

# MODEL R182 AND TR182 SERVICE MANUAL

## SECTION 12

### FUEL SYSTEM

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# MODEL R182 & TR182 SERIES SERVICE MANUAL

## 12-1. FUEL SYSTEM.

12-2. DESCRIPTION. A rubberized bladder-type fuel (cell) tank, or an integral fuel tank is located in the inboard bay of each wing. When the fuel system is in operation, depending upon the airplane's configuration, gravity, an electric or engine-driven fuel pump, draws the fuel from the tanks through the tank strainers, a selector valve, fuel strainer, electric or engine-driven fuel pump to the carburetor. In the 1977 thru 1978 Models, system ventilation is provided by vented fuel caps and a vent line and check valve extends from the left wing tank and emerges through the lower wing skin adjacent to the wing strut. Beginning with the 1979 Models, a vent line and check valve is also used on the right wing tank. The forward fuel lines from the right and left tanks are also utilized as vapor return lines and are teed into a tank crossover vent line connected to the right and left vent lines. The fuel strainer has a quick-drain valve on the bottom and is used to remove water and sediment from the system. Fuel sump drain valves (one in each tank), are located in the bottom, inboard end of each tank and are provided for draining trapped water and sediment. Integral fuel tank equipped airplanes R18200584 and On, incorporating SK182-100 have four additional quick-drain valves installed in each bay.

12-3. PRECAUTIONS. Observe the following general precautions and rules during fueling, defueling, tank or integral fuel bay purging, repairing, assembly or disassembly of system components and electrical system checks and repairs on the airplane fuel system.

### WARNING

During all fueling procedures, fire fighting equipment must be available. Attach a ground wire from approved ground stakes to the mooring eyebolt on LH and RH wing struts or mooring ring on LH and RH wings. Ground fuel nozzle to airplane during fueling operations.

- a. Plugs or caps should be placed on all disconnected hoses, lines and fittings to prevent residual fuel drainage, thread damage, or entry of dirt or foreign materials into the fuel system.

### WARNING

ASSURE THAT ALL CONTAMINATES, INCLUDING WATER, ARE REMOVED FROM FUEL AND FUEL SYSTEM BEFORE FLIGHT. FAILURE TO ASSURE CONTAMINATE FREE FUEL AND HEED ALL SAFETY INSTRUCTIONS AND OWNER ADVISORIES PRIOR TO FLIGHT CAN RESULT IN BODILY INJURY OR DEATH.

PLACARD 0705098-1

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## 12-4. TROUBLE SHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
NO FUEL AT CARBURETOR.	Fuel selector valve-closed.	Open selector valve, or repair as necessary.
	Fuel cells empty.	Service with proper fuel.
	Plugged fuel strainer.	Remove and clean screen.
	Carburetor inlet screen plugged.	Clean or replace.
	Fuel cell outlet plugged.	Remove and clean screens, and flush fuel cells.
<b>CAUTION</b>		
		Aircraft will require de- fueling for this operation.
FUEL STARVATION AFTER STARTING.	Fuel line plugged.	Repair or replace line.
	Fuel line disconnected or broken.	Repair or replace fuel line.
	Mechanical fuel pump defective.	Repair or replace mechan- ical fuel pump.
	Auxiliary fuel pump circuit breaker open.	Reset circuit breaker.
	Auxiliary fuel pump or cir- cuitry defective.	Repair or replace fuel pump or pump wiring.
	Plugged fuel cell vent.	Refer to paragraph 12-24.
	Water in fuel.	Drain fuel cell sumps, lines, and strainers.
	Intermittent fuel pump operation.	Repair or replace fuel pump or wiring.

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### 12-4. TROUBLE SHOOTING (Cont).

NO FUEL QUANTITY INDICATION.	Fuel cell empty.	Service with proper fuel.
	Open or defective circuit breaker.	Reset or replace if necessary.
	Open circuit-loose connections, breaker wiring.	Repair wiring or tighten connections.
PRESSURIZED FUEL CELL.	Defective fuel quantity transmitter or gage.	Remove and replace defective component.
	Plugged bleed hole in fuel vent.	Check out using paragraph 12-24 as guide.

### 12-5. FUEL CELLS.

12-6. **DESCRIPTION.** Rubberized, bladder-type fuel cells are installed in the inboard bay of each wing panel. These cells are secured by fasteners to prevent collapsing because they are flexible.

12-7. **GENERAL PRECAUTIONS.** When storing, inspecting or handling rubberized, bladder-type fuel cells, the following precautions should be observed:

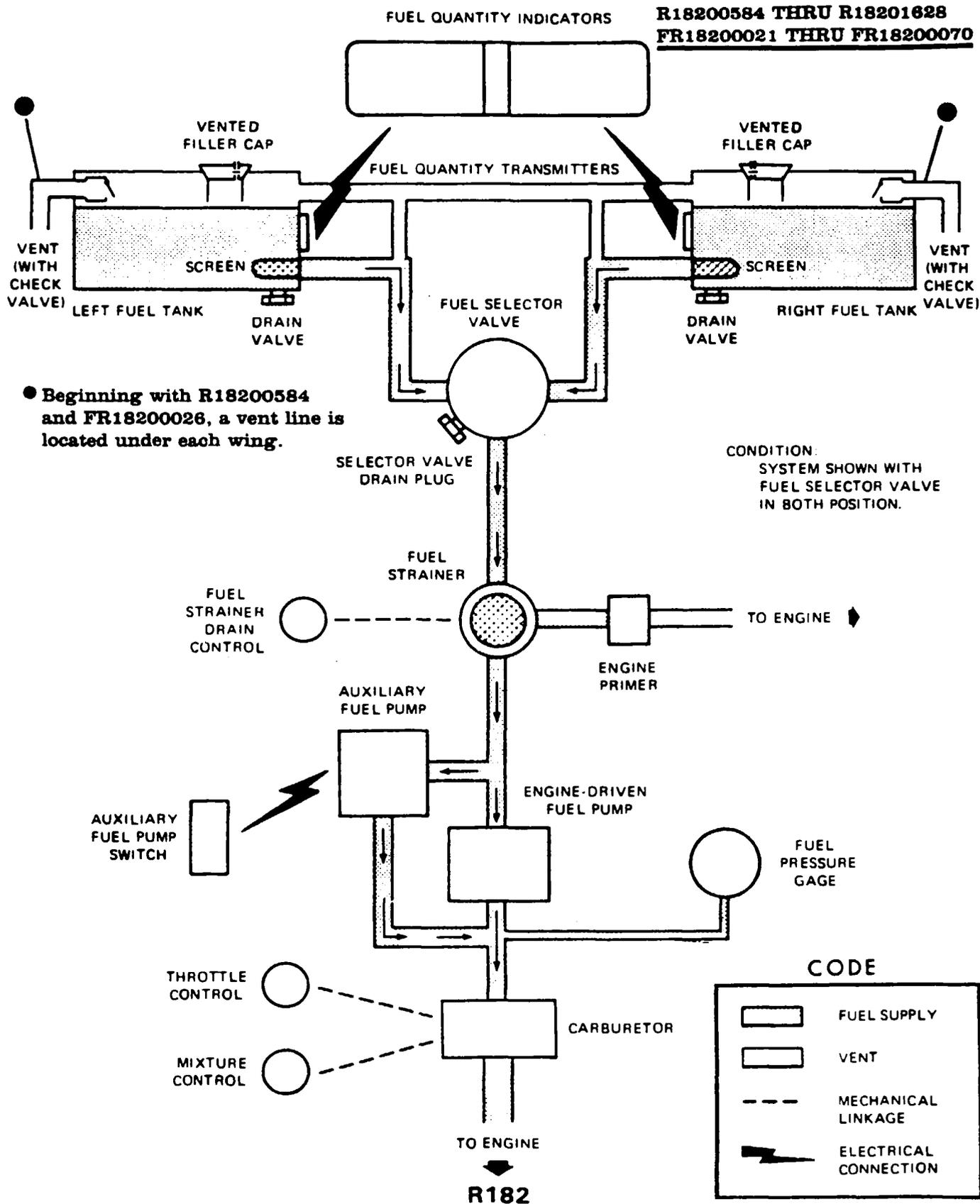
- a. Fold cells as smoothly and lightly as possible with a minimum number of folds. Place protective wadding between folds.
- b. Wrap cell in moisture-proof paper and place in a suitable container. Do not crowd cell in container. Use wadding to prevent movement.
- c. Stack boxed cells to allow access to oldest cell 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°F, 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.

### 12-8. REMOVAL.

- a. Place fuel selector valve in LEFT, RIGHT or OFF position only, if placed in BOTH ON, fuel will have to be drained from both cells. Drain applicable fuel cell, wipe out with cloth, and purge with fresh air, until all traces of fuel are gone.
- 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.

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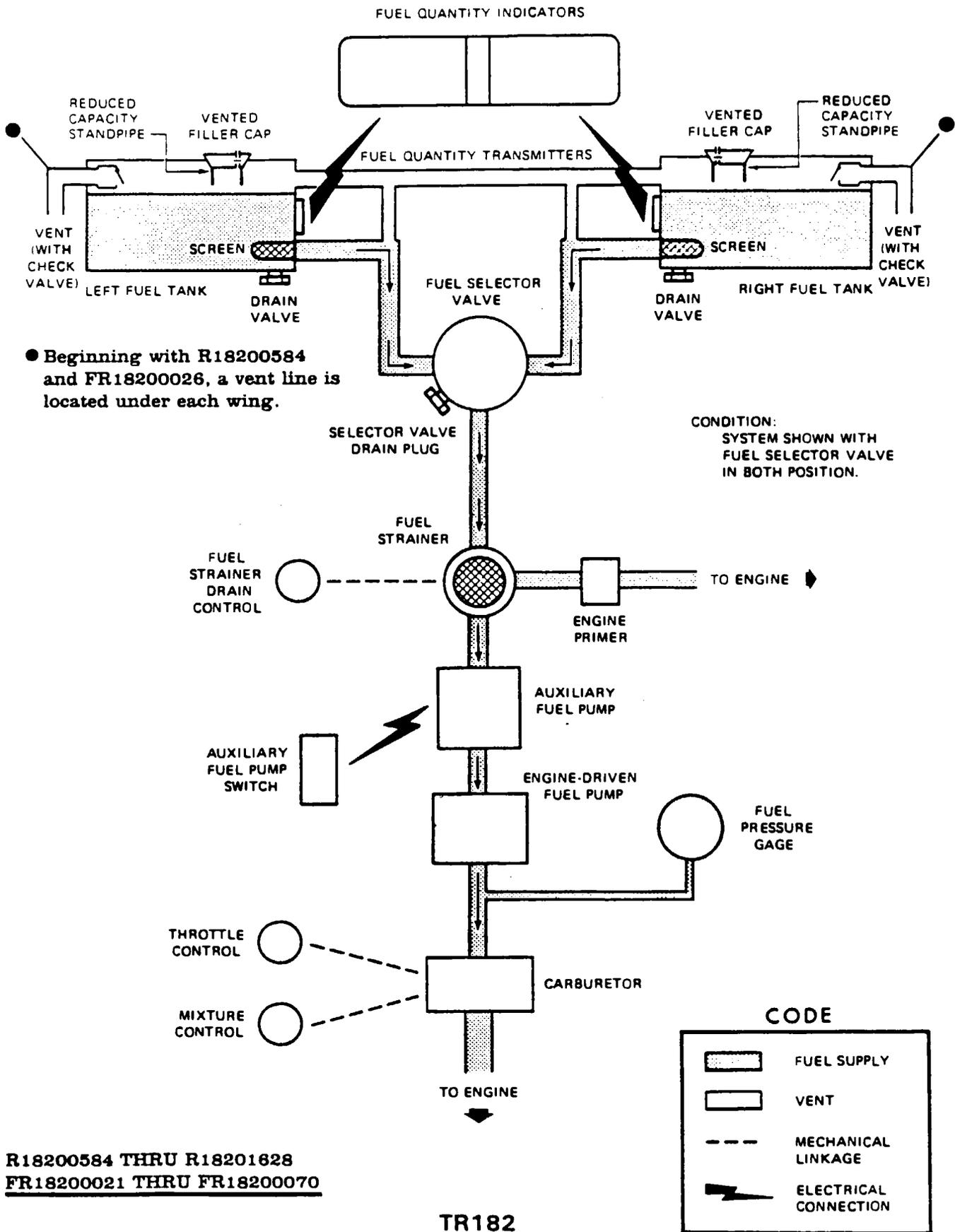
**R18200584 THRU R18201628  
FR18200021 THRU FR18200070**



● Beginning with R18200584 and FR18200026, a vent line is located under each wing.

Figure 12-1. Fuel System Schematic (Sheet 1 of 3)

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R18200584 THRU R18201628  
FR18200021 THRU FR18200070

TR182

Figure 12-1. Fuel System Schematic (Sheet 2 of 3)

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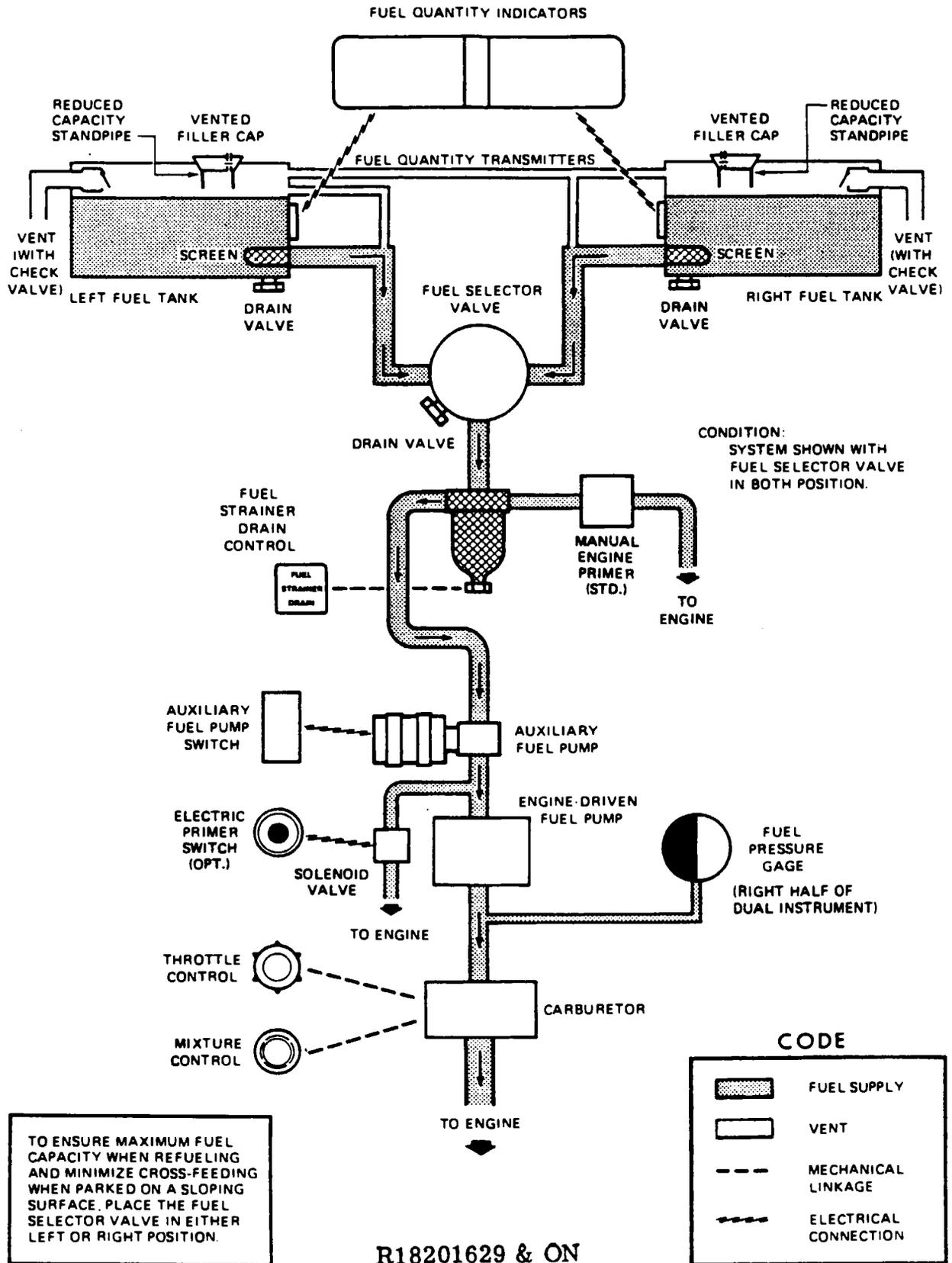
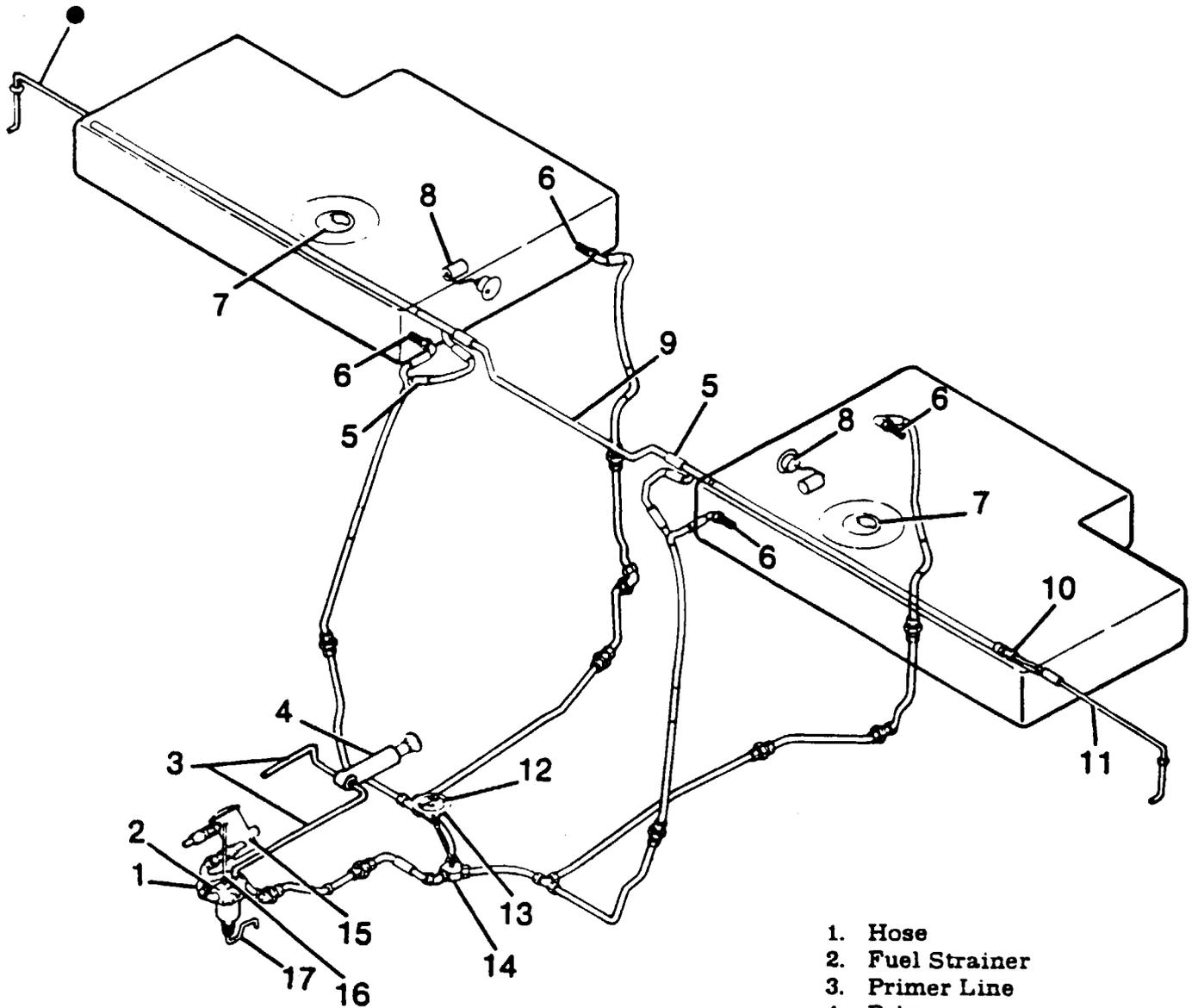


Figure 12-1. Fuel System Schematic (Sheet 3 of 3)

# MODEL R182 AND TR182 SERVICE MANUAL



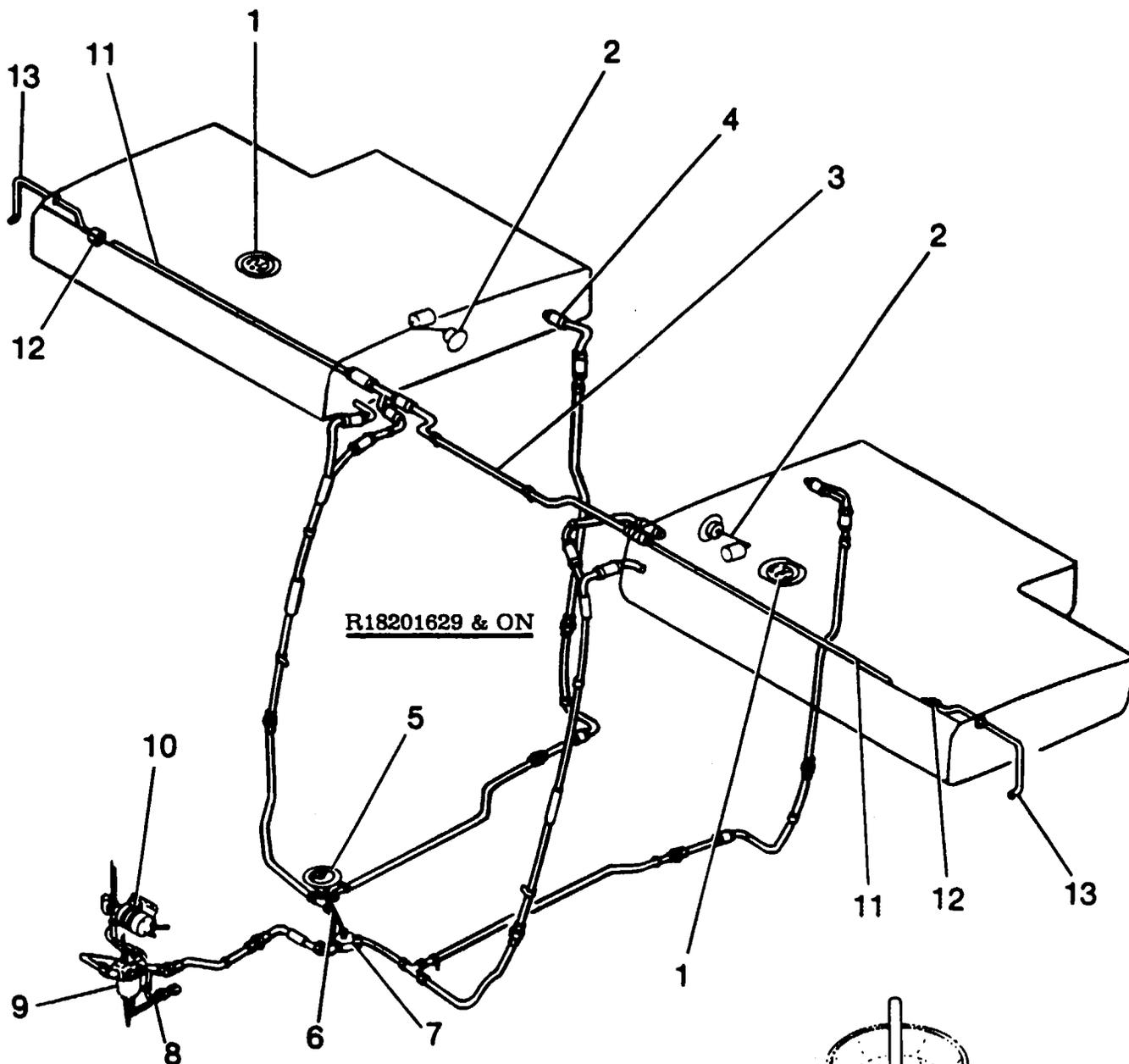
1. Hose
2. Fuel Strainer
3. Primer Line
4. Primer
5. Hose
6. Finger Strainer
7. Fuel Filler Cap
8. Fuel Quantity Transmitter
9. Crossover Vent Line
10. Fuel Vent Valve
11. Vent Line
12. Placard
13. Gear and Shaft Assembly
14. Fuel Selector Valve
15. Auxiliary Fuel Pump
16. Strainer Drain Control
17. Drain Line

**THRU R18201628 AND FR18200070**

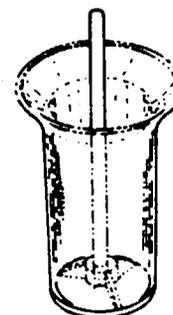
- RH vent line added to system at serials R18200584 and FR18200028.

Figure 12-2. Fuel System (Sheet 1 of 2)

MODEL R182 AND TR182 SERVICE MANUAL



- 1. Fuel Filler Cap
- 2. Fuel Quantity Transmitter
- 3. Crossover Vent Line
- 4. Hose
- 5. Placard
- 6. Gear and Shaft Assembly
- 7. Fuel Selector Valve
- 8. Drain Line
- 9. Fuel Strainer
- 10. Auxiliary Electric Fuel Pump
- 11. Vent Line
- 12. Fuel Vent Valve
- 13. Vent Line

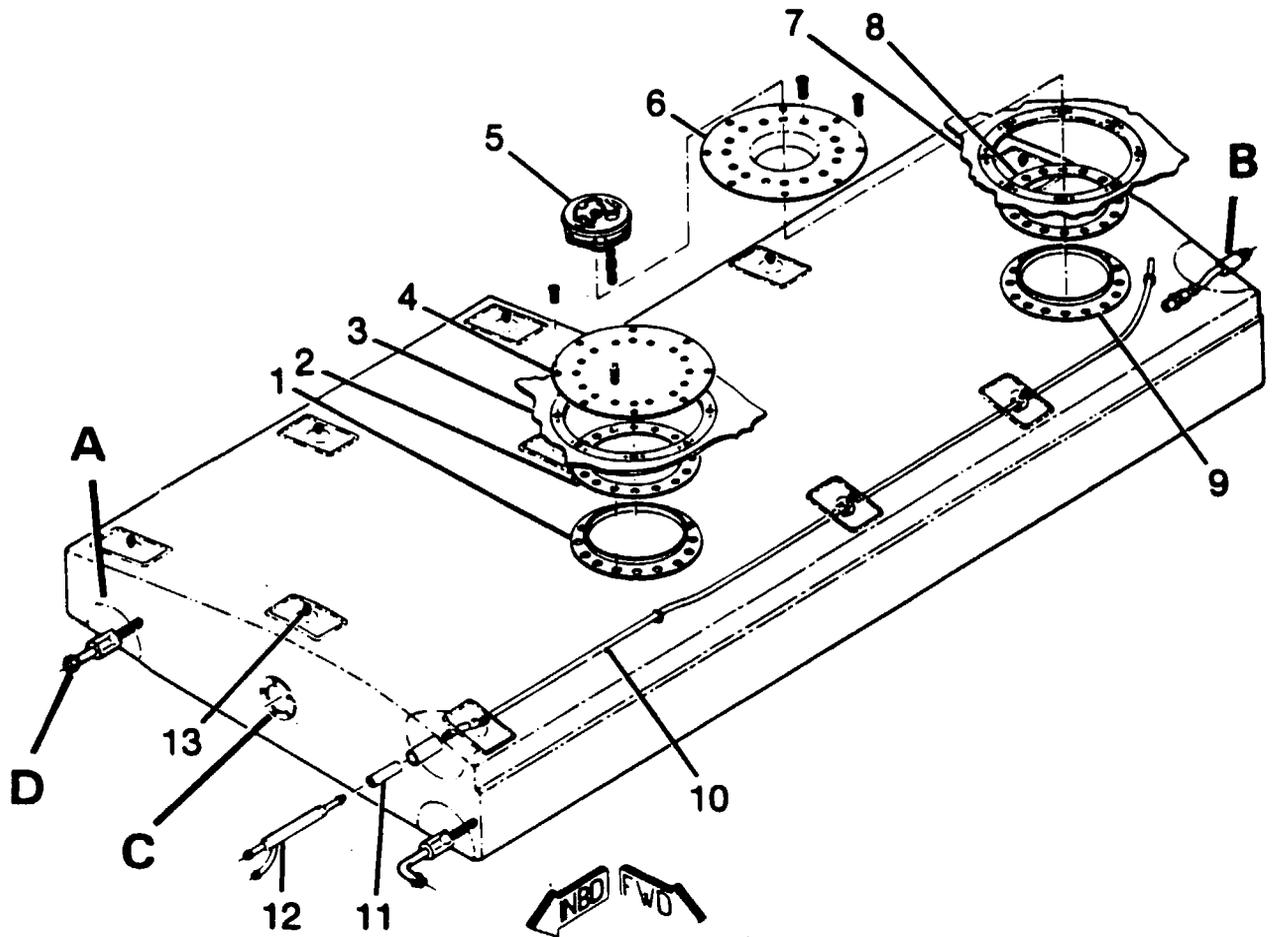


**FUEL SAMPLER CUP**  
 For use with drain valves.  
 (Refer to Section 2 of this manual.)

Figure 12-2. Fuel System (Sheet 2 of 2)



MODEL R182 AND TR182 SERVICE MANUAL



1. Fitting
2. Gasket
3. Wing Skin
4. Cover Plate
5. Filler Cap
6. Adapter
7. Wing Skin
8. Gasket
9. Fitting
10. Nylon Tube
11. Hose
12. Vent Adapter
13. Hanger

**NOTE**

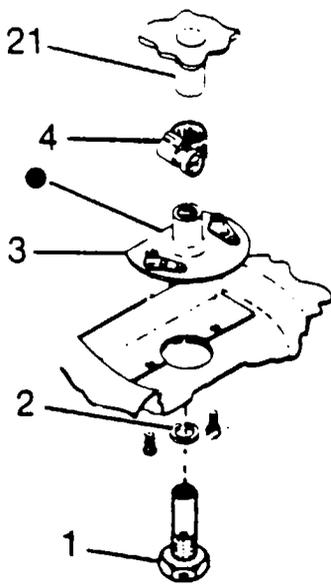
Fuel cell is replaced by integral fuel bay. See figure 12-13.

R18200001 THRU R18200583  
FR18200001 THRU FR18200020

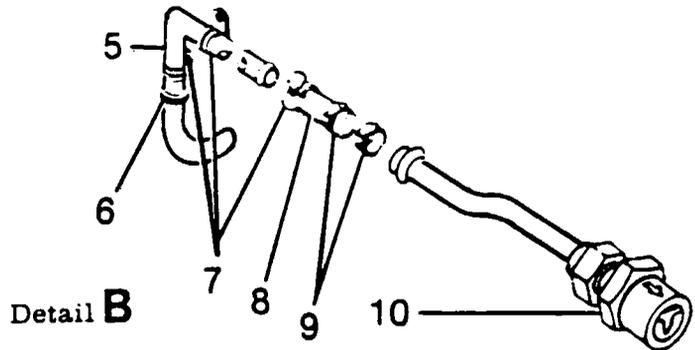
LONG - RANGE CELL

Figure 12-3. Fuel Cell Installation (Sheet 2 of 3)

# MODEL R182 AND TR182 SERVICE MANUAL



Detail A

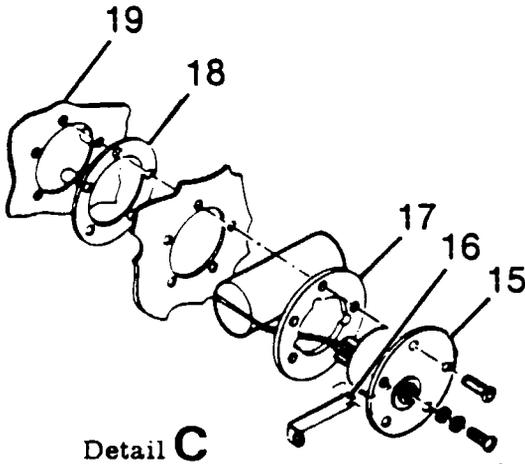


Detail B

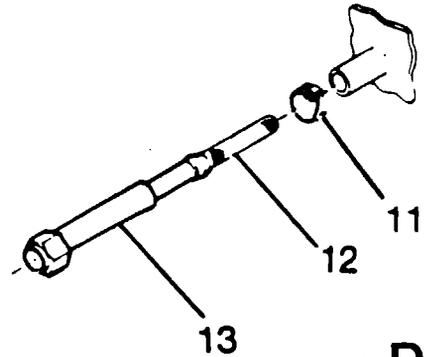
Hinge for vent valve (10) must be at top. Tube for vent extends into fuel cell, then bends down and inboard. Vent valve (10) is used in the left wing fuel cell only.

Torque drain valve (1), 15 to 35 in-lbs and safety-wire. Drain valve gasket (2) should be lightly oiled and installed with asbestos side against head of valve.

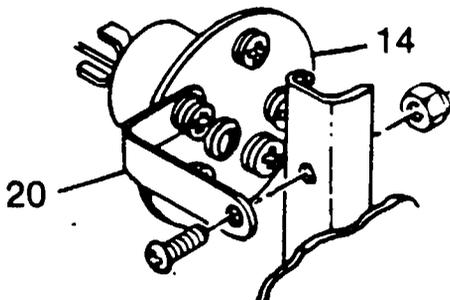
- This surface to be installed toward and parallel to aft side of tank.



Detail C



Detail D



FUELL QUANTITY TRANSMITTER  
INSTALLATION AND GROUNDING

- |                               |                   |
|-------------------------------|-------------------|
| 1. Drain Valve                | 16. Ground Strap  |
| 2. Gasket                     | 17. Gasket (Seal) |
| 3. Adapter                    | 18. Gasket        |
| 4. Clamp                      | 19. Adapter       |
| 5. Vent Line                  | 20. Ground Strap  |
| 6. Grommet                    | 21. Nipple        |
| 7. Clamp                      |                   |
| 8. Hose                       |                   |
| 9. Clamp                      |                   |
| 10. Vent Valve                |                   |
| 11. Clamp                     |                   |
| 12. Strainer                  |                   |
| 13. Protector                 |                   |
| 14. Fuel Quantity Transmitter |                   |
| 15. Fuel Quantity Transmitter |                   |

Figure 12-3. Fuel Cell Installation (Sheet 3 of 3)

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- 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.

### 12-9. 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.

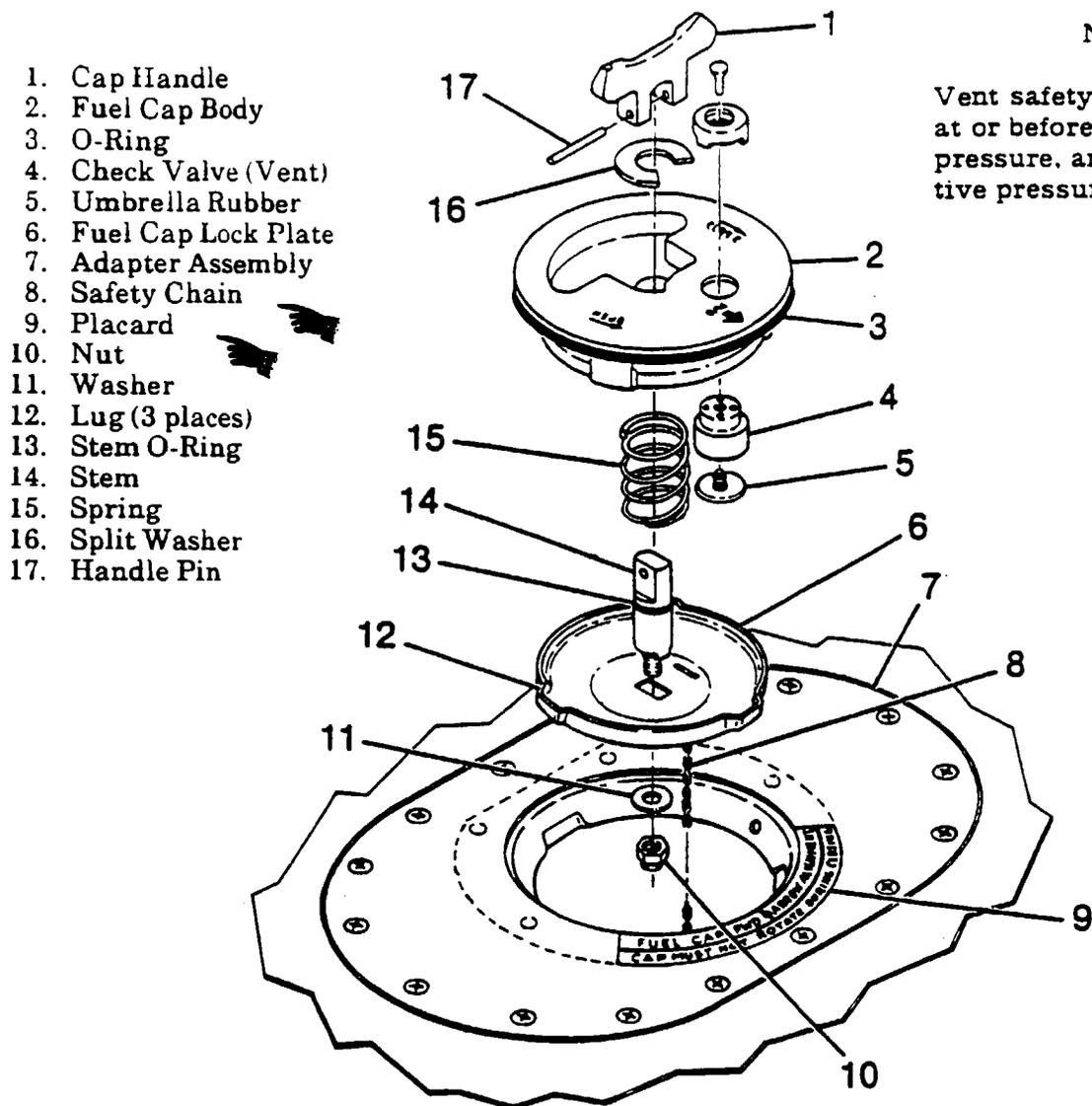
### 12-10. INSTALLATION.

- a. Clean all filings, trimmings, loose washers, bolts, nuts, etc. from cell compartment.
- b. Round all sharp edges or rivets, and tape over them to protect bladder.
- 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 insure 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 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 and/or order tube from applicable Parts Catalog.
- h. When tightening screw-type clamps on standard fuel cell (BTC-39) construction), apply a maximum of torque of 20 inch-pounds to clamp screws. On the extended range fuel cell (BTC-67 construction), apply a maximum torque of 30-35 inch-pounds to clamp screws. A light application of #10 engine oil to metal tube aids installation into nipple fittings.
- i. When installing filler adapter, cover plate and fuel quantity transmitter to the wing and fuel cell, tighten attaching screw 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 insure 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.

### 12-11. VENTED FUEL FILLER CAPS.

- 12-12. DESCRIPTION. The filler cap assemblies may be constructed of either metal or red plastic. Both cap assemblies incorporate a vent safety valve that provides vacuum and positive pressure relief for their respective fuel tanks. It is important that both type caps be cleaned on an as required basis, if proper filler cap sealing is to be maintained.

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## NOTE

Vent safety valve (4) opens at or before 1.0 PSI vacuum pressure, and 10.0 PSI positive pressure.

**R18200001 THRU R18200583**  
**FR18200001 THRU FR18200020**

Figure 12-4. Metal Fuel Filler Cap

12-13. METAL "FLUSH-TYPE" FILLER CAPS. Except for minor differences in construction and weight, metal fuel filler caps perform the same functions as red plastic fuel filler caps. The caps are interchangeable and will fit the same adapter assembly.

12-14. INSPECTION.

## NOTE

If fuel collects in the handle well it could indicate stem O-ring leakage. Fuel collecting around perimeter of cap could indicate cap O-ring or check valve leakage.

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- a. Remove fuel cap from adapter (7), remove safety chain (9) from cap and cover or plug fuel opening to keep out foreign matter.
- b. Remove nut (10) and, observing position of lock plate (6) in relation to stem (14) disassemble cap.
- c. Note resiliency of O-rings (3 & 13) and condition of grooves. If the O-rings (3 & 13) have deteriorated they must be replaced.

### 12-15. CLEANING.

- a. Using a cotton swab and Stoddard solvent or equivalent, gently lift edges of rubber umbrella (5) and clean stainless steel seat and umbrella removing all contaminants. Using a second swab wipe seat and umbrella thoroughly, removing all cotton fibers. Repeat until swabs show no discoloration.
- b. If O-ring grooves appear contaminated, clean with Stoddard solvent or equivalent and cotton swabs.
- c. Ascertain that all vent holes in check for defects.
- d. Clean cap body and lock plate, check for defects.
- e. If the umbrella continues to leak or is deteriorated it must be replaced.
- f. To remove umbrella, lubricate the umbrella stem with (MIL-H-5606) hydraulic fluid and use a small blunt tool to insert the retaining knob on the umbrella stem into the check valve body to prevent damaging the stem.

### 12-16. REASSEMBLY.

- a. Place split washer (16) in cap well correctly.
- b. With handle (1) and O-ring installed on stem (14), insert stem (14) through split washer (16) on cap body (2).
- c. Place spring (15) on stem (14).
- d. Position cap handle (1) to full "OPEN" position.
- e. Place lock plate (6) on threaded end of stem (14) and align all three lugs (12) with three guide bosses on the cap body (2).
- f. Check that square hole in bottom of lock plate (6) is aligned with square surface on threaded end of stem (16).

### NOTE

It is possible to install the lock plate (6) 180° out of the desired position, if the alignment procedures in steps "d", "e" and "f" are not followed. If the cap will not fit when assembled, remove the lock plate (6) and reassemble after rotating it 180°.

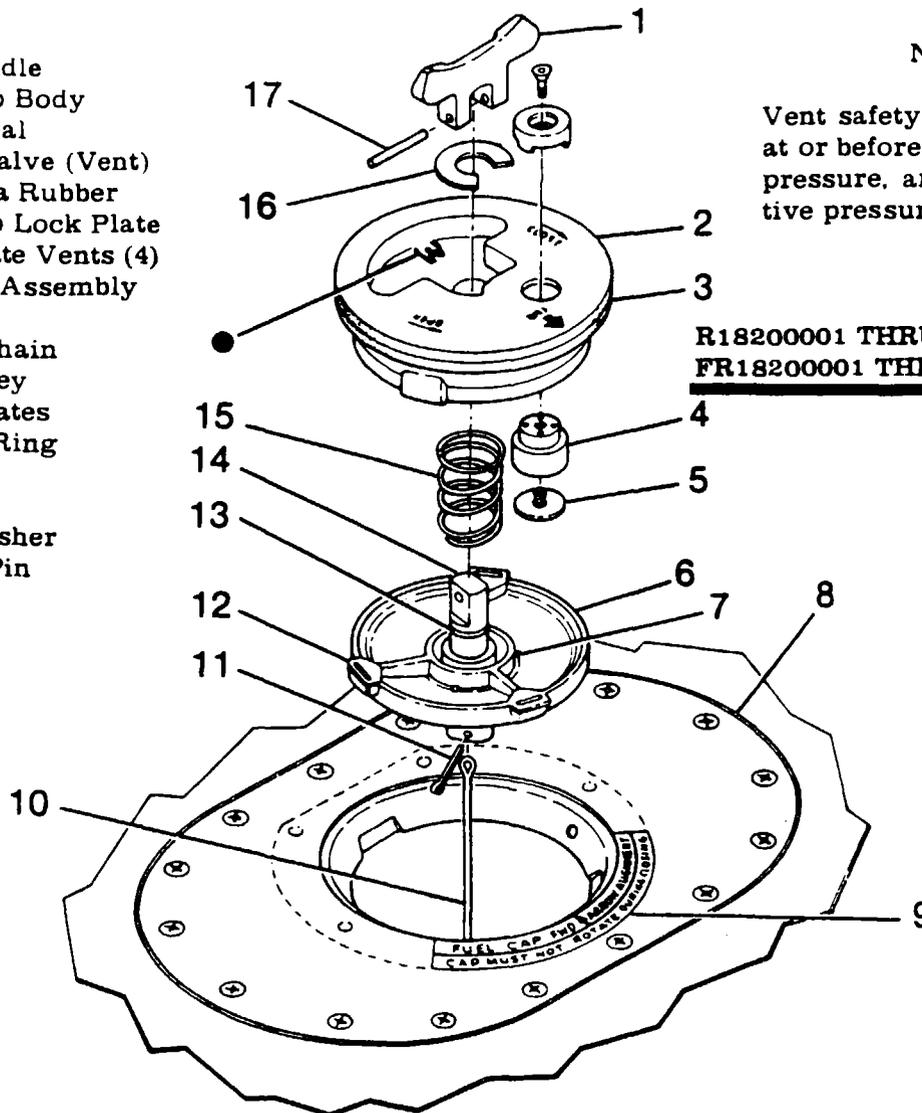
- g. Compress the lock plate (6) and fuel cap body (2) and secure with washer (11) and nut (10).
- h. Connect fuel cap assembly to safety chain (9) and reinstall in tank.

12-16A. CHECKING FILLER CAPS. With fuel cap in the locked position, try to twist cap out of position by pressing down and twisting the fuel cap handle clockwise using as much force as you can with your fingers. If the "FWD" arrow on the cap rotates out of alignment with the arrow on the placard, install more washers until the cap will not rotate. If fuel leaks from a fuel cap, observe where the fuel collects. Fuel in the handle well could indicate stem O-ring leakage. Fuel collecting around the perimeter of the fuel cap body could indicate outer seal or check valve leakage.

12-17. RED PLASTIC "FLUSH-TYPE" FILLER CAPS. A red plastic "Flush-Type" vented filler cap may be used. Extra care is required when reinstalling plastic filler caps in the fuel filler adapter assembly. An improperly installed filler cap could cause a loss of fuel from the tanks during flight.

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1. Cap Handle
2. Fuel Cap Body
3. Outer Seal
4. Check Valve (Vent)
5. Umbrella Rubber
6. Fuel Cap Lock Plate
7. Lock Plate Vents (4)
8. Adapter Assembly
9. Placard
10. Safety Chain
11. Cotter Key
12. Metal Plates
13. Stem O-Ring
14. Stem
15. Spring
16. Split Washer
17. Handle Pin



## NOTE

Vent safety valve (4) opens at or before .25 PSI vacuum pressure, and 5.0 PSI positive pressure.

**R18200001 THRU R18201973  
FR18200001 THRU FR18200070**

Figure 12-5. Red Plastic or Metal Fuel Filler Cap (Sheet 1 of 2)

## CAUTION

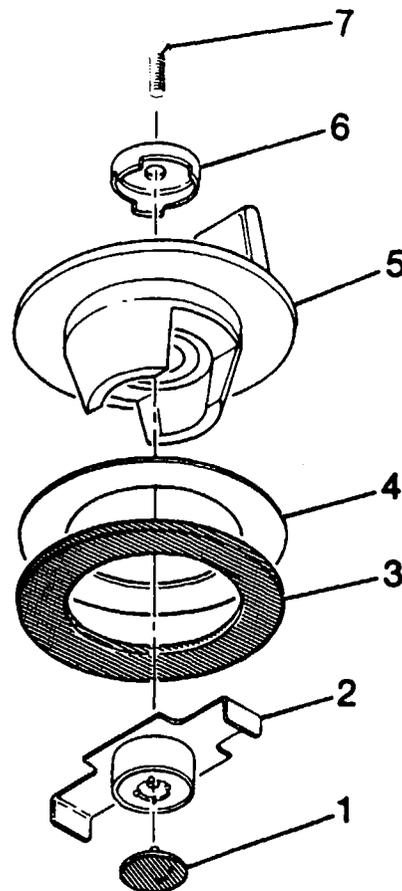
On aircraft serials R18200001 thru R18201973 and FR18200001 thru FR18200070 the O-ring type outer seal (3), (P/N 4196-17) is not to be used as a replacement on the red plastic fuel caps. Replace with the correct gasket type seal from Service Kit SK182-65. Seals used on the metal and plastic caps are not interchangeable.

- A letter M on the fuel cap body (2) under the handle (1) signifies that the outer seal (3) mounting groove is machined.

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## R18201974 AND ON

1. Umbrella
2. Check Valve
3. Gasket
4. Frictionless Washer
5. Body
6. Cover
7. Screw



### NOTE

Check condition of gasket (3) and frictionless washer (4). Replace gasket and washer if worn or fuel leaks between adapter and gasket (3).

### NOTE

Check valve (2) shall open at or before 4.0 inches of water vacuum pressure, and be able to withstand 0.5 PSI positive pressure without leakage.

Figure 12-5. Fuel Filler Cap - LSE (Sheet 2 of 2)

### 12-17A. CLEANING LSE FUEL FILLER CAPS.

- a. Disconnect safety chain and remove RH filler cap from fuel tank adapter.
- b. Plug fuel tank opening to keep dirt and foreign matter from contaminating the tank.

### NOTE

Check condition of gasket (3) and frictionless washer (4). Replace gasket and washer if worn or fuel leaks between adapter and gasket (3).

- c. Using cotton swabs and Stoddard solvent or equivalent, gently lift edges of rubber umbrella (1) and clean stainless steel seat and umbrella, removing all contaminants. Using a second swab, wipe seat and umbrella thoroughly, removing all cotton fibers. Repeat until swabs show no discoloration.
- d. If the umbrella continues to leak or is deteriorated, remove and replace. To remove the umbrella, lubricate the umbrella stem with (MIL-H-5606) hydraulic fluid to prevent tearing the stem. When installing the new umbrella, lubricate the stem with (MIL-H-5606) hydraulic fluid and use a small blunt tool to insert the retaining knob on the umbrella into the check valve body.

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### 12-18. INSPECTION.

#### NOTE

If fuel collects in the handle well it could indicate stem O-ring leakage. Fuel collecting around perimeter of cap could indicate cap outer seal or check valve leakage.

- a. Remove fuel cap from adapter (8), remove safety chain (10) from cap and cover or plug fuel opening to keep out foreign matter.
- b. Rotate cap handle (1) to the "OPEN" position, compress cap body (2) and lock plate (6) to expose the .125 inch diameter handle pin (17).
- c. Using a small wire push out the handle pin (17).
- d. Note resiliency of O-ring (13), outer seal (3), and condition of grooves. If the O-ring or the outer seal (3) have deteriorated they must be replaced.
- e. Note condition of tabs on lockplate (6) for signs of abnormal wear, if such wear is evident, replace the complete cap assembly.

### 12-19. CLEANING METAL OR RED PLASTIC CAPS.

- a. Using a cotton swab and Stoddard solvent or equivalent, gently lift edges of rubber umbrella (5) and clean stainless steel seat and umbrella removing all contaminants. Using a second swab wipe seat and umbrella thoroughly, removing all cotton fibers. Repeat until swabs show no discoloration.
- b. If O-ring or outer seal grooves appear contaminated, clean with Stoddard solvent or equivalent and cotton swabs.
- c. Ascertain that all vent holes in check valve are unobstructed.
- d. Clean cap body and lock plate, check for defects.
- e. If the umbrella continues to leak or is deteriorated, it must be replaced.
- f. To remove umbrella, lubricate the umbrella stem with (MIL-H-5606) hydraulic fluid to prevent tearing the stem.
- g. To replace the umbrella, lubricate the umbrella stem with (MIL-H-5606) hydraulic fluid and use a small blunt tool to insert the retaining knob on the umbrella stem into the check valve body to prevent damaging the stem.

### 12-20. REASSEMBLY.

#### NOTE

If fuel was observed leaking around the cap periphery prior to disassembly and the leakage was not due to a bad O-ring or outer seal an additional split washer (16) may be added for a total of two, prior to reassembling cap. To make sure that these washers are not installed upside down, check to see that edges of the split parallel the respective sides of the cap well. The addition of a washer under the cap handle will increase the effort required to uncage the fuel tank.

- a. Install spring (15) on stem (14).
- b. Install fuel cap body (2) on stem (14).
- c. Check that three metal plates (12) on top rim of lock plate (6) are aligned with three guide bosses on fuel cap body (2).

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### CAUTION

It is possible to install the handle pin in the pin hole 180° out of the desired position, if the alignment procedures in step "c" is not followed. If the handle (1) is not installed properly the FWD arrow on the cap will not align with the arrow on the placard (9) when the cap is reinstalled.

- d. Compress cap body (2) and lock plate (6), install split washer(s) (16) as required.
- e. Install cap handle (1) on stem (14) so that the handle (1) will be in the open position.
- f. Insert handle pin (17) through handle (1) and stem (14).
- g. Connect fuel cap assembly to safety chain (10) and reinstall fuel cap. Make certain that the arrow on the fuel cap body (2) and the arrow on the placard (9) align.

**12-20A. LEAK TESTING METAL OR RED PLASTIC FILLER CAPS.** The following procedure may be used to detect fuel filler cap leakage.

- a. Service the aircraft with approved fuel filling each bay.
- b. Place the fuel selector in the OFF position.
- c. Plug one of the fuel bay vent lines (where it protrudes beneath the wing) with a small rubber plug or tape.
- d. Connect a rubber hose to the other vent. Then tee into this hose a pressure measuring device, such as a water manometer, manifold pressure gage, or airspeed indicator.
- e. Blow into the open end of the hose. The pressure must not exceed .7 psi which equals 20 inches of water on a water manometer, or 1.43 inches Hg on a manifold pressure gage, or 174 Kts on an airspeed indicator.

### WARNING

Do not inhale fuel vapor while blowing into the rubber hose.

- f. It may take several applications of pressure to bring the bay to the desired pressure level.

### WARNING

Do not apply regulated or unregulated air pressure from an air compressor to the fuel vent. Over inflation and major structural damage will occur if more than .7 psi is applied.

- g. Pinch or close the rubber hose to sustain pressure in the fuel bay.
- h. Apply a soap solution to the fuel filler caps and inspect for leakage around the rubber seal to filler neck junction, the fuel cap vent, and the fuel cap handle stem. Load the cap sideways in all directions by pressing on the fuel cap vent housing by hand.

### NOTE

No leakage is permissible. If leaks are present, replace the cap with a new unit or repair in accordance with Cessna Service Information Letter SE 80-59 Supplement No. 1, dated June 23, 1980.

# MODEL R182 AND TR182 SERVICE MANUAL

## NOTE

Beginning with R18200584 and ON: 90° dimension may be deviated outboard on LH or RH vent line **ONLY** in order to balance venting of the system.

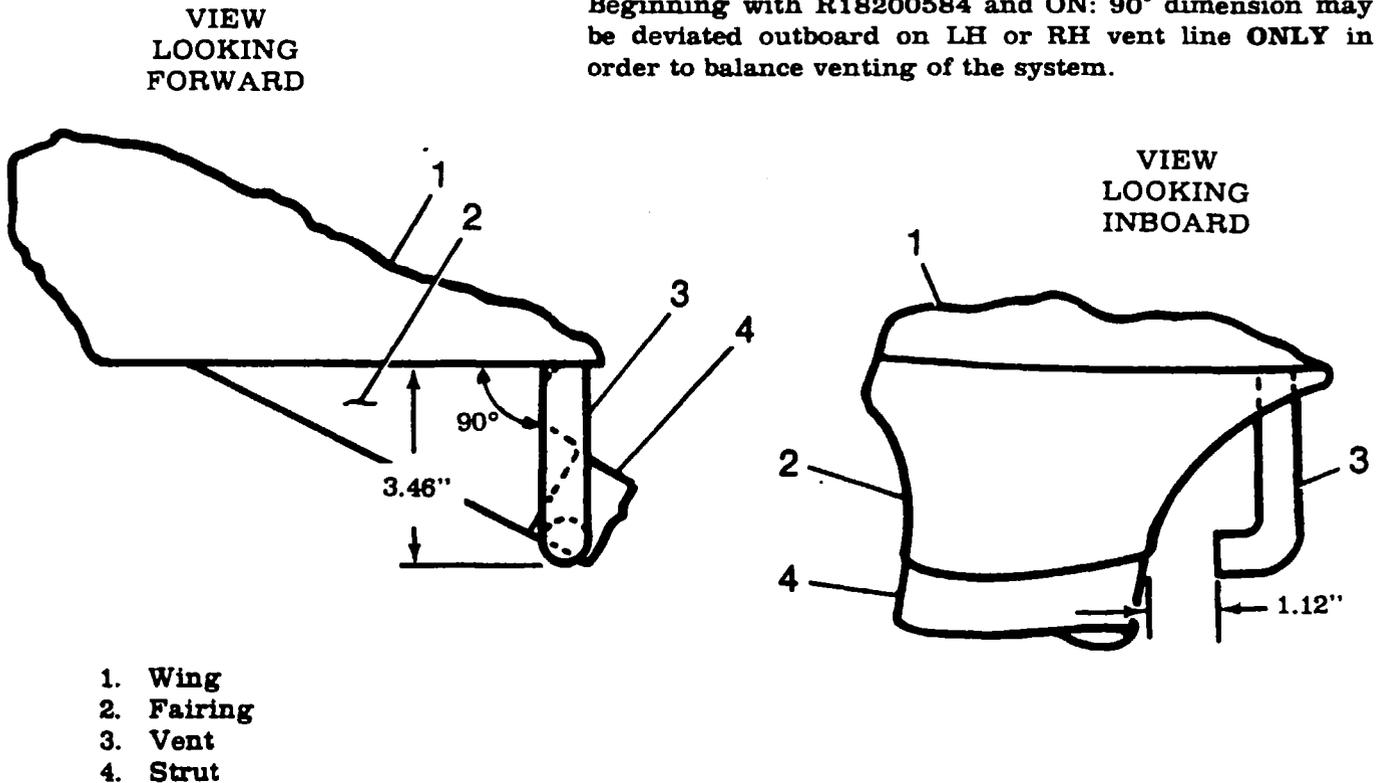


Figure 12-6. Fuel Vent Location

## CAUTION

Care must be exercised in removing the fuel filler caps until the system has been depressurized.

- i. After replacement or repair of either fuel filler cap, repeat the inspection.
- j. Remove the rubber hose, unplug or remove the tape from the other fuel vent, and place the fuel selector in the desired position.

12-21. **FUEL QUANTITY TRANSMITTERS.** Refer to Section 15 for a complete description and maintenance procedures of the transmitters.

12-22. **FUEL VENTS.**

12-23. **DESCRIPTION.** A vent line is installed in the outboard end of each fuel cell and extends overboard through the lower wing skin. The inboard end of the vent line extends into the fuel cell, then forward and slightly upward. A vent valve is installed on the inboard end of the vent line inside the fuel cell, and a crossover line connects the cells together. On aircraft equipped with long-range cells, a nylon vent tube is attached to the crossover line at the inboard end of each cell. This vent tube extends into the fuel cell, and is suspended by four hangers in the top of the cell.

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- 12-24. CHECKING. 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 vent line beneath the wing.
  - b. Plug vent on opposite wing from one being tested.
  - c. With a .5 psi MAX air pressure source, slightly pressurize cell, if air can be blown into cell, vent line is open.
  - d. After cell is slightly pressurized, insert end of rubber tube into a container of water and watch for a continuous stream of bubbles, which indicates the bleed hole in valve assembly is open and relieving pressure.
  - e. After completion of step "c", again slightly pressurize the cell. Crimp rubber tube to retain pressure within the cell. Loosen, but do not remove filler cap on opposite wing to check cell crossover line. If pressure escapes from filler cap, crossover line is open. Remove rubber tube from end of vent line beneath the wing after completion of check.

### NOTE

Remember that a plugged vent line or bleed hole can cause either fuel starvation or the pressurization of bays by fuel expansion.

- f. Repeat procedures for opposite fuel bay.

### NOTE

The fuel vent line protruding beneath the wing near the wing strut must be correctly aligned to avoid possible icing. Dimensions are shown in figure 12-6.

- 12-24A. ADJUSTMENT. On aircraft serials R18200584 and on, uneven fuel flow from the integral fuel bays, when the aircraft fuel selector valve is positioned to feed from both fuel bays, can be caused by unequal pressures in the fuel venting system. When uneven fuel flow is observed, the venting system may be checked and unequal pressures in the system corrected by using the following procedures:

### NOTE

The following procedure should be accomplished during a sequence of routine flight operations. Special flights for the sole purpose of checking and adjusting fuel tank feed rates are not recommended.

- a. Inspect the venting system to ensure the lines are open, connections secure and that the system is functioning properly.
- b. Park the aircraft on a level surface and select the BOTH position on the fuel selector. Leave the aircraft parked until the tank levels are equal or fill both tanks.
- c. With the fuel selector in the BOTH position, take off and climb to an altitude where the air is smooth.
- d. Trim the aircraft for straight and level flight. Make sure the aircraft is free of any yaw by trimming the rudder to center the ball. Cruise at the top of the green band on manifold pressure for a period of at least one hour.
- e. At the end of the hour and while still in straight and level flight, take note of the fuel tank levels and indicated on the fuel gage.

## MODEL R182 AND TR182 SERVICE MANUAL

- f. If the fuel tank levels are greater than 5 gallons apart, land the aircraft and perform the following procedure.
  1. Bend the underwing vent of the tank which had the highest level outboard 1/4 inch.
  2. Bend the underwing vent of the tank which had the lowest level inboard 1/4 inch, providing the vent is not squarely behind the strut. Repeat the first five steps.

### CAUTION

At least one of the vent tubes should remain behind the strut to ensure that icing cannot block both vents.

3. No adjustment need be performed when satisfactory equalization of fuel tank feeding is obtained.

12-25. FUEL SELECTOR VALVE. (See figure 12-7.)

12-26. DESCRIPTION. A four position fuel selector valve is located beneath the floorboard just aft and slightly to the left of the pedestal structure. A shaft incorporating two meshing gears links the valve to a handle and shaft assembly mounted on the pedestal structure. The positions of the handle are labeled OFF, LEFT, BOTH ON AND RIGHT. Valve repair is limited to replacement of component parts only.

12-27. REMOVAL AND INSTALLATION.

- a. Drain all fuel from wing tanks, fuel strainer, lines and selector valve, observing precautions outlined in paragraph 12-3.
- b. Remove selector valve handle (1) and pedestal cover.
- c. Peel back carpet as required to gain access to inspection plates aft of pedestal structure.
- d. Disconnect drive shaft assembly (4) at selector valve (6).
- e. Disconnect and cap inlet and outlet fuel lines to valve.
- f. Remove screws attaching valve to mounting bracket (10) and withdraw valve.
- g. Reverse preceding steps for installation. Service aircraft in accordance with Section 2, turn fuel selector valve to ON position and check for leaks.
- h. Replace items removed for access.

12-28. DISASSEMBLY.

- a. Remove fuel selector valve in accordance with paragraph 12-27.
- b. Remove screws securing cover (2) to valve body (8) and carefully remove cover. Discard O-rings (3) and (16), but retain ball (4) and spring (5) for reinstallation.
- c. Slowly withdraw rotor (6) from valve body.

### NOTE

Removal of rotor (6) will allow seal (9), O-ring (10), washer (11) and spring (12) (one each installed in both inlet ports) to spring free.

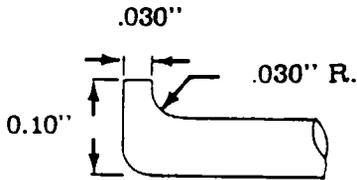
- d. Remove washer (7), plug (14), and O-ring (13).

# MODEL R182 AND TR182 SERVICE MANUAL

R18200001 THRU R18200583  
FR18200001 THRU FR18200020

1. Handle
2. Placard
3. Gear Assembly
4. Drive Shaft
5. Inlet Line
6. Selector Valve
7. Inlet Line
8. Spring Compressor (Locally Mfg.)
9. Outlet Line
10. Mounting Bracket

Grind flat  
 and break sharp edges



Detail **B**

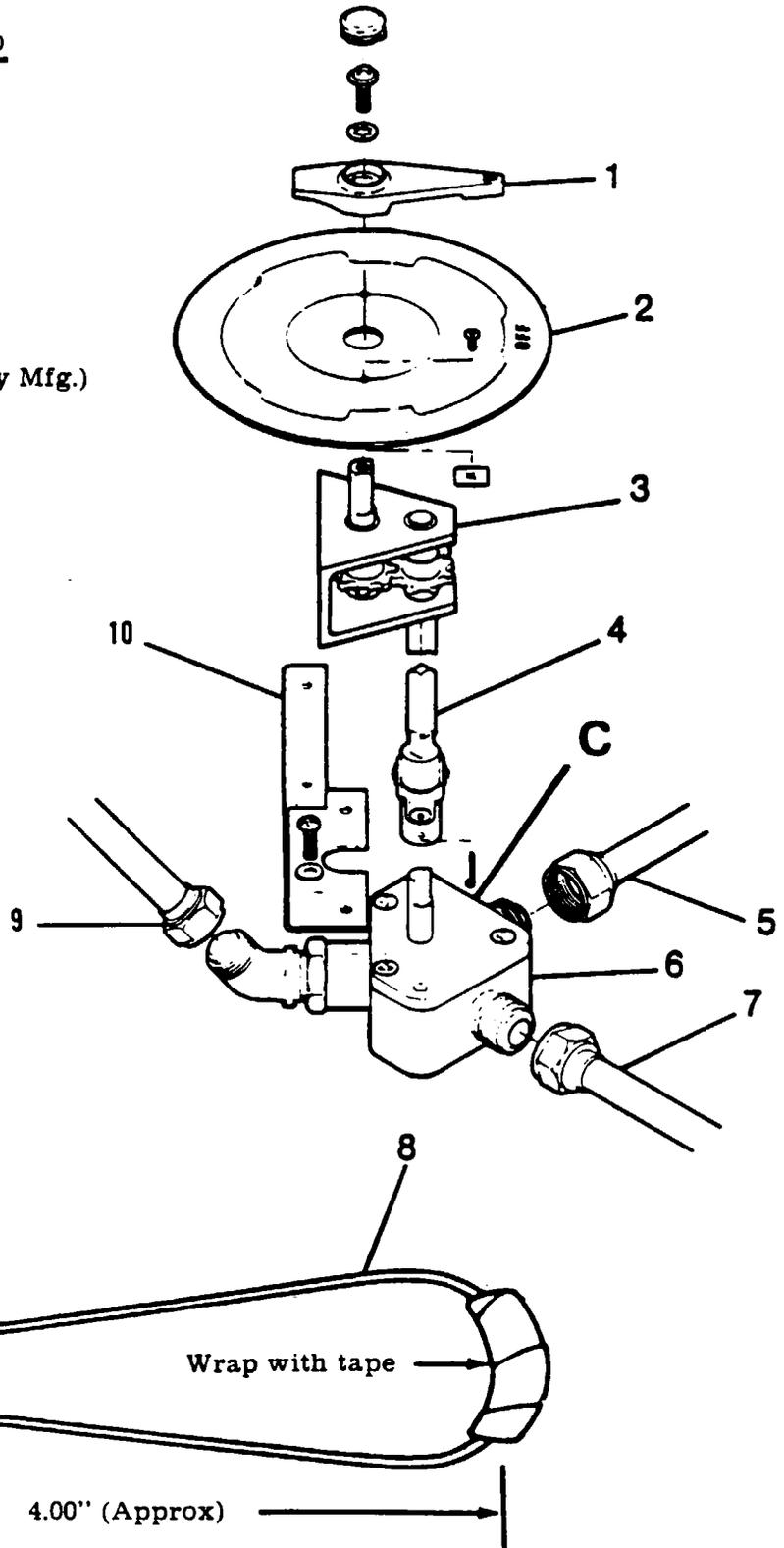
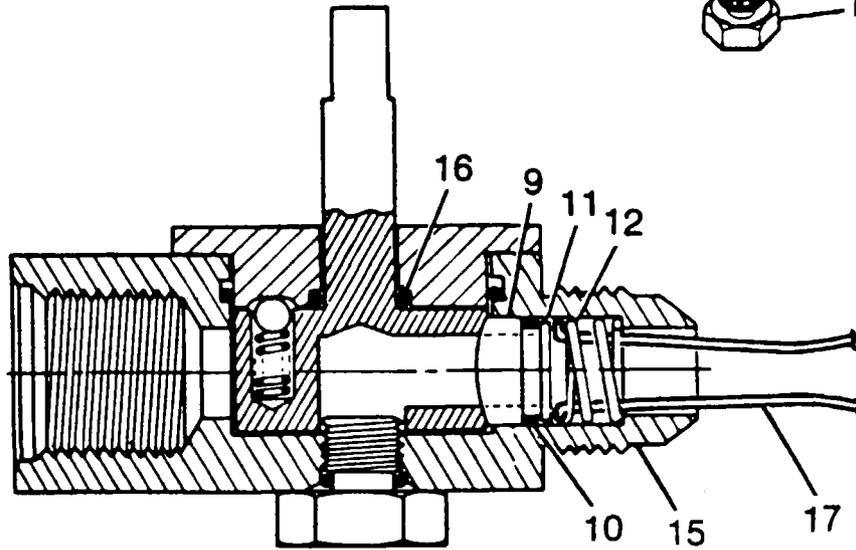
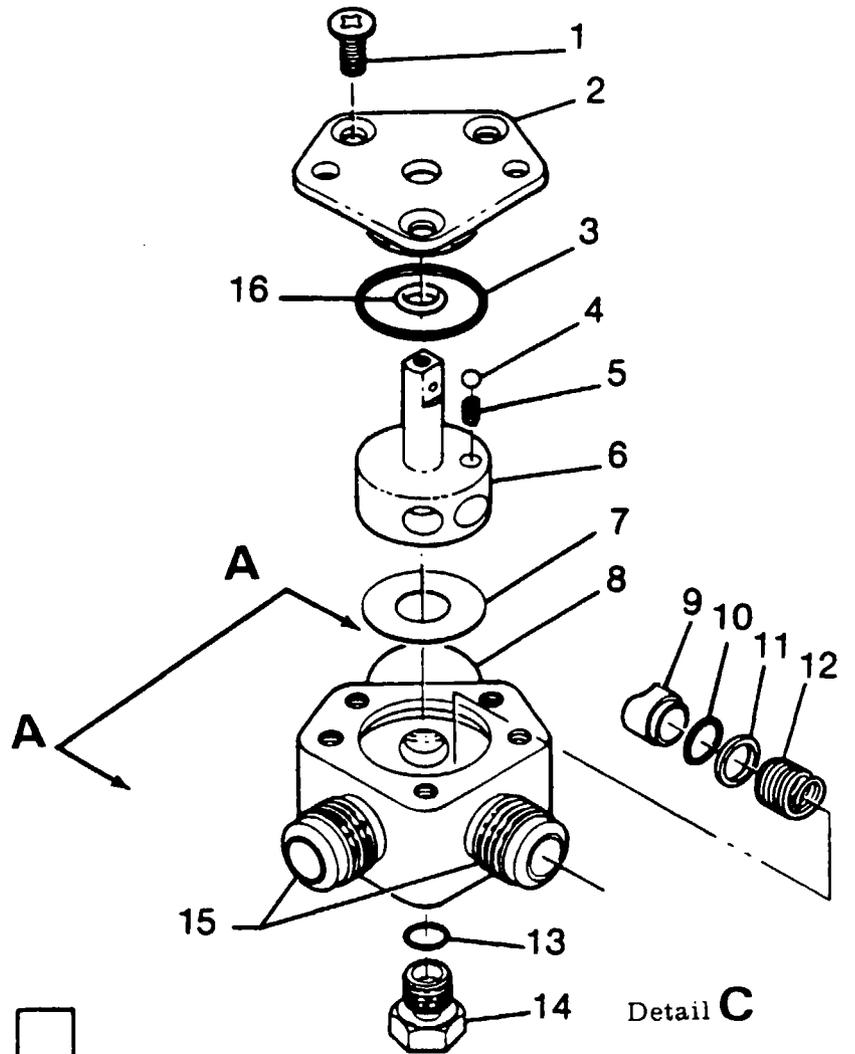


Figure 12-7. Fuel Selector Valve (Sheet 1 of 5)

MODEL R182 AND TR182 SERVICE MANUAL

- 1. Screw
- 2. Cover
- 3. O-Ring
- 4. Ball
- 5. Spring
- 6. Rotor
- 7. Washer
- 8. Body
- 9. Seal
- 10. O-Ring
- 11. Washer
- 12. Spring
- 13. O-Ring
- 14. Plug
- 15. Inlet Ports
- 16. O-Ring
- 17. Spring Compressor



Cross Section A-A

Figure 12-7. Fuel Selector Valve (Sheet 2 of 5)

# MODEL R182 AND TR182 SERVICE MANUAL

R18200584 THRU R18201798  
FR18200021 THRU FR18200070

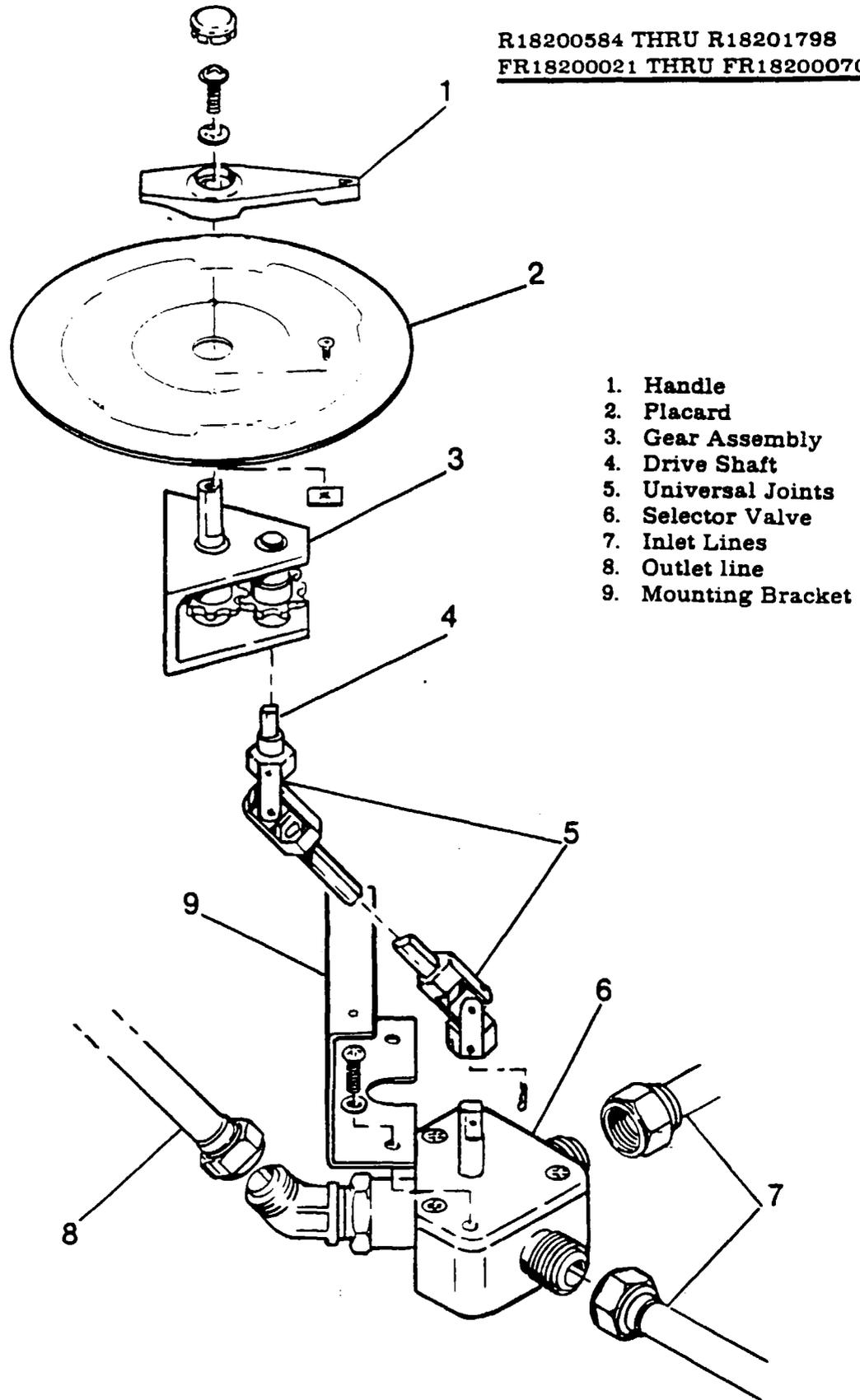


Figure 12-7. Fuel Selector Valve (Sheet 3 of 5)

# MODEL R182 AND TR182 SERVICE MANUAL

R18201799 THRU R18201999

**NOTE**  
The support (3) must be adjusted so that the drive shaft (4) moves freely.

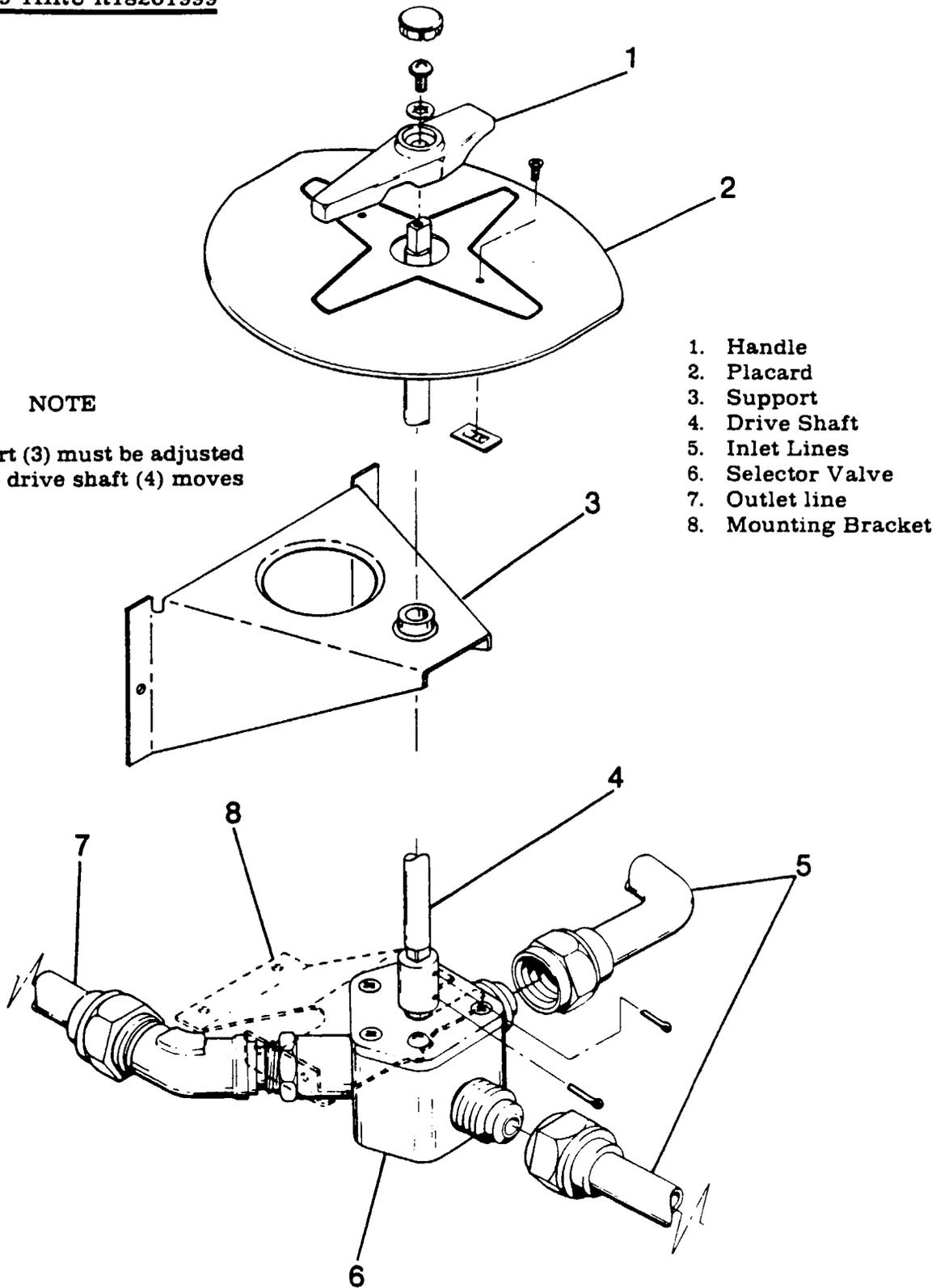
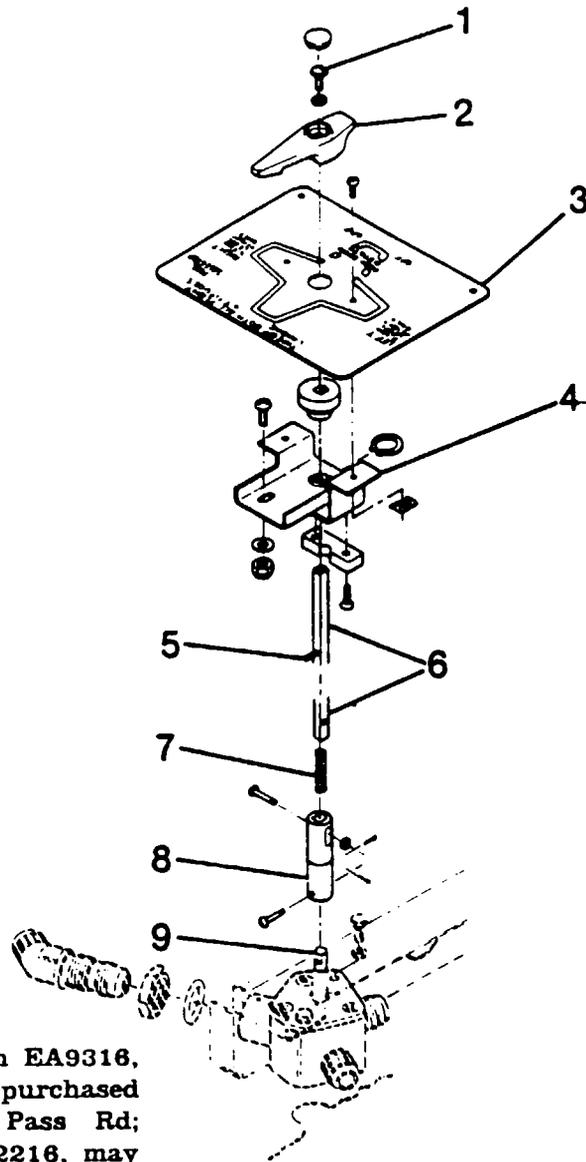


Figure 12-7. Fuel Selector Valve (Sheet 4 of 5)

# MODEL R182 & TR182 SERIES SERVICE MANUAL

## R18202000 AND ON

1. Screw
2. Handle
3. Plate
4. Bracket
5. Roll Pin
6. Drive Shaft
7. Spring
8. Collar
9. Selector Valve



### NOTES

Roll pin (5) must be bonded to shaft (6) with EA9316, EA9309 or EA9314. These products may be purchased from Hystol Div., Dexter Corp., Willow Pass Rd; Pittsburg, CA 94565. Equivalent product, EC2216, may be purchased from 3M Co., St. Paul, MN 55119. Clean roll pin (5) and shaft (6) with MEK, and thoroughly dry parts before applying bonding agent. At 75°F, bond cures to 80% ultimate tensile strength within 24 hours. Accelerated cure times are as follows:

- (a) Five minutes at 250°F.
- (b) Ten minutes at 200°.

Before installing screw (1) on drive shaft (6), clean threads of screw (1) with MEK or equivalent. After threads have thoroughly dried, apply Grade CV Loctite Catalog 85 or 83, Loctite 242, or equivalent. Loctite products may be obtained from: Loctite Corp., 705 Mountain Rd, Newington, CT 06111.

Figure 12-7. Fuel Selector Valve (Sheet 5 of 5)

## MODEL R182 AND TR182 SERVICE MANUAL

### 12-29. CLEANING, INSPECTION AND REPAIR.

#### NOTE

Repair of damaged or worn parts of the selector valve assembly is NOT authorized, therefore, is limited to replacement of component parts only.

- a. Clean disassembled parts by washing in Stoddard solvent or equivalent. Blow dry parts using clean compressed air.
- b. Inspect all parts for obvious wear or damage as follows:
  1. Check detent holes in cover (2) for excessive wear and examine bearing surfaces of rotor (6).
  2. Inspect shaft and bearing surfaces of rotor (6) for removal of black anodized finish indicating wear. Check for internal corrosion of drilled passages.
  3. Examine valve body (8) for wear, cracks, distortion and internal corrosion. Any damage to thread surfaces at inlet and outlet ports or cover attach screw holes is cause for rejection.

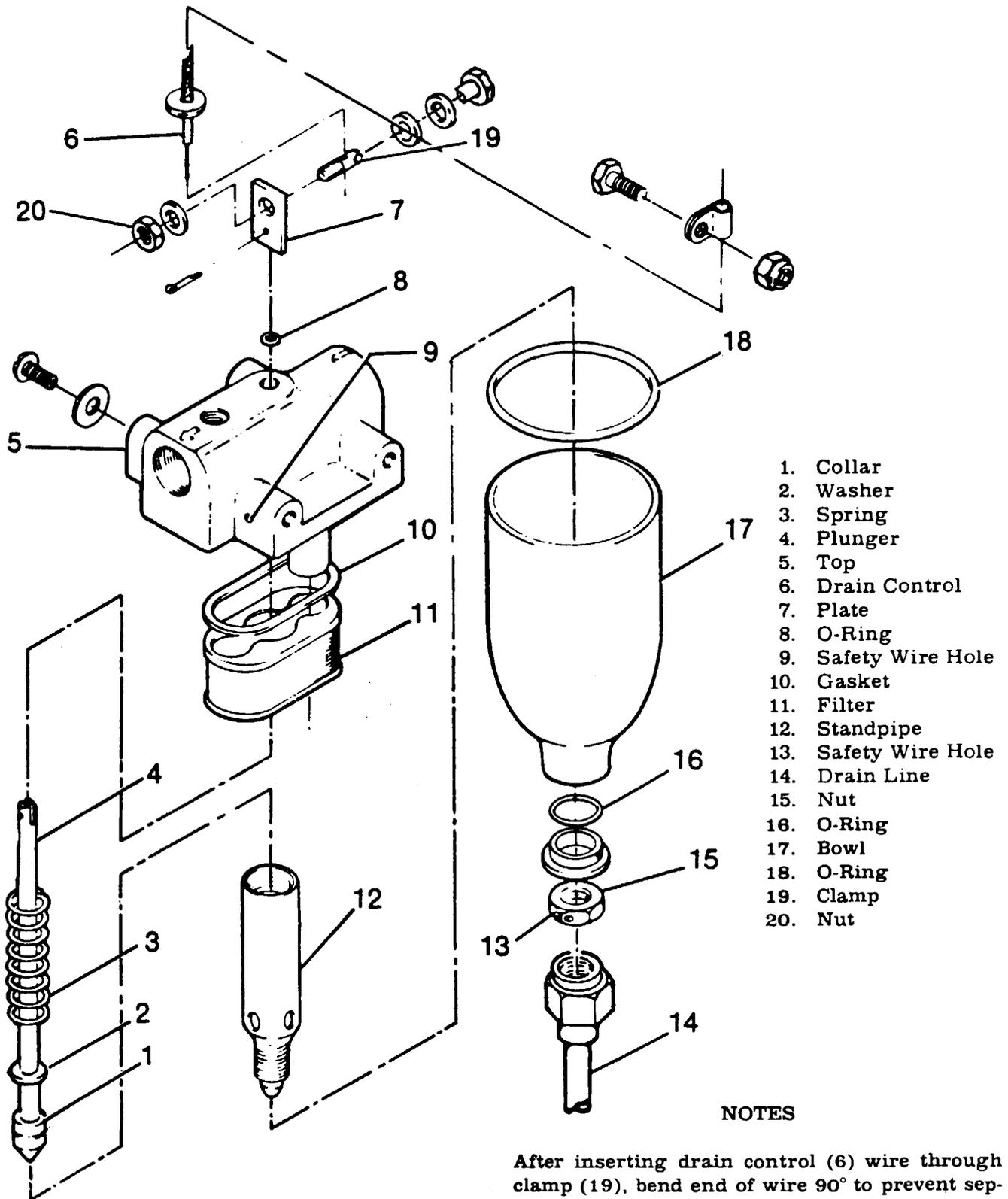
### 12-30. REASSEMBLY.

#### NOTE

Mount selector valve in a vise or equivalent bench support, making sure that valve body (8, figure 12-7), is protected from damage. Fabricate two spring compressors (21, figure 12-7), to aid assembly. Stock is 1/16 inch diameter #1 OX-WELD AC welding rod (or equivalent) according to dimensions shown. Replace O-rings (10, and 16, figure 12-7) each time valve rotor is removed from body.

- a. Ensure all component parts are clean, and coat sparingly with lightweight engine oil.
- b. Insert washer (11) and springs (12) into body (8).
- c. With spring compressors (17) in place as shown in Section A-A, figure 12-7, compress springs (12) and install washers (11), new O-rings (10) and seals (9) into inlet ports.
- d. Holding springs compressed, carefully insert rotor (6) into valve body (8). Release spring compressors and check for proper seating of seals to rotor.
- e. Insert new O-ring (3) into recess at top of valve body (8).
- f. Place new O-ring over shaft of rotor.
- g. Lubricate spring (5) and ball (4) with lubricant conforming to Military Specification VV-P-236 (USP Petrolatum or equivalent), inserting spring into hole in top of rotor.
- h. Place ball on spring and turn rotor as required to index one of the detent holes in cover (2).
- i. Attach cover (2) and test rotation of rotor shaft for ease of operation and positive detent engagement.
- j. Replace plug (14) using new O-ring (13).
- k. Reinstall selector valve in accordance with paragraph 12-27.

MODEL R182 AND TR182 SERVICE MANUAL



1. Collar
2. Washer
3. Spring
4. Plunger
5. Top
6. Drain Control
7. Plate
8. O-Ring
9. Safety Wire Hole
10. Gasket
11. Filter
12. Standpipe
13. Safety Wire Hole
14. Drain Line
15. Nut
16. O-Ring
17. Bowl
18. O-Ring
19. Clamp
20. Nut

NOTES

After inserting drain control (6) wire through clamp (19), bend end of wire 90° to prevent separation from clamp if nut (20) should loosen.

Torque nut (15) to 25-30 in-lbs and safety-wire.

Figure 12-8. Fuel Strainer

## MODEL R182 AND TR182 SERVICE MANUAL

12-31. **FUEL STRAINER.** (See figure 12-8.)

12-32. **DESCRIPTION.** The fuel strainer is mounted at the firewall in the lower engine compartment and is equipped with a quick-drain valve which provides a means of draining trapped water and sediment from the fuel system. The quick-drain control is located adjacent to the oil dipstick and is accessible through the oil dipstick door.

### NOTE

The fuel strainer can be disassembled, cleaned and reassembled without removing the assembly from the aircraft.

12-33. **REMOVAL AND INSTALLATION.**

- a. Remove cowling as necessary to gain access to strainer.
- b. With selector valve in OFF position, drain fuel from strainer and lines with strainer quick-drain control.
- c. Disconnect and cap or plug all fuel lines and control from strainer. (Observe precautions in paragraph 12-3.)
- d. Remove bolts attaching assembly to firewall, and remove strainer.
- e. Reverse the preceding steps for installation. With selector valve in ON position, check for leaks and proper operation of quick-drain valve.

12-34. **DISASSEMBLY AND ASSEMBLY.**

- a. With selector valve in OFF position, drain fuel from bowl and lines with quick-drain control.
- b. Remove drain tube, 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 with 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 drain tube.
- g. With selector valve in ON position, check for leaks and proper operation of quick-drain valve.
- h. Safety wire bottom nut to top assembly. Wire must have right hand wrap, at least 45 degrees.

12-35. **PRIMING SYSTEM.**

12-36. **DESCRIPTION.** The priming system is comprised of a plunger-type manually-operated primer, which draws fuel from the strainer and forces it through a tee fitting to each of the rear four cylinders, no's. 3, 4, 5 & 6.

12-37. **REMOVAL AND INSTALLATION.**

- a. With selector valve in the OFF position, drain fuel from strainer and lines with quick-drain control.
- b. Disconnect and cap or plug all fuel lines at primer. (Observe precautions in paragraph 12-3.)
- c. Unscrew knurled nut, and remove plunger from pump body.
- d. Remove pump body from instrument panel.

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### 12-37A. PRIMING SYSTEM (TR182 OPTIONAL)

12-37B. DESCRIPTION. The optional electric primer consists of a solenoid valve, switch, circuit breaker, and necessary plumbing. The solenoid valve is mounted on a tee attached to the outlet side of the auxiliary fuel pump. A line to the engine-driven pump is attached to the other side of the tee. The primer functions in conjunction with the auxiliary electric fuel pump. With the auxiliary electric fuel pump on, and the primer switch depressed, the solenoid valve opens, allowing fuel to flow to the cylinders.

### NOTE

Visually inspect primer lines for crushed, kinked or broken condition. Insure proper clamping to prevent fatigue due to vibration and chafing.

### 12-38. AUXILIARY ELECTRIC FUEL PUMP.

12-39. DESCRIPTION. An electrically driven auxiliary fuel pump is mounted on the firewall, and is connected in parallel with fuel flow of the primary pump. This pump is designed to be used if the primary pump should fail. It is controlled by the Auxiliary Fuel Pump Switch located adjacent to Master Switch. As the fuel pressure and plunger spring tension become equal, the pumping action is automatically reduced due to limited plunger movement which maintains low tolerance output pressure.

### 12-40. REMOVAL AND INSTALLATION.

- a. Place fuel selector valve in OFF position.
- b. Make sure that Master Switch and Auxiliary Fuel Pump Switch are OFF.
- c. Remove fuel lines from pump, observing precautions in paragraph 12-3.
- d. Disconnect wire at connector.
- e. Remove two mount bolts, retaining hardware for reinstallation.
- f. Reverse preceding steps for installation, and check pump operation when repair is completed.

### 12-41. TURBOCHARGED AIRPLANES.

12-42. DESCRIPTION. On turbocharged airplanes a high pressure fuel pump is used to ensure adequate fuel flow.

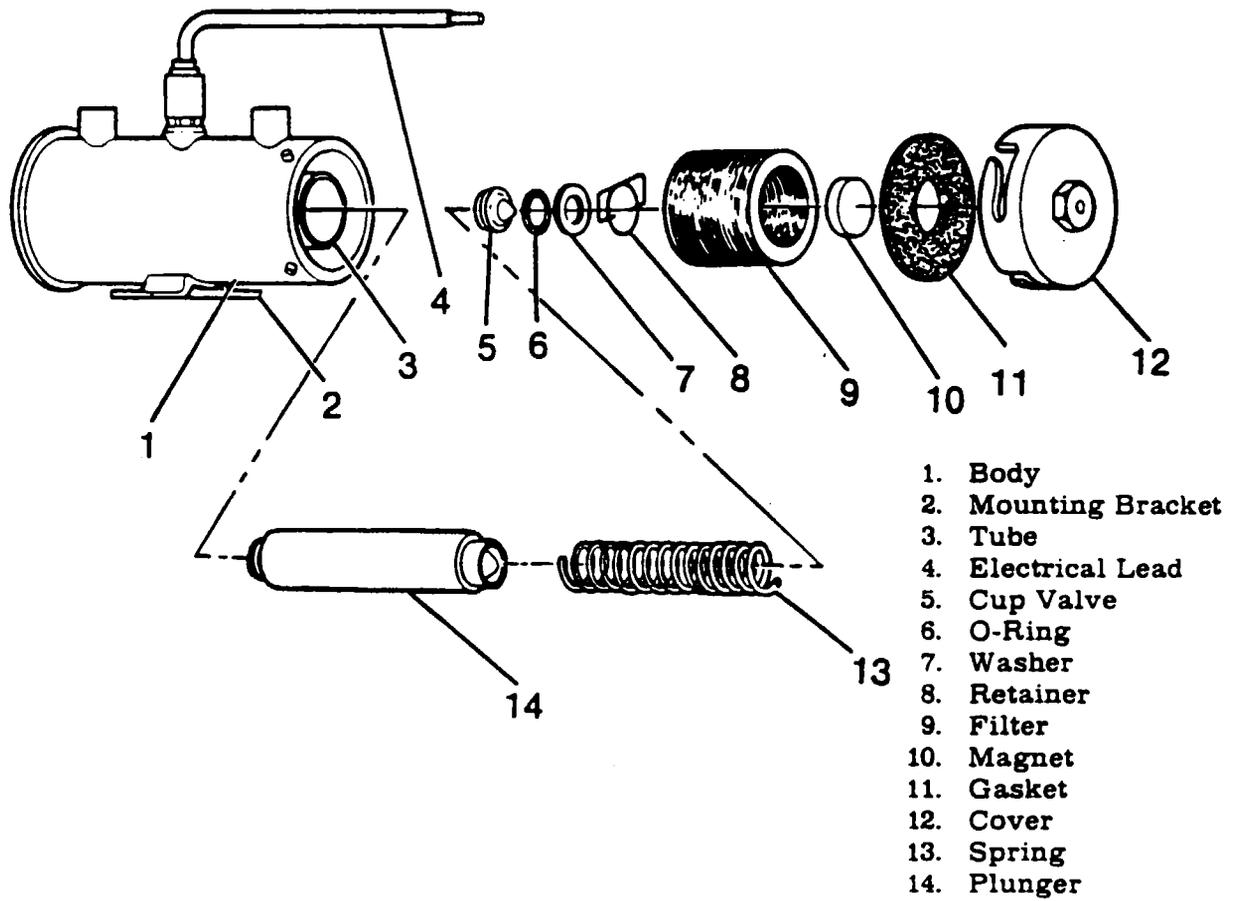
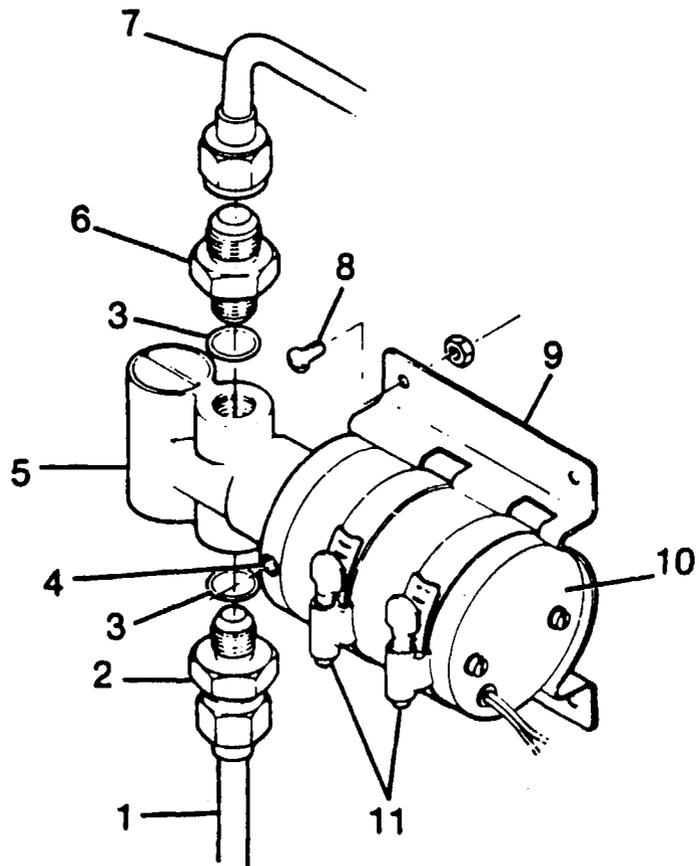


Figure 12-9. Auxiliary Fuel Pump

# MODEL R182 AND TR182 SERVICE MANUAL



1. Fuel Line (Inlet)
2. Fitting
3. O-Rings
4. Fuel Pump Drain Fitting
5. Auxiliary Fuel Pump
6. Fitting
7. Fuel Line (Outlet)
8. Screw
9. Mount Bracket
10. 28V Single Speed Motor
11. Clamps

Figure 12-10. Auxiliary Fuel Pump on Turbo Equipped Airplane

## MODEL R182 AND TR182 SERVICE MANUAL

### 12-43. REMOVAL AND INSTALLATION.

- a. Place Fuel Selector Valve in OFF position.
- b. Be sure that Master Switch and Auxiliary Fuel Pump switch are OFF.
- c. Remove fuel lines from pump, observing precautions in paragraph 12-3.
- d. Disconnect wire at connector.
- e. Remove two mount bolts, retaining hardware for reinstallation.
- f. Reverse preceding steps for installation, check pump operation when repair is completed.

### 12-44. INTEGRAL FUEL BAY.

12-44A. DESCRIPTION. Beginning serial R18200584 and FR18200021. The integral fuel bay is a sealed portion of the inboard wing structure between the wing spars, extending approximately five feet into each wing. This type construction reduces weight as well as increasing the strength of the wing member, and extends the operable range of the airplane considerably.

12-45. FUEL LEAK CLASSIFICATION. Fuel leaks which do not constitute a flight hazard are stains, seeps, and heavy seeps NOT in an enclosed area. All leaks should be repaired when the airplane is grounded for other maintenance. Fuel leaks that constitute a flight hazard are running leaks in any area, seeps, heavy seeps, or stains in an enclosed area, such as the wing leading edge, sections of wing inboard of fuel bay, and the area between the rear fuel spar and trailing edge. This type leak must be repaired prior to flight. A wet or stained spot on the wing is the visual indication of leak intensity. Classification of fuel leakage is shown in figure 12-11.

### NOTE

Stains and seeps that are not considered a flight hazard must be inspected after each flight to ensure that they have not increased.

If a flight hazard leak should be identified at a field where no repair facilities are available. We recommend that the applicable bay be drained, a temporary patch placed over the leak to prevent escaping fumes, and fly to nearest facility that can complete repair action. Switch fuel selector to opposite bay, and fly aircraft normally to repair facility.

### 12-46. FUEL BAY PURGING.

### WARNING

Purge fuel bays with an inert gas prior to repairing fuel leaks, to preclude the possibility of explosions.

The following procedure may be used to purge the bay with argon or carbon dioxide.

- a. Ground airplane to suitable ground stake.
- b. Place fuel selector in OFF position.
- c. Drain all fuel from applicable bay, observing precautions in paragraph 12-3.
- d. Remove access door and insert inert gas supply hose into bay.
- e. Allow gas to flow into bay for several minutes to remove all fuel vapors.

Since argon or carbon dioxide are heavier than air, these gases will remain in the bay during the repair. Non-sparking tools shall be used to make repair. (air motors, plastic scrapers, etc.)

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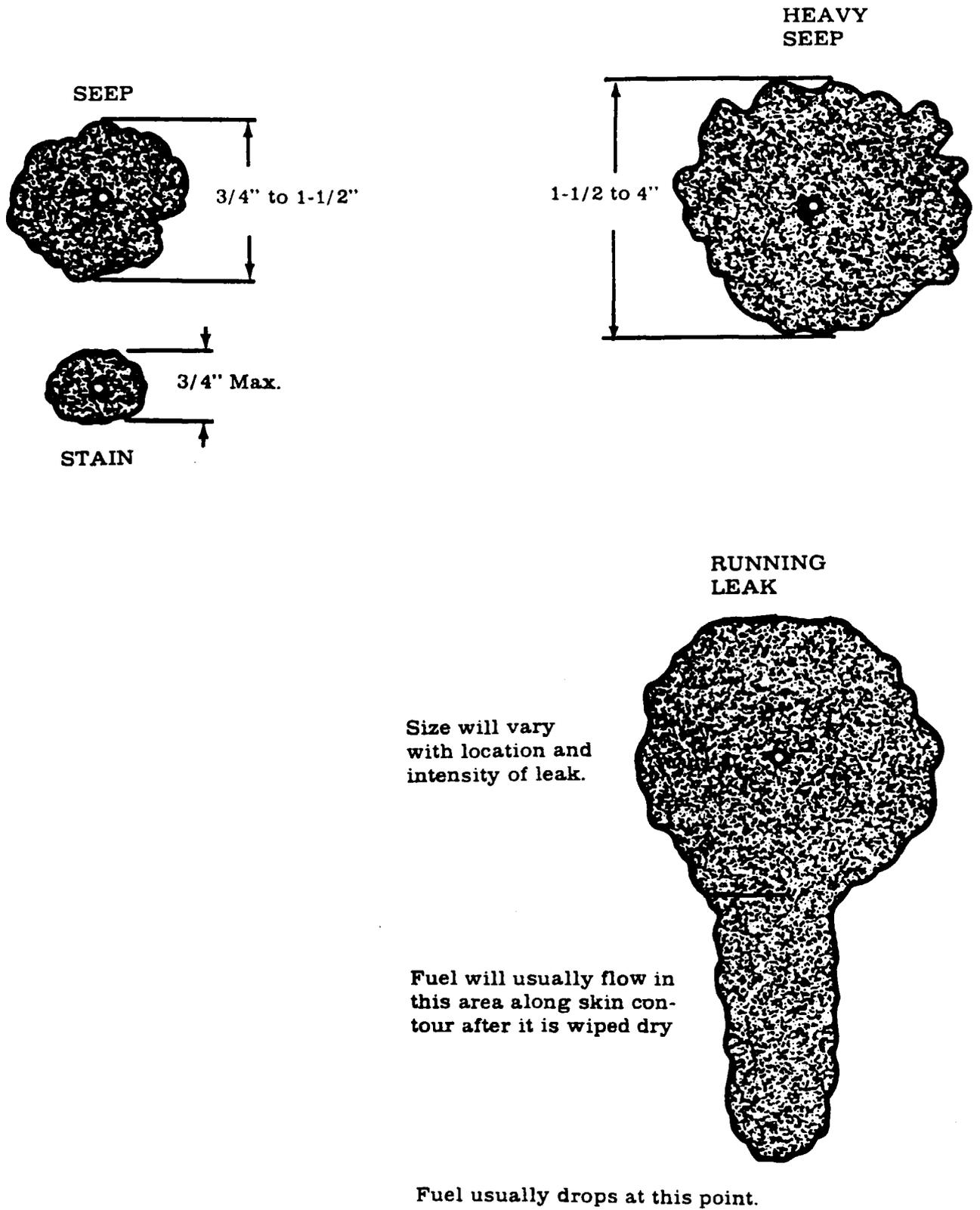


Figure 12-11. Classifications of Fuel Leaks

# MODEL R182 AND TR182 SERVICE MANUAL

## NOTE

Portable vapor detectors are available to determine presence of explosive mixtures and are calibrated for leaded fuel. These detectors can be used to determine when it is safe to make repairs.

- 12-47. **INTEGRAL FUEL BAY SEALANT.** Two kinds of sealants are used, one to seal the bay and the other to seal the access doors and fuel quantity transmitter adapter. The access door sealant is more pliable, and will not adhere to metal so firmly as the bay sealant does. This permits the access doors and fuel quantity transmitter adapter to be removed without damage to them. Service Kits SK210-56 (6-ounce tube) and SK210-101 (2.5-ounce tube), which are available from the Cessna Supply Division, contain these sealants with the proper quantity of accelerator for each sealant. The sealants can be identified by color. The bay sealant is white, and its accelerator is a black paste. The access door sealant is gray, and its accelerator is a clear liquid.

## WARNING

Keep sealants away from heat and flame. Use only in a well ventilated area. Avoid skin and eye contact. **WEAR EYE SHIELDS.** In case of eye contact, flush generously with clean water, and secure prompt medical attention.

- 12-48. **MIXING SEALANT.** Use all the accelerator and sealant in the container when mixing, to ensure the proper ratio of accelerator to sealant. Stir the accelerator to absorb all floating liquid before it is mixed with the sealant. The accelerator can then be poured into the container of sealant for mixing, otherwise, a wax-free container must be used. Stir accelerator and sealant until it becomes a uniform mixture. Do not stir air into mixture so it forms blubbles, if bubbles appear they must be removed.
- 12-49. **SEALING DURING STRUCTURAL REPAIR.**

## CAUTION

Protect drain holes and fuel outlet screens when applying sealants.

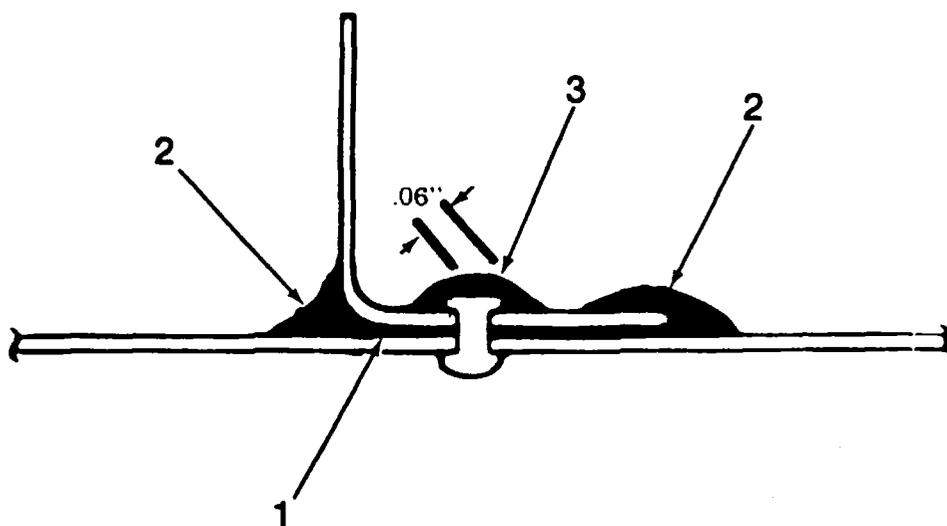
Any repair that breaks the fuel bay seal will necessitate resealing that bay area. Repair parts that need sealing must be installed during the sealing operations. All joints within the boundary of the bay, but do not provide a direct fuel path out of the bay, as such fuel spar flanges, and rib flanges which must be fay surface sealed and fillet sealed on the fuel side. Fay surface sealing is applying sealant to one mating part before assembly. Enough sealant must be applied so it will squeeze out completely around joint when the parts are fastened together. The fillet seal is applied after the joint is fay surface sealed and fastened. Sealer is (fillet) applied to the edge of all riveted joints, joggles, bend reliefs, voids, rivets, or fasteners. All boundaries are sealed, and any other place that could become a fuel leak. The fay sealant need not be cured before applying the fillet sealer, however, the fay sealant must be free of dirt or other contaminants before applying fillet seal. Fillets laid on intersecting joints shall be joined together to produce a continuous seal. Sealant must be pressed into the joint to displace any entrapped air bubbles. Use an extrusion gun to lay a bead along joint, and work out all entrapped air with a small paddle to eliminate bubbles.

# MODEL R182 AND TR182 SERVICE MANUAL

## NOTE

Refer to paragraph 12-49.

### TYPICAL INSPECTION PLATE



### TYPICAL RIB SECTION

1. Faying
2. Fillet Seal
3. Rivet and Fastener Seal

Figure 12-12. Typical Fuel Bay Sealing (Sheet 1 of 2)

MODEL R182 AND TR182 SERVICE MANUAL

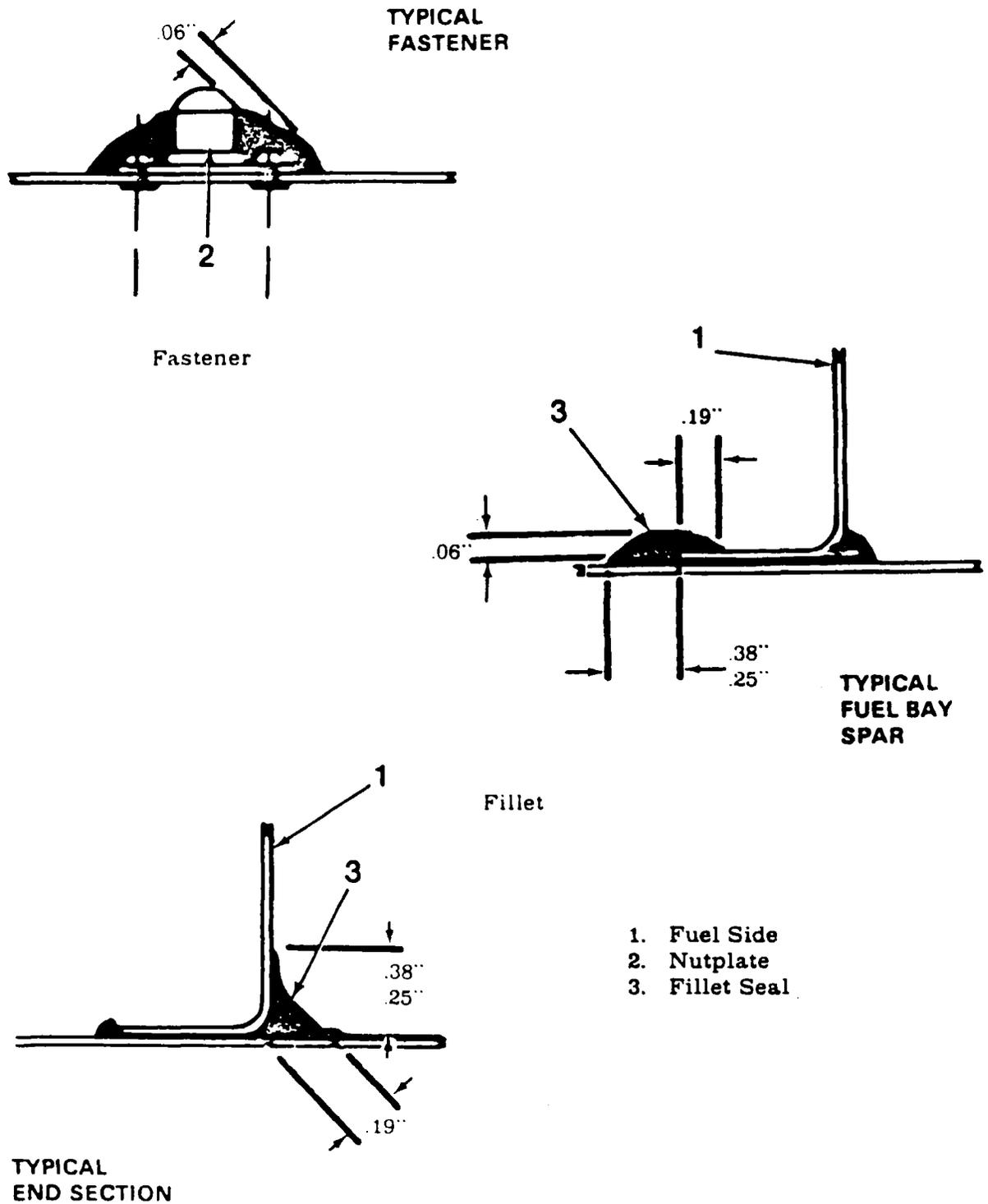


Figure 12-12. Typical Fuel Bay Sealing (Sheet 2 of 2)

## MODEL R182 AND TR182 SERVICE MANUAL

### NOTE

During structural repair, parts must be predrilled, countersunk or dimpled, and cleaned before sealed and positioned for final installation.

- a. Remove all existing sealant from area to be sealed, leaving a taper on the remaining sealant. The taper will allow a scarf bond, and a continuous seal when the new sealant is applied.

### NOTE

The best method of removing sealant is with a chisel-like tool made of hard fiber. Remaining sealant can be removed with aluminum wool. Steel wool or sandpaper must not be used.

- b. Vacuum thoroughly to remove all chips, filings, dirt, etc., from bay area.
- c. All surfaces to be sealed should be thoroughly cleaned by wiping with a clean cloth dampened with Methyl Ethyl Ketone (MEK), Acetone or similar solvent, and dried with a clean cloth before allowing solvent to evaporate. Always pour the solvent on the cloth to prevent contaminating solvent. Do not allow cloth to drip. Never use contaminated solvent.

### NOTE

Work life of EC-1675B/A sealant is two hours from the start of mixing. Work life of EC-1608B/A sealant is two hours. These are set on the standard day, 77°F and 50% relative humidity. An increase in temperature or a decrease in humidity will shorten the work life of the sealant.

- d. Apply fay surface sealant to one mating part, and install rivets or fasteners while sealant is still within its work life.

### NOTE

During sealing, the supply of mixed sealant must be monitored to be certain it has not exceeded the normal work life. To check, use a small wooden paddle, or tongue depressor, to gather a small amount of sealant. Touch this sealant to a piece of clean sheet metal. If it adheres, sealant can still be used, if it doesn't adhere, then the sealant has exceeded the allowable work life, and must not be used.

- e. Apply a fillet seal to the repaired area on the inside of the bay.
- f. Apply a fay surface seal to access doors and fuel quantity transmitters adapter, if removed, and install the doors.
- g. Allow sealant to cure, refer to paragraph 12-51 for time requirements.
- h. Clean stains on outer surface.
- i. Test fuel bay for leaks as described in paragraph 12-52.

## MODEL R182 AND TR182 SERVICE MANUAL

- 12-50. **SEALING FUEL LEAKS.** First determine the source of the fuel leak. Fuel can flow along a seam or structure of the wing for several inches, making the leak source difficult to find. A stained area is an indication of the leak source. Fuel leaks can be found by testing the complete bay as described in paragraph 12-52. Another method of detecting the source of a fuel leak is to remove access doors and blow with an air nozzle from the inside of the bay in the area of the leak while soap bubble solution is applied to the outside of the bay. After the leak source has been found, proceed as follows:
- Remove existing sealant in the area of the leak as described in paragraph 12-49.
  - Clean the area and apply a fillet seal. Press sealant into leaking area with a small paddle, working out all air bubbles.
  - If leakage occurs around a rivet or bolt, restrike the rivet or loosen bolt, retorque, and reseal around nut plate.
  - Apply fay surface door sealant to access doors, fuel quantity transmitters, etc., if removed, and install.
  - Test fuel bay for leakage as outlined in paragraph 12-52.
- 12-51. **NORMAL CURE TIME.** Service Kit SK210-56 contains: (A) SP654706B2 access door sealant and (B) SP654890B2 fuel bay sealant. Cure times for (A) and (B) are 24 hours. Service Kit SK210-101 contains: (C) PR1321B 1/2 access door sealant and (D) PR1422B 1/2 fuel bay sealant. Cure time for (C) is 18 hours; cure time for (D) is 45 hours. Cure times for both kits are based on 77°F (25°C) and 50 percent relative humidity.
- 12-51A. **NORMAL WORK TIME.** Normal work time for Service Kit SK210-56 is two hours, and 0.5 hour for Service Kit SK210-101. Shelf life of these kits is approximately six months. If more rapid cure times are desired, refer to the following note and accelerated curing time chart.

### NOTE

Temperature shall not exceed 160°F (71°C). Bay must be vented to relieve pressure during accelerated curing.

### ACCELERATED CURING TIME

°F of Sealant	Time in Hours
160	3
140	4
● 130	5 1/2
120	7

- Applicable to SK210-101 only.

- 12.51B. **INTEGRAL FUEL TANK QUICK-REPAIR SEALANT.** GC-435 is a quick-repair synthetic rubber sealant for use in fuel tanks. The sealant requires no cure time, and may be used when it is necessary to refuel tanks as soon as the repair has been made. The sealant is a two-part, medium-viscosity, polysulfide liquid polymer and may be applied by brush or extrusion. The base compound is cream colored and the accelerator is black. GC-435 may be purchased from: Goal Chemical Sealants Corp., 3137 East 26th Street, Los Angeles, CA 90023.

### NOTE

Unless specifically noted, all items relating to Integral Fuel Tank Sealants also apply to GC-435 sealants.

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### WARNING

The accelerators contain heavy metal peroxides. Keep away from heat and flame. Use only in a well ventilated area. Avoid skin and eye contact. **WEAR EYE SHIELDS.** In case of eye contact, flush generously with water, and get prompt medical attention.

#### 12-52. TESTING INTEGRAL FUEL BAY.

- a. Remove vent line from vent fitting and cap fitting.
- b. Disconnect fuel lines from bay.
- c. To one of the bay fittings, attach a water manometer capable of measuring twenty inches of water.
- d. To the other bay fitting, connect a well regulated supply of air (**1/2 PSI MAXIMUM, or 13.8 INCHES of water**). Nitrogen may be used where the bay might be exposed to temperature changes while testing.
- e. Make sure filler cap is installed and sealed.

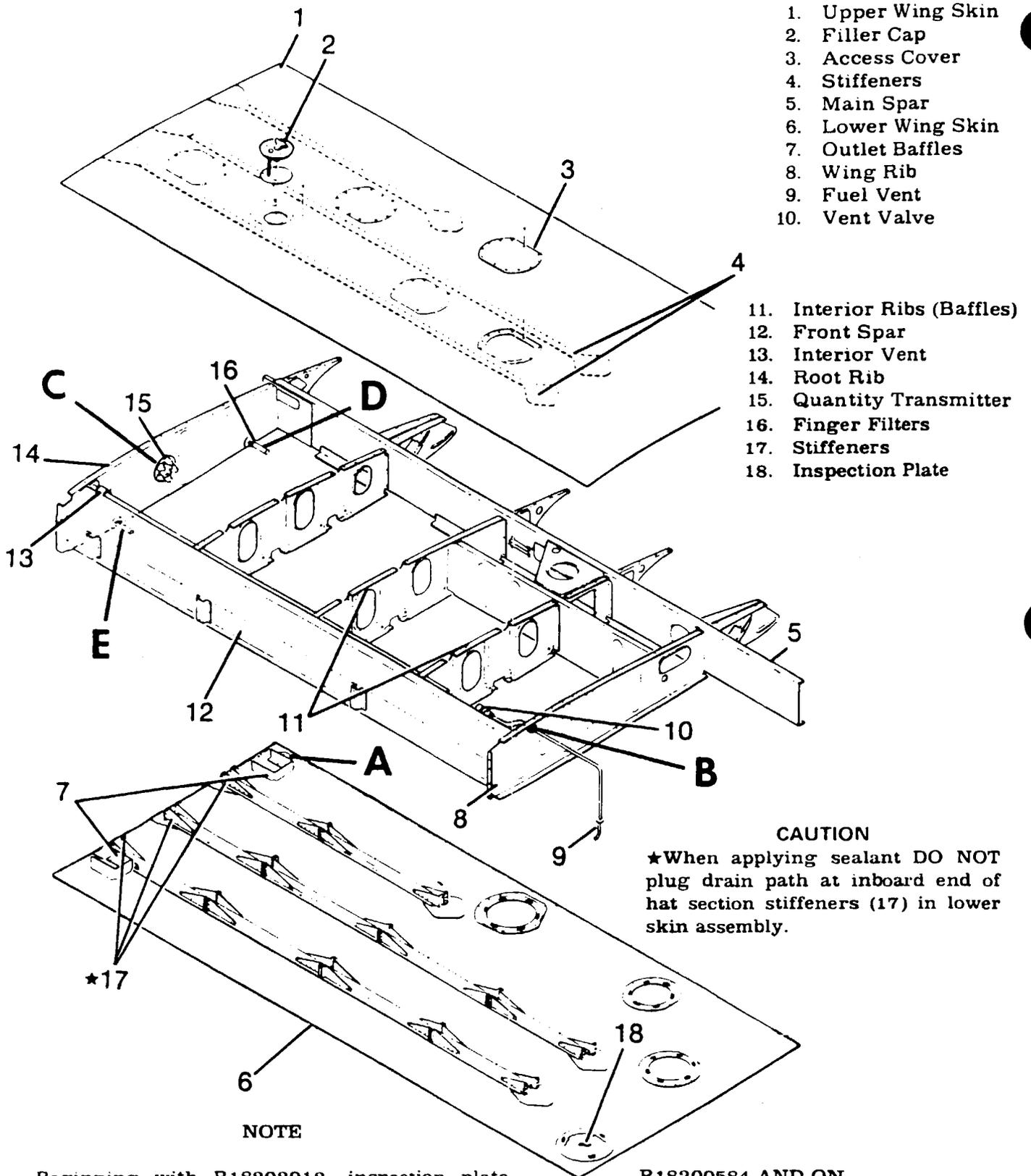
### CAUTION

Do not attempt to apply pressure to the bay without a good regulator, and a positive shutoff in the supply line. Do not inflate the fuel bay to more than 1/2 PSI or damage may occur.

- f. Apply pressure slowly until 1/2 PSI is obtained.
- g. Apply a soap solution as required.
- h. Allow 15 to 30 minutes for pressure to stabilize.
- i. If bay holds for 15 minutes, without pressure loss, bay is acceptable.
- j. Reseal and retest if any leaks are found.

12-53. **FUEL QUANTITY TRANSMITTERS.** One float-actuated, variable-resistive transmitter is located in each fuel bay. They are connected to a magnetic gage, that indicates fuel level in each fuel bay. Complete description, operation, and maintenance is covered in Section 16.

# MODEL R182 AND TR182 SERVICE MANUAL



- 1. Upper Wing Skin
- 2. Filler Cap
- 3. Access Cover
- 4. Stiffeners
- 5. Main Spar
- 6. Lower Wing Skin
- 7. Outlet Baffles
- 8. Wing Rib
- 9. Fuel Vent
- 10. Vent Valve
- 11. Interior Ribs (Baffles)
- 12. Front Spar
- 13. Interior Vent
- 14. Root Rib
- 15. Quantity Transmitter
- 16. Finger Filters
- 17. Stiffeners
- 18. Inspection Plate

**CAUTION**  
 ★When applying sealant DO NOT plug drain path at inboard end of hat section stiffeners (17) in lower skin assembly.

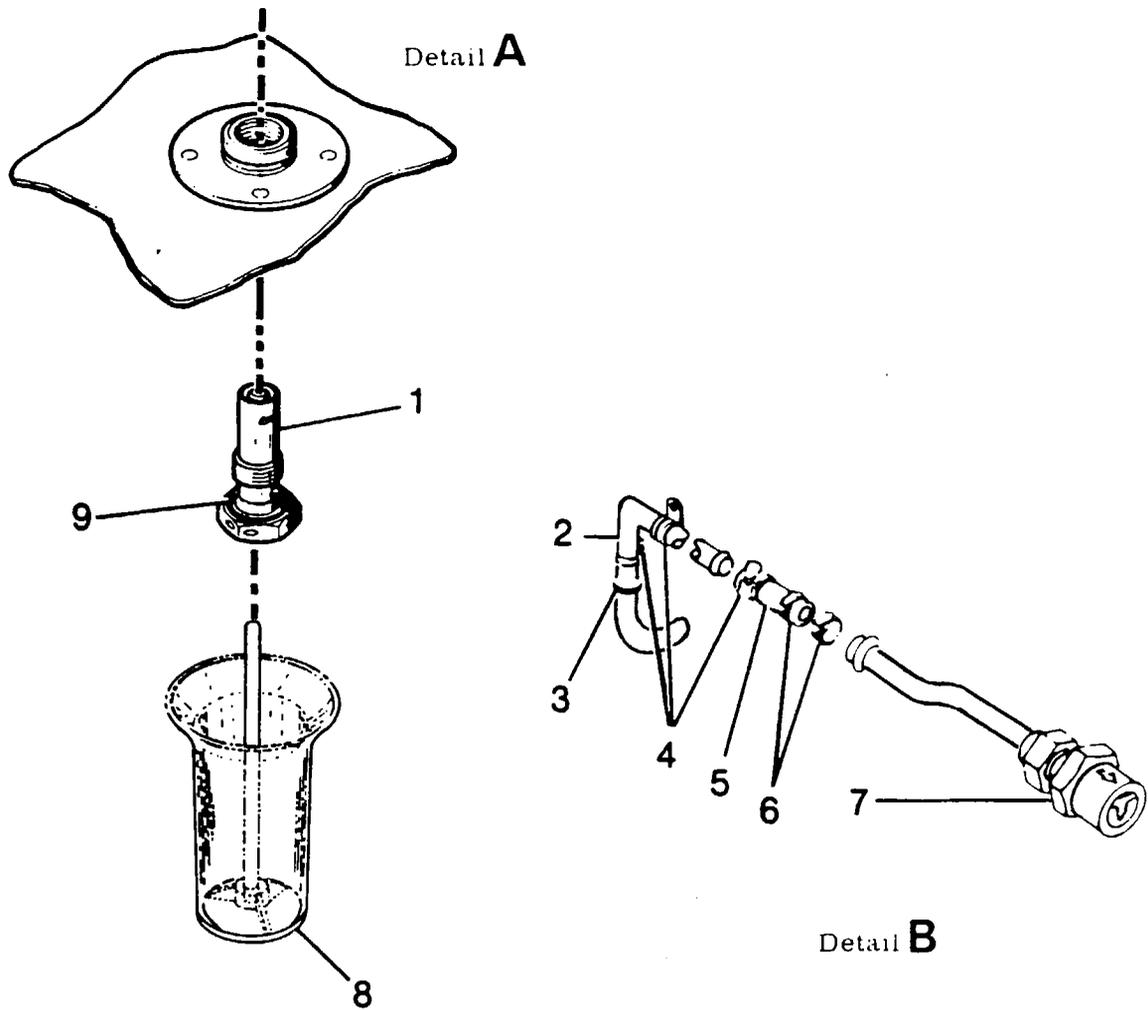
**NOTE**

Beginning with R18202012, inspection plate (18) fasteners change from 3 ea. to 6 ea. recessed countersunk screws.

**R18200584 AND ON**  
**FR18200021 THRU FR18200070**

Figure 12-13. Integral Fuel Bay Installation (Sheet 1 of 5)

# MODEL R182 AND TR182 SERVICE MANUAL



1. Drain Valve
2. Vent Line
3. Grommet
4. Clamp
5. Hose
6. Clamp
7. Vent Valve
8. Fuel Sampler Cup
9. Drain Valve Gasket

Torque drain valve (1), 15 to 35 in-lbs. Drain valve gasket (9) should be lightly oiled and installed with asbestos side side against head of valve. Safety-wire drain valve.

Beginning with serial R18200584 and FR18200026, items 2 thru 7 are installed in LEFT and RIGHT wings.

Figure 12-13. Integral Fuel Bay Installation (Sheet 2 of 5)

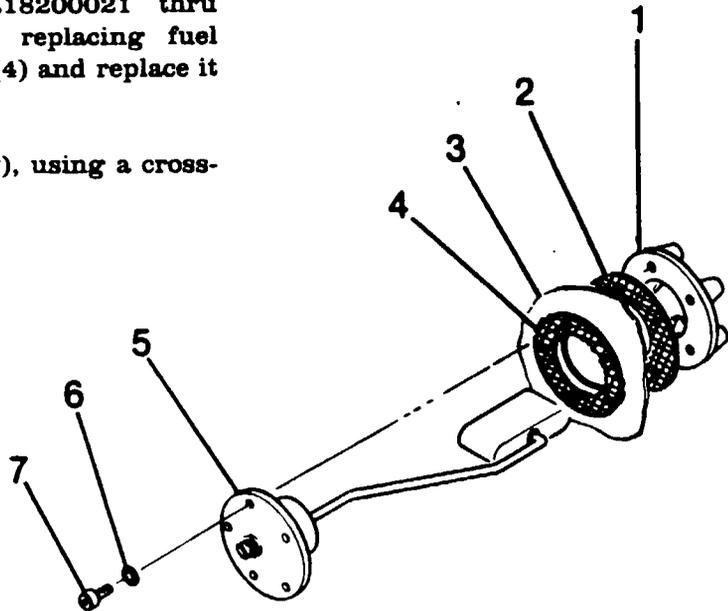
# MODEL R182 & TR182 SERIES SERVICE MANUAL

## NOTES

Beginning with serial R18202007, nutring (1) is bonded to root rib (3). Oder kit number SK210-56 or SK210-101, fuel tank sealant from Cessna Supply Division.

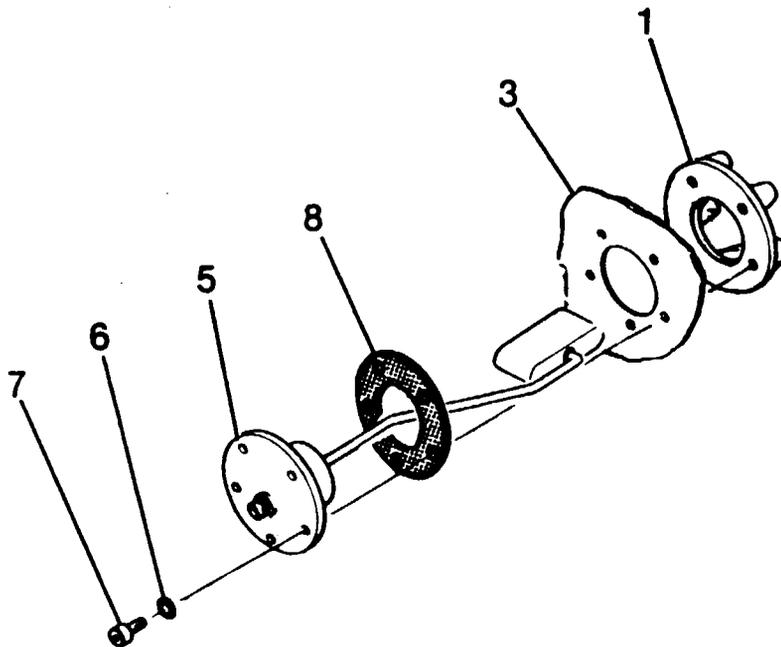
R18200584 thru R18202007 and FR18200021 thru FR18200070, whenever removing and replacing fuel quantity transmitter (5), discard gasket (4) and replace it with new S2670-1 gasket (8).

Torque screws (7) to 20 in-lbs (once only), using a cross-pattern sequence.



1. Nutring
2. Gasket
3. Root Rib
4. Gasket - Transmitter
5. Fuel Quantity Transmitter
6. Washer
7. Screw
8. Gasket

**R18200584 THRU R18202007  
AND FR18200021 THRU  
FR18200070**



**R18202008 AND ON**

Detail **C**

Figure 12-13. Integral Fuel Bay Installation (Sheet 3 of 5)

# MODEL R182 AND TR182 SERVICE MANUAL

## NOTE

Torque clamps (2) and (4) to 8-10 in.-lb.

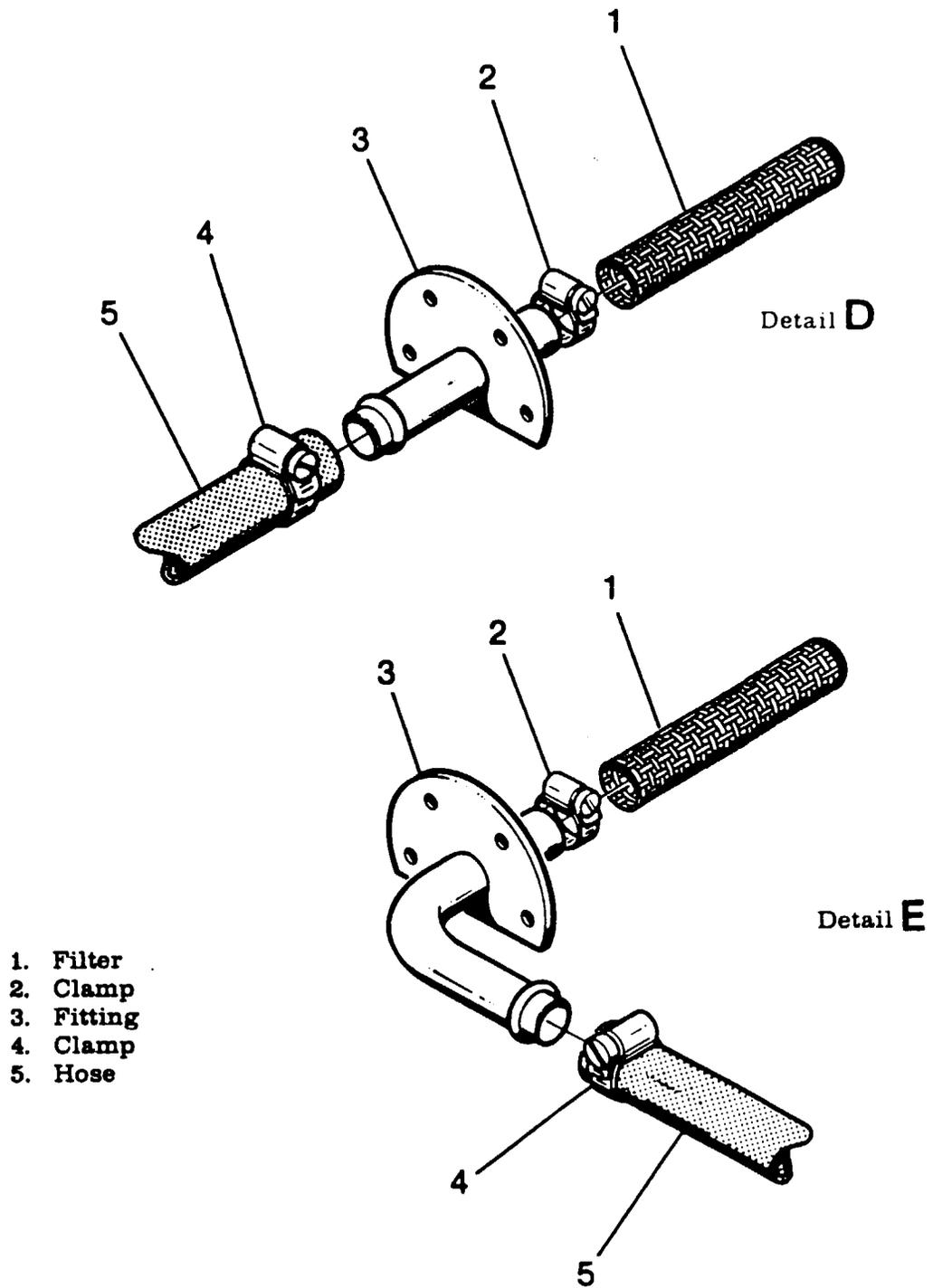
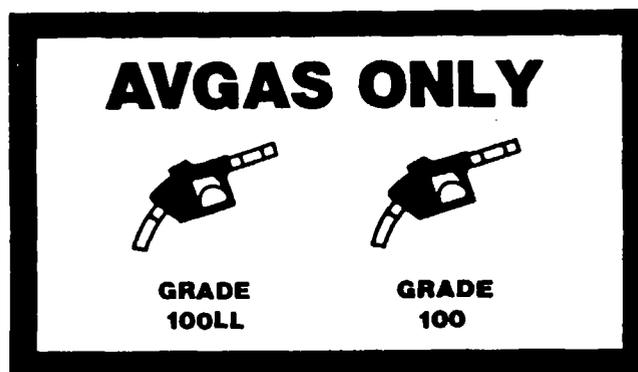


Figure 12-13. Integral Fuel Bay Installation (Sheet 4 of 5)

# MODEL R182 & TR182 SERIES SERVICE MANUAL

**FUEL**  
100LL/100 MIN. GRADE AVIATION GASOLINE  
CAP. 46.0 U.S. GAL.  
CAP. 34.5 U.S. GAL. TO BOTTOM OF FILLER COLLAR

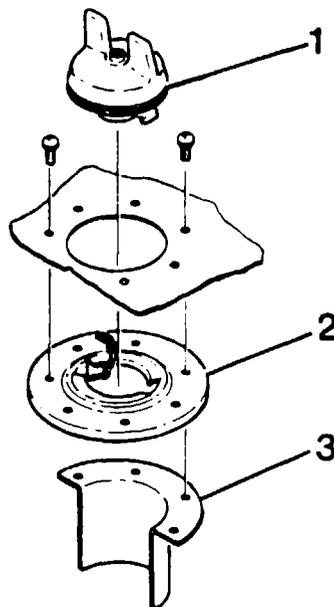
## Fuel Quantity Placard



## Fuel Grade Placard

1. Fuel Cap (See figure 12-5)
2. Adapter
3. Fuel Filler Collar

R18201929 AND ON



R18202000 AND ON

Figure 12-13. Integral Fuel Bay Installation (Sheet 5 of 5)