



# SERVICE BULLETIN

No. 638

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.

FAA/DOA SO-1 Approved

April 23, 1979

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Subject:

Inspection of Fuel Line Union Fittings

Models Affected:

PA-28-161 Warrior II  
PA-28-181 Archer II  
PA-28-236 Dakota  
PA-28-201T Turbo Dakota  
PA-28R-201 Arrow III  
PA-28R-201T Turbo Arrow III  
PA-28RT-201 Arrow IV  
PA-28RT-201T Turbo Arrow IV

Serial Numbers Affected:

28-7816340 to 28-7916410 Inclusive  
28-7890276 to 28-7990429 Inclusive  
28-7911001 to 28-7911167 Inclusive  
28-7921001 to 28-7921028 Inclusive  
28R-7837150 to 28R-7837317 Inclusive  
28R-7803185 to 28R-7803373 Inclusive  
28R-7918001 to 28R-7918128 Inclusive  
28R-7931001 to 28R-7931187 Inclusive

Compliance Time:

Prior to next flight if there is any evidence of fuel leakage or if fuel fumes are detected in the cabin. **Otherwise**, at the next regularly scheduled inspection period, BUT not to exceed the next 100 hours of operation.

Purpose:

Reports have been received from the field of fuel leaks at the interconnecting unions (Parker - Hannifin) that are used in several places in the fuel system. This has resulted in fuel leakage and fumes within the cabin. This leakage is due to insufficient tightening of the fitting during installation.

This Service Release requires inspection of these fittings and tightening of all of the nuts on the fuel line couplings as indicated in the Instructions.

Instructions:

PART A. Inspection and Tightening of Unions

1. Remove the aft inboard inspection panel from the lower surface of the right and left wing.
2. Remove the pilot's seat and the left cabin sidepanel. Fold back the carpeting that covers the forward side of the spar box and remove the cover from the fuel line(s). For 201T models only, pull back the carpeting from the side of the cabin at the lower aft corner of the door to gain access to the 1/4" fuel vent tubing.

(over)

Instructions: (continued)

3. Inspect all Parker - Hannifin unions in the fuel system for signs of leakage. Make note of any leaking fittings for later re-check.
4. Using a torque wrench and a tubing crow's foot, carefully tighten each Parker - Hannifin union to the torque listed in Table I.

TABLE I.

<u>Tube Size</u>	<u>Applied Torque</u>	
1/4" OD	75-95 Inch Pounds	Using a Tubing
3/8" OD	175-195 Inch Pounds	Crow's Foot

CAUTION

Using a crow's foot adapter other than a tubing type will result in deformation or severe damage to the union nut and will quite probably cause a leak which will require replacement of the union and tubing.

NOTE:

If during the torque check procedure, the mechanic suspects a galled nut and union, back off the nut and inspect the threads. If the union is serviceable, apply thread lube (See Table II below), and torque the nut to the proper value listed in Table I. If the union is unserviceable, it must be replaced. See Part B, below.

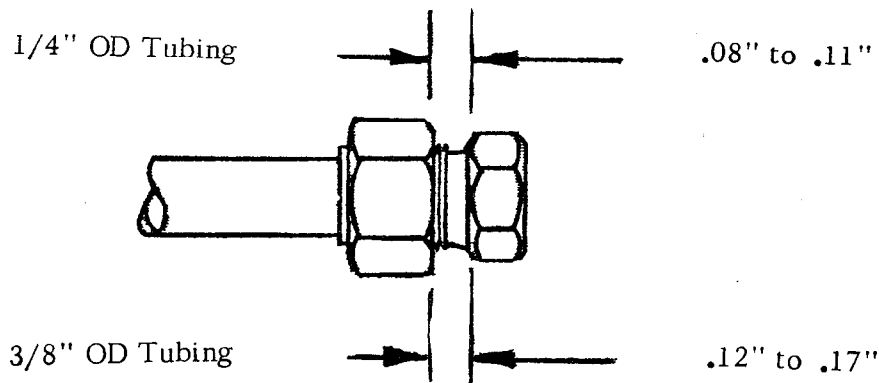
TABLE II

Slip Spray Lubricant (Dupont).

Ferulube (Parker - Hannifin).

Apply the lubricant to the male connector thread. Care should be taken that no lubricant enters the throat of the connector seat or contacts the ferrule seat face.

5. After the torquing of each fitting, measure the distance between the face of union nut and face of the tubing nut. See Figure I for tolerance.

Instructions: (continued)FIGURE I

6. If any fittings are found to be out of tolerance, refer to Part B, below.
7. After all of the unions have been checked for proper tightness and all repairs (if required) have been made, insure that the airplane is full of fuel and run engine for three (3) to five (5) minutes on each tank.
8. After engine shut down, wiggle all unions. If any fittings are found to be leaking, repairs must be accomplished as outlined in Part B, below.
9. When the system is found to be leak free, replace the side panel, carpet, access plates and seat.
10. Make appropriate logbook entry of compliance with this Service Release.

**PART B. Replacement of Fittings If Required**NOTE:

Defueling of airplane may be required for union and/or tubing replacement.

1. If the fitting shows evidence of galling, or does not meet the dimensional requirements of Figure I above, or continues to leak after being tightened, as outlined in Part A, item 5, above, it shall be repaired using items 2, 3, or 4, below.
2. The recommended repair is to remove the leaking union and replace it using a standard AN fitting as outlined in AC43.13-1. (1972 issue) Paragraph 392. This will require cutting off the swaged ferrule and adding a short length of tubing.

(over)

Instructions: (continued)

3. If a replacement tube and union that were purchased from Piper Service Sales are being used, the tubing will have the ferrule pre-swaged onto the tube. Installation of the Piper manufactured tubes will be as follows:
  - a. Apply a thread lube from Table II to the threads of the union.
  - b. Carefully align the tube into the union and snug up the nut using a wrench.
  - c. Then, using a wrench, tighten the nut one (1) to two (2) flats ( $1/6$  to  $1/3$  of a turn).
4. If a repair is being made using Parker-Hannifin unions and tubes without pre-swaged ferrules they should be installed as follows:
  - a. Cut off the tubing at a convenient location back from the fitting.
  - b. De-burr the end of the tube. (A short length of tube will also have to be prepared at this time to splice into the line.)
  - c. Screw nut and ferrule onto the union until solidly finger tight.
  - d. Insert the tubes into the unions, being careful to insure proper straight alignment of the tubing and union.
  - e. Using a tubing wrench tighten the nut one and one quarter ( $1 \frac{1}{4}$ ) turns.
5. After corrective action in Part B has been completed, perform the leak test as outlined in Part A, item 7 and 8.

Material Required:

Refer to appropriate Piper Parts Manual if parts are required to repair a leaking union.

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 compliance with this Service Release in accordance with Compliance Time, above.