

VSP-23  
September 25, 1980

VENDOR SERVICE PUBLICATION

To: All Piper Distribution Service Administrators

Subject: Avco Lycoming Service Bulletin No. 450  
(AiResearch Service Bulletin No. TP60-0119)

Models Affected:

PA-31-325 Navajo C/R  
PA-31-350 Chieftain

Serial Numbers Affected:

Refer to attached Avco Lycoming Service Bulletin for identification of specific aircraft and engines affected.

Purpose:

To distribute the attached Avco Lycoming Service Bulletin No. 450 to Piper Field Service Facilities.

Detailed instructions relative to compliance action are specified in the attached publication; additional/supplemental information is contained in the following "Special Instructions".

SPECIAL INSTRUCTIONS

Required parts are available through Avco Lycoming distributors.

# **TEXTRON** Lycoming

## **Williamsport Plant**

Textron Lycoming/Subsidiary of Textron Inc.  
652 Oliver Street  
Williamsport, PA 17701 U.S.A.

# SERVICE BULLETIN

**DATE:**

September 5, 1980

Service Bulletin No. 450  
Engineering Aspects are  
FAA (DER) Approved

**SUBJECT:**

AiResearch Service Bulletin No. TP60-0119.

**MODELS AFFECTED:**

All Avco Lycoming TIO-540-F, -J series aircraft engines with serial numbers up to and including L-7174-61A except for L-7098-61A, L-7136-61A, L-7137-61A, L-7149-61A, L-7150-61A, L-7165-61A and L-7166-61A; all Avco Lycoming LTIO-540-F, -J series aircraft engines with serial numbers up to and including L-2102-68A except for L-2092-68A. All remanufactured TIO-540-F, -J series and LTIO-540-F, -J series aircraft engines shipped prior to April 1, 1980.

**TIME OF COMPLIANCE:**

As required by subject bulletin.

AiResearch Service Bulletin No. TP60-0119 dealing with bypass valve modification is reprinted herewith in its entirety.

Full parts credit will be issued by receipt of a warranty application through the authorized Avco Lycoming distributor from whom the parts are purchased. This offer expires one year from date of issue.

**PARTS DATA:**

\*Kit - Bypass Valve Modification - Lycoming P/N LW-16930.

QTY.	P/N	NAME
4	75845	GASKET, "V" Band Coupling
1	468225	KIT, Without Insertion Tool
1	468225-1	KIT, With Insertion Tool

\* Contains sufficient material to modify 2 bypass valves on one aircraft (2 engines).

**NOTE**

To modify one bypass valve on one engine order (2) each P/N 75845; and either P/N 468225 or P/N 468225-1 kit.



AIRESEARCH INDUSTRIAL DIVISION

TP60-0119

# Service Bulletin

SUBJECT: BYPASS VALVE MODIFICATION

## A. EFFECTIVITY

1. AiResearch bypass valve P/N 470818-3 and P/N 470818-10, identified by Avco Lycoming as P/N LW12778 and P/N LW14283, which have accumulated less than 400 hours since new or since last packing (U-Cup) change, and have the following serial number prefixes:

HD	HDR	HL	HLR	IH	IHR
HE	HER	IA	IAR	II	IIR
HF	HFR	IB	IBR	IJ	IJR
HG	HGR	IC	ICR	IK	IKR
HH	HHR	ID	IDR	IL	ILR
HI	HIR	IE	IER	JA	JAR
HJ	HJR	IF	IFR	JB	JBR
HK	HKR	IG	IGR	JC	JCR

2. Bypass valves with significant oil leakage from the drain port vent.
3. Bypass valves installed prior to serial number prefixes HD and HDR (April 1, 1978), and which have had the packing (U-Cup) changed since that date but which have not accumulated 400 hours since the packing (U-Cup) change.

## B. REASON

AiResearch has become aware of several instances in service when the subject valve has allowed, over a brief period of time, substantially all the engine oil to drain overboard. Continued operation of the engine with such leakage can result in damage to the engine and ultimate loss of power.

## C. DESCRIPTION

Installation of bypass valve modification service kit AiResearch P/N 468225 or P/N 468225-1.

## D. COMPLIANCE

AiResearch recommends mandatory compliance within the next 25 hours engine time-in-service.

## E. ACCOMPLISHMENT INSTRUCTION

1. Check name plate on bypass valve (prior to removing) to determine if an "X" has been stamped after Lycoming part number, if not proceed with instructions.
2. Remove bypass valve from aircraft, cap all open oil lines.
3. Remove cylinder from cylinder plate by removing four (4) 1/4-20 x 1 in. bolts and 1/4 in. lockwashers. Keep cylinder plate, spring, shaft, shaft retainer, and spacers clean from dirt or other foreign objects.
4. Remove existing piston, packing (U-Cup), and expander from cylinder and discard.  
NOTE: Some (low pressure) air to inlet port of cylinder may be required to remove piston from cylinder.

5. Using new piston P/N 478180-1, install new packing (U-Cup) P/N 476884-2, and expander P/N 476762 onto piston.
6. Pre oil bore of cylinder and outside lip of packing (U-Cup), and inside of packing (U-Cup) insertion tool.
7. Using packing (U-Cup) insertion tool, P/N 410070, install piston, P/N 478180-1; packing (U-Cup), P/N 476884-2; and expander, P/N 476762 back into cylinder as shown in Figure 1. Insert the new piston, packing (U-Cup), and expander (as a unit) into top (widest opening) of U-Cup insertion tool. Position insertion tool into cylinder bore, and tool should be rotated while inserting piston assembly into cylinder, to center piston. Stroke piston by hand three to four times to assure packing (U-Cup) is moving freely prior to reassembling cylinder to cylinder plate.
8. Using new gasket (P/N 476773), reinstall cylinder onto cylinder plate with the four (4) 1/4-20 x 1 in. bolts and lockwashers.
9. Make leak check in accordance with leak check instructions below.
10. If Leak Check is satisfactory, hand stamp an "X" (using metal stamp) on name plate after Lycoming part number.
11. Reinstall modified bypass valve back on aircraft using two (2) new stainless steel gaskets supplied by Lycoming (P/N 75845).

LEAK CHECK INSTRUCTIONS

- a. Connect regulated air pressure to controller outlet port. Plug inlet port.
- b. Stroke actuator 3-5 times. Reduce pressure to  $5 \pm 1$  psig and plug drain port. It is important to plug drain port after cycling and setting pressure.

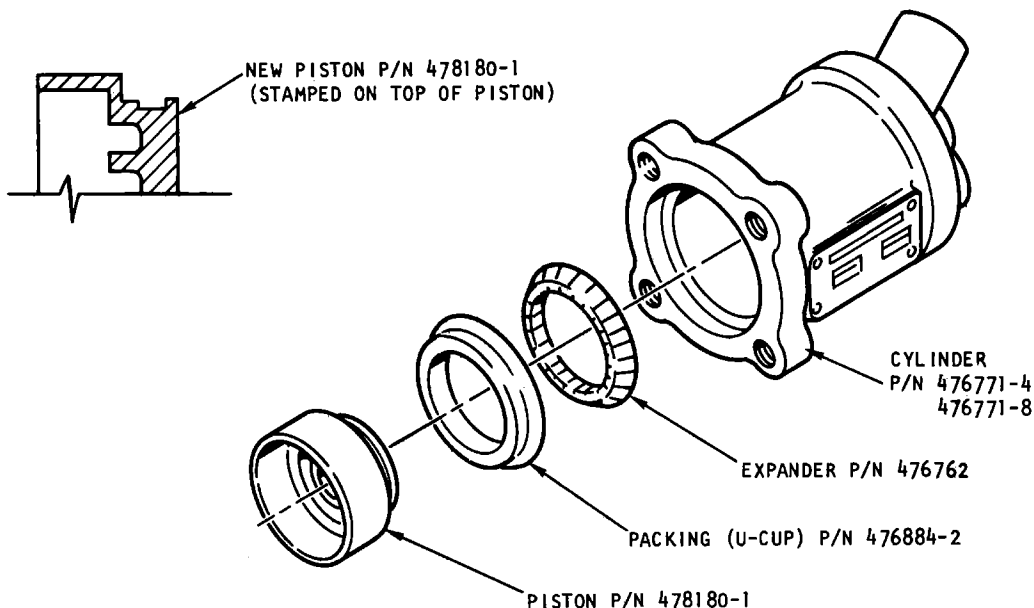


Figure 1. Affected parts in installation of Piston, Packing (U-Cup) and Expander

- c. Apply leak detection solution to area indicated in Figure 2.
- d. Observe leakage at specified point. Clean and inspect if leakage rate exceeds one bubble in 15 seconds. If leakage rate is still one bubble in 15 seconds, replace with new packing (U-Cup) P/N 476884-2.
- e. Repeat steps b, c, and d with  $60 \pm 2$  psig applied to the outlet.

F. MATERIAL INFORMATION

1. Service kits 468225 and 468225-1 will be available through Avco Lycoming distributors.

Service kit No. 468225 is made up with the following parts: one (1) each piston, P/N 478180-1; packing (U-CUP), P/N 476884-2; expander, P/N 476762; gasket, P/N 476773, Service Bulletin TP60-0119. NOTE: No packing (U-Cup) insertion tool in this kit.

2. Service kit No. 468225-1 has the same parts and quantity as the 468225 kit, and in addition, also includes one (1) each packing (U-Cup) insertion tool, P/N 410070.

NOTE: The two (2) stainless steel gaskets identified by Avco Lycoming as gasket "V" band coupling P/N 75845 will be supplied by Lycoming.

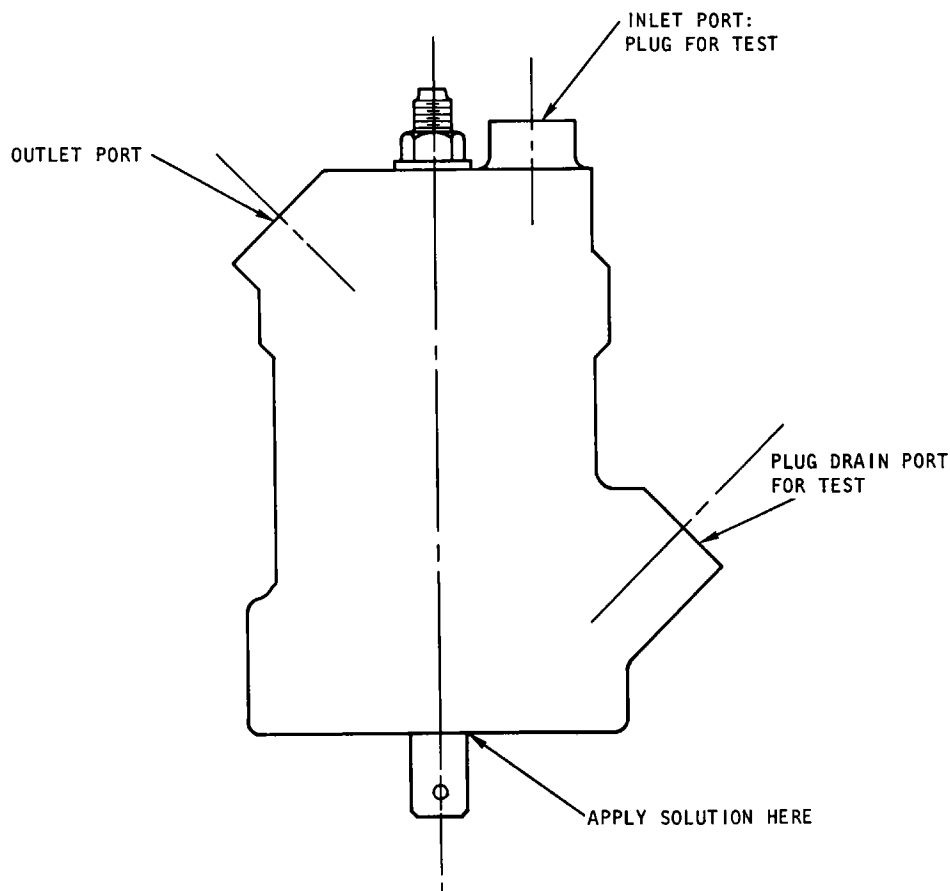


Figure 2. Cylinder Assembly Leak Test Points