CHAPTER 35

OXYGEN

LEARJET 35/35A/36/36A
MAINTENANCE MANUAL

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Insert latest revised pages; destroy superseded or deleted pages.

* Asterisk indicates pages revised, added, or deleted by the current revision. The portion of the text affected by the current revision is indicated by a vertical line in the outer margin of the page.

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35-1	Inactive	Apr 15/77	35-00-00 Page 1	Apr 15/77	LJ	Nov 1/77 Rev. 7	LJ
35-2	Inactive	Apr 15/77	35-00-00 Page 4	Apr 15/77	LJ	Nov 1/77 Rev. 7	LJ
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35-14	Inactive	May 23/77	35-10-00 Page 4	May 23/77	LJ	Nov 1/77 Rev. 7	LJ
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OXYGEN SYSTEM - DESCRIPTION AND OPERATION

1. Description

A. This chapter describes the different oxygen systems as follows: (See Figure 1, Figure 2, and Figure 3.)

(1) *On Aircraft equipped with nose compartment oxygen system*, the oxygen system consists of the crew distribution and passenger distribution systems, a high pressure storage cylinder, a direct reading pressure gage, a shutoff valve and pressure regulator assembly, an overboard discharge indicator, an oxygen aneroid switch, a manual aneroid bypass valve, an oxygen solenoid valve and a manual passenger oxygen valve.

(2) *On Aircraft equipped with nose and dorsal oxygen system,* the nose and dorsal oxygen cylinder system consists of two (2) high pressure storage cylinders, two (2) direct reading pressure gages, two (2) shutoff valve and pressure regulator assemblies, two (2) overboard discharge indicators, an oxygen aneroid switch, a passenger oxygen control panel, an oxygen solenoid valve, and a manual bypass valve.

(3) *On Aircraft equipped with dorsal oxygen cylinder system,* the system consists of the crew distribution and passenger distribution systems, a high pressure storage cylinder, a direct reading pressure gage, a shutoff valve and pressure regulator assembly, an overboard discharge indicator, an oxygen aneroid switch, a manual aneroid bypass valve, an oxygen solenoid valve, and a manual passenger oxygen valve.

(4) *On Aircraft equipped with long range oxygen system,* one (1) oxygen cylinder installed in the nose compartment and two (2) oxygen cylinders installed in the baggage compartment. The long range oxygen system consists of three (3) high pressure storage cylinders, six (6) direct reading pressure gages, two (2) hutoff valve and pressure regulator assemblies, two (2) overboard discharge indicators, an oxygen aneroid switch, a passenger emergency oxygen system control panel, an oxygen solenoid valve, a manual bypass valve, two (2) baggage compartment cylinder shutoff valves, a zero pressure switch and passenger crew masks.

B. An emergency portable oxygen cylinder is installed as optional equipment. The oxygen cylinder is installed on brackets mounted on the aft side of the divan seat. The cylinder incorporates a pressure gage, an on-off control knob and two (2) outlets. The cylinder should be serviced per the instruction plate on the cylinder.

C. Crew Distribution System

(1) The crew distribution system is installed to provide oxygen in the event of pressurization system failure or for flight altitudes that require oxygen masks to be worn at all times. The two crew masks are connected to quick-disconnects. Oxygen flow is available at all times.

D. Passenger Distribution System

(1) The passenger distribution system is installed to provide oxygen in case of pressurization system failure or any other condition requiring oxygen. Oxygen flow is initiated automatically through the oxygen aneroid valve or manually by opening the manual aneroid bypass valve.

(2) *On Aircraft equipped with long range oxygen system,* there are two oxygen quick-disconnects (one RH and one LH) installed in the armrests between frames 13c and 13b. These quick-disconnects provide additional oxygen mask provisions in the passenger compartment.

E. Component Description

(1) Oxygen Storage Cylinder

(a) The oxygen storage cylinder has a capacity of 38 cubic feet at a pressure of 1800 (±50) psi. *On Aircraft equipped with nose compartment oxygen system*, the cylinder is installed in the RH side of the nose compartment and is secured by clamps. *On Aircraft equipped with dorsal oxygen system*, the cylinder is installed in the dorsal fin.

(b) *On Aircraft equipped with long range oxygen system*, there are two (2) additional oxygen storage cylinders (76 cu. ft. each) located, one above the other, on the left side of the baggage compartment.

(c) *On Aircraft equipped with nose and dorsal oxygen system*, an additional oxygen storage cylinder is installed in the dorsal fin. This oxygen storage cylinder is identical to the 38 cubic foot cylinder located in the nose compartment.

(2) Oxygen Pressure Gage

(a) *On Aircraft 35-002 thru 35-201 and 35-205 and 36-002 thru 36-040 equipped with nose oxygen system*, the direct reading oxygen pressure gage is installed in the upper portion of the copilot's instrument panel. *On Aircraft 35-202 and Subsequent, except 35-205 and 36-041 and Subsequent*, the direct reading oxygen pressure gage is installed on the oxygen control panel.

(b) *On Aircraft equipped with long range oxygen system*, there are six (6) direct reading oxygen pressure gages. Two (2) of the pressure gages are located inside the oxygen service door located on the right side of the nose compartment. The other oxygen pressure gages are located on the oxygen system control panel which is on the pilot's side of the cockpit. In each case one (1) gage indicates nose compartment cylinder pressure and the other gage indicates baggage compartment cylinder pressure. In addition, there is a pressure gage located on each baggage compartment cylinder.

(c) *On Aircraft equipped with nose and dorsal oxygen system*, there are two (2) direct reading pressure gages located on the oxygen system control panel which is on the pilot's side of the cockpit. One gage indicates nose compartment oxygen pressure while the other gage indicates dorsal oxygen pressure.

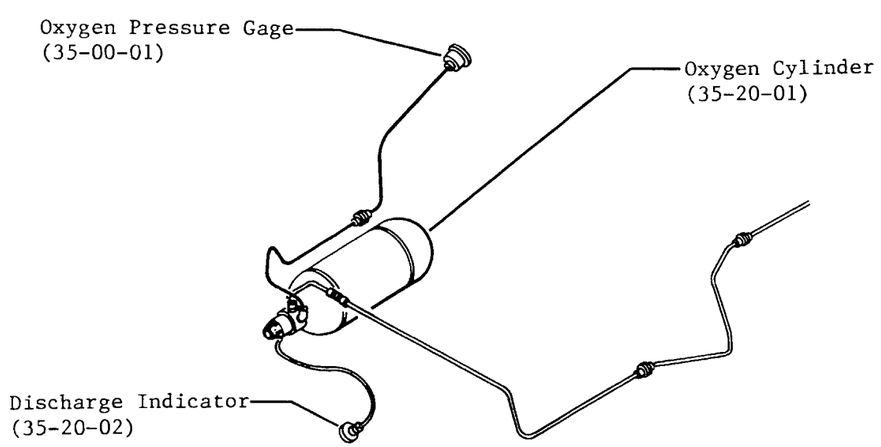
(d) *On Aircraft equipped with dorsal oxygen system*, the direct reading oxygen pressure gage is installed in the oxygen control panel.

(3) Shutoff Valve and Pressure Regulator Assembly

(a) The shutoff valve and pressure regulator assembly form an integral part of the oxygen cylinder and regulate oxygen pressure at 60 to 80 psi for the crew and passenger distribution systems. The shutoff valve and pressure regulator assembly incorporates connections for the oxygen distribution line, oxygen pressure gage capillary line, overboard discharge indicator and the service valves. The shut-off valve and pressure regulator assembly also incorporates a burst disc relief valve.

(b) When the shutoff valve and pressure regulator assembly is closed the oxygen distribution line is vented to ambient as evident by a slight hissing sound. When the service valve cap is removed, a slight leakage may be detected through the fill valve.

(c) *On Aircraft equipped with long range oxygen system*, there is an additional shutoff valve and pressure regulator assembly located in the baggage compartment. This shutoff valve and regulator assembly regulates both baggage compartment oxygen cylinders.

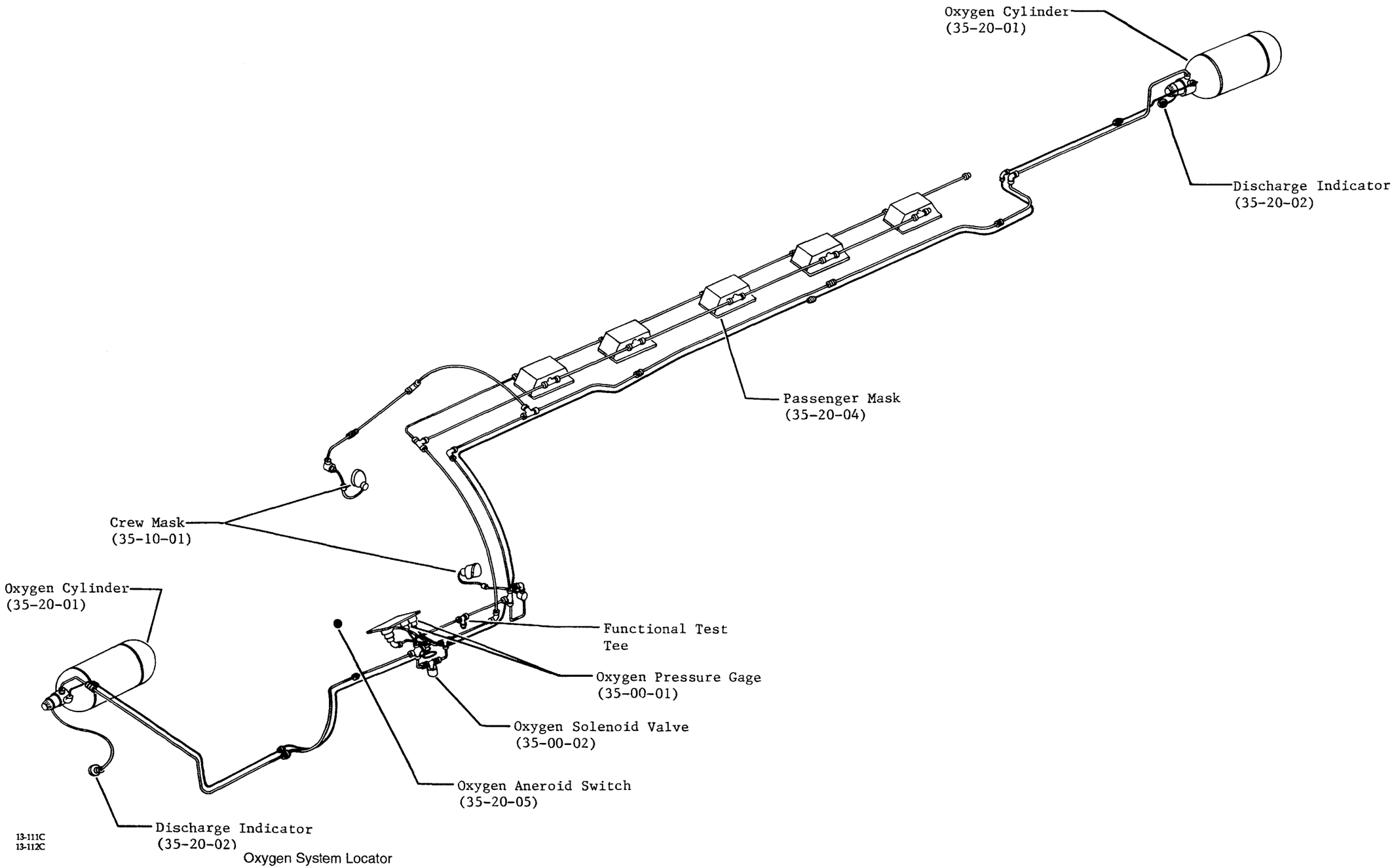


Aircraft 35-002 thru 35-201 and 35-205 and 36-002 thru 36-040

Aircraft 35-202 and Subsequent, except 35-205
and 36-041 and Subsequent

13-111C
13-112C
13-1B-5

Oxygen System Locator
Figure 1



Oxygen System Locator
Figure 2

(d) *On Aircraft equipped with nose and dorsal oxygen system,* the dorsal cylinder has a shutoff valve and regulator assembly which is identical to the shutoff valve and regulator in the nose compartment.

(4) Overboard Discharge Indicator

(a) The overboard discharge indicator is installed on the RH side of the nose at approximately F.S. 38.38. The indicator is secured to the aircraft skin with rivets and incorporates a green blowout disc secured by a snap ring.

(b) *On Aircraft equipped with long range oxygen system,* there is an additional overboard discharge indicator located on the left side of the fuselage between frames 17 and 17a.

(c) *On Aircraft equipped with nose and dorsal oxygen system,* there is an overboard discharge indicator located on the right side of the dorsal as well as on the RH of the nose compartment.

(d) *On Aircraft equipped with dorsal oxygen system,* the overboard discharge indicator is located on the right side of the dorsal.

(5) Oxygen Aneroid Switch

(a) The aneroid switch is installed in the pressurized portion of the cabin. *On Aircraft 35-002 thru 35-052 and 36-002 thru 36-017,* the aneroid switch is located on the left inner skin forward of the instrument panel. *On Aircraft 35-053 thru 35-083 and 36-018 thru 36-020,* the aneroid switch is located on frame 5 pressure bulkhead at approximately LBL 16. and WL 26.5. *On Aircraft 35-085 and Subsequent and 36-021 and Subsequent,* the aneroid switch is located on LH frame 9 inside the pilot's armrest assembly at approximately stringer 13.

(6) Oxygen Solenoid Valve

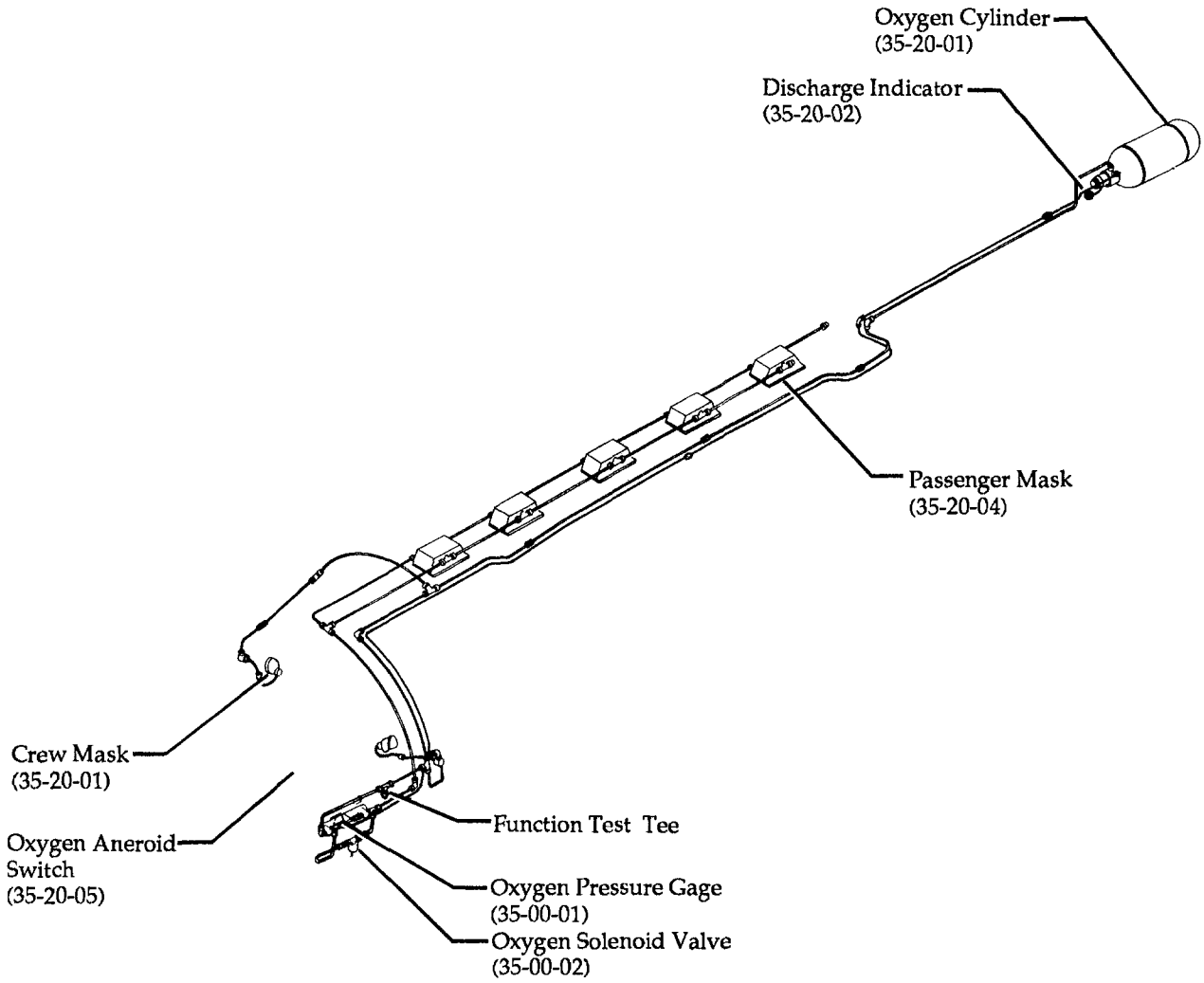
(a) The oxygen solenoid valve is located on the LH side of the cockpit above the circuit breaker panel and behind the upholstery panels. The solenoid valve (normally closed) is actuated by the oxygen aneroid switch to provide oxygen flow to the passenger distribution system.

(7) Manual Aneroid Bypass Valve

(a) The manual aneroid bypass valve is installed on the LH side of the cockpit above the circuit breaker panel and behind the upholstery panels. The valve (normally closed) is installed in a by-pass line around the oxygen solenoid valve and must be opened in case of aneroid switch malfunction.

(8) Manual Passenger Oxygen Valve *(Except Aircraft 36-035 thru 36-048 when equipped with dorsal oxygen system.)*

(a) The manual passenger oxygen valve is installed on the LH side of the cockpit above the circuit breaker panel. The valve (normally open) is installed upstream of the manual aneroid bypass valve and the oxygen solenoid valve. The valve may be closed to provide oxygen to the crew only.



13-111C
13-112C

Oxygen System Locator
Figure 3

OXYGEN SYSTEM - TROUBLE SHOOTING

1. TROUBLE SHOOTING

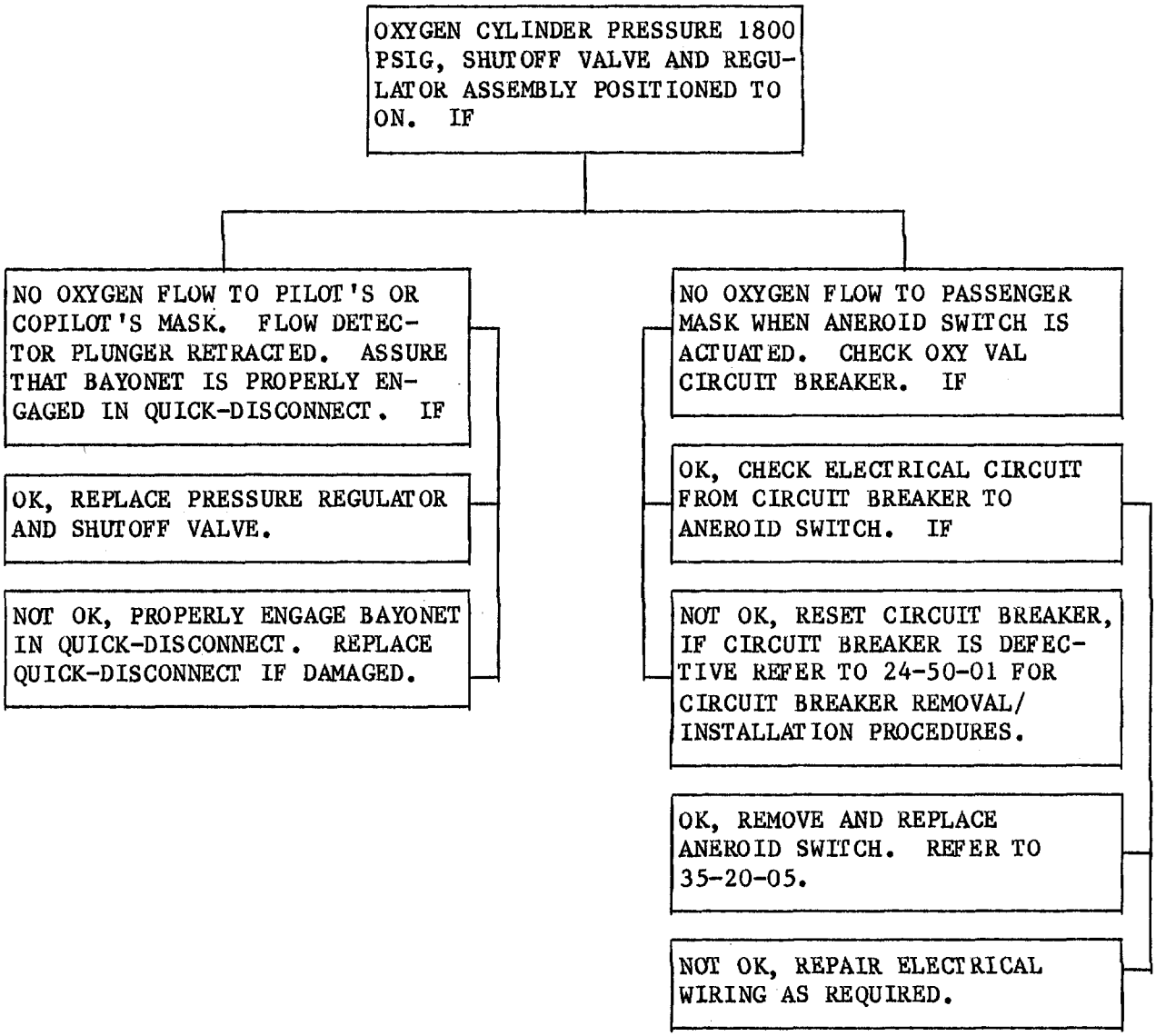
NOTE: ° A trouble shooting chart, figure 101, is provided as an aid in trouble shooting the entire oxygen system. The chart should be used in conjunction with reported discrepancies and with maintenance practice system tests.

° Prior to performing maintenance on the system, personnel should familiarize themselves with and strictly adhere to the maintenance precautions and procedures described in 35-00-00 Oxygen Maintenance Practices.

A. TOOLS AND EQUIPMENT

NAME	PART NUMBER	MANUFACTURER	USE
Sherlock Leak Detector	Type CG	Zep Aero Corp. El Segundo, CA	For leak test.
Altimeter or Vacuum Gage			For checking altitude or vacuum during oxygen aneroid switch actuation.
Vacuum Pump			For actuation of oxygen aneroid switch.
Oxygen Shutoff Valve	ZV902	Puritan-Bennett El Segundo, CA	For system isolation during leak test.
Pressure Gage (0 to 100 psig)		Commercially Available	To monitor isolated system pressure.

B. Refer to figure 101 for trouble shooting procedure.



Oxygen System Trouble Shooting Chart
Figure 101

OXYGEN - MAINTENANCE PRACTICES

1. Oxygen Maintenance Precautions and Procedures

A. Maintenance personnel shall read and thoroughly understand the following maintenance precautions and procedures prior to performing maintenance on the oxygen system or any other system requiring removal of an oxygen system component. Strict adherence to the following procedures and precautions will ensure a trouble free system.

WARNING: DO NOT PERMIT SMOKING OR OPEN FLAME IN OR NEAR AIRCRAFT WHILE PERFORMING MAINTENANCE ON THE OXYGEN SYSTEM.

DISCONNECT ALL ELECTRICAL POWER FROM AIRCRAFT AND ENSURE AIRCRAFT IS PROPERLY GROUNDED.

OIL, GREASE, AND SOLVENTS MAY BURN OR EXPLODE SPONTANEOUSLY WHEN CONTACTED BY OXYGEN UNDER PRESSURE.

ALL TOOLS USED FOR MAINTENANCE OF OXYGEN SYSTEMS MUST BE FREE OF DIRT, GREASE, AND OILS.

HANDS AND CLOTHING SHALL BE FREE OF GREASE AND OIL.

WHEN DEPLETING THE OXYGEN BOTTLE PRESSURE, EITHER REMOVE THE BOTTLE FROM THE AIRCRAFT OR CONNECT A LINE TO THE OXYGEN BOTTLE REGULATOR OUTLET PORT AND DIRECT THE RELEASED OXYGEN TO AN OPEN AREA AWAY FROM THE AIRCRAFT. IF BOTTLE IS REMOVED, CAP OR PLUG ALL LINES TO PREVENT SYSTEM CONTAMINATION. IF LINE IS TO BE USED TO DRAIN BOTTLE, CLEAN LINE BY DEGREASING WITH MIL-T-81533, 1-1-1 TRICHLOROETHANE AND DRY WITH DRY NITROGEN MIL-N-6011 GRADE A TYPE 1, PRIOR TO USE.

UNDER NO CIRCUMSTANCES SHALL ANY ADJUSTMENT OR REPAIR OF OXYGEN SYSTEM COMPONENTS BE ATTEMPTED. ANY DAMAGED OR DEFECTIVE OXYGEN SYSTEM COMPONENT SHALL BE REPLACED.

(1) Deplete oxygen system pressure. (Refer to Chapter 12.)
(2) If an opening becomes uncapped or unplugged, the affected component must be removed and cleaned by degreasing with MIL-T-81533 1,1,1-Trichloroethane, and drying with dry nitrogen (MIL-N-6011, Grade A, Type I).
(3) When connecting straight threaded fittings, align tubing and press flare end firmly against fitting end. Tighten nut.
(4) When connecting tapered threaded fittings, place polytetrafluorethylene anti-seize tape (MIL-T-27730) so that a minimum of 1-1/2 threads remain uncovered at the starting end of the fitting. Stretch tape during wrapping of fitting and apply 1-1/2 turns of tape to fitting.

(5) *On Aircraft equipped with long range oxygen system*, the baggage compartment regulator must be closed prior to closing the nose compartment regulator. Closing the nose compartment regulator depletes all downstream pressure. This would empty the baggage compartment cylinders.

(6) *On Aircraft equipped with nose and dorsal oxygen system*, the dorsal shutoff valve and pressure regulator must be closed prior to closing the nose compartment shutoff valve and pressure regulator. Closing the nose compartment regulator depletes all downstream pressure. This would empty the dorsal cylinder.

(7) Under no circumstances should any adjustment or repair be attempted on oxygen equipment.

2. Servicing Oxygen Cylinder

A. Refer to Chapter 12 for complete servicing procedures.

3. Adjustment/Test

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Pressure Gage (0-200 psi)		Commercially Available	Test set.
Shutoff valve	VZ902	Puritan-Bennett El Segundo, CA	Test set.
Nipples (2 each)	AN816-5D	Commercially Available	Test set.
Hoses (4 each)	ZH740-12	Puritan-Bennett El Segundo, CA	Test set.
Tee	AN824-5D	Commercially Available	Test set.
Leak Detector Fluid	Sherlock Type CG	Commercially Available	Find leaks.
Pitot/Static Tester	1811G	Barfield Inst. Co. Atlanta, GA	Apply vacuum.
Oxygen System Leak Test Set (alternate)	3170021	Learjet, Inc. Wichita, KS	System leakage test.

B. Leak Test of Crew Oxygen System. (See Figures 201 and 202.)

(1) Obtain oxygen system tester or fabricate oxygen system test set. (See Figure 202.)

(2) Charge oxygen cylinder. (Refer to Chapter 12.)

(3) Close shutoff valve and pressure regulator assembly.

(4) Install oxygen system test set. (See Figure 201.)

(5) Ensure that manual passenger shutoff valve is closed.

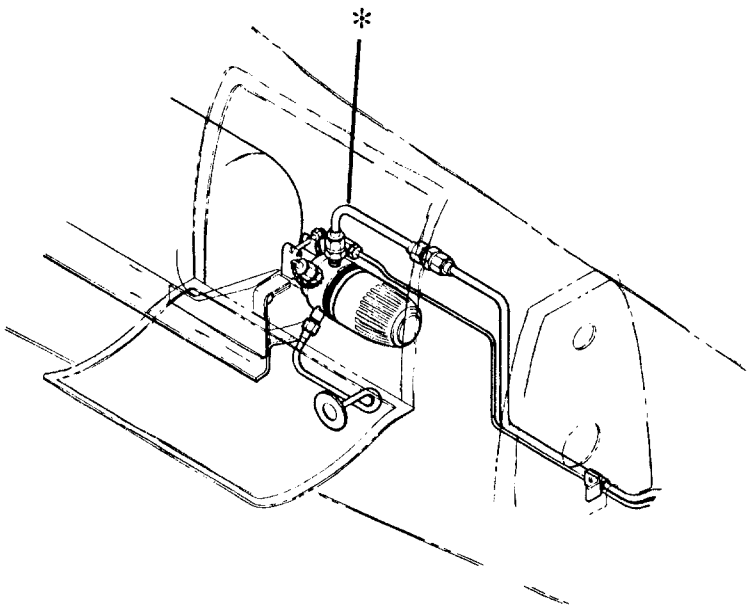
(6) Open shutoff valve and pressure regulator assembly. Charge oxygen system to approximately 70 psig by slowly opening the test set oxygen shutoff valve. Close test set oxygen shutoff valve.

(7) Close shutoff valve and pressure regulator assembly.
(8) Allow system to stabilize for one (1) hour. Read and record oxygen system pressure (60 psig minimum).
(9) After two (2) hours, read and record oxygen system pressure. There is no allowable pressure loss during the two-hour period.
(10) A loss in system pressure indicates system leakage. If leakage exists, perform steps (11) thru (20). If leakage does not exist, perform steps (19) and (20) only.
(11) Open shutoff valve and pressure regulator assembly.
(12) Open test set oxygen shutoff valve, again charging system to approximately 70 psig.
(13) Check pilot's and copilot's mask outlets using Sherlock type CG leak detector fluid.
(14) Remove equipment and upholstery from LH side of cockpit as required to gain access to oxygen system valves and fittings. Check all fittings and connections for leaks.
(15) If leaks are found, close shutoff valve and pressure regulator assembly. Oxygen pressure is automatically vented to ambient.
(16) Make necessary repairs and repeat leak test of system.
(17) Wash leak test fluid off with water and clean cloths.
(18) Unless additional tests are required, install previously removed equipment and upholstery.
(19) Remove oxygen system test set. Install system tubing.
(20) Open shutoff valve and pressure regulator assembly and check tubing, installed in step (19), for leaks.

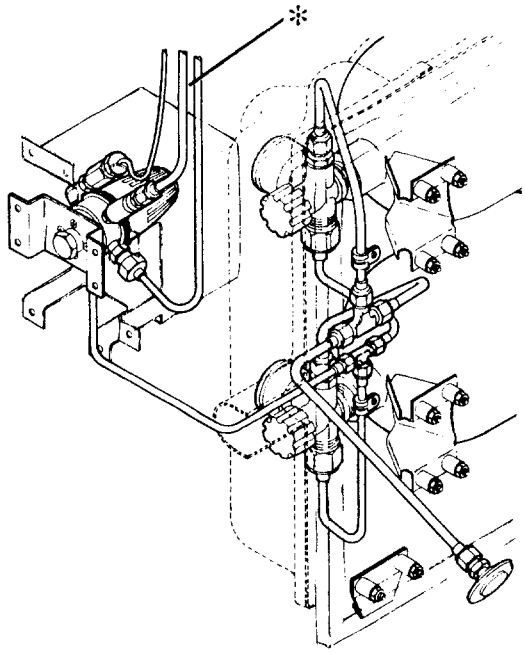
C. Oxygen System Functional Test. *(1004L)* *(Aircraft with nose or dorsal compartment oxygen system.)*

NOTE: Perform Oxygen System Functional Test in accordance with the current inspection intervals specified in Chapter 5.

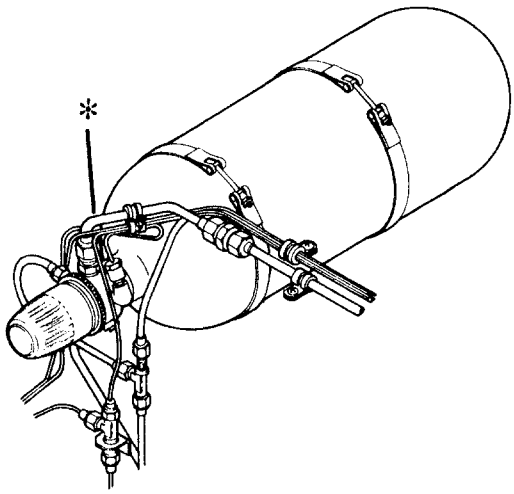
(1) Check oxygen cylinder pressure for approximately 1800 psig. Recharge if necessary.
(2) Ensure that shutoff valve and pressure regulator assembly is open and manual passenger shutoff valve is closed.
(3) Using pilot's or copilot's oxygen mask, insert bayonet end of hose into pilot's oxygen valve, don mask, and check for oxygen flow. Check other oxygen mask and valve in same manner.
  (a) Visually inspect crew oxygen mask for general condition and proper fit, including donning gear (Halo, elastic straps, etc.).
(4) Open manual passenger shutoff valve.
(5) Connect pitot/static tester to open port of oxygen aneroid switch. (Refer to 35-20-05.)
(6) Set Battery Switches on.
(7) Slowly pull a vacuum until an altimeter reading of 14,000 (±750) feet (17.57 inches Hg) is obtained. Between 13,250 feet (18.11 inches Hg) and 14,750 feet (17.05 inches Hg), the aneroid switch shall actuate, passenger masks shall drop, and upper center panel lights shall illuminate.
(8) Pull lanyard of each passenger mask and check for oxygen flow. After checking each mask, install lanyard pin and verify that oxygen flow has stopped.
(9) Slowly relieve vacuum. The oxygen aneroid switch shall reset at or before 8,000 feet on decreasing altitude, and upper center panel lights shall extinguish.
(10) Install passenger masks and close doors.
(11) Remove pitot/static tester from oxygen aneroid switch and set Battery Switches off.
(12) Charge oxygen cylinder to 1800 psig. (Refer to Chapter 12.)



(Dorsal Installation)



(Long Range Installation)



(Nose Compartment Installation)

* Disconnect this tube and connect test set between shutoff valve and pressure regulator assembly and union.

13-1C-7
13-1C-12
13-1D-6

Crew Oxygen System Leak Test
Figure 201

D. Oxygen System Functional Test. (1175) *(Aircraft equipped with long range oxygen system.)*

NOTE: Perform Oxygen System Functional Test in accordance with the current inspection intervals specified in Chapter 5.

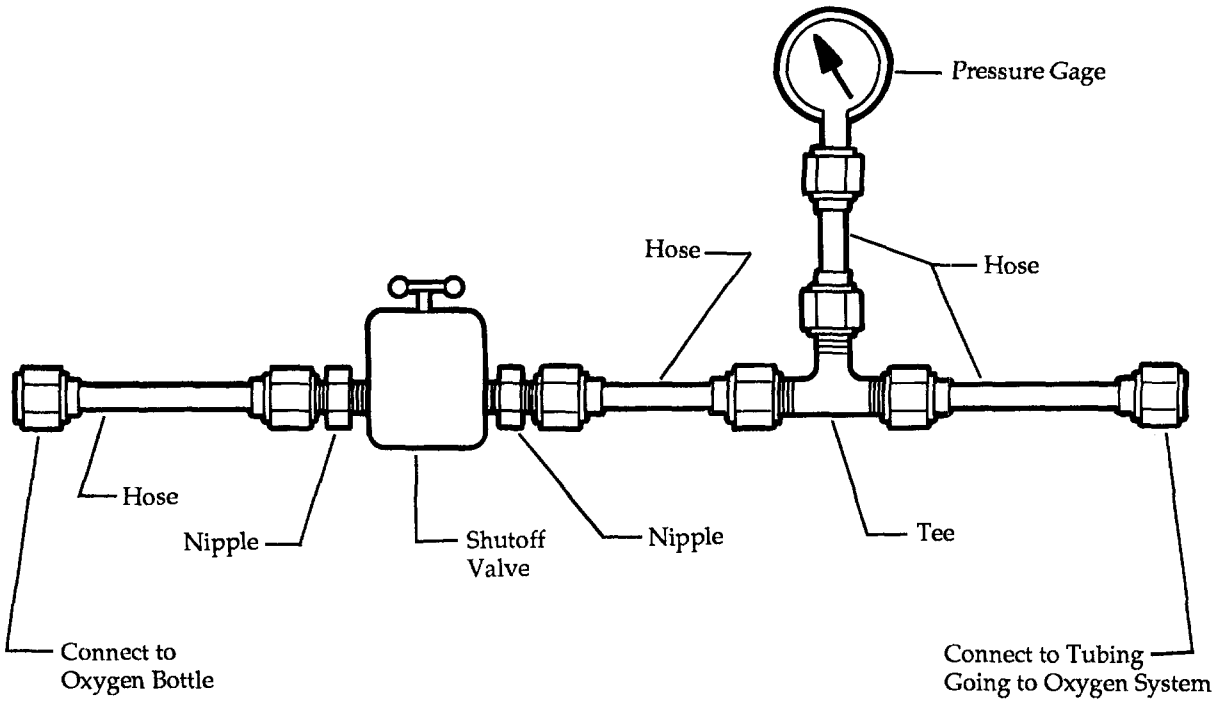
(1) Check oxygen cylinders pressures for approximately 1800 psig. Recharge if necessary.
(2) Ensure that nose compartment regulators are open and that baggage compartment regulators and shutoff valves are open.
(3) Using pilot's or copilot's oxygen mask, insert bayonet end of hose into pilot's quick-disconnect valve, don mask, and check for oxygen flow. Check other oxygen mask and valve in same manner.
  (a) Visually inspect crew oxygen mask for general condition and proper fit, including donning gear (Halo, elastic straps, etc.).
(4) Set Battery Switches on.
(5) Set Passenger Oxygen Switch to ON. Passenger oxygen masks shall drop from their storage compartments, the red PASS OXYGEN ON light and the upper center panel lights shall illuminate.
(6) Check each passenger mask for oxygen flow.
(7) Set Passenger Oxygen Switch to AUTO and stow passenger masks.
(8) Set Bypass Valve to ON. The passenger oxygen masks shall drop from their storage compartments and the red PASS OXYGEN ON light shall illuminate.
(9) Set Bypass Valve to OFF and stow masks.
(10) Connect pitot/static tester to oxygen aneroid switch.
(11) Slowly pull a vacuum while observing altimeter. At 14,000 (±750) feet, passenger oxygen masks shall drop from their storage compartments, the red PASS OXYGEN ON light and the upper center panel lights shall illuminate.
(12) Insert therapeutic oxygen mask(s) into armrest quick-disconnects, and check for oxygen flow.
(13) Slowly relieve vacuum. The oxygen aneroid switch shall reset on or before 8000 feet on decreasing altitude, and the upper center panel lights and PASS OXYGEN ON light shall extinguish.
(14) Remove pitot/static tester from aircraft.
(15) Set Battery Switches off.
(16) Stow all masks.
(17) Recharge oxygen cylinders. (Refer to Chapter 12.)

E. Oxygen System Functional Test. (1193B) *(Aircraft equipped with nose and dorsal [dual] oxygen system.)*

NOTE: Perform Oxygen System Functional Test in accordance with the current inspection intervals specified in Chapter 5.

(1) Check nose and dorsal oxygen cylinders pressures for approximately 1800 psig. Recharge if necessary.
(2) Ensure that shutoff valve and pressure regulator assembly is open on both cylinders.
(3) Using pilot's or copilot's oxygen mask, insert bayonet end of hose into pilot's quick-disconnect valve, don mask, and check for oxygen flow. Check other oxygen mask and valve in same manner.
  (a) Visually inspect crew oxygen mask for general condition and proper fit, including donning gear (Halo, elastic straps, etc.).
(4) Stow crew masks.
(5) Set Battery Switches on.

(6) Set ON-AUTO-OFF Switch on oxygen control panel to ON. Passenger oxygen masks shall drop from their storage compartments and the upper center panel lights shall illuminate.
(7) Check each passenger mask for oxygen flow.
(8) Set ON-AUTO-OFF Switch to AUTO.
(9) Don passenger oxygen mask and breathe until pressure is depleted.
(10) Stow passenger masks and latch compartment doors.
(11) Set Bypass Valve to ON. Passenger masks shall drop from their storage compartments.
(12) Set Bypass Valve to OFF.
(13) Don passenger oxygen mask and breathe until pressure is depleted.
(14) Stow passenger masks and latch compartment doors.
(15) Connect pitot/static tester to oxygen aneroid switch.
(16) Slowly pull a vacuum on aneroid switch while observing altimeter. At 14,000 (±750) feet, passenger oxygen masks shall drop from their storage compartments and the upper center panel lights shall illuminate.
(17) Slowly relieve vacuum while observing altimeter. Aneroid switch shall reset at or before 8,000 feet, and upper center panel lights shall extinguish.
(18) Close main valve on each oxygen cylinder to depressurize the system.
(19) Remove pitot/static tester from aircraft.
(20) Set Battery Switches off.
(21) Stow passenger masks.
(22) Recharge oxygen cylinders as required. (Refer to Chapter 12.)



Crew Oxygen System Leakage Test
Figure 202

OXYGEN PRESSURE GAGE - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Remove Oxygen Pressure Gage

NOTE: The following procedures are applicable to oxygen pressure gages installed in the center instrument or the oxygen control panel.

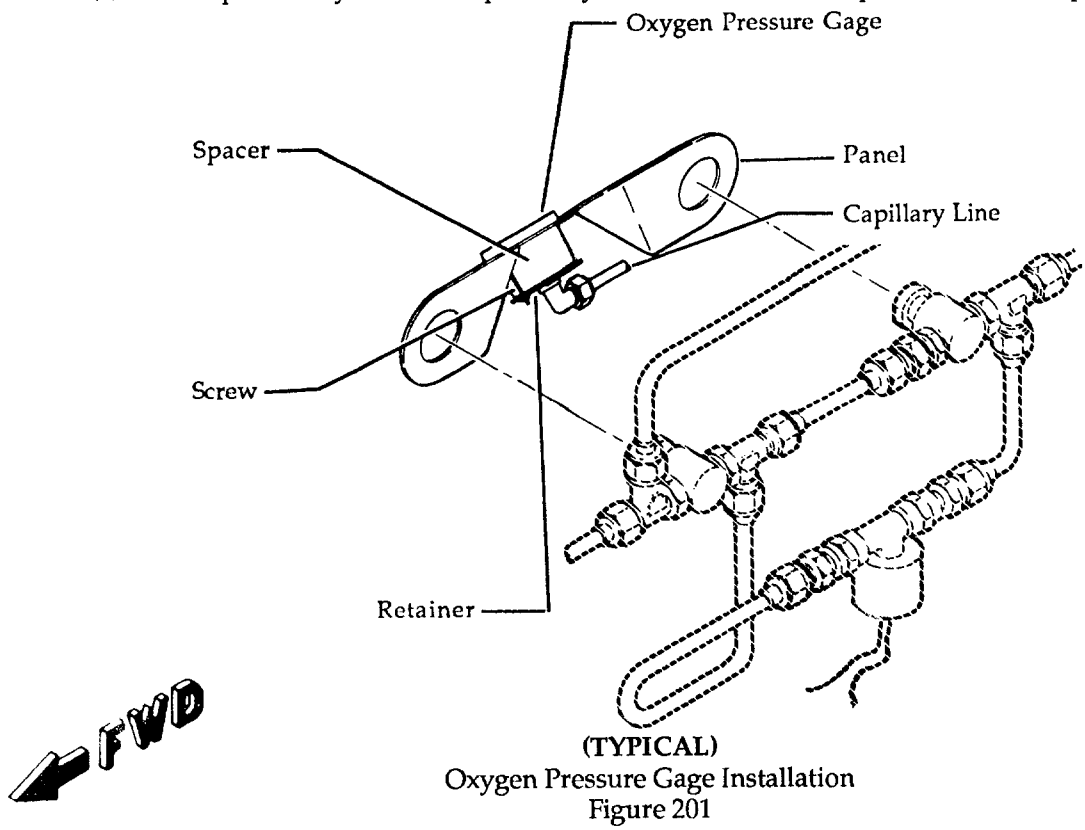
(1) Gain access to oxygen pressure gage by lowering the copilots instrument panel or removing upholstery on LH side of cockpit.

WARNING: IF AIRCRAFT IS EQUIPPED WITH OPTIONAL OXYGEN SYSTEM, ENSURE THAT BOTH OXYGEN BOTTLE SHUTOFF VALVES OR SHUTOFF VALVES AND PRESSURE REGULATORS ARE CLOSED.

(2) Close oxygen bottle shutoff valve and pressure regulator(s).
(3) Disconnect capillary line(s) from oxygen pressure gage(s).
(4) Loosen retainer screw sufficiently to release spacer and O-ring. Note position of O-ring and spacer.
(5) Remove screw, retainer, and oxygen pressure gage from aircraft.

B. Install Oxygen Pressure Gage

(1) Assemble O-ring, spacer, and oxygen pressure gage(s) and position gage(s) on instrument panel or oxygen control panel.
(2) Position retainer on oxygen pressure gage(s) and secure with attaching screw.
(3) Connect capillary line(s) to oxygen system gage(s).
(4) Open oxygen bottle shutoff and pressure regulator valve(s).
(5) Install previously removed upholstery or raise and secure copilots instrument panel.



(TYPICAL)
Oxygen Pressure Gage Installation
Figure 201

OXYGEN SOLENOID VALVE - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

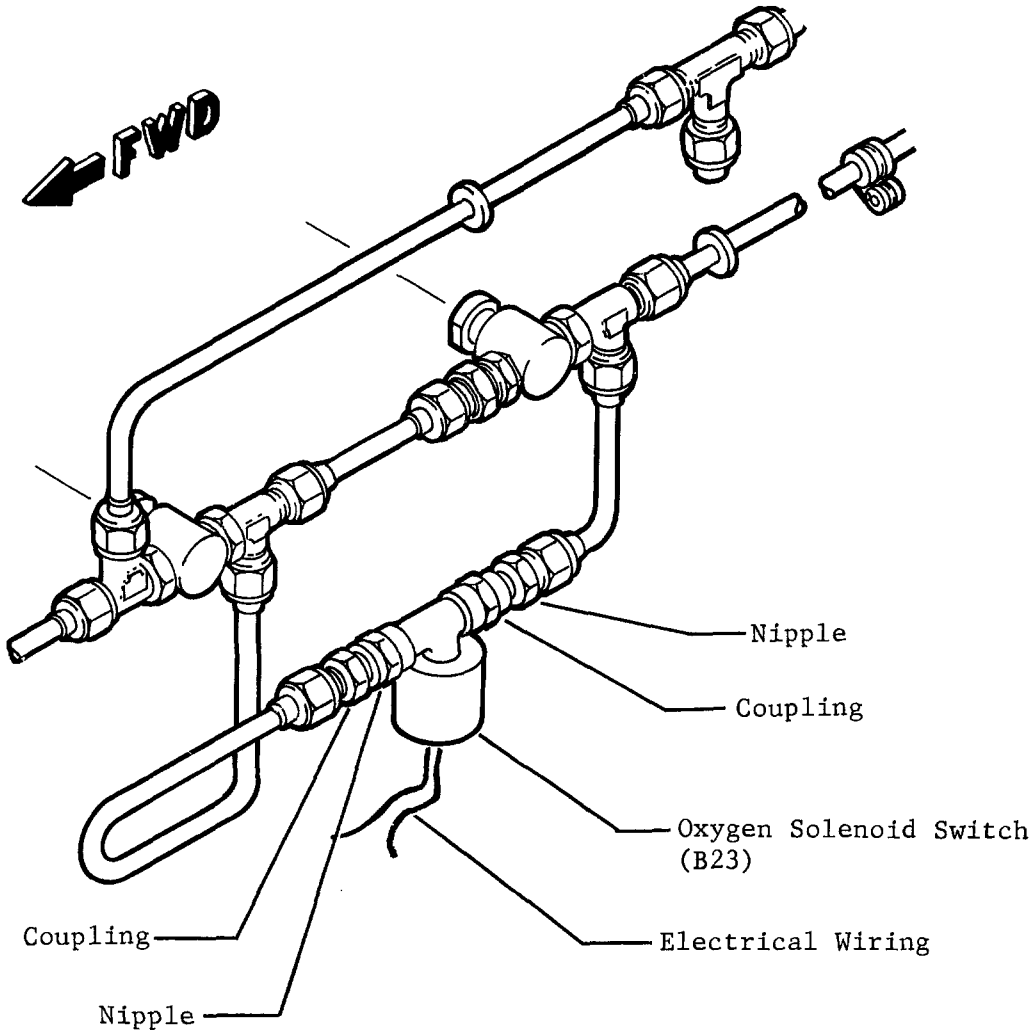
A. Remove Oxygen Solenoid Valve (See figure 201.)

WARNING: IF AIRCRAFT IS EQUIPPED WITH OPTIONAL OXYGEN SYSTEM, ASSURE THAT BOTH OXYGEN BOTTLE SHUTOFF AND PRESSURE REGULATOR VALVES ARE CLOSED.

(1) Close oxygen bottle shutoff and pressure regulator valve(s).
(2) Remove upholstery from LH side of cockpit to gain access to oxygen plumbing at the control panel.
(3) Disconnect electrical wiring from solenoid valve.
(4) Disconnect plumbing from solenoid and remove solenoid from aircraft.

B. Install Oxygen Solenoid Valve (See figure 201.)

(1) Position solenoid valve in aircraft and connect plumbing.
(2) Connect electrical wiring to solenoid valve.
(3) Open oxygen bottle shutoff and pressure regulator valve(s).
(4) Check oxygen lines for leakage.
(5) Install previously removed upholstery.



TYPICAL INSTALLATION, LH SIDE

Oxygen Solenoid Valve Installation
Figure 201

CREW DISTRIBUTION SYSTEM - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. Crew Masks

(1) The masks are stowed on hangers for easy access to the crew members. The mask incorporates a quick-donning head harness.

(2) Crew masks consist of either the diluter-demand type or the pressure-demand type. The diluter demand mask has a two position lever on the regulator which allows the crew members to select either NORMAL or 100% OXY. The Robert Shaw pressure demand mask has a two position function knob and a two position diluter knob. The function knob may be either set to NORM or EMER and the diluter may be set to either DILUTE or 100%. The Puritan-Bennett pressure demand mask has a three-position control which can be set to NORM, 100%, or EMER.

(3) On Aircraft 35-597 and Subsequent and 36-055 and Subsequent when equipped with Scott Aviation Crew Mask (P/N MC1015-01), the masks are the quick-donning, automatic-diluter demand type with automatic pressure breathing and pressure regulator. There are four mode settings on the crew mask pressure regulator: N (normal), 100% PUSH, EMERGENCY and PUSH TO TEST.

(a) With 100% PUSH depressed, the pressure regulator will deliver 100% oxygen at any altitude. Oxygen flow in the crew mask is initiated by inhaling and stopped by exhaling.

(b) With N depressed and the PRESS TO TEST button/know rotated to the ◡ (half circle) position, the regulator will deliver automatic oxygen dilution from sea level to 30,000 feet cabin pressure altitude and automatic pressure breathing above (approximately) 37,000 feet cabin pressure altitude.

(c) With PRESS TO TEST button/knob rotated to the ● (full circle) EMERGENCY position, the pressure regulator will deliver 100% oxygen at all cabin pressure altitudes and maintain positive pressure in the crew mask cup at all times for respiratory protection from smoke or fumes.

(d) With PRESS TO TEST button/knob depressed and held, oxygen will flow in the crew mask. An optional flow detector may be installed in the crew mask oxygen line. When flow detector shows white, oxygen is flowing. When flow detector shows black, no oxygen flow is present.

(e) Each crew mask contains a low-carbon microphone. Communications between crew members can be accomplished by plugging crew mask microphone plug into respective OXY MIC phone jacks.

(f) The crew oxygen masks are stowed in storage cups outboard of pilot's and copilot's seats for easy access.

(4) Each mask incorporates a microphone. An electrical cord extends from the mask and is plugged into the phone jack adjacent to the oxygen quick-disconnect.

(5) A flow detector is installed in each crew mask supply line. The flow detector is basically a spring loaded plunger which becomes visible (green) when oxygen pressure is present in the crew mask supply line.

B. **Quick-Disconnect**

(1) A quick-disconnect is installed for each crew member. Inserting the bayonet into the quick-disconnect moves a spring loaded poppet off its seat and allows oxygen flow. The quick-disconnect also incorporates a spring loaded cover for the quick-disconnect opening when not in use.

2. **OPERATION**

A. **Aircraft Equipped With Scott Aviation Crew Oxygen Mask**

(1) Set desired mode of oxygen system operation for appropriate circumstances.

(2) Ensure crew mask hose bayonet and microphone plug are properly connected.

(3) To don crew oxygen mask, perform the following:

(a) Remove hats and ear muff type headsets.

NOTE: Headsets and eyeglasses worn by crew members may interfere with quick-donning capabilities of crew mask.

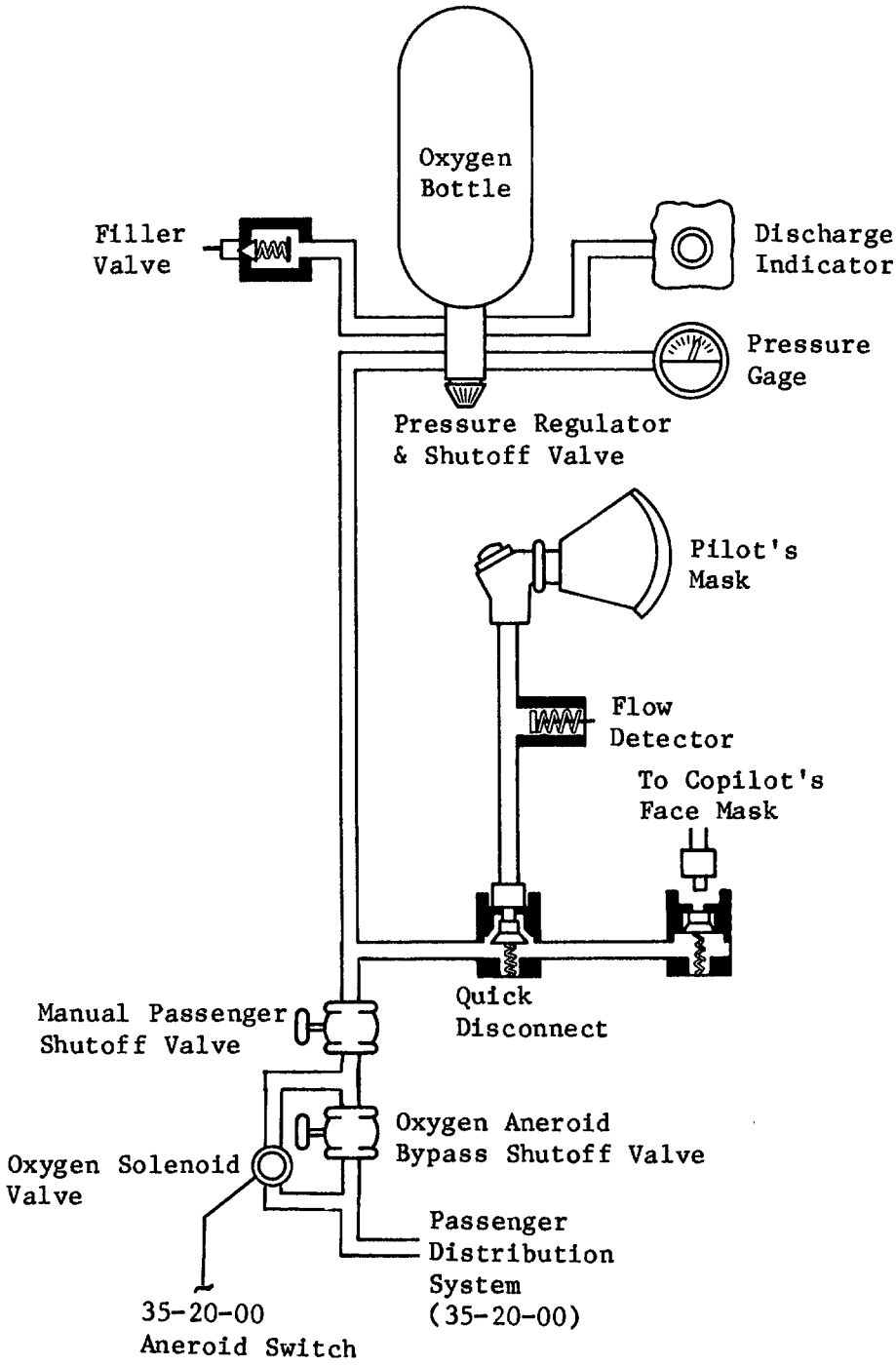
(b) Remove crew mask from storage cup.

(c) Squeeze and hold the red handles (located on both sides of the crew mask pressure regulator) together to inflate the pneumatic harness for donning.

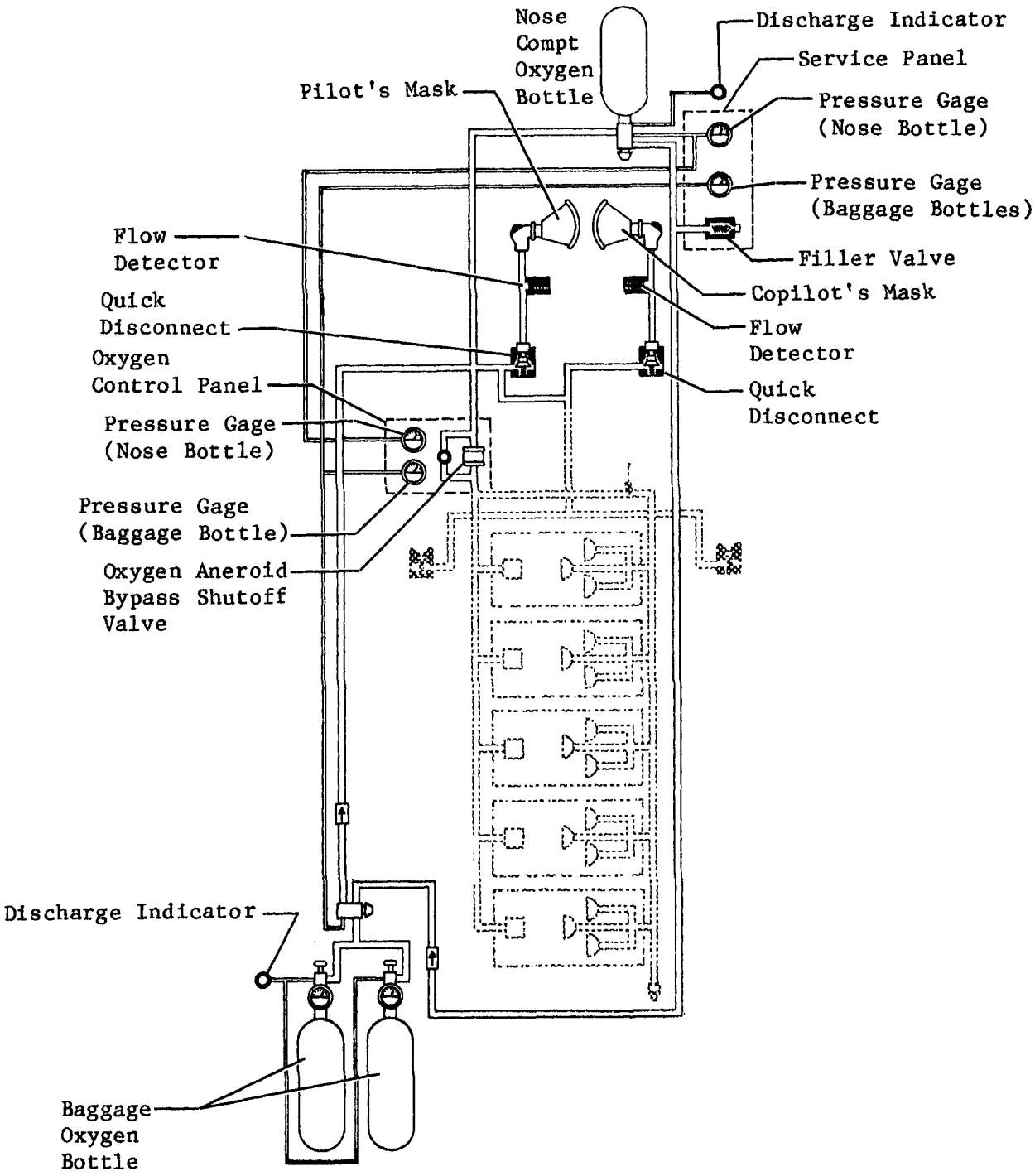
(d) Position pneumatic harness over the head. Position crew mask as desired and then release red handles.

(e) Ensure that crew mask is properly sealed. Reposition crew mask as required to obtain proper seal.

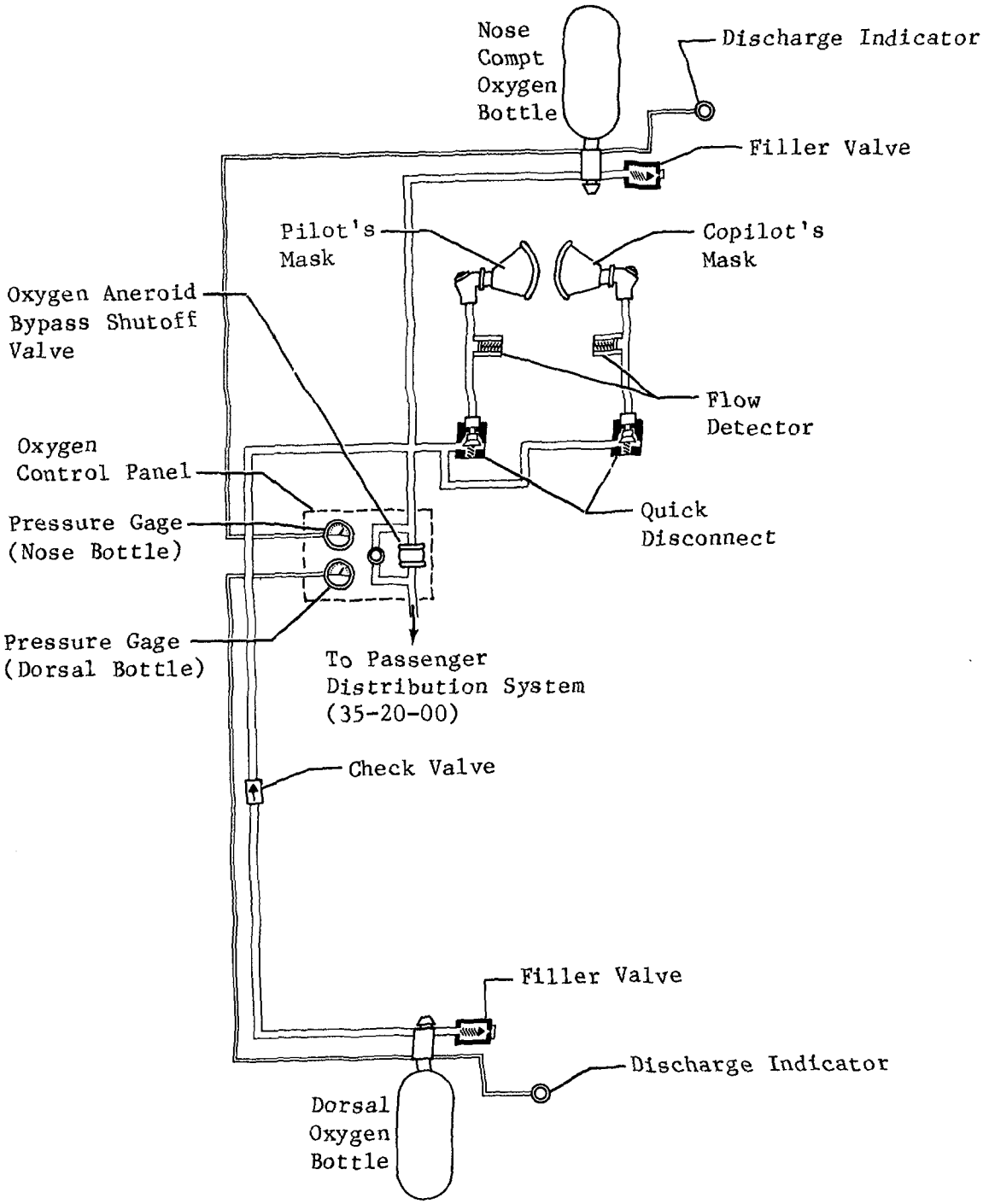
NOTE: Beard worn by crew members may make proper sealing of the crew masks difficult.



Crew Oxygen System Schematic
Figure 1



Crew Oxygen System Schematic
Figure 2



Crew Oxygen System Schematic
Figure 3

EFFECTIVITY: AIRCRAFT EQUIPPED WITH NOSE AND DORSAL OXYGEN SYSTEM

CREW OXYGEN MASK - MAINTENANCE PRACTICES

1. Removal/Installation

A. Removal of Mask
(1) Disconnect microphone from phone jack.
(2) Disconnect bayonet from oxygen quick-disconnect.
(3) Remove mask from hanger.

B. Installation of Mask
(1) Connect microphone to phone jack.
(2) Connect bayonet to oxygen quick-disconnect.
(3) Don mask and check for presence of oxygen. *On Aircraft equipped with E.R.O.S. Aviation mask,* depress PRESS TO TEST button/knob to verify oxygen flow.
(4) Verify that microphone is properly connected and operating.
(5) Install mask on hanger or in storage cup.

2. Inspection/Check

A. Inspect Mask Installation
(1) Visually inspect each crew mask, hoses and connections for general condition and proper installation.
(2) Inspect microphone cord, connectors and circuit.

B. *On Aircraft equipped with E.R.O.S. Aviation masks,* perform operational check as follows:

NOTE: Perform Oxygen Mask Operational Check in accordance with the current inspection intervals specified in Chapter 5.

(1) Remove oxygen mask from storage container.
(2) Ensure mask harness inflates and deflates correctly.
(3) Don mask and check breathing capability.
(4) Check mask operation in emergency mode.
(5) Check mask operation while depressing PRESS TO TEST knob.
(6) Check mask microphone operation.
(7) Stow oxygen mask in storage container.

3. Cleaning/Painting

CAUTION: WHENEVER CLEANING THE FACE MASK, OBSERVE THE FOLLOWING:
(1) DO NOT SUBMERGE OR SOAK THE FACE MASK CONE AND SEAL ASSEMBLY OR ANY MASK PARTS. DO NOT ALLOW LIQUID TO ENTER THE INSIDE, HOLLOW CAVITY OF THE FACE MASK SEAL.
(2) DO NOT USE ANY SOLUTIONS OR CONCENTRATIONS OTHER THAN THOSE SPECIFICALLY RECOMMENDED BY THE MANUFACTURER.
(3) DO NOT CLEAN AND/OR DISINFECT THE FACE MASK CONE WITH SOLUTION TEMPERATURE ABOVE 140°F [60°C].
(4) DO NOT GET CLEANING SOLUTION ON SKIN, CLOTHING, OR IN EYES. THE USE OF RUBBER GLOVES IS RECOMMENDED.
(5) USE ONLY THE RECOMMENDED CONCENTRATION IN A NORMAL ROOM TEMPERATURE SOLUTION WITH CLEAN WATER.

A. *On Aircraft equipped with Robert Shaw and Puritan Bennett crew masks*, clean mask as follows:
(1) Disassemble face mask cone from mask assembly, if applicable.
(2) Use one ounce of QS4 (Brulin and Company) liquid concentrate per two and one-half gallons of clean, room temperature water.

NOTE: The use of rubber gloves is recommended.

(3) Using a soft, cotton cloth or gauze pad dipped into the cleaning/disinfectant solution, scrub the face mask cone assembly. Do not submerge the cone assembly or allow cleaning solution to enter the hollow cavity of the cone seal.
(4) Allow face mask cone assembly to air dry. Do not rinse.
(5) After face mask cone assembly is completely dry, reassemble face mask cone on mask assembly.

NOTE: An alternate method of cleaning and disinfecting may be used. Individually wrapped Dustikins tissue wipers may be used. Follow the instructions and cautions printed on the wrapper.

B. *On Aircraft equipped with E.R.O.S. Aviation crew masks*, clean mask as follows:
(1) Remove crew mask for cleaning.
(2) Mix ten (10) parts water to one (1) part mild dish soap detergent at room temperature for appropriate strength cleaning solution.

NOTE: The use of rubber gloves is recommended.

(3) Using a soft cotton cloth, or gauze pad, dipped in cleaning solution, scrub face mask cone and seal assembly.

CAUTION: DO NOT SUBMERGE OR SOAK ANY CREW MASK PART INCLUDING FACE MASK CONE AND SEAL ASSEMBLY IN THE CLEANING SOLUTION.

(4) Using a soft cotton cloth dipped in clean, clear water, wipe and rinse cleaning solution from face mask and seal assembly.

CAUTION: DO NOT SUBMERGE OR SOAK ANY CREW MASK PART INCLUDING FACE MASK CONE AND SEAL ASSEMBLY IN THE CLEAN, CLEAR WATER.

(5) Using a toothbrush and cleaning solution, scrub crew mask pneumatic harness. Observe cleaning precautions on submersion.
(6) Rinse cleaning solution from crew mask pneumatic harness and observe cleaning precautions on submersion.
(7) Allow crew mask to air dry.
(8) Mix ten (10) parts water to one (1) part antiseptic mouthwash at room temperature for appropriate strength sanitizing solution.
(9) Repeat steps (3), (5), and (7) using sanitizing solution to sanitize crew mask where applicable.
(10) Allow crew mask to air dry.
(11) Install crew mask.

PASSENGER - DESCRIPTION AND OPERATION

1. Description

A. Oxygen flow from the storage cylinders is initiated automatically through the oxygen solenoid valve or manually through the manual bypass valve. The passenger masks are stowed in storage compartments located in the upper center panel.

B. *On Aircraft 36-002 and Subsequent,* the passenger oxygen system consists of four (4) storage compartments, four (4) lanyard actuator valves, nine (9) passenger masks, and provisions for three (3) optional masks.

C. *On Aircraft 35-002 and Subsequent,* the passenger oxygen system consists of five (5) storage compartments, five (5) lanyard actuator valves, 11 passenger masks, and provisions for four (4) optional masks.

D. *On Aircraft equipped with long range oxygen system*, the oxygen system consists of five (5) storage compartments, five (5) door actuator valves, 10 passenger masks, and two (2) armrest oxygen mask quick-disconnects similar to the crew quick-disconnects.

E. Component Description

(1) Oxygen Supply System

(a) *On Aircraft with nose compartment oxygen system,* oxygen is supplied by an oxygen cylinder located in the RH nose compartment. Each oxygen cylinder stores 38 cubic feet of oxygen under 1800 (±50) psi pressure. A manual shutoff valve/regulator assembly is installed on the cylinder assembly.

(b) *On Aircraft equipped with long range oxygen system*, oxygen is supplied by an oxygen cylinder in the RH nose compartment and two (2) oxygen cylinders in the LH baggage compartment. Each cylinder has a shutoff valve and pressure gage installed in the cylinder outlet. A manual shutoff valve/regulator assembly which regulates outflow of both baggage compartment cylinders, is located adjacent to the cylinders.

(c) *On Aircraft equipped with nose and dorsal oxygen system*, oxygen is supplied by an oxygen bottle in the RH nose compartment and an oxygen bottle in the dorsal fin. A manual shutoff valve/regulator assembly is installed on each cylinder.

(d) *On Aircraft equipped with dorsal oxygen system,* oxygen is supplied by an oxygen bottle in the dorsal fin. A manual shutoff valve/regulator assembly is installed on the cylinder.

(2) Shutoff Valve and Regulator Assembly

(a) The shutoff valve and regulator assembly regulates the high pressure oxygen at 60 to 80 psi for the crew and passenger distribution systems. The valve incorporates connections for the oxygen distribution line, oxygen pressure gage capillary line, overboard discharge line and the fill valve.

(b) The shutoff valve and regulator assembly incorporates a high pressure safety burst disc in the overboard discharge port. The burst disc is designed to relieve cylinder pressure should pressure exceed 2700 to 3000 psi. Cylinder pressure is relieved through the overboard discharge line which blows out the discharge indicator. *On Aircraft equipped with long range oxygen system,* the baggage compartment cylinders shutoff valves and regulator assemblies are located

on a bracket adjacent to the bottles and the burst disc is located in the slow-opening shutoff valve on each cylinder.

(c) The shutoff valve and regulator assembly is designed so that when it is closed it will bleed the distribution lines to ambient.

(d) *On Aircraft equipped with long range oxygen system*, a check valve is installed in the distribution outlet port of the shutoff valve and pressure regulator in the baggage compartment. This check valve allows the baggage compartment shutoff valve and pressure regulator to be closed without depleting the nose compartment oxygen. The baggage compartment shutoff valve and pressure regulator must always be closed prior to closing nose compartment shutoff valve and pressure regulator.

(e) *On Aircraft equipped with nose and dorsal oxygen system*, a check valve is installed in the distribution outlet port of the shutoff valve and pressure regulator assembly on the dorsal oxygen bottle. This check valve allows the dorsal shutoff valve and pressure regulator to be closed without depleting the nose compartment oxygen. The dorsal shutoff valve and pressure regulator must always be closed prior to closing the nose compartment shut-off valve and pressure regulator.

(3) Storage Compartment

(a) *On Aircraft 36-002 and Subsequent*, four (4) storage compartments are installed in the upper center panel. The forward compartment contains three (3) masks. The remaining compartments contain two (2) masks each with provisions for an optional mask.

(b) *On Aircraft 35-002 and Subsequent*, five (5) storage compartments are installed in the upper center panel. The forward compartment contains three (3) masks. The remaining compartments contain two (2) masks each with provisions for an optional mask.

(4) Lanyard Actuator Valve

(a) The lanyard actuator valves incorporate a spring-loaded, pressure-actuated latch which secures the compartment door in the up-and-locked position. The valves are connected to the passenger distribution system pressure line. When pressure is supplied to the passenger distribution system the spring-loaded latch retracts, allowing the doors to fall open and the masks to fall out. When the doors are opened and passenger oxygen has not been utilized, one of the lanyard pins must be pulled to relieve oxygen pressure from the system. As soon as the pressure is relieved the spring-loaded latch will extend, then the door may be stowed in the up-and-locked position.

(b) The lanyard actuator valve also incorporates one inlet port and three outlet ports to which the passenger mask is connected. The ports incorporate plungers which are held closed by the lanyard pin. When optional masks are not installed the outlet port is capped and the lanyard pin is safety wired.

(5) Oxygen Door Actuator Valve

(a) *On Aircraft equipped with long range oxygen system and Aircraft equipped with nose and dorsal oxygen system*, a passenger oxygen door actuator is installed in each passenger oxygen mask storage compartment. The oxygen door actuator valve is basically a pressure actuated plunger. Whenever passenger oxygen is turned on, the 70 psi system pressure is applied to the actuator valve. The oxygen pressure drives the 1/4 inch plunger against the door latch mechanism, causing the door to fall open. The plunger will remain extended as long as oxygen pressure is available to the passengers. The plunger is spring loaded and will retract when passenger oxygen system pressure is removed.

(6) Manual Door Release

(a) The manual door release consists of a knob attached to the lanyard valve actuator latch. The manual door release is used to open the storage compartment door when flight altitude requires masks to be worn.

(7) Masks

(a) The mask consists of a soft silicone rubber face piece molded to facial contour, an economizer bag, head strap, length of plastic tubing and a lanyard cord with lanyard attached. An orifice is incorporated in the mask to provide a constant flow of 4.1 "liters per minute" to the passenger.

(8) Oxygen Pressure Gage

(a) *On Aircraft 35-002 thru 35-201 and 35-205 and 36-002 thru 36-040*, the oxygen pressure gage is located in the upper portion of the copilot's flight panel. *On Aircraft 35-202 and Subsequent except 35-205 and 36-041 and Subsequent*, the direct reading oxygen pressure gage is installed on LH side aft of frame #7. The gage is plumbed by a capillary line directly to the oxygen cylinder. The gage is illuminated by a post light. Refer to 31-00-00 for instrument markings.

(b) *On Aircraft equipped with long range oxygen system*, there are two (2) oxygen pressure gages on the nose compartment service panel, two (2) pressure gages on the pilot's oxygen control panel, and one (1) pressure gage on each baggage compartment oxygen bottle. One gage on the oxygen service panel and the oxygen control panel, indicates nose compartment bottle pressure. The remaining gage indicates baggage compartment bottle pressure.

(c) *On Aircraft equipped with nose and dorsal oxygen system*, there are two (2) pressure gages on the oxygen control panel on the pilot's side of the cockpit. One gage reads nose compartment oxygen pressure and the other gage reads dorsal oxygen pressure. Each gage is plumbed directly to its respective cylinder by a capillary line.

(d) *On Aircraft equipped with dorsal oxygen system*, the direct reading oxygen pressure gage is installed on the oxygen control panel. The gage is plumbed by a capillary line directly to the oxygen cylinder.

(9) Aneroid Switch

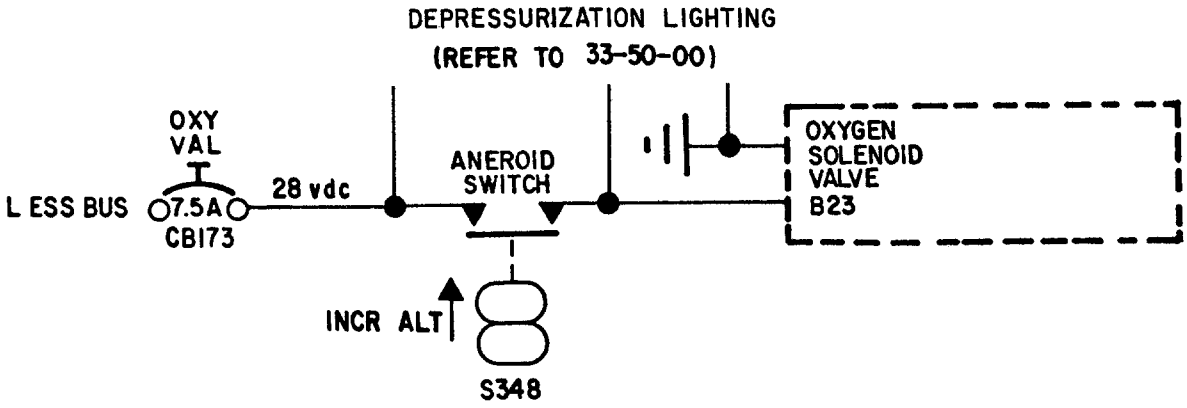
(a) The aneroid switch is installed in the pressurized portion of the cabin. *On Aircraft 35-002 thru 35-052 and 36-002 thru 36-017*, the aneroid switch is located on the left inner skin forward of the instrument panel. *On Aircraft 35-053 thru 35-083 and 36-018 thru 36-020*, the aneroid switch is located on frame 5 pressure bulkhead at LBL 16 and WL 27. *On Aircraft 35-084 and Subsequent and 36-021 and Subsequent*, the aneroid switch is located on LH frame 9 inside the pilot's armrest assembly at stringer 13. The switch senses cabin pressure and applies 28 vdc to the solenoid shutoff valve when cabin pressure is equivalent to an altitude of 14,000 (±750) feet.

2. Operation

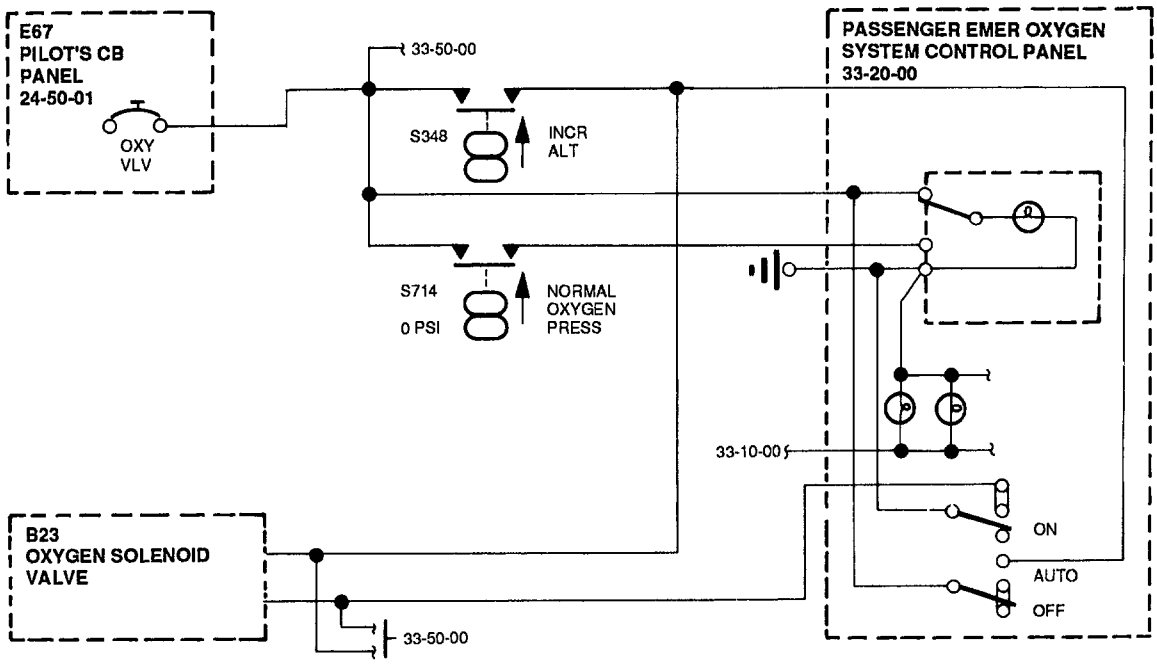
A. *On Aircraft 35-002 and Subsequent and 36-002 and Subsequent*, oxygen pressure is present at the oxygen solenoid valve and the manual aneroid bypass valve at all times. Oxygen flow can be initiated by two methods: (1) automatically through the aneroid controlled solenoid shutoff valve or (2) manually by opening the manual aneroid bypass valve. If pressurization system failure should occur, the aneroid switch senses the rise in cabin altitude. If cabin altitude reaches 14,000 (±750) feet the aneroid switch completes a power circuit to the solenoid shutoff valve. The solenoid valve opens and oxygen pressure of 60 to 80 psi then flows to the door actuator valves. If the aneroid switch or the solenoid

valve fails, the manual aneroid bypass valve is then opened to initiate oxygen flow to the door actuator valve. The oxygen pressure causes the valve latch to retract, opens the storage compartment doors, and releases the passenger masks.

B. *On Aircraft equipped with long range oxygen system,* oxygen is present at the oxygen solenoid valve and the aneroid bypass shutoff valve at all times. This oxygen is supplied by both passenger compartment oxygen bottles and the nose compartment bottle. Oxygen flow to the passenger masks is initiated by three methods: (1) automatically through the aneroid controlled solenoid shutoff valve (Passenger Oxygen Switch set to AUTO) or (2) manually by setting the Passenger Oxygen Switch to ON or (3) manually by setting the bypass valve to ON. Normally, the Passenger Oxygen Switch is set to AUTO during flight. With the switch in this position, the aneroid switch will cause the solenoid valve to open in the event cabin altitude should increase to approximately 14,000 feet. When oxygen pressure enters the passenger mask system a pressure switch energizes the PASS OXYGEN ON light on the oxygen control panel. Oxygen pressure in the passenger system also causes the door release valve plunger to force the door open, causing the passenger masks to drop down. Oxygen system electrical power is verified by depressing the PASS OXYGEN ON Switch to assure that it will illuminate.

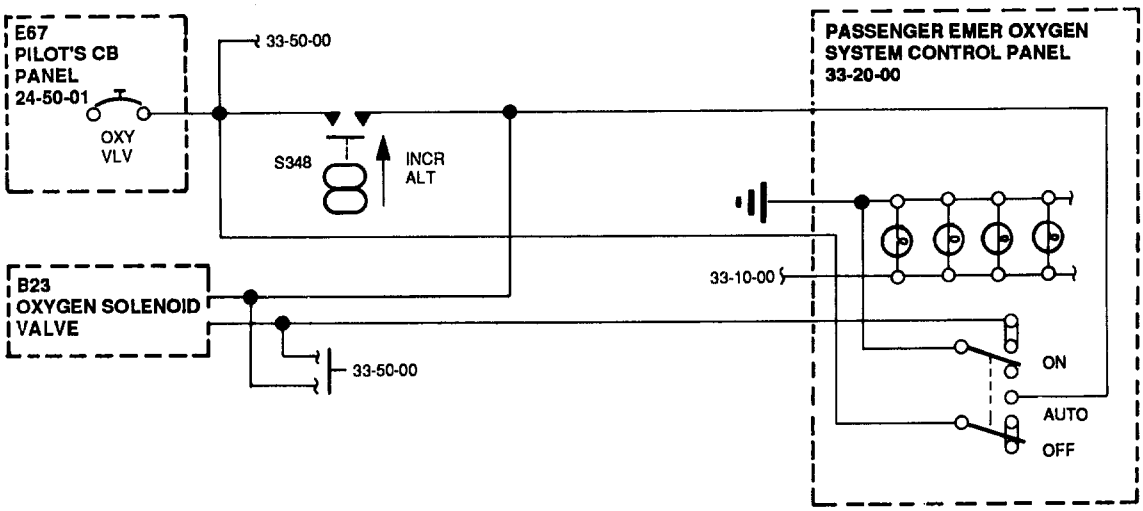


Passenger Oxygen System Electrical Control Schematic
Figure 1 (Sheet 1 of 3)



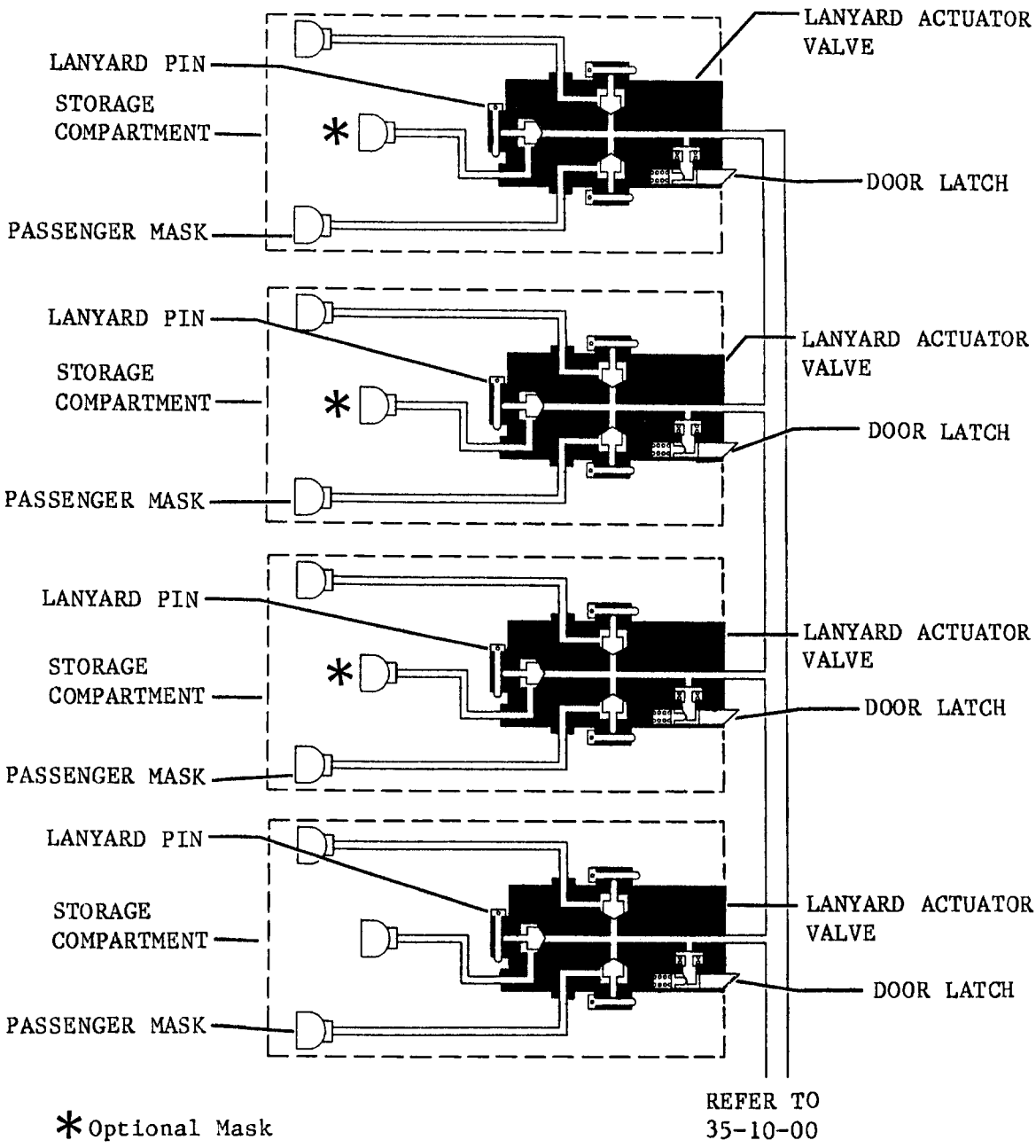
20-66A

Passenger Oxygen System Electrical Control Schematic
Figure 1 (Sheet 2 of 3)

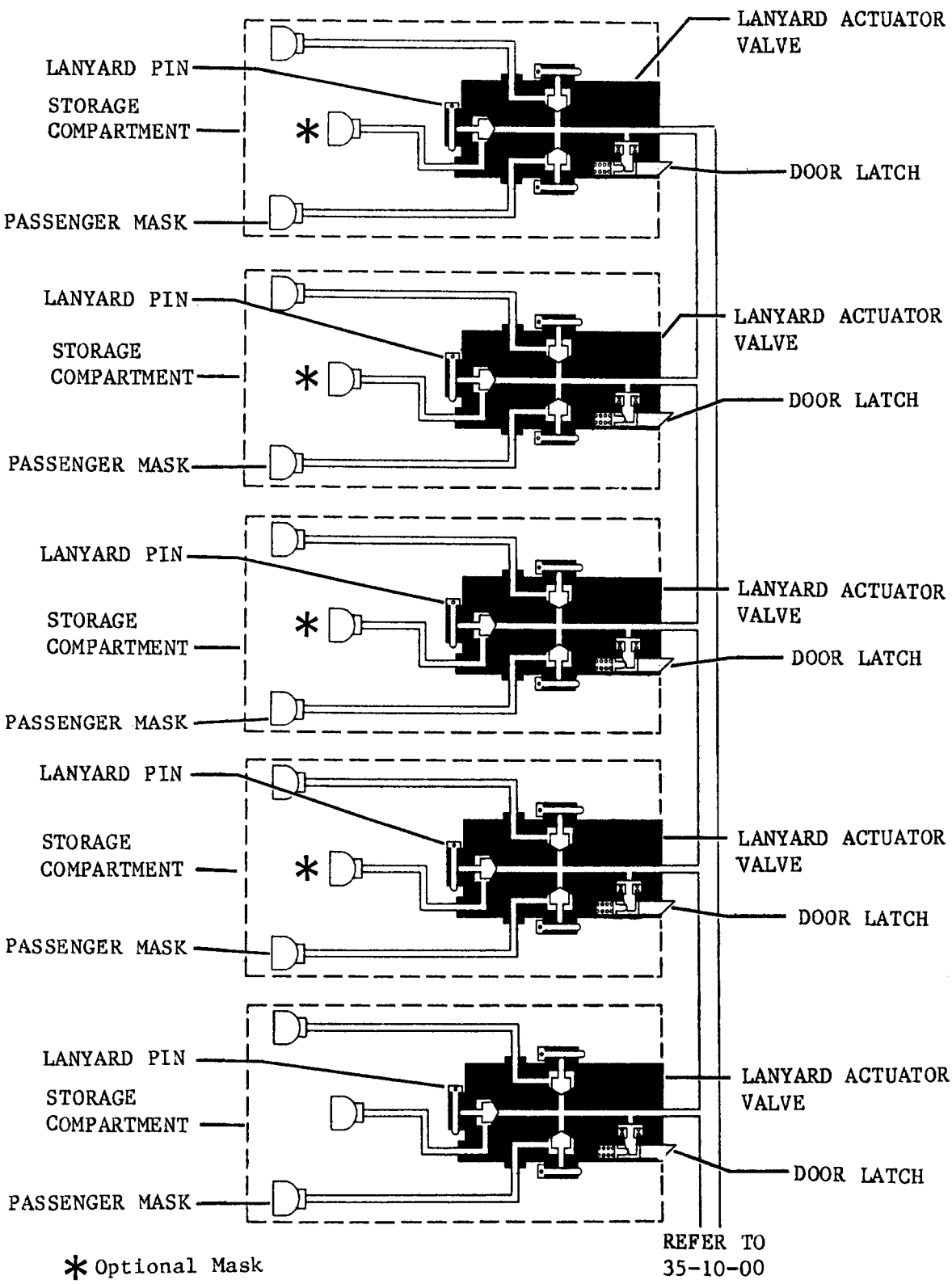


Passenger Oxygen System Electrical Control Schematic
Figure 1 (Sheet 3 of 3)

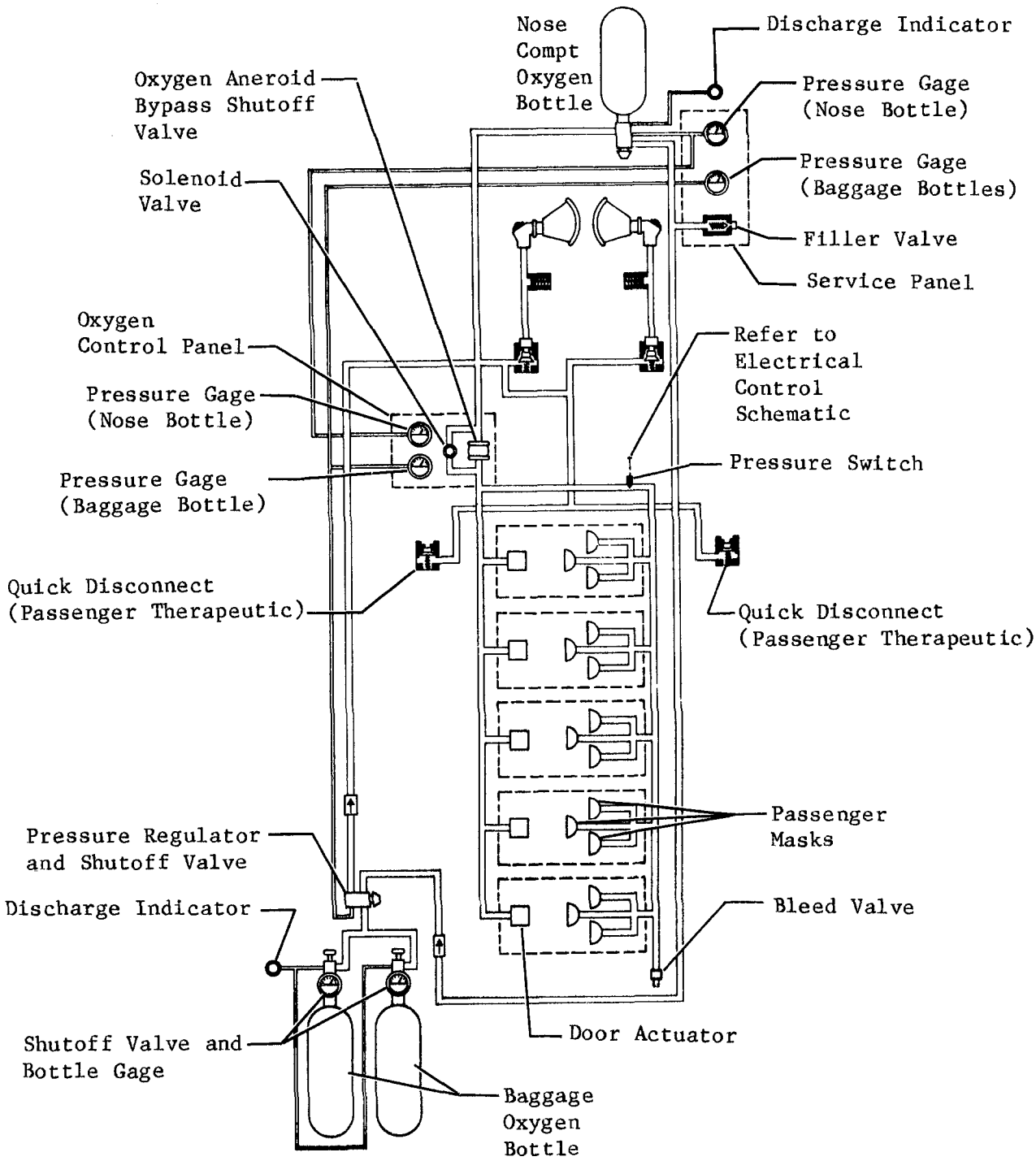
20-65A



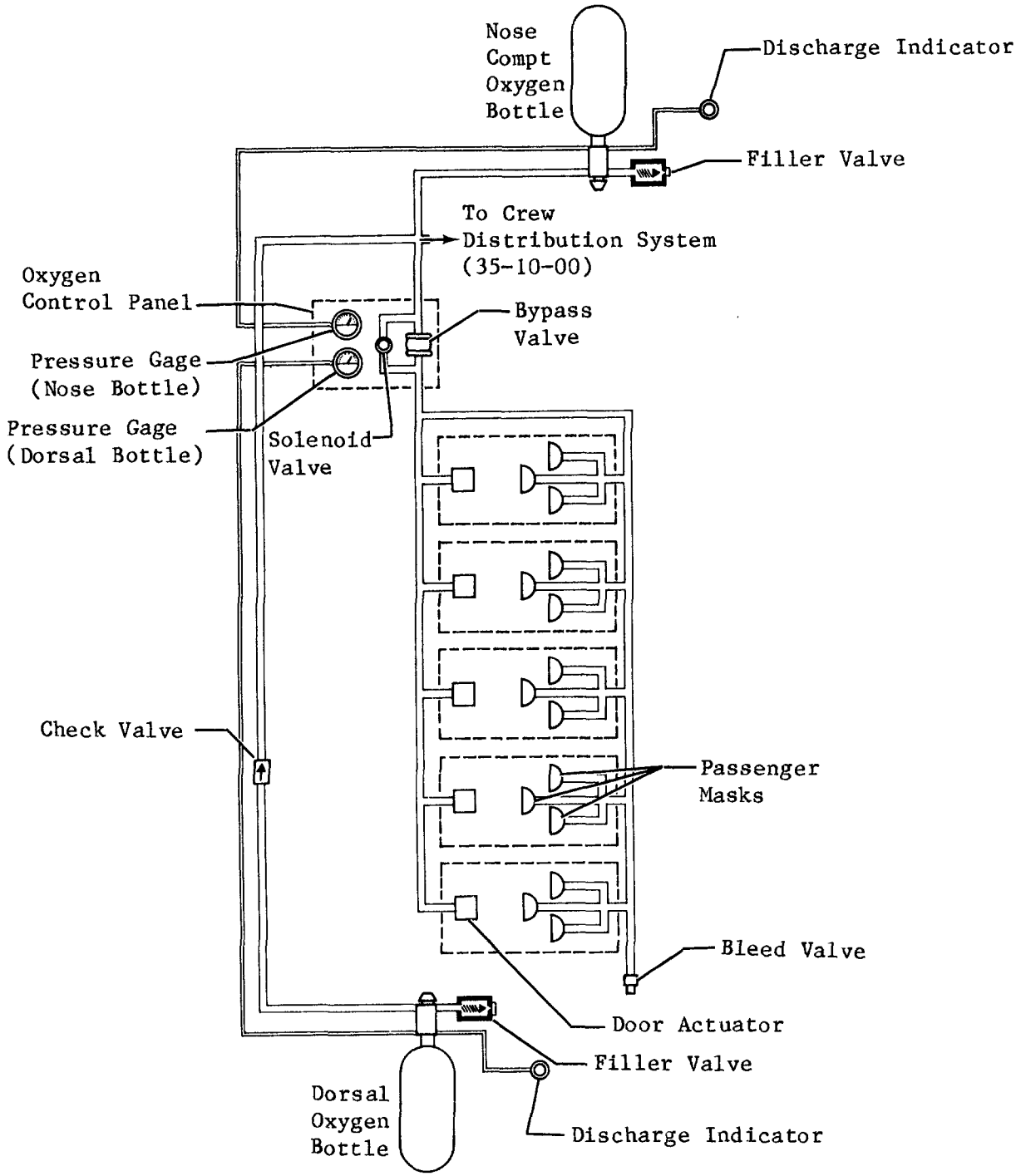
Passenger Oxygen System Schematic
Figure 2



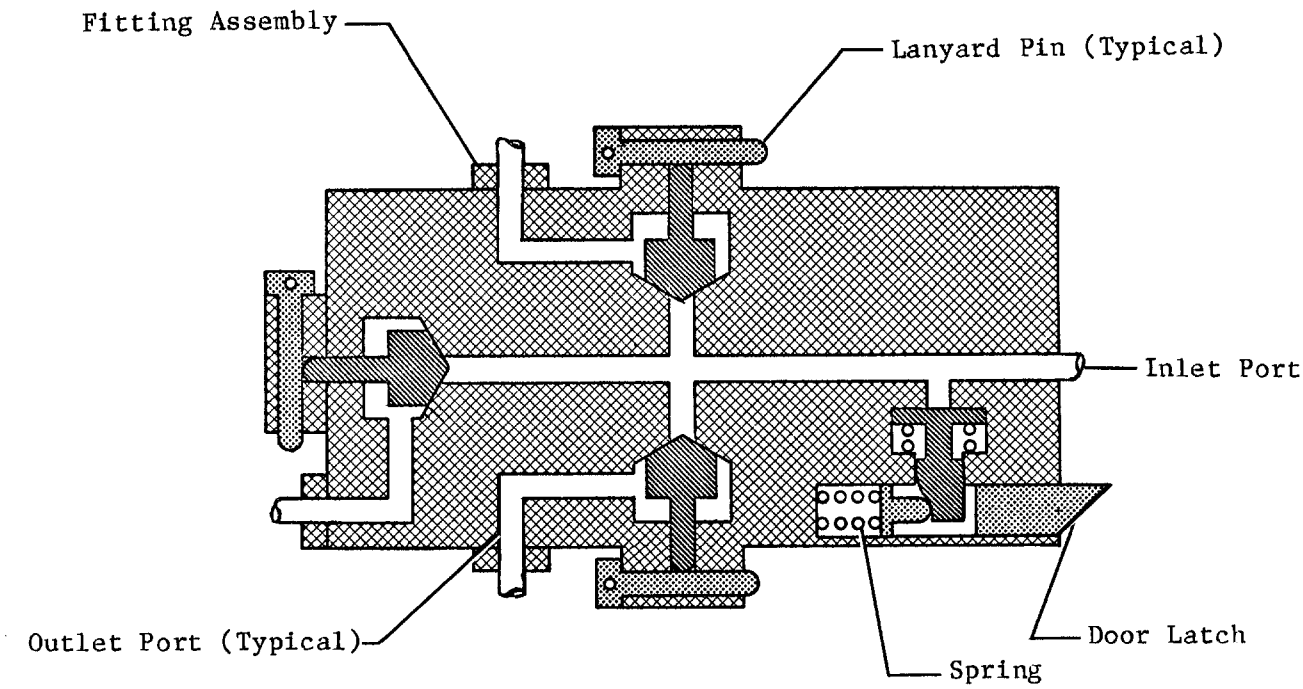
Passenger Oxygen System Schematic
Figure 3



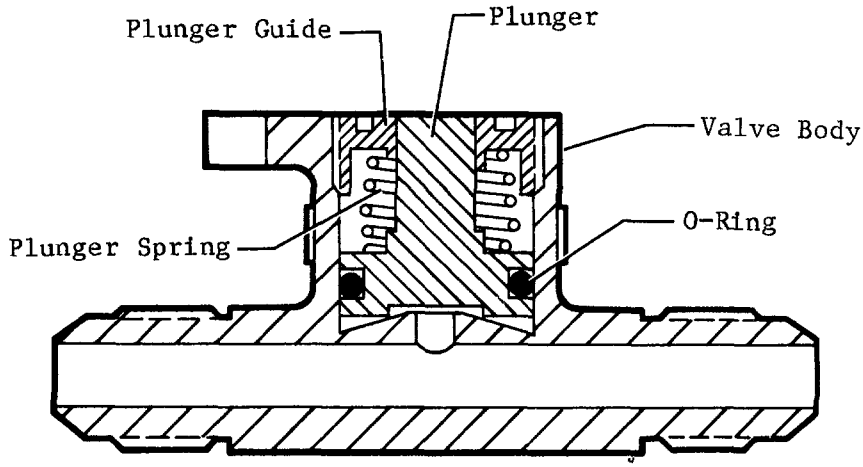
Passenger Oxygen System Schematic
Figure 4



Passenger Oxygen System Schematic
Figure 5



Lanyard Actuator Valve Schematic
Figure 6



Door Actuator Valve Installation
Figure 7

OXYGEN CYLINDER - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: *On Aircraft equipped with long range oxygen system*, the baggage compartment cylinder shutoff valve and pressure regulators must be turned off prior to performing maintenance on any of the oxygen cylinders.

On Aircraft equipped with nose and dorsal oxygen system, the dorsal cylinder shutoff valve and pressure regulator must be closed prior to performing maintenance on either oxygen cylinder.

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Sherlock Leak Detector Compound	Type CG	Zep Aero Corp. El Segundo, CA	For leak test.

B. Removal of Nose Compartment Oxygen Cylinder (See Figure 201.)
(1) Remove nose compartment doors.
(2) *On Aircraft equipped with long range oxygen system*, turn off baggage compartment oxygen cylinder shutoff valves. *On Aircraft equipped with nose and dorsal oxygen system*, turn off dorsal shutoff valve.
(3) Close nose compartment oxygen cylinder shutoff valve and regulator assembly.

NOTE: Oxygen pressure in system lines will bleed to ambient through nose compartment shutoff valve and regulator assembly when the shutoff valve and regulator assembly is closed.

(4) Disconnect the pressure gage line, distribution line, discharge indicator line, and the fill line at the shutoff valve and regulator assembly. Cap and plug all disconnected fittings.
(5) Loosen clamps and remove oxygen cylinder from aircraft. Exercise care not to damage regulator assembly during removal.

C. Installation of Nose Compartment Oxygen Cylinder (See Figure 201.)
(1) Position oxygen cylinder in cradle with fittings on shutoff valve and pressure regulator clocked as they were prior to removal. Secure cylinder with clamps finger tight.
(2) Remove caps and plugs from fittings and reconnect to cylinder regulator assembly.
(3) Tighten clamps around oxygen cylinder.
(4) Open shutoff valve and pressure regulator assembly.
(5) Check for leaks, using Sherlock Leak Detector Compound.
(6) Install nose compartment access doors.

(7) *On Aircraft equipped with long range oxygen system*, turn on baggage compartment oxygen cylinder shutoff valves. *On Aircraft equipped with nose and dorsal oxygen system*, turn on dorsal shutoff valve and pressure regulator.

D. Remove Baggage Compartment Oxygen Cylinders (See Figure 202.) *(Aircraft equipped with long range oxygen system)*

(1) Gain access to and remove the protective cover(s) from the baggage compartment oxygen cylinders by releasing the camloc fasteners.

NOTE: The cylinder protective cover may not be installed due to avionics equipment being installed adjacent to the cylinders.

(2) Close both baggage compartment oxygen cylinder shutoff valves.
(3) Close the shutoff valve and regulator assembly adjacent to the baggage compartment oxygen cylinders.
(4) Disconnect the discharge indicator line and the regulator supply line. Disconnect these lines at the forward end of tees located on oxygen cylinder shelf assembly.
(5) Remove bolts, nuts and washers securing lower edge of shelf assembly to brackets.
(6) Support shelf assembly and remove remaining bolts and washers securing shelf assembly.
(7) Raise shelf vertically to clear lower attach brackets (approximately 2 inches) and remove shelf assembly, with cylinders attached, from aircraft.

E. Installation of Baggage Compartment Oxygen Cylinder (See Figure 202.) *(Aircraft equipped with long range oxygen system)*

(1) Position shelf assembly with lower edge above and behind lower attach brackets. Lower shelf assembly behind brackets until holes align. Insert bolts, washers, and nuts and tighten finger tight.
(2) Insert bolts and washers securing upper edge of shelf assembly. Tighten upper and lower attach bolts.
(3) Connect regulator supply line and discharge indicator line to tees.
(4) Open shutoff valve and regulator assembly.
(5) Open both oxygen cylinder shutoff valves.
(6) Check for leaks, using Sherlock Leak Detector Compound.
(7) Position protective cover(s) over oxygen cylinder installation and secure the camloc fasteners.

F. Removal of Dorsal Oxygen Cylinder (See Figure 203.) *(Aircraft equipped with nose and dorsal oxygen system and aircraft equipped with dorsal oxygen system)*

(1) Release and lower the dorsal access door on the RH side of the dorsal.
(2) Close dorsal oxygen cylinder shutoff valve and pressure regulator.

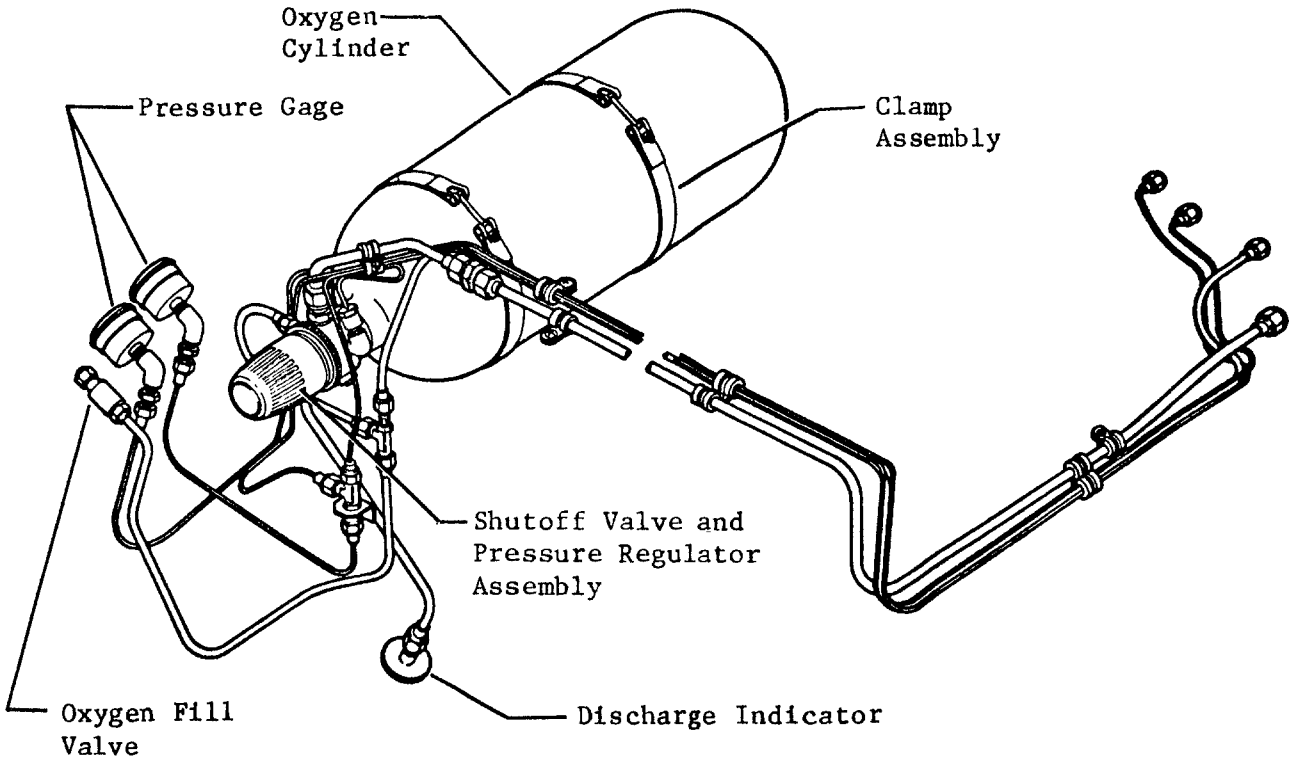
NOTE: The dorsal regulator must be closed first to eliminate dorsal oxygen depletion.

(3) *On Aircraft equipped with nose and dorsal oxygen system*, close nose compartment cylinder shutoff valve and pressure regulator.

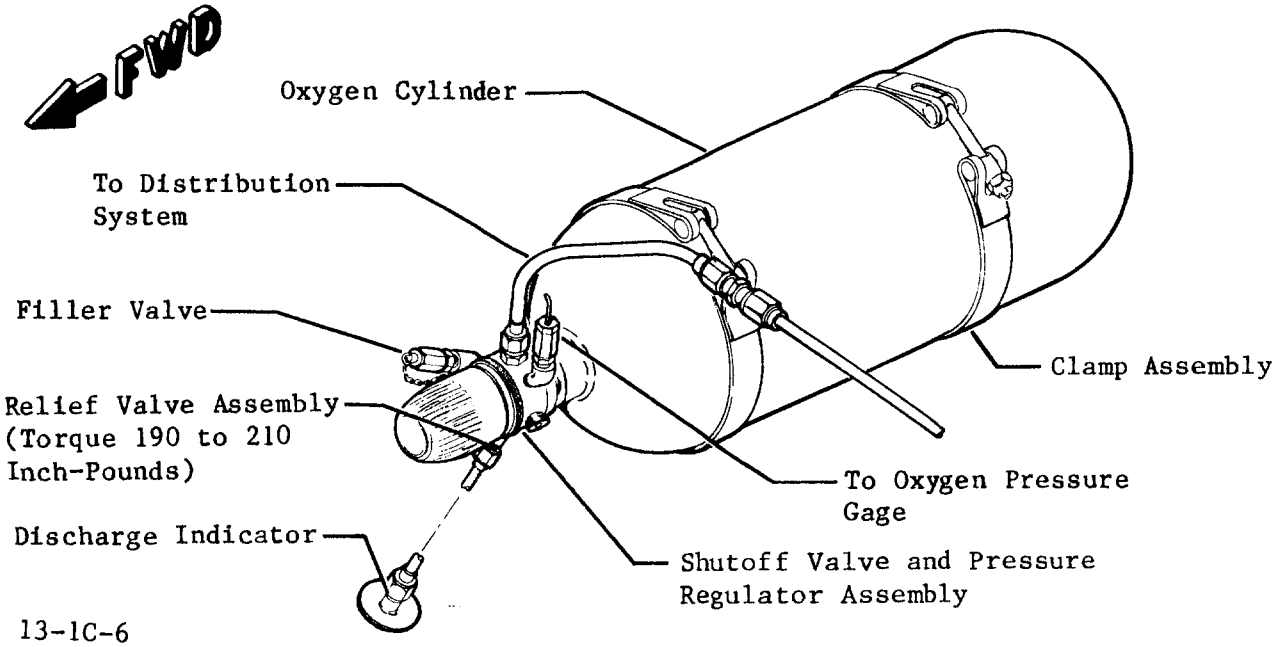
NOTE: Oxygen pressure in system lines will bleed to ambient through shutoff valve and regulator assembly when the shutoff valve and regulator assembly is closed.

(4) Remove access panel on the left side of the dorsal.
(5) Disconnect (at the dorsal shutoff valve and regulator assembly) the pressure gage capillary line, discharge indicator line, and the distribution line. Cap and plug all disconnected fittings and lines.
(6) Loosen clamps around the cylinder assembly and remove cylinder from left side of dorsal. Exercise care not to damage regulator assembly during removal.

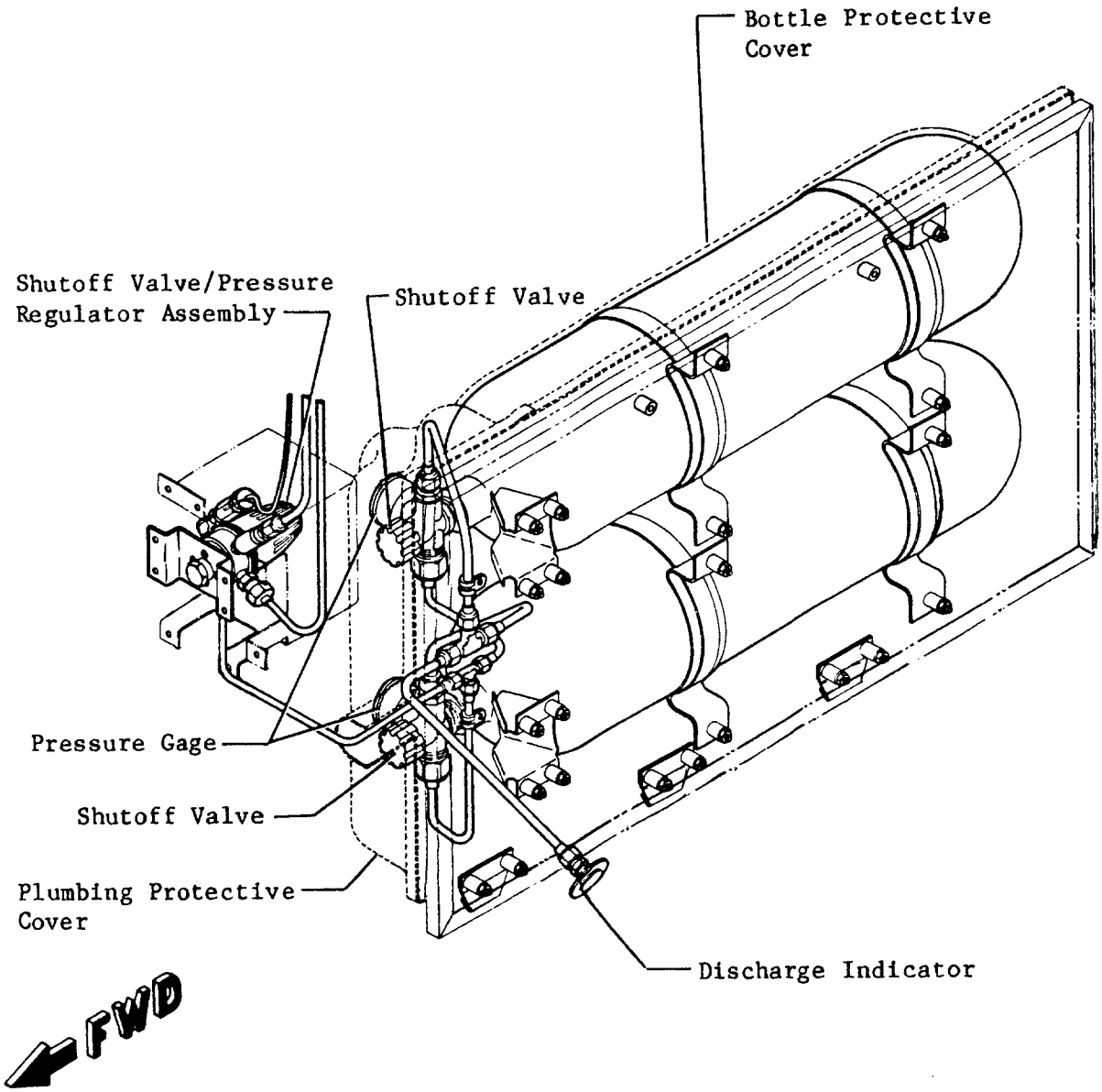
G. Install Dorsal Oxygen Cylinder (See Figure 203.) *(Aircraft equipped with nose and dorsal oxygen system and aircraft equipped with dorsal oxygen system)*
(1) Position oxygen cylinder into cradle through left side of dorsal. Exercise care not to damage regulator assembly during positioning.
(2) Clock cylinder until fittings on shutoff valve and pressure regulator align with tubes.
(3) Tighten clamps around cylinder finger tight.
(4) Remove plugs and caps from fittings and tubes and connect and tighten tubes on regulator.
(5) Open nose compartment shutoff valve and pressure regulator first and then open dorsal shutoff valve and pressure regulator.
(6) Check for leaks, using Sherlock Leak Detector Compound.
(7) Install access panel on left side of dorsal.
(8) Charge cylinders as required.
(9) Close and secure access door on RH side of dorsal.



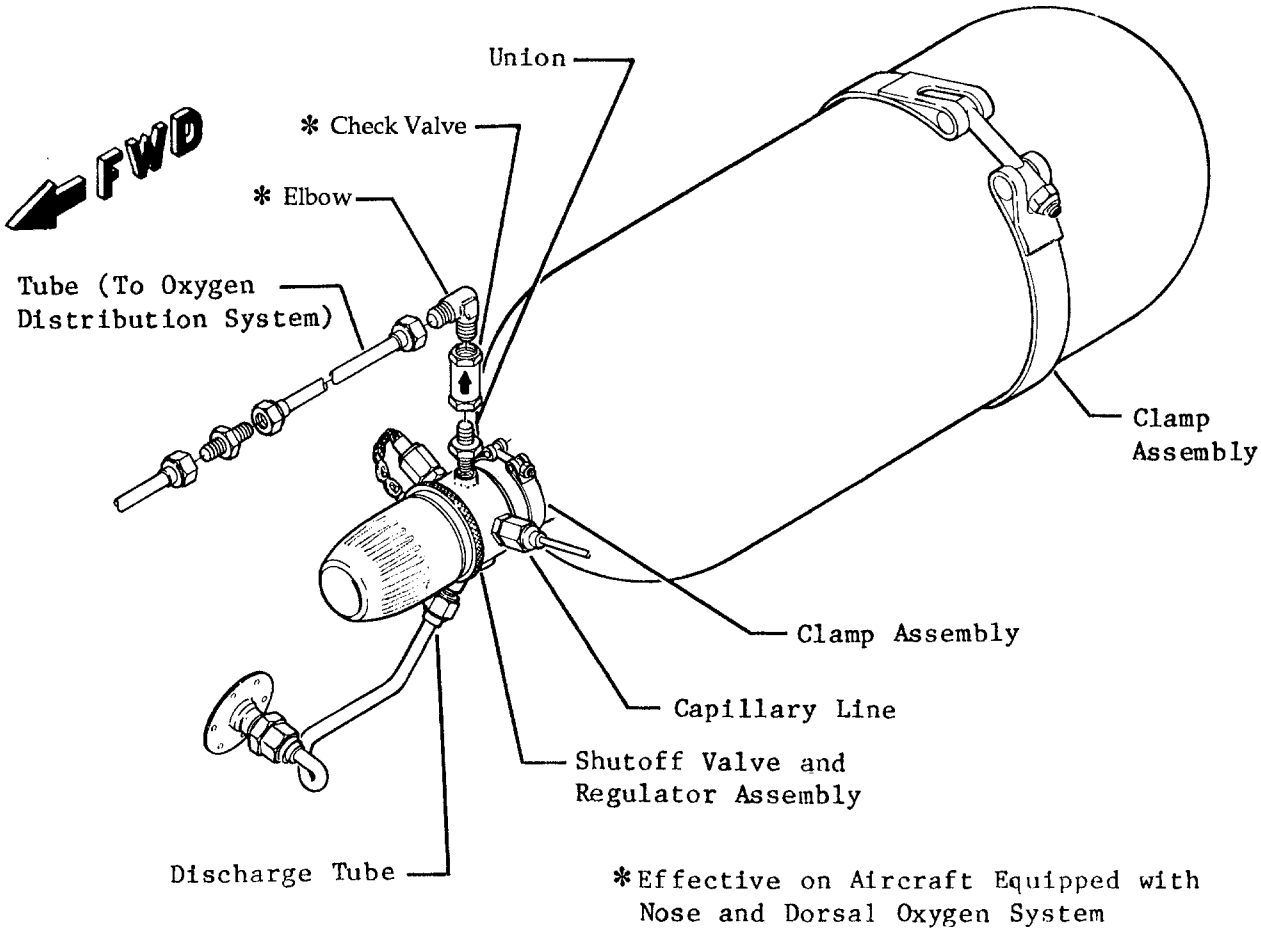
Aircraft 35-093 Only



Nose Compartment Oxygen Cylinder Installation
Figure 201



Baggage Compartment Oxygen Cylinder Installation
Figure 202



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Dorsal Oxygen Cylinder Installation
Figure 203

SHUTOFF VALVE AND REGULATOR ASSEMBLY - MAINTENANCE PRACTICES

1. **Removal/Installation**
   A. Replacement of Shutoff Valve/Regulator Assembly. (Steel Cylinder)

      CAUTION: USE EXTREME CARE NOT TO DAMAGE CYLINDER WHEN PLACED IN VISE OR OTHER SUITABLE HOLDING DEVICE.

      (1) Deplete oxygen system pressure. (Refer to Chapter 12.)
      (2) Remove oxygen cylinder from aircraft.
      (3) Clamp cylinder in vise.
      (4) Loosen and remove old shutoff valve/regulator assembly.
      (5) Remove cylinder from vise and clean as follows:
         (a) Fill cylinder one-third to one-half full of Kelite No. 28 liquid soap and agitate for approximately 30 seconds.
         (b) Pour out solution.
         (c) Flush cylinder with hot water (160°F) until all soap residue is removed.
         (d) Dry cylinder with hot air (250°F). Assure that interior is completely dry.
      (6) Clamp cylinder in vise or other suitable device.
      (7) Purge inside of cylinder with light force of oxygen to remove any foreign matter or moisture.
      (8) Install shutoff valve/pressure regulator on cylinder and torque 180 to 200 foot-pounds.
      (9) Remove cylinder from vise and inspect for damage.
      (10) Service oxygen cylinder and check for leakage. (Refer to Chapter 12.)

2. **Burst Disc Replacement**
   A. Remove Burst Disc. (See Figure 201.) (*Effective for oxygen cylinder installed in nose compartment or dorsal.*)
      (1) Remove RH nose compartment door or lower dorsal access door as applicable.

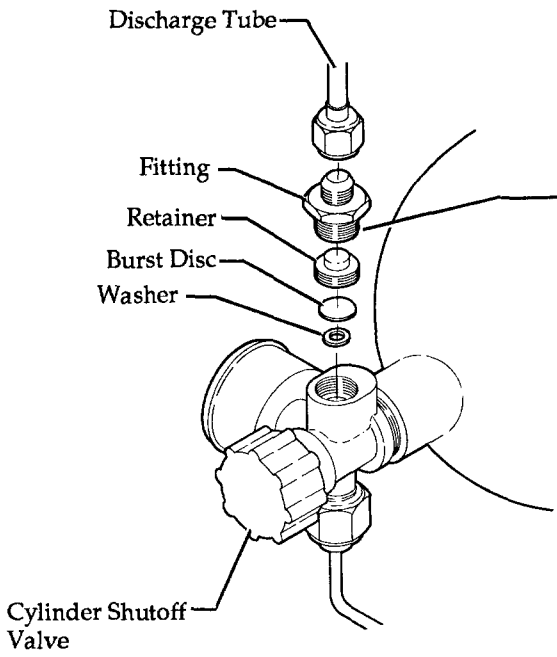
      CAUTION: IF AIRCRAFT IS EQUIPPED WITH OPTIONAL NOSE AND DORSAL OXYGEN SYSTEM OR OPTIONAL LONG RANGE OXYGEN SYSTEM (35-093), THE DORSAL SHUTOFF VALVE/REGULATOR OR BAGGAGE COMPARTMENT SHUTOFF VALVE/REGULATOR MUST BE CLOSED PRIOR TO CLOSING NOSE COMPARTMENT SHUTOFF VALVE/REGULATOR.

      (2) Close shutoff valve/pressure regulator assembly(ies).
      (3) Disconnect plumbing from shutoff valve/regulator assembly and cap all exposed lines and fittings.
      (4) Remove relief valve assembly from shutoff valve/regulator assembly. Part of the ruptured burst disc will be released when relief valve assembly is removed.
      (5) Loosen clamps securing oxygen cylinder in cradle.
      (6) Rotate oxygen cylinder until relief valve assembly port is up.
      (7) Using a suitable tool, extract washer and remainder of burst disc from port.
   B. Install Burst Disc. (See Figure 201.) (*Effective for oxygen cylinder installed in nose compartment or dorsal.)*
      (1) Assemble new burst disc and new washer in relief valve assembly port as shown.
      (2) Install relief valve assembly and slowly tighten relief valve assembly until it is firmly seated.
      (3) Torque assembly 32 to 34 foot-pounds.
      (4) Rotate oxygen cylinder to its original position.
      (5) Remove caps and connect plumbing. Tighten connections.
      (6) Install new indicator disc in discharge indicator.
      (7) Service oxygen system. (Refer to Chapter 12.)
      (8) Open shutoff valve/pressure regulator assembly(ies).

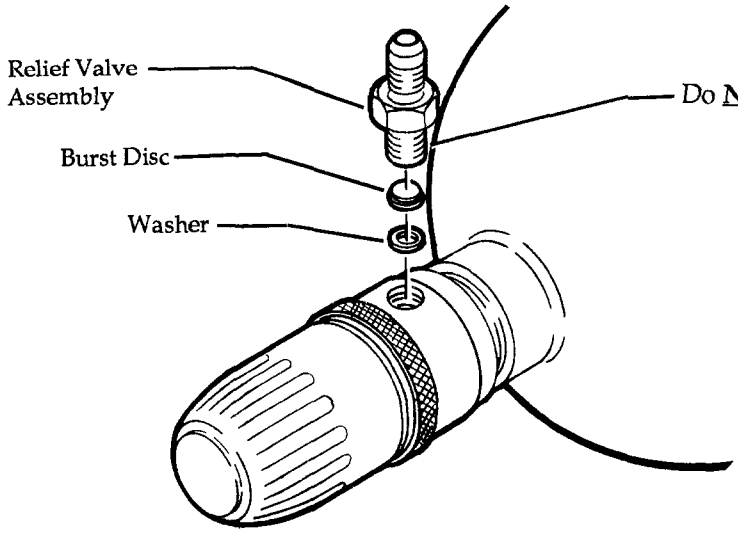
(9) Leak check all connections using Sherlock Leak Detector Compound.
(10) Install nose compartment access doors.

C. Remove Burst Disc. (See Figure 201.) (*Effective for baggage compartment oxygen cylinder.*)
(1) Gain access to and remove the plumbing protective cover from the baggage compartment oxygen cylinders by releasing the camloc fasteners.
(2) Close both baggage compartment oxygen cylinder shutoff valves and the nose compartment shutoff valve/pressure regulator assembly.
(3) Loosen and remove discharge tube from the applicable discharge port.
(4) Loosen and remove fitting from the discharge port.
(5) Unscrew the burst disc retainer from the discharge port.
(6) Using a suitable tool, extract the washer and the remainder of burst disc from port.

D. Install Burst Disc. (See Figure 201.) (*Effective for baggage compartment oxygen cylinder.*)
(1) Insert a new washer and a new burst disc into discharge port.
(2) Screw burst disc retainer into discharge port and torque to 32 to 34 foot-pounds.
(3) Install fitting into discharge port and tighten.
(4) Align discharge tube with discharge port and screw on.
(5) Install new indicator disc in discharge indicator.
(6) Open cylinder shutoff valves and service oxygen system. (Refer to Chapter 12.)
(7) Leak check all connections using Sherlock Leak Detector Compound.
(8) Install plumbing protective cover.



(BAGGAGE COMPARTMENT OXYGEN CYLINDERS)

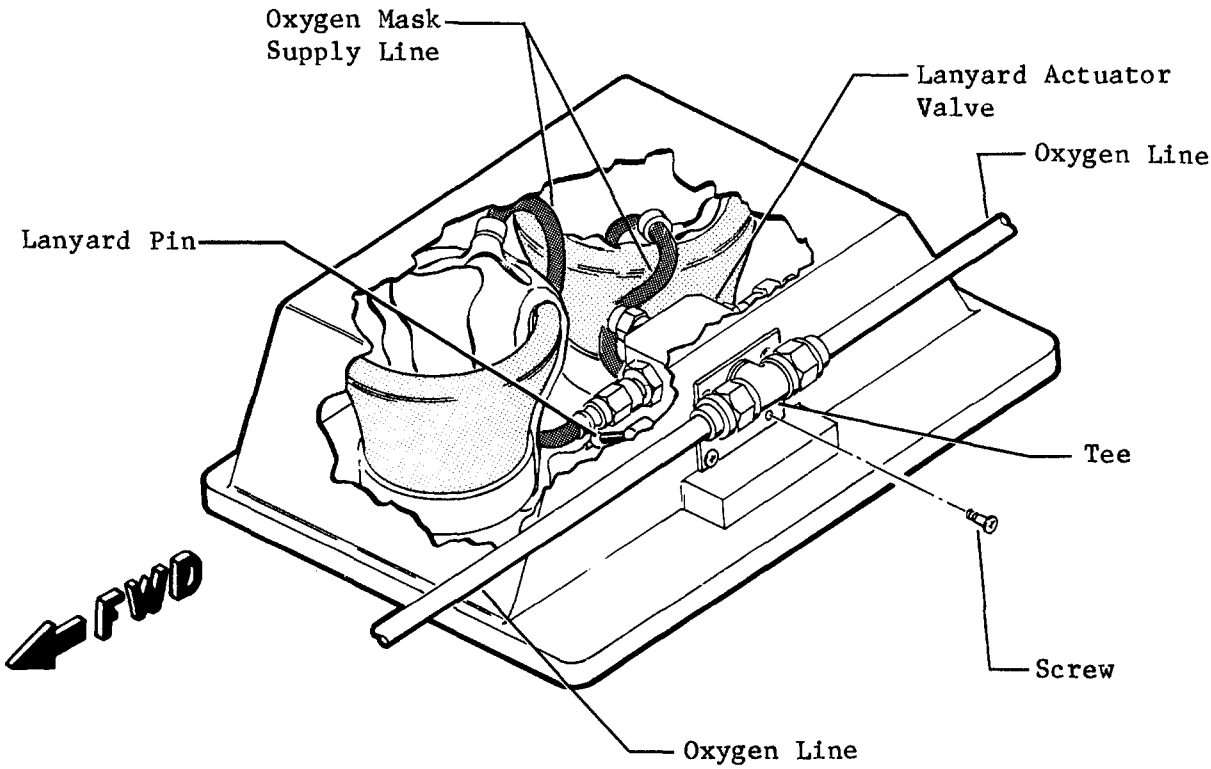


(NOSE COMPARTMENT OR DORSAL OXYGEN CYLINDERS)

Burst Disc Replacement
Figure 201

LANYARD ACTUATOR VALVE - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**
   - **A. Remove Lanyard Actuator Valve** (See figure 201.)
     - (1) Lower upper center panel sufficiently to gain access to the storage compartment.
     - (2) Disconnect oxygen line from tee. Cap exposed lines.
     - (3) Remove tee from storage compartment.
     - (4) Release storage compartment door and disconnect oxygen mask from valve.
     - (5) Remove attaching parts and valve from storage compartment.
   - **B. Install Lanyard Actuator Valve** (See figure 201.)
     - (1) Install valve and secure with attaching parts.
     - (2) connect oxygen mask supply lines to outlet port.
     - (3) Install mask and door in storage compartment.
     - (4) Install tee on storage compartment.
     - (5) Connect oxygen lines to tee.
     - (6) Install upper center panel and secure.



Lanyard Actuator Valve Installation
Figure 201

PASSENGER MASK - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

NOTE: Prior to performing maintenance, personnel should adhere to safety precautions and procedures described in 35-00-00, Oxygen Maintenance Precautions and Procedures.

A. Remove Mask (See figure 201.)

(1) Assure that passenger oxygen supply is closed.
(2) Depress manual storage door release.
(3) Disconnect mask supply tube from oxygen service valve.
(4) Remove lanyard pin from oxygen service valve.

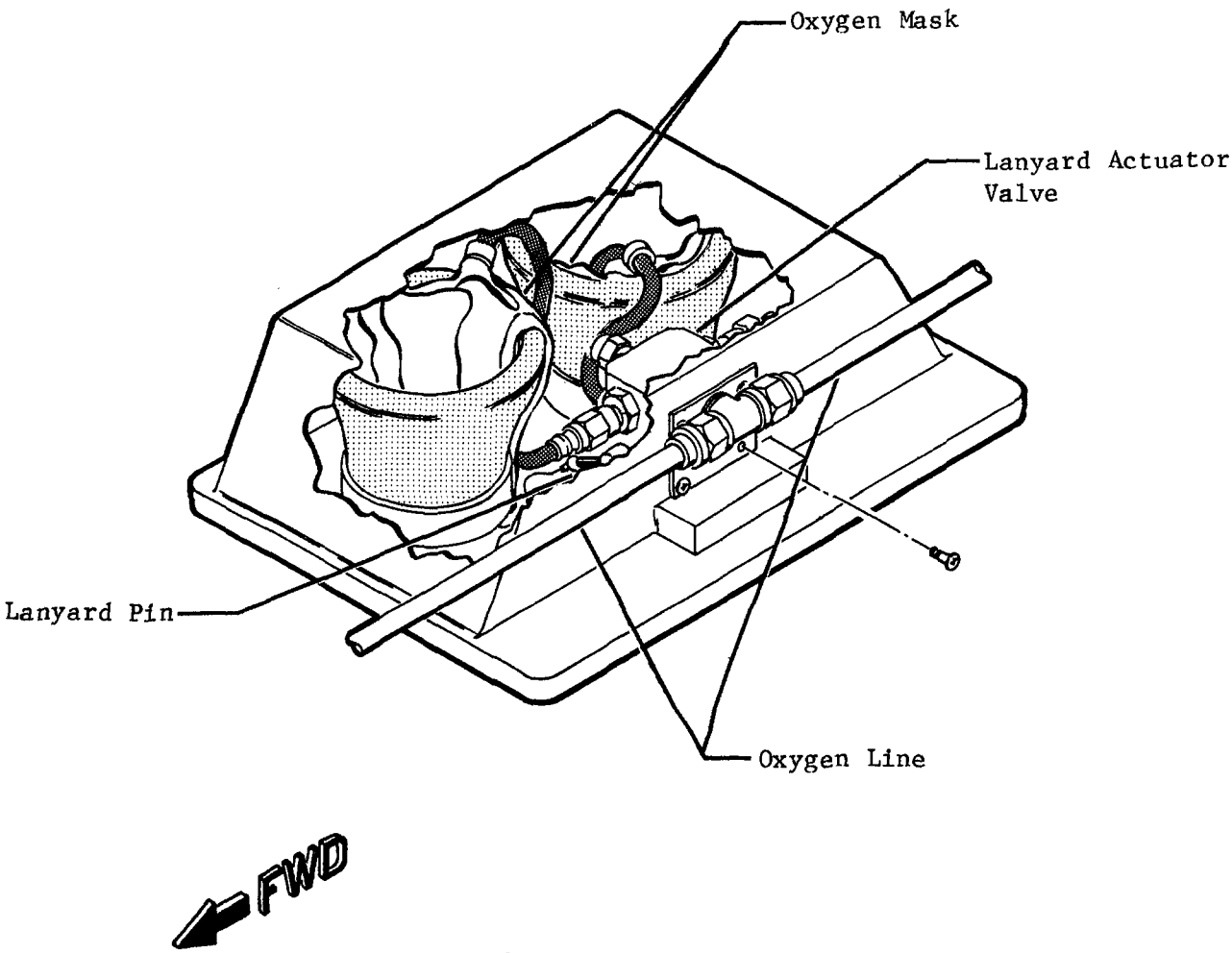
B. Install Mask (See figure 201.)

NOTE: Some aircraft may incorporate oxygen mask storage compartments which do not have lanyard valves, on these aircraft disregard any reference to lanyard pin.

(1) Connect mask supply tube to service valve.
(2) Assure that mask lanyard pin is tied by a double-strand cord approximately 3 inches in length. This will assure that lanyard pin will be pulled before mask is donned.
(3) Install oxygen mask in stowage compartment as follows:
  (a) Let mask hang and remove all supply tube entanglements.
  (b) Hold mask open end up.
  (c) Fold head strap into mask.
  (d) Fold economizer bag lengthwise to width slightly smaller than width of mask opening.
  (e) Fold economizer bag into mask.
  (f) Coil supply tube into mask.
  (g) Fold lanyard over supply tube and insert lanyard pin in oxygen service valve.
  (h) Place mask in stowage compartment and close door.

2. INSPECTION/CHECK

A. Unfold Mask and check the following:
(1) Face-piece for holes, cuts, or tears.
(2) Front and back valve housings for cracks, breaks, and damage to valve seats.
(3) Economizer bag for torn or imperfect seams, holes, and mildew.
(4) Tubing clamp for security of installation, cracks, and distortion.
(5) Tubing for cracks or kinks.
(6) Head strap for corroded or distorted clips, elasticity, cleanliness, and security of attachment.



TYPICAL MASK INSTALLATION

Passenger Oxygen Mask Installation
Figure 201

3. **CLEANING/PAINTING**

A. Tools and Equipment

NAME	NUMBER	MANUFACTURER	USE
Cleaning and Sanitizing Kit	D420-1000-1-F	Zep Aero Corp. El Segundo, CA	Cleaning and sterilization of mask.

B. Clean Mask (Puritan-Zep)

(1) Using suitable container, add 1 teaspoon of mild detergent to 18 oz. of water.
(2) Install valve shield in mask.
(3) Apply solution to mask with soft bristle brush or towel.
(4) Rinse mask.
(5) Remove valve shield.
(6) Wipe or air dry.
(7) Spray internal surface, including valves, lightly with antiseptic spray.
(8) Wipe or air dry.
(9) Apply talcum powder to external surfaces of rubber face-piece.
(10) Install mask in stowage compartment.

C. Clean Mask (Sierra Engineering)

(1) Using a suitable container, add 1/2 teaspoon of mild detergent to each gallon of warm water. Do not use water hotter than 140°F.
(2) Apply solution to face cup with soft bristle brush or towel.
(3) Rinse all parts in cold water.
(4) Allow to air dry at room temperature.
(5) Wash exterior of bag and oxygen tube.

NOTE: Keep ends of oxygen tube and bag closed to prevent detergent solution from entering.

(6) After all parts are thoroughly dry and no visible residue remains, disinfect with a solution of 3 parts zephiran chloride to 1 part water.
(7) Allow parts to dry thoroughly.
(8) Lightly dust outside of face cup with Neo-Novacite powder. (P/N 00-736, Sierra Engineering Co., Sierra Madre, Calif.)

OXYGEN ANEROID SWITCH - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Remove Aneroid Switch (See figure 201.)

(1) Set Battery and Stall Warning Switches off.

(2) Lower instrument panel or remove armrest assembly as applicable to gain access to aneroid switch.

(3) Disconnect electrical plug from aneroid switch.

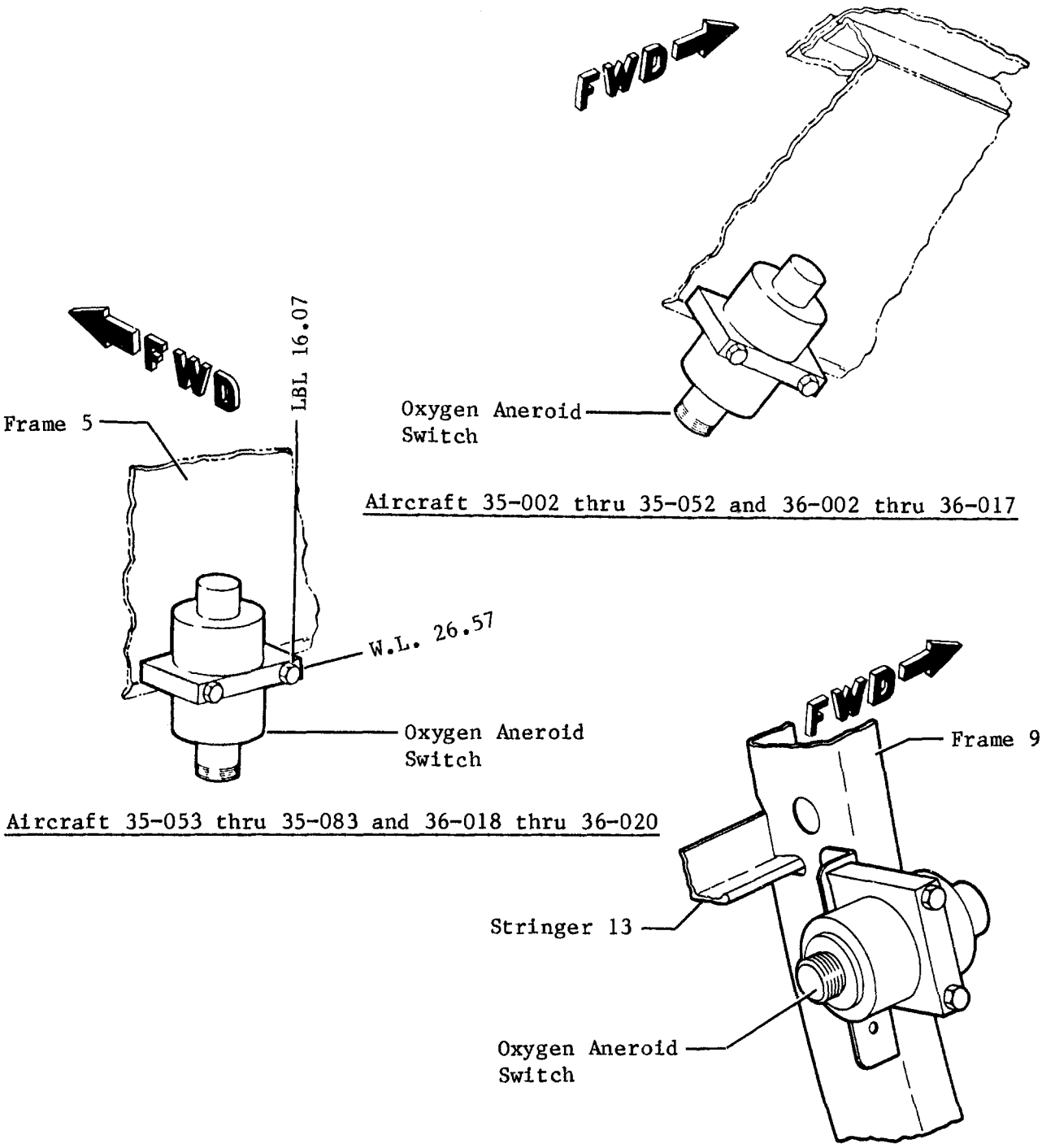
(4) Loosen attaching parts and remove aneroid switch from aircraft.

B. Install Aneroid Switch (See figure 201.)

(1) Install aneroid switch and secure with attaching parts.

(2) Connect electrical plug to aneroid switch.

(3) Install instrument panel or armrest assembly as applicable.



Aneroid Switch Installation
Figure 201