SERVICE LETTER

Service Letter No. 425 May 13, 1964

TO: Distributors, Dealers, Certified Service Centers and Owners

SUBJECT: Lycoming Service Bulletin No. 298
(Fuel and Oil Vent Restriction Requirement for AC Lightweight Diaphragm Fuel Pumps)

MODELS AFFECTED: PA-23-235 Apache and PA-23-250 Aztec aircraft, Serials 27-1 to 27-593 inclusive

PA-23-250 (six place) Aztec aircraft, Serials 27-2000 to 27-2461 inclusive, 27-2463 to 27-2485 incl., 27-2487 to 27-2502 incl.

PA-24 and PA-24 "250" Comanche aircraft, Serials 24-1 to 24-3589 incl., 24-3591 to 24-3624 incl., 24-3627 to 24-3634 incl., 24-3636, 24-3637, 24-3638, 24-3640 to 24-3642 incl., 24-3644, 24-3646 to 24-3649 incl. 24-3652, 24-3655, 24-3657 to 24-3661 incl., 24-3664, 24-3665

PA-28-140 Cherokee aircraft, Serials 28-20001 to 20038 Incl.

PA-28-150-160-180 Cherokee aircraft, Serials 28-1 to 28-1491 incl., 24-1493 to 28-1568 incl., 28-1570 to 28-1585 incl., 28-1587 to 28-1591 incl., 28-1593, 28-1596, 28-1597, 28-1600 to 28-1605 incl., 28-1608 to 28-1611 incl., 28-1615 to 28-1617 incl., 28-1619 to 28-1622 incl., 28-1624, 28-1627, 28-1629, 28-1631, 28-1636 and 28-1639

PA-28-235 Cherokee aircraft, Serials 28-10001 to 10254 incl., 28-10256 to 28-10258 incl., 28-10260 to 28-10269 incl., 28-10271 to 28-10284 incl., 28-10286 to 28-10292 incl., 28-10295 to 28-10299 incl., 28-10301 to 28-10304 incl., 28-10307, 28-10308, 28-10310 to 28-10313 incl., 28-10315, 28-10318, 28-10319, 28-10321 to 28-10330, 28-10332, 28-10334 and 28-10335

This Service Letter has been written to provide aircraft serial numbers concerned in Lycoming Service Bulletin No. 298, copy of which is enclosed. The parts for this modification are available upon request direct from Lycoming Division, AVCO Corporation, Williamsport, Pennsylvania.

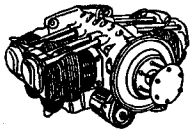
The PA-23 and PA-23-160 Apache Aircraft are exempt from this Bulletin.

Very truly yours,

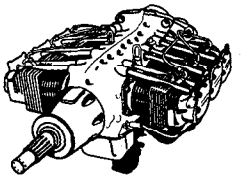
PIPER AIRCRAFT CORPORATION

W. C. Holmes
Service Manager

WH:ew



LYCOMING



SERVICE BULLETIN

LYCOMING DIVISION — **WILLIAMSPORT, PA., U.S.A.**

DATE: April 20, 1964

Service Bulletin No. 298
Approved by FAA

SUBJECT: Fuel and Oil Vent Restriction Requirement for AC Lightweight Diaphragm Fuel Pumps

MODELS AFFECTED: O-320, O-340, O-360 and O-540 series engines equipped with the following AC fuel pumps

AC 5623467 (Lycoming P/N 74082)
AC 5656880 (Lycoming P/N 74082)
AC 6440152 (Lycoming P/N 74798)

IO-320-B1A, IO-360-A1A, -B1B, HIO-360-B1A, -B1B and IO-540-C1B5 engines equipped with the following AC fuel pumps

AC 5623466 (Lycoming P/N 73973)
AC 5656696 (Lycoming P/N 73870)

O-320, O-340, O-360 and O-540 series engines using the larger heavy white-metal type pump are specifically exempt from the requirements of this service bulletin. These older type pumps are further identified by their round bottom sump bowls in comparison to the flat plates used on lightweight aluminum fuel pumps. See Service Instruction No. 1049 for additional description. All new carburetor engines listed below are exempt from compliance with this bulletin as they are equipped with Lyc. P/N 75250 adapter installed in the AC fuel pump P/N 6440152 (Lyc. P/N 74798) furnished with these engines.

O-320-A and C Series: 13446-27, 13447-27, 13841-27, 13880-27, 13908-27, 13909-27, 13911-27, 13912-27, 13914-27 thru 13920-27, 13935-27 thru 13937-27, 13946-27, 13948-27 thru 13950-27, 13954-27, 13955-27, 13964-27 thru 13997-27, 14000-27 thru 14009-27, 14025-27 thru 14033-27, 14035-27 and up.

O-320-B and D Series: 4213-39, 5307-39, 5940-39, 5943-39 thru 5947-39, 5964-39 and up.

O-340 Series: 433-30 and up.

O-360 Series: 6538-36, 6542-36, 6734-36, 6763-36, 6764-36, 6766-36, 6780-36, 6781-36, 6783-36 thru 6785-36, 6800-36 thru 6802-36, 6808-36, 6813-36, 6814-36, 6817-36, 6826-36, 6830-36, 6834-36, 6837-36, 6839-36 thru 6841-36, 6845-36, 6848-36, 6850-36, 6853-36, 6855-36 thru 6861-36, 6864-36, 6872-36, 6873-36, 6890-36, 6892-36 thru 6896-36, 6898-36 thru 6908-36, 6921-36, 6922-36, 6934-36 thru 6937-36, 6939-36 thru 6943-36, 6953-36 thru 6972-36, 6976-36 thru 6990-36, 6993-36 thru 7013-36, 7015-36 thru 7023-36, 7026-36 and up.

O-540 Series: 6705-40, 6706-40, 6819-40, 6844-40, 6873-40, 6938-40, 6945-40, 6971-40, 7108-40, 7140-40, 7141-40, 7154-40, 7157-40, 7174-40, 7176-40, 7177-40, 7197-40, 7254-40, 7257-40, 7261-40, 7263-40, 7265-40, 7266-40, 7268-40, 7269-40, 7287-40, 7290-40, 7318-40 thru 7320-40, 7322-40, 7326-40, 7329-40, 7330-40, 7335-40, 7352-40 thru 7355-40, 7358-40 thru 7360-40, 7366-40, 7368-40 thru 7380-40, 7394-40, 7408-40 thru 7410-40, 7414-40 thru 7428-40, 7430-40 thru 7436-40, 7457-40 thru 7461-40, 7480-40 thru 7484-40, 7486-40 thru 7488-40, 7513-40, 7519-40 thru 7521-40, 7523-40, 7529-40 thru 7531-40, 7549-40, 7550-40, 7552-40, 7570-40 thru 7583-40, 7585-40 and up.

All new fuel injected engines listed below are exempt from compliance with this bulletin as they are equipped with one of the following:

(a) AC fuel pump P/N 5656696 (Lyc. P/N 73870) with Lyc. P/N 75250 adapter installed.
(b) AC fuel pump P/N 6440160 (Lyc. P/N 74999) installed.

IO-320-B1A engines beginning with serial number 457-55, 459-55, 463-55 thru 465-55, 467-55, 470-55, 471-55, 478-55, 479-55, 481-55, 483-55 thru 486-55, 490-55, 493-55 thru 495-55, 497-55, 500-55, 502-55, 505-55 thru 507-55, 510-55 thru 516-55, 518-55 and up.

IO-360-A1A, -B1B, HIO-360-B1A, -B1B series engines beginning with serial number 427-51 and up.

IO-540-C1B5, -C4B5, -D4A5 series engines beginning with serial number 676-48 and up.

All remanufactured engines shipped from the factory beginning April 1, 1964 are furnished with Lyc. P/N 75250 adapter installed in the AC fuel pumps and are exempt from compliance with this bulletin.

TIME OF COMPLIANCE: During next 25 hours time in service or before at owner's discretion.

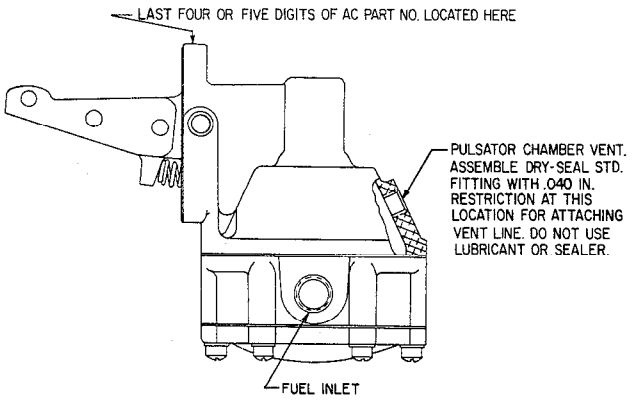


Figure 1. AC Fuel Pump with Vent in Upper Chamber

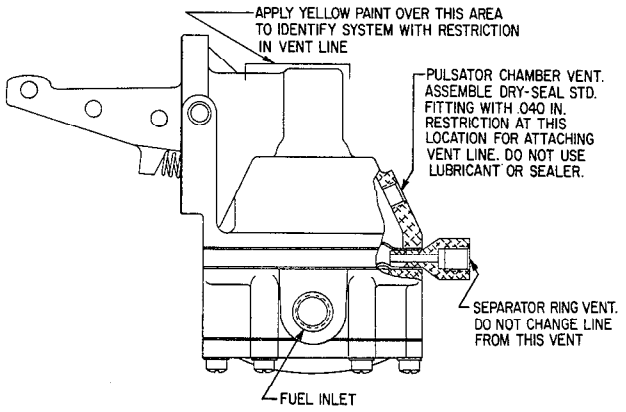


Figure 2. AC Fuel Pump with Two Vent Openings

There have been several instances of oil seal failure in the lightweight aluminum AC diaphragm fuel pumps that resulted in engine lubricating oil being drained overboard through the fuel and oil vent lines. Early models of high pressure pumps used on fuel injected engines as well as low pressure fuel pumps used on carburetor engines are subject to this type of failure and must be modified by adding a vent restriction to prevent loss of lubricating oil.

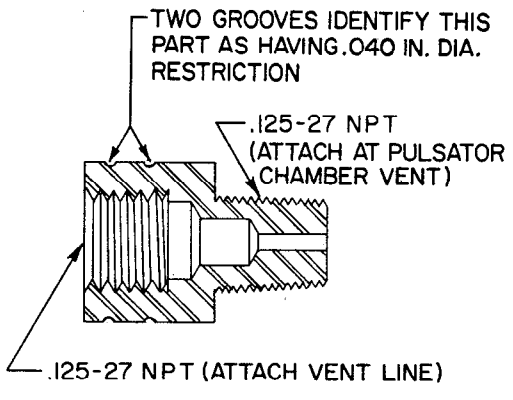
The restriction can be installed anywhere from the upper chamber vent opening at the fuel pump and its line termination. In installations where a tee might be used to connect the fuel pump vent line with a common overboard line, the restriction must be installed between the fuel pump and the tee fitting. However, in most installations it will be found practical to install the restriction in the fitting that connects the overboard drain line to the upper chamber vent, as described herein.

All the fuel pumps affected by this bulletin have a single vent opening in the upper chamber as shown in figure 1, except the P/N 73870 (AC 5656696) which has a vent opening in both the upper chamber and the separator ring as shown in figure 2. Regardless of which of the two types are found on the engine, the restriction described herein is to be installed only in the vent opening or line from the upper chamber; do not change the line connected at vent in separator ring.

NOTE

Although the restriction need not be installed at the location described in the following procedure, nevertheless it is necessary that the restriction consist of an approximate 0.040 inch diameter hole (No. 60 drill), by 1/4 inch in length, drilled in brass, aluminum, silver alloy solder or similar material that is not subject to corrosion by fuel or oil. Also, the restriction must be located between the fuel pump and any other fitting provided in the line for connection of additional vent lines.

1. Determine applicability of this procedure by observing the AC fuel pump part number stamped on the upper edge of the mounting flange as shown in figure 1. Only the last four or five digits of the AC part number are stamped on the pump.



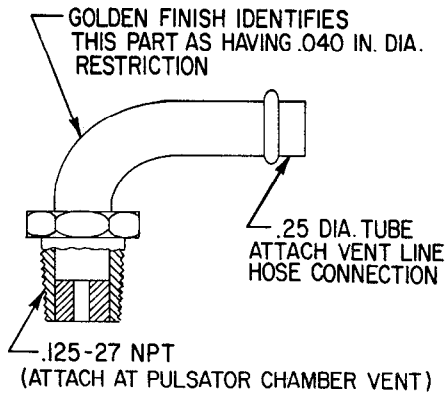


Figure 3 (A). Lycoming P/N 75250 Overboard Drain Adapter
Figure 3 (B). Lycoming P/N 75307 Overboard Drain Elbow Adapter

2. There are two restriction adapters available from Lycoming for installation in the tapped vent hole of the fuel pump. Lyc. P/N 75250 adapter which is generally suitable for most aircraft fuel system installations, and Lyc. P/N 75307 elbow adapter which is designed for installations where a hose coupling is required in the vent line, such as the Piper Comanche, Model PA 24-250. Both adapters, and their method of installation, are shown in figure 3.

NOTE

Both adapters, P/N 75250 and 75307, incorporate a 0.040 inch diameter restriction and are identified as follows: The P/N 75250 adapter has two circular grooves around its hex portion. The P/N 75307 adapter can be identified by its golden color as contrasted with the white, cadmium plated elbow fitting that is usually installed at similar locations.

If installation of either of the above adapters is not practical, a restriction may be fabricated as described in the following step 3.

3. In some installations the connector between the fuel pump and vent line may be a standard flared fitting with a 7/32 inch diameter hole in the male end, similar to the one shown in figure 4. There are two methods (a or b) which a restriction may be installed in this fitting, or an alternate third method (c) for putting a restriction in the hose.

a. Fill the hole in the fitting with silver solder (if the fitting is steel) and drill a 0.040 inch diameter hole through the silver solder to form the restriction. If necessary, counterbore the solder filled area to maintain the length of the restriction to 1/4 inch. Thoroughly clean the fitting and re-install it in the fuel pump.

b. Press a 7/32 inch diameter x 1/4 inch long plug in the hole of the fitting. Peen the end of the fitting to secure the plug and drill a 0.040 inch diameter hole (No. 60 drill) through the plug to form the restriction. 7/32 inch diameter bronze welding rod may be used to make the plug. Thoroughly clean the fitting and re-install it in the fuel pump.

c. Fuel drain lines that employ a hose can be modified by installing the restriction in the hose and securing by a clamp. A restriction can be fabricated, as shown in figure 5, installed in the hose and secured.

4. Identify fuel system installation compliance with this service bulletin by yellow paint on top of the fuel pump as indicated in figure 2. If practical, also apply yellow paint at location of restriction in vent line. Enter notation in Engine Log Book to indicate compliance with this service bulletin.

CAUTION

During each daily, or pre-flight inspection, examine the overboard fuel pump vent opening for evidence of oil, if found replace high pressure fuel pumps (used on injector engines) with pump No. 74999 (AC 6440160) and vent it in accordance with Service Instruction No. 1107. Replace low pressure pumps (used on carburetor engines) with pump No. 74798 (AC 6440152) and install the restriction fitting. Since provisions for servicing all lightweight type AC fuel pumps with Service Repair Kits are no longer available, the factory recommends that new replacement fuel pumps be used at each engine overhaul.

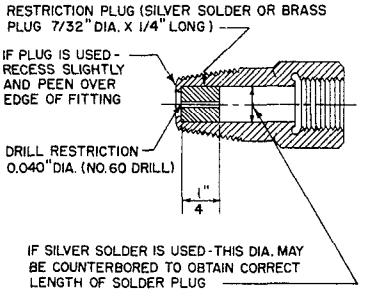


Figure 4. Typical Connector Fitting with .040 Restriction Installed

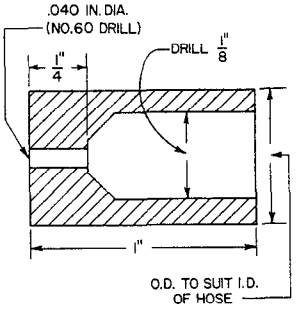


Figure 5. Restriction for Installation in Hose

PARTS SUPPLY: The following parts are available on request from Lycoming for installation as described in this service bulletin. Address your request to Service Department, Lycoming Division - Avco Corporation, Williamsport, Pennsylvania. Furnish airplane model and engine serial number when requesting fitting. Part will be forwarded airmail at no charge.

P/N 75250 Adapter - straight AC fuel pump

P/N 75307 Adapter, elbow - AC fuel pump (required for Piper 250 Comanche - same as Piper P/N 558911, elbow restrictor sweep)

12381 - This number for Lycoming reference only.