



# SERVICE LETTER

No. 782B

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.

December 1, 1977 S/M

(Supersedes and voids prior issues within the Service Letter No. 782 series.)

Subject: Landing Gear Manual Extension System Inspection  
and Nose Gear Down Lock Spring Installation.

Reason for Revision: Revised recommended inspection intervals (see  
I. Inspection under Compliance Time, below.)

Models Affected: Serial Numbers Affected:

PA-24, PA-24-250 and  
PA-24-260 Comanche.....24-1 to 24-5047 inclusive  
PA-24-400 Comanche.....26-2 to 26-148 inclusive  
PA-30 Twin Comanche.....30-1 to 30-2000 inclusive  
PA-39 Twin Comanche "C/R".....39-1 to 39-155 inclusive

Compliance Time:

I. INSPECTION: Recommended as follows;

- A. Aircraft with 1000 hours or more total time in operation - at the next regularly scheduled inspection interval (100 Hour or Annual), and at each subsequent 1000 hours of operation.
- B. Aircraft with less than 1000 hours total time in operation - at 1000 hours of operation and at each subsequent 1000 hours of operation.

II. INSTALLATION: (affected aircraft - reference Material Required II, below);

Recommended during one of the above referenced inspection intervals or sooner, at owner/operator's discretion.

NOTE:

Aircraft (denoted in Material Required II, below) that have previously installed Piper Kit No. 760 627, Landing Gear Emergency Extension Security Installation - as announced on Piper Service Spares Letter No. SP-325 dated February 12, 1973, do not require installation of Kit No. 761 082 described herein.

Purpose: Reports have been received from the field describing failure of the landing gear to remain in the "down locked" position during landing roll-out. This condition occurred following: (1) normal (electrical) landing gear extension failure, and (2) landing gear extension by manual (emergency) system.

(continued)

Purpose: (continued)

Investigation revealed that the down lock mechanism did not remain engaged due to system wear, apparently as a result of inadequate system maintenance and inspection. In some cases, chronic landing gear circuit breaker tripping preceded actual failure (collapse), which should have indicated to the operator that system maintenance was needed.

In order to properly maintain the landing gear system on the above referenced aircraft and to provide a "back-up" down lock mechanism, this Service Release:

1. Provides instructions to conduct a detailed landing gear manual extension system inspection, including system component wear limits, and
2. Announces the availability of a field installation kit containing material and instructions to install an additional nose gear down lock spring on earlier model aircraft (see Material Required No. II, below).

Instructions:

- I. Inspection: attached.
- II. Installation: contained in Piper Kit Number 761 082, Nose Gear Down Lock Spring Installation Kit (reference Material Required II, below).

Material Required:

- I. Refer to attached main and nose gear wear limit tables; replace components exceeding specified wear limits.
- II. Applies to: PA-24, PA-24-250 and PA-24-260 serial numbers 24-1 to 24-4782 inclusive, 24-4784 to 24-4803 inclusive; PA-24-400 Comanche, serial numbers 26-2 to 26-148 inclusive; and PA-30 Twin Comanche, serial numbers 30-1 to 30-1716 inclusive, 30-1718 to 30-1744 inclusive: One (1) each per aircraft Piper Kit No. 761 082 Nose Gear Down Lock Spring Installation @ suggested unit list price \$28.25A.

Availability of Parts: Your Piper Field Service Facility.

Effectivity Date: This Service Release is effective upon receipt.

Summary: Please contact your Piper Field Service Facility to make arrangements for the inspection and product refinement installation described herein, as recommended in Compliance Time, above. Kit installation time is approximately 14 man-hours per aircraft. To minimize aircraft down time/labor expense, suggest coordination during routine aircraft inspection/maintenance interval.

## INSPECTION OF THE LANDING GEAR MANUAL EXTENSION SYSTEM

| REFERENCE CURRENT SERVICE<br>MANUAL PARAGRAPH/FIGURE   |                      |                      |
|--|----------------------|----------------------|
| PA-24 Series   | PA-30/39 Series      |                      |
| 1. Place aircraft on jacks.....  | 2-10                 | 2-12                 |
| 2. Disconnect each gear from the actuator; also<br>disconnect the past center locking springs .....  | 6-46, 6-47           | 7-37, 7-38           |
| 3. Inspect all components for condition and wear.<br>(Refer to attached tables I and II for wear limits....  | 6-48                 | 7-39                 |
| 4. Inspect rod ends for wear by clinching the bearing<br>between a bolt and nut arrangement as shown on<br>attached figure 1; using a dial indicator, measure<br>the total free play between the ball and race.<br>Maximum service limit is .005 inch.....                         | N/A                  | N/A                  |
| 5. Check the thru center travel of both the left and<br>right drag links on the nose gear.....   | 6-13, Fig. 6-3       | 7-10, Fig. 7-2       |
| <u>NOTE:</u><br>Insure both nose gear drag links contact thru<br>stops simultaneously.....   |                      |                      |
| 6. Check thru center travel of each main gear side<br>brace link.....  | 6-15, Step "H"       | 7-12, Step "H"       |
| 7. Install the downlock springs on the nose gear.<br><u>NOTE:</u><br>If only one spring is used, obtain Piper Kit Number<br>761 082 for additional spring installation.....  | 6-32, Fig. 6-8a      | 7-23, Fig. 7-8a.     |
| 8. Disconnect and inspect main gear push pull cables...  | 6-14                 | 7-11                 |
| 9. Hook up both main gears and check manual<br>retraction only (transmission not connected).....   | 6-48                 | 7-39                 |
| 10. Hook up the nose gear and rig to operate with the<br>main gear (transmission not connected );<br>synchronize the over-center locks<br><u>NOTE:</u><br>At this point the landing gear is in a down locked<br>serviceable condition, without benefit of the<br>transmission..... | 6-50, 6-55           | 7-41, 7-46           |
| 11. Perform landing gear retraction load test.....   | 6-58                 | 7-49                 |
| 12. Reengage transmission; perform a retraction/<br>extension cycle of the landing gear <u>electrically</u> .<br>Make necessary limit switch adjustments.....  | 6-51 through<br>6-67 | 7-42 through<br>7-54 |
| 13. Insure landing gear is down and locked; remove aircraft from jacks.  |                      |                      |
| 14. Make appropriate log book entries.   |                      |                      |

Above data reflects June 1976 PA-24 and PA-30/39 Service Manual information.

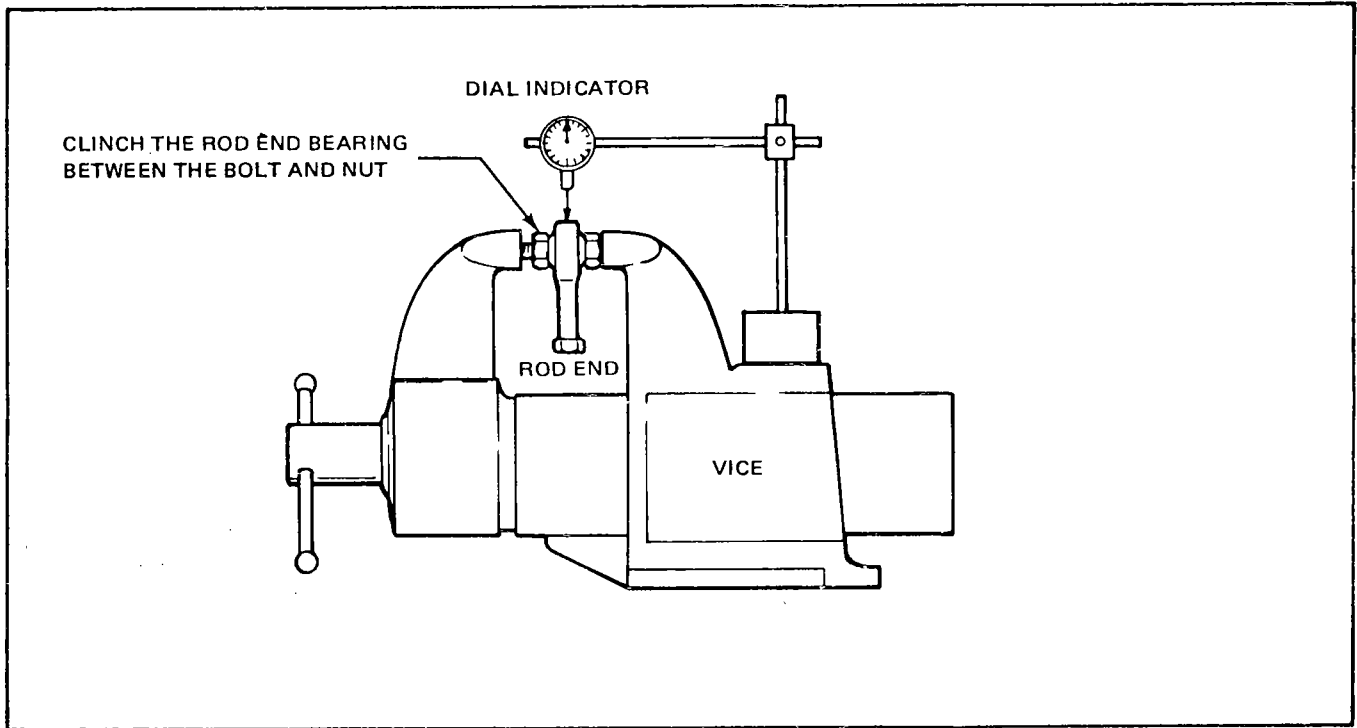
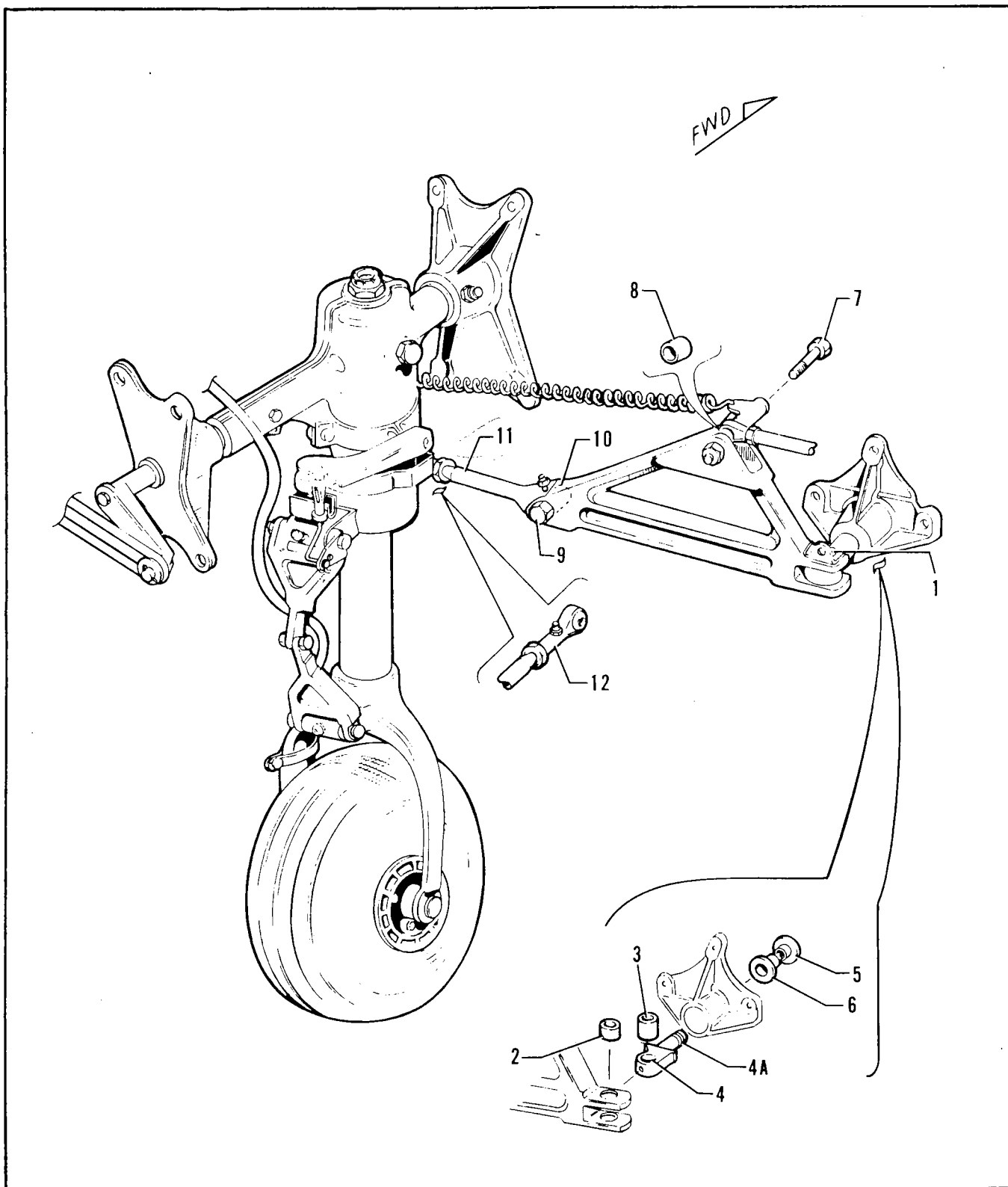


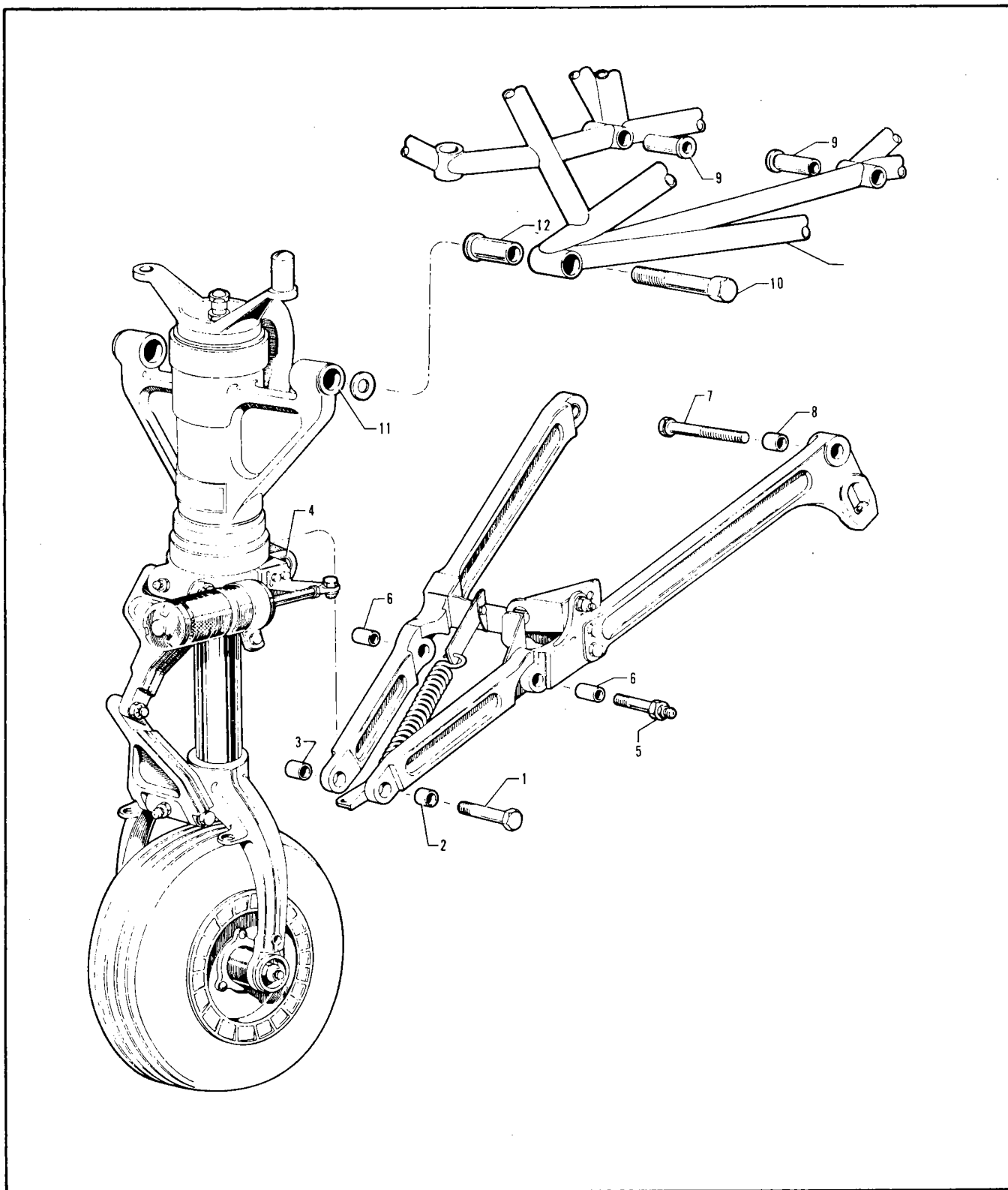
FIGURE 1: INSPECTION OF ROD END BEARINGS



MAIN GEAR WEAR LIMITS (See Table I)

| Index No. | Part No.  | Item     | Mfg. Limits    |                     | Service Limits |              |
|-----------|-----------|----------|----------------|---------------------|----------------|--------------|
|           |           |          | I.D.           | O.D.                | Min.           | Max.         |
| 1         | AN26-25   | Bolt     | _____          | .373/.371           | .370           | .373         |
| 2         | 14843-16  | Bushing  | .375/.373      | _____               | .373           | .376         |
| 3         | 14843-30  | Bushing  | .374/.376      | .435/.433           | .374<br>.432   | .377<br>.435 |
| 4         | 20829     | Stud     | .4365/.4385    | _____               | .4365          | .4395        |
| 4         | 22512     | Stud     | .4365/.4385    | _____               | .4365          | .4395        |
| 4a        | 20829     | Stud     | _____          | .497/.495           | .494           | .497         |
| 4a        | 22512     | Stud     | _____          | .560/.558           | .557           | .560         |
| 5         | 20737-6   | Bushing  | .498/.500      | _____               | .498           | .501         |
| 5         | 20737- 14 | Bushing  | .561/.563      | _____               | .561           | .564         |
| 6         | 20737-5   | Bushing  | .498/.500      | _____               | .498           | .501         |
| 6         | 20737- 13 | Bushing  | .561/.563      | _____               | .561           | .564         |
| 7         | AN4-23A   | Bolt     | _____          | .249 +.000<br>-.003 | .245           | .249         |
| 8         | 20737-8   | Bushing  | .251/.249      | _____               | .249           | .252         |
| 9         | AN26-21   | Bolt     | _____          | .373/.371           | .370           | .373         |
| 10        | 14843-60  | Bushing  | .373/.375      | .435/.433           | .373<br>.432   | .376<br>.435 |
| 11        | 24911     | Link     | .4365/.4385    | _____               | .4365          | .4395        |
| 11        | 25046     | Link     | .4365/.4385    | _____               | .4365          | .4395        |
| 11        | 20768     | Link     | .4365/.4385    | _____               | .4365          | .4395        |
| 11        | 22577     | Link     | .4365/.4385    | _____               | .4365          | .4395        |
| 12        | 23412     | Bearing- | (See Figure 1) | _____               | _____          | .005         |
| 12        | 22943     | Rod End  |                |                     |                |              |

TABLE I: MAIN GEAR WEAR LIMITS



NOSE GEAR WEAR LIMITS (See Table II)

| Index No. | Part No. | Item    | Mfg. Limits |                     | Service Limits |       |
|-----------|----------|---------|-------------|---------------------|----------------|-------|
|           |          |         | I.D.        | O.D.                | Min.           | Max.  |
| 1         | AN6-34   | Bolt    | _____       | .374 +.000<br>-.003 | .370           | .374  |
| 2         | 14843-18 | Bushing | .3745/.3755 | _____               | .3745          | .3765 |
| 3         | 14843-18 | Bushing | .3745/.3755 | _____               | .3745          | .3765 |
| 4         | 20737-4  | Bushing | .374/.376   | _____               | .374           | .377  |
| 5         | 22066    | Bolt    | _____       | .3742/.3737         | .3727          | .3742 |
| 6         | 14843-18 | Bushing | .3745/.3755 | _____               | .3745          | .3765 |
| 7         | AN6-23   | Bolt    | _____       | .374 +.000<br>-.003 | .370           | .374  |
| 7         | AN6-26   | Bolt    | _____       | .374 +.000<br>-.003 | .370           | .374  |
| 8         | 14843-18 | Bushing | .3745/.3755 | _____               | .3745          | .3765 |
| 8         | 14843-19 | Bushing | .3745/.3755 | _____               | .3745          | .3765 |
| 9         | 20803    | Bushing | .374/.376   | _____               | .374           | .376  |
| 10        | AN178-40 | Bolt    | _____       | .4991/.4986         | .4976          | .4991 |
| 11        | 20777    | Bushing | .5015/.5000 | _____               | .5000          | .5025 |
| 11        | 31766    | Bushing | .5015/.5000 | _____               | .5000          | .5025 |
| 12        | 17164-0  | Bushing | .4995/.5005 | _____               | .4995          | .5015 |
| 12        | 17164-4  | Bushing | .4995/.5005 | _____               | .4995          | .5015 |

TABLE II: NOSE GEAR WEAR LIMITS