CHAPTER

35

OXYGEN

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CHAPTER 35 - OXYGEN
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CHAPTER 35 - OXYGEN
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OXYGEN - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 1 and 2)

   A. The oxygen system supplies the crew and the passengers with a source of breathing oxygen for use during hazardous incidents.

   B. The oxygen system has these main components:
   - The oxygen storage cylinder
   - The filling valve
   - The three position valve
   - The pressure gage
   - The altitude pressure switch
   - The crew outlet valves
   - The crew masks
   - The passenger mask dispensing units.
   - Smoke goggle

   C. The system operates manually or automatically in accordance with the pilot selection and the cabin pressure altitude. The 28 Vdc ESSENTIAL BUS supplies electrical power to the system through a 3A OXYGEN VALVE circuit breaker.

2. Component Description (Ref. Fig. 2 and 3)

   A. Oxygen storage cylinder

   (1) Clamps attach the oxygen storage cylinder to support brackets below the floor in zone 231.

   (2) The storage cylinder has these parts:

   (a) An aluminium cylinder covered with a composite shell. Protective elastic vibration spacers give protection against vibration damage.

   (b) A regulator assembly which has these parts:
   - A high pressure safety relief valve
   - A low pressure outlet port
   - A fill port with a check valve
   - A high pressure port and gage adapter
   - A low pressure relief valve
   - An actuation lever and safety shut off valve

   (3) Tubes connect the regulator to other system components. The regulator controls the pressure in the cylinder and the delivery pressure to the three way valve.

   B. Filling Valve

   (1) Bolts attach the filling valve to a cup to the rear of the main cabin entrance at STA 85.024 in zone 231.

(2) The valve body has a fill port and a system port. A tube connects the system port to the check valve on the fill port of the pressure regulator on the oxygen storage cylinder. The valve contains a filter and a pressure regulating and closing valve.

(3) The valve controls the flow of oxygen into the storage cylinder to stop compression heating and to control the final cylinder pressure to stop overfilling.

C. Three Position valve (Ref. Fig. 3)

(1) Screws attach the three position valve to the pilot oxygen panel in the flight compartment in zone 215.

(2) The valve has a body with two ports and a manual control knob. The body contains two manually operated poppet valves and a solenoid valve.

(3) When the control knob is off the valves A and B are closed and no oxygen can flow. When the control knob is at AUTO valve B is open and valve A is closed, oxygen can flow to the face of the solenoid valve C. Oxygen can only flow to the system if the solenoid is energised. With the knob at ON valve B is closed and valve A is open, oxygen flows into the system.

(4) 28 Vdc from the ESSENTIAL BUS supplies the solenoid through the 3A OXY VALVE circuit breaker and the contacts of the cabin altitude switch.

D. Pressure Gage

(1) An instrument clamp attaches the gage to the pilot oxygen panel in the flight compartment zone 215.

(2) The gage has a backlit dial and a pointer which moves over a scale. The dial gives oxygen pressure in graduations of 50 psi from 0 to 2000 psi. A tube connects it to the pressure regulator on the storage cylinder. Two electrical wires connect it to the junction block on the frame at STA 44.482.

(3) The instrument lighting system controls the power supply to the instrument (Refer to 33-00-00).

E. Altitude pressure switch

(1) The altitude pressure switch is on the co-pilot oxygen panel in zone 216.

(2) The switch is a barometric pressure switch which contains a pressure sensitive capsule and electrical contacts. The switch is connected electrically to the solenoid of the three position switch.

(3) When the cabin altitude is more than 14000 ft +500 -0 ft the switch operates and gives a ground to the solenoid of the three position valve.

F. Crew outlet valves

(1) There are two outlet valves, one for the pilot and one for the co-pilot, attached to the respective oxygen panel.

(2) The valve is a non return valve with a bayonet connector for quick connection and disconnection to the oxygen mask fitting.

(3) The connector on the mask fitting opens the valve to let oxygen flow to the mask.

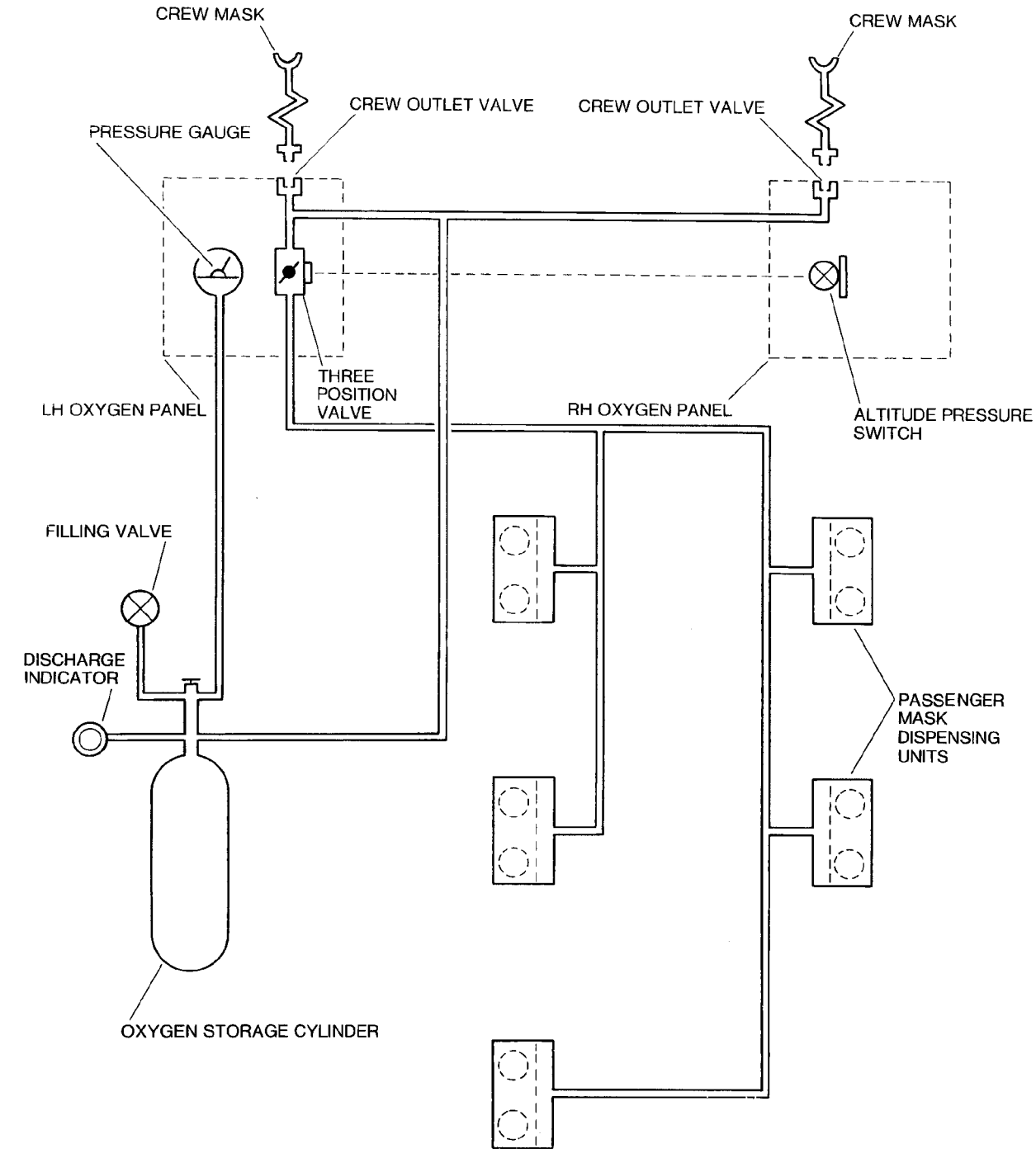

Fig. 1 - Oxygen System - Schematic

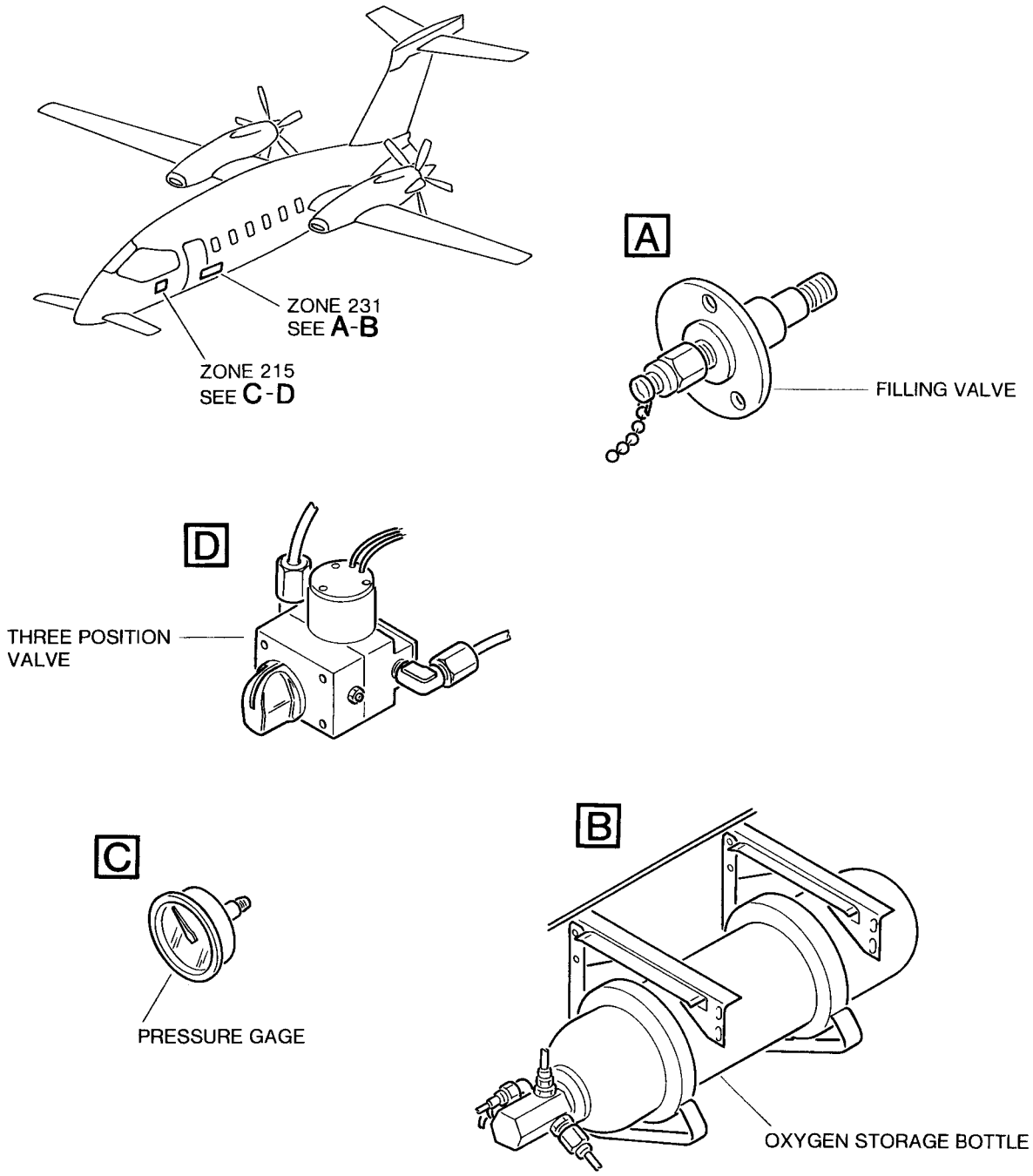

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Fig. 2 - Oxygen - Component Recognition/Identification (Sheet 1 of 2)

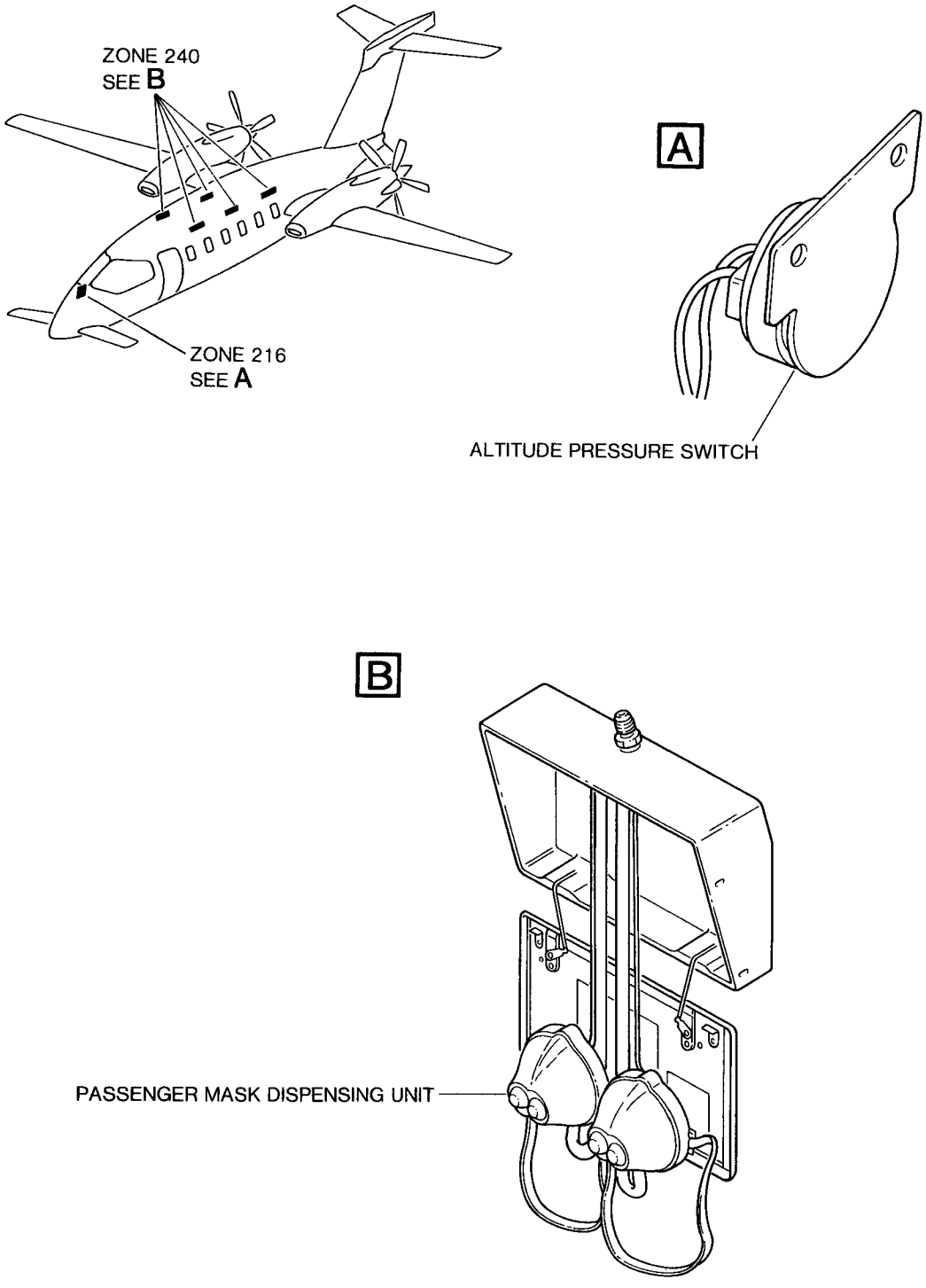

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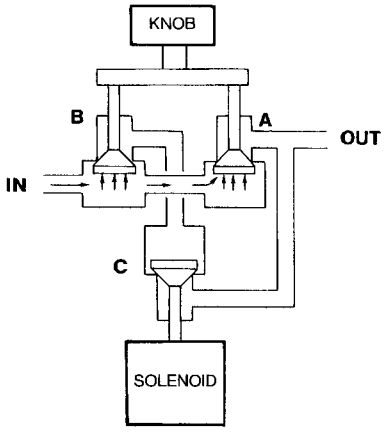
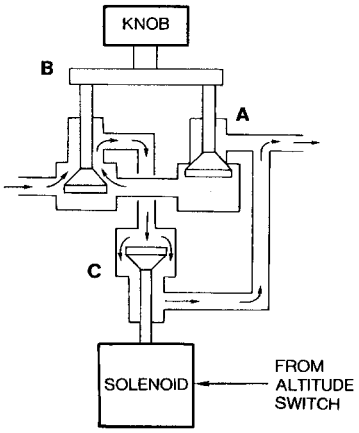
Fig. 2 - Oxygen - Component Recognition/Identification (Sheet 2 of 2)



OFF POSITION

VALVES A, B AND C ARE CLOSED
NO OXYGEN FLOW



AUTO POSITION
(SOLENOID ENERGIZED)

VALVE B IS OPEN - VALVE A IS CLOSED
VALVE C OPENS WHEN THE SOLENOID IS
ENERGIZED - OXYGEN FLOWS

MANUAL MASK RELEASE POSITION

VALVE B CLOSED, VALVE A OPEN
OXYGEN FLOWS

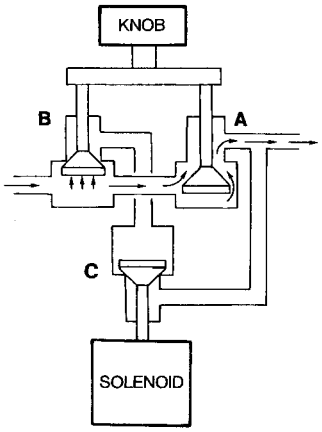


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Fig. 3 - Three Position Valve - Schematic

G. Crew masks

(1) The crew masks are in stowage cups on the oxygen panels L and R in zones 215 and 216.

(2) The mask is a pneumatically adjusted quick donning assembly with a microphone connection and an oxygen demand regulator. A flowmeter in the connecting line to the outlet valves gives an indication of operation.

(3) The mask assembly automatically controls the pressure and quantity of oxygen supplied to the crew.

H. Passenger mask dispensing unit

(1) The dispensing units are in the passenger service units in the passenger compartment ceiling panels in zone 240.

(2) Each unit has a case with a hinged lid. The dispensing unit contains a pneumatic valve with a latch mechanism and outlet ports. Plastic tubes connect masks to the ports. Lanyards connect the masks to the safety pins in the valve.

(3) When system supply pressure to the pneumatic valve is 30 psi or more the pneumatic latch releases the door. The door opens and the masks fall until the lanyards are fully extended. When the passenger pulls the lanyard it pulls the safety pin from the mechanism of the valve and lets oxygen flow to the mask. To stop the oxygen flow the pin must be installed into the pneumatic valve again.

3. System Operation

A. Manual operation (Ref. Fig. 3)

(1) With the control knob on the three position valve set to OFF the valves A and B are closed. Oxygen can not enter the system.

(2) With the three position valve set to ON valve A opens to let oxygen flow from the inlet port to the outlet port. The passenger mask dispensing units desplay. Oxygen is available at all the outlet valves.

B. Auto operation (Ref. Fig. 3)

(1) With the three position valve at AUTO valve A stays closed. Valve B opens to let oxygen through to the face of the solenoid valve C.

(2) If the cabin altitude stays less than 14000 ft +500 ft -0 ft the solenoid valve stays closed (de-energized) and no oxygen will enter the system.

(3) If the cabin altitude increases to more than 14000 ft the cabin altitude switch operates and the solenoid operates (energizes) to open the valve C. Oxygen flows to the system. The passenger mask dispensing units deploy and oxygen is available at all the outlet valves.

C. Overpressure control

(1) If the pressure in the oxygen storage cylinder increases to more than 2775 psi the high pressure relief valve in the pressure regulator opens. The excess pressure flows through a capillary tube to a safety indicator on the airplane skin. The green indicator disc in the indicator breaks to show personnel that there has been an overpressure situation.

(2) When the cylinder pressure decreases to less than 1000 psi the valve closes and stops a further loss of oxygen. It is necessary to find the reason for the overpressure and replace the indicator disc before the next flight.

D. System isolation for maintenance

(1) If components are to be removed or disturbed for maintenance the actuation lever on the pressure regulator of the storage cylinder must be set to OFF. This isolates the cylinder from the rest of the system.

(2) After maintenance the lever must be set to ON again and safetied with lockwire.

OXYGEN - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- A purging procedure
- An inspection/check of the oxygen system.
- Oxygen Filler Valve Assembly - Inspection/Check
- Smoke Goggle - Maintenance
- Smoke Goggle - Inspection

WARNING: BE CAREFUL WHEN YOU WORK ON THE OXYGEN SYSTEM:

- KEEP OIL AND GREASE AWAY FROM OXYGEN EQUIPMENT. THE MIXTURE OF OIL OR GREASE WITH OXYGEN CAN CAUSE EXPLOSIONS.
- KEEP HOT OBJECTS, TOOLS AND ELECTRICAL EQUIPMENT WHICH CAN CAUSE SPARKS AWAY FROM THE OXYGEN EQUIPMENT.
- KEEP OXYGEN EQUIPMENT AWAY FROM UNWANTED MATERIALS (DUST, LINT, ETC.).
- MAKE SURE THAT THERE IS NO OIL OR GREASE ON YOUR HANDS OR ON THE TOOLS.

WARNING: BE CAREFUL WHEN YOU WORK ON THE OXYGEN BOTTLES AND PIPELINES:

- KEEP SPARE BOTTLES IN A COOL PLACE AWAY FROM DIRECT SUNLIGHT.
- KEEP OXYGEN BOTTLES AWAY FROM BOTTLES WHICH CONTAIN OTHER GASES.
- USE ONLY THE SPECIAL LUBRICATION AND SEALING MATERIALS APPROVED FOR USE ON OXYGEN SYSTEMS.
- IF THE PRESSURE IN THE OXYGEN BOTTLES BECOMES ZERO DO A PURGE OF THE SYSTEM TO REMOVE ANY WATER VAPOUR OR ODORS. WATER VAPOUR CAN FREEZE AT LOW TEMPERATURE.
- USE ONLY AVIATION BREATHING OXYGEN TO MIL-O-27210 TO CHARGE OR PURGE THE OXYGEN SYSTEM.

2. Oxygen System - Purging

NOTE: Purge the oxygen system when the oxygen system pressure goes below 50 psi or if offensive odors are reported by the flight crew.

A. Fixtures, Test and Support Equipment

Oxygen charging set	Not specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 35-10-00
Maintenance Manual Chapter 12-10-06

C. Procedure

(1) Make sure electrical power is available (Refer to 24-00-00).
(2) Connect the oxygen charging set to the charging valve inside the lower door in Zone 231.
(3) On the pilot oxygen panel set the three position switch to MANUAL MASK RELEASE.
(4) When all the masks in the passenger compartment are deployed remove the electrical power.
(5) Connect the crew oxygen masks to their respective outlet valves and set the mask emergency manual controls to EMERGENCY.
(6) Pull the lanyards of each passenger mask to start the flow of oxygen.
(7) Set the pressure regulator on the charging set to give a constant flow of oxygen at 50 psi to the system.
(8) Make sure that there is a flow of oxygen to each mask and let the system purge for a minimum time of one hour.

NOTE: If after one hour offensive odors persist purge for a further one hour. If the odor still persists, replace the storage cylinder (Refer to 35-10-00).

(9) Set the three way valve to AUTO NORMAL and set the crew masks to normal, stow the masks.
(10) Install the passenger mask operating pins, stow the masks and close the dispensing unit doors.
(11) Charge the system (Refer to Chap. 12).

3. Oxygen System - Inspection/Check

A. Referenced Procedures

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 12-10-06

B. Procedure

(1) Remove the furnishings from above the floor panels 231 BLF and 231 ELF (Refer to 06-00-00).
(2) Remove the floor panels 231 BLF and 231 ELF.
(3) Remove the LH and RH trim panels in the flight compartment in Zones 211 and 212.
(4) Make sure electrical power is available. (Refer to 24-00-00).
(5) Set the three way valve on the pilot oxygen panel to MANUAL MASK RELEASE.

(6) When the drop-out panels have all deployed set the three way valve to AUTO NORMAL.
(7) Examine the items that follow for general condition and security of attachment:
- The oxygen storage cylinder
- The supply pressure regulator and shut-off valve
- The capillary and filling lines
- The filling valve
- The three position valve
- The altitude pressure switch
- The oxygen pressure gage
- The crew masks and hoses
- The passenger dispensing units and masks.

(8) Make sure that the disc of the high pressure relief indicator is correctly installed.
(9) Replace or repair damaged items as necessary.
(10) Stow the passenger masks and close the passenger dispensing units.
(11) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(12) Install the trim panels.
(13) Install the floor panels.
(14) Install the furnishings (Refer to 25-00-00).

4. Oxygen Filler Valve Assembly - Inspection/Check

A. Referenced Procedures

Maintenance Manual Chapter 35-10-00

B. Procedure

WARNING: CLEANLINESS OF HIGH PRESSURE OXYGEN COMPONENTS IS CRITICAL FOR THE SAFE OPERATION OF PRODUCTS. OIL, GREASE OR OTHER PETROLEUM PRODUCTS, AS WELL AS DUST,LINT,DIRT AND OTHER PATICULAR CONTAMINATION ARE A FIRE HAZARD IN THE PRESENCE OF OXYGEN. IT IS THE RESPONSIBILITY OF ALL ASSEMBLY AND QUALITY PERSONNEL TO BECOME FAMILIAR WITH THE POTENTIAL DANGERS ASSOCIATED WITH THE USE OF OXYGEN.

(1) Make sure that:
- Only leak test solution conforming to MIL-L-25587 shall be used.
- Do not clean the fitter part number P80010 with cleaning solutions.
- Inspect components for cleanliness prior to assembly.
- Cleaning agent and cleaning method(s) shall be compatible with component materials.

(2) The components listed in Table 1 shall be cleaned to the requirements of MIL-STD-1246 level 100A.

PART NUMBER	DESCRIPTION	MATERIAL
P40011	HOUSING	BRASS
P28003	CAP ASSEMBLY	BRASS / FLAREDSTEEL
P40012	END	BRASS

Table 1

(3) Remove the oxygen filler valve assembly (Refer to 35-10-00).

(4) Immediately after cleaning, component parts shall be inspected for clealiness and package in a manner that will maintain the specified cleanliness level.

CAUTION: NITROGEN (HIGH PURITY) CONFORMING TO THE PURITY AND MOISTURE CONTENT SPECIFIED IN MIL-O-27210, TY1 (MOISTURE < 6.6 PPM, TOTAL HYDROCARBONS < 50 PPM). TESTING SHALL BE PERFORMED AT 70° F ± 5° F AND AT AMBIENT PRESSURE.

WARNING: COMPONENT UNDER HIGH PRESSURE MAY BE HAZARDOUS. PROPER PRECAUTIONS SHOULD BE TAKEN TO AVOID INJURY, ISOLATE THE COMPONENT FROM ASSEMBLY AND TEST PERSONNEL DURING PRESSURE TESTING.

(5) Proof Pressure (Leakage)
  (a) Apply 3000 PSIG to 3100 PSIG to the housing and fill (flange end) connections of the filler valve.
  (b) Submerge the filler valve in a container of clean distilled water for minimum of 3 minutes. The filler valve shall show no signs of external leakage (bubble free).

(6) Valve Core Fill Test
  (a) Connect a pressure source to the fill side (flange end) of filler valve.
  (b) The housing side of filler valve shall be vented to ambient.
  (c) Slowly increase the pressure to the fill connection from 0 to 100 PSIG. The valve core shall unseat initiating flow (from the housing side of the filler valve) before the pressure reaches 100 PSIG.

(7) Valve Core Leakage
  (a) Connect a pressure source to the housing side of the filler valve.
  (b) The fill connection (flange end) of the filler valve shall be vented to a tube. The end of the tube shall be submerge in at least 2 inches of water.
  (c) Apply 2000 PSIG to 2100 PSIG to the housing side of the filler valve.
  (d) The valve core shall be leak free as indicated by a lack of bubbles from the submerged tube.

5. Smoke Goggle - Maintenance

A. Procedure

(1) Goggles shall be cleaned and stored by qualified personnel informed about the following procedures.

(2) The goggles lens is of high optic grade with an anti - abrasion coating on the outside surface and an anti - mist coating on the inside surface.

CAUTION: DO NOT WASH WITH ANY SOLVENT OR DETERGENT. TO AVOID DAMAGING THE ANTI - MIST COATING NEVER WIPE THE WINDOW WHEN MOISTURE OR WATER ARE PRESENT ON INSIDE SURFACE.

(3) Wipe carefully all surfaces (inside and outside) with adequate cloth (EROS P/N SAN 40 is acceptable).

(4) Store in a clean and dry area, sheltered from light and dust.

6. Smoke Goggle - Inspection

A. The inspection consists in the following checks:

(1) Lens:

– check for cracks and scratches. No crack, visible on the part of the lens outside of the frame, are allowed. No scratches, over 1/4 inch (6 mm) long and 0,01 inch (0,25 mm) wide or affecting vision when checked in daylight, are allowed within an area starting at a distance 1/4 inch (6 mm) from the frame.

(2) Frame

– Check for distortions of the frame affecting correct fit on the face, tears, defective bonding between frame and foam pad, cloth strip detached from foam pad.

(3) Headband

– Check for loose sewing, loss of elasticity.

(4) Rivet

– Check for missing or broken rivets.

CAUTION: REPLACE SMOKE GOGGLES SHIWING ANY OF THE ABOVE DESCRIBED DEFECTS

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OXYGEN - ADJUSTMENT

1. General

A. This procedure contains the following tests:

- A low pressure test
- A high pressure test
- A test of the oxygen drop-out system

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- KEEP HOT OBJECTS, TOOLS AND ELECTRICAL EQUIPMENT WHICH CAN CAUSE SPARKS AWAY FROM THE OXYGEN EQUIPMENT
- KEEP OXYGEN EQUIPMENT AWAY FROM UNWANTED MATERIALS (DUST, LINT, ETC.).
- MAKE SURE THAT THERE IS NO OIL OR GREASE ON YOUR HANDS OR ON THE TOOLS.

WARNING: BE CAREFUL WHEN YOU WORK ON THE OXYGEN BOTTLES AND PIPELINES:

- KEEP SPARE BOTTLES IN A COOL PLACE AWAY FROM DIRECT SUNLIGHT.
- KEEP OXYGEN BOTTLES AWAY FROM BOTTLES WHICH CONTAIN OTHER GASES.
- USE ONLY THE SPECIAL LUBRICATION AND SEALING MATERIALS APPROVED FOR USE ON OXYGEN SYSTEMS
- IF THE PRESSURE IN THE OXYGEN SYSTEM BECOMES ZERO DO A PURGE OF THE SYSTEM TO REMOVE ANY WATER VAPOUR OR ODORS. WATER VAPOUR CAN FREEZE AT LOW TEMPERATURES.
- USE ONLY AVIATION BREATHING OXYGEN TO MIL-O-27210 TO CHARGE OR PURGE THE SYSTEM.

2. Low Pressure Test

A. Fixtures, Test and Support Equipment

Oxygen gage (with adaptor for crew outlet valves)	Not specified

B. Consumable Materials

Leak detector fluid	MIL-L-25567
Lint-free cloth	Not specified

C. Referenced Information

Maintenance Manual Chapter 24-00-00

D. Procedure

(1) Make sure electrical power is available (Refer to 24-00-00).
(2) Connect the oxygen gage to the pilot outlet valve.
(3) Set the three way valve on the pilot oxygen panel to the MANUAL MASK RELEASE position.
(4) Check that the pressure gage shows a pressure of 70 ±10 psi and that the doors on the passenger mask dispensers open, and the masks drop out and are held by the lanyards.
(5) Let the system stabilize for three minutes, then write down the gage pressure indication.
(6) After 15 minutes write down the gage pressure indication again.
(7) The pressure loss (the difference between step (6) and step (5) must not be more than 5 psi.
(8) If the pressure loss is more than 5 psi do the steps that follow:
  (a) Step by step get access to the system components.
  (b) Apply leak detector fluid (MIL-L-25567) to each component and joint in turn until you find the leak.
  (c) Repair the system as necessary and do the test again until the leakage is inside the limit.
  (d) Clean and dry the areas where detector fluid is used, with a lint free cloth.
  (e) Install any parts removed for access.
(9) Set the three way valve to the AUTO NORMAL position.
(10) Stow the passenger masks and close the dispensing unit.
(11) Disconnect the test pressure gage from the pilot outlet valve.

3. High Pressure Test

A. Consumable Material

Leak detector fluid	MIL-L-25567
Lint-free cloth	Not specified

B. Procedure

(1) Make sure the system pressure is between 1500 and 1800 psi, write down the system pressure.
(2) Make a check of the system pressure after 30 minutes, there must be no pressure loss.
(3) If there is any leakage use the procedure given in the low pressure test above to repair the leaks.
(4) Do the test again until no pressure loss is seen.

4. Pilot Mask and Passenger Mask Dispensing units - Functional Test

A. Referenced Procedures

Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Make sure electrical power is available (Refer to 24-00-00).
(2) Put on the pilot and copilot masks in turn and breath to make sure oxygen flows, then remove and stow the mask.
(3) On the pilot oxygen panel, set the three way switch to MANUAL MASK RELEASE.
(4) All the dispensing unit doors must open and the masks must fall to the limit of the operating Lanyard.
(5) Set the three way switch to the AUTO NORMAL position.
(6) Pull the operating pin of one mask and make sure that oxygen flows, then replace the pin.
(7) Stow the masks and close the dispensing unit doors.
(8) Remove the electrical power (Refer to 24-00-00).

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CREW OXYGEN - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:

- The removal and installation of the oxygen storage cylinder
- The removal and installation of the filling valve
- The removal and installation of the three position valve
- The removal and installation of the oxygen pressure gauge

WARNING: BE CAREFUL WHEN YOU WORK ON THE OXYGEN SYSTEM:

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- KEEP HOT OBJECTS, TOOLS AND ELECTRICAL EQUIPMENT WHICH CAN CAUSE SPARKS AWAY FROM THE OXYGEN EQUIPMENT.
- KEEP OXYGEN EQUIPMENT AWAY FROM UNWANTED MATERIALS (DUST, LINT, ETC.).
- MAKE SURE THAT THERE IS NO OIL OR GREASE ON YOUR HANDS OR ON THE TOOLS.

WARNING: BE CAREFUL WHEN YOU WORK ON THE OXYGEN BOTTLES AND PIPELINES:

- KEEP SPARE BOTTLES IN A COOL PLACE AWAY FROM DIRECT SUNLIGHT.
- KEEP OXYGEN BOTTLES AWAY FROM BOTTLES WHICH CONTAIN OTHER GASES.
- USE ONLY THE SPECIAL LUBRICATION AND SEALING MATERIALS APPROVED FOR USE ON THE OXYGEN SYSTEMS.
- IF THE PRESSURE IN THE OXYGEN BOTTLES BECOMES ZERO DO A PURGE OF THE SYSTEM TO REMOVE ANY WATER VAPOR. WATER VAPOR CAN FREEZE AT LOW TEMPERATURE.

2. Oxygen Storage Cylinder - Removal (Refer to Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Procedures

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Remove the cabin furnishing above the floor panel 231 ELF (Refer to 06-00-00).
(2) Remove the floor panel 231 ELF.

(3) Cut and remove the lockwire from the actuation lever on the regulator.
(4) Set the lever to the OFF position and safety it in this position with lockwire.
(5) Connect the pilot oxygen mask to the outlet valve and use the emergency manual control to release any pressure in lines.
(6) Disconnect these oxygen tube line-ends from the regulator:
- The low pressure outlet (8)
- The safety outlet high pressure relief line (7)
- The fill line (1)
- The gauge capillary line (6).

(7) Put caps on all line ends and adapters.
(8) Loosen the two clamp nuts (3) and disengage the clamps from the support structure (5).
(9) Remove the eight screws (2) and remove the two stiffeners (4) from frames 23 and 24.
(10) Remove the cylinder complete with the clamps and spacers, from the support structure.

3. Oxygen Cylinder - Installation (Refer to Fig. 201)

A. Referenced Procedures

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 35-00-00

B. Procedure

(1) If a new cylinder is to be installed, remove the clamps and the spacers from the old cylinder and install them on the new cylinder.
(2) Install the cylinder in the support structure and align the regulator outlets with the line ends. Align the spacers and clamps with the support structure.
(3) Tighten the clamps.
(4) Install the two stiffeners (4) with the eight screws (2).
(5) Tighten the screws.
(6) Remove the caps from the line ends and the adapters.
(7) Connect and tighten these line ends to the adapters on the regulator:
- The low pressure outlet (8)
- The safety outlet high pressure relief line (7)
- The fill line (1)
- The gauge capillary line (6)

(8) Cut and remove the lockwire from the actuation lever.
(9) Set the actuation lever to ON and safety it in this position with lockwire.
(10) Do a pressure test of the oxygen system (Refer to 35-00-00).
(11) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(12) Install the floor panel 231 ELF.
(13) Install the furnishings (Refer to 06-00-00).

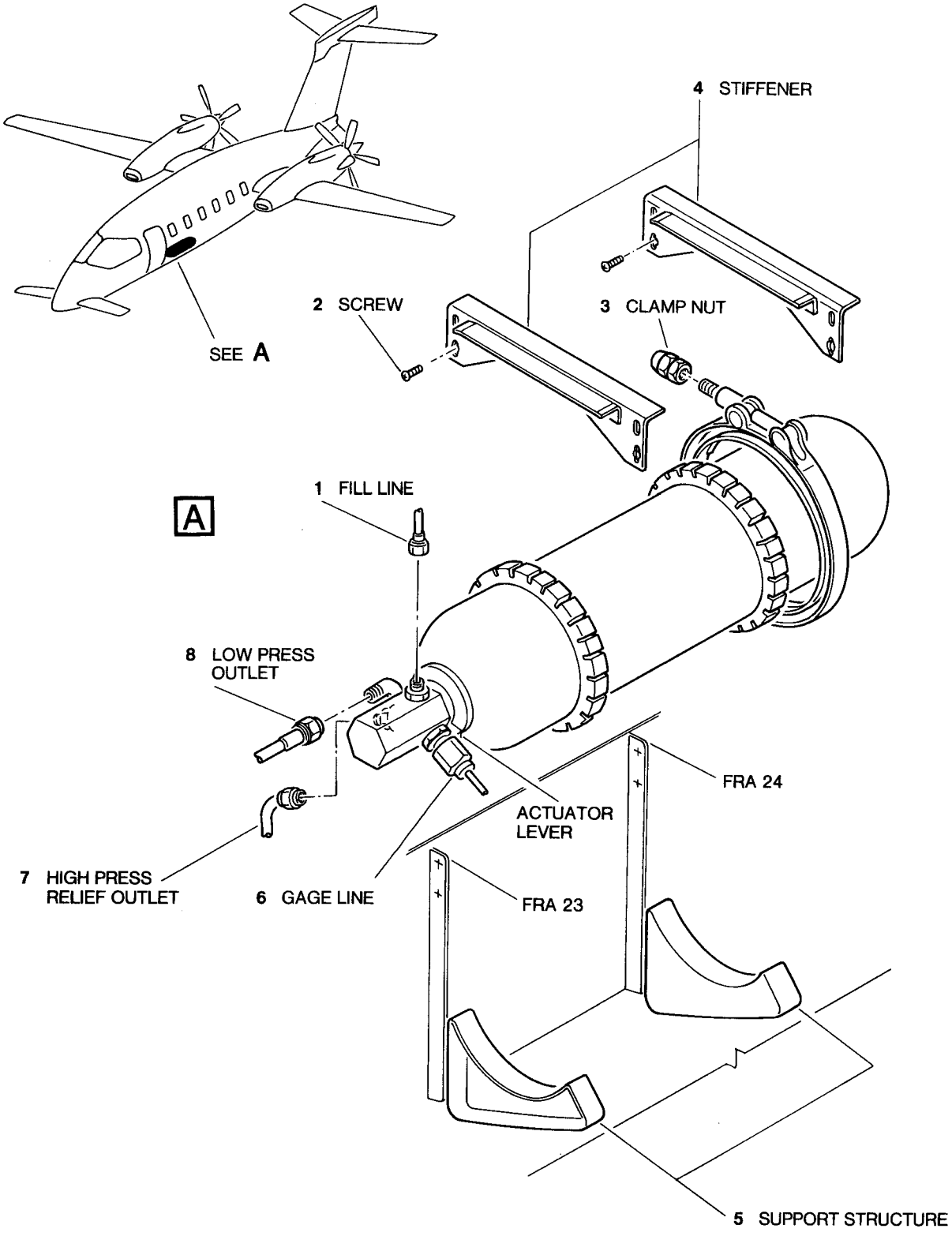

Fig. 201 - Oxygen Storage Cylinder - Removal/Installation

4. Filling Valve - Removal (Refer to Fig. 202)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Procedures

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Remove the cabin furnishing above the floor panel 231 BLF (Refer to 06-00-00).
(2) Remove the floor panel 231 BLF.
(3) Disconnect the line end of the high pressure charging tube (2) from the end fitting on the valve (4).
(4) Put caps on the fitting and the line end.
(5) Remove the cap assembly (6) from the charging adaptor (7) and put caps on the adaptor and the charging cap.
(6) Remove the three nuts (3) and bolts (5) and remove the valve (4) from the valve cup (1).

5. Filling Valve - Installation (Refer to Fig. 202)

A. Referenced Procedures

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 35-00-00

B. Procedure

(1) Install the valve (4) into the valve cup (1) and align the mounting holes.
(2) Install the three bolts (5) and the nuts (3). Tighten the nuts.
(3) Remove the caps from the line ends and adaptors.
(4) Install the cap (6) on the charging adapter (7).
(5) Connect the line end of the high pressure tube (2) to the end fitting of the valve.
(6) Tighten the line end and the valve cap.
(7) Do a leak check of the charging valve (Refer to 35-00-00).
(8) Install the floor panel 231 BLF.
(9) Install the cabin furnishings (Refer to 06-00-00).

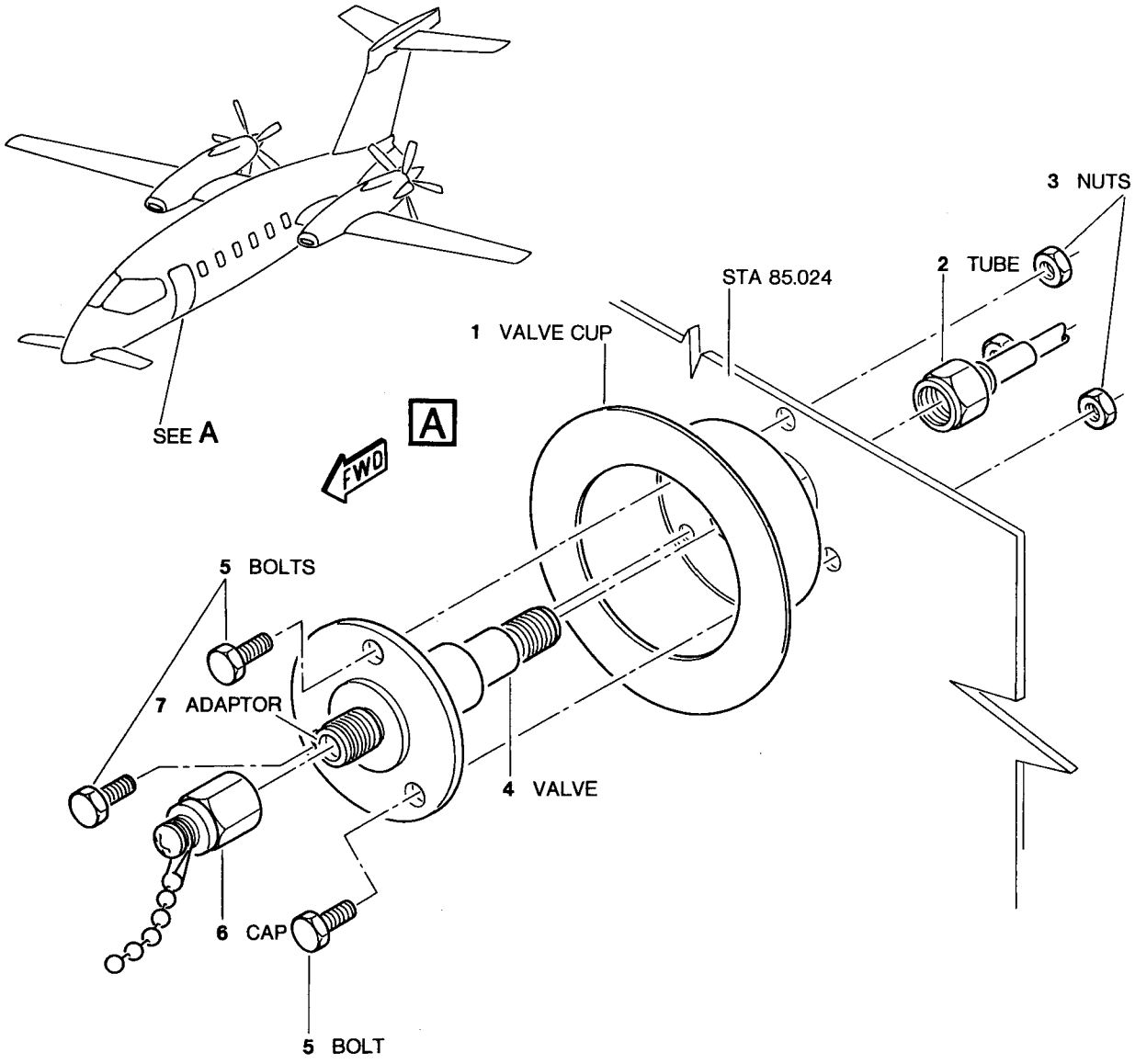

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Fig. 202 - Filling Valve - Removal/Installation

6. Three Position Valve - Removal (Refer to Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Procedures

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Remove the cabin furnishings from above the floor panel 231 ELF.
(2) Remove the panel 231 ELF.
(3) Open, tag and safety the OXY VALVE circuit breaker on the pilot circuit breaker panel.
(4) Cut and remove the lockwire from the actuation lever on the regulator of the oxygen cylinder.
(5) Set the actuation lever to OFF and safety it in this position with lockwire.
(6) Use the emergency manual control on the pilot oxygen mask to release any residual oxygen pressure in the lines.
(7) Remove the oxygen mask from the stowage bay (6).
(8) Remove the flight compartment trim panel in Zone 211.
(9) Disconnect the oxygen tube line-ends (2) and (3) from the unions on the three way valve (4).
(10) Put caps on the line ends and the unions.
(11) Remove (with a suitable tool) from the Terminal Junction Box (8) the electric cables (7) that connect the valve (4).
(12) Attach temporary identification tags to the cables of the solenoid.
(13) Remove the four attachment screws (1) from the oxygen panel (5) and the valve (4).
(14) Remove the Three Way Valve (4).

7. Three Position Valve - Installation (Refer to Fig. 203)

A. Referenced Procedures

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 35-00-00

B. Procedure

(1) Install the valve (4) into the oxygen panel (5) and align the attachment holes.
(2) Install and tighten the four screws (1).
(3) Identify the electrical cables and connect them (with a suitable tool) on to the respective terminal junction box posts (8).
(4) Remove the caps and connect the line-ends (2) and (3) of the oxygen tubes to the unions on the valve (4).
(5) Cut and remove the lockwire and set the actuation lever on the oxygen cylinder to ON.

(6) Safety the actuation lever with lockwire.
(7) Do a test of the system for leaks and for correct operation of the passenger drop-out system (Refer to 35-00-00).
(8) Install the flight compartment trim panel Zone 211.
(9) Remove the safety tag and close the OXY VALVE circuit breaker.
(10) Install the floor panel 231 ELF.
(11) Install the furnishings (Refer to 06-00-00).

8. Oxygen Pressure Gauge - Removal (Refer to Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Procedures

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Remove the cabin furnishings from above the floor panel 231 ELF.
(2) Remove the panel 231 ELF.
(3) Open, tag and safety the LTS DIM circuit breaker on the pilot circuit breaker panel.
(4) Cut and remove the lockwire from the actuation lever on the regulator of the oxygen cylinder.
(5) Set the actuation lever to the OFF position and safety it in this position with lockwire.
(6) Use the emergency manual control on the pilot oxygen mask to release any residual oxygen pressure in the lines.
(7) Remove the flight compartment trim panel in Zone 211.
(8) Remove the oxygen mask from the stowage bay (6).
(9) Attach temporary identification tags to the electrical cables of the gauge (9).
(10) Remove (with a suitable tool) from the Terminal Junction Box (8) the electric cables (7) that connects the gauge (9) at frame STA 44.488.

CAUTION: BE CAREFUL WHEN YOU DISCONNECT THE OXYGEN CAPILLARY TUBE. THE TUBE CAN BE EASILY DAMAGED.

(11) Disconnect the line end of the capillary tube from the adapter on the gauge (9).
(12) Remove the four screws (10) that secure the oxygen gauge (9) to the proper ssupport (11).
(13) Put caps on the line end and the adapter.

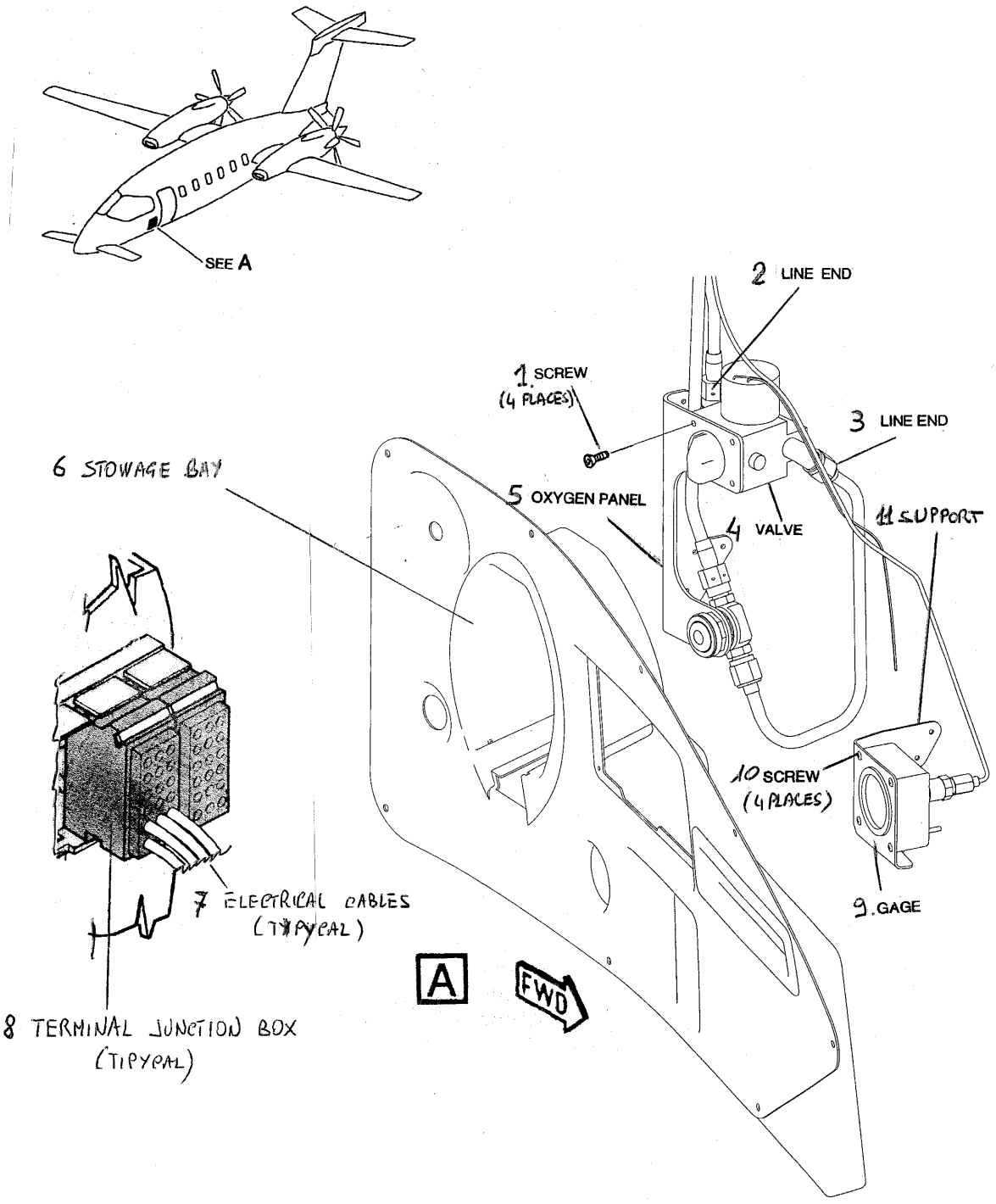

Fig. 203 - Three Position Valve and Oxygen Gauge - Removal/Installation

9. Oxygen Pressure Gauge - Installation (Refer to Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Procedures

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 33-00-00
Maintenance Manual Chapter 35-00-00

C. Procedure

(1) Install the gauge to the support (11) with the screws (10).

CAUTION: BE CAREFUL WHEN YOU CONNECT THE OXYGEN CAPILLARY TUBE. THE TUBE CAN BE EASILY DAMAGED.

(2) Remove the caps from the line end and the adapter.
(3) Connect the line end to the adapter on the gauge (9) and tighten it.
(4) Identify the electrical cables and connect them (with a suitable tool) to the respective terminal juntion box posts (8).
(5) Remove the temporary tags.
(6) Remove the safety tag and close the LTS DIM circuit breaker on the pilot circuit breaker panel.
(7) Cut and remove the lockwire from the actuation lever on the oxygen cylinder.
(8) Set the lever to ON and safety it in this position with lockwire.
(9) Do a pressure and leak check of the oxygen gauge (Refer to 35-00-00).
(10) Do a test of the instrument lighting (Refer to 33-00-00).
(11) Install the floor panel 231 ELF.
(12) Install the furnishings (Refer to 06-00-00)
(13) Install the flight compartment trim panel Zone 211.

10. Crew Oxygen Masks - Visual Check

A. Fixtures, Test and Support Equipment

Strong Light	Not specified
Magnifying-Glass	Not specified

NOTE: All the parts that show a visual defect or signs of corrosion must be systematically replaced.

B. Procedure

(1) Use a strong light and a magnifying-glass as needed.
(2) Do a visual check on all parts of the assemblies and in particular: - make sure that the parts are clean and in a satisfactory condition, - examine the condition of the threads, - examine the condition of the tubes and of the hoses.
(3) Check if there is presence of visible damage or corrosion.

11. Crew Oxygen Masks - Operational Check

A. Procedure

(1) Select Microphone MASK and Cockpit Speaker SPK on the Audio Control Panel.
(2) Make sure that the mask is connected to the Pilot or Copilot Oxygen Outlet.
(3) Make sure that the Radio Connector is properly inserted in the OXYGEN MIC. jack.
(4) Wear the Oxygen Mask, breath and make sure that you can feel a light oxygen flow.
(5) Speak into the Microphone and make sure that you can hear a loud and clear voice in the cockpit speakers.

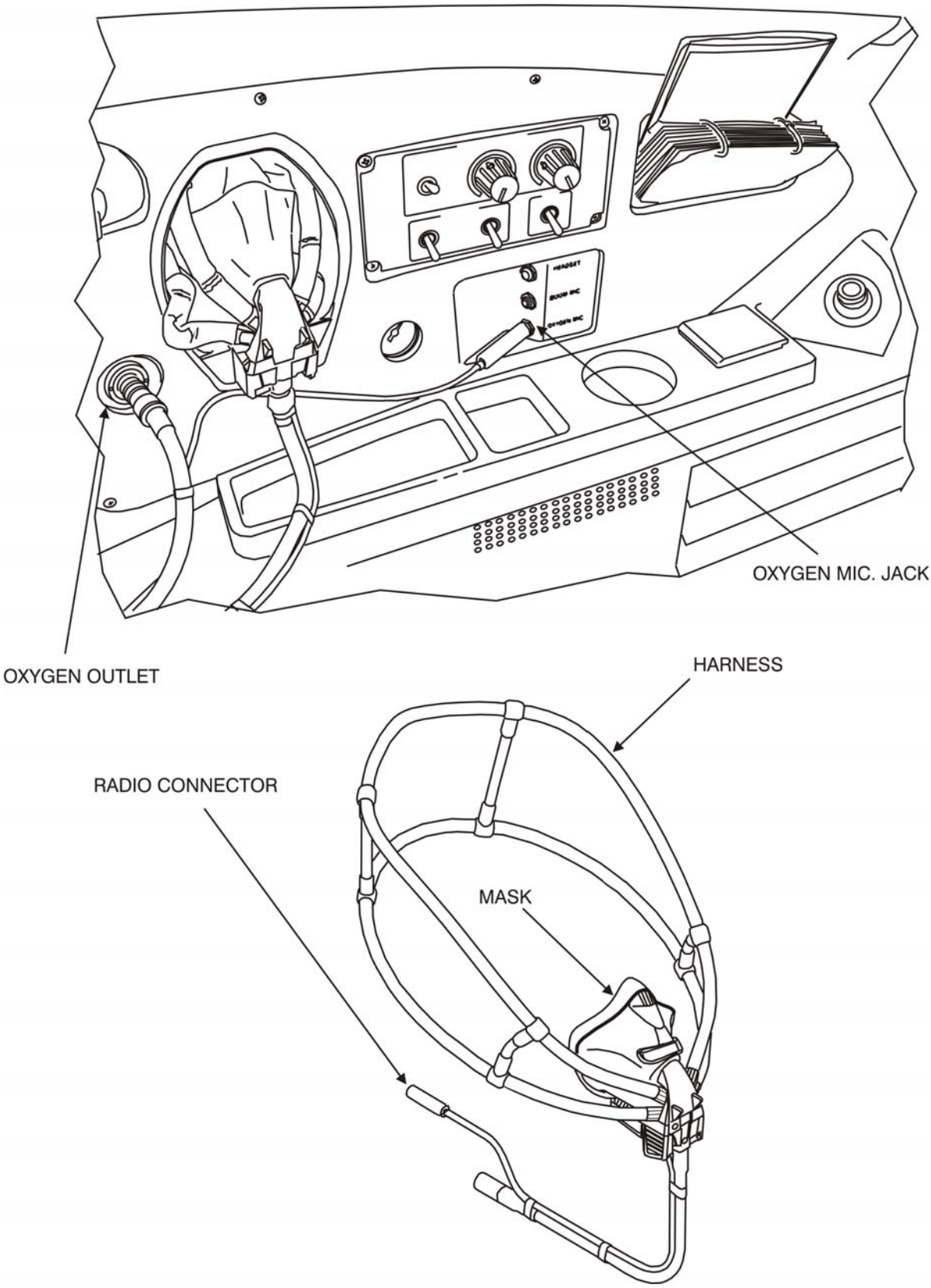

Fig. 204 - Oxygen Mask - Operational Check

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PASSENGER OXYGEN - MAINTENANCE PRACTICES

1. General

A. This page block contains the following maintenance practices:
- The removal/installation of the passenger mask dispensing units
- The removal/installation of the altitude pressure switch

WARNING: BE CAREFUL WHEN YOU WORK ON THE OXYGEN SYSTEM:
- KEEP OIL AND GREASE AWAY FROM OXYGEN EQUIPMENT. THE MIXTURE OF OIL GREASE WITH OXYGEN CAN CAUSE EXPLOSIONS.
- KEEP HOT OBJECTS, TOOLS AND ELECTRICAL EQUIPMENT WHICH CAN CAUSE SPARKS AWAY FROM THE OXYGEN EQUIPMENT.
- KEEP OXYGEN EQUIPMENT AWAY FROM UNWANTED MATERIALS (DUST, LINT, ETC.).
- MAKE SURE THAT THERE IS NO OIL OR GREASE ON YOUR HANDS OR ON THE TOOLS.

2. Passenger Mask Dispensing Units - Removal (Refer to Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified

B. Referenced Procedures

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 25-20-00

C. Procedure

(1) Remove the passenger compartment side panel (Refer to 25-20-00).
(2) Remove the furnishings above the floor panel 231 ELF. (Refer to 06-00-00).
(3) Make sure electrical power is available (Refer to 24-00-00).
(4) On the pilot oxygen panel, set the three way valve to MANUAL MASK RELEASE.
(5) When the passenger mask dispensing units have all deployed:
- Cut and remove the lockwire from the actuation lever on the storage cylinder
- Set the lever to the OFF position and safety it in this position with lockwire.

(6) Disconnect the oxygen tube line-end (2) from the rear of the mask dispensing unit (3).
(7) Put caps on the line end and the union.
(8) Remove the four screws (4) that hold the dispensing unit into the passenger service unit (1).
(9) Remove the dispensing unit.

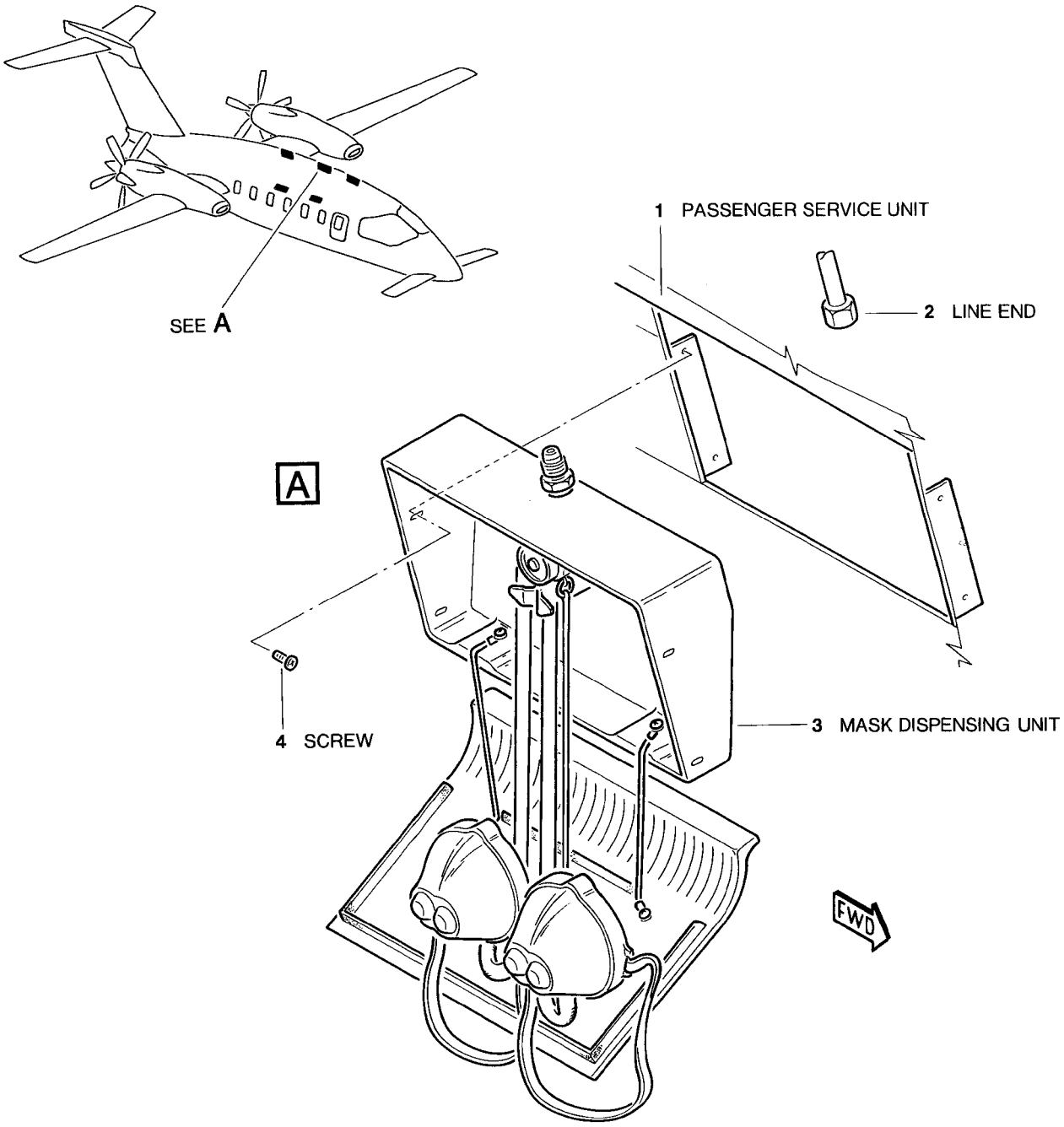

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Fig. 201 - Passenger Mask Dispensing Unit - Removal/Installation

3. Passenger Mask Dispensing Units - Installation (Refer to Fig. 201)

A. Referenced Procedures

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 35-00-00

B. Procedure

(1) Install the dispensing unit into the passenger service unit and align the four attachment holes.
(2) Install and tighten the four attachment screws (4).
(3) Remove the caps from the line end (2) and the union.
(4) Connect and tighten the line end (2) on the dispensing unit.
(5) Stow the mask(s) into the dispensing unit and close and latch the door.
(6) Cut and remove the lockwire from the actuation lever on the storage cylinder.
(7) Set the lever to the ON position and safety it in this position with lockwire.
(8) Do a test of the oxygen drop-out system (Refer to 35-00-00).
(9) Install the passenger compartment roof panel.
(10) Install the floor panel 231 ELF.
(11) Install the furnishings above the floor panel (Refer to 06-00-00).

4. Cabin Altitude Switch - Removal (Refer to Fig. 202)

A. Procedure

(1) Open, tag and safety the OXY VALVE circuit breaker on the pilot circuit breaker panel.
(2) Remove the oxygen mask from the stowage bay (4).
(3) Remove the flight compartment trim panel in Zone 212.
(4) Remove the two screws (1) which hold the altitude switch to the support (2).
(5) Attach temporary identification tags to the electrical wires.
(6) Remove (with a suitable tool) from the terminal junction box (6) the electrical cables (5) that connects the cabin altitude switch (3).
(7) Remove the cabin altitude switch (3) complete with the wires.

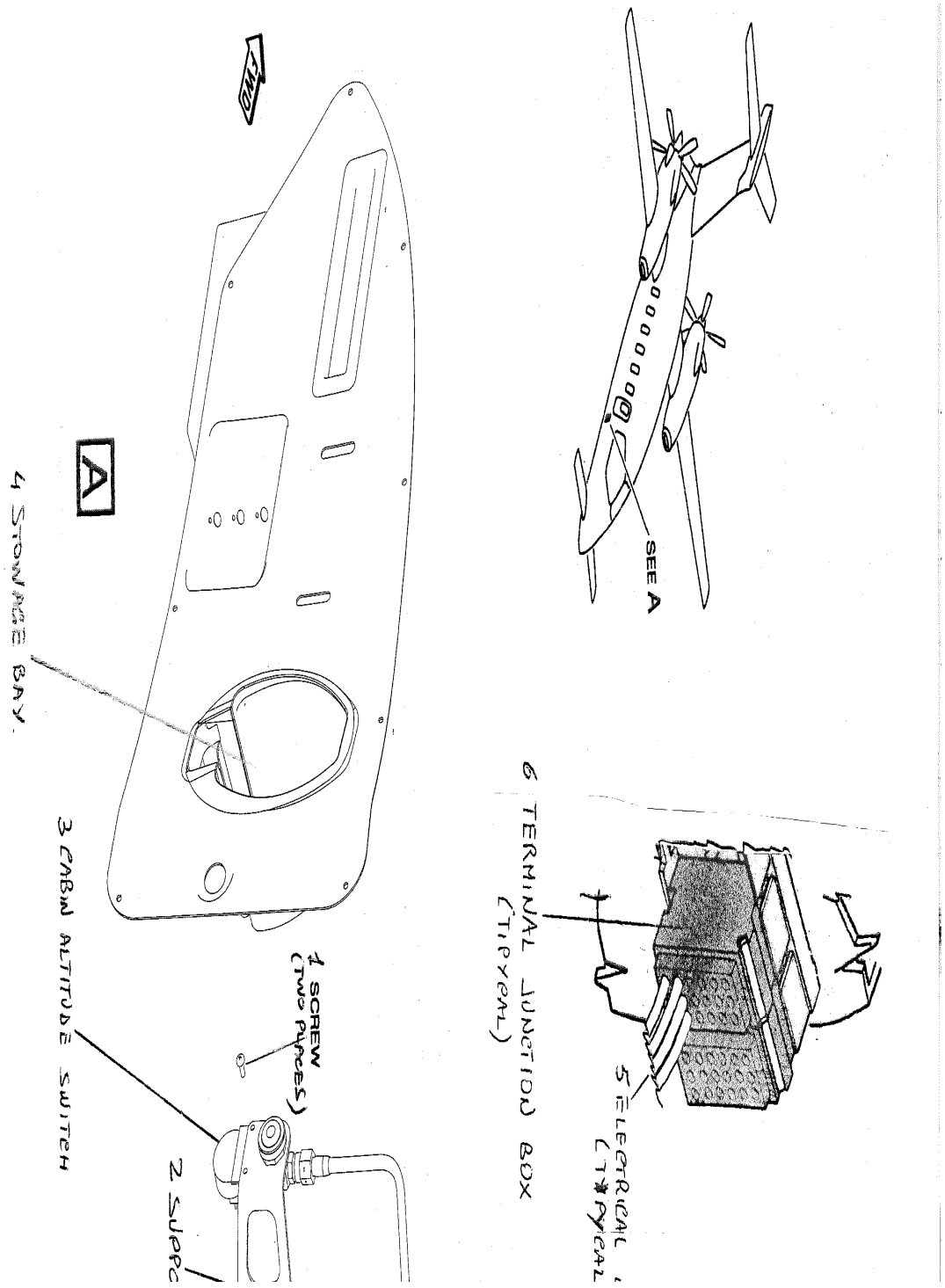

Fig. 202 - Cabin Attitude Switch - Removal/Installation

5. Cabin Altitude Switch - Installation (Refer to Fig. 202)

A. Procedure

(1) Put the cabin altitude switch (3) in position and attach it with the two screws (1) to the proper support (2).
(2) Identify the electrical cables (5) and connect them (with a suitable tool) on the respective terminal junction box posts (6) on frame STA 44.488.
(3) Install the flight compartment trim panel.
(4) Remove the safety tag and close the OXY VALVE circuit breaker.

6. Cabin Altitude Switch - Test Bench (Refer to Fig. 202)

A. Procedure

(1) Remove the Altitude switch as described in this section.
(2) Connect the switch terminals with a suitable multimeter or tester for verifying electrical continuity.
(3) position the switch into a Vacuum Chamber with the multimeter.
(4) Verify that, at ambient pressure, the contact of barometric switch is OPEN.

CAUTION: BECAUSE THE COMPONENT TOLERANCE IS + 500 FT, THE REFERENCE ALTIMETER MUST HAVE A MAXIMUM ERROR OF 50 FT. FOR THIS REASON A DIGITAL INSTRUMENT IS PREFERRED.

(5) Depressurize the vacuum chamber with a suitable Pitot-Static pressure monitoring system or vacuum pump + calibrated reference altimeter for allowing the pressure measure precision.
(6) Increase the vacuum chamber altitude with a 2000 ft/min rate.
(7) Verify and record the value of altitude at which the switch closes. The required value is 14000 ft + 500 -0.00 ft
(8) Decrease the altitude with a rate of 2000 ft/min. rate
(9) Verify and record the value of altitude at which the switch opened. The required value is greater than 8000 ft.
(10) Decrease the altitude up to ambient pressure and disconnect all links to switch.
(11) Record on a sheet all the recorded values.
(12) Install the Altitude switch as described in this section.

7. Passenger Mask - Stowing (Ref. to Fig. 203)

A. Procedure

WARNING: BE CAREFUL WHEN YOU TOUCH THE PASSENGER MASKS. MAKE SURE THAT THERE IS NO OIL OR GREASE ON YOUR HANDS OR TOOLS. THE MIXTURE OF OIL OR GREASE WITH OXYGEN CAN CAUSE EXPLOSIONS.

(1) Spread the reservoir bag out on a flat surface and carefully smooth out any wrinkles.

(2) Examine the mask, reservoir bag and hose for the following:
- cuts and splits
- contamination
- crushing or kinking of the oxygen supply hose.

(3) If necessary, replace any defective parts.

(4) Stow the mask as follows:

(a) Pull the lanyard cord out to the side of the mask so that it does not interfere with packing and fold the headstrap into the mask facepiece.

(b) Fold the reservoir bag lengthways into thirds by folding the outside edges inwards. Take care not to crease the bag.

(c) Fold the reservoir bag into the mask facepiece on the opposite side to the breathing valves. Make sure the bag does not cover the breathing valves.

(d) Coil the oxygen supply hose inside the mask facepiece.

WARNING: DO NOT CROSS-CONNECT THE OXYGEN SUPPLY HOSES OR LANYARD CORDS. CROSS-CONNECTION COULD RESULT IN NO OXYGEN FLOW TO THE PASSENGER AND CAUSE INJURY OR DEATH.

(e) Push the oxygen supply hoses on to the corresponding outlets of the dispensing-unit oxygen-manifold.

(f) Install the lanyard-cord pins into the corresponding check-valves.

(g) Place the masks, facepiece first, into the dispensing unit. Make sure the oxygen supply hoses and lanyard cords are free to deploy and can not get trapped between the unit and its lid.

(h) Close the dispensing unit lid.

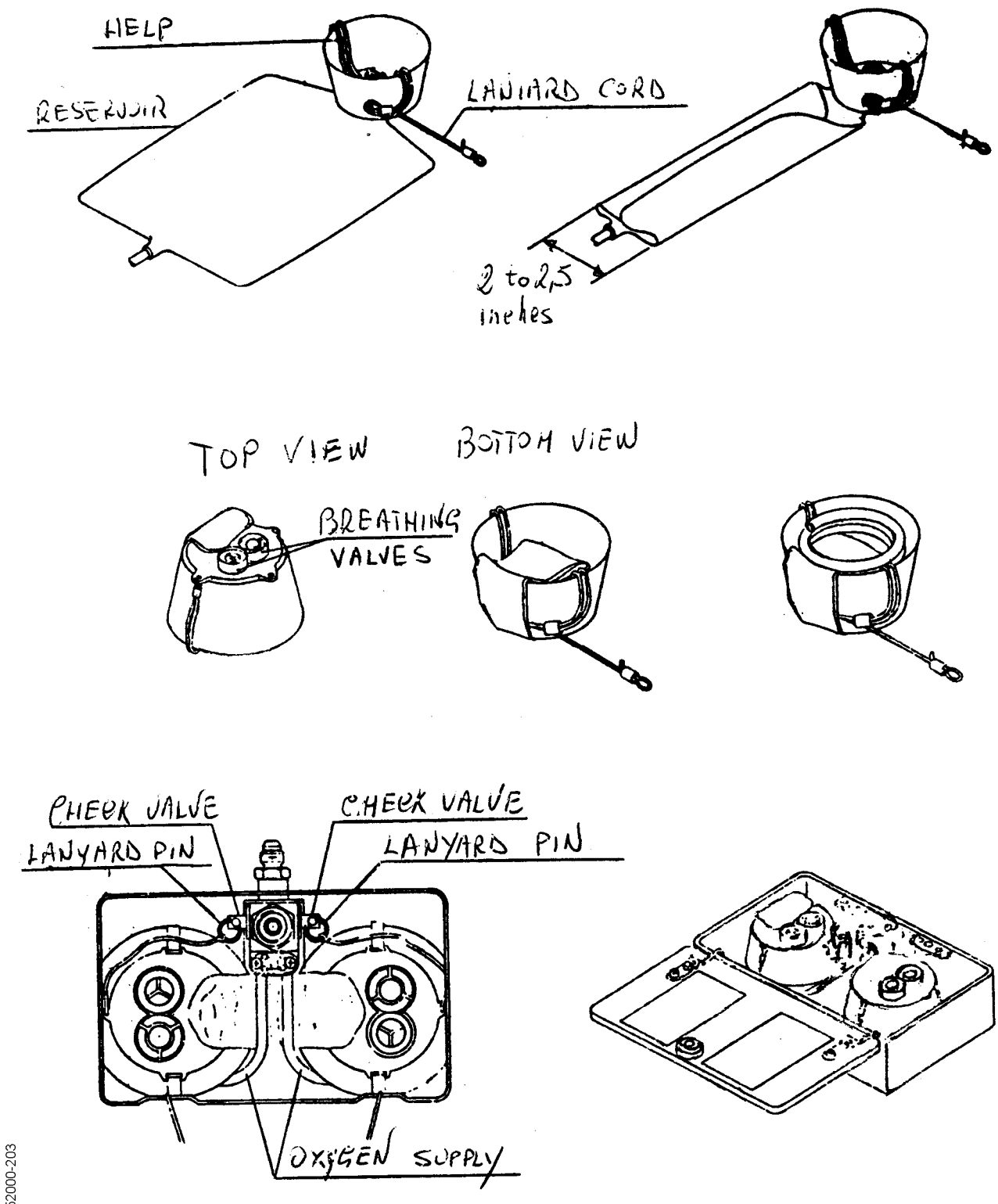

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Fig. 203 - Passenger Mask - Stowing

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