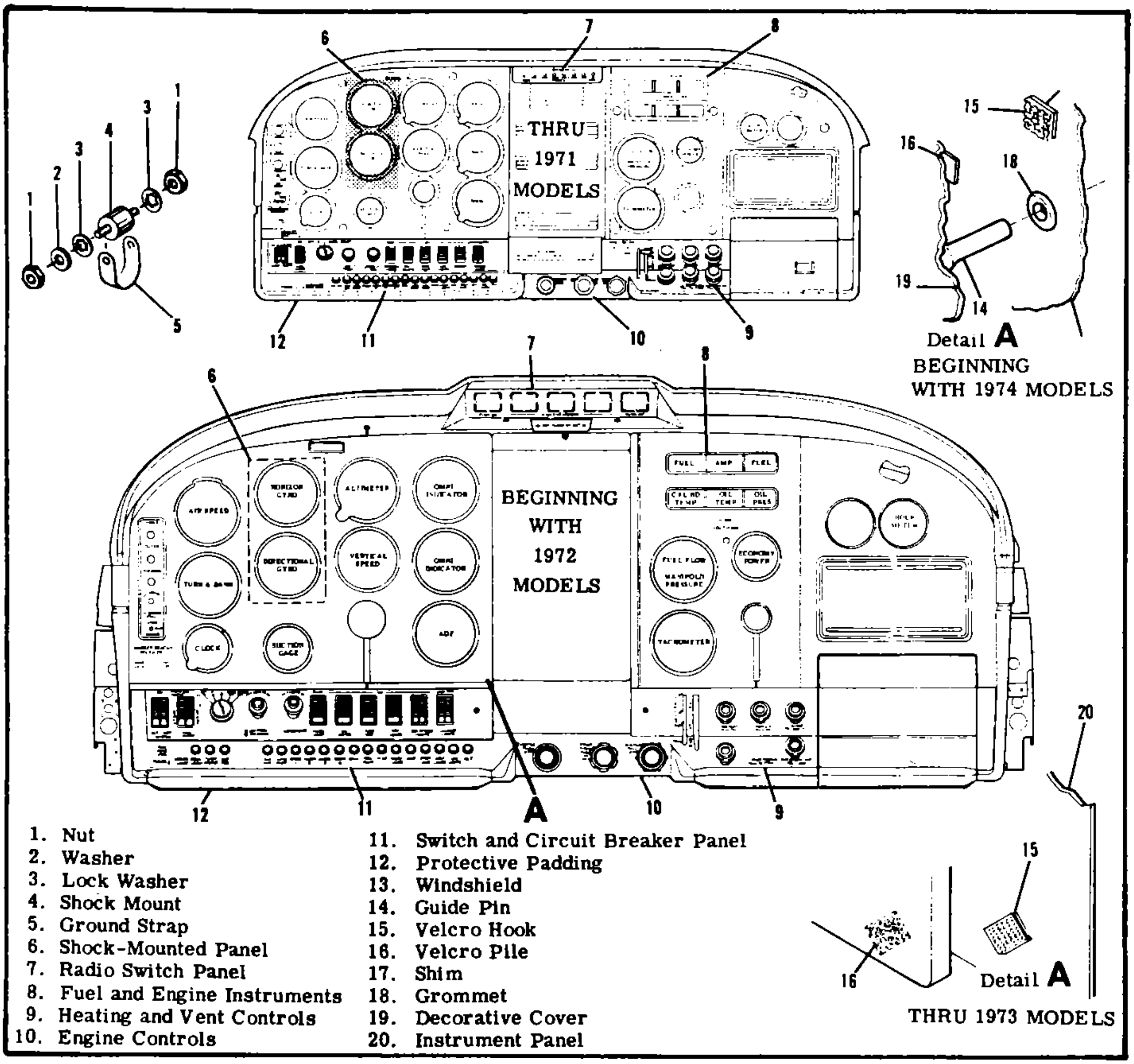


Figure 16-1. Typical Instrument Panel Installation

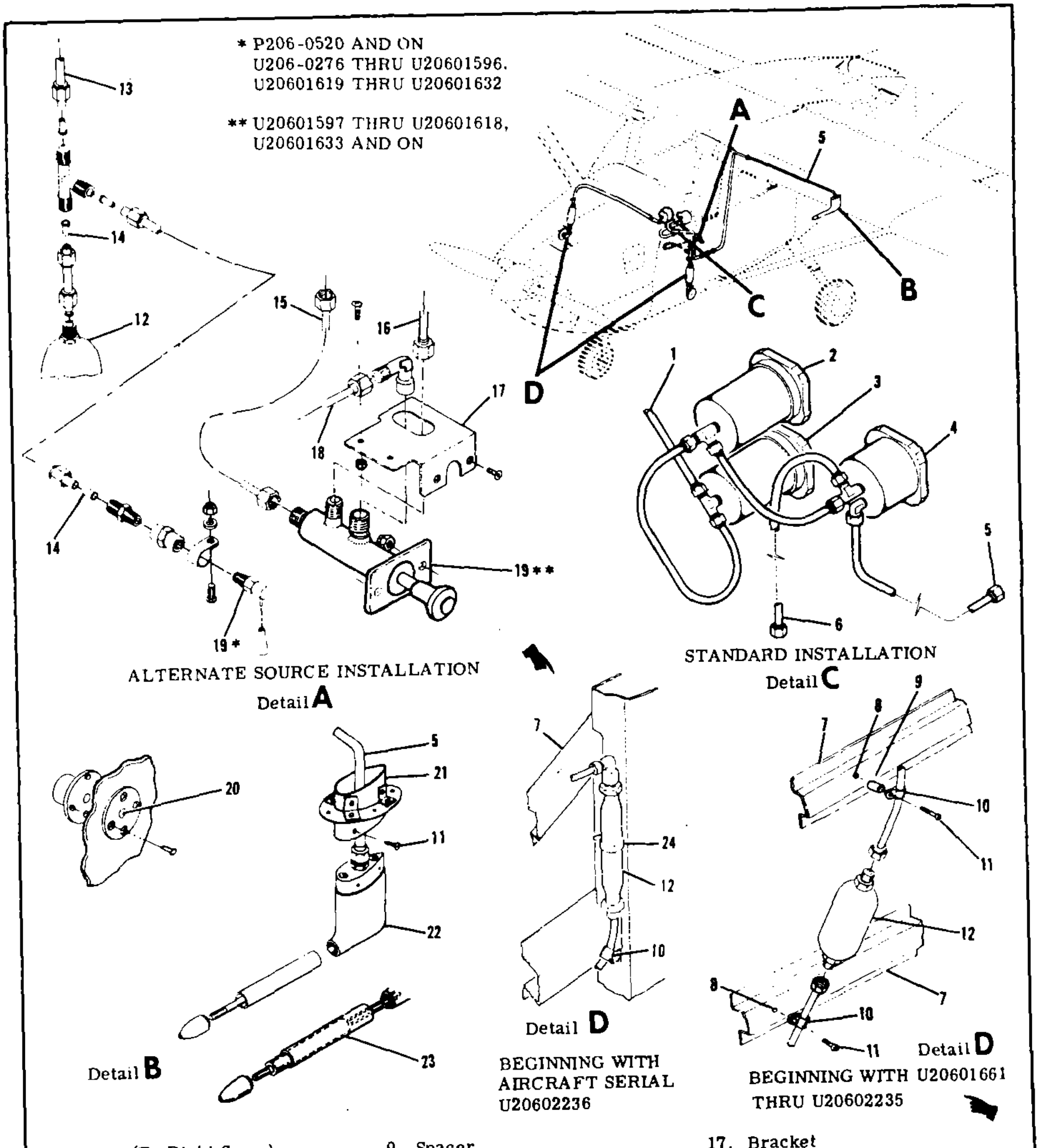
bly consists of a stationary, removable and shock-mounted panel. The stationary panel, normally NOT considered removable, contains instruments such as tachometer, manifold/fuel pressure, fuel and oil gages. The removable panel contains flight instruments such as airspeed, vertical speed and altimeter which ARE NOT sensitive to vibration. The shock-mounted panel, located in the removable panel, contains the major flight instruments such as horizontal and directional gyros which ARE affected by vibration. Most of the instruments are screw-mounted on the panel.

16-5. REMOVAL AND INSTALLATION. The stationary panel is secured to engine mount stringers and ordinarily not considered removable. The removable panel is secured to the stationary panel with screws. The shock mounted panel is secured to the removable panel with rubber shock-mounts. To remove flight instrument panel proceed as follows:

a. Thru 1971 Models remove retainer clips securing decorative cover by carefully prying under clip buttons. Beginning with 1972 Models covers are installed with Velcro fasteners, beginning with 1974 models a combination of Velcro fasteners, guide pins and grommet arrangement is used to install the decorative covers. To remove, pull gently on the cover until released.

b. Remove control knobs or switches from panel as necessary and remove panel.

c. Remove screws securing panel to stationary panel, tag and disconnect instrument wiring and plumbing and pull panel straight back.



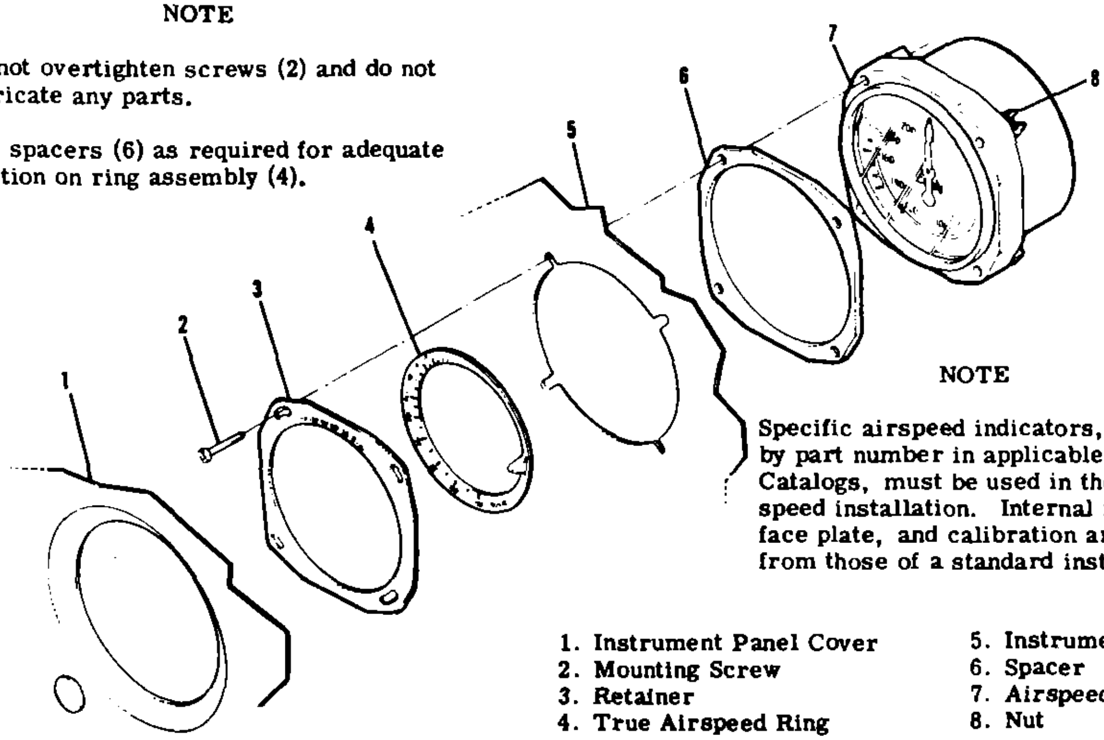
1. Line (To Right Sump)
2. Altimeter
3. Vertical Speed Indicator
4. Airspeed Indicator
5. Line (To Pitot Tube)
6. Line (Airspeed to Left Sump)
7. Stringer
8. Nutplate
9. Spacer
10. Clamp
11. Screw
12. Sump
13. Line (Airspeed to Left Sump)
14. Insert 15.
15. Line (To Instruments)
16. Line (To Alternate Air)
17. Bracket
18. Line (To Sumps)
19. Valve
20. Static Port
21. Connector
22. Pitot Tube Mast Body
23. Heater Element
24. Sta-Strap

Figure 16-2. Pitot-Static Systems

NOTE

Do not overtighten screws (2) and do not lubricate any parts.

Use spacers (6) as required for adequate friction on ring assembly (4).



NOTE

Specific airspeed indicators, listed by part number in applicable Parts Catalogs, must be used in the true airspeed installation. Internal mechanism, face plate, and calibration are different from those of a standard instrument.

1. Instrument Panel Cover
2. Mounting Screw
3. Retainer
4. True Airspeed Ring
5. Instrument Panel
6. Spacer
7. *Airspeed Indicator*
8. Nut

Figure 16-3. True Airspeed Indicator

NOTE

If panel is to be removed from aircraft, remove control wheel.

d. To remove shock-mounted panel remove nuts from shock mounts and pull panel straight back.
e. Reverse preceding steps for installation.

NOTE

A light coat of paraffin, beeswax or soap on prongs of retainer clips will ease installation.

16-6. SHOCK MOUNTS. Service life of instruments is directly related to adequate shock-mounting of panel. If removal of panel is necessary, check mounts for deterioration and replace as necessary.

16-7. INSTRUMENTS. (Refer to figure 16-1.)

16-8. REMOVAL. Most instruments are secured to panel with screws inserted through panel face, under decorative cover. To remove an instrument, remove decorative cover, disconnect plumbing or wiring to instrument concerned, remove retainer screws and take instrument out from behind, or, in some cases from front of instrument panel. Instrument clusters are installed as units, secured by a screw on each corner of cluster. Cluster must be removed from panel to replace an individual gage. In all cases when an instrument is removed, lines or wires disconnected from it should be protected. Cap open lines and cover pressure connections on instrument to prevent thread damage and entrance of foreign matter. Wire terminals should be insulated or tied up so they will not ground accidentally or short-circuit on another terminal.

16-9. INSTALLATION. Generally, installation procedure is the reverse of removal procedure. Make sure mounting screw nuts are tightened firmly, but do not overtighten, particularly on instruments having plastic cases. The same rule generally applies to connecting plumbing and wiring.

NOTE

All instruments (gages and indicators), requiring a thread seal or lubricant, shall be installed using teflon tape on male fittings only. This tape is available through Cessna Service Parts Center.

When replacing an electrical gage in an instrument cluster assembly, avoid bending pointer or dial plate. Distortion of dial or back plate could change calibration of gages.

16-10. PITOT AND STATIC SYSTEMS. (Refer to figure 16-2.)

16-11. DESCRIPTION. The pitot system conveys ram air pressure to the airspeed indicator. The static system vents vertical speed indicator, altimeter and airspeed indicator to atmospheric pressure through plastic tubing connected to static ports.

A static line sump is installed at each source button to collect condensation in static system. Beginning with 1974 models a new smaller diameter static line sump is installed and is located on the firewall. An alternate static source may be installed and is used only in emergencies. When used as a static source on Aircraft Serials thru U20601632 the cabin air becomes another source of static air and the external source is not shut off unless totally obstructed. Beginning with Serial U20601633 the static source valve is so connected to the system that when the control is pulled on the external source is mechanically shut off and the cabin air becomes the only source of static air. When used as a static source, cabin pressure is substituted for atmospheric pressure, causing instrument readings to vary from normal. Refer to Owner's Manual for flight operation using alternate static source pressure. A pitot tube heater and stall warning heater may be installed. The heating elements are controlled by a switch at the instrument panel and powered by the electrical system.

16-12. MAINTENANCE. Proper maintenance of pitot and static system is essential for proper operation of altimeter, vertical speed and airspeed indicators. Leaks, moisture and obstructions in pitot system will result in false airspeed indications, while static system malfunctions will affect readings of all three instruments. Under instrument flight conditions, these instrument errors could be hazardous. Cleanliness and security are the principal rules for system maintenance. The pitot tube and static ports MUST be kept clean and unobstructed.

16-13. STATIC PRESSURE SYSTEM INSPECTION AND LEAKAGE TEST. The following procedure outlines inspection and testing of static pressure system, assuming altimeter has been tested and inspected in accordance with current Federal Aviation Regulations.

a. Ensure static system is free from entrapped moisture and restrictions.

b. Ensure no alterations or deformations of airframe surface have been made which would affect the relationship between air pressure in static pressure system and true ambient static air pressure for any flight configuration.

c. Seal off one static pressure source opening with plastic tape. This MUST be an air-tight seal.

d. Close static pressure alternate source valve, if installed.

e. Attach a source of suction to remaining static pressure source opening. Figure 16-4 shows one method of obtaining suction.

f. Slowly apply suction until altimeter indicates a 1000-foot increase in altitude.

CAUTION

When applying or releasing suction, do not exceed range of vertical speed indicator or airspeed indicator.

g. Cut off suction source to maintain a "closed" system for one minute. Leakage shall not exceed 100 feet of altitude loss as indicated on altimeter.

h. If leakage rate is within tolerance, slowly release suction source, then remove tape used to seal static source.

NOTE

If leakage rate exceeds maximum allowable, first tighten all connections, then repeat leakage test. If leakage rate still exceeds maximum allowable, use following procedure.

i. Disconnect static pressure lines from airspeed indicator and vertical speed indicator. Use suitable fittings to connect lines together so altimeter is the only instrument still connected into static pressure system.

j. Repeat leakage test to check whether static pressure system or the removed instruments are cause of leakage. If instruments are at fault, they must be repaired by an "appropriately rated repair station" or replaced. If static pressure system is at fault, use following procedure to locate leakage.

k. Attach a source of positive pressure to static source opening. Figure 16-4 shows one method of obtaining positive pressure.

CAUTION

Do not apply positive pressure with airspeed indicator or vertical speed indicator connected to static pressure system.

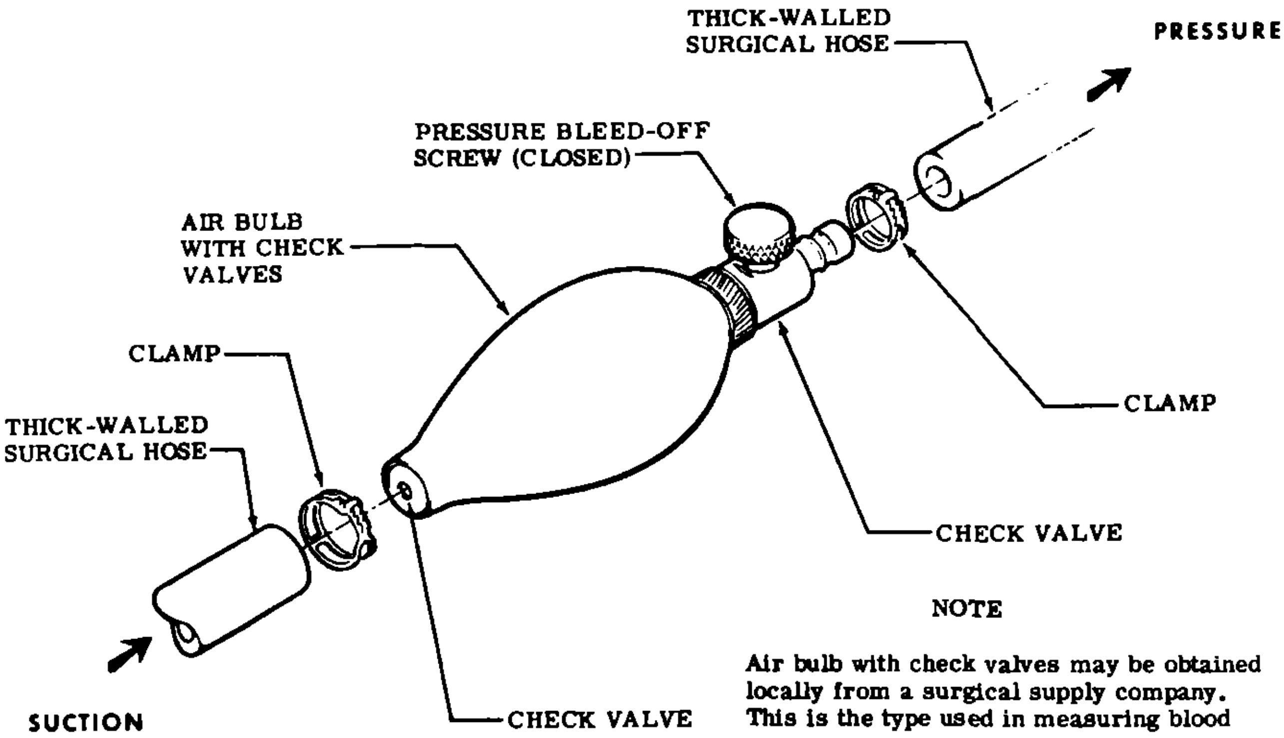
l. Slowly apply positive pressure until altimeter indicates a 500-foot decrease in altitude and maintain this altimeter indication while checking for leaks. Coat line connections, static pressure alternate source valve and static source flange with solution of mild soap and water, watching for bubbles to locate leaks.

m. Tighten leaking connections. Repair or replace parts found defective.

n. Reconnect airspeed and vertical speed indicators into static pressure system and repeat leakage test per steps "c" thru "h".

16-14. PITOT SYSTEM INSPECTION AND LEAKAGE TEST. To check pitot system for leaks, fasten a piece of rubber or plastic tubing over pitot tube, close opposite end of tubing and slowly roll up tube until airspeed indicator registers in cruise range. Secure tube and after a few minutes recheck airspeed indicator. Any leakage will have reduced the pressure in system, resulting in a lower airspeed indication. Slowly unroll tubing before removing it, so pressure is reduced gradually. Otherwise instrument may be damaged. If test reveals a leak in system, check all connections for tightness.

16-15. BLOWING OUT LINES. Although pitot system is designed to drain down to pitot tube opening, condensation may collect at other points in system and produce a partial obstruction. To clear line, disconnect at airspeed indicator. Using low pressure air, blow from indicator end of line toward pitot tube.



NOTE

Air bulb with check valves may be obtained locally from a surgical supply company. This is the type used in measuring blood pressure.

TO APPLY SUCTION:

1. Squeeze air bulb to expel as much air as possible.
2. Hold suction hose firmly against static pressure source opening.
3. Slowly release air bulb to obtain desired suction, then pinch hose shut tightly to trap suction in system.
4. After leak test, release suction slowly by intermittently allowing a small amount of air to enter static system. To do this, tilt end of suction hose away from opening, then immediately tilt it back against opening. Wait until vertical speed indicator approaches zero, then repeat. Continue to admit this small amount of air intermittently until all suction is released, then remove test equipment.

TO APPLY PRESSURE:

CAUTION

Do not apply positive pressure with airspeed indicator or vertical speed indicator connected into static system.

1. Hold pressure hose firmly against static pressure source opening.
2. Slowly squeeze air bulb to apply desired pressure to static system. Desired pressure may be maintained by repeatedly squeezing bulb to replace any air escaping through leaks.
3. Release pressure by slowly opening pressure bleed-off screw, then remove test equipment.

Figure 16-4. Static System Test Equipment

CAUTION

Never blow through pitot or static lines toward instruments.

Like pitot lines, static pressure lines must be kept clear and connections tight. All models have static source sumps which collect moisture and keep system clear. However, when necessary, disconnect static line at first instrument to which it is connected, then blow line clear with low-pressure air.

NOTE

On aircraft equipped with alternate static source, use same procedure, opening alternate static source valve momentarily to clear line, then close valve and clear remainder of system.

Check all static pressure line connections for tightness. If hoses or hose connections are used, check for general condition and clamps for security. Replace hoses which have cracked, hardened or show other signs of deterioration.

16-16. REMOVAL AND INSTALLATION. (Refer to figure 16-2.) To remove pitot mast remove four mounting screws on side of connector (21) and pull mast out of connector far enough to disconnect pitot line (5). Electrical connections to heater assembly (if installed) may be disconnected through wing access plate just inboard of mast. Pitot and static lines are removed in the usual manner, after removing wing access plates, lower wing fairing strip and upholstery as required. Installation of tubing will be simpler if a guide wire is drawn in as tubing is removed from wing. The tubing may be removed intact by drawing it out through cabin and right door. When replacing components of pitot and static pressure systems, use anti-seize compound sparingly on male threads on both metal and plastic connections. Avoid excess compound which might enter lines. Tighten connections firmly, but avoid overtightening and distorting fittings. If twisting of plastic tubing is encountered when tightening fittings, VV-P-236 (USP Petrolatum), may be applied sparingly between tubing and fittings.

16-17. TROUBLE SHOOTING--PITOT STATIC SYSTEM.

TROUBLE	PROBABLE CAUSE	REMEDY
LOW OR SLUGGISH AIRSPEED INDICATION. (Normal altimeter and vertical speed.)	Pitot tube obstructed, leak or obstruction in pitot line.	Test pitot tube and line for leaks or obstructions. Blow out tube and line, repair or replace damaged line.
INCORRECT OR SLUGGISH RESPONSE. (all three instruments.)	Leaks or obstruction in static line.	Test line for leaks and obstructions. Repair or replace line, blow out obstructed line.

16-18. TRUE AIRSPEED INDICATOR. A true airspeed indicator may be installed. This indicator, equipped with a conversion ring, may be rotated until pressure altitude is aligned with outside air temperature, then airspeed indicated on instrument is read as true airspeed on adjustable ring. Refer to figure 16-3 for removal and installation. Upon installation, before tightening mounting screws (2), calibrate the instrument as follows: Rotate ring (4) until 120 mph on adjustable ring aligns with 120 mph on indicator. Holding this setting, move retainer (3) until 60°F aligns with zero pressure altitude, then tighten mounting screws (2) and replace decorative cover.

NOTE

On indicators graduated in knots, use 105 knots instead of 120 miles per hour in the above calibration procedure.

SHOP NOTES:

16-19. TROUBLE SHOOTING--AIRSPEED INDICATOR.

TROUBLE	PROBABLE CAUSE	REMEDY
HAND FAILS TO RESPOND.	Pitot pressure connection not properly connected to pressure line from pitot tube.	Test line and connection for leaks. Repair or replace damaged line, tighten connections.
	Pitot or static lines clogged.	Check line for obstructions. Blow out lines.
INCORRECT INDICATION OR HAND OSCILLATES.	Leak in pitot or static lines.	Test lines and connections for leaks. Repair or replace damaged lines, tighten connections.
	Defective mechanism or leaking diaphragm.	Substitute known-good indicator and check reading. Replace instrument.
	Leaking diaphragm.	Substitute known-good indicator and check reading. Replace instrument.
(Refer to Paragraph 16-11)	Alternate static source valve open. THRU U20601596, U20601619 THRU U20601632 AND THRU P20601587.	Check visually. Close for normal operation.
HAND VIBRATES.	Excessive vibration.	Check panel shock mounts. Replace defective shock mounts.
	Excessive tubing vibration.	Check clamps and line connections for security. Tighten clamps and connections, replace tubing with flexible hose.

SHOP NOTES:

16-20. TROUBLE SHOOTING--ALTIMETER

TROUBLE	PROBABLE CAUSE	REMEDY
INSTRUMENT FAILS TO OPERATE.	Static line plugged.	Check line for obstructions. Blow out lines.
	Defective mechanism.	Substitute known-good altimeter and check reading. Replace instrument.
INCORRECT INDICATION.	Hands not carefully set.	Reset hands with knob.
	Leaking diaphragm.	Substitute known-good altimeter and check reading. Replace instrument.
	Pointers out of calibration.	Compare reading with known-good altimeter. Replace instrument.
HAND OSCILLATES.	Static pressure irregular.	Check lines for obstruction or leaks. Blow out lines, tighten connections.
	Leak in airspeed or vertical speed indicator installations.	Check other instruments and system plumbing for leaks. Blow out lines, tighten connections.

16-21. TROUBLE SHOOTING--VERTICAL SPEED INDICATOR.

TROUBLE	PROBABLE CAUSE	REMEDY
INSTRUMENT FAILS TO OPERATE.	Static line plugged.	Check line for obstructions. Blow out lines.
	Static line broken.	Check line for damage, connections for security. Repair or replace damaged line, tighten connections.
INCORRECT INDICATION.	Partially plugged static line.	Check line for obstructions. Blow out lines.
	Ruptured diaphragm.	Substitute known-good indicator and check reading. Replace instrument.
	Pointer off zero.	Reset pointer to zero. Reset pointer to zero.
POINTER OSCILLATES.	Partially plugged static line.	Check line for obstructions. Blow out lines.

16-21. TROUBLE SHOOTING--VERTICAL SPEED INDICATOR. (Cont)

TROUBLE	PROBABLE CAUSE	REMEDY
POINTER OSCILLATES. (cont).	Leak in static line.	Test lines and connections for leaks. Repair or replace damaged lines, tighten connections.
	Leak in instrument case.	Substitute known-good indicator and check reading. Replace instrument.
HAND VIBRATES.	Excessive vibration.	Check shock mounts. Replace defective shock mounts.
	Defective diaphragm.	Substitute known-good indicator and check for vibration. Replace instrument.

16-22. TROUBLE SHOOTING--PITOT TUBE HEATER.

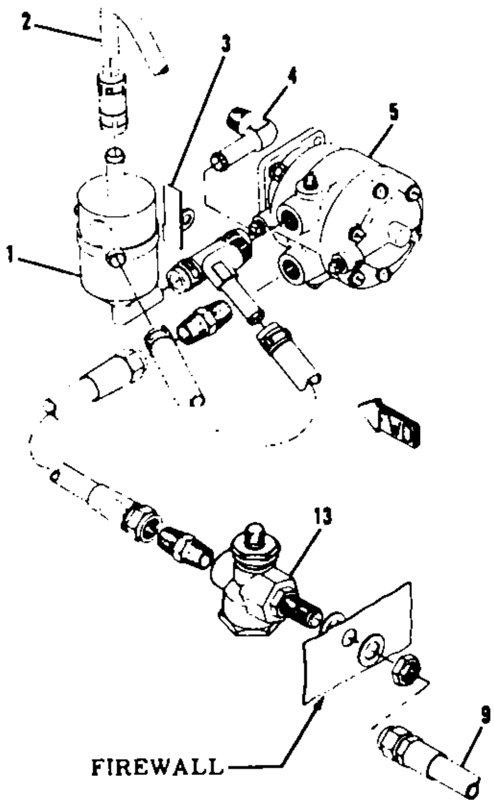
TROUBLE	PROBABLE CAUSE	REMEDY
TUBE DOES NOT HEAT OR CLEAR ICE.	Switch turned "OFF."	Turn switch "ON."
	Blown fuse.	Check fuse. Replace fuse.
	Break in wiring.	Test for open circuit. Repair wiring.
	Heating element burned out.	Check resistance of heating element. Replace element.

16-23. VACUUM SYSTEM (Refer to Figure 16-5)

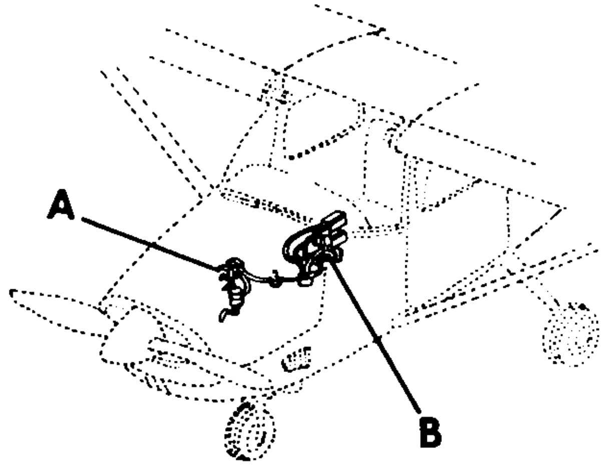
16-24. DESCRIPTION. Through Aircraft Serial U20601956 suction to operate the gyros is provided by an engine-driven vacuum pump, gear-driven through a spline-type coupling. The vacuum pump discharge air passes through an oil separator, where the oil, which passes through the pump for lubrication, is returned to the engine and the air is expelled overboard. Beginning with Aircraft Serial U20601957 a dry vacuum system is installed. This system utilizes a sealed bearing, engine-driven vacuum pump, which eliminates the oil separation components from the system. A discharge tube is connected to the pump to expell the air from the pump overboard. A suction relief valve is used to control system pressure and is connected between the pump inlet and the instruments. In the cabin, the vacuum line is routed from the gyro instruments to the relief valve at the firewall. A central air filtering system is utilized. The reading of the suction gage indicates net difference in suction before and after air passes through a gyro. This differential pressure will gradually decrease as the central air filter becomes dirty, causing a lower reading on the suction gage.

16-25. TROUBLE SHOOTING--VACUUM SYSTEM --THRU U20601956 (WET SYSTEM)

TROUBLE	PROBABLE CAUSE	REMEDY
HIGH SUCTION GAGE READINGS.	Gyros function normally-relief valve screen clogged, relief valve malfunction.	Check screen, than valve. Compare gage readings with new gage. Clean screen, reset valve. Replace gage.

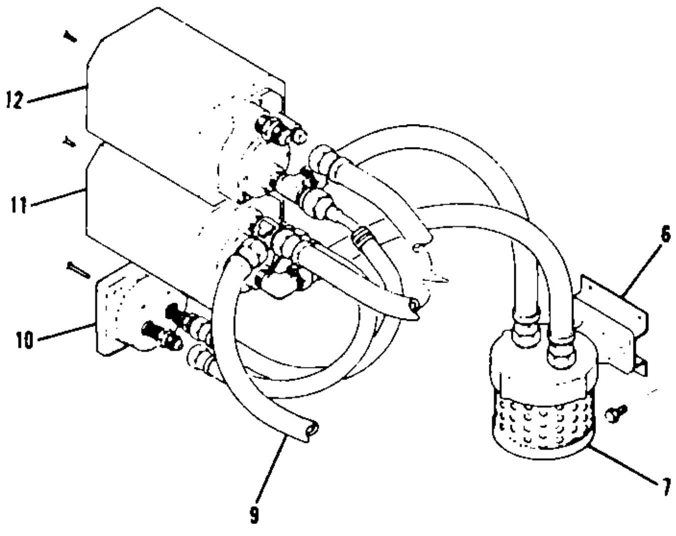


Detail **A**



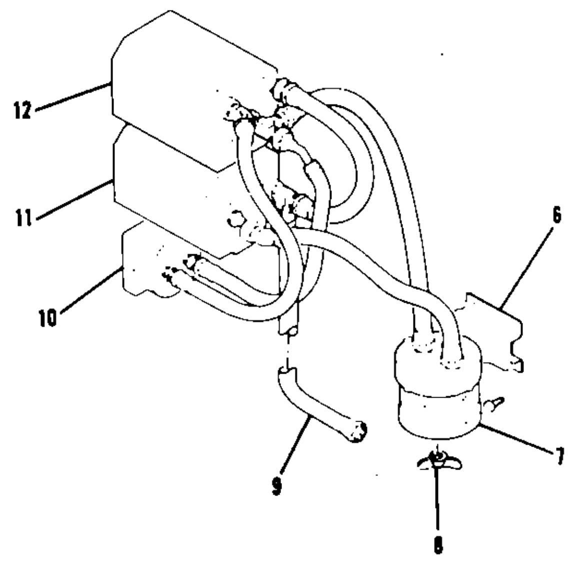
NOTE

Refer to paragraph 16-30 for relief valve adjustment.



BEGINNING WITH 1972 MODELS

Detail **B**



THRU 1971 MODELS

Detail **B**

1. Oil Separator
2. Vent
3. Bracket
4. Oil Return (To Engine)
5. Vacuum Pump
6. Bracket
7. Filter Element
8. Wing Nut
9. Suction Hose
10. Suction Gage
11. Directional Gyro
12. Gyro Horizon

THRU AIRCRAFT
SERIAL U20602199

13. Relief Valve
14. Vacuum Adjust
15. Tube Locator
16. Firewall
17. O-Ring
18. Fitting
19. Cross Assembly

Figure 16-5. Vacuum System (Sheet 1 of 3) Wet System

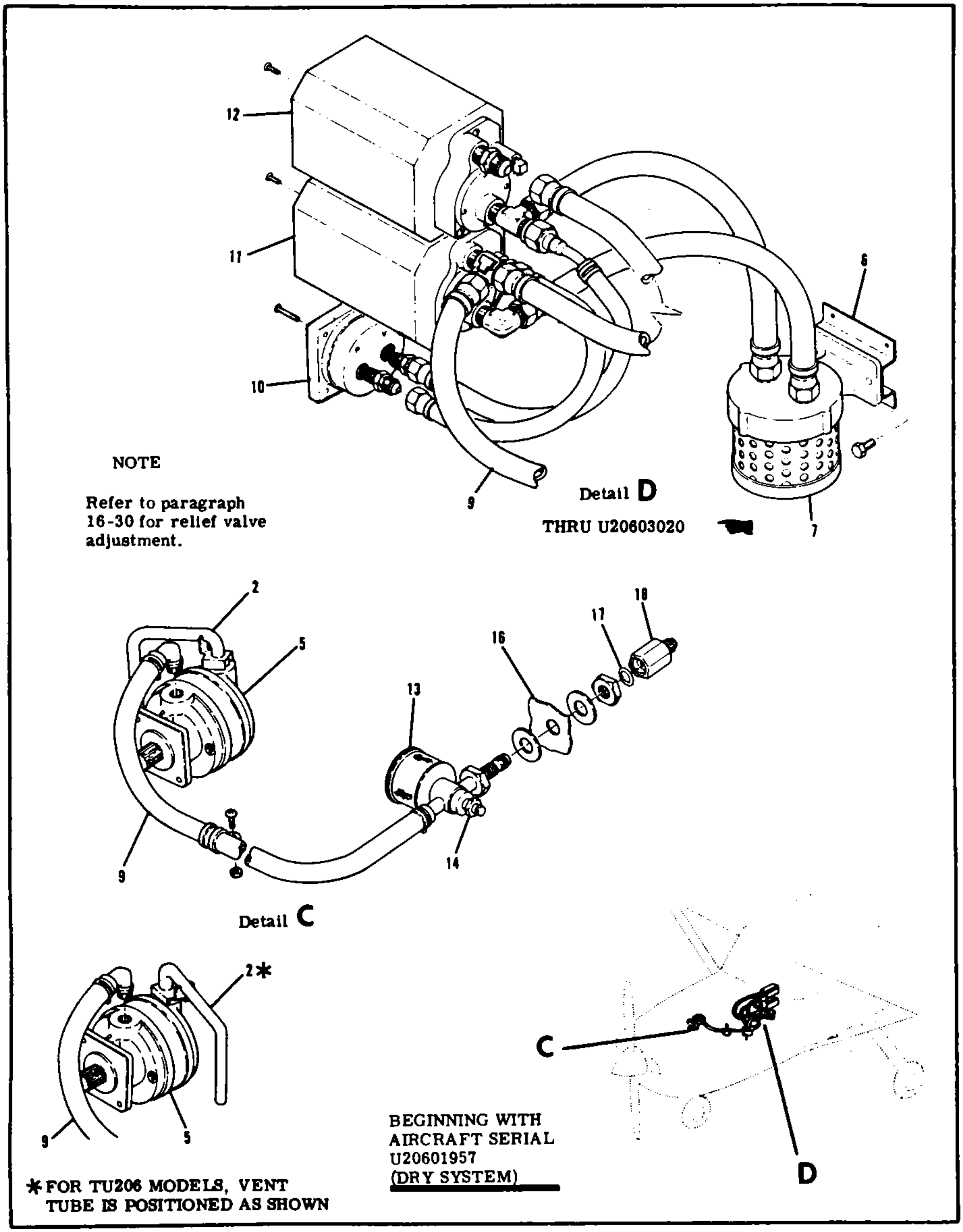
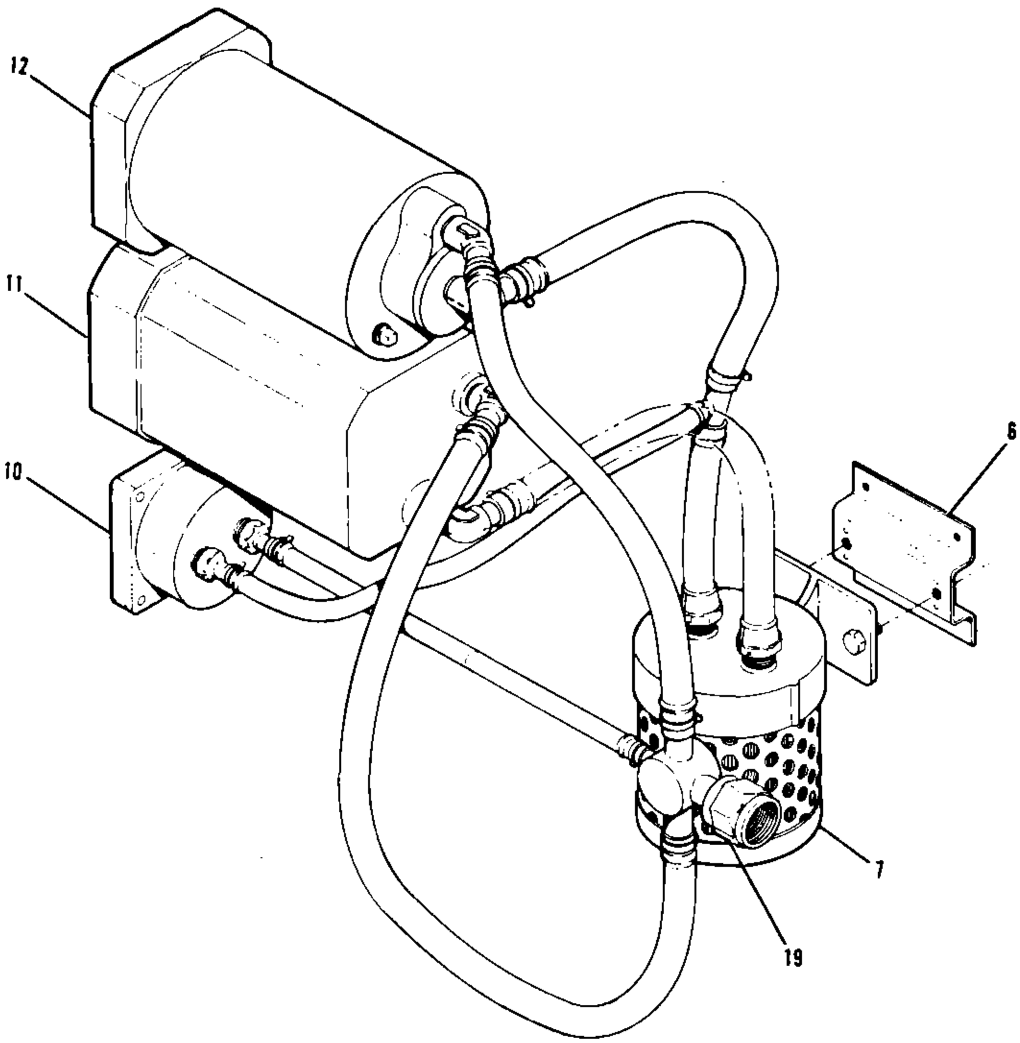


Figure 16-5. Vacuum System (Sheet 2 of 3) Dry System



Detail D

BEGINNING WITH U20603021

Figure 16-5. Vacuum System (Sheet 3 of 3) Dry System

16-25. TROUBLE SHOOTING--VACUUM SYSTEM--THRU U20601956 (WET SYSTEM) (cont)

TROUBLE	PROBABLE CAUSE	REMEDY
NORMAL SUCTION GAGE READING, SLUGGISH OR ERRATIC GYRO RESPONSE.	Instrument air filters clogged.	Clean or replace filter as necessary.
LOW SUCTION GAGE READINGS.	Leaks or restriction between instruments and relief valve, relief valve out of adjustment, defective pump, restriction in oil separator or pump discharge line.	Check lines for leaks, disconnect and test pump. Repair or replace lines, adjust or replace relief valve, repair or replace pump, clean oil separator.
	Central air filter dirty.	Clean or replace filter as necessary.
SUCTION GAGE FLUCTUATES.	Defective gage or sticking relief valve.	Check suction with test gage. Replace gage. Clean sticking valve with Stoddard solvent. Blow dry and test. If valve sticks after cleaning, replace valve.
OIL COMES OVER IN PUMP DISCHARGE LINE.	Oil seperator clogged, oil return line obstructed, excessive oil flow through pump.	Check oil seperator, return line. Check that pump oil return rate does not exceed 120 cc/hour (approx. 8 drops/minute), at 50 psi oil pressure. Clean oil separator is Stoddard solvent, blow dry. Blow out lines. If pump oil consumption is excessive, replace oil metering collar and pin in pump.

16-25A. TROUBLE SHOOTING--VACUUM SYSTEM--BEGINNING WITH U20601957 (DRY SYSTEM)

TROUBLE	PROBABLE CAUSE	REMEDY
HIGH SUCTION GAGE READINGS.	Gyros function normally-relief valve screen clogged, relief valve malfunction.	Check screen, then valve. Compare gage readings with new gage. Clean screen, reset valve. Replace gage.
NORMAL SUCTION GAGE READING, SLUGGISH OR ERRATIC GYRO RESPONSE.	Instrument air filters clogged.	Clean or replace filter as necessary.
LOW SUCTION GAGE READINGS.	Leaks or restriction between instruments and relief valve, relief valve out of adjustment, defective pump.	Check lines for leaks, disconnect and test pump. Repair or replace lines, adjust or replace relief valve, repair or replace pump.
	Central air filter dirty.	Clean or replace filter as necessary

16-25A. TROUBLE SHOOTING--BEGINNING WITH U20601957 DRY SYSTEM (Cont)

TROUBLE	PROBABLE CAUSE	REMEDY
SUCTION GAGE FLUCTUATES.	Defective gage or sticking relief valve.	Check suction with test gage. Replace gage. Clean sticking valve with Stoddard solvent. Blow dry and test. If valve sticks after cleaning, replace valve.

16-26. TROUBLE SHOOTING--GYROS.

TROUBLE	PROBABLE CAUSE	REMEDY
HORIZON BAR FAILS TO RESPOND.	Central filter dirty.	Check filter. Clean or replace filter.
	Suction relief valve improperly adjusted.	Adjust or replace relief valve.
	Faulty suction gage.	Substitute known-good suction gage and check gyro response. Replace suction gage.
	Vacuum pump failure.	Check pump. Replace pump.
	Vacuum line kinked or leaking.	Check lines for damage and leaks. Repair or replace damaged lines, tighten connections.
HORIZON BAR DOES NOT SETTLE.	Defective mechanism.	Substitute known-good gyro and check indication. Replace instrument.
	Insufficient vacuum.	Adjust or replace relief valve.
	Excessive vibration.	Check panel shock-mounts. Replace defective shock-mounts.
HORIZON BAR OSCILLATES OR VIBRATES EXCESSIVELY.	Central filter dirty.	Check filter. Clean or replace filter.
	Suction relief valve improperly adjusted.	Adjust or replace relief valve.
	Faulty suction gage.	Substitute known-good suction gage and check gyro indication. Replace suction gage.
	Defective mechanism.	Substitute known-good gyro and check indication. Replace instrument.
	Excessive vibration.	Check panel shock-mounts. Replace defective shock-mounts.

16-26. TROUBLE SHOOTING--GYROS. (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
EXCESSIVE DRIFT IN EITHER DIRECTION.	Central air filter dirty.	Check filter. Clean or replace filter.
	Low vacuum, relief valve improperly adjusted.	Adjust or replace relief valve.
	Faulty suction gage.	Substitute known-good suction gage and check gyro indication. Replace suction gage.
	Vacuum pump failure.	Check pump. Replace pump.
	Vacuum line kinked or leaking.	Check lines for damage and leaks. Repair or replace damaged lines, tighten connections.
DIAL SPINS IN ONE DIRECTION CONTINUOUSLY.	Operating limits have been exceeded.	Replace instrument.
	Defective mechanism.	Substitute known-good gyro and check indication. Replace instrument.

16-27. TROUBLE SHOOTING--VACUUM PUMP (Wet System)

TROUBLE	PROBABLE CAUSE	REMEDY
EXCESSIVE OIL IN DISCHARGE.	Damaged engine drive seal.	Replace gasket.
	Oil separator clogged, oil return line obstructed, excessive oil flow through pump.	Clean oil separator with Stoddard solvent, then blow dry. Blow out lines. If pump oil consumption is excessive, replace oil metering pin in pump.
HIGH SUCTION.	Suction relief valve screen clogged.	Clean or replace screen.
LOW SUCTION.	Relief valve leaking.	Replace relief valve.
	Vacuum pump failure.	Replace vacuum pump.

16-27A. TROUBLE SHOOTING -- VACUUM PUMP (Dry System)

TROUBLE	PROBABLE CAUSE	REMEDY
OIL IN DISCHARGE.	Damaged pump drive seal.	Replace gasket.

TROUBLE	PROBABLE CAUSE	REMEDY
HIGH SUCTION.	Suction relief valve screen clogged.	Clean or replace screen.
LOW SUCTION.	Relief valve leaking.	Replace relief valve.
	Vacuum pump failure.	Replace vacuum pump.

16-28. REMOVAL AND INSTALLATION OF COMPONENTS. Through Aircraft Serial U20601956 the various components of the vacuum system are secured by conventional clamps, mounting screws and nuts. To remove a component, remove mounting screws and disconnect inlet and discharge lines. When replacing a vacuum system component, ensure connections are made correctly. Use thread lubricant sparingly and only on male threads. Avoid over-tightening connections. Before reinstalling a vacuum pump, probe oil passages in pump and engine, to make sure they are open. Place mounting pad gasket in position over studs and ensure it does not block oil passages. Coat pump drive splines lightly with a high-temperature grease such as Dow Silicone #30 (Dow-Corning Co., Midland, Mich.). After installing pump, before connecting plumbing, start engine and hold a piece of paper over pump discharge to check for proper lubrication. Proper oil flow through pump is one to four fluid ounces per hour.

16-28A. REMOVAL AND INSTALLATION OF COMPONENTS. Beginning with U20601957 the various components of the vacuum system are secured by conventional clamps, mounting screws and nuts. To remove a component, remove mounting screws and disconnect inlet and discharge lines. Cap open lines and fitting to prevent dirt from entering the system. When replacing a vacuum system component, ensure connections are made correctly. Use no lubricants on any components when assembling a dry vacuum system. Avoid over-tightening connections. Before installing the vacuum pump, place mounting pad gasket in position over studs. Be sure all lines and fittings are open and caps are removed.

16-29. CLEANING. Low pressure, dry compressed air should be used in cleaning vacuum system components. The suction relief valve should be washed with Stoddard solvent then dried with low-pressure air. Refer to Section 2 for central air filter. Check hose for collapsed inner liners as well as external damage.

CAUTION

Never apply compressed air to lines or components installed in aircraft. The excessive pressures will damage gyros. If an obstructed line is to be blown out, disconnect at both ends and blow from instrument panel out.

16-30. VACUUM RELIEF VALVE ADJUSTMENT. A suction gage reading of 5.3 inches of mercury is desirable for gyro instruments. However, a range of 4.6 to 5.4 inches of mercury is acceptable. To adjust relief valve, remove control air filter, run engine to 2200 rpm on ground and adjust relief valve to 5.3 ± .1 inches of mercury.

CAUTION

Do not exceed maximum engine temperature.

NOTE

The relief valve on turbocharged aircraft is altitude compensated by an internal aneroid. Operation of the compensating mechanism is automatic. Standard relief valve adjustment applies to the compensated relief valve.

Be sure filter element is clean before installing. If reading drops noticeably, install new filter element.

SHOP NOTES:

16-30. VACUUM RELIEF VALVE ADJUSTMENT. A suction gage reading of 5.3 inches of mercury is desirable for gyro instruments. However, a range of 4.6 to 5.4 inches of mercury is acceptable. To adjust relief valve, remove control air filter, run engine to 2200 rpm on ground and adjust relief valve to 5.3 ± .1 inches of mercury.

CAUTION

Do not exceed maximum engine temperature.

Be sure filter element is clean before installing. If reading drops noticeably, install new filter element.

16-31. ENGINE INDICATORS.

16-32. TACHOMETER.

16-33. DESCRIPTION. The tachometer is a mechanical indicator driven at half crankshaft speed by a flexible shaft. Most tachometer difficulities will be found in the drive-shaft. To function properly, the shaft housing must be free of kinks, dents and sharp bends. There should be no bend on a radius shorter than six inches and no bend within three inches of either terminal. If a tachometer is noisy or pointer oscillates, check cable housing for kinks, sharp bends and damage. Disconnect cable at tachometer and pull it out of housing. Check cable for worn spots, breaks and kinks.

NOTE

Before replacing a tachometer cable in housing, coat lower two thirds with AC Type ST-640 speedometer cable grease or Lubriplate No. 110. Insert cable in housing as far as possible, then slowly rotate to make sure it is seated in engine fitting. Insert cable in tachometer, making sure it is seated in drive shaft, then reconnect housing and torque to 50 pound-inches (at instrument).

16-34. MANIFOLD PRESSURE/FUEL FLOW INDICATOR.

15-35. DESCRIPTION. The manifold pressure and fuel flow indicators are in one instrument case. However, each instrument operates independently. The manifold pressure gage is a barometric instrument which indicates absolute pressure in the intake manifold inches of mercury. The fuel flow indicator is a pressure instrument calibrated in gallons per hour, indicating approximate gallons of fuel metered per hour to the engine. Pressure for operating the indicator is obtained through a hose from the fuel manifold valve. The fuel flow indicator is vented to atmospheric pressure with standard engines and to turbocharger outlet pressure on turbocharged engines.

16-36. TROUBLE SHOOTING -- FUEL FLOW INDICATOR.

TROUBLE	PROBABLE CAUSE	REMEDY
DOES NOT REGISTER.	Pressure line clogged.	Blow out line.
	Pressure line broken.	Repair or replace damaged line.
	Fractured bellows or damaged mechanism.	Replace instrument.
	Clogged snubber orifice.	Replace instrument.
	Pointer loose on staff.	Replace instrument.
POINTER FAILS TO RETURN TO ZERO.	Foreign matter in line.	Blow out line.
	Clogged snubber orifice.	Replace instrument.
	Damaged bellows or mechanism.	Replace instrument.
INCORRECT OR ERRATIC READING.	Damaged or dirty mechanism.	Replace instrument.
	Pointer bent, rubbing on dial or glass.	Replace instrument.
	Leak or partial obstruction in pressure or vent line.	Blow out dirty line, repair or tighten loose connections.

16-37. TROUBLE SHOOTING -- MANIFOLD PRESSURE INDICATOR.

TROUBLE	PROBABLE CAUSE	REMEDY
EXCESSIVE ERROR AT EXISTING BAROMETRIC PRESSURE.	Pointer shifted.	Replace instrument.
	Leak in vacuum bellows.	Replace instrument.
	Loose pointer.	Replace instrument.
	Leak in pressure line.	Repair or replace damaged line, tighten connections.
	Condensate or fuel in line.	Blow out line.
JERKY MOVEMENT OF POINTER.	Excessive internal friction.	Replace instrument.
	Rocker shaft screws tight.	Replace instrument.
	Link springs too tight.	Replace instrument.
	Dirty pivot bearings.	Replace instrument.
	Defective mechanism.	Replace instrument.
	Leak in pressure line.	Repair or replace damaged line, tighten connections.
SLUGGISH OPERATION OF POINTER.	Foreign matter in line.	Blow out line.
	Damping needle dirty.	Replace instrument.
	Leak in pressure line.	Repair or replace damaged line, tighten connections.
EXCESSIVE POINTER VIBRATION.	Tight rocker pivot bearings.	Replace instrument.
	Excessive vibration.	Tighten mounting screws.
IMPROPER CALIBRATION.	Faulty mechanism.	Replace instrument.
NO POINTER MOVEMENT.	Faulty mechanism.	Replace instrument.
	Broken pressure line.	Repair or replace damaged line.

16-38. CYLINDER HEAD TEMPERATURE GAGE.

16-39. DESCRIPTION. The temperature sending unit regulates power through the cylinder head temperature gage. The gage and sending unit require little or no maintenance other than cleaning, making sure the lead is properly supported, and all connections are clean and properly insulated. The Rochester and Stewart Warner gages are connected the same, but the Rochester gage does not have a calibration pot and cannot be adjusted. Refer to Table 2 on page 16-18C/D when trouble shooting the cylinder head temperature gage.

NOTE

A Cylinder Head Temperature Gage Calibration Unit, (SK182-43) is available and may be ordered through the Cessna Supply Division.

16-40. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
GAGE INOPERATIVE.	No current to circuit.	Repair electrical circuit.
	Defective gage, bulb or circuit.	Repair or replace defective items.
GAGE FLUCTUATES RAPIDLY.	Loose or broken wire permitting alternate make and break of gage circuit.	Repair or replace defective wire.
GAGE READS TOO HIGH ON SCALE.	High voltage.	Check "A" terminal.
	Gage off calibration.	Recalibrate or replace gage.
GAGE READS TOO LOW ON SCALE.	Low voltage.	Check voltage supply and "D" terminal.
	Gage off calibration.	Recalibrate or replace gage.
GAGE READS OFF SCALE AT HIGH END.	Break in bulb.	Replace bulb.
	Break in bulb lead.	Replace bulb.
	Internal break in gage.	Replace gage.
OBVIOUSLY INCORRECT READING.	Defective gage mechanism.	Replace gage.
	Incorrect calibration.	Recalibrate.

16-41. OIL PRESSURE GAGE.

16-42. DESCRIPTION. The Bourdon tube-type oil pressure gage is a direct-reading instrument, operated by a pressure pickup line connected to the engine main oil gallery. The oil pressure line from the instrument to the engine should be filled with kerosene, especially during cold weather operation, to attain an immediate oil indication.

16-43. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
GAGE DOES NOT REGISTER.	Pressure line clogged.	Check line for obstructions. Clean line.
	Pressure line broken.	Check line for leaks and damage. Repair or replace damaged line.
	Fractured Bourdon tube.	Replace instrument.
	Gage pointer loose on staff.	Replace instrument.
	Damaged gage movement.	Replace instrument.
GAGE POINTER FAILS TO RETURN TO ZERO.	Foreign matter in line.	Check line for obstructions. Clean line.
	Foreign matter in Bourdon tube.	Replace instrument.
	Bourdon tube stretched.	Replace instrument.
GAGE DOES NOT REGISTER PROPERLY.	Faulty mechanism.	Replace instrument.
GAGE HAS ERRATIC OPERATION.	Worn or bent movement.	Replace instrument.
	Foreign matter in Bourdon tube.	Replace instrument.
	Dirty or corroded movement.	Replace instrument.
	Pointer bent and rubbing on dial, dial screw or glass.	Replace instrument.
	Leak in pressure line.	Check line for leaks and damage. Repair or replace damaged line.

16-44. OIL TEMPERATURE GAGE.

16-45. DESCRIPTION. On some airplanes, the oil temperature gage is a Bourdon tube type pressure instrument connected by armored capillary tubing to a temperature bulb in the engine. The temperature bulb, capillary tube and gage are filled with fluid and sealed. Expansion and contraction of fluid in the bulb with temperature changes operates the gage. Checking capillary tube for damage and fittings for security is the only maintenance required. Since the tubes inside diameter is small, small dents and kinks, which would be acceptable in larger tubing, may partially or completely close off the capillary, making the gage inoperative. Some airplanes are equipped with gages that are electrically actuated and are not adjustable. Table 1 on page 16-18B when trouble shooting the cylinder head temperature gage.

16-46. FUEL QUANTITY INDICATING SYSTEM.

16-47. DESCRIPTION. The magnetic type fuel quantity indicators are used in conjunction with a float-operated variable-resistance transmitter in each fuel tank. The full position of float produces a minimum resistance through transmitter, permitting maximum current flow through the fuel quantity indicator and maximum pointer deflection. As fuel level is lowered, resistance in transmitter is increased, producing a decreased current flow through fuel quantity indicator and a smaller pointer deflection. Beginning with Serial U206-01573, a heat sink assembly (Voltage Regulator) is incorporated into the fuel quantity indicating system of aircraft equipped with a 24-volt system. The unit is mounted on top of the glove box thru U20602199 and is located under the glove box beginning with U20602200. The unit converts 28-volt current flow from the bus to a 14-volt current flow to the fuel quantity indicators and transmitters. Refer to the 24-volt part of Section 20 in this Service Manual for a schematic wiring diagram of the Heat Sink Assembly.

16-48. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
FAILURE TO INDICATE.	No power to indicator or transmitter. (Pointer stays below E.)	Check fuse and inspect for open circuit. Replace fuse, repair or replace defective wire.
	Grounded wire. (Pointer stays above F.)	Check for partial ground between transmitter and gage. Repair or replace defective wire.
	Low voltage.	Check voltage at indicator. Correct voltage.
	Defective indicator.	Substitute known-good indicator. Replace indicator.
OFF CALIBRATION.	Defective indicator.	Substitute known-good indicator. Replace indicator.
	Defective transmitter.	Substitute known-good transmitter. Recalibrate or replace.
	Low or high voltage.	Check voltage at indicator. Correct voltage.
STICKY OR SLUGGISH INDICATOR OPERATION.	Defective indicator.	Substitute known-good indicator. Replace indicator.
	Low voltage.	Check voltage at indicator. Correct voltag
ERRATIC READINGS.	Loose or broken wiring on indicator or transmitter.	Inspect circuit wiring. Repair or replace defective wire.
	Defective indicator or transmitter.	Substitute known-good component. Replace indicator or transmitter.
	Defective master switch.	Replace switch.

16-49. TRANSMITTER ADJUSTMENT.
(Refer to page 16-18B).

16-49C. REMOVAL AND INSTALLATION FUEL QUANTITY TRANSMITTERS. (Refer to Section 13, figure 13-5.) Observe precautions of Section 13-3 when working with fuel components.

a. Drain fuel from cell.
b. Remove wing root fairing.
c. Disconnect electrical lead and ground strap from transmitter.
d. Remove screws through transmitter and wing root rib, and remove transmitter.

16-49. TRANSMITTER ADJUSTMENT.

WARNING

Using the following fuel transmitter calibration procedure on components other than the originally installed (Stewart Warner) components will result in a faulty fuel quantity reading.

16-49A. STEWART WARNER GAGE TRANSMITTER CALIBRATION. Chances of transmitter calibration changing in normal service is remote; however, it is possible that float arm or float arm stops may become bent if transmitter is removed from cell. Transmitter calibration is obtained by adjusting float travel. Float travel is limited by float arm stops.

WARNING

Use extreme caution while working with electrical components of the fuel system. The possibility of electrical sparks around an "empty" fuel cell creates a hazardous situation.

Before installing transmitter, attach electrical wires and place master switch in "ON" position. Allow float arm to rest against lower float arm stop and read indicator. The pointer should be on E (empty) position. Adjust the float arm against lower stop so pointer indicator is on E. Raise float until arm is against upper stop and adjust upper stop to permit indicator pointer to be on F (full). Install transmitter in accordance with paragraph 16-49C.

16-49B. ROCHESTER GAGE TRANSMITTER. Do not attempt to adjust float arm or stop. No adjustment is allowed.

Table 1

NOTE

Select the oil temperature sending unit part number that is used in your aircraft from the left column and the temperature from the column headings. Read the ohms value under the appropriate temperature column.

Part Number	Type	72°F	120°F	165°F	220°F	250°F
S1630-1	Oil Temp				46.4	
S1630-3	Oil Temp		620.0			52.4
S1630-4	Oil Temp		620.0			52.4
S1630-5	Oil Temp			192.0		
S2335-1	Oil Temp	990.0				34.0

16-49C. CYLINDER HEAD TEMPERATURE INDICATING SYSTEM RESISTANCE TABLE 2

The following table is provided to assist in the troubleshooting the cylinder head temperature indicating system components.

Select the cylinder head temperature sending unit part number that is used in your airplane from the left column and the temperature from the column headings. Read the ohms value under the appropriate temperature column.

Part Number	Type	200°F	220°F	450°F	475°F
S1372-1	CHT		310.0 Ω	34.8 Ω	
S1372-2	CHT		310.0 Ω	34.8 Ω	
S1372-3	CHT			113.0 Ω	
S1372-4	CHT			113.0 Ω	
S2334-3	CHT	745.0 Ω			38.0 Ω
S2334-4	CHT	745.0 Ω			38.0 Ω

16-49D. FUEL QUANTITY INDICATING SYSTEM OPERATIONAL TEST

WARNING: REMOVE ALL IGNITION SOURCES FROM THE AIRPLANE AND VAPOR HAZARD AREA. SOME TYPICAL EXAMPLES OF IGNITION SOURCES ARE STATIC ELECTRICITY, ELECTRICAL POWERED EQUIPMENT (TOOLS OR ELECTRONIC TEST EQUIPMENT - BOTH INSTALLED ON THE AIRPLANE AND GROUND SUPPORT EQUIPMENT), SMOKING AND SPARKS FROM METAL TOOLS.

WARNING: OBSERVE ALL STANDARD FUEL SYSTEM FIRE AND SAFETY PRACTICES.

1. Disconnect all electrical power from the airplane. Attach maintenance warning tags to the battery connector and external power receptacle stating:

   DO NOT CONNECT ELECTRICAL POWER, MAINTENANCE IN PROGRESS

2. Electrically ground the airplane.

3. Level the airplane and drain all fuel from wing fuel tanks.

4. Gain access to each fuel transmitter float arm and actuate the arm through the transmitter's full range of travel.

   A. Ensure the transmitter float arm moves freely and consistently through this range of travel. Replace any transmitter that does not move freely or consistently.

   WARNING: USE EXTREME CAUTION WHILE WORKING WITH ELECTRICAL COMPONENTS OF THE FUEL SYSTEM. THE POSSIBILITY OF ELECTRICAL SPARKS AROUND AN "EMPTY" FUEL CELL CREATES A HAZARDOUS SITUATION.

   B. While the transmitter float arm is being actuated, apply airplane battery electrical power as required to ensure that the fuel quantity indicator follows the movement of the transmitter float arm. If this does not occur, troubleshoot, repair and/or replace components as required until the results are achieved as stated.

   NOTE: Stewart Warner fuel quantity indicating systems can be adjusted. Refer to paragraph 16-49A for instructions for adjusting Stewart Warner fuel indicating systems. Rochester fuel quantity indicating system components are not adjustable, only component replacement or standard electrical wiring system maintenance practices are permitted.

5. With the fuel selector valve in the "OFF" position, add unusable fuel to each fuel tank.

6. Apply electrical power as required to verify the fuel quantity indicator indicates "EMPTY".

   A. If "EMPTY" is not indicated, adjust, troubleshoot, repair and/or replace fuel indicating components as required until the "EMPTY" indication is achieved.

      NOTE: Stewart Warner fuel quantity indicating systems can be adjusted. Refer to paragraph 16-49A for instructions for adjusting Stewart Warner fuel indicating systems.
      Rochester fuel quantity indicating system components are not adjustable, only component replacement or standard electrical wiring system maintenance practices are permitted.

7. Fill tanks to capacity, apply electrical power as required and verify fuel quantity indicator indicates "FULL".

   A. If "FULL" is not indicated, adjust, troubleshoot, repair and/or replace fuel indicating components as required until the "FULL" indication is achieved.

      NOTE: Stewart Warner fuel quantity indicating systems can be adjusted. Refer to paragraph 16-49A for instructions for adjusting Stewart Warner fuel indicating systems.
      Rochester fuel quantity indicating system components are not adjustable, only component replacement or standard electrical wiring system maintenance practices are permitted.

8. Install any items and/or equipment removed to accomplish this procedure, remove maintenance warning tags and connect the airplane battery.

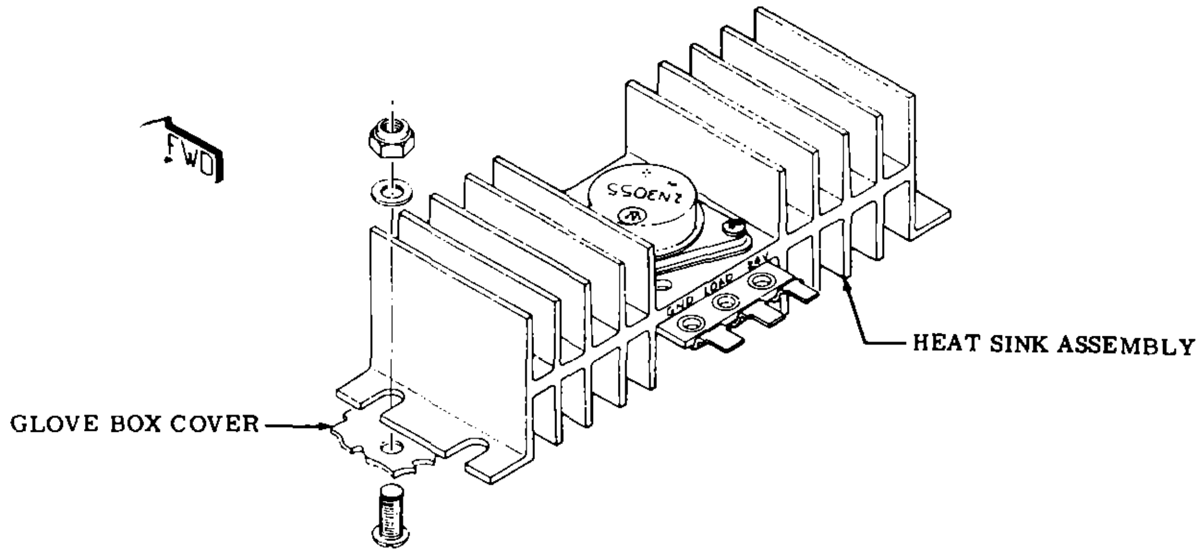


Figure 16-6. Heat Sink Assembly (Voltage Regulator) Installation

e. Install transmitter by reversing preceding steps. No gasket paste should be used.
f. *Fill fuel cell. Check for leaks and correct fuel* quantity indication.

NOTE

Be sure grounding is secure and in accordance with figure 13-5.

16-49B. REMOVAL AND INSTALLATION HEAT SINK. (Refer to figure 16-6.)
a. Turn off master switch or disconnect battery leads.
b. Disconnect 3 wires from heat sink assembly and tag for identification.
c. Remove nuts, screws and washers attaching unit to glove box and remove the unit.
d. Reverse preceding steps to install the heat sink unit.

16-50. HOURMETER.

16-51. DESCRIPTION. The hourmeter is electrically operated instrument, actuated by a pressure switch in the oil pressure gage line. Electrical power is supplied through a one-amp fuse from the electrical clock circuit, and therefore will operate independent of master switch.

SHOP NOTES:

16-52. ECONOMY MIXTURE INDICATOR.

16-53. DESCRIPTION. The economy mixture indicator is an exhaust gas temperature (EGT) sensing device which is used to aid pilot in selecting most desirable fuel-air mixture for cruising flight at less than 75% power. Exhaust gas temperature (EGT) varies with ratio of fuel-to-air mixture entering engine cylinders. Refer to Owner's Manual for operating procedure of system.

16-54. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
GAGE INOPERATIVE.	Defective gage, probe or circuit.	Repair or replace defective part.
INCORRECT READING.	Indicator needs calibrating.	Calibrate indicator in accordance with paragraph 15-56.
FLUCTUATING READING.	Loose, frayed or broken lead, permitting alternate make and break of circuit.	Tighten connections and repair or replace defective leads.

16-55. CALIBRATION. A potentiometer adjustment screw is provided behind the plastic cap at the back of the instrument for calibration. This adjustment screw is used to position the pointer over the reference increment line (4/5 of scale) at peak EGT. Establish 65% power in level flight, then carefully lean the mixture to peak EGT. After the pointer has peaked, using the adjustment screw, position pointer over the reference increment line (4/5 of scale).

NOTE

This setting will provide relative temperature indications for normal cruise power settings within range of the instrument.

Turning the screw clockwise increases the meter reading and counterclockwise decreases the meter reading. There is a stop in each direction and damage can occur if too much torque is applied against stops. Approximately 600°F total adjustment is provided. The adjustable yellow pointer on the face of the instrument is a reference pointer only.

16-56. REMOVAL AND INSTALLATION. Removal of the indicator is accomplished by removing the mounting screws and disconnecting the leads. Tag leads to facilitate installation. The thermocouple probe is secured to the exhaust stack with a clamp. When installing probe, tighten clamp to 45 pound-inches and safety as required.

16-57. MAGNETIC COMPASS.

16-58. DESCRIPTION. The magnetic compass is liquid-filled, with expansion provisions to compensate for temperature changes. It is equipped with compensating magnets adjustable from the front of the case. The compass is internally lighted, controlled by the panel lights rheostat. No maintenance is required on the compass except an occasional check on a compass rose and replacement of the lamp. The compass mount is attached by three screws to a base plate which is bonded to the windshield with methylene chloride. A tube containing the compass light wires is attached to the metal strip at the top of the windshield. Removal of the compass is accomplished by removing the screw at the forward end of the compass mount, unfastening the metal strip at the top of the windshield and cutting the two wire splices. Removal of the compass mount is accomplished by removing the outside air temperature probe and removing the three screws attaching mount to the base plate. Access to the inner screw is gained through a hole in the bottom of mount, through which a thin screwdriver may be inserted. When installing the compass, it will be necessary to splice the compass light wires.

16-59. STALL WARNING HORN AND TRANSMITTER.

16-60. DESCRIPTION. The stall warning horn is mounted on the glove box. It is electrically operated and controlled by a stall warning transmitter mounted on leading edge of left wing. For further information on warning horn and transmitter, refer to Section 17.

16-61. TURN-AND-SLIP INDICATOR.

16-62. DESCRIPTION. The turn-and-slip indicator is operated by the aircraft electrical system and operates ONLY when the master switch is on. Its circuit is protected by an automatically-resetting circuit breaker.

16-63. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
INDICATOR POINTER FAILS TO RESPOND.	Automatic resetting circuit breaker defective.	Check circuit breaker. Replace circuit breaker.
	Master switch "OFF" or switch defective.	Check switch "ON." Replace defective switch.
	Broken or grounded lead to indicator.	Check circuit wiring. Repair or replace defective wiring.
	Indicator not grounded.	Check ground wire. Repair or replace defective wire.
	Defective mechanism.	Replace instrument.
HAND SLUGGISH IN RETURNING TO ZERO.	Defective mechanism.	Replace instrument.
	Low voltage.	Check voltage at indicator. Correct voltage.
POINTER DOES NOT INDICATE PROPER TURN.	Defective mechanism.	Replace instrument.
HAND DOES NOT SIT ON ZERO.	Gimbal and rotor out of balance.	Replace instrument.
	Hand incorrectly sits on rod.	Replace instrument.
	Sensitivity spring adjustment pulls hand off zero.	Replace instrument.
IN COLD TEMPERATURES, HAND FAILS TO RESPOND OR IS SLUGGISH.	Oil in indicator becomes too thick.	Replace instrument.
	Insufficient bearing end play.	Replace instrument.
	Low voltage.	Check voltage at indicator. Correct voltage.
NOISY GYRO.	High voltage.	Check voltage at indicator. Correct voltage.
	Loose or defective rotor bearings.	Replace instrument.

16-64. TURN COORDINATOR.

16-65. DESCRIPTION. The turn coordinator is an electrically operated, gyroscopic, roll-rate turn indicator. Its gyro simultaneously senses rate of motion roll and yaw axes which is projected on a single indicator. The gyro is a non-tumbling type requiring no caging mechanism and incorporates an a.c. brushless spin motor with a solid state inverter.

16-66. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
INDICATOR DOES NOT RETURN TO CENTER.	Friction caused by contamination in the indicator damping.	Replace instrument.
	Friction in gimbal assembly.	Replace instrument.
DOES NOT INDICATE A STANDARD RATE TURN (TOO SLOW).	Low voltage.	Measure voltage at instrument. Correct voltage.
	Inverter frequency changed.	Replace instrument.
NOISY MOTOR.	Faulty bearings.	Replace instrument.
ROTOR DOES NOT START.	Faulty electrical connection.	Check continuity and voltage. Correct voltage or replace faulty wire.
	Inverter malfunctioning.	Replace instrument.
	Motor shorted.	Replace instrument.
	Bearings frozen.	Replace instrument.
IN COLD TEMPERATURES, HAND FAILS TO RESPOND OR IS SLUGGISH.	Oil in indicator becomes too thick.	Replace instrument.
	Insufficient bearing end play.	Replace instrument.
	Low voltage.	Check voltage at instrument. Correct voltage.
NOISY GYRO.	High voltage.	Check voltage to instrument. Correct voltage.
	Loose or defective rotor bearings.	Replace instrument.

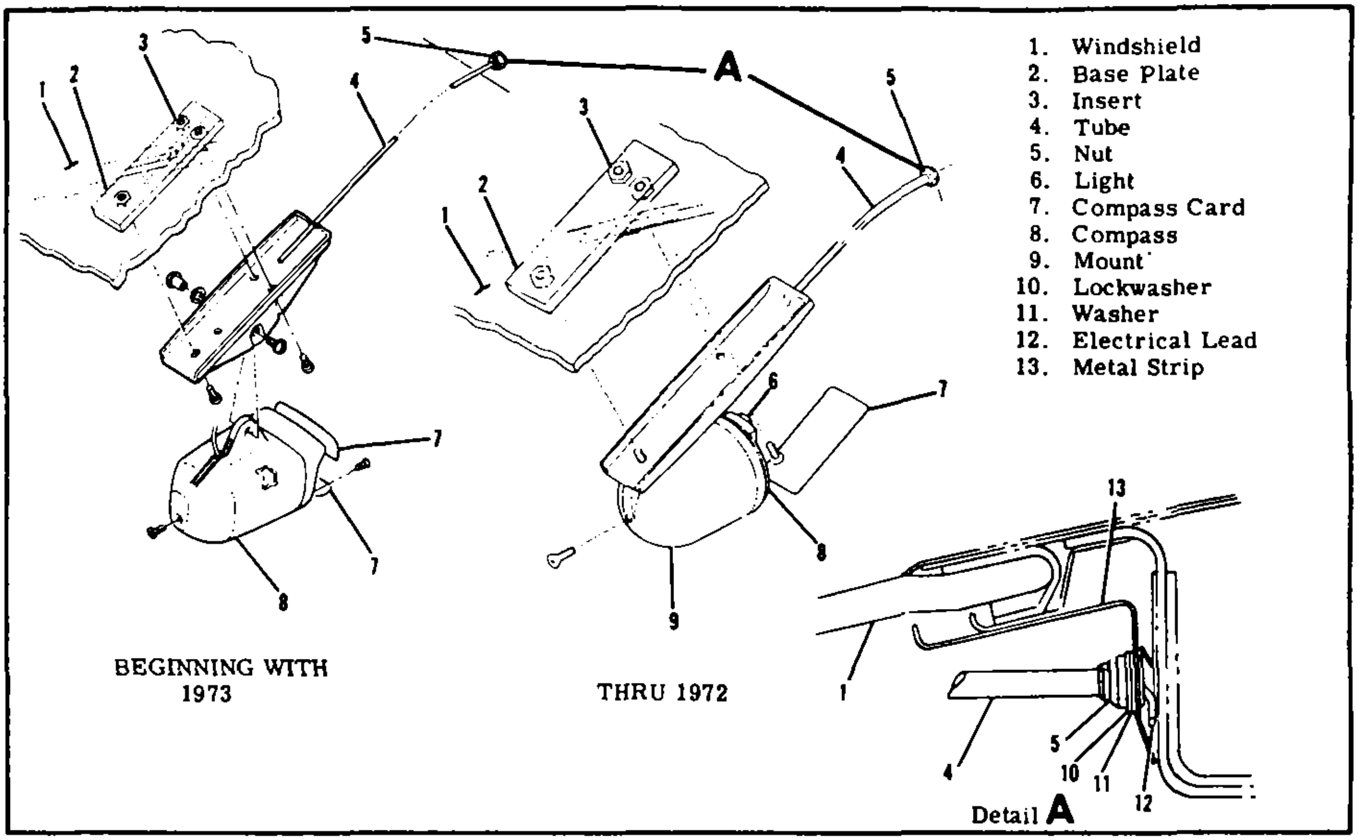


Figure 16-7. Magnetic Compass Installation

16-67. ELECTRIC CLOCK.

16-68. DESCRIPTION. The electric clock is connected to the battery through a one-ampere fuse mounted adjacent to the battery box. The electrical circuit is separate from the aircraft electrical system and will operate when the master switch is OFF.

16-69. WING LEVELER. (Refer to figure 16-8). THRU AIRCRAFT SERIAL U20602199.

16-70. DESCRIPTION. The wing leveler control system, consisting of a turn coordinator (9), pneumatic servos (3), connecting cables (4) and hose (1 and 2) may be installed. The turn coordinator gyro senses changes in roll attitude, then electrically meters vacuum power from engine-driven vacuum pump to cylinder-piston servos, operating ailerons for lateral stability. Manual control of system is afforded by the roll trim knob (10). Roll trim should not be used to correct faulty rigging or "wing heaviness". Manual override of the system may be accomplished without damage to the aircraft or system. The ON-OFF valve (11) controls vacuum supply to distributor valve, but does not affect electrically operated turn coordinator gyro. Installation of wing leveler does not change vacuum relief valve settings. Refer to appropriate publication issued by manufacturer for trouble shooting procedures.

16-71. RIGGING.

a. Remove access plates as necessary to expose components.
b. Check distance between clamp (7) and swaged ball (8). Adjust to 10.94 inches and tighten clamp on cable.
c. Position aileron in full UP position.
d. Adjust turnbuckle (5) until servo seal is fully extended but not stretched. Spring (6) should now have cable (4) and clamp (7) pulled away from its normal angle approximately one inch.

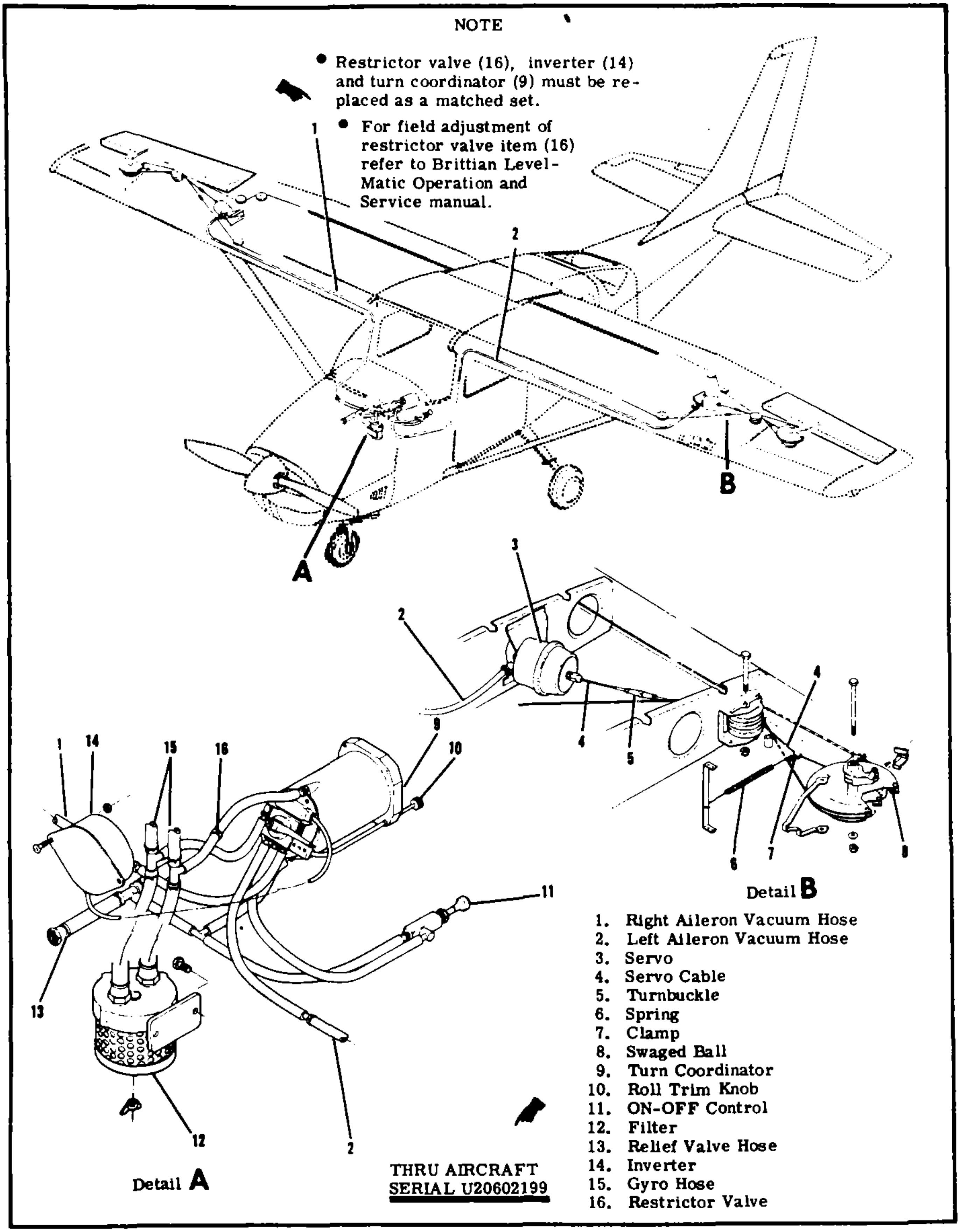


Figure 16-8. Wing Leveler Control System

SECTION 17

ELECTRICAL SYSTEMS

TABLE OF CONTENTS Page

17-1. ELECTRICAL SYSTEMS.

17-2. GENERAL. This section contains service information necessary to maintain the Aircraft Electrical Power Supply System, Battery and External Power Supply System, Alternator Power System, Aircraft Lighting System, Pitot Heater, Stall Warning, Cigar Lighter and Electrical Load Analysis.

17-3. ELECTRICAL POWER SUPPLY SYSTEM.

17-4. DESCRIPTION. Electrical energy for the aircraft is supplied by a 14-volt or optional 24-volt, direct-current, single wire, negative ground electrical system. A single 33 Amp-Hour 12-volt battery or optional 17 Amp-Hour, 24-volt battery supplies power for starting and furnishes a reserve source of power in the event of alternator failure. An engine-driven alternator is the normal source of power during flight and maintains a battery charge controlled by a voltage regulator. An external power source receptacle is offered as optional equipment to supplement the battery alternator system for starting and ground operation.

17-5. SPLIT BUS BAR.

17-6. DESCRIPTION. Electrical power is supplied through a split bus bar. One side of the bus bar supplies power to the electrical equipment while the other side supplies the electronic installations. When the master switch is closed the battery contactor engages and battery power is supplied to the electrical side of the split bus bar. The electrical bus feeds battery power to the electronics bus through a normally-closed relay; this relay opens when the starter switch is engaged or when an external power source is used, preventing transient voltages from damaging the semiconductor circuitry in the electronic installations. (Refer to figure 17-1.)

17-7. SPLIT BUS POWER RELAY.

17-8. DESCRIPTION. A power relay is installed behind the instrument panel on all aircraft utilizing a split bus bar. The relay is a normally-closed type, opening when external power is connected or when the starter is engaged, thus removing battery power from the electronic side of the split bus bar and preventing transient voltages from damaging the electronic installations. (Refer to figure 17-1.)

17-9. MASTER SWITCH.

17-10. DESCRIPTION. On models prior to 1970, the operation of the battery and alternator system is controlled by a single master switch. The switch is a rocker type with double-pole, single-throw contacts. The switch, when operated, connects the battery contactor coil to ground and the alternator field circuit to the battery, activating the power systems. On 1970 models and on, a new master switch is utilized. This switch is an interlocking split rocker with the battery mode on the right hand side and the alternator mode on the left hand side. This arrangement allows the battery to be on the line without the alternator, however, operation of the alternator without the battery on the line is not possible. The switch is labeled "BAT" and "ALT" below the switch and is located on the left hand side of the switch panel.

17-11. AMMETER.

17-12. DESCRIPTION. The ammeter is connected between the battery and the aircraft bus. The meter indicates the amount of current flowing either to or from the battery. With a low battery and the engine operating at cruise speed the ammeter will show the full alternator output when all electrical equipment is off. When the battery is fully charged and cruise RPM is maintained with all electrical equipment off, the ammeter will show a minimum charging rate.

17-13. BATTERY POWER SYSTEM.

17-14. BATTERY.

17-15. DESCRIPTION. On 14-volt systems, the battery is 12-volts and is approximately 33 ampere-hour capacity. On all 14-volt aircraft the battery is mounted on the forward, left side of the firewall.

On the 1971 & on optional 28-volt systems, the battery is 24-volts and is approximately 17 ampere-hour capacity. On 28-volt aircraft thru 1973 models the battery is mounted below the engine in the nose wheel tunnel. Beginning with 1974 models the battery is mounted on the left hand side of the firewall.

17-16. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
BATTERY WILL NOT SUPPLY POWER TO BUS OR IS INCAPABLE OF CRANKING ENGINE	Battery discharged.	1. Measure voltage at "BAT" terminal of battery contactor with master switch and a suitable load such as a taxi light turned on. Normal battery will indicate 11.5 volts or more on a 14 volt system or 23 volts or more on a 28 volt system. If voltage is low proceed to step 2. If voltage is normal, proceed to step 3.
	Battery faulty.	2. Check fluid level in cells and charge 12-volt battery at 14 volts or 24-volt battery at 28 volts for approximately 30 minutes or until battery voltage rises to 14 volts on 12-volt battery or 28 volts on 24-volt battery. If tester indicates a good battery, the malfunction may be assumed to be a discharged battery. If the tester indicates a faulty battery, replace the battery.
	Faulty contactor or wiring. between contactor and master switch.	3. Measure voltage at master switch terminal (smallest) on contactor with master switch closed. Normal indication is zero volts. If voltage reads zero, proceed to step 4. If a voltage reading is obtained, check wiring between contactor and master switch. Also check master switch.

TROUBLE	PROBABLE CAUSE	REMEDY
BATTERY WILL NOT SUPPLY POWER TO BUS OR IS INCAPABLE OF CRANKING ENGINE (Cont.)	Open coil on contactor.	4. Check continuity between "BAT" terminal and master switch terminal of contactor. Normal indication on 14 volt aircraft is 16-24 ohms. Normal indication on 28 volt aircraft is 50-70 ohms. If ohmmeter indicates an open coil, replace contactor. If ohmmeter indicates a good coil, proceed to step 5.
	Faulty contactor contacts.	5. Check voltage on "BUS" side of contactor with master switch closed. Meter normally indicates battery voltage. If voltage is zero or intermittent, replace contactor. If voltage is normal, proceed to step 6.
	Faulty wiring between contactor and bus.	6. Inspect wiring between contactor and bus. Repair or replace wiring.

17-17. REMOVAL AND INSTALLATION OF 12 VOLT BATTERY. (Refer to figure 17-2.)

a. *To gain access to the battery, remove the upper* left half of cowling.

b. Remove the battery box lid and disconnect the battery ground cable.

CAUTION

Always remove the ground cable first and connect it last to prevent accidentally shorting the battery to the airframe with tools.

c. Disconnect the positive cable from the battery and remove the battery from aircraft.

d. To install a battery, reverse this procedure.

17-18. REMOVAL AND INSTALLATION OF 24 VOLT BATTERY. (Refer to figure 17-2.)

a. Turn Master Switch to OFF position.

b. Remove lower cowling access plate from tunnel located under the engine.

c. Remove drain tube from battery box assembly.

d. Remove quick disconnect cable assembly from battery box by loosening knob on the cable assembly.

CAUTION

Place a stand under the battery box and support assembly before removing the nuts, washers and bolts securing the battery support assembly to the tunnel. When these nuts, washers and bolts are removed, the complete battery and battery box support assembly will fall free from the aircraft, thus causing damage to the battery and battery box support assembly.

e. Remove the upper engine cowling half to gain access to the nuts, washers and bolts securing the battery support assembly and ground strap to the tunnel walls.

f. Remove the nut securing the ground strap to the right side of the tunnel wall and push the bolt thru the tunnel hole to ensure the ground strap is free for removal.

g. Remove three nuts and washers from each side of the tunnel which secure the battery support assembly.

h. Inside the tunnel, remove the three bolts from each side of the tunnel which secure the battery support assembly to the tunnel walls.

j. To reinstall the battery, reverse this procedure.

17-18A. REMOVAL AND INSTALLATION. (28 VOLT BEGINNING WITH 1974 MODELS.) (Refer to figure 17-2.)

a. To gain access to the battery, remove the upper left half of the engine cowling.

b. Remove the battery box lid and disconnect the battery ground cable.

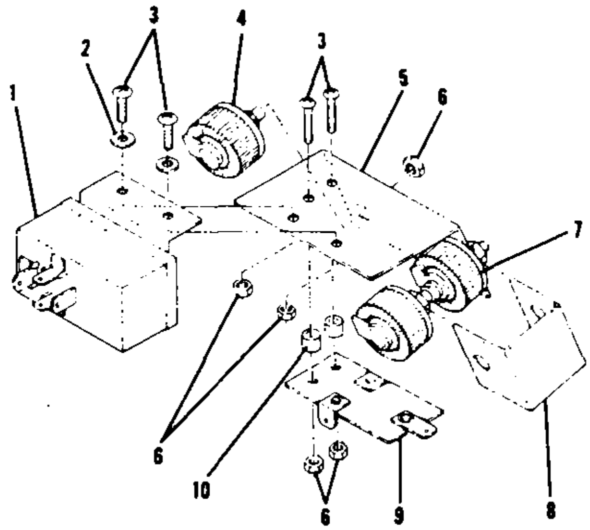
CAUTION

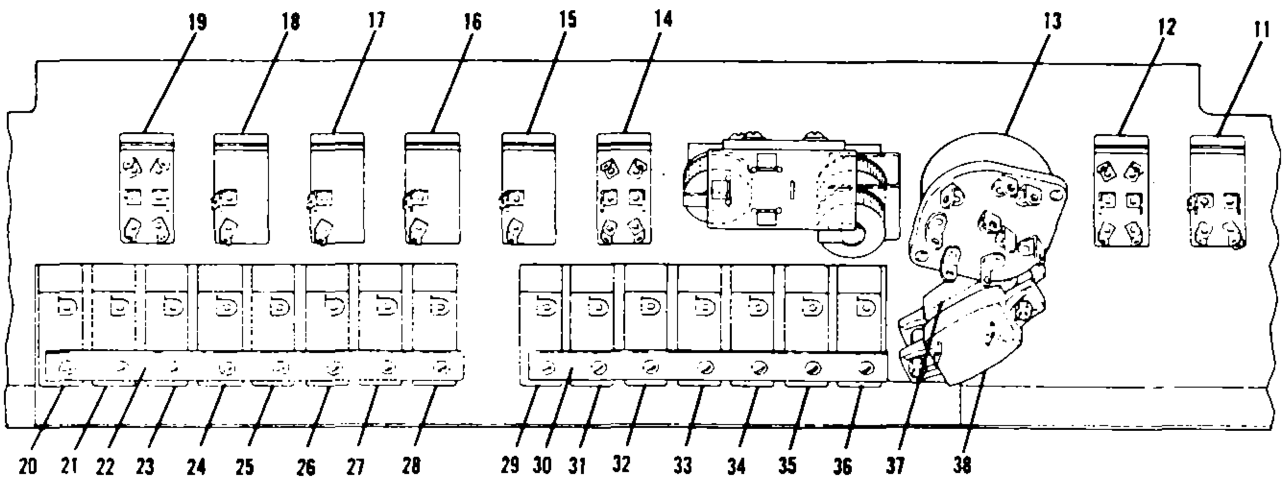
Always remove the ground cable first and connect it last to prevent accidentally shorting the battery to the airframe with tools.

c. Disconnect the positive cable from the battery and remove the battery from the aircraft.

d. To install the battery, reverse this procedure.

1. Split Bus Power Relay
2. Washer
3. Screw
4. Radio Light Rheostat
5. Bracket - Relay Mounting
6. Nut
7. Tandem Rheostat Assembly
8. Bracket - Rheostat Mounting
9. Diode Assembly Board
10. Spacer





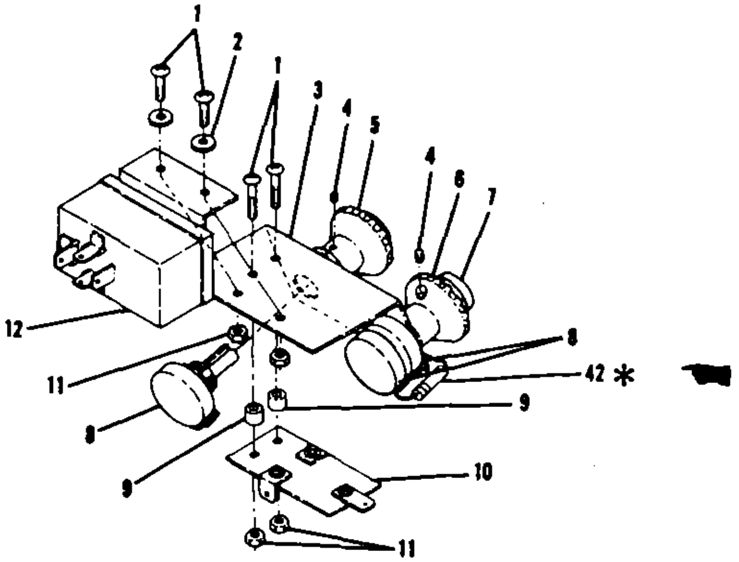
VIEWED FROM THE BACK SIDE OF THE SWITCH PANEL

11. Master Switch
12. Fuel Pump Switch
13. Magneto Switch
14. Console Light Switch (Opt)
15. Oil Dilution Switch (Opt)
16. Pitot Heat Switch (Opt)
17. Navigation Light Switch
18. Flashing Beacon Light Switch
19. Landing Light Switch
20. Generator Circuit Breaker
21. Landing Light Circuit Breaker
22. Primary Bus Bar
23. Navigation Lights Circuit Breaker
24. Pitot Heat Circuit Breaker (Opt)
25. Instrument Light Circuit Breaker
26. Cabin Light Circuit Breaker
27. Flap Circuit Breaker
28. Fuel Pump Circuit Breaker
29. Beacon Light Circuit Breaker
30. Electronics Bus Bar
31. Radio #4 Circuit Breaker (Opt)
32. Radio #3 Circuit Breaker (Opt)
33. Radio #2 Circuit Breaker (Opt)
34. Radio #1 Circuit Breaker (Opt)
35. Auto Pilot Circuit Breaker (Opt)
36. Audio Amp Circuit Breaker (Opt)
37. Automatic Circuit Breaker, Gen. Field
38. Automatic Circuit Breaker, Turn Coordinator and Stall Horn

THRU 1969 MODELS ONLY

Figure 17-1. Split Bus Bar and Split Bus Power Relay Installation (Sheet 1 of 3)

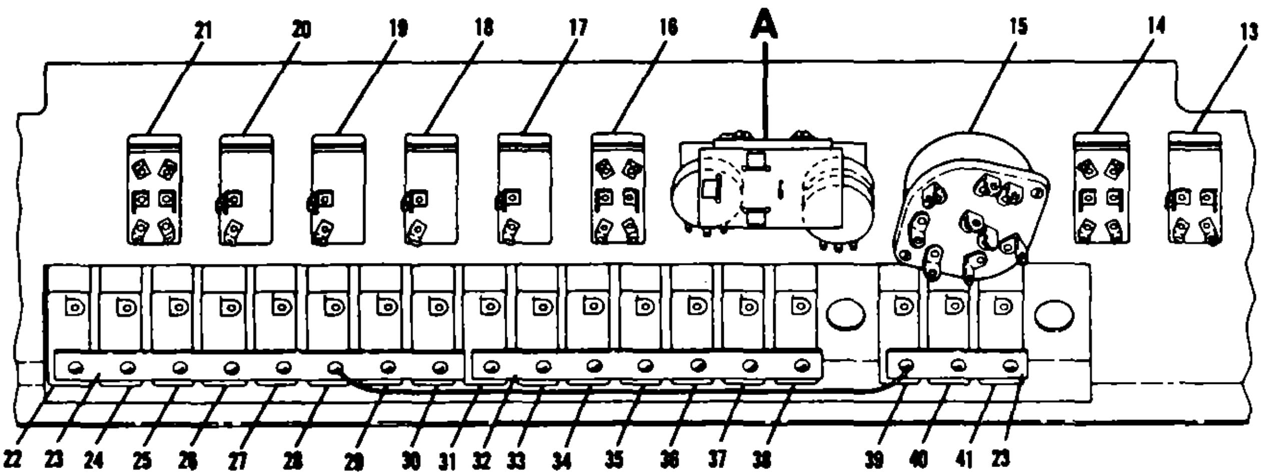
1. Screw
2. Washer
3. Bracket - Relay Mounting
4. Set Screw
5. Instrument Light Control
6. Engine - Radio Light Control
7. Lower Panel Light Control
8. Rheostat
9. Spacer
10. Diode Assembly Board
11. Nut
12. Split Bus Power Relay



* NOTE

Beginning with aircraft serials P20600635 and U20601493.

Detail A



VIEWED FROM THE BACK SIDE OF THE SWITCH PANEL

13. Master Switch
14. Fuel Pump Switch
15. Magneto Switch
16. Console Light Switch (Opt)
17. Oil Dilution Switch (Opt)
18. Pitot Heat Switch (Opt)
19. Navigation Light Switch
20. Flashing Beacon Light Switch (Opt)
21. Landing Light Switch
22. Alternator Circuit Breaker
23. Primary Bus Bar
24. Landing Light Circuit Breaker
25. Navigation Lights Circuit Breaker
26. Pitot Heat Circuit Breaker (Opt)
27. Instrument Light Circuit Breaker
28. Cabin Light Circuit Breaker
29. Flap Circuit Breaker
30. Fuel Pump Circuit Breaker
31. Flashing Beacon Light Circuit Breaker (Opt)
32. Electronics Bus Bar
33. Radio #4 Circuit Breaker (Opt)
34. Radio #3 Circuit Breaker (Opt)
35. Radio #2 Circuit Breaker (Opt)
36. Radio #1 Circuit Breaker (Opt)
37. Auto Pilot Circuit Breaker (Opt)
38. Audio Amp Circuit Breaker (Opt)
39. Alt - Reg Circuit Breaker (Opt)
40. Turn Coordinator Circuit Breaker (Opt)
41. Stall Warning Circuit Breaker (Opt)
42. Resistor

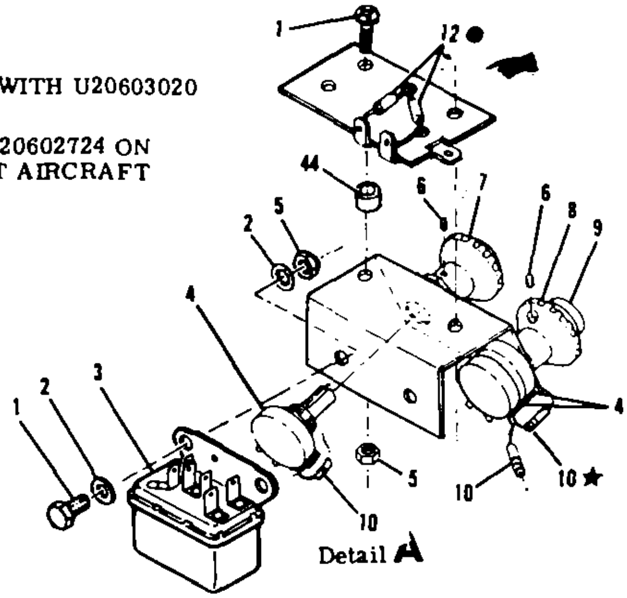
1970 MODELS THRU 1973

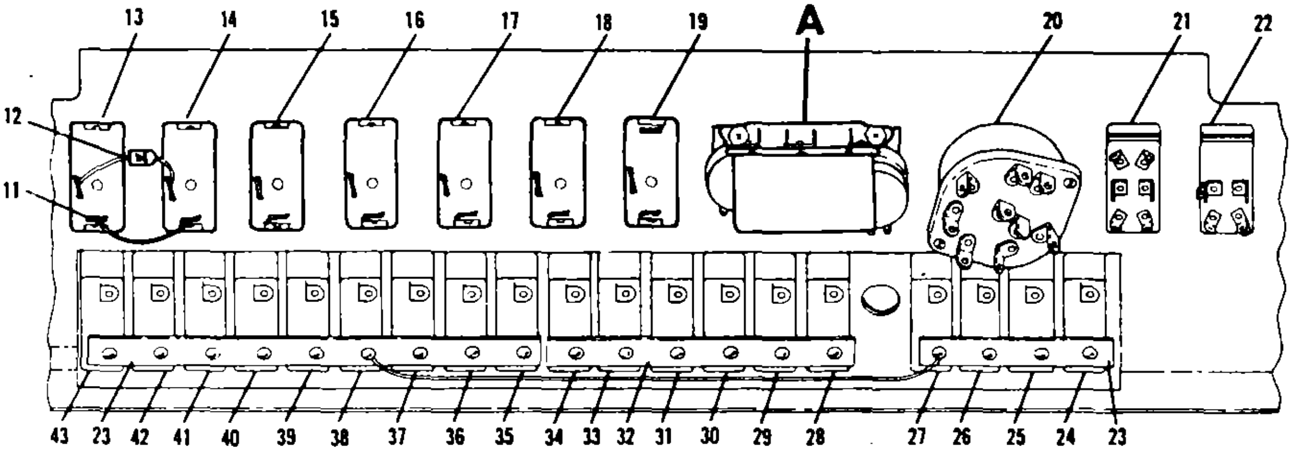
Figure 17-1. Split Bus Bar and Split Bus Power Relay Installation (Sheet 2 of 3)

● BEGINNING WITH U20603020

★ THRU U20602724 ON
24 VOLT AIRCRAFT

1. Bolt
2. Washer
3. Split Bus Relay
4. Rheostat
5. Nut
6. Set Screw
7. Instrument Light Control
8. Engine-Radio Light Control
9. Lower Panel (EL Panel) Light Control
10. Resistor



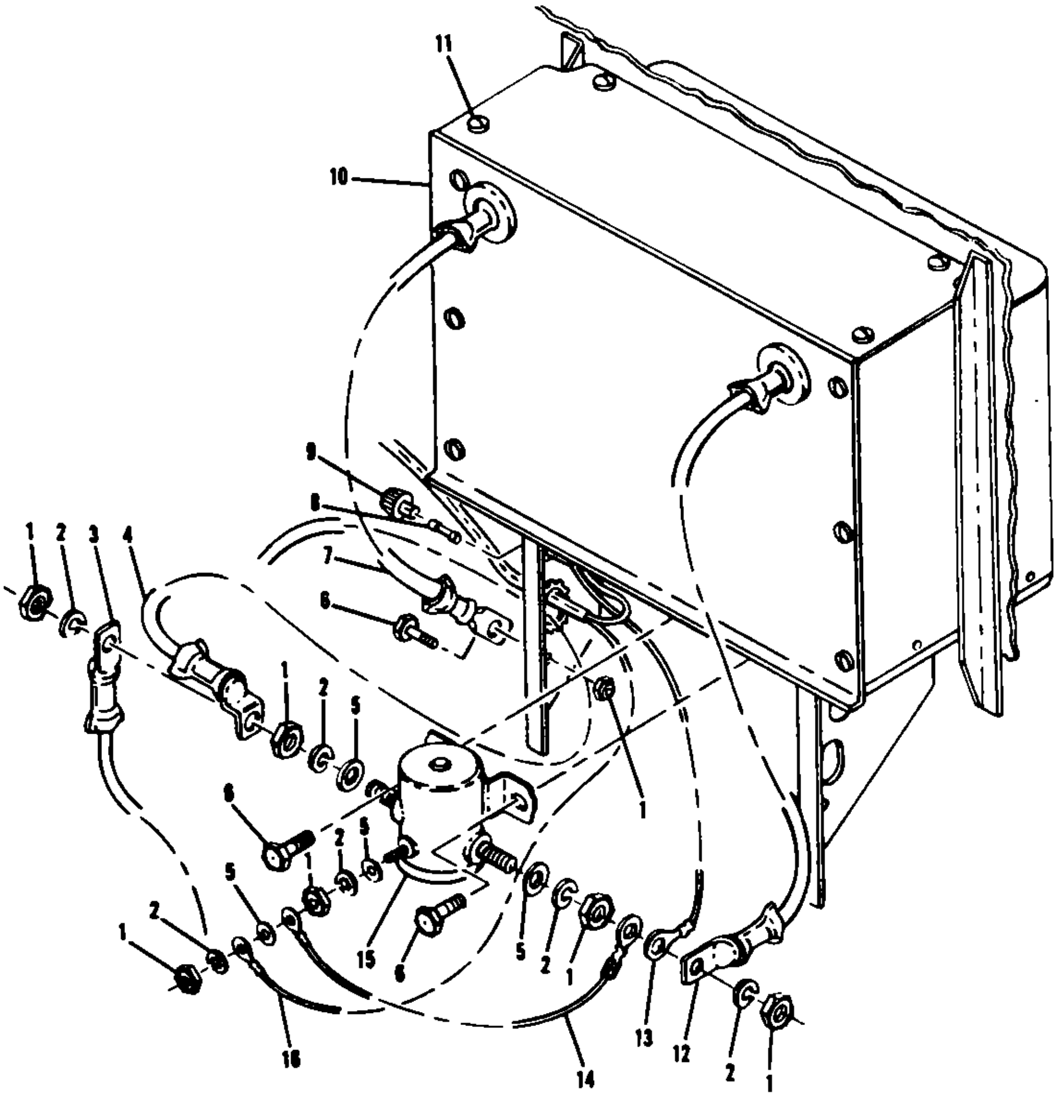


VIEWED FROM THE BACK SIDE OF THE SWITCH PANEL (TYPICAL INSTALLATION)

11. Jumper Wire
12. Diode
13. Landing Light Switch
14. Taxi Light Switch
15. Strobe Light Switch
16. Flashing Beacon Light Switch
17. Navigation Light Switch
18. Pitot Heat Switch
19. Post Light and Flood Light Switch
20. Magneto Switch
21. Fuel Pump Switch
22. Master Switch
23. Primary Bus Bar
24. Strobe Light Circuit Breaker
25. Stall Warning Circuit Breaker
26. Turn Coordinator Circuit Breaker
27. Alt-Reg Circuit Breaker
28. Audio Amp Circuit Breaker
29. Autopilot Circuit Breaker
30. Radio #1 Circuit Breaker
31. Radio #2 Circuit Breaker
32. Electronics Bus Bar
33. Radio #3 Circuit Breaker
34. Radio #4 Circuit Breaker
35. Flashing Beacon Circuit Breaker
36. Fuel Pump Circuit Breaker
37. Flap Circuit Breaker
38. Cabin Light Circuit Breaker
39. Instrument Light Circuit Breaker
40. Pitot Heat Circuit Breaker
41. Naviagtion Light Circuit Breaker
42. Landing Light Circuit Breaker
43. Alternator Circuit Breaker
44. Spacer

BEGINNING WITH 1974 MODELS

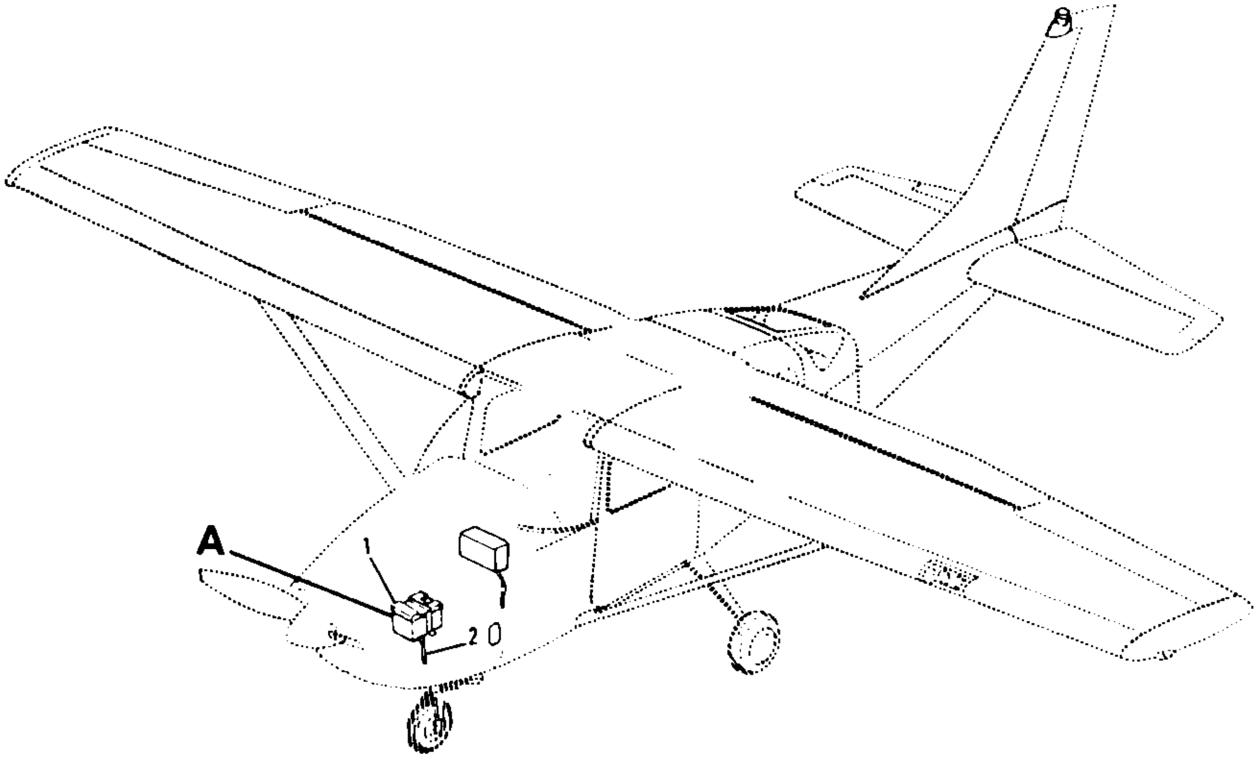
Figure 17-1. Split Bus Bar and Split Bus Power Relay Installation (Sheet 3 of 3)



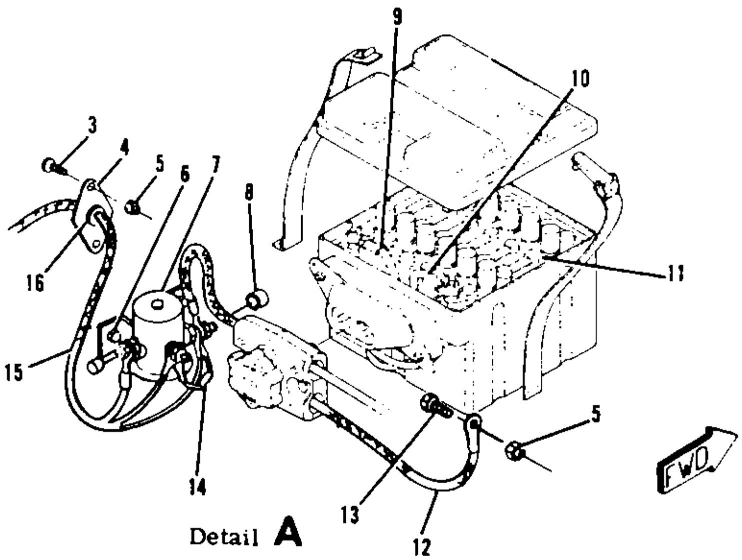
12-VOLT SYSTEMS ONLY

1. Nut
2. Lockwasher
3. Gnd Ser Recpt Cable
4. Starter Contactor Cable
5. Washer
6. Bolt
7. Ground Cable
8. Fuse
9. Cap-Fuse
10. Battery Box
11. Fasteners
12. Power Cable
13. Clock Wire
14. Diode Wire
15. Battery Solenoid
16. Master Switch Wire

Figure 17-2. Battery Installation (Sheet 1 of 3)



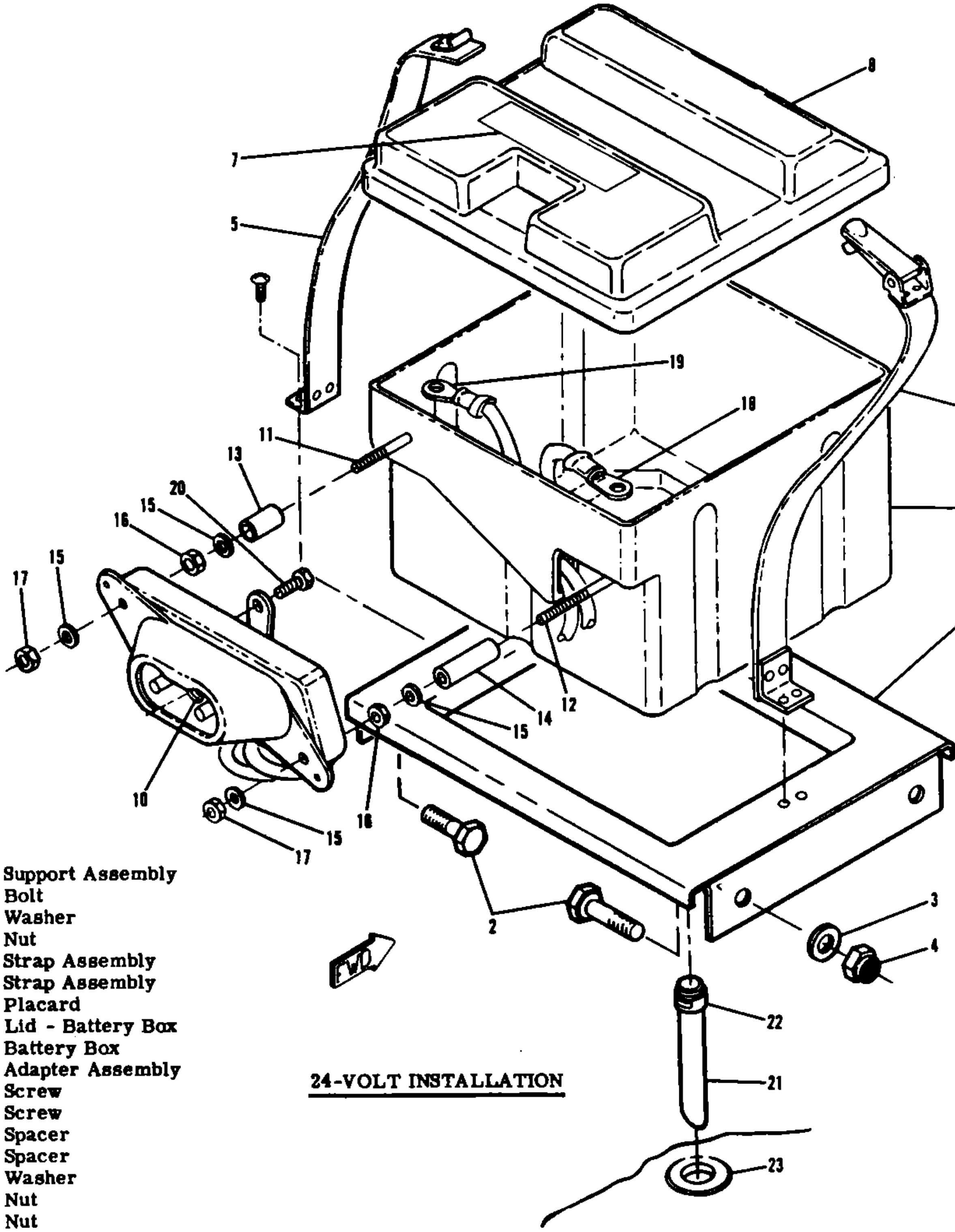
24-VOLT INSTALLATION



THRU 1973 MODELS

1. Battery Box
2. Drain Hose
3. Screw
4. Shield
5. Nut
6. Bolt
7. Contactor Assembly
8. Cover - Terminal
9. Cable - Negative Terminal
10. Cable - Positive Terminal
11. Battery
12. Cable - Ground
13. Bolt
14. Diode Assembly
15. Cable Assembly
16. Grommet

Figure 17-2. Battery Installation (Sheet 2 of 3)



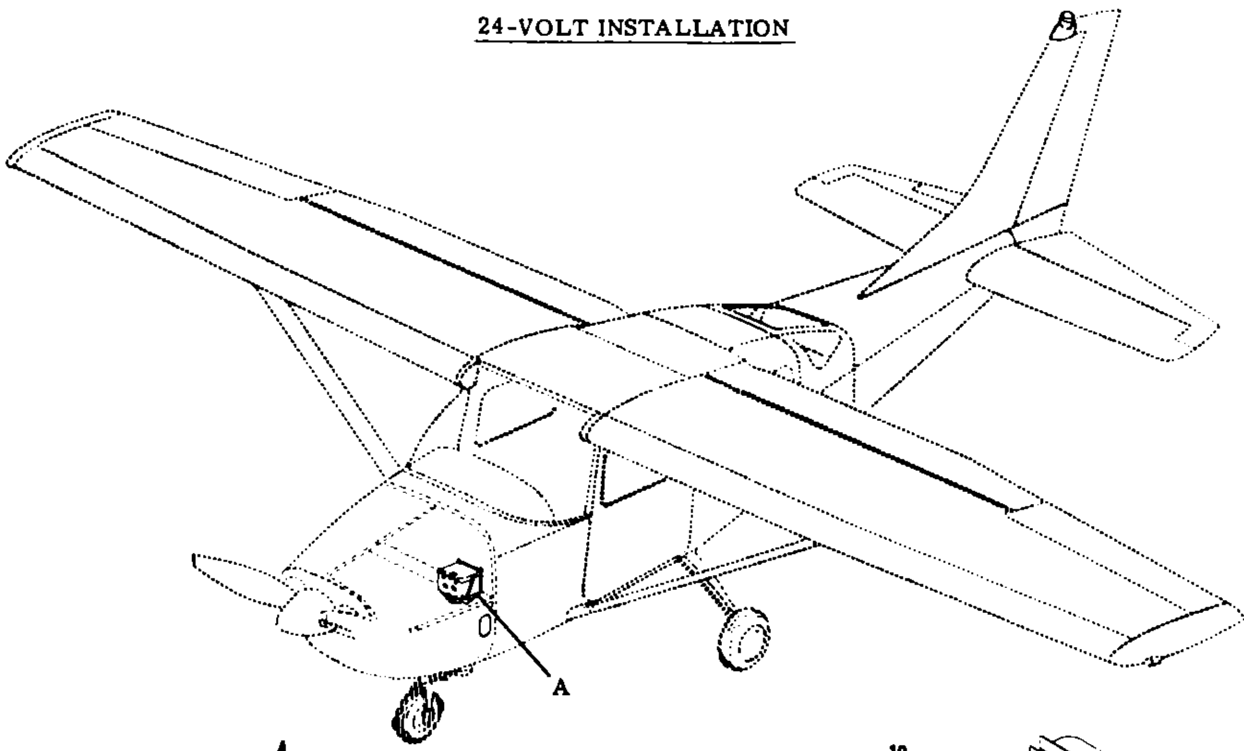
1. Support Assembly
2. Bolt
3. Washer
4. Nut
5. Strap Assembly
6. Strap Assembly
7. Placard
8. Lid - Battery Box
9. Battery Box
10. Adapter Assembly
11. Screw
12. Screw
13. Spacer
14. Spacer
15. Washer
16. Nut
17. Nut
18. Cable Assembly - Positive
19. Cable Assembly - Negative
20. Bolt
21. Hose - Drain
22. Clamp
23. Grommet

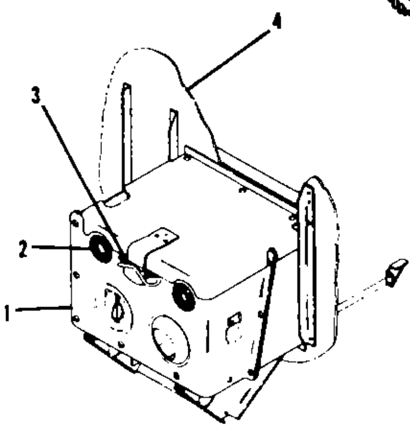
24-VOLT INSTALLATION

THRU 1973 MODELS

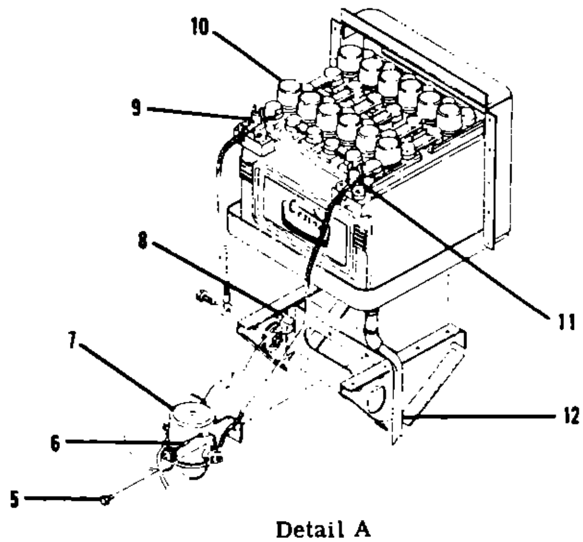
Figure 17-2. Battery Installation (Sheet 3 of 3)

24-VOLT INSTALLATION





Detail A



Detail A
(Cover Removed)

BEGINNING WITH 1974 MODELS

1. Battery Box
2. Grommet
3. Clip
4. Firewall
5. Bolt
6. Diode
7. Contactor
8. Fuse
9. Cable Assembly-Negative
10. Battery
11. Cable Assembly-Positive
12. Hose Drain

Figure 17-2. Battery Installation (Sheet 4 of 4)

17-19. CLEANING THE BATTERY. For maximum efficiency, the battery and connections should be kept clean at all times.

a. Remove the battery in accordance with preceding paragraph.

b. Tighten battery cell filler caps to prevent the cleaning solution from entering the cells.

c. Wipe battery cable ends, battery terminals and entire surface of the battery with a clean cloth moistened with a solution of bicarbonate of soda (baking soda) and water.

d. Rinse with clear water, wipe off excess water and allow battery to dry.

e. Brighten up cable ends and battery terminals with emery cloth or a wire brush.

f. Install the battery according to the preceding paragraph.

g. Coat the battery terminals and the cable ends with petroleum jelly.

17-20. ADDING ELECTROLYTE OR WATER TO THE BATTERY. A battery being charged and discharged with use will decompose the water from the electrolyte by electrolysis. When the water is decomposed, hydrogen and oxygen gases are formed which escape into the atmosphere through the battery vent system. The acid in the solution chemically combines with the plates of the battery during discharge or is suspended in the electrolyte solution during charge. Unless the electrolyte has been spilled from a battery, acid should not be added to the solution. The water will decompose into gases and should be replaced regularly. Add distilled water as necessary to maintain the electrolyte level even with the horizontal baffle plate inside the battery. When "dry charged" batteries are put into service, fill as directed with electrolyte. However, as the electrolyte level falls below normal with use add only distilled water to maintain the proper level. The battery electrolyte contains approximately 25% sulphuric acid by volume. Any change in this volume will hamper the proper operation of the battery.

CAUTION

Do not add any type of "battery rejuvenator" to the electrolyte. When acid has been spilled from a battery, the acid balance may be adjusted by following instructions published by the Association of American Battery Manufacturers.

17-21. TESTING THE BATTERY. The specific gravity check method of testing the battery is preferred when the condition of the battery is in a questionable state-of-charge. However, when the aircraft has been operated for a period of time with an alternator output voltage which is known to be correct, the question of battery capability may be answered more correctly with a load type tester. If testing the battery is deemed necessary, the specific gravity should be checked first and compared with the following chart.

BATTERY HYDROMETER READINGS	
1.280 Specific Gravity	100% Charged
1.250 Specific Gravity	75% Charged
1.220 Specific Gravity	50% Charged
1.190 Specific Gravity	25% Charged
1.160 Specific Gravity	Practivally Dead

NOTE

All readings shown are for an electrolyte temperature of 80° Fahrenheit. For higher temperatures the readings will be slightly lower. For cooler temperatures the readings will be slightly higher. Some hydrometers have a built-in temperature compensation chart and a thermometer. If this type tester is used, disregard this chart.

If a specific gravity reading indicates that the battery is not fully charged, the battery should be charged on 12-volt systems at 14-volts, or on 24-volt systems at 28-volts for approximately 30 minutes, or until battery voltage rises to 14-volts on 12-volt systems or 28-volts on 24-volt systems. After charging, a load tester will give more meaningful results. A special gravity check can be used after charging but the check cannot spot cells which short under load, broken connectors between plates of a cell, etc.

17-22. CHARGING THE BATTERY. When the battery is to be charged, the level of electrolyte should be checked and adjusted by adding distilled water to cover the tops of the internal battery plates. The battery cables and connections should be clean.

WARNING

When a battery is charging, hydrogen and oxygen gases are generated. Accumulation of these gases can create a hazardous explosive condition. Always keep sparks and open flame away from the battery. Allow unrestricted ventilation of the battery area during charging.

The main points of consideration during a battery charge are excessive battery temperature and violent gassing. Under a reasonable rate of charge, the battery temperature should not rise over 125°F nor should gassing be so violent that acid is blown from the vents.

17-23. BATTERY BOX.

17-24. DESCRIPTION. On 12-volt aircraft, the battery is enclosed in a metal battery box which is painted with acid proof paint and is riveted to the forward side of the firewall. On 24-volt aircraft, thru 1973 models, the battery is enclosed in a acid resistant plastic box which is mounted in the tunnel below the engine. Beginning with 1974 models the 24-volt aircraft, the battery box is mounted on the left hand firewall and constructed of metal covered with acid proof paint. On all three systems, the battery box completely encloses the battery preventing any spillage of electrolyte or accumulation of battery gases inside the aircraft. All three battery boxes are vented by a tube which attaches to the bottom of the battery box and extends downward through the bottom of the fuselage.

17-25. REMOVAL AND INSTALLATION OF 12 VOLT BATTERY BOX. (Refer to figure 17-2.) The battery box is riveted to the firewall. The rivets must be drilled out to remove the box. When a battery box is installed and riveted into place, all rivets and scratches inside the box should be painted with acid-proof lacquer, Part No. CES1054-381, available from the Cessna Service Parts Center.

17-26. REMOVAL AND INSTALLATION OF 24 VOLT BATTERY BOX. (Refer to figure 17-2.)

a. Use paragraph 17-18 as a guide for removal and replacement of the battery box.

NOTE

If rivets are removed from battery box, new rivets should be painted with acid-proof lacquer. Part No. CES1054-381, available from the Cessna Service Parts Center.

17-27. MAINTENANCE OF BATTERY BOX. The battery box should be inspected and cleaned periodically. The box and cover should be cleaned with a strong solution of bicarbonate of soda (baking soda) and water. Hard deposits may be removed from a metal box with a wire brush or from a plastic box with a plastic scraper. When all corrosive deposits have been removed from the box, flush it thoroughly with clean water.

WARNING

Do not allow acid deposits to come in contact with skin or clothing. Serious acid burns may result unless the affected area is washed immediately with soap and water. Clothing will be ruined upon contact with battery acid.

Inspect the cleaned box and cover for physical damage and for areas lacking proper acid proofing. A badly damaged or corroded box should be replaced. If the box or lid require acid proofing, paint the area with acid-proof black lacquer, Part No. CES1054-381, available from the Cessna Service Parts Center.

17-28. BATTERY CONTACTOR.

17-29. DESCRIPTION. The battery contactor on 12-volt systems is bolted to the firewall below the battery box. Thru 1973 models on the 24 volt system the battery contactor is bolted to the tunnel wall below the engine, beginning with 1974 models on the 24 volt system the battery contactor is bolted to the battery box support bracket on the firewall. The contactor is a solenoid plunger type, which is actuated by turning the master switch on. Beginning with U20601912 a vented battery contactor is installed. When the master switch is off, the battery is disconnected from the electrical system. A silicon diode is used to eliminate spiking of the transistorized radio equipment. The cathode (+) terminal of the diode connects to the battery terminal of the battery contactor. The anode (-) terminal of the diode connects to the same terminal on the contactor as the master switch wire. This places the diode directly across the contactor solenoid coil so the inductive spikes originating in the coil are clipped when the master switch is opened. Refer to figure 17-2 for pictorial installation of the battery contactor and diode.

17-30. REMOVAL AND INSTALLATION. (Refer to figure 17-2.)

a. On 12-volt aircraft and 24-volt aircraft beginning with 1974 models, open battery box and disconnect negative battery terminal. Pull cable clear of aircraft.

b. On 24-volt aircraft thru 1973 models, remove the quick disconnect cable assembly from the battery box by loosening the knob on the cable assembly.

c. Refer to figure 17-2 as a guide for removal and installation.

d. For installation of battery contactor, reverse this procedure.

a. On 12-volt aircraft, open battery box and disconnect negative battery terminal. Pull cable clear of aircraft.

b. On 24-volt aircraft, remove the quick disconnect cable assembly from the battery box by loosening the knob on the cable assembly.

c. Refer to figure 17-2 and use as a guide for removal.

d. For replacement of battery contactor, reverse this procedure.

17-31. BATTERY CONTACTOR CLOSING CIRCUIT.

17-32. DESCRIPTION. This circuit consists of a fuse, a resistor and a diode mounted on the ground service receptacle bracket. This serves to shunt a small charge around the battery contactor so that ground power may be used to close the contactor when the battery is too dead to energize the contactor by itself. Refer to figure 17-3.

17-33. GROUND SERVICE RECEPTACLE.

17-34. DESCRIPTION. A ground service receptacle is installed to permit the use of external power for cold weather starting or when performing lengthy electrical maintenance. A reverse polarity protection system is utilized whereby ground power must pass through an external power contactor to be connected to the bus. A silicon junction diode is connected in series with the coil on the external power contactor so that if the ground power source is inadvertently connected with a reversed polarity, the external power contactor will not close. This feature protects the diodes in the alternator, and other semiconductor devices used in the aircraft, from possible reverse polarity damage.

NOTE

Maintenance of the electronic installations cannot be performed when using external power. Application of external power opens the relay supplying voltage to the electronics bus. For lengthy ground testing of electronics systems, connect a well regulated and filtered power supply directly to the battery side of the battery contactor. Adjust the supply for 14-volts on 12-volt systems or 28-volt on 24-volt systems and close the master switch.

NOTE

When using ground power to start the aircraft, close the master switch before removing the ground power plug. This will ensure closure of the battery contactor and excitation of the alternator field in the event that the battery is completely dead.

CAUTION

Failure to observe polarity when connecting an external power source directly to the battery or directly to the battery side of the battery contactor, will damage the diodes in the alternator and other semiconductor devices in the aircraft.

WARNING

External power receptacle must be functionally checked after wiring, or after replacement of components of the external power or split bus systems. Incorrect wiring or malfunctioned components can cause immediate engagement of starter when ground service plug is inserted.

17-35. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
STARTER ENGAGES WHEN GROUND POWER IS CONNECTED.	Shorted or reversed diode in split bus-bar system.	Check wiring to, and condition of diode mounted on the split bus relay bracket adjacent to the magneto switch. Correct wiring. Replace diode board assembly.
GROUND POWER WILL NOT CRANK ENGINE.	Ground service connector wired incorrectly.	1. Check for voltage at all three terminals of external power contactor with ground power connected and master switch off. If voltage is present on input and coil terminals but not on the output terminal, proceed to step 4. If voltage is present on the input terminal but not on the coil terminal, proceed to step 2. If voltage is present on all three terminals, check wiring between contactor and bus.
		2. Check for voltage at small terminal of ground service receptacle. If voltage is not present, check ground service plug wiring. If voltage is present, proceed to step 3.

17-35. TROUBLE SHOOTING. (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
GROUND POWER WILL NOT CRANK ENGINE. (Cont).	Open or mis-wired diode on ground service diode board assembly.	3. Check polarity and continuity of diode on diode board at rear of ground service receptacle. If diode is open or improperly wired, replace diode board assembly.
	Faulty external power contactor.	4. Check resistance from small (coil) terminal of external power contactor to ground (master switch off and ground power unplugged). Normal indication is 16-24 ohms. on 12-volt system or 50-70 ohms on the 24-volt systems. If resistance indicates an open coil, replace contactor. If resistance is normal, proceed to step 5.
	Faulty contacts in external power contactor.	5. With master switch off and ground power applied, check for voltage drop between two large terminals of external power (turn on taxi light for a load). Normal indication is zero volts. If voltage is intermittently present or present all the time, replace contactor.

17-36. REMOVAL AND INSTALLATION. (Refer to figure 17-3.)

a. On 12-volt systems, open the battery box and disconnect the ground cable from the negative terminal of the battery and pull the cable free of the box.

b. On 24-volt systems, remove the quick-disconnect cable assembly from the battery box assembly by loosening the knob on the cable assembly.

c. Remove the nuts, washers, ground strap, bus bar and diode board from the studs of the receptacle and remove battery cable.

d. Remove the screws and nuts holding the receptacle; ground strap will then be free from the bracket.

e. To install a ground service receptacle, reverse this procedure.

17-37. ALTERNATOR POWER SYSTEM.

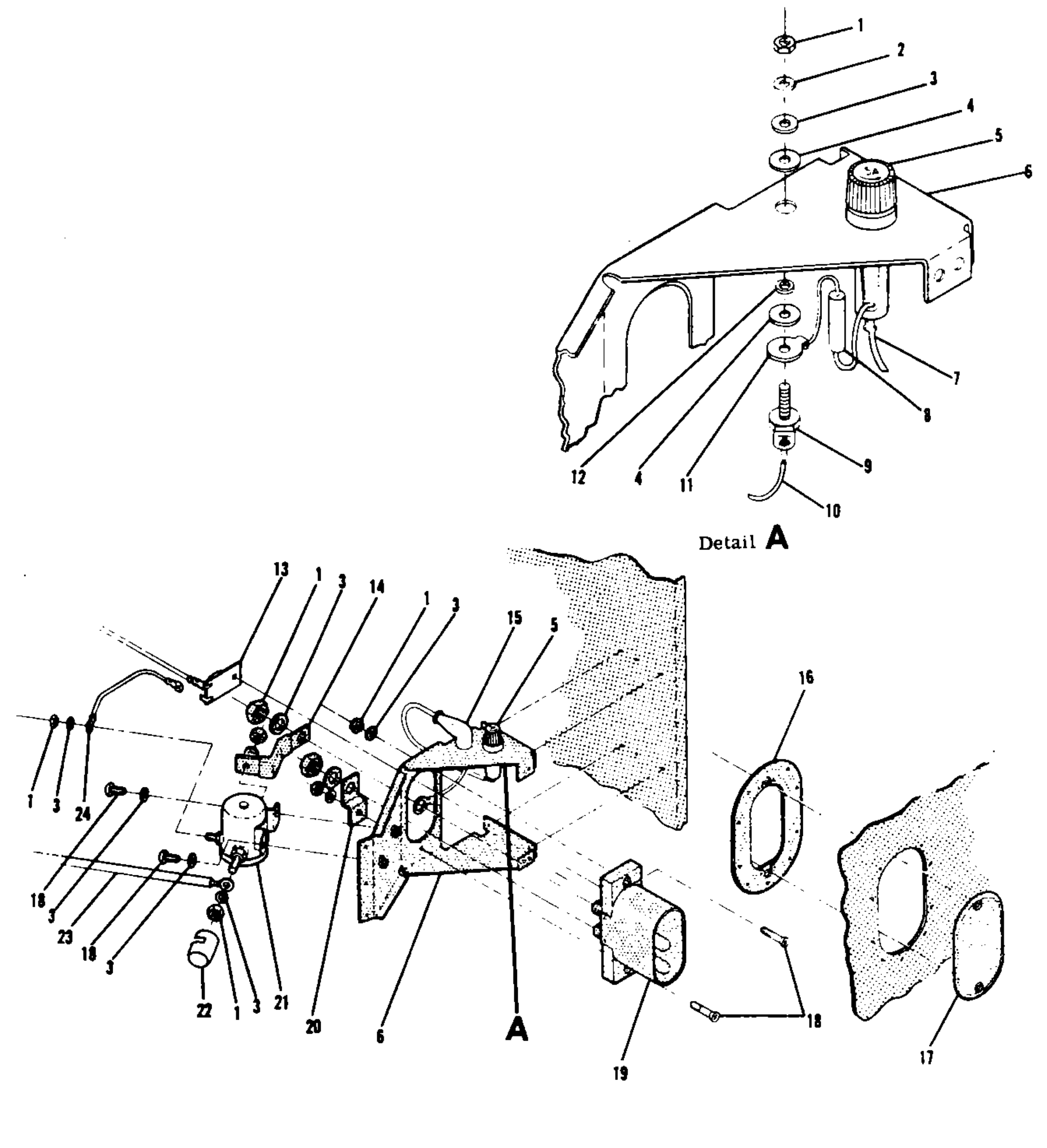
17-38. DESCRIPTION. The alternator system consists of an engine driven alternator, a voltage regulator and a circuit breaker located on the instrument panel. The system is controlled by the left hand portion of the split rocker, master switch labeled ALT. Beginning with 1972 models an over-voltage sensor switch and red warning light labeled HIGH VOLTAGE are incorporated to protect the system, (refer to paragraph 17-57). The aircraft battery supplies the source of power for excitation of the alternator.

17-39. ALTERNATOR.

17-40. DESCRIPTION. The 60-ampere alternator used on the aircraft are three-phase, delta connected with integral silicon diode rectifiers. The alternator is rated at 14-volts or 28-volts at 60-amperes continuous output. The moving center part of the alternator (rotor) consists of an axial winding with radial interlocking poles which surround the winding.

With excitation applied to the winding through slip rings the pole pieces assume magnetic polarity. The rotor is mounted in bearings and rotates inside the stator which contains the windings in which the ac current is generated. The stator windings are three-phase, delta connected and are attached to two diode plates, each of which contains three silicon diodes. The diode plates are connected to accomplish full-wave, rectification of the ac. The resulting dc output is applied to the aircraft bus and sensed by the voltage regulator. The regulator controls the excitation applied to the alternator field thus controlling the output voltage of the alternator.

17-41. ALTERNATOR REVERSE VOLTAGE DAMAGE. The alternator is very susceptible to reverse polarity damage due to the very low resistance of the output windings and the low resistance of the silicon diodes in the output. If a high current source, such as a battery or heavy duty ground power cart is attached to the aircraft with the polarity inadvertently reversed, the current through the alternator will flow almost without limit and the alternator will be immediately damaged.



1. Nut
2. Lockwasher
3. Washer
4. Insulating Washer
5. Fuse
6. Bracket
7. Wire to Battery Contactor
8. Resistor-.75 ohm
9. Diode
10. Wire to Ext. Pwr. Recept.
11. Solder Terminal
12. Spacer
13. Diode Board
14. Bus Bar
15. Nipple - Used before resistor was added
16. Doubler
17. Cover Plate
18. Screw
19. Receptacle
20. Ground Strap
21. Ext. Power Contactor
22. Cover - Late Airplanes
23. Power Cable
24. Contactor Control Wire

Figure 17-3. Ground Service Receptacle Installation

17-42. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
AMMETER INDICATES HEAVY DISCHARGE WITH ENGINE NOT RUNNING OR ALTERNATOR CIRCUIT BREAKER OPENS WHEN MASTER SWITCH IS TURNED ON.	Shorted field in alternator.	1. Remove plug from regulator with master switch on and observe if heavy drain persists. If heavy drain is reduced, proceed to step 2. If heavy drain is not reduced, proceed to step 3. 2. Check resistance from terminal "F" on alternator to the alternator case. Normal indication on 12-volt systems is 6-7 ohms of 11-12 ohms on 24-volt systems. If resistance is too low, repair or replace alternator.
	Shorted radio noise filter or shorted wire.	3. Remove cable from output terminal of alternator. Check resistance from end of cable to ground (MASTER SWITCH MUST BE OFF). If resistance does not indicate a direct short, proceed to step 6. If resistance indicates a direct short, proceed to step 4.
		4. Remove cable connections from radio noise filter. Check resistance from the filter input terminal to ground. Normal indication is infinite resistance. If reading indicates a direct short, replace filter. If no short is evident, proceed to step 5. 5. Check resistance from ground to the free ends of the wires which were connected to the radio noise filter (or alternator if no noise filter is installed). Normal indication does not show a direct short. If a short exists in wires, repair or replace wiring.
	Shorted diodes in alternator.	6. Check resistance from output terminal of alternator to alternator case. Reverse leads and check again. Resistance reading may show continuity in one direction but should show an infinite reading in the other direction. If an infinite reading is not obtained in at least one direction, repair or replace alternator.

17-42. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
ALTERNATOR SYSTEM WILL NOT KEEP BATTERY CHARGED.	Regulator faulty or improperly adjusted.	1. Start engine and adjust for 1500 RPM. Ammeter should indicate a heavy charge rate with all electrical equipment turned off. Rate should taper off in 1-3 minutes. On 12-volt aircraft a voltage check at the bus should indicate a reading consistant with the voltage vs temperature chart on page 17-19. If charge rate tapers off very quickly and voltage is normal, check battery for malfunction. If ammeter shows a low charge rate or any discharge rate, and voltage is low, proceed to step 2. 2. Stop engine, remove cowl, and remove cover from voltage regulator. Turn master switch ON/OFF several times and observe field relay in regulator. Relay should open and close with master switch and small arc should be seen as contacts open. If relay is inoperative, proceed to step 3. If relay operates, proceed to step 4. 3. Check voltage at "S" terminal of regulator with master switch closed. Meter should indicate bus voltage. If voltage is present, replace regulator. If voltage is not present, check wiring between regulator and bus. 4. Remove plug from regulator and start engine. Momentarily jumper the "A+" and "F" terminals together on the plug. Aircraft's ammeter should show heavy rate of charge. If heavy charge rate is observed, replace regulator. If heavy charge rate is not observed, proceed to step 5.
	Faulty wiring between alternator and regulator, or faulty alternator.	5. Check resistance from "F" terminal of regulator to "F" terminal of alternator. Normal indication is a very low resistance. If reading indicates no, or poor continuity, repair or replace wiring from regulator to alternator.

17-42. TROUBLE SHOOTING. (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
ALTERNATOR SYSTEM WILL NOT KEEP BATTERY CHARGED. (Cont).	Faulty wiring between alternator and regulator, or faulty alternator. (Cont).	6. Check resistance from "F" terminal of alternator to alternator case. Normal indication on 12-volt systems is 6-7 ohms or 11-12 ohms on 24-volt systems. If resistance is high or low, repair or replace alternator. 7. Check resistance from case of alternator to airframe ground. Normal indication is very low resistance. If reading indicates no, or poor continuity, repair or replace alternator ground wiring.
ALTERNATOR OVERCHARGES BATTERY - BATTERY USES EXCESSIVE WATER.	Regulator faulty or improperly adjusted.	Check bus voltage with engine running. Normal indication agrees with voltage vs temperature chart on page 17-13. Observe aircraft's ammeter, ammeter should indicate near zero after a few minutes of engine operation. Replace regulator.
OVER-VOLTAGE WARNING LIGHT STAYS ON. (24-VOLT).	Faulty regulator.	Reset over-voltage relay by turning master switch (ALT side) off and on. Check regulator by replacement. Replace regulator.
	Over-voltage relay out of adjustment.	Warning light comes on without over-voltage. Adjust over-volt relay assembly, thru 1973 models.
	Faulty over-voltage relay.	Repair or replace. Substitute relay.
	Faulty field wiring.	Test wiring - look for field wire shorted to primary voltage. Repair.
OVER-VOLTAGE WARNING LIGHT ON. (12 VOLT)	Regulator faulty or improperly adjusted. Faulty sensor switch.	1. With engine running turn off and on battery portion of the master switch. If the light stays on shut down engine then turn on the "BAT" and "ALT" portions of the master switch. Check for voltage at the "S" terminal of the voltage regulator. If voltage is present adjust or replace regulator. If voltage is not present check master switch and wiring for short or open condition. If wiring and switch are normal replace sensor.

17-43. REMOVAL AND INSTALLATION. (Refer to figure 17-4.)

a. Make sure that the master switch remains in the off position or disconnect the negative lead from the battery.

b. Disconnect the wiring from the alternator.

c. Remove the safety wire from the upper adjusting bolt and remove the bolt from the alternator.

d. Remove the nut and washer from the lower mounting bolt.

e. Remove the alternator drive belt and lower mounting bolt to remove the alternator.

f. To replace alternator, reverse this procedure.

g. Adjust belt tension to obtain 3/8" deflection at the center of the belt when applying 12 pounds pressure to the belt. After belt is adjusted and bolt is safety wired, tighten the bottom bolt to 100-140 lb.in. torque to remove any play between alternator mounting foot and the U-shaped support assembly.

CAUTION

When new belt in installed, belt tension should be checked withih 10 to 25 hours of operation.

NOTE

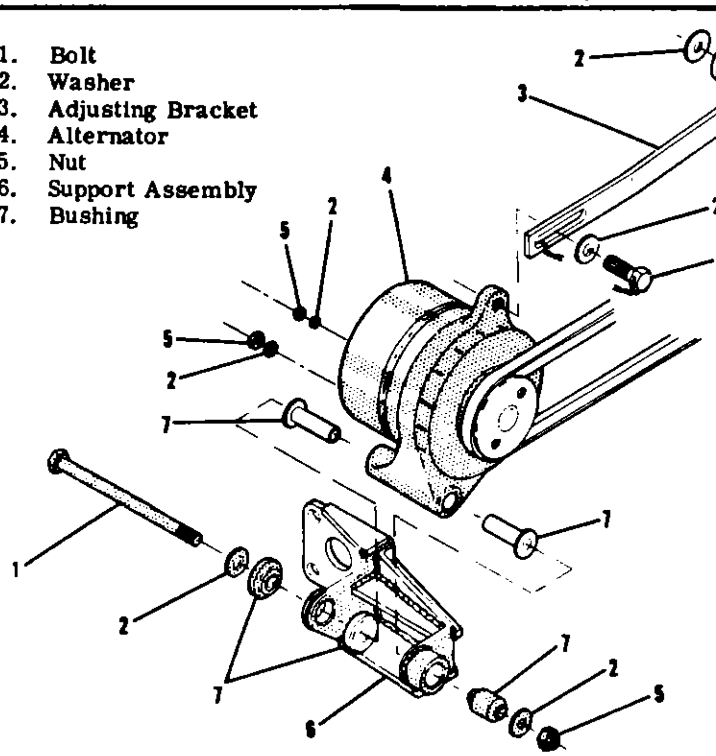
When tightening the alternator belt, apply pry bar pressure only to the end of the alternator nearest to the belt pulley.

17-44. ALTERNATOR FIELD CIRCUIT PROTECTION. On models prior to 1970, a 2-amp automatic resetting circuit breaker located on the back of the instrument panel is provided to protect the alternator field circuit. On 1970 models and on, a manually-resettable circuit breaker located on the switch panel is provided to protect the alternator field circuit.

17-45. ALTERNATOR VOLTAGE REGULATOR. 12 VOLT AIRCRAFT ONLY.

17-46. DESCRIPTION. The alternator voltage regulator contains two relays. The field relay is actuated by the aircraft master switch and connects the regulator to the battery. The voltage limiter relay is a two-stage, voltage sensitive device, which is used to control the current applied to the field winding of the alternator. When the upper set of contacts on the voltage regulator relay are closed, full bus voltage is applied to the field. This condition will exist when the battery is being heavily charged or when a very heavy load is applied to the system. When the upper contacts open, as the voltage begins to rise toward normal bus voltage, the voltage to the alternator field is reduced through a resistor network in the base of the regulator, thus reducing the output from the alternator. As the voltage continues to rise, assuming a very light load on the system, the lower contacts will close and ground the alternator field and shut the alternator completely off. Under lightly loaded conditions the voltage relay will vibrate between the intermediate charge rate and the lower (completely off) contacts. Under a moderate load, relay will vibrate between intermediate charge and upper (full output) contacts. The voltage relay is temperature compensated so that the battery is supplied with the proper charging voltage for all operating temperatures. With the battery fully charged (ship's ammeter indicating at or near zero) and a moderate load applied to the system (a taxi light turned on), the voltage at the bus bar should be within the range shown according to the air tem-

1. Bolt
2. Washer
3. Adjusting Bracket
4. Alternator
5. Nut
6. Support Assembly
7. Bushing



NOTE

When replacement of the alternator support bracket is required refer to Cessna Single-engine Service Letter SE71-42, dated, December 10, 1971.

WARNING

On Models manufactured prior to mid 1971 should alternator thru-bolt loosening or breaking occur, Cessna Service Letter SE71-40 dated November 24, 1971 should be complied with. On models manufactured after mid 1971 a new high strength thru-bolt and a K shaped retainer are installed. Torque bolts 45 to 55 pound-inches.

Figure 17-4. Alternator Installation

perature on the temperature and bus voltage chart.

Beginning with U20602200 a solid state voltage regulator is installed. The Voltage Limiter relay in this regulator is replaced by a circuit board. The regulator is a remove and replace item and not repairable. The regulator may be adjusted by removing the cover and adjusting the potentiometer either up or down.

12-VOLT SYSTEM	
TEMPERATURE	BUS VOLTAGE
60 - 75°F	13.8 - 14.1
75 - 90°F	13.7 - 14.0
91 - 100°F	13.6 - 13.9

The voltage regulator is adjustable but adjustments on the aircraft is not recommended. A bench adjustment procedure is outlined in the Cessna Alternator Charging Systems Service/Parts Manual.

17-47. TRANSISTORIZED VOLTAGE REGULATOR. (24-VOLT AIRCRAFT ONLY.)

17-48. DESCRIPTION. The transistorized voltage regulator controls the alternator output in a similar manner to a mechanical voltage regulator: by regulating the alternator field current. The regulation is accomplished electronically with the use of transistors and diodes rather than by a vibrating armature relay. The voltage sensing component is a zener diode which has the characteristic of suddenly changing its resistance when a specified voltage is reached.

When the engine is started, battery current is supplied to the field through a "bias" diode, and power transistor. The bias diode aids high temperature stability of the power transistor. A second diode, connected from the field terminal to common ground, absorbs undesirable field voltage peaks more efficiently than the resistor used in electro-mechanical regulators. As the alternator begins to supply current, battery voltage will increase. When battery voltage reaches approximately 28 volts, the zener diode suddenly reduced its resistance and turns on the driver transistor. When the driver transistor turns on, the power transistor is caused to turn off. Battery voltage is reduced slightly because the alternator output was reduced when the power transistor turned off the field current. Zener diode voltage is reduced at the same time as battery voltage, causing the zener diode to increase its resistance and turn off the driver transistor. The power transistor is caused to turn on again, resulting in a complete cycle of events. The transistors alternate in the on-off action. When the driver transistor turns on the power transistor turns off.

The temperature compensating resistor is made of a special material that changes its resistance with temperature in such a manner that during cold weather the battery charging voltage is increased. This resistor performs the same function as the bimetal hinge on the voltage limiter armature of a mechanical regulator.

Transistor regulator calibration can be changed by screwdriver adjustment of potentiometer. Adjusting the potentiometer performs the same function as adjusting the voltage limiter armature spring tension on a mechanical regulator.

A capacitor, in series with two resistors, causes the driver transistor and the power transistor to switch on and off faster, for proper flip-flop action.

The remaining resistors in the unit provide proper operating voltages for the zener diode and the two transistors.

17-49. TRANSISTORIZED REGULATOR ADJUSTMENTS - 24 VOLT AIRCRAFT ONLY. Regulator voltage limiter adjustments.

The only adjustment on the transistorized alternator regulator is the voltage limiter adjustment. The voltage setting can be tailored to meet the requirements of a given aircraft in order to maintain proper battery specific gravity. Never shift the voltage setting by more than 0.3 volt from the previous setting. Always allow an adequate time interval between each new voltage setting in order to obtain an accurate reading of battery specific gravity.

NOTE

Clockwise adjustment decreases voltage and counterclockwise adjustment increases voltage. Refer to the Cessna Alternator Charging Systems Manual for bench testing.

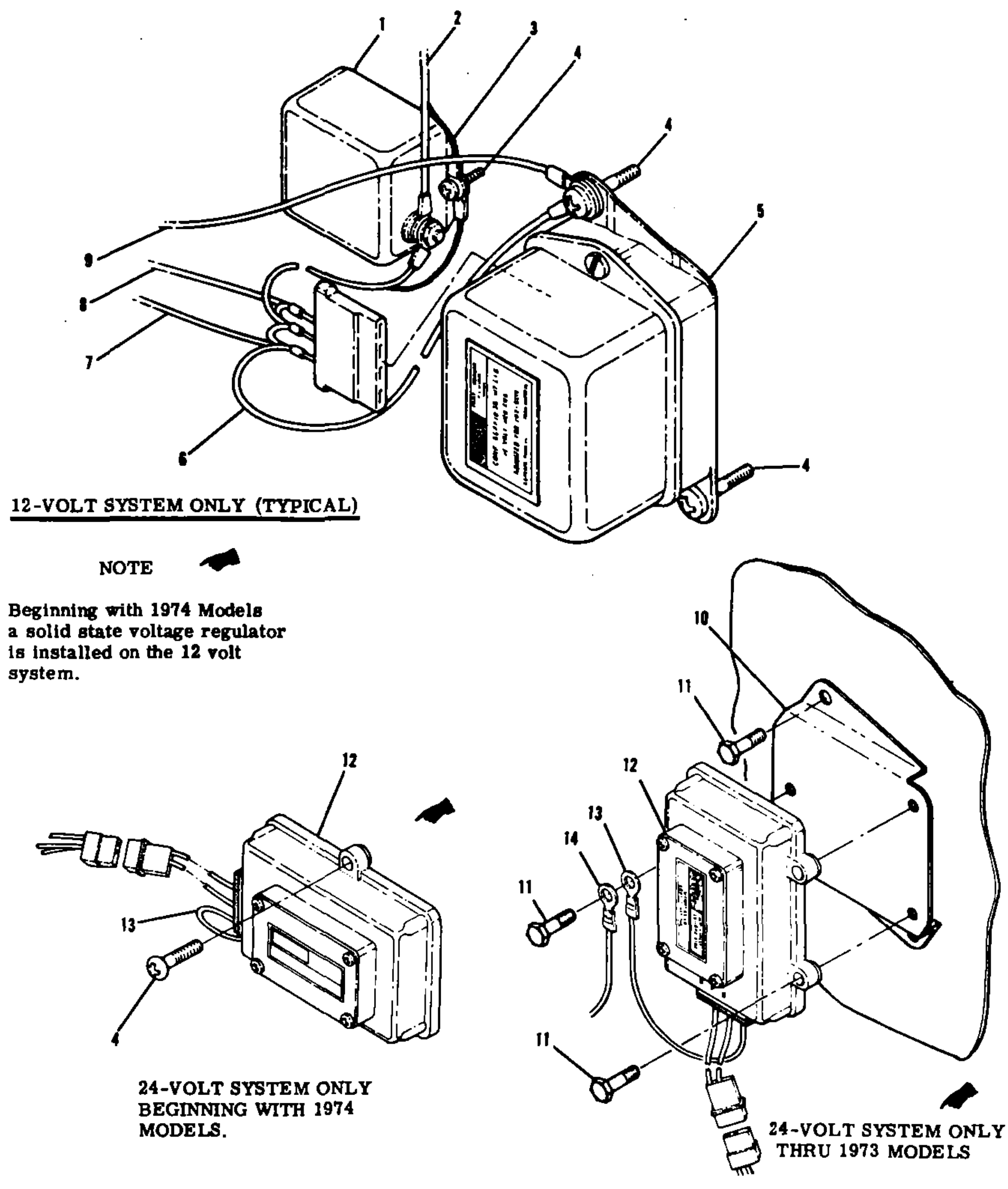
17-50. TROUBLE SHOOTING THE VOLTAGE REGULATOR. For trouble shooting the voltage regulator, refer to paragraph 17-42.

17-51. REMOVAL AND INSTALLATION - 12-VOLT AIRCRAFT ONLY (Refer to Figure 17-5.)

a. Make sure that the master switch is off or disconnect the negative lead from the battery.
b. Remove the connector plug from the regulator.
c. Remove two screws holding the regulator on the firewall.
d. To replace the regulator, reverse this procedure. Be sure that the connections for grounding the alternator, wiring shields and the base of the regulator are clean and bright before assembly. Otherwise, poor voltage regulation and/or excessive radio noise may result.

17-52. REMOVAL AND INSTALLATION OF TRANSISTORIZED VOLTAGE REGULATOR - 24-VOLT AIRCRAFT ONLY.

a. Ensure that the master switch is off.
b. Remove the quick-disconnect cable assembly from the battery box assembly by loosening the knob on the cable assembly.
c. Remove the upper cowling to gain access to the regulator mounted on the forward left side of the firewall.
d. Disconnect wiring from regulator and label wires.
e. Remove the three mounting bolts and nuts.
f. To replace the regulator, reverse this procedure.



NOTE

Beginning with 1974 Models a solid state voltage regulator is installed on the 12 volt system.

1. Filter - Radio Noise
2. Wire to Master Switch
3. Shield - Ground
4. Screw
5. Voltage Regulator
6. Wire Shields to Ground
7. Wire to Alternator "F"
8. Wire to Alternator "A+"
9. Wire to Alternator Ground
10. Support Assembly - Regulator
11. Bolt
12. Alternator Regulator
13. Regulator Ground Wire
14. Alternator Ground Wire

Figure 17-5. Voltage Regulator Installation

17-53. OVER-VOLTAGE WARNING CIRCUIT - 24-VOLT AIRCRAFT ONLY. (Refer to Figure 17-6.)

17-54. DESCRIPTION. Thru 1973 models the over-voltage warning system consists of a relay assembly, condenser and red indicator light. The relay is voltage sensitive, opening the alternator field circuits and turning on a red warning light if excessive voltage is present. Simultaneously with lamp illumination, the alternator will automatically shut down. To turn the over-volt light out, the ALT side of the master switch must be turned OFF and then back ON to reset the system. Monitor the output of the alternator on the ammeter and shut off enough electronic equipment to bring the reading below full scale. Beginning with 1974 models the system operation remains the same except the relay and capacitor are replaced by a new type relay. This relay is a remove and replace item and not adjustable.

17-55. ADJUSTMENT OF OVER-VOLTAGE RELAY ASSEMBLY. (THRU 1973 MODELS, 24 VOLT). Connect a well filtered D.C. supply to terminals E (negative) and B (positive) of the relay. Connect a 28 volt light bulb between terminals B and F of the relay. Increase the voltage of the supply until the lamp lights. The lamp should come on when the power supply voltage reaches 31.5 volts. The relay may be adjusted with a screwdriver until proper pull-in voltage is obtained.

17-56. REMOVAL AND INSTALLATION OF OVER-VOLTAGE RELAY ASSEMBLY.

a. Turn Master Switch (BAT side) to OFF position.
b. Label wires for identification and use figure 17-6 as a guide for removal and replacement.

17-57. OVER-VOLTAGE SENSOR AND WARNING LIGHT. (12 VOLT AIRCRAFT ONLY, BEGINNING WITH 1972 MODELS.)

17-58. DESCRIPTION. The over-voltage system consists of a over-voltage sensor switch and a red warning light labeled, "HIGH VOLTAGE", on the instrument panel. When an over-voltage tripoff occurs the over-voltage sensor turns off the alternator system and the red warning light comes on. The ammeter will show a discharge. Turn off both sections of the Master Switch to recycle the over-voltage sensor. If the over-voltage condition was transient, the normal alternator charging will resume and no further action is necessary. If the over-voltage tripout recurs, then a generating system malfunction has occurred such that the electrical accessories must be operated from the aircraft battery only. Conservation of electrical energy must be practiced until the flight can be terminated. The over-voltage red warning light filament may be tested at any time by turning off the "Alternator" portion of the Master Switch and leaving the "Battery" portion turned on. This test does not induce an over-voltage condition on the electrical system.

NOTE

Should nuisance trip-outs occur on aircraft prior to U20601751, Single-engine Service letter SE72-15, Dated April 21, 1972 should be complied with.

17-58A. RIGGING THROTTLE OPERATED MICRO-SWITCH. Refer to Section 13.

17-58B. AUXILIARY ELECTRIC FUEL PUMP FLOW RATE ADJUSTMENT. Refer to Section 13.

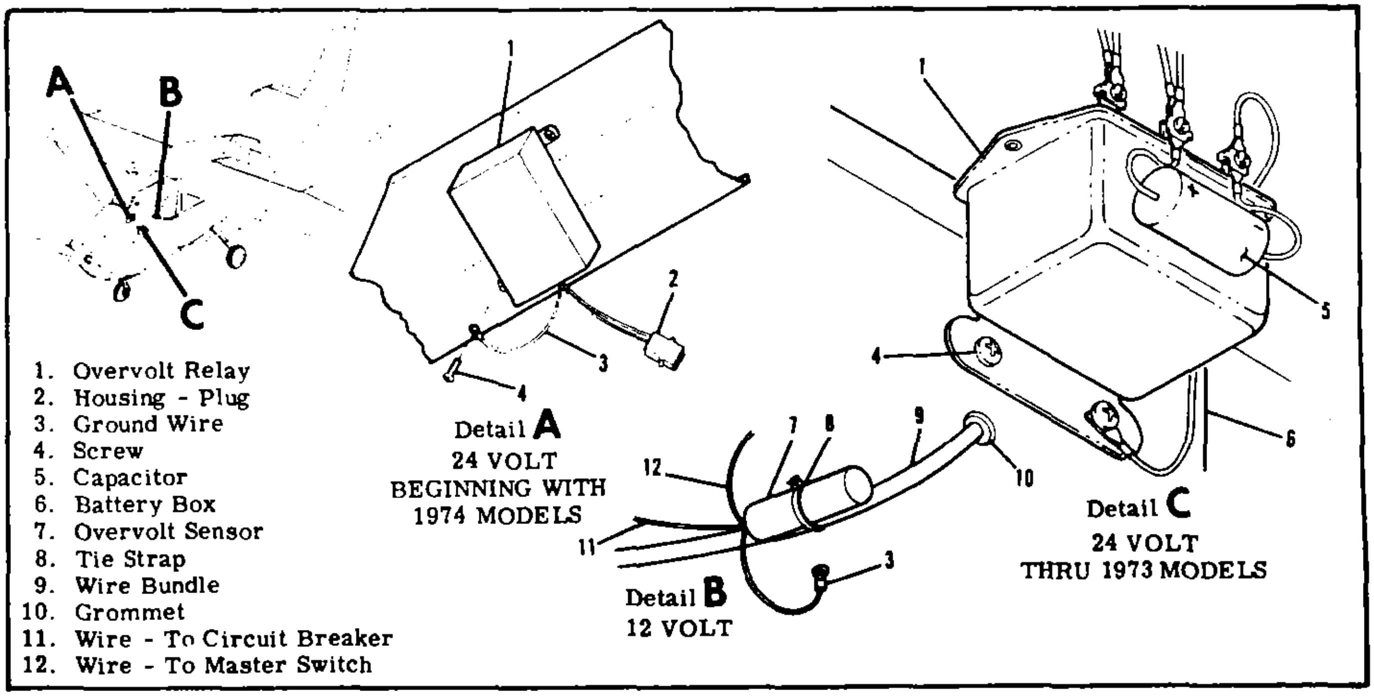


Figure 17-6. Overvolt Relay Installation

17-59. AIRCRAFT LIGHTING SYSTEM.

17-60. DESCRIPTION. The aircraft lighting system consists of landing and taxi lights, navigation lights, anti-collision strobe lights, flashing beacon light, interior and instrument panel flood lights, electro-luminescent panel lighting, instrument post lighting, pedestal lights, courtesy lights, control wheel map light, compass and radio dial lights.

On the 1969 model, snap-in type rocker switches are introduced. These switches have a design feature which permits them to snap into the panel from the panel side and can subsequently be removed for easy maintenance. These switches also feature spade type slip-on terminals.

17-61. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
LANDING AND TAXI LIGHTS OUT.	Short circuit in wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Test each circuit separately until short is located. Repair or replace wiring.
	Defective switch.	3. Check voltage at lights with master and landing and taxi light switches ON. Should read battery voltage. Replace switch.
LANDING OR TAXI LIGHT OUT.	Lamp burned out.	1. Test lamp with ohmmeter or new lamp. Replace lamp.
	Open circuit in wiring.	2. Test wiring for continuity. Repair or replace wiring.
FLASHING BEACON DOES NOT LIGHT.	Short circuit in wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Test circuit until short is located. Repair or replace wiring.
	Lamp burned out.	3. Test lamp with ohmmeter or a new lamp. Replace lamp. If lamp is good, proceed to step 4.
	Open circuit in wiring.	4. Test circuit from lamp to flasher for continuity. If no continuity is present, repair or replace wiring. If continuity is present, proceed to step 5.
	Defective switch.	5. Check voltage at flasher with master and beacon switch on. Should read battery voltage. Replace switch. If voltage is present, proceed to step 6.
	Defective flasher.	6. Install new flasher.
FLASHING BEACON CONSTANTLY LIT.	Defective flasher.	1. Install new flasher.

17-61. TROUBLE SHOOTING (Cont.)

TROUBLE	PROBABLE CAUSE	REMEDY
ALL NAV LIGHTS OUT.	Short circuit in wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Isolate and test each nav light circuit until short is located. Repair or replace wiring.
	Defective switch.	3. Check voltage at nav light with master and nav light switches on. Should read battery voltage. Replace switch.
ONE NAV LIGHT OUT.	Lamp burned out.	1. Inspect lamp. Replace lamp.
	Open circuit in wiring.	2. Test wiring for continuity. Repair or replace wiring.
ONE ANTI-COLLISION STROBE LIGHT WILL NOT LIGHT. THRU 1972 MODELS.	Flash tube burned out.	Test with new flash tube. Replace flash tube.
	Faulty wiring.	Test for continuity. Repair or replace.
	Faulty trigger head.	Test with new trigger head. Replace trigger head.
BOTH ANTI-COLLISION STROBE LIGHTS WILL NOT LIGHT. THRU 1972 MODELS.	Circuit breaker open.	Inspect. Reset.
	Faulty power supply.	Listen for whine in power supply to determine if power is operating.
	Faulty switch.	Test for continuity. Repair or replace.
	Faulty wiring.	Test for continuity. Repair or replace.

WARNING

The anti-collision system is a high voltage device. Do not remove or touch tube assembly while in operation. Wait at least 5 minutes after turning off power before starting work.

BOTH ANTI-COLLISION STROBE LIGHTS WILL NOT LIGHT. BEGINNING WITH 1973 MODELS.	Open circuit breaker.	1. Check, if open reset. If circuit breaker continues to open proceed to step 2.

TROUBLE	PROBABLE CAUSE	REMEDY
BOTH ANTI-COLLISION STROBE LIGHTS WILL NOT LIGHT. BEGINNING WITH 1973 MODELS. Cont.	Open circuit breaker. Cont.	2. Disconnect red wire between aircraft power supply (battery/external power) and strobe power supplies, one at a time. If circuit breaker opens on one strobe power supply, replace strobe power supply. If circuit breaker opens on both strobe power supplies proceed to step 3. If circuit breaker does not open proceed to step 4.
		3. Check aircraft wiring. Repair or replace as necessary.
		4. Inspect strobe power supply ground wire for contact with wing structure.

CAUTION

Extreme care should be taken when exchanging flash tube. The tube is fragile and can easily be cracked in a place where it will not be obvious visually. Make sure the tube is seated properly on the base of the nav light assembly and is centered in the dome.

NOTE

When checking defective power supply and flash tube, units from opposite wing may be used. Be sure power leads are protected properly when unit is removed to prevent short circuit.

TROUBLE	PROBABLE CAUSE	REMEDY
ONE ANTI-COLLISION STROBE LIGHT WILL NOT LIGHT. BEGINNING WITH 1973 MODELS.	Defective Strobe Power Supply, or flash tube.	1. Connect voltmeter to red lead between aircraft power supply (battery/external power) and strobe power supply, connecting negative lead to wing structure. Check for 12 volts. If OK proceed to step 2. If not, check aircraft power supply (battery/external power).
		2. Replace flash tube with known good flash tube. If system still does not work, replace strobe power supply.

TROUBLE	PROBABLE CAUSE	REMEDY
DOME LIGHT TROUBLE.	Short circuit in wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Test circuit until short is located. Repair or replace wiring.
		3. Test for open circuit. Repair or replace wiring. If no short or open circuit is found, proceed to step 4.
	Lamp burned out.	4. Test lamp with ohmmeter or new lamp. Replace lamp.
	Defective switch.	5. Check for voltage at dome light with master and dome light switch on. Should read battery voltage. Replace switch.
ELECTROLUMINESCENT PANELS WILL NOT LIGHT.	Short circuit in wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Test circuit until short is located. Repair or replace wiring. 3. Test for open circuit. Repair or replace wiring. If no open or short circuit is found, proceed to step 4.
	Defective resistor.	4. Check resistor for continuity. (Located in line between rheostat and inverta-pak.) Replace resistor.

SHOP NOTES:

TROUBLE	PROBABLE CAUSE	REMEDY
ELECTROLUMINESCENT PANELS WILL NOT LIGHT. (Cont).	Defective rheostat.	5. Check input voltage at inverta-pak with master switch on. Voltmeter should give a smoothly varied reading over the entire control range of the rheostat. If no voltage is present or voltage has a sudden drop before rheostat has been turned full counterclockwise, replace rheostat.
	Defective inverta-pak.	6. Check output voltage at inverta-pak with ac voltmeter. Should read about 125 volts ac with rheostat set for full bright. Replace inverta-pak.
INSTRUMENT LIGHTS WILL NOT LIGHT (THRU 1969 MODELS ONLY).	Short circuit in wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Test circuit until short is located. Repair or replace wiring 3. Test for open circuit. Repair or replace wiring. If no short or open circuit is found, proceed to step 4.
	Defective rheostat.	4. Check voltage at instrument light with master switch on. Should read battery voltage with rheostat turned full clockwise and voltage should decrease as rheostat is turned counterclockwise. If no voltage is present or voltage has a sudden drop before rheostat has been turned full counterclockwise, replace rheostat.
	Lamp burned out.	5. Test lamp with ohmmeter or new lamp. Replace lamp.
INSTRUMENT LIGHTS WILL NOT LIGHT (1970 MODELS & ON).	Short circuit wiring.	1. Inspect circuit breaker. If circuit breaker is open, proceed to step 2. If circuit breaker is OK, proceed to step 3.
	Defective wiring.	2. Test circuit until short is located. Repair or replace wiring. 3. Test for open circuit. Repair or replace wiring. If no short or open circuit is found, proceed to step 4.
	Faulty section in dimming potentiometer.	4. Lights will work when control is placed in brighter position. Replace potentiometer.

17-61. TROUBLE SHOOTING (CONT.)

TROUBLE	PROBABLE CAUSE	REMEDY
INSTRUMENT LIGHTS WILL NOT LIGHT (1970 MODELS & ON). (Cont).	Faulty light dimming transistor.	5. Test both transistors with new transistor. Replace faulty transistor.
	Faulty selector switch.	6. Inspect. Replace switch.
INSTRUMENT LIGHTS WILL NOT DIM (1970 MODELS & ON).	Open resistor or wiring in minimum intensity end of potentiometer.	1. Test for continuity. Replace resistor or repair wiring.
	Shorted transistor.	2. Test transistor by substitution. Replace defective transistor.
CONTROL WHEEL MAP LIGHT WILL NOT LIGHT THRU 1969 MODELS ONLY.	Nav light switch turned off.	1. Nav light switch has to be ON before map light will light.
	Short circuit in wiring.	2. Check lamp fuse on terminal board located on back of stationary panel with ohmmeter. If fuse is open, proceed to step 3. If fuse is OK, proceed to step 4.
	Defective wiring.	3. Test circuit until short is located. Repair or replace wiring. 4. Test for open circuit. Repair or replace wiring. If a short or open circuit is not found, proceed to step 5.
	Defective map light assembly.	5. Check voltage at map light assembly with master and nav switches on. If battery voltage is present, replace map light assembly.

CAUTION

Failure to observe polarity shown on wiring diagram 11.11.0 will result in immediate failure of the transistor on the map light circuit board assembly.

TROUBLE	PROBABLE CAUSE	REMEDY
CONTROL WHEEL MAP LIGHT WILL NOT LIGHT 1970 MODELS & ON.	Nav light switch turned off.	1. Nav light switch has to be ON before map light will light.
	Short circuit in wiring.	2. Check lamp fuse on terminal board located on back of stationary panel with ohmmeter. If fuse is open, proceed to step 3. If fuse is OK, proceed to step 4.

17-61. TROUBLE SHOOTING (Cont).

TROUBLE	PROBABLE CAUSE	REMEDY
CONTROL WHEEL MAP LIGHT WILL NOT LIGHT 1970 MODELS AND ON. (Cont).	Defective wiring.	3. Test circuit until short is located. Repair or replace wiring. 4. Test for open circuit. Repair or replace wiring. If a short or open circuit is not found, proceed to step 5.
	Defective map light assembly.	5. Check voltage at map light assembly with master and nav switches on. If battery voltage is present, replace map light assembly.

17-62. LANDING AND TAXI LIGHTS.

17-63. DESCRIPTION. Thru 1971 Models the landing and taxi lights are mounted in the leading edge of the left wing. A clear plastic cover provides weather protection for the lamps and is shaped to maintain the leading edge curvature of the wing. The landing lamp is mounted on the inboard side and is adjusted to throw its beam further forward than the taxi lamp. Both lamps are controlled by an interlocking split rocker switch. Beginning with 1972 Models the landing and taxi lights are mounted in the lower nose cowl. Beginning with 1974 models the interlocking split rocker switch is replaced by two separate rocker switches interconnected by a jumper wire and a diode assembly.

17-64. REMOVAL AND INSTALLATION. (THRU 1971 MODELS). (Refer to Figure 17-7.)

a. Remove the 18 screws securing the landing light window assembly (1) and the assembly will then be free for removal.

b. Remove the four attaching screws (6) from the bracket assembly and remove the bracket.

NOTE

Do not reposition the landing and taxi light adjustment screws (2). If readjustment is required refer to figure 17-7.

c. Remove the two screws securing the wiring to the lamp contacts and remove the lamp.

d. Install new lamp and reassemble.

17-65. REMOVAL AND INSTALLATION. (BEGINNING WITH 1972 MODELS.) (Refer to Figure 17-7.)

a. Remove screws securing support assembly (2) to cowl and pull assembly forward from cowl.

b. Remove screws securing the wiring to lamp contacts.

c. Remove the tinnerman screws from the bracket (5) and remove bracket and lamp.

d. Install new lamp and reassemble.

17-66. NAVIGATION LIGHTS.

17-67. DESCRIPTION. The navigation lights are located on each wing tip and the stinger. Operation of the lights is controlled by a single switch. A plastic light detector on each wing tip allows the pilot to determine if the lamps are working properly during flight.

17-68. REMOVAL AND INSTALLATION. Refer to Figure 17-8 for removal and installation.

17-69. ANTI-COLLISION STROBE LIGHTS.

17-70. DESCRIPTION. A white strobe light is installed on each wing tip. These lights are vibration resistant and operate on the principle of a capacitor discharge into a xenon tube, producing an extremely high intensity flash. Thru 1972 Models energy is supplied to the strobe lights from a power supply. The power supply is mounted inside the left wing, on the rib at wing station 118.00 just forward of the wing rear spar. Beginning with 1973 Models energy is supplied from individual power supplies mounted on the wing tip rib.

17-70A. OPERATIONAL REQUIREMENTS.

WARNING

The capacitors in the strobe light power supplies must be reformed if not used for a period of six (6) months. The following procedure must be used.

Connect the power supply, red wire to plug, black to ground to 6 volt DC source. Do Not connect strobe tube. Turn on 6 volt supply. Note current draw after one minute. If less than 1 ampere, continue operation for 24 hours. Turn off DC power source. Then connect to the proper voltage, 12/24 volt. Connect tube to output of strobe power supply and allow to operate, flashing, for 15 minutes. Remove strobe tube. Operating power supply at 12/24 volts, note the current drain after one minute. If less than 0.5 amperes, operate for 6 hours. If current draw is greater than 0.5 amperes, reject the unit.

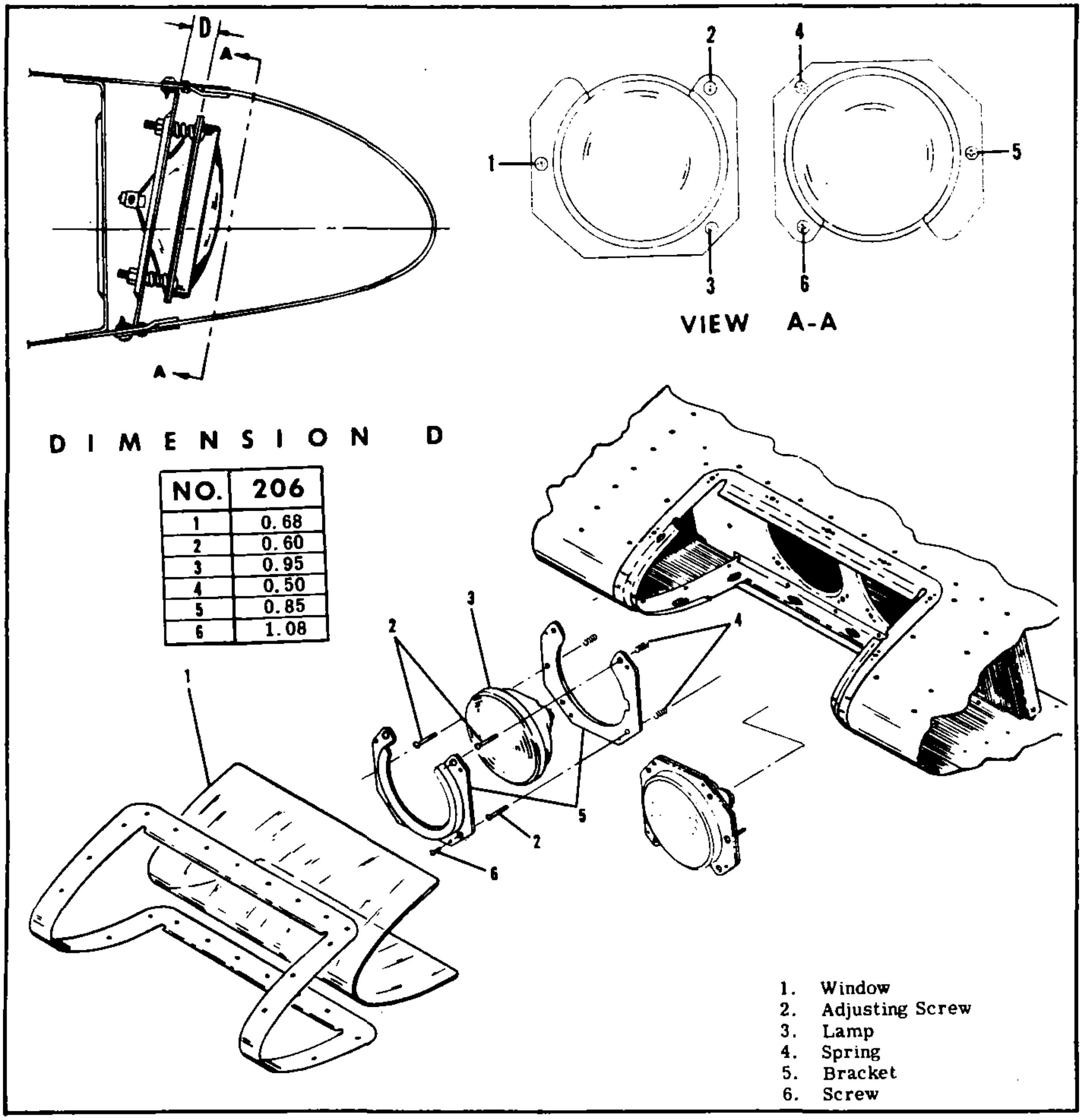
17-71. REMOVAL AND INSTALLATION. Refer to Figure 17-8 as a guide for removal and installation.

WARNING

The anti-collision system is a high voltage device. Do not remove or touch the tube assembly while in operation. Wait at least five minutes after turning off power before starting work.

17-72. FLASHING BEACON LIGHT.

17-73. DESCRIPTION. The flashing beacon light is attached to the (ABS constructed) vertical fin tip. The assembly consists of a red dome cover and a iodine vapor lamp electrically switched by a solid-

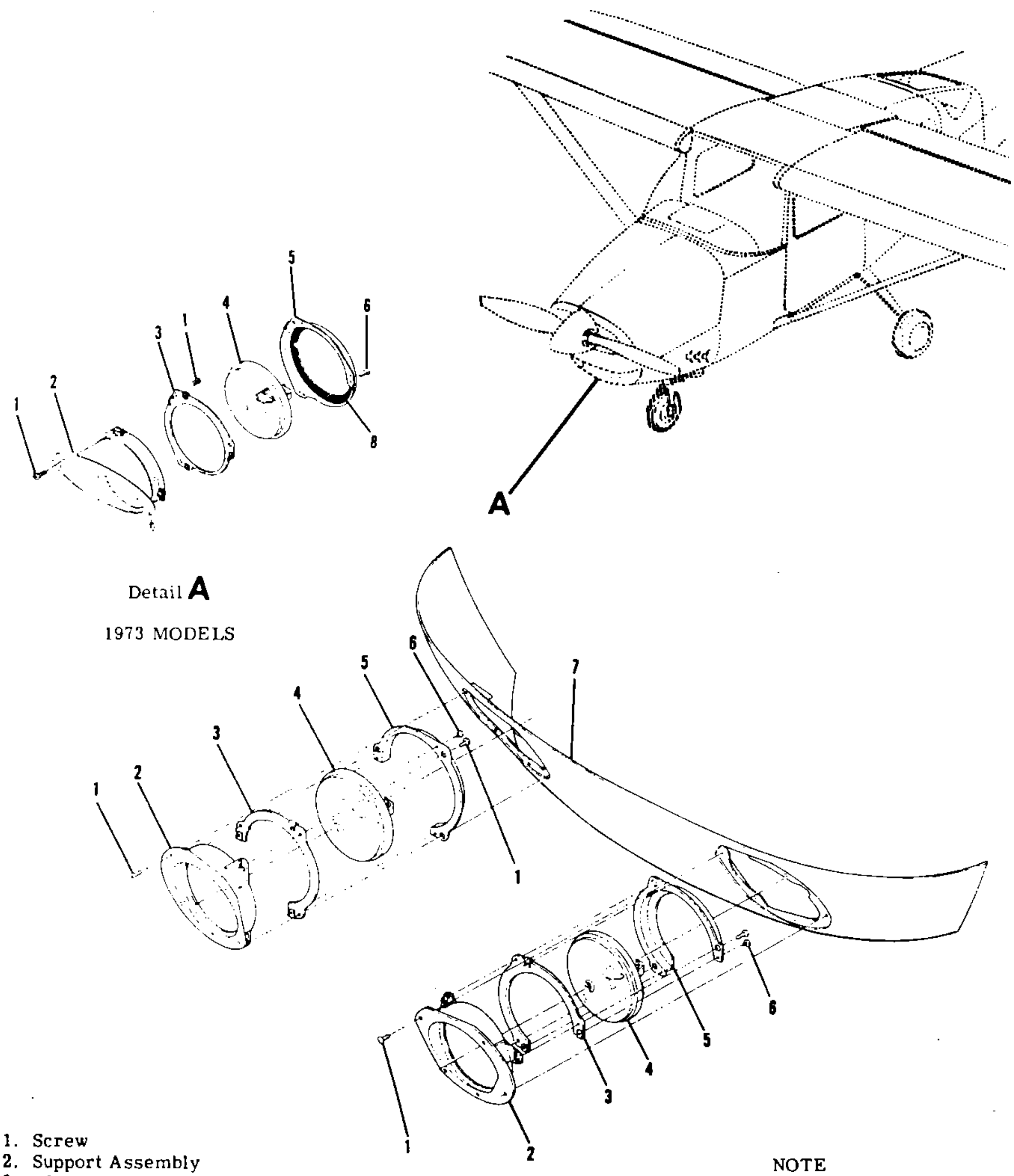


DIMENSION D

NO.	206
1	0.68
2	0.60
3	0.95
4	0.50
5	0.85
6	1.08

1. Window
2. Adjusting Screw
3. Lamp
4. Spring
5. Bracket
6. Screw

Figure 17-7. Landing and Taxi Light Installation (Sheet 1 of 2)



Detail A

1973 MODELS

1. Screw
2. Support Assembly
3. Plate
4. Lamp
5. Bracket
6. Tinnerman Screw
7. Nose Cap
8. Gasket

Detail A

1972 MODELS

NOTE

Should further adjustment be desired washers may be added between retainer (2) and plate (3).

Figure 17-7. Landing and Taxi Light Installation (Sheet 2 of 2) state flasher assembly. Thru U20601966 a 100 watt lamp is installed. Beginning with U20601967 a 125 watt lamp is installed. The flasher assembly is located in the vertical fin tip. A 1.5 ohm resistor on 12 volt and 6 ohm resistor on the 24 volt, is installed on the forward upper side of the stabilizer to prevent pulsing of the aircraft lighting when the beacon is operating. The switching frequency of the flasher assembly operates the beacon at approximately 45 flashes per minute.

17-74. REMOVAL AND INSTALLATION. Refer to Figure 17-9 for removal and installation.

17-75. INSTRUMENT LIGHTING.

17-76. DESCRIPTION. The instrument panel lighting is fabricated in two separate sections. The lower two-thirds of the instrument panel is illuminated by two lights mounted in the overhead light console. The lighting for the upper one-third of the instrument panel is provided by (four small lights thru 1972 Models and five small lights beginning with the 1973 Models) located in the instrument panel glare shield. The intensity of the instrument panel lighting is controlled by a dimming rheostat located on the left side of the instrument panel. A remotely located two-circuit, transistorized dimmer is installed as standard equipment to control the instrument panel lighting on 1970 and on models. Panel lighting dimming controls are increased from two to three. This is accomplished by concentric knob arrangement on one of the existing control knobs. Transistor light dimming is used on two of three circuits, thereby allowing greater dimming load variation and better linearity of control. One circuit controls the engine instruments and radio lights while the other circuit controls the instrument flood lights and post lights.

17-77. REMOVAL AND INSTALLATION. Refer to Figure 17-10 and 17-12 for removal and installation.

17-78. REMOVAL AND INSTALLATION OF TRANSISTORIZED LIGHT DIMMING. Refer to Figure 17-11 for removal and installation.

17-79. ELECTROLUMINESCENT PANEL LIGHTING.

17-80. DESCRIPTION. The electroluminescent lighting consists of two "EL" panels; the switch panel

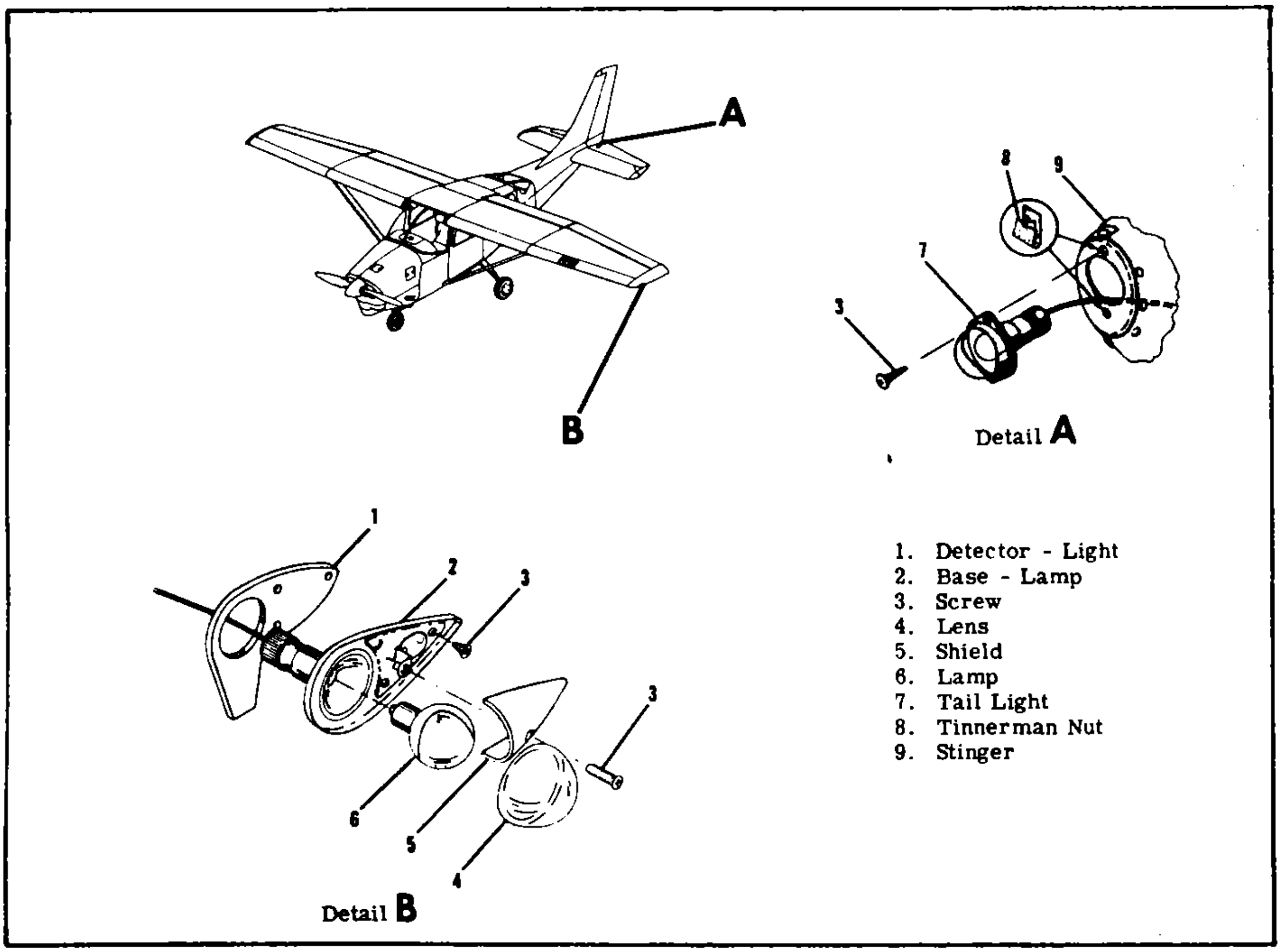
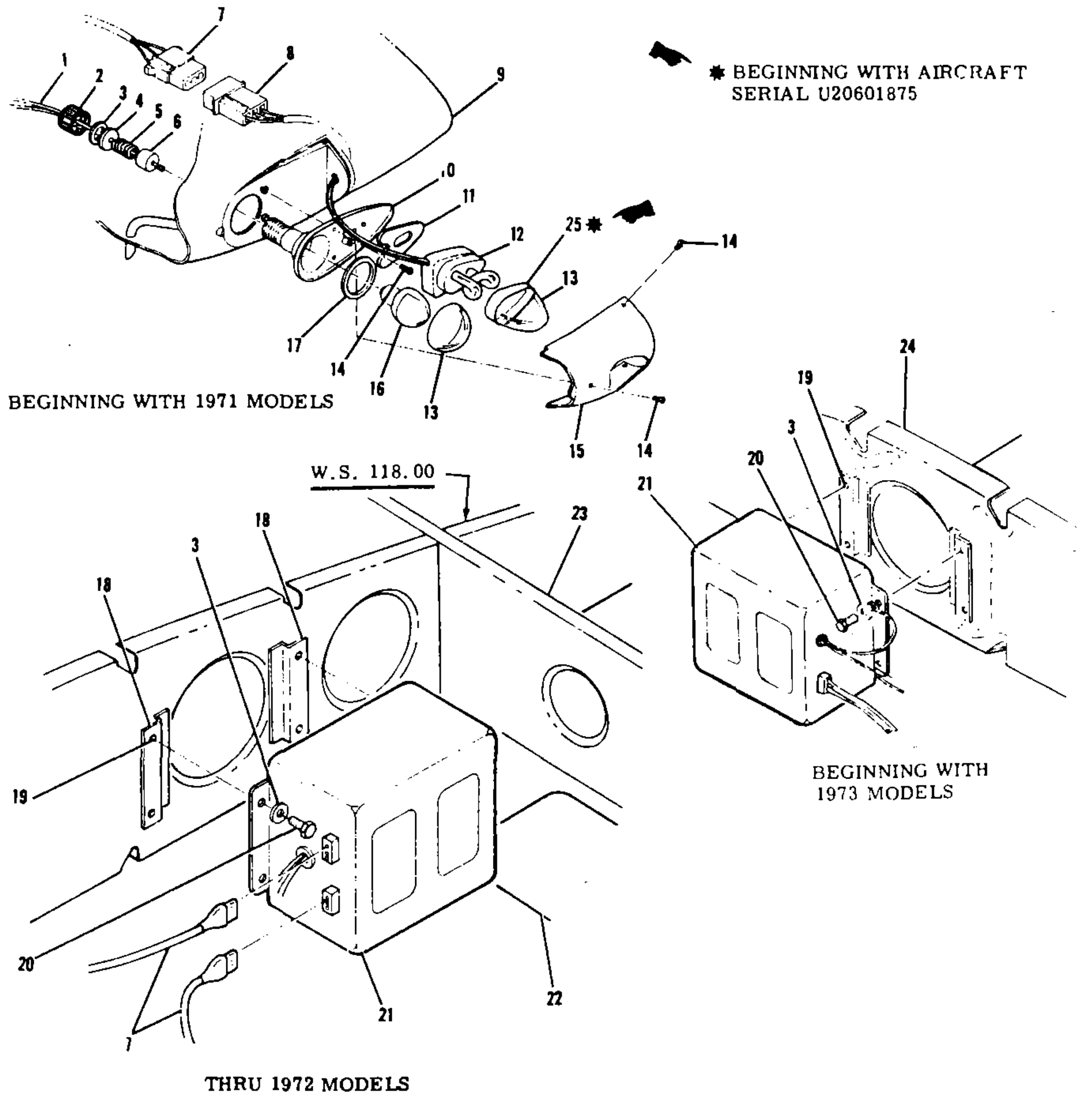
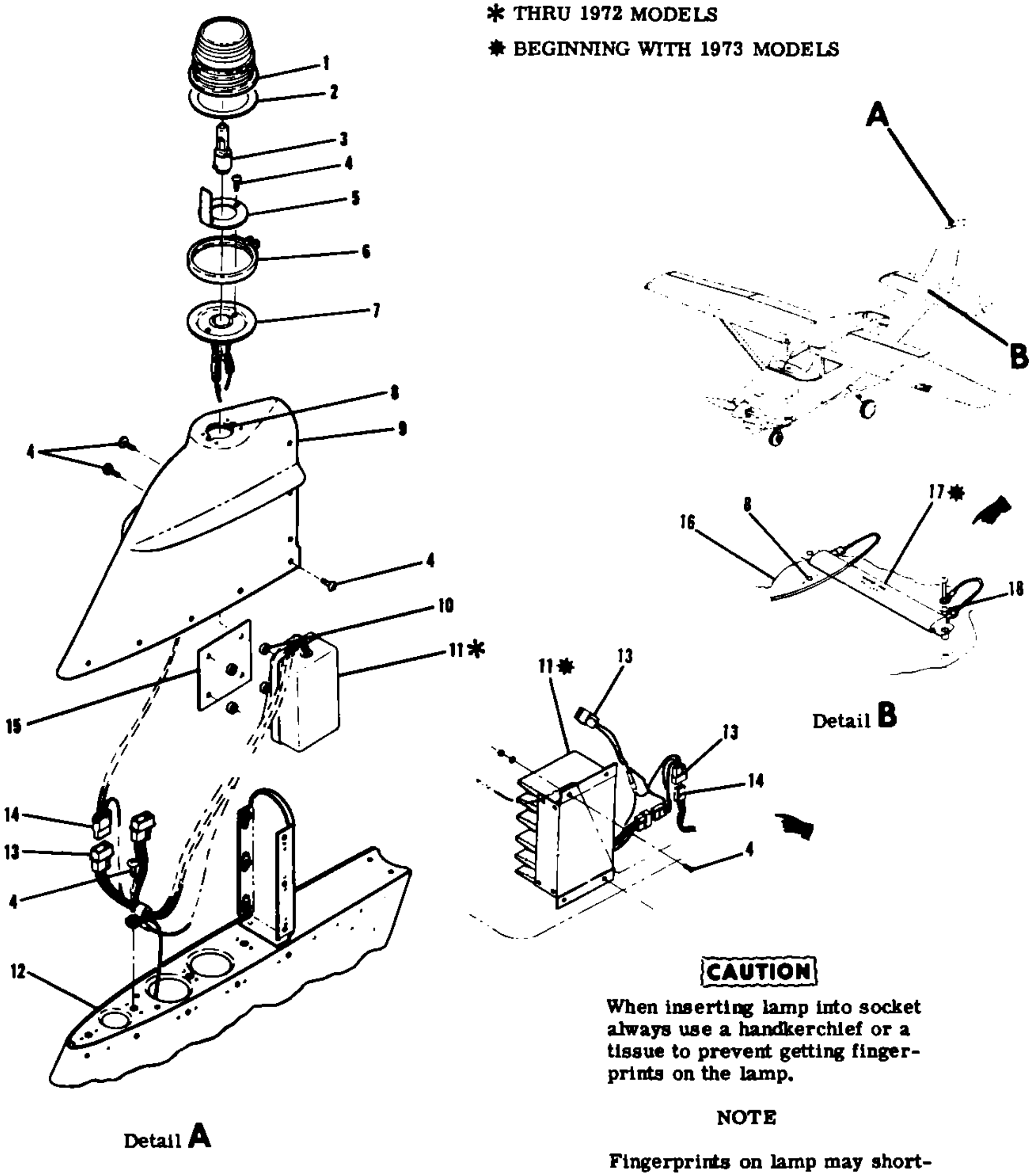


Figure 17-8. Navigation and Anti-Collision Strobe Lights Installation (Sheet 1 of 2)



1. Electrical Leads	9. Wing Tip	18. Bracket
2. Cap	10. Wing Navigation Light	19. Nutplate
3. Washer	11. Spacer	20. Bolt
4. Insulated Washer	12. Flash Tube Assembly	21. Power Supply
5. Spring	13. Lens	22. Inspection Plate
6. Insulator	14. Screw	23. Rear Spar
7. Housing - Plug	15. Lens Retainer	24. Wing Tip Rib
8. Housing - Cap	16. Bulb	25. Gasket
	17. Seal	

Figure 17-8. Navigation and Anti-Collision Strobe Lights Installation (Sheet 2 of 2)



CAUTION

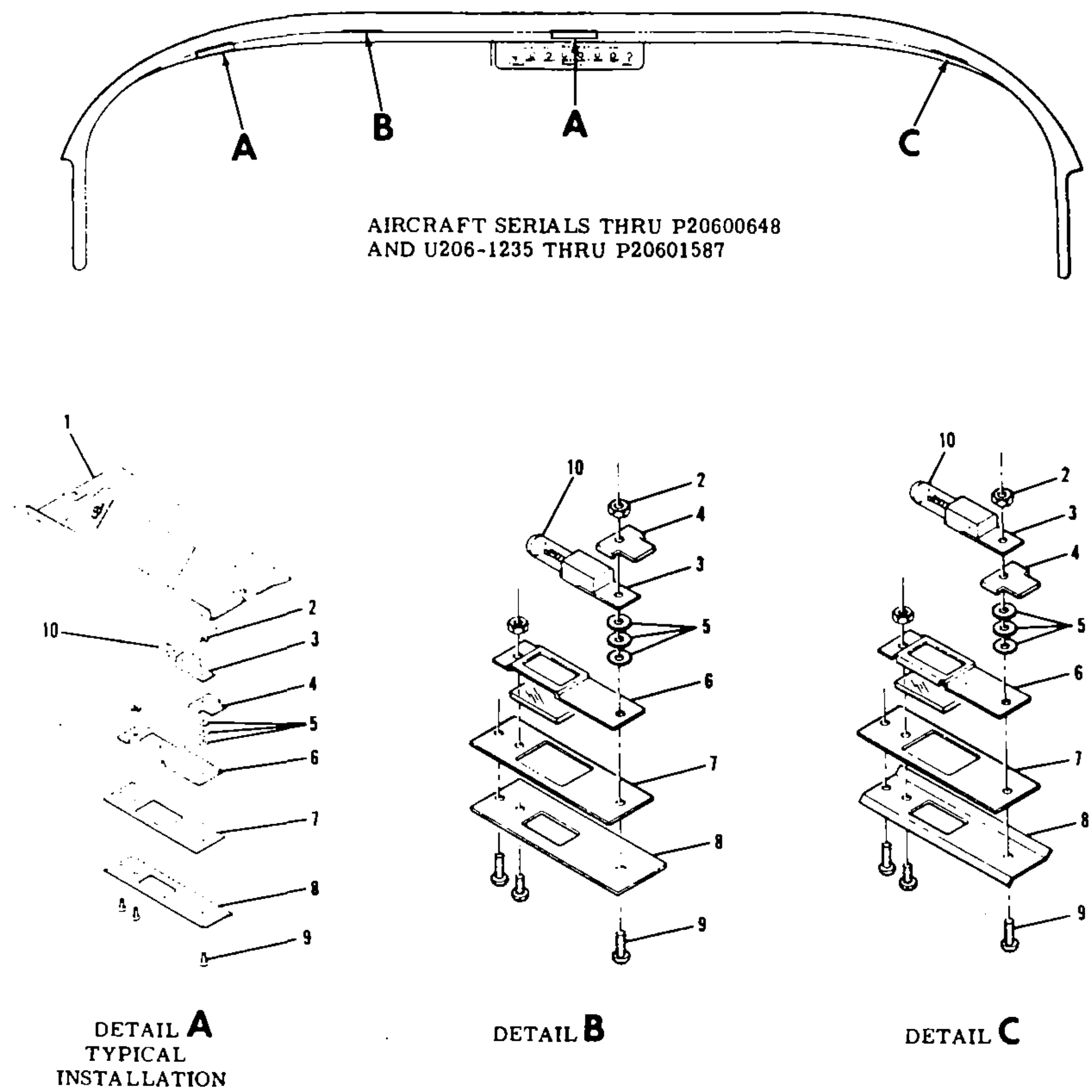
When inserting lamp into socket always use a handkerchief or a tissue to prevent getting fingerprints on the lamp.

NOTE

Fingerprints on lamp may shorten the life of the lamp.

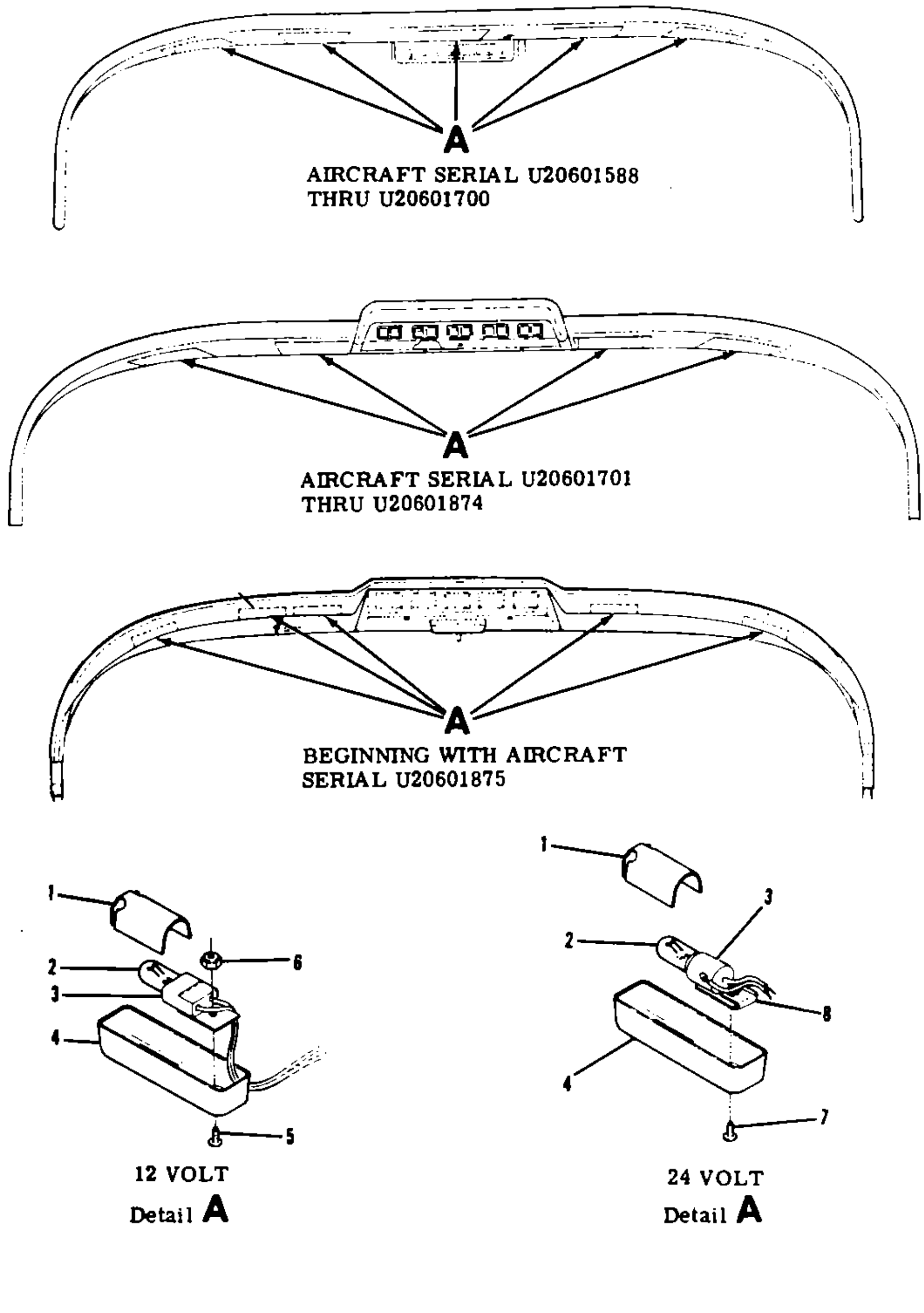
1. Dome
2. Gasket
3. Lamp
4. Screw
5. Baffle
6. Clamp Assembly
7. Socket Assembly
8. Nutplate
9. Tip Assembly - Fin
10. Spacer
11. Flasher Assembly
12. Fin Assembly
13. Housing - Cap
14. Housing - Plug
15. Plate
16. Stabilizer Skin - Upper
17. Resistor
18. Washer

Figure 17-9. Flashing Beacon Light Installation



1. Light Fitting Assembly
2. Nut
3. Light Assembly
4. Retainer
5. Washer
6. Bracket
7. Gasket
8. Cover
9. Screw
10. Bulb

Figure 17-10. Instrument Panel Glare Shield Light Installation (Sheet 1 of 2)



1. Reflector
2. Lamp
3. Lamp Socket
4. Housing
5. Screw
6. Nut
7. Tinnerman Screw
8. Tinnerman Nut

Figure 17-10. Instrument Panel Glare Shield Light Installation (Sheet 2 of 2)

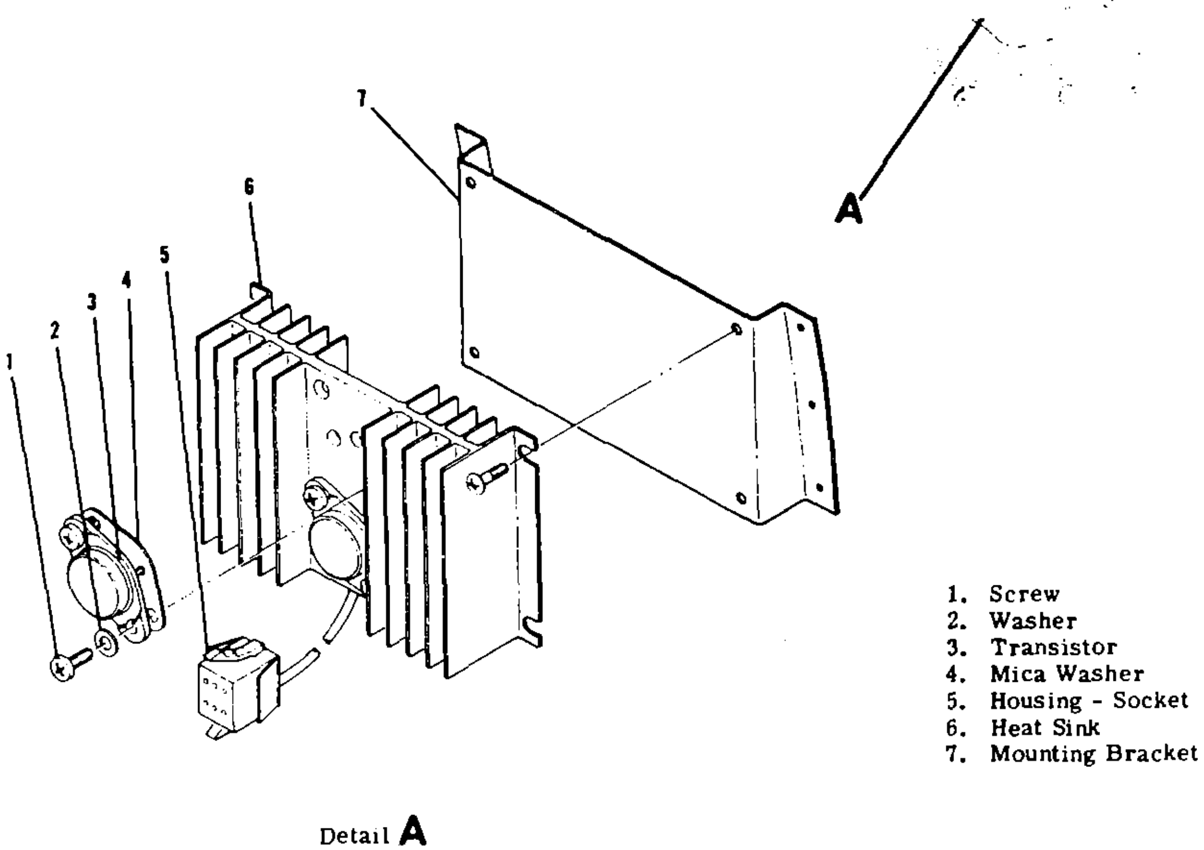


Figure 17-11. Transistorized Light Dimming Installation

and the comfort control panel. The ac voltage required to drive the "EL" panels is supplied by a small inverta-pak (power supply) located behind the instrument panel. The intensity of the "EL" panel lighting is controlled by a rheostat located on the instrument panel. Beginning with aircraft serials P20600635 and U20601493 a resistor is installed ahead of the dimming EL rheostat as a lood for the AC output of the E inverter. Due to heat dissipation, the resistor must be kept away from the wire bundle. Refer to figure 17-1 and 17-13.

17-81. PEDESTAL LIGHTS .

17-82. DESCRIPTION. The pedestal lights consist of two post type lights mounted on the pedestal to illuminate the rudder and elevator trim controls. The pedestal lights are controlled by the instrument light rheostat.

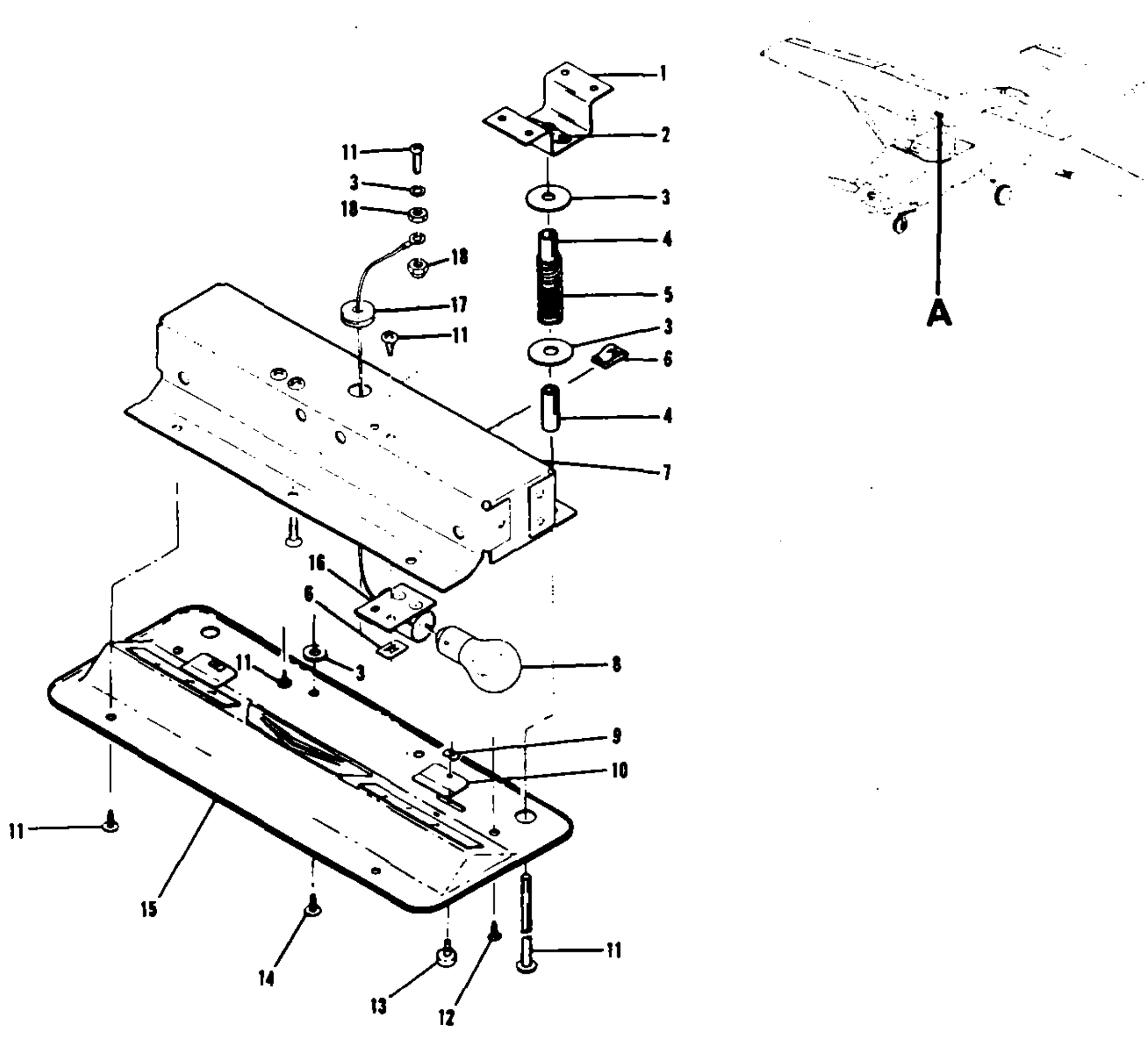
17-83. REMOVAL AND INSTALLATION. For removal and replacement of the pedestal lamp, slide the cap and lens assembly from the base. Slide the lamp from the socket and replace.

17-84. INSTRUMENT POST LIGHTING.

17-85. DESCRIPTION. Individual post lighting may be installed as optional equipment to provide for nonglare instrument lighting. The post light consists of a cap and a clear lamp assembly with a tinted lens. The intensity of the instrument post lights is controlled by the radio light dimming rheostat located on the switch panel.

NOTE

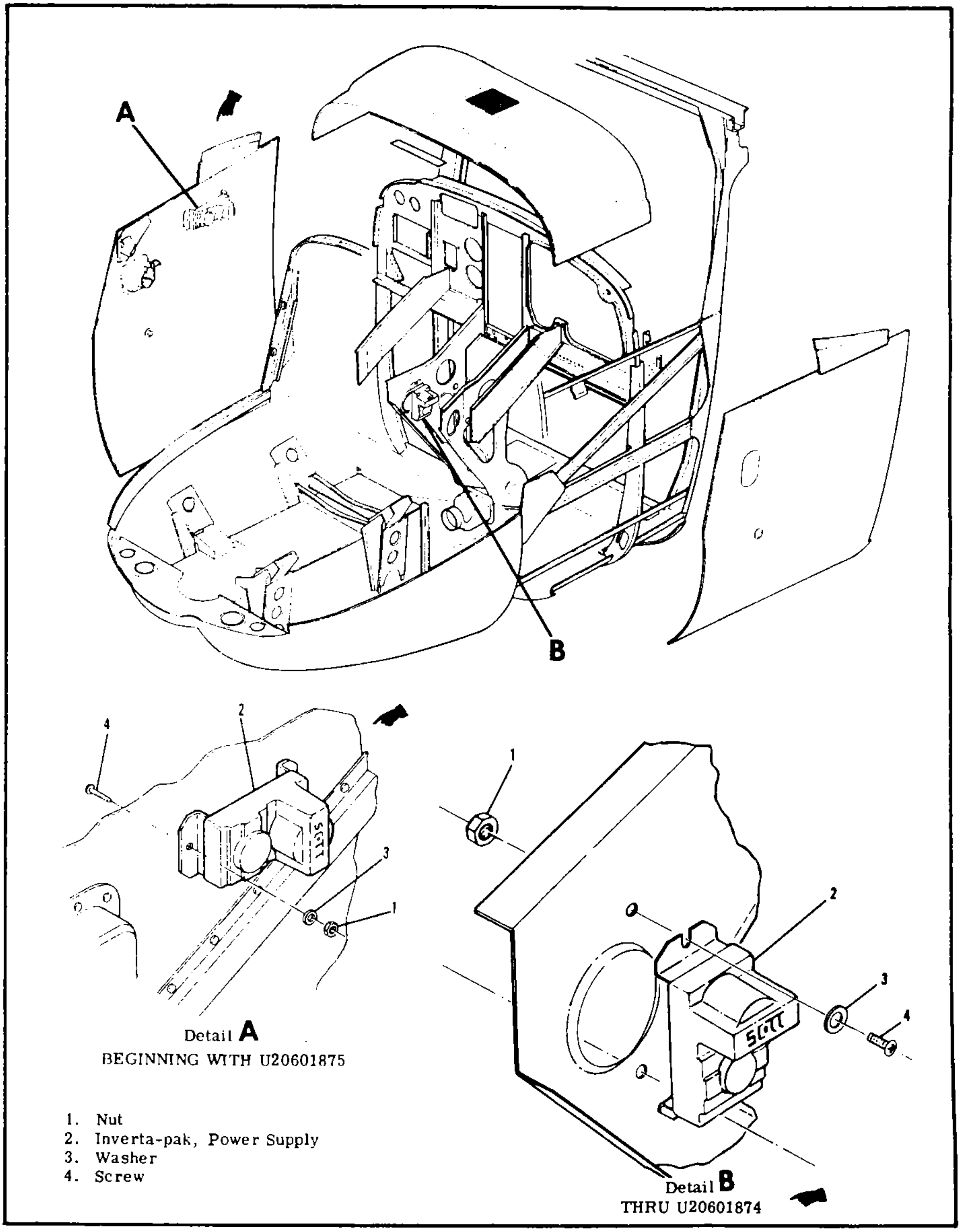
Adjust the overhead map light so that the forward edge of the lighted area is 3.0 (±1.0) inches aft of the control wheel (when full forward).



Detail **A**

1. Panel Light Bracket
2. Nutplate
3. Washer
4. Spacer
5. Spring
6. Tinnerman Nut
7. Panel Light Housing
8. Lamp
9. Clip
10. Slide Cover
11. Adjustment Screw
12. Screw
13. Slide Knob
14. Panel Light Cover
15. Lamp Socket
16. Grommet
17. Nut

Figure 17-12. Overhead Console Installation



1. Nut
2. Inverta-pak, Power Supply
3. Washer
4. Screw

Figure 17-13. Electroluminescent Panel Inverta-pak Power Supply

17-86. REMOVAL AND INSTALLATION. For removal and replacement of the instrument post lamps, slide the cap and the lens assembly from the base. Slide the lamp from the socket and replace.

17-87. COURTESY LIGHTS.

17-88. DESCRIPTION. The lights consist of one light located on the underside of each wing to provide ground lighting around the cabin area. The courtesy lights have clear lens and are controlled by a single slide switch labeled, "Utility Lights," located on the left rear door post. The switch also operates the dome lights thru 1972 Models.

17-89. REMOVAL AND INSTALLATION. Refer to Figure 17-14 for removal and installation.

17-90. INTERIOR LIGHTING. Thru 1972 Models the cabin interior is illuminated by two dome lights, one dome light on each side of the aft cabin. The dome lights are controlled by a single slide switch labeled "Utility Lights," located on the left door post. The switch also operates the courtesy lights. Beginning with 1973 Models a single dome light is installed overhead center aft of the rear spar. The light is controlled by a rocker switch on the assembly.

17-91. REMOVAL AND INSTALLATION. Thru 1972 models for removal and replacement of dome lamps, pry light assembly out of retainer then pry socket out of light assembly. Twist the bayonet type lamp from the socket and replace. Beginning with 1973 models the lens snap out for access to the lamp.

17-92. CONTROL WHEEL MAP LIGHT.

17-93. DESCRIPTION. As optional equipment, a white, dimmable map light may be installed on the underside of the pilot's control wheel. On 1969 models, a solid-state dimming circuit along with a miniature dimming control was used. On 1970 thru 1971 models, a new type of optional map light has been installed on the underside of the pilot's control wheel. The new map light assembly consists of a rectangle shaped housing containing two small lamps and a small rheostat. On both type of installations, the dimming control extends just below the edge of the control wheel map light housing for convenient thumb or finger operation. For dimming the control should be rotated clockwise. Beginning with 1972 models the control wheel map light is internally mounted in the control wheel. Thru 1974 models a rheostat switch located on the right hand forward side of the wheel controls the light, Beg Beginning with 1975 models the rheostat switch is located on the lower right hand side of the control wheel.

17-94. REMOVAL AND INSTALLATION (THRU U 206-1444) (Refer to Figure 17-15.)

a. Rotate the control wheel 90° to the left to gain access to the underside of the control wheel.

b. Remove four screws at the corner of the etched circuit board assembly.

c. Detach wires from the terminal strip along the edge of the circuit board. Note the connection for reference when replacing the board.

d. To install the control wheel map light, reverse the procedure.

NOTE

It is recommended that the board be replaced as an assembly if the lamps should become defective. If personnel familiar with etched circuit board repair work are available, emergency repairs of the map light assembly may be made by soldering leads to #330 lamps and then soldering the lamps to the board in place of those provided. The lamps should be secured in place with a spot of epoxy cement after soldering.

17-95. REMOVAL AND INSTALLATION (AIRCRAFT U20601445 THRU U20601700) (Refer to Figure 17-15.)

a. Rotate the control wheel 90° to the left to gain access to the underside of the control wheel.

b. Remove two screws and nuts holding map light assembly to control wheel.

c. Detach two wires from the terminal strip above the map light. Note the connection and mark for reference when replacing the wires.

d. To install the control wheel map light reverse this procedure.

e. For replacement of defective lamps, remove two screws holding map light cover in place and unplug rheostat to remove cover.

f. Unsnap lamp sockets and replace lamps.

g. To reassemble, reverse this procedure.

17-96. REMOVAL AND INSTALLATION. (AIRCRAFT SERIAL U20601701 THRU U20601757).

a. Disconnect electrical cable connector of aft side of control wheel.

b. Remove screws securing control wheel back plate to control wheel tube adapter.

c. Remove screws securing plate to control wheel.

d. Disconnect socket from map light lamp and reflector unit.

e. Remove lamp and reflector unit.

NOTE

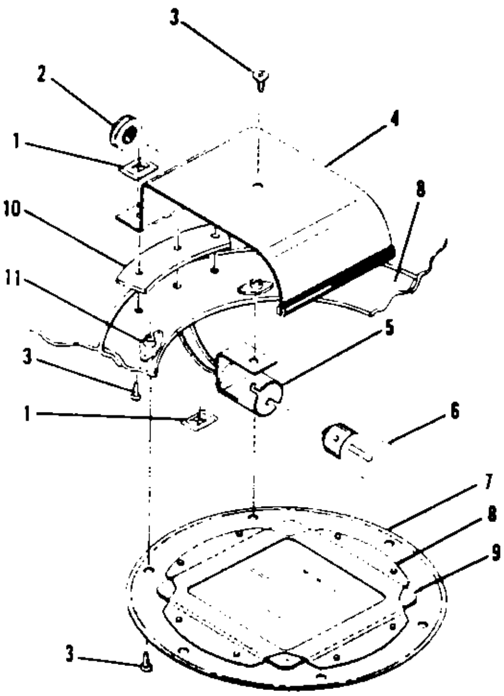
Lamp and reflector unit are bonded to control wheel.

CAUTION

Care must be taken in removing excess bonding material, (do not hammer on control wheel) as control wheel could be damaged.

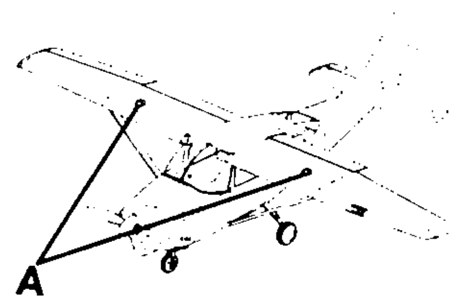
f. Using Conley Weld C1 and C2 or Hysol 5095 and 3673, bond new lamp and reflector unit.

g. To reassemble, reverse this procedure.

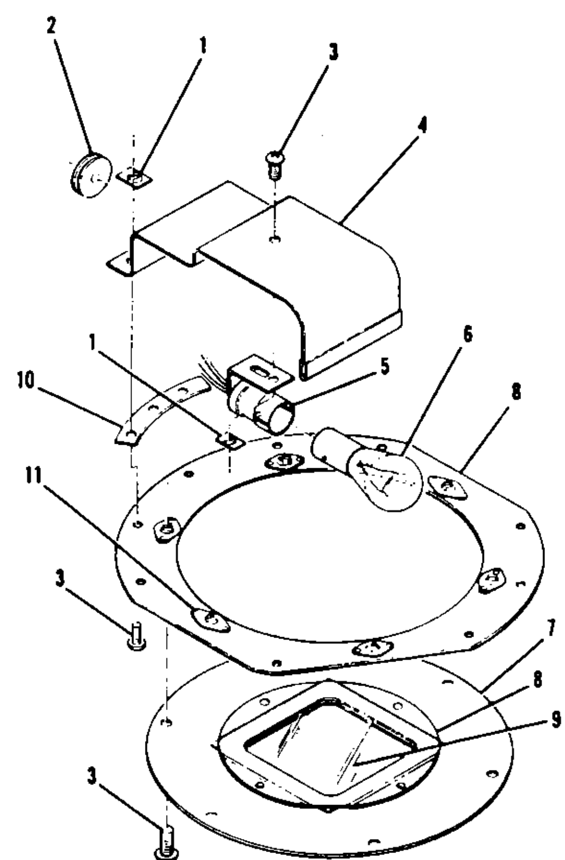


THRU 1969 MODELS ONLY

Detail **A**



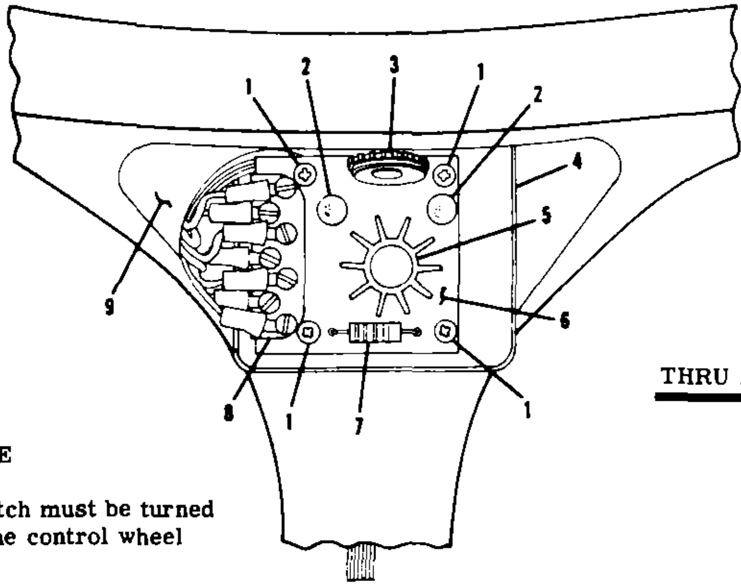
1. Tinnerman Nut
2. Grommet
3. Screw
4. Reflector
5. Socket
6. Bulb
7. Inspection Plate
8. Doubler
9. Lens
10. Spacer
11. Nutplate



1970 MODELS & ON

Detail **A**

Figure 17-14. Courtesy Light Installation



NOTE

The "NAV LIGHTS" switch must be turned on in order to operate the control wheel map light.

1. Screw
2. Lamp
3. Dimming Control
4. Map Light Housing
5. Transistor
6. Circuit Board
7. Resistor
8. Terminal Board
9. Control Wheel

Figure 17-15. Control Wheel Map Light Installation (Sheet 1 of 4)

17-97. REMOVAL AND INSTALLATION. (BEGINNING WITH AIRCRAFT SERIAL U20601758 AND ALL SERVICE PARTS BEGINNING WITH U20601701). To remove, push upward on the lamp and turn. The lamp and reflector is replaced as a unit.

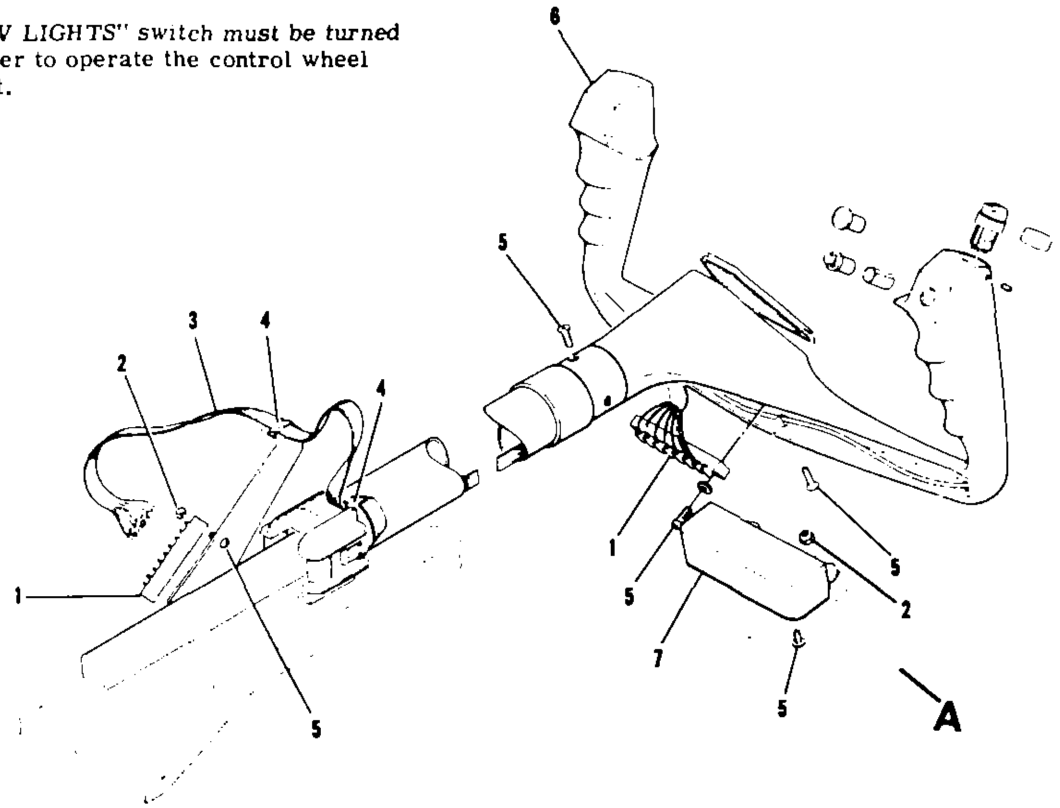
17-98. COMPASS AND RADIO DIAL LIGHTS.

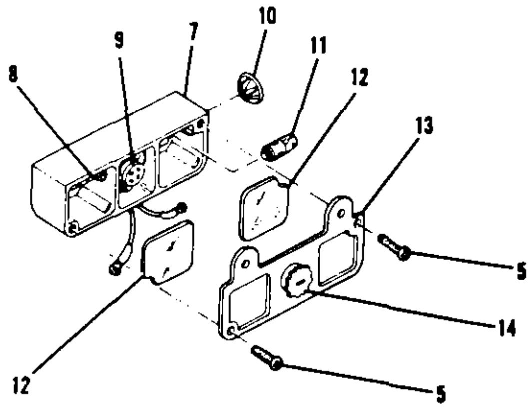
17-99. DESCRIPTION. The compass and radio dial lights are contained within the individual units. The

SHOP NOTES:

NOTE

The "NAV LIGHTS" switch must be turned on in order to operate the control wheel map light.





Detail **A**

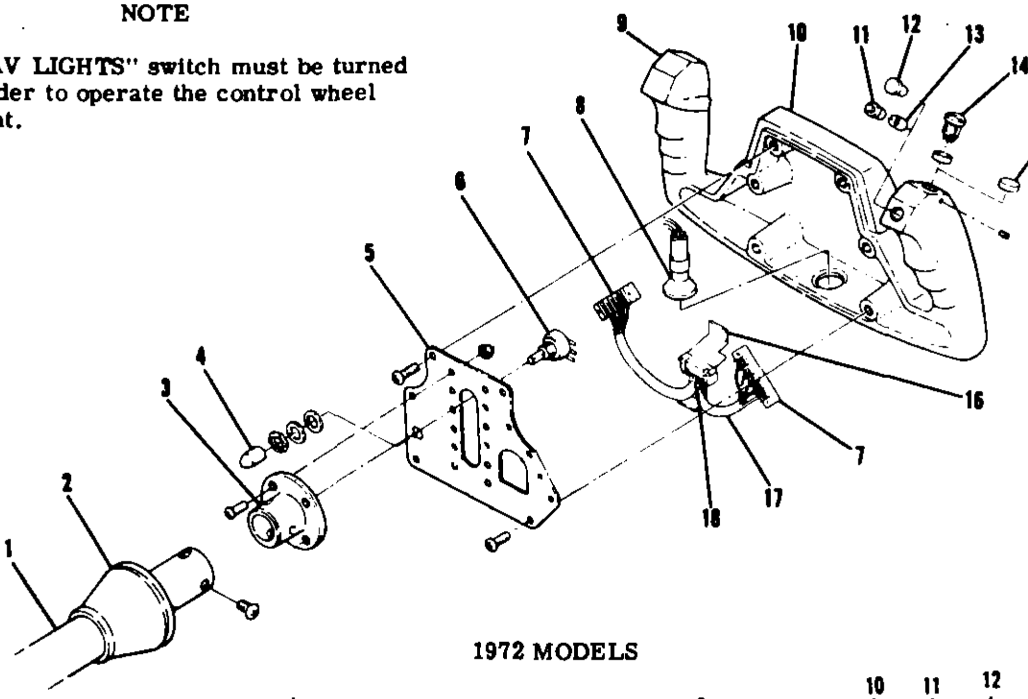
1. Terminal Block
2. Nut
3. Spectastrip Cable
4. Sta-Strap
5. Screw
6. Control Wheel
7. Housing
8. Socket (Lamp)
9. Socket (Rheostat)
10. Plug Button
11. Lamp
12. Lens
13. Cover
14. Rheostat

1970 AND 1971 MODELS

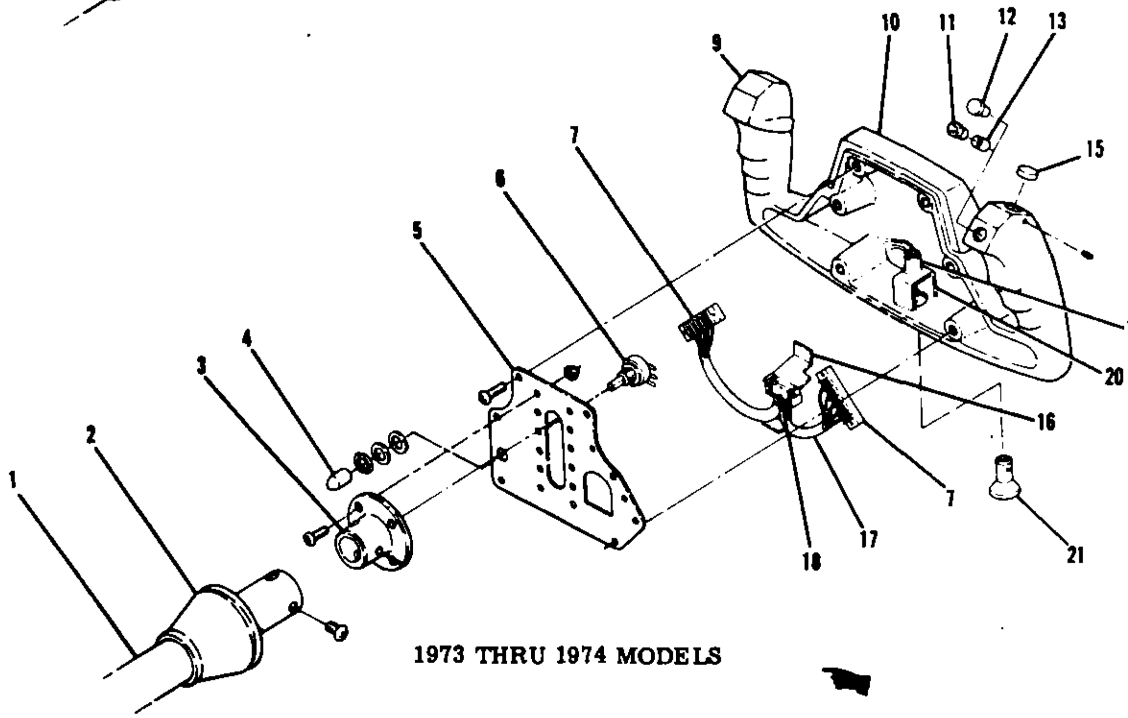
Figure 17-15. Control Wheel Map Light Installation (Sheet 2 of 4)

NOTE

The "NAV LIGHTS" switch must be turned on in order to operate the control wheel map light.



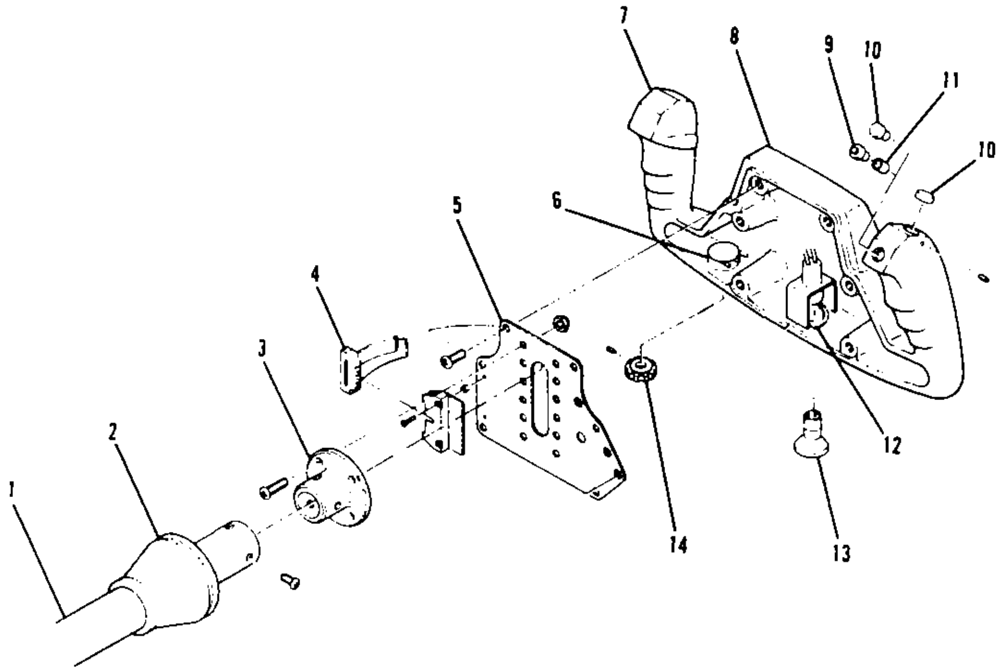
1972 MODELS



1973 THRU 1974 MODELS

1. Tube
2. Cover
3. Adapter
4. Rubber Cover
5. Plate
6. Map Light Rheostat
7. Terminal Block
8. Map Light Assembly
9. Control Wheel
10. Pad
11. Mike Switch
12. Plug
13. Insulator
14. Electric Trim Switch
15. Plug
16. Bracket
17. Cable
18. Connector
19. Socket
20. Bracket
21. Lamp

Figure 17-15. Control Wheel Map Light Installation (Sheet 3 of 4)



BEGINNING WITH 1975 MODELS

1. Control Tube Assembly
2. Cover
3. Adapter
4. Connector
5. Plate
6. Map Light Rheostat
7. Control Wheel
8. Pad
9. Mike Switch
10. Plug
11. Insulator
12. Map Light Assembly
13. Lamp
14. Knob (Map Light)

Figure 17-15. Control Wheel Map Light Installation (Sheet 4 of 4)

light intensity is controlled by the radio dial light dimming rheostat mounted on the lower left side of the instrument panel.

17-100. ELECTRIC CLOCK.

17-101. DESCRIPTION. The electric clock is connected to the battery through a 1-ampere fuse mounted adjacent to the battery box. The clock has a sweep second hand and is an electro-mechanical type which rewinds approximately every one and one-half minutes.

17-102. STALL WARNING SYSTEM.

17-103. DESCRIPTION. The stall warning circuit is comprised of a warning horn and an actuating switch. The switch is installed in the leading edge of the left wing and is actuated by airflow over the surface of the wing. The switch will close as a stall condition is approached, actuating the warning horn which is mounted on the glove box. The stall warning unit should actuate the stall warning horn approximately five to ten miles per hour above the aircraft stall speed. Install the lip of the warning unit approximately one-sixteenth of an inch below the centerline of the wing skin cutout. Test fly the aircraft to determine if the unit actuates the

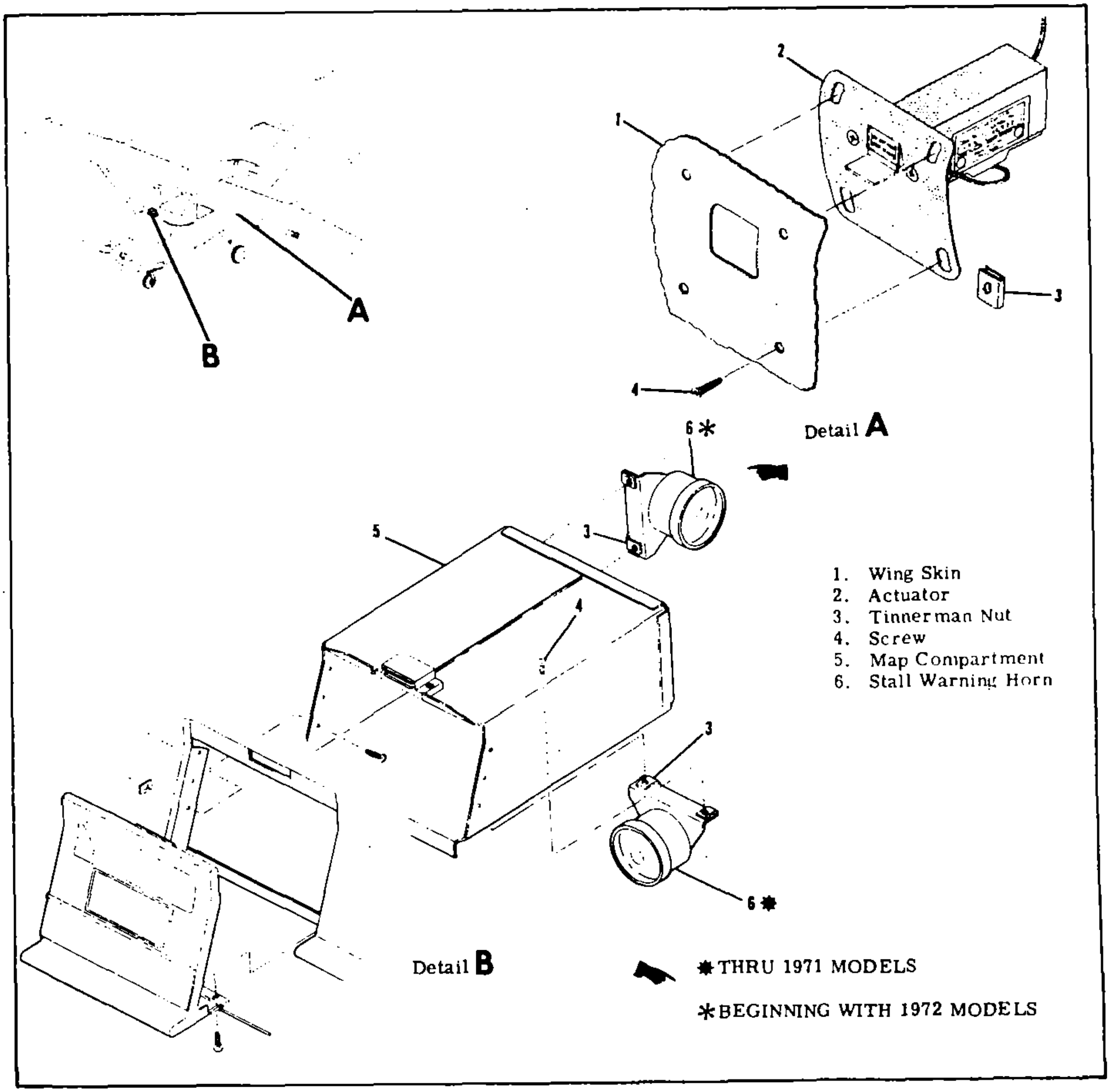


Figure 17-16. Stall Warning, Actuator and Horn Installation

warning horn at the desired speed. If the unit actuates the warning horn at a speed in excess of ten miles per hour above stall speed, loosen the mounting screws and move the unit down. If the unit actuates the horn five miles per hour below stall speed, loosen the mounting screws and move the unit up.

17-104. PITOT AND STALL WARNING HEATERS.

17-105. DESCRIPTION. Electrical heater units are incorporated in some pitot tubes and stall warning switch units. The heaters offset the possibility of ice formations on the pitot tube and stall warning actuator switch. The heaters are integrally mounted in the pitot tube and the stall warning actuator switch. Both heaters are operated by the pitot heat switch.

17-106. REMOVAL AND INSTALLATION OF PITOT HEATER. Refer to Figure 17-17 for removal and installation.

17-107. CIGAR LIGHTER.

17-108. DESCRIPTION. A special circuit breaker is

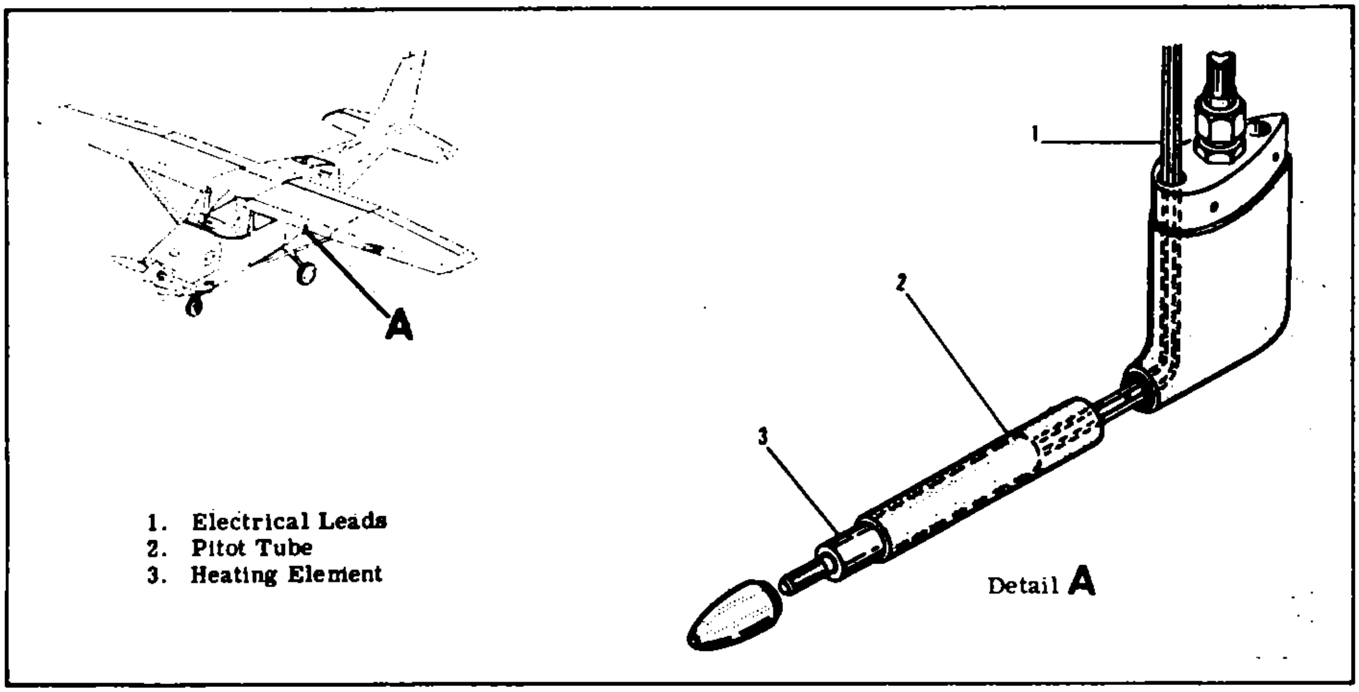


Figure 17-17. Pitot Heater Installation

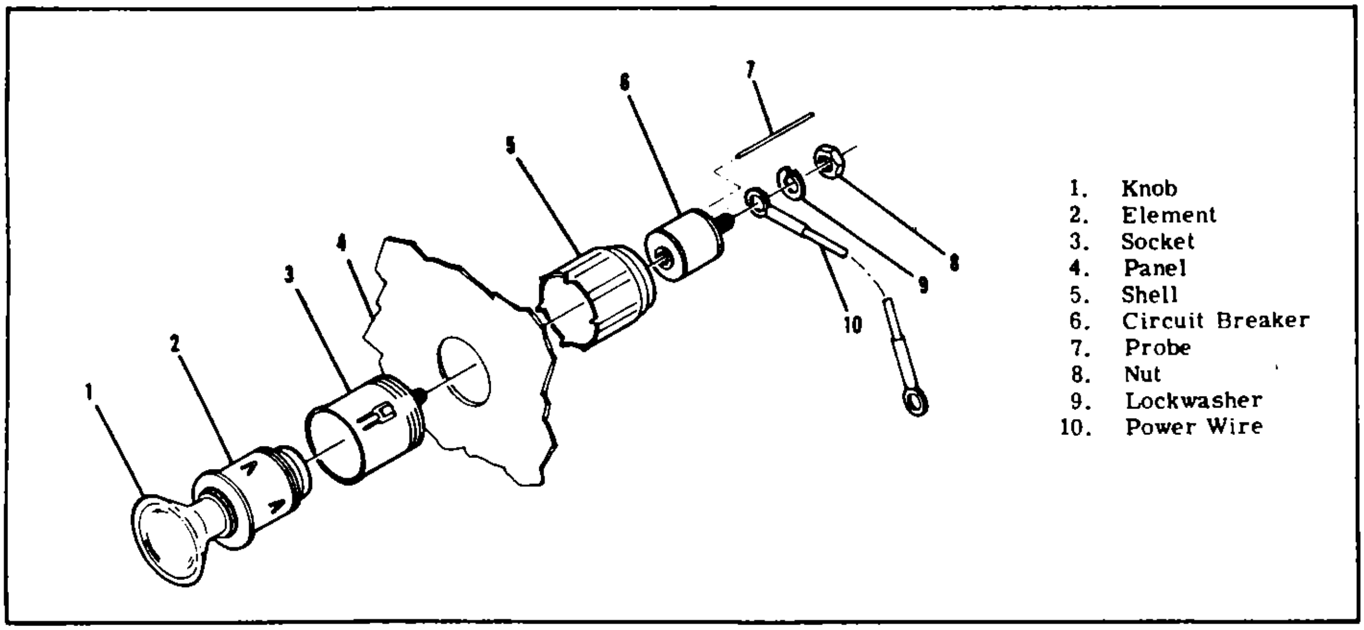


Figure 17-18. Cigar Lighter Installation

contained in a small cylinder screwed directly on the back of the cigar lighter socket. The circuit breaker is a bi-metallic type and is resettable. To reset a breaker, make sure that the master switch is off, then insert a small diameter pin (end of a paper clip works) into the hole in the phenolic back plate of the breaker and apply pressure. A small click will be heard when the breaker resets.

17-109. REMOVAL AND INSTALLATION (Refer to Figure 17-18.)

a. Ensure that the master switch is "OFF."
b. Remove cigar lighter element.
c. Disconnect wire on back of lighter.
d. Remove shell that screws on socket back of panel.
e. The socket will then be free for removal.
f. To install a cigar lighter, reverse this procedure.

17-110. SKYDIVING KIT.

17-111. DESCRIPTION. The kit consists of a spoiler, sky diver steering switch, and a steering signal light console. The spoiler is installed on the door hinges of the removed front cargo door to minimize the strong air flow buffeting within the cabin when cargo doors are removed. The rocker-type steering switch is mounted inside the cabin on the upper sill of the cargo door opening and is used by the sky diver to signal the pilot of his desired flight path over the drop zone. A steering signal light console, with red and green lights controlled by operation of the steering switch, is mounted on top of the instrument panel. Illumination of the red light indicates to the pilot that the diver desires that the aircraft be steered left; conversely, a green light shows that the pilot is to steer right. Removal of the cargo doors necessitates the installation of a depressor plate over the wing flap circuit interrupt switch to permit flap operation with doors removed. (Under normal operations with the cargo door installed the switch prevents flap operation whenever the front cargo door is open to prevent accidental damage to the door or wing flap if the flaps are lowered.)

17-112. REMOVAL AND INSTALLATION. For removal and installation of skydiving kit, refer to Figure 17-19. Refer to wing flap wiring diagrams in the Wiring Section of this manual for wiring associated with the flap circuit interrupt switch.

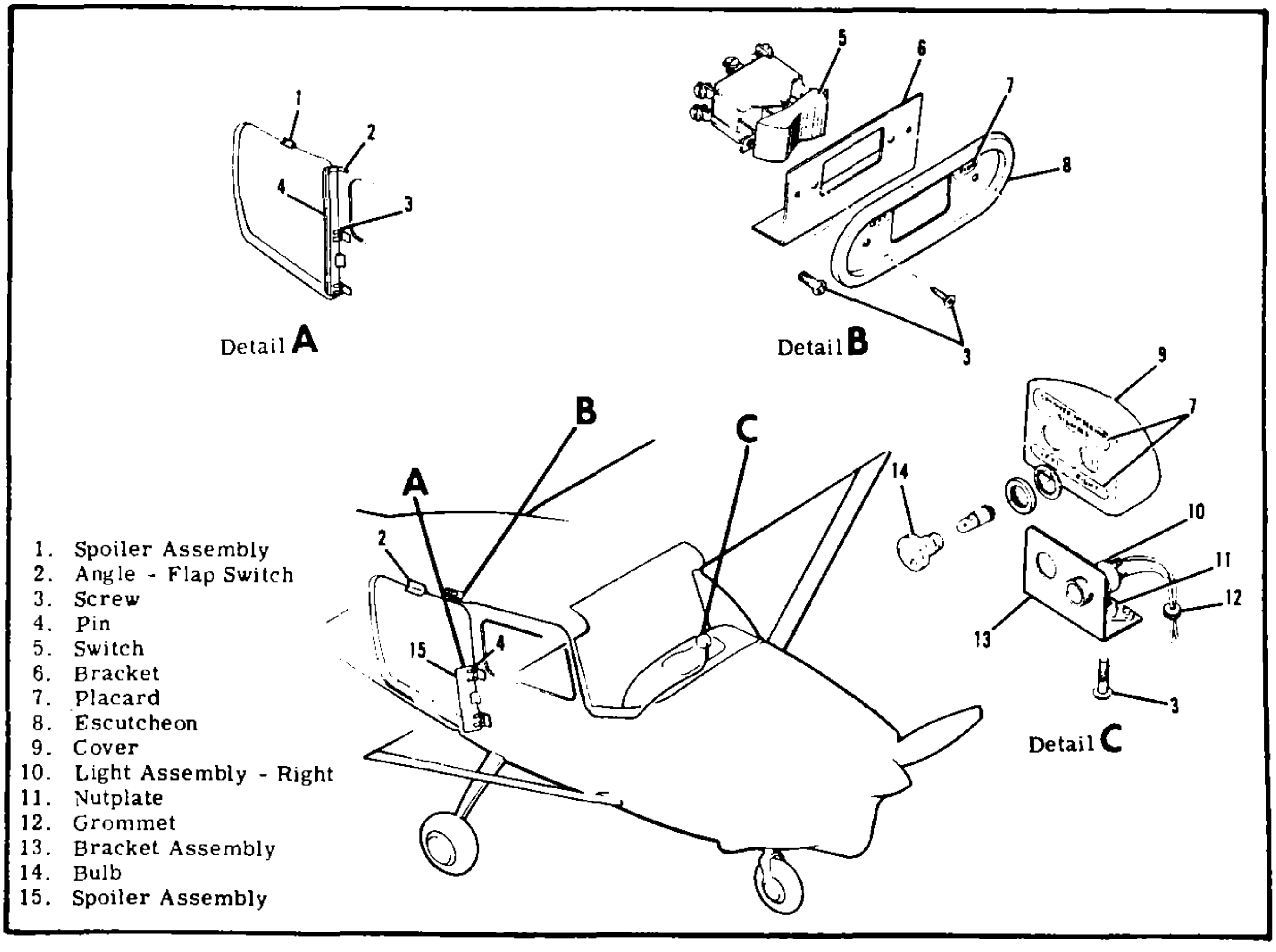


Figure 17-19. Sky Diving Components Equipment Installation

17-113. EMERGENCY LOCATOR TRANSMITTER.

17-114. DESCRIPTION. The ELT is a self-contained, solid state unit, having its own power supply, with an externally mounted antenna. The C589510-0209 transmitter is designed to transmit simultaneously on dual emergency frequencies of 121.5 and 243.0 Megahertz. The C589510-0211 transmitter used for Canadian registry, operates on 121.5 only. The unit is mounted in the tailcone, aft of the baggage curtain on the right hand side. The transmitters are designed to provide a broadcast tone that is audio modulated in a swept manner over the range of 1600 to 300 Hz in a distinct, easily recognizable distress signal for reception by serch and rescue personnel and others monitoring the emergency frequencies. Power is supplied to the transmitter by a battery-pack which has the service life of the batteries placarded on the batteries and also on the outside end of the transmitter. ELT's thru early 1974 models, were equipped with a battery-pack containing six magnesium "D" size dry cell batteries wired in series. (See figure 17-20) Mid 1974 thru early 1975, ELT's are equipped with a battery-pack containing four "in-line" lithium "D" batteries wired in series. Early 1975 and on ELT's are equipped with a battery-pack containing four lithium "D" size batteries which are stacked in two's (See figure 17-22). The ELT exhibits line of sight transmission characteristics which correspond approximately to 100 miles at a search altitude of 10,000 feet. When battery inspection and replacement schedules are adhered to, the transmitter will broadcast an emergency signal at rated power (75 MW-minimum), for a continuous period of time as listed in the following table.
table.

TRANSMITTER LIFE
TO 75 MILLIWATTS OUTPUT

Temperature	6 Cell Magnesium Battery Pack	4 Cell Lithium Battery Pack
+130°F	89 hrs	115 hrs
+ 70°F	95 hrs	115 hrs
- 4°F	49 hrs	95 hrs
- 40°F	23 hrs	70 hrs

Battery-packs have a normal shelf life of five to ten (5-10) years and must be replaced at 1/2 of normal shelf life in accordance with TSO-C91. Cessna specifies 3 years replacement of magnesium (6-cell) battery-packs and 5 years replacement of lithium (4-cell) battery packs.

17-115. OPERATION. A three position switch on the forward end of the unit controls operation. Placing the switch in the ON position will energize the unit to start transmitting emergency signals. In the OFF position, the unit is inoperative. Placing the switch in the ARM position will set the unit to start transmitting emergency signals only after the unit has received a 5g (tolerances are +2g and -0g) impact force, for a duration of 11-16 milliseconds.

CAUTION

Do not leave the emergency locator transmitter in the ON position longer than 5 seconds or you may activate downed aircraft procedures by C. A. P., D. O. T. or F. A. A. personnel.

WARNING

Magnesium (6-cell) battery-packs (excluding 4 cell lithium battery-packs) after prolonged continuous use (1 hour) in a sealed environment give off explosive gas. If your ELT has operated for this time period or longer, as a precautionary measure, loosen the ELT cover screws, lift the cover to break air tight seal and let stand for 15 minutes before tightening screws. Keep sparks, flames and lighted cigarettes away from battery-pack.

NOTE

After relatively short periods of inactivation, the magnesium (6-cell) battery-pack develops a coating over its anode which drastically reduces self discharge and thereby gives the cell an extremely long storage life. This coating will exhibit a high resistance to the flow of electric current when the battery is first switched on. After a short while (less than 15 seconds), the battery current will completely dissolve this coating and enable the battery to operate normally. If this coating is present when your ELT is activated, there may be a few seconds delay before the transmitter reaches full power.

17-116. CHECKOUT INTERVAL:

100 HOURS.

a. Turn aircraft master switch ON.
b. Turn aircraft transceiver ON and set frequency on receiver to 121.5 MHz.
c. Remove the ELT's antenna cable from the ELT unit.
d. Place the ELT's function selector switch in the ON position for 5 seconds or less. Immediately replace the ELT function selector switch in the ARM position after testing ELT.
e. Test should be conducted only within the time period made up of the first five minutes after any hour.

CAUTION

Tests with the antenna connected should be approved and confirmed by the nearest control tower.

NOTE

Without its antenna connected, the ELT will produce sufficient signal to reach your receiver, yet it will not disturb other communications or damage output circuitry.

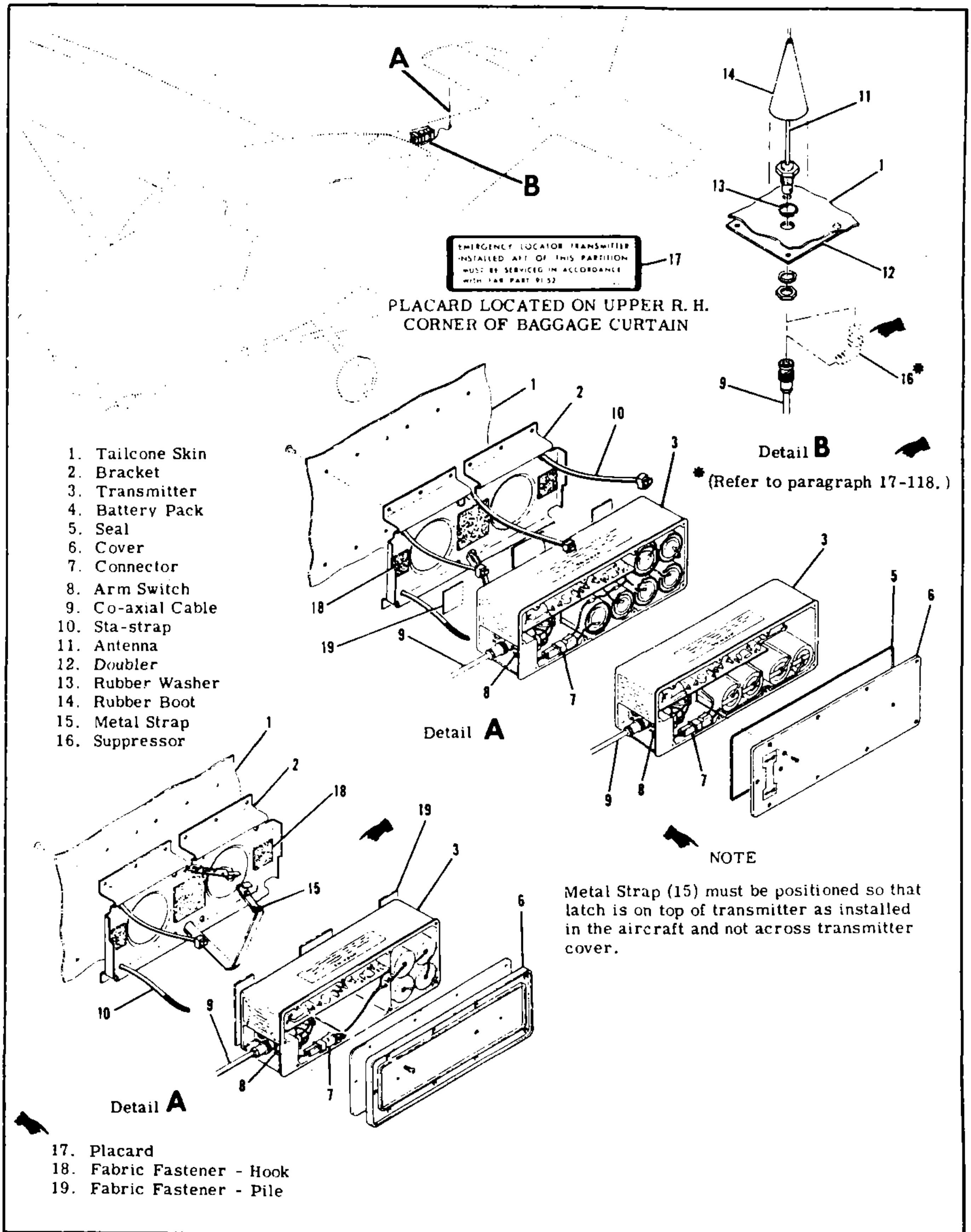


Figure 17-20. Emergency Locator Transmitter Installation

NOTE

After accumulated test or operation time equals 1 hour, battery-pack replacement is required.

f. Check calendar date for replacement of battery-pack. This date is supplied on a sticker attached to the outside of the ELT case and to each battery.

17-117. REMOVAL AND INSTALLATION OF TRANSMITTER. (Refer to figure 17-20.)

a. Remove the baggage curtain to gain access to the transmitter and antenna.
b. Disconnect co-axial cable from end of transmitter.
c. Depending upon the particular installation, either cut four sta-straps and remove transmitter or cut sta-strap securing antenna cable and unlatch metal strap to remove transmitter.

NOTE

Transmitter is also attached to the mounting bracket by velcro strips; pull transmitter to free from mounting bracket and velcro.

NOTE

To replace velcro strips, clean surface thoroughly with clean cloth saturated in one of the following solvents: Trichloric thylene, Aliphatic Napthas, Methyl Ethyl Ketone or Enmar 6094 Lacquer Thinner. Cloth should be folded each time the surface is wiped to present a clean area and avoid redepositing of grease. Wipe surface immediately with clean dry cloth, do not allow solvent to dry on surface. Apply Velcro #40 adhesive to each surface in a thin even coat and allow to dry until quite tacky, but no longer transfers to the finger when touched (usually between 5 and 30 minutes). Porous surfaces may require two coats. Place the two surfaces in contact and press firmly together to insure intimate contact. Allow 24 hours for complete cure.

e. To reinstall transmitter, reverse preceding steps.

NOTE

An installation tool is required to properly secure sta-straps on units installed with sta-straps. This tool may be purchased locally or ordered from the Pandiut Corporation, Tinley Park, Ill., part number GS-2B (Conforms to MS90387-1).

CAUTION

Ensure that the direction of flight arrows (placarded on the transmitter) are pointing towards the nose of the aircraft.

17-118. REMOVAL AND INSTALLATION OF ANTENNA. (Refer to figure 17-20.)

a. Disconnect co-axial cable from base of antenna.
b. Remove the nut and lockwasher attaching the antenna base ot the fuselage and the antenna will be free for removal.
c. To reinstall the antenna, reverse the preceding steps.

NOTE

Upon reinstallation of antenna, cement rubber boot (14) using RTV102, General Electric Co. or equivalent, to antenna whip only; do not apply adhesive to fuselage skin or damage to paint may result.

CAUTION

In-service 6 cell magnesium battery-pack powered ELT's require the installation of a static electricity suppressor in the antenna cable to prevent the possibility of damage to the case of the ELT. Refer to Cessna Avionics Service Letter AV74-16 and figure 17-20.

17-119. REMOVAL AND INSTALLATION OF MAGNESIUM SIX (6) CELL BATTERY-PACK. (Refer to figure 17-21.)

NOTE

On aircraft incorporating Cessna ELT's manufactured by Leigh (Shark 7 series), when replacing battery-pack refer to Cessna Avionics Service Letter AV75-5, dated July 3, 1975.

NOTE

Since replacement 6 cell magnesium battery-packs are no longer available, when in-service units require replacement, use the 4 cell lithium battery-pack. Refer to paragraph 17-120.

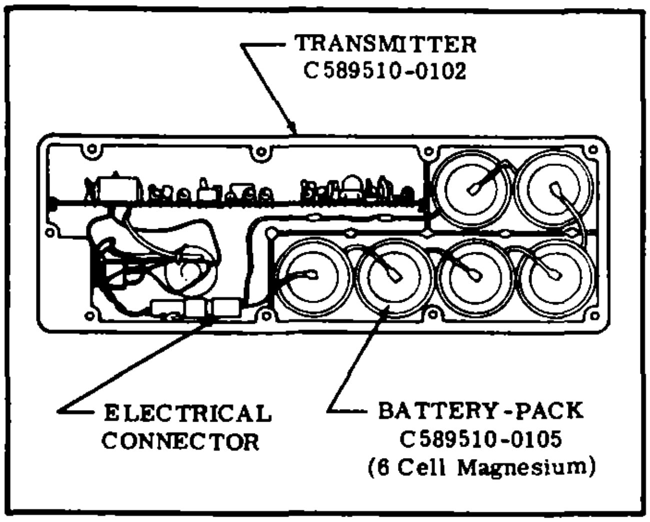


Figure 17-21. Magnesium 6 Cell Battery-Pack Installation

17-120. REMOVAL AND INSTALLATION OF LITHIUM FOUR (4) CELL BATTERY-PACK. (Refer to figure 17-22.)

NOTE

On aitcraft incorporaring Cessna ELT's manufactured by Leigh (Shark 7 series), when replacing battery-pack refer to Cessna Avionics Service Letter AV75-5, dated July 3. 1975.

NOTE

Transmitters equipped with the 4 cell battery-pack can only be replaced with another 4 cell battery-pack.

a. After the transmitter has been removed from aircraft in accordance with para. 17-117, place the transmitter switch in the OFF position.
b. Remove the nine screws attaching the cover to the case and then remove the cover to gain access to the battery-pack.

NOTE

Retain the rubber "O" ring gasket, rubber washers and screws for reinstallation.

c. Disconnect the battery-pack electrical connector and remove battery-pack.
d. Place new battery-pack in the transmitter with four batteries as shown in the case in figure 17-22.
e. Connect the electrical connector as shown in figure 17-22.

NOTE

Before installing the new 4 cell battery-pack, check to ensure that its voltage is 11.2 volts or greater.

CAUTION

If it is desireable to replace adhesive material on the 4 cell battery-pack, use only 3M Jet Melt Adhesive #3738. Do not use other adhesive materials since other materials may corrode the printed circuit board assembly.

f. Replace the transmitter cover by positioning the rubber "O" ring gasket, if installed, on the cover and pressing the cover and case together. Attach cover with nine screws and rubber washers.
g. Remove the old battery-pack placard from the end of transmitter and replace with new battery-pack placard supplied with the new battery-pack.

CAUTION

Be sure to enter the new battery-pack expiration date in the aircraft records. It is also recommended this date be placed in your ELT Owner's Manual for quick reference.

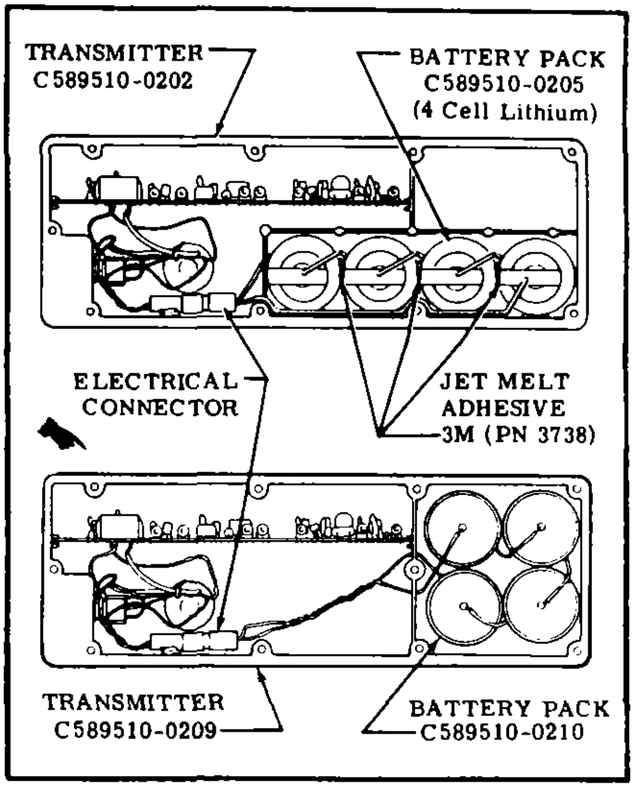


Figure 17-22. Lithium 4 Cell Battery Pack Installations

17-121. TROUBLE SHOOTING. Should your Emergency Locating Transmitter fail the 100 Hours performance checks, it is possible to a limited degree to isolate the fault to a particular area of the equipment. In performing the following trouble shooting procedures to test peak effective radiated power, you will be able to determine if battery replacement is necessary or if your unit should be returned to your dealer for repair.

SHOP NOTES:

TROUBLE	PROBABLE CAUSE	REMEDY
*POWER LOW	Low battery voltage.	1. Set toggle switch to off. 2. Remove plastic plug from the remote jack and by means of a Switchcraft #750 jackplug, connect a Simpson 260 model voltmeter and measure voltage. If the battery-pack voltage on the 6-cell magnesium battery pack transmitter is 10.8 volts or less, and on the 4-cell lithium battery pack transmitters is 11.2 volts or less, the battery pack is below specification.
	Faulty transmitter.	3. If the battery-pack voltage meets the specifications in step 2, the battery-pack is O.K. If the battery is O.K., check the transmitter as follows: a. Remove the voltmeter. b. By means of a switchcraft 750 jackplug and 3 inch maximum long leads, connect a Simpson Model 1223 ammeter to the jack. c. Set the toggle switch to ON and observe the ammeter current drain. If the current-drain is in the 85-100 ma range, the transmitter or the co-axial cable is faulty.
	Faulty co-axial antenna cable.	4. Check co-axial antenna cable for high resistance joints. If this is found to be the case, the cable should be replaced.

*This test should be carried out with the co-axial cable provided with your unit.

SHOP NOTES:

ELECTRICAL LOAD ANALYSIS CHART

24 VOLT ALL MODELS

STANDARD EQUIPMENT (RUNNING LOAD)	AMPS REQD 1971	1972	1973	1974	1975	1976
Battery Contactor	0.6	.41	.41	.41	.41	.41
Clock	†	†	†	†	†	†
Cylinder Head Temperature Indicator	0.2	.039	.039	0.039	0.039	0.039
Fuel Quantity Indicators	0.4	.12	.12	0.12	0.12	0.12
Flashing Beacon	7.0	6.0	6.0	4.0	4.0	4.0
Instrument Lights						
a. Electroluminescent Panel	.03	.03	.03	0.02	0.02	0.02
b. Cluster	0.2	0.2	0.2	0.16	0.16	0.16
c. Console*	1.0	1.0	1.0	1.14	1.14	1.14
d. Compass	.04	.04	.04	0.04	0.04	0.04
Position Lights	2.0	2.0	2.0	2.0	2.0	2.0
Turn Coordinator	0.4	.28	.28	0.3	0.3	0.3
OPTIONAL EQUIPMENT (RUNNING LOAD)						
Heated-Pitot	5.8	5.8	5.8	5.8	5.8	5.8
Strobe Lights	4.0	4.0	4.0	4.0	4.0	4.0
Carburetor Air Temp	0.03	0.03	0.03	0.03	0.03	0.03
Cessna 200A Navomatic (Type AF-295A)	—	—	—	1.5	—	—
Cessna 200A Navomatic (Type AF-295B)	—	—	—	—	1.5	1.5
Cessna 300 ADF (Type R-521B)	1.6	—	—	—	—	—
Cessna 300 ADF (Type R-546A)	—	1.0	1.0	1.0	1.0	1.0
Cessna 300 ADF (Type R-546E)	—	1.0	1.0	1.0	1.0	1.0
Cessna 300 Marker Beacon (Type R-502B)	.02	.02	.02	0.02	0.02	0.02
Cessna 300 Nav/Com (90 Channel-Type RT-517R)	4.5	—	—	—	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-540A)	4.5	—	—	—	—	—
Cessna 300 Nav/Com (100 Channel-Type RT-508A)	—	1.9	1.9	—	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-308C)	—	—	—	1.5	1.5	1.5
Cessna 300 Nav/Com (360 Channel-Type RT-528A)	—	1.9	1.9	—	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-528E)	—	—	1.9	1.9	1.9	1.9
Cessna 300 Nav/Com (360 Channel-Type RT-328A)	—	—	1.9	—	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-328C)	—	—	—	1.5	—	—
Cessna 300 Nav/Com (720 Channel-Type RT-328D)	—	—	—	—	1.5	1.5
Cessna 300 Transceiver (Type RT-524A)	2.1	2.1	2.1	2.1	2.1	2.1
Cessna 300 HF Transceiver (Type PT-10A)	1.0	1.0	1.0	1.0	—	—
Cessna 300 Transponder (Type KT-75R)	0.7	0.7	—	—	—	—
Cessna 300 Transponder (Type KT-76 & KT-78)	—	1.3	1.3	—	—	—
Cessna 300 Transponder (Type RT-359A)	—	—	—	1.0	1.0	1.0
Cessna 300 Navomatic (Type AF-512C)	1.8	—	—	—	—	—
Cessna 300 Navomatic (Type AF-512D)	—	1.8	—	—	—	—
Cessna 300 Navomatic (Type AF-394A)	—	—	1.75	1.8	—	—
Cessna 300A Navomatic (Type AF-395A)	—	—	—	—	2.0	2.0
Cessna 300 DME (Type KN-60B)	3.0	—	—	—	—	—
Cessna 300 DME (Type KN-60C)	—	3.0	3.0	2.4	—	—
Cessna 400 ADF (Type R-324A)	1.8	—	—	—	—	—
Cessna 400 ADF (Type R-346A)	—	1.0	1.0	1.0	—	—
Cessna 400 ADF (Type R-446A)	—	—	—	—		1.0
Cessna 400 Glideslope (Type R-543B)	0.4	0.4	0.4	0.4	0.4	0.4
Cessna 400 Glideslope (Type R-443A)	—	—	0.4	—		—
Cessna 400 Glideslope (Type R-443B)	—	—	—	0.32	0.32	0.32
Cessna 400 Nav/Com (Type RT-522A)	3.0	3.0	3.0	3.0	3.0	3.0
Cessna 400 Nav/Com (Type RT-422A)	—	—	2.5	1.7	—	—
Cessna 400 Transceiver (Type RT-532A)	2.2	2.2	—	—	—	—
Cessna 400 Transceiver (Type RT-432A)	—	—	1.7	1.4	—	—
Cessna 400 Transponder (Type RT-506A)	1.5	1.5	1.5	—	—	—
Cessna 400 Transponder (Type RT-459A)	—	—	—	1.0	1.0	1.0
Cessna 400 Nav-O-Matic (Type AF-520C)	1.2	1.2	—	—	—	—
Cessna 400 Nav-O-Matic (Type AF-420A)	—	—	1.2	1.2	1.2	1.2

ELECTRICAL LOAD ANALYSIS CHART (CONT.)

24 VOLT ALL MODELS

OPTIONAL EQUIPMENT (RUNNING LOAD) (CONT.)	AMPS REQD 1971	1972	1973	1974	1975	1976
Cessna 400 Area Nav (Type RN-478A)	—	—	—	—	—	0.5
Cessna 400 DME (Type R-476A)	—	—	—	—	—	2.5
Bendix MKR BCN RCVR (Type GM-247A)	—	—	—	—	—	.100
King KN-65 DME	—	—	—	1.4	1.4	1.4
Sunair SSB Transceiver (Type ASB-125)	2.5	2.5	2.5	2.5	2.5	2.5
Narco Mark 12B Nav/Com with VOA-40 or VOA-50	4.6	—	—	—	—	—
Narco UGR-2 Glideslope Receiver	.23	—	—	—	—	—
King KN-60C DME	—	—	—	—	2.4	2.4
Pantronics PT-10A HF Transceiver	—	—	—	—	1.5	1.5
ITEMS NOT CONSIDERED AS PART OF RUNNING LOAD.						
Auxiliary Fuel Pump	3.0	3.0	3.0	3.0	3.0	3.0
Cigarette Lighter	7.0	7.0	7.0	7.0	7.0	7.0
Flap Motor	8.5	8.5	8.5	8.5	8.5	8.5
Landing Lights (Each)	3.57	3.57	3.57	3.57	3.57	3.57
Oil Dilution System	1.0	1.0	1.0	1.0	1.0	1.0
Stall Warning Horn	.25	.25	.25	.28	.28	.28
Wing Courtesy Lights and Cabin Lights	1.2	1.2	1.2	1.65	1.65	1.65
Sky Diving Lights	.04	.04	.04	.04	.04	.04

*Console lights not used with post lights. Only one or the other may be used at one time.
†Negligible

12 VOLT ALL MODELS

STANDARD EQUIPMENT (RUNNING LOAD)	AMPS REQD 1969	1970	1971	1972	1973	1974	1975
Battery Contactor	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Clock	†	†	†	†	†	†	†
Cylinder Head Temperature Indicator	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Fuel Quantity Indicators	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Flashing Beacon	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Instrument Lights							
a. Electroluminescent Panel	0.5	0.5	0.5	0.5	0.5	0.4	0.4
b. Cluster	0.3	0.3	0.3	0.3	0.3	0.32	0.32
c. Console*	2.0	2.0	2.0	2.0	2.0	2.08	2.08
d. Compass	0.1	0.1	0.1	0.1	0.1	0.8	0.8
Position Lights	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Turn Coordinator	0.8	0.8	0.8	0.8	0.8	0.8	0.8
OPTIONAL EQUIPMENT (RUNNING LOAD)							
Heated-Pitot, Stall Warning Heater	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Strobe Lights	—	—	4.0	4.0	4.0	2.0	2.0
Carburetor Air Temp	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Cessna 200A Navomatic Autopilot (Type AF-295A)	—	—	—	—	—	2.0	—
Cessna 200A Navomatic Autopilot (Type AF-295B)	—	—	—	—	—	—	2.0
Cessna 300 ADF (Type R-521B)	1.6	1.6	1.6	—	—	—	—

ELECTRICAL LOAD ANALYSIS CHART (CONT.)

12 VOLT ALL MODELS

OPTIONAL EQUIPMENT (RUNNING LOAD) (CONT.)	AMPS REQD 1969	1970	1971	1972	1973	1974	1975
Cessna 300 ADF (Type R-546A)	—	—	—	1.0	1.0	1.0	1.0
Cessna 300 ADF (Type R-546E)	—	—	—	1.0	1.0	1.0	1.0
Cessna 300 Marker Beacon (Type R-502B)	.02	.02	.02	.02	.02	0.02	0.02
Cessna 300 Nav/Com (90 Channel-Type RT-517R)	4.5	4.5	4.5	—	—	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-540A)	4.5	4.5	4.5	—	—	—	—
Cessna 300 Nav/Com (100 Channel-Type RT-508A)	—	—	—	1.9	1.9	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-308C)	—	—	—	—	—	1.5	1.5
Cessna 300 Nav/Com (360 Channel-Type RT-528A)	—	—	—	1.9	1.9	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-528E)	—	—	—	—	1.9	1.9	1.9
Cessna 300 Nav/Com (360 Channel-Type RT-328A)	—	—	—	—	1.9	—	—
Cessna 300 Nav/Com (360 Channel-Type RT-328C)	—	—	—	—	—	1.5	—
Cessna 300 Nav/Com (720 Channel-Type RT-328D)	—	—	—	—	—	—	1.5
Cessna 300 Transceiver (Type RT-524A)	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Cessna 300 HF Transceiver (Type PT-10A)	—	—	1.5	1.5	1.5	1.5	—
Cessna 300 Transponder (Type KT-75R)	1.5	1.5	1.5	1.5	—	—	—
Cessna 300 Transponder (Type KT-76 & KT-78)	—	—	—	1.3	1.3	—	—
Cessna 300 Transponder (Type RT-359A)	—	—	—	—	—	1.0	1.0
Cessna 300 Navomatic (Type AF-512C)	3.5	3.5	3.5	—	—	—	—
Cessna 300 Navomatic (Type AF-512D)	—	—	—	3.5	—	—	—
Cessna 300 Navomatic (Type AF-394A)	—	—	—	—	2.0	2.0	—
Cessna 300A Navomatic (Type AF-395A)	—	—	—	—	—	—	2.0
Cessna 300 DME (Type KN-60B)	3.0	3.0	3.0	—	—	—	—
Cessna 300 DME (Type KN-60C)	—	—	—	3.0	3.0	3.0	—
Cessna 400 ADF (Type R-324A)	2.0	2.0	2.0	—	—	—	—
Cessna 400 ADF (Type R-346A)	—	—	—	1.0	1.0	1.0	—
Cessna 400 ADF (Type R-446A)	—	—	—	—	—	—	
Cessna 400 Glideslope (Type R-543B)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Cessna 400 Glideslope (Type R-443A)	—	—	—	—	0.4	—	—
Cessna 400 Glideslope (Type R-443B)	—	—	—	—	—	0.4	0.4
Cessna 400 Nav/Com (Type RT-522A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cessna 400 Nav/Com (Type RT-422A)	—	—	—	—	2.5	2.5	—
Cessna 400 Transceiver (Type RT-532A)	1.5	1.5	1.5	1.5	—	—	—
Cessna 400 Transceiver (Type RT-432A)	—	—	—	—	1.4	1.4	—
Cessna 400 Transponder (Type RT-506A)	3.0	3.0	3.0	3.0	3.0	—	—
Cessna 400 Transponder (Type RT-459A)	—	—	—	—	—	1.0	1.0
Cessna 400 Nav-O-Matic (Type AF-520C)	—	—	2.4	2.4	—	—	—
Cessna 400 Nav-O-Matic (Type AF-420A)	—	—	—	—	1.2	1.2	1.2
Sunair SSB Transceiver (Type ASB-125)	—	5.0	5.0	5.0	5.0	5.0	5.0
Flashing Beacon	7.0	7.0	7.0	7.0	7.0	7.0	—
King KN-60C DME	—	—	—	—	—	—	3.0
King KN-65 DME	—	—	—	—	—	2.8	2.8
Pantronics PT-10A HF Transceiver	—	—	—	—	—	—	1.5
Narco Mark 12A Nav/Com	4.6	—	—	—	—	—	—
Narco Mark 12B Nav/Com with VOA-40 or VOA-50	4.6	4.6	4.6	—	—	—	—
Narco UGR-2 Glideslope Receiver	.23	.23	.23	—	—	—	—

ITEMS NOT CONSIDERED AS PART OF RUNNING LOAD	1969	1970	1971	1972	1973	1974	1975
Auxiliary Fuel Pump	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cigarette Lighter	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Flap Motor	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Landing Lights	15.6	15.6	15.6	15.6	15.6	15.6	15.6
Oil Dilution System	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Stall Warning Horn	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Wing Courtesy Lights and Cabin Lights	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Sky Diving Lights	0.1	0.1	0.1	0.1	0.1	0.1	0.1

*Console lights not used with post lights.
Only one or the other may be used at one time
†Negligible

SECTION 18

STRUCTURAL REPAIR

TABLE OF CONTENTS Page

18-1. REPAIR CRITERIA.

18-2. Although this section outlines repair permissible on structure of the aircraft, the decision of whether to repair or replace a major unit of structure will be influenced by such factors as time and labor available, and by a comparison of labor costs with the price of replacement assemblies. Past experience indicates that replacement, in many cases, is less costly than major repair. Certainly, when the aircraft must be restored to its airworthy condition in a limited length of time, replacement is preferable.

18-3. Restoration of a damaged aircraft to its original design strength, shape and alignment involves careful evaluation of the damage, followed by exacting workmanship in performing the repairs. This section suggest the extent of structural repair practical on the aircraft and supplements Federal Aviation Regulations, Part 43. Consult the factory when in doubt about a repair not specifically mentioned here.

18-4. EQUIPMENT AND TOOLS.

18-5. Equipment and tools for repair of structure may be fabricated locally for all but major repair jobs. For major repair of wings and fuselage, special jigs, available from the factory are recommended. These jigs are precision equipment designed to ensure accurate alignment of these airframe components.

18-6. CONTROL BALANCING requires the use of a fixture to determine the static balance moment of the control surface assembly. Plans for, and the use of, such a fixture are shown in figure 18-9.

18-7. SUPPORT STANDS shown in figure 18-1 are used to hold a fuselage or wing when it is removed. The stands may be manufactured locally of any suitable wood.

18-8. FUSELAGE REPAIR JIG. The fuselage jig, which may be obtained from the factory, is a sturdy, versatile fixture used to hold an entire fuselage and to locate the firewall, wing and landing gear attachment points. The jig is ideal for assembling new parts in repair of a badly damaged fuselage.

18-9. WING JIG. The wing jig, which may also be obtained from the factory, serves as a holding fixture during extensive repair of a damaged wing. The jig locates the root rib, leading edge, and tip rib of the wing.

18-10. WING TWIST AND STABILIZER ANGLE-OF-INCIDENCE. Wing twist (washout) and horizontal stabilizer angle of incidence are shown below. Stabilizers do not have twist. Wings have no twist from the root to the lift strut station. All twist in the wing panel occurs between this station and the tip rib. Refer to figure 18-2 for wing twist measurement.

WING	
Twist (Washout)	3°
STABILIZER	
Angle of Incidence	-3° 30'

18-11. REPAIR MATERIALS.

18-12. Thickness of material on which a repair is to be made can easily be determined by measuring with a micrometer. In general, material used in Cessna aircraft covered in this manual is made from 2024 aluminum alloy, heat treated to a -T3, -T4, or -T42 condition. If the type of material cannot be readily determined, 2024-T3 may be used in making repairs, since the strength of -T3 is greater than -T4 or -T42 (-T4 and -T42 may be used interchangeably, but they may not be substituted for -T3). When necessary to form a part with a smaller bend radius than the standard cold bending radius for 2024-T4, use 2024-0 and heat treat to 2024-T42 after forming. The repair material used in making a repair must equal the gage of the material being repaired unless otherwise noted. It is often practical to cut repair pieces from service parts listed in the Parts Catalogs.

A few components (empennage tips, for example) are fabricated from thermo-formed plastic or glass fiber constructed materials.

18-13. WING.

18-14. The wing assemblies are of the semi-cantilever type employing semi-monocoque type of structure. Basically, the internal structure consists of built-up front and rear spar assemblies, formed sheet metal nose, intermediate, and trailing edge ribs. Stressed skin, riveted to the rib and spar structures, completes the wing structure.

18-15. ACCESS openings (hand holes with removable cover plates) are located in the underside of the wing between the wing root and tip section. These openings afford access to the aileron bellcranks, flap bellcranks, electrical wiring, strut attaching fittings, aileron control cable pulley and control cable disconnect points.

18-16. WING SKIN.

18-17. NEGLIGIBLE DAMAGE. Any smooth dents in the wing skin that are free from cracks, abrasions and sharp corners, which are not stress wrinkles and do not interfere with any internal structure or mechanism, may be considered as negligible damage. In areas of low stress intensity, cracks, deep scratches or deep, sharp dents, which after trimming or stop drilling can be enclosed by a two-inch circle, can be considered negligible if the damaged area is at least one diameter of the enclosing circle away from all existing rivet lines and material edges. Stop drilling is considered a temporary repair and a permanent repair should be made as soon as practicable.

18-18. REPAIRABLE DAMAGE. Figure 18-3 outlines typical repairs to be employed in patching skin. Before installing a patch, trim the damaged area to form a rectangular pattern, leaving at least a one-half inch radius at each corner, and deburr. The sides of the hole should lie span-wise or chord-wise. A circular patch may also be used. If the patch is in an area where flush rivets are used, make a flush patch type of repair; if in an area where flush rivets are not used, make an overlapping type of repair. Where optimum appearance and airflow are desired, the flush patch may be used. Careful workmanship will eliminate gaps at butt-joints; however, an epoxy type filler may be used at such joints.

18-19. DAMAGE NECESSITATING REPLACEMENT OF PARTS. If a skin is badly damaged, repair should be made by replacing an entire skin panel, from one structural member to the next. Repair seams should be made to lie along existing structural members and each seam should be made exactly the same in regard to rivet size, spacing, and pattern as the manufactured seams at the edges of the original sheet. If the manufactured seams are different, the stronger should be copied. If the repair ends at a structural member where no seam is used, enough repair panel should be used to allow an extra row of staggered rivets, with sufficient edge margin, to be installed.

18-20. WING STRINGERS.

18-21. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-22. REPAIRABLE DAMAGE. Figure 18-4 outlines a typical wing stringer repair. Two such repairs may be used to splice a new section of stringer material in position, without the filler material.

18-23. DAMAGE NECESSITATING REPLACEMENT OF PARTS. If a stringer is so badly damaged that more than one section must be spliced into it, replace the entire stringer.

18-24. WING RIBS.

18-25. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-26. REPAIRABLE DAMAGE. Figure 18-5 outlines typical wing rib repairs.

18-27. DAMAGE NECESSITATING REPLACEMENT OF PARTS. Leading edge and trailing edge ribs that are extensively damaged should be replaced. However, due to the necessity of unfastening so much skin in order to replace ribs, they should be repaired if practicable. Center ribs, between the front and rear spars should always be repaired if practicable.

18-28. WING SPARS.

18-29. NEGLIGIBLE DAMAGE. Due to the stresses which wing spars encounter, very little damage can be considered negligible. All cracks, stress wrinkles, deep scratches, and sharp dents must be repaired. Smooth dents, light scratches, and abrasions may be considered negligible.

18-30. REPAIRABLE DAMAGE. Figure 18-6 outlines typical spar repairs. It is often practical to cut repair pieces from spare parts listed in Parts Catalogs. Service Kits are available for certain types of spar repairs.

18-31. DAMAGE NECESSITATING REPLACEMENT OF PARTS. Damage so extensive that repair is not feasible requires replacement of a complete wing spar. Also refer to paragraph 18-2.

18-32. WING LEADING EDGE.

18-33. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-34. REPAIRABLE DAMAGE. A typical leading edge skin repair is shown in figure 18-8. An epoxy type filler may be used to fill gaps at butt joints. To facilitate repair, extra access holes may be installed in the locations noted in figure 18-7. If the damage would require a repair which could not be made between adjacent ribs, refer to the following paragraph.

18-35. DAMAGE NECESSITATING REPLACEMENT OF PARTS. For extensive damage, complete leading edge skin panels should be replaced. To facilitate replacement, extra access holes may be installed in the locations noted in figure 18-7.

18-35A. BONDED LEADING EDGE REPAIR.

18-35B. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-35C. REPAIRABLE DAMAGE. (Refer to figure 18-12.) Cut out damaged area, as shown, to the edge of undamaged ribs. Using a corresponding section from a new leading edge skin, overlap ribs and secure to wing using rivet pattern as shown in the figure.

18-36. AILERONS.

18-37. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-38. REPAIRABLE DAMAGE. The repair shown in figure 18-8 may be used to repair damage to aileron leading edge skins. Figure 18-3 may be used as a guide to repair damage to flat surface between corrugations, when damaged area includes corrugations refer to figure 18-11. It is recommended that material used for repair be cut from spare parts of the same guage and corrugation spacing. Refer to figure 18-10 for balancing. If damage would require a repair which could not be made between adjacent ribs, refer to paragraph 18-39.

18-39. DAMAGE NECESSITATING REPLACEMENT OF PARTS. If the damage would require a repair which could not be made between adjacent ribs, complete skin panels should be replaced. Ribs and spars may be repaired, but replacement is generally preferable. Where extensive damage has occurred, replacement of the aileron assembly is recommended. After repair and/or repainting, balance in accordance with figure 18-9.

18-40. WING FLAPS.

18-41. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-42. REPAIRABLE DAMAGE. Flap repairs should be similar to aileron repairs discussed in paragraph 18-38. A flap leading edge repair is shown in figure 18-8.

18-43. DAMAGE NECESSITATING REPLACEMENT OF PARTS. Flap repairs which require replacement of parts should be similar to aileron repairs discussed in paragraph 18-39.

18-44. ELEVATORS AND RUDDERS.

18-45. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17. The exception of negligible damage on the elevator surfaces is the front spar, where a crack appearing in the web at the hinge fittings or in the tip rib which supports the overhanging balance weight is not considered negligible. Cracks in the overhanging tip rib, in the area at the front spar intersection with the web of the rib, also cannot be considered negligible.

18-46. REPAIRABLE DAMAGE. Skin patches illustrated in figure 18-3 may be used to repair skin damage to the rudder, and between corrugations on the elevator. For skin damage on the elevator which includes corrugations, refer to figure 18-11. Following repair the elevator/rudder must be balanced. Refer to figure 18-10 for balancing. If damage would require a repair which could not be made between adjacent ribs, refer to paragraph 18-47.

18-47. DAMAGE NECESSITATING REPLACEMENT OF PARTS. If the damaged area would require a repair which could not be made between adjacent ribs, complete skin panels should be replaced. Ribs and spars may be repaired, but replacement is generally preferable. Where extensive damage has occurred, replacement of the entire assembly is recommended. After repair and/or repainting, balance in accordance with figure 18-9.

18-48. FIN AND STABILIZER.

18-49. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17.

18-50. REPAIRABLE DAMAGE. Skin patches shown in figure 18-3 may be used to repair skin damage. Access to the dorsal area of the fin may be gained by removing the horizontal closing rib at the bottom of the fin. Access to the internal fin structure is best gained by removing skin attaching rivets on one side of the rear spar and ribs, and springing back the skin. Access to the stabilizer structure may be gained by removing skin attaching rivets on one side of the rear spar and ribs, and springing back the skin. If the damaged area would require a repair which could not be made between adjacent ribs, or a repair vould be located in an area with compound curves, see the following paragraph.

18-51. DAMAGE NECESSITATING REPLACEMENT OF PARTS. If the damaged area would require a repair which could not be made between adjacent ribs or the repair would be located in an area with compound curves, complete skin panels should be replaced. Ribs and spars may be repaired, but replacement is generally preferable. Where damage is extensive, replacement of the entire assembly is recommended.

18-52. FUSELAGE.

18-53. The fuselage is of semi-monocoque construction consisting of formed bulkheads, longitudinal stringers, reinforcing channels and skin platings.

18-54. NEGLIGIBLE DAMAGE. Refer to paragraph 18-17. Mild corrosion appearing upon alclad surfaces does not necessarily indicate incipient failure of the base metal. However, corrosion of all types should be carefully considered, and approved remedial action taken. Small cans appear in the skin structure of all metal airplanes. It is strongly recommended, however, that wrinkles which appear to have originated from other sources, or which do not follow the general appearance of the remainder of the skin panels, be thoroughly investigated. Except in the landing gear bulkhead area, wrinkles occurring over stringers which disappear when the rivet pattern is removed may be considered negligible. However, the stringer rivet holes may not align perfectly with the skin holes because of a permanent "set" in the stringer. If this is apparent, replacement of the stringer will usually restore the original strength characteristics of the area.

NOTE

Wrinkles occurring in the skin of the main landing gear bulkhead areas should not be considered negligible. The skin panel should be opened sufficiently to permit a thorough examination of the lower portion of the landing gear bulkhead and its tie-in structure.

Wrinkles occurring on open areas which disappear when the rivets at the edge of the sheet are removed, or a wrinkle which is hand removable, may often be repaired by the addition of a 1/2 x 1/2 x .060 inch 2024-T4 extruded angle, riveted over the wrinkle and extended to within 1/16 to 1/8 inch of the nearest structural members. Rivet pattern should be identical to the existing manufactured seam at the edge of the sheet.

18-55. REPAIRABLE DAMAGE. Fuselage skin repairs may be accomplished in the same manner as wing skin repairs outlined in paragraph 18-18. Stringers, formed skin flanges, bulkhead channels, and similar parts may be repaired as shown in figure 18-4.

18-56. DAMAGE NECESSITATING REPLACEMENT OF PARTS. Fuselage skin major repairs may be accomplished in the same manner as wing skin repairs outlined in paragraph 18-19. Damaged fittings should be replaced. Seat rails serve as structural parts of the fuselage and should be replaced if damaged.

18-57. BULKHEADS.

18-58. LANDING GEAR BULKHEADS. Since these bulkheads are highly stressed members irregularly formed to provide clearance for control lines, actuators, fuel lines, etc., patch type repairs will be for the most part, impractical. Minor damage consisting of small nicks or scratches may be repaired by dressing out the damaged area, or by replacement of rivets. Any other such damage should be repaired by replacing the landing gear support assembly as an aligned unit.

18-59. REPAIR AFTER HARD LANDING. Buckled skin or floorboards and loose or sheared rivets in the area of the main gear support will give evidence of damage to the structure from an extremely hard landing. When such evidence is present, the entire support structure should be carefully examined and all support forgings should be checked for cracks, using a dye penetrant and proper magnification. Bulkheads in the area of possible damage should be checked for alignment and a straightedge should be used to determine deformation of the bulkhead webs. Damaged support structure, buckled floorboards and skins, and damaged or questionable forgings should be replaced. Landing gear components should be replaced and rigged properly.

18-60. REPLACEMENT OF HI-SEAR RIVETS. Hi-shear rivet replacement with close tolerance bolts or other commercial fasteners of equivalent strength properties is permissible. Holes must not be elongated, and the Hi shear substitute must be a smooth push fit. Field replacement of main landing gear forgings on bulkheads may be accomplished by using:

a. NAS464P* Bolt, MS21042-* Nut and AN960-* washer in place of Hi-Shear Rivets for forgings with machined flat surface around attachment holes.
b. NAS464P* Bolt, ESNA 2935* Mating Base Ring, ESNA LH 2935* Nut for forgings (with draft angle of up to a maximum of 8°) without machined flat surface around attachment holes.

*Dash numbers to be determined according to the size of the holes and the grip lengths required. The bolts grip length should be chosen so that no threads remain in the bearing area.

18-61. NOSE GEAR WHEEL WELL AND FIREWALL. The nose gear wheel well is made of stainless steel, as is the firewall bulkhead. Refer to paragraph 18-17 for negligible damage, and paragraph 18-18 for repairable damage. Stainless steel patches should be used in nose wheel well and firewall repairs. Any repairs in these areas will require resealing with 700P, or equivalent compound.

18-62. BAFFLES.

18-63. CONSIDERATIONS. Baffles ordinarily should be replaced if damaged or cracked. However, small plate reinforcements riveted to the baffle will often prove satisfactory both to the strength and cylinder cooling requirements of the unit.

18-64. ENGINE COWLING.

18-65. REPAIR OF COWLING SKINS. If extensively damaged, complete sections of cowling should be replaced. Standard flush-type skin patches, however, may be used if repair parts are formed to fit. Small cracks may be stop-drilled and dents straightened, if they are reinforced on the inner side with a doubler of the same material. Bonded cowling may be repaired by the same methods used for riveted structure. Rivets are a satisfactory substitute for bonded seams on these assemblies. The strength of the bonded seams in cowling may be replaced by a single 3/32, 2117-AD rivet per running inch of bond seam. The standard repair procedures outlined in AC43.13-1 are also applicable to cowling.

18-66. REPAIR OF REINFORCEMENT ANGLES. Cowl reinforcement angles, if damaged, should be replaced. Due to their small size they are easier to replace than to repair.

18-67. REPAIR OF ABS COMPONENTS.

18-68. Rezolin Kit Number 404 may be obtained from the Cessna Service Parts Center for repair of ABS components.

18-69. REPAIR OF GLASS FIBER CONSTRUCTED COMPONENTS.

18-70. Glass fiber constructed components on the aircraft may be repaired as stipulated in instructions furnished in SK182-12. Observe the resin manufacturer's recommendations concerning mixing and application of the resin. Epoxy resins are preferable for making repairs, since epoxy compounds are usually more stable and predictable than polyester and, in addition, give better adhesion.

18-71. BONDED DOORS.

18-72. REPAIRABLE DAMAGE. Bonded doors may be repaired by the same methods used for riveted structure. Rivets are a satisfactory substitute for bonded seams on these assemblies. The strength of the bonded seams in doors may be replaced by a single 3/32, 2117-AD rivet per running inch of bond seam. The standard repair procedures outlined in AC43.13-1 are also applicable to bonded doors.

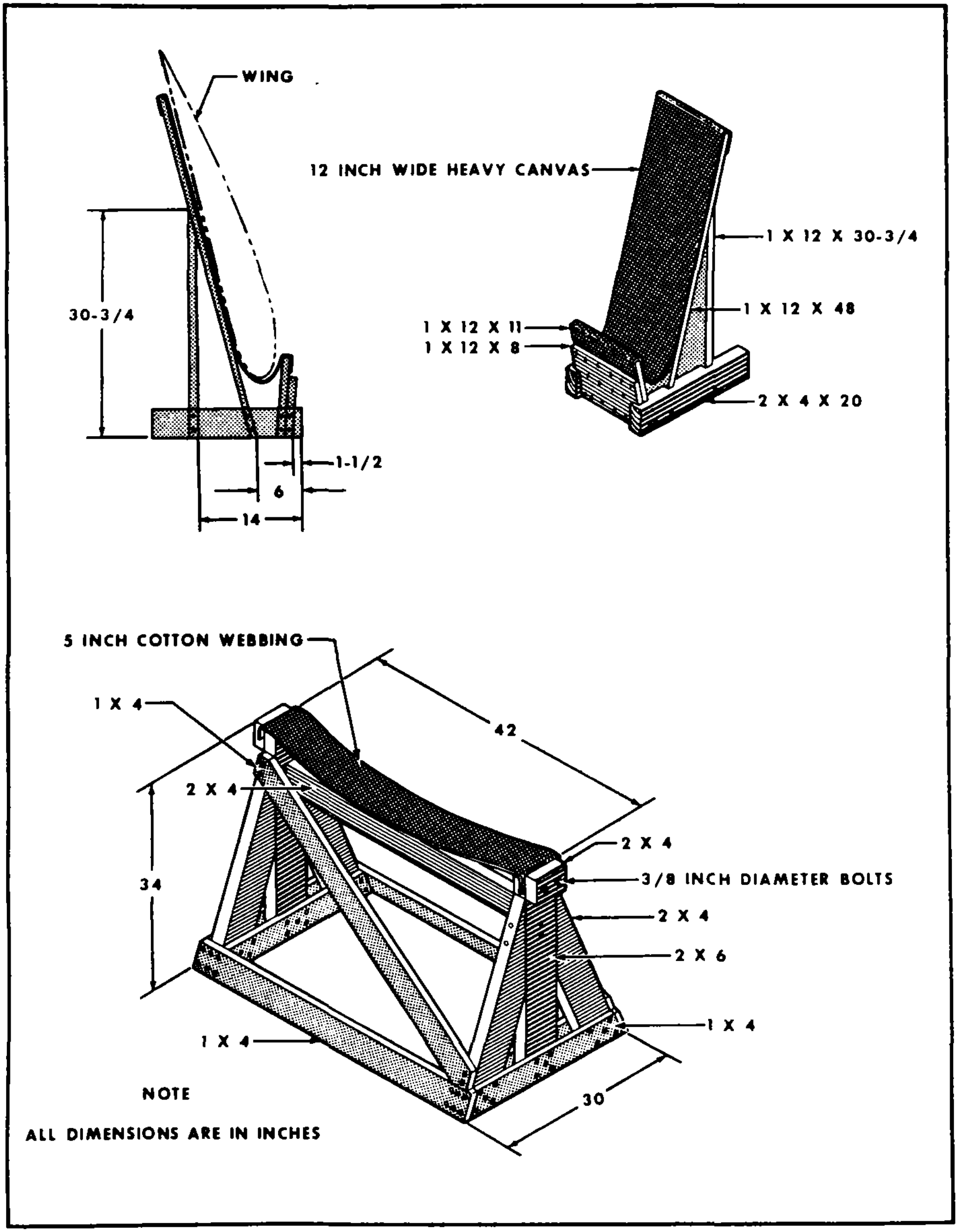
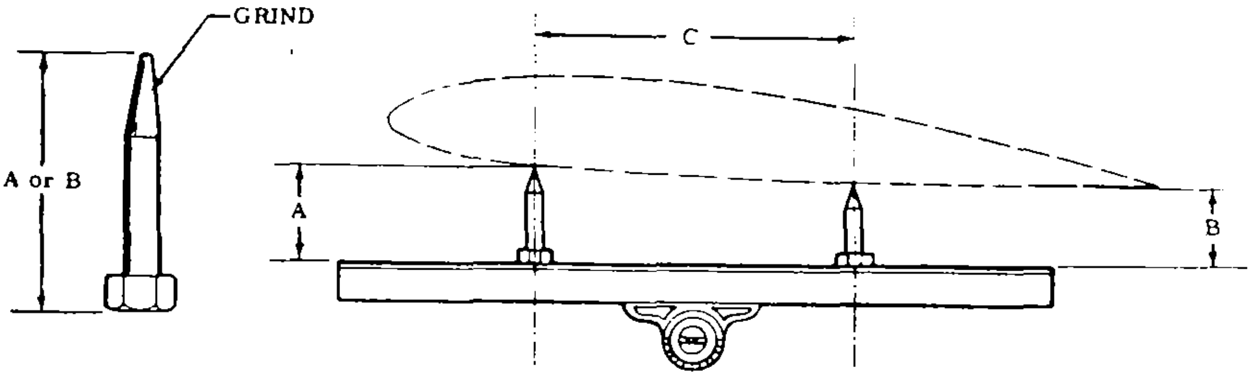


Figure 18-1. Wing and Fuselage Support Stands



MODEL	A	B	C	WING STATION
THRU U20601700	2.00 2.00 .79	1.00 1.00 1.00	29.50 29.50 20.00	39.00 100.00 207.00
BEGINNING WITH U20601701	2.00 2.00 .66	1.00 1.00 1.00	29.50 29.50 20.00	39.00 100.00 207.00

ALL WING TWIST OCCURS BETWEEN STA. 100.00 AND STA. 207.00.
(Refer to paragraph 18-10 for angle of incidence).

MEASURING WING TWIST

If damage has occurred to a wing, it is advisable to check the twist. The following method can be used with a minimum of equipment, which includes a straightedge (32" minimum length of angle, or equivalent), three modified bolts for a specific wing, and a protractor head with level.

1. Check chart for applicable dimension for bolt length (A or B).
2. Grind bolt to a rounded point as illustrated, checking length periodically.
3. Tape two bolts to straightedge according to dimension C.
4. Locate inboard wing station to be checked and make a pencil mark approximately one-half inch aft of the lateral row of rivets in the wing leading edge spar flange.
5. Holding straightedge parallel to wing station (staying as clear as possible from "cans"), place longer bolt on pencil mark and set protractor head against lower edge of straightedge.
6. Set bubble in level to center and lock protractor to hold this reading.
7. Omitting step 6, repeat procedure for each wing station, using dimensions specified in chart. Check to see that protractor bubble is still centered.
8. Proper twist is present in wing if protractor readings are the same (parallel). Forward or aft bolt may be lowered from wing .10 inch maximum to attain parallelism.

Figure 18-2. Checking Wing Twist

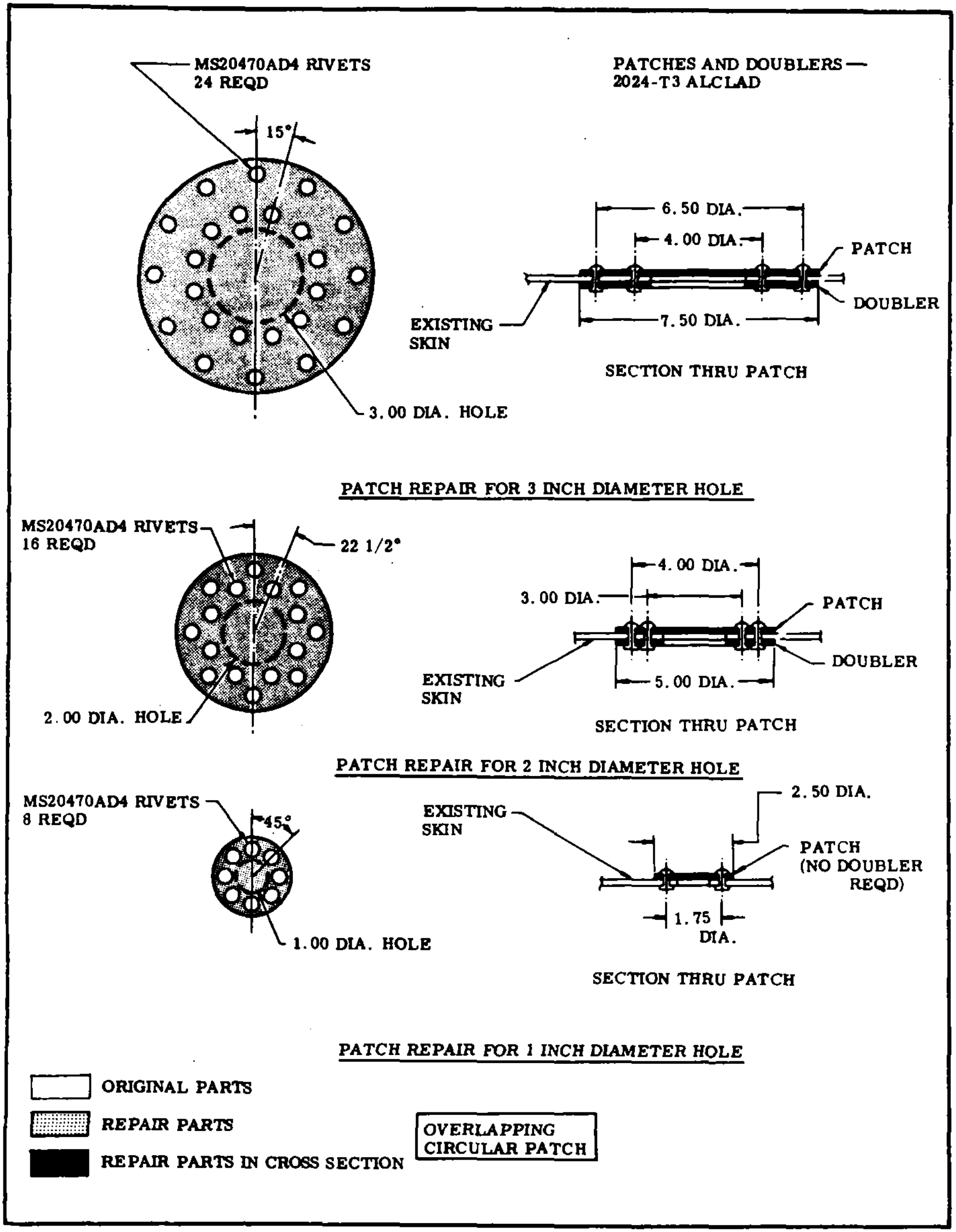
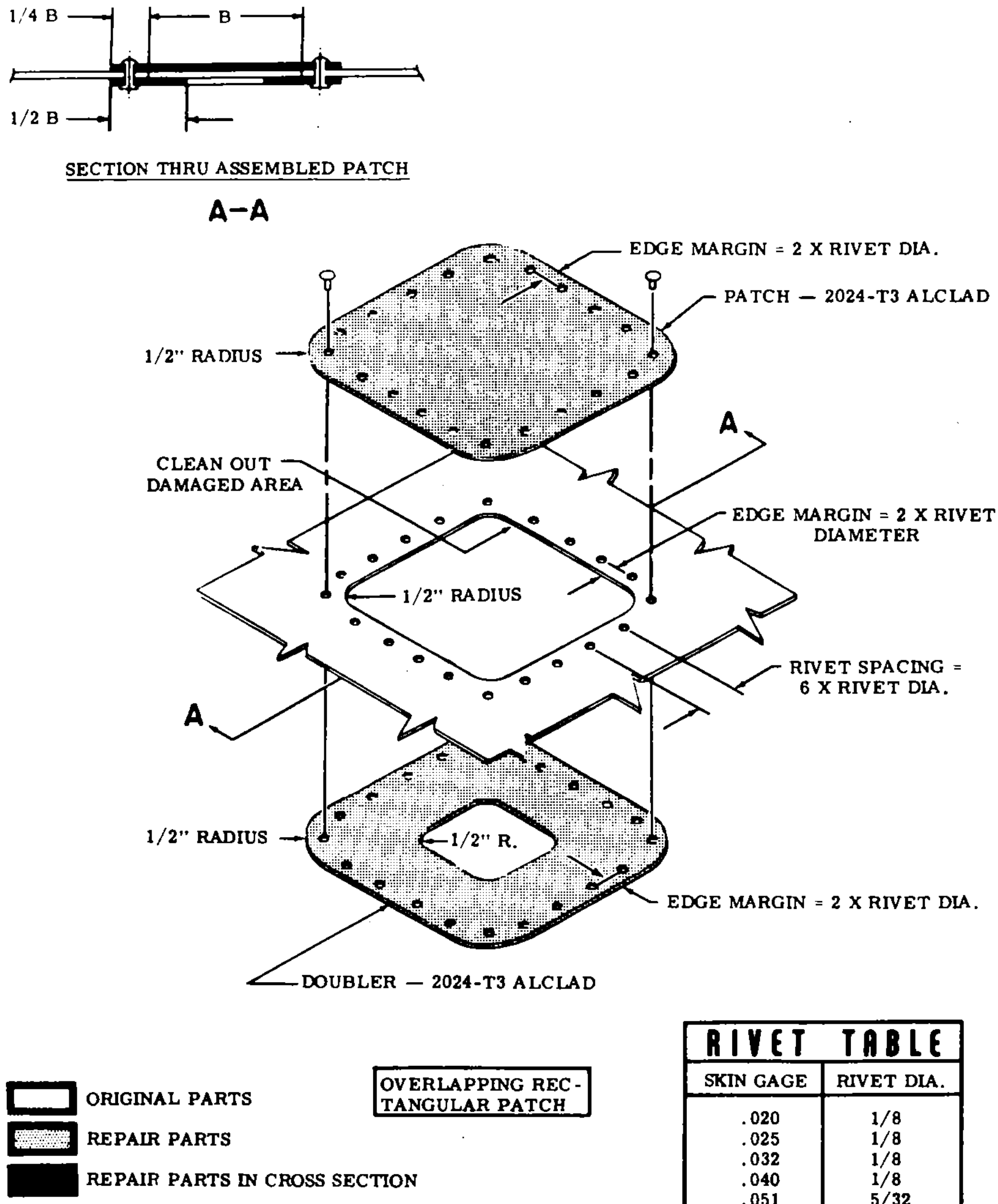


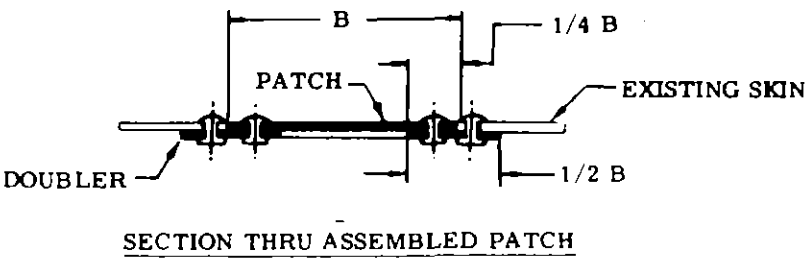
Figure 18-3. Skin Repair (Sheet 1 of 6)



RIVET TABLE

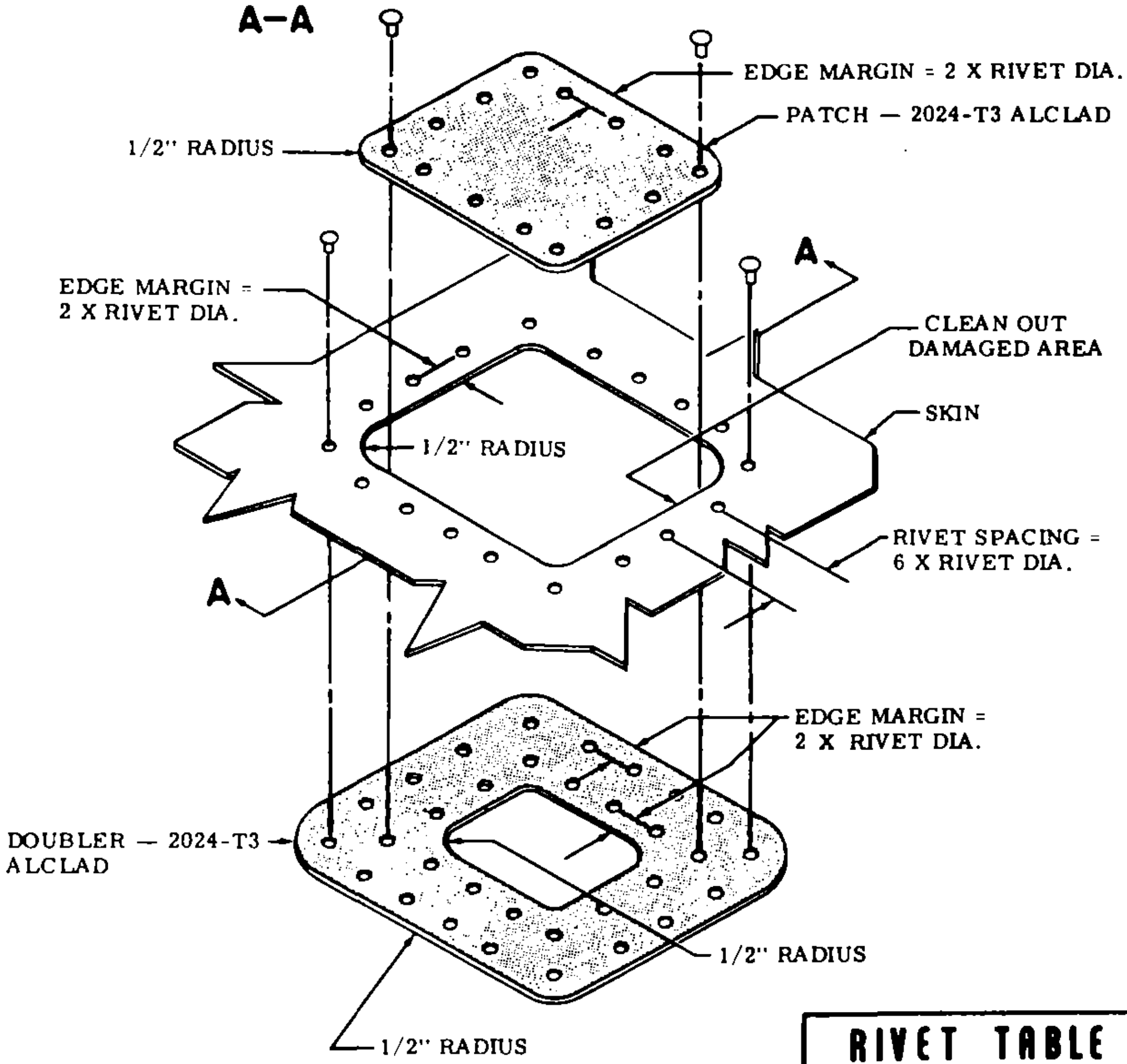
SKIN GAGE	RIVET DIA.
.020	1/8
.025	1/8
.032	1/8
.040	1/8
.051	5/32

Figure 18-3. Skin Repair (Sheet 2 of 6)



NOTE

For optimum appearance and airflow, use flush rivets, dimpled skin and patch, and countersunk doubler.



ORIGINAL PARTS

REPAIR PARTS

REPAIR PARTS IN CROSS SECTION

FLUSH RECTANGULAR PATCH (CIRCULAR FLUSH PATCH IS SIMILAR)

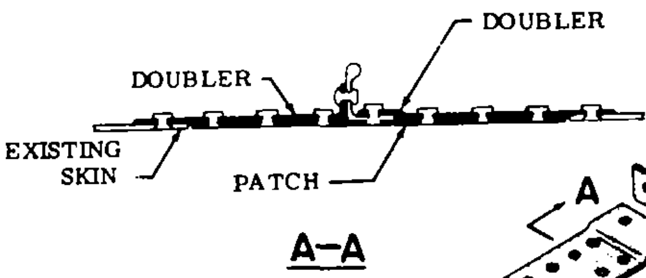
RIVET TABLE

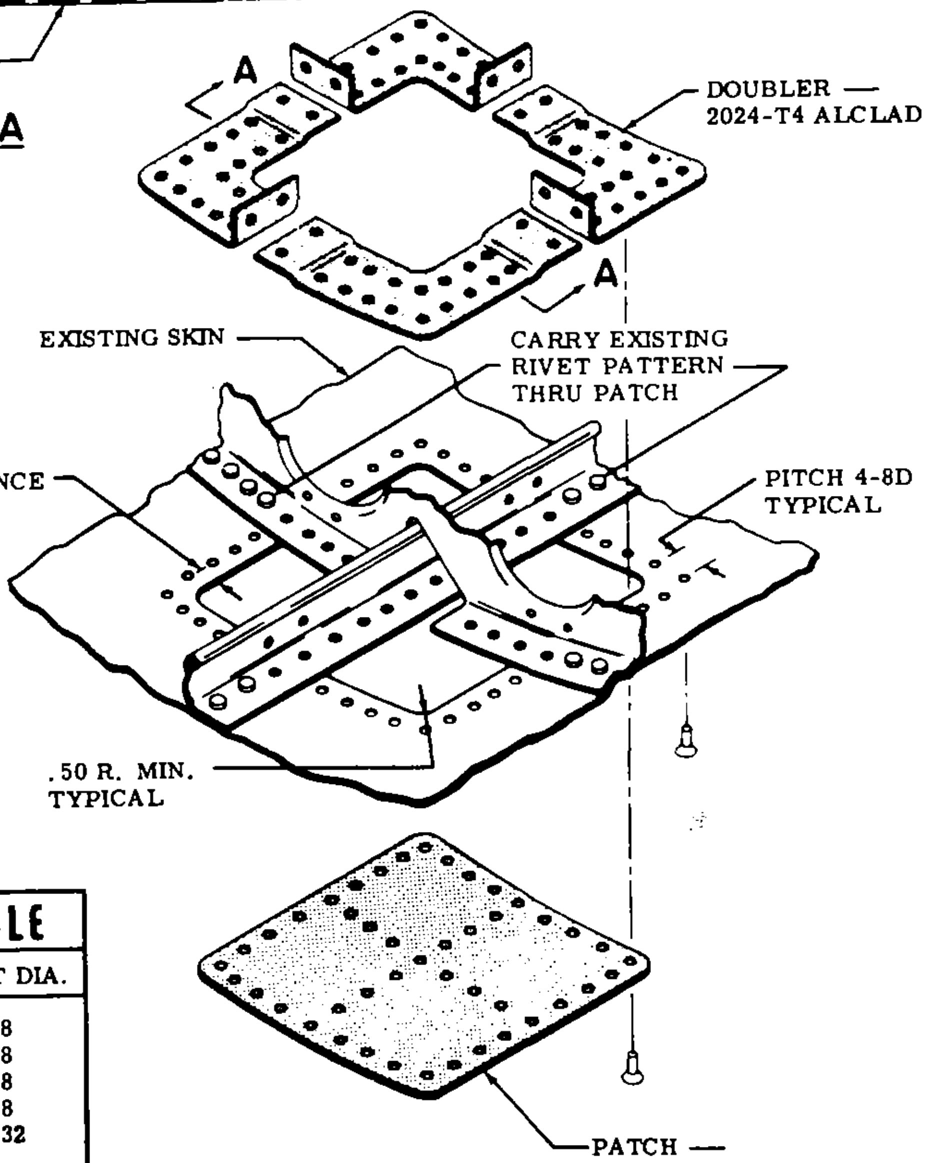
SKIN GAGE	RIVET DIA.
.020	1/8
.025	1/8
.032	1/8
.040	1/8
.051	5/32

Figure 18-3. Skin Repair (Sheet 3 of 6)

NOTE

Countersink doublers, and dimple skin and patch.





RIVET TABLE	
SKIN GAGE	RIVET DIA.
.020	1/8
.025	1/8
.032	1/8
.040	1/8
.051	5/32

FLUSH PATCH AT STRINGER/BULKHEAD INTERSECTION

ORIGINAL PARTS

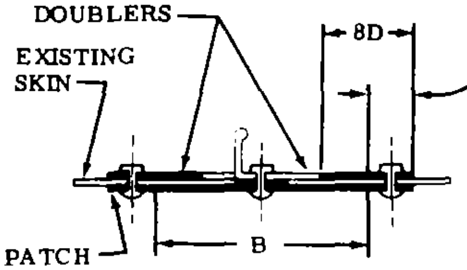
REPAIR PARTS

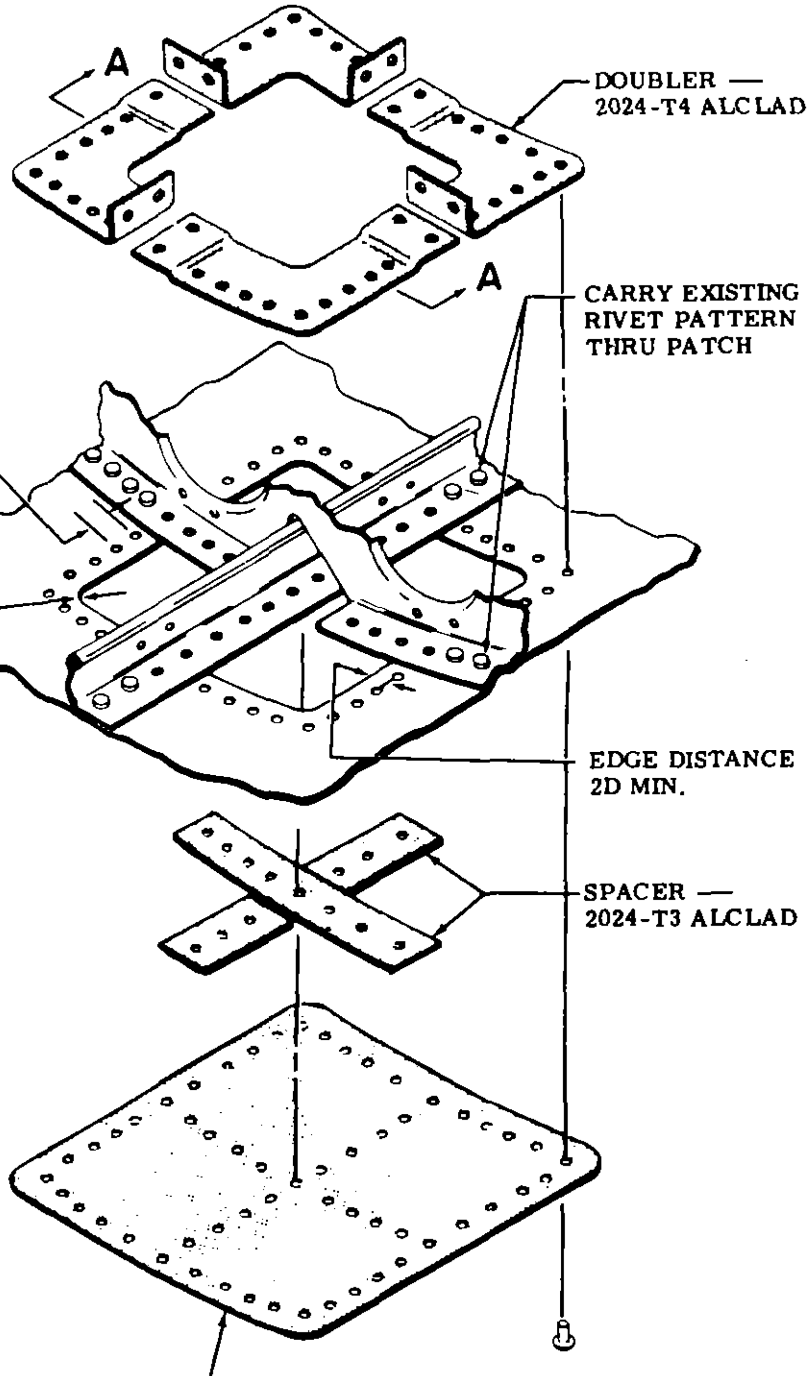
REPAIR PARTS IN CROSS SECTION

NOTE

This procedure is not recommended in areas where stringers are riveted to bulkheads.

Figure 18-3. Skin Repair (Sheet 4 of 6)





RIVET TABLE

SKIN GAGE	RIVET DIA.
.020	1/8
.025	1/8
.032	1/8
.040	1/8
.051	5/32

OVERLAPPING PATCH AT STRINGER/BULKHEAD INTERSECTION

ORIGINAL PARTS

REPAIR PARTS

REPAIR PARTS IN CROSS SECTION

Figure 18-3. Skin Repair (Sheet 5 of 6)

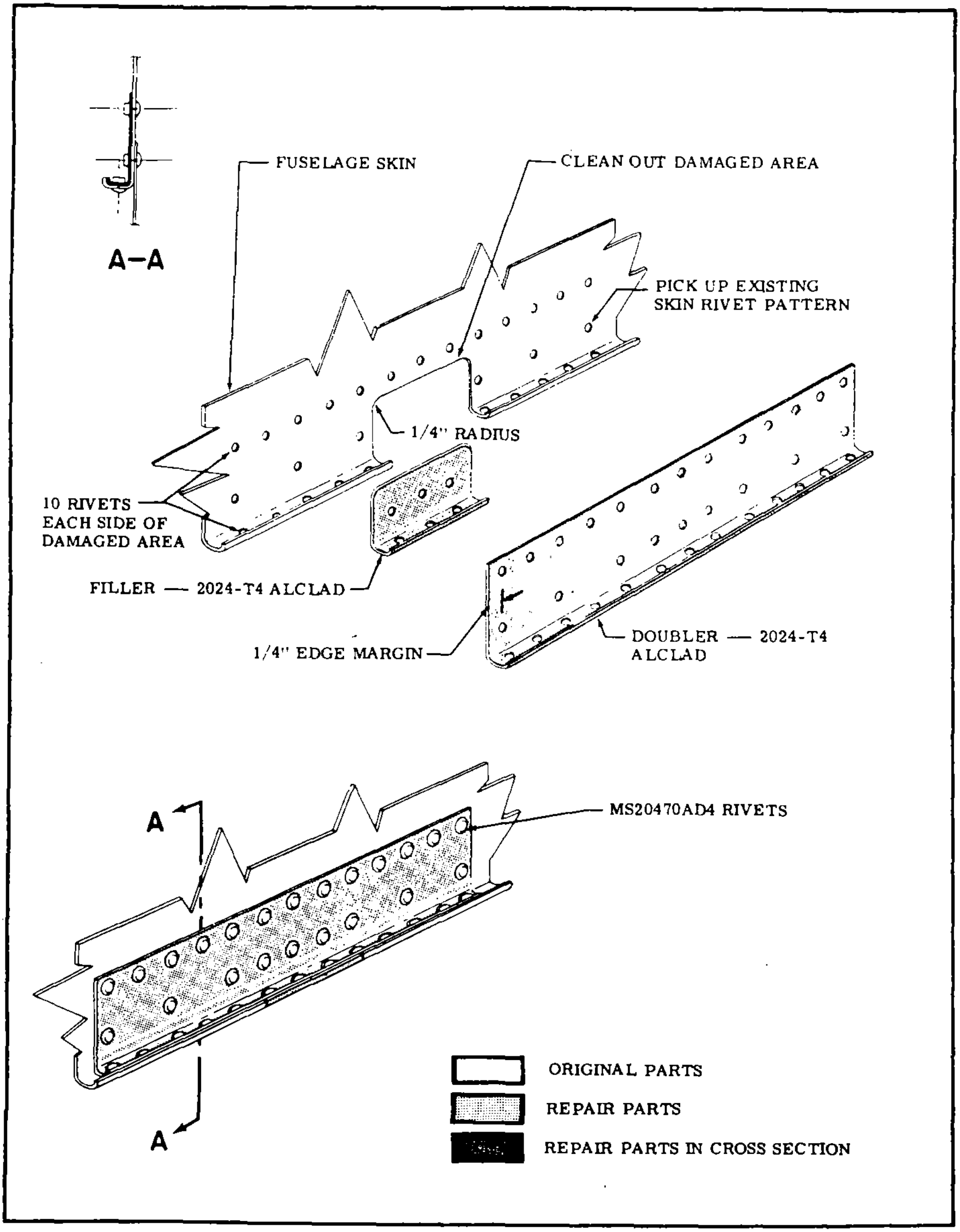


Figure 18-3. Skin Repair (Sheet 3 of 6)

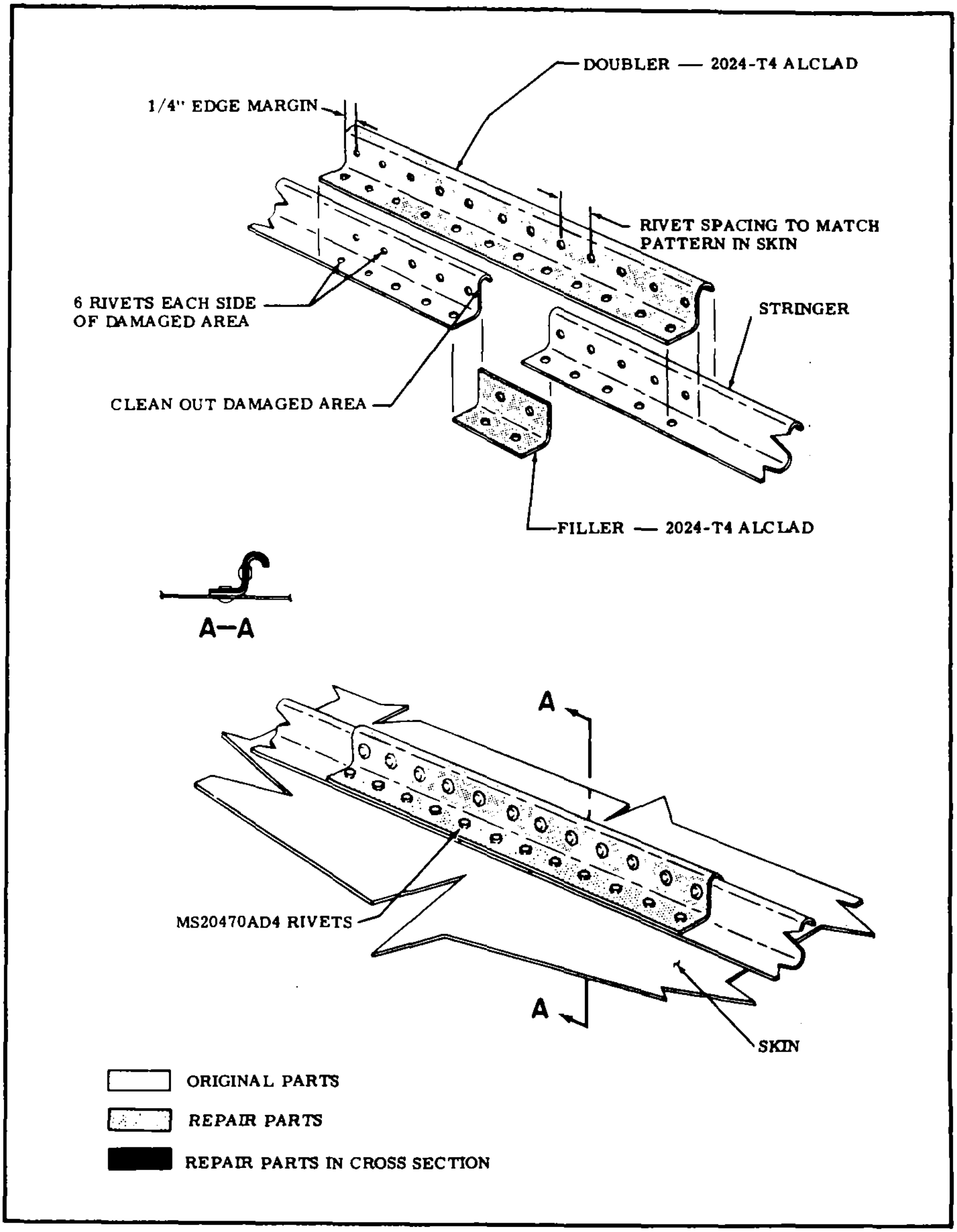


Figure 18-4. Stringer and Channel Repair (Sheet 1 of 4)

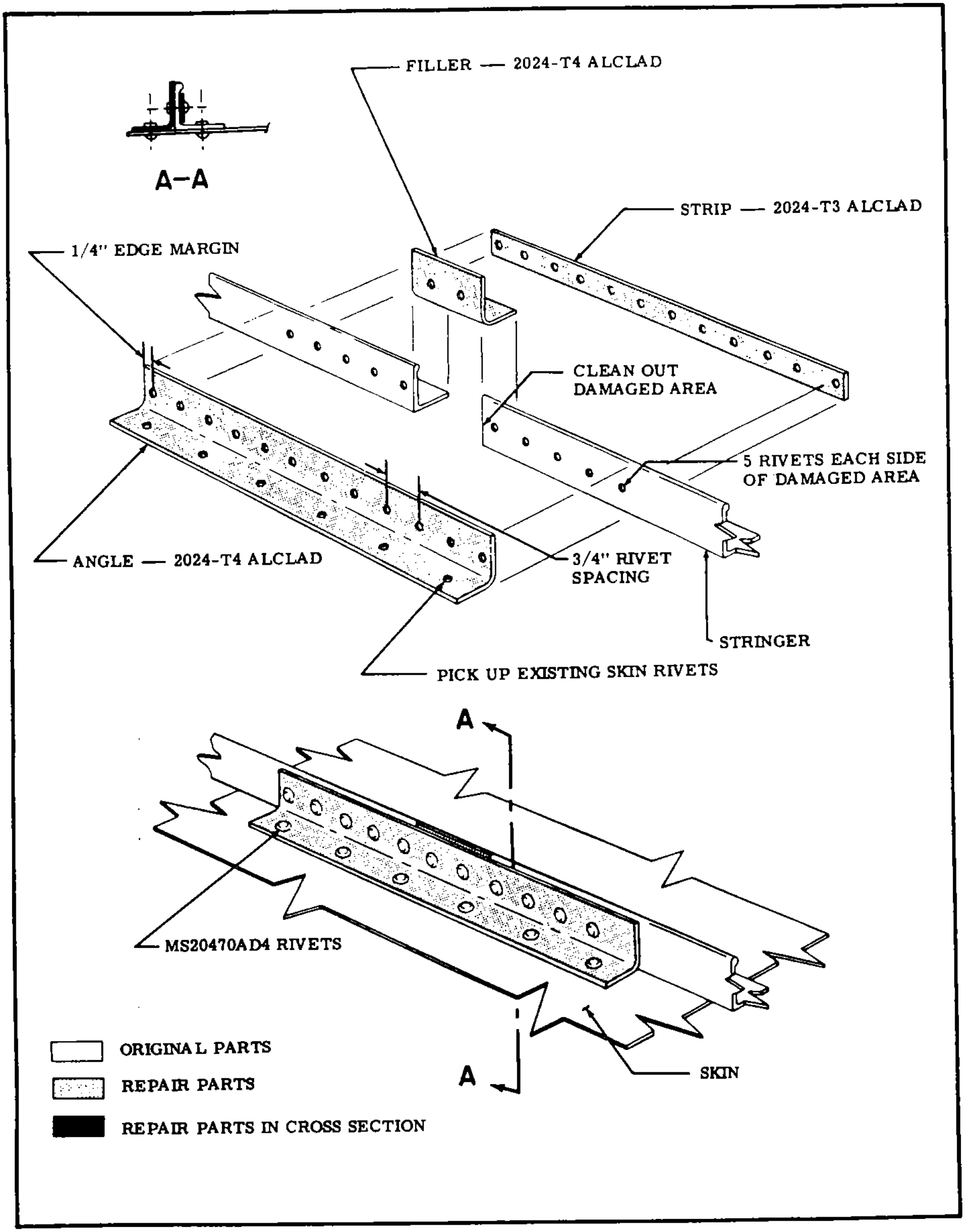


Figure 18-4. Stringer and Channel Repair (Sheet 2 of 4)

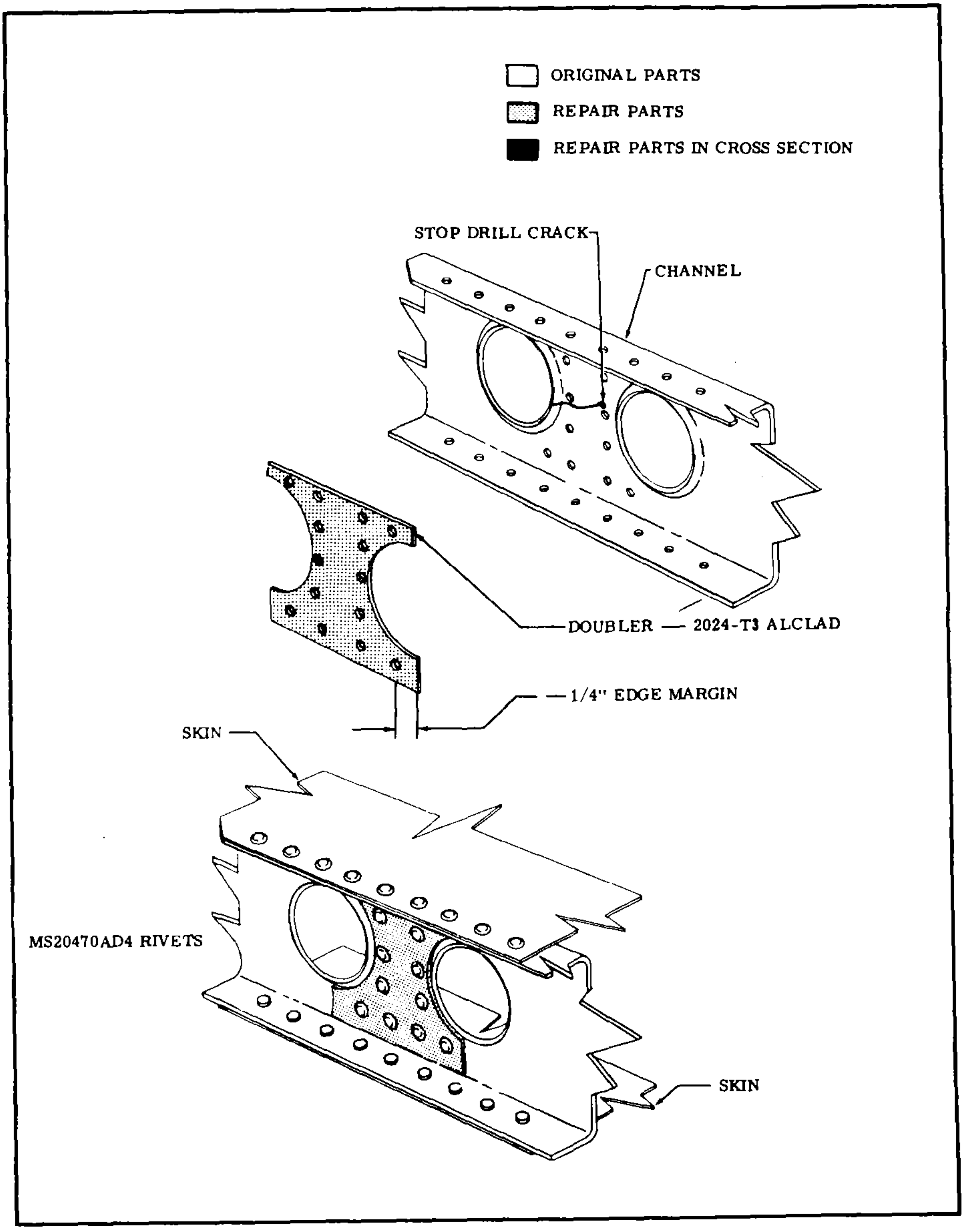


Figure 18-4. Stringer and Channel Repair (Sheet 3 of 4)

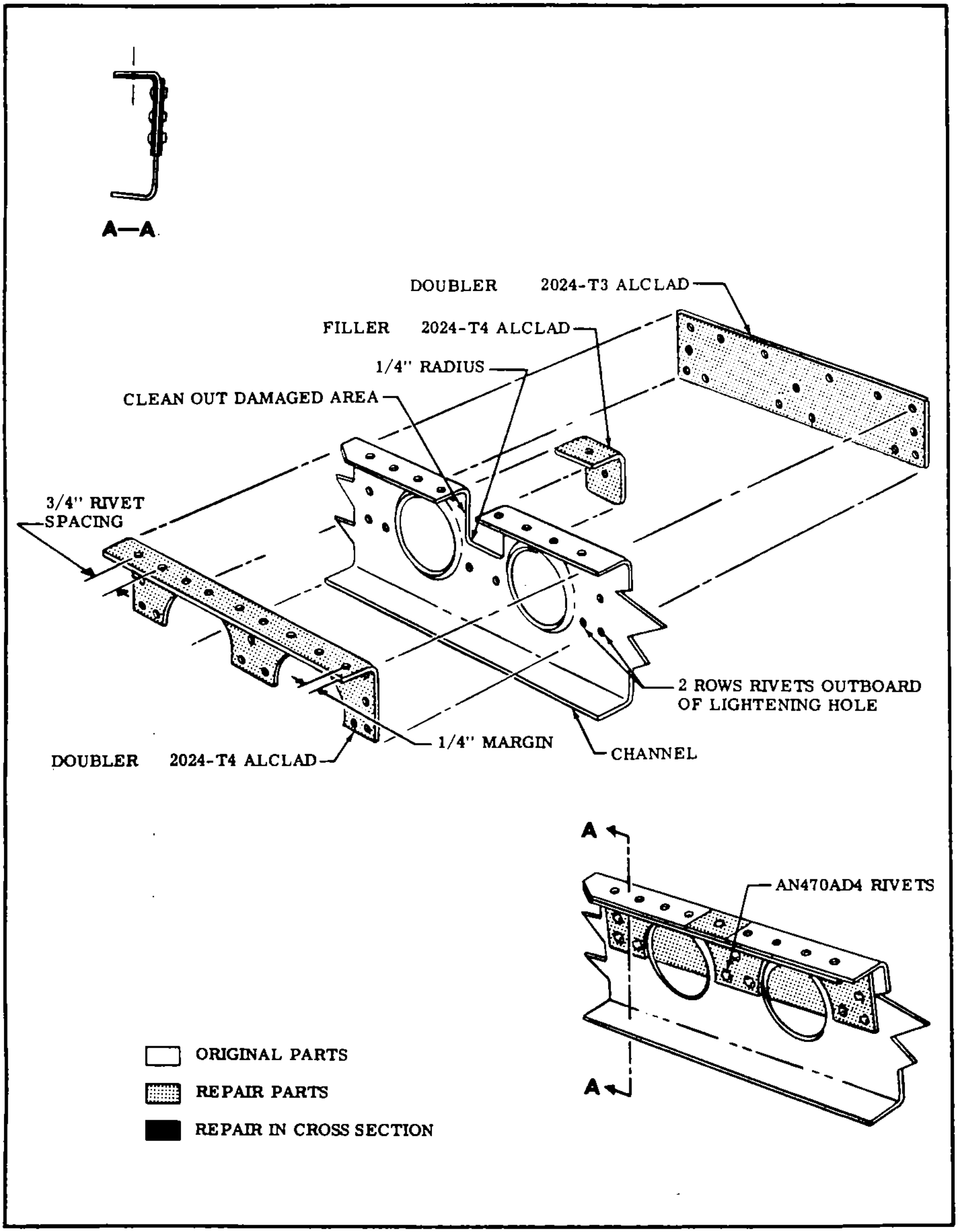


Figure 18-4. Stringer and Channel Repair (Sheet 4 of 4)

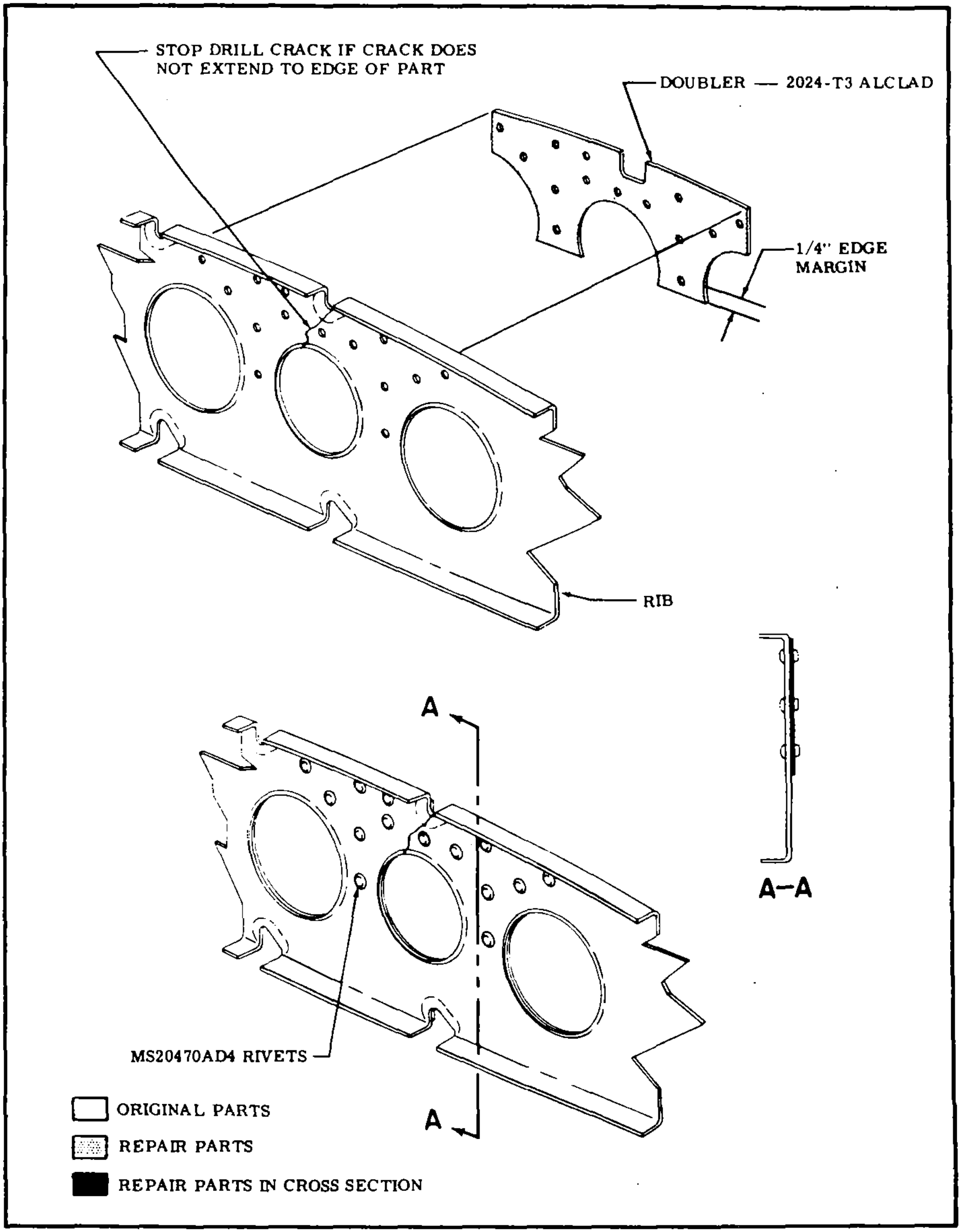


Figure 18-5. Rib Repair (Sheet 1 of 2)

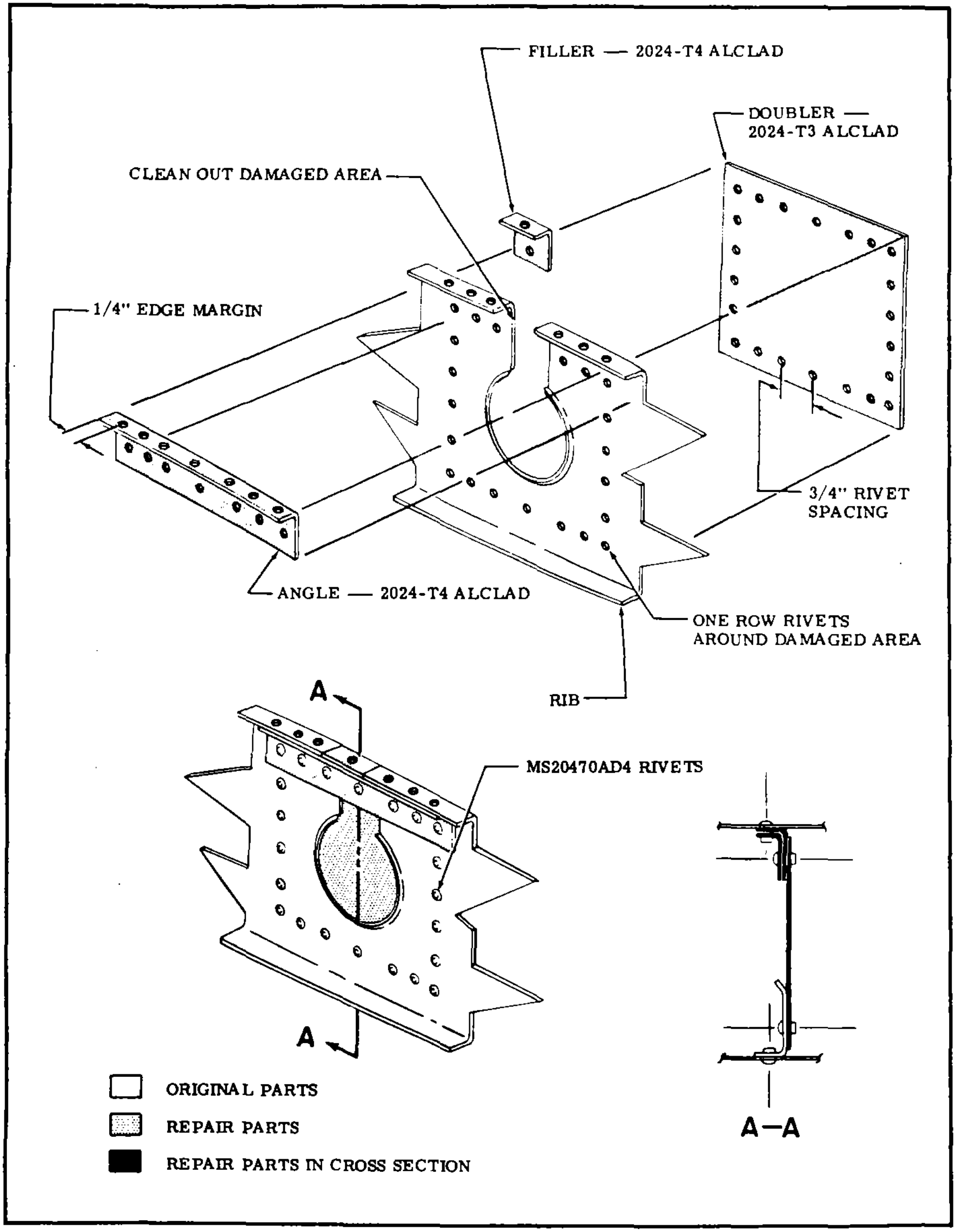


Figure 18-5. Rib Repair (Sheet 2 of 2)

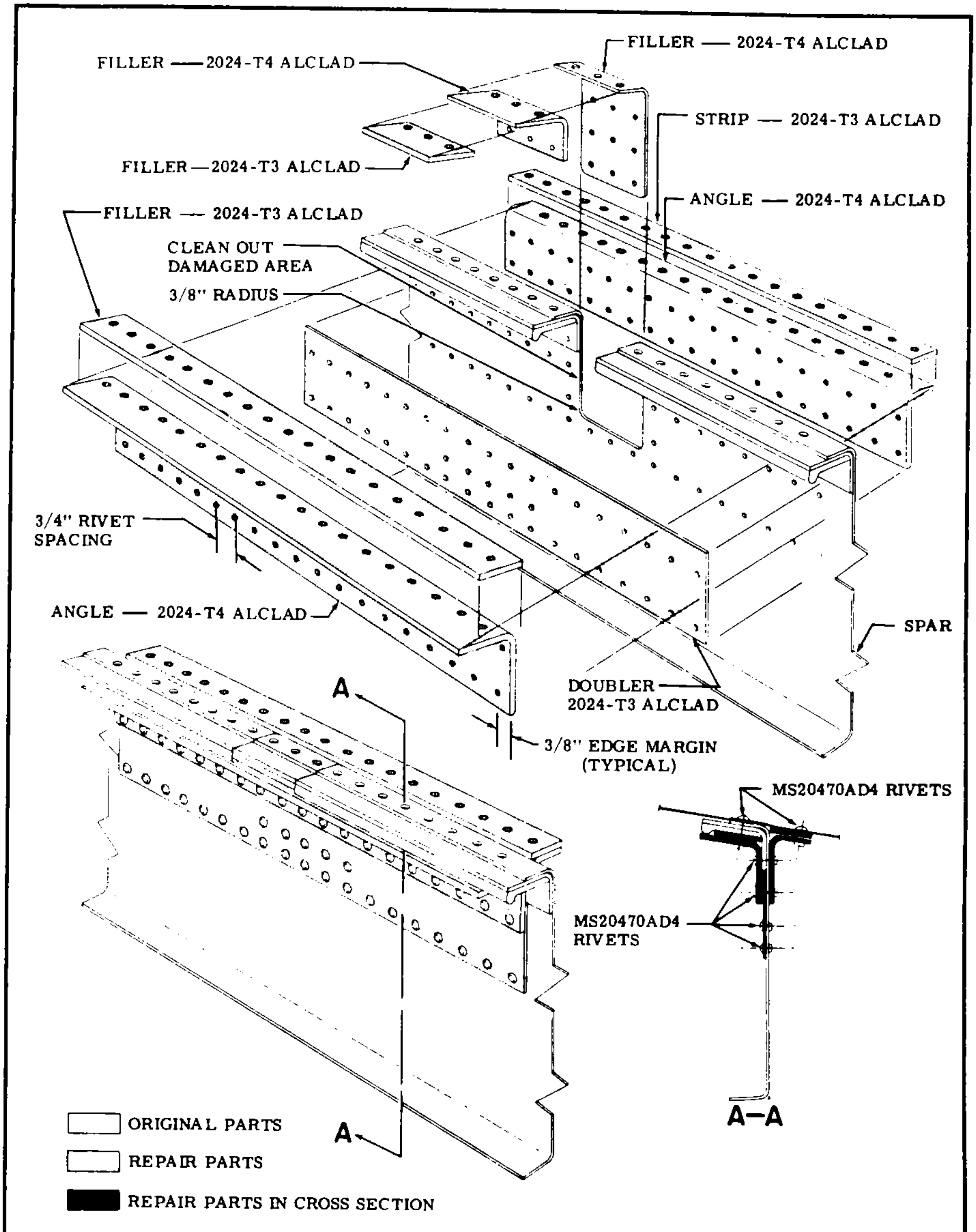


Figure 18-6. Wing Spar Repair (Sheet 1 of 4)

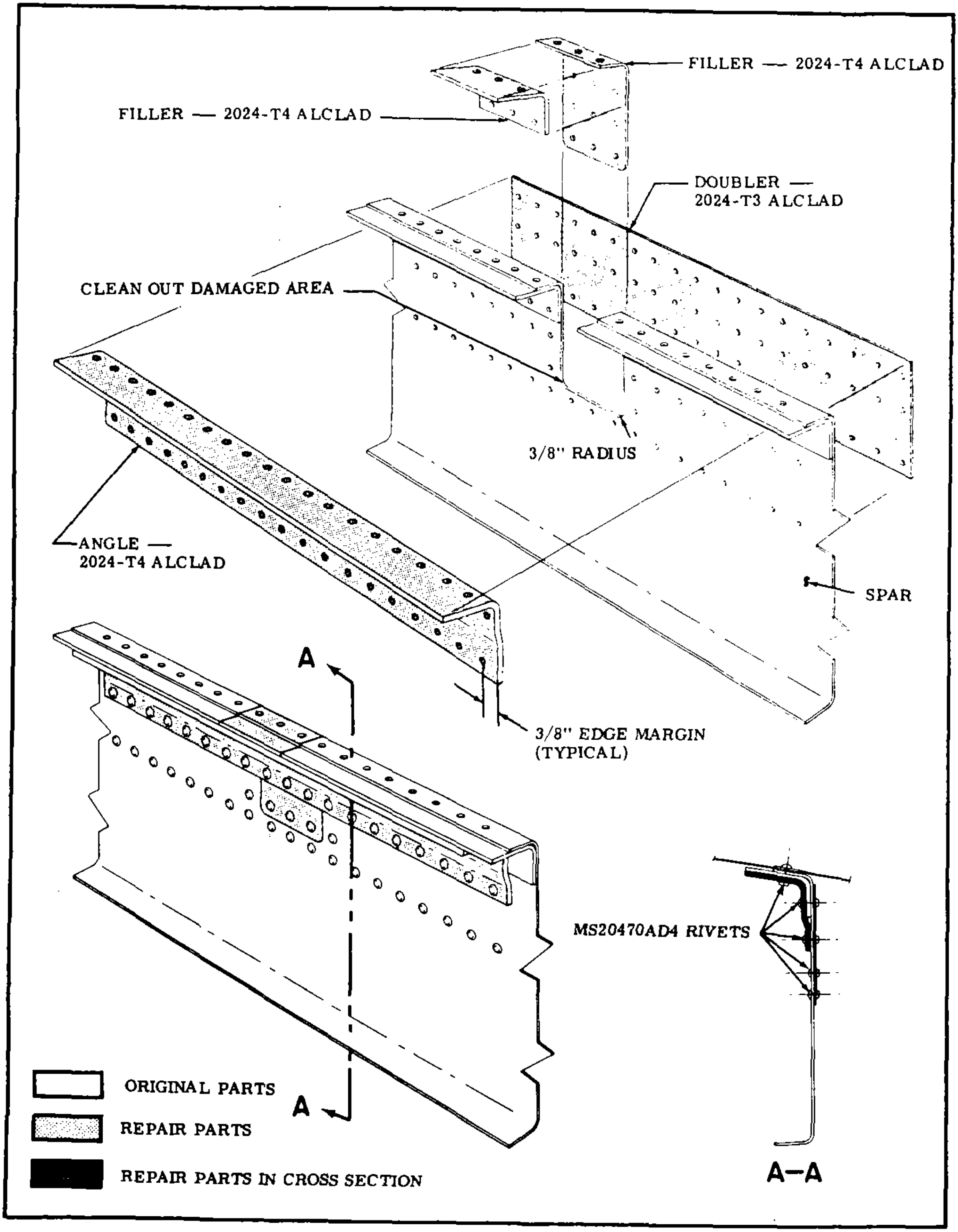


Figure 18-6. Wing Spar Repair (Sheet 2 of 4)

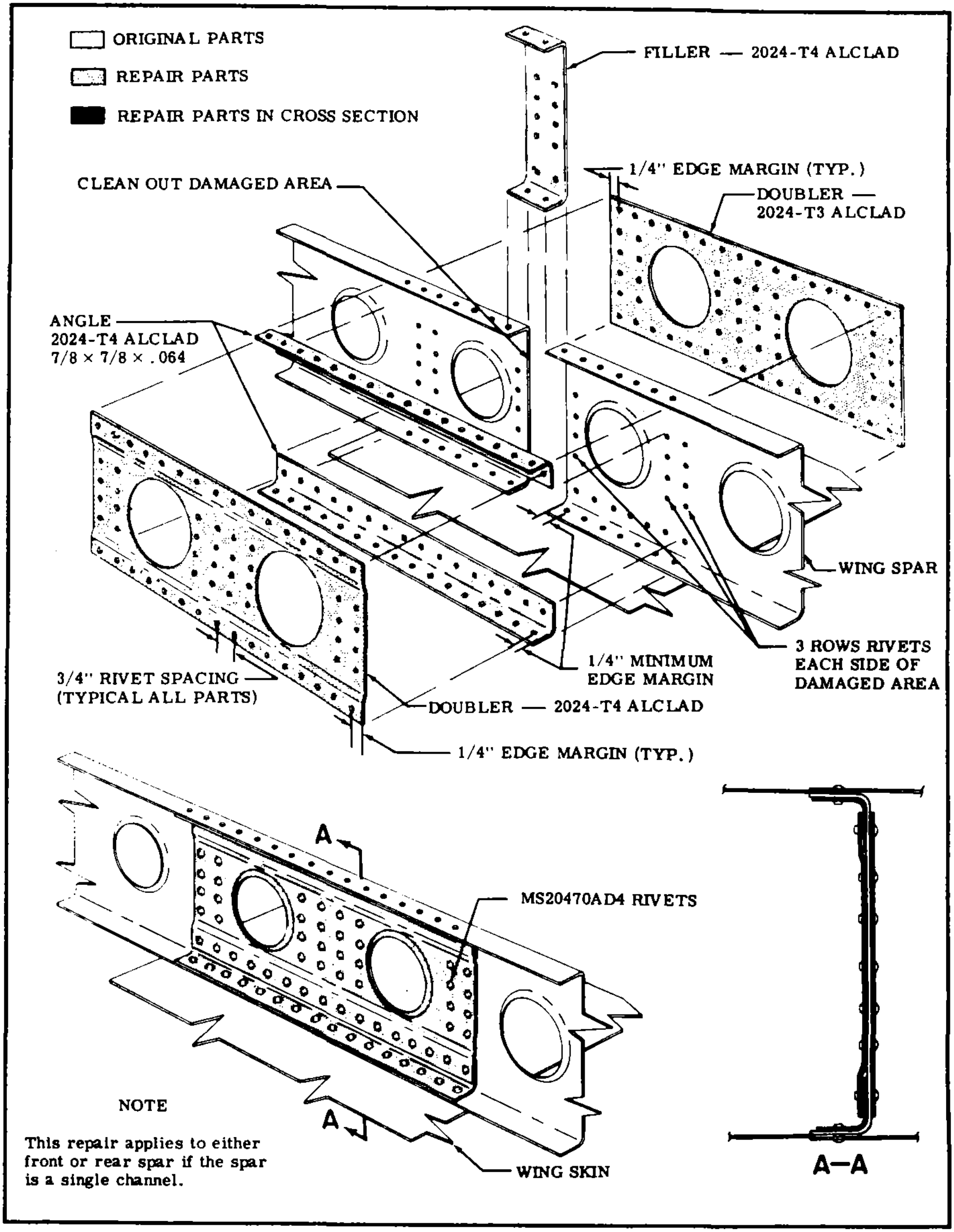


Figure 18-6. Wing Spar Repair (Sheet 3 of 4)

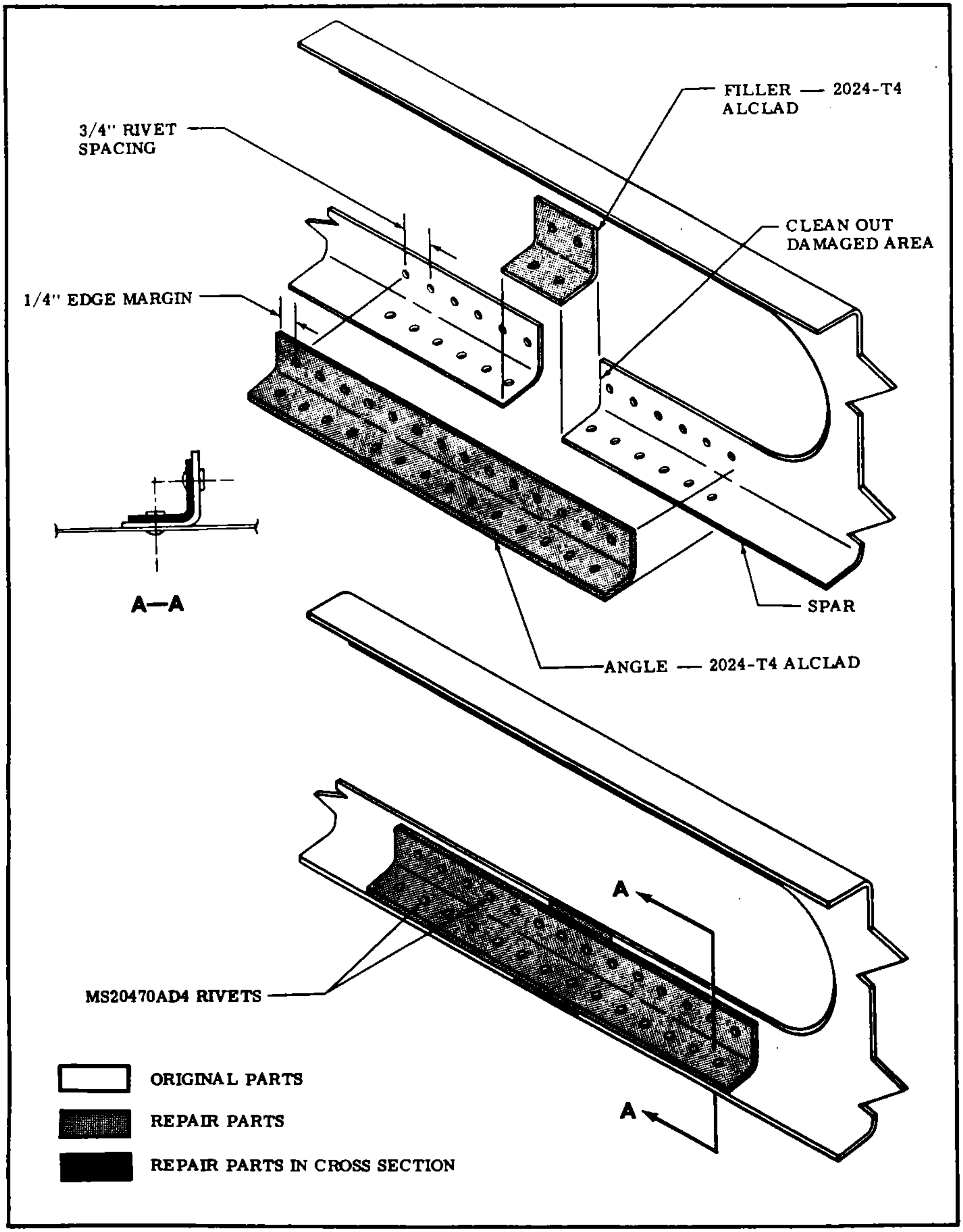
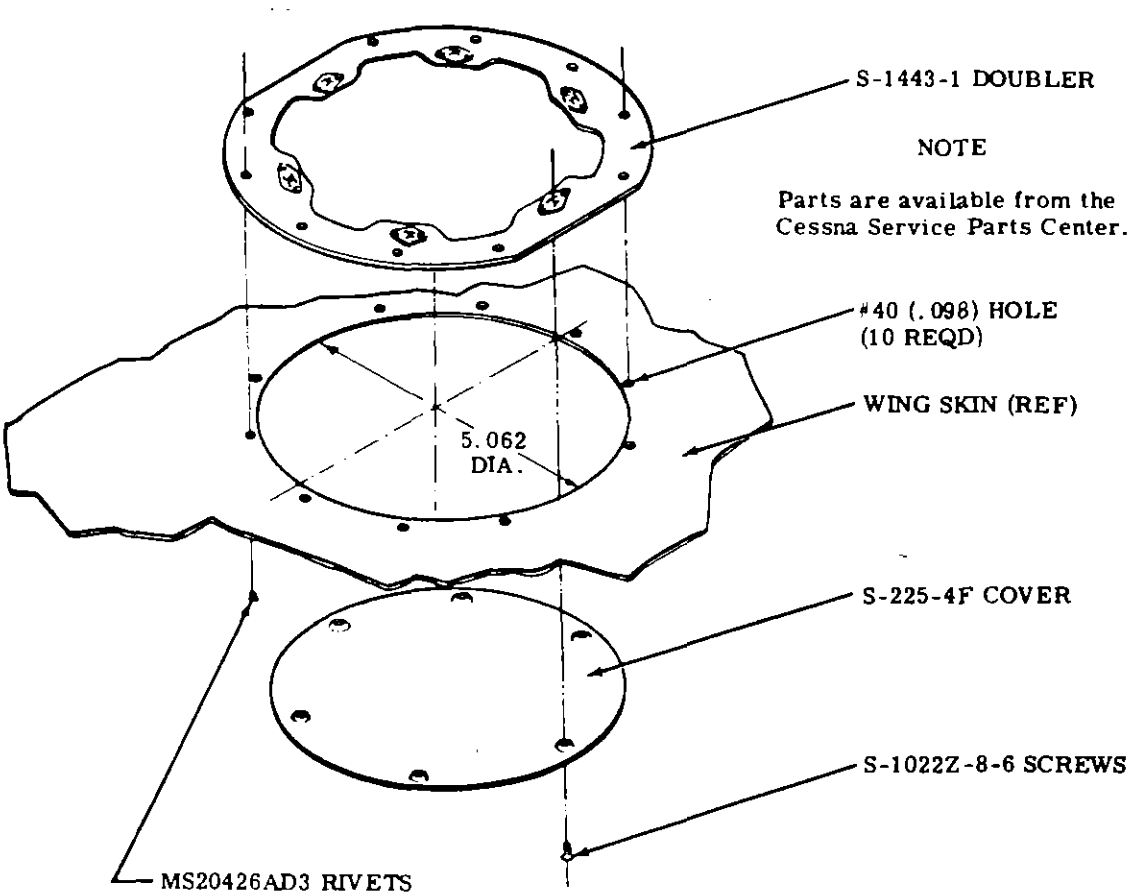


Figure 18-6. Wing Spar Repair (Sheet 4 of 4)



PRECAUTIONS:

1. Add the minimum number of access holes necessary.
2. Any circular or rectangular access hole which is used with approved optional equipment installations may be added in lieu of the access hole illustrated.
3. Use landing light installations instead of adding access holes where possible. Do not add access holes at outboard end of wing; remove wing tip instead.
4. Do not add an access hole in the same bay where one is already located.
5. Locate new access holes near the center of a bay (spanwise).
6. Locate new access holes forward of the front spar as close to the front spar as practicable.
7. Locate new access holes aft of the front spar between the first and second stringers aft of the spar. When installing the doubler, rotate it so the two straight edges are closest to the stringers.
8. Alternate bays, with new access holes staggered forward and aft of the front spar, are preferable.
9. A maximum of five new access holes in each wing is permissible; if more are required, contact the Cessna Service Department.
10. When a complete leading edge skin is being replaced, the wing should be supported in such a manner that wing alignment is maintained.

a. Establish exact location for inspection cover and inscribe centerlines.

b. Determine position of doubler on wing skin and center over centerlines. Mark the ten rivet hole locations and drill to size shown.

c. Cut out access hole using dimension shown.

d. Flex doubler and insert through access hole, and rivet in place.

e. Position cover and secure using screws as shown.

Figure 18-7. Access Hole Installation

NOTES:

1. Dimple leading edge skin and filler material; countersink the doubler.
2. Use MS20426AD4 rivets to install doubler.
3. Use MS20426AD4 rivets to install filler, except where bucking is impossible. Use CR162-4 Cherry (blind) rivets where regular rivets cannot be bucked.
4. Contour must be maintained; after repair has been completed, use epoxy filler as necessary and sand smooth before painting.
5. Vertical size is limited by ability to install doubler clear of front spar.
6. Lateral size is limited to seven inches across trimmed out area.
7. Number of repairs is limited to one in each bay.

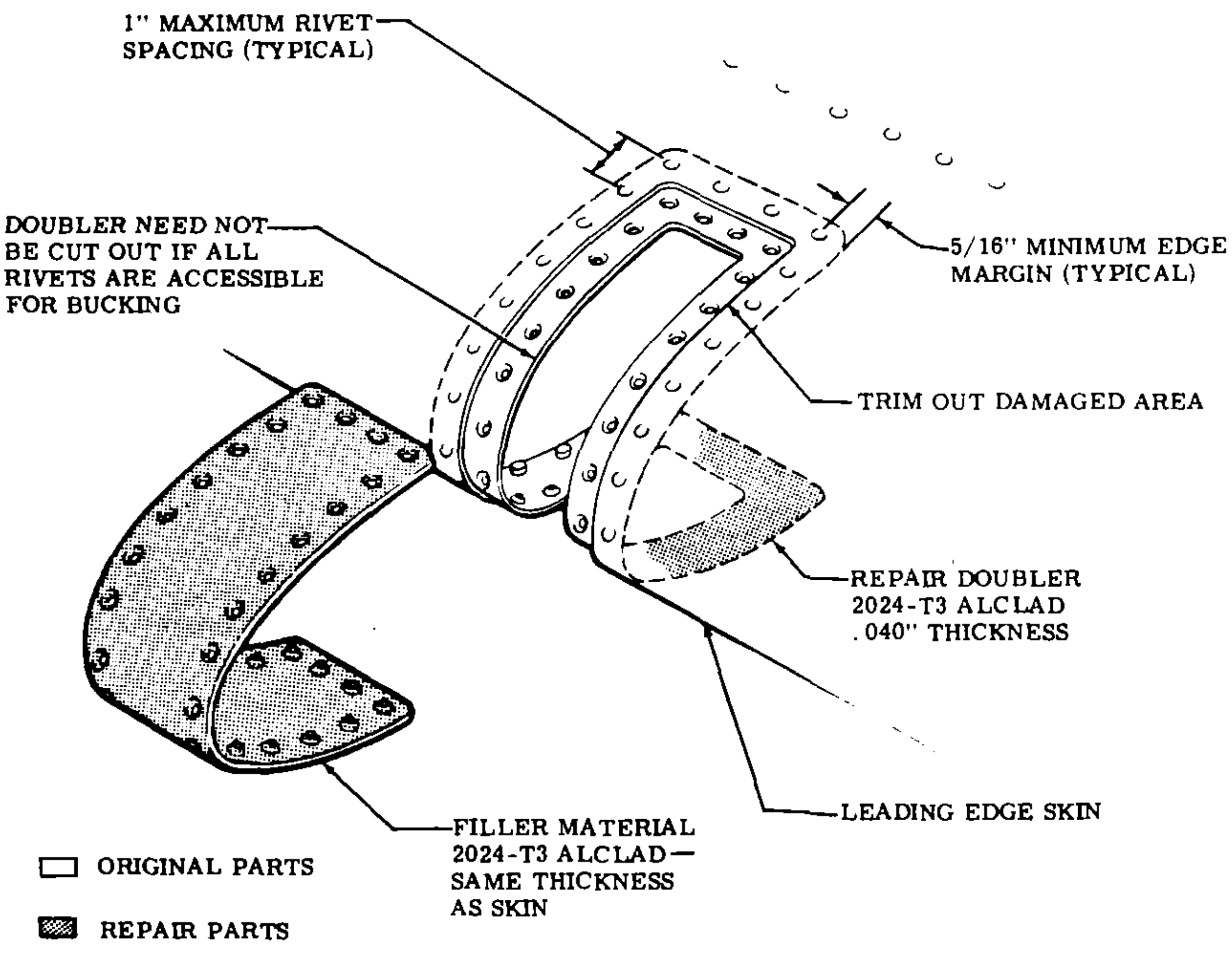


Figure 18-8. Leading Edge Repair Applicable to Aileron, Flap, and Wing

GENERAL NOTES

1. Balance control surfaces in a draft-free area.

2. Place hinge bolts through control surface hinges, and position on knife edge balancing mandrels.

3. Make sure all control surfaces are in their final flight configuration: painted (if applicable), trim tabs installed, all foreign matter removed from inside of control surface, elevator trim tab push-pull rod installed, and all tips installed.

4. Place balancing mandrels on a table or other suitable flat surface.

5. Adjust trailing edge support to fit control surface being balanced while center of balancing beam is directly over hinge line. Remove balancing beam and balance the beam itself by adding washers or nuts as required at end opposite the trailing edge support.

6. When positioning balancing beam on control surface, avoid rivets to provide a smooth surface for the beam, and keep the beam 90° to the hinge line of the control surface.

7. Paint is a considerable weight factor. In order to keep balance weight to a minimum, it is recommended that existing paint be removed before adding paint to a control surface. Increase in balance weight will also be limited by the amount of space available and clearance with adjacent parts. Good workmanship and standard repair practices should not result in unreasonable balance weight.

8. The approximate amount of weight needed may be determined by taping loose weight at the balance weight area.

9. Lighten balance weight by drilling off part of weight.

10. Make balance weight heavier by fusing bar stock solder to weight after removal from control surface. The ailerons should have balance weight increased by ordering additional weight and gang channel, listed in applicable Parts Catalogs, and installing next to existing inboard weight the minimum length necessary for correct balance, except that a length which contains at least two attaching screws must be used. If necessary, lighten new weight and/or existing weights for correct balance.

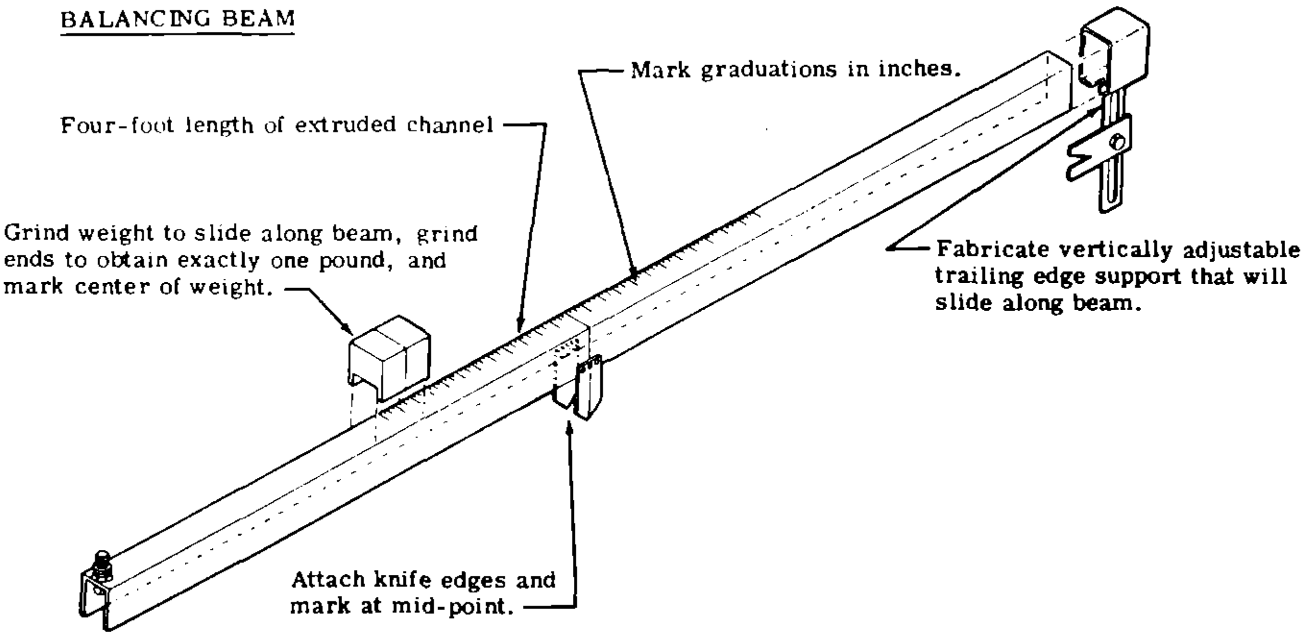


Figure 18-9. Control Surface Balancing (Sheet 1 of 3)

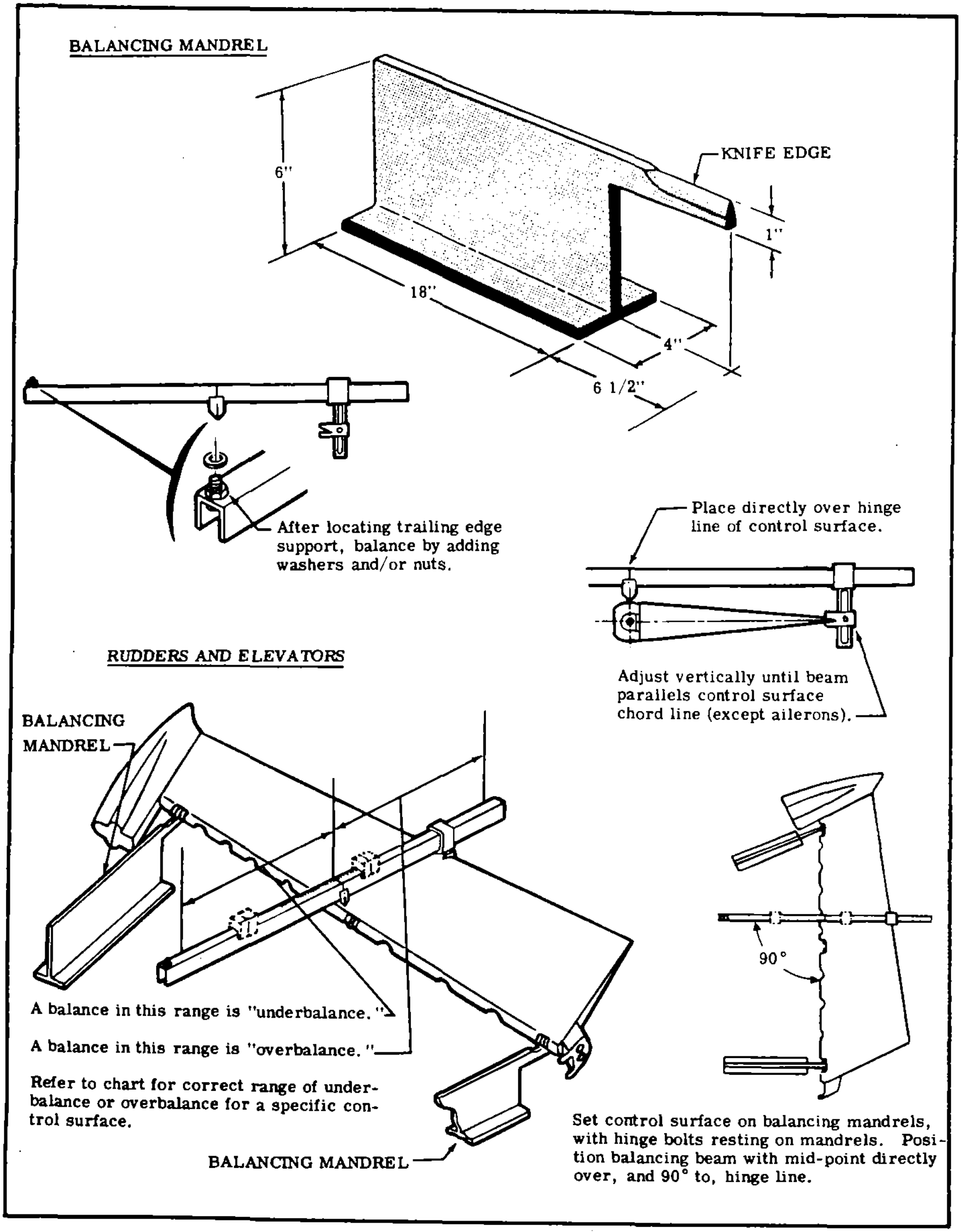
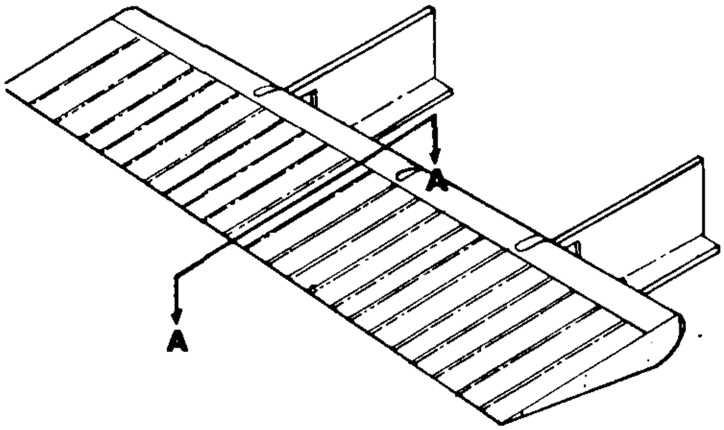


Figure 18-9. Control Surface Balancing (Sheet 2 of 3)

AILERONS



DETAIL **A-A**

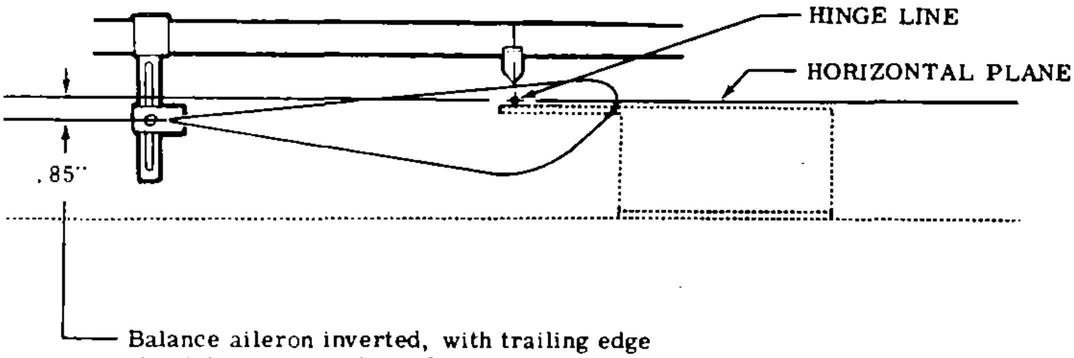


Figure 18-9. Control Surface Balancing (Sheet 3 of 3)

NOTE

Unpainted values are not limits which must be met. They are given as guides, in order that the unbalance of the control surface in the final aircraft configuration may be predicted. If the control surface in the unpainted condition falls within the unpainted limit, the mechanic may feel confident that the control surface will be acceptable after painting. However, if the surface in the unpainted condition exceeds the unpainted limit, the balance must be checked again after final painting to assure that the control surface falls within the painted unbalance limit. Refer to GENERAL NOTES on sheet 1 of figure 18-9 for specific conditions.

DEFINITIONS:

UNDERBALANCE is defined as the condition that exists when the control surface is trailing edge heavy, and is symbolized by a plus (+).

OVERBALANCE is defined as the condition that exists when the control surface is leading edge heavy, and is symbolized by a minus (-).

NOTE

The following applies to the landplane/floatolane except as noted.

NOTE

The "Balance Limits" columns list the moment tolerances within which the control surface must balance. These tolerances must never be exceeded in the final flight configuration.

CONTROL: AILERON

PAINTED (Inch-Pounds)	UNPAINTED (Inch-Pounds)
BALANCE LIMITS	BALANCE LIMITS
0.0 to +3.0	0.0 to +2.3

CONTROL: RUDDER

PAINTED (Inch-Pounds)		UNPAINTED (Inch-Pounds)	
BALANCE LIMITS		BALANCE LIMITS	
Landplane	-1.87 to +1.50	Landplane	-2.85 to 0.0
Floatplane	0.0 to + 7.25	Floatplane	0.0 to + 6.0

CONTROL: RIGHT ELEVATOR

PAINTED (Inch-Pounds)	UNPAINTED (Inch-Pounds)
BALANCE LIMITS	BALANCE LIMITS
0.0 to +12.1	0.0 to +8.5
	BEGINNING WITH 20602928 0.0 to +5.5

CONTROL: LEFT ELEVATOR

PAINTED (Inch-Pounds)	UNPAINTED (Inch-Pounds)
BALANCE LIMITS	BALANCE LIMITS
0.0 to +12.1	0.0 to +8.5
	BEGINNING WITH U20602928 0.0 to +5.0

Figure 18-10. Control Surface Balance Limits

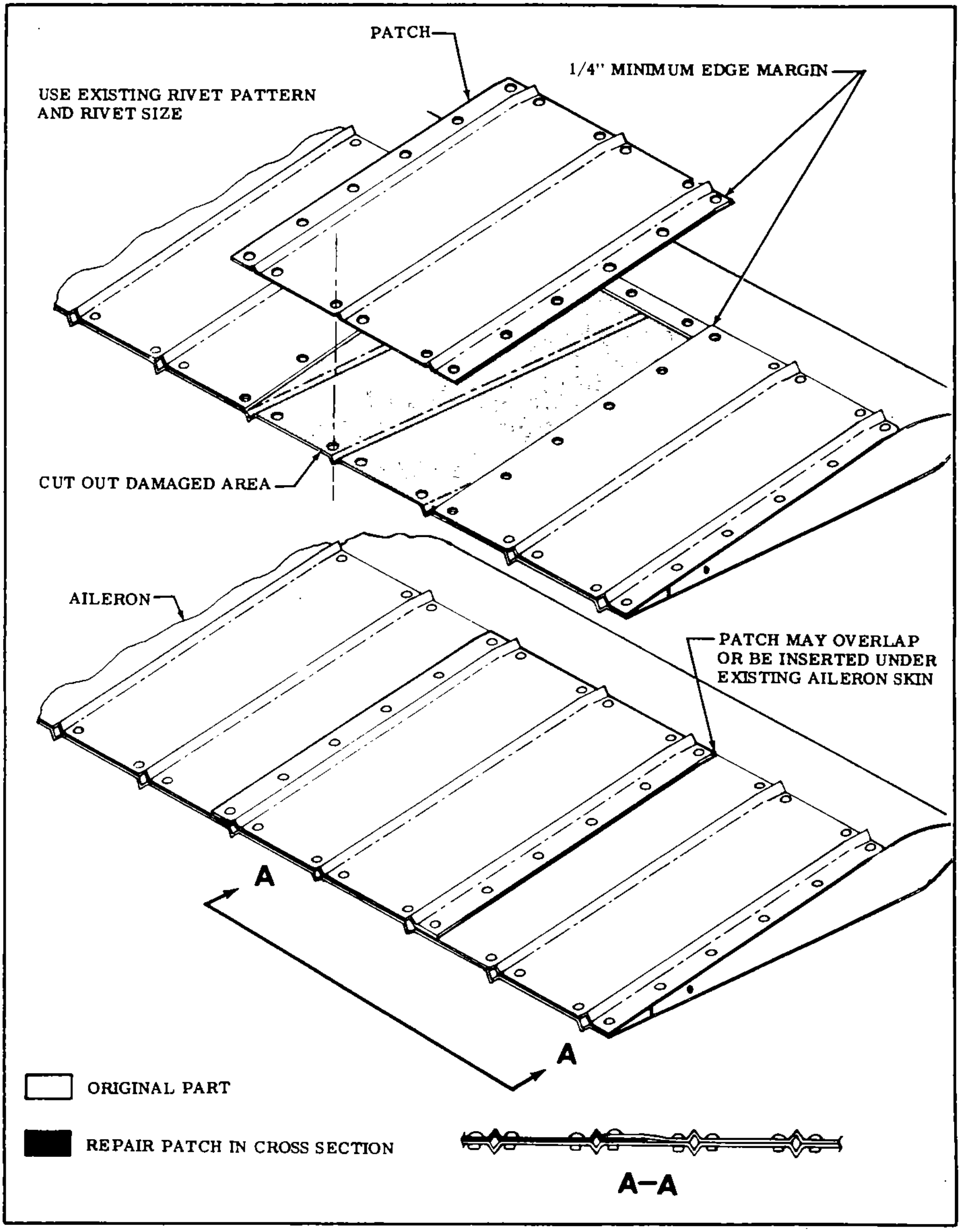
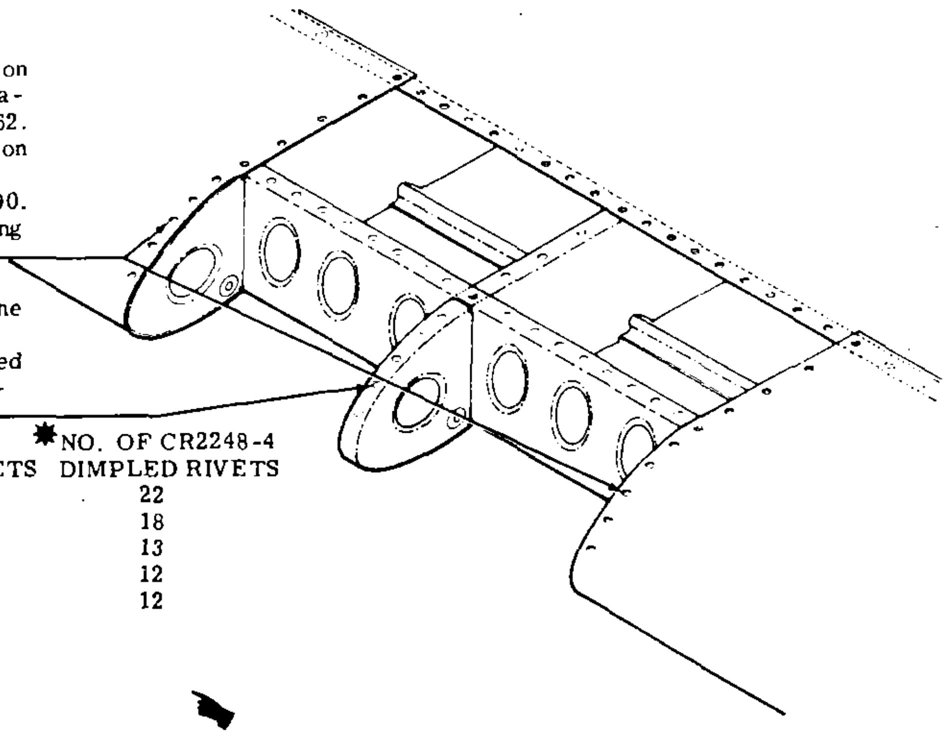


Figure 18-11. Corrugated Skin Repair

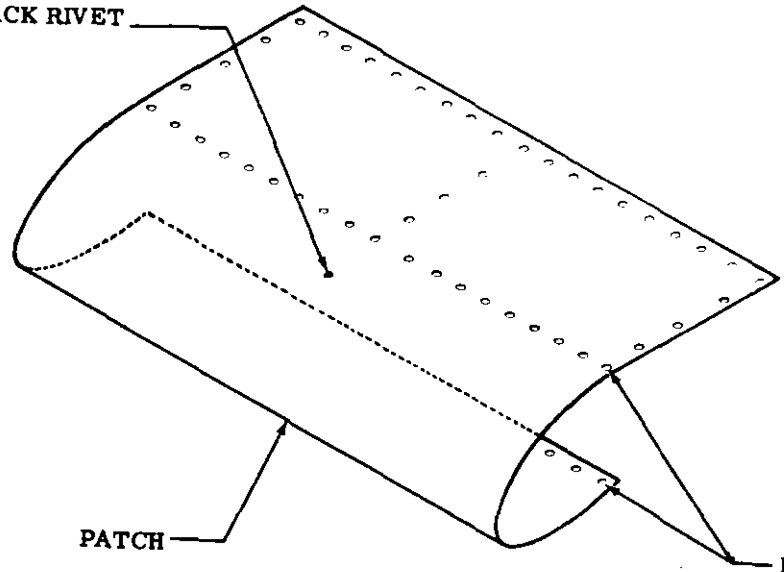
NOTES

Use rivet pattern at wing station 23.53 for repair from wing station 23.53 to wing station 85.62. Use rivet pattern at wing station 100.00 for lap splice patterns from wing station 100.00 to 190.00. Refer to figure 1-2 for wing stations.

Use rivet spacing similar to the pattern at wing station 100.00 with the number of BB4 dimpled rivets at leading edge ribs between lap splices as shown:



STATION	✱NO. OF BB4 RIVETS	✱NO. OF CR2248-4 DIMPLED RIVETS	✱NO. OF CR2249-4 RIVETS
118	18	22	27
136	15	18	23
154	11	13	17
172	10	12	15
190	10	12	15



TYPICAL LEADING EDGE SECTION

✱ NOTE

The Bulbed Cherrylock rivets listed may be substituted for BB4 dimpled rivets in inaccessible areas, provided the number of rivets installed is increased proportionately. Blind rivets should not be installed in the wing spar.

Figure 18-12. Bonded Leading Edge Repair

SECTION 19

EXTERIOR PAINTING

NOTE

This section contains standard factory materials listing and area of application. For paint number and color, refer to Aircraft Trim Plate and Parts Catalog. In all cases determine the type of paint on the aircraft as some types of paint are not compatible. Materials may be obtained from the Cessna Service Parts Center.

MATERIAL	NO/TYPE	AREA OF APPLICATION
PAINT	ACRYLIC LACQUER	Used on exterior airframe.
PAINT	EPOXY PAINT	Used on the nose gear fairing on the P206 thru 1970 models and the U206 on 1969 models.
PRIMER	ER-7 WITH ER-4 ACTIVATOR	Used with acrylic lacquer.
PRIMER	P60G2 WITH R7K46 ACTIVATOR	Used with acrylic lacquer.
THINNER	T-8402A	Used to thin acrylic lacquer and for burndown.
THINNER	T-3871	Used with epoxy (Du Pont).
THINNER	T-6487	Used with epoxy (Enmar).
SOLVENT	#2 SOLVENT	Used to clean aircraft exterior prior to priming.

NOTE

Do not paint Pitot Tube, Gas Caps or Antenna Covers which were not painted at the factory.

NOTE

When stripping aircraft of paint, use caution to avoid stripper coming in contact with ABS parts.

19-1. INTERIOR PARTS (Finish Coat of Lacquer)

a. Painting of Spare Parts.

1. Insure a clean surface by wiping with Naphtha to remove surface contamination.

CAUTION

Do not use strong solvents such as Xylol, Toluol or Lacquer Thinner since prolonged exposure can soften or embrittle ABS.

2. After the part is thoroughly dry it is ready for the lacquer topcoat. Paint must be thinned with lacquer thinner and applied as a wet coat to insure adhesion.

b. Touch Up of Previously Painted Parts.

1. Light sanding is acceptable to remove scratches and repair the surface but care must be exercised to maintain the surface texture or grain.

2. Insure a clean surface by wiping with Naphtha to remove surface contamination.

CAUTION

Do not use strong solvents such as Xylol, Toluol or Lacquer Thinner since prolonged exposure can soften or embrittle ABS.

3. After the part is thoroughly dry it is ready for the lacquer topcoat. Paint must be thinned with lacquer thinner and applied as a wet coat to insure adhesion.

NOTE

Lacquer paints can be successfully spotted in.

19-2. EXTERIOR PARTS (Acrylic Topcoat)

a. Painting of Spare Parts.

1. Lightly scuff sand to remove scratches and improve adhesion.

2. Insure a clean surface by wiping with Naphtha to remove surface contamination.

CAUTION

Do not use strong solvents such as Xylol, Toluol or Lacquer Thinner since prolonged exposure can soften or embrittle ABS.

3. After the part is thoroughly dry it is ready for the topcoat. Paint must be thinned with appropriate acrylic thinner and applied as a wet coat to insure adhesion.

b. Touch Up of Previously Painted Parts.

1. Lightly scuff sand to remove scratches and improve adhesion.

2. Insure a clean surface by wiping with Naphtha to remove surface contamination.

CAUTION

Do not use strong solvents such as Xylol, Toluol or Lacquer Thinner since prolonged exposure can soften or embrittle ABS.

3. Apply a compatible primer - surfacer and sealer.

4. After the part is thoroughly dry it is ready for the topcoat. Paint must be thinned and applied as a wet coat to insure adhesion.

NOTE

Acrylic topcoats can be successfully spotted in.

19-3. EXTERIOR PARTS (Epoxy or Polyurethane Topcoat)

a. Painting of Spare Parts and Touch Up of Painted Parts.

1. Lightly scuff sand to remove scratches and improve adhesion.

2. Insure a clean surface by wiping with Naphtha to remove surface contamination.

CAUTION

Do not use strong solvents such as Xylol, Toluol or Lacquer Thinner since prolonged exposure can soften or embrittle ABS.

3. Apply a primer compatible with Epoxy or Polyurethane topcoat.

4. After the part is thoroughly dry it is ready for the topcoat.

NOTE

Epoxy or Polyurethane topcoats cannot be successfully spotted in - finish should be applied in areas with natural breaks such as skin laps or stripe lines.

When painting interior and exterior polycarbonate parts, or where the part material is questionable, a "barrier primer" should be applied prior to the Enamel, Lacquer, Epoxy or Polyurethane topcoat.

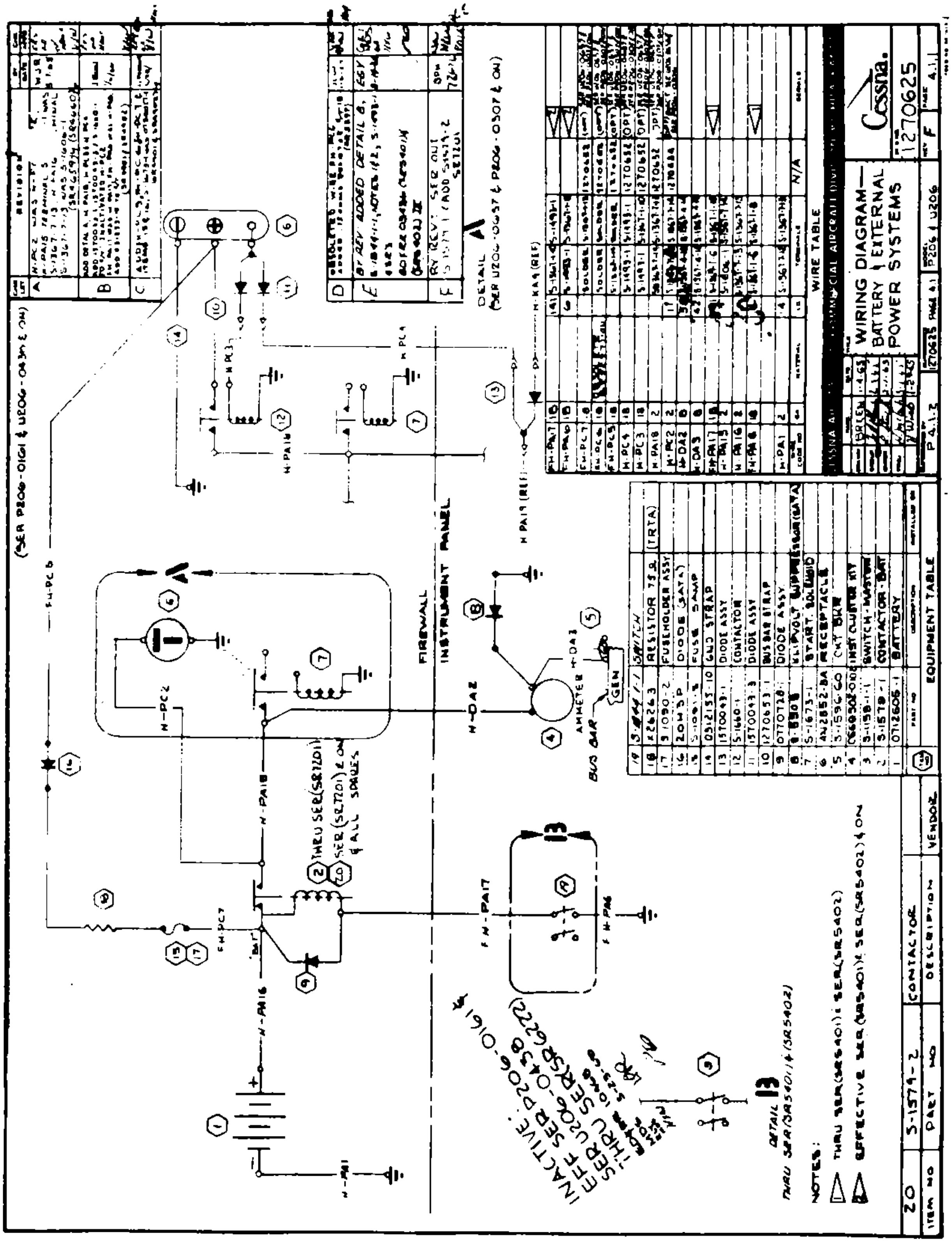
SECTION 20
WIRING DIAGRAMS

12 - VOLT

TABLE OF CONTENTS — Page

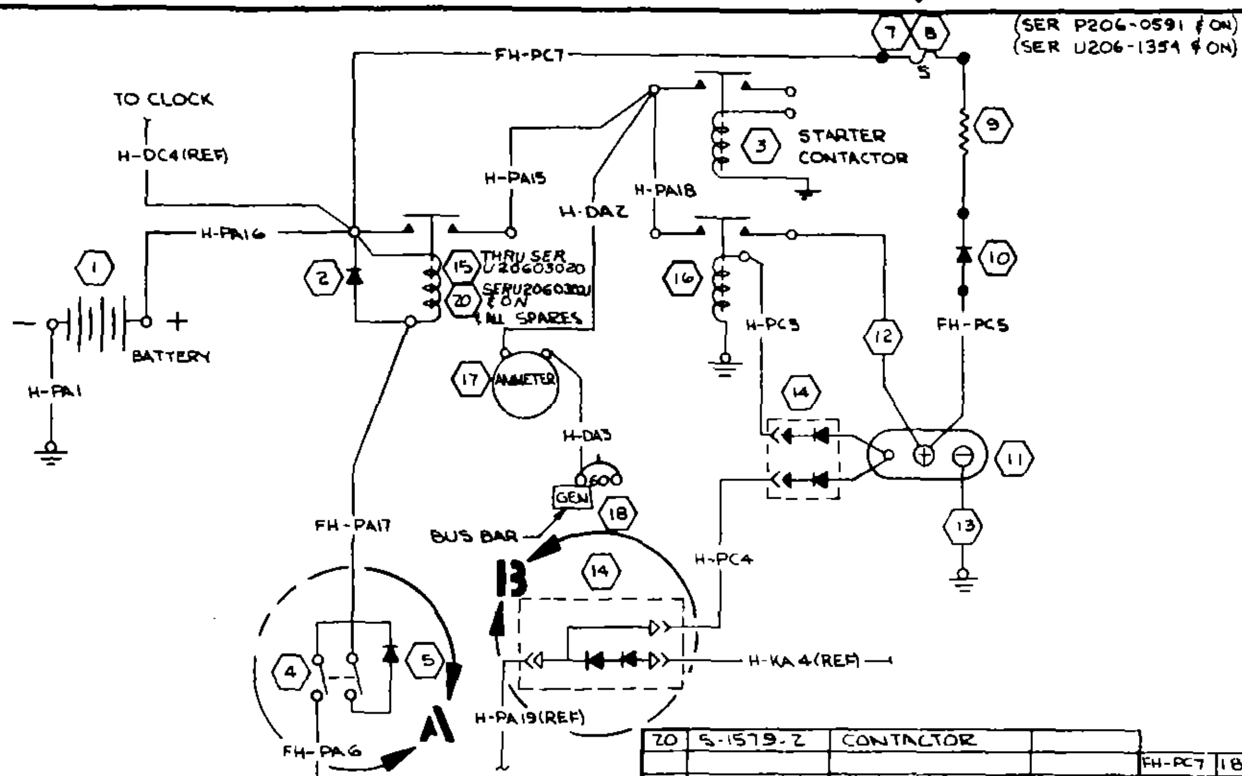
24 - VOLT

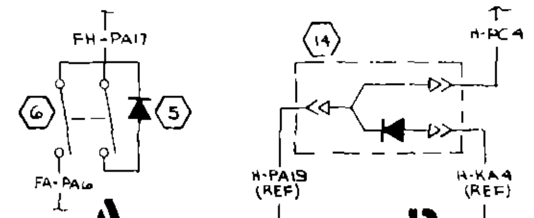
24 - VOLT



WIRING DIAGRAM—
BATTERY & EXTERNAL
POWER SYSTEMS
1270625
WIRE TABLE
EQUIPMENT TABLE
FIREWALL
INSTRUMENT PANEL
AMMETER
BUS BAR
GEN
DETAIL A
DETAIL B
NOTES:

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT S-1579-1 & ADD S-1579-2 (S27201)	BDH 6-16-72	
B	BY REV: ADD DETAIL "B" & SER (SR8259)	RS 6-12-75	





DETAIL A
THRU SER U206-1444 &
SER P206-0603

DETAIL B
THRU SER (SR8259)
(U20603020)

ITEM NO	PART NO	DESCRIPTION	VENDOR
20	S-1579-2	CONTACTOR	
18	S-1596-60	CKT BKR	
17	C669502-0102	INST CLUSTER KIT	
16	S-1660-1	CONTACTOR	
15	S-1579-1	CONTACTOR	
14	1570043	DIODE ASSY	
13	0312155-10	GND STRAP	
12	1270653-1	BUS BAR STRAP	
11	AN2552-3A	RECEPTABLE	
10	20H3P	DIODE	84970
9	X26263	RESISTOR (.75Ω)	94310
8	S-1050-2	FUSEHOLDER ASSY	
7	S-1091-5	FUSE	
6	S-1844-1-1	SWITCH	
5	0770719-2	DIODE ASSY	
4	S-1994-1-1	SWITCH	
3	S-1991-1	STARTER CONTACTOR	
2	0770728-1	DIODE ASSY	
1	0712605-1	BATTERY	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
FH-PC7	18			SOLDER	S-1367-1-13	(OPT)	
FH-PC5	18			S-1367-1-14	SOLDER	(OPT)	
H-PC4	18			S-1493-1	S-1493-1	(OPT)	
H-PC3	18			S-1493-1	S-1367-1-10	(OPT)	
H-PA18	2			S-1367-7-14	S-1367-7-13	(OPT)	
FH-PA17	18		141	S-1495-1	S-1367-1-10		
H-PA16	2			S-1367-7-15	S-1367-7-13		
H-PA15	2			S-1606-1	S-1367-7-14		
FH-PA6	18		6	S-1493-1	S-1367-1-8		
H-PA1	2		14	S-1367-7-12	S-1367-7-13		
H-DA3	8		42	S-1367-4-10	S-1367-4-10		
H-DA2	8		58	S-1367-4-10	S-1367-4-14		

WIRE TABLE

CES 1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: P 4.1.1
SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H. Wise	6-9-69
DRAWN	M. SWANEY	5-23-69
CHECK	R. YOUNGERS	5-25-69
STRESS	Roberts	6-4-69
PROJECT		6-7-69
APPD	McSwaney	6-2-69

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — BATTERY & EXTERNAL POWER SYSTEM

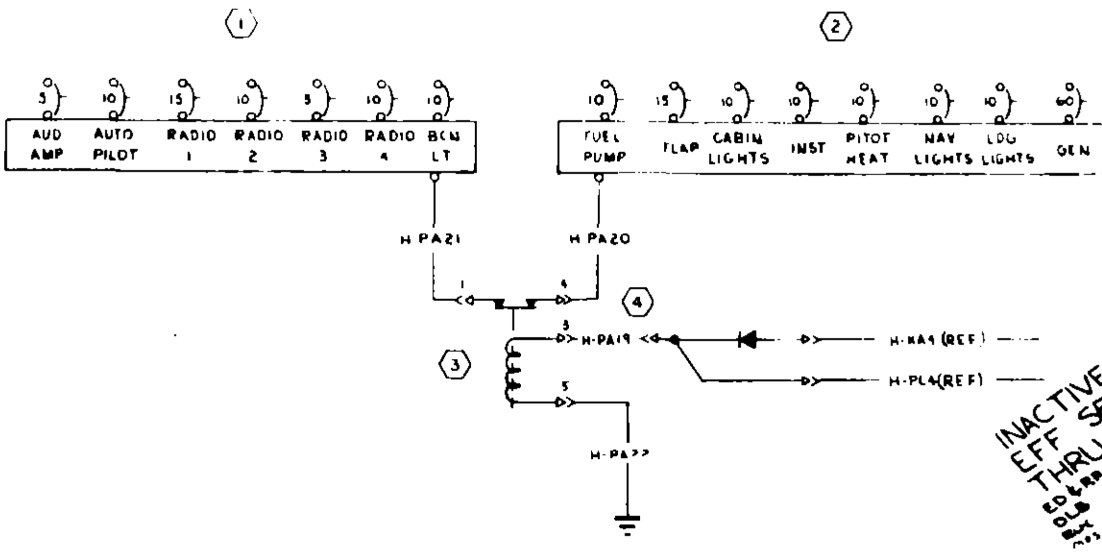
SIZE: C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE: NONE | P206 & U206 | PAGE 4.1.2

ED&RR 10468 (SR6222)

SER P206-0307 & ON
SER U206-0657 & ON

ZNG	REVISION	BY DATE	CHK APPD



INACTIVE:
EFF SER P206-0307 & SER U206-0657
THRU SER(SR6005) & SER(SR6006)
ED&RR 10422
OLD 8-1-68

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			REMARKS
H-PA22	18			S-1493-1	S-1367-1-8		
H-PA21	14			S-1493-2	S-1367-2-6		
H-PA20	14			S-1493-2	S-1367-2-6		
H-PA19	18			S-1493-1	S-1493-1		

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	INSTALLED ON
4	1570048-1	DIODE ASSY	
3	S-1660-1	RELAY-POWER	
2	[illegible]13854-1	BUS BAR-PRIMARY	
1	[illegible]13854-1	BUS BAR-ELECT	

EQUIPMENT TABLE

	NAME	DATE
DRAWN	J Wedel	1-27-66
GROUP	N. Wise	2-1-66
CHECK	[illegible]	2-7-66
PROJ	[illegible]	2-3-66

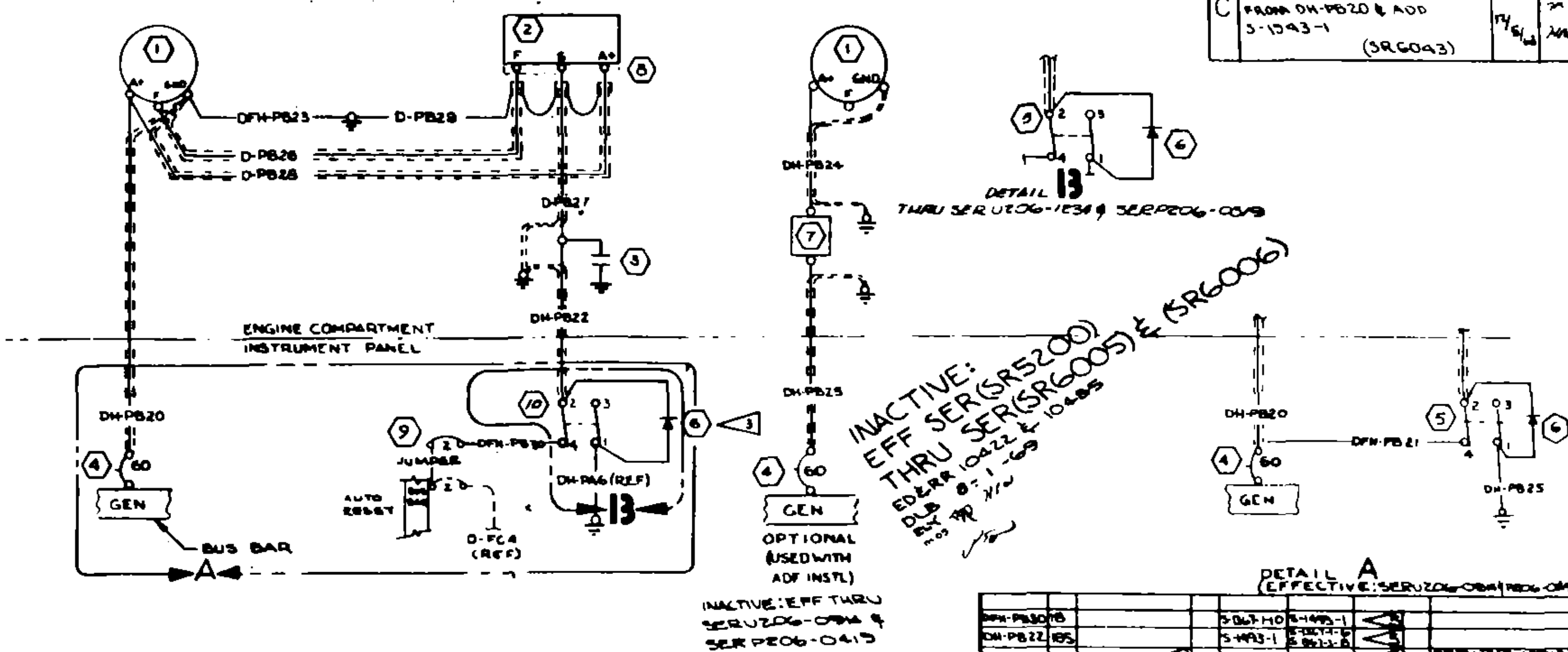
WIRING DIAGRAM—SPLIT BUS BAR

Cessna.

DWG NO. 1270625

SUPERSEDED BY: P 4.7 | MODEL: P206 & U206 | REV: | PAGE: 45

CHG LTR	REVISION	BY DATE	CHK APPD
A	ADDED DETAIL A, D-PB31, CA-2 (ITEM 9) & DFH-PB21 (SR5150, SR5190(ON))		
B	BY REV: ADDED DETAIL B, S-1844-1-1, NOTES 4 & 5, S-1493-1 & SE'S ED/RR 03436 (SR6401) & (SR6402)	EGY	
C	BY REV: DELETED S-1367-4-12 FROM DH-PB20 & ADD S-1593-1 (SR6043)	BFC	



NOTES:

1. AMP TERMINAL 42281-2 ON CONDUCTOR. AMP TERMINAL 2-323914-2 ON SHIELD & GROUNDING WIRE.
2. 8 GAUGE SHIELDED WIRE MATERIAL PER S-1534-8-9.
3. OBSERVE POLARITY SYMBOL ON DIODE WHEN INSTALLING ON SWITCH TERMINALS OR DIODE WILL FAIL WHEN SYSTEM IS ENERGIZED.

"D" PREFIX IS USED ON THESE WIRES INSTEAD OF "P". THESE WIRES ARE THE SAME AS THOSE USED IN 182. THIS DWG IS SCHEMATICALLY IDENTICAL TO 0770610 Pg. 4.7.

4. THRU SER U206-1234 & SER P206-0519
5. EFFECTIVE SER U206-1235 & SER P206-0520 & ON

ITEM NO	PART NO	DESCRIPTION	INSTALLED ON
10	S-1844-1-1	SWITCH	
9	CA-2	CKT BKR (80602)	
9	C6AB-10A7304	HOUSING (E&WB)	
7	S-1629-1	NOISE FILTER	
6	0770719-1	DIODE ASSY	
5	S-1159-1-1	SWITCH-MASTER	
4	S-1596-60	CIRCUIT BREAKER	
3	0770038-2	FILTER	
2	C611001-0101	REGULATOR	
1	C611501-0101	ALTERNATOR ASSY	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
DFH-PB30	18			S-1367-1-10	S-1493-1	5	
DH-PB22	18S			S-1493-1	[illegible]	5	
DFH-PB30		4		S-1367-1-8	S-1367-1-10	4	[illegible]
D-PB29	18			S-1367-1-12	1		
D-PB28	18S			[illegible]			
D-PB27	18S			[illegible]			
D-PB26	18S			[illegible]	1		
DH-PB25	8S	2		[illegible]	S-1367-1-6	INACTIVE:	THRU [illegible]
DH-PB24	8S	2		[illegible]	[illegible]	INACTIVE:	THRU [illegible]
DFH-PB23	10			S-1367-1-10	S-1367-1-10		
DH-PB22	18S			S-1367-1-6	[illegible]	4	
DFH-PB21	18			S-1367-1-6	S-1367-1-10	OBSOLETE	THRU [illegible]
DH-PB20	8S	2 4		[illegible]	S-1367-4-6		

WIRE TABLE

	NAME	DATE
DRAWN		3-3-66
		3-3-66
CHECK		3-10-66
APPD		2-7-66

WIRING DIAGRAM—
ALTERNATOR
SYSTEM,
60 AMP

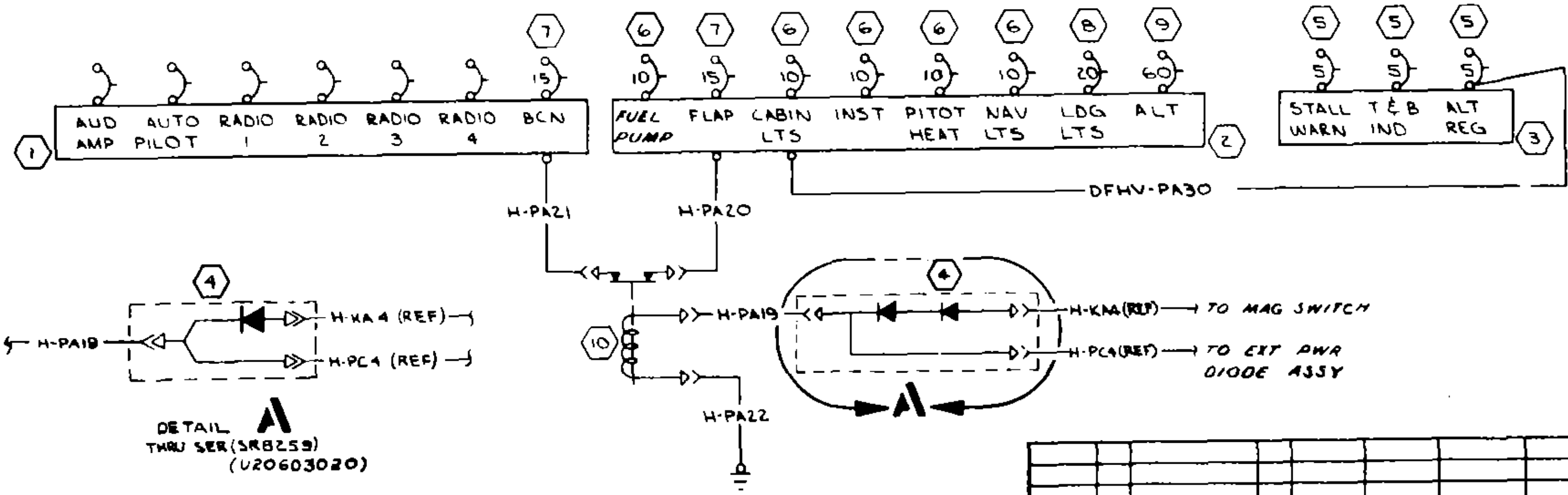
Cessna.

DWG NO 1270625

MODEL 206 — REV C — PAGE 4.6

(SER P20600604 & ON)
(SER U20601445 & ON)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: S-1917-1 WAS S-1668-1 (SR7403)	RAM 9-17-73	
B	BY REV: S-1360-15L WAS S-1360-10L AT BCN LT CKT BKR (SR8260)	BAH 5-13-75	
C	BY REV ADD DETAIL "A" & SEE (SR8259)	RS 6-12-75	



DFHV-PA30	14			S-1367-2-6	S-1367-2-6		
H-PA19	18			S-1493-1	S-1493-1		
H-PA22	18			S-1493-1	S-1367-1-8		
H-PA21	14			S-1493-2	S-1367-2-6		
H-PA20	14			S-1493-2	S-1367-2-6		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	
10	S-1917-1	RELAY-POWER	
9	S-1596-60L	CIRCUIT BKR	
8	S-1360-20L	CIRCUIT BKR	
7	S-1360-15L	CIRCUIT BKR	
6	S-1360-10L	CIRCUIT BKR	
5	S-1360-5L	CIRCUIT BKR	
4	1570043	DIODE ASSY	
3	0713854-3	BUS BAR-PRIMARY 2	
2	0713854-2	BUS BAR-PRIMARY 1	
1	0713854-1	BUS BAR-ELECTRONIC	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX=CESSNA
STD NO

SUPERSEDES P 4.5

SUPERSEDED BY

CONTRACT NO

	NAME	DATE
DESIGN	HENSHAW	4-7-69
GROUP	H. Wise	8-6-69
DRAWN	D.L. BURKE	8-1-69
CHECK	R. YOUNGERS	8-5-69
STRESS		8-7-69
PROJ		4-7-69
APPD		8-6-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV
5800 E PAWNEE
WICHITA, KANSAS

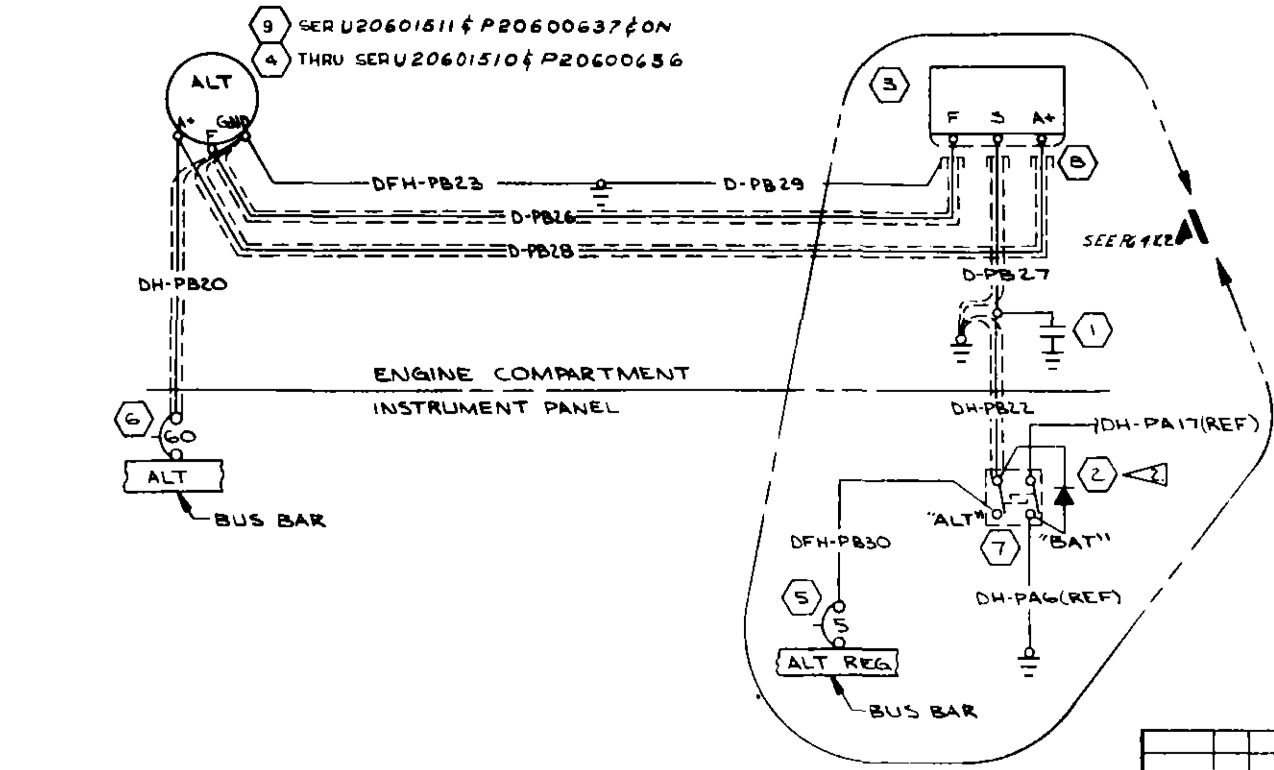
TITLE
WIRING DIAGRAM — SPLIT BUS BAR

SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | P206 & U206 | PAGE: 4.7

ED & RR 10422 (SR6008) & (SR6006)

FORM NO 80 2158



INACTIVE
EFF THRU SER U20602159 IX

LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT C611601-0101; SER IN C611501-0102 ED&RR 10611 (SR6292)	RAINES 10/22/69	
B	BY REV: ADDED DETAIL A; C593001-0101 OVERVOLTAGE SENSOR; S-2135-1 LIGHT ASSY; WIRES H-PB31 & H-PB32. S-1943-2 TERM WAS S-1943-1 (SR6766) IX	WDA 6-1-71	
C	BY REV. REPLACED S-1370-1 TERM WITH S-1635-1 TERM ON H-PB31 & H-PB32. ADDED S-1637-1 & S-1637-2 HOUSINGS TO EQUIP TABLE. ADD TVA-1315 CAP TO F/D & E/T (SER 206-01747, 206-01751)	WRA 11-4-71	

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-PB32	18			S-1635-1	42281-2	(00779)	SER (SR6766): ON
H-PB31	18			S-1367-1-6	S-1635-1		SER (SR6766): ON
DH-PB30	18			S-1367-1-10	S-1493-1		THRU SER (SR6766)
DH-PB22	18S			S-1493-1	S-1367-1-2 S-1367-2-8		
D-PB29	18			S-1367-1-12	1		
D-PB28	18S			S-1367-1-12 S-1367-2-10			
D-PB27	18S			S-1367-1-6 S-1367-2-8			
D-PB26	18S			S-1367-1-10 S-1367-3-10	1		
DFH-PB23	10			S-1367-3-10	S-1367-3-10		
DH-PB20	8S	S-1534-8-9		S-1943-2 S-1367-3-10	S-1367-4-10		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
14	TVA-1315	CAPACITOR	56289
13	S-1637-2	HOUSING-SOCKET	
12	S-1637-1	HOUSING-PIN	
11	S-2135-1	LIGHT ASSY	
10	C593001-0101	OVERVOLTAGE SENSOR	
9	C611501-0102	ALTERNATOR ASSY	
8	C6AB-10A730-A	HOUSING	88690
7	S-1994-1-1	SWITCH	
6	S-1596-60	CIRCUIT BKR	
5	S-1360-5	CIRCUIT BKR	
4	C611501-0101	ALTERNATOR ASSY	
3	C611001-0101	REGULATOR	
2	0770719-2	DIODE ASSY	
1	0770038-2	FILTER	

EQUIPMENT TABLE

NOTES:

1. AMP TERMINAL 42281-2 (00779) ON CONDUCTOR. AMP TERMINAL 2-323931-2 ON SHIELD & GROUNDING WIRE
2. OBSERVE POLARITY SYMBOL ON DIODE WHEN INSTALLING ON SWITCH TERMINALS OR DIODE WILL FAIL WHEN SYSTEM IS ENERGIZED

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC NO
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 4.6

SUPERSEDED BY: P 4.8.3

CONTRACT NO.

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP	H. Wall	8-7-69
DRAWN	D.L. BURKE	8-7-69
CHECK	R. YOUNGERS	8-5-69
STRESS		8-7-69
PROJ		8-7-69
APPD		8-6-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA KANSAS

TITLE
WIRING DIAGRAM — ALTERNATOR SYSTEM, 60 AMP

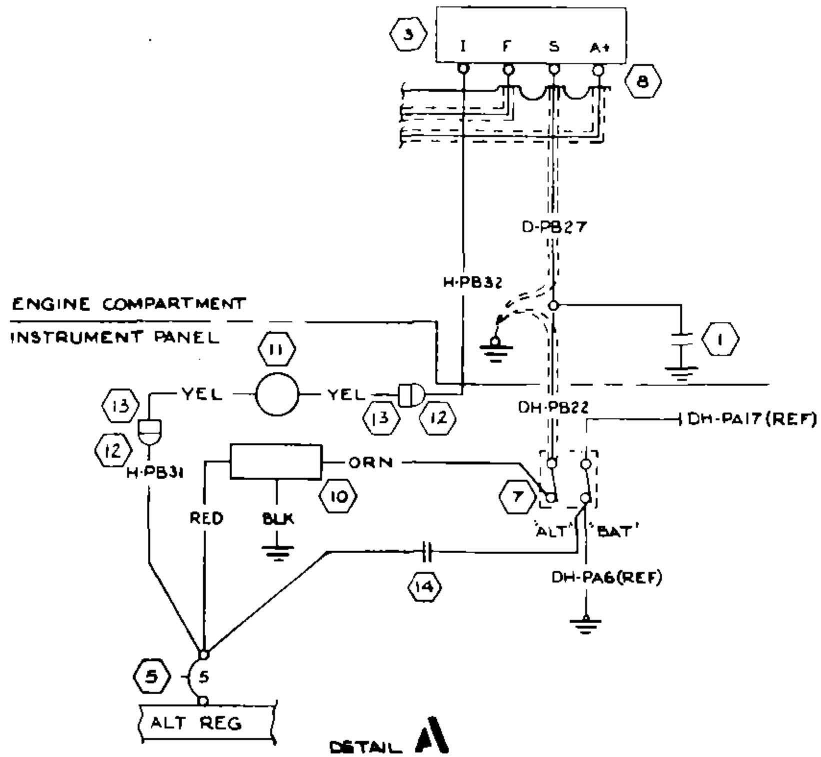
SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE NONE | P206 & U206 | PAGE 4.8

FORM NO. 80-2158

ED&RR 10422 (SR6005) IX
ED&RR 10485 (SR6006) IX

REVISION			
LET	DESCRIPTION	DATE	APPD
C	SEE PAGE 4.8 FOR REVS.		



DETAIL A
SERU20601701 & ON

INACTIVE
EFF THRU SERU20602193
4-23-73

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS	SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX-CESSNA SPEC. NO. S-XXX OR CMXXXX-CESSNA STD. NO.

SUPERSEDES:

SUPERSEDED BY: P 4.8.3

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	N. Wise	6-1-71
DRAWN	ACKERSON	6-1-71
CHECK	LK. WHITE	5-26-71
STRESS	[illegible]	5-28-71
PROJ	[illegible]	5-28-71
APPD		
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

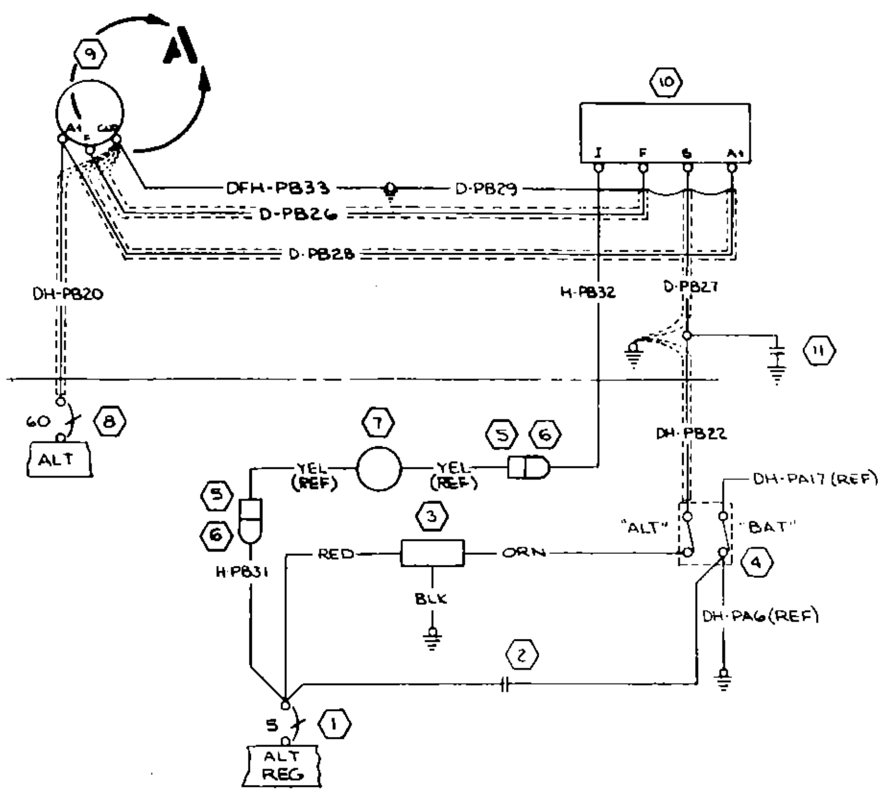
TITLE: WIRING DIAGRAM — ALTERNATOR SYSTEM, 60 AMP

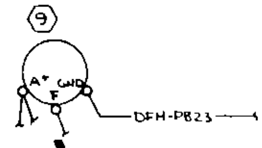
SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE | U206 | PAGE: 4.8.2

FORM NO SO-2198

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL "A", PB33 & SER; SER OUT PB23 (SR7639)	RAM 7-31-73	
B	BY REV: S-1943-2 TERM., WAS S-1367-3-10 TERM. (DH-PB20) ADD WIRE LENGTHS (NOW SHOP PRACTICE)	TON 9-10-73	





DETAIL A
THRU SER (SR7639)

NOTES:

1. AMP TERMINAL 42281-2 (00779) ON CONDUCTOR. AMP TERMINAL 2-323931-2 ON SHIELD & GROUNDING WIRE.

ITEM NO	PART NO.	DESCRIPTION	
11	0710038-2	FILTER	
10	C611001-0201	VOLTAGE REGULATOR	
9	C611501-0102	ALTERNATOR ASSY	
8	S-1596-60L	CKT BKR	
7	S-2135-1	LIGHT ASSY	
6	S-1637-1	HOUSING	
5	S-1637-2	HOUSING	
4	S-1994-1-1	SWITCH	
3	C593001-0101	OVERVOLTAGE SENSOR	
2	TVA-1315	CAPACITOR	
1	S-1360-5L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
DFH-PB33	8	S-1562-8-9	21	S-1943-3	S-1367-4-10		SER (SR7639) & ON
D-PB29	18		8	S-1367-1-12	1		
H-PB32	18			S-1636-1	42281-2		
H-PB31	18			S-1367-1-6	S-1635-1		
D-PB28	18S		23	S-1367-1-12 S-1367-2-10	1		
D-PB27	18S		10	S-1367-1-6 S-1367-2-8	1		
D-PB26	18S		23	S-1367-1-10 S-1367-2-10	1		
DFH-PB23	10		21	S-1367-3-10	S-1367-3-10		THRU SER (SR7639)
DH-PB22	18S		24	S-1493-1	S-1367-1-6 S-1367-3-8		
DH-PB20	8S	S-1534-8-9	56	S-1367-4-10	S-1943-2		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 4.8 & 4.8.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-17-73
GROUP	V. White	4-27-73
DRAWN	WHITE	4-23-73
CHECK	E. YOUNGERS	4-27-73
STRESS	C. Paie	20 Aug 73
PROJ		4-18-73
APPD		
OTHER		

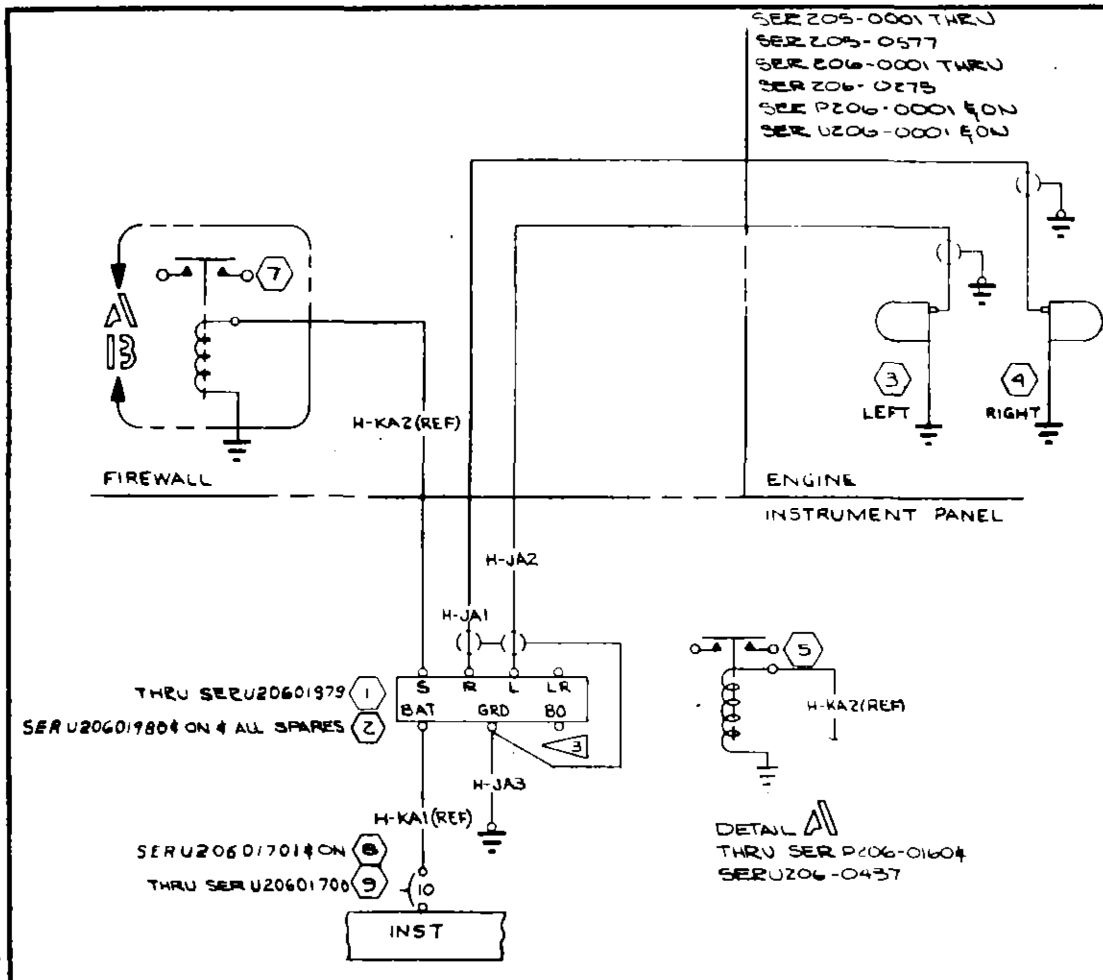
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ALTERNATOR SYSTEM, 60 AMP, 12V

SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | (SR 7403) B | PAGE: 4.8.3

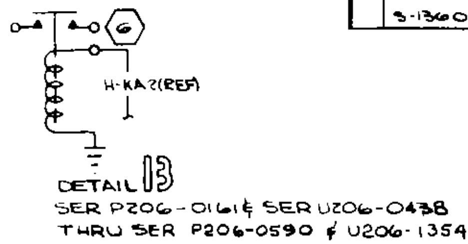
FORM NO. 80-2198

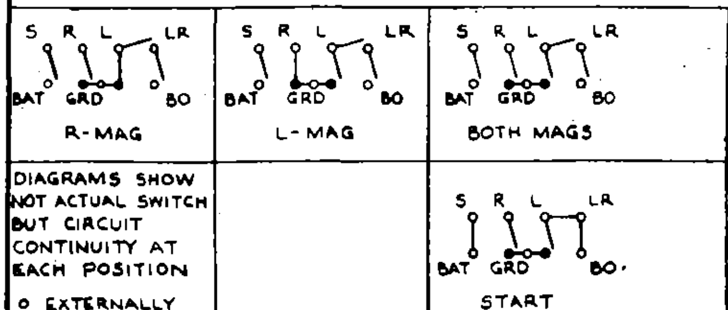


NOTES:

1. TERMINATE WITH 7.
2. SHORTING BAR BETWEEN "R" AND UNMARKED TERMINAL ADJACENT TO IT IS NOT USED FOR THIS CIRCUIT.
3. TERMINATE SHIELDS ON JA-1 & JA-2 WIRES AT THE SWITCH WITH S-1367-2-6 TERMINALS & CONNECT TO "GRD" TERMINAL ON SWITCH.
4. S-1367-1-10 TERMINAL ON HOT LEAD. S-1367-3-10 ON SHIELD.

CHG LET	REVISION	BY / DATE	CHK / APPD
A	REMOVED N/A FROM STD WIRES 0713129-1 WAS S-1255-1 ADD NOTE 2 & 3 REMOVED PUSH FROM SWITCH POSITIONS ADD SHIELDED WIRE TO JA1 & JA2 WIRES ADD NOTE 4 (SR3624-10)	GLW 4-2-62	
B	18DS WAS 18S MATERIAL ON JA1 & JA2 WIRES		
C	ADD MODEL 206 1270461-1 BUS BAR WAS 1270429-1 S-1360-10 CKT BKR WAS S-1232-10 ON BUS BAR, INST WAS INST LIGHTS (SR4058-6) (SR3985-6)	GLW 6-17-63	
D	ADDED P206 & U206 TO MODEL BLOCK REMOVED 1270461-1 BUS BAR, H-KA1 & H-KA2 FROM E/T; ADDED WIRE LENGTHS TO W/T	WJR 6-26-64	
E	ON WIRES H-JA1 & H-JA2, 18-S WIRE WAS 18-DS	GLW 11-1-65	
F	BY REV: ADD DETAIL "A" & "B", S-1673-1, S-1991-1 & SR; SER OUT 0750027-1 ED & RR 10468 (SR6222)	MOS 5-25-69	RLY
G	BY REV: C292501-0101 WAS 0713129-1, SER OUT C292501-0101 SER IN C292501-0105; SER OUT S-1860-10, SER IN S-1360-10L (SR7126), (SR6766)	RLY 5-1-72	





DIAGRAMS SHOW NOT ACTUAL SWITCH BUT CIRCUIT CONTINUITY AT EACH POSITION

o EXTERNALLY ACCESSIBLE TERMINAL

ITEM NO	PART NO	DESCRIPTION	SERIALS
9	S-1360-10	CIRCUIT BREAKER	
8	S-1360-10L	CIRCUIT BKR	
7	S-1991-1	CONTACTOR	
6	S-1673-1	CONTACTOR	
5	0750027-1	START SOLENOID	
4	SLICK #662	RIGHT MAGNETO	
3	SLICK #662	LEFT MAGNETO	
2	C292501-0105	IGNITION SWITCH	
1	C292501-0101	SWITCH	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-JA3	18		9	S-1367-1-6	S-1367-1-8		
H-JA2	18-S		63	S-1367-1-6	4	3	
H-JA1	18-S		63	S-1367-1-6	4	3	

WIRE TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	G WOOD	12-7-61
GROUP		1-29-62
CHECK		3-5-62
PROJ		3-2-62

TITLE: WIRING DIAGRAM — IGNITION SYSTEM

Cessna.

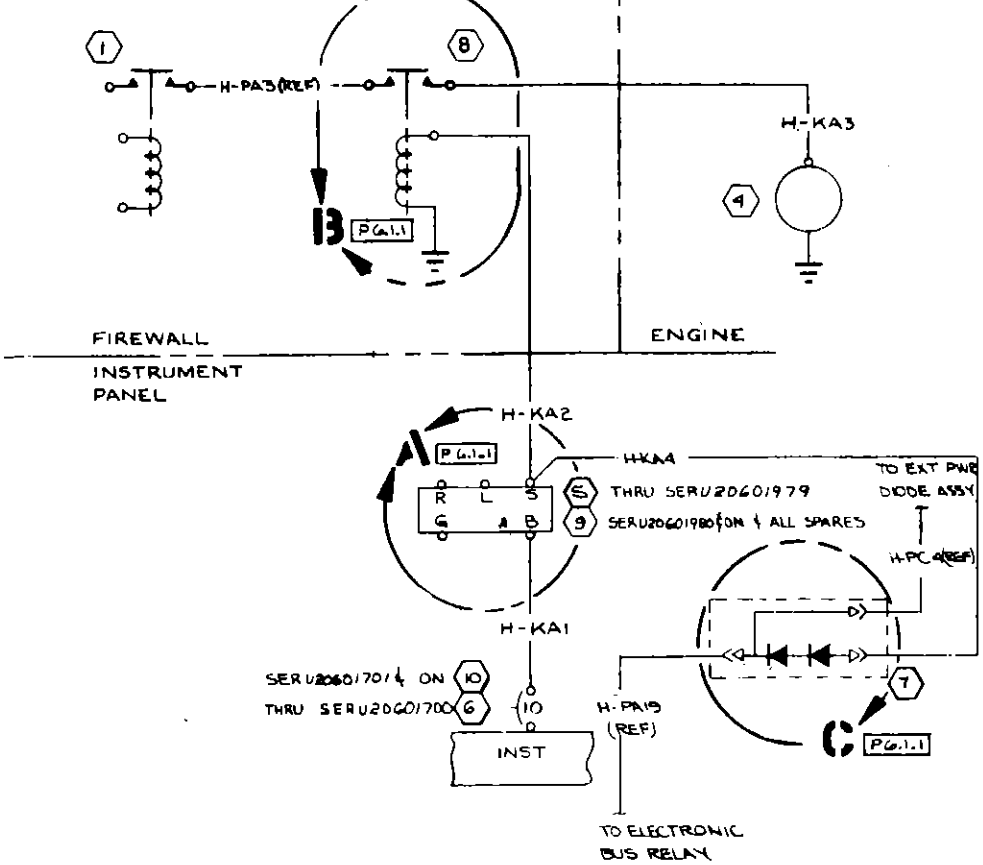
DWG NO 1270625

SUPERSEDED BY | SUPERSEDES | MODEL 205, P206, U206 | REV G | PAGE 5.1

FORM NO 80-161

SER 205-0001 THRU
SER 205-0577
SER 206-0001 THRU
SER 206-0275
SER P206-0001 & ON
SER U206-0001 & ON

NOTE:
1 PART OF 1250600 ENGINE INSTALLATION.



CHG LET	REVISION	BY / DATE	CHK / APPD
A	REMOVED N/A FROM STD WIRES 0713129-1 WAS S-1255-1 (SR3694-10)	GLN 4-3-62	
B	ADD MODEL 206 S-1360-10 CKT BKR WAS S-1232-10 1270461-1 BUS BAR WAS 1270439-1 ON BUS BAR, INST WAS INST LIGHTS (SR 4038-6)(SR 3983-6)	GLW 6-17-63	
C	REMOVED 1270461-1 BUS BAR FROM E/T; ADDED P206 & U206 TO E/M REMOVED H-PA3 FROM E/T; ADDED WIRE LENGTHS TO W/T	6-29-64	
D	BY REV: ADD DETAIL A, 1570043-1 & H-KA4 ED&RR 10279	FER 12-3-68	
E	BY REV: ADD DETAIL "B" & "C", S-1673-1, S-1991-1 & SR; SER OUT 0750027-1 ED&RR 10468 (SR6222)	MDS 5-23-69	RLY
F	BY REV: C292601-0101 WAS 0713129-1; SER OUT C292601-0101, SER IN C292501-0105; SER OUT S-1360-10, SER IN S-1360-10L (SR7126). (SR6766) II (REF)	RLY 3-1-72	
G	BY REV: ADD PG 6.1.1 & DETAIL "C" & SER (SR8259)	RS 6-12-75	JCY

ITEM NO	PART NO	DESCRIPTION	SERIALS
10	S-1360-10L	CIRCUIT BKR	
9	C292501-0105	IGNITION SWITCH	
8	S-1991-1	CONTACTOR	
7	1570043	DIODE ASSY	
6	S-1360-10	CIRCUIT BREAKER	
5	C292501-0101	SWITCH, MAG	
4	1	STARTER	
3	0750027-1	START. SOLENOID	
2	S-1673-1	CONTACTOR	
1	0712603-2	BAT. CONTACTOR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-KA4	18			SEE KA2	S-1493-1		SER P206-0504 & ON SER U206-0627 & ON
H-KA3	2		12	S-1367-7-14	S-1367-7-14		
H-KA2	18		89	S-1367-1-6	S-1367-1-10		
H-KA1	18		8	S-1367-1-6	S-1367-1-8		

WIRE TABLE

CESSNA AIRCRAFT CO · COMMERCIAL AIRCRAFT DIVISION · WICHITA, KANSAS

	NAME	DATE
DRAWN	G WOOD	12-6-61
GROUP		1-29-62
CHECK	R. Stuck	2-5-62
PROJ		2-7-62

TITLE: WIRING DIAGRAM — STARTER SYSTEM

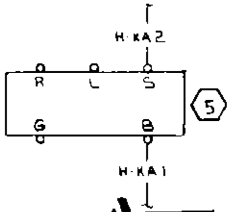
Cessna.

DWG NO 1270625

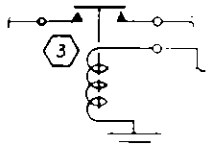
SUPERSEDED BY: | SUPERSEDES: | MODEL 205, P206 & U206 | REV F | PAGE 6.1.0

FORM NO 80-161

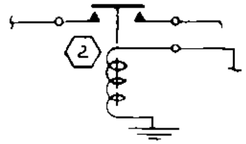
REVISION			
LET	DESCRIPTION	DATE	APPD
G	SEE PG 6.1.0 FOR REVISION		



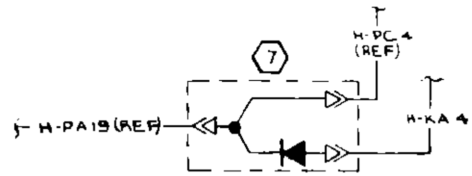
DETAIL **A** P 6.1.0
THUR SER P206-0306 &
SER U206-0656



DETAIL **B** P 6.1.0
THUR SER P206-0160 &
SER U206-0437



DATAIL **B** P 6.1.0
SER P206-161 & SER U206-0438
THUR SER P206-0590 & SER U206-1354



DETAIL **C** P6.1.0
THRU SER(SR8259)
(U20603020)

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

	PART NO.	DESCRIPTION	
	EQUIPMENT TABLE		

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA
STD. NO.

SUPERSEDES:

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	J. Darley	
GROUP	W. H. Vanderheiden	6-25-75
DRAWN	R SWANSON	6-12-75
CHECK	J. YOUEL	6-18-75
STRESS		
PROJ		
APPD	JRS	
OTHER		

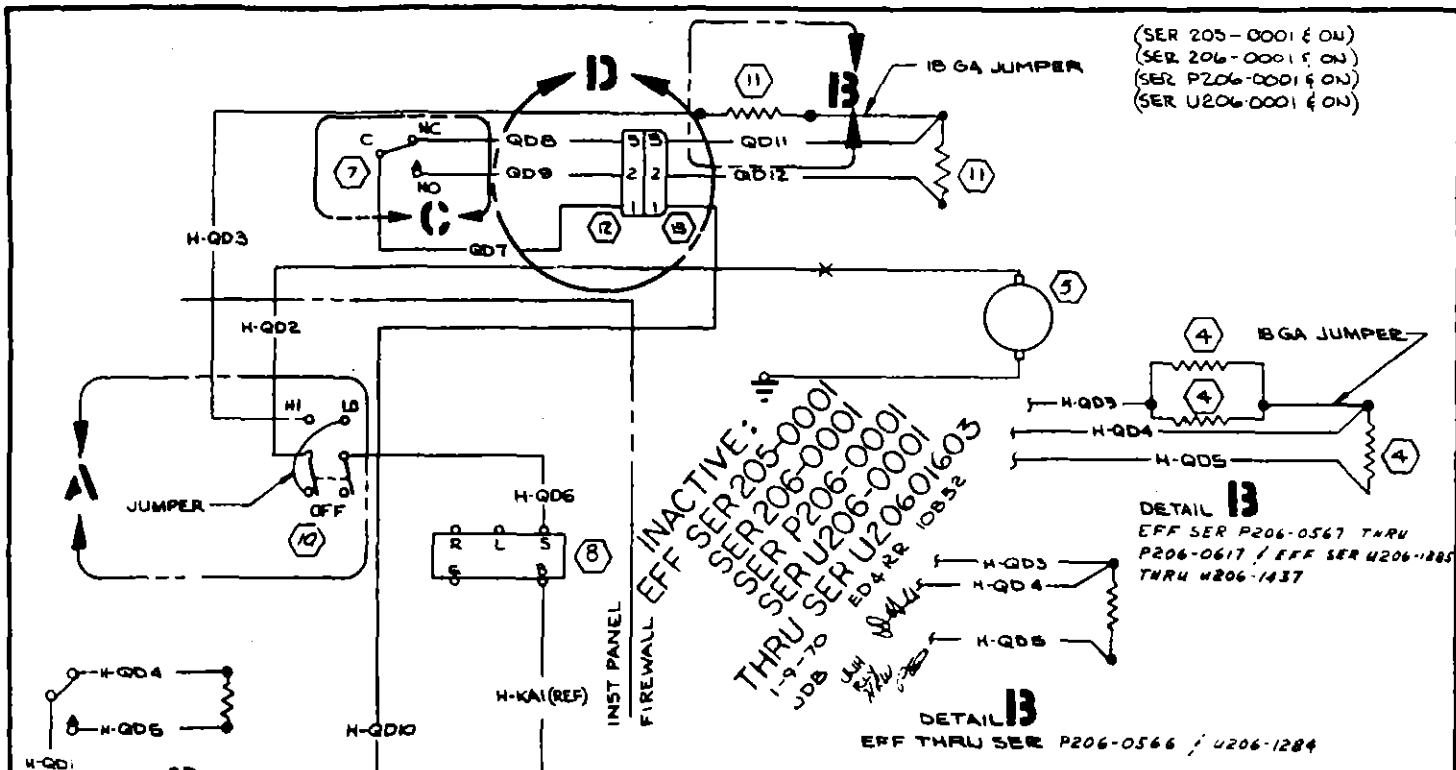
Cessna. AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

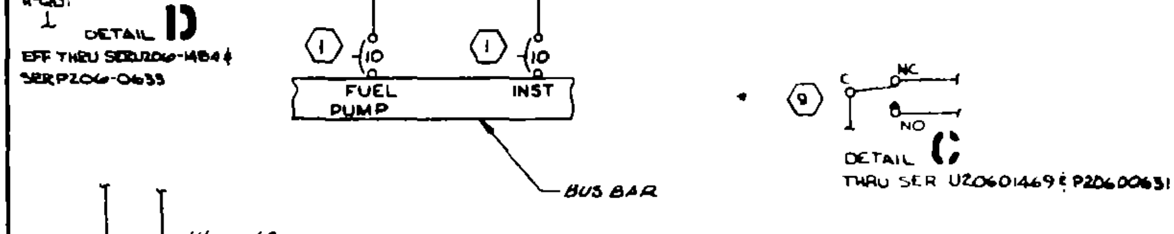
TITLE
WIRING DIAGRAM — STARTER SYSTEM

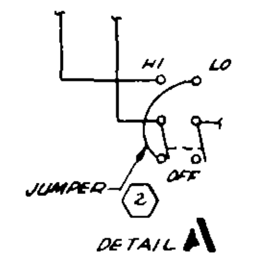
SIZE	CODE IDENT NO	DWG NO
C	71379	1270625

SCALE: NONE | 205, P206, U206 | PAGE: 6.1.1

FORM NO. 80-5158







DETAIL A
THRU SER P206-0519 / U206-1234

NOTES:

1. THRU SER P206-0519 / U206-1234
2. EFFECTIVE SER P206-0520 / U206-1234 / ON

ITEM NO	PART NO	DESCRIPTION	
13	S-1638-2	HOUSING	
12	S-1638-1	HOUSING	
11	MX-0020-031AV	RESISTOR	(94310)
10	S-1846-1-2	SWITCH	
9	AN3234-1	SWITCH	
8	0713129-1	SWITCH	
7	1250706-3	SWITCH ASSY	
6			
5	4140-00-17	FUEL PUMP	
4	MOR-20-2	RESISTOR	(94310)
3			
2	S-1160-1-2	SWITCH	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

CHG LET	REVISION	BY DATE	CHK APPD
A	REMOVED N/A FROM STD WIRES REMOVED AN3546-2-3 TERM BLOCK, MS3106A-10SL-4S PLUG, MS3057-4A ADAPTER & A-76 VALVE. 4140-00-1 FUEL PUMP WAS 1216012-1. ADD MOR-20-2 RESISTOR REMOVED H-QE1 & H-QE2 (SR3694-10)	GLW 4-9-62	RRS
B	REMOVED FROM FIELD RADIO COMPARTMENT & TUNNEL; ADDED FIREWALL (SR 3694-10)	WJR 5/24/62	RRS
C	REWIRED FUEL PUMP. ADDED H-QD4, H-QD5, H-QD6 WIRES. ON H-QD2 S-1410-1 WAS S-1367-1-6 H-QD3 SOLDER WAS S-1367-1-6 ADD Y3-1 SW. ADD JUMPER. REMOVED 10D192A1 CAP. (SR 3694-10)	GLW 6-13-62	RRS
D	ADD MODEL 206 S-1360-10 CKT BKR WAS S-1232-10 1270461-1 BUS BAR WAS 1270429-1 ON BUS BAR, INST WAS INST LIGHTS (SR 4038-6) (SR 3985-6)	GLW 6-1-64	RRS
E	S-1160-1-2 WAS S-1160-1-1; REMOVED 1270461-1 BUS BAR FROM E/T MODEL P206 & U206 TO B/M; REMOVED ... FROM E/T; ADDED ... TO ...	WJR 6-30-64	
F	BY REV: ADDED DETAIL A, S-1846-1-2, NOTES 1 & 2, S-1493-1 & SR'S ED & RR 03436 (SR5401)(SR5402) II	EGY 8-14-64	
G	BY REV: ADD DETAIL B, SER & 18 GA JUMPER ED & RR 10374A (SR6153)	RLY 2-7-69	
H	BY REV: ADD DETAIL "B" & MX-0020-031AV TO EQUIP TABLE ED & RR 10631 (SR6338)	BPH 8-12-69	
J	BY REV: ADD DETAIL C, 1250706-3 SER; SER OUT AN3234-1 ED & RR 10796 (SR6421)	DOR 10/29/69	
K	BY REV: ADD DETAIL D, S-1638-1 & -2, QD7, QD8, QD9, QD10, QD11 & QD12 ED & RR ...	RLY 2-13-70	

WIRE CODE NO	GA	MATERIAL	LC	TERMINALS	TERMINALS		SERIALS
H-QD12	18			S-1635-2	SOLDER		
H-QD11	18			S-1635-2	SOLDER		
H-QD10	18			S-1367-1-8	S-1635-2		
H-QD9	18			S-1636-2	S-1367-1-4		
H-QD8	18			S-1636-2	S-1367-1-4		
H-QD7	18			S-1636-2	S-1367-1-4		
H-QD6	18		8	S-1492-1	S-1367-1-8	2	
H-QD3	18		135	S-1493-1	SOLDER	2	
H-QD2	18		135	S-1493-1	S-1370-1	2	
H-QD6	18		8	S-1367-1-6	S-1367-1-8	1	
H-QD5	18		32	S-1367-1-4	SOLDER		THRU SER U206-1484 & P206-0633
H-QD4	18		32	S-1367-1-4	SOLDER		THRU SER U206-1484 & P206-0633
H-QD3	18		135	S-1367-1-6	SOLDER	1	
H-QD2	18		135	S-1367-1-6	S-1370-1	1	
H-QD1	18		108	S-1367-1-4	S-1367-1-8		THRU SER U206-1484 & P206-0633

WIRE TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	G WOOD	12-30-61
GROUP		1-19-62
CHECK		1-5-62
APPD		8-2-62

TITLE: WIRING DIAGRAM — FUEL PUMP SYSTEM

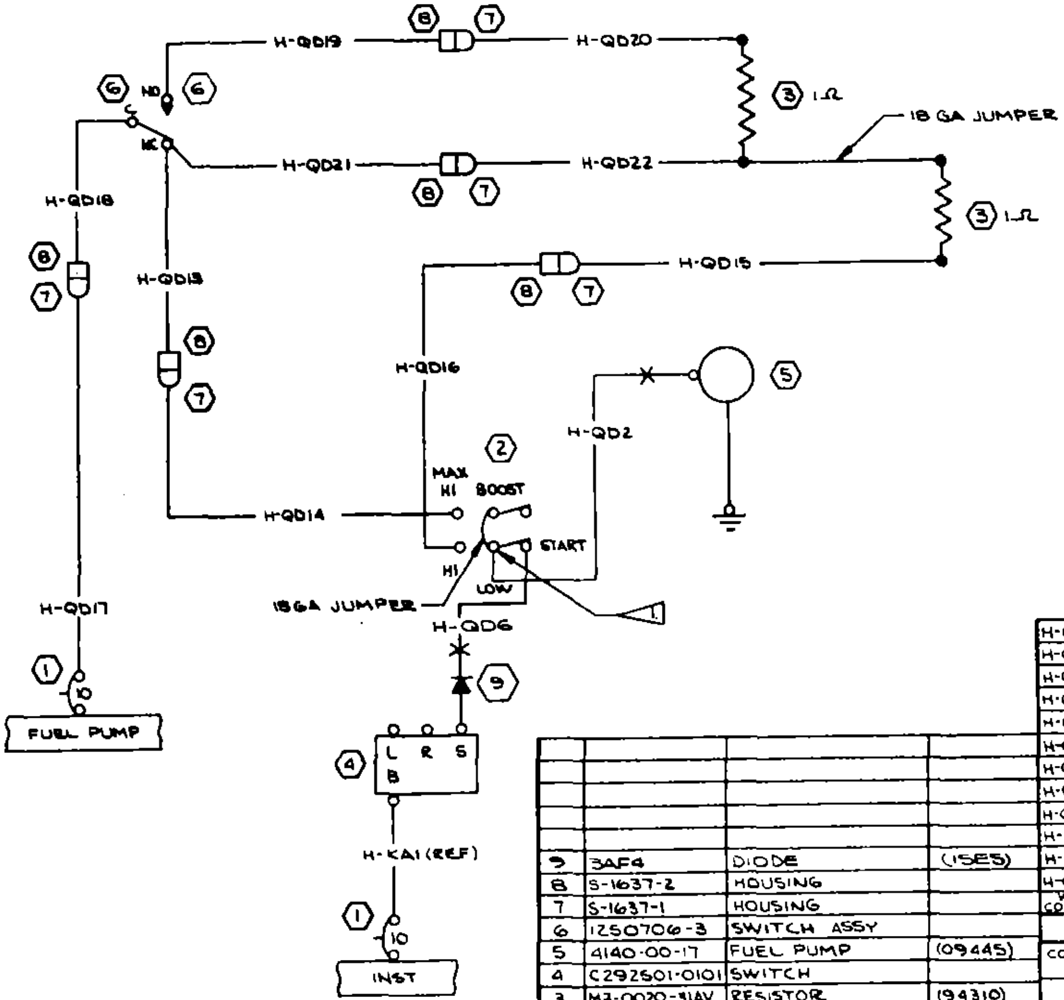
Cessna.

DWG NO 1270625

SUPERSEDED BY: P 7.1.1 | SUPERSEDES: | MODEL: 205, P206 & U206 | REV: K | PAGE: 7.1.0

FORM NO 80-61

LET	DESCRIPTION	DATE	APPD
	REVISION		
A	BY REV: ADD NOTE 1 ED&RR10074 (NOW SHOP PRACTICE)	RLY 6-9-70	
B	BY REV: ADD 1250706-5 & SER; SER OUT 1250706-3 (SR7403) IX	DLP 1-5-73	
C	BY REV: DELETE 1250706-5 & SER/1250706-3; INACT DWG. (SR7403) IX	GKG 4-30-73	



INACTIVE: THRU SER U20602199 IX GKG 4-30-73

NOTES:

1. INSTALL S-2028-1 ADAPTER

H-QD2	18			S-1493-1	S-1370-1			
H-QD6	18			S-1493-1	S-1370-1			
H-QD16	18			S-1636-1	S-1493-1			
H-QD15	18			SOLDER	S-1635-1			
H-QD14	18			S-1635-1	S-1493-1			
H-QD13	18			S-1367-1-4	S-1636-1			
H-QD22	18			S-1635-1	SOLDER			
H-QD21	18			S-1367-1-4	S-1636-1			
H-QD20	18			S-1635-1	SOLDER			
H-QD19	18			S-1367-1-4	S-1636-1			
H-QD18	18			S-1636-1	S-1367-1-4			
H-QD17	18			S-1367-1-8	S-1635-1			
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS				SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
9	3AF4	DIODE	(1SES)
8	S-1637-2	HOUSING	
7	S-1637-1	HOUSING	
6	1250706-3	SWITCH ASSY	
5	4140-00-17	FUEL PUMP	(09445)
4	C292501-0101	SWITCH	
3	MZ-0020-31AV	RESISTOR	(94310)
2	S-2055-1-1	SWITCH	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 7.1.0

SUPERSEDED BY: P 7.1.4

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	3-30-70
GROUP	H. Wise	3-30-70
DRAWN	R. YOUNGERS	3-17-70
CHECK	L.K. WHITE	3-25-70
STRESS		
PROJ		
APPD	R. YOUNGERS	3-30-70
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE

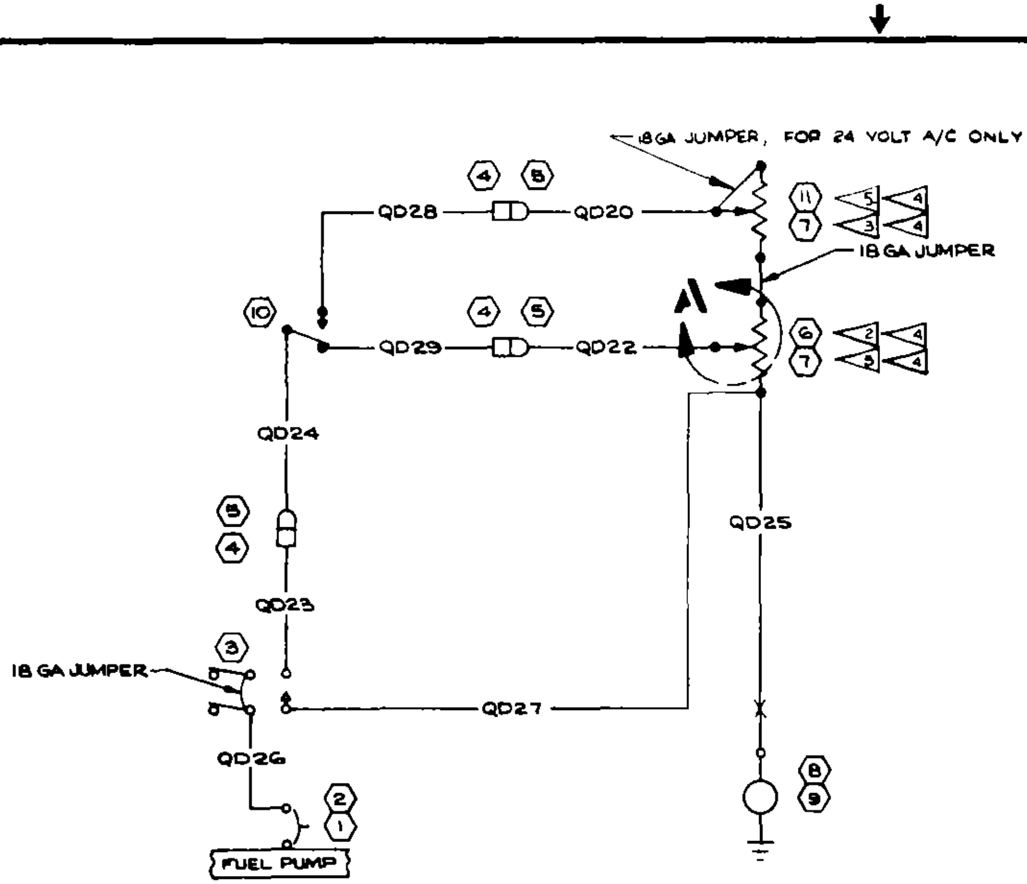
WIRING DIAGRAM — FUEL PUMP SYSTEM

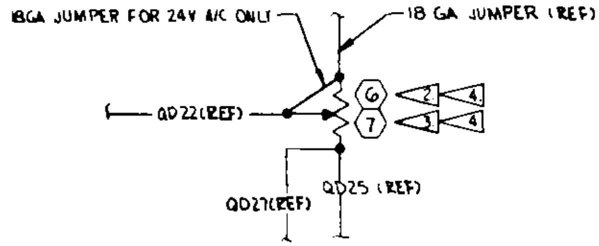
SIZE	CODE IDENT. NO	DWG NO
C	71379	1270625
SCALE: NONE	206	PAGE: 7.1.3

(SR6486) ED&RR10935

FORM NO. 80-2188

LET	DESCRIPTION	DATE	APPD
REVISION			
A	BY REV: SOLDER/QD27 WAS SEE QD25; ADD WIRE LENGTHS; REVISED NOTE 1. DELETE NOTE 1; ADD NOTES 2,3 & 4; ADD JUMPER FOR AMOR20-10 RESISTOR (NOW SHOP PRACTICE)(SR 8082)	DEF 2-8-74 BLA	JCY JRB WLS
B	BY REV: ADD AMOR 20-5 & NOTE 5; REVISE NOTES 2 & 3; ADD DETAIL 'A' AND SER'S (SR8297)	GW 7-30-75	JCY JRB





DETAIL A
EFF THRU SER (SR8297)

NOTE:

1. ~~PLACE YELLOW ROCKER SWITCH IN HIGH BOOST POSITION ADJUST RESISTORS WITH 13.75 ± .25 VOLTS FOR 14 VOLT SYSTEM AND 27.75 ± .25 FOR 28 VOLT SYSTEM. OPEN TO FULL THROTTLE & ADJUST 1ST RESISTOR TO PRODUCE 125 LBS/HR INDICATION ON FUEL FLOW METER. ADJUST 2ND RESISTOR WITH THROTTLE CLOSED TO PRODUCE 40 LBS/HR INDICATION ON FUEL FLOW METER. RESISTORS ARE IN SERIES WHEN THROTTLE IS CLOSED.~~

2. ADJUST AMOR 20-1.5 TO 1.0 ± .25 OHMS PRIOR TO INSTALLATION

3. ADJUST AMOR 20-10 TO 3.5 ± .5 OHMS PRIOR TO INSTALLATION

4. READJUST RESISTOR AS REQD AFTER INSTL TO COMPLY WITH FUEL FLOW REQUIRMENTS PER CES 1243

5. ADJUST AMOR 20-5 TO 2.0 ± .25 OHMS PRIOR TO INSTALLATION

ITEM NO.	PART NO.	DESCRIPTION	
11	AMOR 20-5	RESISTOR (12V)	
10	USMS-B	SWITCH	
9	4140-00-17	FUEL PUMP (12V)	
8	1426033-3	FUEL PUMP (24V)	
7	AMOR20-10	RESISTOR (24V)	
6	AMOR20-1.5	RESISTOR (12V)	
5	S-1637-1	HOUSING	
4	S-1637-2	HOUSING	
3	S-1846-3-2	SWITCH	
2	S-1360-10L	CIRCUIT BKR (12V)	
1	S-1360-5L	CIRCUIT BKR (24V)	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
QD27	18		80	S-1493-1	SOLDER		
QD26	18		13	S-1493-1	S-1367-1-6		
QD25	18		80	SOLDER	S-1370-1		
QD24	18		10	SOLDER	S-1635-1		
QD23	18		78	S-1493-1	S-1636-1		
QD22	18		50	SOLDER	S-1635-1		
QD29	18		10	SOLDER	S-1636-1		
QD20	18		18	SOLDER	S-1635-1		
QD28	18		10	SOLDER	S-1636-1		

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H Wise	4-30-73
DRAWN	GRUBB	4-30-73
CHECK	R.YOUNGERS	4-30-73
STRESS		
PROJ	Bergman	5-1-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — FUEL PUMP SYSTEM (12V & 24V)

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 7.1.2 & P 7.1.6

SUPERSEDED BY:

SIZE	CODE IDENT NO.	DWG NO
C	71379	1270625

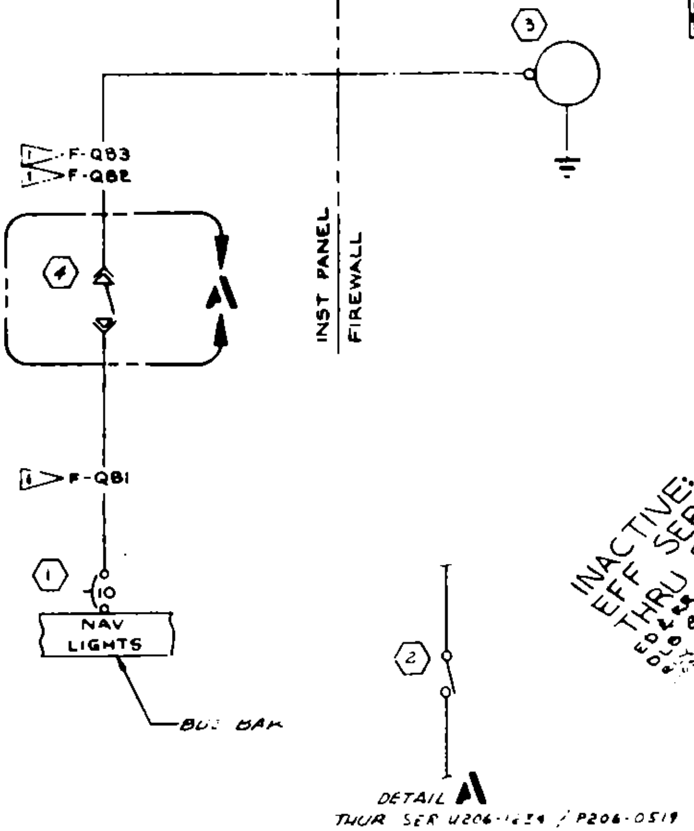
SCALE: NONE | 206 | PAGE: 7.1.4

(SR7405) B

FORM NO. 80-2186

SER 205-0001 THRU
SER 205-0577
SER 206-0001 THRU
SER 206-0275
SER P206-0001 & ON
SER U206-0001 & ON

NOTE:
1. "F" PREFIX USED ON THIS DRAWING INSTEAD OF "H" BECAUSE WIRES ARE SAME AS THOSE USED ON MODEL 210. THIS DIAGRAM IS SCHEMATICALLY IDENTICAL TO 1270405 PAGE 7.2.
2. THRU SER U206-1234 & SER P206-0519
3. EFFECTIVE SER U206-1235 & SER P206-0520 & ON



INACTIVE:
EFF SER P206-0001 & SER U206-0001
THRU SER P206-0603, & SER U206-1444

CHG LET	REVISION	BY DATE	CHK APPD
A	ADD OPT TO TITLE [illegible]	[illegible]	[illegible]
B	ADD MODEL [illegible] S-1360-10 CKT BKR WAS [illegible] [illegible]	[illegible]	
C	[illegible]	[illegible]	
D	[illegible]	[illegible]	[illegible]
E	ADDED F-QB3 [illegible]	[illegible]	[illegible]
F	BY REV ADDED DETAIL A, S-1845-1-1, NOTES 2 & 3, S-1493-1 & 3 ERS EO/ER 03436 (SRS 401)(SRS 402)	EGY [illegible]	[illegible]
G	BY REV: S-1845-2-1 WAS S-1845-1-1 EO/ER 10315	LDL [illegible]	[illegible]

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
F-QB3	18			S-1493-1	S-1367-1-8		3
F-QB1	18		7	S-1493-1	S-1367-1-8		3
F-QB3	18			S-1367-1-6	S-1367-1-10	1200711	SER P206-0161 / SER U206-[illegible] & ON 2
F-QB2	18		60	S-1367-1-6	S-1367-1-10	1200437	INACTIVE SER P206-0160 THRU [illegible]
F-QB1	18		7	S-1367-1-6	S-1367-1-8	1200711	2
H-QB2	18		60	S-1367-1-6	S-1367-1-10	1200437	OBSOLETE
H-QB1	18		7	S-1367-1-6	S-1367-1-8	1200437	OBSOLETE

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	SERIALS
4	S-1845-2-1	SWITCH	
3	AN4078-1	OIL DIL VALVE	
2	S-1158-1-1	SWITCH	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA, KANSAS

	NAME	DATE
DRAWN	G WOOD	12-27-61
[illegible]	[illegible]	1-29-62
CHECK	[illegible]	2-5-62
[illegible]	[illegible]	2-7-62

WIRING DIAGRAM — OIL DILUTION SYSTEM (OPT)

Cessna.

DWG NO 1270625

SUPERSEDED BY P 7.3 | SUPERSEDES | MODEL 205, P[illegible] | REV G | PAGE 7.2

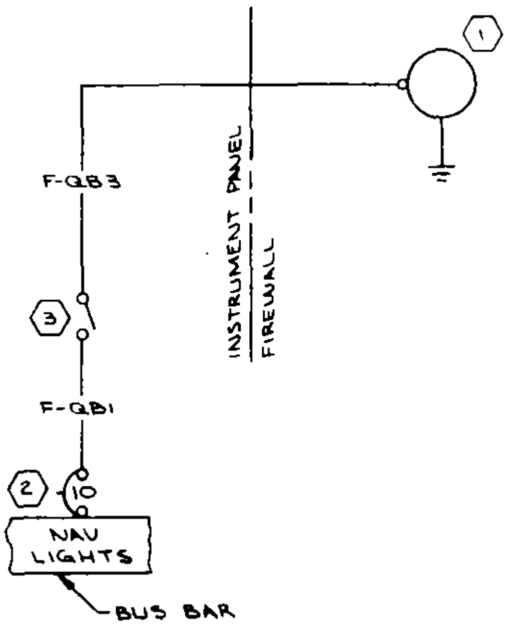
FORM NO 80-161

(SER P20600604 & ON)
(SER U20601445 & ON)

REVISION			
LET	DESCRIPTION	DATE	APPD

NOTES:

1. "F" PREFIX USED ON THIS DRAWING INSTEAD OF "H" BECAUSE WIRES ARE SAME AS THOSE USED ON MODEL 210. THIS DIAGRAM IS SCHEMATICALLY IDENTICAL TO 1270701 PAGE 7.2



INACTIVE
EFF THRU SER U20602139
4-23-73

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		SERIALS
F-QB3	18			S-1493-1	S-1367-1-10	
F-QB1	18		7	S-1493-1	S-1367-1-6	

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
3	S-1845-2-2	SWITCH
2	S-1360-10	CIRCUIT BREAKER
1	AN4078-1	OIL DIL VALVE

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 7.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP		8-7-69
DRAWN	D.L. BURKE	8-7-69
CHECK	R. YOUNGERS	8-5-69
STRESS		8-7-69
PROJ		8-7-69
APPD		8-6-67
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — OIL DILUTION SYSTEM (OPT)

SIZE C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE NONE | U206 & P206 | PAGE 7.3

FORM NO 60 2158

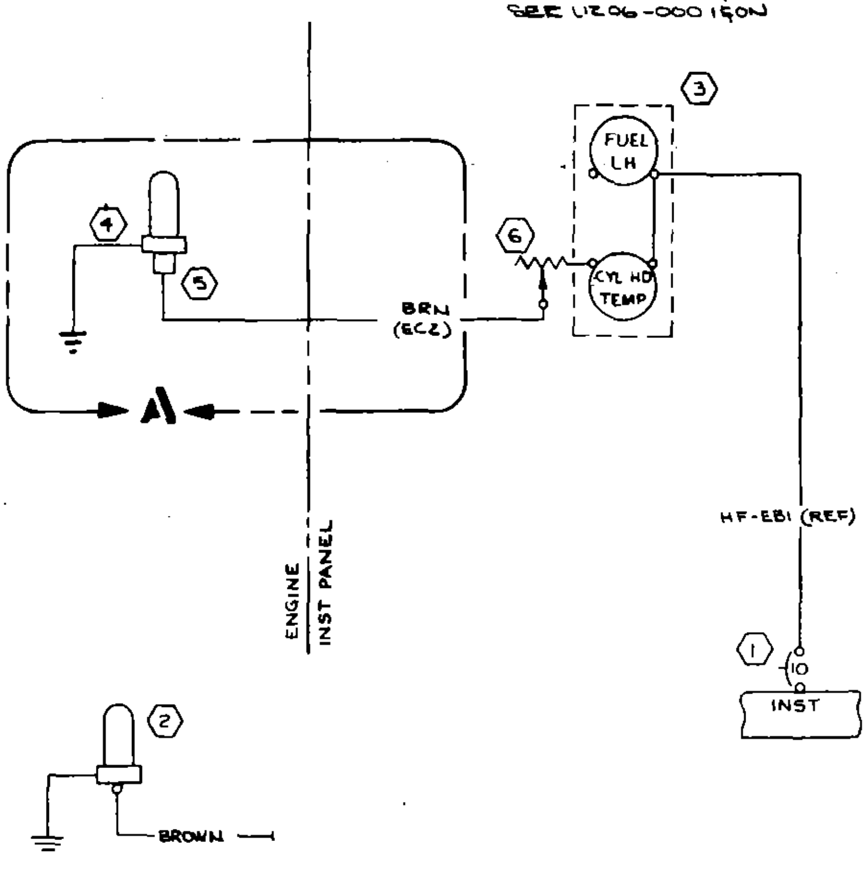
EDERR 10486

(SR6005) IX
(SR6006) IX

SER 205-0001 THRU
SER 205-0577
SER 206-0001 THRU
SER 206-0275
SER P206-0001 & ON
SER U206-0001 & ON

NOTES:

1. PART NO. 110691 (PR50)
COLOR: BROWN
2. TEMP BULB FOR 205, P206 & U206 HAVE BEEN LOCATED ON NO. 1 CYL. AT GIVEN SERIALS, MODEL 205 TEMP BULB MOVES TO NO. 6 CYL. MODEL P206 & U206 TEMP BULB REMAINS AT NO. 1 CYL.
3. CRIMP S-1656-5 TERMINAL AROUND WIRE INSULATION, BEND .25 OF STRIPPED WIRE BACK OVER CRIMP & SOLDER PER CES 1040. USE MOLEX HT-1719-C CRIMPING TOOL ONLY



DETAIL A
EFF THRU SER (SR8085)
(U20602724)

CHG LET	REVISION	BY DATE	CHK APPD
A	REMOVED N/A FROM STD WIRES (SR3484-10)	GLW 4-4-62	
B	ADDED 0713602-4 POTENTIOMETER SR 3781	HLW 8-27-62	
C	ADD MODEL 206 S-1360-10 CKT BKR WAS S-1232-10 1270461-1 BUS BAR WAS 1270429-1 1213505-1 WAS 0713602-1; ADD 1213505-2 ON BUS BAR, INST WAS INST LIGHTS H-EBI WIRE WAS 0700805-EBI WIRE ADDED NOTE 1 MATL WAS PER MIL-W-5086A TYPE I (SR 4038-6)(SR 3983-8)	GLW 6-18-63	RRS HMS HTW
D	BY REVISION 1 WAS MATL PER MIL-W-16878D TYPE E 200°C GRADE EXTRUDED TEFLON DIELECTRIC. REMOVED 1 FROM H-ECI ADD 2 IN FIELD, 'BROWN' WAS H-ECI SER (SR4464)	GLW 2-12-64	RRS
E	ADDED WIRE LENGTHS TO W/T; ADDED P206 & U206 TO TITLE BLOCK; REMOVED 1270461-1 BUS BAR & 1270625-EBI FROM EIT; C669502-0104 WAS 1213505-1 & 1213505-2	WJR 7-6-64	RRS
F	BY REV: SER OUT BRN & S-1372-1; SER IN EC2 & S-1372-2. ADD DETAIL A & NOTE 3 (SR8085)	RAM 11-12-74	JRB

WIRE CODE NO	GA	MATERIAL	LC	TERMINALS				SERIALS
BRN (EC2)	18	-18-4	93	S-1367-1-8	S-1656-5		3	SER (SR8085) & ON
BROWN	18	1		S-1367-1-8	S-1367-1-4	NO. 6 CYL	2	205-0655 THRU SER (SR8085)
BROWN	18	1	93	S-1367-1-8	S-1367-1-4	NO. 1 CYL	2	205-0493 THRU 205-0654 206-0029 & P206-0001 & ON
H-ECI	18		93	S-1367-1-8	S-1367-1-4	NO. 1 CYL		INACTIVE 205-0493 & ON 206-0029 & ON

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	SERIALS
7			
6	0713602-4	POTENTIOMETER	
5	S-1637-4	HOUSING-PLUG	
4	S-1372-2	BULB, CYL HD TEMP	
3	C669502-0104	INST CLUSTER KIT	
2	S-1372-1	BULB, CYL HD TEMP	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	G WOOD	12-27-61
GROUP		1-29-62
CHECK		2-5-62
PROJ		2-7-62

WIRING DIAGRAM — CYLINDER HEAD TEMPERATURE

Cessna.

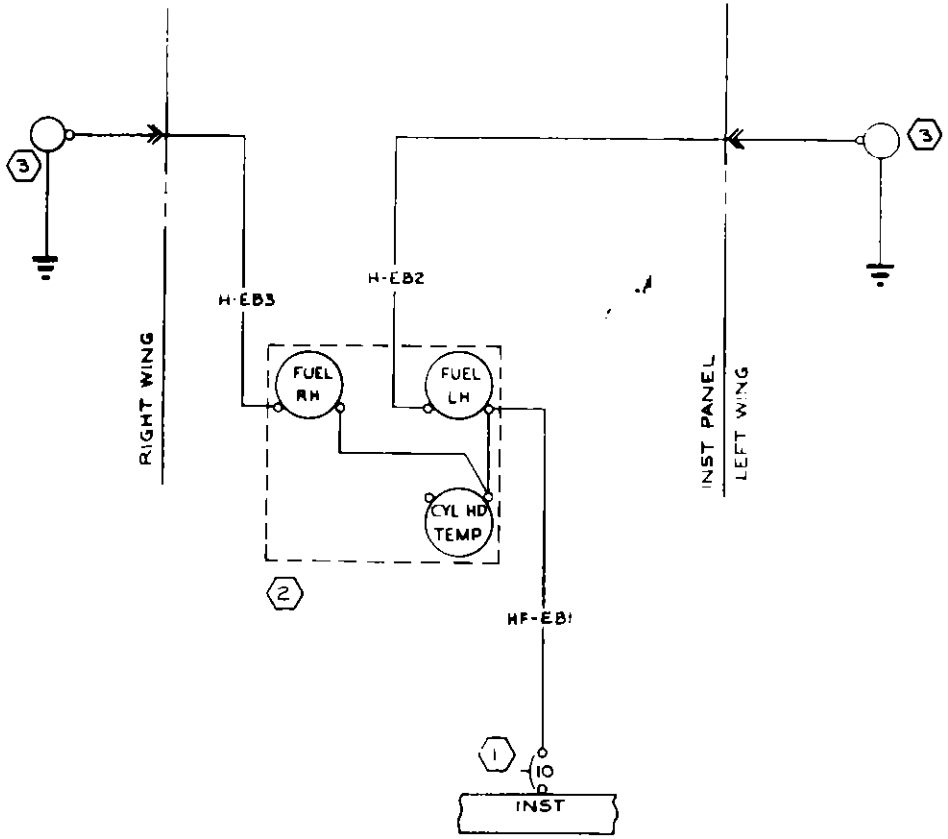
DWG NO 1270625

SUPERSEDED BY: SUPERSEDES: MODEL: 205, P206 & U206 REV E PAGE 8.1

FORM NO. 80-161

SER 205-0001 THRU
SER 205-0577
SER 206-0001 THRU
SER 206-0275
SER P206-0001 ON
SER U206-0001 ON

CHG LET	REVISION	BY / DATE	CHK / APPD
A	BY REVISION: S-341-2 WAS S-1367-1-8 ADD SHORT WIRE TO FUEL LEVEL XMTR REMOVED N/A FROM STD WIRES (SR[illegible])	GLW 2-20-62	[illegible]
B	ADD MODEL 206 ADD H-EB1 WIRE S-1360-10 CKT BKR WAS S-1232-10 1213505-1 WAS 0713602-1; ADD 1213505-2 1270461-1 BUS BAR WAS 1270429-1 0726110-1 WAS 0726600-1 ON BUS BAR INST WAS INST LIGHTS DELETE 0700603-EB1 WIRE (SR4038-6)(SR3985-6)	GLW 6-18-63	[illegible]
C	ADDED WIRE LENGTHS TO W/T; HF-EB1 WIRE WAS H-EB1 WIRE; ADDED P206 & U206 TO B/M; REMOVED 1270461-1 BUS BAR FROM E/T; C669502 -0109 WAS 1213505-1 & 1213505-2	WJR 7-6-64	[illegible]



INACTIVE: EFF THRU SER U20602199 [illegible] 9-19-75

Wire Code No	GA	Material	LG	Terminals			Serials
H-EB3	18		88	S-1367-1-10	S-341-2		
H-EB2	18		120	S-1367-1-10	S-341-2		
HF-EB1	18		50	S-1367-1-8	S-1367-1-6		

WIRE TABLE

Item No	Part No	Description	Serials
6			
5			
4			
3	0726110-1	XMTR, FUEL LEVEL	
2	C669502-0104	INST CLUSTER KIT	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	Name	Date
Drawn	G WOOD	12-26-61
Group	[illegible]	1-24-62
Check	[illegible]	2-5-62
Proj	[illegible]	2-7-62

Title: WIRING DIAGRAM — FUEL QUANTITY INDICATOR

Cessna.

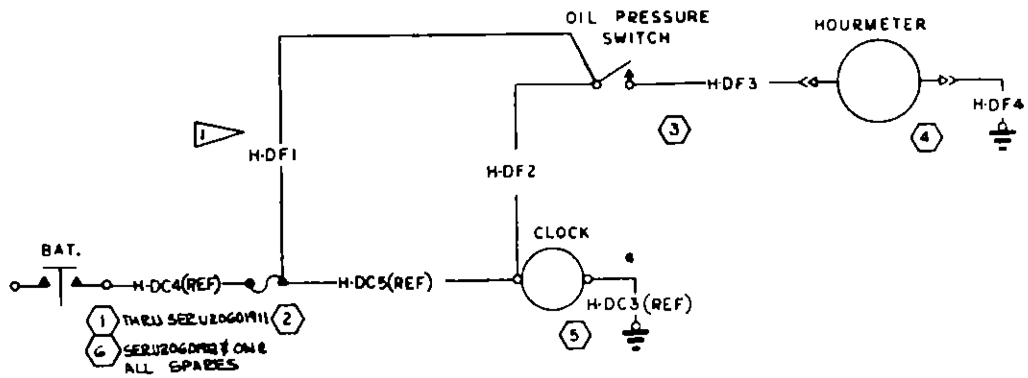
DWG NO 1270625

Superseded by: PG. 5.4 | Supersedes: | Model: 205, P206 & U206 | Rev C | Page 8.2

Form No 80-161

SER P206-0406 & ON
SER U206-0501 & ON

CHG LET	REVISION	BY DATE	CHK APPD
A	BY REV: SER OUT S-1579-1 & ADD S-1579-2 (SE7201)	BPH	



NOTE:
1. WIRING DIAGRAM SHOWN IS FOR USE WHEN AN OPTIONAL ELECTRIC CLOCK IS INSTALLED. WHEN ELECTRIC CLOCK IS NOT INSTALLED WIRE H-DF1 CONNECTS PRESSURE SWITCH TO FUSEHOLDER. INSTALL S-1091-1 FUSE AND S-1690-22 FUSEHOLDER.

WIRE TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-DF4	18			S-1493-1	S-1367-1-6		
H-DF3	18			S-1493-1	S-1367-1-6		
H-DF2	18			S-1367-1-6	S-1367-1-6		
H-DF1	16			S-1367-1-6	SOLDER		

EQUIPMENT TABLE

ITEM NO.	PART NO.	DESCRIPTION	INSTALLED ON
6	S-1579-2	CONTACTOR	
5	S-1317N1	CLOCK	
4	C664501-0101	HOURMETER	
3	S-1711-1	OIL PRESSURE SW.	
2	S-1091-1	FUSE	
1	S-1579-1	BAT. CONTACTOR	

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	Weber	9-13-66
GROUP	H. Wise	9-21-66
CHECK	[illegible]	9-16-66
APPD	[illegible]	9-29-66

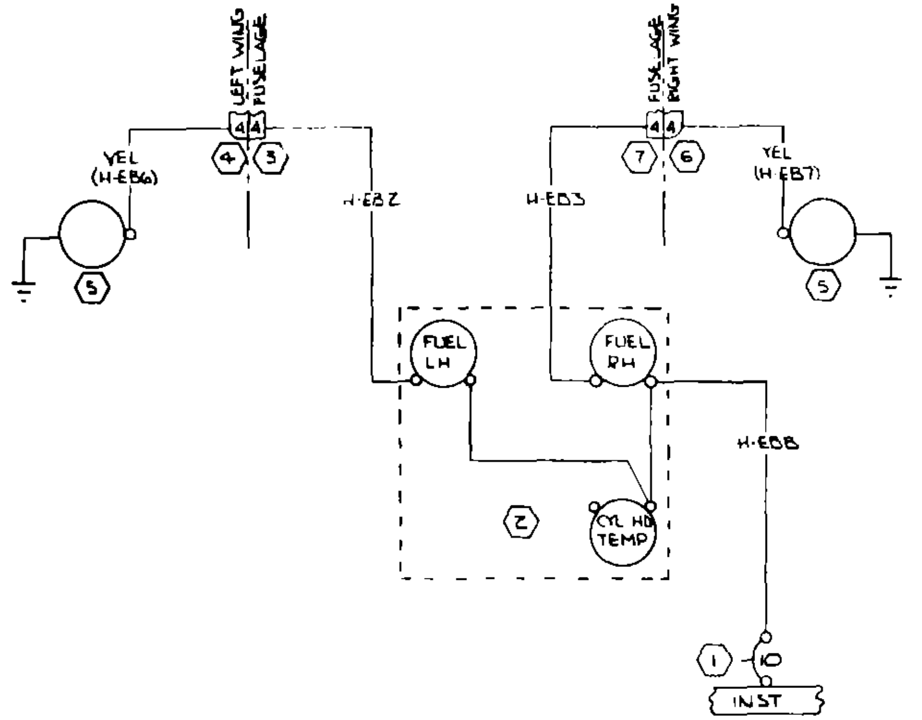
TITLE: WIRING DIAGRAM — HOURMETER (OPT)

Cessna.

DWG NO. 1270625

MODEL P206 & U206 | REV. A | PAGE 6.3

LET	DESCRIPTION	DATE	APPD
A	BY REV. DELETE S-1637-1 & S-1637-2; ADD S-1640-6, S-1640-12, S-1641-6 S-1641-12 & WIRE LENGTHS; S-1567-1-10 WAS S-1367-1-6/EB2 MER EO 393(NOW SHOP PRACTICE)	BLA 12-10-74	JCY WWV 9A3 WB



WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-EB8	18		43	S-1367-1-8	S-1367-1-6		
YEL (H-EB7)	18	-18-4		S-1635-1	S-1367-1-10		
YEL (H-EB6)	18	-18-4		S-1635-1	S-1367-1-10		
H-EB3	18		100	S-1367-1-6	S-1636-1		
H-EB2	18		132	S-1367-1-10	S-1636-1		

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	
7	S-1641-12	HOUSING - SOCKET	
6	S-1640-12	HOUSING - PIN	
5	0726110	XMTR - FUEL LEVEL	
4	S-1640-6	HOUSING - PIN	
3	S-1641-6	HOUSING - SOCKET	
2	C669502-0202	INST CLUSTER	
1	S-1360-10L	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA
STD. NO.

SUPERSEDES: FG B.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H. Wise	8-14-73
DRAWN	X. CLLER	8-14-73
CHECK	R. YOUNGERS	8-14-73
STRESS		
PROJ	[illegible]	8-15-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV 5800 E. PAWNEE WICHITA, KANSAS

TITLE
WIRING DIAGRAM — FUEL QUANTITY INDICATOR (14V)

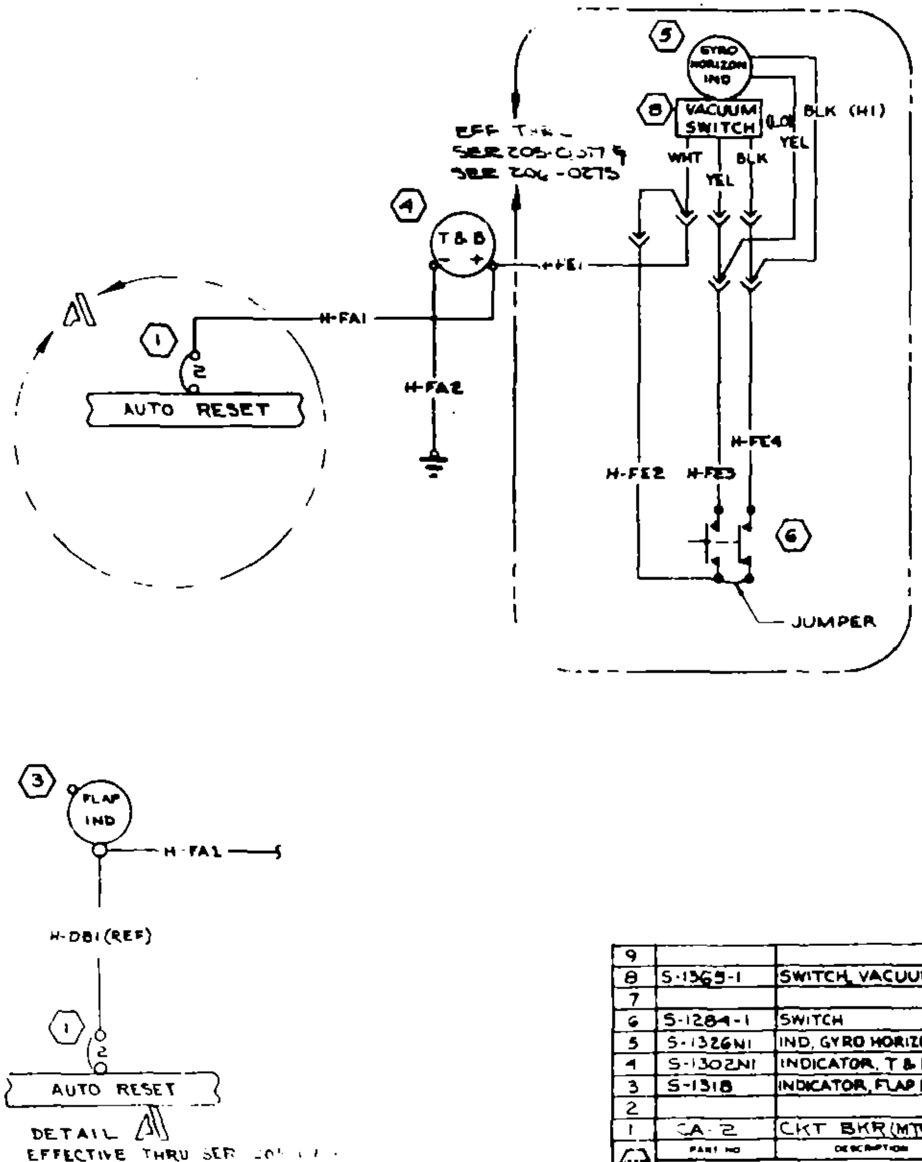
SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE (SR 7403) IX PAGE: B.4

FORM NO. 60-2186

SER 205-0001 THRU
SER 205-0577
SER P206-0001 & ON
SER U206-0001 & ON
SER 206-0001 THRU
SER 206-0275

CHG LET	REVISION	BY / DATE	CHK / APPD
A	REMOVED N/A FROM STD WIRES. ADD 'OPT' TO OPT WIRES. (SR 3694-10)	GLW 4-4-62	[illegible]
B	ADD MODEL 206 ADDED 1270461-1 BUS BAR, DETAIL A (SR 4038-6) (SR 3983-6)	GLW 6-18-63	[illegible]
C	ADDED LIMITING SERIALS TO FIELD & INACTIVATED WIRES H-FE1 THRU H-FE4. ADDED P206 & U206 TO BM; REMOVED H-DB1, 1270461-1 & 1270929-1 FROM E/T; ADDED WIRE LENGTHS TO W/T (SR 4456) (SR 4457)	WJR 7-14-65	[illegible]



INACTIVE:
EFF SER P206-0001 & SER U206-0001
THRU SER P20600603 & SER U20601444
EDER 10422
DLB 8-1-69
RLY [illegible]
MOS [illegible]

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS	TERMINALS	N/A	SERIALS
H-FE4	20		6	S-341-2	SOLDER	0713705	(OPT) INACTIVE: THRU SER 205-0577 SER 206-0275
H-FE3	20		8	S-341-2	SOLDER	0713705	(OPT)
H-FE2	20		6	S-341-2	SOLDER	0713705	(OPT)
H-FE1	20		6	S-341-2	S-1367-1-8	0713705	(OPT) INACTIVE: THRU SER 205-0577 SER 206-0275
H-FA2	18		16	S-1367-1-8	S-1367-1-8		
H-FA1	18		11	S-1367-1-6	S-1367-1-10		

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	SERIALS
9			
8	S-1365-1	SWITCH, VACUUM	
7			
6	S-1284-1	SWITCH	
5	S-1326N1	IND, GYRO HORIZON	
4	S-1302N1	INDICATOR, T & B	
3	S-1318	INDICATOR, FLAP POS	
2			
1	CA-2	CKT BKR (MTCC)	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. WICHITA, KANSAS

	NAME	DATE
DRAWN	G WOOD	12-27-61
GROUP	[illegible]	1-20-62
CHECK	[illegible]	2-5-62
APPD	[illegible]	2-1-62

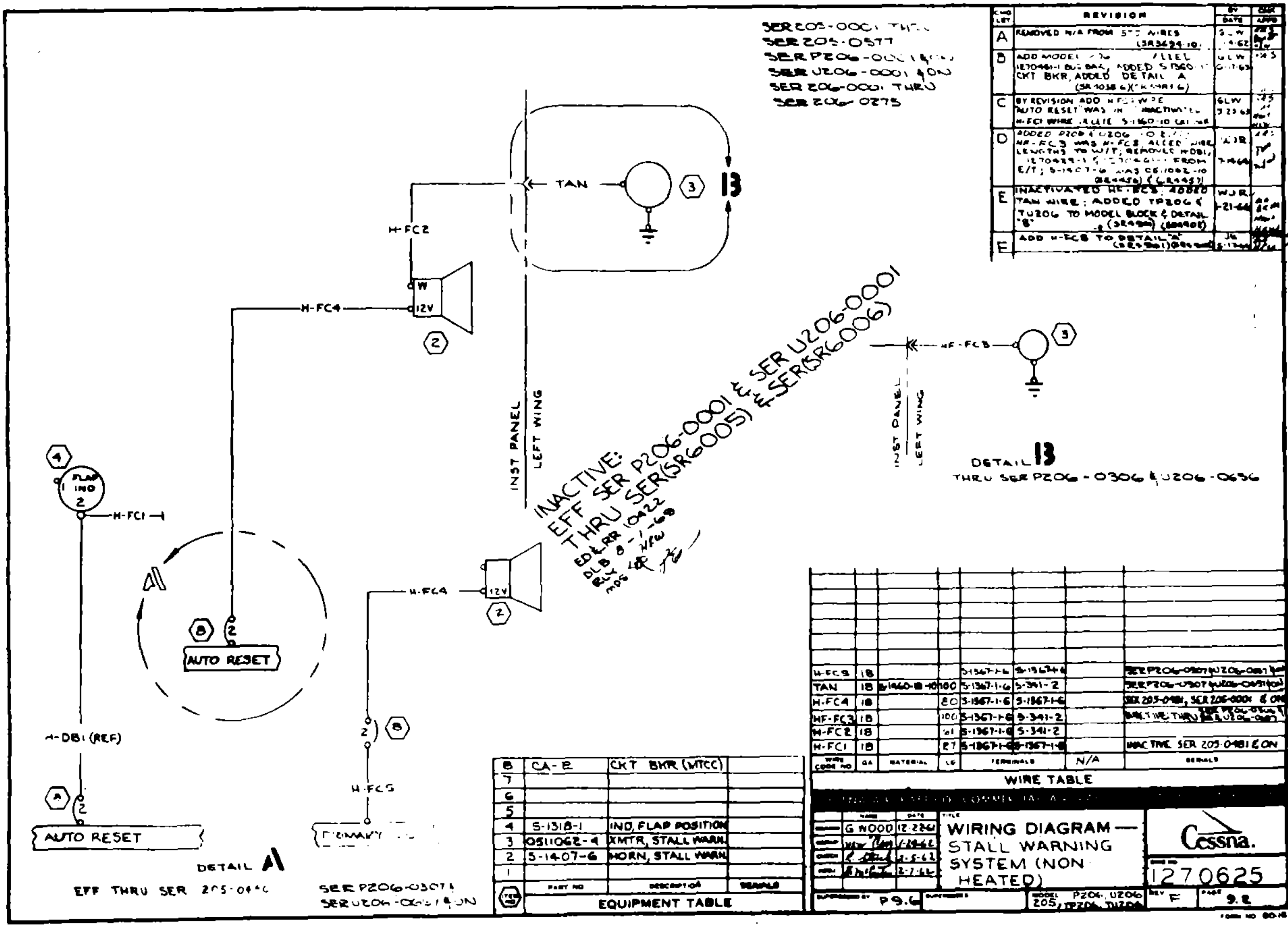
TITLE: WIRING DIAGRAM — TURN & BANK AND GYRO HORIZON INDICATOR

Cessna.

DWG NO 1270625

SUPERSEDED BY: P9.5 | SUPERSEDES: | MODEL: 205, P206 & U206 | REV: C | PAGE: 9.1

FORM NO 80-161



CHG LET	REVISION	BY DATE	CHK APPD
A	REMOVED N/A FROM STD WIRES (SR3694-10)	GLW 4-62	
B	ADD MODEL 206 ... 1270461-1 BUS BAR, ADDED S-1360 CKT BKR, ADDED DETAIL A (SR1038 6)(SR ... 6)	GLW 6-1-63	
C	BY REVISION ADD H-FC2 WIRE AUTO RESET WAS ... INACTIVATED H-FC1 WIRE ... S-1160-10 ...	GLW 3-29-63	
D	ADDED P206 & U206 ... HF-FC3 WAS H-FC3, ADDED WIRE LENGTHS TO W/T, REMOVED H-DB1, 1270429-1 & ... FROM E/T; S-1407-6 WAS CE1062-10 (SR4456)(SR4457)	AJR 7-1-64	
E	INACTIVATED HF-FC3, ADDED TAN WIRE; ADDED TP206 & TU206 TO MODEL BLOCK & DETAIL "B" (SR4900)(SR4901)	WJR 1-21-66	
F	ADD H-FC5 TO DETAIL "A" (SR4901)	JG	

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
H-FC5	18			S-1367-1-6	S-1367-1-6		SER P206-0307 & U206-0657 & ON
TAN	18	S-1460-18-10	100	S-1367-1-6	S-341-2		SER P206-0307 & U206-0657 & ON
H-FC4	18		80	S-1367-1-6	S-1367-1-6		SER 205-0481, SER 206-0001 & ON
HF-FC3	18		100	S-1367-1-6	S-341-2		INACTIVE THRU SER P206-0306 & U206-0656
H-FC2	18		61	S-1367-1-6	S-341-2		
H-FC1	18		27	S-1367-1-6	S-1367-1-6		INACTIVE SER 205-0481 & ON

WIRE TABLE

ITEM	PART NO	DESCRIPTION	SERIALS
8	CA-E	CKT BKR (MTCC)	
7			
6			
5			
4	S-1318-1	IND, FLAP POSITION	
3	0511062-4	XMTR, STALL WARN	
2	S-1407-6	HORN, STALL WARN	
1			

EQUIPMENT TABLE

	NAME	DATE
	G WOOD	12-22-61
		1-19-62
		2-5-62
		2-7-62

WIRING DIAGRAM — STALL WARNING SYSTEM (NON HEATED)

Cessna.

DWG NO 1270625

SUPERSEDED BY P9.6 | SUPERSEDES | MODEL 205, P206, U206, TP206, TU206 | REV F | PAGE 9.2

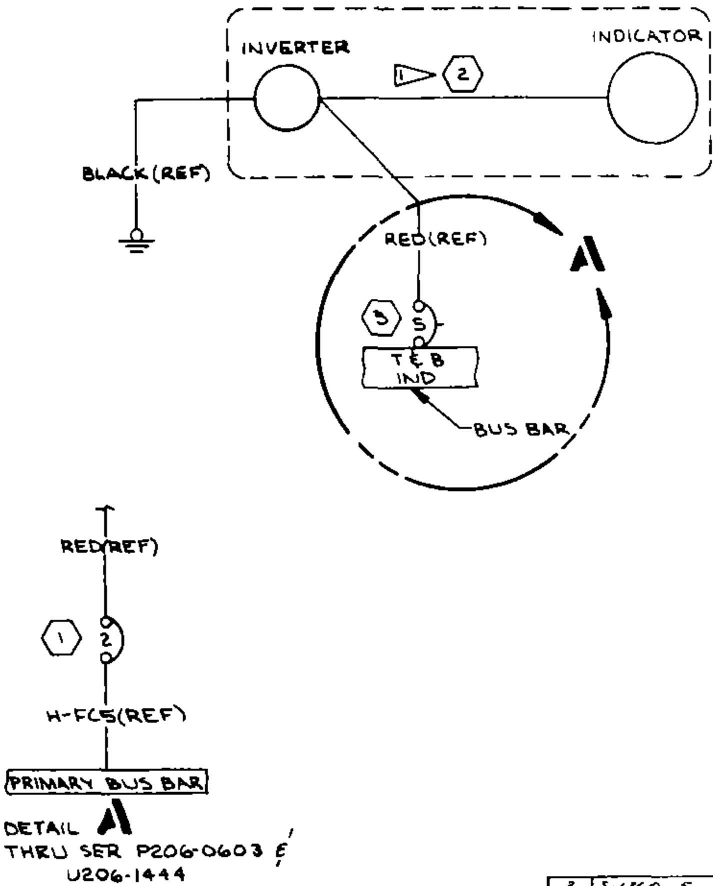
FORM NO 80-181

(SER P206-0420 & ON)
(SER U206-0519 & ON)

NOTES:

1. TURN COORDINATOR INDICATOR INCLUDES ALL WIRES AND CABLES BETWEEN INVERTER, INDICATOR AND CIRCUIT BREAKER.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	BY: SER OUT CA-2; SER IN S-1360-5; ADD DETAIL A ED&RR 10422 (SR6006)	DLB 8-4-69	RLY MOS



INACTIVE: EFF THRU SER U206C2199 5-16-73

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
3	S-1360-5	CKT BKR
2	C661003-0401	TURN COORDINATOR
1	CA-2	CKT BKR (73803)

EQUIPMENT TABLE

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H. Ward	5-25-67
DRAWN	HARRIS	5/22/67
CHECK	YACSHAW	5-23-67
STRESS		5-25-67
PROJECT		5-16-67
APPD		5-24-67

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — BRITTAIN WING LEVELER (OPT)

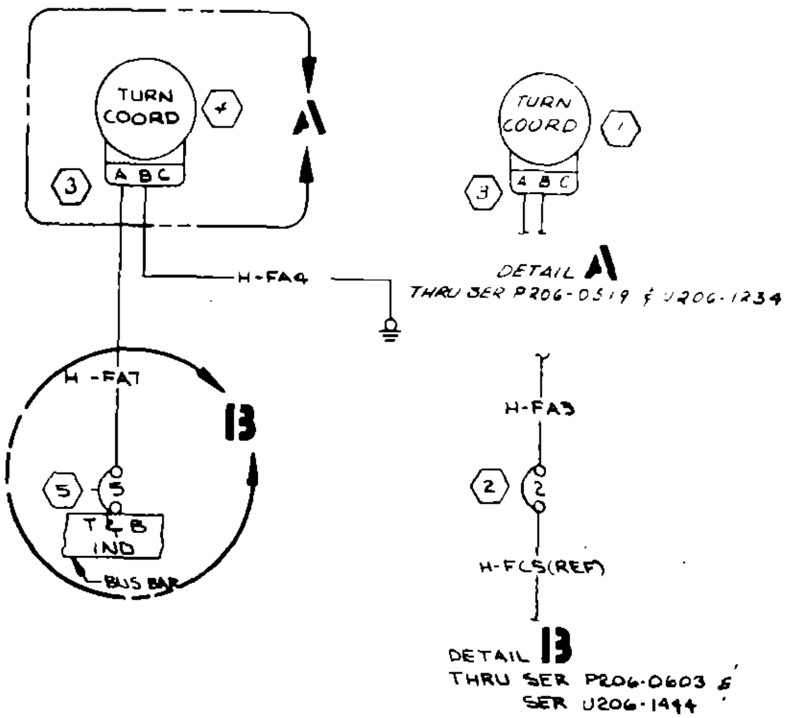
SIZE	CODE IDENT NO.	DWG NO
C	71379	1270625

SCALE: NONE | U206 | PAGE: 9.3

FORM NO 20-215

(SER P206-0420 & ON)
(SER U206-0915 & ON)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED DETAIL A & C661003-0501 ED&RR03436 (SR5401)II (SR5402)II	EGY 9-1-68	GKL MDS
B	BY REV: SER OUT CA-2; SER IN S-1360-5; ADD DETAIL B ED&RR 10422 (SR6005)(SR6006)II	DLB 8-1-69	RCY MDS



H-FA7	18			S-1367-1-8 SOLDER		
H-FA4	18			S-1367-1-8 SOLDER		
H-FA3	18			S-1367-1-8 SOLDER		THRU SER (SR6005)(SR6006)
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
5	S-1360-5	CKT BKR	
4	C661003-0501	TURN COORDINATOR	
3	MS3106A10SL3S	CONNECTOR	
2	CA-2	CIRCUIT BREAKER (80602)	
1	C661003-0201	TURN COORDINATOR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES:

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	COOK	9-13-67
GROUP	H. Wiel	9-13-67
DRAWN	HARRIS	9-8-67
CHECK	LAURIE	9-9-67
STRESS		9-4-67
PROJECT		9-14-67
APPD	R.E. Munn	11-5-67

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E PAWNEE WICHITA, KANSAS

TITLE WIRING DIAGRAM — TURN COORDINATOR

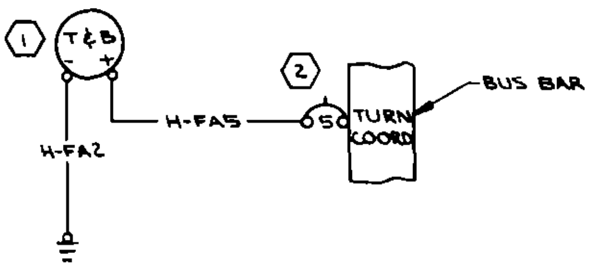
SIZE	CODE IDENT NO	DWG NO.
C	71379	1270625

SCALE: NONE | P206 & U206 | PAGE 9.4

FORM NO 06-3134

(SER P20600604 & ON)
(SER U20601445 & ON)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: S-1413-2 WAS S-1302N1, S-1360-5L WAS S-1360-5 & FA5/S-1367-1-6 WAS S-1367-1-8	7-5-73 RAM	[illegible]



WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-FA5	18			S-1367-1-6	S-1367-1-8		
H-FA2	18		16	S-1367-1-8	S-1367-1-8		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
2	S-1360-5L	CIRCUIT BKR
1	S-1413-2	INDICATOR

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO.
S-XXX OR CMXXXX-CESSNA
STD NO

SUPERSEDES: P 9.1

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP	H Wise	8-7-69
DRAWN	D.L.BURKE	8-1-69
CHECK	R.YOUNGERS	8-5-69
STRESS	[illegible]	8-7-69
PROJ	[illegible]	8-7-69
APPD	[illegible]	8-6-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — TURN & BANK INDICATOR

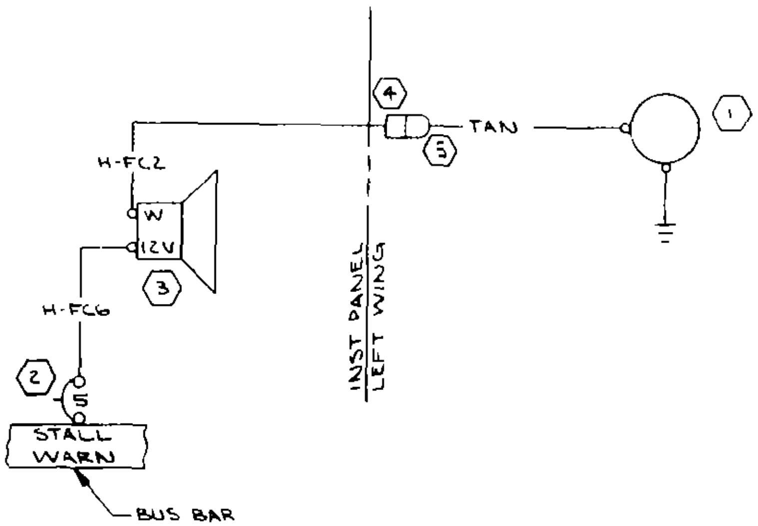
SIZE: C
CODE IDENT. NO.: 71379
DWG NO: 1270625
SCALE: NONE
P206 & U206
PAGE: 9.5

ED & RR 10422 (SR6005) IX (SR6006) IX

FORM NO 80-2188

(SER P20600604 & ON)
(SER U20601445 & ON)

LET	DESCRIPTION	DATE	APPD
A	BY REV: S-1635-1 & S1636-1 WAS S-341-2 (SR7403)(REF)	DLO 3-1-74	



WIRE TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
TAN	18	S-1460-18-10	100	S-1367-1-6	S-1635-1		
H-FC6	18			S-1367-1-6	S-1367-1-6		
H-FC2	18		61	S-1367-1-6	S-1636-1		

EQUIPMENT TABLE

ITEM NO	PART NO.	DESCRIPTION
5	S-1637-1	HOUSING-CAP
4	S-1637-2	HOUSING-PLUG
3	S-1407-6	HORN, STALL WARN
2	S-1360-5	CIRCUIT BKR
1	0511062-4	AMTR, STALL WARN

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX-CESSNA SPEC NO. S-XXX OR CMXXXX-CESSNA STD. NO.

SUPERSEDES: P 9.2

SUPERSEDED BY:

CONTRACT NO

	NAME	DATE
DESIGN		
GROUP	H Wi...	8-69
DRAWN	D.L.BURKE	9-1-69
CHECK	R.YOUNGERS	9-5-69
STRESS		
PROJ		
APPD		9-6-69
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV 5800 E PAWNEE WICHITA, KANSAS

TITLE
WIRING DIAGRAM — STALL WARNING SYSTEM (NON-HEATED)

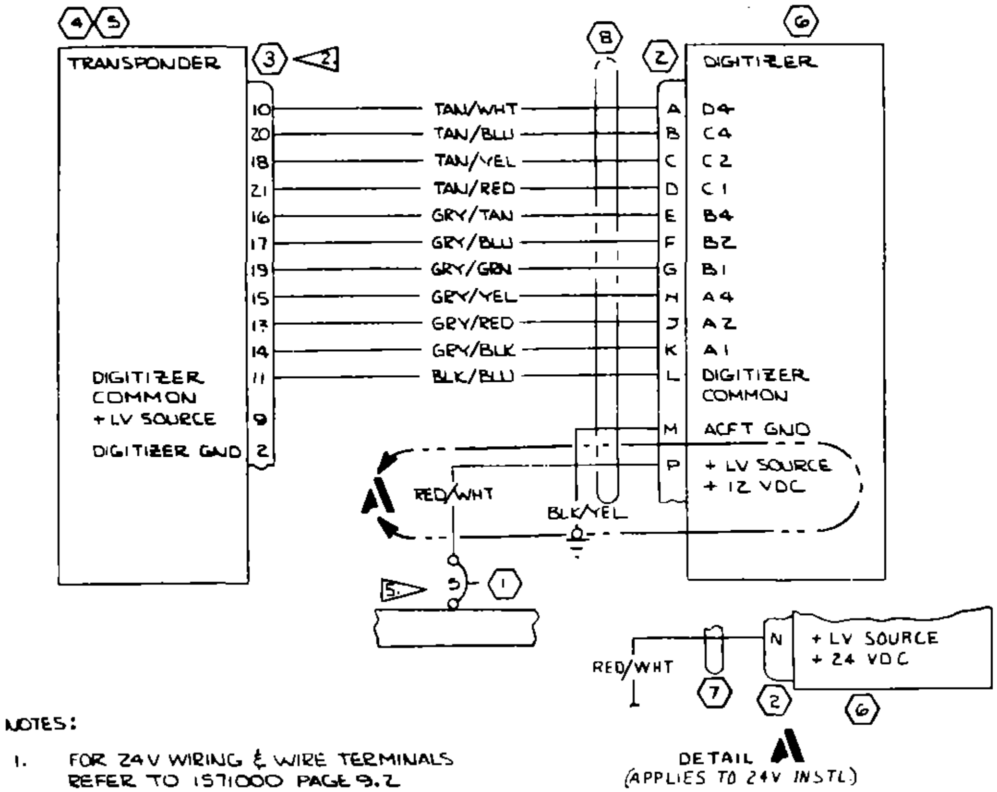
SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | P206 & U206 | PAGE 9.6

ED & RR 10422 (SR6005)IX (SR6006)IX

FORM NO 80 2158

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD NOTE NO. 5; DELETE TURN COORDINATOR FROM BUS BAR; ADD (SR 7922) (SR 7922)	MEM 3-5-74	



NOTES:

1. FOR 24V WIRING & WIRE TERMINALS REFER TO 1571000 PAGE 9.2
2. TRANSPONDER CONNECTOR HOUSING IS PART OF TRANSPONDER CABLE ASSY
3. FOR WIRING DIAGRAM OF 300 & 400 TRANSPONDER REFER TO 3920143
4. PINS ARE CRIMP TYPE & VENDOR FURNISHED WITH CONNECTOR
5. ATTACH BOTH TRANPONDER AND ENCODING ALTIMETER TO NO. 4 RADIO CIRCUIT BREAKER.

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED/WHT	20	-20-2-9		S-1367-1-8	4		
BLK/YEL	22	-22-0-4		S-1367-1-8			
BLK/BLU		-22-0-6		S-2190-1			
GRY/BLK		-22-8-0					
GRY/RED		-22-8-2					
GRY/YEL		-22-8-4					
GRY/GRN		-22-8-5					
GRY/BLU		-22-8-6					
GRY/TAN		-22-8-10					
TAN/YEL		-22-10-4					
TAN/RED		-22-10-2					
TAN/BLU		-22-10-6					
TAN/WHT	22	-22-10-9		S2190-1	4		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
8	1570312-3	CABLE ASSY	
7	1570312-1	CABLE ASSY	
6	EA-401A	ALT DIGITIZER	
5	RT-359A	TRANSPONDER	
4	RT-459A	TRANSPONDER	
3	S-2189-1	CONNECTOR	
2	42816	CONNECTOR	
1	S-1360-5L	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES:

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP		11-13-73
DRAWN	SL OLLER	11-9-73
CHECK	J YOVEL	11-9-73
STRESS		
PROJ		
APPD		
OTHER		

Cessna. AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

WIRING DIAGRAM — ENCODING ALTIMETER (12 & 24 VOLT)

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

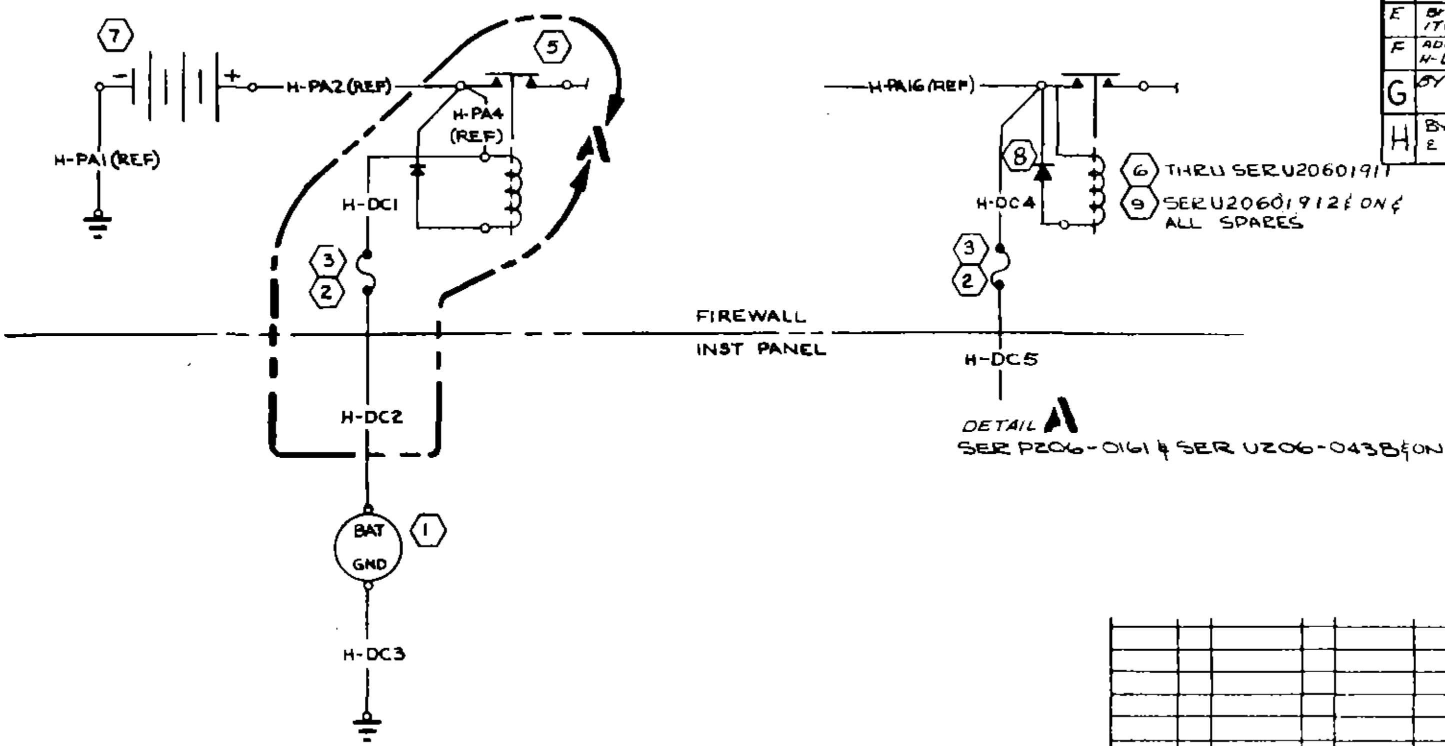
SCALE: NONE (SR 7922) PAGE: 9.1

(SR 7692)

FORM NO. 80-2158

SER 205-0001 THRU
SER 205-0577
SER 206-0001 THRU
SER 206-0275
SER P206-0001 & ON
SER U206-0001 & ON

CHG LET	REVISION	BY / DATE	CHK / APPD
A	REMOVED N/A FROM STD WIRES (SR3694-10)	GLW 4-4-62	
B	REMOVED OBSOLETE NEVER USED FROM FACE OF DRAWING; S-1091-1 WAS -2; S-1090-22 WAS -18 (SR4021)	WJR 10-8-62	
C	ADD MODEL 206 (SR 3983-6)	GLW 6-18-63	
D	ADDED P206 & U206 TO B/M; ADDED WIRE LENGTHS TO W/T; REMOVED H-PA1, H-PA2 & H-PA4 FROM E/T	WJR 7-16-64	
E	BY REV: ADD DETAIL A, H-DC4 & ITEM 6. SER. OUT H-DC1 (SR4659)	LPB -65	
F	ADDED H-DC5; INACTIVATED H-DC2 (SR4659)(SR4660)	WJR 5-7-65	
G	BY REV: S-1317N2 WAS S-1317N1 ED; RR 10445	FER 4-8-69	
H	BY REV: SER OUT S-1579-1 & ADD S-1579-2 (SR7201)	BPH 6-16-72	



ITEM NO	PART NO	DESCRIPTION	SERIALS
9	S-1579-2	CONTACTOR	
8	0770728-1	DIODE ASSY.	
7	0712605-1	BATTERY	
6	S-1579-1	CONTACTOR, BAT.	
5	0712603-2	CONTACTOR, BAT.	
4	S-1579-2	CONTACTOR	
3	S-1091-1	FUSE	
2	S-1090-22	FUSEHOLDER	
1	S-1317N2	CLOCK ASSY	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
H-DC5	18			S-1367-1-6	SOLDER		SER P206-0161 & SER U206-0438 & ON
H-DC4	18		8	S-1367-2-13	SOLDER		SER P206-0161 & SER U206-0438 & ON
H-DC3	18		11	S-1367-1-6	S-1367-1-8		205-0129 & ON
H-DC2	18		120	S-1367-1-6	SOLDER		205-0129 THRU SER P206-[illegible] SER U206-[illegible]
H-DC1	18		8	S-1367-1-6	SOLDER		205-0129 THRU SER P206-[illegible] SER U206-[illegible]

WIRE TABLE

CESSNA AIRCRAFT CO COMMERCIAL AIRCRAFT DIVISION WICHITA, KANSAS

	NAME	DATE
DRAWN	G WOOD	12-27-61
GROUP		1-24-62
CHECK		2-5-62
PROJ		2-7-62

TITLE: WIRING DIAGRAM — CLOCK

Cessna.

DWG NO 1270625

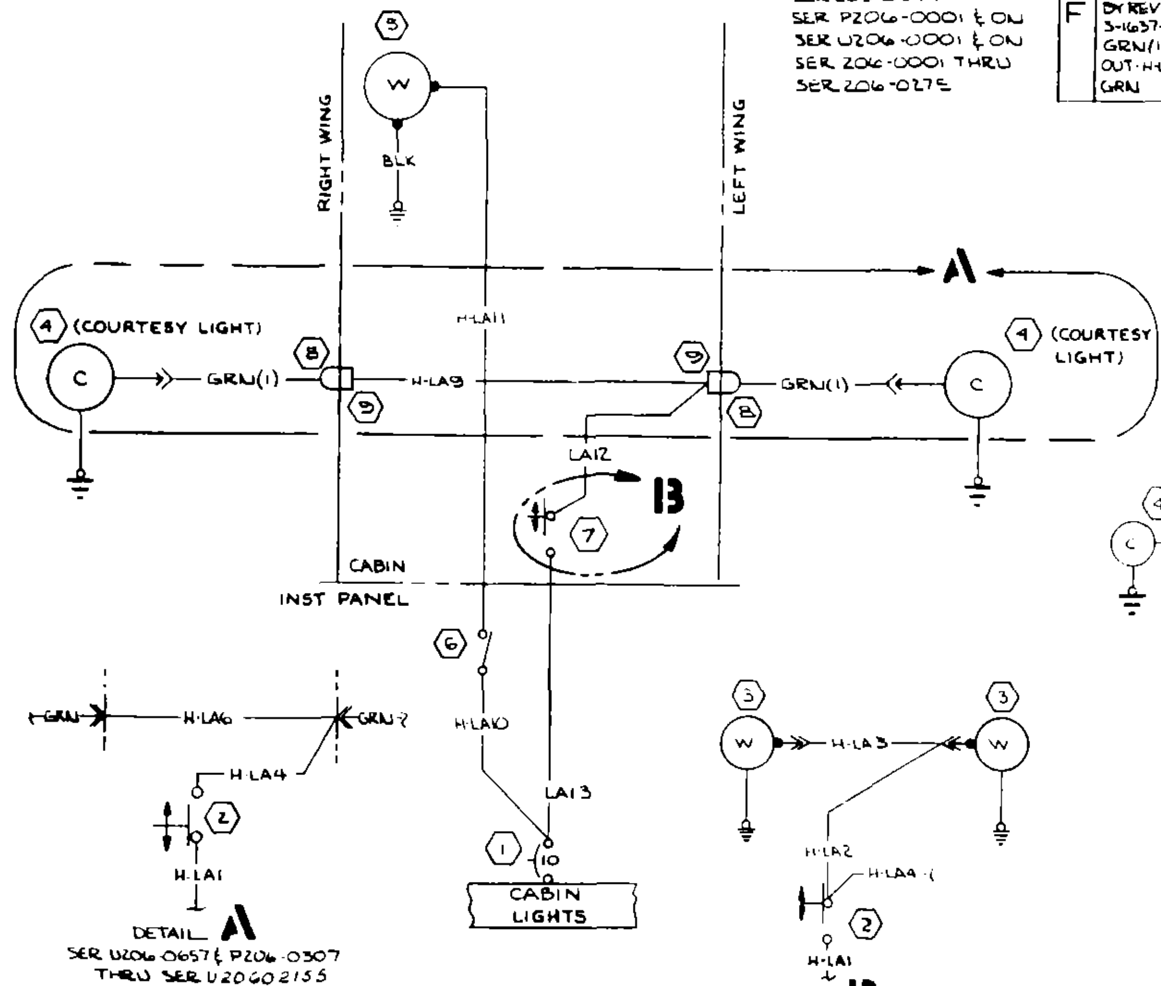
SUPERSEDED BY | SUPERSEDES | MODEL 205, P206 & U206 | REV H | PAGE 10.1

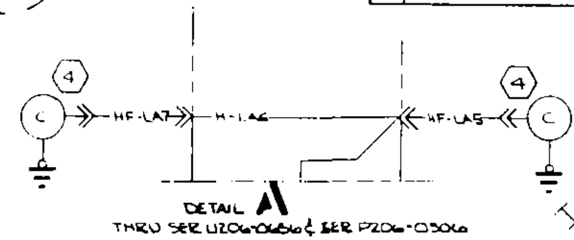
FORM NO 80-161

SER 205-0001 THRU
SER 205-0577
SER P206-0001 & ON
SER U206-0001 & ON
SER 206-0001 THRU
SER 206-0275

LET	REVISION	BY DATE	CHK APPD
F	BY REV: ADD S-1831-1, S-1637-1, S-1637-2; SER IN LA12, GRN(1). H-LA13 & H-LA9: SER OUT-H-LA1, H-LA4, H-LA6 & GRN (SR7630)	DLO 1-14-73	DLP HPW

CHG LET	REVISION	BY DATE	CHK APPD
A	REMOVED N/A FROM STD WIRES (SR 3694-10)	GLW 4-4-63	
B	ADD MODEL 206 S-1360-10 CKT BKR WAS S-1292-10 1270461-1 BUS BAR WAS 1270429-1 ADD NOTE 1 ON BUS BAR CABIN LIGHTS WAS NAVIGATION LIGHTS (SR 4038-6) (SR 3983-6)	GLW 6-18-63	
C	ADDED P206 & U206 TO B/M; REMOVED 1270461-1 FROM E/T; ADDED WIRE LENGTHS TO W/T HF-LA5 WAS H-LA5 & HF-LA7 WAS H-LA7 (SR4456) (SR4457)	WJR 7-16-64	
D	INACTIVATED HF-LA5 & HF-LA7; ADDED GREEN WIRES (2) ADDED TP206 & TU206 TO MODEL BLOCK; ADDED DETAIL A (SR4901) (SR4902)	WJR 1-21-66	
E	BY REV: ADD DETAIL B, LA10, LA11, 1210110-1 & S-2061-1; INACT DWG SER U20601875 & ON & SER (SR7403) IX	LKW 4-23-73	





INACTIVE
EFF THRU SER U20602199 IX
4-23-73

NOTE:
1. COURTESY LIGHTS ARE OPTIONAL SER 205-0481 & ON, SER U206-0001 & ON & P206-0001 & ON. WIRES ARE STD.

ITEM NO	PART NO	DESCRIPTION	SERIALS
9	S-1637-2	HOUSING-PLUG	
8	S-1637-1	HOUSING-CAP	
7	S-1831-1	SWITCH	
6	S-2061-1	SWITCH	
5	1210110-1	LIGHT INSTL	
4	1270430-1	LIGHT ASSY	
3	181522	DOME LIGHT ASSY	
2	0713029	SWITCH	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
H-LA9	18			S-1636-2	S-1636-3		SER U20602156 & ON
LA13	18			S-1830-1	S-1367-1-6		SER U20602156 & ON
GRN(1)	18			S-1635-1	S-341-2		SER U20602156 & ON
GRN(1)	18			S-1635-1	S-341-2		SER U20602156 & ON
LA12	18			S-1830-1	SEE LA9		SER U20602156 & ON
BLK	18			S-1367-1-6	SOLDER		SER U20601701 & ON
LA11	18			S-1493-1	SOLDER		SER U20601701 & ON
LA10	18			S-1367-1-6	S-1493-1		SER U20601701 & ON
GREEN	18	S-1460-18-5	150	S-341-2	S-341-2		SER U206-0657 & P206-0307 THRU U20602155
GREEN	18	S-1460-18-5	150	S-341-2	S-341-2		SER U206-0657 & P206-0307 THRU U20602155
HF-LA7	18		150	S-341-2	S-341-2		INACTIVE: THRU P206-0306 & U206-0656
H-LA6	18		88	S-341-2	SEE H-LA4		THRU SER U20602156
HF-LA5	18		150	S-341-2	S-341-2		INACTIVE: THRU P206-0306 & U206-0656
H-LA4	18		51	S-1367-1-6	S-341-1		THRU SER U20602156
H-LA3	18		43	S-341-1	S-341-2		THRU SER U20601700
H-LA2	18		36	S-1367-1-6	SEE H-LA3		THRU SER U20601700
H-LA1	18		114	S-1367-1-6	S-1367-1-6		THRU SER U20602156

WIRE TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	G WOOD	12-19-61
GROUP		1-11-62
CHECK		1-5-62
PROJ		2-7-62

TITLE: WIRING DIAGRAM — DOME & COURTESY LIGHTS

Cessna.

DWG NO 1270625

SUPERSEDED BY: P 11.1.2

SUPERSEDES:

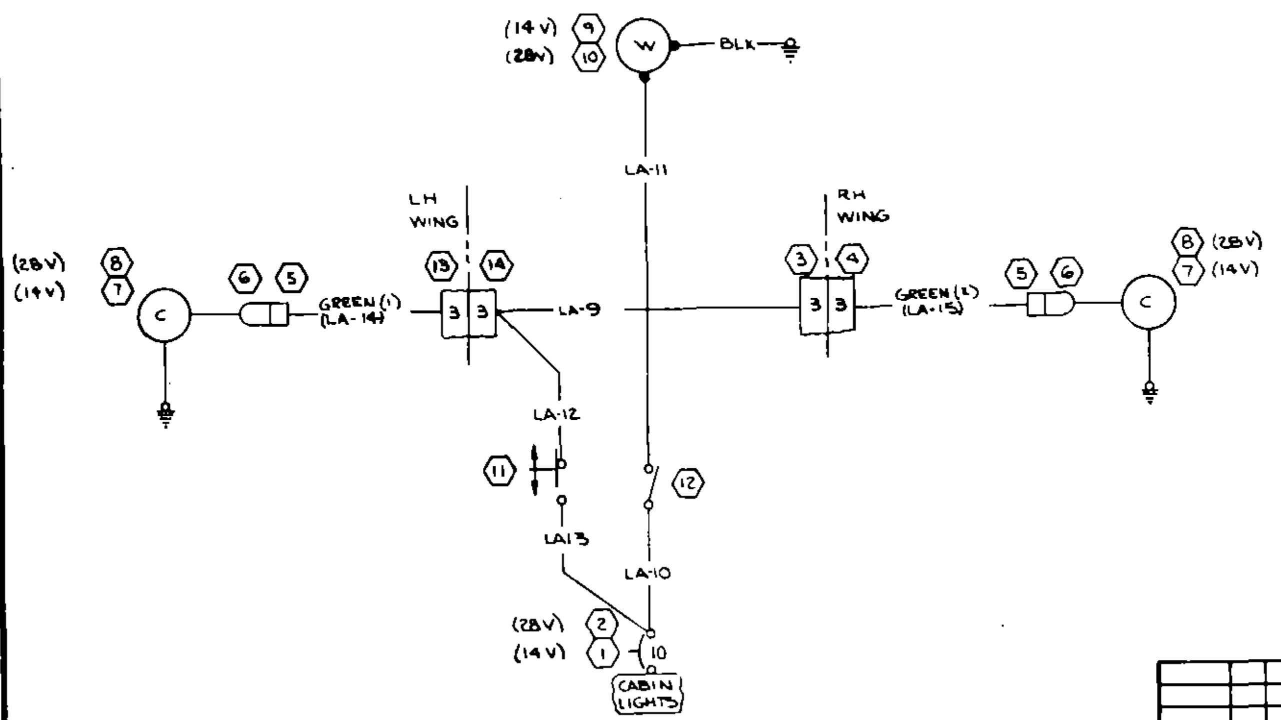
MODEL P206, U206, 205, TP206, TU206

REV F

PAGE 11.1

FORM NO 80-161

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED LA-14 & LA-15, LA9 WAS LA13, LA13 WAS LA1 & S-1831-1 WAS 0713029-0 (SR7403) IX	DLO 7-24-73	
B	BY REV: ADD S-1640-6 & S-1641-6; PIN 3 WAS 7; S-1640-12 & S-1641-12 WAS S-1640-9 & S-1641-9 MER EO 353 (NOW SHOP PRACTICE)	BLA 12-10-74	



14	S-1641-6	HOUSING-SOCKET	
13	S-1640-6	HOUSING-PIN	
12	S-2160-1	SWITCH	
11	S-1831-1	SWITCH	
10	1210110-2	LIGHT INSTL	
9	1210110-1	LIGHT INSTL	
8	GE 308	LAMP	
7	MS15584-2	LAMP	
6	S-1637-1	HOUSING	
5	S-1637-2	HOUSING	
4	S-1640-12	HOUSING-PIN	
3	S-1641-12	HOUSING-SOCKET	
2	S-1360-5L	CKT BKR	
1	S-1360-10L	CKT BKR	
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK	18	-18-0		S-1367-1-8	SOLDER		
GREEN (1) (LA15)	18	-18-5		S-1635-1	S-1636-1		
GREEN (1) (LA-14)	↓	-18-5		S-1635-1	S-1636-1		
LA13			126	S-1367-1-6	S-1830-1		
LA12			54	SEE LA9	S-1830-1		
LA11			10	S-1493-1	SOLDER		
LA10	↑		126	S-1367-1-6	S-1493-1		
LA9	18		72	S-1636-3	S-1636-2		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.1 & 11.1

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-4-73
GROUP	H. Wise	4-27-73
DRAWN	WHITE	4-29-73
CHECK	K. YOUNGERS	4-27-73
STRESS	C. Pate	8 Apr 73
PROJ		4-18-73
APPD		
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

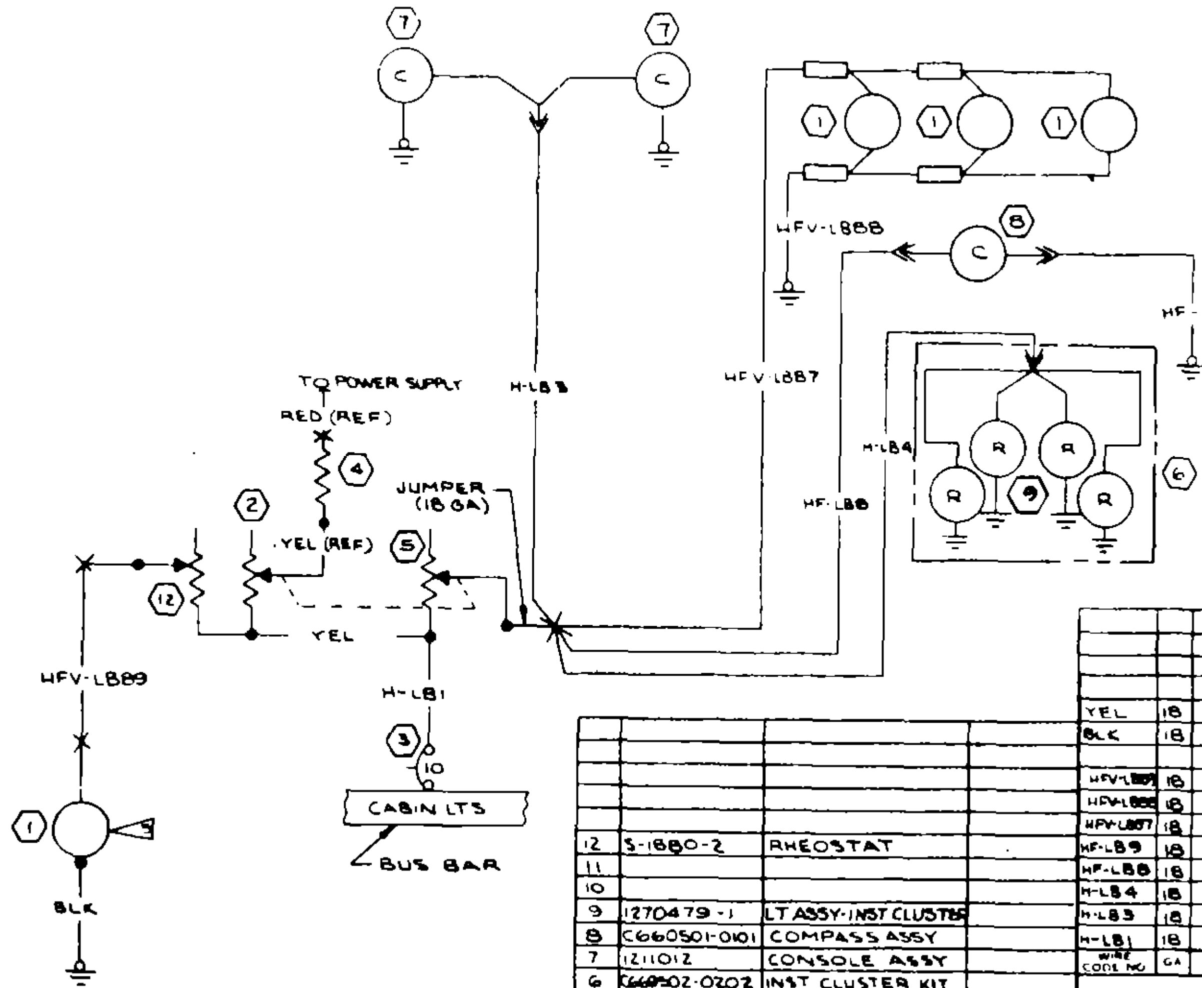
TITLE
WIRING DIAGRAM — DOME & COURTESY LIGHTS (14V & 28V)

SIZE C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE: NONE | SR7403 IX | PAGE: 11.1.2

FORM NO. 80-2188

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: DELETE S-1907-1, S-1894-1 (NOTE 3 AT 23 288(3)), HFV-LB88 WAS HDFV-LB88, HFV-LB87 WAS HDFV-LB87; HFV-LB89 WAS HDFV-LB89; ADD 1270479-1 ED&RR 10176 & 10162 (SR5401) & (SR5402) IX	EGY 10-11-68	JWH



INACTIVE: EFF SER U206-1235 & SER P206-0520 THRU SER U20601444 & SER P20600603 8-1-69

NOTES:

1. CC2 STAK-ON TERMINAL (59730)
2. PERMNENT SPLICE
3. STANDARD LENSES FOR EYEBROW LIGHTS ARE RED & CESSNA WHITE IS OPTIONAL

12	S-1880-2	RHEOSTAT	
11			
10			
9	1270479-1	LT ASSY-INST CLUSTER	
8	C660501-0101	COMPASS ASSY	
7	1211012	CONSOLE ASSY	
6	C660502-0202	INST CLUSTER KIT	
5	S-1880-4	RHEOSTAT	
4	VAL-3	6.8 Ω RESISTOR	
3	S-1360-10	CIRCUIT BKR	
2	S-1880-6	RHEOSTAT	
1	23-288	LIGHT ASSY	(95263)
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

YEL	18			SOLDER	SOLDER		
BLK	18			SOLDER	S-1367-1-8		
HFV-LB89	18			2	2		
HFV-LB88	18			S-1370-2	S-1367-1-8		
HFV-LB87	18			1	S-1370-2		
HF-LB9	18			S-341-2	S-1367-1-8		
HF-LB8	18			1	S-341-2		
H-LB4	18			1	S-341-2		
H-LB3	18			1	S-341-2		
H-LB1	18			S-1367-1-8	SOLDER		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

CES 1000 IS APPL CABLE VENDOR CODES PER S-1400 CES-XXXX-CESSNA SPEC. NO. S-XXX OR CMXXXX-CESSNA STD. NO.

SUPERSEDES P11.2

SUPERSEDED BY P 11/60

CONTRACT NO.

	NAME	DATE
DESIGN	G WOOD	8-26-68
GROUP	H Wise	8-27-68
DRAWN	YOUNGERS	8-13-68
CHECK	G IRVIN	8-15-68
STRESS	ASHER	8-31-68
PROJECT		8-31-68
APPD	SHANEY	8-20-68

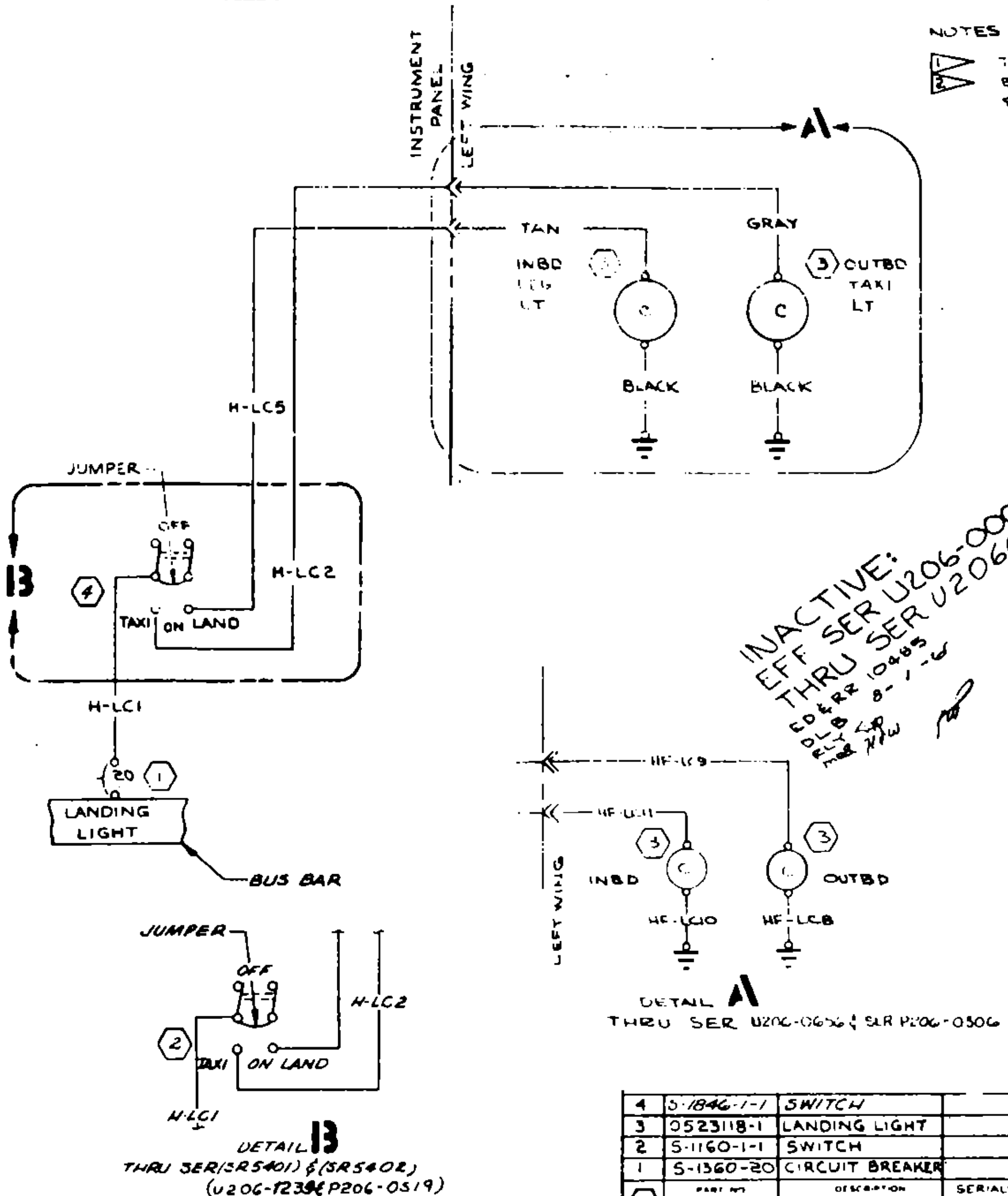
Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E PAWNEE WICHITA, KANSAS

TITLE: WIRING DIAGRAM — INSTRUMENT LIGHTS

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE: NONE | U206 & P206 | PAGE 11.2.1

ED&RR 03436 (SR5401) & (SR5402) IX



(SER 205-0001 & ON)

NOTES:

1 THRU SER(SR5401) & SER(SR5402)

2 EFFECTIVE SER(SR5401) & SER(SR5402) & ON

CHG LET	REVISION	BY / DATE	CKR / APPD
A	REMOVE N/A FROM STD WIRES (SR3694-10)	GLW 4-9-62	
B	ADD MODEL 206 S-1360-15 CKT BKR WAS S-1232-15 1270461-1 BUS BAR 1270429-1 ON WIRES H-LC2 & H-LC5 14 GA WAS 16GA (SR 4038-6; (SR3985-6)	GLW 6-19-63	
C	S-1360-20 CKT BKR WAS S-1360-15 (SR [illegible])	[illegible] 9-17-63	
D	ADDED P206 & U206 TO MODEL BLOCK; ADDED WIRE LENGTHS, TO WIT; REMOVED 1270461-1 FROM E/T; OBSOLETED H-LC3, H-LC4, H-LC6 & H-LC7; HF-LC8 WAS H-LC4; HF-LC9 WAS H-LC3; HF-LC10 WAS H-LC7; HF-LC11 WAS H-LC6 (SR4450) (SR4457)	JJR [illegible]	
E	INBD WAS OUTBD; OUTBD WAS INBD; INACTIVATED HF-LC8, HF-LC9, HF-LC10 & HF-LC11; ADDED GRAY, BLK, TAN & BLK WIRES & DETAIL "A" (SR4902) (SR4901)	VLR 1-25-66	
F	BY REV: ADDED DETAIL B, S-1846-1-1, NOTES 1&2, S-1493-2 & SE'S ED&RR 03436 (SR5401) & (SR5401) IX	EGY 8-19-66	GKI

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
H-LC5	14		26	S-1493-2	S-341-1		2
H-LC2	14		26	S-1493-2	S-341-1		2
H-LC1	14		4	S-1493-2	S-1367-2-8		2
BLACK	16	S-1460-14-0	6	S-1367-2-8	S-1367-2-8	1220090	SER U206-0657 & SER P206-0507 & ON
TAN	14	S-1460-14-0	180	S-341-1	S-1367-2-8	1220090	SER U206-0657 & SER P206-0507 & ON
BLACK	16	S-1460-16-0	6	S-1367-2-8	S-1367-2-8	1220090	SER U206-0657 & SER P206-0507 & ON
GRAY	14	S-1460-14-8	74	S-341-1	S-1367-2-8	1220090	SER U206-0657 & SER P206-0507 & ON
HF-LC11	14		180	S-1367-2-8	S-341-1	1220090	P206-0001 U206-0276 THRU P206-0506 U206-0656
HF-LC10	14		6	S-1367-2-8	S-1367-2-8	1220090	P206-0001 U206-0276 THRU P206-0506 U206-0656
HF-LC9	14		74	S-1367-2-8	S-341-1	1220090	P206-0001 U206-0276 THRU P206-0506 U206-0656
HF-LC8	14		6	S-1367-2-8	S-1367-2-8	1220090	P206-0001 U206-0276 THRU P206-0506 U206-0656
H-LC7	14		6	S-1367-2-8	S-1367-2-8		OBSOLETE
H-LC6	14		155	S-1367-2-8	S-341-1		OBSOLETE
H-LC5	14		26	S-1367-2-6	S-341-1		1
H-LC4	14		6	S-1367-2-8	S-1367-2-8		OBSOLETE
H-LC3	14		161	S-1367-2-8	S-341-1		OBSOLETE
H-LC2	14		26	S-1367-2-6	S-341-1		1
H-LC1	14		4	S-1367-2-6	S-1367-2-8		1

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	SERIALS
4	S-1846-1-1	SWITCH	
3	0523118-1	LANDING LIGHT	
2	S-1160-1-1	SWITCH	
1	S-1360-20	CIRCUIT BREAKER	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	G WOOD	12-30-61
CHECK	[illegible]	1-29-62
CHECK	R. [illegible]	3-5-62
PROJ	[illegible]	2-7-62

TITLE: WIRING DIAGRAM — LANDING LIGHTS

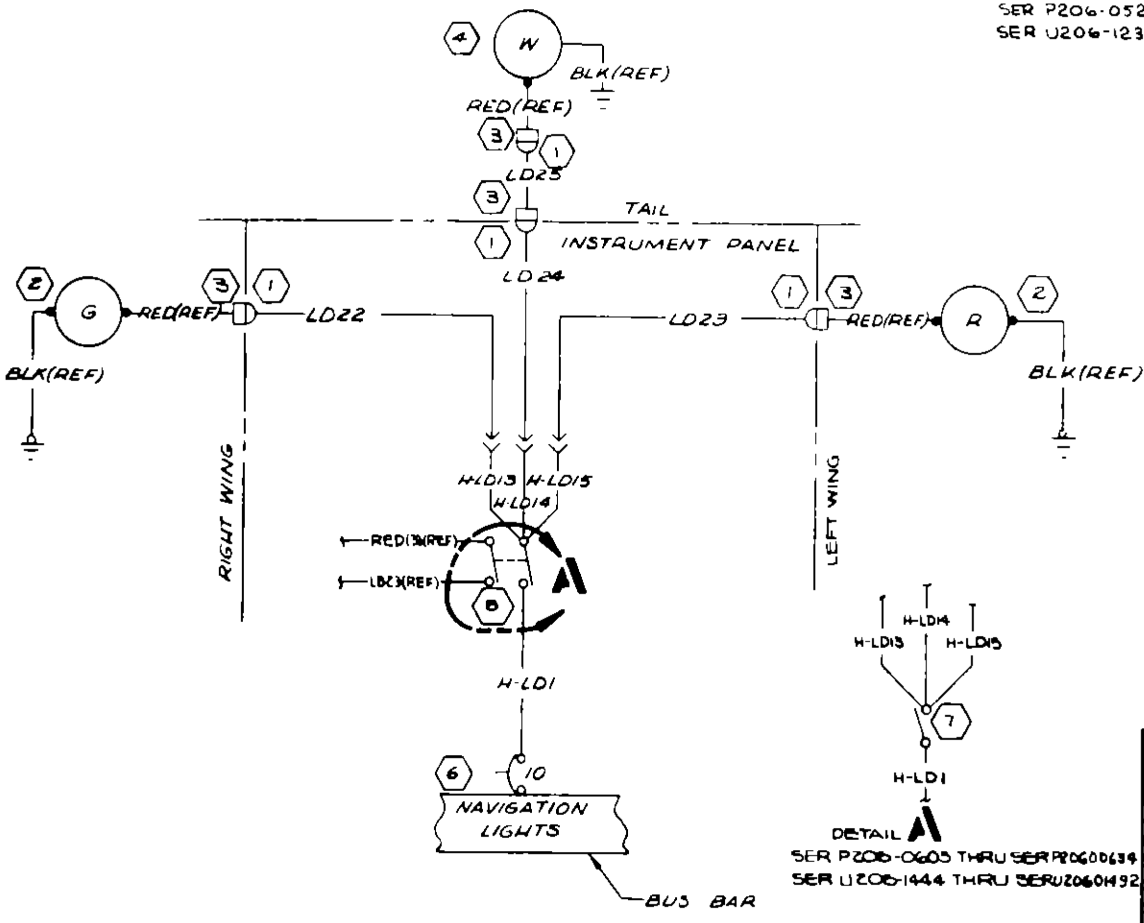
Cessna.

DWG NO 1270625

SUPERSEDED BY: P 11.13 | SUPERSEDES: | MODEL 205, 206's | REV F | PAGE 11.3

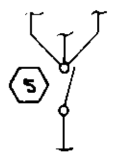
SER P206-0520 & ON
SER U206-1235 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT S-1845-1-1; SER IN S-1845-1-2; ADD DETAIL A ED & RR 10485 (SR6005)(SR6006)II	DLB 9-1-69	
B	BY REV: ADD DETAIL "A", S-1844-1-2 & SER; ADD RED(3)(REF) & LB23(REF) EDRR 10829 (SR6452)	DLP 1-5-70	



DETAIL A
SER P206-0603 THRU SER P20600634
SER U206-1444 THRU SER U20601492

INACTIVE
EFF THRU SER U20602195 II
4-23-73



DETAIL A
THRU SER P206-0603 &
SER U206-1444

H-LD25	18		20	S-1636-1	S-1635-1	
H-LD24	18		335	S-341-2	S-1635-1	
H-LD23	18		65	S-341-2	S-1635-1	
H-LD22	18		66	S-341-2	S-1635-1	
H-LD15	18		27	S-341-2	S-1493-1	
H-LD14	18		352	S-341-2	S-1493-1	
H-LD13	18		50	S-341-2	S-1493-1	
H-LD1	18		4	S1367-18	S-1493-1	
WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS		SERIALS

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	SERIALS
8	S-1844-1-2	SWITCH	
7	S-1845-1-2	SWITCH	
6	S-1360-10	CIRCUIT BREAKER	
5	S-1845-1-1	SWITCH	
4	C622001-0102	TAIL LIGHT ASSY	
3	S-1637-2	HOUSING	
2	C622001-0201	LIGHT ASSY	
1	S-1637-1	HOUSING	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P. 11.4
SUPERSEDED BY: P. 11.4.3

CONTRACT NO:

	NAME	DATE
DESIGN	G WOOD	8-26-68
GROUP	H. Wiel	8-11-68
DRAWN	E. YARBROUGH	8-14-68
CHECK	GK IRVIN	8-19-68
STRESS		8-21-68
PROJECT		
APPD	SWANEY	8-20-68

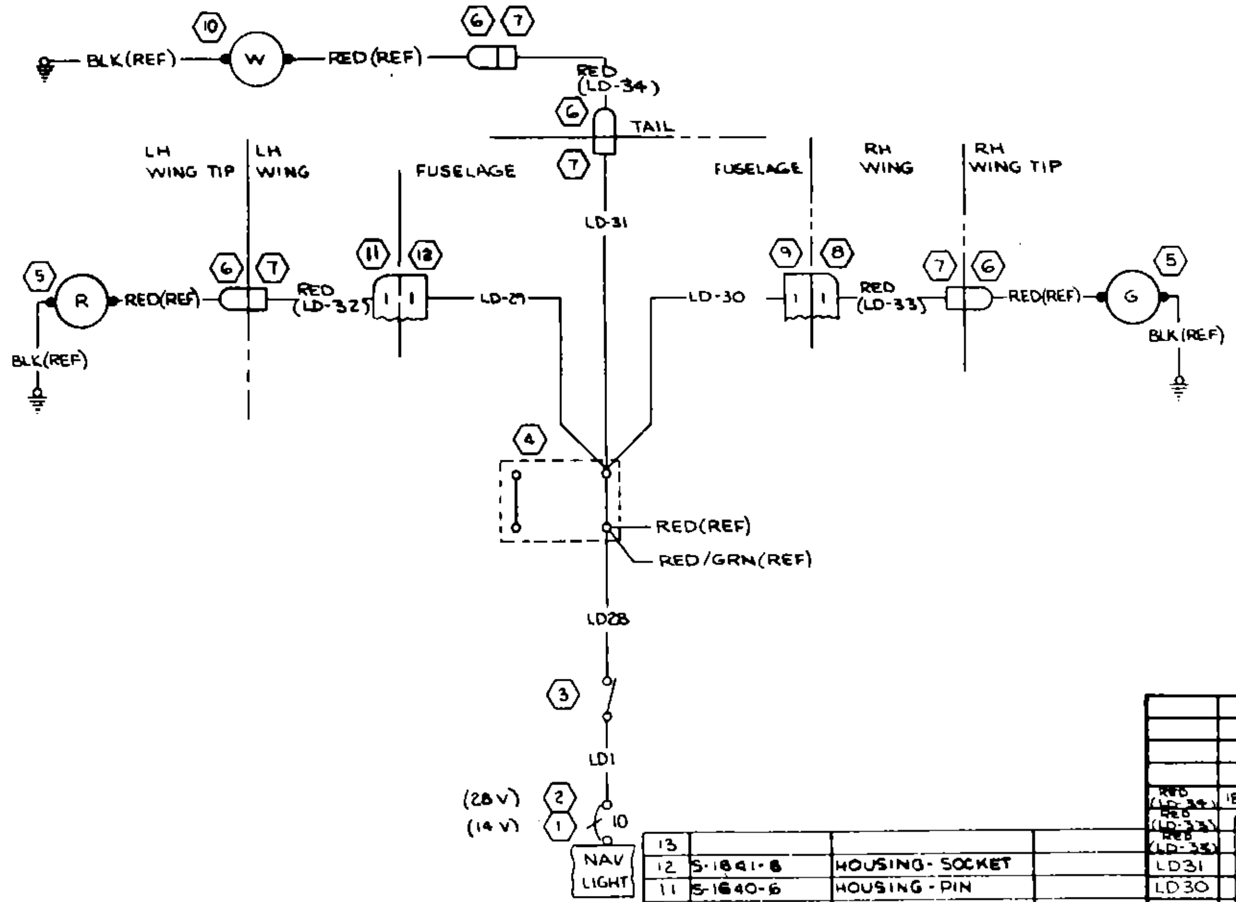
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — NAVIGATION LIGHTS

SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

SCALE: NONE | U206 & 206 | PAGE: 11.4.1

ED & RR 03436 (SR5401)II & (SR5402)II



REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED LD-32, LD-33 & LD-33 (SR7403) IX	RAM 8-10-73	
B	BY REV: ADD WIRE LENGTHS; S-1640-12 & S-1641-12 WAS S-1640-9 & S-1641-9, S-1640-6 & S-1641-6 WAS S-1640-9 & S-1641-9; MER EO 393 (NOW SHOP PRACTICE)	BLA 2-10-74	

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED (LD-34)	18	-18-2		S-1636-1	S-1635-1		
RED (LD-33)		-18-2	190	S-1636-1	S-1635-1		
RED (LD-32)		-18-2	190	S-1636-1	S-1635-1		
LD31			352	S-1829-1	S-1636-1		
LD30			75		S-1636-1		
LD29			27		S-1636-1		
LD28			7	S-1829-1	S-1493-1		
LD1	18		6	S-1367-1-6	S-1493-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
13			
12	S-1641-6	HOUSING-SOCKET	
11	S-1640-6	HOUSING-PIN	
10	C622001-0102	LIGHT ASSY	
9	S-1641-12	HOUSING-SOCKET	
8	S-1640-12	HOUSING-PIN	
7	S-1637-2	HOUSING	
6	S-1637-1	HOUSING	
5	C622001-0201	LIGHT ASSY	
4	34002-59	TERMINAL BLOCK	
3	S-2160-1	SWITCH	
2	S-1360-5L	CKT BKR	
1	S-1360-10L	CKT BKR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P11.4.1 & P11.4.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-4-73
GROUP	H. Wise	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNGERS	4-27-73
STRESS		
PROJ	Bergman	4-28-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — NAVIGATION LIGHTS

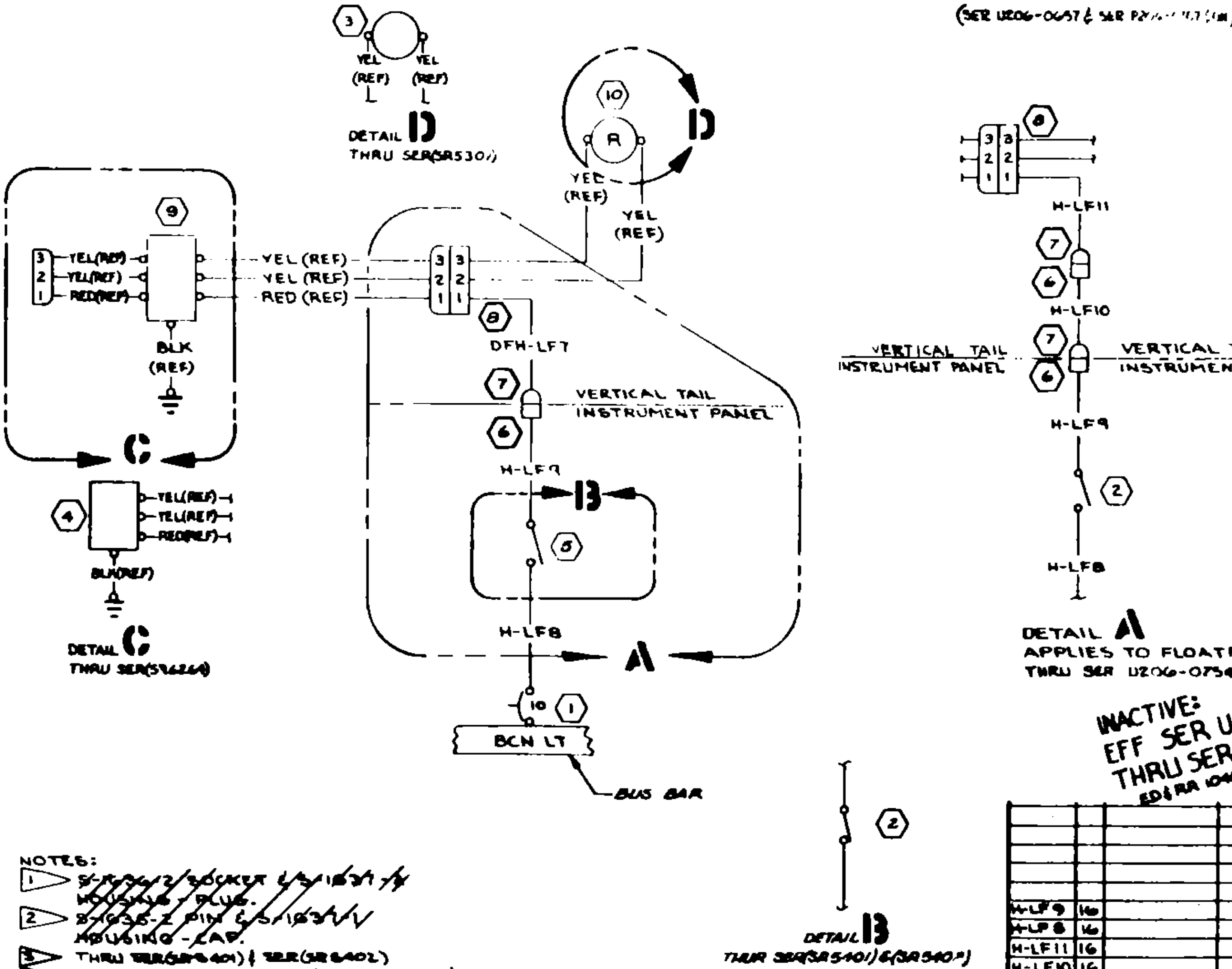
SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE (SR 7403) IX PAGE: 11.4.3

FORM NO. 80-2155

(SER U206-0657 & SER P206-0307 (IN))

LTR	REVISION	BY / DATE	CHK / APPD
A	BY REV: SEE SHEET 0	JWH 5-1-67	
B	BY REV: ADDED DETAIL B, & S-1645-1-1; ADDED S-1637(-1 & -2) & S-1638-2 TO EQUIP TABLE; DELETE NOTES 1 & 2; C594501-0201 WAS C594501-0101; ADD NOTES 3 & 4, S-1493-2 & [illegible] ED (RR 03436 (SR5401)(SR5402))	ECY	
C	BY REV: ADD DETAIL C, C594501-0203 & DETAIL D; INACTIVATE DWG SER IN C621001-0103 ED & RR 10405 (SR6005)(SR6006) ED & RR 10542 (SR6264)(SR5307)	PGP 7-23-66	



INACTIVE:
EFF SER U206-0657 & SER P206-0307
THRU SER(SR6005) & SER(SR6006)
ED & RR 10405 PGP 7-23-66

NOTES:

1. ~~S-1636-2 SOCKET & S-1637-1 HOUSING - PLUG.~~
2. ~~S-1636-2 PIN & S-1637-1 HOUSING - CAP.~~
3. THRU SER(SR6401) & SER(SR6402)
4. EFFECTIVE SER(SR6401) & SER(SR6402) & ON

H-LF9	16			S-1493-2	S-1638-2		4
H-LF8	16			S-1637-1	S-1493-2		4
H-LF11	16			S-1636-2	S-1638-2		THRU SER U206-0754
H-LF10	16			S-1636-2	S-1635-6		THRU SER U206-0754
H-LF9	16			S-1367-2-6	S-1636-6		3
H-LF8	16			S-1367-2-6	S-1367-2-6		3
DFH-LF7	16			S-1636-2	S-1639-1		
CODE NO.	GA	MATERIAL	LG	TERMINALS			REMARKS

WIRE TABLE

10	C621001-0106	LIGHT ASSY	
9	C594501-0203	FLASHER ASSY	
8	S-1638-2	HOUSING - CAP	
7	S-1637-2	HOUSING - PLUG	
6	S-1637-1	HOUSING - CAP	
5	S-1645-1-1	SWITCH	
4	C594501-0201	FLASHER ASSY	
3	C621001-0101	LIGHT ASSY	
2	S-1168-2-1	SWITCH	
1	S-1360-10	CIRCUIT BREAKER	
ITEM NO.	PART NO.	DESCRIPTION	INSTALLED ON

EQUIPMENT TABLE

	RIODDE	2-21-66
	J. Wise	1-24-66
	[illegible]	1-25-66
	[illegible]	1-27-66

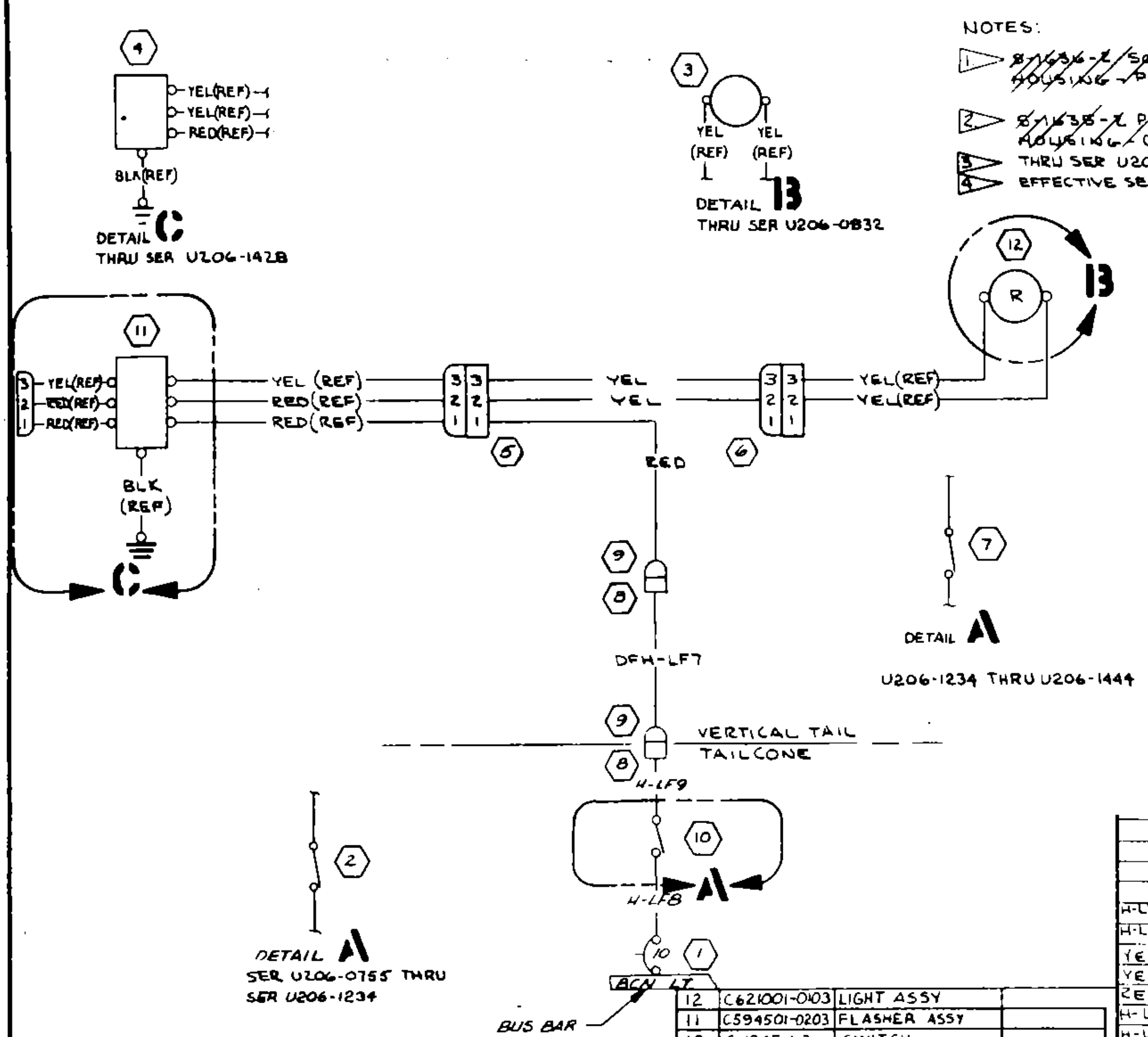
WIRING DIAGRAM—FLASHING BEACON LIGHT

Cessna.

1270625

P1114 | 1270625 11.5 | P206 & U206 | D | 11.5.1

(SER U206-0755 & ON)



NOTES:

1. ~~S-1636-2 SOCKET & S-1637-2 HOUSING - PLUG~~
2. ~~S-1635-2 PIN & S-1637-1 HOUSING - CAP.~~
3. THRU SER U206-1234
4. EFFECTIVE SER U206-1235 & ON

INACTIVE
EFFECTIVE SER U20600755 THRU SER U20601874
6-16-72

CHG LET	REVISION	BY / DATE	CHK / APPD
A	BY REV: ADDED DETAIL A & 1845-1-1; DELETE NOTES 1 & 2, ADDED S-1637(-1 & -2) TO EQUIP TABLE; S-1638-1 WAS S-1638-2 & S-1638-2 WAS S-1638-1, C594501-0201 WAS C594501-0101; YEL 18 GA WAS YEL 16 GA; ADD NOTES 3 & 4, S-1493-2 & SR'S ED & RR 03426 (SR5401)(SR5402) IX	EGY 8-15-68	
B	BY REV: ADD DETAIL B, DETAIL C S-1845-1-2, C594501-0203 & C621001-0103 ED & RR 10542 (SR6264) ED & RR 10485 (SR6005)(SR6006) IX; (SR 5307)	PGP 7-23-68	RLY
C	BY REV: RED (REF) WAS YEL (REF) / PIN 2 ON C594501-0203 ED & RR 10048	RLY 6-8-70	

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-LF9	16			S-1493-2	S-1635-2	4	
H-LF8	16			S-1367-2-6	S-1493-2	4	
YEL	18	18-4	8"	S-1635-2	S-1636-2		
YEL	18	18-4	8"	S-1635-2	S-1636-2		
RED	16	16-2	18	S-1636-2	S-1636-2		
H-LF9	16			S-1367-2-6	S-1635-2	3	
H-LF8	16			S-1367-2-6	S-1367-2-6	3	
DFH-LF7	16			S-1636-2	S-1635-2		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	INSTALLED ON
12	C621001-0103	LIGHT ASSY	
11	C594501-0203	FLASHER ASSY	
10	S-1845-1-2	SWITCH	
9	S-1637-2	HOUSING - PLUG	
8	S-1637-1	HOUSING - CAP	
7	S-1845-1-1	SWITCH	
6	S-1638-1	HOUSING PLUG	
5	S-1638-2	HOUSING CAP	
4	C594501-0201	FLASHER UNIT	
3	C621001-0101	LIGHT ASSY	
2	S-1158-2-1	SWITCH	
1	S-1360-10	CIRCUIT BREAKER	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO., COMMERCIAL AIRCRAFT DIVISION, WICHITA, KANSAS

	NAME	DATE
DRAWN	J.W. HARRIS	3-1-67
GROUP	V. Wise	3-7-67
CHECK	[illegible]	3-3-67
PROJ	[illegible]	[illegible]

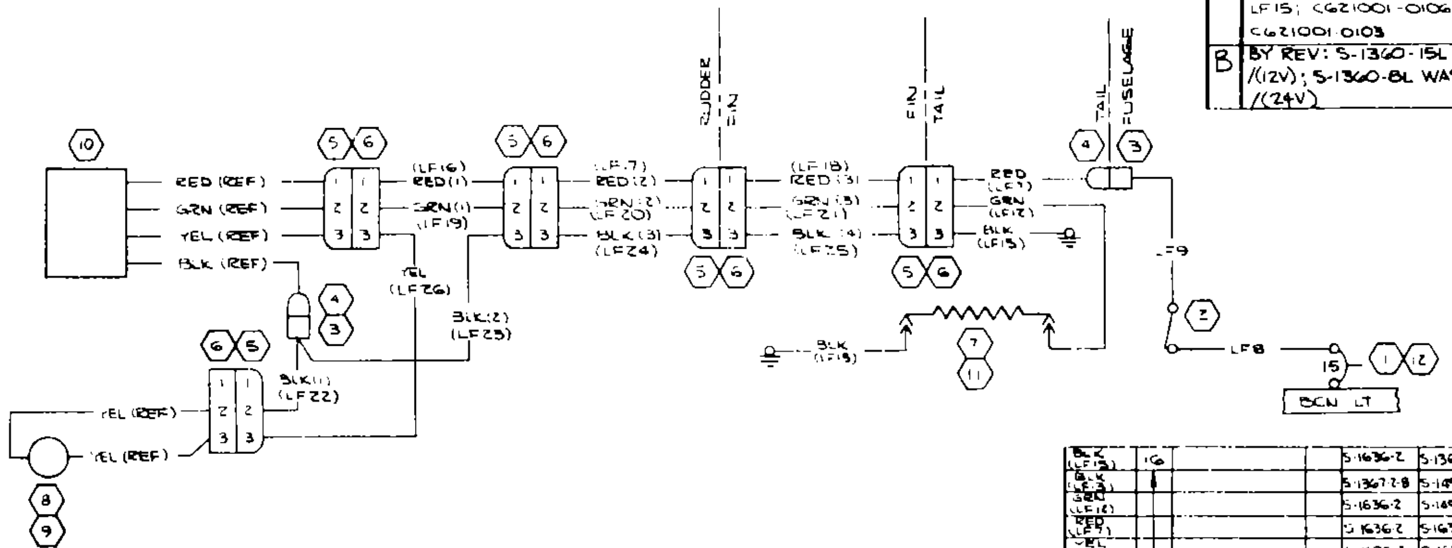
TITLE: WIRING DIAGRAM — FLASHING BEACON LIGHT (FLOATPLANE)

Cessna

DWG NO 1270625

SUPERSEDED BY P 11.5.4 | SUPERSEDES DETAIL "A" P 11.5.1 | MODEL U206 | REV C | PAGE 11.5.2

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD NOTE 1 , RED, GRN, BLK & SER; SER OUT LF7, LF12, LF13 & LF15; C621001-0106 WAS C621001-0103 (SR7413)	DLP 1-10-73	
B	BY REV: S-1360-15L WAS S-1360-10L /(12V); S-1360-8L WAS S-1360-5L /(24V) (SR8260)	BAH 5-13-75	BRM



WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK (LF15)	16			S-1636-2	S-1367-2-8		SER U20602209 & ON
BLK (LF13)				S-1367-2-8	S-1493-2		SER U20602209 & ON
GRN (LF12)				S-1636-2	S-1493-2		SER U20602209 & ON
RED (LF7)				S-1636-2	S-1635-2		SER U20602209 & ON
YEL (LF26)				S-1636-2	S-1635-2		
BLK(4) (LF25)				S-1636-2	S-1635-2		
BLK(3) (LF24)				S-1636-2	S-1635-2		
BLK(2) (LF23)				S-1636-2	S-1635-2		
BLK(1) (LF22)				S-1635-2	S-1636-2		
GRN(3) (LF21)				S-1636-2	S-1635-2		
GRN(2) (LF20)							
GRN(1) (LF19)							
RED(3) (LF18)							
RED(2) (LF17)							
RED(1) (LF16)					S-1635-2		
LF15				S-1636-2	S-1367-2-8		THRU SER U20602208
LF13				S-1367-2-8	S-1493-2		THRU SER U20602208
LF12				S-1636-2	S-1493-2		THRU SER U20602208
LF9				S-1636-2	S-1493-2		
LF8				S-1493-2	S-1367-2-8		
LF7	16			S-1636-2	S-1635-2		THRU SER U20602208

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
12	S-1360-8L	CKT BKR	(24V)
11	0R95-6	RESISTOR (83777)	(24V)
10	C594502-0101	FLASHER	
9	C621001-0106	LIGHT ASSY	(12V)
8	C621001-0102	LIGHT ASSY	(24V)
7	0R95-1.5	RESISTOR (83777)	(12V)
6	S-1638-1	HOUSING-PLUG	
5	S-1638-2	HOUSING-CAP	
4	S-1637-1	HOUSING	
3	S-1637-2	HOUSING	
2	S-1845-1-2	SWITCH	
1	S-1360-15L	CKT BKR	(12V)

EQUIPMENT TABLE

NOTES:

1. COLORED WIRES BEARING CES 1100 CODING IN PARENTHESIS SHALL NOT BE STAMPED. CES 1100 CODING ON THESE WIRES IS FOR PARTS LIST USE ONLY

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.5.4

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H. Wiebe	11-3-72
DRAWN	PAPE	11-2-72
CHECK	E. YOUNGERS	11-2-72
STRESS		
PROJ		11-3-72
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — FLASHING BEACON (FLOATPLANE)

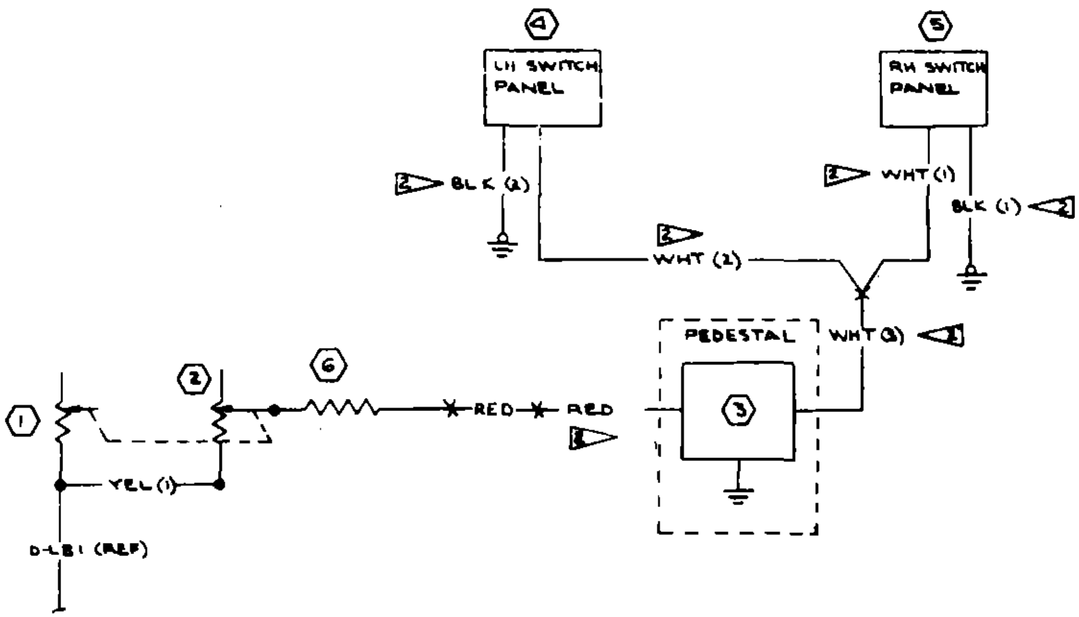
SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | 206 | PAGE: 11.5.4.1

FORM NO 80-2168

(SR7061) (REF)

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE:
EFF SER U806-1235 & SER P206-0520
THRU SER U20601444 & SER P20600603
8-1-69
SPC VIW
BY
REC.

NOTES:

1. TO BE RETAINED IN TERMINAL WIRE MUST BE STRIPPED, DOUBLED & TWISTED
2. THESE WIRES ARE VENDOR FURNISHED

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
WHT (2)	22	-22-9		[illegible] (2)	SOLDER	2	
WHT (1)	22	-22-9		[illegible] (1)	SOLDER	2	
BLK (2)	22	-22-0		SOLDER	S-1367-1-8	1 2	
BLK (1)	22	-22-0		SOLDER	S-1367-1-8	1 2	
WHT (3)	22	-22-9		SOLDER	S-1310-[illegible]	2	
RED	18	-18-4		S-1370-1	S-1370-1		
YEL (1)	18	-18-4		SOLDER	SOLDER		

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	
6	VAL-3	6.8Ω RESISTOR	(94310)
5	1213192-1	PANEL	
4	1213191-1	PANEL	
3	C613001-0201	INVERTA PAK	
2	S-1880-1	RHEOSTAT	
1	S-1880-4	RHEOSTAT	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P11.9

SUPERSEDED BY: P11.15

CONTRACT NO

	NAME	DATE
DESIGN		
GROUP	H. Wise	7-15-68
DRAWN	YOUNGERS	7-11-68
CHECK	G IRVIN	7-12-68
STRESS	REGSIDE	7-15-68
PROJECT	[illegible]	7-16-68
APPD	SWANEY	7-12-68

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E PAWNEE WICHITA, KANSAS

TITLE WIRING DIAGRAM — ELECTRO LUMINESCENT PANEL

SIZE C | CODE IDENT NO 71379 | DWG NO. 1270625

SCALE NONE | U206 & P206 | PAGE 17.9.1

ED&RR 03412 (SR5401) & (SR5402) IX

NOTES:

1. TYPICAL 17 PLACES
2. STANDARD EQUIPMENT
3. WHEN POST LIGHTS ARE INSTALLED LB3 & LB87 ARE CONNECTED TO CONSOLE SIDE OF S-1847-2-1 INSTEAD OF S-1880-4 RHEOSTAT
4. TYPICAL 16 PLACES

REVISION

LET	DESCRIPTION	DATE	APPD
A	BY REV: S-1847-2-1 WAS S-1847-1-1 ED&RR 10084 (SR5401)&(SR5402) IX	JVH 9-26-68	
B	BY REV: ADD HFV-LB87(REF) WIRE; DELETE S-1894-1, S-1902-1, 1813/2LW1, ADD 1270479-2 ED&RRS10176&10162 (SR5401)(SR5402) IX	EGY 10-17-68	JWH MOS

INACTIVE:
EFF SER U206-1235 & P206-0520
THRU SER U2060144 & P20600603
ED&RR 10485 & 10528 8-1-69
ED&RR DLY ... DATE ...

RED/YEL	22	-22-2-4		SOLDER	SOLDER	1		
RED/YEL(1)	22	-22-2-4		S-341-2	SOLDER	1		
BLK (3)	22	-22-0		SOLDER	S-1367-1-8			
BLK (2)	22	-22-0		SOLDER	SOLDER	4		
BLK (1)	22	-22-0		SOLDER	S-341-2			
DHF-LB85	20			S-341-2	S-1370-1			
DHF-LB84	20			S-341-2	S-1370-1			
DHF-LB83	20			SOLDER	S-1367-1-8			
DHF-LB82	20			SOLDER	SOLDER			
DHF-LB81	20			S-341-2	S-1367-1-8			
DHF-LB80	20			S-341-2	S-1367-1-8			
LB51	18			S-1367-1-6	S-341-2			
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS				SERIALS

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	
12	VAL-3	6.8 Ω RESISTOR	(94310)
11	S-1880-6	RHEOSTAT	
10	FRL-5-2	2 Ω RESISTOR	(94310)
9	1270479-2	LT ASSY	
8	S-1847-2-1	SWITCH	
7	C669502-0202	INST CLUSTER	
6			
5	S-1899-1	POST LIGHT ASSY	
4			
3	S-1899-2	POST LIGHT ASSY	
2	S-1880-4	RHEOSTAT	
1	S-1360-10	CIRCUIT BKR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO
S-XXX OR CMXXXX-CESSNA STD NO.

SUPERSEDES: P11.10

SUPERSEDED BY: P11.17.0

CONTRACT NO.

	NAME	DATE
DESIGN	G WOOD	8-26-68
GROUP	H. Wise	8-21-68
DRAWN	YOUNGER	8-13-68
CHECK	G IRVIN	8-15-68
STRESS		8-21-68
PROJECT		
APPD	SWANEY	8-30-68

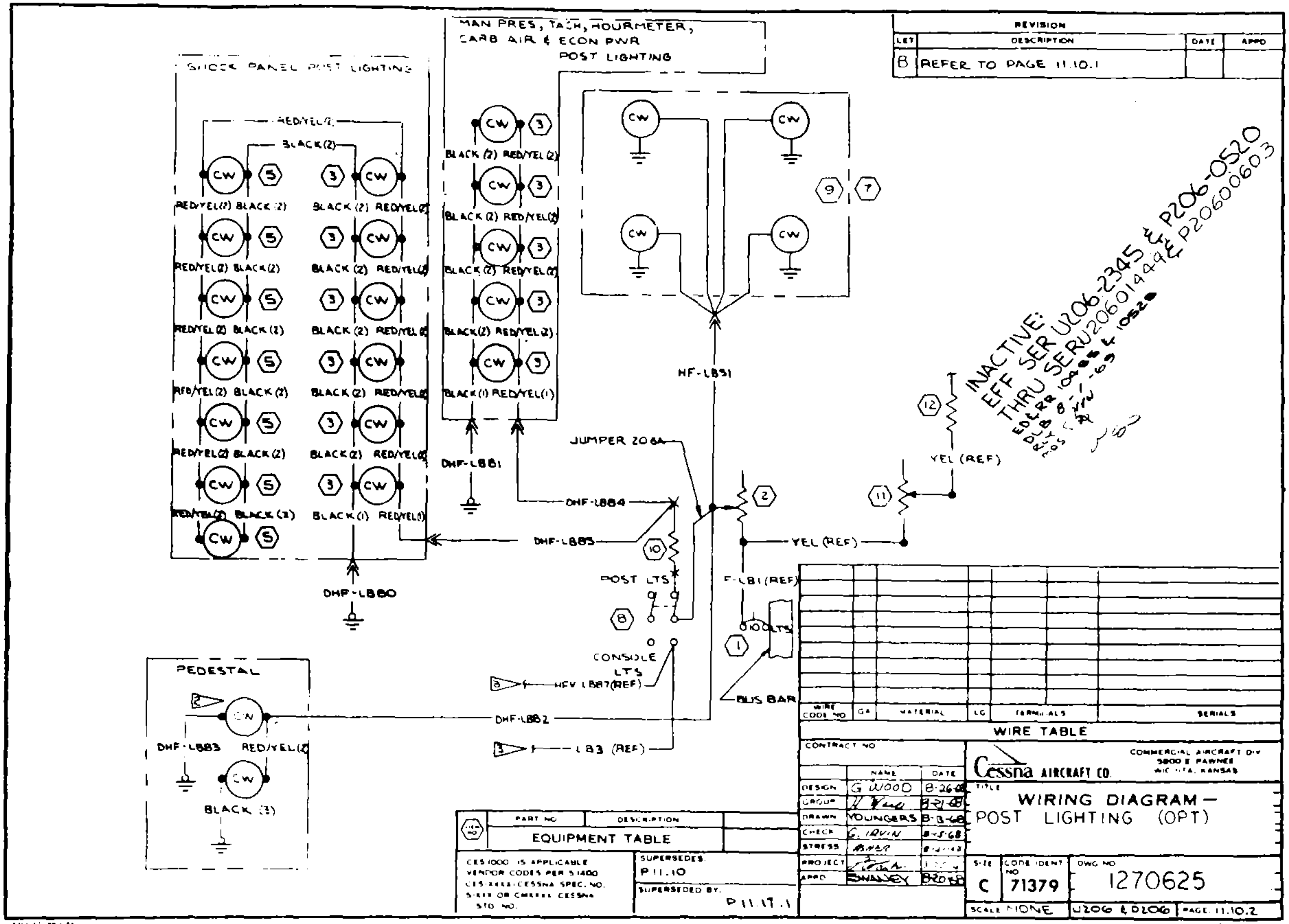
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — POST LIGHTING (OPT)

SIZE: C | CODE IDENT NO: 71379 | DWG NO. 1270625

SCALE: NONE | U206 & P206 | PAGE: 11.10.1

ED&RR 03436 SER P206-0520 & ON
SER U206-...

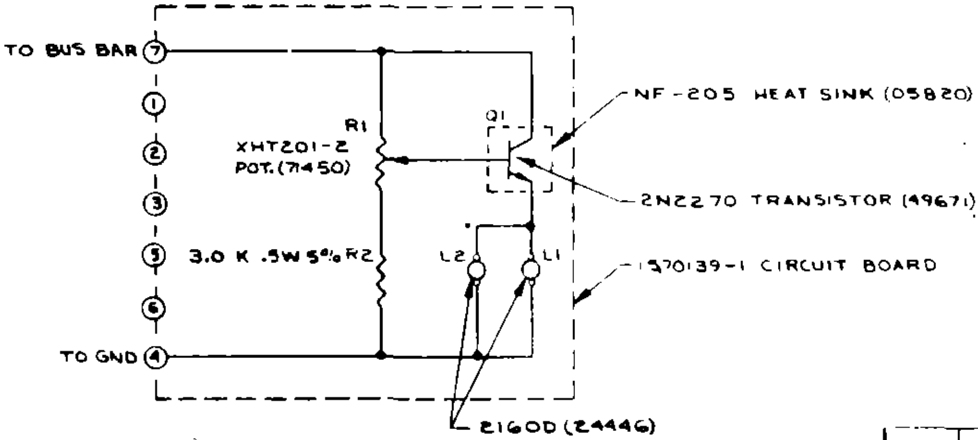


ED&RR 03436 (SR5401)&(SR5402) IX

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

NOTES:

1. ALL MATERIALS DEFINED ON THIS DRAWING ARE FOR REFERENCE AND TECHNICAL USE ONLY



INACTIVE: EFF SER U206-0915 THRU SER U20601444 SEM ED&R 10653 8-28-69

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

PART NO	DESCRIPTION

EQUIPMENT TABLE

CONTRACT NO	NAME	DATE
DESIGN	J WEDEL	7-28-67
GROUP		7-27-67
DRAWN	C. GARCIA	9-15-67
CHECK		7-9-67
STRESS		9-19-67
PROJECT		
APPD		

SUPERSEDES: 12997-79

SUPERSEDED BY:

Cessna AIRCRAFT CO — COMMERCIAL AIRCRAFT DIV, 5800 E. PAWNEE, WICHITA, KANSAS

TITLE: WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL (12 VOLT)

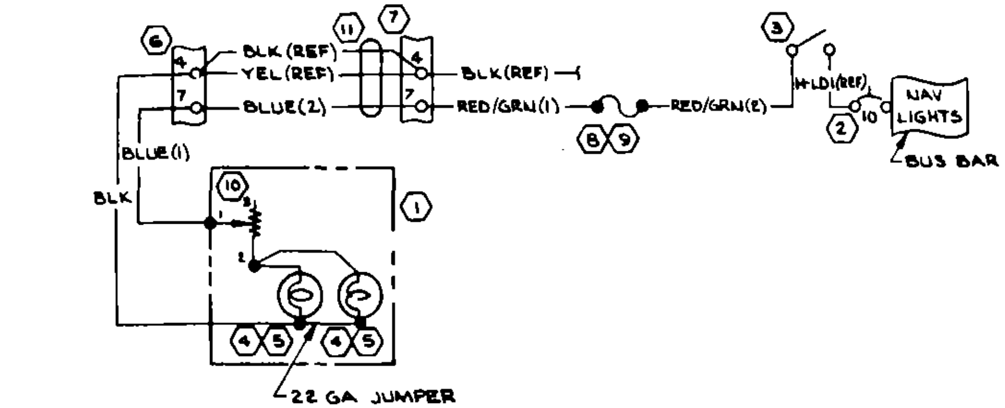
SIZE	CODE IDENT NO	DWG NO
C	71379	1270625

SCALE NONE — U206 — PAGE 11.11.0

SER U206-0915 & ON

SER P20600604 & ON
SER U20601445 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE: EFF THRU SER U20601700 & P20600644
EDRR 10907 6-30-70

NOTES:

1. PART OF SF-1030-BX (08261) CABLE
2. 329636 (00779) TERMINAL

ITEM NO	PART NO.	DESCRIPTION	
11	SF-1030-BX	CABLE	08261
10	K-350	POT	10582
9	HHJ-A	FUSEHOLDER	71400
8	AGC-1/2	FUSE	71400
7	351-11-08-001	TERM. BLOCK	71785
6	351-11-07-001	TERM. BLOCK	71785
5	S-1902-1	SOCKET	
4	S-1894-1	LAMP	
3	S-1845-1-2	SWITCH	
2	S-1360-10	CKT BKR	
1	1270686-1	MAPLIGHT ASSY	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK	22	-22-0		2	SOLDER		
RED/GRN(2)	22	-22-2-5		SOLDER	S-1493-1		
RED/GRN(1)	22	-22-2-5		2	SOLDER		
BLUE(2)		1		2	2		
BLUE(1)	22	-22-6		2	SOLDER		

WIRE TABLE

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	H. Nice	9-3-69
DRAWN	MONICAL	8-18-69
CHECK	J. HARRIS	8-29-69
STRESS		9-2-69
PROJ		9-2-69
APPD	McAvaney	8-29-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL (12 VOLT)

SIZE C | CODE IDENT. NO 71379 | DWG NO 1270625

SCALE NONE | U206 & P206 | PAGE 11.11.1

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO
S-XXX OR CMXXXX-CESSNA
STD NO

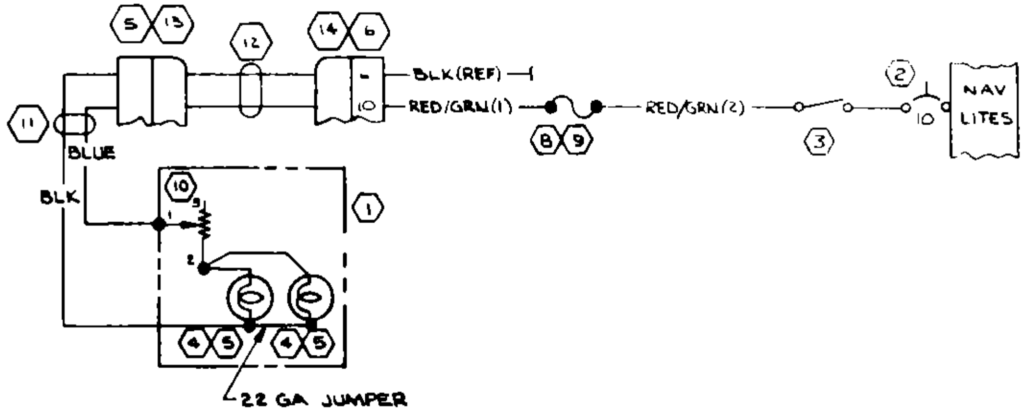
SUPERSEDES
1270625 PAGE 11.11

SUPERSEDED BY
? 11.11.2

FORM NO 80 2198

ED & RR 10653 (SR6006) IX & (SR6005) IX

LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT S-1845-1-2; ADD DETAIL A; S-1360-10L WAS S-1360-10; SER IN RED/GRN(3) SER (SR 74037) ON	1-4-72 LKW	
B	BY REV: REMOVE DETAIL A, RED/GRN (3), 34002-55 & S-2160-1; INACT DWG SER 20601701	RAM 9-21-73	



INACTIVE: EFF THRU SER 20601700 9-21-73 RAM

NOTES:

1. PART OF SF-1030-BX (08261) CABLE
2. 60218-4LP TERMINAL (00779)

ITEM NO	PART NO.	DESCRIPTION	
14	1270062-1	CKT BOARD	
13	1270061-1	CKT BOARD	
12	1270060-1	CABLE ASSY	
11	SF-1030-BX	CABLE	08261
10	K-350	POT	10582
9	HHJ-A	FUSEHOLDER	71400
8	AGC-1/2	FUSE	71400
7	255 10 30 190	CONNECTOR	71785
6	582384-9	SOCKET	00779
5	S-1902-1	SOCKET	
4	S-1894-1	LAMP	
3	S-1845-1-2	SWITCH	
2	S-1360-10L	CKT BKR	
1	1270686-1	MAPLIGHT ASSY	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK	22	1		SOLDER	SOLDER		
RED/GRN(2)	22	-22-2-5		SOLDER	S-1493-1		
RED/GRN(1)	22	-22-2-5		2	SOLDER		
BLUE	22	1		SOLDER	SOLDER		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES 1270625 PAGE 11.11.1

SUPERSEDED BY: R. 11.11.3

CONTRACT NO:

	NAME	DATE
DESIGN		7-2-70
GROUP	H. Wise	7-2-70
DRAWN	PAPE	6-30-70
CHECK	L.K. WHITE	7-1-70
STRESS		
PROJ		7-6-70
APPD		
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E PAWNEE WICHITA, KANSAS

TITLE: WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL (12 VOLT)

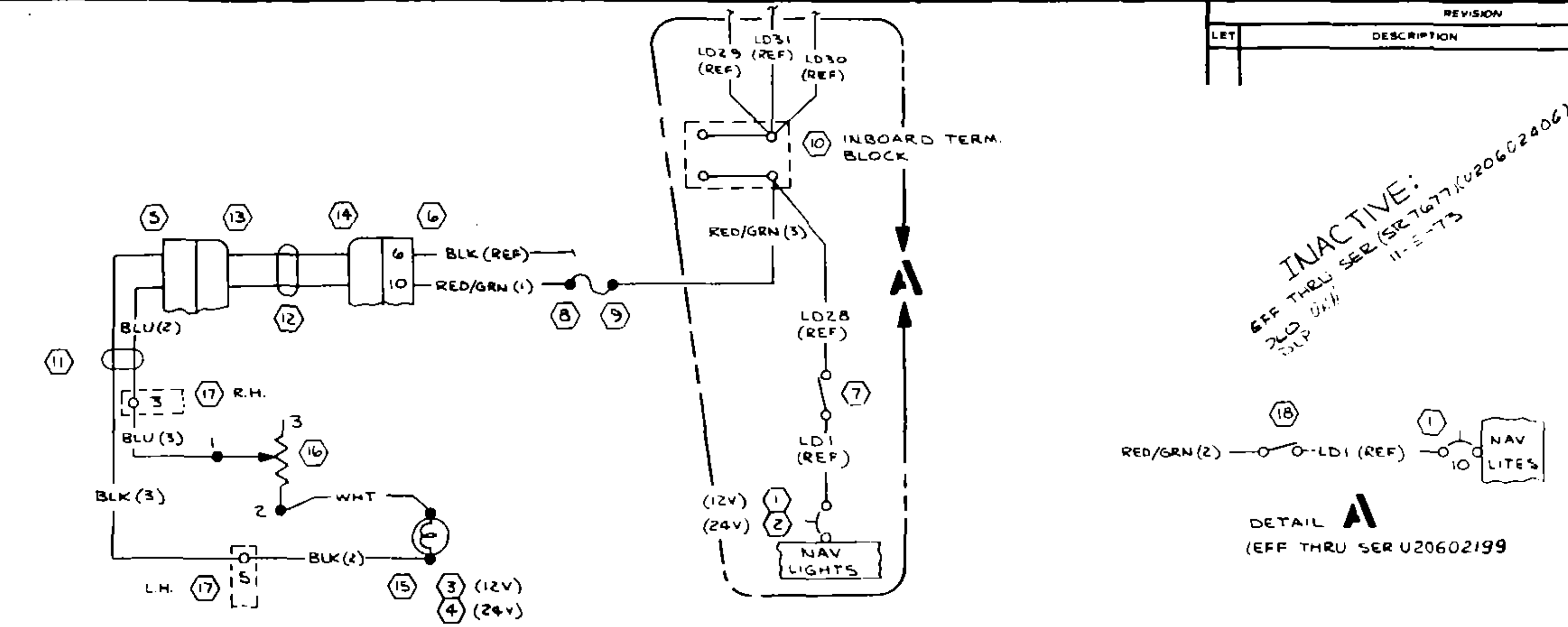
SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | 206 | PAGE 11.11.2

FORM NO 80 2188

EDRR 10907 (SR6563)

REVISION			
LET	DESCRIPTION	DATE	APPD



NOTES:

1. 60215-4LP (00779) TERMINAL
2. 329636 (00779) TERMINAL

ITEM NO	PART NO.	DESCRIPTION	
18	S-1845-1-2	SWITCH	
17	351-11-05-001	TERM BOARD	
16	3859A-282-152A	POT	
15	4157-001	SOCKET	
14	1270062-1	CKT BOARD	
13	1270061-1	CKT BOARD	
12	1270060-1	CABLE ASSY	
11	SF-1030-Bx	CABLE	
10	34002-55	TERM BLOCK	
9	HHJ-A	FUSE HOLDER	
8	AGC-1/2	FUSE	
7	S-2160-1	SWITCH	
6	582384-9	SOCKET	
5	255 10 30 190	CONNECTOR	
4	24RB	LAMP	
3	12 RB	LAMP	
2	S-1360-5L	CKT BKR	
1	S-1360-10L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED/GRN(2)	22	-22-2-5		SOLDER	S-1493-1		THRU SER U20602198
BLK(3)	22	-22-0		SOLDER	2		
BLK(2)		-22-0					
BLU(3)		-22-6					
BLU(2)		-22-6			2		
RED/GRN(1)		-22-2-5		SOLDER	S-1829-1		SER U20602199 & ON
RED/GRN(1)	22	-22-2-5		1	SOLDER		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: Pg. 11.11.2

SUPERSEDED BY: P 11.11.4

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	H. Wiel	9-24-73
DRAWN	MERRICK	9-21-73
CHECK	J. YOUEL	9-21-73
STRESS		
PROJ	[illegible]	9-24-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

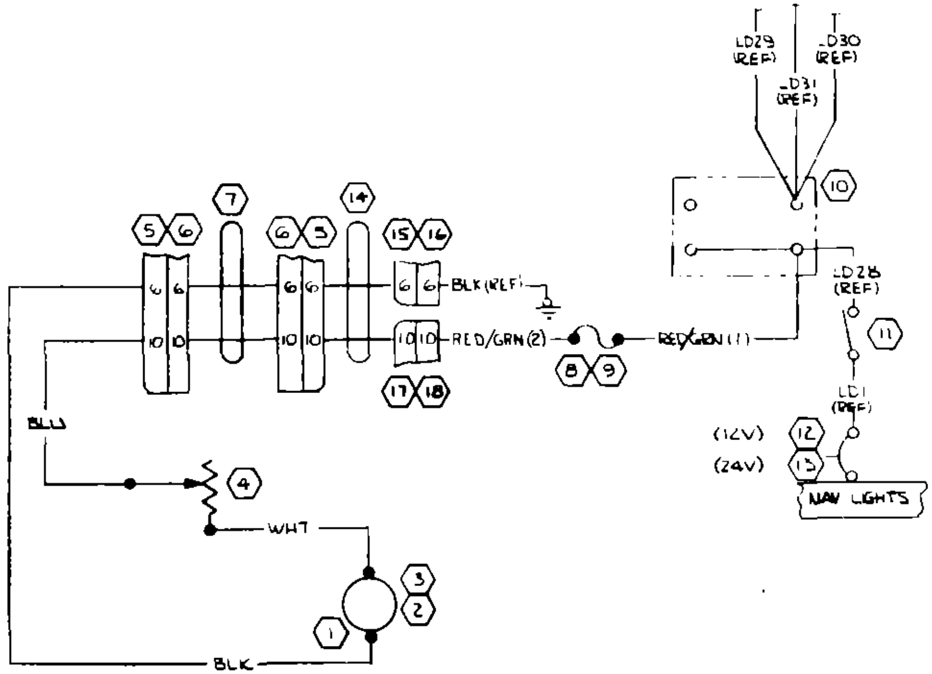
TITLE
WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL

SIZE C | CODE IDENT. NO 71379 | DWG NO 1270625

SCALE: NONE | U20601701 | PAGE: 11.11.3

FORM NO. 80-2158

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD 1570307-2; S-1963-2 WAS SOLDER/RED/GRN(2) (SR7677) (SR 7670) IX	MEM 5-14-74	ARS



ITEM NO.	PART NO.	DESCRIPTION	
18	S-1962-2-0	HOUSING	
17	S-1962-1-0	HOUSING	
16	S-1960-2-0	HOUSING	
15	S-1960-1-0	HOUSING	
14	1570307-2	CABLE ASSY	
13	S-1360-10L	CKT BKR	
12	S-1360-5L	CKT BKR	
11	S-2160-1	SWITCH	
10	34002-5S	TERM BLOCK	
9	AGC-1/2	FUSE	
8	HHJ-A	FUSE HOLDER	
7	1570308-1	CABLE ASSY	
6	3421-0000	SOCKET	
5	1570307-1	CONNECTOR ASSY	
4	3859A161-152A	RHEOSTAT	
3	24 RB	LAMP (24V)	
2	12 RB	LAMP (12V)	
1	4157-001	SOCKET	

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
BLU	22	-22-6		SOLDER	SOLDER		
BLK	22	-22-0		SOLDER	SOLDER		
WHT	22	-22-9		SOLDER	SOLDER		
RED/GRN (2)	22	-22-2-5		S-1963-2	SOLDER		
RED/GRN (1)	22	-22-2-5		SOLDER	S-4829-1		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.11.3

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	[illegible]	11-12-73
DRAWN	J. OLLER	11-2-73
CHECK	PAPE	11-5-73
STRESS		
PROJ	McCarter	11-14-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

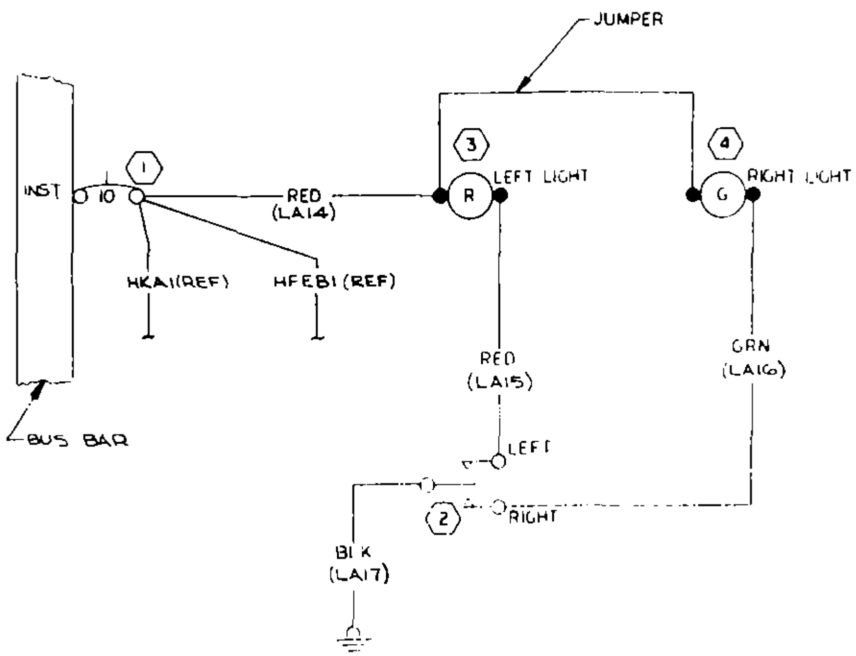
TITLE
WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE SR7677 PAGE: 11.11.4

FORM NO 80-3188

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	BY REV: INST WAS CABIN LTS; ADD (OPT) TO TITLE BLOCK, HFEB1(REF) & HKA1(REF); DELETE HLA1(REF) ED & RR 02372	SEM 6-17-68	[illegible]
B	BY REV: S-1460-18-2 WAS S-1460-20-2 ED & RR 10290	A.S. 12-6-68	[illegible]
C	BY REV: ADD CES1100 CODE TO WIRES NOW SHOP PRAC	GKG 6-25-73	[illegible]



WIRE CODE NO.	GA	MATERIAL	CO	TERMINALS			[illegible]ERIALS
RED (LA14)	18	S-1460-18-2		S-1367-1-6	SOLDER		
RED (LA15)	18	S-1460-18-2		S-1367-1-6	SOLDER		
GRN (LA16)	20	S-1460-20-5		S-1367-1-6	SOLDER		
BLK (LA17)	18	S-1460-18-0		S-1367-1-6	S-1367-1-8		

WIRE TABLE

	PART NO.	DESCRIPTION
4	[illegible]	LIGHT ASSY (B7034)
3	VM [illegible]	LIGHT ASSY (B7034)
2	S-1238-1-1	SWITCH
	S-1360-[illegible]	CKT BKR

EQUIPMENT TABLE

CONTRACT NO.	NAME	DATE
DESIGN		
GROUP	[illegible]	8 [illegible]
DRAWN	SWANEY	6-22-67
CHECK	[illegible]SHAW	[illegible]
STRESS	[illegible]	[illegible]
PROJECT	[illegible]	[illegible]
APPD		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — SKYDIVING SIGNAL LIGHT (OPT)

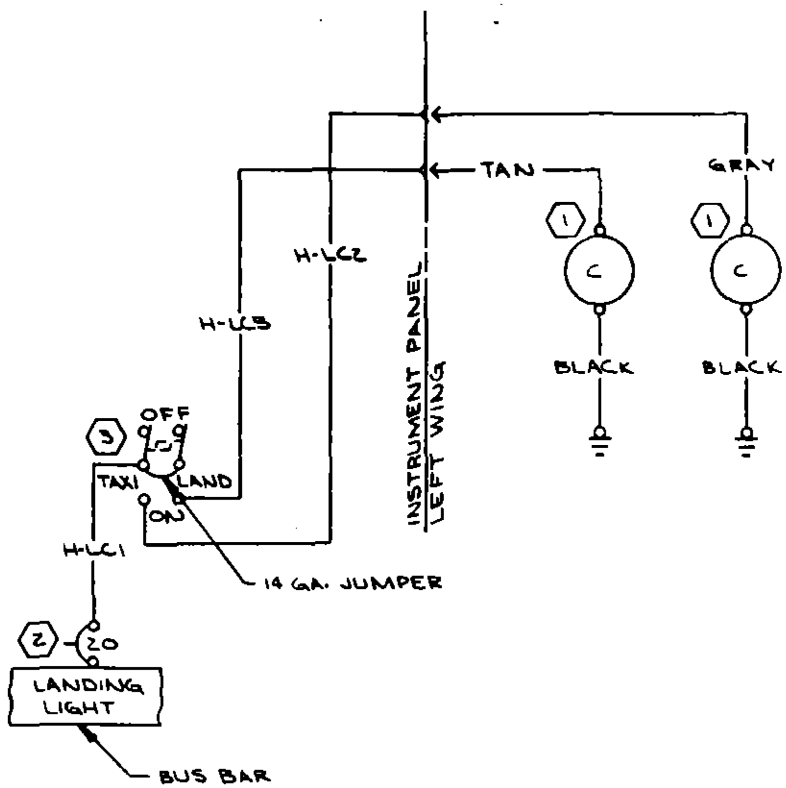
SIZE C | CODE IDENT NO 71379 | DWG NO 1270625
SCALE: NONE | 206 | PAGE: 1 1/2

SER U206-0915 & ON

FORM NO 80-215

SER P20600604 & ON
SER U20601445 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFF THRU SER U20601700
LKW 1-12-73

BLACK	16	-16-0	6	S-1367-2-8	S-1367-2-8		
GRAY	14	-14-8	74	S-341-1	S-1367-2-8		
TAN	14	-14-10	180	S-341-1	S-1362-2-8		
H-LC5	14		26	S-1493-2	S-341-1		
H-LC2	14		26	S-1493-2	S-341-1		
H-LC1	14		4	S-1493-2	S-1362-2-8		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
3	S-1846-1-3	SWITCH	
2	S-1360-20	CIRCUIT BKR	
1	0523118-1	LANDING LIGHT	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO
S-XXX OR CMXXXX-CESSNA
STD NO.

SUPERSEDES: P 11.3

SUPERSEDED BY: P 11.13.2

CONTRACT NO.

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP	[illegible]	8-7-69
DRAWN	D.L.BURKE	8-1-69
CHECK	R.YOUNGERS	8-5-69
STRESS	[illegible]	8-7-69
PROJ	[illegible]	8-7-69
APPD	[illegible]	8-6-69
OTHER		

Cessna. AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM —
LANDING LIGHTS

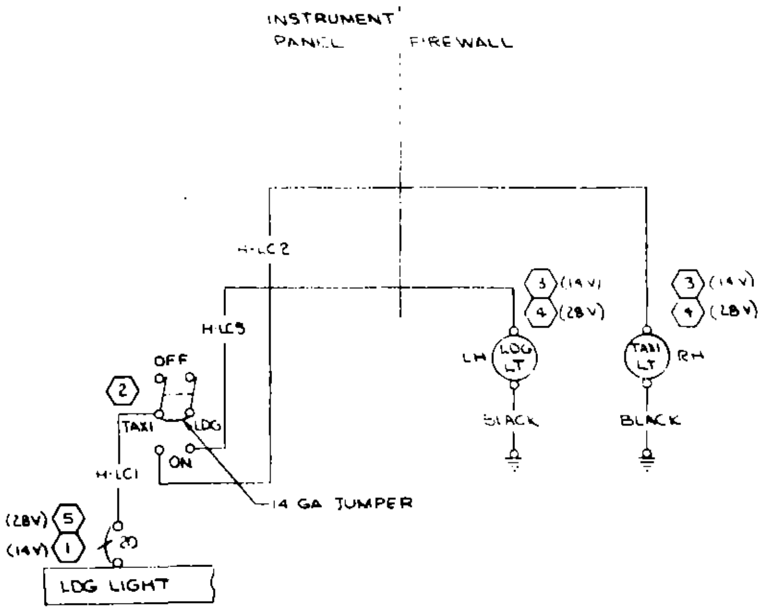
SIZE C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE NONE | U206 & P206 | PAGE: 11.13

ED & RR 10485 (SR6005) IX
(SR6006) IX

FORM NO. 80-2198

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE EFF THRU SERU20602199 II 1-12-73

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLACK	14	-14-0		S1367-2-8	S-1367-2-8		
LC5	↓			S1367-2-8	S-1493-2		
LC2	↓			S1367-2-8	↕		
LC1	14			S-1367-2-6	S-1493-2		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
5	S-1360-15L	CIRCUIT BREAKER	
4	4591	PAR-36, 100W LAMP	(024446)
3	4509	PAR-36, 100W LAMP	(024446)
2	S-1846-1-3	SWITCH	
1	S-1360-20L	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.13 & P 11.13.1

SUPERSEDED BY: P 11.13.3

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	12-29-72
GROUP		
DRAWN	WHITE	1-12-73
CHECK	ENOUNGERS	1-15-73
STRESS		
PROJ	Bergman	1-18-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

WIRING DIAGRAM — LANDING LIGHT & TAXI LIGHT

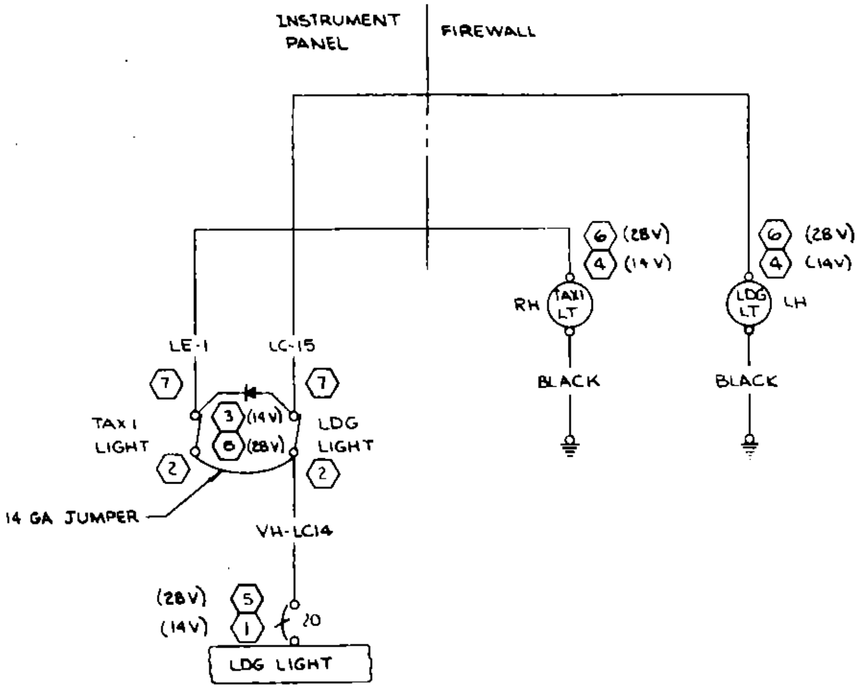
SIZE: C | CODE IDENT. NO: 71379 | DWG NO: 1270625

SCALE: NONE | PAGE: 11.13.2

SERU20601701 ON

FORM NO. 80-2155

REVISION			
LET	DESCRIPTION	DATE	APPD



WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLACK	14	-14-0		S-1367-2-8	S-1367-2-8		
LE-1	14			S-1493-2	S-1367-2-8		
LC-15	14			S-1493-2	S-1367-2-8		
LC-14	14			S-1367-2-6	S-1493-2		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
8	1270082-1	DIODE ASSY	
7	S-2023-1	ADAPTER	
6	4591	PAR-36, 100 W LAMP	(24446)
5	S-1360-15L	CKT BREAKER	
4	4509	PAR-36, 100 W LAMP	(24446)
3	1270082-2	DIODE ASSY	
2	S-2160-1	SWITCH	
1	S-1360-20L	CKT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.13.2

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	WHITE	1-3-73
GROUP	H. Wise	1-17-73
DRAWN	WHITE	1-12-73
CHECK	R. YOUNGERS	1-15-73
STRESS		
PROJ	[illegible]	1-18-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — LANDING LIGHT & TAXI LIGHT

SIZE: C | CODE IDENT. NO. 71379 | DWG NO 1270625

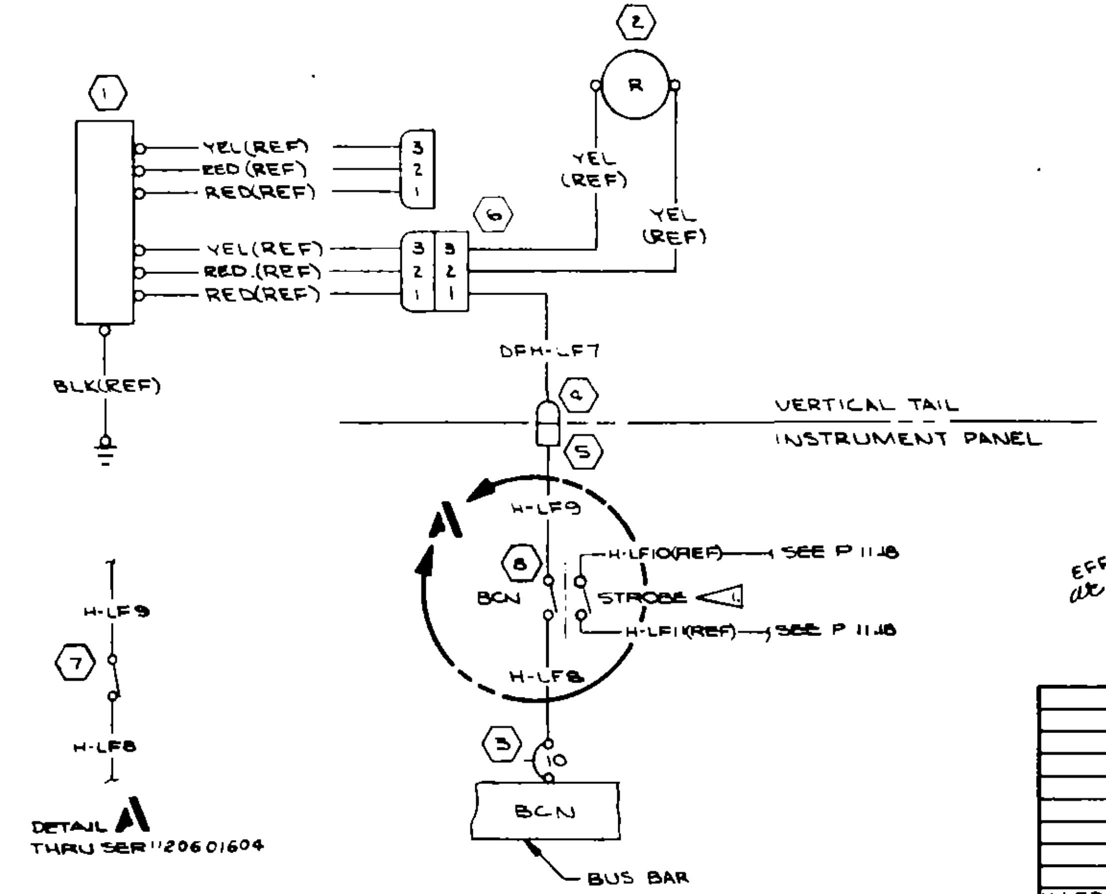
SCALE: NONE | PAGE: 11.13.3

FORM NO. 80-2188

SER (SR7403) IX

SER P20600604 & ON
SER U20601445 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD S-1846-2-3, DETAIL "A", SER & NOTE 1 EDRR 10827 ~~SR6355~~(SR6356)	DLP 12/23/69	JWH RLY LB HRW
B	BY REV: (SR6600) WAS (SR6355) & SR6356 (SR6600)	RLY 5-14-70	RLY HRW JDM
C	BY REV: RED (REF) WAS YEL (REF)/ PIN 2 ON C594501-0203 ED&RR 10048	RLY 6-8-70	LW RLY HRW



INACTIVE
EFFECTIVE SER P20600604 & U20601445 THRU SER U20601874
at 6-16-72 LW HRW

NOTES:

1. INSTALL 1270695-2 CLIP ON STROBE SIDE OF S-1846-2-3 SWITCH WHEN STROBE LIGHTS ARE NOT INSTL

ITEM NO	PART NO.	DESCRIPTION	
8	S-1846-2-3	SWITCH	
7	S-1845-1-2	SWITCH	
6	S-1638-1	HOUSING-PLUG	
5	S-1637-2	HOUSING-PLUG	
4	S-1637-1	HOUSING-CAP	
3	S-1360-10	CIRCUIT BKR	
2	C621001-0101	LIGHT ASSY	
1	C594501-0203	FLASHER ASSY	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-LF9	16			S-1493-2	S-1636-2		
H-LF8	16			S-1367-2-6	S-1493-2		
DFH-LF7	16			S-1636-2	S-1635-2		

WIRE TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD NO

SUPERSEDES: P 11.5.1

SUPERSEDED BY: P 11.14.2

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP	H. Wise	8-7-69
DRAWN	D.L. BURKE	8-1-69
CHECK	R. YOUNGLES	8-5-69
STRESS	B. Kent	8-7-69
PROJ	[illegible]	8-1-69
APPD	[illegible]	8-6-69
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E PAWNEE WICHITA, KANSAS

TITLE: WIRING DIAGRAM — FLASHING BEACON LIGHT

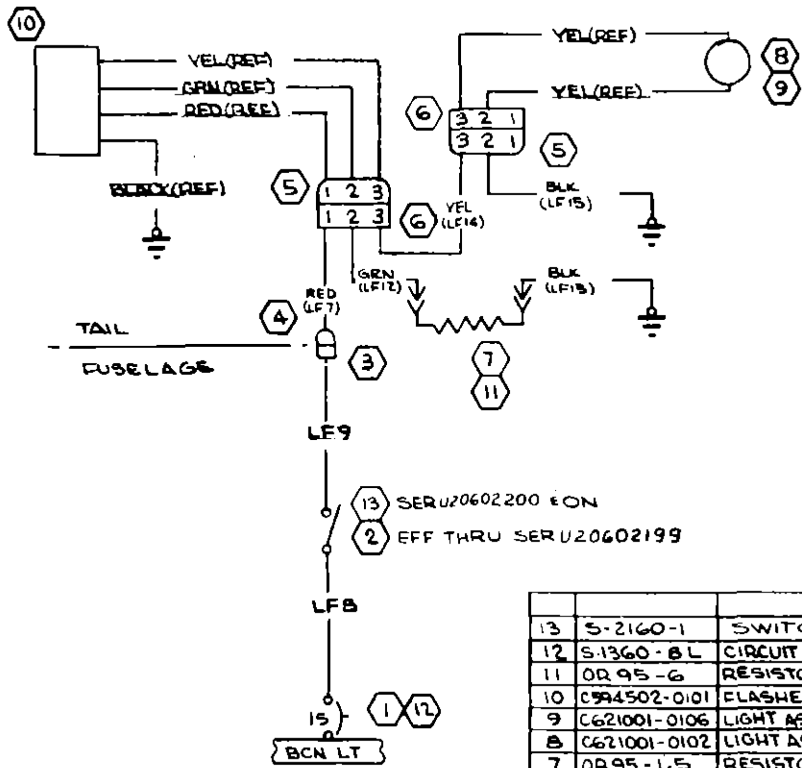
SIZE: C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE: NONE | U206 & P206 | PAGE 11.14

ED&RR 10845 SER P20600604 & ON SER U20601445 & ON

FORM NO 60 2188

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD S-2160-1, RED, GRN, YEL BLK & SER; SEE OUT S-1845-1-2, LF7, LF12, LF13, LF14 & LF15; ADD NOTE 1 C621001-0106 WAS C621001-0103 (SR7403)Ⅱ (SR7473)	LKW 1-10-73	BY NLW MOR
B	BY REV: S-1360-15L WAS S-1360-10L /(12V); S-1360-8L WAS S-1360-5L /(24V) (SR8260)	BAH 5-13-75	DKM



NOTES:

1. COLORED WIRES BEARING CES1100 CODING IN PARENTHESIS SHALL NOT BE STAMPED. CES1100 CODING ON THESE WIRES IS FOR PARTS LIST USE ONLY.

ITEM NO	PART NO.	DESCRIPTION	
13	S-2160-1	SWITCH	
12	S-1360-8L	CIRCUIT BREAKER	(24V)
11	0R95-6	RESISTOR (83777)	(24V)
10	C594502-0101	FLASHER	
9	C621001-0106	LIGHT ASSY	(12V)
8	C621001-0102	LIGHT ASSY	(24V)
7	0R95-1.5	RESISTOR (83777)	(12V)
6	S-1638-1	HOUSING - PLUG	
5	S-1638-2	HOUSING - CAP	
4	S-1637-1	HOUSING	
3	S-1637-2	HOUSING	
2	S-1845-1-2	SWITCH	
1	S-1360-15L	CIRCUIT BREAKER	(12V)

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK (LF15)	16			S-1635-2	S-1367-2-8		SER U20602209 & ON
BLK (LF13)				S-1493-2	S-1367-2-8		SER U20602209 & ON
YEL (LF14)				S-1636-2	S-1635-2		SER U20602209 & ON
GRN (LF12)				S-1636-2	S-1493-2		SER U20602209 & ON
RED (LF7)				S-1636-2	S-1635-2		SER U20602209 & ON
LF15				S-1635-2	S-1367-2-8		THRU SER U20602208
LF14				S-1636-2	S-1635-2		THRU SER U20602208
LF13				S-1493-2	S-1367-2-8		THRU SER U20602208
LF12				S-1636-2	S-1493-2		THRU SER U20602208
LF9				S-1493-2	S-1636-2		
LF8				S-1367-2-4	S-1493-2		
LF7	16			S-1636-2	S-1635-2		THRU SER (SR7473)

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN	COOK	6-16-72
GROUP	V. Wise	6-22-72
DRAWN	COOK	6-16-72
CHECK	WHITE	6-19-72
STRESS		
PROJ		
APPD		
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE: WIRING DIAGRAM — LIGHT-FLASHING BEACON

SIZE: C | CODE IDENT NO: 71379 | DWG NO: 1270625

SCALE: NONE | 206 | PAGE: 11.14.2

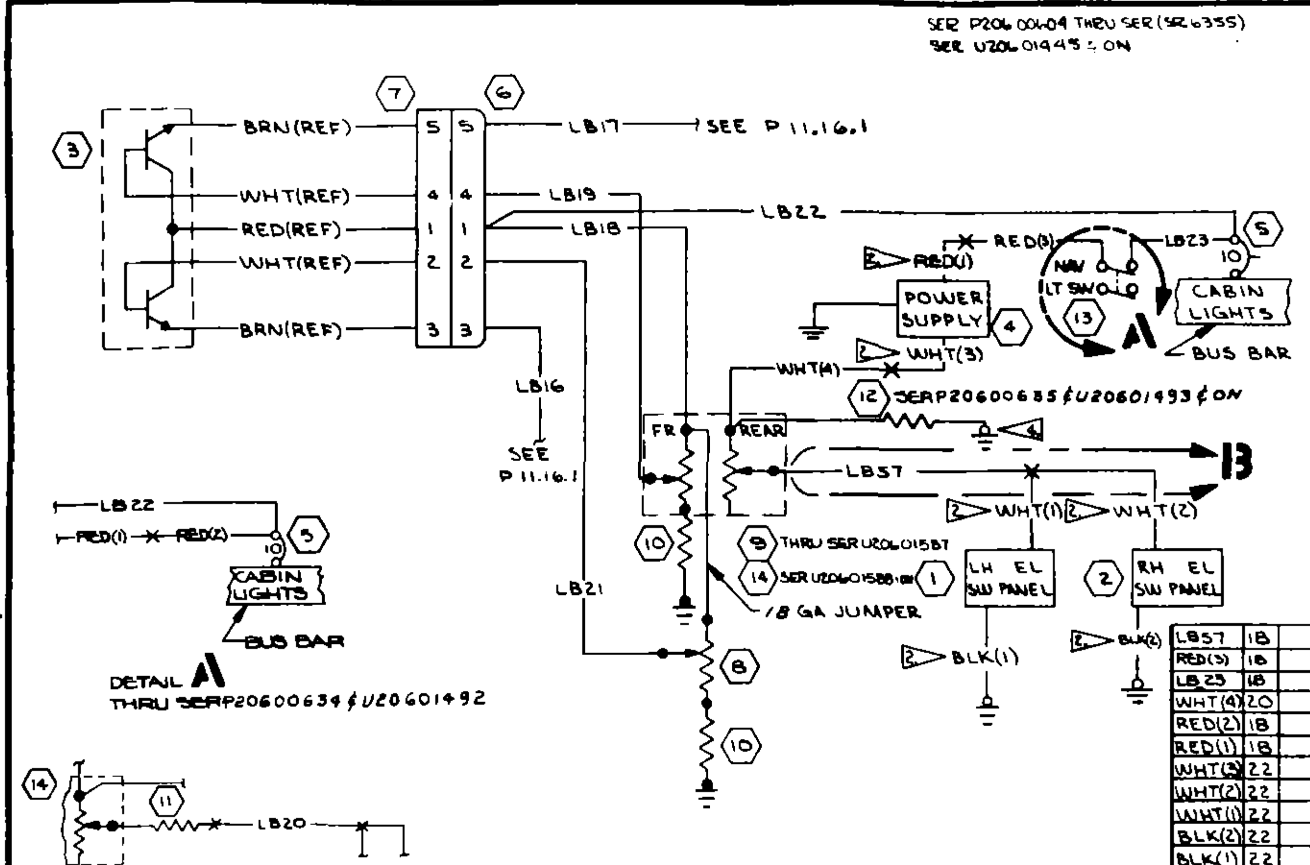
(SR7061)

CES 1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: PAGES 11.14 & 11.14.1

SUPERSEDED BY:

FORM NO. 80-3188



DETAIL **B**
(THRU SER U20601755)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD NOTE 4, RED(3), VAL-5-6000, LB23 S-1844-1-2, DETAIL "A" & SER; SER OUT ... EDRR 10825 (SR6452)	DLP 1-5-70	
B	BY REV: 27 OHM 1/2W RESISTOR WAS 47Ω 1/2W RESISTOR, SER P20600609 THRU SER (SR6355) WAS SER P20600604 & ON. ED&RR 10999 (NOW SHOP PRACTICE)	J.G. 9-20-70	
C	BY REV: SER OUT S-2008-1; SER IN S-2091-1; INACT DWG. (SR7405) IX SER U20601588 & ON	LKW 4-23-73	
D	BY REV: ADD LB57 & DETAIL "B"; SER OUT LB20 & 5.6K 2W 10% SER U20601756 & ON	RAM 9-25-74	

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB57	18			SOLDER	S-1370-2		SER U20601756 & ON
RED(3)	18			S-1493-1	SEE RED(1)		SER (P20600685 U20601493) & ON
LB23	18			S-1493-1	S-1367-1-8		SER (P20600685 U20601493) & ON
WHT(4)	20	-20-9		SOLDER	SEE WHT(3)		
RED(2)	18	-18-2		SEE RED(1)	S-1367-1-6		THRU SER P20600684 U20601492
RED(1)	18	-18-2		SOLDER	S-1370-0	1, 2	
WHT(3)	22	-22-9		S-1370-1	SOLDER	1, 2	
WHT(2)	22	-22-9		SEE WHT(1)	SOLDER	2	
WHT(1)	22	-22-9		S-1370-0	SOLDER	2	
BLK(2)	22	-22-0		SOLDER	S-1367-1-8	2	
BLK(1)	22	-22-0		SOLDER	S-1367-1-8	2	
LB22	18			SEE LB18	S-1367-1-8		
LB21	20			S-1635-1	SOLDER		
LB20	18			S-1370-1	S-1370-2		THRU SER U20601755
LB19	18			S-1635-1	SOLDER		
LB18	18			S-1635-1	SOLDER		
LB17	18			S-1635-1	S-1829-1		
LB16	18			S-1635-1	S-1829-1	3	

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
14	S-2091-1	POT ASSY	
13	S-1844-1-2	SWITCH	
12	VAL-5-6000	RESISTOR	
11	5.6K, 2W, 10%	RESISTOR	
10	27 OHM 1/2W	RESISTOR	
9	S-2008-1	POT ASSY	
8	S-1904-3	POT ASSY	
7	S-1641-6	HOUSING-SOCKET	
6	S-1640-6	HOUSING-PIN	
5	S-1360-10	CIRCUIT BKR	
4	C613001-0201	POWER SUPPLY	
3	1570166-1	DIMMING ASSY	
2	1213192-1	EL PANEL	
1	1213107-8	EL PANEL	

EQUIPMENT TABLE

NOTES:

1. TO BE RETAINED IN TERMINAL, WIRE MUST BE STRIPPED, DOUBLED & TWISTED
2. THESE WIRES VENDOR FURNISHED
3. WHEN POST LIGHTS ARE INSTALLED, S-1493-1 TERMINAL REPLACES S-1829-1 TERMINAL
4. THIS END OF RESISTOR TERMINATED WITH S-1367-1-14 TERMINAL & INSTALLED ON SHAFT OF TANDEM POT ASSY. DUE TO HEAT DISSIPATION, RESISTOR MUST BE KEPT FROM WIRE BUNDLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO

SUPERSEDES P 11.9.1

SUPERSEDED BY P 11.15.2

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	5-7-69
GROUP	H. Wire	8-7-69
DRAWN	D.L. BURKE	8-1-69
CHECK	R. YOUNGREES	8-6-69
STRESS		8-2-69
PROJ		4-7-69
APPD	M. Odhoney	8-6-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ELECTRO LUMINESCENT PANEL

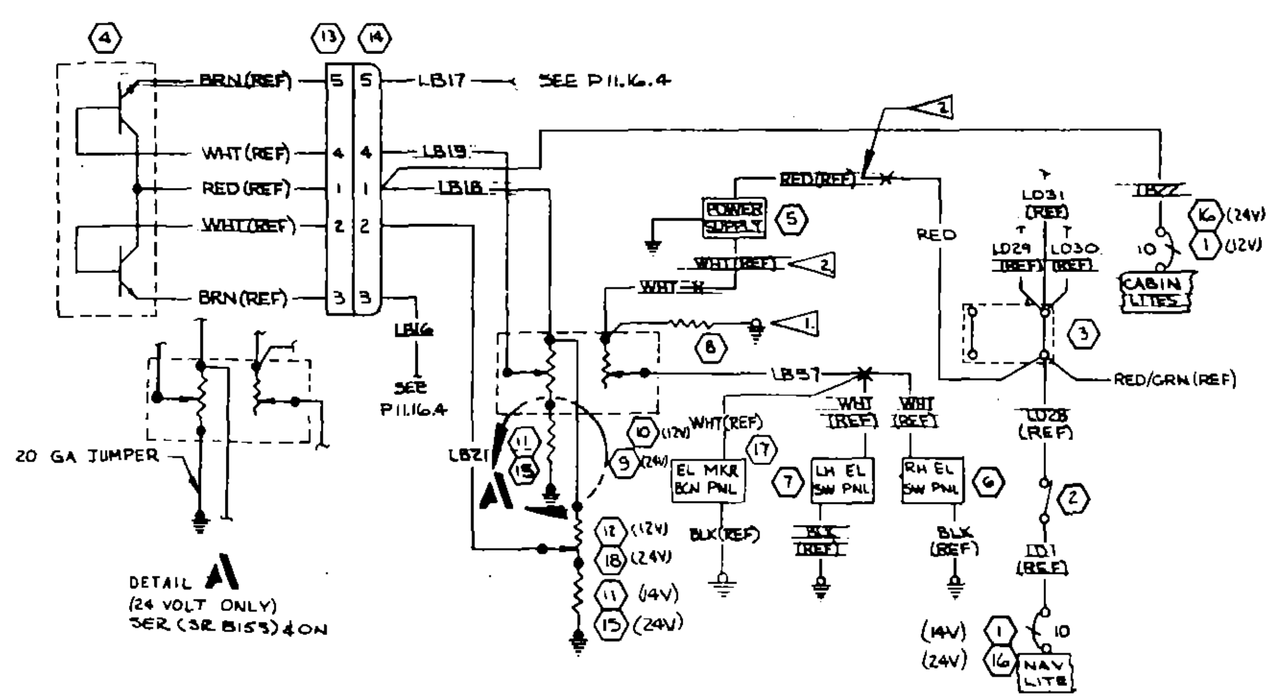
SIZE	CODE IDENT. NO	DWG NO
C	71379	1270625

SCALE NONE | U206 & P206 | PAGE 11.15

ED&RR 10528A (SR6005) IX (SR6006) IX

FORM NO. 80-2188

LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD LB57; DELETE LB20 & 5.6K, 2W, 10% (NOW SHOP PRACTICE)	RAM 9-25-74	
B	BY REV: VAL 3-200 WAS VAL 3-2000. ADD DETAIL 'A' TO DELETE VAL 3-200 RESISTOR ON 24 VOLT SYSTEM (SR 8155)	CJH 1-4-75	
C	BY REV: ADD WIRING FOR 1213757 EL MKR BCN PANEL (SR 7910)	BAH 2-28-75	
D	BY REV: ADD S-2091-4 & S-1904-2; S-2091-2 WAS S-2091, S-1904-3 WAS S-1904 (NOW SHOP PRACTICE)	GW 7-31-75	



NOTES:

1. THIS END OF RESISTOR TERMINATED WITH S-1367-1-14 TERMINAL & INSTALLED ON SHAFT OF TANDOM POT ASSY. DUE TO HEAT DISSIPATION, RESISTOR MUST BE KEPT FROM WIRE BUNDLE
2. TO BE RETAINED IN TERMINAL, WIRE MUST BE STRIPED, DOUBLED & TWISTED

EQUIPMENT TABLE

ITEM NO	PART NO.	DESCRIPTION
18	S-1904-2	POT. ASSY. (24V)
17	1213757	EL PANEL
16	S-1360-5L	CKT BKR
15	VAL-3-200	RESISTOR
14	S-1640-6	HOUSING
13	S-1641-6	HOUSING
12	S-1904-3	POT ASSY (12V)
11	27Ω, 5W 10%	RESISTOR
10	S-2091-2	POT ASSY (12V)
9	S-2091-4	POT ASSY (24V)
8	VAL-5-6000	RESISTOR
7	1213342	EL PANEL
6	1213363	EL PANEL
5	C613001	POWER SUPPLY
4	1570166	DIMMING ASSY
3	34002-55	TERMINAL BLOCK
2	S-2160-1	SWITCH
1	S-1360-10L	CKT BKR

WIRE TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB57	18			SOLDER	S-1370-2		
RED	18	-18-2		S-1370-1	S-1829-1		
WHT	↕	-18-10		SOLDER	S-1370-1		
LB22	↕			S-1367-1-6			
LB21	18			S-1366-1	SOLDER		
LB19	18			S-1635-1	SOLDER		
LB18	↕			S-1635-2	SOLDER		
LB17	↕			S-1636-1	S-1829-1		
LB16	18			S-1635-1	[illegible]		

CONTRACT NO.

	NAME	DATE
DESIGN	WHITE	1-5-72
GROUP	H. Wise	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R.YOUNGERS	4-27-73
STRESS		
PROJ	Bergman	4-27-73
APPD		
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE: WIRING DIAGRAM — ELECTRO LUMINESCENT PANEL (14 V) & (28V)

SIZE C DWG NO 1270625

(SR 7403) PAGE: 11.15.2

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC NO. S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: P 11.15

SUPERSEDED BY:

FORM NO. 80-2159

SER P20600603 & ON
SER U20601445 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD BLK(4), LB38, LB39, S-1695-2 & 1213319-4 REF (SR 7061)	10-25-72 LKW	BY NEW MR

NOTES:

1. OXYGEN CONSOLE WIRING APPLICABLE ONLY WHEN OPTIONAL OXYGEN SYSTEM IS INSTALLED

2. INSTALL S-341-1 TERMINAL ON VENDOR SUPPLIED WIRE

3. STANDARD LENSES FOR EYEBROW LIGHTS ARE RED & CESSNA WHITE IS OPTIONAL

INACTIVE
EFF THRU SER U20602199 II
4-23-73
LKW MR
BY NEW JKB

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS	TERMINALS		SERIALS
LB 39	18			SOLDER	SOLDER		
LB38	18			S-1829-1	SOLDER		
BLK(4)	18	-18-0		SOLDER	S-1367-1-8		
RED/YEL	22	-22-2-4		SOLDER	SOLDER		
RED/BLU	18	-18-2-6		SOLDER	SOLDER		
BLK(3)	18	-18-0		SOLDER	SOLDER		
BLK(2)	18	-18-0		SOLDER	S-1367-1-8		
BLK(1)	22	-22-0		SOLDER	S-1367-1-8		
HFV-L88B	18			S-1370-2	S-1367-1-8		
DHF-L88	20			SOLDER	S-1367-1-8		
HF-L89	18			S-341-2	S-1367-1-8		
LB 32	18			S-1829-1	S-341-1		
LB 31	18			SOLDER	S-1367-1-8		
LB 30	18			S-1829-1	SOLDER		
LB 29	18			S-1829-1	S-1370-1		
LB 28	18			S-1829-1	S-341-1		
LB 27	18			S-1829-1	SOLDER		
LB 26	18			S-1829-1	S-1370-1		
LB 25	18			S-1829-1	S-341-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
9	1213319-4	LIGHT ASSY	
8	S-1695-2	SWITCH	
7	34002-55	TERMINAL BOARD	(ETNC)
6	C660501-0101	COMPASS ASSY	
5	23-288	LIGHT ASSY	(95263)
4	S-1899-1	LIGHT ASSY	
3	C669502-0202	INST CLUSTER KIT	
2	1270479-1	LIGHT ASSY	
1	12110012	CONSOLE ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO.
S-XXX OR CMXXXX-CESSNA STD. NO.

SUPERSEDES 11.2.1

SUPERSEDED BY P 11.16.4

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP	H. Wise	8-7-69
DRAWN	J.R. CONLEY	8-1-69
CHECK	R. YOUNGERS	8-5-69
STRESS	[illegible]	8-7-69
PROJ	[illegible]	8-7-69
APPD	M. [illegible]	8-6-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

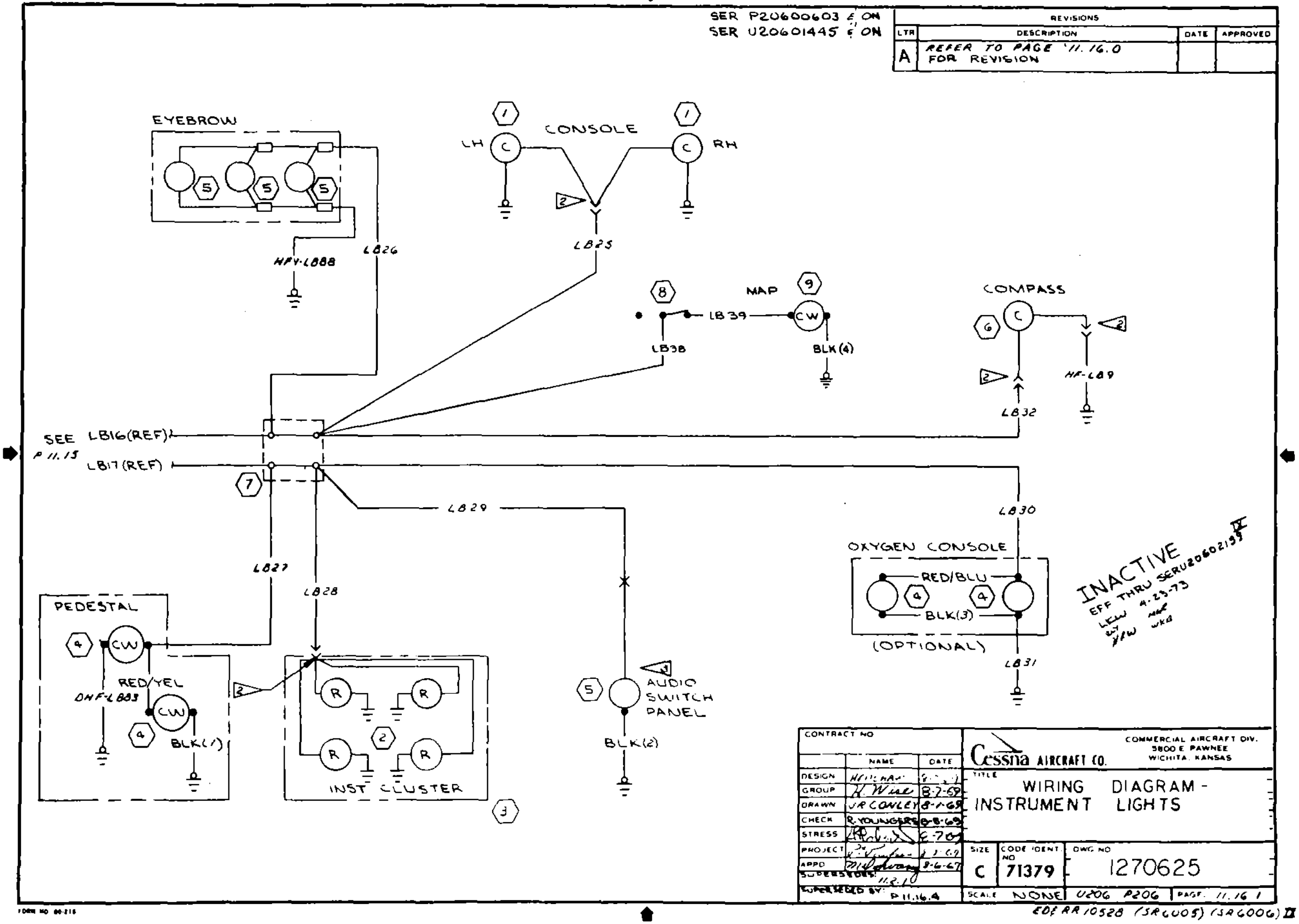
TITLE
WIRING DIAGRAM — INSTRUMENTS LIGHTS

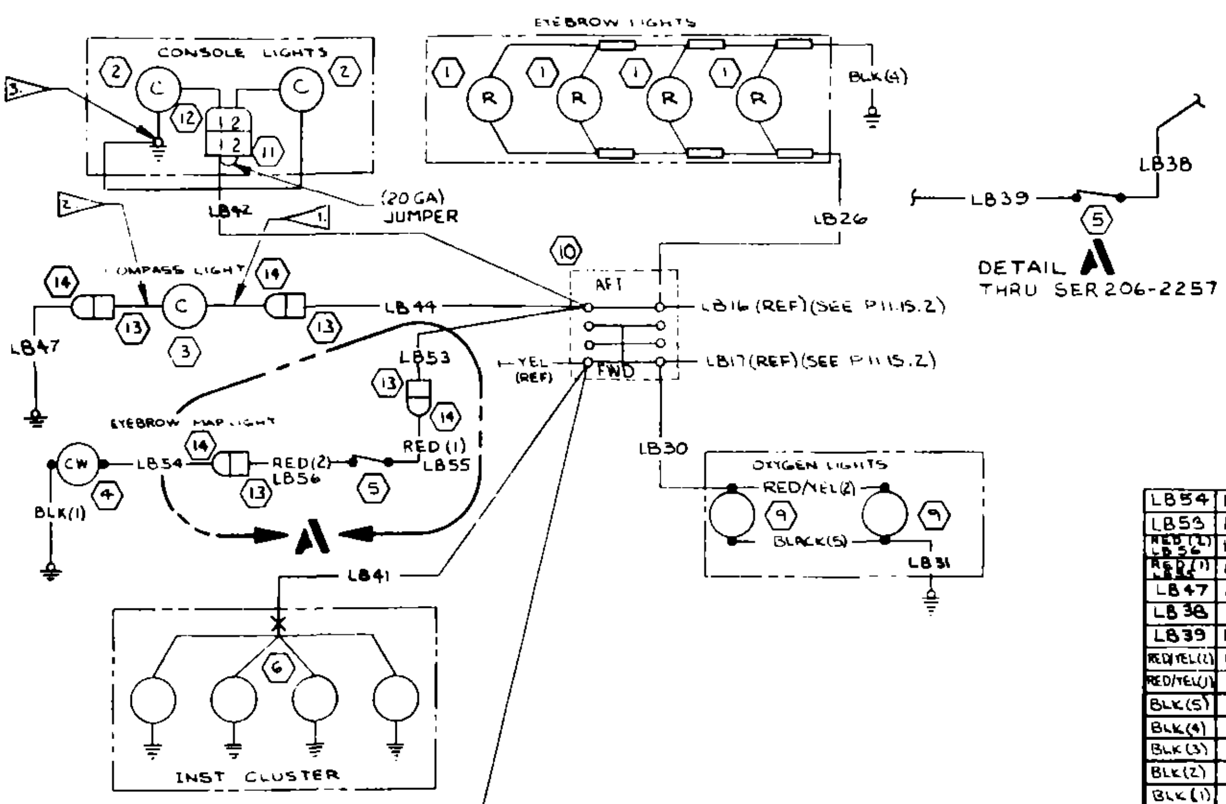
SIZE	CODE IDENT. NO	DWG NO
C	71379	1270625

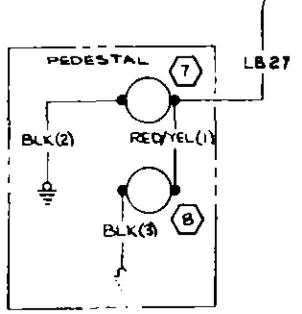
SCALE: NONE | U206 P206 | PAGE: 11.16.0

FORM NO 80-2158

EDC RR 10328 (SR 6005)(SR6006) II


SER P20600603 & ON
SER U20601445 & ON
REVISIONS
LTR
DESCRIPTION
DATE
APPROVED
A
REFER TO PAGE 11.16.0 FOR REVISION
EYEBROW
CONSOLE
LH
RH
LB26
LB25
HFV-LB88
MAP
LB39
LB38
BLK(4)
COMPASS
HF-LB9
LB32
SEE P 11.15
LB16(REF)
LB17(REF)
LB29
LB30
LB27
LB28
OXYGEN CONSOLE
RED/BLU
BLK(3)
(OPTIONAL)
LB31
PEDESTAL
RED/YEL
DHF-LB83
BLK(1)
INST CLUSTER
AUDIO SWITCH PANEL
BLK(2)
INACTIVE
EFF THRU SER U20602139
4-23-73
CONTRACT NO
NAME
DATE
DESIGN
GROUP
DRAWN
CHECK
STRESS
PROJECT
APPD
J.R. CONLEY
R. YOUNGERS
SUPERSEDES: 11.2.10
SUPERSEDED BY: P 11.16.4
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS
TITLE
WIRING DIAGRAM - INSTRUMENT LIGHTS
SIZE C
CODE IDENT NO 71379
DWG NO 1270625
SCALE NONE
U206 P206
PAGE 11.16.1
EDE RR 10528 (SR6005) (SR6006)





NOTES:

1. INSTALL S-1635-1 TERMINAL ON VENDOR FURNISHED WIRE
2. INSTALL S-1636-1 TERMINAL ON VENDOR FURNISHED WIRE
3. INSTALL S-1367-2-6 TERMINAL ON VENDOR FURNISHED WIRE

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL A; SER OUT LB38 & LB39; SER IN LB53, LB54 RED(1) & RED(2); S-2035-1 & S-2035-2 WAS S-1637-1 & S-1637-2 MER E0011 & MER E0039 (SER 206-2258) (SR 7403)(REF)	TJP DEF 2-8-74	JCY DKM JRB
B	BY REV: S-1637-1 WAS S-2035-1/ LB47, RED(1), LB54; S-1637-2 WAS S-2035-2/LB44, LB53, LB56 S-1367-2-6 WAS S-1637-2-6/NOTE 3; DELETE DETAIL "B" (MER 206-E0098)	MEM 5-9-74	JCY DKM JRB
C	BY REV: 34003-55-3410 WAS 34002-55 (SR7910)	BLA 3-6-75	JCY JRB DKM
D	BY REV: 34004-818 WAS 34003-55-3410 (SR7910)	GW 8-4-75	JRB

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB54	18			S-1635-1	SOLDER		SER206-2258 & ON
LB53	18			S-1829-1	S-1636-1		SER206-2258 & ON
RED(2) LB56	18	-18-2		SOLDER	S-1636-1		SER206-2258 & ON
RED(1) LB55	18	-18-2		S-1635-1	SOLDER		SER206-2258 & ON
LB47	18			S-1635-1	S-1367-1-8		
LB38	18			S-1829-1	SOLDER		THRU SER206-2257
LB39	18			SOLDER	SOLDER		THRU SER206-2257
RED/YEL(2)	18	-18-2-5		SOLDER	SOLDER		
RED/YEL(1)		-18-2-5		SOLDER	SOLDER		
BLK(5)		-18-0		SOLDER	SOLDER		
BLK(4)		-18-0		S-1370-1	S-1367-1-8		
BLK(3)		-18-0		SOLDER	S-1367-1-8		
BLK(2)		-18-0		SOLDER	S-1367-1-8		
BLK(1)		-18-0		SOLDER	S-1367-1-8		
LB31				SOLDER	S-1367-1-8		
LB30				SOLDER	S-1829-1		
LB26				S-1370-1	S-1829-1		
LB44				S-1829-1	S-1636-1		
LB42				S-1829-1	S-1636-1		
LB41				S-1829-1	S-1370-1		
LB27	18			SOLDER	S-1829-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
14	S-1637-1	HOUSING-CAP	
13	S-1637-2	HOUSING-PLUG	
12	S-2035-1	HOUSING-CAP	
11	S-2035-2	HOUSING-PLUG	
10	34004-818	TERMINAL BLOCK	
9	S-1899	LIGHT ASSY	
8	S-1899	LIGHT ASSY	
7	S-1899	LIGHT ASSY	
6	1270479	LIGHT ASSY	
5	S-1695-2	SWITCH	
4	1213319	LIGHT ASSY	
3	C660501	COMPASS ASSY	
2	0700623-15	HOUSING ASSY	
1	1213319	LIGHT ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P11.16.0, 11.16.1, 11.16.3 & 11.16.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-16-73
GROUP	H. Wise	5-1-73
DRAWN	WHITE	4-23-73
CHECK	ZNOUNGERG	4-30-73
STRESS		
PROJ	Bergmann	5-2-73
APPD	WGE	
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV 5800 E. PAWNEE WICHITA, KANSAS

TITLE

WIRING DIAGRAM — INSTRUMENT LIGHTS, 14V & 28V

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE NONE (SR7403) PAGE: 11.16.4

10-288-0905

FORM NO. 80-2188

NOTES:

SER P20600604 & ON
SER U20601495 & ON

1. TYPICAL 16 PLACES

2. WHEN OPTIONAL POST LIGHTS ARE INSTALLED S-1493-1 TERMINAL REPLACES S-1829-1 TERM.

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: IN NOTE 2 S-1829-1 WAS S-1493-1, S-1493-1 WAS S-1829-1; ADD LB40, S-1695-2 & 1213319-4 REF (SR 7061)	10-24-72 LKW	BY NBW

INACTIVE
EFF THRU SER U20602199
4-23-73
LKW
BY NBW

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED/YEL(4)	22			SOLDER	S-341-2		
RED/YEL(3)	22			SOLDER	S-341-2		
RED/YEL(2)	22			SOLDER	SOLDER		
RED/YEL(1)	22			SOLDER	SOLDER	1	
BLK(4)	22			SOLDER	S-341-2		
BLK(3)	22			SOLDER	S-1367-1-8		
BLK(2)	22			S-341-2	SOLDER		
BLK(1)	22			SOLDER	SOLDER	1	
DNF-LB83	20			SOLDER	S-1367-1-8		
DNF-LB81	20			S-341-2	S-1367-1-8		
DNF-LB80	20			S-341-2	S-1367-1-8		
LB40	20			S-1493-1	SOLDER		
LB37	20			S-1829-1	SOLDER		
LB36	20			S-1493-1	S-341-2		
LB35	20			S-1493-1	S-341-2		
LB34	18			S-1829-1	S-341-1		
LB33	18			S-1493-1	S-1829-1		

WIRE TABLE

	PART NO.	DESCRIPTION	
10	1213319-4	LIGHT ASSY	
9	S-1695-2	SWITCH	
8	C660501-0101	COMPASS ASSY	
7	34002-55	TERMINAL BLOCK	(ETNC)
6	S-2023-1	TERMINAL ADAPTER	
5	S-1899-2	POST LIGHT ASSY	
4	S-1899-1	POST LIGHT ASSY	
3	S-1847-2-2	SWITCH	
2	C669502-0202	INST CLUSTER	
1	1270479-2	LIGHT ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES P 11.10.1

SUPERSEDED BY P 11.17.4

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	1-69
GROUP	H. Wise	8-7-69
DRAWN	J R CONLEY	8-1-69
CHECK	R. YOUNGERS	8-5-69
STRESS	[illegible]	8-7-69
PROJ	[illegible]	8-7-69
APPD	McSharry	8-6-69
OTHER		

Cessna AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

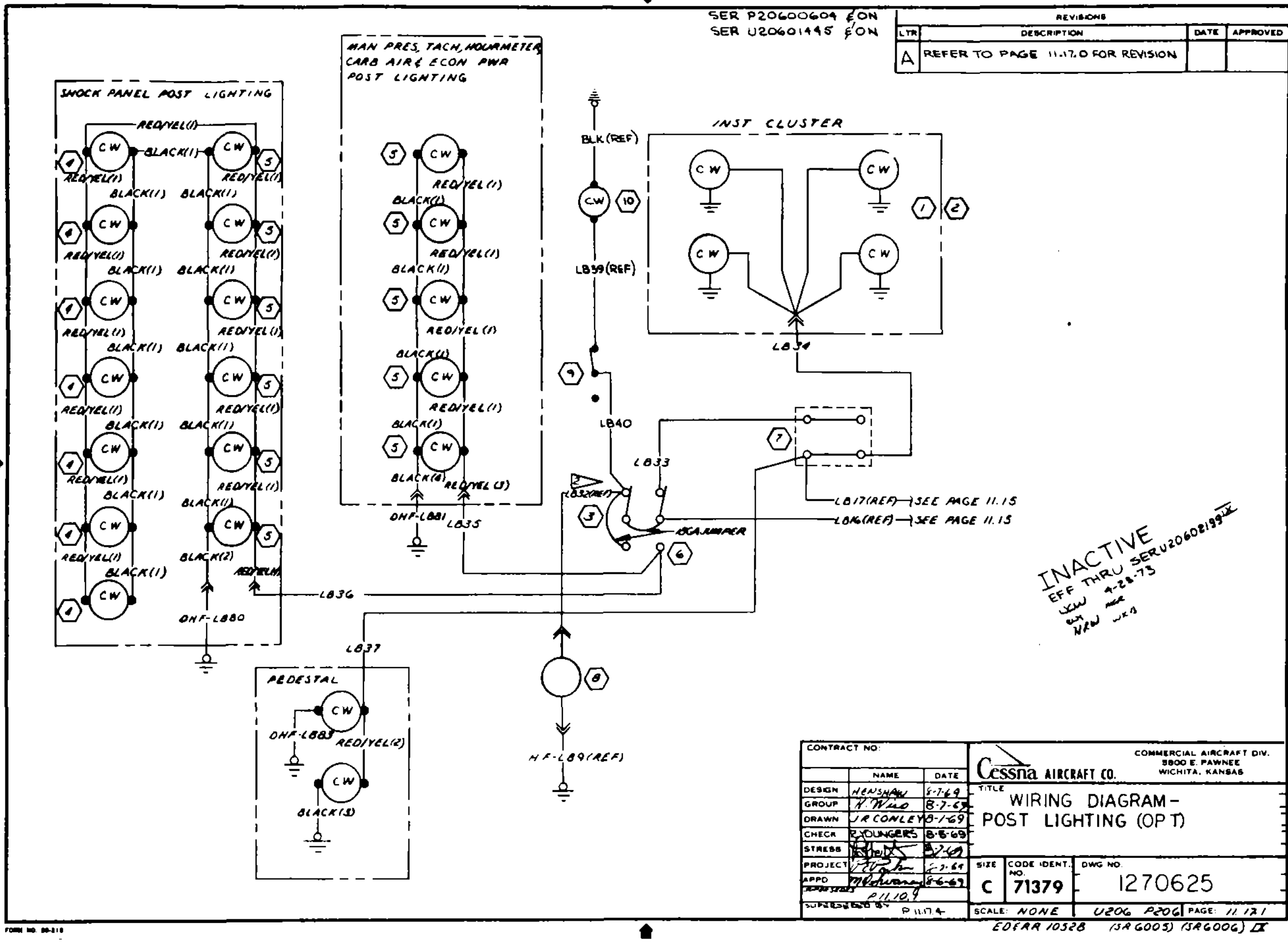
WIRING DIAGRAM — POST LIGHTING (OPT)

SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | U206 P206 | PAGE: 11.17.0

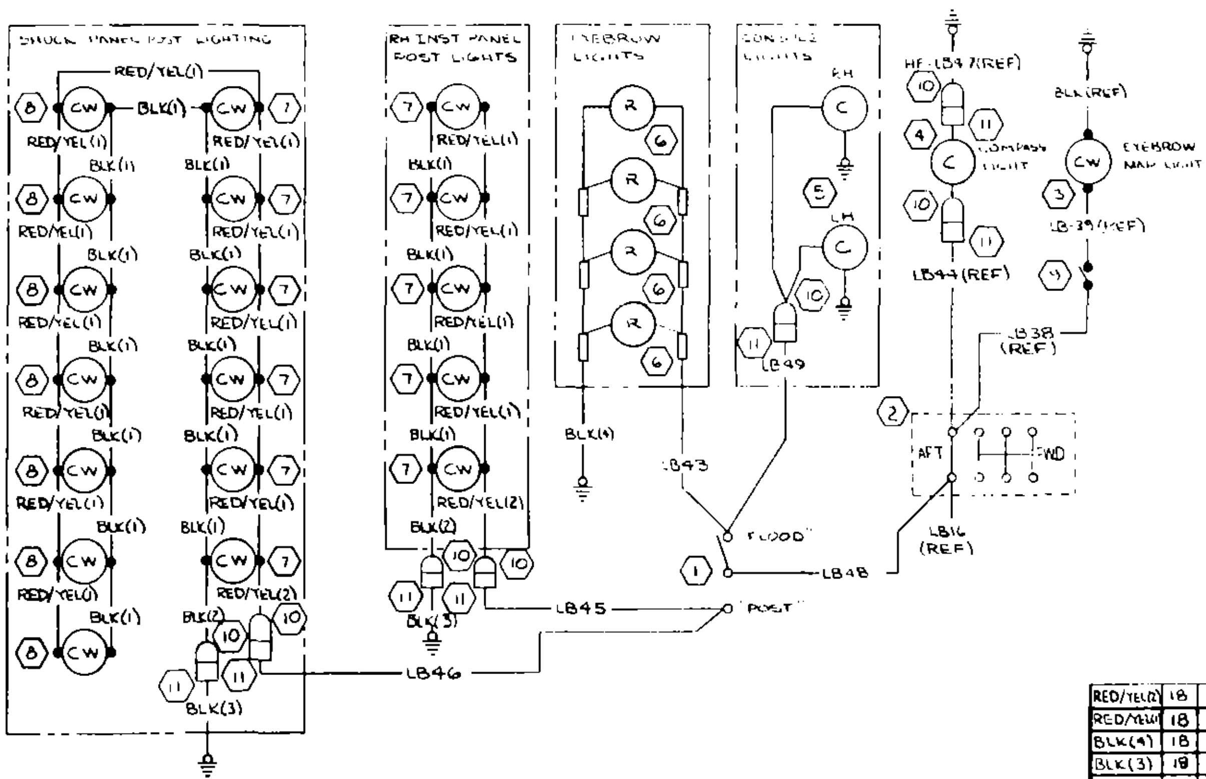
EDCAR 10528 (SR 6003) (SR 6006) IX

FORM NO 80 2158



SER P20600604 & ON
SER U20601445 & ON
REVISIONS
LTR
DESCRIPTION
DATE
APPROVED
A
REFER TO PAGE 11.17.0 FOR REVISION
SHOCK PANEL POST LIGHTING
RED/YEL(1)
BLACK(1)
BLACK(2)
RED/YEL
OHF-LB80
MAN PRES, TACH, HOURMETER
CARB AIR & ECON PWR
POST LIGHTING
BLACK(4)
RED/YEL (3)
OHF-LB81
LB35
BLK(REF)
LB39(REF)
LB40
LB33
LB32(REF)
LB36
LB37
INST CLUSTER
LB34
LB17(REF) SEE PAGE 11.15
LB16(REF) SEE PAGE 11.15
JUMPER
HF-LB9(REF)
PEDESTAL
OHF-LB83
RED/YEL(2)
BLACK(3)
C W
INACTIVE
EFF THRU SER U20602199
4-28-73
CONTRACT NO:
NAME
DATE
DESIGN
HENSHAW
6-7-69
GROUP
8-7-69
DRAWN
J R CONLEY
8-1-69
CHECK
R YOUNGERS
8-6-69
STRESS
PROJECT
APPD
8-6-69
SUPERSEDES
P11.10.9
SUPERSEDED BY
P 11.17.4
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS
TITLE
WIRING DIAGRAM -
POST LIGHTING (OPT)
SIZE
C
CODE IDENT. NO.
71379
DWG NO.
1270625
SCALE: NONE
U206 P206
PAGE: 11.17.1
EOFAR 10528 (SR 6005) (SR 6006)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: 34004-818 NAS 34002-55 (SR7910)	GW 8-4-75	[illegible]



10-288-0905

RED/YEL(2)	18			SOLDER	S-1635-2		
RED/YEL(1)	18			SOLDER	SOLDER		
BLK(4)	18			S-1370-1	S-1367-1-B		
BLK(3)	18			S-1636-2	S-1367-1-B		
BLK(2)	18			SOLDER	S-1635-2		
BLK(1)	18			SOLDER	SOLDER		
LB48	18			S-1493-1	S-1829-1		
LB46	18			S-1493-1	S-1636-2		
LB45	18			S-1493-1	S-1636-2		
LB43	18			LB25	S-1370-1		
LB49	18			S-1493-1	S-1636-1		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

11	S-1637-2	HOUSING	
10	S-1637-1	HOUSING	
9	S-1695-2	SWITCH	
8	S-1899	LIGHT ASSY	
7	S-1899	LIGHT ASSY	
6	1213319	LIGHT ASSY	
5	0700623-15	HOUSING ASSY	
4	C660501	COMPASS ASSY	
3	1213319	LIGHT ASSY	
2	34004-818	TERMINAL BLOCK	
1	S-2160-2	SWITCH	
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: F11.17.0, 11.17.1, 11.17.2 & 11.17.3

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-10-73
GROUP	[illegible]	5-1-73
DRAWN	WHITE	4-28-73
CHECK	R. YOUNGERS	5-1-73
STRESS		
PROJ	[illegible]	5-2-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

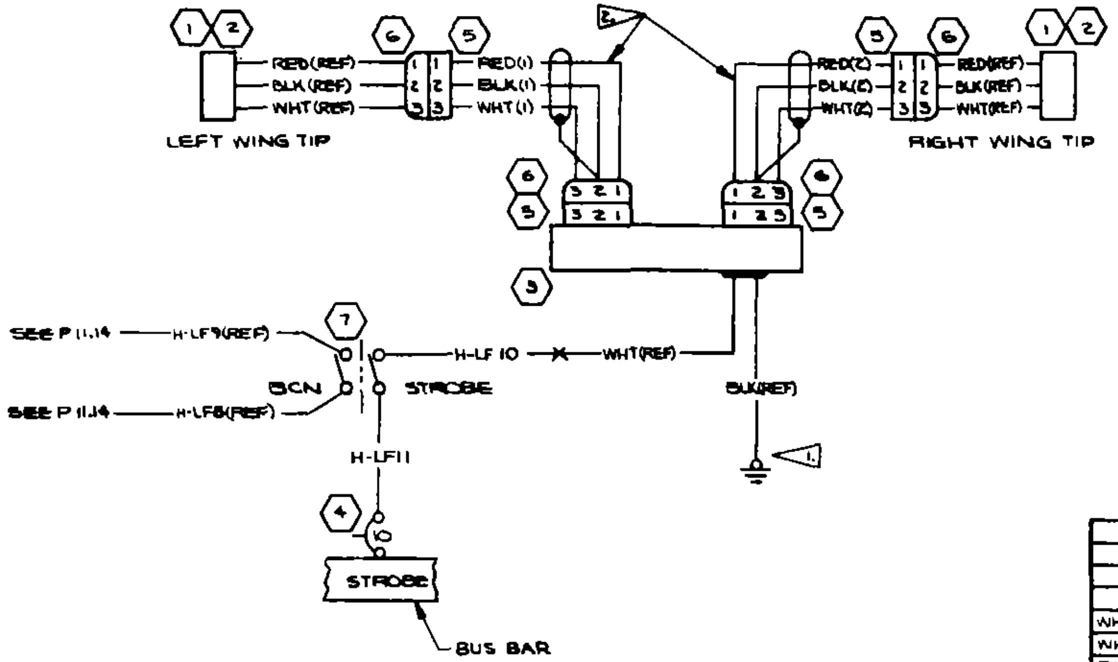
WIRING DIAGRAM — POST LIGHTS, 14V & 28V (OPTIONAL)

SIZE C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE: NONE | SR 7403 | PAGE: 11.17.4

FORM NO. 80-2128

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: C622003 & C622004 WAS C22003 & C22004; SR6600 WAS SR6385 & SR6386 ED&RR 10991 (SR6600)	RLY 8-14-70	BD RLY HW
B	BY REV: 18 GA WAS 20GA/H-LF10 & H-LF11 ED&RR 10087	RLY 6-25-70	LKW HXW
C	BY REV: C622004-0103 WAS C622004-0101 ED&RR 10149 (NOW SHOP PRACTICE)	RLY 8-21-70	LKW RLY HW



INACTIVE
EFF THRU SER U20601874
4-23-73

NOTES:

1. TERMINATE WITH S-1367-1-8 TERMINAL
2. THREE CONDUCTOR CABLE, BELDEN (70303) PART NO. 8770 OR EQUIVILANT

7	S-1846-2-3	SWITCH
6	S-1638-2	CAP
5	S-1638-1	PLUG
4	S-1360-10	CKT BKR
3	C622004-0103	POWER SUPPLY
2	C622003-0104	LENS
1	C622003-0101	LIGHT
ITEM NO	PART NO.	DESCRIPTION

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC NO
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES.

SUPERSEDED BY. P 11.18.1

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
WHT(2)	18	-18-9		S-1635-2	S-1636-2		
WHT(1)	18	-18-9					
BLK(2)	18	-18-0					
BLK(1)	18	-18-0					
RED(2)	18	-18-2					
RED(1)	18	-18-2		S-1635-2	S-1636-2		
H-LF11	18			S-1367-1-6	S-1493-1		
H-LF10	18			S-1370-1	S-1493-1		

WIRE TABLE

CONTRACT NO.

	NAME	DATE
DESIGN	D.L. Burns	12-29-69
GROUP	H. Wise	12-21-69
DRAWN	PAPE	12/23/69
CHECK	HARRIS	12-23-69
STRESS		
PROJ		12-26-69
APPD	R. YOUNGERS	12-23-69
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE
WIRING DIAGRAM — WING TIP STROBE LIGHTS (OPT)

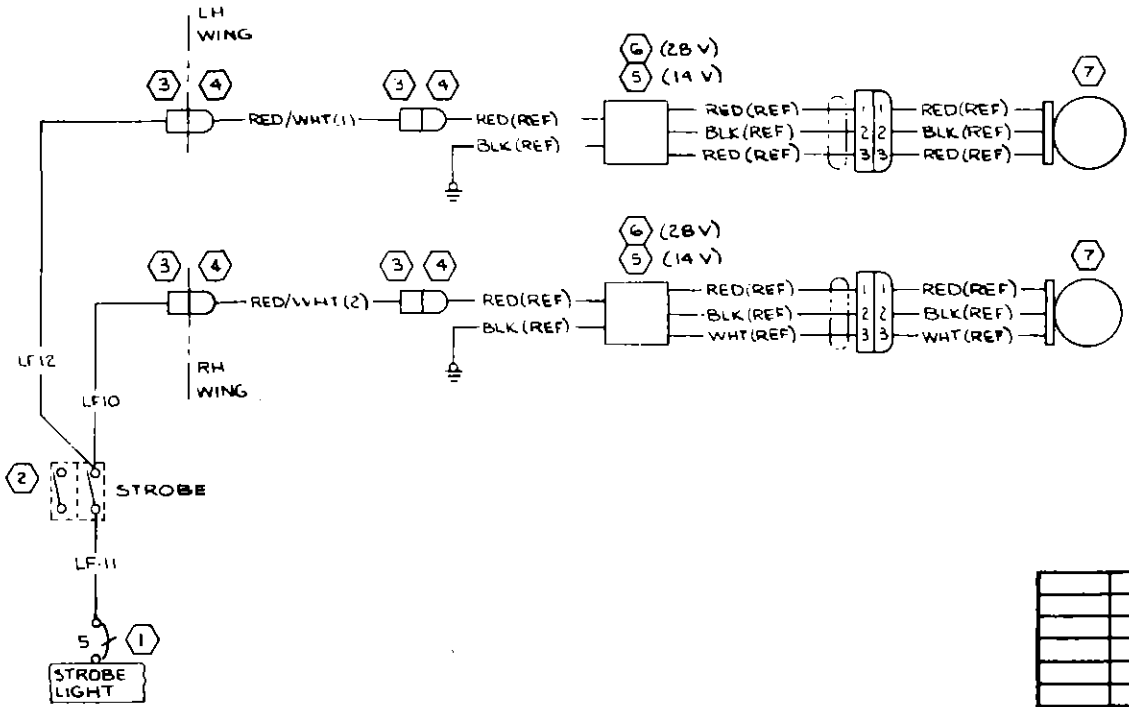
SIZE C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE: NONE | U206, P206 | PAGE: 11.18

EDRR 10827 (SR6600)

FORM NO 80-2158

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFF THRU SERU20602199 II
4-23-73
LKW
RLY
H/W

RED/WHT(2)	18	-18-2-9		S-1635-1	S-1636-1		(STD)
RED/WHT(1)	18	-18-2-9		S-1635-1	S-1636-1		(STD)
LF12	18			SEE LF10	S-1636-1		
LF11	18			S-1367-1-6	S-1493-1		
LF10	18			S-1493-2	S-1636-1		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

7	C622006-0101	LIGHT ASSY	
6	C622007-0103	POWER SUPPLY	
5	C622007-0101	POWER SUPPLY	
4	S-1637-1	HOUSING	
3	S-1637-2	HOUSING	
2	S-1846-2-3	SWITCH	
1	S-1360-5L	CKT BKR	
	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 11.18

SUPERSEDED BY: 11.18.2

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-6-73
GROUP	H. Wise	4-27-73
DRAWN	WHITE	4-23-73
CHECK	E. YOUNGERS	4-21-73
STRESS		
PROJ		
APPD	MGR	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

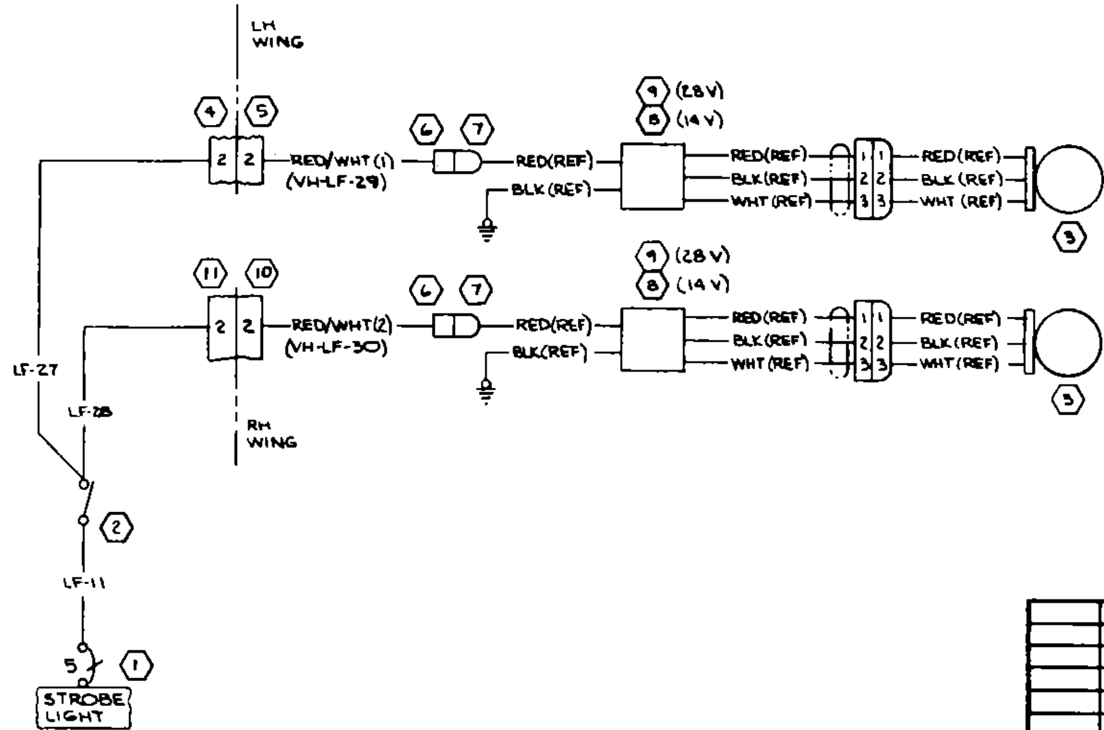
TITLE
WIRING DIAGRAM — STROBE LIGHTS, WING TIP

SIZE: C
CODE IDENT. NO.: 71379
DWG NO: 1270625
SCALE: NONE
PAGE: 11.18.1

FORM NO 20-2155

SERU20601875 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: PIN 2 WAS PIN 4 LH WING; S-1641-6 & S-1640-6 WAS S-1640-9 & S-1641-9, S-1640-12 & S-1641-12 WAS S-1640-9 & S-1640-9; DRAWING BECOMES INACTIVE; (NOW SHOP PRACTICE) MERED393 (SR7910)	CJH 11-22-74	
B	BY REV: REACTIVATE DRAWING (SR 7910)	TMS 1-21-75	



10 288 0905

11	S-1641-12	HOUSING - SOCKET	
10	S-1640-12	HOUSING - PIN	
9	C622007-0103	POWER SUPPLY	
8	C622007-0101	POWER SUPPLY	
7	S-1637-1	HOUSING	
6	S-1637-2	HOUSING	
5	S-1640-6	HOUSING-PIN	
4	S-1641-6	HOUSING-SOCKET	
3	C622006-0101	LAMP ASSY	
2	S-2160-1	SWITCH	
1	S-1360-5L	CKT BKR	
ITEM NO.	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
RED/WHT(2) (VH-LF-30)	18	-18-2-9		S-1636-1	S-1635-1	STD	
RED/WHT(1) (VH-LF-29)	↓	-18-2-9		S-1636-1	S-1635-1	STD	
LF 28	↓			SEE LF 27	S-1636-1		
LF 27	↓			S-1493-2	S-1636-1		
LF 11	18			S1367-1-6	S-1493-1		

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-6-73
GROUP	H. White	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNGER	4-27-73
STRESS		
PROJ		4-28-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — STROBE LIGHTS, WING TIP (OPT)

SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | (SR 7403) | PAGE: 11.18.2

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

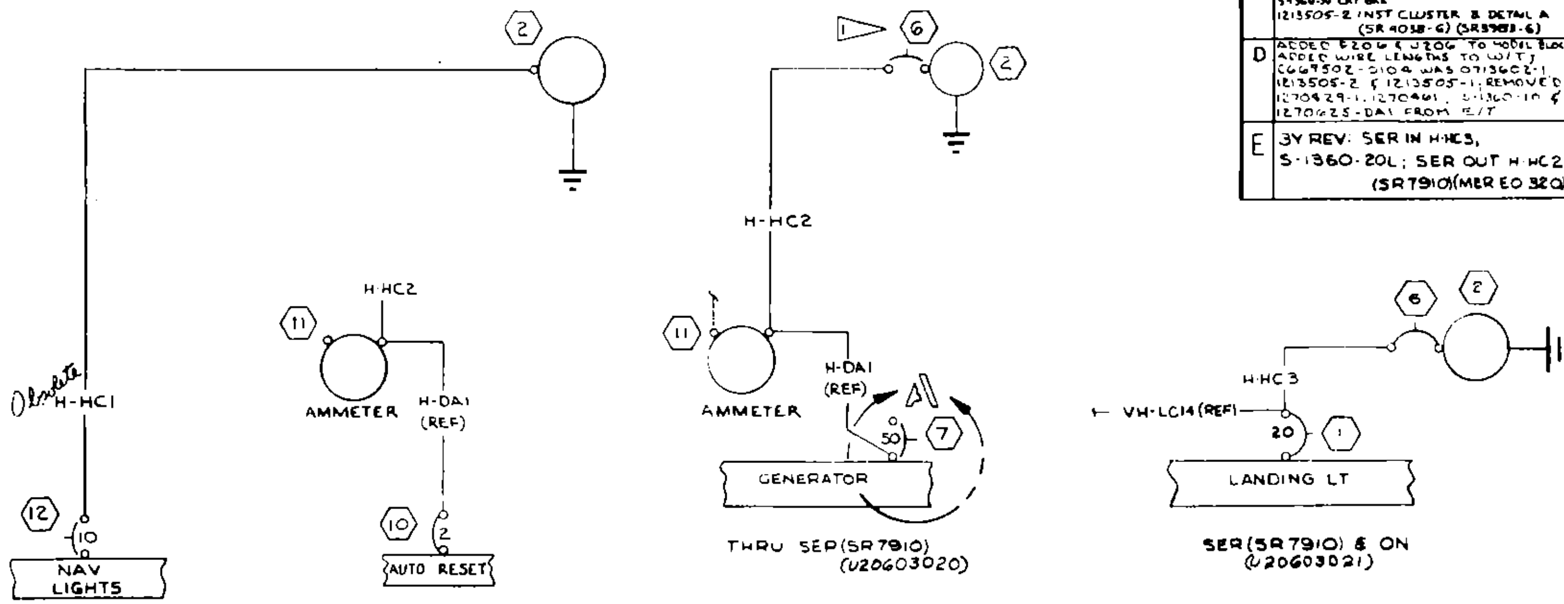
SUPERSEDES: P 11.18.1

SUPERSEDED BY:

FORM NO. 80-2189

SER 205-0001
THRU SER 205-0577
SER P206-0001 & ON
SER U206-0001 & ON
SER 206-0001 THRU
SER 206-0275

CHG LET	REVISION	BY DATE	CHK APPD
A	REMOVED N/A FROM STD WIRES (SR3694-10)	GLW 4-4-62	
B	ADD 60232-1 CKT BKR TO CIGAR LIGHTER, ADD H-HC2 WIRE ADD NOTE 1, CA-2 CKT BKR, 0713602-1 OBSOLETED F-HC1 H-HC1 WAS -8 GA S-1367-7-8 TERM WAS S-1367-18 TERM (SR 4081)	GLW 12-10-62	
C	ADD MODEL 206 S-1360-10 CKT BKR 1270461-1 BUS BAR 1213505-1 INST CLUSTER S-1360-50 CKT BKR 1213505-2 INST CLUSTER & DETAIL A (SR 4058-6) (SR3983-6)	GLW 6-21-63	
D	ADDED F206 & U206 TO MODEL BLOCK ADDED WIRE LENGTHS TO W/T; C669502-0104 WAS 0713602-1 1213505-2 & 1213505-1, REMOVED 1270429-1, 1270461, S-1360-10 & 1270625-DA1 FROM E/T	WJR 8-19-64	
E	BY REV: SER IN H-HC3, S-1360-20L; SER OUT H-HC2 (SR7910)(MER EO 320)	BLA 10-30-74	JCY



THRU SER(SR7910)
(U20603020)

SER(SR7910) & ON
(U20603021)

THRU SER 205-0319

DETAIL A
EFFECTIVE 205-0320
THRU SER 205-0480

10-288-0905

NOTE:

1. CIRCUIT BREAKER IS RESET BY INSERTING A PROBE INTO THE 5/64 DIA HOLE IN BREAKER FACE AND PUSHING LIGHTLY UNTIL A CLICK IS HEARD.

ITEM NO	PART NO	DESCRIPTION	INSTALLED ON
12	S-1232-10	CIRCUIT BREAKER	
11	C669502-0104	INST CLUSTER KIT	
10	CA-2	CKT BKR (MTCC)	
9			
8			
7	S-1360-50	CIRCUIT BREAKER	
6	60232-1	CKT BKR (CUE)	
5			
4			
3			
2	0513039-7	CIGAR LIGHTER	
1	S-1360-20L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
H-HC3	16			S-1367-2-8	S-1367-2-8		SER (SR 7910) & ON
H-HC2	16		15	S-1367-2-10	S-1367-2-8		THRU SER (SR 7910)
H-HC1	16		35	S-1367-2-8	S-1367-2-6		THRU SER 205-0319

WIRE TABLE

CESSNA AIRCRAFT CO COMMERCIAL AIRCRAFT DIVISION WICHITA KANSAS

	NAME	DATE
DRAWN	G WOOD	12-30-61
GROUP		1-29-62
CHECK		2-5-62
PROJ	H. McC	2-7-62

TITLE: WIRING DIAGRAM — CIGAR LIGHTER

Cessna.

DWG NO 1270625

SUPERSEDED BY: | SUPERSEDES: | MODEL 205, F206 & U206 | REV D | PAGE 13.1

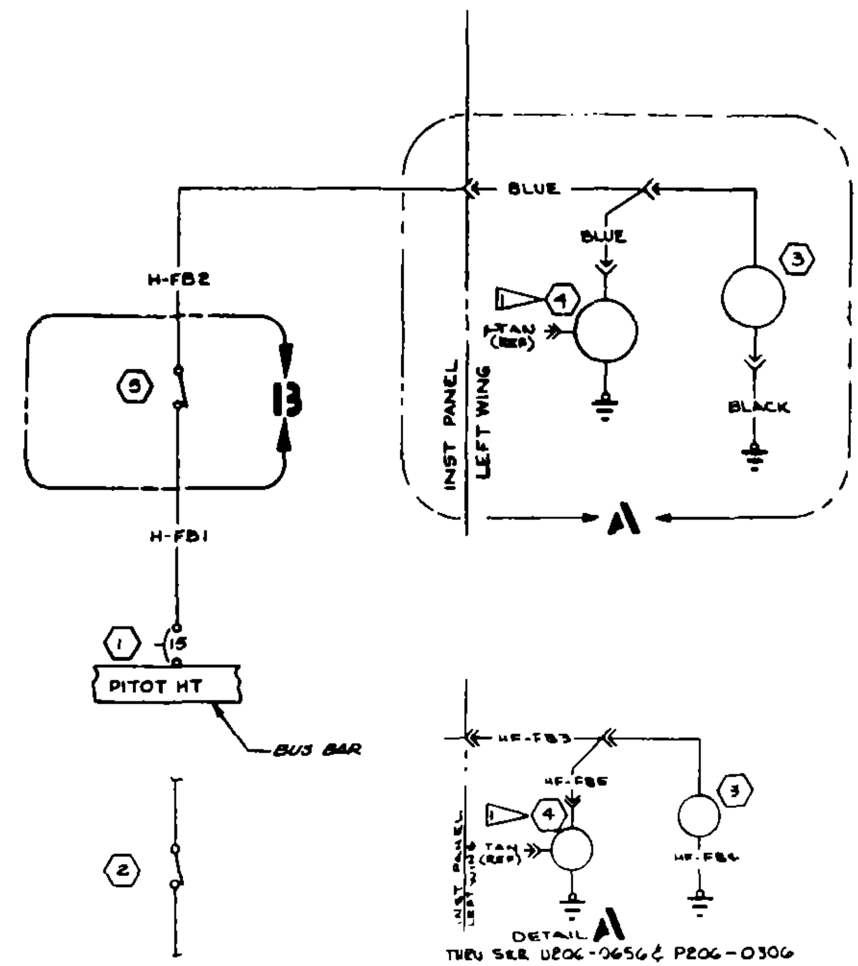
FORM NO 80-16

NOTE: (SER 205-0001 & ON)

1. ONLY HEATER CIRCUIT SHOWN. FOR STALL WARNING CIRCUIT, SEE PAGE 9.2.
2. THRU SER(SR5401) & SER(SR5402)
3. EFFECTIVE SER(SR6401) & SER(SR6402) & ON

CHG LET	REVISION	BY / DATE	CHK / APPD
A	1200400 WAS 1270626 ADD "OPT" TO TITLE (SR3694-10)	GLW 4-4-62	
B	ADD MODEL 206 S-1360-10 CKT BKR WAS -1232-10 1270461-1 BUS BAR WAS 1210429-1 (SR 4038-6)(SR 3985-6)	GLW 6-21-63	
C	ADDED P206 & U206 TO MODEL BLOCK ADDED WIRE LENGTHS TO W/T REMOVED 1270461-1 FROM E/T. HF-FB3 WAS H-FB3 ; HF-FB4 WAS H-FB4 & HF-FB5 WAS F-FB5 (SR4456) & (SR4457)	WJR 8-14-64	
D	INACTIVATE HF-FB5, HF-FB4 & HF-FB5 ; ADDED BLUE, BLACK BLUE WIRES AND DETAIL "A" 0721105-15 WAS 0721105-1 (SR490)(SR4905)	WJR 1-26-65	
E	S-1360-15 WAS S-1360-10 (SR5144)	GLW 7-25-66	
F	BY REV: ADDED DETAIL B, S-1845-1-1, NOTES 2 & 3, S-1493-2 & SR'S ED/ER C3936(SR5401)(SR5402)	EGY 8-14-68	GLI

INACTIVE EFF SER U206-1235 & P206-0520 THRU SER U20601444 & P20600603 ED & ER D4845 DLB 8-1-69



DETAIL B THRU SER(SR5401) & (SR5402) (U206-1234 & P206-0519)

DETAIL A THRU SER U206-0656 & P206-0306

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS		N/A	SERIALS
H-FB2	16		35	S-1493-2	S-341-1		3
H-FB1	16		4	S-1367-6	S-1493-2		3
BLUE	16	S-1460-16-6	50	SEE BLACK	S-341-1	1220090	SER U206-0657 & SER P206-0308 & ON
BLACK	18	S-1460-18-0	8	S-1369-1	S-1367-1-8	1220090	SER U206-0657 & SER P206-0308 & ON
BLUE	18	S-1460-16-6	92	S-341-1	S-1369-2	1220090	SER U206-0657 & SER P206-0307 & ON
HF-FB5	16		50	SEE H-FB3	S-341-2	1220008 1220008	INACTIVE SER U206-0656 & SER P206-0306
HF-FB4	18		8	S-1360-1	S-1367-1-8	1220008 1220008	INACTIVE SER U206-0656 & SER P206-0306
HF-FB8	16		92	S-341-1	S-1369-2	1220008 1220008	INACTIVE SER U206-0656 & SER P206-0306
H-FB2	16		35	S-1367-2-6	S-341-1	1200440	2
H-FB1	16		4	S-1367-2-6	S-1367-2-6	1200440	2

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	INSTALLED ON
5	S-1845-1-1	SWITCH	
4	0511062-5	XMTR STALL WARN. HTD	
3	0721105-15	PITOT TUBE, HEATED	
2	S-1158-2-1	SWITCH	
1	S-1360-15	CIRCUIT BREAKER	

EQUIPMENT TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION

DRAWN: G WOOD 12-26-61

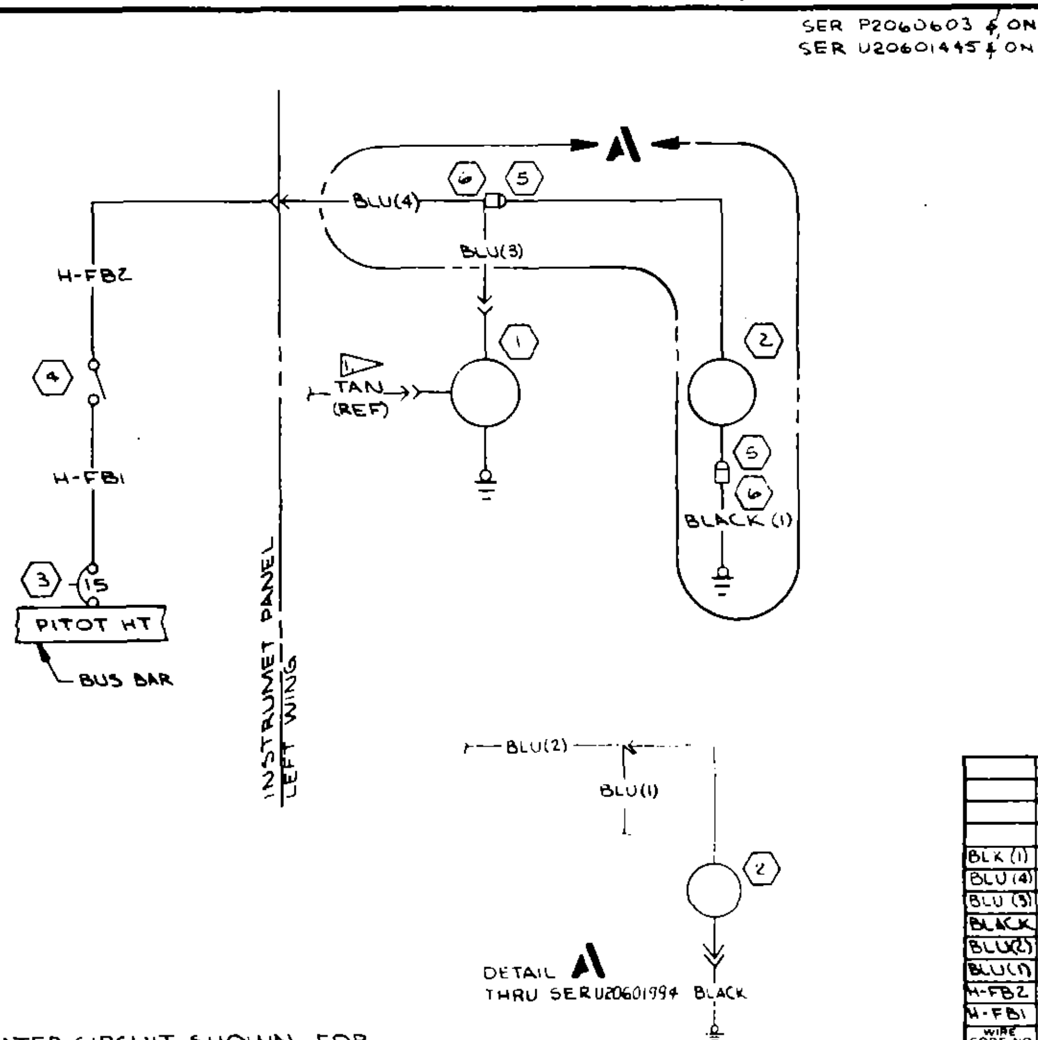
TITLE: WIRING DIAGRAM — HEATED PITOT TUBE & HEATED STALL WARNING SYSTEM (OPT)

Cessna.

DWG NO. 1270625

SUPERSEDED BY: P 13.3 | MODEL: 205 & 206's | REV F | PAGE 13.2

FORM NO 30-181



REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT BLU(1), BLU(2) & BLACK; SER IN BLU(3), BLU(4) & BLK(1); ADD DET "A" & SER (SR 7320)	JCY 11-6-72	

INACTIVE EFF THRU SER U20602199 IX 4-23-73 LKW BLY NHW

NOTES:

1. ONLY HEATER CIRCUIT SHOWN. FOR STALL WARNING CIRCUIT SEE PAGE 9.6

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK (1)	18	-18-0	8	S-1636-2	S-1367-1-8		SER U20601995 & ON
BLU (4)	16	-16-6	92	SEE H-FB2	SEE BLU(1)		SER U20601995 & ON
BLU (3)	16	-16-6	50	S-341-1	S-1636-2		SER U20601995 & ON
BLACK	18	-18-0	8	S-1369-1	S-1367-1-8		THRU SER U20601994
BLU(2)	16	-16-6	92	SEE H-FB2	SEE BLU(1)		THRU SER U20601994
BLU(1)	16	-16-6	50	S-341-1	S-1369-2		THRU SER U20601994
H-FB2	16		35	S-1493-2	S-341-1		
H-FB1	16		4	S-1367-2-6	S-1493-2		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
6	S-1637-2	HOUSING - PLUG
5	S-1637-1	HOUSING - CAP
4	S-1845-1-2	SWITCH
3	S-1360-15	CIRCUIT BKR
2	0721105-15	PITOT TUBE, HTD
1	0511062-5	XMTR STALL WRN, HTD

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: P 13.2

SUPERSEDED BY: P 13.3.2

CONTRACT NO:

	NAME	DATE
DESIGN	HENSHAW	8-7-69
GROUP	H. Wise	8-7-69
DRAWN	D.L. BURKE	8-7-69
CHECK	R. YOUNGERS	8-5-69
STRESS	[illegible]	8-7-69
PROJ	[illegible]	8-7-69
APPD	McAnaney	8-6-69
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM —
HEATED PITOT TUBE & HEATED STALL WARNING SYSTEM (OPT)

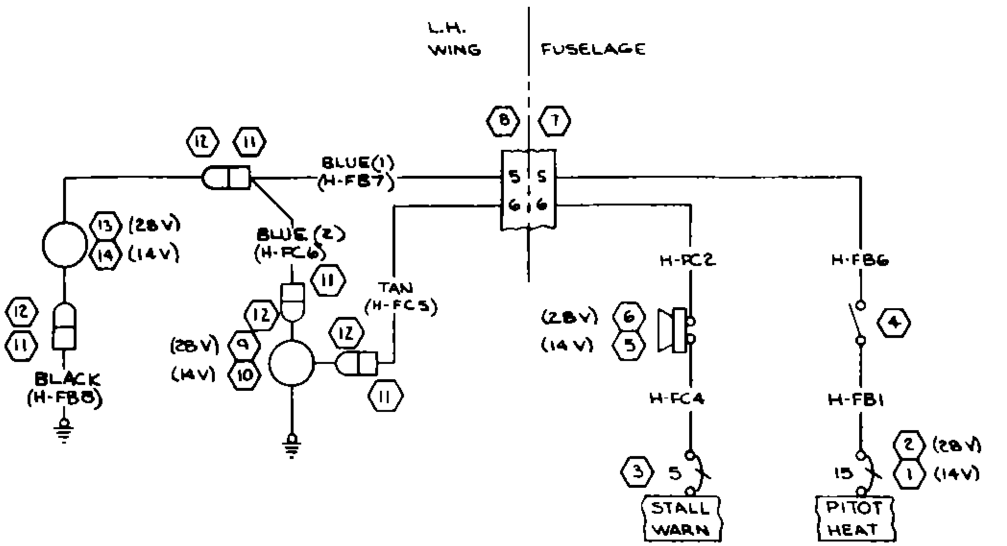
SIZE C | CODE IDENT. NO 71379 | DWG NO 1270625

SCALE: NONE | U206 & P206 | PAGE: 13.3

ED & RR 10985 (SR6005) IX (SR6006) IX

FORM NO 80 2158

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED H-FC5, H-FC6, H-FB7 & H-FB8 (SR7403) II	RAM 8-10-73	
B	BY REV: S-1640-6 WAS S-1640-9; S-1641-6 WAS S-1641-9; ADD WIRE LENGTHS PER EO 588 (NOW SHOP PRACTICE)	BLA 12-10-74	



ITEM NO	PART NO.	DESCRIPTION	
14	0721105-15	PITOT TUBE	
13	0721105-18	PITOT TUBE	
12	S-1637-1	HOUSING	
11	S-1637-2	HOUSING	
10	0511062-15	XMTR	
9	0511062-16	XMTR	
8	S-1640-6	HOUSING-PIN	
7	S-1641-6	HOUSING-SOCKET	
6	S-2077-8	STALL WARN HORN	
5	S-2077-5	STALL WARN HORN	
4	S-2160-1	SWITCH	
3	S-1360-5L	CKT BKR	
2	S-1360-8L	CKT BKR	
1	S-1360-15L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
TAN (H-FC5)	18	-18-10		S-1635-2	S-1636-2		
BLACK (H-FB8)	16	-16-0		S-1636-2	S-1367-2-8		
BLUE(2) (H-FC6)	16	-16-6		SEE BLUE(1)	S-1636-2		
BLUE(1) (H-FB7)	16	-16-6		S-1635-2	S-1636-3		
H-FC4	18			S-1367-1-6	S-1367-1-6		
H-FC2	18		100	S-1367-1-6	S-1636-2		
H-FB6	16		95	S-1493-2	S-1636-2		
H-FB1	16		6	S-1367-2-6	S-1493-2		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 13.3, 13.3.1

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-11-73
GROUP	H. Wiall	4-27-73
DRAWN	WHITE	4-23-73
CHECK	E. HOUNGEES	4-27-73
STRESS		
PROJ	Bergman	4-30-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — HEATED PITOT TUBE & STALL WARNING XMTR (OPT)

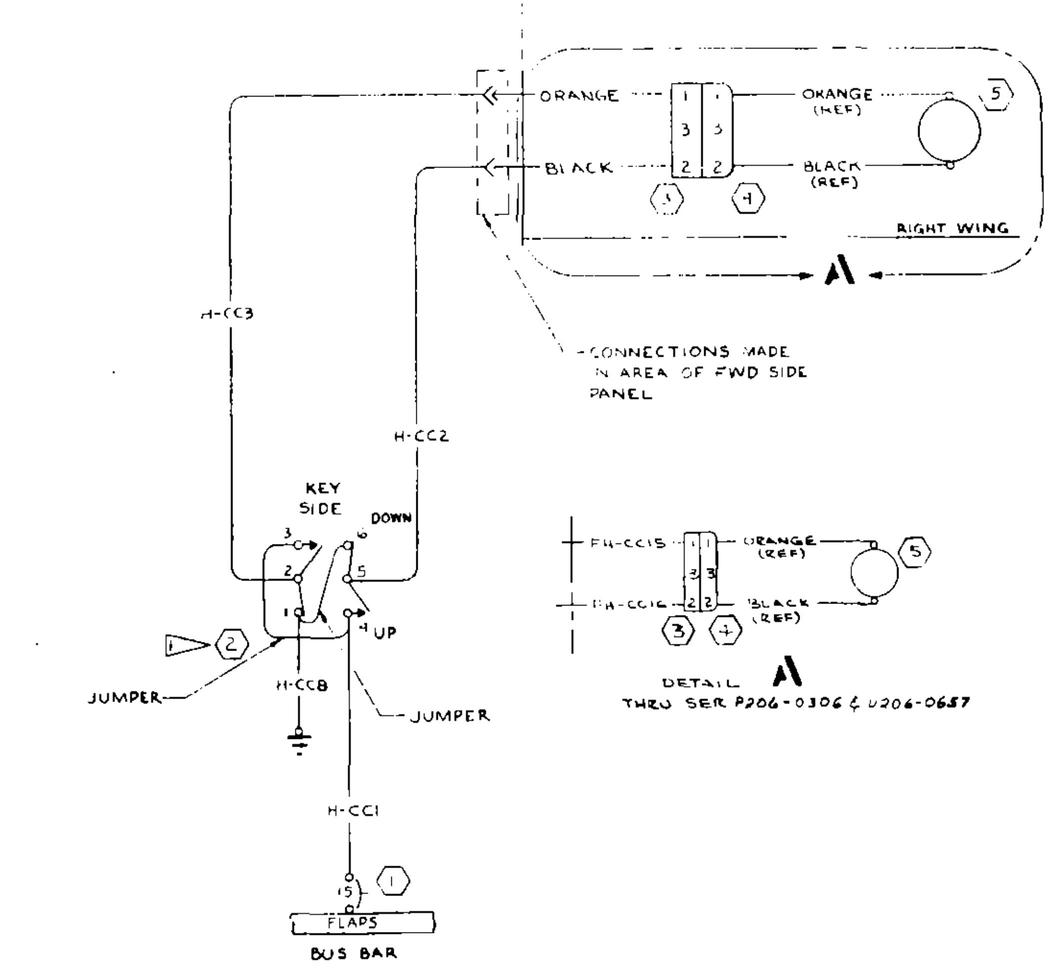
SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | SR7403 II | PAGE: 13.3.2

FORM NO. 80-2188

(SR4946)

CHG LET	REVISION	BY / DATE	CHK / APPD
A	0760657-8 WAS C301001-0101; INACTIVATED FH-CC15, FH-CC16, H-CC18, H-CC19 & H-CC21; ADDED ORANGE, BLACK, BROWN, VIOLET & BLACK WIRES; ADD DETAILS A & B (SR4901). (SR4902)	GLW 10-26-65	[illegible]



NOTE:

1. SWITCH SHOWN IS A "MOMENTARY ON"-"ON"- MOMENTARY ON" CONFIGURATION. THE MOTOR IS SHORTED WHEN THE SWITCH IS IN THE CENTER "ON" POSITION. THE SWITCH IS SHOWN IN CENTER "ON" POSITION.
2. SWITCH TERMINALS SHOWN AS VIEWED FROM TOGGLE SIDE OF SWITCH.

ITEM NO	PART NO	DESCRIPTION	INSTALLED ON
7	BZ-7RW2T04	LIMIT SWITCH (MCS)	
6	E13-00M	SWITCH (CRYE)	
5	0760657-8	FLAP MOTOR ASSY	
4	S-1638-2	HOUSING-CAP	
3	S-1638-1	HOUSING-PLUG	
2	S-1661-1	SWITCH ASSY	
1	S-1360-15	CIRCUIT BREAKER	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLACK	16	S-1460-16-0	10	S-1367-2-6	S-1367-2-8		U206-0657 P206-0307 & ON
VIOLET	16	S-1460-16-7	149	S-1367-2-6	S-341-1		U206-0657 P206-0307 & ON
BROWN	16	S-1460-16-1	155	S-1367-2-6	S-341-1		U206-0657 P206-0307 & ON
BLACK	16	S-1460-16-0	142	S-341-1	S-1636-2		U206-0657 P206-0307 & ON
ORANGE	16	S-1460-16-3	142	S-341-1	S-1636-2		U206-0657 P206-0307 & ON
H-CC21	16		10	S-1367-2-6	S-1367-2-8		Inactive U206-0656 P206-0306 & ON
H-CC20	16		25	S-1367-2-6	S-341-1		
H-CC19	16		149	S-1367-2-6	S-341-1		Inactive U206-0656 P206-0306 & ON
H-CC18	16		155	S-1367-2-6	S-341-1		Inactive U206-0656 P206-0306 & ON
H-CC17	16		25	S-1367-2-6	S-341-1		
FH-CC16	16		142	S-341-1	S-1636-2		Inactive U206-0656 P206-0306 & ON
FH-CC15	16		142	S-341-1	S-1636-2		Inactive U206-0656 P206-0306 & ON
H-CC14	16		100	S-1493-2	S-341-1		
H-CC13	16		100	S-1493-2	S-341-1		
H-CC8	16		5	S-1367-2-8	S-1367-2-6		
H-CC3	16		25	S-1367-2-6	S-341-1		
H-CC2	16		25	S-1367-2-6	S-341-1		
H-CC1	16		34	S-1367-2-6	S-1367-2-8		

WIRE TABLE

CESSNA AIRCRAFT CO. COMMERCIAL AIRCRAFT DIVISION, WICHITA, KANSAS

	NAME	DATE
DRAWN	G. WOOD	10-19-65
GROUP	H. Wise	10-19-65
CHECK	[illegible]	10-20-65
PROJ	[illegible]	10-21-65

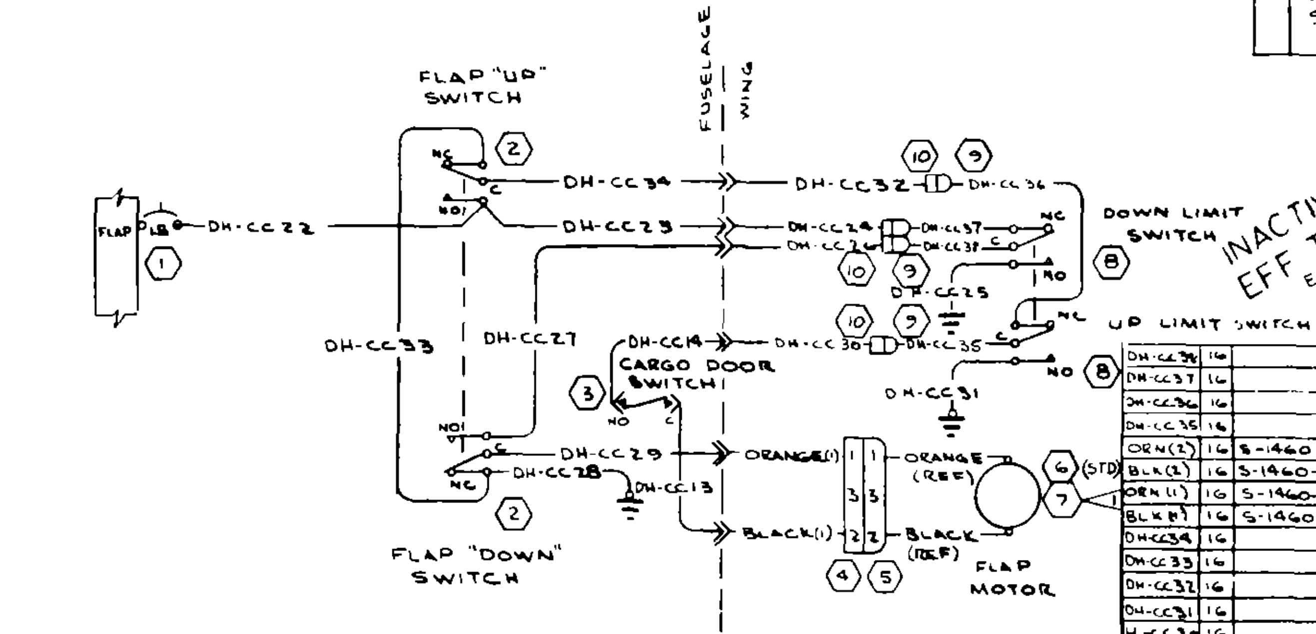
WIRING DIAGRAM—WING FLAPS

Cessna.

DWG NO 1270625

SUPERSEDED BY: | SUPERSEDES: 1270625 PAGE 14.10 | MODEL: TP206 P206 | REV: A | PAGE: 14.20

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: S-1367-2-4 WAS S-1367-1-4; S-1367-2-8 WAS S-1367-1-8; DELETE S-1637-1 & S-1367-2 FROM WIRE TABLE & ADD ITEM 9 & 10 INACT DWG ED&RR10141 (SR6584)	MH 9-4-70	



NOTES:

1 OPTIONAL WITH RADIOS

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
DH-CC38	16			S-1367-2-4	S-1635-2		
DH-CC37	16			S-1367-2-4	S-1635-2		
DH-CC36	16			S-1367-2-4	S-1635-2		
DH-CC35	16			S-1367-2-4	S-1635-2		
ORN(2)	16	S-1460-16-3		S-1493-2	S-1636-2		
BLK(2)	16	S-1460-16-0		S-1493-2	S-1636-2		
ORN(1)	16	S-1460-16-3		S-341-1	S-1636-2		
BLK(1)	16	S-1460-16-0		S-341-1	S-1636-2		
DH-CC34	16			S-1367-1-4	S-341-1		
DH-CC33	16			S-1367-2-4	S-1367-2-4		
DH-CC32	16			S-341-1	S-1636-2		
DH-CC31	16			S-1367-2-4	S-1367-2-8		
DH-CC30	16			S-341-1	S-1636-2		
DH-CC29	16			S-1367-2-4	S-341-1		
DH-CC28	16			S-1367-2-4	S-1367-2-8		
DH-CC27	16			S-341-1	S-1367-2-4		
DH-CC26	16			S-341-1	S-1636-2		
DH-CC25	16			S-1367-2-4	S-1367-2-8		
DH-CC24	16			S-341-1	S-1636-2		
DH-CC23	16			S-1367-2-4	S-341-1		
DH-CC22	16			S-1367-2-8	S-1367-2-4		
DH-CC14	16			S-341-1	S-1493-2		
DH-CC13	16			S-341-1	S-1493-2		

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
10	S-1637-2	HOUSING - PLUG	
9	S-1637-1	HOUSING - CAP	
8	MS25253-1	SWITCH	
7	C301001-0701	ACTUATOR ASSY	
6	C301001-0301	ACTUATOR ASSY	
5	S-1638-2	HOUSING - CAP	
4	S-1638-1	HOUSING - PLUG	
3	E3-00M	SWITCH	(01963)
2	E33-10K	SWITCH	(01963)
1	S-1360-15	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: 1270625 PAGE 14.3.0

SUPERSEDED BY: 1270625 PAGE 14.3.3

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H. Wiel	9-13-69
DRAWN	P.G.POTTS	9-2-69
CHECK	[illegible]	[illegible]
STRESS	[illegible]	[illegible]
PROJECT		
APPD	SWANEY	9-5-69

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

WIRING DIAGRAM — WING FLAPS

SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

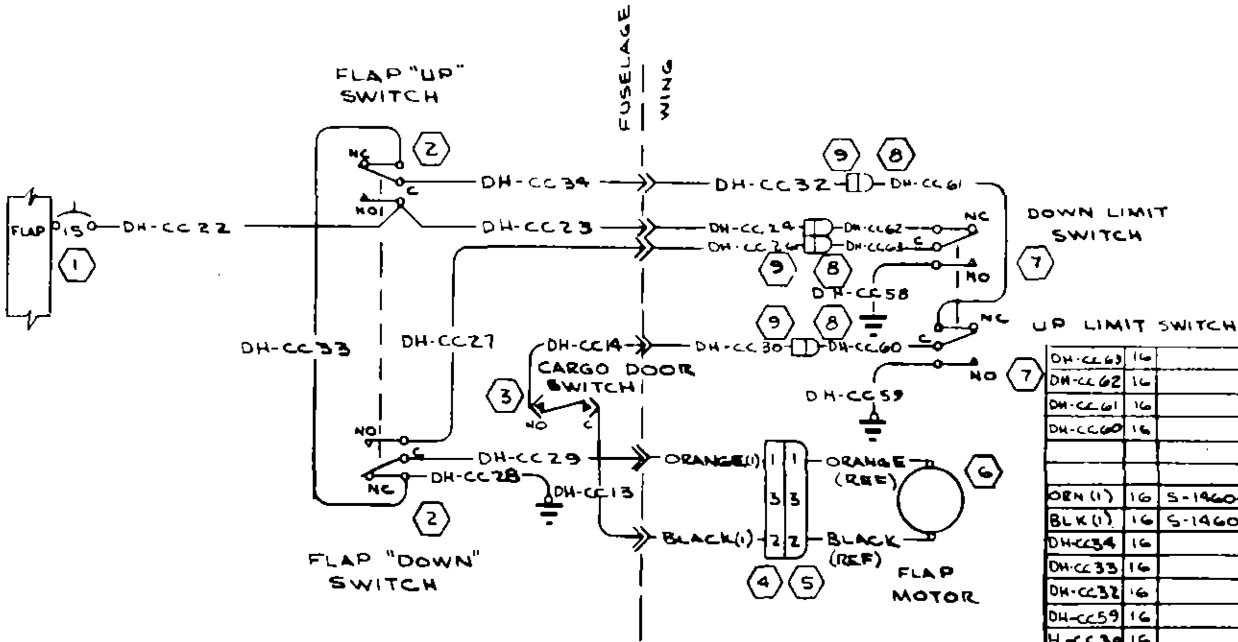
SCALE: NONE | 206's | PAGE: 14.3.1

ED&RR 02629

FORM NO. 88-118A

REVISION			
LET	DESCRIPTION	DATE	APPD

INACTIVE: EFF THRU SER U20602199 IX
ECN 1-4-73



NOTES:

1. THESE SWITCHES PART OF C301002-0101 ACTUATOR ASSY

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
DH-CC63	16			S-1493-2	S-1635-2		
DH-CC62	16			S-1493-2	S-1635-2		
DH-CC61	16			S-1493-2	S-1635-2		
DH-CC60	16			S-1493-2	S-1635-2		
ORN (1)	16	S-1460-16-3		S-341-1	S-1636-2		
BLK (1)	16	S-1460-16-0		S-341-1	S-1636-2		
DH-CC34	16			S-1367-2-4	S-341-1		
DH-CC33	16			S-1367-2-4	S-1367-2-4		
DH-CC32	16			S-341-1	S-1636-2		
DH-CC59	16			S-1493-2	S-1367-2-8		
H-CC30	16			S-341-1	S-1636-2		
DH-CC29	16			S-1367-2-4	S-341-1		
DH-CC28	16			S-1367-2-4	S-1367-2-8		
DH-CC27	16			S-341-1	S-1367-2-4		
DH-CC26	16			S-341-1	S-1636-2		
DH-CC58	16			S-1493-2	S-1367-2-8		
DH-CC24	16			S-341-1	S-1636-2		
DH-CC23	16			S-1367-2-4	S-341-1		
DH-CC22	16			S-1367-2-6	S-1367-2-4		
DH-CC14	16			S-341-1	S-1493-2		
DH-CC13	16			S-341-1	S-1493-2		

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
9	S-1637-2	HOUSING - PLUG	
8	S-1637-1	HOUSING - CAP	
7 (1)	Y3-1-D9	SWITCH	MMEC
6	C301002-0101	ACTUATOR ASSY	
5	S-1638-2	HOUSING - CAP	
4	S-1638-1	HOUSING - PLUG	
3	E13-OOM	SWITCH	(01963)
2	S-1906-1	SWITCH	
1	S-1360-15	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: PAGE 14.3.1

SUPERSEDED BY: PAGE 14.5

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H Wiese	10-15-70
DRAWN	M. HUNTER	9-4-70
CHECK	L.K.WHITE	10-15-70
STRESS		
PROJECT	[illegible]	[illegible]
APPD		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — WING FLAPS

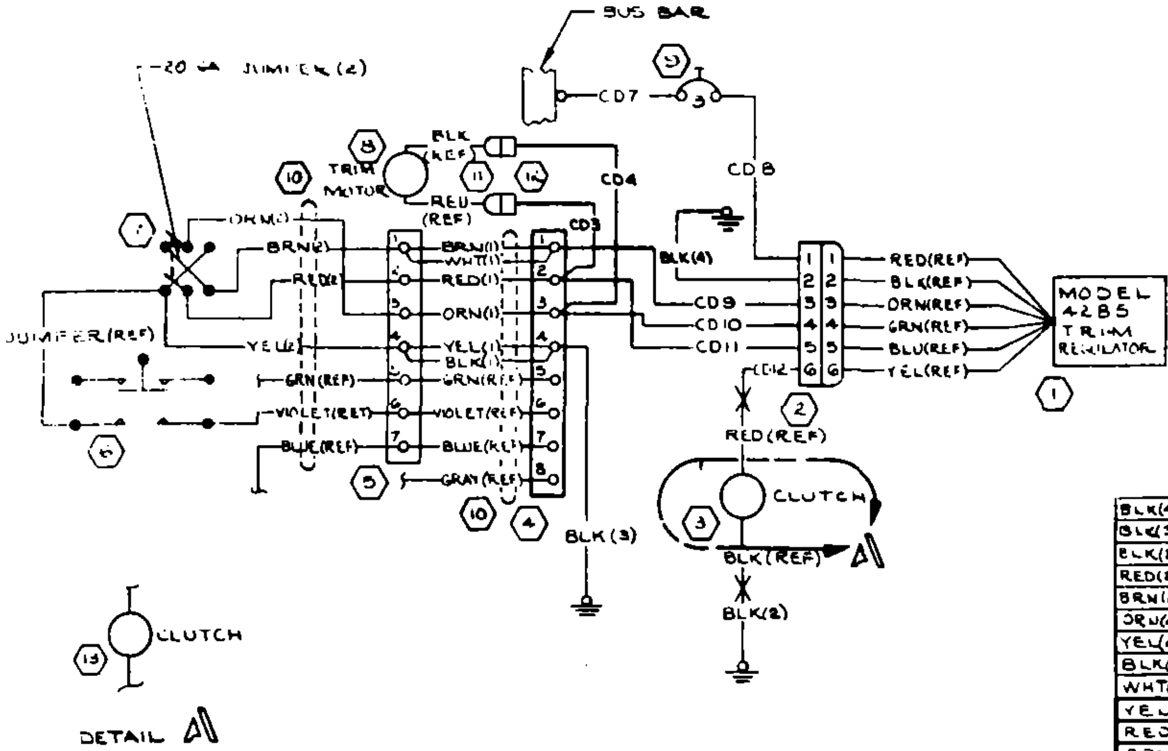
SIZE: C | CODE IDENT. NO.: 71379 | DWG NO.: 1270625

SCALE: NONE | U206 | PAGE: 14.3.3

ED&RR 10141 (SR 6584)

FORM NO. 50-1134

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: CD3/TERMINAL NO. 2 WAS CD3/TERMINAL NO. 1 & CD4/TERMINAL NO. 3 WAS CD4/TERMINAL NO. 2 ED&RR 10950	3-9-70	



INACTIVE: EFF THRU SER U20601700 EDRR 10907 6-30-70

NOTES:

1. BLK, WHT & GRY WIRE TO BE REMOVED FROM SF-1030-BX CABLE ON INSTL IN CONTROL WHEEL
2. 329636 TERMINAL VENDOR (00779)
3. PART OF SF-1030-BX CABLE (08261)

ITEM NO.	PART NO.	DESCRIPTION	
13	1560321-1	CLUTCH-24V	
12	S-1637-2	HOUSING-PLUG	
11	S-1637-1	HOUSING-CAP	
10	SF-1030-BX	CABLE	(08261)
9	7271-8-3	CIRCUIT BREAKER	
8	1560322-26	TRIM MOTOR ASSY	
7	305-4304	PITCH TRIM SW	
6	S-1985-1	SWITCH-KEYING	
5	351-11-07-001	TERMINAL BLK	(71785)
4	351-11-08-001	TERMINAL BLK	(71785)
3	1560321-12	CLUTCH-12V	
2	S-1641-6	HOUSING	
1	MODEL 4285	TRIM REGULATOR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: PAGE 14.4

SUPERSEDED BY: P 14.14.2

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK(4)	20			S-1367-1-8	S-1636-1		
BLK(3)	20			S-1367-1-8	◁2		
BLK(2)	20			S-1367-1-8	S-1370-2		
RED(2)		◁3		SOLDER	◁2		
BRN(2)				SOLDER			
ORN(2)				SOLDER			
YEL(2)				SOLDER			
BLK(1)				◁2			
WHT(1)							
YEL(1)							
RED(1)							
BRN(1)							
ORN(1)		◁3		◁2	◁2		
CD12	20			S-1370-2	S-1636-1		
CD11	20			◁2			
CD10	20			◁2			
CD9	20			◁2			
CD8	20			S-1367-1-8	S-1636-1		
CD7	20			S-1367-1-8	S-1367-1-8		
CD4	20			◁2	S-1636-1		
CD3	20			◁2	S-1636-1		

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN	SIPES VR	6-5-69
GROUP	V. Weir	8-8-69
DRAWN	LUESTRAND	8-4-69
CHECK		8-5-69
STRESS		8-8-69
PROJ		8-9-69
APPD		8-7-69
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

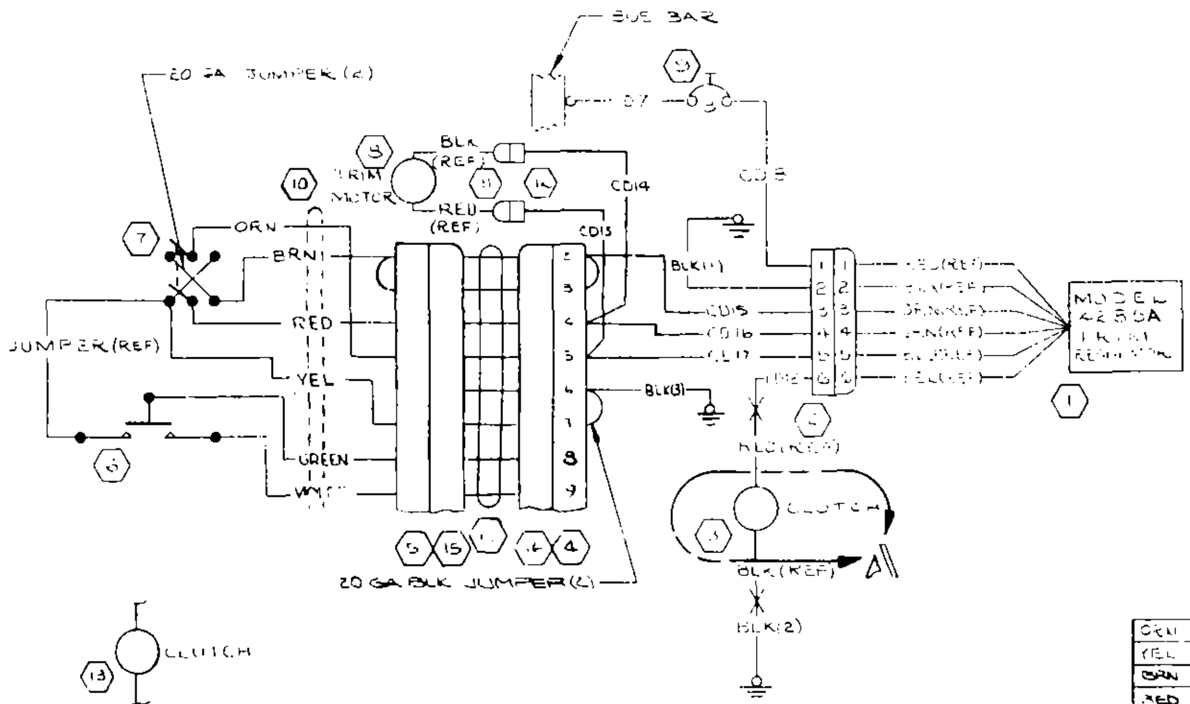
TITLE: WIRING DIAGRAM — ELECTRIC ELEVATOR TRIM (OPT)

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE NONE | U206 & P206 | PAGE: 14.4.1

ED&RR 10634

FORM NO 80 2156



DETAIL A
APPLIES TO 24V INSTL

INACTIVE: EFF THRU SER U20602133 (12-18-73)

NOTES.

1. BLK WHT & GRY WIRE TO BE REMOVED FROM SF-1030-BX CABLE ON INSTL TO CONTROL WHEEL
2. 60215-4LP TERMINAL, VENDOR (00779)
3. PART OF SF-1030-BX CABLE (08261)

Rev	Description	Date	Appd
A	BY REV: REVISED & REDRAWN	WRC	
B	BY REV: ADD S-1695-2, DET "B" † SER; 4285A WAS 4285 (SR7061)(REF)	GKG 6-18-73	
C	BY REV: DELETED S-1695-2 & DETAIL "B" (SR 7403)	MLM 5-6-74	

Item No	Part No.	Description	
16	1270062-1	CKT BOARD	
15	1270061-1	CKT BOARD	
14	1270060-1	CABLE ASSY	
13	1560321-1	CLUTCH 24V	
12	S-1637-2	HOUSING-PLUG	
11	S-1637-1	HOUSING-CAP	
10	SF-1030-BX	CABLE	(08261)
9	7271-8-5	CIRCUIT BREAKER	
8	1560322-26	TRIM MOTOR ASSY	
7	305-4304	PITCH TRIM SW	
6	S-1985-1	SWITCH KEYING	
5	255 10 30 190	CONNECTOR	(71785)
4	582384-9	SOCKET	(00779)
3	1560321-12	CLUTCH-12V	
2	S-1641-6	HOUSING	
1	MODEL 4285A	TRIM REGULATOR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC NO
S-XXX OR CMXXXX=CESSNA STD NO

SUPERSEDES: PAGE 14.4.1
SUPERSEDED BY: PAGE 14.7

Wire Code No	GA	Material	LG	Terminals	Terminals		Serials
ORN		3		SOLDER	SOLDER		
YEL		3		SOLDER	SOLDER		
BRN		3		SOLDER	SOLDER		
RED		3		SOLDER	SOLDER		
BLK(4)	20			S-1361-8	S-1036-1		
BLK(3)	20			S-1361-8	2		
BLK(2)	20	-20-0		S-1361-6	S-1510-2		
BLK(1)	20	-20-0		S-1361-8	S-1036-1		
CD12	20			[illegible]	[illegible]		
CD17	20			2			
CD16	20			2			
CD15	20			2			
CD8	20			[illegible]	[illegible]		
CD7	20			[illegible]	[illegible]		
CD14	20			2	[illegible]		
CD13	20			2	[illegible]		

WIRE TABLE

CONTRACT NO:

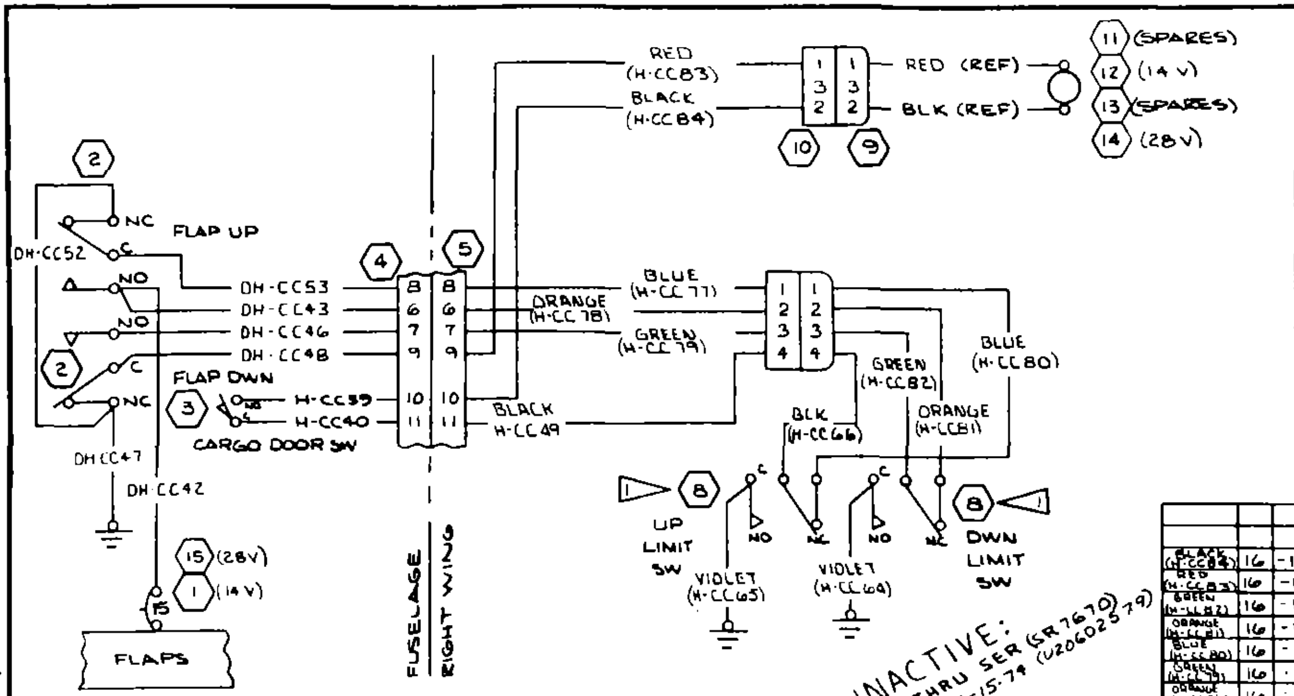
	Name	Date
DESIGN	[illegible]	[illegible]
GROUP	[illegible]	2-2-70
DRAWN	PAPE	1-30-70
CHECK	LE WHITE	2-4-70
STRESS		
PROJ	[illegible]	2-6-70
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ELECTRIC ELEVATOR TRIM (OPT)

SIZE C | CODE IDENT NO 71379 | DWG NO 1270025
SCALE NONE | PAGE 14.4.2

LET	REVISION DESCRIPTION	DATE	APPD
A	BY REV: ADDED H-CC83 & H-CC84 (SR7403) II	RAM 8-10-73	
B	BY REV: COLOR CODE WIRES H-CC49 & H-CC64 THRU H-CC83, (H-CC83) RED WAS (H-CC83) ORANGE (NOW SHOP PRACTICE)	TDM 10-10-73	
C	BY REV: ADD WIRE LG; S-1641-6 & S-1640-6 WAS S-1638-1 & S-1678-2; S-1640-12 & S-1641-12 WAS S-1640-9 & S-1641-9; MER E0014 (SR7403) II (REF) (NOW SHOP PRACTICE)	DEF 2-8-74	JCY JRS



INACTIVE: EFF THRU SER (SR7670) (U20602579) MEM 6-15-74 JRS DKM WIS

1060-111-72

BLACK (H-CC84)	16	-16-0	13	S-1635-2	S-1636-2		
RED (H-CC83)	16	-16-2	13	S-1635-2	S-1636-2		
GREEN (H-CC82)	16	-16-5	13	S-1635-2	S-1493-2		
ORANGE (H-CC81)	16	-16-3	13	S-1635-2	S-1493-2		
BLUE (H-CC80)	16	-16-6	13	S-1635-2	S-1493-2		
GREEN (H-CC79)	16	-16-5		S-1635-2	S-1636-2		
ORANGE (H-CC78)	16	-16-3		S-1635-2	S-1636-2		
BLUE (H-CC77)	16	-16-6		S-1635-2	S-1636-2		
BLACK (H-CC66)	16	-16-0	13	S-1493-2	S-1635-2		
VIOLET (H-CC65)	16	-16-7	19	S-1493-2	S-1367-2-8		
VIOLET (H-CC64)	16	-16-7	19	S-1493-2	S-1367-2-8		
DH-CC53	16			S-1367-2-4	S-1636-2		
DH-CC52	16			S-1367-2-4	S-1367-2-4		
BLACK (H-CC49)	16	-16-0		S-1635-2	S-1636-2		
DH-CC48	16			S-1367-2-4	S-1636-2		
DH-CC47	16				S-1367-2-8		
DH-CC46	16				S-1636-2		
DH-CC43	16			S-1367-2-4	S-1636-2		
DH-CC42	16			S-1367-2-4	S-1367-2-4		
H-CC40	16			S-1636-2	S-1493-2		
H-CC39	16			S-1636-2	S-1493-2		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

NOTES:

1. THESE SWITCHES ARE PART OF C301002 ACTUATOR ASSY
2. USE FOR PRODUCTION ONLY FOR ALL SPARES USE: C301002-0301 (14 VOLT) C301002-0302 (28 VOLT)

NO	PART NO	DESCRIPTION	VENDOR
17	S-1641-6	HOUSING-SOCKET	
16	S-1640-6	HOUSING-PIN	
15	S-1360-8L	CIRCUIT BREAKER	28 VOLT
2 14	C301002-0102	ACTUATOR ASSY	28 VOLT
13	C301002-0302	ACTUATOR ASSY	28 VOLT
2 12	C301002-0101	ACTUATOR ASSY	14 VOLT
11	C301002-0301	ACTUATOR ASSY	14 VOLT
10	S-1638-1	HOUSING-PLUG	
9	S-1638-2	HOUSING-CAP	
1 8	V3L-3-09	SWITCH	MMEC
7	S-1637-1	HOUSING-CAP	
6	S-1637-2	HOUSING-PLUG	
5	S-1640-12	HOUSING-PIN	
4	S-1641-12	HOUSING-SOCKET	
3	E13-00M	SWITCH	01963
2	S-1906-1	SWITCH	
1	S-1360-15L	CIRCUIT BREAKER	14 VOLT

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 14.3.3 & 14.3.4

SUPERSEDED BY: PAGE 14.5.1

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	V Wise	1-8-73
DRAWN	M.MORIARTY	1-4-73
CHECK	E.YOUNGERS	1-6-73
STRESS		
PROJECT		
APPD		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E PAWNEE WICHITA, KANSAS

TITLE WIRING DIAGRAM — WING FLAPS

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE: NONE | U206 | PAGE 14.5

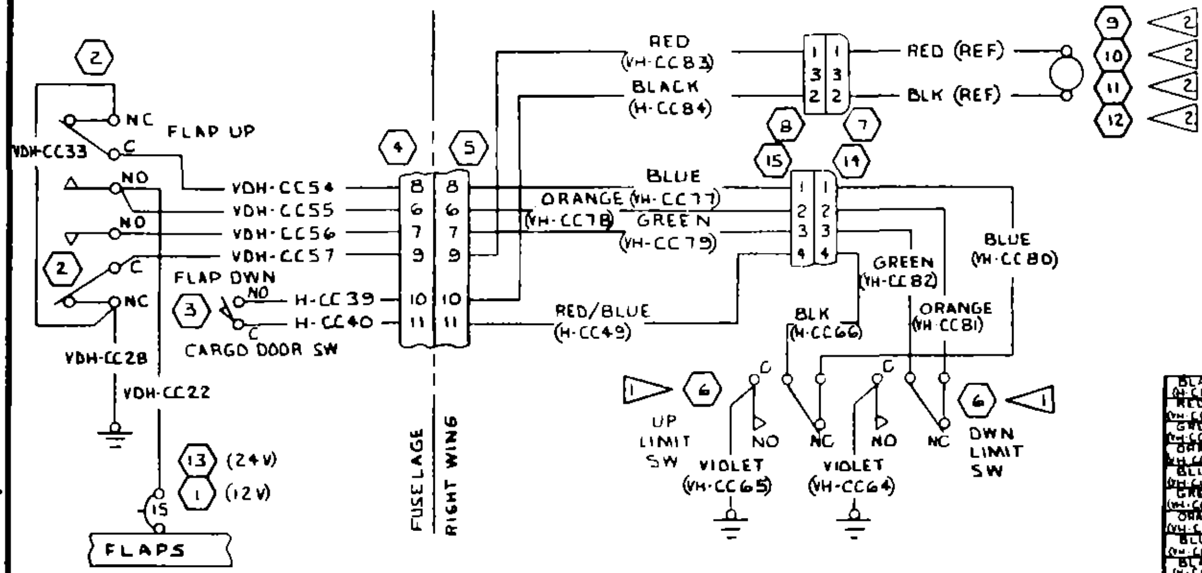
(SR7403) II

FORM NO 80-8194

NOTES

1. THESE SWITCHES ARE PART OF C301002 ACTUATOR ASSY

2. FOR ALL SPARES USE: C301002-0301 (14 VOLT) AND C301002-0302 (28 VOLT)



70-111-0901

BLACK (H-CC84)	16	-16-0	13	S-1635-2	S-1636-2		
RED (VH-CC83)	16	-16-2	13		S-1636-2		
GREEN (VH-CC82)	16	-16-5	13		S-1493-2		
ORANGE (VH-CC81)	16	-16-3	13		S-1493-2		
BLUE (VH-CC80)	16	-16-6	13		S-1493-2		
GREEN (VH-CC79)	16	-16-5			S-1636-2		
ORANGE (VH-CC78)	16	-16-3			S-1636-2		
BLUE (VH-CC77)	16	-16-6		S-1635-2	S-1636-2		
BLACK (H-CC66)	16	-16-0	13	S-1493-2	S-1635-2		
VIOLET (VH-CC65)	16	-16-7	19	S-1493-2	S-1367-2-8		
VIOLET (VH-CC64)	16	-16-7	19	S-1493-2	S-1367-2-8		
RED/BLUE (H-CC49)	16	-16-2-6		S-1635-2	S-1636-2		
VDH-CC54	16		102	S-1367-2-4	S-1636-2		
VDH-CC33	16		6	S-1367-2-4	S-1367-2-4		
VDH-CC57	16		62	S-1367-2-4	S-1636-2		
VDH-CC28	16		10		S-1367-2-8		
VDH-CC56	16		62		S-1636-2		
VDH-CC55	16		62	S-1367-2-4	S-1636-2		
VDH-CC22	16		36	S-1367-2-4	S-1367-2-4		
H-CC40	16			S-1636-2	S-1493-2		
H-CC39	16			S-1636-2	S-1493-2		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
15	S-1641-6	HOUSING-SOCKET	
14	S-1640-6	HOUSING-PIN	
13	S-1360-8L	CIRCUIT BREAKER	
12	C301002-0102	ACTUATOR ASSY	
11	C301002-0302	ACTUATOR ASSY	
10	C301002-0101	ACTUATOR ASSY	
9	C301002-0301	ACTUATOR ASSY	
8	S-1638-1	HOUSING-PLUG	
7	S-1638-2	HOUSING-CAP	
6	V3L 3 D9	SWITCH	
5	S-1640-12	HOUSING-PIN	
4	S-1641-12	HOUSING-SOCKET	
3	E13-00M	SWITCH	
2	S-1906-1	SWITCH	
1	S-1360-15L	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: PAGE 14.5

SUPERSEDED BY:

REVISION			
LET	DESCRIPTION	DATE	APPD

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	[illegible signature]	6-24-74
DRAWN	MCBRIDE	6-13-74
CHECK	D L OLLER	6-13-74
STRESS		
PROJ	[illegible signature]	6-25-74
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — WING FLAPS

SIZE: C
CODE IDENT. NO. 71379
DWG NO 1270625
SCALE: NONE
U206
PAGE: 14.5.1

FORM NO 80-2188

(SR 7670)

REVISION			
LET	DESCRIPTION	DATE	APPD
C	BY REV: REVISED & REDRAWN. ADD P(19.7.1), CD25 THRU CD35. BLK(4), RED(2), YEL(2) ORN(2), BRN(2), 1570308-1, 1570307-1 & 3421-0000 C611003-0101 WAS MODEL 42854: ADD WIRE COLORS CD26 GRN & CD25 BLU SER (SR 7677) (SR 7403) (REF)	DEF 1-12-74	JCY DKM JRS
D	BY REV: ADD 1570307-2 & S-1370-5, S1963-2 WAS SOLDER (CD27, CD28, CD29, & BLK(4) (SR7677), (SR1670)	MEM 5-14-74	JCY JRS
E	BY REV: S-1360-5L WAS S-1370-5L (NOW SHOP PRACTICE)	JEG 7/15/74	JCY JRS
F	BY REV: S-1636-1 WAS S-1370-2/CD-12 (MER 206-E0360)(NOW SHOP PRACTICE)	RJP 1-23-75	JCY JRS

1080-111-04

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK (4)	20	-20-0		S-1367-1-8	S-1963-2		SER U20602407 & ON
ORN (2)		-20-3		SOLDER	SOLDER		
YEL (2)		-20-4					
BRN (2)		-20-1					
RED (2)	20	-20-2					SER U20602407 & ON
ORN(1)		◁3					THRU SER U20602406
YEL(1)							
BRN(1)							
RED(1)		◁3		SOLDER	SOLDER		
BLK (3)	20	-20-0		S-1367-1-8	◁2		THRU SER U20602406
BLK(2)		-20-0		S-1367-1-8	S-1370-2		
BLU (CD33)			34	S-1635-1	S-1636-1		
GRN (CD32)			34				
ORN (CD31)			34				
RED (CD30)			34	S-1635-1			
CD29				S-1963-2			SER U20602407 & ON
CD28				S-1963-2			
CD27				S-1963-2			
GRN (CD26)				SOLDER			
BLU (CD25)				SOLDER			
CD24				S-1635-1			SER U20602407 & ON
CD18				S-1367-1-8			
YEL (CD12)			50	S-1636-1	S-1636-1		
CD7	20		34	S-1367-1-8	S-1367-1-8		

WIRE TABLE

26	S-1360-5L	CIRCUIT BREAKER	
25	S-1960-2-0	HOUSING	
24	S-1960-1-0	HOUSING	
23	S-1962-2-0	HOUSING	
22	S-1962-1-0	HOUSING	
21	1570307-2	CABLE ASSY	
20	582384-9	SOCKET	
19	1270062-1	CKT BOARD	
18	1270060-1	CABLE ASSY	
17	1270061-1	CKT BOARD	
16	255-10-30-190	CONNECTOR	
15	SF-1030-BX	CABLE	
14	S-1985-1	SWITCH-KEYING	
13	3421-0000	SOCKET	
12	1570307-1	CONNECTOR ASSY	
11	1570308-1	CABLE ASSY	
10	7271-8-3	CIRCUIT BREAKER	
9	305-4304	PITCH TRIM SW	
8	S-1695-2	SWITCH (TRIM DISENGAGE)	
7	C610502-0101	TRIM MOTOR	
6	S-1637-1	HOUSING PIN	
5	S-1637-2	HOUSING PLUG	
4	TC5-20B	CLUTCH	
3	S-1640-6	HOUSING	
2	S-1641-6	HOUSING	
1	C611003-0101	TRIM REGULATOR	24 V
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

NOTES:

1. BLK WHT & GRY WIRE TO BE REMOVED FROM SF-1030-BX CABLE ON INSTL IN CONTROL WHEEL

▷2 60215-4LP TERMINAL, VENDOR (00779)

▷3 PART OF SF-1030-BX CABLE (08261)

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
CD23	20			◁2	S-1636-1		THRU SER (SR7677)
CD22	20						
CD21	20						
CD20	20						
CD19	20			◁2			THRU SER (SR7677)
BLK (1)	20	-20-0		S-1637-1-8	S-1636-1		
JUMPER	18			S-1635-1	S-1635-1	12V	
CD35	20			S-1635-1	S-1370-2	12 V	
CD34	20			S-1635-1	S-1370-2	12 V	

FORM NO. 80-2188

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: REV "B"

SUPERSEDED BY.

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	H. WISE	3-2-73
DRAWN	J. YOUEL	2-28-73
CHECK	R. YOUNGERS	3-2-73
STRESS		
PROJ	BERGMAN	3-5-73
APPD	MGR	
OTHER		

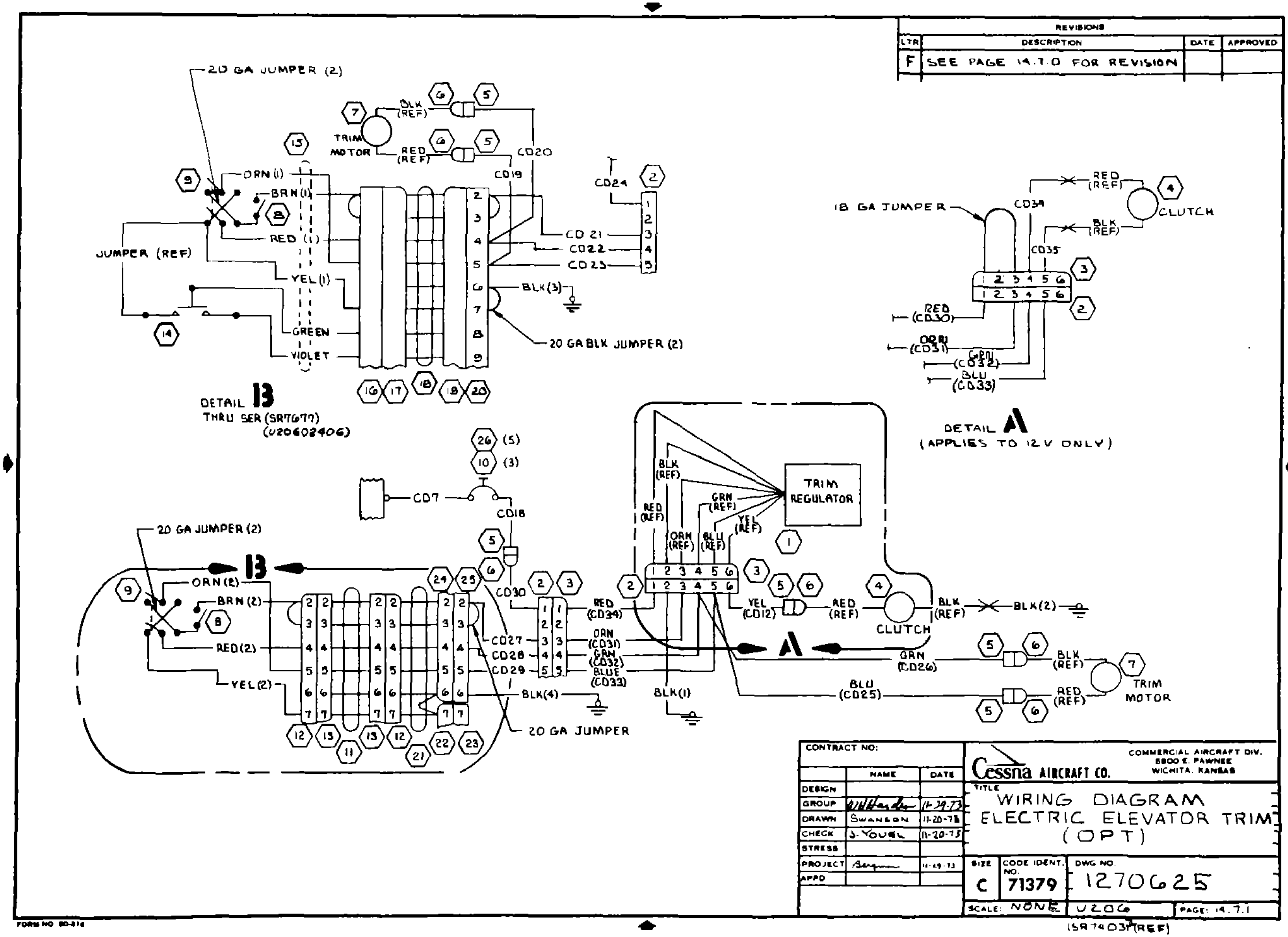
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ELECTRIC ELEVATOR TRIM (OPT)

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

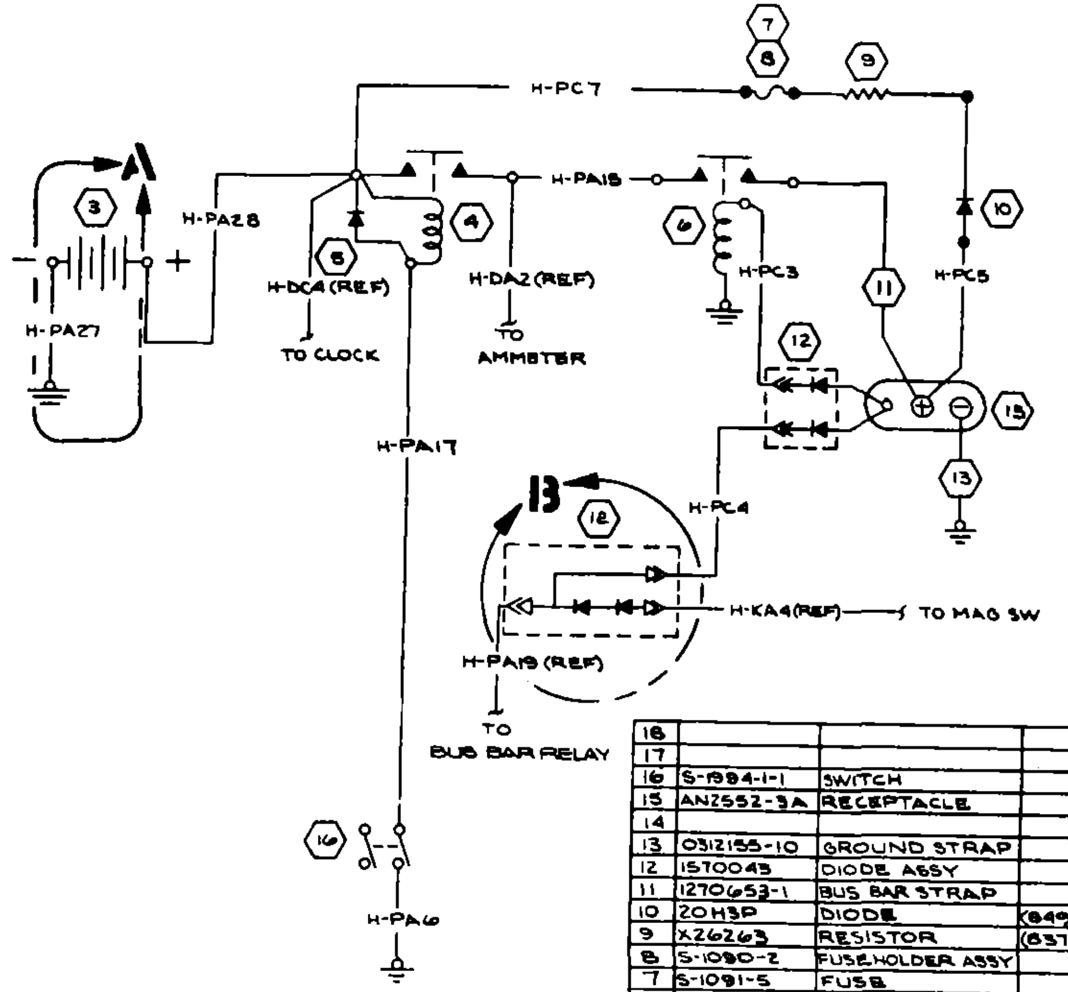
SCALE: NONE U206 PAGE: 14.7.0

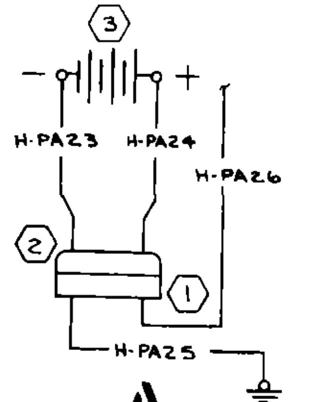
(SR7403)(REF)



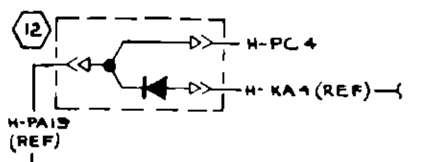
REVISIONS
LTR | DESCRIPTION | DATE | APPROVED
F | SEE PAGE 14.7.0 FOR REVISION
20 GA JUMPER (2)
TRIM MOTOR
BLK (REF)
RED (REF)
CD20
CD19
CD24
CD 21
CD22
CD23
ORN (1)
BRN (1)
RED (1)
YEL (1)
GREEN
VIOLET
JUMPER (REF)
BLK (3)
20 GA BLK JUMPER (2)
DETAIL B
THRU SER (SR7677)
(U20602406)
18 GA JUMPER
CD34
CD35
RED (REF)
BLK (REF)
CLUTCH
RED (CD30)
ORN (CD31)
GRN (CD32)
BLU (CD33)
DETAIL A
(APPLIES TO 12V ONLY)
CD7
CD18
(5)
(3)
TRIM REGULATOR
BLK (REF)
RED (REF)
ORN (REF)
BLU (REF)
GRN (REF)
YEL (REF)
20 GA JUMPER (2)
ORN (2)
BRN (2)
RED (2)
YEL (2)
CD30
CD27
CD28
CD29
RED (CD34)
ORN (CD31)
GRN (CD32)
BLUE (CD33)
BLK (4)
BLK (1)
20 GA JUMPER
YEL (CD12)
RED (REF)
CLUTCH
BLK (REF)
BLK (2)
GRN (CD26)
BLU (CD25)
BLK (REF)
RED (REF)
TRIM MOTOR
CONTRACT NO:
NAME | DATE
DESIGN
GROUP | 11-29-73
DRAWN | SWANSON | 11-20-73
CHECK | S. YOUEL | 11-20-73
STRESS
PROJECT | 11-29-73
APPD
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS
TITLE
WIRING DIAGRAM
ELECTRIC ELEVATOR TRIM
(OPT)
SIZE C
CODE IDENT. NO. 71379
DWG NO. 1270625
SCALE: NONE
U206
PAGE: 14.7.1
(SR7403) (REF)
FORM NO 80-214

LET	REVISION DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL 'A', PA27, PA28 & SER; SER OUT PA23, PA24, PA25, PA26, MS25182-2 & 0570052-2 SER U20601701	RAM 8-6-73	
B	BY REV: ADD DETAIL 'B' & SER (SR8259)	RS 6-12-75	





DETAIL A
THRU SER U20601700



DETAIL B
THRU SER (SR8259) (U20603020)

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
18			
17			
16	S-1984-1-1	SWITCH	
15	AN2552-3A	RECEPTACLE	
14			
13	0312155-10	GROUND STRAP	
12	1570043	DIODE ASSY	
11	1270653-1	BUS BAR STRAP	
10	20H3P	DIODE	(84970)
9	X26263	RESISTOR	(83777)
8	S-1090-2	FUSEHOLDER ASSY	
7	S-1091-5	FUSE	
6	S-1577-1	CONTACTOR	
5	0770728-1	DIODE ASSY	
4	S-1580-1	BAT. CONTACTOR	
3	0870060-1	BATTERY ASSY	
2	0570052-2	ADAPTER ASSY	
1	MS25182-2	PLUG	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406
SUPERSEDED BY:

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-PA28	2			S-1367-7-8	S-1367-7-15		SER U20601701 & ON
H-PA27	2			S-1367-7-8	S-1367-7-12		SER U20601701 & ON
H-PC7	18			SOLDER	S-1367-1-13		
H-PC6	18			S-1367-1-14	SOLDER		
H-PC4	18			S-1493-1	S-1493-1		
H-PC3	18			S-1367-1-10	S-1493-1		
H-PA15	2			S-1606-1	S-1367-7-8		
H-PA26	2			S-1367-7-13	S-1367-7-13		THRU SER U20601700
H-PA25	2			S-1367-7-15	S-1367-7-12		
H-PA24	2			S-1367-7-13	S-1367-7-13		
H-PA23	2			S-1367-7-13	S-1367-7-13		THRU SER U20601700
H-PA17	18			S-1367-1-10	S-1493-1		
H-PA6	18			S-1493-1	S-1367-1-6		

WIRE TABLE

CONTRACT NO.

	NAME	DATE
DESIGN	S. HENSHAW	3-11-70
GROUP	V. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

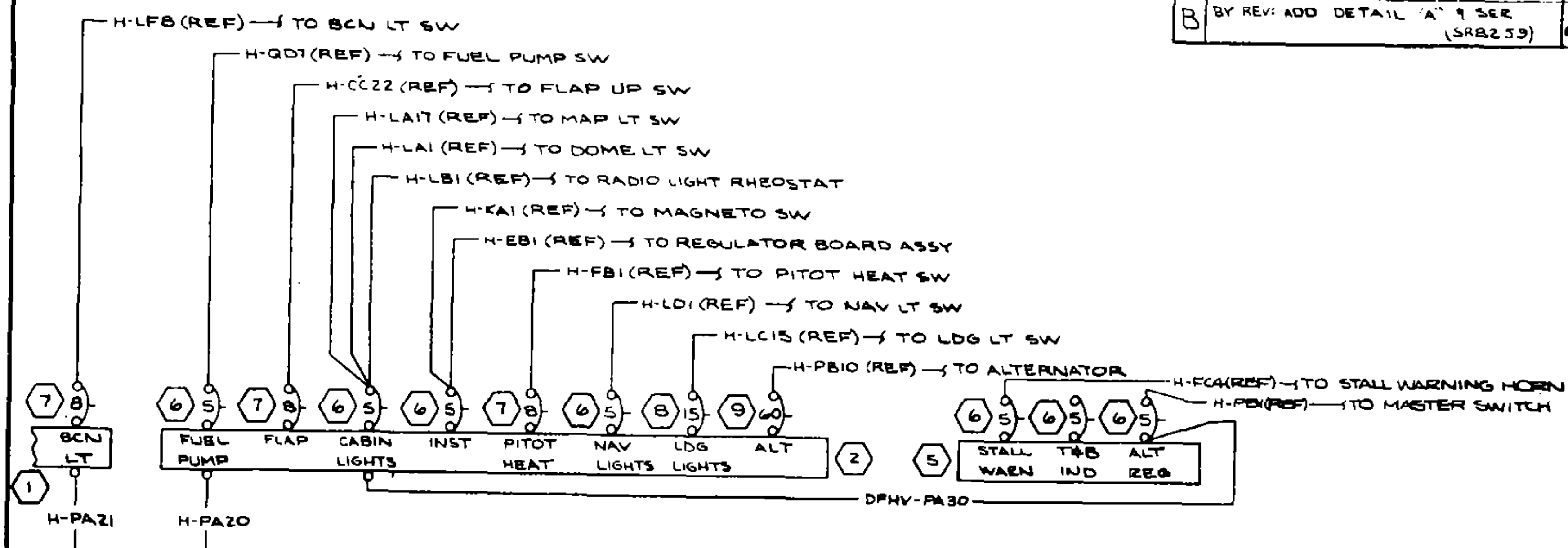
TITLE
WIRING DIAGRAM — BATTERY & EXTERNAL POWER SYSTEMS, OPT 24 VOLT

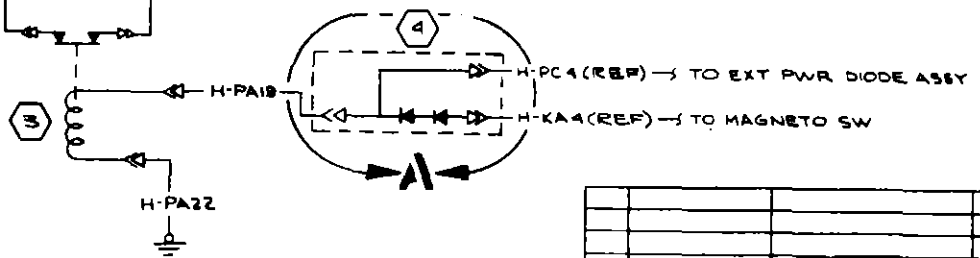
SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

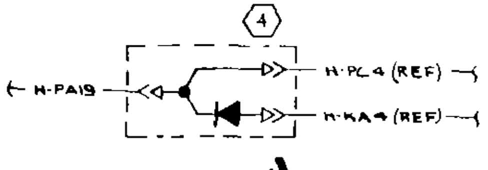
SCALE: NONE | U206 | PAGE 4.1.3

ED&RR 10367 (SR6546)

LET	REVISION DESCRIPTION	DATE	APPD
A	BY REV: S-1360-8L WAS S-1360-5L AT BCN LT CKT BKR (SR8260)	BAH 5-13-75	
B	BY REV: ADD DETAIL "A" & SER (SRB259)	RS 6-12-75	







DETAIL A
THRU SER (SRB259)
(U20603020)

ITEM NO	PART NO.	DESCRIPTION	VENDOR
9	S-1596-60L	CKT BKR	
8	S-1360-15L	CKT BKR	
7	S-1360-8L	CKT BKR	
6	S-1360-8L	CKT BKR	
5	0713854-3	BUS BAR-PRIMARY 2	
4	1510043	DIODE ASSY	
3	S-1917-2	POWER RELAY	
2	0713854-2	BUS BAR-PRIMARY 1	
1	0713854-1	BUS BAR-ELECTRONIC	

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
DFHV-PA30	14			S-1367-2-6	S-1367-2-6		
H-PA22	18			S-1493-1	S-1367-1-8		
H-PA21	14			S-1493-2	S-1367-2-6		
H-PA20	14			S-1493-2	S-1367-2-6		
H-PA19	18			S-1493-1	S-1493-1		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX: CESSNA SPEC. NO.
S-XXX OR CMXXXX: CESSNA STD. NO

SUPERSEDES: 12205-406
SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

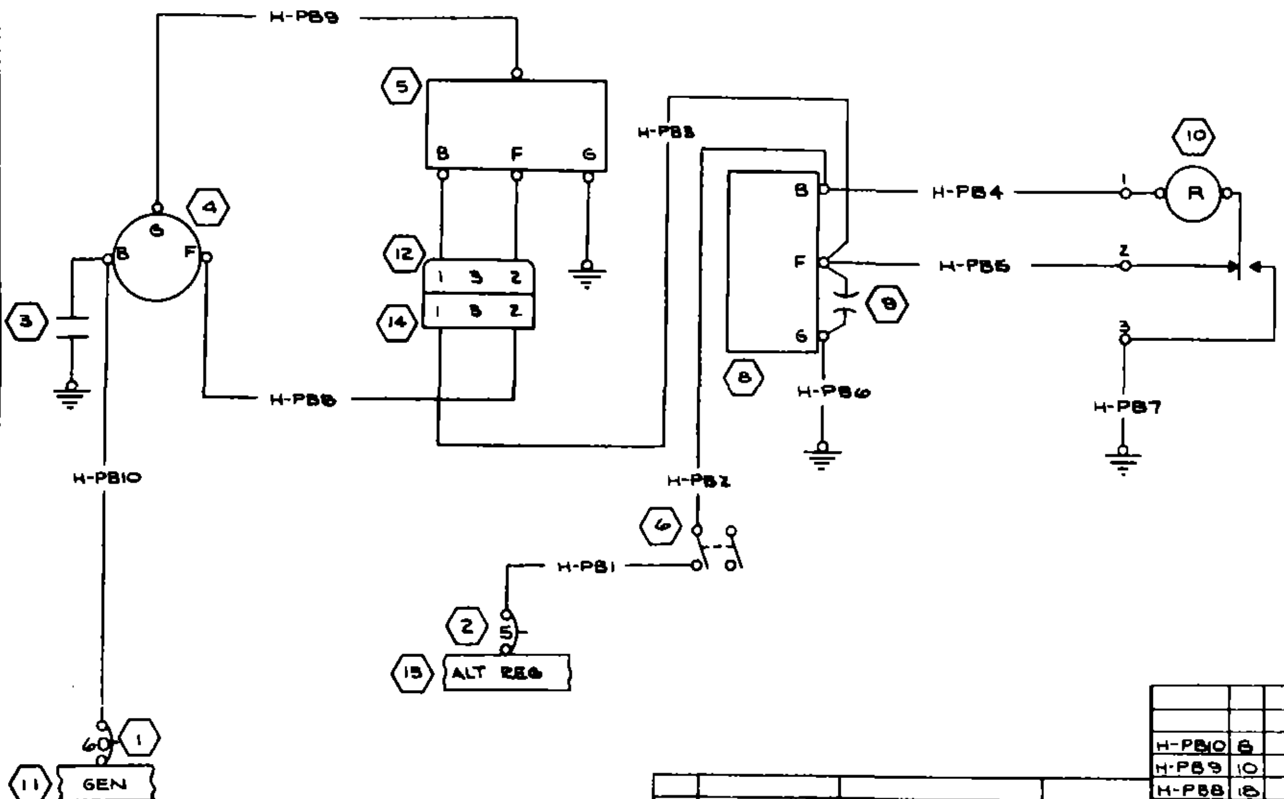
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — SPLIT BUS BAR, OPT 24 VOLT

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625
SCALE: NONE | U206 | PAGE 4.7.1

ED&RR10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFF THRU SER U20602193X
LKW 4-23-73
HIW

ITEM NO	PART NO.	DESCRIPTION	VENDOR
14	S-1638-2	PLUG	
13	0713854-5	BUS BAR	
12	S-1638-2	CAP	
11	0713854-2	BUS BAR	
10	VM911M-6PS	OVERVOLT LIGHT	(87034)
9	TVA-1315	FILTER CAP	(56289)
8	RBM138-3	OVERVOLT RELAY	(RBM)
7			
6	S-1994-1-1	SWITCH	
5	C611002-0105	REGULATOR ASSY	
4	C6115003-0102	ALTERNATOR ASSY	
3	S-1915-1	CAPACITOR	
2	S-1360-5	CIRCUIT BREAKER	
1	S-1596-60	CIRCUIT BREAKER	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-PB10	6		66	S-1367-4-12	S-1367-4-12		
H-PB9	10		20	S-1367-3-10	S-1367-3-12		
H-PB8	18		20	S-1367-1-10	S-1636-1		
H-PB7	18		20	S-1367-1-6	S-1367-1-6		
H-PB6	18		10	S-1367-1-6	S-1367-1-6		
H-PB5	18		68	S-1367-1-6	S-1367-1-6		
H-PB4	18		68	S-1367-1-6	S-1367-1-6		
H-PB3	18		30	S-1636-1	S-1367-1-6		
H-PB2	18		55	S-1493-1	S-1367-1-6		
H-PB1	18		20	S-1367-1-10	S-1493-1		

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN	J. Dunham	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	1-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ALTERNATOR SYSTEM 60 AMP, OPT 24 VOLT

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625

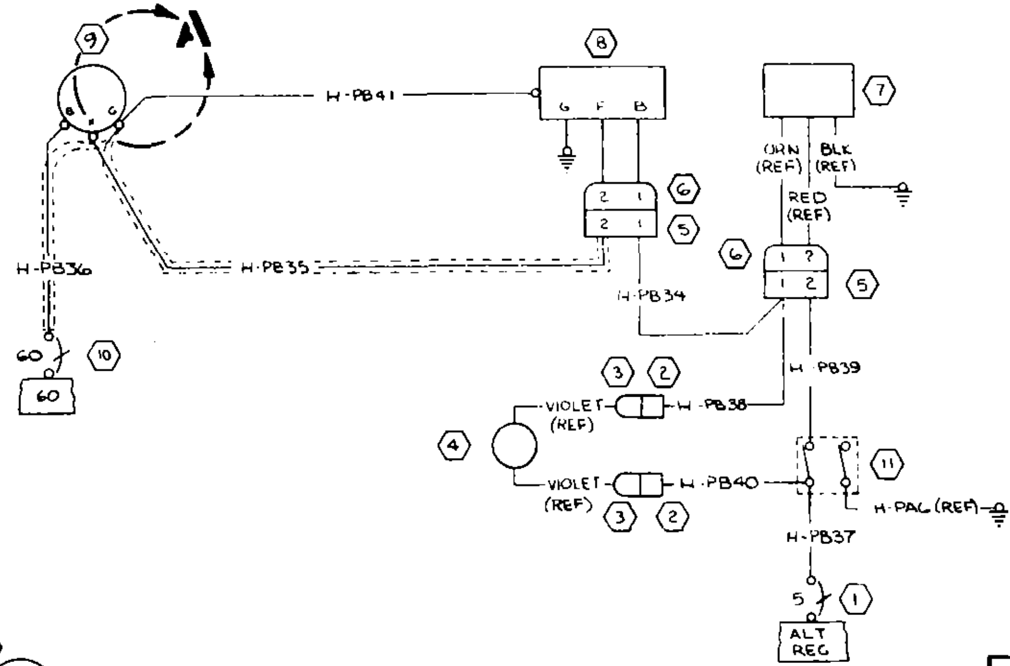
SCALE: NONE | U206 | PAGE: 4.8.1

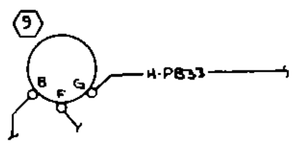
CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPLC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406
SUPERSEDED BY: P 4.8.4

ED&RR 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL "A", PB41; SER; SER OUT PB33 (SR7639)	RAM 7-31-73	





DETAIL A
THRU SER (SR7639)

ITEM NO	PART NO.	DESCRIPTION	
11	S-1994-1-1	SWITCH	
10	S-1596-60L	CKT BKR	
9	C611503-0102	ALTERNATOR ASSY	
8	C611002-0105	REGULATOR ASSY	
7	0353	OVERVOLT UNIT	
6	S-1638-2	HOUSING	
5	S-1638-1	HOUSING	
4	S-2135-2	LIGHT ASSY	
3	S-1637-1	HOUSING	
2	S-1637-2	HOUSING	
1	S-1360-5L	CKT BKR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES. P 4.8.1

SUPERSEDED BY.

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-PB41	8	S-1562-8-9		S-1943-3	S-1367-4-12		SER (SR7639) & ON
H-PB40	20			SEE PB37	S-1636-1		
H-PB39	20			S-1636-1	S-1493-1		
H-PB38	20			S-1636-1	SEE PB34		
H-PB37	20			S-1367-1-6	S-1493-3		
H-PB36	8S			S-1943-1	S-1367-4-10		
H-PB35	20S			S-1636-1	S-1367-1-10		
H-PB34	20			S-1636-1	S-1636-3		
H-PB33	10			S-1367-3-10	S-1367-3-10		THRU SER (SR7639)

WIRE TABLE

CONTRACT NO.

	NAME	DATE
DESIGN	WHITE	1-17-73
GROUP	H. Weis	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNGERS	4-27-73
STRESS	C. Pate	20 Aug 73
PROJ		4-28-73
APPD		
OTHER		

Cessna. AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

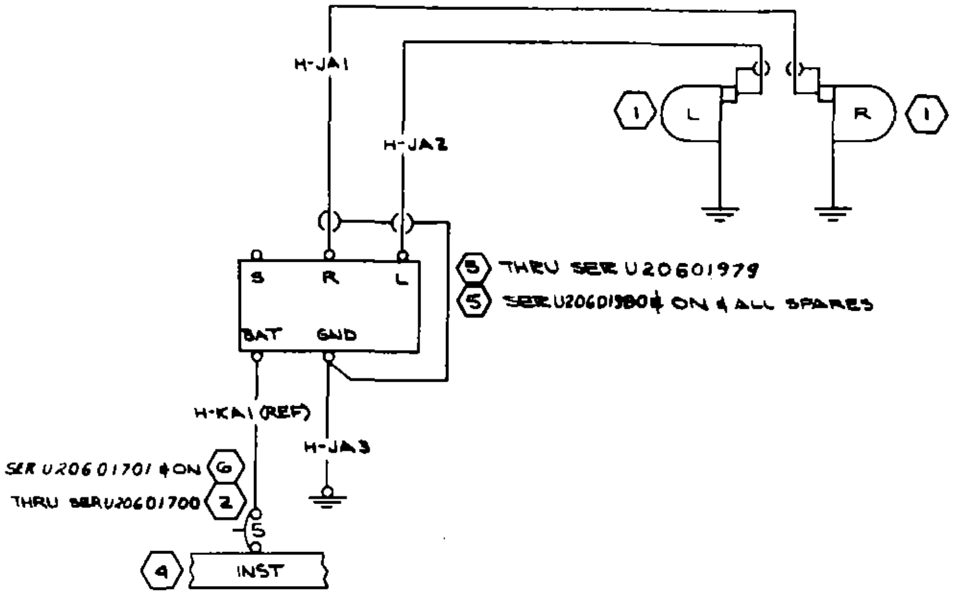
TITLE
WIRING DIAGRAM — ALTERNATOR SYSTEM, 60 AMP, 24 V

SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | (SR7403) | PAGE: 4.8.4

FORM NO. 80-2158

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT C292501-0101; SER IN C292501-0105; SER OUT S-1360-10, SER IN S-1360-10L (SR7126), (SR6766) IX (REF)	RLY 3-1-72	LW NAW



NOTES:

1. TERMINATE SHIELDS ON JA1 & JA2 WIRES AT THE SWITCH WITH S-1367-2-6 TERMINALS & CONNECT TO GND TERMINAL ON SWITCH
2. USE S-1367-1-10 ON HOT LEAD & S-1367-3-10 ON SHIELD

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
6	S-1360-5L	CIRCUIT BREAKER	
5	C292501-0105	IGNITION SWITCH	
4	0713854-2	BUS BAR	
3	C292501-0101	MAGNETO SW	
2	S-1360-5	CIRCUIT BREAKER	
1	SLICK #662	MAGNETO	(08033)

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-JA3	18			S-1367-1-6	S-1367-1-8		
H-JA2	18S			S-1367-1-6	2	1	
H-JA1	18S			S-1367-1-6	2	1	

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	[illegible]	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

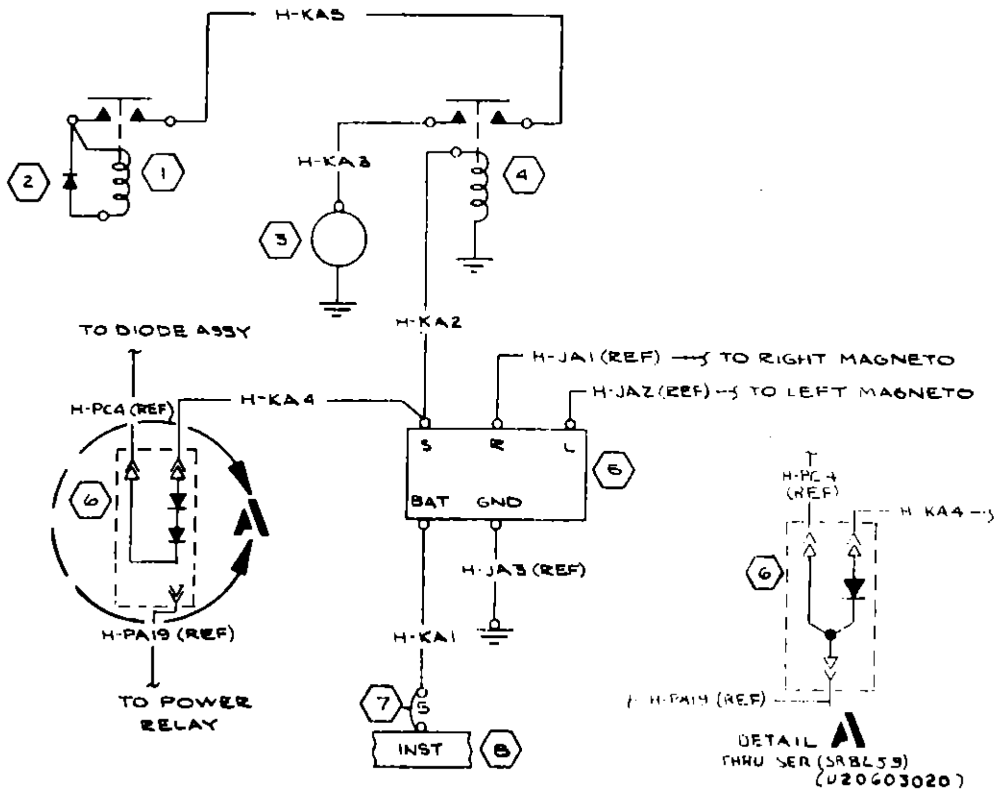
WIRING DIAGRAM — IGNITION SYSTEM, OPT 24 VOLT

SIZE	CODE IDENT NO.	DWG NO.
C	71379	1270625

SCALE: NONE U206 PAGE: 5.2

ED & RR 10367 (SR6846)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL "A" & SER (SRB259)	RS 6-16-[illegible]	[illegible]



WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-KA5	2			S-1367-7-13	S-1367-7-13		
H-KA4	18			S-1367-1-6	S-1493-1		
H-KA2	18			S-1367-1-6	S-1367-1-10		
H-KA3	2			S-1367-7-14	S-1367-7-13		
H-KA1	18			S-1367-1-6	S-1367-1-8		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
8	0713854-2	BUS BAR	
7	S-1360-5	CIRCUIT BREAKER	
6	1570045	DIODE ASSY	
5	C292501-0101	MAGNETO SW	
4	S-1577-1	STARTER CONTACTOR	
3	CMC634433	STARTER	(12984)
2	0770728-1	DIODE ASSY	
1	S-1580-1	BAT. CONTACTOR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	J. HEUSHAW	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	[illegible]
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

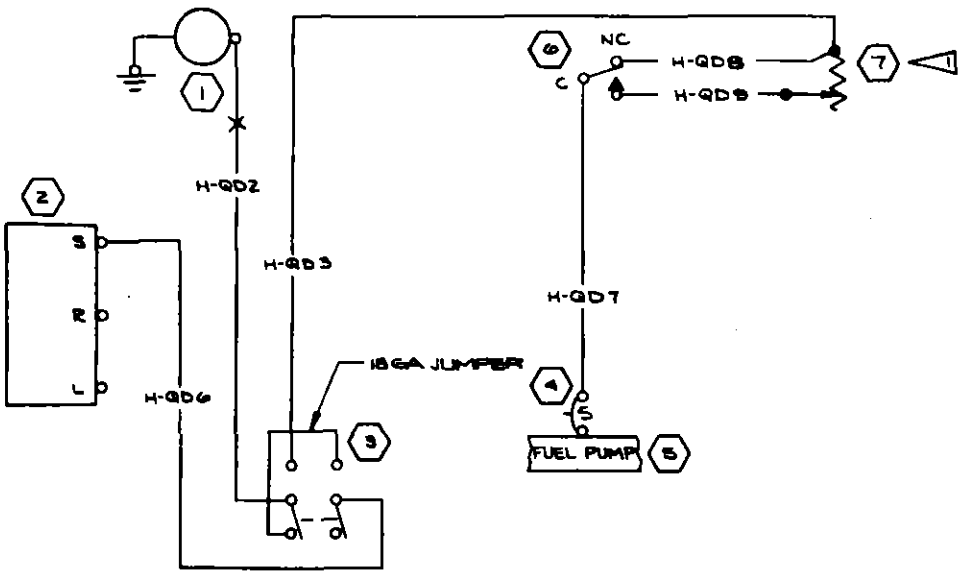
TITLE
WIRING DIAGRAM — STARTER SYSTEM, OPT 24 VOLT

SIZE	CODE IDENT NO.	DWG NO.
C	71379	1270625

SCALE: NONE U206 PAGE: 6.2

ED & RR10367 (SE6546)

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE:
THRU SER U20602199 IX
GKG 4-30-73

NOTES:

1. POSITION SLIDE ON THIS RESISTOR FOR MAXIMUM RESISTANCE (ALL THE WAY TO THE END OPPOSITE QD8) FLIGHT LINE WILL MAKE FINAL ADJUSTMENT.

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
7	AR-25-20	RESISTOR	(83777)
6	S-1952-1	SWITCH	
5	0713854-2	BUS BAR	
4	S-1360-6	CIRCUIT BREAKER	
3	S-2055-1-1	SWITCH	
2	C292501-0101	MAGNETO SW	
1	1426033-3	FUEL PUMP	

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-QD6	18			S-1493-1	S-1367-1-8		
H-QD9	18			S-1493-1	SOLDER		
H-QD8	18			S-1493-1	SOLDER		
H-QD3	18			S-1493-1	SOLDER		
H-QD2	18			S-1493-1	S-1310-1		
H-QD7	18			S-1367-1-6	S-1493-1		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY: P 7.1.4

CONTRACT NO

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	N. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		2-19-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE

WIRING DIAGRAM — FUEL PUMP SYSTEM, OPT 24 VOLT

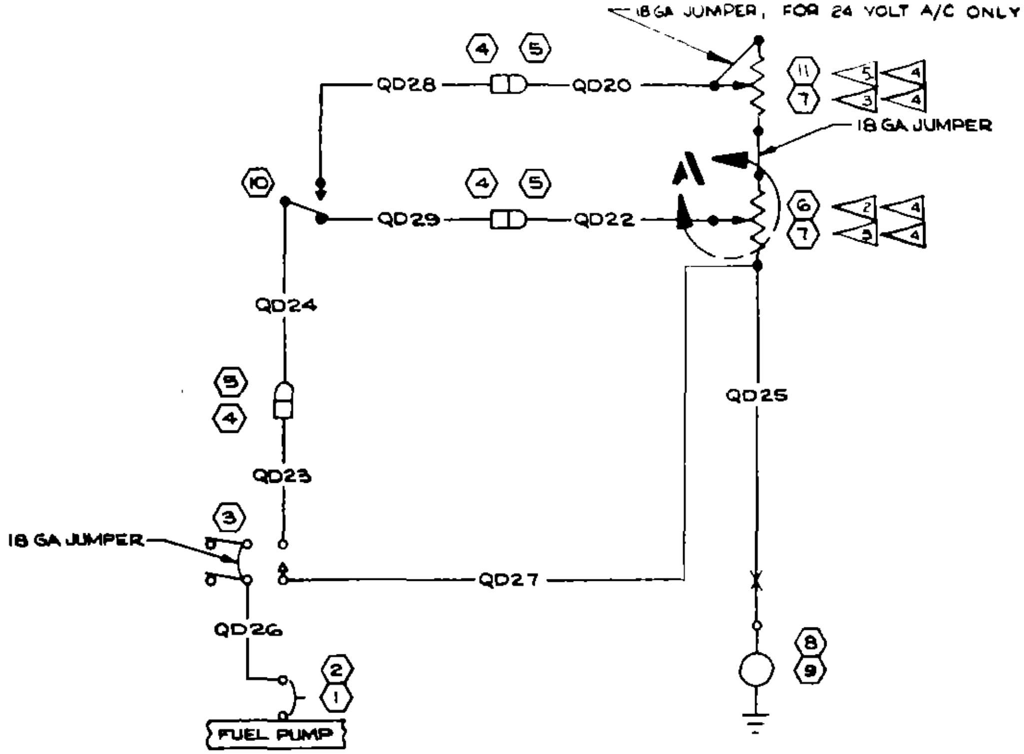
SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

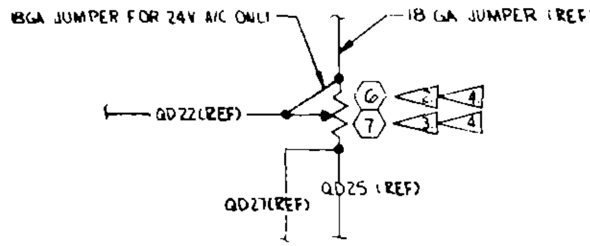
SCALE: NONE | U206 | PAGE: 7.1.2

FORM NO. 00-613A

ED & ER 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SOLDER/QD27 WAS SEE QD25; ADD WIRE LENGTHS; REVISED NOTE 1. DELETE NOTE 1; ADD NOTES 2, 3 & 4; ADD JUMPER FOR AMOR20-10 RESISTOR (NOW SHOP PRACTICE)(SR 8082)	DEF 2-8-74 BLA	JRS WJS
B	BY REV: ADD AMOR 20-5 & NOTE 5; REVISE NOTES 2 & 3; ADD DETAIL 'A' AND SER'S (SR8297)	GW 7-30-75	JRS





DETAIL **A**
EFF THRU SER (SR8297)

NOTE:

1. ~~PLACE YELLOW ROCKER SWITCH IN HIGH BOOST POSITION ADJUST RESISTORS WITH 13.75 ± .25 VOLTS FOR 14 VOLT SYSTEM AND 27.75 ± .25 FOR 28 VOLT SYSTEM. OPEN TO FULL THROTTLE & ADJUST 1ST RESISTOR TO PRODUCE 125 LBS/HR INDICATION ON FUEL FLOW METER. ADJUST 2ND RESISTOR WITH THROTTLE CLOSED TO PRODUCE 48 LBS/HR INDICATION ON FUEL FLOW METER. RESISTORS ARE IN SERIES WHEN THROTTLE IS CLOSED.~~

2. ADJUST AMOR 20-1.5 TO 1.0 ± .25 OHMS PRIOR TO INSTALLATION

3. ADJUST AMOR 20-10 TO 3.5 ± .5 OHMS PRIOR TO INSTALLATION

4. READJUST RESISTOR AS REQD AFTER INSTL TO COMPLY WITH FUEL FLOW REQUIRMENTS PER CES 1243

5. ADJUST AMOR 20-5 TO 2.0 ± .25 OHMS PRIOR TO INSTALLATION

ITEM NO	PART NO.	DESCRIPTION	
11	AMOR 20-5	RESISTOR (12V)	
10	USM5-B	SWITCH	
9	4140-00-17	FUEL PUMP (12V)	
8	1426033-3	FUEL PUMP (24V)	
7	AMOR20-10	RESISTOR (24V)	
6	AMOR20-1.5	RESISTOR (12V)	
5	S-1637-1	HOUSING	
4	S-1637-2	HOUSING	
3	S-1846-3-2	SWITCH	
2	S-1360-10L	CIRCUIT BKR (12V)	
1	S-1360-5L	CIRCUIT BKR (24V)	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
QD27	18		80	S-1493-1	SOLDER		
QD26	18		13	S-1493-1	S-1367-1-6		
QD25	18		80	SOLDER	S-1370-1		
QD24	18		10	SOLDER	S-1635-1		
QD23	18		78	S-1493-1	S-1636-1		
QD22	18		50	SOLDER	S-1635-1		
QD29	18		10	SOLDER	S-1636-1		
QD20	18		18	SOLDER	S-1635-1		
QD28	18		10	SOLDER	S-1636-1		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: P 7.1.2 & P 7.1.3

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	H. Wise	4-30-73
DRAWN	GRUBB	4-30-73
CHECK	R. YOUNGERS	4-30-73
STRESS		
PROJ	Bergman	5-1-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — FUEL PUMP SYSTEM (12V & 24V)

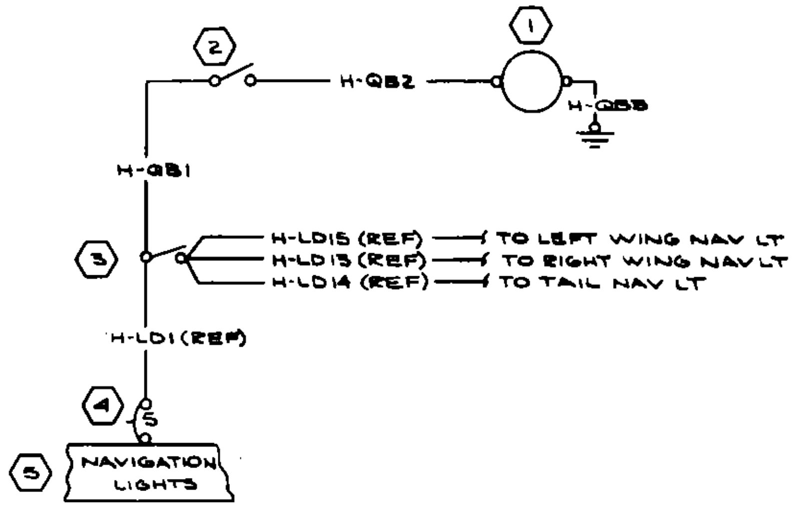
SIZE	CODE IDENT NO	DWG NO
C	71379	1270625

SCALE NONE | 206 | PAGE: 7.1.4

FORM NO 80-3155

(SR7405) IX

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFF THRU SER U20608159
4-23-73
LCW
BY
NKW
WRB

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-QB3	18			S-1367-1-10	S-1367-1-8		
H-QB2	18			S-1493-1	S-1367-1-10		
H-QB1	18			S-1493-1	S-1493-1		

WIRE TABLE

	PART NO.	DESCRIPTION	VENDOR
5	0713854-2	BUS BAR	
4	S-1360-5	CIRCUIT BREAKER	
3	S-1845-1-2	SWITCH	
2	S-1845-2-2	SWITCH	
1	AN4078-1	OIL DIL VALVE	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 1220S-406

SUPERSEDED BY:

CONTRACT NO:

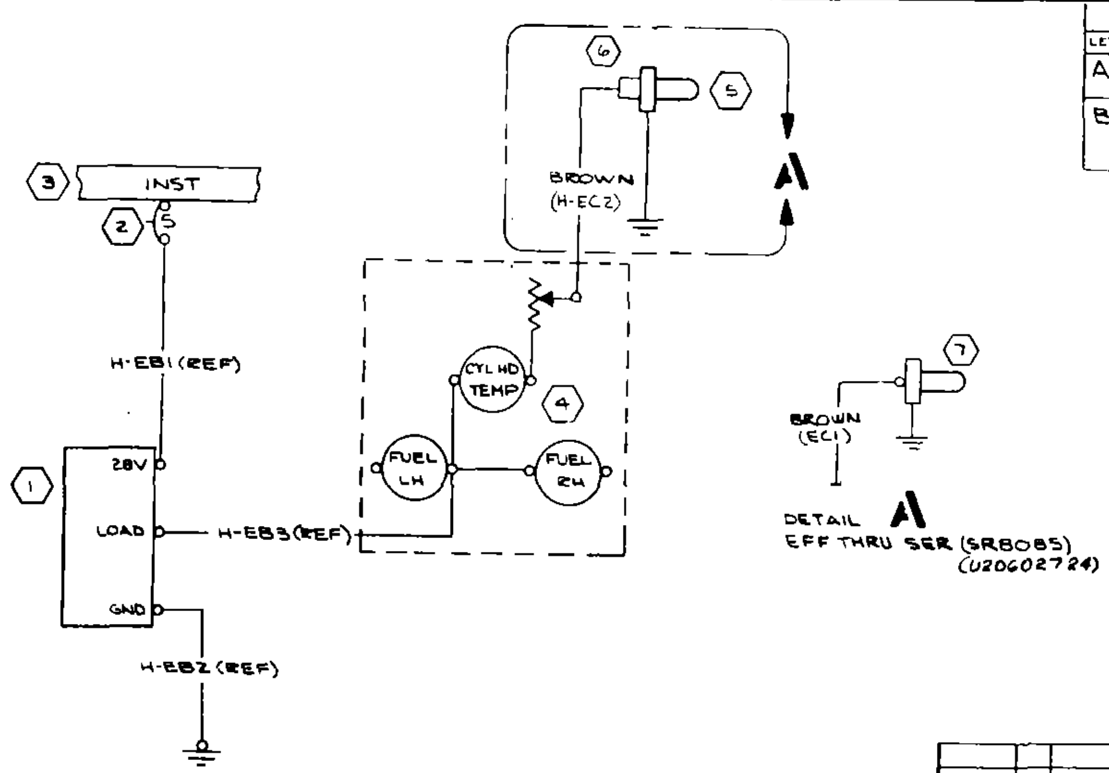
	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	H Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — OIL DILUTION SYSTEM, OPT
24 VOLT

SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625
SCALE: NONE	1206	PAGE: 7.5.1

ED & RR 10367 (SR6546)



REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED H-EC1 (SR7403)	RAM 8-6-74	
B	BY REV: SER OUT EC1 & S-1372-1, SER IN EC2 & S-1372-2, ADD DETAIL "A", NOTE 2 (SR8085)	RAM 11-12-74	

NOTES:

1. PART NO. 110691, (12984)
2. CRIMP S-1636-5 TERMINAL AROUND WIRE INSULATION, BEND .25 OF STRIPPED WIRE BACK OVER CRIMP & SOLDER PER CES 1040. USE MOLEX HT-1719-C CRIMPING TOOL ONLY

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
7	S-1372-1	SENDING UNIT	
6	S-1637-4	HOUSING - PLUG	
5	S-1372-2	SENDING UNIT	
4	C669502-0202	INST CLUSTER	
3	0713854-2	BUS BAR	
2	S-1360-5L	CIRCUIT BREAKER	
1	0570409-1	HEAT SINK ASSY	

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
BRN (EC2)	18	-18-4		S-1367-1-8	S-1636-5	2	SER (SR8085) & ON
BROWN (H-EC1)	18	1		S-1367-1-8	S-1367-1-4		THRU SER (SR8085)

WIRE TABLE

CES 1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX: CESSNA SPEC. NO.
S-XXX OR C-XXXX: CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHALL	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK		
STRESS		
PROJECT		3-11-70
APPD	R. YOUNGERS	3-2-70

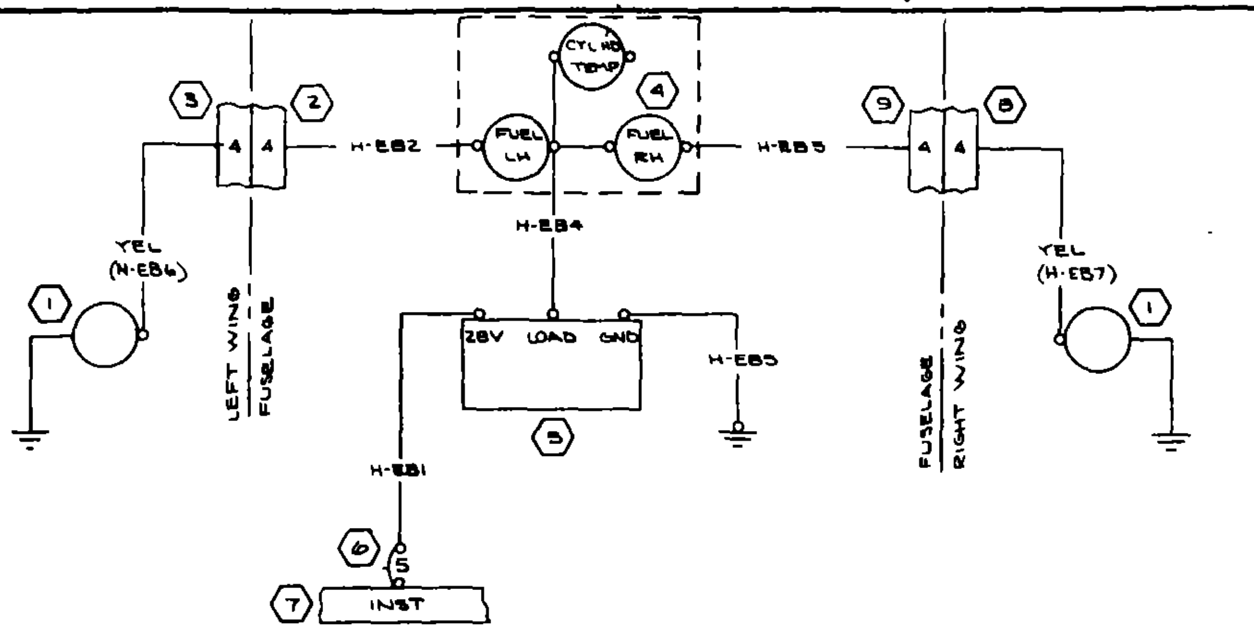
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM —
CYLINDER HEAD TEMP, OPT
24 VOLT

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE NONE | U206 | PAGE 8.1.1

BD & RR 10367 (SR6546)



REVISION

LET	DESCRIPTION	DATE	APPD
A	BY REV: H-EB3 WAS H-EB2 & H-EB2 WAS H-EB3 IN FIELD ED&RR 10040 (SR6546)	ZLY 5-11-70	
B	BY REV: ADDED H-EB6 & H-EB7 (SR7403)	RAM 5-10-73	
C	BY REV: ADD S-1640-12, S-1641-12, S-1640-6 & S-1641-6 & WIRE LENGTHS; PIN 4 WAS PIN 6/LH & PIN 2 /RH; S-1367-1-10 WAS S-1367-1-6/EB2 MER EO 393 (NOW SHOP PRACTICE)	BLA 12-10-74	

WIRE TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
YELLOW (H-EB7)	18	-18-4		S-1635-1	S-1367-1-10		
YELLOW (H-EB6)	18	-18-4		S-1635-1	S-1367-1-10		
H-EB5	18		30	S-1493-1	S-1367-1-8		
H-EB4	18		60	S-1493-1	S-1367-1-6		
H-EB3	18		100	S-1367-1-6	S-1636-1		
H-EB2	18		152	S-1367-1-10	S-1636-1		
H-EB1	18		6	S-1367-1-8	S-1493-1		

EQUIPMENT TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
9	S-1641-12	HOUSING-SOCKET	
8	S-1640-12	HOUSING-PIN	
7	0713854-2	BUS BAR	
6	S-1360-5	CIRCUIT BREAKER	
5	0570409-1	HEAT SINK ASSY	
4	C669502-0202	INST CLUSTER	
3	S-1640-6	HOUSING-PIN	
2	S-1641-6	HOUSING-SOCKET	
1	0726110-1	XMTR-FUEL LEVEL	

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO.
S-XXX OR CMXXXX-CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	2-11-70
GROUP		3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

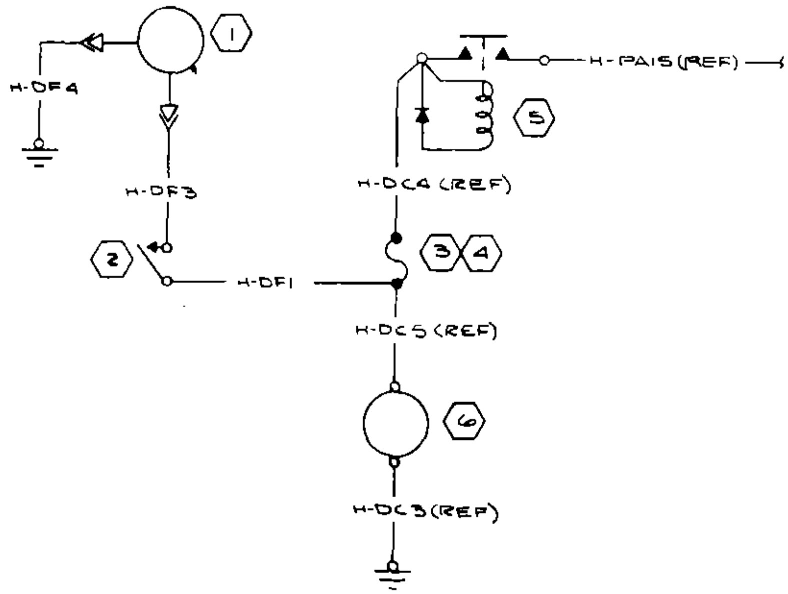
TITLE
WIRING DIAGRAM — FUEL QUANTITY INDICATOR, OPT 24 VOLT

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE NONE | U206 | PAGE 8.2.1

ED&RR 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD



WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-DF4	18			S-1493-1	S-1367-1-6		
H-DF3	18			S-1367-1-6	S-1367-1-6		
H-DF1	18			S-1367-1-6	SOLDER		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
6	S-1317N2	CLOCK	
5	S-1580-1	BAT. CONTACTOR	
4	S-1090-22	FUSEHOLDER	
3	S-1091-1	FUSE	
2	S-1711-1	OIL PRESS. SW	
1	C664501-0101	HOURMETER	

EQUIPMENT TABLE

CES 1000 IS APPLICABLE
VENDOR CODES PER S 1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA
STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-4-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — HOURMETER, OPT 24 VOLT

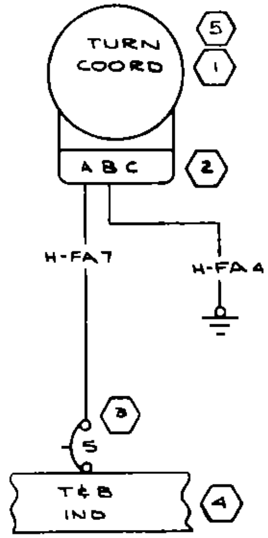
SIZE	CODE IDENT. NO	DWG NO.
C	71379	1270625

SCALE NONE | L:206 | PAGE 8.3.1

FORM NO 30 A-84

ED & RR 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BYREV ADD S-1303-2 TURN & BANK TO TITLE; C661003-0505 WAS C661003-0502 (SR 7903)(REF) (MER 206 E0103)	MEM 5-8-74	



H-FA4	18			S-1367-1-14	SOLDER		
H-FA7	18			S-1367-1-8	SOLDER		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

5	S-1303-2	INDICATOR-T&B	
4	0713854-3	BUS BAR	
3	S-1360-5	CKT BKR	
2	MS3106A10SL3S	CONNECTOR	
1	C661003-0505	TURN COORDINATOR	
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP		3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE

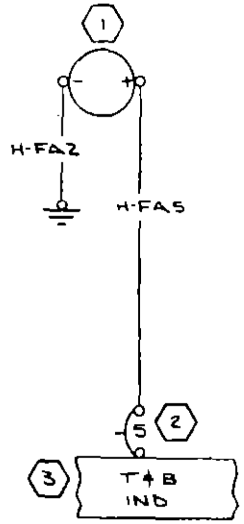
WIRING DIAGRAM — TURN COORDINATOR, TURN & BANK, OPT 24 VOLT

SIZE C | CODE IDENT NO. 71379 | DWG NO. 1270625

SCALE: NONE | U206 | PAGE: 9.4.1

ED4RR 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE: EFF SER(SR6546) THRU SER(SR7903)(U20602149)

H-FA2	18			S-1367-1-8	S-1367-1-8		
H-FA5	18			S-1367-1-8	S-1367-1-8		
WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

3	0713854-3	BUS BAR	
2	S-1360-5	CIRCUIT BREAKER	
1	S-1303N1	INDICATOR-T&B	
ITEM NO	PART NO.	DESCRIPTION	VENDOR

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S1400
CES-XXXX: CESSNA SPEC. NO
S-XXX OR CMXXXX: CESSNA STD. NO.

SUPERSEDES: 12205-406
SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J HENSHAW	3-11-70
GROUP	[illegible]	3-10-70
DRAWN	R YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — TURN & BANK, OPT 24 VOLT

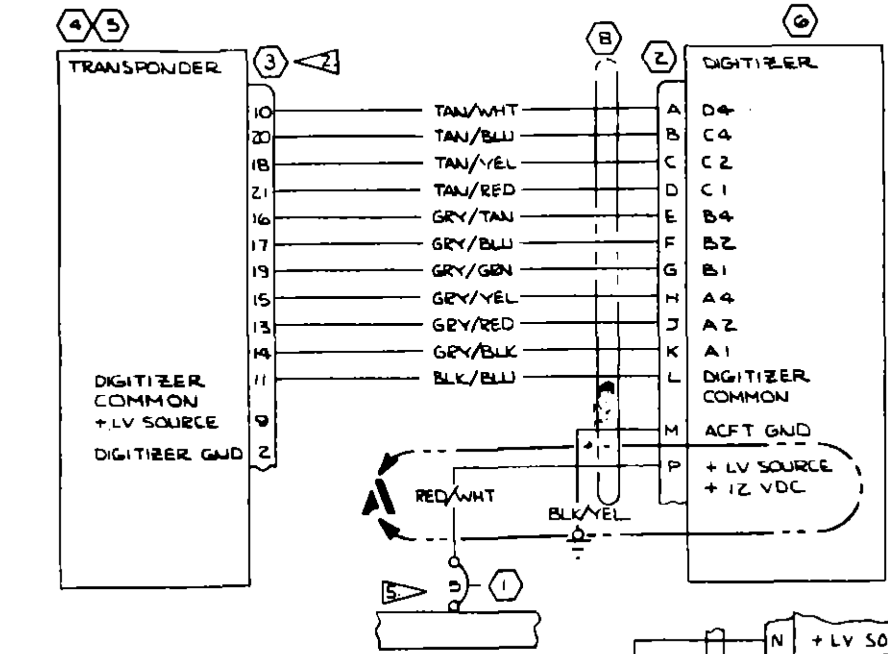
SIZE	CODE IDENT NO.	DWG NO.
C	71379	1270625

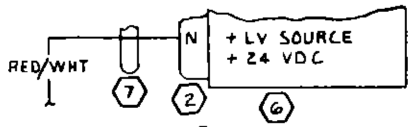
SCALE NONE | U206 | PAGE 9.5.1

EDRR 0367 SR6546

FORM NO 90 213A

LET	DESCRIPTION	DATE	APPD
	REVISION		
A	BY REV. ADD NOTE NO 5; DELETE TURN COORDINATOR FROM BUS BAR; ADD (SR7922) (SR7922)	MEM 3-5-74	





DETAIL A
(APPLIES TO 24V INSTL)

NOTES:

1. FOR 24V WIRING & WIRE TERMINALS REFER TO 1571000 PAGE 9.2
2. TRANSPONDER CONNECTOR HOUSING IS PART OF TRANSPONDER CABLE ASSY
3. FOR WIRING DIAGRAM OF 300 & 400 TRANSPONDER REFER TO 3920143
4. PINS ARE CRIMP TYPE & VENDOR FURNISHED WITH CONNECTOR
5. ATTACH BOTH TRANPONDER AND ENCODING ALTIMETER TO NO. 4 RADIO CIRCUIT BREAKER.

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED/WHT	20	-20-2-9		S1367-1-8	4		
BLK/YEL	22	-22-0-4		S-1367-1-8			
BLK/BLU		-22-0-6		S-2190-1			
GRY/BLK		-22-B-0					
GRY/RED		-22-B-2					
GRY/YEL		-22-B-4					
GRY/GRN		-22-B-5					
GRY/BLU		-22-B-6					
GRY/TAN		-22-B-10					
TAN/YEL		-22-10-4					
TAN/RED		-22-10-2					
TAN/BLU		-22-10-6					
TAN/WHT	22	-22-10-9		S2190-1	4		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
8	1570312-3	CABLE ASSY
7	1570312-1	CABLE ASSY
6	EA-401A	ALT DIGITIZER
5	RT-359A	TRANSPONDER
4	RT-459A	TRANSPONDER
3	S-2189-1	CONNECTOR
2	42816	CONNECTOR
1	S-1360-5L	CIRCUIT BREAKER

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES:

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	[illegible]	11-13-73
DRAWN	D. OLLER	11-9-73
CHECK	J. YOUEL	11-9-73
STRESS		
PROJ	[illegible]	[illegible]
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV 5800 E. PAWNEE WICHITA, KANSAS

TITLE

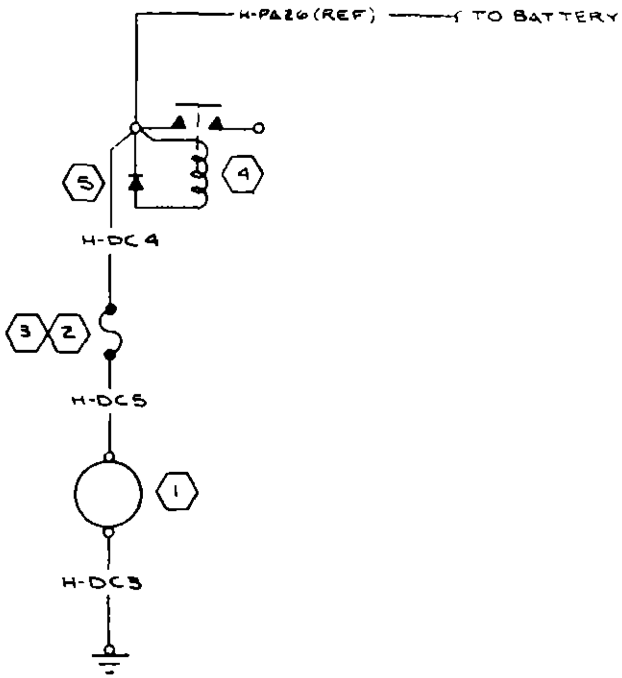
WIRING DIAGRAM — ENCODING ALTIMETER (12 & 24 VOLT)

SIZE	CODE IDENT NO	DWG NO
C	71379	1270625

SCALE: NONE (SR7922) PAGE: 9.1

(SR 7692)

FORM NO. 80-2180



REVISION			
LET	DESCRIPTION	DATE	APPD

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-DC5	18			SOLDER	S1367-1-6		
H-DC4	18		8	S-1367-2-13	SOLDER		
H-DC3	18		11	S-1367-1-6	S-1367-1-8		

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	
5	0770728-1	DIODE ASSY	
4	S-1580-1	BAT. CONTACTOR	
3	S-1090-22	FUSEHOLDER	
2	S-1091-1	FUSE	
1	S-1317N2	CLOCK	

EQUIPMENT TABLE

CES 1000 IS APPLICABLE
VENDOR CODES PER S 1400
CES-XXXX-CESSNA SPEC NO.
S-XXX OR CMXXXX CESSNA
STD. NO.

SUPERSEDES.
12205-406

SUPERSEDED BY

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	2-11-10
GROUP	V. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	[illegible]
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

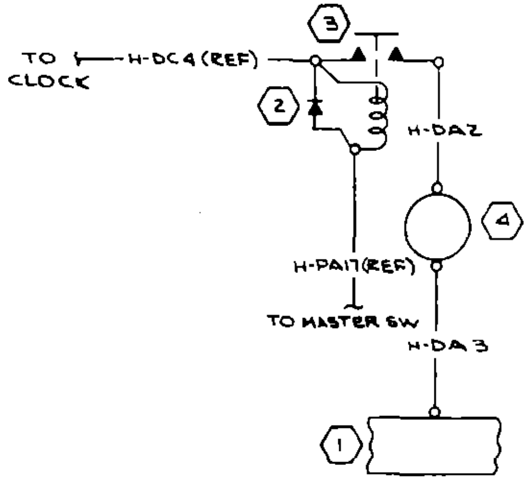
TITLE
WIRING DIAGRAM — CLOCK, OPT 24 VOLT

SIZE	CODE IDENT NO.	DWG NO.
C	71379	1270625

SCALE NONE | U206 | PAGE 10.7.1

ED & RR 10367 (SR 65461)

REVISION			
LET	DESCRIPTION	DATE	APPD



WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
H-DA3	8			S-1367-4-10	S-1367-4-10		
H-DA2	8			S-1367-4-10	S-1367-4-15		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
4	C669502-0202	INST CLUSTER	
3	S-1580-1	BAT. CONTACTOR	
2	0710728-1	DIODE ASSY	
1	0713854-2	BUS BAR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	V. Wise	3-10-70
DRAWN	R.YOUNGER	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R.YOUNGER	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

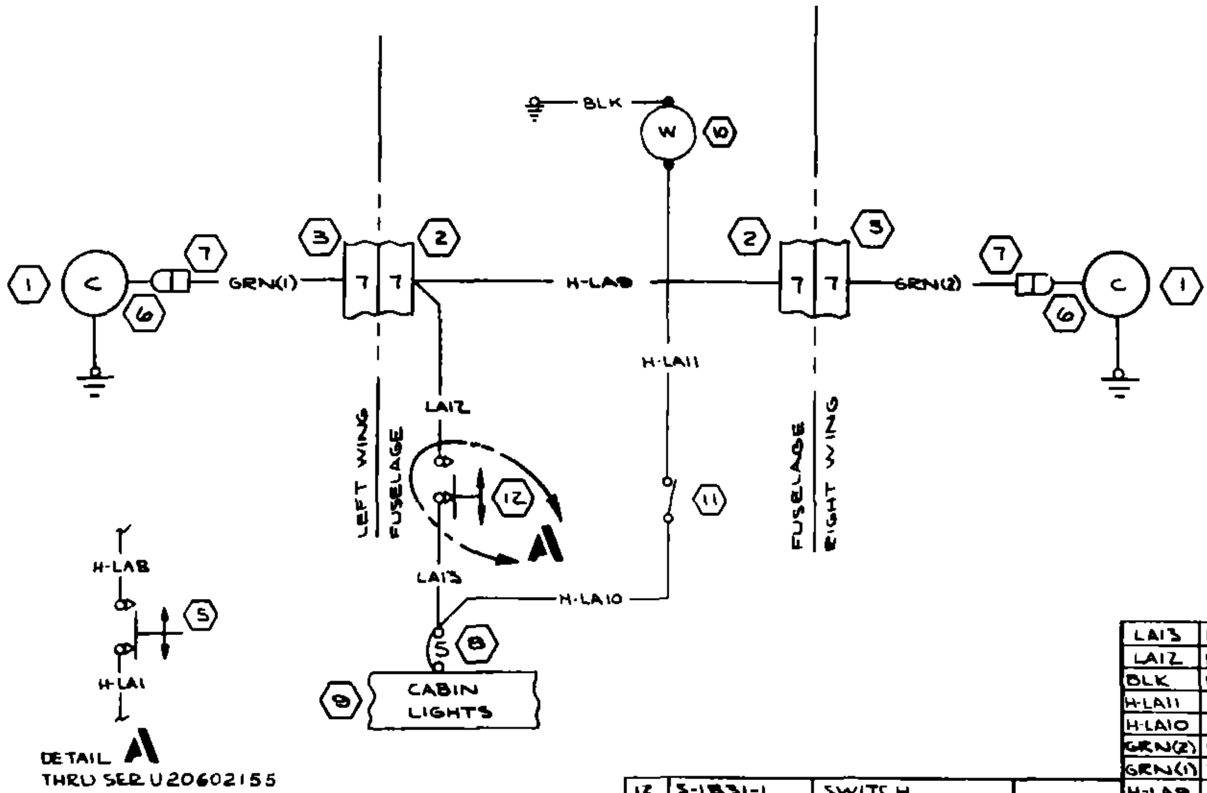
TITLE
WIRING DIAGRAM — AMMETER, OPT 24 VOLT

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

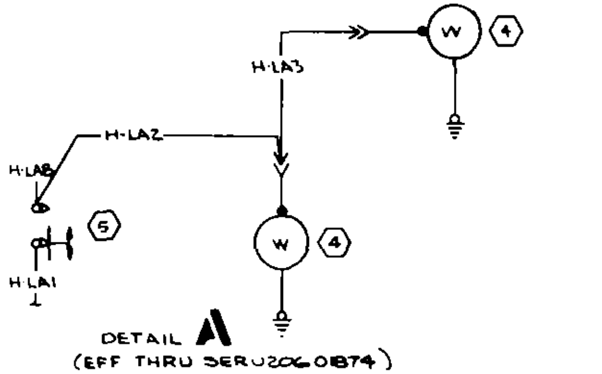
SCALE NONE | U206 | PAGE 10.1.2

ED&RR 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV. ADD DETAIL A, LA-10, LA-11, 1210110-2 & S-2061-1; INACT DWG SER U20601875 ON & SER (SR 7403)	LKW 4-23-73	BY NW
B	BY REV: ADD S-1831-1; SER OUT H-LA1 & H-LA8; SER IN LA12 & LA13 (SR7630)	7-24-73	NLW



INACTIVE
EFF THRU SER U20602155
4-23-73



WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LA13	18			S-1367-1-6	S-1830-1		SER U20602156 & ON
LA12	18			S-1830-1	SEE LA9		SER U20602156 & ON
BLK	18	-18-0		S-1367-1-8	SOLDER		
H-LA11	18			S-1493-1	SOLDER		
H-LA10	18			S-1493-1	S-1367-1-6		
GRN(2)	18	-18-5		S-1635-2	S-1636-2		
GRN(1)	18	-18-5		S-1635-2	S-1636-2		
H-LA9	18			S-1636-2	S-1636-3		
H-LA8	18			S-1367-2-6	SEE H-LA9		THRU SER U20602155
H-LA3	18			S-341-1	S-341-2		THRU SER U20601874
H-LA2	18			SEE H-LA8	SEE H-LA3		THRU SER U20601874
H-LA1	18			S-1367-1-6	S-1367-1-8		THRU SER U20602155

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
12	S-1831-1	SWITCH	
11	S-2061-1	SWITCH	
10	1210110-2	LIGHT INSTL	
9	0713654-2	BUS BAR	
8	S-1360-5	CIRCUIT BREAKER	
7	S-1637-2	HOUSING-PLUG	
6	S-1637-1	HOUSING-CAP	
5	0713029	SWITCH	
4	C622002-0102	DOME LIGHT ASSY	
3	S-1640-9	HOUSING-PIN	
2	S-1641-9	HOUSING-SOCKET	
1	0700615-6	LIGHT ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA
STD. NO.

SUPERSEDES: 12205-406
SUPERSEDED BY: P 11.1.2

CONTRACT NO:

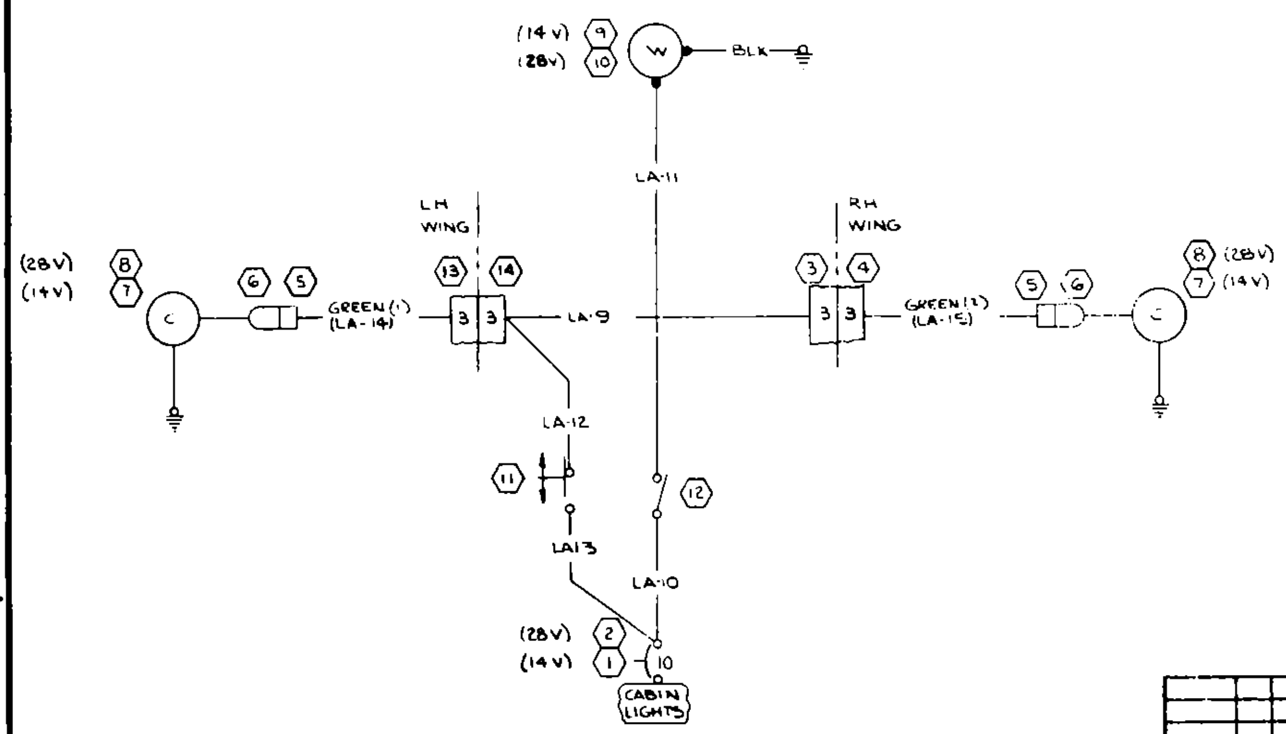
	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	N. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — DOME & COURTESY LIGHTS, OPT 24 VOLT

SIZE C | CODE IDENT NO 71379 | DWG NO. 1270625
SCALE: NONE | U206 | PAGE: 11.1.1

ED & RR 10367 (SR6546)



REVISION			
LET	DESCRIPTION	DATE	APP'D
A	BY REV : ADDED LA-14 & LA-15, LA9 WAS LA13, LA13 WAS LA1 & S-1831-1 WAS 071302-9-2 (SR 7403)	7-24-73	[illegible]
B	BY REV: ADD S-1640-6 & S-1641-6; PIN 3 WAS 7; S-1640-12 & S-1641-12 WAS S-1640-9 & S-1641-9 MER EO 995 (NOW SHOP PRACTICE)	ELA 12-10-74	[illegible]

ITEM NO	PART NO.	DESCRIPTION	
14	S-1641-6	HOUSING-SOCKET	
13	S-1640-6	HOUSING-PIN	
12	S-2160-1	SWITCH	
11	S-1831-1	SWITCH	
10	1210110-2	LIGHT INSTL	
9	1210110-1	LIGHT INSTL	
8	GE 308	LAMP	
7	MS15584-2	LAMP	
6	S-1637-1	HOUSING	
5	S-1637-2	HOUSING	
4	S-1640-12	HOUSING-PIN	
3	S-1641-12	HOUSING-SOCKET	
2	S-1360-5L	CKT BKR	
1	S-1360-10L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			NOTES
BLK	18	-18-0		S-1367-8	SOLDER		
GREEN (2) (LA-15)	18	-18-5		S-1635-1	S-1636-1		
GREEN (1) (LA-14)	↑	-18-5		S-1635-1	S-1636-1		
LA13			126	S-1367-1-6	S-1830-1		
LA12			54	[illegible]	S-1830-1		
LA11			10	S-1493-1	SOLDER		
LA10	↓		126	S-1367-1-6	S-1493-1		
LA9	18		72	S-1635-3	S-1636-2		

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-4-73
GROUP	H. Wise	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNGERS	4-21-73
STRESS	C. Pate	9 Aug 73
PROJ	Bergman	5-29-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — DOME & COURTESY LIGHTS (14V & 28V)

SIZE C | CODE IDENT. NO 71379 | DWG NO 1270625

SCALE NONE | SR 7403 | SHEET [illegible]

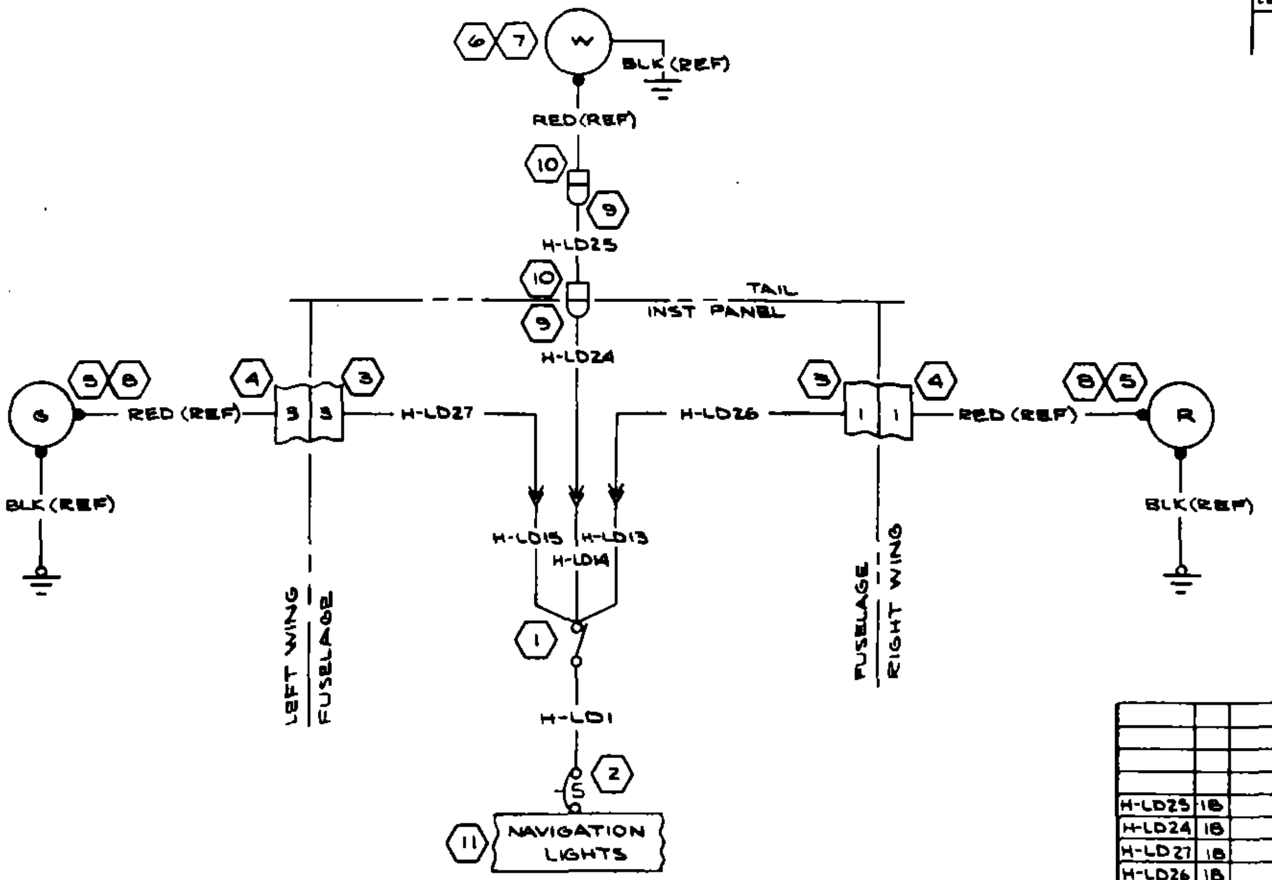
CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: [illegible]

SUPERSEDED BY:

FORM NO. 80-2198

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFF THRU SERU20602199 IX
4-23-73

11	0713854-2	BUS BAR	
10	S-1637-2	HOUSING-PLUG	
9	S-1637-1	HOUSING-CAP	
8	AN3122-1524	LAMP	
7	C622001-0102	LIGHT ASSY	
6	307	LAMP	(24446)
5	C622001-0201	LIGHT ASSY	
4	S-1640-9	HOUSING-PIN	
3	S-1641-9	HOUSING-SOCKET	
2	S-1360-5	CIRCUIT BREAKER	
1	S-1844-1-2	SWITCH	
ITEM NO.	PART NO.	DESCRIPTION	VENDOR

EQUIPMENT TABLE

H-LD25	18			S-1636-2	S-1635-1		
H-LD24	18			S-341-2	S-1635-1		
H-LD27	18			S-341-2	S-1636-2		
H-LD26	18			S-341-2	S-1636-2		
H-LD15	18			S-1493-1	S-341-2		
H-LD14	18			S-1493-1	S-341-2		
H-LD13	18			S-1493-1	S-341-2		
H-LD1	18			S-1367-1-8	S-1493-1		
WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

CES 1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 1220S-406

SUPERSEDED BY: P 11.4.3

CONTRACT NO:

	NAME	DATE
DESIGN	J. HELLSING	3-11-70
GROUP	[illegible]	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R. YOUNGERS	3-2-70

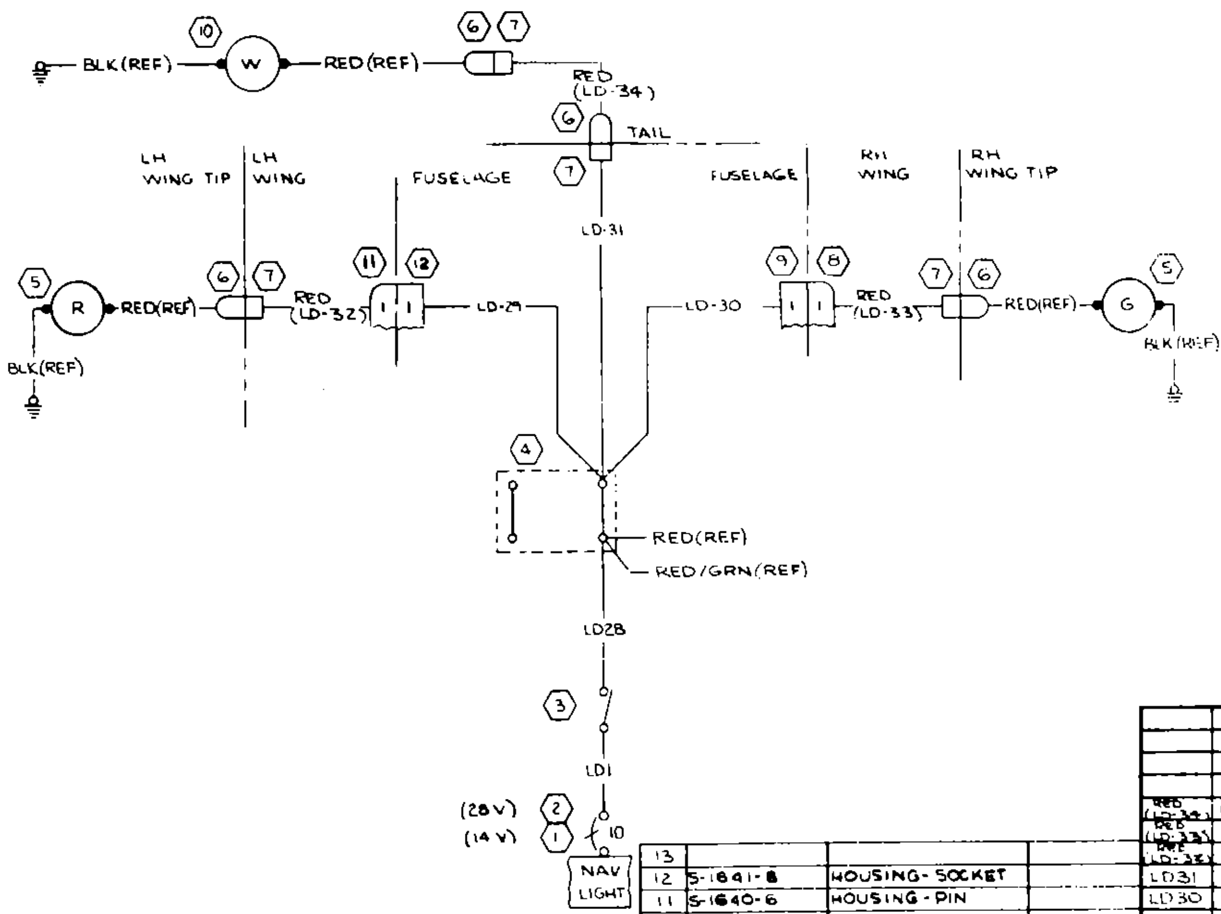
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — NAVIGATION LIGHTS, OPT 24 VOLT

SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

SCALE: NONE | U206 | PAGE: 11.4.2

ED 4RR 10367 (8R6546)



REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED LD-32, LD-33 & LD-33 (SR7403)II	RAM 8-10-73	
B	BY REV: ADD WIRE LENGTHS; S-1640-12 & S-1641-12 WAS S-1640-9 & S-1641-9, S-1640-6 & S-1641-6 WAS S-1640-9 & S-1641-9; MER EO 393 (NOW SHOP PRACTICE)	BLA 12-10-74	

ITEM NO	PART NO.	DESCRIPTION	
13			
12	S-1641-6	HOUSING-SOCKET	
11	S-1640-6	HOUSING-PIN	
10	C622001-0102	LIGHT ASSY	
9	S-1641-12	HOUSING-SOCKET	
8	S-1640-12	HOUSING-PIN	
7	S-1637-2	HOUSING	
6	S-1637-1	HOUSING	
5	C622001-0201	LIGHT ASSY	
4	34002-55	TERMINAL BLOCK	
3	S-2160-1	SWITCH	
2	S-1360-5L	CKT BKR	
1	S-1360-10L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED (LD-34)	18	-18-2		S-1636-1	S-1635-1		
RED (LD-33)		-18-2	190	S-1636-1	S-1635-1		
RED (LD-32)		-18-2	190	S-1636-1	S-1635-1		
LD31			352	S-1829-1	S-1636-1		
LD30			75		S-1636-1		
LD29			27		S-1636-1		
LD28			7	S-1829-1	S-1493-1		
LD1	18		6	S-1362-1-6	S-1493-1		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P11.4.1 & P11.4.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-4-73
GROUP	H Winn	4-27-73
DRAWN	WHITE	4-23-73
CHECK	E. YOUNGERS	4-27-73
STRESS		
PROJ	Bergman	
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

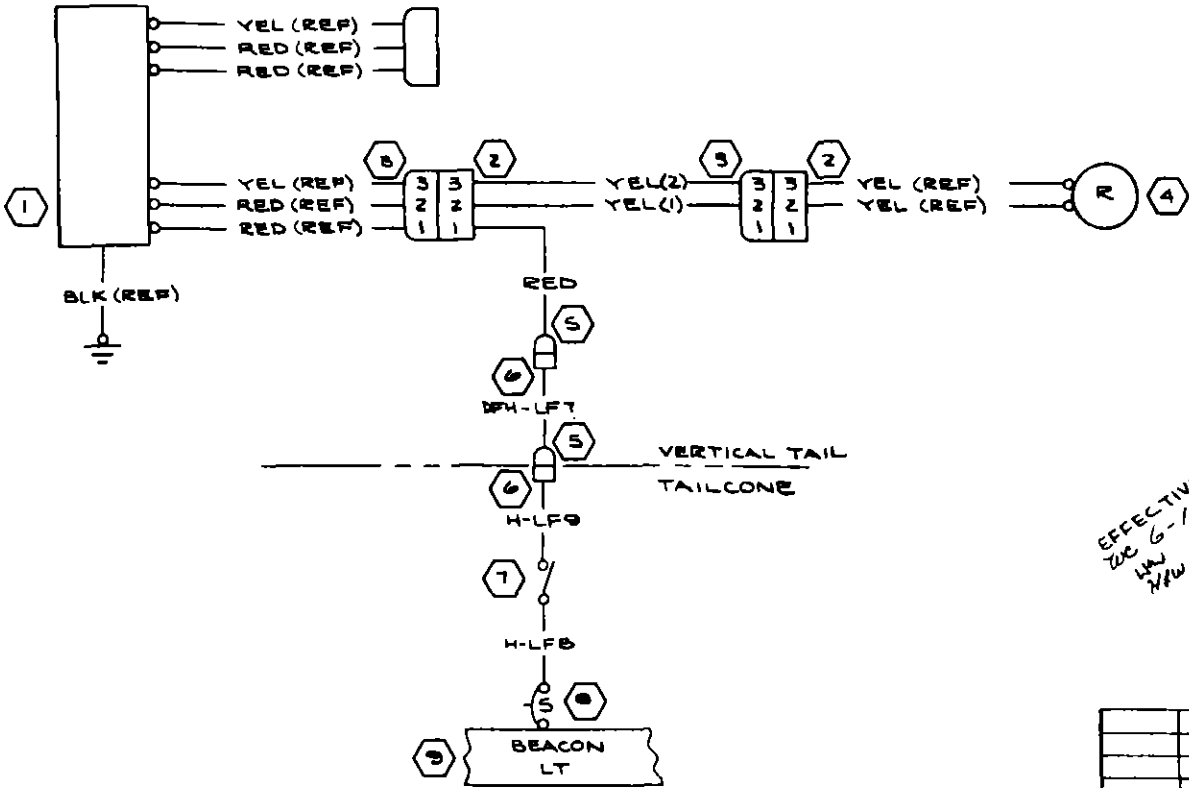
TITLE
WIRING DIAGRAM — NAVIGATION LIGHTS

SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | (SR 7403)II | PAGE: 11.4.3

FORM NO. 80-2186

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFFECTIVE SER U20601570 THRU SER U20601874
WC 6-16-72
HW
HIW
MGR
PEP

9	0713854-1	BUS BAR	
8	S-1360-5	CKT BKR	
7	S-1845-1-2	SWITCH	
6	S-1637-2	HOUSING-PLUG	
5	S-1637-1	HOUSING-CAP	
4	C621001-0102	LIGHT ASSY	
3	S-1638-2	HOUSING-CAP	
2	S-1638-1	HOUSING-PLUG	
1	C594501-0204	FLASHER ASSY	
ITEM NO	PART NO.	DESCRIPTION	
	EQUIPMENT TABLE		

YEL(2)	16			S-1636-2	S-1635-2		
YEL(1)	16			S-1636-2	S-1635-2		
RED	16			S-1635-2	S-1636-2		
H-LF9	16			S-1493-2	S-1636-2		
H-LF8	16			S-1367-2-6	S-1493-2		
DFH-LF7	16			S-1635-2	S-1636-2		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
WIRE TABLE							

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

CESSNA AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — FLASHING BEACON LIGHT, OPT 24 VOLT (FLOATPLANE)

SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625
SCALE: NONE	U206	PAGE: 11.5.3

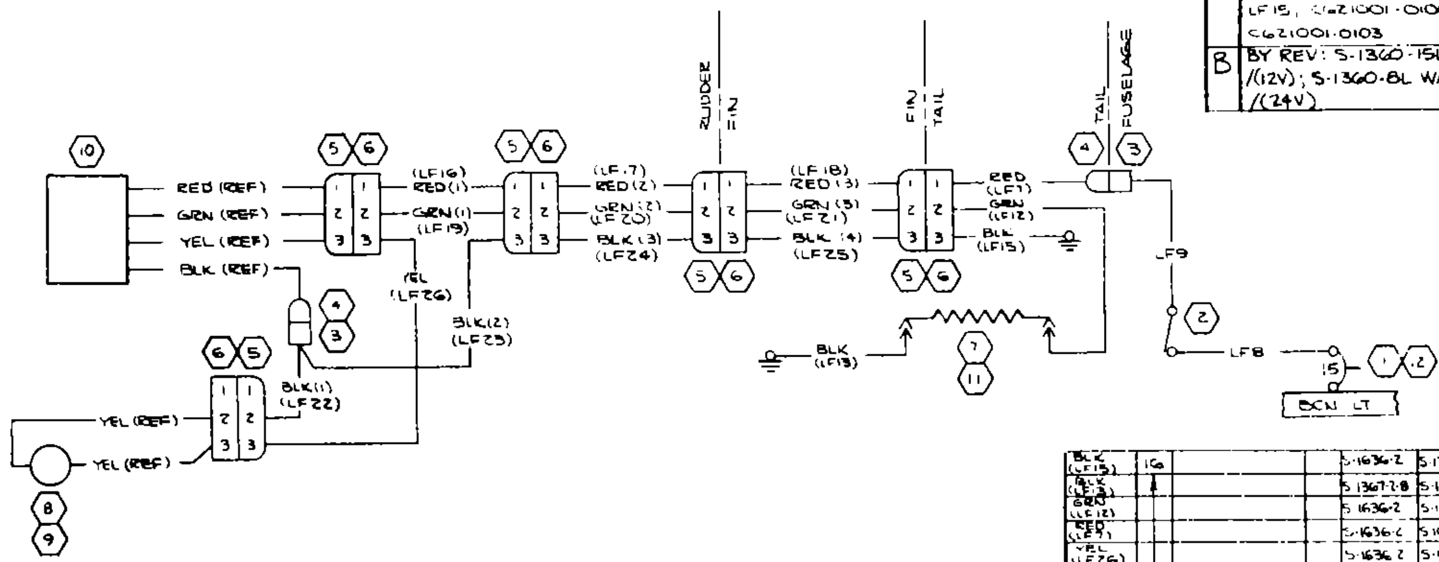
CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 1205-406
SUPERSEDED BY: P 11.5.4

FORM NO. 88-818A

ED4RR10567 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD NOTE 1 RED, GRN, BLK & SER; SER OUT LF7, LF12, LF13 & LF15; C621001-0106 WAS C621001-0103 (SR7415)	DLP 1-10-73	
B	BY REV: S-1360-15L WAS S-1360-10L /(12V); S-1360-8L WAS S-1360-5L /(24V) (SR8260)	SAH 5-13-75	



BLK (LF15)	16			S-1636-2	S-1367-2-8		SER U20602209 & ON
BLK (LF13)				S-1367-2-8	S-1493-2		SER U20602209 & ON
GRN (LF12)				S-1636-2	S-1493-2		SER U20602209 & ON
RED (LF7)				S-1636-2	S-1635-2		SER U20602209 & ON
YEL (LF26)				S-1636-2	S-1635-2		
BLK(4) (LF25)				S-1636-2	S-1635-2		
BLK(3) (LF24)				S-1636-2	S-1635-2		
BLK(2) (LF23)				S-1636-2	S-1635-2		
BLK(1) (LF22)				S-1635-2	S-1636-2		
GRN(3) (LF21)				S-1636-2	S-1635-2		
GRN(2) (LF20)							
GRN(1) (LF19)							
RED(3) (LF18)							
RED(2) (LF17)							
RED(1) (LF16)					S-1635-2		
LF15				S-1636-2	S-1367-2-8		THRU SER U20602208
LF13				S-1367-2-8	S-1493-2		THRU SER U20602208
LF12				S-1636-2	S-1493-2		THRU SER U20602208
LF9				S-1636-2	S-1493-2		
LF8				S-1493-2	S-1367-2-6		
LF7	16			S-1636-2	S-1635-2		THRU SER U20602208
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

12	S-1360-8L	CKT BKR	(24V)
11	0R95-6	RESISTOR (83777)	(24V)
10	C594502-0101	FLASHER	
9	C621001-0106	LIGHT ASSY	(12V)
8	C621001-0102	LIGHT ASSY	(24V)
7	0R95-1.5	RESISTOR (83777)	(12V)
6	S-1638-1	HOUSING-PLUG	
5	S-1638-2	HOUSING-CAP	
4	S-1637-1	HOUSING	
3	S-1637-2	HOUSING	
2	S-1845-1-2	SWITCH	
1	S-1360-15L	CKT BKR	(12V)
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

NOTES:

1. COLORED WIRES BEARING CES 1100 CODING IN PARENTHESIS SHALL NOT BE STAMPED. CES 1100 CODING ON THESE WIRES IS FOR PARTS LIST USE ONLY

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.5.4

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	H. Wise	11-3-72
DRAWN	PAPE	11-2-72
CHECK	E. YOUNGERS	11-2-72
STRESS		
PROJ		11-3-72
APPD		
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE: WIRING DIAGRAM — FLASHING BEACON (FLOATPLANE)

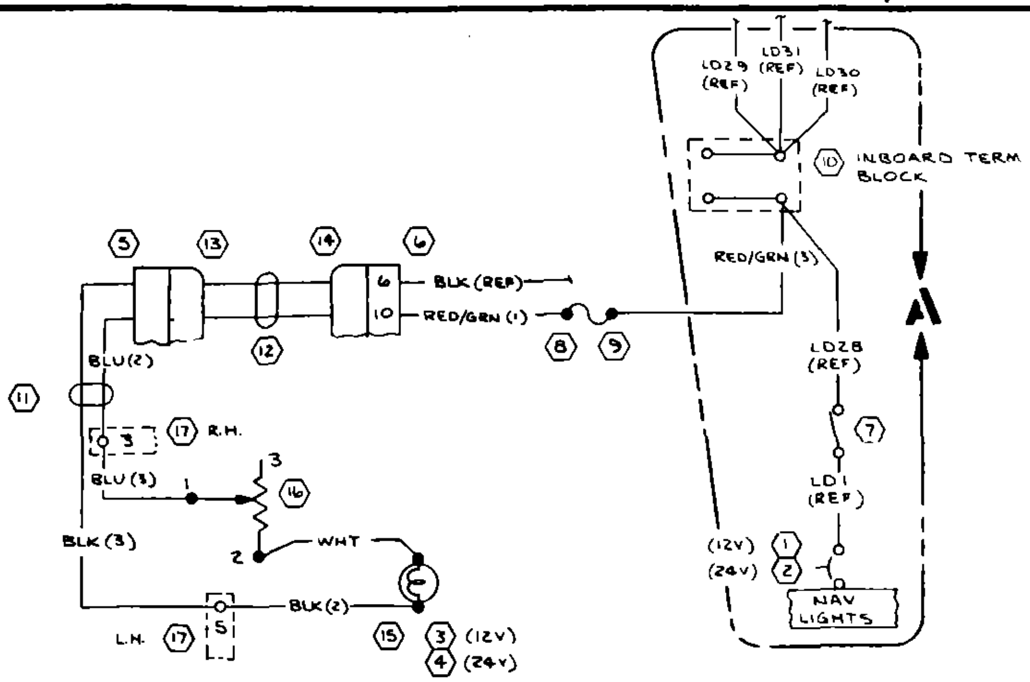
SIZE: C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE: NONE | 206 | PAGE 11.5.4.1

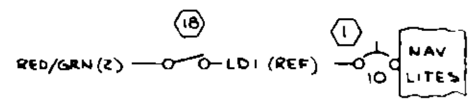
(SR10661) (REF)

FORM NO 80-2188

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE: EFF THRU SER (SR7677) U20602406) 11-2-73



DETAIL A
(EFF THRU SER U20602199

NOTES:
1. 60215-4LP (00779) TERMINAL
2. 329636 (00779) TERMINAL

ITEM NO	PART NO.	DESCRIPTION	
18	S-1845-1-2	SWITCH	
17	351-11-05-001	TERM BOARD	
16	3859A-282-152A	POT	
15	4157-001	SOCKET	
14	1270062-1	CKT BOARD	
13	1270061-1	CKT BOARD	
12	1270060-1	CABLE ASSY	
11	SF-1030-8X	CABLE	
10	34002-55	TERM BLOCK	
9	HHJ-A	FUSE HOLDER	
8	AGC-1/2	FUSE	
7	S-2160-1	SWITCH	
6	582384-9	SOCKET	
5	255 10 30 190	CONNECTOR	
4	24RB	LAMP	
3	12 RB	LAMP	
2	S-1360-5L	CKT BKR	
1	S-1360-10L	CKT BKR	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS	
RED/GRN (2)	22	-22-2-5		SOLDER	S-1493-1		THRU SER U20602198	
BLK (3)	22	-22-0		SOLDER	2			
BLK (2)	↑	-22-0		↑	↑			
BLU (3)		-22-6			↓			
BLU (2)		-22-6		↓	2			
RED/GRN (1)	↓	-22-2-5		SOLDER	S-1829-1		SER U20602199	ON
RED/GRN (1)	22	-22-2-5		1	SOLDER			

WIRE TABLE

CEB-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: Pg. 11.11.2
SUPERSEDED BY: P 11.11.4

CONTRACT NO.

	NAME	DATE
DESIGN		
GROUP	H. Wier	9-21-73
DRAWN	MERRICK	9-21-73
CHECK	J. YOUEL	9-21-73
STRESS		
PROJ	[illegible]	[illegible]
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

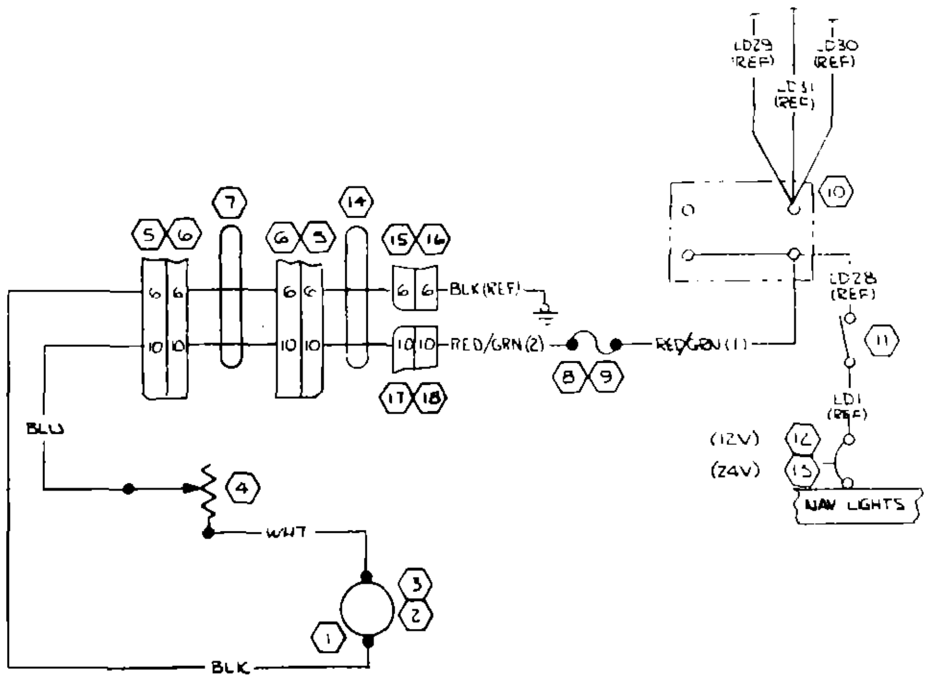
TITLE
WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE | U20601701 | PAGE: 11.11.3

FORM NO. 80-2158

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD 1570307-2; S-1963-2 WAS SOLDER/RED/GRN(2) (SR7677) (SR 7670)	MEM 5-14-74	



18	S-1962-2-0	HOUSING	
17	S-1962-1-0	HOUSING	
16	S-1960-2-0	HOUSING	
15	S-1960-1-0	HOUSING	
14	1570307-2	CABLE ASSY	
13	S-1360-10L	CKT BKR	
12	S-1360-5L	CKT BKR	
11	S-2160-1	SWITCH	
10	34002-5S	TERM BLOCK	
9	AGC-½	FUSE	
8	HHJ-A	FUSE HOLDER	
7	1570308-1	CABLE ASSY	
6	3421-0000	SOCKET	
5	1570307-1	CONNECTOR ASSY	
4	3B59A161-152A	RHEOSTAT	
3	24 RB	LAMP (24V)	
2	12 RB	LAMP (12V)	
1	4157-001	SOCKET	
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLU	22	-22-6		SOLDER	SOLDER		
BLK	22	-22-0		SOLDER	SOLDER		
WHT	22	-22-9		SOLDER	SOLDER		
RED/GRN 2	22	-22-2-5		S-1963-2	SOLDER		
RED/GRN 1	22	-22-2-5		SOLDER	S-1829-1		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES P11.11.3

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	[illegible]	11-12-73
DRAWN	D. OLLER	11-2-73
CHECK	PAPE	11-5-73
STRESS		
PROJ	[illegible]	[illegible]
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

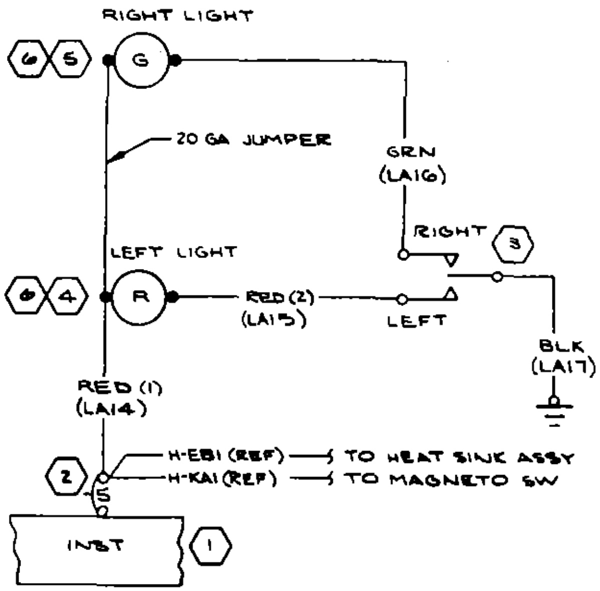
TITLE
WIRING DIAGRAM — MAP LIGHT, CONTROL WHEEL

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE   SR7677   PAGE 11.11.4

FORM NO 90-2198

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD CES1100 CODE TO WIRES NOW SHOP PRAC.	GKG 6-25-73	



WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK (LA17)	18	-18-0		S-1367-1-6	S-1367-1-6		
GRN (LA16)	20	-20-5		SOLDER	S-1367-1-6		
RED (2) (LA15)	20	-20-2		SOLDER	S-1367-1-6		
RED (1) (LA14)	20	-20-2		S-1367-1-6	SOLDER		

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
6	GE 327	LAMP	(24446)
5	VM304-7	LIGHT ASSY	(87034)
4	VM304-6	LIGHT ASSY	(87034)
3	S-1238-1-1	SWITCH	
2	S-1360-5	CIRCUIT BREAKER	
1	0713854-2	BUS BAR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX = CESSNA SPEC. NO.
S-XXX OR CMXXXX = CESSNA STD NO.

SUPERSEDES:

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE

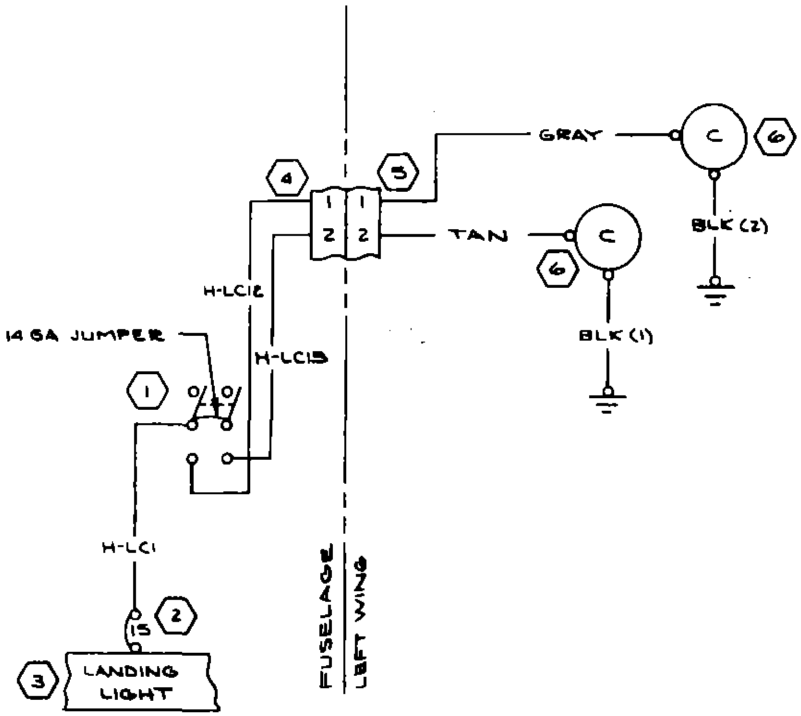
WIRING DIAGRAM — SKYDIVING SIGNAL LIGHT, OPT 24 VOLT

SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

SCALE: NONE   J206   PAGE 11.12.1

ED&RR 0367   (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE EFF THRU SER U20601700 1-12-73 LEW RY NEW ... -X8

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK(2)	16	-16-0		S-1367-2-8	S-1367-2-8		
BLK(1)	16	-16-0		S-1367-2-8	S-1367-2-8		
GRAY	14	-14-8		S-1635-2	S-1367-2-8		
TAN	14	-14-10		S-1635-2	S-1367-2-8		
H-LC1	14			S-1493-2	S-1367-2-8		
H-LC15	14			S-1493-2	S-1636-2		
H-LC12	14			S-1493-2	S-1636-2		

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
6	GE 4594	LIGHT	(24446)
5	S-1640-8	HOUSING-PIN	
4	S-1641-8	HOUSING-SOCKET	
3	0713854-2	BUS BAR	
2	S-1360-15	CIRCUIT BREAKER	
1	S-1846-1-3	SWITCH	

EQUIPMENT TABLE

CES 1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406

SUPERSEDED BY: P 11.13.2

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	Howden	3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE
WIRING DIAGRAM — LANDING LIGHTS, OPT 24 VOLT

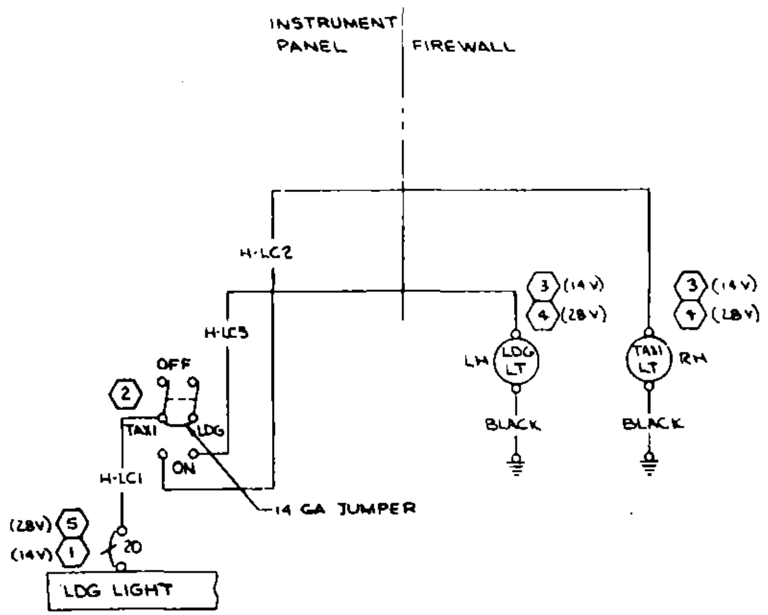
SIZE	CODE IDENT. NO.	DWG NO.
C	71379	1270625

SCALE: NONE U206 PAGE: 11.13.1

FORM NO 66-215A

ED & RR 10367 (SR6546)

REVISION			
LET	DESCRIPTION	DATE	APPD



INACTIVE
EFF THRU SERU20602199 II
1-12-73

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLACK	14	-14-0		S-1367-2-8	S-1367-2-8		
LC5	↓			S-1367-2-8	S-1493-2		
LC2	↓			S-1367-2-8	↕		
LC1	14			S-1367-2-6	S-1493-2		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
5	S-1360-15L	CIRCUIT BREAKER	
4	4591	PAR-36,100W LAMP	(024446)
3	4509	PAR-36,100W LAMP	(024446)
2	S-1846-1-3	SWITCH	
1	S-1360-20L	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA
STD NO.

SUPERSEDES: P 11.13 & P 11.13.1

SUPERSEDED BY: P 11.13.3

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	12-29-72
GROUP		
DRAWN	WHITE	1-12-73
CHECK	RYOUNGERS	1-15-73
STRESS		
PROJ	Bergman	1-8-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — LANDING LIGHT & TAXI LIGHT

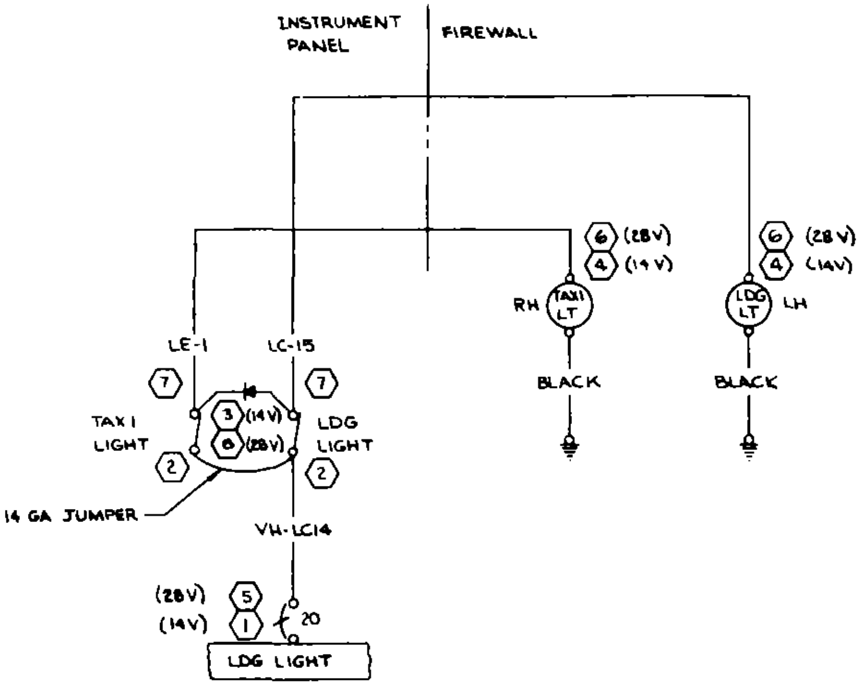
SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | PAGE: 11.13.2

SER U20601701 & ON

FORM NO. 60-2188

REVISION			
LET	DESCRIPTION	DATE	APPD



ITEM NO.	PART NO.	DESCRIPTION	
8	1270082-1	DIODE ASSY	
7	S-2023-1	ADAPTER	
6	4591	PAR-36, 100 W LAMP	(24446)
5	S-1360-15L	CKT BREAKER	
4	4509	PAR-36, 100 W LAMP	(24446)
3	1270082-2	DIODE ASSY	
2	S-2160-1	SWITCH	
1	S-1360-20L	CKT BREAKER	

EQUIPMENT TABLE

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLACK	14	-14-0		S-1367-2-8	S-1367-2-8		
LE-1	14			S-1493-2	S-1367-2-8		
LC-15	14			S-1493-2	S-1367-2-8		
LC-14	14			S-1367-2-6	S-1493-2		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.13.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-3-73
GROUP	H. Wiese	1-17-73
DRAWN	WHITE	1-12-73
CHECK	E. YOUNGERS	1-15-73
STRESS		
PROJ	Bergman	1-18-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — LANDING LIGHT & TAXI LIGHT

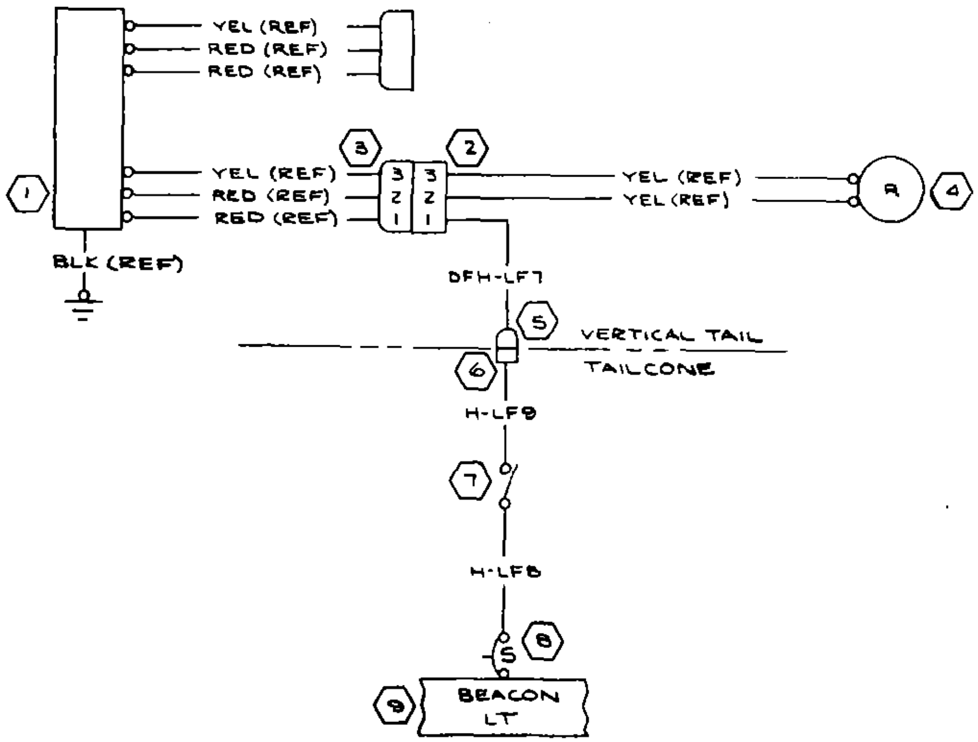
SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE: NONE PAGE: 11.13.3

FORM NO. 60-3158

88R(SR7403)

REVISION			
LET	DESCRIPTION	DATE	APPD



9	0713854-1	BUS BAR	
8	S-1360-5	CKT BKR	
7	S-1845-1-2	SWITCH	
6	S-1637-2	HOUSING-PLUG	
5	S-1637-1	HOUSING-CAP	
4	C621001-0102	LIGHT ASSY	
3	S-1638-2	HOUSING-CAP	
2	S-1638-1	HOUSING-PLUG	
1	C594501-0204	FLASHER ASSY	
ITEM NO	PART NO.	DESCRIPTION	

EQUIPMENT TABLE

H-LF9	16			S-1493-2	S-1636-2		
H-LF8	16			S-1367-2-6	S-1493-2		
DFH-LF7	16			S-1638-2	S-1636-2		
WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO.
S-XXX OR CMXXXX-CESSNA STD NO.

SUPERSEDES: 1220S-406

SUPERSEDED BY: P 11.14.2

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP		3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-11-70
APPD	R. YOUNGERS	3-2-70

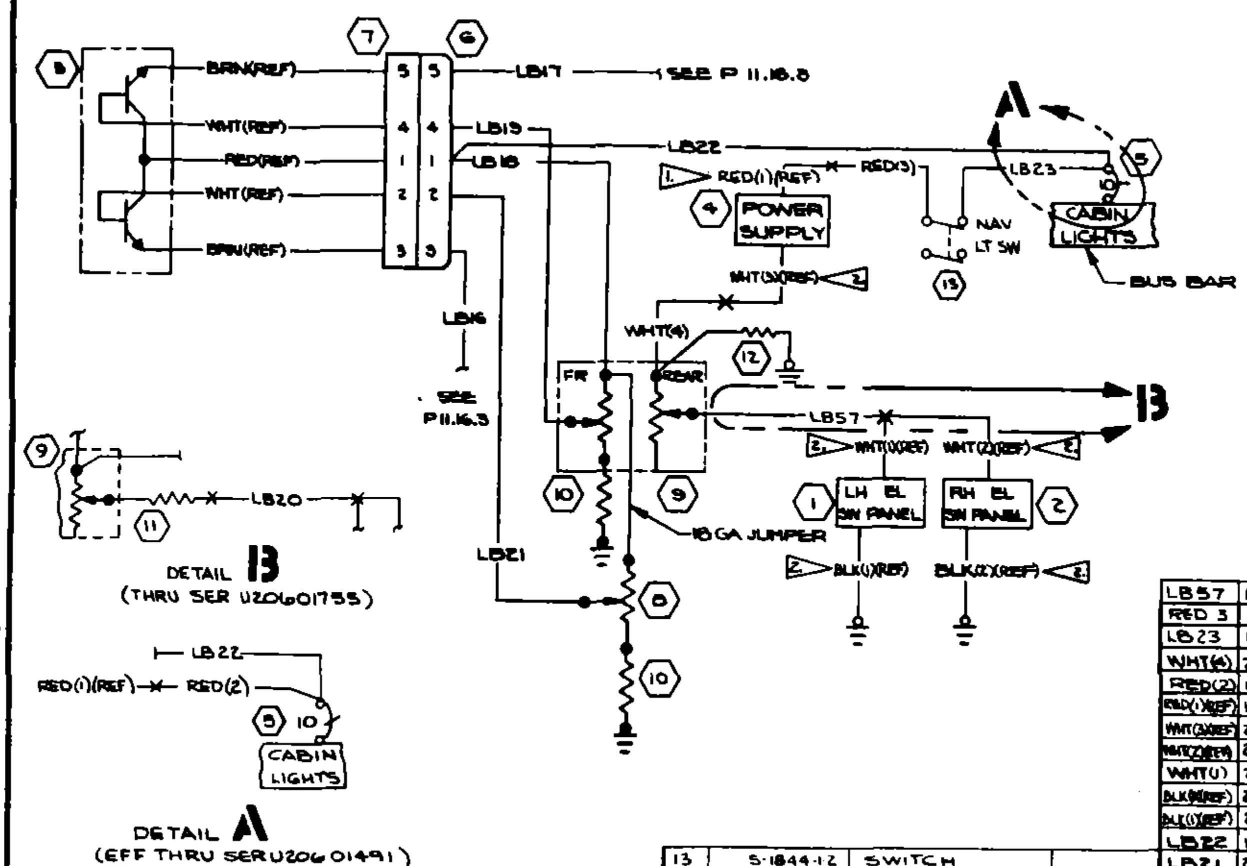
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — FLASHING BEACON LIGHT, OPT 24 VOLT

SIZE	CODE IDENT NO.	DWG NO.
C	71379	1270625

SCALE NONE | U206 | PAGE 11.14.1

ED&RR 10367 (SR6546)



NOTES:

1. TO BE RETAINED IN TERMINAL, WIRE MUST BE STRIPPED, DOUBLED & TWISTED
2. THESE WIRES VENDOR FURNISHED
3. WHEN POST LIGHTS ARE INSTALLED, S-1493-1 TERMINAL REPLACES S-1829-1 TERMINAL

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL A AND LB23; INACT DWG U20601492 SER (SR7403)	4-23-73	
B	BY REV: ADD LB57 & DETAIL "B"; SER OUT LB20 & 5.6K, 2W, 10% SER U20601756 & ON	RAM 5-25-74	

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB57	18			SOLDER	S-1370-2		SER U20601756 & ON
RED 3	18			S-1370-1	S-1493-1		SER U20601492 & ON
LB23	18			S-1493-1	S-1367-1-6		
WHT(4)	20	-20-9		SOLDER	S-1370-1		
RED(2)	18	-18-2		S-1370-1	S-1367-1-6		THRU SER U20601491
RED(1)(REF)	18				SEE RED(2)	1 2	
WHT(3)(REF)	22			SEE WHT(4)		1 2	
WHT(2)(REF)	22			SEE LB20		2	
WHT(1)	22			SEE LB20		2	
BLK(2)(REF)	22				S-1367-1-8	2	
BLK(1)(REF)	22				S-1367-1-8	2	
LB22	18			SEE LB18	S-1367-1-8		
LB21	20			S-1686-1	SOLDER		
LB20	18			S-1370-1	S-1370-2		THRU SER U20601755
LB19	18			S-1635-1	SOLDER		
LB18	18			S-1635-1	SOLDER		
LB17	18			S-1635-1	S-1829-1	3	
LB16	18			S-1635-1	S-1829-1	3	

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
13	S-1844-12	SWITCH	
12	VAL-5-6000	RESISTOR	(83777)
11	5.6K, 2W, 10%	RESISTOR	
10	VAL5 (200Ω)	RESISTOR	(83777)
9	S-2008-3	RESISTOR	
8	S-1904-2	RESISTOR	
7	S-1641-6	HOUSING-SOCKET	
6	S-1640-6	HOUSING-PIN	
5	S-1360-10	CIRCUIT BKR	
4	C613001-0101	POWER SUPPLY	
3	1570166-1	DIMMING ASSY	
2	1215192-1	EL PANEL ASSY	
1	1213314-8	EL PANEL ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES:

SUPERSEDED BY: P 11.15.2

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP		3-10-70
DRAWN	PAPE	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		1-13-70
APPD	R. YOUNGERS	3-2-70

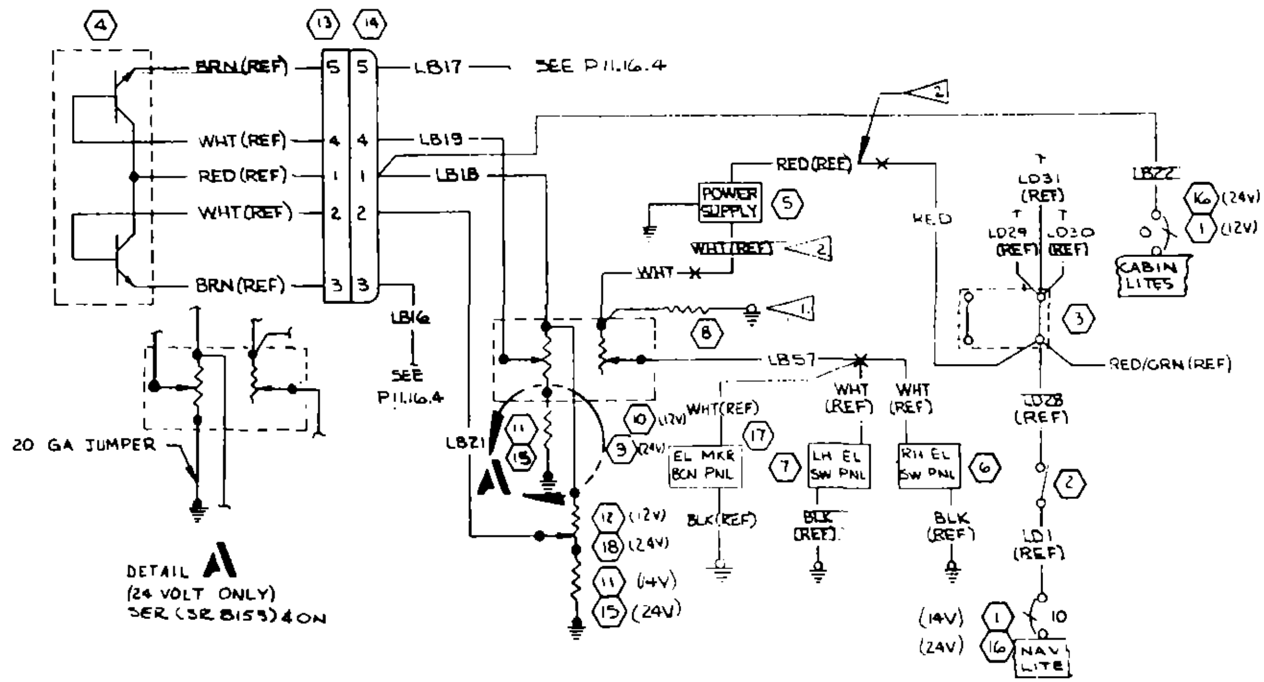
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ELECTROLUMINESCENT PANEL, OPT 24 VOLT

SIZE C | CODE IDENT NO. 71379 | DWG NO. 1270625

SCALE: NONE | U206 | PAGE 11.15.1

EDRR 10811 (626546)



REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD LB57: DELETE LB20 & 5.6K, 2W, 10% (NOW SHOP PRACTICE)	RAM 9-25-74	JCY LKM
B	BY REV: VAL-5-600 WAS VAL-3-2000. ADD DETAIL "A" TO DELETE VAL-3-200 RESISTOR ON 24 VOLT SYSTEM (SR 8155)	C J H 1-4-75	
C	BY REV: ADD WIRING FOR 1213757 EL MKR BCN PANEL (SR7910)	RAH 2-28-75	DRM
D	BY REV: ADD S-2091-4 & S-1904-2: S-2091-2 WAS S-2091. S-1904-3 WAS S-1904 (NOW SHOP PRACTICE)	GW 7-3-75	

10-311-0158

NOTES:

1. THIS END OF RESISTOR TERMINATED WITH S-1367-1-14 TERMINAL & INSTALLED ON SHAFT OF TANDOM POT ASSY. DUE TO HEAT DISSIPATION, RESISTOR MUST BE KEPT FROM WIRE BUNDLE

2. TO BE RETAINED IN TERMINAL, WIRE MUST BE STRIPED, DOUBLED & TWISTED

ITEM NO	PART NO.	DESCRIPTION
18	S-1904-2	POT ASSY (24V)
17	1213757	EL PANEL
16	S-1360-5L	CKT BKR
15	VAL-3-200	RESISTOR
14	S-1640-6	HOUSING
13	S-1641-6	HOUSING
12	S-1904-3	POT ASSY (12V)
11	27Ω, .5W 10%	RESISTOR
10	S-2091-2	POT ASSY (12V)
9	S-2091-4	POT ASSY (24V)
8	VAL-5-600Ω	RESISTOR
7	1213342	EL PANEL
6	1213363	EL PANEL
5	C613001	POWER SUPPLY
4	1570166	DIMMING ASSY
3	34002-55	TERMINAL BLOCK
2	S-2160-1	SWITCH
1	S-1360-10L	CKT BKR

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: P 11.15

SUPERSEDED BY:

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB57	18			SOLDER	S-1370-2		
RED	18	-18-2		S-1370-1	S-1829-1		
WHT	18	-18-10		SOLDER	S-1370-1		
LB22	18			S-1367-1-6	LB18		
LB21	18			S-1366-1	SOLDER		
LB19	18			S-1635-1	SOLDER		
LB18	18			S-1635-2	SOLDER		
LB17	18			S-1635-1	S-1829-1		
LB16	18			S-1635-1	[illegible]		

WIRE TABLE

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-5-72
GROUP	H. Wise	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNGERS	4-27-73
STRESS		
PROJ	[illegible]	[illegible]
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — ELECTRO LUMINESCENT PANEL (14 V) & (28V)

SIZE C | CODE IDENT NO. 71379 | DWG NO 1270625

SCALE: NONE | (SR 7403) B | PAGE: 11.15.2

FORM NO 80-3158

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD BLK(4), LB38, LB39, S-1695-2 & 1213319-13 REF (SR 7061)	4-25-72 LKW	

NOTES:

1. OXYGEN CONSOLE WIRING APPLICABLE ONLY WHEN OPTIONAL OXYGEN SYSTEM IS INSTALLED

2. INSTALL S-341-1 TERMINAL ON VENDOR SUPPLIED WIRE

3. STANDARD LENSES FOR EYEBROW LIGHTS ARE RED. CESSNA WHITE IS OPTIONAL

4. MUST BE WIRED IN SERIES-PARALLEL AS SHOWN

INACTIVE
EFF THRU SERU20602195 IX
LKW 4-23-73

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB 39	18			SOLDER	SOLDER		
LB 38	18			S-1829-1	SOLDER		
BLK(4)	18	-18-0		SOLDER	S-1367-1-8		
RED/YEL	22	-22-2-4		SOLDER	SOLDER		
RED/BLU	18	-18-2-6		SOLDER	SOLDER		
BLK(3)	18	-18-0		SOLDER	SOLDER		
BLK(2)	18	-18-0		S-341-2	S-1367-1-8		
BLK(1)	22	-22-0		SOLDER	S-1367-1-8		
DHF-LB83	20			SOLDER	S-1367-1-8		
HF-LB9	18			S-341-2	S-1367-1-8		
LB 32	18			S-1829-1	S-341-1		
LB 31	18			SOLDER	S-1367-1-8		
LB 30	18			S-1829-1	SOLDER		
LB 28	18			S-1829-1	S-341-1		
LB 27	18			S-1829-1	SOLDER		
LB 26	18			S-1829-1	S-1370-1		
LB 25	18			S-1829-1	S-341-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
10	1213319-13	LIGHT ASSY	
9	S-1695-2	SWITCH	
8	34002-55	TERMINAL BOARD	(ETNC)
7	C669502-0202	INST CLUSTER	
6	C660501-0102	COMPASS ASSY	
5	S-1901-1	LAMP	
4	S-1899-4	LIGHT ASSY	
3	S-1899-3	LIGHT ASSY	
2	1270479-4	LIGHT ASSY	
1	1211001Z	CONSOLE ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES:

SUPERSEDED BY: P 11.16.4

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	H. Wise	3-10-70
DRAWN	PAPE	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-12-70
APPD	R. YOUNGER	3-2-70

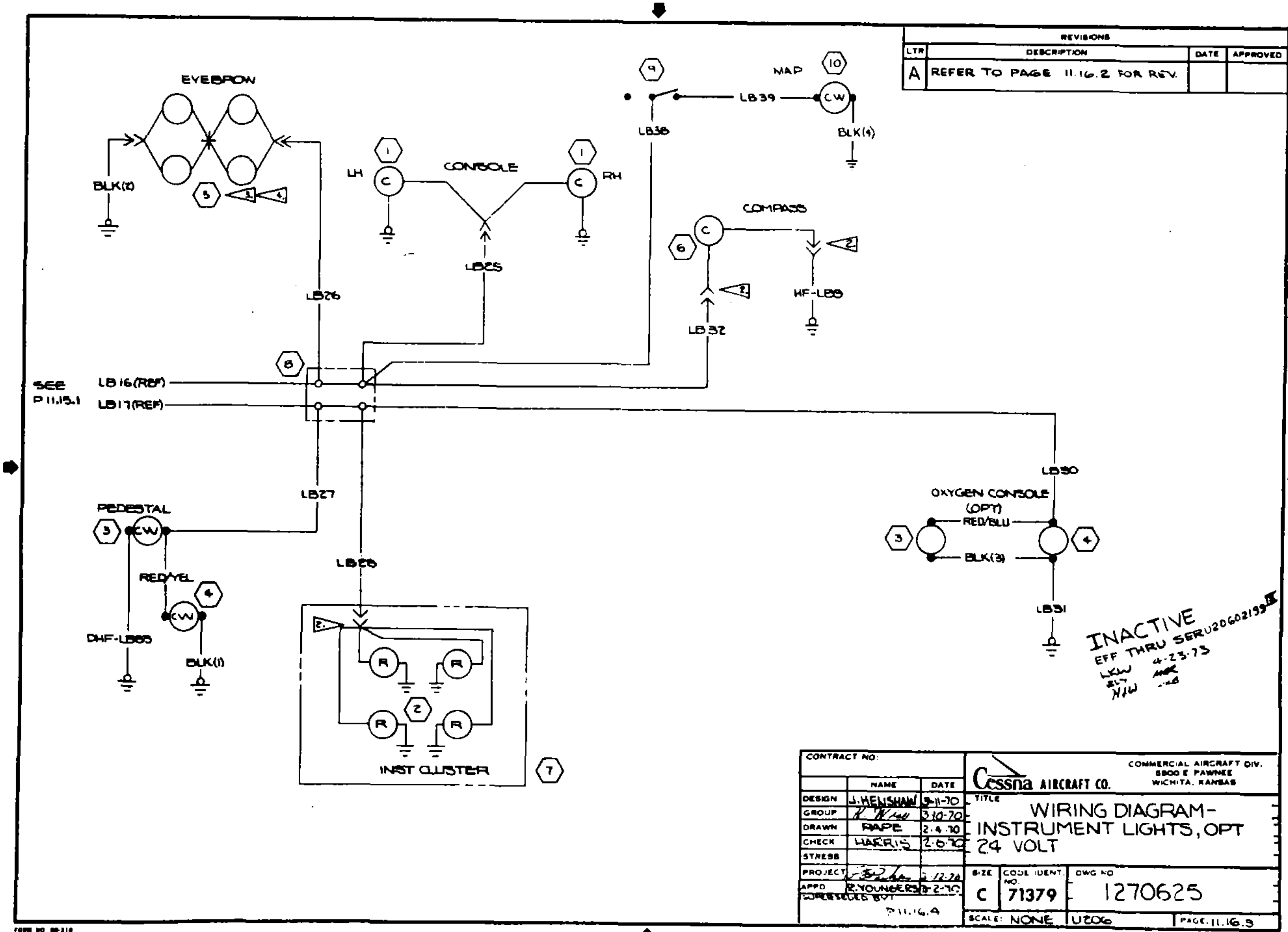
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

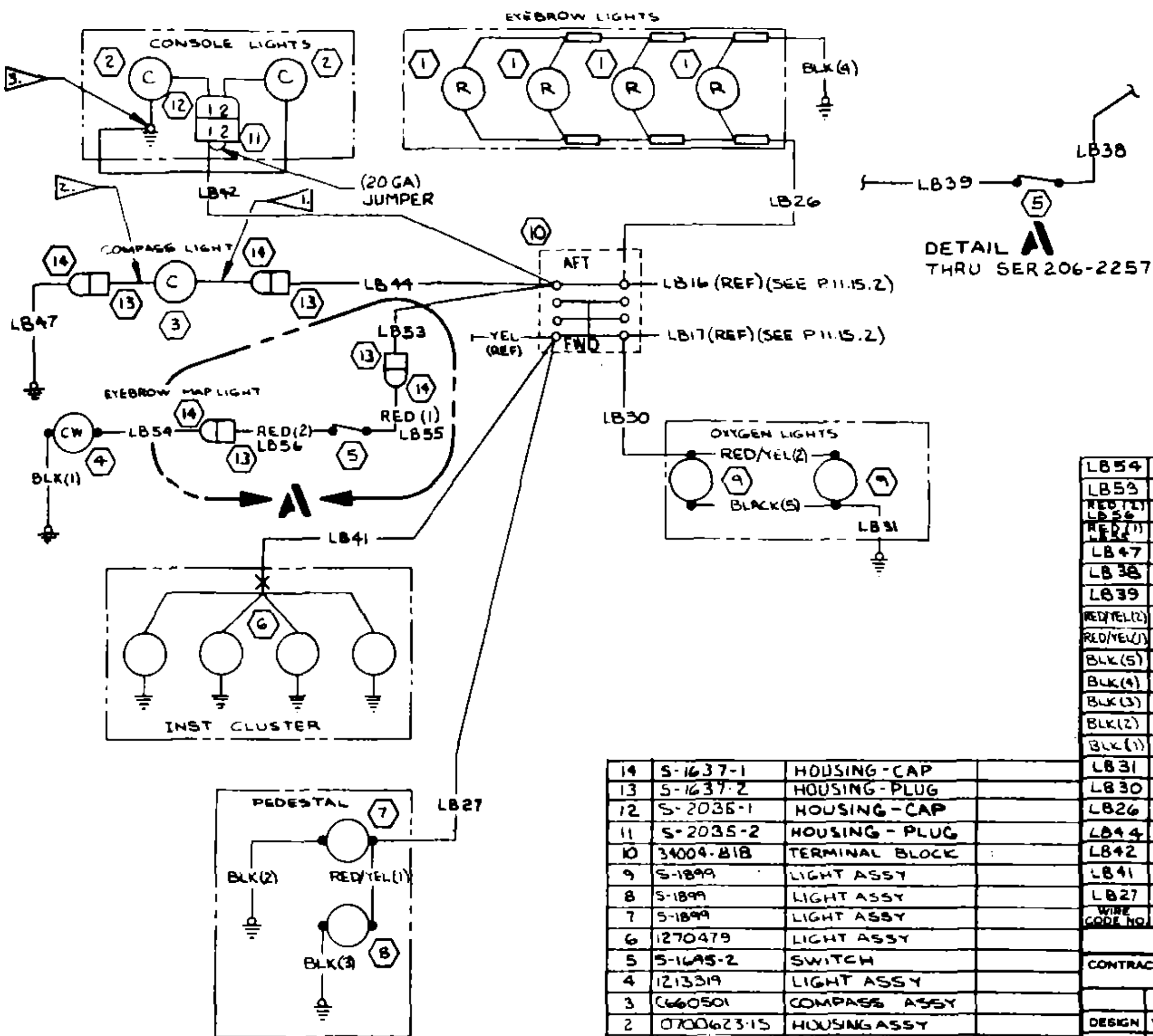
TITLE
WIRING DIAGRAM — INSTRUMENT LIGHTS, OPT 24 VOLT

SIZE	CODE IDENT NO.	DWG NO.
C	71379	1270625
SCALE: NONE	U206	PAGE: 11.16.2

FORM NO. 20-618A

EDRR 10811 (SR6546)


REVISIONS
LTR
DESCRIPTION
DATE
APPROVED
A
REFER TO PAGE 11.16.2 FOR REV.
EYEBROW
BLK(2)
5
3
4
LH
1
C
CONSOLE
1
C
RH
LB25
LB26
9
MAP
10
CW
LB39
LB38
BLK(4)
COMPASS
6
C
2
2
HF-LB8
LB32
8
SEE
P 11.15.1
LB16(REF)
LB17(REF)
LB27
LB30
PEDESTAL
3
CW
RED/YEL
4
CW
DHF-LB85
BLK(1)
LB28
OXYGEN CONSOLE
(OPT)
RED/BLU
3
4
BLK(3)
LB31
2
R
R
2
R
R
INST CLUSTER
7
INACTIVE
EFF THRU SER U20602199
4-23-73
CONTRACT NO.
NAME
DATE
DESIGN
J. HENSHAW
9-11-70
GROUP
9-10-70
DRAWN
RAPE
2-4-70
CHECK
HARRIS
2-6-70
STRESS
PROJECT
APPD
R. YOUNGERS
2-2-70
SUPERSEDED BY
P 11.16.4
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS
TITLE
WIRING DIAGRAM-
INSTRUMENT LIGHTS, OPT
24 VOLT
SIZE
C
CODE IDENT NO.
71379
DWG NO
1270625
SCALE: NONE
U206
PAGE 11.16.3



NOTES:

1. INSTALL S-1635-1 TERMINAL ON VENDOR FURNISHED WIRE
2. INSTALL S-1636-1 TERMINAL ON VENDOR FURNISHED WIRE
3. INSTALL S-1367-2-6 TERMINAL ON VENDOR FURNISHED WIRE

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD DETAIL A; SER OUT LB38 & LB39; SER IN LB53, LB54 RED(1) & RED(2); S-2035-1 & S-2035-2 WAS S-1637-1 & S-1637-2 MER E0017 & MER E0039 (SER 206-2258) (SR 7403)(REF)	TJP DEF 2-8-74	
B	BY REV: S-1637-1 WAS S-2035-1/LB47, RED(1), LB54; S-1637-2 WAS S-2035-2/LB44, LB53, LB56 S-1367-2-6 WAS S-1637-2-6/NOTE 3; DELETE DETAIL "B" (MER 206-E0098)	MEM 5-9-74	
C	BY REV 34003-55-3410 WAS 34002-55 (SR7910)	BLA 3-6-75	
D	BY REV: 34004-818 WAS 34003-55-3410 (SR7910)	GW 8-4-75	

10-208-0905

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB54	18			S-1635-1	SOLDER		SER206-2258 & ON
LB53	18			S-1829-1	S-1636-1		SER206-2258 & ON
RED(2) LB56	18	-18-2		SOLDER	S-1636-1		SER206-2258 & ON
RED(1) LB55	18	-18-2		S-1635-1	SOLDER		SER 206-2258 & ON
LB47	18			S-1638-1	S-1367-1-8		
LB38	18			S-1829-1	SOLDER		THRU SER206-2257
LB39	18			SOLDER	SOLDER		THRU SER206-2257
RED/YEL(2)	18	-18-2-5		SOLDER	SOLDER		
RED/YEL(1)		-18-2-5		SOLDER	SOLDER		
BLK(5)		-18-0		SOLDER	SOLDER		
BLK(4)		-18-0		S-1370-1	S-1367-1-8		
BLK(3)		-18-0		SOLDER	S-1367-1-8		
BLK(2)		-18-0		SOLDER	S-1367-1-8		
BLK(1)		-18-0		SOLDER	S-1367-1-8		
LB31				SOLDER	S-1367-1-8		
LB30				SOLDER	S-1829-1		
LB26				S-1370-1	S-1829-1		
LB44				S-1829-1	S-1636-1		
LB42				S-1829-1	S-1636-1		
LB41				S-1829-1	S-1370-1		
LB27	18			SOLDER	S-1829-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
14	S-1637-1	HOUSING-CAP	
13	S-1637-2	HOUSING-PLUG	
12	S-2035-1	HOUSING-CAP	
11	S-2035-2	HOUSING-PLUG	
10	34004-818	TERMINAL BLOCK	
9	S-1899	LIGHT ASSY	
8	S-1899	LIGHT ASSY	
7	S-1899	LIGHT ASSY	
6	1270479	LIGHT ASSY	
5	S-1695-2	SWITCH	
4	1213319	LIGHT ASSY	
3	C660501	COMPASS ASSY	
2	0700623-15	HOUSING ASSY	
1	1213319	LIGHT ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC. NO.
S-XXX OR CMXXXX-CESSNA STD. NO.

SUPERSEDES: P11.16.0, 11.16.1, 11.16.3 & 11.16.2

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-16-73
GROUP	H. Wise	5-1-73
DRAWN	WHITE	4-23-73
CHECK	Z.YOUNGERS	4-30-73
STRESS		
PROJ	Bergman	5-2-73
APPD		
OTHER		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — INSTRUMENT LIGHTS, 14V & 28V

SIZE	CODE IDENT NO.	DWG NO
C	71379	1270625

SCALE: NONE (SR7403) PAGE: 11.16.4

FORM NO. 80-2188

NOTES:

1. TYPICAL 16 PLACES
2. WHEN OPTIONAL POST LIGHTS ARE INSTALLED S-1493-1 TERMINAL REPLACES S-1829-1 TERMINAL

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: IN NOTE 2 S-1829-1 WAS S-1493-1, S-1493-1 WAS S-1829-1; ADD LB40, S-1695-2 & 1213319-13 REF (SR 7061)	10-24-72 LKW	RAY VEW

INACTIVE EFF THRU SER U20602199 IX 4-23-73 LKW RAY VEW

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
LB40	20			S-1493-1	SOLDER		
RED/YEL(4)	22			SOLDER	S-341-2		
RED/YEL(3)	22			SOLDER	S-341-2		
RED/YEL(2)	22			SOLDER	SOLDER		
RED/YEL(1)	22			SOLDER	SOLDER	1.	
BLK(4)	22			SOLDER	S-341-2		
BLK(3)	22			SOLDER	S-1367-1-8		
BLK(2)	22			S-341-2	SOLDER		
BLK(1)	22			SOLDER	SOLDER	1.	
DHF-LB83	20			SOLDER	S-1367-1-8		
DHF-LB81	20			S-341-1	S-1367-1-8		
DHF-LB80	20			S-341-1	S-1367-1-8		
LB37	20			S-1829-1	SOLDER		
LB36	20			S-1493-1	S-341-2		
LB35	20			S-1493-1	S-341-2		
LB34	18			S-1829-1	S-341-1		
LB33	18			S-1493-1	S-1829-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	VENDOR
10	1213319-13	LIGHT ASSY	
9	S-1695-2	SWITCH	
8	C660501-0102	COMPASS ASSY	
7	34002-55	TERMINAL BLOCK	ETNC
6	S-2023-1	TERMINAL ADAPTER	
5	S-1899-4	LIGHT ASSY	
4	S-1899-3	LIGHT ASSY	
3	S-1847-2-1	SWITCH	
2	C669502-0202	INST CLUSTER	
1	1270479-5	LIGHT ASSY	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC NO S-XXX OR CMXXXX=CESSNA STD. NO

SUPERSEDES

SUPERSEDED BY: P 11.17.4

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP	K. Wise	3-10-70
DRAWN	PAPE	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJ	[illegible]	3-12-70
APPD	R YOUNGERS	3-2-70
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV 5800 E PAWNEE WICHITA, KANSAS

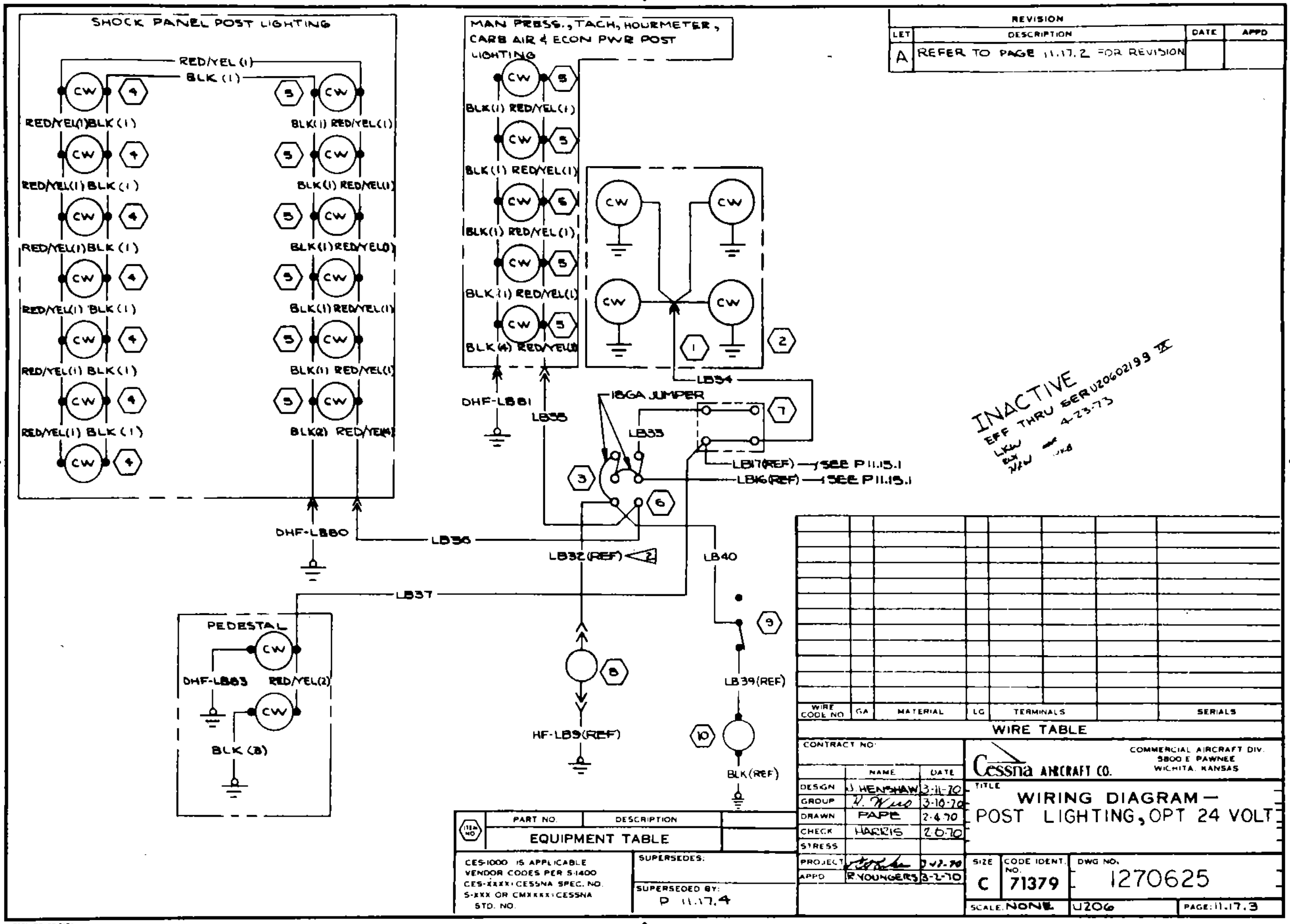
TITLE WIRING DIAGRAM — POST LIGHTING, OPT 24 VOLT

SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

SCALE: NONE | U206 | PAGE: 11.17.2

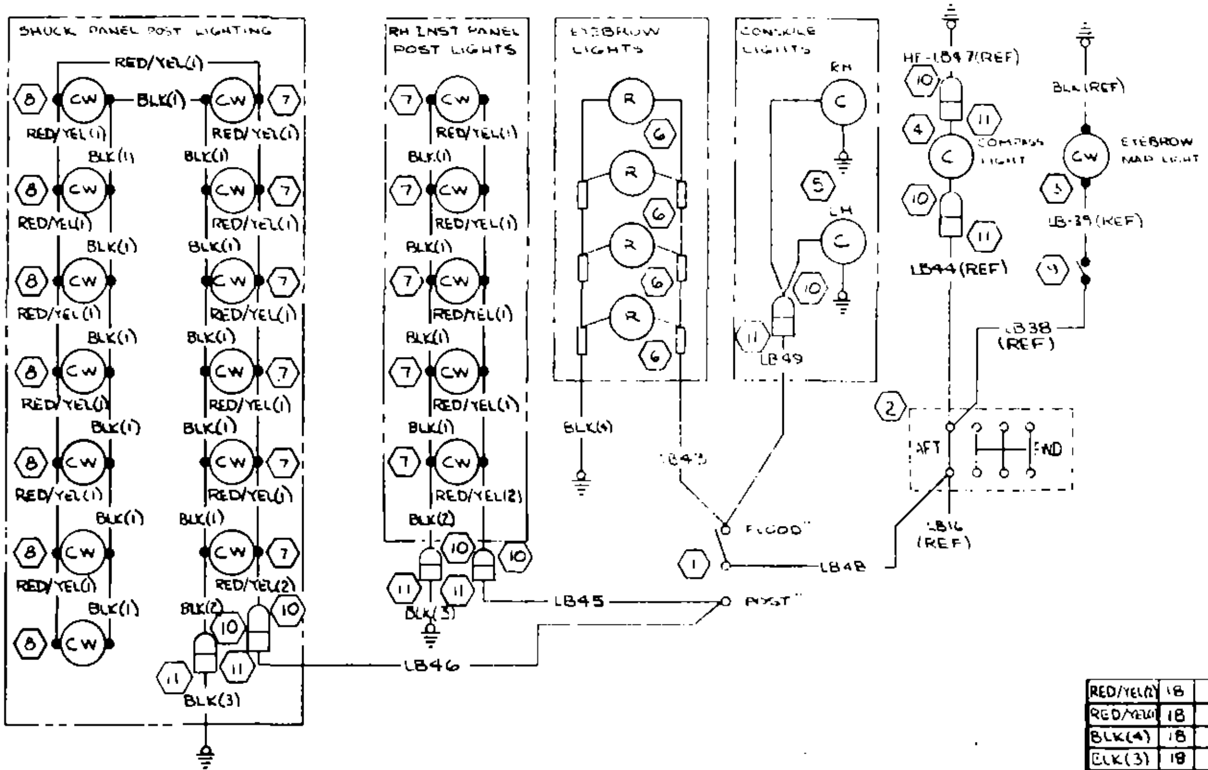
EDRR 10811 (SR 6546)

FORM NO 80 2158



EDRR 10811 (6R6546)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: 34004-818 NAS 34002-55 (SR7910)	GW 8-4-75	



10-288-0905

RED/YEL(2)	18			SOLDER	S-1635-2		
RED/YEL(1)	18			SOLDER	SOLDER		
BLK(4)	18			S-1370-1	S-1367-1-8		
BLK(3)	18			S-1636-2	S-1367-1-8		
BLK(2)	18			SOLDER	S-1635-2		
BLK(1)	18			SOLDER	SOLDER		
LB48	18			S-1493-1	S-1829-1		
LB46	18			S-1493-1	S-1636-2		
LB45	18			S-1493-1	S-1636-2		
LB43	18			REF LB25	S-1370-1		
LB49	18			S-1493-1	S-1636-1		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
11	S-1637-2	HOUSING	
10	S-1637-1	HOUSING	
9	S-1695-2	SWITCH	
8	S-1899	LIGHT ASSY	
7	S-1899	LIGHT ASSY	
6	1213319	LIGHT ASSY	
5	0700623-15	HOUSING ASSY	
4	C660501	COMPASS ASSY	
3	1213319	LIGHT ASSY	
2	34004-818	TERMINAL BLOCK	
1	S-2160-2	SWITCH	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA
STD. NO.

SUPERSEDES: P11.17.0, 11.17.1, 11.17.2 & 11.17.3

SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	WHITE	1-10-73
GROUP	F. Wise	5-1-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNKERS	5-1-73
STRESS		
PROJ	Bergman	5-1-73
APPD		
OTHER		

Cessna. AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

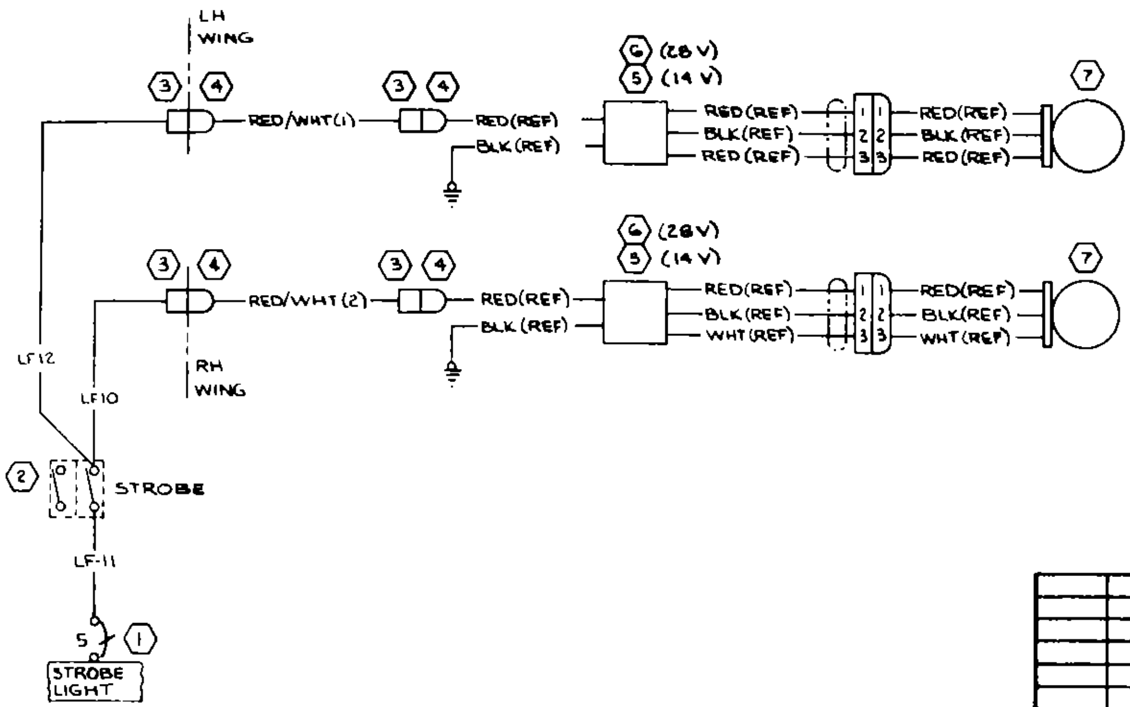
TITLE
WIRING DIAGRAM — POST LIGHTS, 14 V & 28V (OPTIONAL)

SIZE: C | CODE IDENT NO: 71379 | DWG NO: 1270625

SCALE: NONE | (SR 7403) 2 | PAGE: 11.17.4

FORM NO 80-2158

LET	DESCRIPTION	DATE	APPD
REVISION			



INACTIVE
EFF THRU SERU20602199
LKW 4-23-73
RLY MGR
HW WKB

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
RED/WHT(2)	18	-18-2-9		S-1635-1	S-1636-1		(STD)
RED/WHT(1)	18	-18-2-9		S-1635-1	S-1636-1		(STD)
LF12	18			SEE LF10	S-1636-1		
LF11	18			S-1367-1-6	S-1493-1		
LF10	18			S-1493-2	S-1636-1		

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
7	C622006-0101	LIGHT ASSY
6	C622007-0103	POWER SUPPLY
5	C622007-0101	POWER SUPPLY
4	S-1637-1	HOUSING
3	S-1637-2	HOUSING
2	S-1846-2-3	SWITCH
1	S-1360-5L	CKT BKR

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 11.18

SUPERSEDED BY: 11.18.2

CONTRACT NO.

	NAME	DATE
DESIGN	WHITE	1-6-73
GROUP	H. Wise	4-22-73
DRAWN	WHITE	4-23-73
CHECK	E. YOUNGERS	4-23-73
STRESS		
PROJ		
APPD	MGR	
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE
WIRING DIAGRAM — STROBE LIGHTS, WING TIP

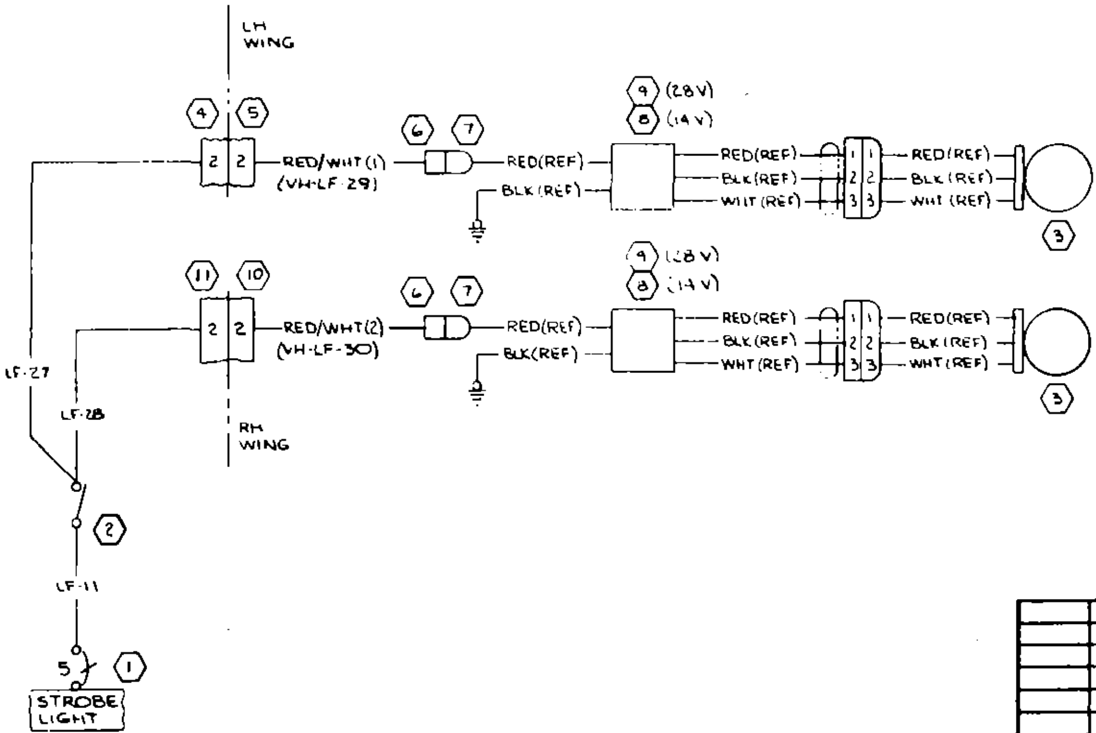
SIZE	CODE IDENT NO.	DWG NO
C	71379	1270625

SCALE: NONE PAGE: 11.18.1

FORM NO. 90-2159

SERU20601875 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: PIN 2 WAS PIN 4 LH WING; S-1641-6 & S-1640-6 WAS S-1640-9 & S-1641-9, S-1640-12 & S-1641-12 WAS S-1640-9 & S-1640-9; DRAWING BECOMES INACTIVE; (NOW SHOP PRACTICE) MEREO393 (SR 7910)	CJH 11-22-74	JCY JRS WS
B	BY REV: REACTIVATE DRAWING (SR 7910)	TMS 1-21-75	JCY JRS WS



10 288 0905

RED/WHT(2) (VH-LF-30)	18	-18-2-9		S-1636-1	S-1635-1	STD	
RED/WHT(1) (VH-LF-29)	↓	-18-2-9		S-1636-1	S-1635-1	STD	
LF 28	↓			SEE LF 27	S-1636-1		
LF 27	↓			S-1493-2	S-1636-1		
LF 11	18			S-1367-1-6	S-1493-1		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
11	S-1641-12	HOUSING - SOCKET	
10	S-1640-12	HOUSING - PIN	
9	C622007-0103	POWER SUPPLY	
8	C622007-0101	POWER SUPPLY	
7	S-1637-1	HOUSING	
6	S-1637-2	HOUSING	
5	S-1640-6	HOUSING-PIN	
4	S-1641-6	HOUSING-SOCKET	
3	C622006-0101	LAMP ASSY	
2	S-2160-1	SWITCH	
1	S-1360-5L	CKT BKR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 11.18.1

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-6-73
GROUP	[illegible]	4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. YOUNGER	4-27-73
STRESS		
PROJ	[illegible]	4-28-73
APPD	[illegible]	
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE

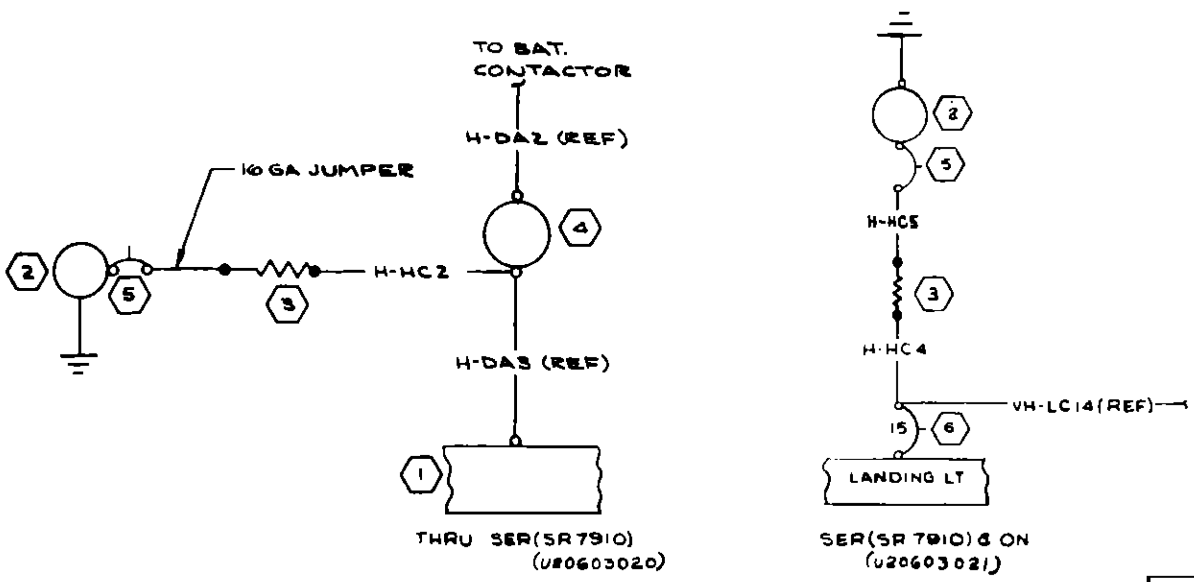
WIRING DIAGRAM — STROBE LIGHTS, WING TIP (OPT)

SIZE	CODE IDENT. NO.	DWG NO
C	71379	1270625

SCALE NONE (SR 7403) B PAGE: 11.18.2

FORM NO. 80-3156

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SER IN H-HC4, S-1367-15L SER OUT H-HC2 (SR7910)(MER EO 320)	BLA 10-30-70	
B	BY REV: H-HC5 WAS 16 GA JUMPER (SR7910)	RJP 8-4-75	



10-288-0905

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
H-HC5	16		6	SOLDER	S-1367-2-10		SER(SR7910) & ON
H-HC4	16			S-1367-2-8	SOLDER		SER(SR7910) & ON
H-HC2	16			S-1367-2-10	SOLDER		THRU SER(SR7910)

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION
6	S-1360-15L	CIRCUIT BREAKER
5	60232-1	CIRCUIT BREAKER
4	C669502-0202	INST CLUSTER
3	S-2041-50-1.6	RESISTOR
2	0513039-7	CIGAR LIGHTER
1	0713854-2	BUS BAR

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: 12205-406
SUPERSEDED BY:

CONTRACT NO.

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP		3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-12-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E PAWNEE
WICHITA, KANSAS

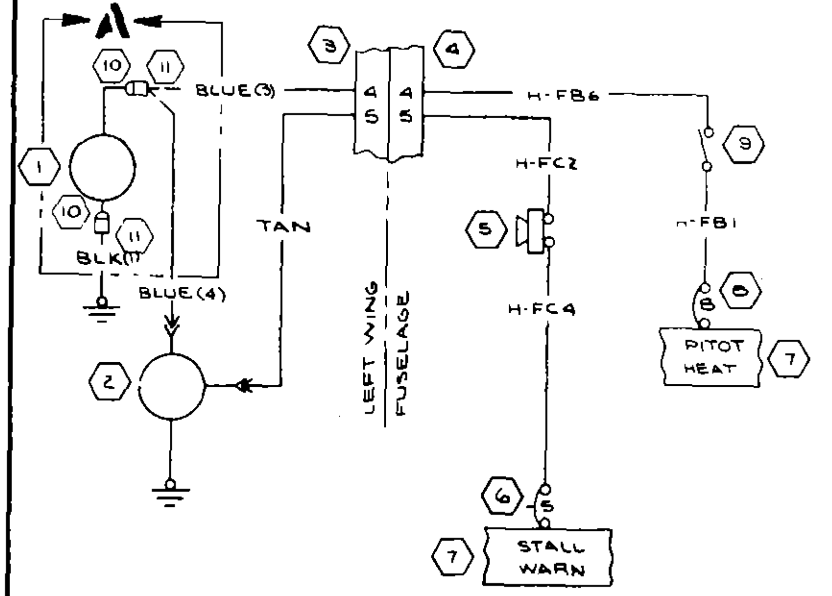
TITLE
WIRING DIAGRAM — CIGAR LIGHTER, OPT 24 VOLT

SIZE: C | CODE IDENT. NO.: 71379 | DWG NO.: 1270625

SCALE: NONE | U206 | PAGE: 13.1.1

FORM NO 90-316A

ED&RR 10367 (SR6546)

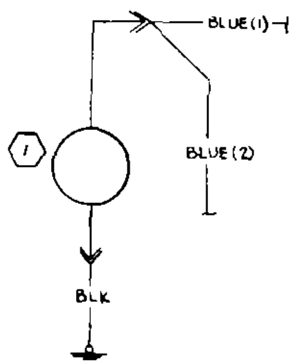


NOTES:

1. FOR NON-HEATED STALL WARNING INSTL DELETE BLUE (2) WIRE

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: SER OUT BLU(1), BLU (2) & BLK; SER IN BLU (3), BLU (4) & BLK (1); ADD DET "A" & SER (SR 7320)	SCY 11-6-72	

INACTIVE
EFF THRU SER U20602199 IX
4-23-73



DETAIL A
THRU SER U20601994

BLK(1)	16	-16-0		S-1636-2	S-1367-1-6		SER U20601995 & ON
BLU(4)	16	-16-6		S-341-2	SEE BLU(3)	1	SER U20601995 & ON
BLU(3)	16	-16-6		S-1635-2	S-1636-2		SER U20601995 & ON
BLK	16	-16-0		S-341-1	S-1367-1-6		THRU SER U20601999
BLU(2)	16	-16-6		S-341-2	SEE BLU(1)	1	THRU SER U20601999
BLU(1)	16	-16-6		S-1635-2	S-341-1		THRU SER U20601994
TAN	18	-18-10		S-1635-2	S-341-2		
H-FC4	18			S-1367-1-6	S-1367-1-6		
H-FC2	18			S-1367-1-6	S-1636-1		
H-FB6	16			S-1493-2	S-1636-2		
H-FB1	16			S-1367-2-6	S-1493-2		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO	DESCRIPTION	VENDOR
11	S-1637-2	HOUSING - PLUG	
10	S-1637-1	HOUSING - CAP	
9	S-1845-1-2	SWITCH	
8	S-1360-8	CIRCUIT BREAKER	
7	0713854-3	BUS BAR	
6	S-1360-5	CIRCUIT BREAKER	
5	S-1407-7	STALL WARN HORN	
4	S-1641-9	HOUSING-SOCKET	
3	S-1640-9	HOUSING-PIN	
2	0511062-6	STALL WARN XMTR-HTD	
1	0721105-18	PITOT TUBE-HTD	

EQUIPMENT TABLE

CES 1000 IS APPLICABLE
VENDOR CODES PER S 1400
CES-XXXX CESSNA SPEC. NO.
S-XXX OR CMXXXX-CESSNA STD NO.

SUPERSEDES: 12206-406

SUPERSEDED BY: P 13.3.2

CONTRACT NO:

	NAME	DATE
DESIGN	J. HENSHAW	3-11-70
GROUP		3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT		3-11-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

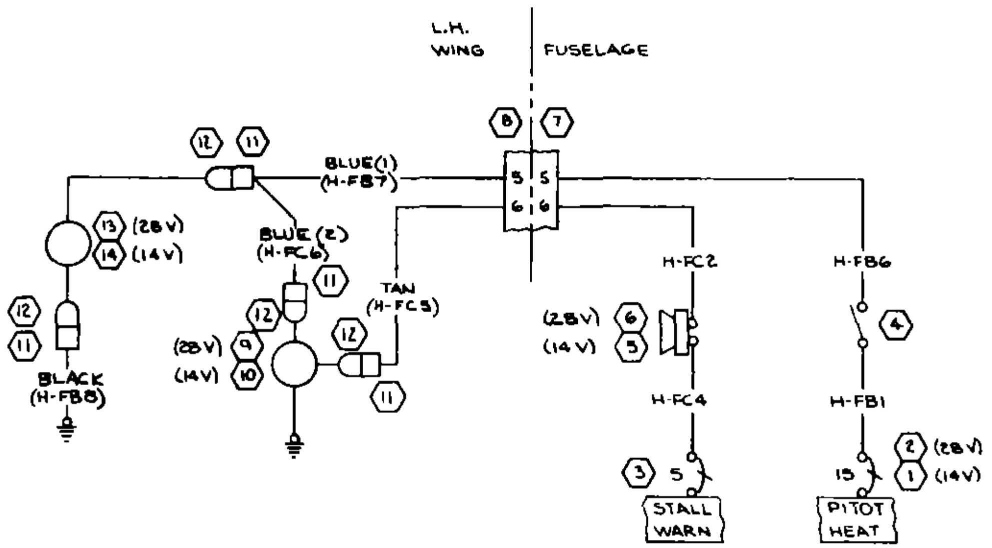
TITLE
WIRING DIAGRAM — HEATED PITOT TUBE & STALL WARNING XMTR, OPT 24 VOLT

SIZE: C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE: NONE | U206 | PAGE 13.3.1

ED & RR 10367 (SR 6646)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED H-FC5, H-FC6, H-FB7 & H-FB8 (SR7403)	RAM 8-10-73	
B	BY REV: S-1640-6 WAS S-1640-9; S-1641-6 WAS S-1641-9; ADD WIRE LENGTHS PER EO 585 (NOW SHOP PRACTICE)	BLA 12-10-74	



TAN (H-FC5)	18	-18-10		S-1635-2	S-1636-2	
BLACK (H-FB8)	16	-16-0		S-1636-2	S-1367-2-8	
BLUE(2) (H-FC6)	16	-16-6		BLUE(1)	S-1636-2	
BLUE(1) (H-FB7)	16	-16-6		S-1635-2	S-1636-3	
H-FC4	18			S-1367-1-6	S-1367-1-6	
H-FC2	18		100	S-1367-1-6	S-1636-2	
H-FB6	16		95	S-1493-2	S-1636-2	
H-FB1	16		8	S-1367-2-6	S-1493-2	
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS		SERIALS

WIRE TABLE

ITEM NO.	PART NO.	DESCRIPTION
14	0721105-15	PITOT TUBE
13	0721105-18	PITOT TUBE
12	S-1637-1	HOUSING
11	S-1637-2	HOUSING
10	0511062-15	XMTR
9	0511062-16	XMTR
8	S-1640-6	HOUSING-PIN
7	S-1641-6	HOUSING-SOCKET
6	S-2077-8	STALL WARN HORN
5	S-2077-5	STALL WARN HORN
4	S-2160-1	SWITCH
3	S-1360-5L	CKT BKR
2	S-1360-8L	CKT BKR
1	S-1360-15L	CKT BKR

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: P 13.3, 13.3.1

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN	WHITE	1-11-73
GROUP		4-27-73
DRAWN	WHITE	4-23-73
CHECK	R. HOUNGERS	4-27-73
STRESS		
PROJ		4-30-73
APPD		
OTHER		

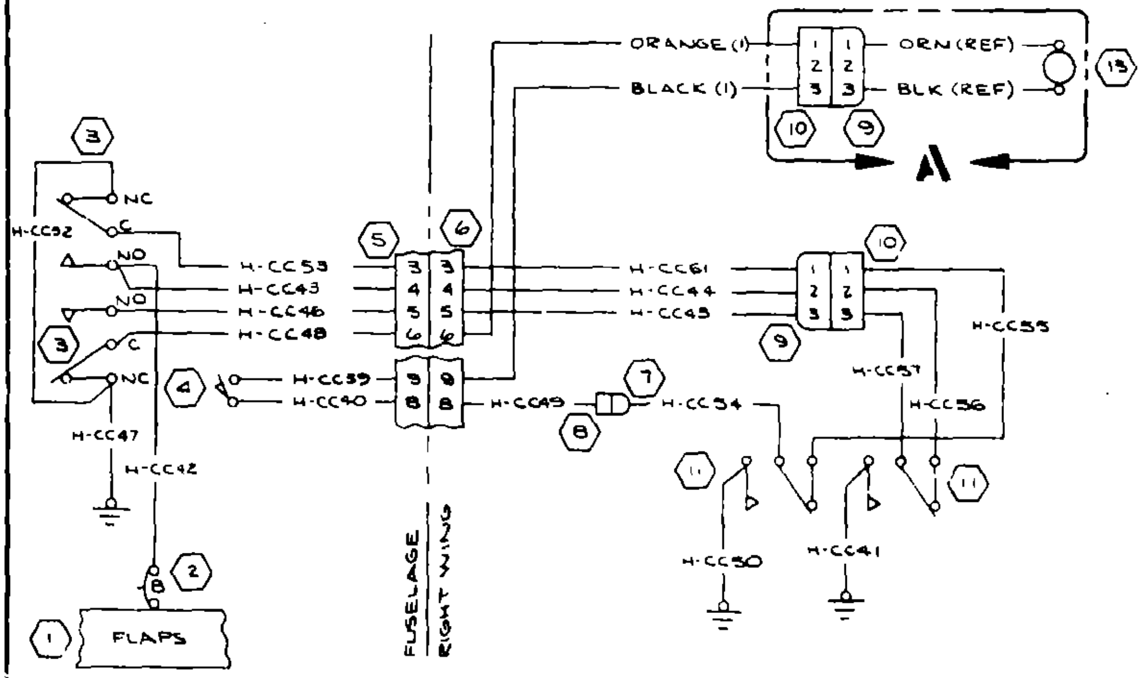
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — HEATED PITOT TUBE & STALL WARNING XMTR (OPT)

SIZE C | CODE IDENT. NO. 71379 | DWG NO 1270625

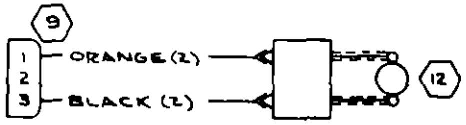
SCALE: NONE | (SR7403) | PAGE: 13.3.2

FORM NO. 60-2158



REVISION			
LET	DESCRIPTION	DATE	APPD

INACTIVE: EFF THRU SER (SR6584) (U20601673)
ED & RR 10141
5-4-70



DETAIL A
(OPT WITH 1ST RADIO INSTL)

Wire Code No	GA	Material	LG	Terminals			Serials
BLK (2)	16	-16-0		S-1635-2	S-341-1		
BLK (1)	16	-16-0		S-1635-2	S-1636-2		
ORN (2)	16	-16-3		S-1635-2	S-341-1		
ORN (1)	16	-16-3		S-1635-2	S-1636-2		
H-CC57	16			S-1636-2	S-1367-2-6		
H-CC56	16			S-1636-2	S-1367-2-6		
H-CC55	16			S-1636-2	S-1367-2-6		
H-CC54	16			S-1635-2	S-1367-2-6		
H-CC53	16			S-1493-2	S-1636-2		
H-CC52	16			S-1493-2	S-1493-2		
H-CC51	16			S-1635-2	S-1635-2		
H-CC50	16			S-1367-2-6	S-1367-2-8		
H-CC49	16			S-1635-2	S-1636-2		
H-CC48	16			S-1493-2	S-1636-2		
H-CC47	16			S-1493-2	S-1367-2-8		
H-CC46	16			S-1493-2	S-1636-2		
H-CC45	16			S-1635-2	S-1635-2		
H-CC44	16			S-1635-2	S-1635-2		
H-CC43	16			S-1493-2	S-1636-2		
H-CC42	16			S-1367-2-8	S-1493-2		
H-CC41	16			S-1367-2-6	S-1367-2-8		
H-CC40	16			S-1636-2	S-1493-2		
H-CC39	16			S-1636-2	S-1493-2		

WIRE TABLE

Item	Part No	Description	Vendor
13	C301001-0602	ACTUATOR ASSY	
12	C301001-0601	ACTUATOR ASSY	
11	MS25253-1	SWITCH	
10	S-1638-1	HOUSING-PLUG	
9	S-1638-2	HOUSING-CAP	
8	S-1637-2	HOUSING-PLUG	
7	S-1637-1	HOUSING-CAP	
6	S-1640-9	HOUSING-PIN	
5	S-1641-9	HOUSING-SOCKET	
4	E13-00M	SWITCH	(01963)
3	S-1952-1	SWITCH	
2	S-1360-8	CIRCUIT BREAKER	
1	0713854-2	BUS BAR	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX-CESSNA SPEC NO.
S-XXX OR CMXXXX-CESSNA STD NO

SUPERSEDES: 1220S-406
SUPERSEDED BY: 1270625 PAGE 14.3.4

CONTRACT NO

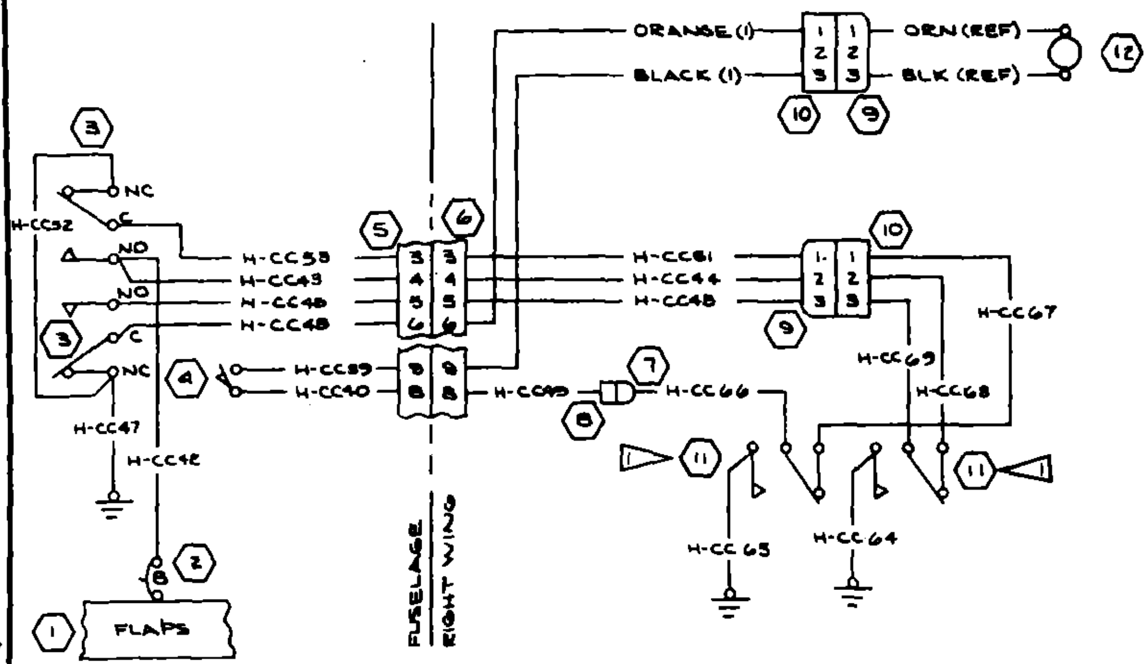
	NAME	DATE
DESIGN	J HENSHAW	5-11-70
GROUP	H Nisi	3-10-70
DRAWN	R. YOUNGERS	2-4-70
CHECK	HARRIS	2-6-70
STRESS		
PROJECT	[illegible]	3-11-70
APPD	R. YOUNGERS	3-2-70

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE
WIRING DIAGRAM — WING FLAPS, OPT 24 VOLT

SIZE C | CODE IDENT NO 71379 | DWG NO 1270625
SCALE NONE | U206 | PAGE 14.3.2

ED & RR 10367 (SR6846)



INACTIVE:
EFF THRU SERU20602199 TC
MTM 1-4-73

NOTES:

1 THESE SWITCHES ARE PART OF C301002-0102 ACTUATOR ASSY

REVISION			
LET	DESCRIPTION	DATE	APPD

ITEM NO.	PART NO.	DESCRIPTION	VENDOR
12	C301002-0102	ACTUATOR ASSY	
11	Y3-1-D9	SWITCH	MMEC
10	S-1638-1	HOUSING-PLUG	
9	S-1638-2	HOUSING-CAP	
8	S-1637-2	HOUSING-PLUG	
7	S-1637-1	HOUSING-CAP	
6	S-1640-9	HOUSING-PIN	
5	S-1641-9	HOUSING-SOCKET	
4	E13-00M	SWITCH	(01963)
3	S-1952-1	SWITCH	
2	S-1360-8	CIRCUIT BREAKER	
1	0713854-2	BUS BAR	

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS		SERIALS
BLK(1)	16	-16-0		S-1635-2	S-1636-2	
ORN(1)	16	-16-3		S-1635-2	S-1636-2	
H-CC69	16			S-1636-2	S-1493-2	
H-CC68	16			S-1636-2	S-1493-2	
H-CC67	16			S-1636-2	S-1493-2	
H-CC66	16			S-1635-2	S-1493-2	
H-CC53	16			S-1493-2	S-1636-2	
H-CC52	16			S-1493-2	S-1493-2	
H-CC51	16			S-1635-2	S-1635-2	
H-CC65	16			S-1493-2	S-1367-2-8	
H-CC49	16			S-1635-2	S-1636-2	
H-CC48	16			S-1493-2	S-1636-2	
H-CC47	16			S-1493-2	S-1367-2-8	
H-CC46	16			S-1493-2	S-1636-2	
H-CC45	16			S-1635-2	S-1635-2	
H-CC44	16			S-1635-2	S-1635-2	
H-CC43	16			S-1493-2	S-1636-2	
H-CC42	16			S-1367-2-8	S-1493-2	
H-CC64	16			S-1493-2	S-1367-2-8	
H-CC40	16			S-1636-2	S-1493-2	
H-CC39	16			S-1636-2	S-1493-2	

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES: PAGE 14.3.2

SUPERSEDED BY: PAGE 14.5

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H. Wise	10-15-70
DRAWN	M. HUNTER	9-4-70
CHECK	W. WHITE	10-15-70
STRESS		
PROJECT	R. Parker	10-22-70
APPD		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

TITLE
WIRING DIAGRAM — WING FLAPS, OPT 24 VOLT

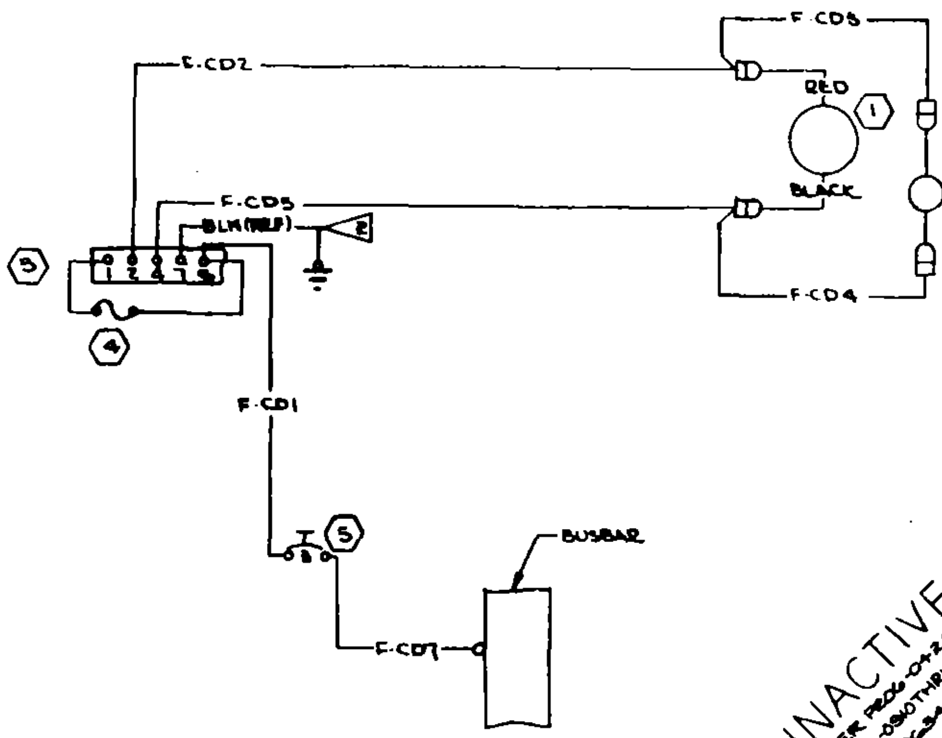
SIZE C | CODE IDENT NO. 71379 | DWG NO. 1270625

SCALE: NONE | U206 | PAGE: 14.3.4

ED & RR 10141 (SR6584)

(SER P206-0420 & ON)
(SER U206-0910 & ON)

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADD NOTES 5 & 5E5. (5R5158)(5R5159)	[illegible]	YAK
B	BY REV: (SR 6464) WAS (SR 6285) ED & RR 02816		



NOTES:

1. WITH RED MOTOR LEAD NEGATIVE & BLACK LEAD POSITIVE, MOTOR WILL ROTATE IN A CLOCKWISE DIRECTION (LOOKING INTO SHAFT).

2. BLK GND WIRE IS DESCRIBED ON 1270675, PG 2.48.0

3. PART NO. IS 329656, VENDOR CODE IS 00779.

INACTIVE:
EFF SER P206-0420 & SER U206-0910 THRU SER [illegible]
ED & RR 10634
8-4-69

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
F-CD7	18			S-1367-1-B	S-1001-6		
F-CD5	20			[illegible]	3		
4				[illegible]	SEE-CD5		
3				SEE-CD2	[illegible]		
2				3	[illegible]		
F-CD1	20			S-1367-1-B	3		

WIRE TABLE

5	7271-8-3	CKT BKR	(82647)
4	1570141-2	FUSE ASSY	
3	B-171	TERM BLOCK	(71785)
2	1560521-12	CLUTCH	
1	1560522-26	MOTOR ASSY	
ITEM NO.	PART NO.	DESCRIPTION	VENDOR

EQUIPMENT TABLE

C88-1000 IS APPLICABLE
VENDOR CODES PER 9-1400
C88-XXXX=CESSNA SPEC. NO.
9-XXX OR CMXXXX=CESSNA STD. NO.

SUPERSEDES:
SUPERSEDED BY: PAGE 14.4.1

CONTRACT NO:

	NAME	DATE
DESIGN	HARDEN	7-28-67
GROUP	W. Wise	7-29-67
DRAWN	HARDEN	7-28-67
CHECK	BRACKSHAW	8-30-67
STRESS	[illegible]	8-31-67
PROJECT	[illegible]	8-4-67
APPD		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

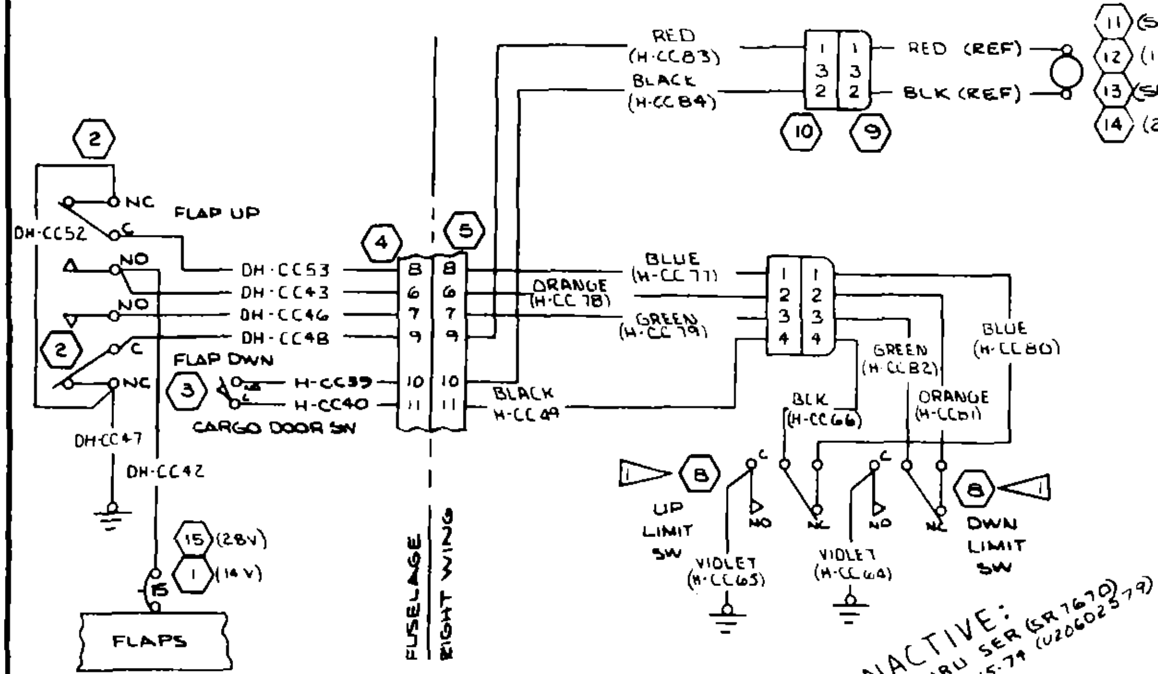
TITLE
WIRING DIAGRAM — ELECTRIC ELEVATOR TRIM (OPTIONAL)

SIZE C | CODE IDENT. NO. 71379 | DWG NO. 1270625

SCALE: NONE | P206 U206 | PAGE 14.4

SER P206-0420 & ON
SER U206-0910 & ON

REVISION			
LET	DESCRIPTION	DATE	APPD
A	BY REV: ADDED H-CC83 & H-CC84 (SR7403) II	RAM 8-10-73	
B	BY REV: COLOR CODE WIRES H-CC49 & H-CC64 THRU H-CC83, (H-CC83) RED WAS (H-CC83) ORANGE (NOW SHOP PRACTICE)	TOM 10-10-73	SCY
C	BY REV: ADD WIRE LG; S-1641-6 & S-1640-6 WAS S-1638-1 & S-1678-2; S-1640-12 & S-1641-12 WAS S-1640-9 & S-1641-9; MER E0014 (SR7403) II (REF) (NOW SHOP PRACTICE)	DEF 2-8-74	JY DRAW JRS



INACTIVE:
EFF THRU SER (SR7670) (U20602579)
MEM 6-15-74 DRM
JLO JRS

NOTES:

1. THESE SWITCHES ARE PART OF C301002 ACTUATOR ASSY
2. USE FOR PRODUCTION ONLY FOR ALL SPARES USE:
C301002-0301 (14 VOLT)
C301002-0302 (28 VOLT)

	ITEM NO.	PART NO.	DESCRIPTION	VENDOR
	17	S-1641-6	HOUSING-SOCKET	
	16	S-1640-6	HOUSING-PIN	
	15	S-1360-8L	CIRCUIT BREAKER	28 VOLT
2	14	C301002-0102	ACTUATOR ASSY	28 VOLT
	13	C301002-0302	ACTUATOR ASSY	28 VOLT
2	12	C301002-0101	ACTUATOR ASSY	14 VOLT
	11	C301002-0301	ACTUATOR ASSY	14 VOLT
	10	S-1638-1	HOUSING-PLUG	
	9	S-1638-2	HOUSING-CAP	
1	8	V3L-3-D9	SWITCH	MMEC
	7	S-1637-1	HOUSING-CAP	
	6	S-1637-2	HOUSING-PLUG	
	5	S-1640-12	HOUSING-PIN	
	4	S-1641-12	HOUSING-SOCKET	
	3	E13-00M	SWITCH	01963
	2	S-1906-1	SWITCH	
	1	S-1360-15L	CIRCUIT BREAKER	14 VOLT

EQUIPMENT TABLE

WIRE CODE NO.	GA	MATERIAL	LG	TERMINALS			SERIALS
BLACK (H-CC84)	16	-16-0	13	S-1635-2	S-1636-2		
RED (H-CC83)	16	-16-2	13	S-1635-2	S-1636-2		
GREEN (H-CC82)	16	-16-5	13	S-1635-2	S-1493-2		
ORANGE (H-CC81)	16	-16-3	13	S-1635-2	S-1493-2		
BLUE (H-CC80)	16	-16-6	13	S-1635-2	S-1493-2		
GREEN (H-CC79)	16	-16-5		S-1635-2	S-1636-2		
ORANGE (H-CC78)	16	-16-3		S-1635-2	S-1636-2		
BLUE (H-CC77)	16	-16-6		S-1635-2	S-1636-2		
BLACK (H-CC66)	16	-16-0	13	S-1493-2	S-1635-2		
VIOLET (H-CC65)	16	-16-7	19	S-1493-2	S-1367-2-8		
VIOLET (H-CC64)	16	-16-7	19	S-1493-2	S-1367-2-8		
DH-CC53	16			S-1367-2-4	S-1636-2		
DH-CC52	16			S-1367-2-4	S-1367-2-4		
BLACK (H-CC49)	16	-16-0		S-1635-2	S-1636-2		
DH-CC48	16			S-1367-2-4	S-1636-2		
DH-CC47	16				S-1367-2-8		
DH-CC46	16				S-1636-2		
DH-CC43	16			S-1367-2-4	S-1636-2		
DH-CC42	16			S-1367-2-4	S-1367-2-4		
H-CC40	16			S-1636-2	S-1493-2		
H-CC39	16			S-1636-2	S-1493-2		

WIRE TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO
S-XXX OR CMXXXX-CESSNA STD NO.

SUPERSEDES: P 14.3.3 • 14.3.4
SUPERSEDED BY: PAGE 14.5.1

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP		1-8-73
DRAWN	M. MORIARTY	1-4-73
CHECK	R. YOUNGERS	1-6-73
STRESS		
PROJECT		
APPD		

Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE: WIRING DIAGRAM — WING FLAPS

SIZE: C | CODE IDENT. NO.: 71379 | DWG NO.: 1270625

SCALE: NONE | U206 | PAGE: 14.5

(SR7403) II

FORM NO 00-218A

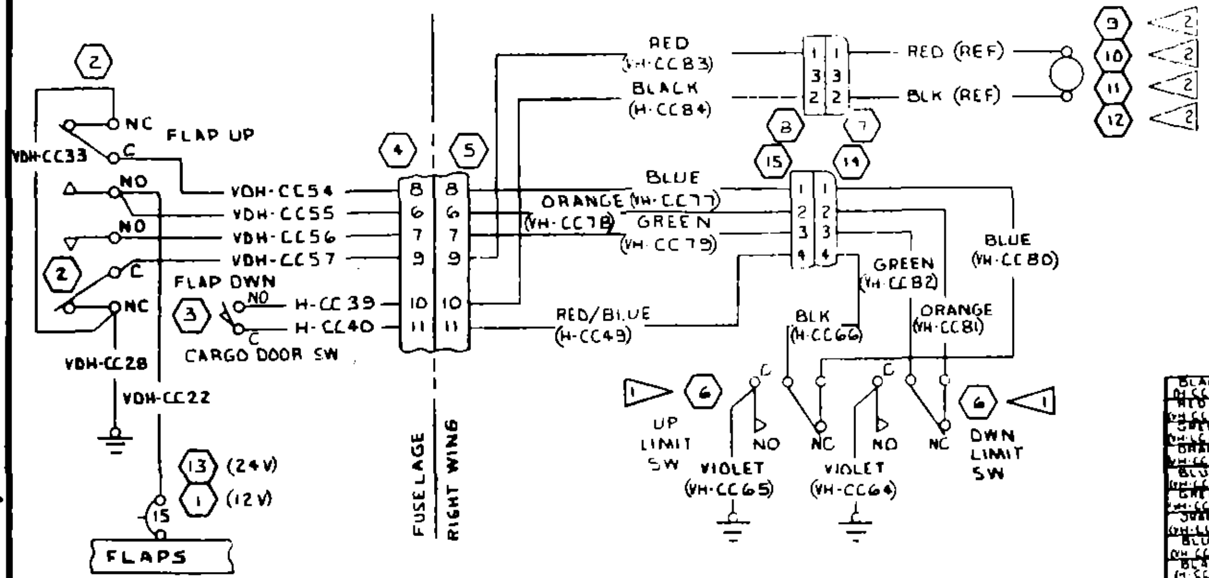
1060-111-72

NOTES

1. THESE SWITCHES ARE PART OF C301002 ACTUATOR ASSY

2. FOR ALL SPARES USE: C301002-0301 (14 VOLT) AND C301002-0302 (28 VOLT)

REVISION			
LET	DESCRIPTION	DATE	APPD



BLACK (H-CC84)	16	-16-0	13	S-1635-2	S-1636-2		
RED (VH-CC83)	16	-16-2	13		S-1636-2		
GREEN (VH-CC82)	16	-16-5	13		S-1493-2		
ORANGE (VH-CC81)	16	-16-3	13		S-1493-2		
BLUE (VH-CC80)	16	-16-6	13		S-1493-2		
GREEN (VH-CC79)	16	-16-5			S-1636-2		
ORANGE (VH-CC78)	16	-16-3			S-1636-2		
BLUE (VH-CC77)	16	-16-6		S-1635-2	S-1636-2		
BLACK (H-CC66)	16	-16-0	13	S-1493-2	S-1635-2		
VIOLET (VH-CC65)	16	-16-7	19	S-1493-2	S-1367-2-8		
VIOLET (VH-CC64)	16	-16-7	19	S-1493-2	S-1367-2-8		
RED/BLUE (H-CC49)	16	-16-2-6		S-1635-2	S-1636-2		
VDH-CC54	16		102	S-1367-2-4	S-1636-2		
VDH-CC33	16		6	S-1367-2-4	S-1367-2-4		
VDH-CC57	16		62	S-1367-2-4	S-1636-2		
VDH-CC28	16		10		S-1367-2-8		
VDH-CC56	16		62		S-1636-2		
VDH-CC55	16		62	S-1367-2-4	S-1636-2		
VDH-CC22	16		36	S-1367-2-6	S-1367-2-4		
H-CC40	16			S-1636-2	S-1493-2		
H-CC39	16			S-1636-2	S-1493-2		
WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
15	S-1641-6	HOUSING-SOCKET	
14	S-1640-6	HOUSING-PIN	
13	S-1360-8L	CIRCUIT BREAKER	
12	C301002-0102	ACTUATOR ASSY	
11	C301002-0302	ACTUATOR ASSY	
10	C301002-0101	ACTUATOR ASSY	
9	C301002-0301	ACTUATOR ASSY	
8	S-1638-1	HOUSING-PLUG	
7	S-1638-2	HOUSING-CAP	
6	V3L 3 D9	SWITCH	
5	S-1640-12	HOUSING-PIN	
4	S-1641-12	HOUSING-SOCKET	
3	E13-00M	SWITCH	
2	S-1906-1	SWITCH	
1	S-1360-15L	CIRCUIT BREAKER	

EQUIPMENT TABLE

CES-1000 IS APPLICABLE
VENDOR CODES PER S-1400
CES-XXXX=CESSNA SPEC. NO.
S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: PAGE 14.5

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	[signature]	6-24-74
DRAWN	MCBRIDE	6-13-74
CHECK	SLOLLER	6-13-74
STRESS		
PROJ	[signature]	6-25-74
APPD		
OTHER		

Cessna AIRCRAFT CO.

COMMERCIAL AIRCRAFT DIV.
5800 E. PAWNEE
WICHITA, KANSAS

TITLE: WIRING DIAGRAM — WING FLAPS

SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | U206 | PAGE 14.5.1

20-111-0901

FORM NO 80-3180

(IR 7670)

REVISION			
LET	DESCRIPTION	DATE	APPD
C	BY REV: REVISED & REDRAWN. ADD P 14.7.1, CD25 THRU CD35. BLK(4), RED (2), YEL(2) ORN (2), BRN (2), 1570308-1, 1570307-1 & 3421-0000 C611003-0101 WAS MODEL 4285A: ADD WIRE COLORS CD26 GRN & CD25 BLU SER (SR 7677) (SR 7403) II (REF)	DEF 1-12-74	JCY DAM JRS
D	BY REV: ADD 1570307-2 & S-1370-5 ; S1963-2 WAS SOLDER / CD27, CD28, CD29, & BLK (4) (SR7677), (SR1670) II	MEM 5-14-74	JCY JRS
E	BY REV: S-1360-5L WAS S1370-5L (NOW SHOP PRACTICE)	JEG 7/15/74	JCY JRS
F	BY REV: S-1636-1 WAS S-1370-2 / CD-12 (WER 206-E0361)(NOW SHOP PRACTICE)	AJP 1-23-75	JCY WDD JRS DAM

70-111-0901

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
BLK (4)	20	-20-0		S-1367-1-B	S-1963-2		SER U20602407 1 ON
ORN (2)		-20-3		SOLDER	SOLDER		
YEL (2)		-20-4					
BRN (2)		-20-1					
RED (2)	20	-20-2					SER U20602407 ON
ORN(1)		<3					THRU SER U20602406
YEL(1)							
BRN(1)							
RED(1)		<3		SOLDER	SOLDER		
BLK (3)	20	-20-0		S-1367-1-B	<2		THRU SER U20602406
BLK(2)		-20-0		S-1367-1-B	S-1370-2		
BLU (CD33)			34	S-1635-1	S-1636-1		
GRN (CD32)			34				
BLU (CD31)			34				
BLU (CD30)			34	S-1635-1			
CD29				S-1963-2			SER U20602407 ON
CD28				S-1963-2			
CD27				S-1963-2			
GRN (CD26)				SOLDER			
BLU (CD25)				SOLDER			
CD24				S-1635-1			SER U20602407 1 ON
CD18				S-1367-1-B			
YEL (CD12)			50	S-1636-1	S-1636-1		
CD7	20		34	S-1367-1-B	S-1367-1-B		

WIRE CODE NO	GA	MATERIAL	LG	TERMINALS			SERIALS
CD23	20			<2	S-1636-1		THRU SER (SR 7677)
CD22	20						
CD21	20						
CD20	20						
CD19	20			<2			THR SER (SR 7677)
BLK (1)	20	-20-0		S-1637-1-B	S-1636-1		
JUMPER	18			S-1635-1	S-1635-1	12 V	
CD35	20			S-1635-1	S-1370-2	12 V	
CD34	20			S-1635-1	S-1370-2	12 V	

WIRE TABLE

ITEM NO	PART NO.	DESCRIPTION	
26	S-1360-5L	CIRCUIT BREAKER	
25	S-1960-2-0	HOUSING	
24	S-1960-1-0	HOUSING	
23	S-1962-2-0	HOUSING	
22	S-1962-1-0	HOUSING	
21	1570307-2	CABLE ASSY	
20	582384-9	SOCKET	
19	1270062-1	CKT BOARD	
18	1270060-1	CABLE ASSY	
17	1270061-1	CKT BOARD	
16	255 0-30-190	CONNECTOR	
15	SF-1030-8X	CABLE	
14	S-1985-1	SWITCH - KEYING	
13	3421-0000	SOCKET	
12	1570307-1	CONNECTOR ASSY	
11	1570308-1	CABLE ASSY	
10	7271-8-3	CIRCUIT BREAKER	
9	305-4304	PITCH TRIM SW	
8	S-1695-2	SWITCH (TRIM DISENGAGE)	
7	C610502-0101	TRIM MOTOR	
6	S-1637-1	HOUSING PIN	
5	S-1637-2	HOUSING PLUG	
4	TC5-20B	CLUTCH	
3	S-1640-6	HOUSING	
2	S-1641-6	HOUSING	
1	C611003-0101	TRIM REGULATOR	24 V

EQUIPMENT TABLE

NOTES:

1. BLK WHT & GRY WIRE TO BE REMOVED FROM SF-1030-8X CABLE ON INSTL IN CONTROL WHEEL

2. 60215-4LP TERMINAL, VENDOR (00779)

3. PART OF SF-1030-8X CABLE (08261)

CES-1000 IS APPLICABLE VENDOR CODES PER S-1400 CES-XXXX=CESSNA SPEC. NO. S-XXX OR CMXXXX=CESSNA STD NO.

SUPERSEDES: REV "B"

SUPERSEDED BY:

CONTRACT NO:

	NAME	DATE
DESIGN		
GROUP	H WISE	3-2-73
DRAWN	J YOUEL	2-28-73
CHECK	R. YOUNGERS	3-2-73
STRESS		
PROJ	BERGMAN	3-5-73
APPD	MGR	
OTHER		

Cessna AIRCRAFT CO. COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS

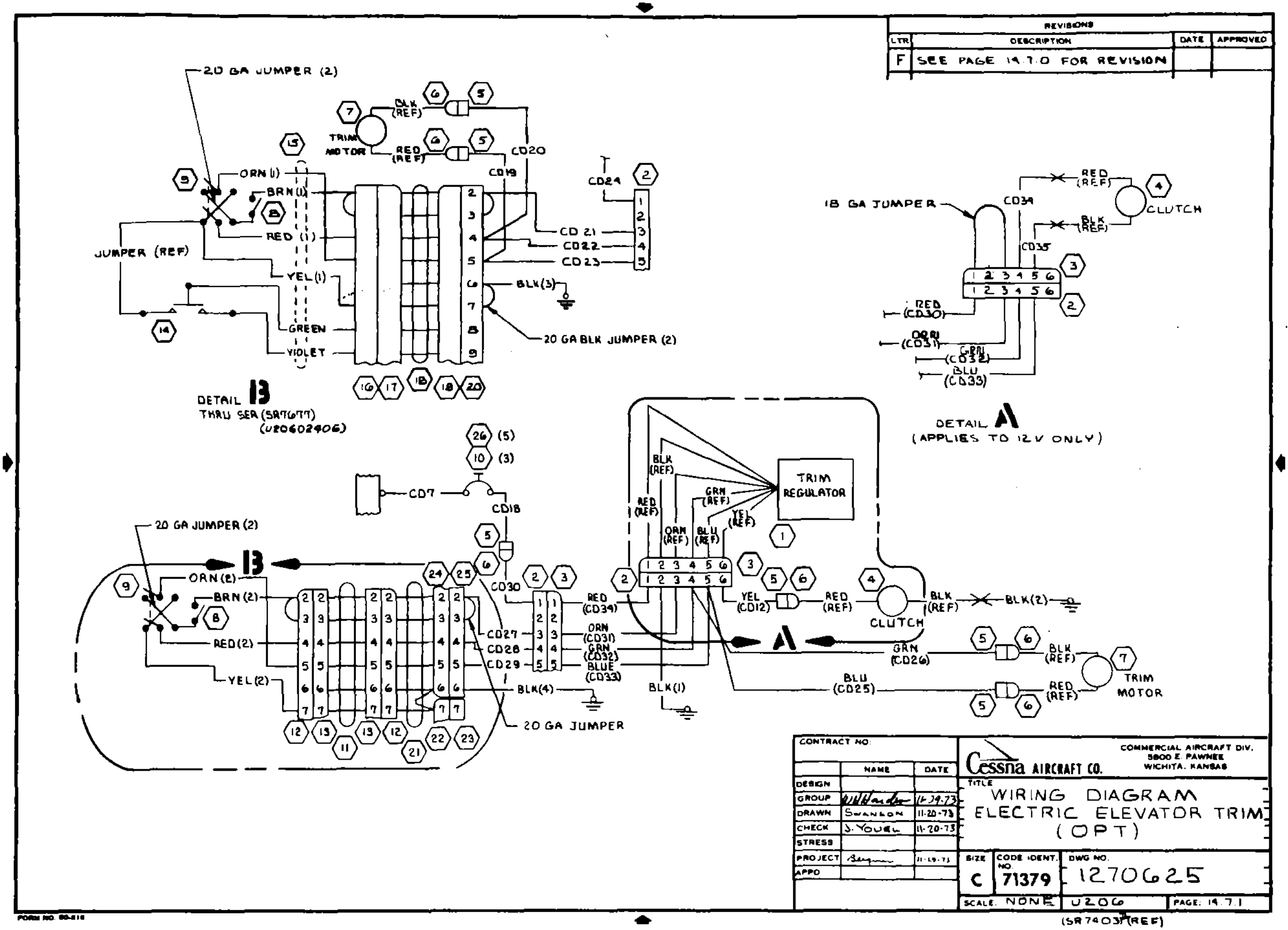
TITLE: WIRING DIAGRAM — ELECTRIC ELEVATOR TRIM (OPT)

SIZE C | CODE IDENT NO 71379 | DWG NO 1270625

SCALE NONE | U206 | PAGE 14.7.0

(SR7403)(REF)

FORM NO 60-2190


REVISIONS
LTR | DESCRIPTION | DATE | APPROVED
F | SEE PAGE 14.7.0 FOR REVISION
20 GA JUMPER (2)
TRIM MOTOR
BLK (REF)
RED (REF)
CD20
CD19
CD24
ORN (1)
BRN (1)
RED (1)
YEL (1)
GREEN
VIOLET
JUMPER (REF)
CD 21
CD22
CD23
BLK (3)
20 GA BLK JUMPER (2)
DETAIL B
THRU SER (SR7677) (U20602406)
18 GA JUMPER
CD34
CD35
CLUTCH
RED (CD30)
ORN (CD31)
GRN (CD32)
BLU (CD33)
DETAIL A
(APPLIES TO 12V ONLY)
CD7
CD18
CD30
TRIM REGULATOR
GRN (REF)
YEL (REF)
ORN (REF)
BLU (REF)
ORN (2)
BRN (2)
RED (2)
YEL (2)
CD27
CD28
CD29
BLK (4)
20 GA JUMPER
RED (CD34)
ORN (CD31)
GRN (CD32)
BLUE (CD33)
BLK (1)
YEL (CD12)
BLK (2)
GRN (CD26)
BLU (CD25)
CONTRACT NO.
NAME | DATE
DESIGN
GROUP | 11-29-73
DRAWN | SWANSON | 11-20-73
CHECK | J. YOUEL | 11-20-73
STRESS
PROJECT | 11-29-73
APPD
Cessna AIRCRAFT CO.
COMMERCIAL AIRCRAFT DIV. 5800 E. PAWNEE WICHITA, KANSAS
TITLE
WIRING DIAGRAM ELECTRIC ELEVATOR TRIM (OPT)
SIZE C
CODE IDENT. NO. 71379
DWG NO. 1270625
SCALE: NONE
U206
PAGE: 14.7.1
(SR7403)(REF)
FORM NO. 80-616