

FUEL TANKS - MAINTENANCE PRACTICES

1. General

- A. Fuel tank maintenance practices consist of fuel tanks component removal/installation and fuel tank leak check.

2. Fuel Drain Valve Removal/Installation

- A. Remove Fuel Drain Valve (Refer to Figure 201).

- (1) Defuel and purge fuel tank. Refer to Fuel System - Maintenance Practices.
- (2) Remove drain valve (33) and O-ring (32) from nut (31).
- (3) Remove lower wing access covers (3) adjacent to WS 53.00.
- (4) Drill out rivets attaching retainer (30) to skin (34) and remove retainer (30) and nut (31) from fuel tank.
- (5) Clean sealant from mating surfaces of retainer (30) and skin (34).

NOTE: If nut (31) has not been damaged, or if no fuel leaks are noted in this area, removal of retainer (30), nut (31), and access covers (3) is not necessary.

- B. Install Fuel Drain Valve (Refer to Figure 201).

- (1) Replace nut (31), attach and seal retainer (30) to skin (34).
- (2) Replace O-ring (32) on drain valve (33). Install and tighten drain valve (33).
- (3) Replace lower wing access covers (3) at WS 53.00.

3. Fuel Drain Valve Poppet Removal/Installation

- A. Remove Fuel Drain Valve Poppet O-Ring (Refer to Figure 201).

NOTE: Drain valve poppet O-ring replacement can be performed, without defueling the airplane.

- (1) With cross point screwdriver, turn fuel drain valve (33) poppet clockwise, until poppet drops down, exposing poppet O-ring.
- (2) Using a pointed tool, remove O-ring from poppet. Discard O-ring.

- B. Install Fuel Drain Valve Poppet O-Ring (Refer to Figure 201).

- (1) Position new O-ring over exposed end of fuel drain valve (33) poppet. Ensure O-ring is properly seated in groove.
- (2) With cross point screwdriver, push poppet upward and turn poppet counterclockwise until poppet locks in place, flush with bottom of drain valve.

CAUTION: Continuing to turn drain valve poppet counterclockwise past the locked position will result in the fuel drain valve (33) being locked in the open position.

4. Float-type Fuel Quantity Transmitters and Low Fuel Level Switches Removal/Installation

- A. Remove Fuel Quantity Transmitters and Low Fuel Level Switches (Refer to Figure 201).

- (1) Defuel and purge fuel tank.
- (2) Remove lower wing access covers (3) adjacent to WS 53.00, WS 101.00, WS 145.00 and WS 214.30.
- (3) Detach connector (10), disconnect and identify wires at inboard, center inboard, center outboard, and outboard fuel transmitters (5), (23), (24), and (24A).
- (4) Remove screws (22) from cover (23), and detach cover fuel bulkhead (4).
- (5) Remove nuts (9) and (11), and detach switch (6) from bracket (7).
- (6) Remove screws (20), lockwashers (19), washers (18), cover plate (17) from bulkheads (4) and (24), and wing spar (25).
- (7) Detach fuel transmitters (5), (23), (24A), and gaskets (16) from fuel bulkheads (4) and (24), and wing spar (25). Discard gaskets (16).

NOTE: Remove fuel transmitters (5), (23), (24), and (24A) carefully from bulkheads (4) and (24), wing spar (25), and nut rings (8) to prevent bending float arms (21).

- (8) Clean sealant from mating surfaces of fuel bulkheads (4) and (24), wing spar (25), covers (17) and (23), connector (10), and nuts (11) and (9).

- B. Install Fuel Quantity Transmitters and Low Fuel Level Switches (Refer to Figure 201).

- (1) Attach switch (6) to bracket (7) using nut (9). Connect connector (10) to wiring, and tighten nut (11).

NOTE: Fillet seal top of nut (9) common to threads of switch (6) with PR-1428B 1/2 access cover sealant.

- (2) Attach cover (23) to inboard fuel bulkhead (4), install screws (22).
- (3) Apply sealant to wires, connector (10), nuts (11 and 9), and cover (23). Seal cover on sides and bottom edge, adjacent to fuel bulkhead (4).

CAUTION: After sealing sides and bottom edge of cover (23) to fuel bulkhead (4), verify hole in bottom and holes in sides of cover are not plugged.

- (4) Replace fuel transmitters (5), (23), (24) and (24A) in bulkheads (4) and (24), and wing spar (25). Install gaskets (16), cover plates (17), washers (18), lock washers (19) and screws (20). Tighten and torque screws.

NOTE: Be careful when replacing fuel transmitters (5), (23), (24) and (24A), to keep from bending float arms (21) as they are inserted through nut rings (8).

- (5) Check fuel tanks for cleanliness, replace and seal access covers at WS 53.00, WS 101.00, WS 145.00 and WS 214.00.

(6) Calibrate fuel system. Refer to Fuel Quantity Indicating Systems - Maintenance Practices.

- (7) Refuel airplane and perform visual inspection for fuel leaks.

5. Filler Adapter Removal/Installation

- A. Remove Filler Adapter (Refer to Figure 201).

- (1) Defuel and purge fuel tank.
- (2) Remove cap (35) and detach lanyard (36) from adapter (38). Separate cap (35) and lanyard (36) from adapter
- (3) Remove screws (39), detach adapter (38) from doubler (41)
- (4) Clean sealant from mating surfaces of adapter (38) and doubler (41).

- B. Install Filler Adapter (Refer to Figure 201).

- (1) Seal adapter (38) and doubler (41).
- (2) Replace screws (39).

NOTE: Removal and installation procedures are identical for inboard and outboard filler adapters.

- (3) Attach lanyard (36) to adapter (38).

6. Filler Cap Leak Test

- A. Test Filler Cap for Leaks (Refer to Figure 201).

- (1) Fill each tank with approved fuel.
- (2) Place fuel selectors in OFF position.
- (3) Plug outboard end of one vent line and both 0.040 inch diameter holes located six inches from outboard ends of both vent lines.
- (4) Connect a rubber hose and tee into the unplugged vent line.
- (5) Attach a pressure measuring instrument into hose tee; water manometer, manifold pressure gage, or airspeed indicator.

NOTE: Pressure must not exceed 0.7 PSI (0.7 PSI equals 20 inches of water on a water manometer; 1.43 inches Hg on manifold pressure gage) or 174 knots on airspeed indicator.

WARNING: Never apply regulated or unregulated air from an air compressor to fuel vent. Major structural damage to the fuel tank may occur if more than 0.7 PSI is applied.

- (6) Blow into the open end of hose until pressure reaches 0.7 PSI. It may take several breaths to reach 0.7 PSI. ALWAYS blow into hose, NEVER inhale fuel or vapor.
- (7) Pinch or clamp hose to maintain pressure in fuel tanks.
- (8) Apply soap solution to filler caps and inspect for bubbles. If either cap leaks, RELEASE ALL pressure from system before removing defective cap.

CAUTION: Never attempt to remove cap with pressure in system.

- (9) Remove leaking cap, replace O-ring.

NOTE: If leak is observed in recessed area around stem, cap must be disassembled and stem O-ring

must be replaced.

- (10) Clean cap and adapter with Stoddard solvent and perform leak test.

NOTE: Minor leaks may be stopped by removing cotter pin and turning nut on cap lock tab clockwise to apply more tension on O-ring (37).

7. Fuel Reservoir Tank and Wing Fuel Bay Primer Adhesion Inspection and Repair (Airplanes 20800001 Thru 20800108 and 208B0001 Thru 208B0008)

NOTE: The following procedures provide instructions for inspection of fuel for paint primer particles and repair of fuel reservoir and/or wing fuel bays if evidence of paint primer particles are found in the fuel.

A. Inspect Fuel (Refer to Figure 203).

- (1) Drain a pint of fuel from fuel filter (1), thru drain valve (2), into a clear container. Check this fuel sample for any evidence of paint primer particles. Repeat this same procedure, draining at least a quart of fuel from the reservoir tank thru drain valve (4) or drain line (6).
- (2) If no paint primer particles are evident, no further action is required. Make an entry in the Airplane Logbook stating the inspection has been performed.
- (3) If there is any evidence of paint primer particles in the fuel, within 25 hours of operation, the reservoir tank must be inspected for loose primer and repaired. If there is evidence of paint primer particles in the fuel and the primer in the reservoir is not loose, wing fuel tanks must be inspected.

B. Fuel Reservoir Tank Primer Adhesion Inspection and Repair (Refer to Figure 203, Detail C and D).

- (1) Turn main fuel selector valves to OFF position.
- (2) Drain fuel from reservoir thru drain valve (4). Airplanes with cargo pod, drain fuel from the reservoir drain valve control (7).
- (3) Airplanes without cargo pod, remove access panel (3).
- (4) Airplanes with cargo pod, gain access thru cargo pod door and remove fuel drain line cover (8), lines (6) and drain control (7). Remove fuselage access cover (5).
- (5) Remove bolts (14) and washers (13); then remove reservoir access plate (15). Discard gasket (16).
- (6) Clean and purge reservoir before starting inspection.
- (7) Inspect interior of reservoir for paint primer which has peeled, blistered or separated from the walls.
- (8) If no primer separation can be found, proceed to Step (17).
- (9) If loose primer areas are found, disconnect line (12) from adapter (11) and from check valve (18). Disconnect fitting from ejector pump. Remove nut (29), O-ring (30) and ejector pump (10); discard O-ring (30). Disconnect drain line (22) from adapter (21); then remove adapter. Loosen nut (25) and remove adapter (24), nut (25), and O-ring (26). Remove bolts (27), washers (28); disconnect electrical lead (20) and remove auxiliary fuel pump (17); discard gasket (19). Cap check valve (18).
- (10) Remove any loose primer using a ScotchBrite pad. Using the pad, feather primer edges and rough up surrounding primer surface to improve adhesion of rubber sealing solution.
- (11) Ensure tank is clean of all particles using clean lint free rags or cheese cloth slightly dampened with Methyl n-Propyl Ketone.
- (12) Allow tank to completely dry.
- (13) Brush a coat of EC776 rubber sealant solution over prepared area. Tank temperature must be 60 degrees Fahrenheit or higher. To accelerate curing, ventilate tank with forced warm dry air until solution dries to touch.
- (14) Apply a second coat of EC776.
- (15) Inspect treated areas for signs of loose or wrinkled paint primer where sealant solution has been applied. If this condition exists, the area must be cleaned with an acrylic scraper and wiped clean with Methyl n-Propyl Ketone. Repeat Steps (11) thru (14). Sealer must cure for 48 hours before tank is refueled.
- (16) Position ejector pump (10) in reservoir, and install new O-ring (30) and nut (29). Connect fitting to ejector pump. Uncap check valve (18) and connect line (12) to check valve and ejector pump. Position auxiliary fuel pump (17) in reservoir, using new gasket (19) and install washers (28) and bolts (27). Connect adapter (24) to auxiliary fuel pump, using nut (25) and new O-ring (26). Connect auxiliary fuel pump electrical lead (20). Install adapter (21) and connect drain line (22) to adapter.

- (17) Lightly coat new gasket (16) on both sides with PR1428 sealer. Reinstall access plate (15), gasket (16), washers (13) and bolts (14). Do NOT refuel tank for 48 hours.
- (18) Turn main fuel selector valves to ON position. Check for leaks around access cover (15).
- (19) Airplanes without cargo pod, reinstall access panel (3) below reservoir.
- (20) Airplanes with the cargo pod installed, clean off all excess sealant on access cover (5) with Methyl n-Propyl Ketone or equivalent and let dry. Use MS122 mold release and reseal with PR1428 sealant. Install and secure access cover (5). Install drain lines (6) and drain control (7). Clean and reseal drain line cover (8) with PR-1440 sealant and install drain line cover.
- (21) If loose primer was found and repairs were made, the airframe and engine fuel pump filters must be cleaned after 25 hours of operation to ensure removal of any lint and/or fiber which may have remained.
- (22) If no loose primer was found in reservoir inspection, proceed to Wing Fuel Tank Primer Adhesion Inspection and Repair.
- (23) Make entry in Airplane Logbook stating compliance with the inspection, and method of compliance.

C. Wing Fuel Tank Primer Adhesion Inspection and Repair (Refer to Figure 203).

- (1) Drain all fuel from wing fuel bays.
- (2) Remove all wing fuel bay access plates (31).

WARNING: To avoid harmful fumes, ensure area is properly ventilated.

- (3) Inspect all interior surfaces of each bay for any paint primer which has peeled, blistered or separated from interior surfaces.
- (4) If no loose primer is found, proceed to Step 6.C.(14).
- (5) Dry all fuel from wing fuel bays with clean lint free rags or cheese cloth.
- (6) Remove loose primer from affected areas using a ScotchBrite pad and a minimal amount of Methyl n-Propyl Ketone.
- (7) Use Scotch Brite pad to feather primer edges and rough up surrounding primer surface a minimum of 3 inches to improve adhesion of rubber solution.
- (8) Ensure wing fuel bays are clean and free of all particles, using clean lint free rags or cheese cloth slightly dampened with Methyl n-Propyl Ketone.
- (9) Allow wing tank to completely dry.

NOTE: Ensure rubber solution does not obstruct or plug fuel drain passages.

- (10) Brush a coat of EC776 or PR1005L synthetic rubber solution over prepared area. Wing temperature must be at least 60 degrees Fahrenheit or higher. To accelerate curing, ventilate with forced warm air until solution dries to touch.
- (11) Apply a second coat of EC776 or PR1005L.
- (12) Inspect treated areas for signs of loose or wrinkled primer where rubber solution has been applied. If this condition exists, the area must be cleaned with an acrylic scraper and wiped clean with Methyl n-Propyl Ketone. Repeat Steps 6.C.(8) thru 6.C.(11).
- (13) Inspect all fuel drain passages to ensure they are not plugged or obstructed.
- (14) Seal and install wing access plates (31). Sealer must cure for 48 hours before fuel bays are refueled.
- (15) If loose primer was found and repairs were made, airframe and engine fuel pump filters must be cleaned after 25 hours of operation to ensure removal of any lint and/or fiber which may have remained.
- (16) Make an entry in the Airplane Logbook stating compliance of this inspection and method of compliance.

Figure 201 : Sheet 1 : Fuel Bay Area

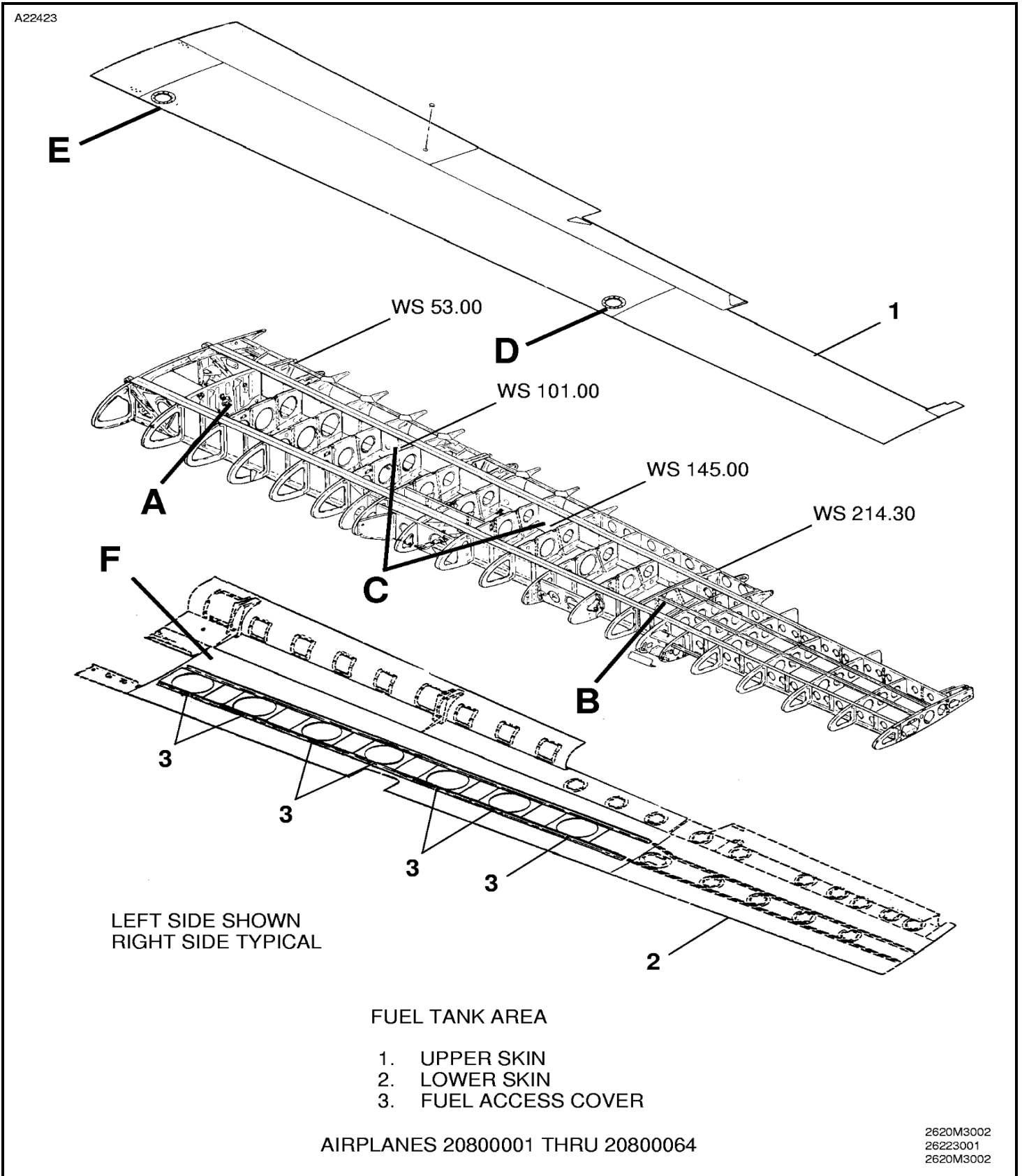


Figure 201 : Sheet 2 : Fuel Bay Area

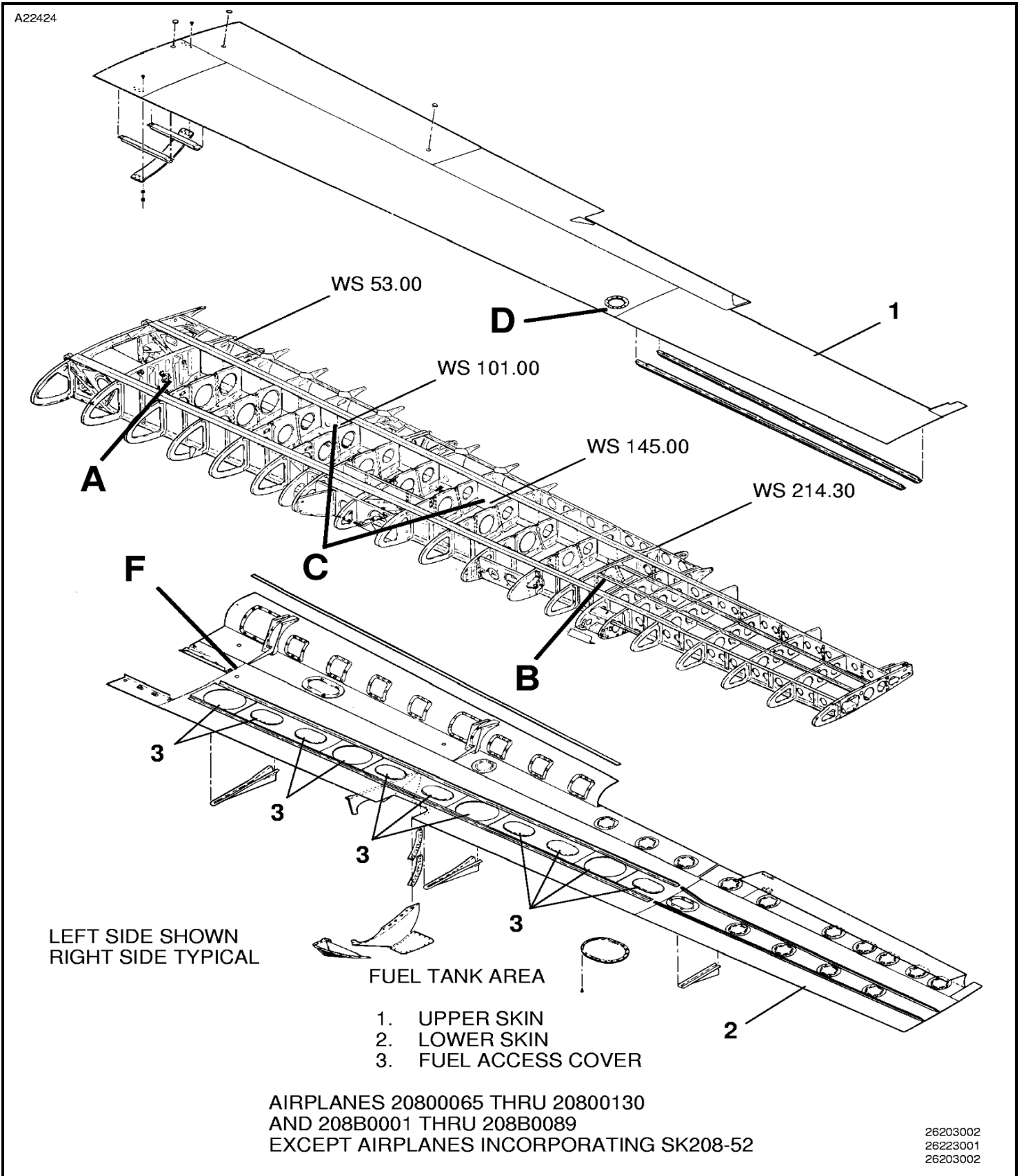


Figure 201 : Sheet 3 : Fuel Bay Area

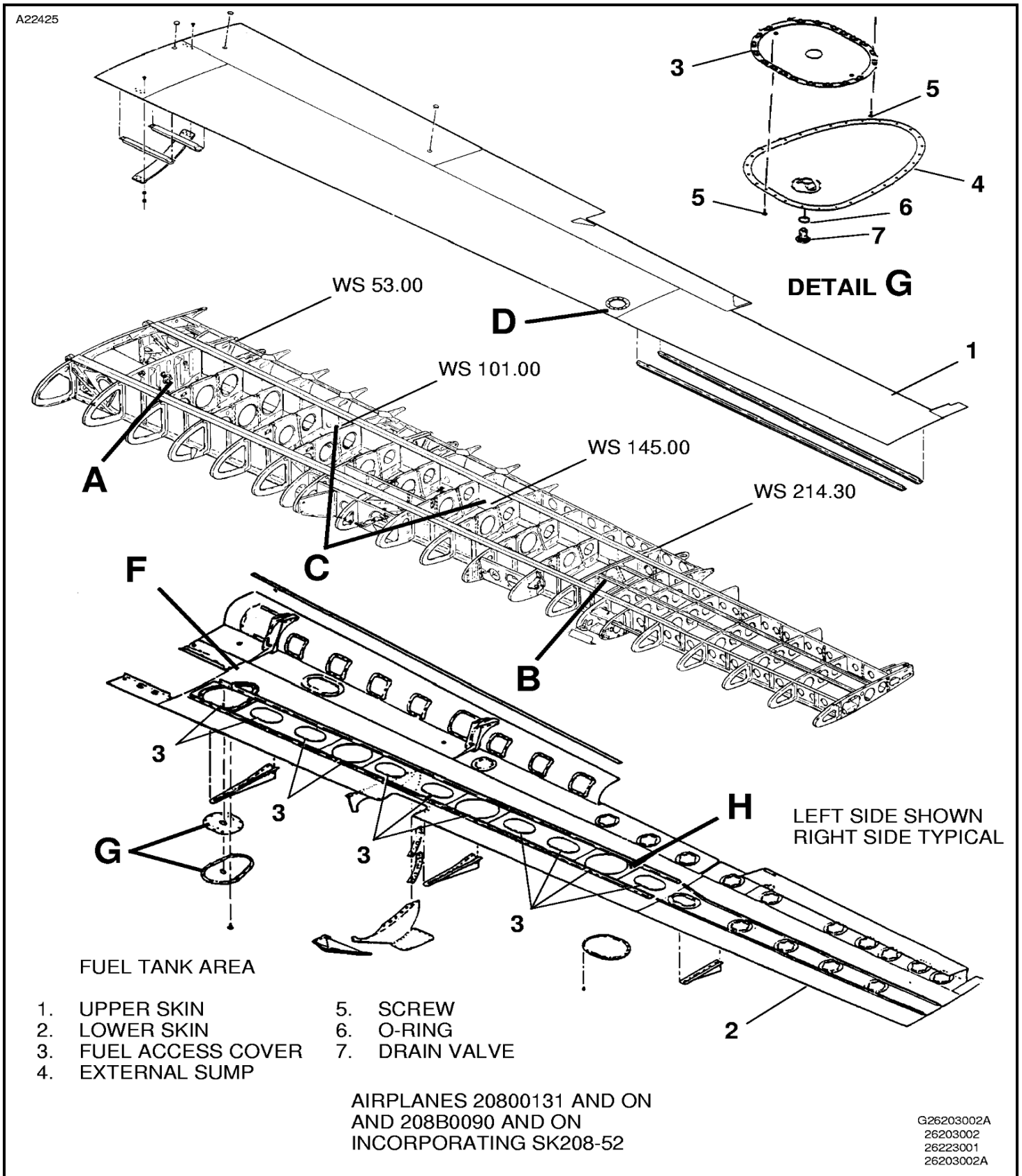
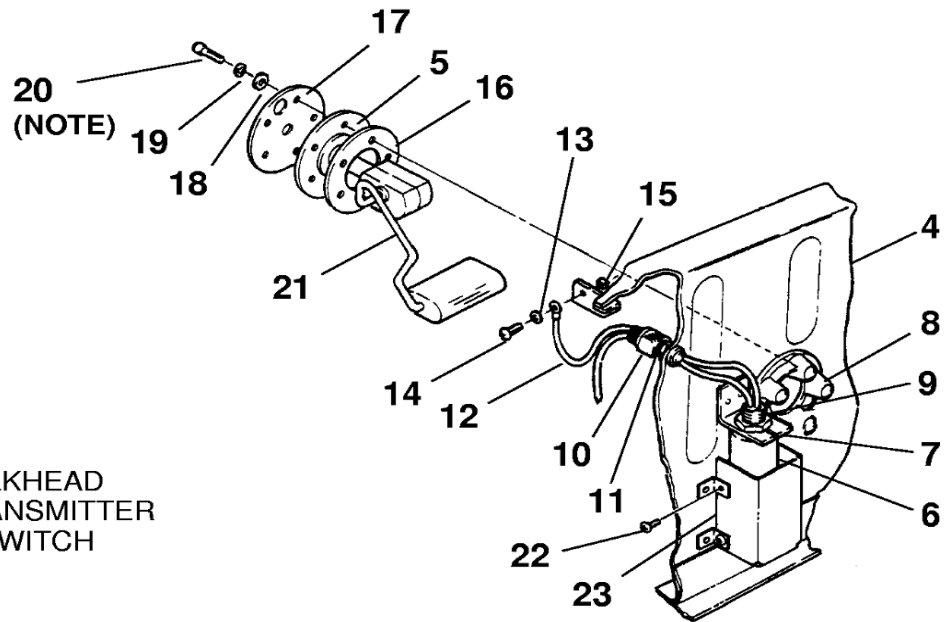


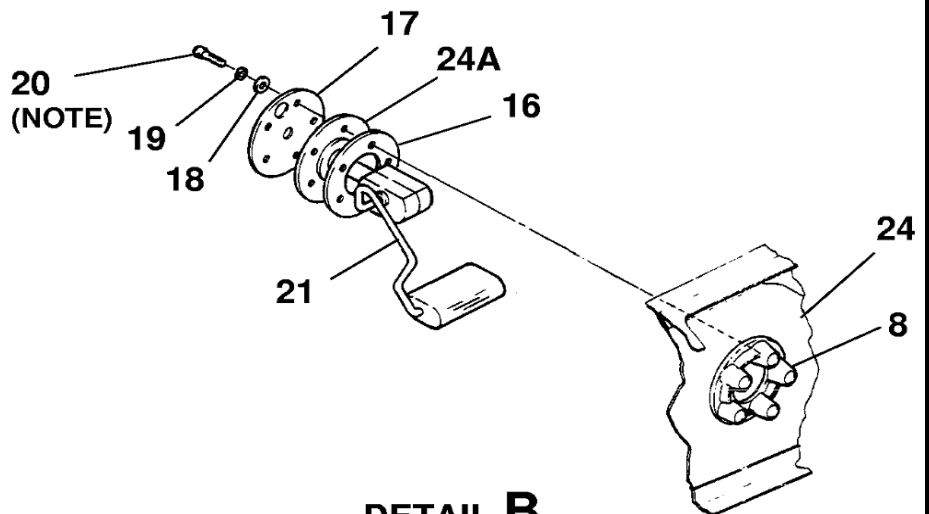
Figure 201 : Sheet 4 : Fuel Bay Area

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DETAIL A
INBOARD FUEL TRANSMITTER

4. INBOARD FUEL BULKHEAD
5. INBOARD FUEL TRANSMITTER
6. LOW FUEL LEVEL SWITCH
7. BRACKET
8. NUT RING
9. NUT
10. CONNECTOR
11. NUT
12. GROUND WIRE
13. WASHER
14. SCREW
15. NUT
16. GASKET
17. COVER PLATE
18. WASHER
19. LOCKWASHER
20. SCREW (NOTE)
21. FLOAT ARM
22. SCREW
23. COVER
24. OUTBOARD FUEL BULKHEAD
- 24A. OUTBOARD FUEL TRANSMITTER



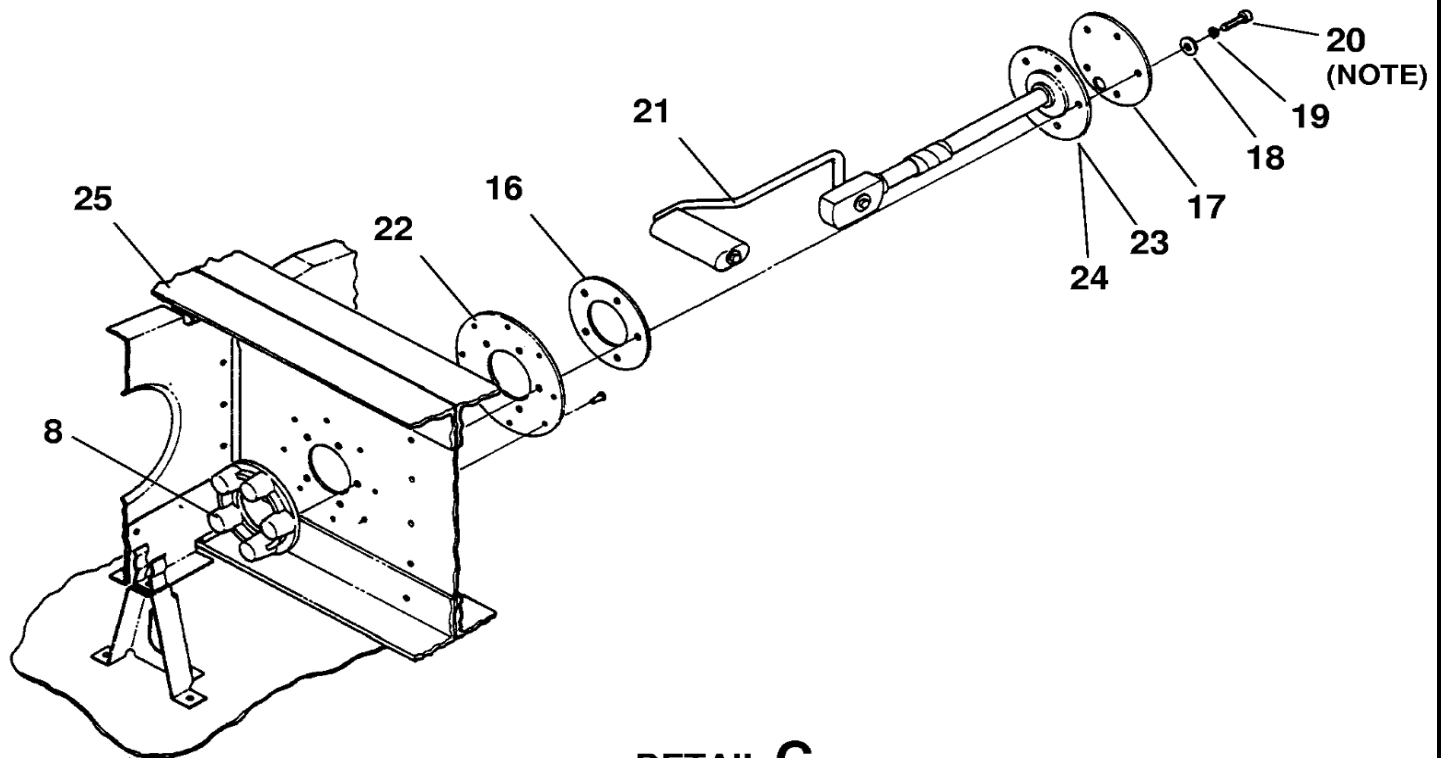
DETAIL B
OUTBOARD FUEL TRANSMITTER

NOTE: TORQUE SCREWS TO 20 INCH-POUNDS
(ONCE ONLY) USING A CROSS-PATTERN
SEQUENCE.

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Figure 201 : Sheet 5 : Fuel Bay Area

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DETAIL C

CENTER INBOARD AND CENTER OUTBOARD FUEL TRANSMITTERS

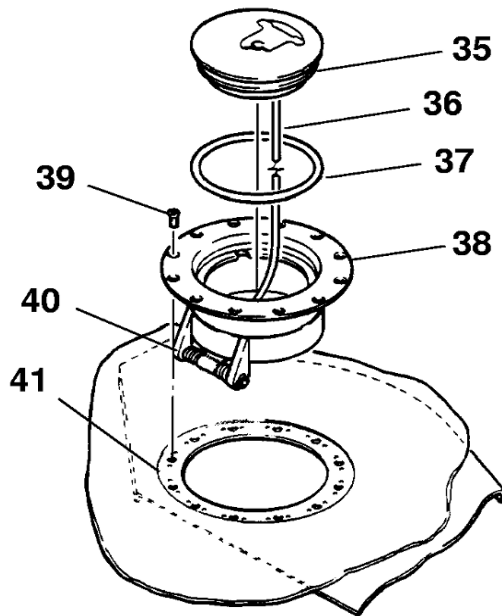
- 8. NUTRING
- 16. GASKET
- 18. WASHER
- 19. LOCKWASHER
- 20. SCREW (**NOTE**)
- 21. FLOAT ARM
- 22. DOUBLER
- 23. CENTER INBOARD FUEL TRANSMITTER
- 24. CENTER OUTBOARD FUEL TRANSMITTER
- 25. WING SPAR

NOTE: TORQUE SCREWS TO 20 INCH-POUNDS (ONLY ONCE) USING A CROSSPATTERN SEQUENCE.

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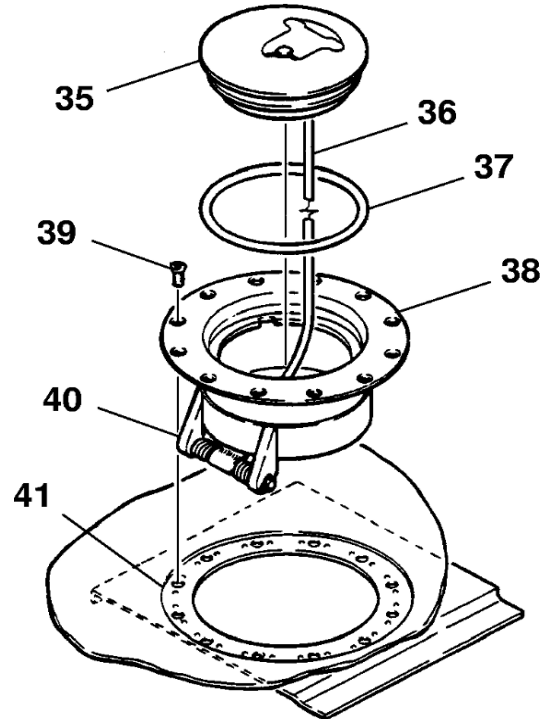
Figure 201 : Sheet 6 : Fuel Bay Area

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DETAIL D

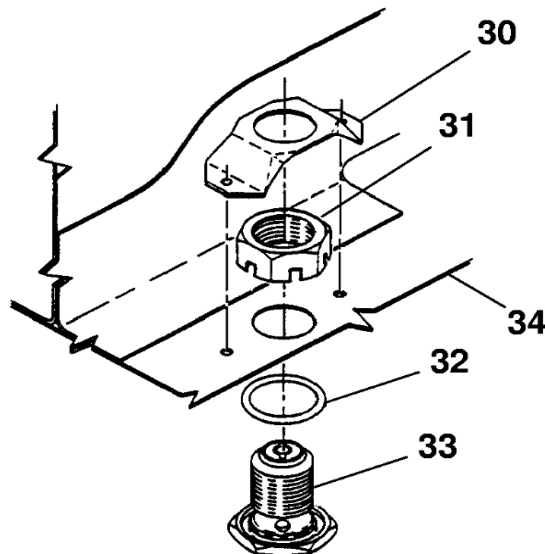
OUTBOARD CAP AND ADAPTER ASSEMBLY



DETAIL E

INBOARD CAP AND ADAPTER ASSEMBLY

- 30. RETAINER
- 31. NUT
- 32. O-RING
- 33. FUEL DRAIN VALVE
- 34. LOWER WING SKIN
- 35. CAP
- 36. LANYARD
- 37. O-RING
- 38. ADAPTER
- 39. SCREW
- 40. FLAPPER
- 41. DOUBLER

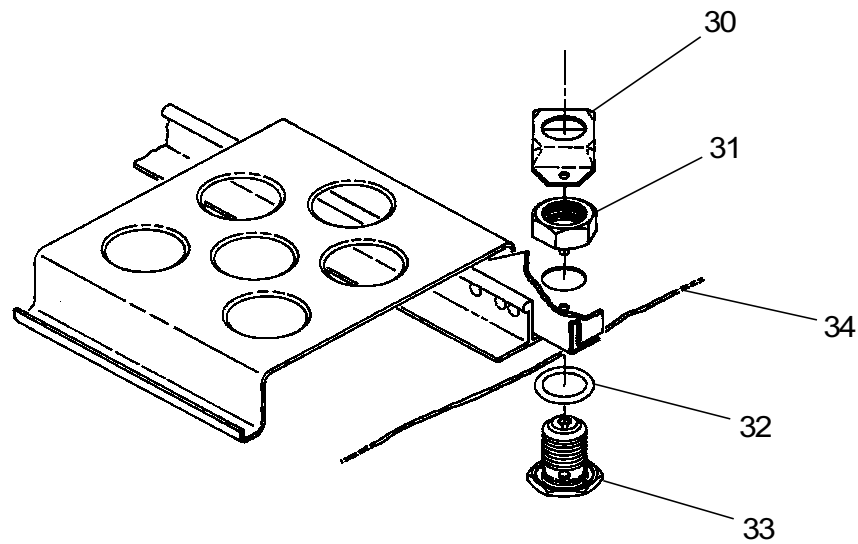


DETAIL F

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Figure 201 : Sheet 7 : Fuel Bay Area

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DETAIL A

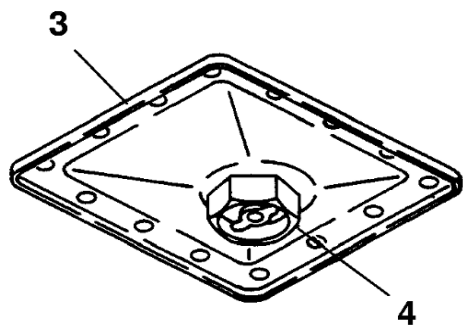
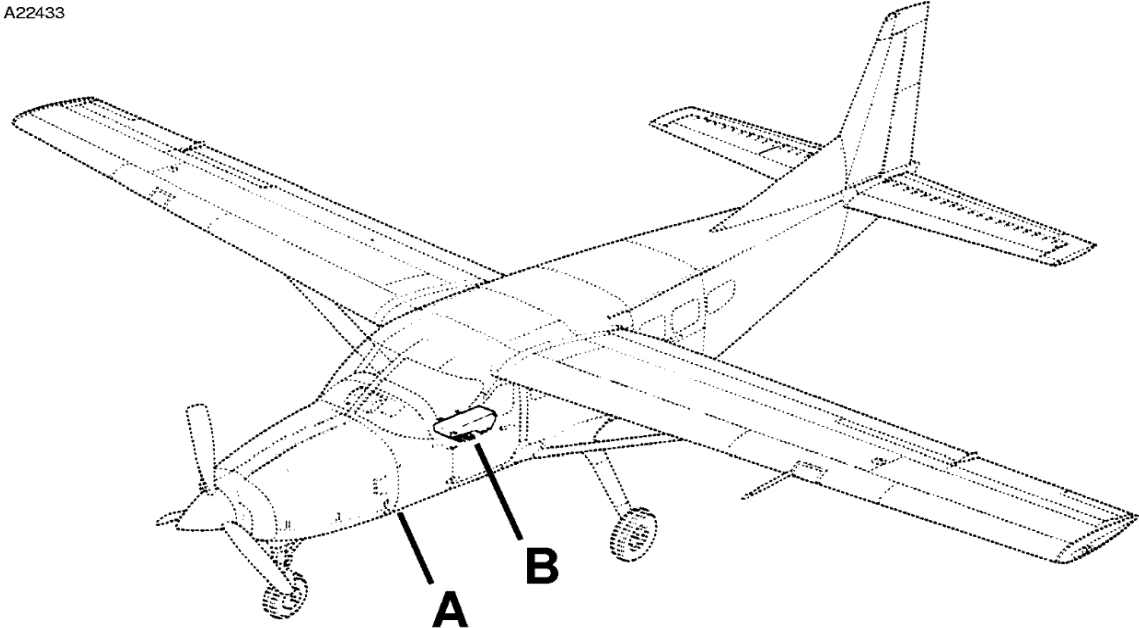
AIRPLANES 20800109 AND ON
AND 208B0001 AND ON

- 30. RETAINER
- 31. NUT
- 32. O-RING
- 33. FUEL DRAIN VALVE
- 34. LOWER WING SKIN

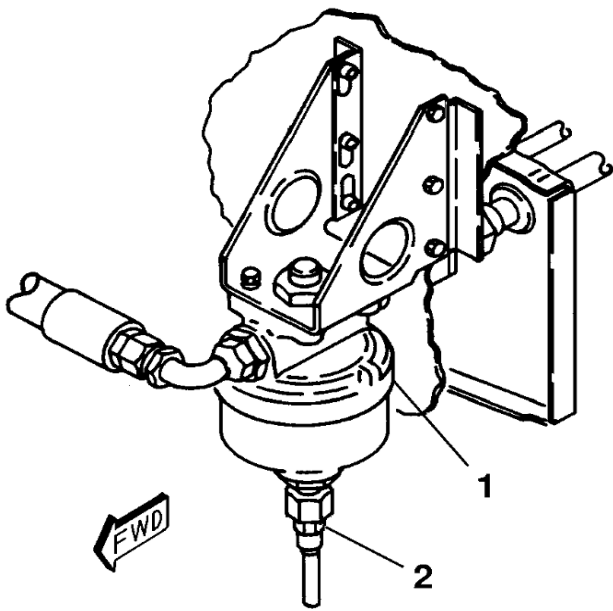
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Figure 202 : Sheet 1 : Fuel Reservoir and Wing Fuel Bay Inspection and Repair

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DETAIL B
(WITHOUT CARGO POD)



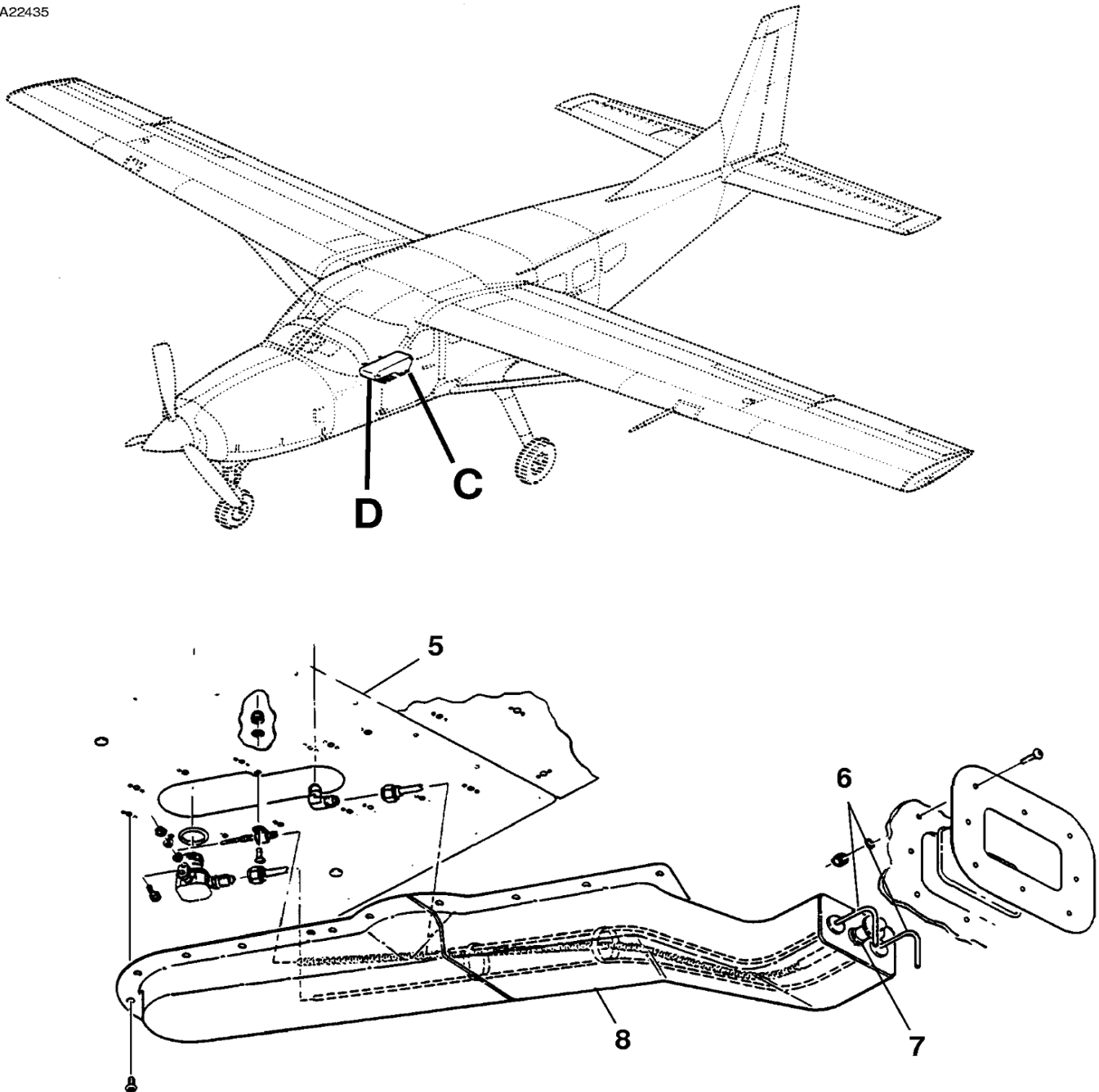
DETAIL A

- 1. FUEL FILTER
- 2. DRAIN VALVE
- 3. ACCESS PANEL
- 4. DRAIN VALVE

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Figure 202 : Sheet 2 : Fuel Reservoir and Wing Fuel Bay Inspection and Repair

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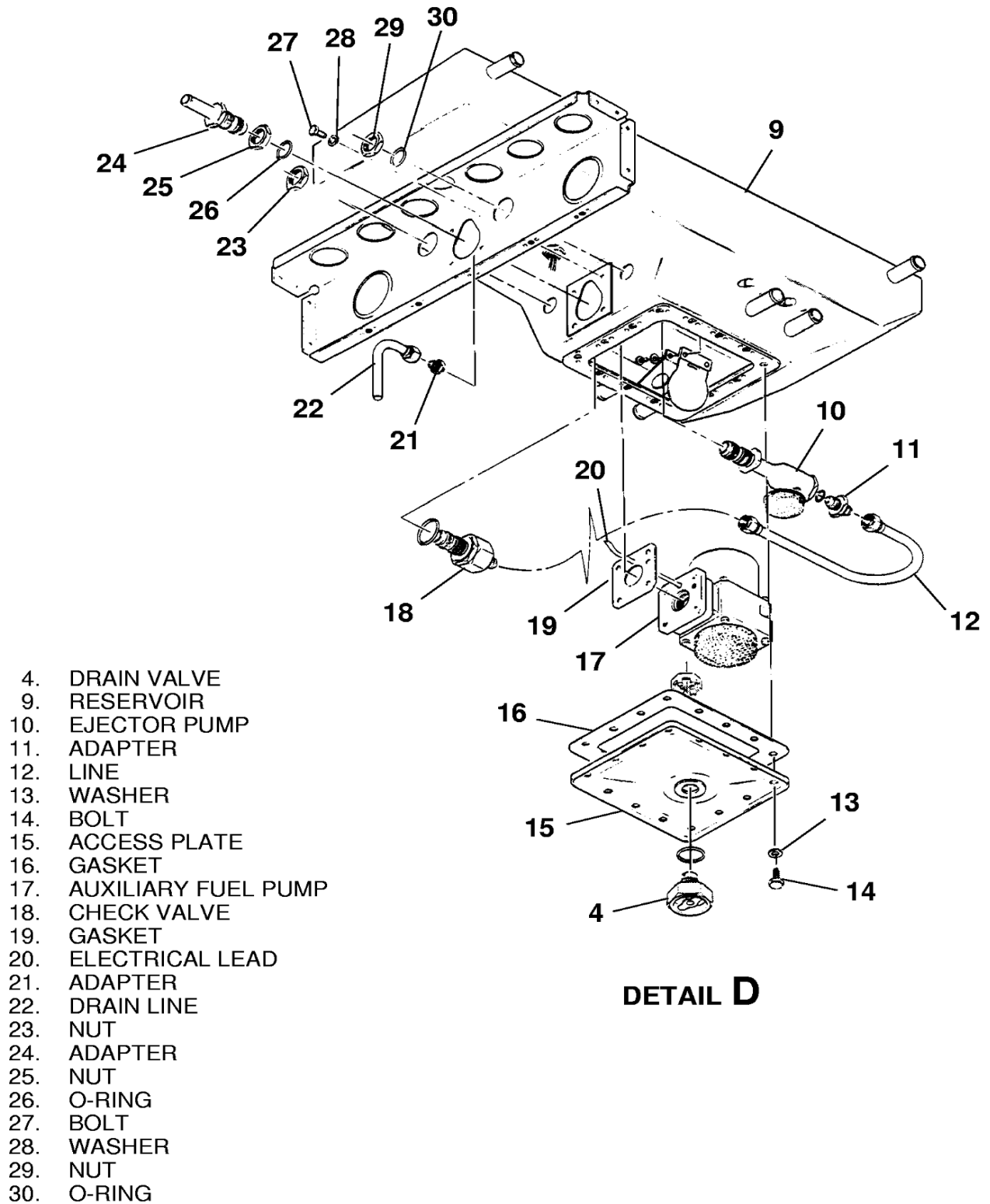
DETAIL C
(WITH CARGO POD)

- 5. ACCESS COVER
- 6. DRAIN LINES
- 7. DRAIN CONTROL
- 8. COVER

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Figure 202 : Sheet 3 : Fuel Reservoir and Wing Fuel Bay Inspection and Repair

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Figure 202 : Sheet 4 : Fuel Reservoir and Wing Fuel Bay Inspection and Repair

