CHAPTER 7

AIRCRAFT PANEL MOUNTED OXYGEN REGULATORS P/N 29255 SERIES

Section 7-1. Description

7-1. GENERAL.

NOTE

For CRU-96/A, P/N 29255-6BB1 and CRU-97/A, P/N 29255-10AB-12, refer to Chapter 13 for Bench Testing and Lamp Installation procedures.

7-2. Aircraft Panel Mounted Oxygen Regulators, P/N 29255 Series (figure 7-1 and 7-2) are manufactured by Litton Life Support, formerly the Bendix Corporation (CAGE 99251). They are designed to regulate breathing oxygen supplied to the aircrewmember during flight. Table 7-1 contains leading particulars for the regulators.

7-3. All controls and indicators necessary for indication of performance and operation of the regulator are located on an illuminated panel with the regulating components attached to the mounting plate and controls assembly.

7-4. The regulators are panel mounted, automatic positive pressure diluter demand-type regulators and are used in conjunction with a pressure breathing-type oxygen mask. The regulators provide 100% oxygen or an air/oxygen mixture at the correct ratio, depending on altitude, to the user on demand. The regulators incorporate an emergency pressure control toggle. During normal operation, the toggle is set in the NORMAL position. A TEST MASK position is provided to test the oxygen supply function of the regulator at low altitudes and ground level. When in the EMERGENCY position, the regulator delivers 100% oxygen to the user at a positive pressure. The EMERGENCY position is used when inadequate oxygen supply is suspected.

7-5. CONFIGURATION.

7-6. The regulators are supplied in two basic configurations: low pressure (50 to 500 psig operating pressure range), and high pressure (50 to 2000 psig operating range).

7-7. FUNCTION.

7-8. Characteristics and performance for which the regulators are designed are described below. Numbers in parentheses relate to numbers in figure 7-3.

1. Supply oxygen is admitted to the regulator through the inlet valve assembly (1) and is registered on the supply pressure gage (23) regardless of the position of the supply toggle (15). The oxygen passes into the pressure reducer assembly (2) where pressure is reduced to 37 to 45 psig.

2. Air is admitted to the regulator through the aneroid and air shutoff assembly (4). The air-oxygen mixture is delivered to the mask by means of a flexible hose attached to the outlet of the regulator (5).

3. The flow indicator blinker assembly (6) is secured in the mounting panel and is seen through the window in the panel. The pressure drop across the injector (8) operates the blinker assembly. When the face shows white, the blinker is in a breathing cycle. When the flow stops, the pressure is equalized through the flow indicator feedback passage (14). The blinker returns to the normal position and the face shows black. Thus, an indication of flow is shown at each breathing cycle.

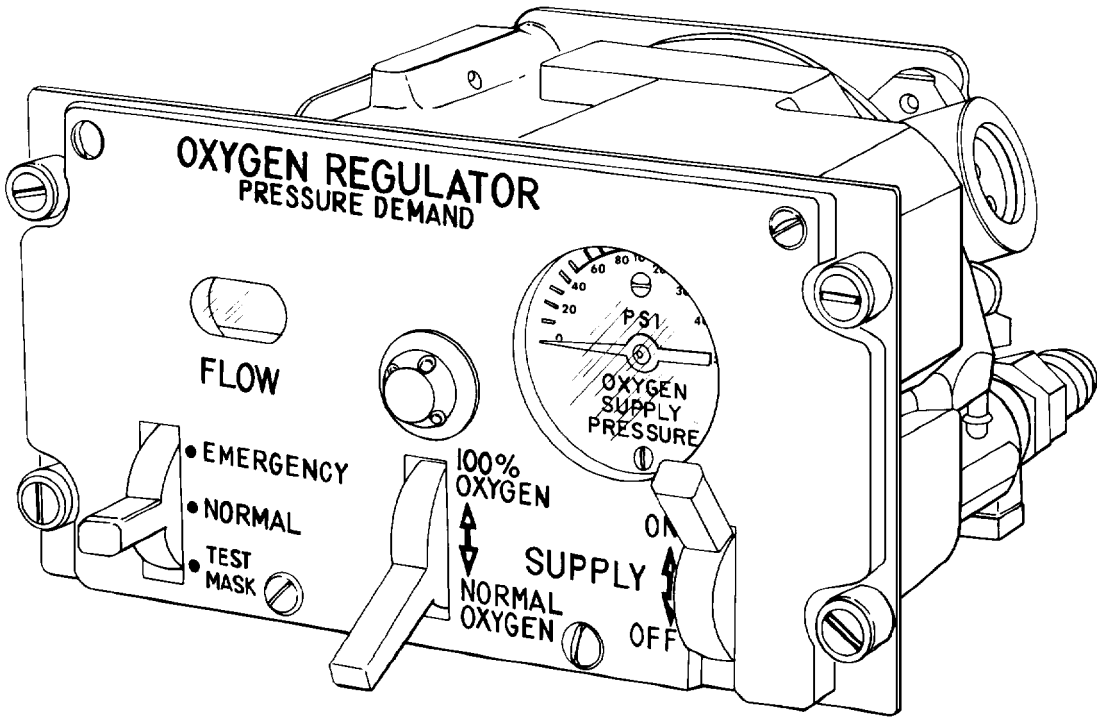

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Figure 7-1. Aircraft Panel Mounted Oxygen Regulator, Low Pressure, P/Ns 29255-10A-A1, 29255-10A-B9, 29255-10A-A2, 29255-10A-A4, 29255-10A-A5, 29255-10A-A9, 29255-10A-A17, 29255-10AB10 (CRU-54/A), 29255-10AB11 (CRU-55/A), 29255-10A-A1A, 29255-10A-B9A, 29255-10A-A2A, 29255-10A-A4A, 29255-10A-A5A, 29255-10A-A9A, 29255-10A-A17A, 29255-10A-B10A, and 29255-10A-B11A

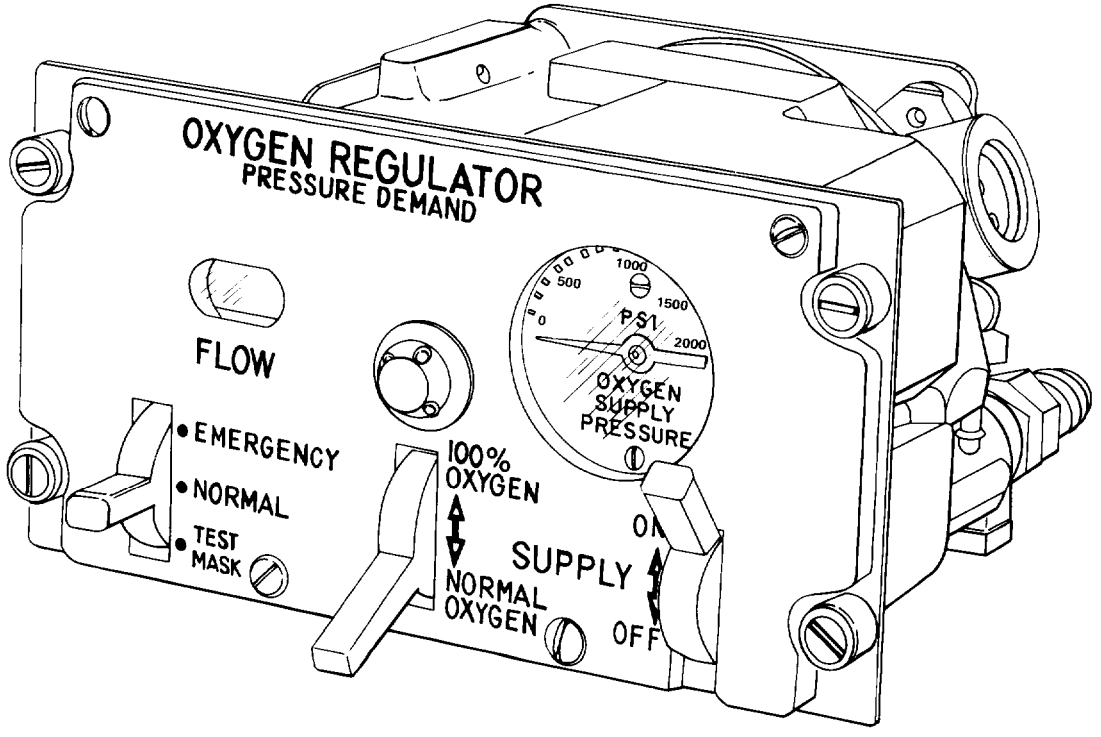

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Figure 7-2. Aircraft Panel Mounted Oxygen Regulator, High Pressure, P/Ns 29255-6B-B1, 29255-6B-A1, 29255-6B-A1A, and 29255-6B-B1A

Table 7-1. Leading Particulars

Low Pressure	50 to 500 psig
High Pressure	50 to 2000 psig
Voltage	28 Vdc
Mounting	Panel
Operating Altitude Range:	
Normal Breathing	Up to 30,000 ft
Pressure Breathing starts	At 30,000 ft
Air-Oxygen Mixture	Up to 32,000 ft
100% Oxygen Delivery Starts	At 32,000 ft
Visual Indicators	Pressure Gage and Flow
Regulator Controls:	Indicator on Front Panel
Diluter Toggle	Selects NORMAL or 100% OXYGEN
Supply Toggle	Opens and closes oxygen supply
Emergency Toggle	For emergency, and ground test of mask
Overall Dimensions:	
Length	5.75 in
Width	3.00 in
Height	4.25 in
Weight	2.75 lb

4. The demand valve assembly (7) is positioned in a chamber which has three openings. The one at the upstream end of the valve opens into the pressure reducer chamber. The other two are on the downstream side of the valve. One opens into the flow indicator channel and the other opens into the injector assembly (8). The valve is maintained in its normally-closed position by the spring-loaded demand valve lever which is in contact with the valve stem. When the mask wearer inhales, the inner diaphragm (11) moves inward and opens the demand valve through the medium of a linkage system.

5. The injector (8) consists of a silicone nozzle and a housing. These are mounted in the regulator housing, downstream from the demand valve (7) and upstream from the mixing tube (16). The injector housing is positioned in the regulator housing so the cutaway portion of the injector housing is open to the port from the aneroid and air shutoff assembly (4). When the demand valve is opened, oxygen is forced through the nozzle in the injector, and to the oxygen mask. The flow of oxygen through the nozzle causes a low pressure area that opens the check valve adapter and spring assembly, allowing

ambient air to mix with the oxygen, when the diluter toggle is at NORMAL OXYGEN and altitude is below 32,000 feet. Excessive pressure in the regulator is prevented by the relief valve (18).

6. The aneroid and air shutoff assembly (4) contains an aneroid which gradually expands as atmospheric pressure decreases. Expansion of the aneroid progressively decreases the distance separating a throttling plate and an air valve flange (19) until, at an altitude of approximately 32,000 feet, the air passage through the regulator is completely closed.

7. The check valve adapter and spring assembly (9) consists of a spring-loaded disc pressing against a seat at the bottom of the aneroid housing. When seated, the check valve closes the air passage. Inhalation unseats the check valve and allows air to be sucked in through the aneroid and air shutoff assembly (4). The air mixes with the oxygen in the mixing tube (16) and the resulting mixture passes to the mask.

8. The lever and bracket assembly (10) is part of a linkage system connecting the inner diaphragm (11) and the demand valve assembly (7). By placing the emergency pressure toggle (20) in the EMERGENCY or TEST MASK position, the lever and bracket assembly will be depressed which, in turn, depresses the demand valve lever and opens the demand valve (7) to permit a flow of oxygen.

9. The manual safety pressure assembly (13) is a mechanism which can be manually operated under emergency conditions to increase the outlet pressure of the oxygen regulator. The mechanism includes the emergency pressure toggle which can be moved to the EMERGENCY, NORMAL, or TEST MASK position.

10. The pressure breathing assembly consists of an aneroid (21) and a seat and matched valve assembly (22). At approximately 30,000 feet the assembly begins to function, delivering an automatic positive pressure to the user.

7-9. SERVICE LIFE.

7-10. Oxygen regulators shall remain in service for as long as they function correctly and do not require excessive repair (exceeds 75% of original cost of regulator). All affected silicone rubber parts shall be replaced whenever a regulator is disassembled for repair.

7-11. REFERENCE NUMBERS, ITEMS AND SUPPLY DATA.

7-12. Section 7-5, Illustrated Parts Breakdown, contains information on each assembly, subassembly, and component part of the regulators. The figure and index number, reference or part number, description, and units per assembly are provided with the breakdown.

Section 7-2. Modifications

7-13. GENERAL.

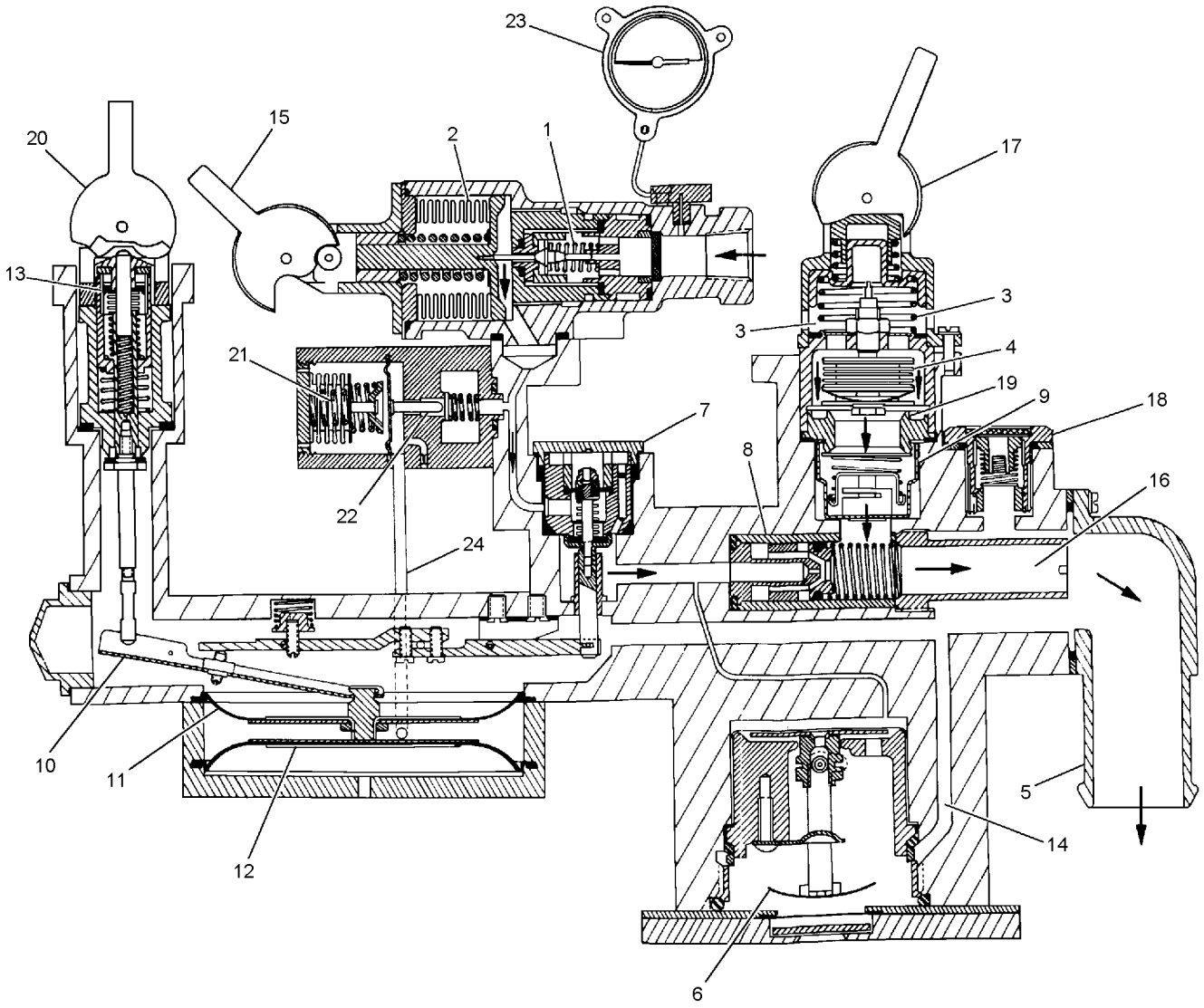
7-14. There are no authorized modifications to the 29255 series oxygen regulators at this time.

Section 7-3. Performance Test Sheet Preparation

7-15. GENERAL.

7-16. Preparation of Oxygen Regulator Performance Test Sheets require that, through the use of various graphs, actual flows given in applicable directives and provided in this section be converted to indicated flows.

7-17. Flows provided in applicable directives are stated in liters per minute (lpm) and are not measurable by the manometers used in oxygen regulator test stands. The flows must be converted to inches of water pressure (inH_2O), the form of measurement which can be read on the test stand manometers.



1. INLET VALVE ASSEMBLY
2. PRESSURE REDUCER ASSEMBLY
3. AIR
4. ANEROID/ AIR SHUTOFF ASSEMBLY
5. REGULATOR OUTLET
6. FLOW INDICATOR
7. DEMAND VALVE
8. INJECTOR
9. CHECK VALVE ADAPTER AND SPRING ASSEMBLY
10. LEVER AND BRACKET ASSEMBLY
11. INNER DIAPHRAGM
12. OUTER DIAPHRAGM
13. MANUAL SAFETY PRESSURE ASSEMBLY
14. FLOW INDICATOR FEED BACK PASSAGE
15. SUPPLY TOGGLE
16. MIXING TUBE
17. DILUTER TOGGLE
18. RELIEF VALVE
19. AIR VALVE FLANGE
20. EMERGENCY PRESSURE TOGGLE
21. PRESSURE BREATHING ANEROID
22. PRESSURE BREATHING SEAT AND MATCHED VALVE ASSEMBLY
23. OXYGEN SUPPLY PRESSURE GAGE
24. PRESSURE BREATHING SENSING TUBE

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Figure 7-3. Regulator Operation

NOTE

The various graphs supplied with each Oxygen System Components Test Stand, Model 1172AS100 or 1316AS100 are used in converting flows. The graphs supplied are not interchangeable between test stands.

7-18. The information provided in the tables in this Section is to be recorded on the Performance Test Sheet (figure 7-4).

7-19. The Performance Test Sheet (figure 7-4) is a sample only, but may be reproduced for local use.

7-20. The following tests require conversion of flows from actual lpm to indicated inH_2O.

1. Relief Valve Test.
2. Flow Suction Test.
3. Oxygen Ratio Test.
4. Safety Pressure/Pressure Breathing Test.
5. Blinker (Flow Indicator) Test.
6. Emergency Pressure Test.

7-21. REGULATOR PERFORMANCE TESTS.

7-22. RELIEF VALVE TEST. The relief valve shall vent at least 45 lpm at a specified pressure. The actual 45 lpm flow must be converted to an indicated inH_2O flow by using the nitrogen (N_2) line of the Vent Flow Graph. Convert the actual flow as follows:

1. Locate the 45 lpm line on the bottom of the Vent Flow Graph, and trace the line up to where it intersects the N_2 line.

2. Trace the line on the graph where the lpm and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this information in the appropriate block on the Performance Test Sheet.

7-23. FLOW SUCTION TEST. The Flow Suction Test shall be performed at sea level with the diluter control lever in both the 100% OXYGEN and NORMAL OXYGEN position. Actual (lpm) flows are converted to indicated (inH_2O) flows by using the sea level Output Graph. The air line is used for NORMAL OXYGEN flows, and the N_2 line is used for 100% OXYGEN flows. Convert the actual flows as follows:

NOTE

Test Stand Input and Output Flow Graphs may vary in makeup, according to the activity performing the test stand calibration. Some test stands may have a single output graph and an input graph with various altitude lines, while others may have separate graphs for each altitude. Ensure the specified graph is used.

1. Locate the desired lpm line (Performance Test Sheet, figure 7-4) at the bottom of the Sea Level Output Graph.

2. Trace selected lpm line up to where it intersects the air line (NORMAL indicated output) or N_2 line (100% indicated output).

3. Trace the line from point of intersection across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

5. Repeat steps 1 through 4 for all output flows (lpm) given in figure 7-4.

7-24. OXYGEN RATIO TEST. Actual flows and oxygen percentages (figure 7-4) used for the Oxygen Ratio Test must be converted to indicated flows and oxygen averages. All actual flows must be converted to indicated flows. The results of these computations shall be entered in the appropriate columns within the Oxygen Ratio Test portion of the Performance Test Sheet. To find average oxygen, indicated output, corrected indicated output, actual and indicated input flows, proceed as follows:

REGULATOR PERFORMANCE TEST SHEET

BENDIX 29255
SERIES REGULATORS

DATE _____ TYPE _____ SERIAL NO. _____

TEST STAND SERIAL NO. _____ TESTED BY _____ CDI _____

1. INWARD LEAKAGE TEST _____ 2. OUTLET LEAKAGE TEST _____
3. OXYGEN SUPPLY VALVE LEAKAGE TEST _____ 4. OVERALL LEAKAGE TEST _____
5. PRESSURE GAGE TEST: NOTE: TESTED AT AMBIENT TEMPERATURE OF 70°F.

LOW PRESSURE REGULATOR ONLY

PRESSURE GAGE (PSIG)	TOLERANCE PSIG	BEFORE TAP	AFTER TAP
50	±10		
100	±25		
500	±25		

HIGH PRESSURE REGULATORS ONLY

PRESSURE GAGE (PSIG)	TOLERANCE PSIG	BEFORE TAP	AFTER TAP
500	±50		
1000	±50		
1500	±50		

6. OUTWARD LEAKAGE TEST _____
7. RELIEF VALVE TEST
   a. VENTS 45 LPM _____ AT 40.7 inH_2O (3 INHg)
   b. LEAKAGE AT 17 INH_2O _____
8. FLOW SUCTION TEST

ALTITUDE	INLET PRESSURE (PSIG)	ACTUAL OUTPUT (LPM)	NORMAL		100 PERCENT		MAXIMUM SUCTION (INH_2O)
			INDICATED OUTPUT	READING	INDICATED OUTPUT	READING	
SEA LEVEL	50	30					-0.50
SEA LEVEL	150	50					-0.70
SEA LEVEL	150	85					-1.0

9. OXYGEN RATIO TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)
   (INLET PRESSURE 150 PSIG FOR HIGH PRESSURE REGULATORS)

ALTITUDE (1000 FT)	OXYGEN PERCENT		OUTPUT				INPUT				
	MIN	MAX	AVERAGE PERCENT	ACTUAL OUTPUT (LPM)	INDICATED OUTPUT (INH_2O)	CORRECTED INDICATED OUTPUT	ACT HI	ACT LOW	IND HI	IND LOW	READING
10	6	45	25.5	15			14.1	8.25			
10	6	60	33	85			79.9	34			
20	24	55	39.5	15			11.4	6.75			
20	24	80	52	85			64.6	17			
28	60	100	80	15			6	0		0	
28	60	100	80	85			34	0		0	
32	98	100	99	85			1.7	0		0	

10. ANEROID AIR VALVE CLOSURE TEST (28,000 TO 32,000 FEET) PERFORMED ONLY IF REGULATOR FAILS OXYGEN RATIO TEST _____

Figure 7-4. Performance Test Sheet (Sheet 1 of 2)

11. SAFETY PRESSURE/PRESSURE BREATHING TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)
(INLET PRESSURE 150 PSIG FOR HIGH PRESSURE REGULATORS)

ALTITUDE (1000 FT)	OUTPUT		PRESSURE (INH_2O)		
	ACTUAL (LPM)	INDICATED (INH_2O)	MINIMUM	READING	MAXIMUM
30	0	0	0.01		2.50
30	85		0.01		2.50
40	0	0	0.30		5.60
40	85		0.30		5.60
43	0	0	5.30		12.50
43	85		5.30		12.50
50	0	0	11.20		18.20
50	85		11.20		18.20

12. BLINKER (FLOW INDICATOR) TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)
(INLET PRESSURE 150 PSIG FOR HIGH PRESSURE REGULATORS)

ALTITUDE/ PRESSURE	DILUTER LEVER	OUTPUT		READING	BLINKER POSITION
		ACTUAL	INDICATED		
SEA LEVEL	NORMAL	20			FULLY OPEN
SEA LEVEL	100%	8			FULLY OPEN
17 INH_2O	100%	12			FULLY OPEN
17 INH_2O	100%	0	0		CLOSE IMMED

13. EMERGENCY PRESSURE TEST (INLET PRESSURE 50 PSIG FOR LOW PRESSURE REGULATORS)
(INLET PRESSURE 150 PSIG FOR HIGH PRESSURE REGULATORS)

OUTPUT		DILUTER LEVER	EMERGENCY LEVER	PRESSURE READING	TOLERANCE (INH_2O)
ACTUAL	INDICATED				
10 LPM		NORMAL	EMERGENCY		2.0 TO 4.0
80 LPM		100%	EMERGENCY		1.0 MIN.
10 LPM		100%	TEST MASK		6.0 TO 16.0

Notes: WITH ZERO FLOW, OUTLET PRESSURE SHALL NOT EXCEED 17.5 INH_2O WITH EMERGENCY PRESSURE CONTROL LEVER IN TEST MASK POSITION. WITH EMERGENCY PRESSURE CONTROL LEVER IN EMERGENCY POSITION, OUTLET PRESSURE SHALL NOT EXCEED 5.5 INH_2O.

14. REGULATOR OXYGEN PURGE: APPLY 500 PSIG TO LOW PRESSURE REGULATORS AND 500 PSIG TO HIGH PRESSURE REGULATORS, AVIATORS BREATHING OXYGEN AND FLOW 1 TO 3 MINUTES.

Figure 7-4. Performance Test Sheet (Sheet 2 of 2)

NOTE

Test Stand Input and Output Flow Graphs may vary in makeup, according to the activity performing the test stand calibration. Some test stands may have a single output graph and an input graph with various altitude lines, while others may have separate graphs for each altitude. Ensure the specified graph is used.

7-25. Average Oxygen. These figures are provided but are computed as follows. Average oxygen is found by adding the minimum and maximum oxygen percentage (figure 7-4) then dividing the sum by 2 (e.g., 6% + 45% = 51% ÷ 2 = 25.5%).

1. Enter the resulting figure, 25.5% in the appropriate block on the Performance Test Sheet.

2. Repeat this procedure for all minimum and maximum oxygen percentages given in figure 7-4.

7-26. Indicated Output. To convert actual output flows (lpm) given in figure 7-4 to indicated output flows (inH_2O), proceed as follows:

1. Locate the desired actual output at the bottom of the Output Graph (figure 7-4).

2. Trace the selected line up to the point of intersection with the appropriate altitude air line.

3. Trace the line on the graph from where the desired lpm and altitude air lines intersect across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

NOTE

Flows at 28,000 and 32,000 feet are converted by using the next higher altitude air line or Output Graph (e.g., 30,000 foot Output Graph or 35,000-foot Output Graph).

5. Repeat steps 1 through 4 for all actual output flows given in figure 7-4.

7-27. Corrected Indicated Output. Corrected indicated output is indicated output with the required percentage of nitrogen added. To find corrected indicated output, proceed as follows:

NOTE

Use Oxygen/Air/Nitrogen Conversion Graph provided in NAVAIR 17-15BC-21 Technical Manual.

1. Locate the indicated output (inH_2O) at the bottom of the Oxygen/Air/Nitrogen Conversion Graph.

2. Find the average oxygen percentage on the Performance Test Sheet corresponding to the selected indicated output.

NOTE

Select percentage line on Oxygen/Air/Nitrogen Conversion Graph nearest to average oxygen figure selected from Average Oxygen column on Performance Test Sheet.

3. Follow the indicated output line selected on the Oxygen/Air/Nitrogen Conversion Graph up to the appropriate N_2 percentage line.

4. Trace the line on the graph where the selected indicated output and N_2 percentage lines intersect across the left hand column to determine inH_2O.

5. Enter this figure in the appropriate block on the Performance Test Sheet.

6. Repeat steps 1 through 5 for all required indicated output flows.

7-28. Actual High Air. These figures are provided, but are computed as follows. Find the actual high air by subtracting the minimum oxygen percentage (figure 7-4) from 100%; multiply the result by the corresponding actual output (e.g., 100% - 6% = 94% x 15 lpm = 14.10 lpm).

1. Enter 14.10 lpm in the actual high air column on the Performance Test Sheet.

2. Repeat the procedure for all minimum oxygen percentages given in figure 7-4.

7-29. Actual Low Air. These figures are provided but are computed as follows. Find the actual low air by subtracting the maximum oxygen percentage (figure 7-4) from 100%; multiply the result by the corresponding actual output (e.g., 100% - 45% = 55% x 15 lpm = 8.25 lpm).

1. Enter 8.25 lpm in the actual low air column on the Performance Test Sheet.

2. Repeat the procedure for all maximum oxygen percentages given in figure 7-4.

7-30. Indicated High Air (Input). To convert actual high air to indicated high air, proceed as follows:

1. Locate the actual input (lpm) at the bottom of the Test Stand Input Graph.

NOTE

Flows at 28,000 and 32,000 feet are converted by using the next higher altitude air line or Input Graph (e.g., 30,000-foot Input Graph or 35,000-foot Input Graph).

2. Trace the selected line up to where it intersects the appropriate altitude line.

3. Trace the line on the graph where the actual input and desired altitude lines intersect across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

5. Repeat steps 1 through 4 for all actual high air figures previously entered on Performance Test Sheet.

7-31. Indicated Low Air (Input). To convert actual low air to indicated low air, proceed as follows:

1. Locate the actual input (lpm) at the bottom of the Test Stand Input Graph.

2. Trace the selected line up to where it intersects the appropriate altitude line.

3. Trace the line on the graph where the actual input and desired altitude lines intersect across the graph to the left hand column to determine indicated inH_2O.

4. Enter this figure in the appropriate block on the Performance Test Sheet.

5. Repeat steps 1 through 4 for all actual low air figures previously entered on Performance Test Sheet.

7-32. SAFETY PRESSURE AND PRESSURE BREATHING TEST. Actual output flows (lpm) given in the Safety Pressure Breathing Test section of the Performance Test Sheet must be converted to indicated output flows (inH_2O). To convert the flows, proceed as follows:

NOTE

Test Stand Input and Output Flow Graphs may vary in makeup, according to the activity performing the test stand calibration. Some test stands may have a single output graph and an input graph with various altitude lines, while others may have separate graphs for each altitude. Ensure specified graph is used.

1. Locate the desired actual output (figure 7-4) at the bottom of the test stand Output Graph.

2. Trace the selected line up to where it intersects the N_2 line, then across the graph to the left hand column to determine inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

NOTE

Flows at 43,000 feet are converted using the 45,000 foot N_2 line on the Output Graph, or the 45,000 foot Output Graph.

4. Repeat steps 1 through 4 for all actual flows given in Safety Pressure/Pressure Breathing Test section of figure 7-4.

7-33. BLINKER (FLOW INDICATOR) TEST. Actual output flows (lpm) for the Blinker Test section of the Performance Test Sheet must be converted to indicated output flows (inH_2O). To convert the flows refer to paragraphs 7-34 through 7-36.

7-34. Diluter Toggle Normal Oxygen Position. Use the air line of the Sea Level Output Graph.

1. Locate the actual output (figure 7-4) at the bottom of the graph and trace the selected line up to the air line.

2. Trace the line from where the actual output and air lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

7-35. Diluter Toggle 100 Percent Oxygen Position (Sea Level). Use the N_2 line on the Sea Level Output Graph.

1. Locate actual output (lpm) (figure 7-4) at the bottom of the graph and trace the selected line up to the N_2 line.

2. Trace the line from where the actual output and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

7-36. Diluter Toggle 100 Percent Oxygen Position (17 inH_2O). Use the 50,000 foot N_2 line on the Output Graph.

1. Locate actual output (lpm) (figure 7-4) at the bottom of the Output Graph (or 50,000 foot Output Graph) and follow selected line up the 50,000 foot N_2 line.

2. Trace the line from where the actual output and N_2 lines intersect across the graph to the left hand column to determine indicated inH_2O.

3. Enter this figure in the appropriate block on the Performance Test Sheet.

7-37. EMERGENCY PRESSURE TEST. Actual output flows (lpm) specified for the Emergency Pressure Test can be found in the Emergency Pressure Test section of the Performance Test Sheet. Actual flows must be converted to indicated flows (inH_2O). To convert the flows, refer to paragraphs 7-38 and 7-39.

7-38. Diluter Toggle Normal Oxygen Position. Use air line of Sea Level Output Graph.

1. Locate actual output (lpm) (figure 7-4) at bottom of Sea Level Output Graph and trace selected line up to air line.

2. Trace the line from where the actual output and air lines intersect across the graph to the left-hand column to determine indicated inH_2O.

3. Enter this figure in appropriate block on Performance Test Sheet.

7-39. Diluter Toggle 100 Percent Oxygen Position. Use N_2 line of Sea Level Output Graph.

1. Locate actual output (lpm) (see figure 7-4) at bottom of Sea Level Output Graph and trace selected line up to N_2 line.

2. Trace the line from where the actual output and N_2 lines intersect across the graph to the left-hand column to determine indicated inH_2O.

3. Enter this figure in appropriate block on Performance Test Sheet.

Section 7-4. Maintenance

7-40. GENERAL.

7-41. This section contains the procedural steps for inspecting, testing, troubleshooting, disassembly, cleaning, assembly and adjusting of aircraft panel mounted oxygen regulators.

NOTE

The regulator shall be considered beyond economical repair when the cost of repair parts exceeds approximately 75% of the cost of the regulator.

Upon completion of any maintenance action (e.g., inspection, repair, modification, etc.), make necessary entries on appropriate forms in accordance with OPNAVINST 4790.2 Series.

7-42. Procedural steps outlined in this section are listed under the aircraft inspection cycle in which they are required, and are in the sequence in which they normally occur.

7-43. Bench tests shall be performed on Aircraft Panel Mounted Oxygen Regulators prior to being placed in service, and during the Phase/Calendar or SDLM (Standard Depot Level Maintenance) Inspection cycle of the aircraft in which installed. See applicable Planned Maintenance System (PMS) publications for specified intervals. In no case shall the interval exceed 448 days. The regulators shall also be subjected to a bench test if malfunction is suspected, and after repair or replacement of damaged parts. To ensure damage did not occur during extensive transportation and shipment (via commercial/U.S. Mail); all regulators shall be subjected to a Bench Test, when received from supply, prior to being placed in service.

7-44. Bench tests shall be performed using Oxygen System Components Test Stand, Model 1172AS100 or 1316AS100. Refer to appropriate ground support equipment manual for identification of test stand controls and indicators referred to in Bench Test.

7-45. Due to the complexity of the 1172AS100 or 1316AS100 test stand, it is essential that the operator become thoroughly familiar with the test stand prior to performing bench tests. Refer to appropriate ground support equipment manual.

7-46. INSPECTION.

7-47. TURNAROUND/PREFLIGHT/POSTFLIGHT/TRANSFER INSPECTION. The Turnaround/Preflight/Postflight/Transfer inspections consist of a Visual Inspection performed in conjunction with the aircraft inspection requirements for the aircraft in which the regulators are installed. Refer to table 7-2 for assistance in troubleshooting. To perform the inspection, visually inspect the following:

1. Electrical performance of panel light.

2. Legibility of all markings.

3. Plastic lighting plate for cracks and discoloration.

4. Low, or improper reading on regulator pressure gage.

5. Emergency pressure control toggle in NORMAL position.

6. Diluter control toggle in 100% OXYGEN position.

7. Supply control toggle in OFF position.

8. Regulator and surrounding area for freedom from dirt and hydrocarbons.

9. Delivery hose and connector for cuts, fraying, kinking, hydrocarbons and general condition.

7-48. If discrepancies are found or suspected, Maintenance Control shall be notified.

7-49. Regulators which do not pass inspection and cannot be repaired in the aircraft, shall be removed and replaced by Ready For Issue (RFI) regulators. Non-RFI regulators shall be forwarded to the nearest maintenance activity having repair capability.

7-50. ACCEPTANCE/SPECIAL/DAILY INSPECTIONS. The Acceptance/Special/Daily Inspections consist of a Visual Inspection followed by a Functional Test. These inspections and tests shall be performed in conjunction with the aircraft inspection requirements for the aircraft in which the regulators are installed. Refer to table 7-2 for assistance in troubleshooting. To perform the inspection, proceed as follows:

WARNING

Make certain that when working with oxygen, clothing, tubing fittings, and equipment are free of oil, grease, fuel, hydraulic fluid, or any combustible liquid. Fire or explosion may result when even slight traces of combustible material come in contact with oxygen under pressure.

7-51. Visually inspect the regulators in accordance with paragraph 7-58.

7-52. Functional Test. To perform Functional Test, proceed as follows:

1. Place supply valve control toggle in ON position.

Table 7-2. Troubleshooting (Daily, Preflight, Special, Turnaround, Transfer and Acceptance Inspections)

Trouble	Probable Cause	Remedy
Regulator fails to deliver oxygen with emergency toggle in emergency position.	Failure of demand valve to operate.	Replace regulator.
Howling sound or vibration noise emitted from regulator.	Pressure reducer faulty.	Replace regulator.
Regulator delivers constant flow of oxygen when all toggles are in OFF/ NORMAL position.	Oxygen inlet valve or demand valve is leaking.	
Oxygen cylinder pressure gage fails to indicate proper pressure.	Defective gage.	Replace regulator.
	Blocked or leaking supply line.	Replace or clean supply line to regulator.
	Low cylinder pressure.	Refill.
	Defective inlet valve assembly.	Replace regulator.
Oxygen not available at mask with proper pressure source to regulator and other than EMERGENCY setting on regulator.	Regulator controls improperly positioned.	Correct position of controls.
	Hose to mask is kinked.	Straighten hose and reposition outlet.
	Regulator not functioning properly.	Replace regulator.
Oxygen not available at mask with proper pressure source to regulator and regulator control set at EMERGENCY.	Kink or other malfunction between hose and mask.	Replace or readjust equipment as necessary.
	Faulty linkage from emergency pressure control toggle.	Replace regulator.
Oxygen available at mask but flow is not indicated.	Defective blinker assembly.	Replace regulator.
Gage pressure drops when regulator is not in use.	Loose or leaking connections.	Tighten or replace connections as necessary.
	Defective inlet valve assembly.	Replace regulator.
Panel lamp fails to light.	Burned out lamp.	Replace lamp.
	Faulty lamp assembly.	Replace regulator.
	Faulty electrical hookup to power source.	Repair electrical hookup (figure 7-5).

2. Place diluter control toggle in NORMAL OXYGEN position.

3. Connect oxygen hose to quick disconnect, place mask to face and inhale. Proper regulator operation will be indicated by flow indicator assembly showing white during inhalation and black during exhalation.

NOTE

While at ground level, the Regulator will not normally supply oxygen from the supply system to the mask. The emergency pressure control toggle must therefore be used in order to check out the oxygen supply function of the regulator at low altitudes. The emergency toggle is spring loaded at the NORMAL position, and will return to NORMAL when released.

4. Hold emergency pressure control toggle in TEST MASK position and observe flow indicator. Flow indicator should be white, indicating a flow through regulator.

7-53. Upon completion of functional test, secure regulator as follows:

1. Disconnect mask from supply hose.

2. Ensure that emergency pressure control toggle returns to NORMAL position.

3. Place diluter control toggle in 100% position.

4. Place supply valve control toggle in OFF position.

7-54. If discrepancies are found or suspected, Maintenance Control shall be notified.

7-55. Regulators which do not pass inspection and cannot be repaired in the aircraft shall be removed and replaced by RFI regulators. Non-RFI regulators shall be forwarded to the nearest maintenance activity having repair capability.

7-56. CALENDAR/PHASED/SDLM INSPECTIONS. Calendar/Phased/SDLM Inspections require removal of the regulators from the aircraft. See applicable Planned Maintenance System (PMS) publications for specified intervals. In no case shall the interval exceed 448 days. Upon removal from the aircraft, regulators shall be subjected to a Visual Inspection and Bench Test. All work shall be performed in a clean dust-free and oil-free area.

7-57. Aircraft panel-mounted regulators failing Visual Inspection or Bench Test shall be repaired. SM&R codes define repairability of components and lowest level of maintenance authorized. Instructions can be found in the current issue of Naval Aviation Maintenance Program, OPNAVINST 4790.2 Series.

7-58. Visual Inspection. To visually inspect the regulator, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Lint-free, White	MIL-C-85043

1. Inspect regulator inlet and outlet for foreign objects, dirt, corrosion, bends, dents, cracks, damaged threads, and any other obvious damage.

2. Ensure that regulator inlet filter is properly installed.

3. Inspect regulator body for bends, dents, cracks, corrosion, condition and legibility of nameplate, security of screws and fittings, and any other obvious damage.

4. Inspect regulator for wear/contamination as follows:

NOTE

It has been determined that this form of lead contamination poses no threat to the aircrewmember's health.

Index numbers in parentheses refer to figure 7-6.

a. Disassemble diaphragm assembly of regulator in accordance with paragraph 7-90.

NOTE

Contamination can be seen in the form of powder which is dull black/gray in color.

b. Using a clean lint-free piece of white cloth, swab area around emergency pressure lever assembly (69). Examine cloth for traces of contamination. Inspect lever assembly for presence of leak counter weight. If present, replace lever assembly with new lever assembly with stainless steel counter weight.

NOTE

If no contamination is found, assemble the diaphragm assembly in accordance with paragraph 7-113 and perform Bench Test. If wear/contamination is found, proceed with steps 4c through 4f.

c. Disassemble regulator in accordance with paragraph 7-77.

d. Clean the disassembled parts in accordance with paragraph 7-94.

e. Assemble regulator in accordance with paragraph 7-100. Ensure emergency pressure lever assembly is replaced by new assembly.

f. Bench Test assembled regulator.

7-59. BENCH TEST.

7-60. The Bench Test shall be performed using an Oxygen System Components Test Stand, Model 1172AS100 or 1316AS100. Proceed as follows:

WARNING

Because of possible vacuum pump explosion, only water-pumped nitrogen, Type 1, Class 1, Grade B (Fed Spec BB-N-411) shall be used in testing oxygen regulators.

For oxygen test stands and purging equipment, use only nitrogen from gray cylinders marked NITROGEN OIL FREE in white letters. Two 3-inch wide black bands mark the tops of these cylinders. Do not use 3500 psig nitrogen supply cylinders. These cylinders cannot be certified contaminate free.

NOTE

Nitrogen supply cylinders utilized in testing oxygen components contain a maximum pressure of 1800 psig. For tests requiring pressures of 1800 psig, utilize highest available pressure, but in no case shall this pressure be less than 500 psig.

Tests are arranged so they proceed from one test to the next with a minimum of flow and altitude changes. Troubleshooting tables are provided following each test.

7-61. Unless otherwise specified in specific tests, the pressure applied, control toggle settings, flows drawn, etc., shall be the same for all 29255 series regulators.

WARNING

Ensure altitude chamber is configured in accordance with NAVAIR 17-15BC-21, WP003 00, Figure 3, sheets 2 thru 4 as applicable. Ensure High Pressure or Low Pressure Hose Assembly listed in NAVAIR 17-15BC-21, WP031 00, Figure 1 or Figure 2 is attached to N_2 Input Connection (18) or Tee Connection (28) in altitude chamber as applicable for the oxygen regulator being tested. Remove hose assembly not being used and cap connection (18) or (28) when not in use. For regulators requiring inlet pressures greater than 175 psig, the High Pressure Hose Assembly in NAVAIR 17-15BC-21, WP031 00, Figure 1 shall be used.

7-62. INWARD LEAKAGE TEST (TEST STAND MODEL 1172AS100 ONLY). To perform the Inward Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter	Fabricate IAW NAVAIR Dwg 1172AS136
1	Oxygen System Components Test Stand	1172AS100

1. Ensure test stand valves are closed, then open N_2 supply cylinder valve.

2. Place regulator supply control valve lever in the OFF position, and diluter control lever in the 100 OXYGEN position.

3. Ensure regulator emergency pressure control lever is in NORMAL position. Cap regulator inlet.

NOTE

Regulator shall be mounted on a horizontal plane in the test chamber.

4. Using an adapter (NAVAIR Drawing No. 1172AS136), connect the regulator outlet to N_2 INPUT connection (18) in the altitude chamber.

5. Connect a line from LOW PRESS. connection (19) to REF. TAP (21) in altitude chamber. Plug the rubber hose attached to piezometer (26) using piezometer plug supplied with test stand.

WARNING

Ensure that no pressure is indicated on regulated high pressure gage (10), regulated low pressure gage (11) and N_2 input pressure gage (27).

Ensure LOW PRESS. REGULATOR (N) is not loaded. This will prevent N_2 supply cylinder pressure from passing on to INLET PRESS. ON/OFF valve (L), which could damage the test item, or cause injury to the test stand operator.

6. Turn INLET PRESS. ON/OFF valve (L) to the ON position.

CAUTION

Vacuum pump vent (54) must be opened one to two turns when operating vacuum pump. Refer to appropriate ground support equipment manual.

7. Turn vacuum pump on.

8. Turn PRESS. SELECTOR valve (D) to the H_2O position, and fully open LEAKAGE CONTROL valve (E).

9. Ensure LEAKAGE SELECTOR valve (F) is in HIGH RANGE position.

NOTE

Leakage rotameter (8) is calibrated with an applied pressure of 70 psig. The inward leakage test requires that a suction of 9.0 inH_2O be applied to the regulator outlet and the rotameter. This pressure difference (9.0 inH_2O vice 70 psig) creates a wide variance between actual leakage and indicated leakage. The maximum allowable leakage for the inward leakage test is 200 ccm. An actual leakage of 200 ccm will be displayed on HIGH RANGE LEAKAGE rotameter (8) as an indicated 740 ccm.

10. Slowly open OUTPUT valve (C) until 9.0 inH_2O suction is indicated on PRESS./SUCTION manometer (4). Any leakage will be displayed on HIGH RANGE LEAKAGE rotameter (8). The maximum allowable indicated leakage is 740 ccm (actual 200 ccm). Record indicated leakage on the Performance Test Sheet.

11. Close OUTPUT valve (C) and LEAKAGE CONTROL valve (E). Turn vacuum pump OFF. Turn INLET PRESS. ON/OFF valve (L) to the OFF position.

12. Disconnect line from LOW PRESS. Connection (19) and REF. TAP (21) in altitude chamber. Disconnect regulator outlet from N_2 INPUT connection (18). Remove piezometer plug from piezometer (26). Remove cap from regulator inlet.

13. If excessive leakage is indicated, locate probable cause, using troubleshooting table 7-3.

7-63. INWARD LEAKAGE TEST (TEST STAND MODEL 1316AS100 ONLY). To perform the Inward Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1316AS100

1. Ensure all test stand valves and regulators are properly secured and open N_2 supply cylinder.

2. Place oxygen regulator supply control valve lever in the OFF position and diluter control lever in the 100% OXYGEN position.

3. Ensure oxygen regulator emergency pressure control lever is in NORMAL position and cap the regulator inlet.

4. Connect a line from 20 TO 200 LEAKAGE connection (20) to REF TAP and connection (21) in altitude chamber.

5. Connect regulator outlet to piezometer (26).

6. Turn on vacuum pump.

7. Turn PRESSURE SELECTOR valve (D) to H_2O position.

8. Place OVERBOARD ON/OFF valve (T) to the ON position.

9. Slowly open INWARD LEAKAGE REF valve (P) until 9 inH_2O suction is indicated on pressure suction manometer (4).

10. Observe OVERBOARD LEAKAGE rotameter (6), maximum allowable leakage is 200 ccm. Record reading on Performance Test Sheet.

11. Close INWARD LEAKAGE REF valve (P) and place OVERBOARD ON/OFF valve (T) in the OFF position.

12. Disconnect line from 20 TO 200 LEAKAGE connection (20) and REF TAP and connection (21).

13. Disconnect regulator outlet from piezometer (26) and remove cap from regulator inlet.

14. If excessive leakage is indicated, locate probable cause using troubleshooting table 7-3.

7-64. OUTLET LEAKAGE TEST. To perform Outlet Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type 1	MIL-L-25567
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

Table 7-3. Troubleshooting (Inward Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 7-9.		
Leakage through aneroid and air shutoff valve assembly.	Air shutoff sleeve (8) damaged.	Replace air shutoff sleeve (8).
	Gasket (16) damaged.	Replace gasket (16).
Leakage at outlet.	Preformed packing (44, figure 7-6) damaged.	Replace preformed packing (44, figure 7-6).
	Loose screws (41).	Tighten screws (41, figure 7-6).
Notes: Probable causes in table 7-7, Troubleshooting (Outward Leakage Test) could also cause excessive inward leakage.		

WARNING

Prior to use, inspect leak detection compound. Compound which is not clear and free from suspended material/sediment is considered contaminated and shall be disposed of. Compound exhibiting peculiar odors such as acetone or alcohol is considered contaminated and shall be disposed of.

1. Place regulator supply valve control toggle in ON position.

2. Place diluter control toggle in 100% OXYGEN position.

3. Ensure emergency pressure control toggle is in NORMAL position.

NOTE

Regulator shall be mounted on a horizontal plane in the test chamber.

4. Connect regulator inlet to N_2 INPUT connection (18) in altitude chamber.

5. Using LOW PRESS. REGULATOR (N), apply 150 psig to the regulator inlet.

6. Slowly turn INLET PRESS. ON/OFF valve (L) to ON.

7. Activate emergency pressure control toggle to allow a flow through the regulator. Return toggle to NORMAL position.

8. Draw a film of leak detection compound across the regulator outlet. Film shall not advance more than 1/2 inch in 10 seconds. If film advance is more than allowable, repeat test three or four times. (Distention could be caused by difference in temperature between inside and outside of regulator.)

9. If film advance continues to be more than allowed, locate probable cause using troubleshooting table 7-4.

10. Relieve pressure to regulator by backing out on LOW PRESS. REGULATOR (N).

7-65. OXYGEN INLET VALVE LEAKAGE TEST. To perform the Oxygen Inlet Valve Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Table 7-4. Troubleshooting (Outlet Leakage Test)

Trouble	Probable Cause	Remedy
Note: Index numbers refer to figure 7-6, unless otherwise noted.		
Demand valve assembly leaking.	Demand valve bushing (113). Demand valve O-rings (106, 108, and 114). Demand valve seat (105.) Stem assembly (107).	Replace defective part(s).
	Valve lever connector (110) set too high.	Adjust by turning valve lever connector (110) clockwise.
Demand valve loading.	Manual safety pressure assembly (28) out of adjustment.	Turn adjusting screw (1) counterclockwise or cap screw (4, figure 7-11) clockwise.
Seat and matched valve assembly (95).	Out of adjustment.	Adjust aneroid assembly (86) counterclockwise.
	Faulty.	Replace seat and matched valve assembly (95).
	Out of Adjustment.	Adjust setscrew (90) clockwise.

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Place regulator oxygen inlet valve toggle in OFF position.

2. Place emergency pressure control toggle in EMERGENCY position.

3. Using HIGH PRESS. REGULATOR (Q), apply 500 psig to inlet of low-pressure regulators. Apply 1800 psig to inlet of high-pressure regulators.

4. Draw a film of leak detection compound across regulator outlet fitting.

5. There is no allowable leakage. If leakage is noted, locate probable cause using troubleshooting table 7-5.

7-66. OVERALL LEAKAGE TEST. To perform the Overall Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

NOTE

Perform this test with diluter toggle in 100% OXYGEN position, and then in the NORMAL OXYGEN position.

1. Place regulator oxygen inlet valve toggle in ON position, and emergency pressure control toggle in NORMAL position.

2. Ensure pressure specified in paragraph 7-65 step 3 is still applied to regulator inlet.

3. Turn INLET PRESS. ON/OFF valve (L) to OFF. Leave regulator oxygen inlet valve toggle in ON position.

4. Leakage will be indicated on the regulator pressure gage. Allowable leakage shall not exceed 60 psig over a two minute period.

5. If leakage is excessive, locate probable cause using troubleshooting table 7-6.

6. Turn HIGH PRESS. REGULATOR (Q) to VENT.

7. Bleed regulator by placing emergency pressure control toggle in EMERGENCY position. Return toggle to NORMAL.

8. Bleed test stand using SYSTEM BLEED valve (S).

Table 7-5. Troubleshooting (Oxygen Inlet Valve Leakage Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers refer to figure 7-8.		
Inlet valve (31, figure 7-6) leaking.	Valve stem (5) leaking.	Replace valve stem (5).
	Seat insert (6) damaged.	Replace seat insert (6).
	Out of adjustment.	Add or delete shims (16).

Table 7-6. Troubleshooting (Overall Leakage Test)

Trouble	Probable Cause	Remedy
Excessive leakage.	Pressure gage screws (8, figure 7-7) loose.	Tighten screws.
	Faulty pressure gage tubing.	Replace pressure gage (4, figure 7-7).
	Faulty pressure gage.	
	Inlet valve housing screws (32, figure 7-6) loose.	Tighten screws (32, figure 7-6).
	Damaged inlet valve preformed packing (22, figure 7-8).	Replace packing (22, figure 7-8).
	Manual safety pressure assembly (28, figure 7-6) loading diaphragm.	Adjust adjusting screw (1, figure 7-11) counterclockwise, or cap screw (4, figure 7-11) clockwise.

7-67. REGULATOR PRESSURE GAGE SCALE AND ERROR TEST. To perform the Regulator Pressure Gage Scale and Error Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Turn INLET PRESS. ON/OFF valve (L) to ON.

CAUTION

LOW PRESS. REGULATOR (N) can only be used when applying pressures of below gage guard setting (165 to 175 psig) to an item under test. For pressures above gage guard setting, HIGH PRESS. REGULATOR (Q) must be used.

2. Using LOW PRESS. REGULATOR (N), slowly increase pressure to each test pressure 100 psig and below specified in figure 7-4.

NOTE

Regulator pressure gage readings must be recorded twice, once before and once after tapping regulator pressure gage.

3. Check tolerance by comparing regulator pressure.

4. Back out on LOW PRESS. REGULATOR (N).

5. Continue test for 500 psig using HIGH PRESS. REGULATOR (Q).

6. Turn HIGH PRESS. REGULATOR (Q) to VENT.

7. Bleed test stand using SYSTEM BLEED valve (S). Bleed regulator using Emergency Pressure Control toggle.

7-68. OUTWARD LEAKAGE TEST. To perform the Outward Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

NOTE

During this test the relief valve shall not be covered. The allowable leakage through this valve at 17 inH_2O is included in the maximum allowable leakage, 0.12 lpm (120 ccm).

1. Place regulator inlet valve control toggle in OFF position, and diluter control toggle in NORMAL OXYGEN position.

2. Connect regulator outlet to piezometer (26) in altitude chamber.

3. Connect a line from LOW PRESS. connection (19) to REF. TAP (21) in chamber.

4. Turn test stand INLET PRESS. ON/OFF valve (L) to the OFF position.

5. Adjust LOW PRESS. REGULATOR (N) until 70 psig is indicated on REGULATED LOW PRESS. gage (11).

6. Turn PRESS. SELECTOR valve (D) to H_2O position, and slowly open LEAKAGE CONTROL valve (E) until 17 inH_2O is indicated on PRESS./SUCTION manometer (4).

NOTE

Maintain 17 inH_2O with LEAKAGE CONTROL valve (E) throughout test.

7. If no leakage is indicated on HIGH RANGE LEAKAGE rotameter (8), turn LEAKAGE SELECTOR valve (F) to low range position, and check for indication of leakage on LOW RANGE LEAKAGE rotameter (7). Allowable leakage is 0.12 lpm (120 ccm).

8. Switch LEAKAGE SELECTOR valve (F) to HIGH position, and close LEAKAGE CONTROL valve (E).

9. Repeat steps 6, 7 and 8 with diluter control lever in 100% OXYGEN position.

10. If leakage is excessive, locate probable cause using troubleshooting table 7-7.

7-69. RELIEF VALVE TEST. To perform the Relief Valve Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Turn PRESS. SELECTOR valve (D) to the Hg position, and place FLOW SELECTOR valve (M) SUIT SIMULATOR position.

2. Ensure diluter control lever is in 100% OXYGEN position.

3. Using VENT PRESS. valve (H), slowly apply 3 inches of mercury (inHg) to the regulator outlet. Regulator relief valve shall be venting at least 45 lpm as indicated on VENT FLOW manometer (3).

4. Close VENT PRESS. valve (H) and bleed pressure down to 1.25 inHg using VENT AMBIENT valve (I). Close valve (I).

5. Turn FLOW SELECTOR valve (M) to the REGULATOR position. Drain suit simulator tank by slowly opening VENT Ambient valve (I).

6. Slowly move PRESS. SELECTOR valve (D) to H_2O position.

7. Turn LEAKAGE SELECTOR valve (F) to LOW position.

8. Open LEAKAGE CONTROL valve (E). Apply and maintain 17 inH_2O to regulator outlet. Maximum allowable leakage is 0.12 lpm (120 ccm).

9. Close LEAKAGE CONTROL valve (E).

10. Back out on LOW PRESS. REGULATOR (N). Bleed pressure with SYSTEM BLEED valve (S).

11. Turn LEAKAGE SELECTOR valve (F) to high range position.

12. If excessive leakage is found or if relief valve fails to vent, locate probable cause using troubleshooting table 7-8.

7-70. FLOW SUCTION TEST. To perform the Flow Suction Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Disconnect hose from LOW PRESS. connection (19) and REF. TAP connection (21) in altitude chamber.

2. Turn vacuum pump ON.

3. Ensure PRESS. SELECTOR valve (D) is in the H_2O position.

5. Ensure INLET PRESS. ON/OFF valve (L) is ON.

6. Place regulator inlet valve control toggle in ON position.

7. Using LOW PRESS. REGULATOR (N), set the inlet pressure at each inlet pressure specified on Performance Test Sheet.

NOTE

Readings must be recorded with regulator diluter control toggle in both NORMAL and 100% OXYGEN positions for each outlet flow specified on Performance Test Sheet.

8. Using OUTPUT valve (C), set flows specified in Performance Test Sheet on OUTPUT manometer (1). Suction values will be displayed on PRESS./SUCTION manometer (4). Record readings on Performance Test Sheet.

NOTE

With no suction on regulator (OUTPUT valve (C) closed), maximum flow through regulator shall not exceed 0.01 lpm. This will cause a slight rise in PRESS./SUCTION manometer (4).

9. Close OUTPUT valve (C).

10. If regulator fails the Flow Suction Test, locate probable cause using troubleshooting table 7-9.

Table 7-7. Troubleshooting (Outward Leakage Test)

Trouble	Probable Cause	Remedy
Note: Index numbers refer to figure 7-6, unless otherwise noted.		
Plug (100) leaking.	Faulty preformed packing (101).	Replace packing (101).
Outlet leaking.	Loose screws (41).	Tighten screws (41).
	Damage preformed packing (44).	Replace packing (44).
Inlet valve (31) leaking.	Loose screws (32).	Tighten screws (32).
	Damaged O-Ring.	Replace O-ring.
Diaphragm cover (57) leaking.	Loose screws (58).	Tighten screws (58).
	Ruptured diaphragm (60).	Replace diaphragm (60).
Diaphragm assembly (63) leaking.	Improper installation.	Reinstall, or replace diaphragm assembly (63).
Flow indicator leaking.	Damaged O-ring (11).	Replace faulty part(s).
	Damaged gasket (4).	
	Bent washer (14).	
	Ruptured diaphragm (17).	
Manual safety pressure assembly leaking.	Damaged preformed packing (29). Damaged washer (7, figure 7-11).	
Check valve adapter and spring assembly leaking.	Damaged check valve disc (4) or adapter (5). Damaged gaskets (36, 38).	

Table 7-8. Troubleshooting (Relief Valve Test)

Trouble	Probable Cause	Remedy
Leakage in excess of 0.01 lpm.	Relief valve (figure 7-12) out of adjustment. Weak spring (2, figure 7-12).	Adjust by turning spring retainer (1) clockwise Replace spring.
Relief valve fails to vent 45 lpm.	Spring (2, figure 7-12) tension too strong.	Replace spring (2, figure 7-12).
	Relief Valve (figure 7-12) out of adjustment.	Adjust by turning spring retainer (1, figure 7-12) counterclockwise.

Table 7-9. Troubleshooting (Flow Suction Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers refer to figure 7-6.		
Flow indicator leaking (High suction).	Damaged blinker assembly (15).	Replace blinker assembly (15).
	Damaged O-ring (11), gasket (4), washer (14) or diaphragm (17).	Replace defective part(s).
Injector assembly (High or low suction).	Stiff injector nozzle (48).	Replace injector nozzle (48).
Inlet valve assembly.	(High suction) Clogged filter (2, figure 7-8).	Replace filter (2, figure 7-8).
	(High or low suction) Inlet valve assembly (figure 7-8) out of adjustment.	Add or delete shims (16, figure 7-8).

7-71. OXYGEN RATIO TEST. To perform the Oxygen Ratio Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Ensure regulator inlet valve control toggle is in ON position, and diluter control toggle is in NORMAL OXYGEN position.

2. Using LOW PRESS. REGULATOR (N), apply 50 psig to regulator inlet of low pressure regulators or 150 psig to regulator inlet of high pressure regulators.

CAUTION

Maintain 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C) while ascending to altitude.

NOTE

To slow ascents in altitude chamber during the following tests, install a restrictor in the BYPASS port (BP). Restrictor can be fabricated locally by drilling a 1/4-inch hole in center of a plug made to fit the bypass opening.

CAUTION

Slowly open VACUUM CONTROL valve (B) and observe PRESS./ SUCTION manometer (4). If rapid increase in pressure is indicated, close down on VACUUM CONTROL valve (B) until pressure stabilizes. This rapid increase of pressure shown on PRESS./ SUCTION manometer (4) is caused by too fast a rate of climb in the altitude chamber.

3. Using VACUUM CONTROL valve (13), ascend to first test altitude shown on Performance Test Sheet.

4. Set output flows specified in Performance Test Sheet with OUTPUT valve (C) and stabilize altitude with INPUT valve (A).

5. Read INPUT FLOW manometer (2), and record readings on Performance Test Sheet.

6. Continue the test for each specified altitude and outlet flow shown on Performance Test Sheet.

7. Close OUTPUT valve (C) and INPUT valve (A). Descend to 27,000 feet using CHAMBER BLEED valve (K).

NOTE

If indicated input flows are not within limits, an Aneroid Closure Test must be performed.

8. If Oxygen Ratio Test was satisfactory, proceed to paragraph 7-73, Safety Pressure and Pressure Breathing Test.

7-72. ANEROID CLOSURE TEST. To perform the Aneroid Closure Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

NOTE

Aneroid Closure Test is performed only if regulator fails Oxygen Ratio Test.

1. Descend to 25,000 feet using CHAMBER BLEED valve (K).

2. Ensure inlet pressure is set at 50 psig for low pressure regulators and 150 psig for high pressure regulators.

3. Set up a flow of 3.0 inH_2O on OUTPUT FLOW manometer (I) with OUTPUT valve (C).

4. Aneroid shall close between 28,000 and 32,000 feet, as indicated by no further advance in altitude on LOW RANGE ALTM. (13).

5. Close OUTPUT valve (C) and descend to sea level using CHAMBER BLEED valve (K).

6. If regulator fails Aneroid Closure Test and/or Oxygen Ratio Test, locate probable cause using trouble-shooting table 7-10.

7-73. SAFETY PRESSURE AND PRESSURE BREATHING TEST. To perform the Safety Pressure and Pressure Breathing Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Using LOW PRESS. REGULATOR (N), apply 50 psig to regulator inlet of low pressure regulators or 150 psig to regulator inlet of high pressure regulators.

NOTE

If chamber altitude is not at 30,000 feet, adjust altitude. Use VACUUM CONTROL valve (B) to increase altitude or CHAMBER BLEED valve (K) to decrease altitude.

2. Using OUTPUT valve (C), draw flows of 0 and 85 lpm through the regulator. Delivery pressure must be within limits shown on Regulator Performance Test Sheet.

Table 7-10. Troubleshooting (Oxygen Ratio/Aneroid Closure Tests)

Trouble	Probable Cause	Remedy
Incorrect oxygen ratio at 10,000 and 15,000 feet (low air).	Excessive check valve spring (3, figure 7-10) tension.	Turn adjusting screw retainer assembly (1, figure 7-10) counterclockwise.
	Leaking injector (47, figure 7-6).	Tighten mixing tube (45, figure 7-6). Replace preformed packing (44, figure 7-6).
	Incorrectly positioned injector sleeve (47, figure 7-6).	Align port in injector sleeve with port in regulator.
High air at 10,000 and 15,000 feet.	Insufficient check valve spring (3, figure 7-10) tension.	Turn adjusting screw (1, figure 7-10) clockwise, or replace springs.
Low air at 20,000 feet.	Distance too short between throttling plate (10, figure 7-9) and aneroid housing (17, figure 7-9).	Install shorter shouldering screw (11, figure 7-9).
High air at 20,000 feet.	Distance too great between throttling plate (10, figure 7-9) and aneroid housing (17, figure 7-9).	Install longer shouldering screw (11, figure 7-9).
Incorrect oxygen ratio at 25,000 to 30,000 feet.	Aneroid (13, figure 7-9) incorrectly adjusted.	Too high-turn aneroid (13, figure 7-9) counterclockwise. Too low-turn aneroid (13, figure 7-9) clockwise.

CAUTION

Maintain 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C) while ascending to altitude.

NOTE

Reading for 0 lpm must also be recorded at each test altitude.

3. Repeat step 2 for each altitude shown on Performance Test Sheet.

4. Close OUTPUT valve (C) and descend to sea level using CHAMBER BLEED valve (K).

5. If safety pressure/pressure breathing flows are not within limits, locate probable cause using troubleshooting table 7-11.

7-74. BLINKER ASSEMBLY TEST. To perform the Blinker Assembly Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

Table 7-11. Troubleshooting (Safety Pressure/Pressure Breathing Test)

Trouble	Probable Cause	Remedy
Note: Index numbers refer to figure 7-6.		
Low safety pressure/pressure breathing.	Pressure breathing aneroid (86) or setscrew (90) on end of stud screw (87) too far from valve control diaphragm (93).	Adjust aneroid or setscrew closer to valve control diaphragm.
High safety pressure/pressure breathing.	Pressure breathing aneroid (86) or setscrew (90) on end of stud screw (87) too close to valve control diaphragm (93).	Adjust aneroid or setscrew farther from valve control diaphragm.
Safety pressure creep at zero flow.	Seat and matched valve assembly (95) leaking.	Replace seat and matched valve assembly.
Safety pressure drops below minimum at higher flows.	Tube and ring assembly (61) leaking, or improperly installed.	Replace preformed packing (62) on end of tube, or install correctly.
	Inner diaphragm (63) and/or outer diaphragm (62) damaged or improperly installed.	Replace, or install correctly.

1. Ensure diluter control toggle is in NORMAL OXYGEN position.

2. Using LOW PRESS. REGULATOR (N), apply 50 psig to regulator inlet of low pressure regulators or 150 psig to regulator inlet of high pressure regulators.

3. Using OUTPUT valve (C), draw 20 lpm through regulator. Blinker must open fully.

4. Reduce output flow to 8 lpm and place diluter control toggle in 100% OXYGEN position. Blinker must remain fully open.

5. Close OUTPUT valve (C). Blinker should close immediately.

6. Close altitude chamber door.

CAUTION

Maintain 3.0 inH_2O on OUTPUT FLOW manometer (1) with OUTPUT valve (C) while ascending to altitude.

7. Using VACUUM CONTROL valve (B), ascend in altitude until 17.0 inH_2O is indicated on PRESS./ SUCTION manometer (4).

8. Open OUTPUT valve (C) and draw a flow of 12 lpm through the regulator. The blinker should be fully open. Close OUTPUT valve (C). Blinker should close immediately.

9. Descend to sea level using CHAMBER BLEED valve (K).

10. If malfunctions are noted, locate probable cause using troubleshooting table 7-12.

7-75. EMERGENCY PRESSURE TEST. To perform the Emergency Pressure Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Table 7-12. Troubleshooting (Blinker Assembly Test)

Trouble	Probable Cause	Remedy
Note: Index numbers in parentheses refer to figure 7-6.		
Flow indicator fails to open or close.	Ruptured diaphragm (17).	Replace diaphragm (17).
	Bent, or distorted blinker assembly (15).	Replace flow indicator.

Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

1. Ensure diluter control toggle is in NORMAL OXYGEN position.

2. Using LOW PRESS. REGULATOR (N), apply 50 psig to regulator inlet of low pressure regulators or 150 psig to regulator inlet of high pressure regulators.

3. Open OUTPUT valve (C) and draw a 10 lpm flow through the regulator.

4. Place emergency control toggle in EMERGENCY position. Pressure indicated on PRESS./SUCTION manometer (4) shall read 2.0 to 4.0 inH_2O.

NOTE

Ensure inlet pressure is maintained when performing step 5.

5. Adjust OUTPUT valve (C) to draw 80 lpm through regulator.

6. Place diluter control toggle in 100% OXYGEN position. Pressure at outlet of regulator, as indicated on PRESS./SUCTION manometer (4), shall be no less than 1.0 inH_2O.

7. Adjust output to 10 lpm. Hold emergency pressure control toggle in TEST MASK position. Output flow, as indicated on PRESS./SUCTION manometer (4), shall be 6.0 to 16.0 inH_2O.

8. If emergency pressure flows are not within tolerance, locate probable cause using Troubleshooting Chart (table 7-13).

9. Close N_2 supply cylinder valve. Using LOW PRESS. REGULATOR (N) and SYSTEM BLEED valve (S), relieve all pressure in the test stand. Secure all test stand valves.

7-76. REGULATOR OXYGEN PURGE. After completion of all tests, the regulator shall be purged with oxygen as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Aviator's Breathing Oxygen Type 1	MIL-O-27210,

1. Connect regulator inlet to a regulated source of aviator's breathing oxygen.

WARNING

Do not use oxygen test stand to regulate the oxygen purge pressure.

2. Apply 500 psig to regulator inlet on low pressure regulators and 500 psig to regulator inlet on high pressure regulators.

Table 7-13. Troubleshooting (Emergency Pressure Test)

Trouble	Probable Cause	Remedy
Note: Unless otherwise noted, index numbers in parentheses refer to figure 7-11.		
High or low emergency pressure.	Demand valve stem assembly (112, figure 7-6) bent or sticking.	Replace demand valve stem assembly (112, figure 7-6).
Low emergency pressure.	Spring (2) tension weak.	Increase spring tension with adjusting screw (1).
High emergency pressure.	Spring (2) tension too strong.	Decrease spring tension with adjusting screw (1).
Test mask pressure low.	Short cap screw (4).	Increase length of cap screw (4) by turning counterclockwise.
Test mask pressure high.	Long cap screw (4).	Decrease length of cap screw (4) by turning clockwise.
Low emergency pressure at 80 lpm flow.	Faulty injector nozzle (48, figure 7-6).	Replace injector nozzle (48, figure 7-6).

3. Position diluter toggle in the 100% position, supply toggle in ON position and emergency pressure control toggle in the emergency position. Allow oxygen to flow 1 to 3 minutes.

4. Shut off oxygen source and disconnect regulator.

NOTE

All equipment forwarded from the organizational level maintenance to the intermediate and/or depot level, shall be accompanied by the appropriate forms in accordance with OPNAVINST 4790.2 Series. The test stand operator and CDI shall sign the Performance Test Sheet, and the original or a copy shall be forwarded to the organizational custodian. Upon completion of the bench test and/or Calendar Inspection, the organizational custodian shall retain the the appropriate forms in accordance with OPNAVINST 4790.2 Series.

7-77. DISASSEMBLY.

7-78. Disassemble the oxygen regulator using the index numbers assigned to figure 7-6, unless otherwise noted. Disassemble the regulator as follows:

CAUTION

All disassembly, inspection, repair and assembly must be done on benches having good lighting and in an area provided with air conditioning or air filtering. Walls, floor and ceiling should have a smooth finish, and be painted with a non-chalking paint which can be kept clean and dust free. It is desirable to keep all parts for each individual regulator separated. Make careful note of the location and quantity of all shims, spacers and packings. Plastic partitioned boxes with covers or similar storage facilities should be used to keep the parts segregated and protected from dirt and moisture. Plastic bags are also useful for storing subassemblies and component parts after cleaning and inspection until ready for assembly.

NOTE

Special tools shall be requisitioned directly from manufacturer (99251), or obtain commercial equivalents.

7-79. PLASTIC LIGHTING PLATE. To remove the Plastic Lighting Plate, proceed as follows:

1. Remove panel light assembly (1, figure 7-7) and lamp (2, figure 7-7).

2. Remove four screws (3) and lift off light plate (2).

7-80. GAGE AND LIGHT MOUNTING PLATE ASSEMBLY. Remove the Gage and Light Mounting Plate Assembly as follows:

1. Remove gaskets (4) and (6). Remove four screws (9) and two screws (8). Carefully remove pressure gage line from inlet valve assembly (31).

2. Lift off gage and light mounting plate assembly (7) and flow indicator O-ring (11).

NOTE

Do not remove electrical wire (10, figure 7-7) unless damaged.

7-81. PRESSURE GAGE ASSEMBLY. Remove the Pressure Gage Assembly as follows:

NOTE

Index numbers in this paragraph refer to figure 7-7 unless otherwise noted.

1. Remove two screws (7), screw (8), nut (5), lock washer (6), and clamp (9). Use 1/4-inch open end wrench to hold nut.

2. Remove pressure gage (4) and O-ring packing (10, figure 7-6).

7-82. INLET VALVE ASSEMBLY. Disassemble the Inlet Valve Assembly as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Special Pliers, Retaining Ring	31TA10528 (CAGE 99251) NIIN 01-096-9701

1. Remove three screws (32), lock washers (33), inlet valve assembly (31) and O-ring packing (34).

NOTE

Index numbers in steps 2, 3 and 4 refer to figure 7-8.

2. Using special pliers remove retaining ring (1). Remove filter (2), sleeve (3) and helical compression spring (4). Remove cap and toggle assembly (8 through 14) as a unit by removing screws (15). Remove shims (16).

3. Using a jeweler's screwdriver, remove valve stem (5), seat insert (6) and O-ring packing (7) from piston assembly (17).

4. Remove piston assembly (17).

7-83. TOGGLE AND FOLLOWER ASSEMBLY. If required, disassemble the Toggle and Follower Assembly as follows:

NOTE

Index numbers in this paragraph refer to figure 7-8.

1. Remove roll pin (9), toggle (8) and follower assembly (10).

2. Remove pin (12) and roller (11) from follower sleeve (13).

7-84. ANEROID AND AIR SHUTOFF VALVE ASSEMBLY. Disassemble the Aneroid and Air Shutoff Valve Assembly as follows:

NOTE

Index numbers in steps 1 through 6 refer to figure 7-9 unless otherwise noted.

When performing step 1 apply pressure to aneroid and air shutoff valve assembly to prevent loss of parts, because it is under spring tension.

1. Using a jeweler's screwdriver, remove retaining ring (3). Remove toggle (1), roll pin (2) and pivot block (4) as a unit.

2. Remove spring retaining cap (5), washer (6), helical compression spring (7), air shutoff sleeve (8) and conical compression spring (9).

3. Remove remainder of assembly from regulator housing (115, figure 7-6) by turning counterclockwise.

4. Remove gasket (16). (Cemented to housing (17)).

5. Using a 5/16-inch deep well socket wrench, remove nut (14) and aneroid screen (15).

NOTE

Retain screw (11) for reuse during assembly.

6. Remove aneroid (13). Remove screw (11), throttling plate (10) and washer (12) from aneroid (13).

7. Remove gasket (36, figure 7-6).

7-85. CHECK VALVE ADAPTER AND SPRING ASSEMBLY. Remove Check Valve Adapter and Spring Assembly (37) and aneroid air shutoff valve assembly from regulator housing by turning regulator housing upside down. Disassemble the check valve adapter and spring assembly in the order of Index Numbers assigned to figure 7-11.

1. Separate the parts by carefully separating prongs on retainer assembly (1).

CAUTION

Use extreme care when handling check valve disc (4) to avoid scratching or marring surface.

2. Remove gasket (38, figure 7-6).

7-86. MANUAL SAFETY PRESSURE ASSEMBLY. Disassemble the Manual Safety Pressure Assembly as follows:

1. Remove two screws (19) and lock washers (20). Remove toggle assembly (18).

2. Remove manual safety pressure assembly (28) from regulator housing (115). Remove preformed packing (29).

3. Remove top plate (25), push rod (24), shim (26) and helical compression spring (27) (by turning manual safety pressure assembly (28) upside down).

NOTE

Index numbers in steps 4 through 6 refer to figure 7-11.

4. To remove the push rod assembly (3), hold manual safety pressure housing (11) between fingers, and apply thumb pressure to adjusting screw (1), thereby applying pressure against manual safety guide (9) which compresses spring (10) and releases pressure from nonmetallic washer (7). Using a 5/16-inch open end wrench, remove push rod assembly (3).

5. Remove manual safety guide (9), helical compression spring (10), adjusting screw (1), helical compression spring (2) and actuating rod (8).

6. Using a 3/16-inch open end wrench, remove hex nut (5) and cap screw (4) from push rod (6).

7-87. BLINKER ASSEMBLY. Disassemble the Blinker Assembly as follows:

1. Using retaining ring pliers, remove retaining ring (12).

2. Carefully remove spacer (13), washer (14), blinker assembly (15), sealing ring (16) and diaphragm (17).

7-88. ANEROID AND MATCHED VALVE ASSEMBLY. Disassemble the Aneroid and Matched Valve Assembly as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Spanner	31TA10529 (CAGE 99251)

1. Remove three screws (92), and remove aneroid housing (91) as a unit.

2. Remove valve control diaphragm (93). Using retaining ring pliers, remove retaining ring (94).

3. Remove seat and matched valve assembly (95), O-ring (96) and helical compression spring (98).

4. Loosen setscrew (53) in aneroid housing (91). Using spanner wrench remove aneroid (86).

5. Remove screw (87), spring retainer (88) and helical spring (89).

7-89. RELIEF VALVE ASSEMBLY. Disassemble the Relief Valve Assembly as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Punch, Relief Valve	31TA10523 (CAGE 99251)

1. Using retaining ring pliers, remove retaining ring (49), relief valve screen (50), relief valve assembly (51) and preformed packing (52).

NOTE

Index numbers in steps 2 and 3 refer to figure 7-12.

2. Remove spring retainer (1), relief valve spring (2) and relief valve disc (3) from relief valve housing (5).

3. Using relief valve punch, remove relief valve seat (4) from relief valve housing (5).

7-90. DIAPHRAGM ASSEMBLY. Disassemble the Diaphragm Assembly as follows:

1. Remove four screws (58) and lock washers (59). Remove diaphragm cover (57) and diaphragm and plate assembly (60).

2. Remove tube and ring assembly (61) and preformed packing (62). Remove diaphragm assembly (63) by carefully moving it up and away from the outlet side of the regulator.

7-91. EMERGENCY PRESSURE LEVER ASSEMBLY AND DEMAND VALVE LEVER ASSEMBLY. Disassemble the Emergency Pressure Lever Assembly, and the Demand Valve Lever Assembly as follows:

NOTE

Ensure lead counterweight is not present on demand valve lever. If demand valve lever has lead counterweight, discard it and order new demand valve lever with stainless steel counterweight.

1. Using retaining ring pliers, remove retaining ring (99). Remove plug (100) and preformed packing (101) by pushing from inside regulator to outside with a blunt instrument.

2. Remove bind screw (55) and lock-o-seal (56) from regulator.

3. Remove two screws (83) from lever bracket (82).

4. Remove two screws (76) from lever bracket (78).

5. Insert jeweler's screwdriver through hole that bind screw (55) was removed from and remove valve lever connector (110) from demand valve stem assembly (112).

6. Carefully depress spring guide (84) against helical compression spring (85). Slide demand valve lever assembly (75) away from demand valve stem (109), detaching demand valve lever assembly (75).

7. Remove spring guide (84) and helical compression spring (85). Remove demand valve lever assembly (75) and emergency pressure lever assembly (69).

7-92. DEMAND VALVE. Disassemble the Demand Valve as follows:

1. Using retaining ring pliers, remove retaining ring (102), valve retainer (103) and preformed packing (104).

2. Apply gentle pressure to demand valve through plug (100) port, and remove demand valve assembly from regulator housing (115).

3. Remove extension stem assembly (107), O-ring packing (108) from demand valve seat (105).

4. Remove O-ring (106), demand valve bushing (113) and O-ring (114).

7-93. OUTLET, MIXING TUBE, AND INJECTOR ASSEMBLY. Disassemble the Outlet, Mixing Tube and the Injector Assembly as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Spanner, Piloted	QB-70750-9 (CAGE 55974) NIIN 00-302-6456

1. Remove two screws (41), lockwashers (42), flat washers (43) and outlet (40). Remove preformed packing (44).

2. Using piloted spanner wrench, remove mixing tube (45).

3. Remove mixing tube screen (46), injector sleeve (47) and injector nozzle (48).

7-94. CLEANING.

7-95. To clean the disassembled oxygen regulator body and component parts, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Bag, Plastic	MIL-B-117 (CAGE 81349)
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

*If available (optional item)

WARNING

Do not use oil, or any material containing oil, in conjunction with oxygen equipment. Oil, even in a minute quantity, coming in contact with oxygen can cause explosion or fire. Dust, lint and fine metal particles are also dangerous.

1. Clean all metallic parts in accordance with NAVAIR 13-1-6.4-1.

WARNING

Do not attempt to clean any elastomer parts that have become contaminated with oil or grease. All such parts shall be replaced.

2. Prior to installation, wash all silicone rubber parts in distilled water and blow dry with oil-free nitrogen.

3. After cleaning, all internal surfaces shall be examined for cleanliness. Should further contamination be found, reclean the parts in accordance with step 1.

4. Cleaned parts shall be sealed in plastic bags for storage. Bag all complete assemblies that are not immediately returned to service.

7-96. INSPECTION OF DISASSEMBLED REGULATOR.

7-97. Inspect the disassembled regulator body and component parts in accordance with the following special instructions and table 7-14.

1. Make certain lamp (2, figure 7-7) is wired in accordance with figure 7-5.

7-98. REPAIR.

Materials Required

Quantity	Description	Reference Number
As Required	Lacquer, white	MIL-L-6805 (CAGE 81349)

7-99. Unless otherwise specified, all parts found to be damaged or defective shall be replaced. Defects on white painted surfaces may be touched-up using Lacquer.

7-100. ASSEMBLY.

7-101. Assembly of Aircraft Panel Mounted Regulators is essentially the reverse of disassembly. Tests are required on subassemblies as they are assembled into the regulator. Adjustment and calibration is also performed at time of assembly.

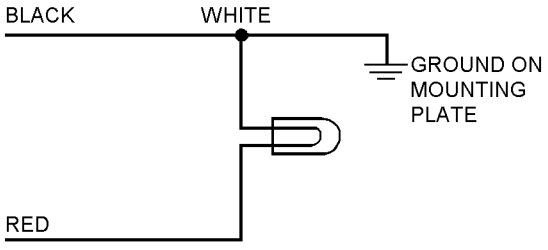

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Figure 7-5. Wiring Diagram

Table 7-14. Inspection of Disassembled Regulator Components

Nomenclature	Figure and Index No.	Inspect For
Gage and light mounting assembly.	7-6-7	Cracks or other damage to plate or lamps.
		Check fasteners, spring and cups for proper mating action.
Manual safety pressure assembly.	7-6-28	Smooth operation (no sticking or binding).
Inlet valve assembly.	7-6-31	Scratches or excessive wear on sealing surfaces.
Aneroid and air shutoff assembly.	7-6-35	Scratches or excessive wear on sealing surfaces.
Check valve adapter and spring assembly.	7-6-37	Scratches or excessive wear on sealing surfaces.
Relief valve assembly.	7-6-51	Scratches or excessive wear on sealing surfaces.
Diaphragm assembly.	7-6-63	Pinholes, minute ruptures, discoloring, spotting or other damage likely to cause leakage in diaphragm. Check diaphragm rim for cuts or other damage on sealing surfaces.
Emergency pressure lever assembly.	7-6-69	Disintegration of lead counter weight.
Aneroid assembly.	7-6-86	Evenly spaced convolutions (no cocks or dents).
Lamp.	7-7-2	Burned out condition by applying 28 Vdc.
Tube and pressure gage assembly.	7-7-4	Chips or breaks in glass. Tubing for kinks or blockage.
Wire assembly.	7-7-10	Damaged insulation and loose solder joints.
Fasteners.	7-7-12	Excessive wear in slots.
Filter.	7-8-2	Clogging.
Valve stem.	7-8-5	Scratches, rings, or excessive wear.
Seat insert.	7-8-6	Scratches, rings, or excessive wear.
Throttling plate.	7-9-10	Smooth, flat surfaces, entirely free of nicks or scratches.
Aneroid assembly.	7-9-13	Evenly spaced convolutions (no cocks or dents).
Retainer assembly.	7-10-1	Bent or deformed prongs.
Check valve disc.	7-10-4	Smooth, flat surfaces, entirely free of nicks or scratches.

Table 7-14. Inspection of Disassembled Regulator Components (Cont)

Nomenclature	Figure and Index No.	Inspect For
Cap screw.	7-10-4	Marks or scratches.
Manual safety housing.	7-10-11	Nicks or scratches on seat surface.
Relief valve disc.	7-12-3	Bright surface, free of nicks and scratches on lapped and polished side of disc.
Relief valve seat.	7-12-4	Nicks, scratches or excessive wear.
Emergency pressure lever assembly.	7-6-69	Check for presence of lead counter weight. If present, replace lever with one containing stainless steel counter weight.

WARNING

Prior to use, inspect leak detection compound. Compound which is not clear and free from suspended material/sediment is considered contaminated and shall be disposed of. Compound exhibiting peculiar odors such as acetone or alcohol is considered contaminated and shall be disposed of.

CAUTION

Use extreme care in fitting precision parts to prevent damage. Ensure each component is dust- and dirt-free.

NOTE

All silicone-rubber parts shall be discarded and replaced with new items at time of assembly. They shall be washed in accordance with paragraph 7-95, step 2, prior to installation.

Unless otherwise noted, index numbers refer to figure 7-6.

7-102. Assembly is effected in two separate operations; assembly of components into subassemblies (mounting plate and controls assembly, injector assembly, etc.), and assembly of the subassemblies into the regulator body.

7-103. RELIEF VALVE ASSEMBLY. To assemble the Relief Valve Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Glyptal	1201B (General Electric)

NOTE

Index numbers in steps 1 through 3 refer to figure 7-12. Index numbers in steps 4 and 5 refer to figure 7-6.

1. Lock and seal relief valve seat (4) to relief valve housing (5) using Glyptal.

2. Before installing relief valve disc (3), polish surface of disc that contacts relief valve seat (4).

3. Install spring (2) and spring retainer (1) in relief valve housing (5).

4. Install preformed packing (52) and relief valve assembly (51) in regulator housing (115).

5. Install relief valve screen (50) and retaining ring (49).

6. Final adjustment of spring retainer will be made during post assembly bench test.

7-104. ANEROID AND AIR SHUTOFF VALVE ASSEMBLY. To assemble the Aneroid and Air Shutoff Valve, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Adhesive	RTV-734 (CAGE 94499)
As Required	Toluene	TT-T-548 (CAGE 81348)
As Required	Xylene	TT-X-916 (CAGE 81348)

NOTE

Index numbers in this paragraph refer to figure 7-9.

1. Cement gasket (16) to aneroid housing (17) using method described in steps 2 through 5.

2. Clean surfaces to be bonded with Xylene or Toluene and allow to air dry.

3. Coat the metal sealing surface of the aneroid housing (17) and gasket (16) with adhesive RTV-734 and allow to air dry for five minutes.

4. Bond gasket (16) to aneroid housing (17) and allow to cure at room temperature for 24 hours with a minimum relative humidity of 20 percent.

5. Visually examine to be certain there are no air pockets in the bond. The parts must flat, even and firmly cemented to each other.

6. Use same screw (11) removed at disassembly.

7. Assemble washer (12), throttling plate (10) and screw (11) to aneroid (13).

8. Screw aneroid (13) into aneroid housing (17).

9. Install aneroid screen (15) and nut (14) on aneroid (13).

10. Assemble conical compression spring (9), air shutoff sleeve (8), helical compression spring (7), washer (6), retaining cap (5) and pivot block (4) into aneroid housing (17). Secure in place with retaining ring (3).

11. Final adjustments to the aneroid and air shutoff valve assembly will be accomplished during post assembly bench test.

7-105. CHECK VALVE ADAPTER AND SPRING ASSEMBLY. To assemble the Check Valve Adapter and Spring Assembly, proceed as follows:

NOTE

Index numbers in steps 1 and 2 refer to figure 7-10.

1. Install spring adapter assembly (2) into retainer assembly (1).

NOTE

Handle retainer assembly (1) carefully. Do not bend the four prongs.

2. Install aneroid check valve spring (3), check valve disc (4) and check valve adapter (2) into retainer assembly (1).

3. Final adjustment of the air check valve adapter and spring assembly (37) will be accomplished during post assembly bench test.

4. Install gasket (38) and air check valve adapter and spring assembly (37) into regulator housing (115).

5. Install gasket (36) and aneroid and air shutoff valve assembly (35) into regulator housing (115).

7-106. INLET VALVE ASSEMBLY. To assemble the Inlet Valve Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240AC, Type II, Lubricant	NIIN 00-961-8995 (CAGE 81349)
As Required	Compound, Leak Detection, Type 1	MIL-L-25567
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

Support Equipment Required

Quantity	Description	Reference Number
1	Punch, Filter	31TA10527 CAGE 99251
1	Fixture, Spring Clamp	31TA10203 (CAGE 99521) NIIN 00-831-5376
1	Oxygen System Components Test Stand	1172AS100 or 1316AS100

NOTE

Unless otherwise noted, index numbers in this paragraph refer to figure 7-8.

Use only new preformed packings and O-rings. Clean in accordance with paragraph 7-95 step 2, prior to installation.

1. To assemble piston assembly (17), install shim (21) on piston (23). Using spring clamp fixture, install helical compression spring (20) and guide washer (19). Secure to piston (23) with spring retaining screw (18).

2. Apply a light film of lubricant to preformed packing (22) and insert into inlet valve body (24).

WARNING

Ensure insert seat (6) is correct part for regulator being repaired. Check insert seat part number against Usable On Code column. Insert seat (P/N 1602937-1) is clear in color and can be used only on 50-500 psi (low pressure) type ventilators. Insert seat (P/N 1602937-2) is dark or gray in color and can be used on either low or high pressure regulators.

3. Insert O-ring packing (7), seat insert (6) and valve stem (5) into inlet body (24).

4. Align valve stem (5) with threaded hole in piston assembly (17). Insert a screwdriver through inlet port of inlet valve body (24) and tighten valve stem (5). Push down on piston assembly (17) while tightening valve stem (5) raise stem off seat insert (6). Turn valve stem (5) into piston assembly (17) until top of piston assembly is 1/2-inch from top of inlet valve body (24).

5. Salvage the tubing and inlet valve attaching block from a discarded pressure gage assembly. Cut, pinch and silver solder the tubing end.

6. Install pinched-and-soldered tubing and O-ring (10, figure 7-6) into inlet valve pressure gage port with screws (8, figure 7-6).

7. Install helical compression spring (4) and sleeve (3) into inlet valve body (24). Using filter punch, install filter (2). Secure in place with retaining ring (1).

NOTE

At this point, it is necessary to check the inlet valve assembly for leakage.

8. Using test stand, apply 50 psig to inlet of the valve assembly. Apply leak detection compound to valve outlet. There shall be no leakage.

9. If leakage occurs, refer to troubleshooting table 7-5.

10. Install following assembly (10) and toggle assembly (8) on toggle cap (14). Secure with roll pin (9).

11. Insert appropriate shim (16) into toggle cap (14) and secure toggle cap (14) to inlet valve body with screw (15).

12. Repeat inlet valve leakage test (step 8).

13. Turn off nitrogen source, bleed pressure from test stand and inlet valve assembly. Disconnect inlet valve from test stand.

7-107. ANEROID AND MATCHED VALVE ASSEMBLY. To assemble the Aneroid and Matched Valve Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Adhesive	RTV-734 (CAGE 94499)
As Required	Tape, Anti-Seize	MIL-T-27730 (CAGE 81349) NIIN 00-398-4130
As Required	Krytox 240AC, Type II, Lubricant	NIIN 00-961-8995 (CAGE 81349)

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Spanner	31TA10529 (CAGE 99251)

1. Apply a light film of lubricant to helical compression spring (98). Install O-ring (97) and matched valve assembly (95) into regulator housing (115). Secure in place with internal retaining ring (94).

2. Install setscrew (90) into stud screw (87). Lock threads of setscrew (90) in place using RTV 734 adhesive.

3. Wrap threads of stud screw (87) with 1 1/2 turns of anti-seize tape. Keep tape back one thread from end of screw.

4. Install stud screw (87) into spring retainer (88).

5. Assemble aneroid assembly (86), helical compression spring (89) and spring retainer (88).

6. Using spanner wrench, install aneroid assembly (86) into aneroid housing (91).

7. Installation of aneroid housing assembly (91) will be accomplished after demand valve/seat and matched valve leakage test (paragraph 7-112).

7-108. DEMAND VALVE ASSEMBLY. To assemble the Demand Valve Assembly, proceed as follows:

CAUTION

Use extreme care during assembly to prevent damage to demand valve seat (105).

1. Install O-ring packing (114) and demand valve bushing (113) ensuring hole in bushing aligns with hole in regulator housing (115).

2. Install O-ring (108) and stem assembly (107) into demand valve seat (105).

3. Assemble demand valve stem (112), locking insert (111) and valve lever connector (110) . Turn valve lever connector (110) into demand valve stem (112) until four threads are showing.

4. Pass end of extension stem assembly (107) through demand valve seat (105) and assembly to valve stem assembly (109). Turn valve stem assembly (109) onto extension stem assembly (107) until valve is just seated.

5. Install O-ring packing (106).

6. Install extension stem assembly (109), demand valve seat (105), O-ring (108) and demand valve stem assembly (106) as a unit into the regulator housing (115). Ensure hole in demand valve seat (105) aligns with hole in inlet valve.

7. Install preformed packing (104) so that it lies around demand valve seat (105). Install valve retainer (102) into regulator housing (115). Secure in place with retaining ring (102).

7-109. MANUAL SAFETY PRESSURE ASSEMBLY. To assemble the Manual Safety Pressure Assembly, proceed as follows:

NOTE

Index numbers in steps 1 through 5 refer to figure 7-11.

1. Assemble cap screw (4), hex nut (5) and push rod (6) until approximately 5/16-inch of cap screw (4) extends from push rod (6). Tighten hex nut (5) against push rod (6) after adjusting cap screw (4).

2. Install helical compression spring (10), manual safety guide (9) and actuating rod (8) in manual safety housing (11).

3. Install helical compression spring (2). Secure with adjusting screw (1). Adjusting screw (1) shall be flush with top of safety pressure assembly (28).

4. Hold manual safety housing (11) between fingers and apply pressure on adjusting screw (1).

5. Place washer (7) on manual safety housing (11). Align push rod assembly (3) with actuating rod (8) threads. Using a 5/16-inch open end wrench, tighten push rod assembly (3) to actuating rod (8).

NOTE

Index numbers in steps 6 and 7 refer to figure 7-7.

6. Install preformed packing (29) and manual safety pressure assembly (28) into regulator housing (115).

7. Install helical compression spring (27), shim (26), top plate (25), push rod (24) and toggle assembly (18) into regulator housing (115) with emergency position in board. Attach with two washers (20) and two screws (19).

NOTE

Ensure toggle returns from TEST MASK position to NORMAL when released.

8. Final adjustments will be performed during post assembly bench test.

7-110. EMERGENCY PRESSURE LEVER ASSEMBLY AND DEMAND VALVE LEVER ASSEMBLY. To assemble the Emergency Pressure Lever Assembly and Demand Valve Lever Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240AC, Type II, Lubricant	NIIN 00-961-8995 (CAGE 81349)

NOTE

Ensure demand valve lever has stainless steel counterweight and not a lead counterweight.

1. If necessary to assemble demand valve lever assembly (75), or emergency pressure lever assembly (69), coat threads on setscrews with Krytox 240AC before assembling levers. Using pliers, crimp pins (70) and (77) during assembly.

2. Install emergency lever assembly (69) into regulator housing (115) and secure loosely with screws (83).

3. Insert demand valve lever assembly (75) through plug (100) port.

4. Using a pair of tweezers insert valve lever connector (110) in plug (100) port. Using a jeweler screwdriver inserted in screw (55) hole; Screw valve lever connector (110) into demand valve stem assembly (112) until 4 threads remain showing.

NOTE

It may be necessary to hold demand valve stem assembly (112). If so care must be taken to ensure no damage to demand valve stem assembly (112).

5. Compress guide (84) and spring (85) and place in cavity under demand valve lever assembly (75).

6. Place fork of demand valve lever assembly (75) into slot of valve lever connector (110) and secure demand valve lever (75) to regulator housing (115) with screws (76).

7. Tighten screws (83).

8. Depress emergency pressure lever assembly (69) and demand valve lever assembly (75) while observing through plug (100) port for proper operation of demand valve assembly.

7-111. DEMAND VALVE LEVER AND EMERGENCY PRESSURE LEVER ASSEMBLY ADJUSTMENTS. Adjust Demand Lever Assembly (75) and Emergency Pressure Lever Assembly (69) as follows:

1. To adjust demand valve lever assembly (75), insert jeweler's screwdriver through screw (55) hole, in regulator housing (115) and turn valve lever connector (110). While making adjustments, prevent valve stem assembly (109) from turning with needle nose pliers inserted through plug (100) port.

2. Adjust demand valve lever (75) so that the back of the lever is 1/32 inch lower than the front. Take the back measurement in front of setscrew (79). Take the front measurement between the two access holes in lever bracket (78). Measurements are made from the bottom of regulator housing (115).

3. Turn setscrew (72) on lever bracket (82) so that emergency pressure lever assembly (69) is 5/16 inch above demand valve lever assembly (75) when emergency pressure lever (69) is depressed far enough to touch lever assembly (75). Take measurement from forked end of emergency pressure lever assembly (69) down to demand valve lever assembly (75).

4. Install O-ring (101), plug (100), retaining ring (99), screw (55) and seal (56).

5. After demand valve lever adjustments are completed, install O-ring packing (34) and inlet valve assembly (31) on regulator housing (115) with screws (32) and lock washers (33).

7-112. DEMAND VALVE/SEAT AND MATCHED VALVE LEAKAGE TEST. Test the Demand Valve/Seat and Matched Valve Assembly for leakage as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type 1	MIL-L-25567

Support Equipment Required

Quantity	Description	Reference Number
1	Tube, Leak Test	31TA10205 NIIN 00-831-5428

1. Screw leak test tube into injector nozzle port in regulator housing. Apply 50 psig pressure to the regulator inlet and draw a film of leak detection solution across the outlet of the leak test tube.

2. If film distends, leakage is indicated. Recheck assembly and adjustments of valve stem assembly (109) and demand valve lever assembly (75).

3. After test, remove leak test tube.

4. Draw a film of leak detection solution over retaining ring (94) and matched valve assembly (95).

5. If film distends, leakage is indicated. Recheck retaining ring (94) and O-ring (97) for proper installation. Check matched valve assembly (95) for scoring. Replace as required.

6. Install diaphragm (93) (with protruding ridge up) on aneroid housing (91) into regulator housing (115). Secure with screws (92).

7. When installing aneroid housing, rotate the assembly so hole for setscrew (53) is accessible from front of regulator between inlet valve assembly (31) and aneroid and air shutoff assembly (35).

8. Final adjustment of the seat and matched valve assembly will be accomplished during post assembly bench test.

7-113. DIAPHRAGM ASSEMBLIES. To assemble the Diaphragm Assemblies, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Adhesive	RTV-734 (CAGE 94499)
As Required	Krytox 240AC, Type II, Lubricant	NIIN 00-961-8995 (CAGE 81349)

1. When assembling diaphragm (67) to diaphragm plate (68), cement parts together with adhesive RTV 734.

2. Apply a light coat of Krytox 240AC to inner surface of diaphragm plate (66), inner surface of diaphragm cover (57) and around diaphragm flange (65). Install diaphragm nut (64) and tighten.

3. Attach diaphragm assembly (63) to emergency pressure lever assembly (69) by sliding lever forks over flange (65).

4. Install preformed packing (62) on the tube and ring assembly (61). Install tube and ring assembly (61), diaphragm and plate assembly (60) and cover (57) on regulator housing (115). Secure with four washers (59) and four screws (58).

5. Install filter (54).

7-114. OUTLET, MIXING TUBE, AND INJECTOR ASSEMBLY. To assemble the Outlet, Mixing Tube, and Injector Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
1	Wrench, Spanner, Piloted	QB-70750-9 (CAGE 55974) NIIN 00-302-6456

1. Insert injector nozzle (48) and injector sleeve (47) into regulator housing (115). Align window of injector sleeve (47) with port from aneroid and air shutoff assembly (35).

2. Install screen assembly (46) and mixing tube (45). Tighten mixing tube with piloted spanner.

3. Install preformed packing (44) and outlet (40) into regulator housing (115). Secure with plain washers (43), lock washers (42) and screws (41).

7-115. BLINKER ASSEMBLY. To install Blinker Assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Compound, Sealing	MIL-S-22473 (CAGE 73925)
As Required	Glyptal	1201B (General Electric)

Support Equipment Required

Quantity	Description	Reference Number
1	Sight Gage, Parallel	31TA10087 (CAGE 99521) NIIN 00-572-5565

1. Install diaphragm assembly (17), (with metal plate facing up), sealing ring (16), (flat surface facing up) blinker assembly (15), flat washer (14) and spacer (13) in regulator housing (115).

2. Place parallel sight gage over blinker assembly (15) and align.

3. Install retaining ring (12) and O-ring (11).

4. Place protecting cover (P/N 31TA10086) over blinker assembly.

NOTE

Regulator pressure gage scale and error test cannot be performed at this time.

7-116. Perform bench test in accordance with paragraph 7-59 through 7-75.

7-117. The following operations must be accomplished prior to completing assembly of the regulator.

1. Following adjustment of relief valve (table 7-8), apply sealing compound to retainer threads, install relief valve screen (50), and retaining ring (44).

2. Aneroid and Air Shutoff Valve Assembly. When proper adjustment has been obtained (table 7-10), tighten nut (14, figure 7-9) using 5/16-inch deep socket to secure aneroid assembly. Apply Glyptal to adjusting screw (1, figure 7-10) in retainer assembly. Ensure screw slot is clear of Glyptal.

3. Aneroid and Matched Valve Assembly. When final adjustment has been obtained, install setscrew (53). Secure screws, (53 and 92, figure 7-6) in place with Glyptal.

7-118. GAGE AND LIGHT MOUNTING PLATE ASSEMBLY. To assemble the Gage and Light Mounting Plate Assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Cover, Protecting	31TA10086 (CAGE 99251) NIIN 00-571-3666

NOTE

Index numbers in steps 2 and 3 refer to figure 7-7.

1. Remove protective cover from blinker assembly.

2. Assemble pressure gage assembly if required. Attach pressure gage (4) to mounting plate assembly (11) with two screws (7).

3. Attach wire assembly (10) to mounting plate assembly (11) with clamp (9), screw (8), lock washer (6) and nut (5).

4. Remove the pinched-and-soldered tubing and block from inlet valve body (31) by removing two screws (8).

5. Install new O-ring (10) on pressure gage tubing block. Secure block to inlet valve body (31) with two screws (8).

6. Attach gage and light mounting plate assembly (7) to regulator housing (115) with screws (9).

7-119. PLASTIC LIGHTING PLATE. To assemble and install the Plastic Lighting Plate, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Plastic Bag	MIL-B-117 (CAGE 81349)

1. Install gaskets (4) and (6).

2. Attach plastic plate (2) to gage and light mounting plate assembly (7) with four screws (3).

3. Install lamp (2, figure 7-7) and light assembly (1, figure 7-7).

7-120. Place air shutoff toggle in 100% OXYGEN position. Make necessary entries on appropriate forms in accordance with OPNAVINST 4790.2 Series.

7-121. After bench test, place regulator in plastic bag for storage.

Section 7-5. Illustrated Parts Breakdown

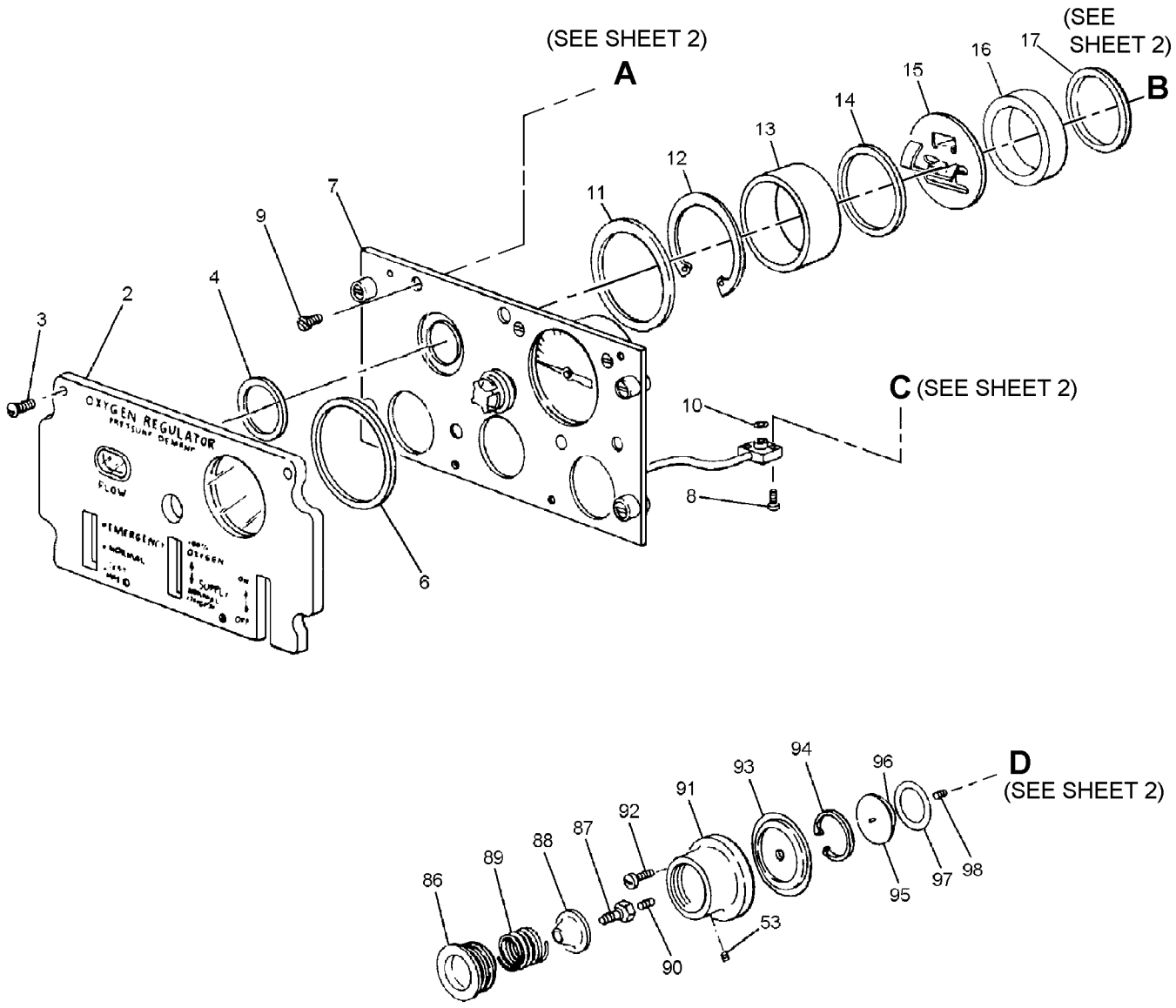
7-122. GENERAL.

7-123. This section lists and illustrates the assemblies and detail parts of the regulators listed below, and manufactured by Litton Life Support, formerly Bendix Corporation, CAGE 99251.

Part Number

29255-10A-A1	29255-10A-A17A
29255-10A-A1A	29255-10A-B9
29255-10A-A2	29255-10A-B9A
29255-10A-A2A	29255-10A-B10
29255-10A-A4	29255-10A-B10A
29255-10A-A4A	29255-10A-B11
29255-10A-A5	29255-10A-B11A
29255-10A-A5A	29255-6B-A1
29255-10A-A9	29255-6B-A1A
29255-10A-A9A	29255-6B-B1
29255-10A-A17	29255-6B-B1A

7-124. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.



00700601

Figure 7-6. 29255 Panel Mounted Oxygen Regulators (Sheet 1 of 3)

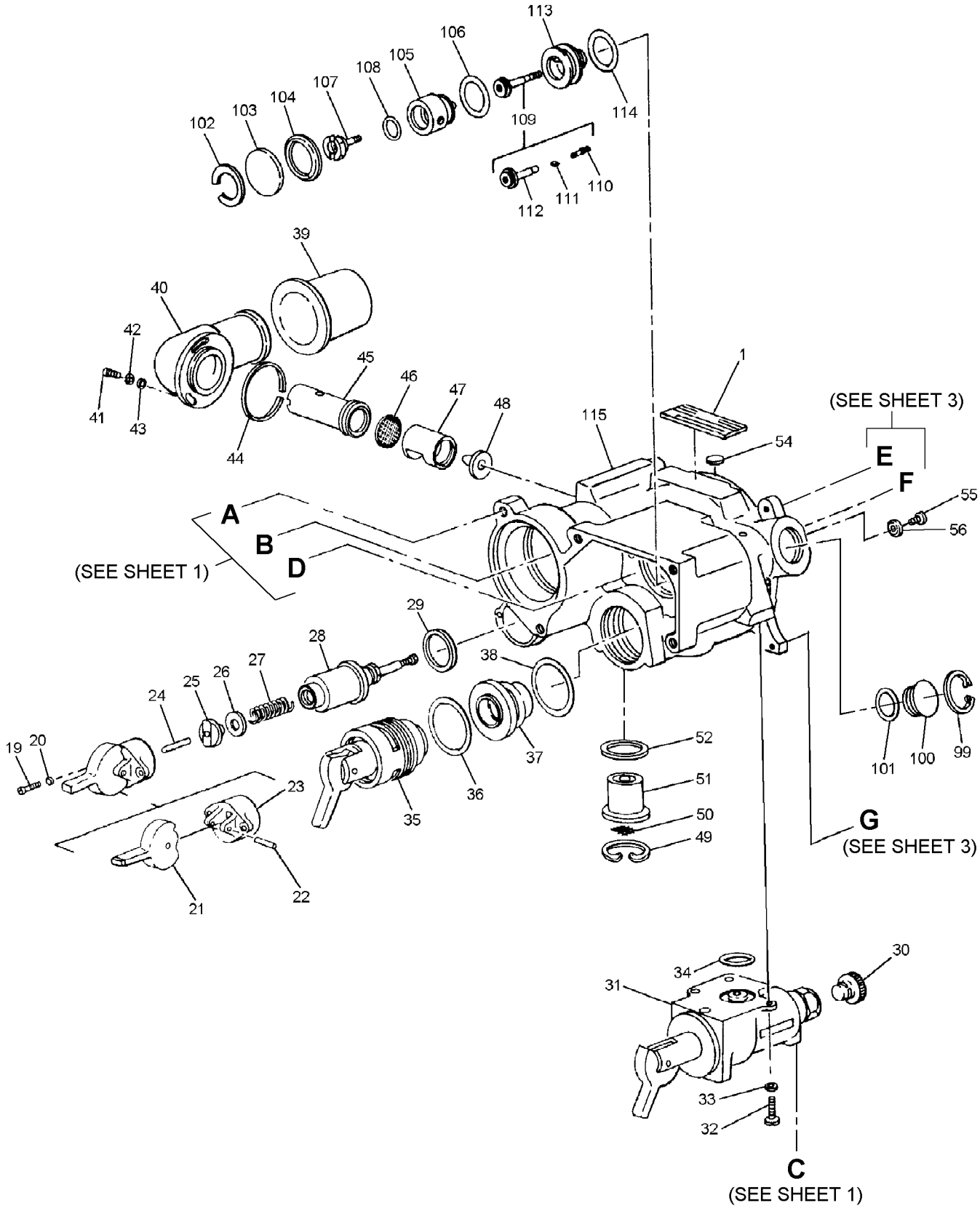
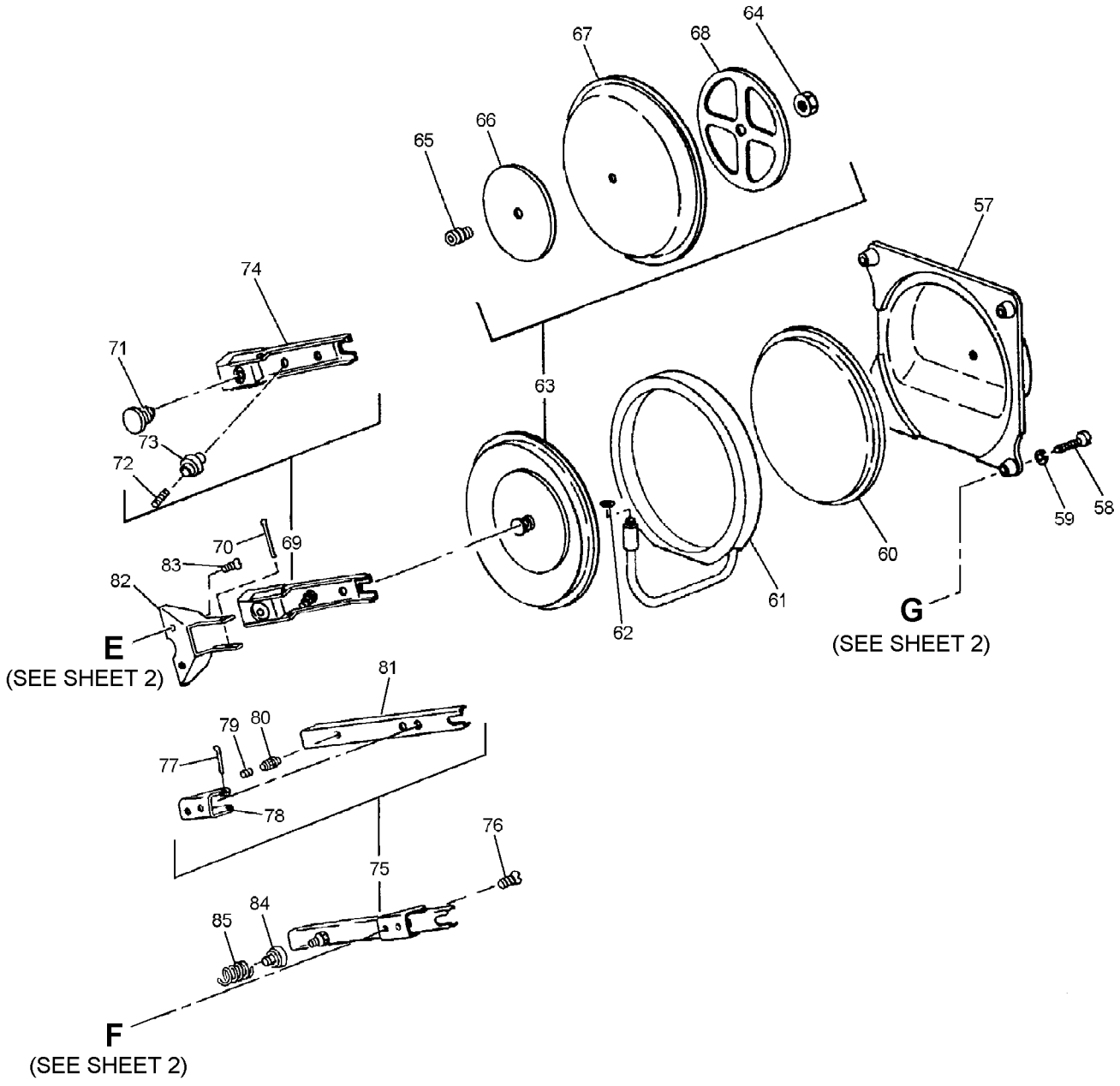


Figure 7-6. 29255 Panel Mounted Oxygen Regulators (Sheet 2 of 3)



00700603

Figure 7-6. 29255 Panel Mounted Oxygen Regulators (Sheet 3 of 3)

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-6	29255-10A-A1	REGULATOR, Pressure demand oxygen	1	A
	29255-10A-A1A	REGULATOR, Pressure demand oxygen	1	A
	29255-10A-B9	REGULATOR, Pressure demand oxygen	1	B
	29255-10A-B9A	REGULATOR, Pressure demand oxygen	1	B
	29255-6B-B1	REGULATOR, Pressure demand oxygen	1	C
	29255-6B-B1A	REGULATOR, Pressure demand oxygen	1	C
	29255-10A-A2	REGULATOR, Pressure demand oxygen	1	D
	29255-10A-A2A	REGULATOR, Pressure demand oxygen	1	D
	29255-10A-A4	REGULATOR, Pressure demand oxygen	1	E
	29255-10A-A4A	REGULATOR, Pressure demand oxygen	1	E
	29255-10A-A5	REGULATOR, Pressure demand oxygen	1	F
	29255-10A-A5A	REGULATOR, Pressure demand oxygen	1	F
	29255-10A-A9	REGULATOR, Pressure demand oxygen	1	G
	29255-10A-A9A	REGULATOR, Pressure demand oxygen	1	G
	29255-10A-A17	REGULATOR, Pressure demand oxygen	1	H
	29255-10A-A17A	REGULATOR, Pressure demand oxygen	1	H
	29255-10A-B10	REGULATOR, Pressure demand oxygen	1	H
	29255-10A-B10A	REGULATOR, Pressure demand oxygen	1	H
	29255-10A-B11	REGULATOR, Pressure demand oxygen	1	H
	29255-10A-B11A	REGULATOR, Pressure demand oxygen	1	H
	29255-6B-A1	REGULATOR, Pressure demand oxygen	1	K
	29255-6B-A1A	REGULATOR, Pressure demand oxygen	1	K
-1	1612820-1	. PLATE, Identification	1	ABC EJK
	1612820-2	. PLATE, Identification	1	D
	1612820-3	. PLATE, Identification	1	FH
-2	1611735-1	. PLATE, Light	1	
		(ATTACHING PARTS)		
-3	MRO-607BN	. SCREW, RD, HD, BRS BLK NI PL NO . . . . . 6-32 X 7/16 IN. LG (KFP)	4	
		---*---		
-4	813112	. GASKET (KCP)	1	
-5	1621386-1	. COVER, Plate (without gage, light, ... mounting screws) Not shown	1	ABC
-6	813111	. GASKET (KCP)	1	
-7	1612055-3	. PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-7 for BKDN)	1	ABG
	1612055-5	. PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-7 for BKDN)	1	CK
	1612055-2	. PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-7 for BKDN)	1	D
	1612055-1	. PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-7 for BKDN)	1	E
	1612055-4	. PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-7 for BKDN)	1	F

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
	1612055-9	. PLATE ASSEMBLY, Gage and light mounting (figure 7-7 for BKDN) (ATTACHING PARTS)	1	H
-8	FFILO-303-1/ 2BN	. SCREW, Flat FIL H, BRS BLK NI PL NO 3-56 X 7/32 IN. LG (KF)	2	
-9	MFO-605BN	. SCREW, Flat HD, BRS BLK NI PL NO 6-32 X 5/16 IN. LG (KFP) ---*---	4	
-10	813061	. PACKING, “O” ring (KCP)	1	
-11	812921	. RING, “O” (KCP)	1	
-12	MS16629-1137	. RING, Retaining (KFP)	1	
-13	1614152	. SPACER	1	
-14	1603660-120	. WASHER, Flat	AR	
-15	1614148-1	. BLINKER ASSEMBLY	1	
-16	1614153-1	. RING, Sealing	1	
-17	1614155-1	. DIAPHRAGM ASSEMBLY, Blinker (KC)	1	

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Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-6-18	1604108-1	. TOGGLE ASSEMBLY	1	
		(ATTACHING PARTS)		
-19	FFILO-406BN	. SCREW, Flat FIL H, BRS BLK NI PL	2	
		NO 4-48 X 3/8 IN. LG (KFP)		
-20	LWO-4	. WASHER, Lock, BRZ for NO. 4 SCR (KFP)	2	
		---*---		
-21	1604107-1	. . TOGGLE, Emergency	1	
		(ATTACHING PARTS)		
-22	RP62-500SS	. . PIN, Roll. CRES 0.062 NOM DIA X 0.500 ...	1	
		IN. LG (KFP)		
		---*---		
-23	813062	. . BLOCK, Clevis	1	
-24	816764	. ROD, Push (KFP)	1	
-25	1623317- 1	. PLATE, Top	1	ABC
	814423	. PLATE, Top	1	DEF GHK
-26	814921-1	. SHIM (0.015 IN. THK) (KPF)	AR	
	814921-2	. SHIM (0.032 IN. THK) (KPF)	AR	
-27	814993	. SPRING, Helical compression (KFP)	1	
-28	1602949-1	. PRESSURE ASSEMBLY, Manual safety	1	
		(figure 7-11 for BKDN)		
-29	1602321-5	. PACKING, Preformed (KCP)	1	
-30	812429-8	. PLUG, Pipe (for shipping and stocking	1	
		only) (KFP)		
-31	1611738-1	. VALVE ASSEMBLY, Inlet	1	ADE FGH
		(figure 7-8 for BKDN)		
	1611738-2	. VALVE ASSEMBLY, Inlet	1	K
		(figure 7-8 for BKDN)		
	1611738-4	. VALVE ASSEMBLY, Inlet	1	B
		(figure 7-8 for BKDN)		
	1611738-5	. VALVE ASSEMBLY, Inlet	1	C
		(figure 7-8 for BKDN)		
		(ATTACHING PARTS)		
-32	MFILO-607BN	. SCREW, FIL H, BRS BLK NI PL	3	
		NO 6-32 X 7/16 IN. LG (KG)		
-33	LWO-6	. WASHER Lock, BRZ for NO. 6 SCR (KFP)	3	
		---*---		
-34	813058	. PACKING, “O” ring (KC)	1	
-35	1611714-1	. SHUTOFF ASSEMBLY, Aneroid and air	1	
		(figure 7-9 for BKDN)		
-36	1623977-1	. GASKET	1	A
	779490-7	. GASKET (KCP)	1	BCD EFG HK
-37	1611726-1	. ADAPTER AND SPRING ASSEMBLY, ...	1	
		Check valve (figure 7-10 for BKDN)		
-38	1623977-2	. GASKET	1	A
	779490-7	. GASKET, (KC)	1	BCD EFG K

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-6-39	1613723-17	. CAP, Shipping (For shipping and stocking only) (KFP)	1	ABC K
	213	. CAP, Shipping (81904) (Bendix Spec Cont Dwg 812097-l)(For shipping and stocking only) (KD)	1	DEF GH
-40	1612829-1	. OUTLET (ATTACHING PARTS)	1	
-41	FFILO-405-1/2BN	. SCREW, Flat FIL H, BRS BLK NI PL NO. 4-48 X 11/32 IN. LG (KF)	2	
-42	LWO-4	. WASHER, Lock, BRZ for NO. 4 SCR (KF)	2	
-43	WO-4SS	. WASHER, Plain, CRES 0.119 ID X 9/32 OD X 0.025 IN. THK (KFP) ---*---	2	
-44	1602321-29	. PACKING, Preformed (KCP)	1	
-45	761800-2	. TUBE, Mixing	1	
-46	812614-1	. SCREEN ASSEMBLY, Mixing tube (KF)	1	
-47	1602956-1	. SLEEVE, Injector	1	
-48	1602821-1	. NOZZLE, Injector (KCP)	1	
-49	MS16629-1081	. RING, Retaining, internal (KF)	1	
-50	814765-5	. SCREEN, Relief valve (KF)	1	
-51	1610650-1	. VALVE ASSEMBLY, Relief (figure 7-12 for BKDN)	1	
-52	1602321-35	. PACKING, Preformed (KCP)	1	
-53	FSO-201-1/2SS	. SETSCREW, Slotted, CRES NO 2-64 X 3/32 IN. LG (KF)	1	
-54	1603942-4	. FILTER, Inlet (KF)	1	
-55	BH402-1/2BN	. SCREW, BIND. HD, BRS BLK NI PL NO. 4-48 X 5/32 IN. LG (KFP)	1	
-56	741790-2	. LOCK-O-SEAL, High temperature (KC)	1	
-57	1612830-1	. COVER, Diaphragm (ATTACHING PARTS)	1	
-58	MFFILO-609-1/2BN	. SCREW, Flat FIL H, BRS BLK NI PL NO. 6-32 X 19/32 IN. LG (KF)	4	
-59	LWO-6	. WASHER, Lock, BRZ for No. 6 SCR (KF) ---*---	4	
-60	1611734-1	. DIAPHRAGM AND PLATE ASSEMBLY (KC)	1	
-61	1611729-1	. TUBE AND RING ASSEMBLY	1	
-62	1602321-24	. PACKING, Preformed (KCP)	1	
-63	1600632-2	. DIAPHRAGM ASSEMBLY	1	
-64	793515-1	. . NUT, Diaphragm (KFP)	1	
-65	791765-2	. . FLANGE, Diaphragm, (KF)	1	
-66	1602045-1	. . PLATE, Diaphragm	1	
-67	814441	. . DIAPHRAGM (KCP)	1	
-68	814442	. . PLATE, Diaphragm	1	
-69	1616994-3	. LEVER ASSEMBLY, Emergency pressure (ATTACHING PARTS)	1	
-70	1613131-2	. PIN ---*---	1	

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-6-71	1610626-1	. . POST	1	
-72	1612419-10	. . SETSCREW (KF)	1	
-73	50FMP11-356	. . NUT, Clinch, PASS., 3-56 X 0.179 IN. THK (56878) (Bendix Spec Cont Dwg 1610694-1)	1	
-74	1602912-1	. LEVER, Emergency pressure	1	
-75	1602916-1	. LEVER ASSEMBLY, Demand valve (ATTACHING PARTS)	1	
-76	FO-304BN	. SCREW, Flat HD, BRS BLK NI PL NO 3-56 X 1/4 IN. LG (KF) ---*---	2	
-77	PB50788-5	. . PIN	1	
-78	1602914-1	. . BRACKET, Lever	1	
-79	1612419-10	. . SETSCREW (KF)	1	
-80	1610694-1	. . NUT, Clinch, self-locking	1	
-81	1602915-1	. . LEVER	1	
-82	814646	. BRACKET, Lever (ATTACHING PARTS)	1	
-83	FO-304BN	. SCREW, Flat HD, BRS NI PL NO 3-56 X 1/4 IN. LG (KF) ---*---	2	
-84	815601	. GUIDE, Spring (KF)	1	
-85	814793	. SPRING, Helical compression (KFP)	1	
	816308	. SPRING, Helical compression (KFP)	1	
-86	1611722-1	. ANEROID ASSEMBLY	1	
-87	1611782-1	. SCREW, Stud (KF)	1	
-88	1611741-1	. RETAINER, Spring (KF)	1	
-89	1611742-1	. SPRING, Helical compression (KF)	1	
	1611742-2	. SPRING, Helical compression (KF)	1	
-90	HOS-202-1/2SS	. SETSCREW, Allen, CRES NO 2 64 X 5/32 IN. LG (KF)	1	
-91	1611740-1	. HOUSING, Aneroid (ATTACHING PARTS)	1	
-92	1607617-5	. SCREW, Special (KF) ---*---	3	
-93	1611730-1	. DIAPHRAGM, Valve control (KC)	1	
-94	MS16629-1068	. RING, Retaining, internal (KF)	1	
-95	1632425-1	. VALVE SEAT (Note 1)	1	
-96	1611739-1	. VALVE ASSEMBLY (Note 1)	1	
-97	1602321-65	. PACKING, “O” ring (KCP) (Note 1)	1	
-98	1611770-1	. SPRING, Helical compression (KF)	1	
-99	MS16625-1062	. RING, Retaining, internal (KFP)	1	
-100	1611723-1	. PLUG	1	
-101	1602321-3	. PACKING, Preformed (KCP)	1	
-102	MS16629-1081	. RING, Retaining, internal (KF)	1	
-103	1611718-1	. RETAINER, Valve	1	
-104	1602321-5	. PACKING, Preformed (KC)	1	
-105	1611715-1	. SEAT, Demand valve	1	

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-6-106	815678	. PACKING “O” ring (KC)	1	
-107	1611717-1	. STEM ASSEMBLY, Extension (KC)	1	
-108	813752	. RING, “O” (KCP)	1	
-109	1602922-2	. STEM ASSEMBLY, Valve (KCP)	1	
-110	1602920-1	. . CONNECTOR, Valve lever	1	
-111	812462-1	. . INSERT, Locking	1	
-112	1623897-1	. . STEM ASSEMBLY, Demand valve	1	ABC
	1605331-1	. . STEM ASSEMBLY, Demand valve	1	DEF GHK
-113	1602972-1	. BUSHING, Demand valve	1	
-114	815678	. PACKING, “O” ring (KC)	1	
-115	1610652-1	. HOUSING (Note 2)		
	1601914-1	KIT, Parts, pressure demand oxygen regulator field (F)	1	AE
	1601573-1	KIT, Parts, pressure demand oxygen regulator cure-date (C)	1	AE
	1601915-1	KIT, Parts, pressure demand oxygen regulator field (F)	1	BC
	1601588-1	KIT, Parts, pressure demand oxygen regulator cure-date (C)	1	BC
	Notes: 1. Matched seat and valve assembly P/N 1611737-1 can no longer be ordered as a complete assembly. Individual parts consisting of valve seat P/N 1632425-1, valve P/N 1611739-1 and preformed packing P/N 1602321-65 must be ordered. 2. For regulators with Usable on Codes D, F, G, H, and K, there are no parts kits available. Parts must be individually ordered.			

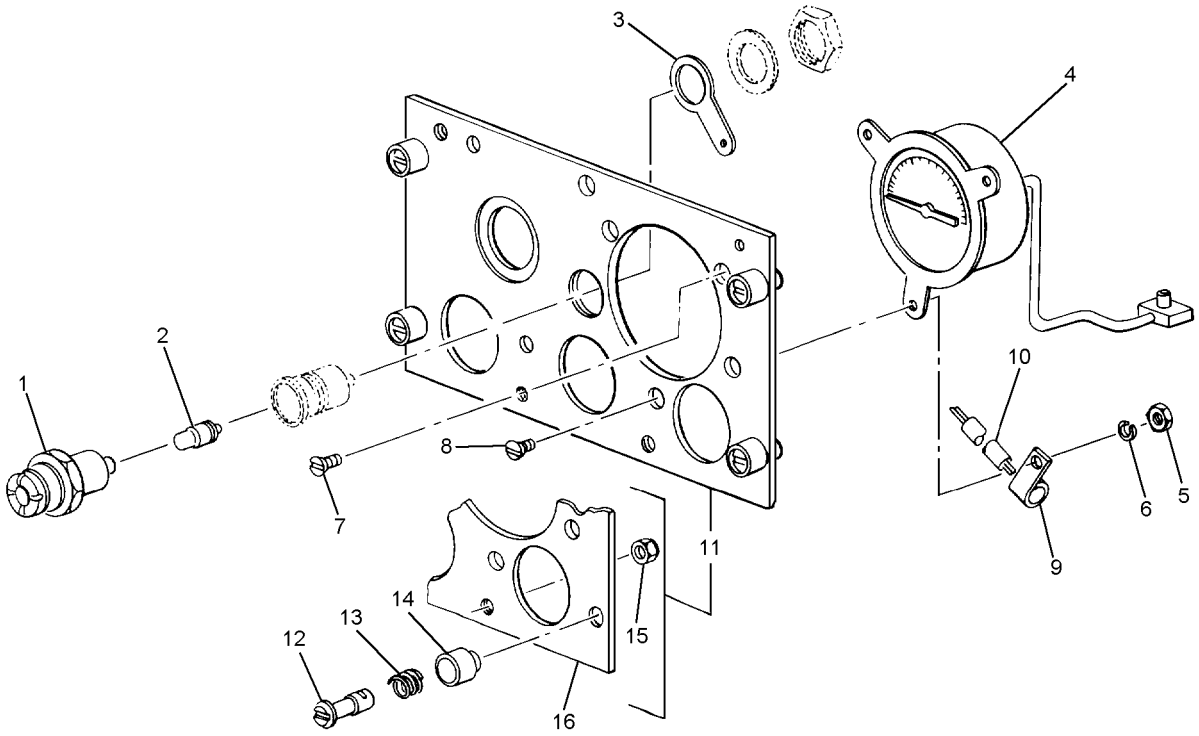


Figure 7-7. Gage and Light Mounting Plate Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-7	1612055-3	PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-6 for NHA)	REF	ABG
	1612055-5	PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-6 for NHA)	REF	CK
	1612055-1	PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-6 for NHA)	REF	E
	1612055-2	PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-6 for NHA)	REF	D
	1612055-4	PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-6 for NHA)	REF	F
	1612055-9	PLATE ASSEMBLY, Gage and light . . . . . mounting (figure 7-6 for NHA)	REF	H

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-7-1	MS25011-2A	. LIGHT ASSEMBLY, Panel	1	ABCGK
	A7075-1	. LIGHT ASSEMBLY, Panel (72914) (Bendix Spec Cont Dwg 1607344-1)	1	HD
	A7075-5	. LIGHT ASSEMBLY, Panel (72914) (Bendix Spec Cont Dwg 1607344-2)	1	EF
-2	MS25237-327	. LAMP, Incandescent	1	ABC EGHK
	MS25237-328	. LAMP, Incandescent	1	DF
-3	816554	. LUG, TERMINAL	1	
-4	813095-1	. GAGE ASSEMBLY, Tube and pressure	1	ABD EFGH
	813095-2	. GAGE ASSEMBLY, Tube and pressure (ATTACHING PARTS)	1	CK
-5	NO-6SS	. NUT, HEX, CRES NO. 6-40 X 0.125 IN. THK (KFP)	3	
-6	LWO-6	. WASHER, Lock, BRZ for NO. 6 SCR (KF)	3	
-7	FO-604SS	. SCREW, Flat HD, CRES NO 6-40 X 1/4 IN. LG (KF)	2	
-8	FO-605SS	. SCREW, Flat HD, CRES NO 6-40 X 5/16 IN. LG (KFP)	1	
-9	TA557TSS3	. CLAMP, Loop type (84971) (Bendix Spec Cont Dwg 815753-2) ---*---	1	
-10	1608564-1	. WIRE ASSEMBLY	1	
-11	816593-1	. PLATE ASSEMBLY, Mounting	1	
-12	PF3-1/2-38	. . FASTENER (72794) (Bendix Spec Cont Dwg 799812-1)	4	
-13	PS3-1-2	. . SPRING (72794) (Bendix Spec Cont Dwg 799814-1)	4	
-14	PC3-1/2	. . CUP (72794) (Bendix Spec Cont Dwg 799813-1)	4	
-15	812762-1	. . NUT, Clinch CRES NO. 6-30 X 0.180 IN. THK	3	
-16	813089	. . PLATE, Mounting	1	

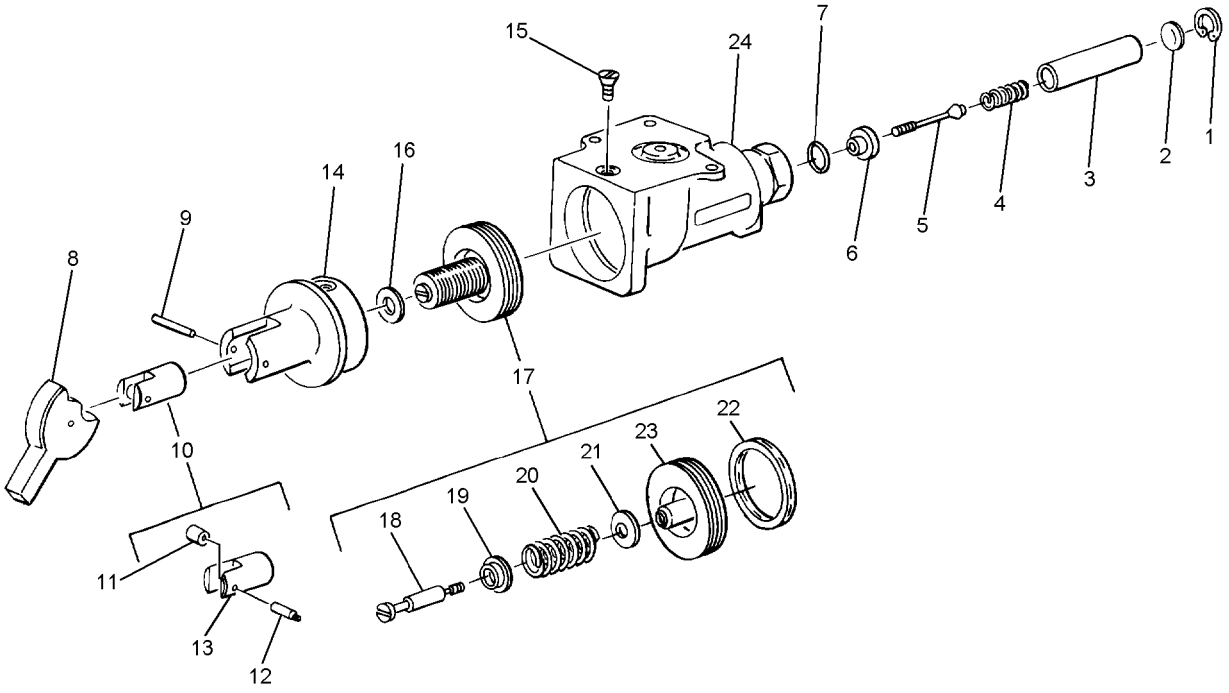
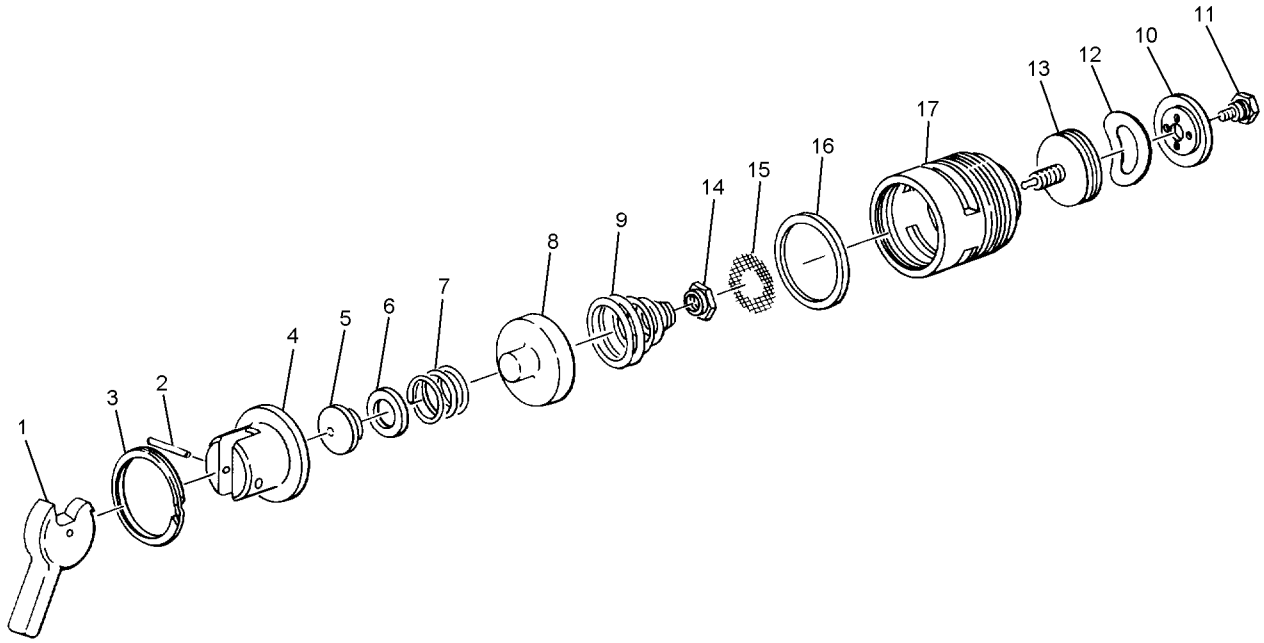


Figure 7-8. Inlet Valve Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-8	1611738-1	VALVE ASSEMBLY, Inlet . . . . . (figure 7-6 for NHA)	REF	ADE FGH
	1611738-4	VALVE ASSEMBLY, Inlet . . . . . (figure 7-6 for NHA)	REF	B
	1611738-5	VALVE ASSEMBLY, Inlet . . . . . (figure 7-6 for NHA)	REF	C
	1611738-2	VALVE ASSEMBLY, Inlet . . . . . (figure 7-6 for NHA)	REF	K
-1	MS16629-1031	. RING, Retaining, internal (KFP)	1	
-2	1612057-1	. FILTER (KF)	1	
-3	1611732-1	. SLEEVE	1	
-4	1602929-1	. SPRING, Helical compression (KFP)	1	
-5	1602930-1	. STEM, Valve (KFP)	1	
-6	1602937-1	. INSERT, Seat (KC)	1	ADE FGH K
	1620718-1	. INSERT, Seat	1	B
	1620718-2	. INSERT, Seat	1	C
-7	1600099	. PACKING, “O” ring (83259) (Bendix Spec Cont Dwg 1600099)(KCP)	1	

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-8-8	1617369-1	. TOGGLE, Inlet	1	ABC HK
	1603412-1	. TOGGLE, Inlet (KD) (ATTACHING PARTS)	1	DEFG
-9	RP62-500SS	. PIN, ROLL, CRES 0.062 NOM DIA X 0.500 IN. LG ---*---	1	
-10	1602925-1	. FOLLOWER ASSEMBLY, Sleeve	1	
-11	1603411-1	. . ROLLER (ATTACHING PARTS)	1	
-12	814381-1	. . PIN ---*---	1	
-13	1602924-2	. . SLEEVE, Follower	1	
-14	1610647-1	. CAP, Toggle (ATTACHING PARTS)	1	
-15	FO-605BN	. SCREW, Flat HD, BRS BLK NI PL NO 6-40 X 5/16 IN. LG (KF) ---*---	2	
-16	1605349-1	. SHIM (0.0050 IN. THK) (KF)	AR	
	1605349-2	. SHIM (0.0100 IN. THK) (KF)	AR	
	1605349-3	. SHIM (0.0150 IN. THK) (KF)	AR	
-17	1602935-1	. PISTON ASSEMBLY	1	
-18	1602932-1	. . SCREW, Spring retaining (KFP)	1	
-19	1602933-1	. . WASHER, Guide (KFP)	1	
-20	1602931-1	. . SPRING, Helical compression (KFP)	1	
-21	814450-1	. . SHIM (0.0050 IN. Select at Assembly THK) (KF)		
	814450-2	. . SHIM (0.0100 IN. (Not part of piston THK) (KFP)	AR	
	814450-3	. . SHIM (0.0150 IN. assembly, item 17) (THK) (KFP)	AR	
-22	816919-3	. . PACKING, Preformed (KCP)	1	
-23	1602934-1	. . PISTON	1	
-24	1611733-1	. BODY, Inlet valve	1	

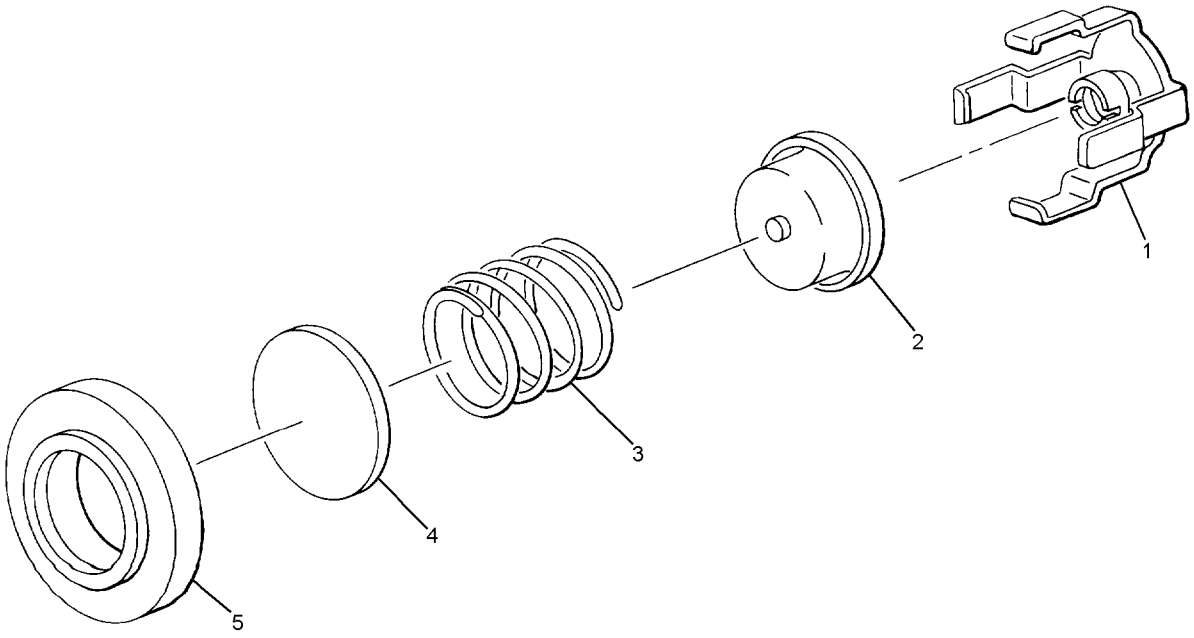


007009

Figure 7-9. Aneroid and Air Shutoff Valve Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-9	1611714-1	SHUTOFF ASSEMBLY, Aneroid and air . . . . . (figure 7-6 for NHA)	REF	
-1	1604106-1	. TOGGLE, Diluter (KFP) . . . . . (ATTACHING PARTS)	1	
-2	RP62-500SS	. PIN, Roll, CRES 0.062 NOM DIA . . . . . X 0.500 IN. LG (KF) ---*---	1	
-3	UR-100-C	. RING, Retaining (80756) (Bendix Spec . . . . . Cont Dwg 1602678-4) (KF)	1	
-4	1610654-1	. BLOCK, Pivot	1	
-5	1604111-1	. CAP, Spring retaining	1	
-6	1603660-6	. WASHER, Flat	AR	
-7	813079-1	. SPRING, Helical compression (KFP)	1	
-8	1610655-1	. SLEEVE, Air shutoff	1	
-9	1611713-1	. SPRING, Conical compression (KF)	1	
-10	766097-1	. PLATE, Throttling . . . . . (ATTACHING PARTS)	1	
-11	758649-1	. SCREW (KFP)	1	
	758649-2	. SCREW (KFP)	1	
	758649-3	. SCREW (KFP)	1	
	758649-4	. SCREW (KFP) . . . . . ---*---	1	

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-9-12	PB50828-1	. WASHER, Spring (KFP)	1	
-13	758632-1	. ANEROID ASSEMBLY	1	
		(ATTACHING PARTS)		
-14	1611712-1	. NUT (KF)	1	
		---*---		
-15	813077	. SCREEN, Aneroid (KFP)	1	
-16	813115	. GASKET (KCP)	1	
-17	1610653-1	. HOUSING, Aneroid	1	



007010

Figure 7-10. Check Valve Adapter and Spring Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-10	1611726-1	ADAPTER AND SPRING ASSEMBLY, Check valve (figure 7-6 for NHA)	REF	
-1	1611725-1	. RETAINER ASSEMBLY (KF)	1	
-2	763204-1	. ADAPTER ASSEMBLY, Spring	1	
-3	758636-1	. SPRING, Aneroid check valve (KFP)	1	
-4	PB53041-1	. DISC, Check valve (KFP)	1	
-5	1611719-1	. ADAPTER, Check valve	1	

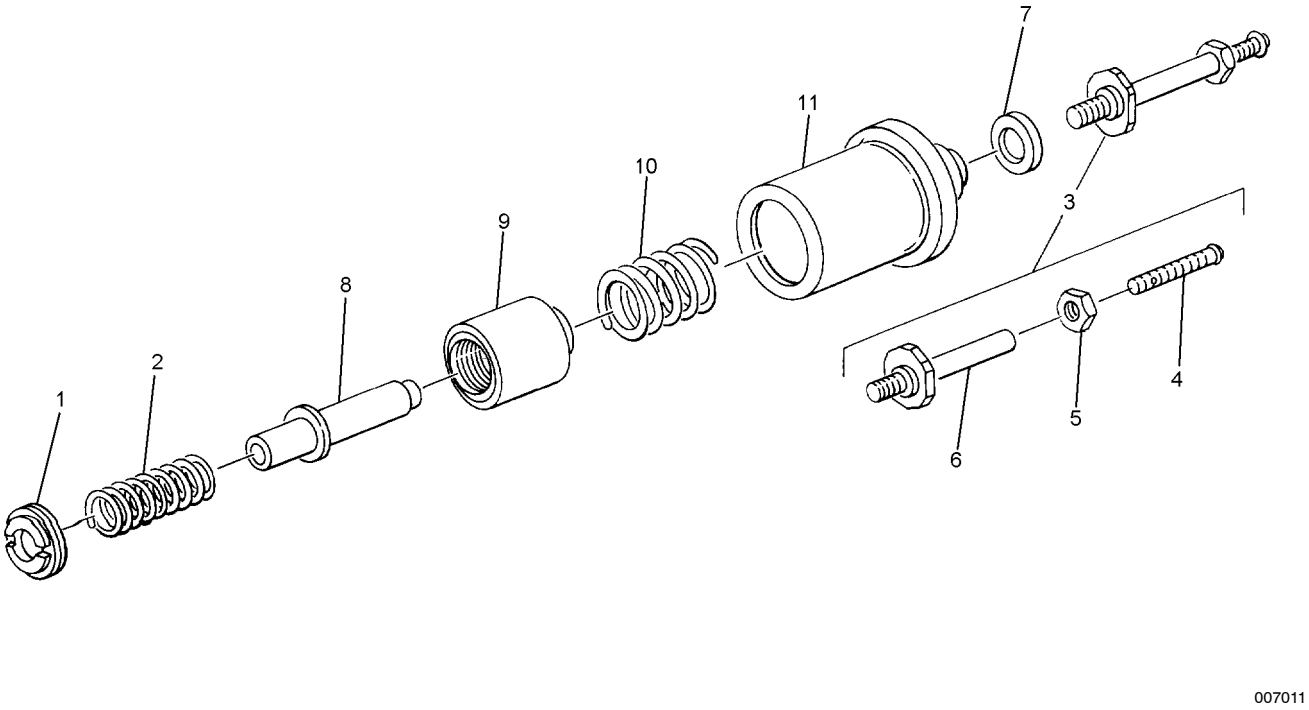


Figure 7-11. Manual Safety Pressure Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-11	1602949-1	PRESSURE ASSEMBLY, Manual safety . . . . . (figure 7-6 for NHA)	REF	
-1	813108	. SCREW, Adjusting	1	
-2	815619	. SPRING, Helical compression (KFP)	1	
-3	1602947-1	. ROD ASSEMBLY, Push	1	
-4	1605328-1	. . SCREW, Cap	1	
-5	NO-2SS	. . NUT, HEX	1	
-6	814427	. . ROD, Push	1	
-7	1602951-1	. WASHER, Non-metallic (KC)	1	
-8	814425	. ROD, Actuating	1	
-9	814424	. GUIDE, Manual safety	1	
-10	815504	. SPRING, Helical compression (KFP)	1	
-11	1602948-1	. HOUSING, Manual safety	1	

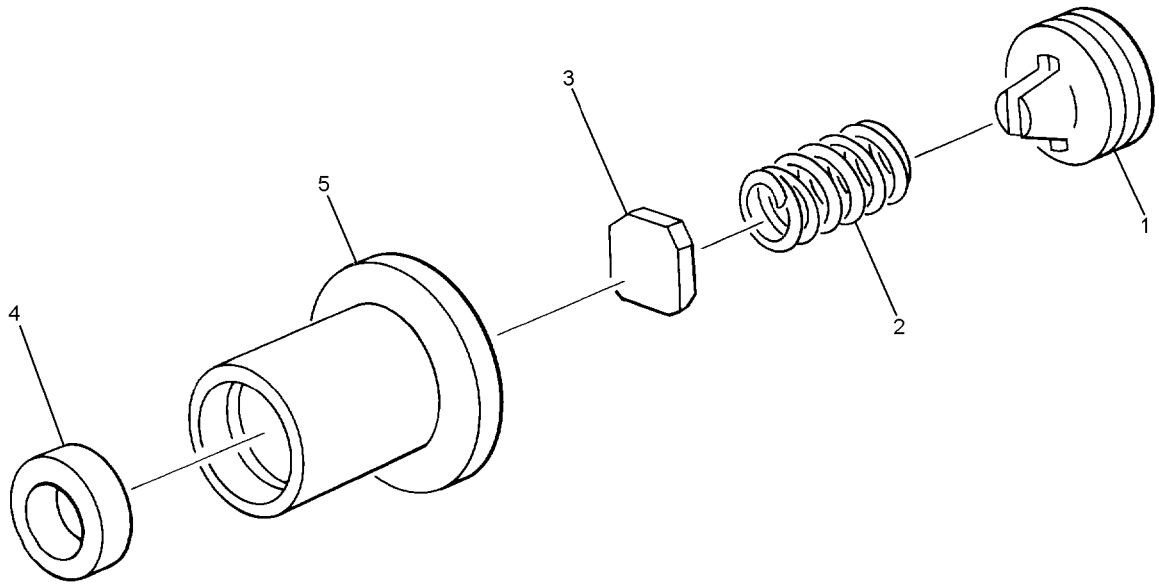


Figure 7-12. Relief Valve Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
7-12	1610650-1	VALVE ASSEMBLY, Relief (figure 7-6 for NHA)	REF	
-1	1610648-1	. RETAINER, Spring	1	
-2	708766-1	. SPRING, Relief valve (KF)	1	
-3	708762-1	. DISC, Relief valve (KF)	1	
-4	1610646-1	. SEAT, Relief valve	1	
-5	1610649-1	. HOUSING, Relief valve	1	

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MS16629-1068	7-6-94	PAOZZ
MS16629-1081	7-6-49	PAGZZ
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MS16629-1137	7-6-12	PAOZZ
MS25010-2A	7-7-1	PAOZZ
MS25237-327	7-7-2	PAOZZ
MS25237-328	7-7-2	PAOZZ
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PB50788-5	7-6-77	PAOZZ
PB50828-1	7-9-12	PAOZZ
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1602922-2	7-6-109	PAOZZ
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1611735-1	7-6-2	PAOZZ
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1611738-2	7-6-31	PAGZZ
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