CHAPTER 10

HIGH PRESSURE OXYGEN MANIFOLD AND CHECK VALVE ASSEMBLY

P/Ns 2140, 2150, AND 2170

Section 10-1. Description

10-1. GENERAL.

10-2. The High Pressure Oxygen Manifold and Check Valve Assembly (P/Ns 2140, 2150 and 2170) is manufactured by Carleton Technologies, Inc. and American Flight Safety Systems, Inc. (CAGE 31441) for use on the P-3 series aircraft (figure 10-1).The manifold and check valve assembly is designed for routing system high pressure oxygen to the aircraft pressure reducer assembly and to serve as a connection for filling of oxygen cylinders installed in the aircraft. Table 10-1 contains leading particulars for the high pressure oxygen manifold and check valve assembly.

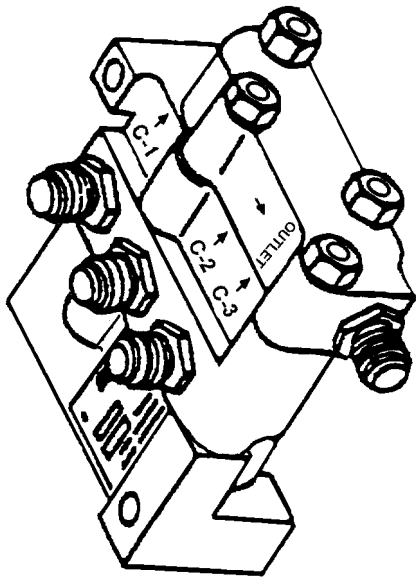

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Figure 10-1. High Pressure Oxygen Manifold and Check Valve Assembly

Table 10-1. Leading Particulars for High Pressure Oxygen Manifold and Check Valve Assembly

P/N 2140 Without Adapters	
P/N 2150 Fitting Adapters	AN816-5K
P/N 2170 Fitting Adapters	ER816-5J
Ports	C1, C2, C3, Outlet, Filler
Weight	14 oz
Height	1 1/2 in.
Length	3 in.
Width	3 1/4 in.
Operating Pressure Range	50 to 2100 psig

10-3. CONFIGURATION.

10-4. The manifold and check valve assembly (P/N 2140) is supplied in two basic configurations, with each performing the same function. P/N 2150 utilizes 5 adapters (P/N AN816-5K or -5J) for mating the manifold and check valve to the aircraft system. P/N 2170 utilizes adapter P/N ER-816-5J for this function.

10-5. FUNCTION.

10-6. The manifold and check valve assembly filler port is connected to the aircraft oxygen high pressure check valve, ports C1, C2, and C3 are connected to the three aircraft oxygen supply cylinders, and the outlet port is connected to the system oxygen pressure reducer assembly and system high pressure oxygen gage. The manifold assembly incorporates six gravity fed check valves which prevent the flow of oxygen from one cylinder to another and from the oxygen cylinders back through the manifold filler valve. The manifold assembly outlet port routes system oxygen to the high pressure gage and oxygen pressure reducer assembly. (figure 10-2).

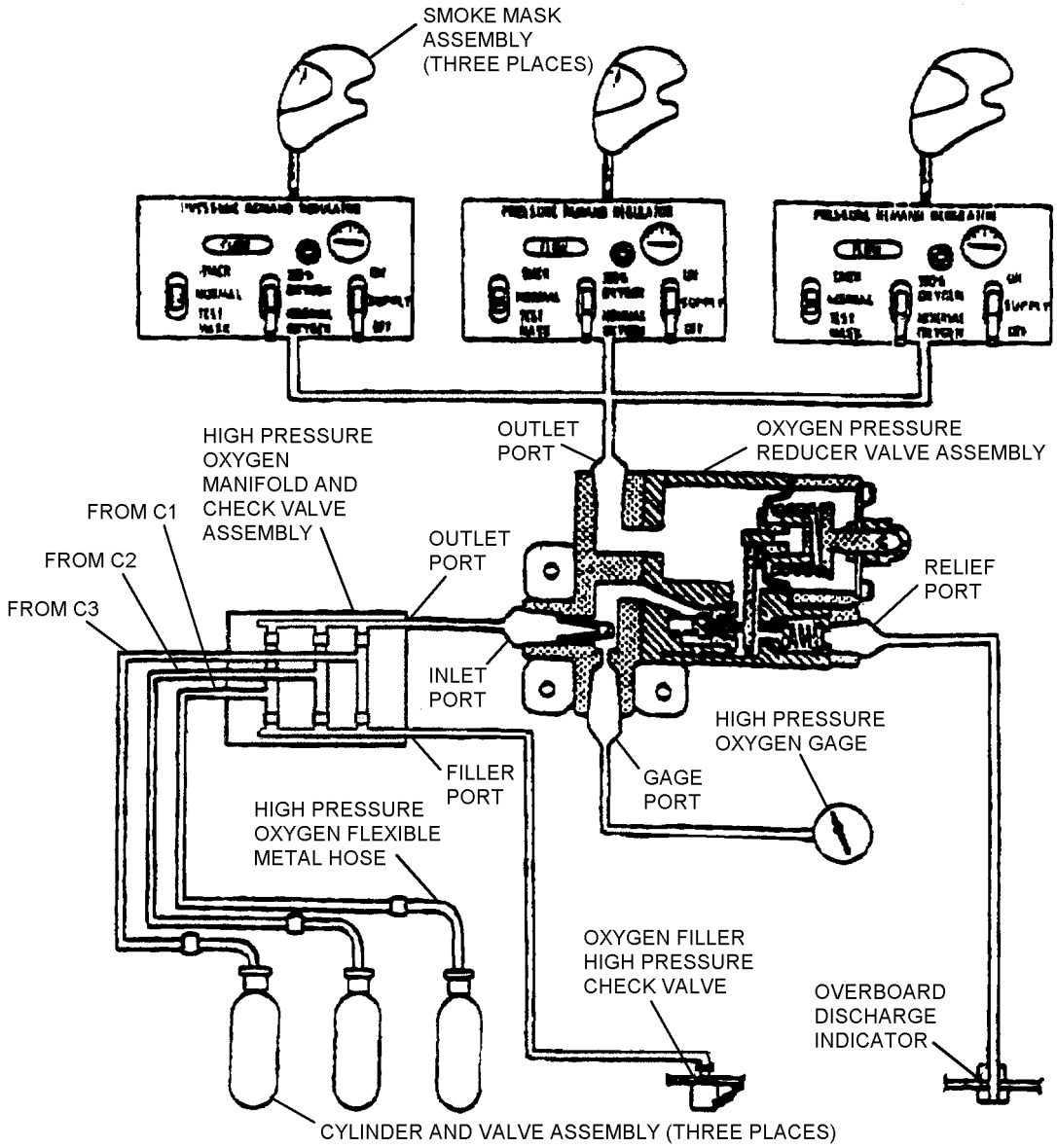

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Figure 10-2. Functional Diagram of P-3 Oxygen System

10-7. SERVICE LIFE.

10-8. The manifold and check valve assembly shall remain in service as long as repair cost does not exceed 75% of cost of the valve.

10-9. REFERENCE NUMBERS, ITEMS, AND SUPPLY DATA.

10-10. Section 10-5, Illustrated Parts Breakdown, contains information on each assembly, subassembly and component part of the manifold assembly. The figure and index number, reference or part number, description and units per assembly are provided with the breakdown.

Section 10-2. Modifications

10-11. GENERAL.

10-12. No modifications to this valve assembly are required or authorized at this time.

Section 10-3. Performance Test Sheet Preparation

10-13. GENERAL.

10-14. Flows provided in applicable directives are stated in liters per minute (lpm) and are not measurable by the manometers used in oxygen system component test stands. Flows must be converted to inches of water (inH_2O), the form of measurement which can be read on test stand manometers.

NOTE

The various graphs supplied with each test stand, Models 1172AS100 and 1316AS100 are used in converting flows. These graphs are not interchangeable between test stands. A new set of graphs will be provided each time the test stand is calibrated.

10-15. The information provided in the tables in this section is to be recorded on the Performance Test Sheet (figure 10-3).

10-16. The Performance Test Sheet is a sample only but may be reproduced for local use.

10-17. The following test requires conversion of flow from actual lpm to indicated inH_2O.

1. Check Valve and Outlet Flow Test. To convert the actual 50 liter per minute flow to inH_2O, proceed as follows:

a. Using the vent flow graph, find 50 lpm at bottom of graph, trace up to nitrogen line on the graph, then to the left for equivalent inH_2O flow.

b. Record inH_2O flow on Performance Test Sheet in space provided.

10-18. The following tests require no conversion flows:

1. External Leakage Test
2. Outlet Flow Check Valve Leakage Test
3. Filler Flow Check Valve Leakage Test
4. Oxygen Purge

PERFORMANCE TEST SHEET
HIGH PRESSURE OXYGEN MANIFOLD AND CHECK VALVE ASSEMBLY
PART NUMBERS 2140, 2150, AND 2170

Date: _____ Part No. _____ Manifold Serial No. _____ Test Stand Serial No. _____

Test Stand Operator _____ Inspected By (CDI/QAR) _____

1. External Leakage Test:

   A. 500 psig (No leakage allowed) _____

   B. 1500 psig (No leakage allowed) _____

2. Outlet Flow Check Valve Leakage Test: (50 and 1000 psig applied to outlet 50 CCM maximum leak)

   A. C1 Port Leakage: 50 psig _____ 1000 psig _____

   B. C2 Port Leakage: 50 psig _____ 1000 psig _____

   C. C3 Port Leakage: 50 psig _____ 1000 psig _____

3. Filler Flow Check Valve Leakage Test: (50 and 1000 psig applied to ports C1, C2, C3 50 CCM maximum leak)

   A. C1 Port Leakage: 50 psig _____ 1000 psig _____

   B. C2 Port Leakage: 50 psig _____ 1000 psig _____

   C. C3 Port Leakage: 50 psig _____ 1000 psig _____

4. Flow Check Valve and Outlet Flow Test: (140 psig, 50 LPM _____ inH_2O, 20 psig Difference)

   A. C1 Port: N_2 Input Press Gage (27) Reading _____

   B. C2 Port: N_2 Input Press Gage (27) Reading _____

   C. C3 Port: N_2 Input Press Gage (27) Reading _____

   D. Outlet Port: N_2 Input Press Gage (27) Reading _____

5. Manifold and Check Valve Assembly Purge: (200 psig Aviators Breathing Oxygen for 3 minutes)

Figure 10-3. Manifold and Check Valve Assembly Performance Test Sheet

Section 10-4. Maintenance

10-19. GENERAL.

10-20. This section contains the procedural steps for inspecting, testing, disassembly, cleaning, and assembly of the manifold and check valve assembly.

10-21. Procedural steps outlined in this section are listed as they are required, and in the sequence in which they occur.

NOTE

The manifold assembly shall be considered beyond economical repair when cost of repair parts exceeds approximately 75% of the cost of manifold and check valve assembly.

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

10-22. INSPECTION.

10-23. SPECIAL INSPECTION. The Special Inspection consists of a visual inspection performed in conjunction with the aircraft inspection requirements for aircraft in which the manifold and check valve assembly is installed. To perform the inspection, visually inspect the following:

1. Legibility of all markings.

2. Manifold assembly and surrounding area for freedom from dirt, grease, oil, hydraulic fluid, and other hydrocarbons.

3. Line Connections for security of attachment and good conditions.

4. Manifold assembly for obvious damage and good condition.

10-24. BENCH TEST.

10-25. To Bench Test the manifold and check valve assembly, 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 when testing oxygen components.

For oxygen test stands, use only Nitrogen from gray cylinders marked NITROGEN OIL FREE in white letters. Two 3 inch wide black bands mark the top of these cylinders. Do not use 3500 psig cylinders as these cylinders are components of Nitrogen Serving Trailers and cannot be certified contaminant free.

Prior to performing Bench Test on manifold assemblies that have been inducted for scheduled or unscheduled maintenance, the manifold assembly shall be disassembled and cleaned and reassembled in accordance with paragraphs 10-32 through 10-41.

NOTE

Oxygen Systems Components Test Stand Model 1172AS100 or 1316AS100 shall be used for performing Bench Test. Do not attempt to operate test stand without first becoming familiar with operation of test stand. Refer to appropriate ground support equipment manual.

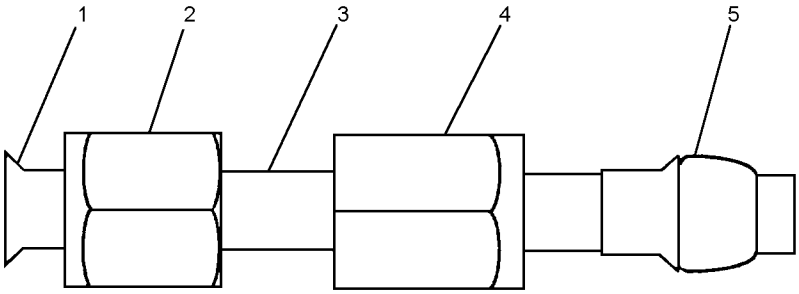
A high pressure source of nitrogen, other than the test stand, will be needed when performing some of the required tests.

The Bench Test shall be performed prior to placing the manifold and check valve assembly in service, in accordance with aircraft inspection cycle every 448 days or after any unscheduled repair action. The Performance Test Sheet (figure 10-3) may be reproduced and used for recording readings.

10-26. EXTERNAL LEAKAGE TEST. To perform the External 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

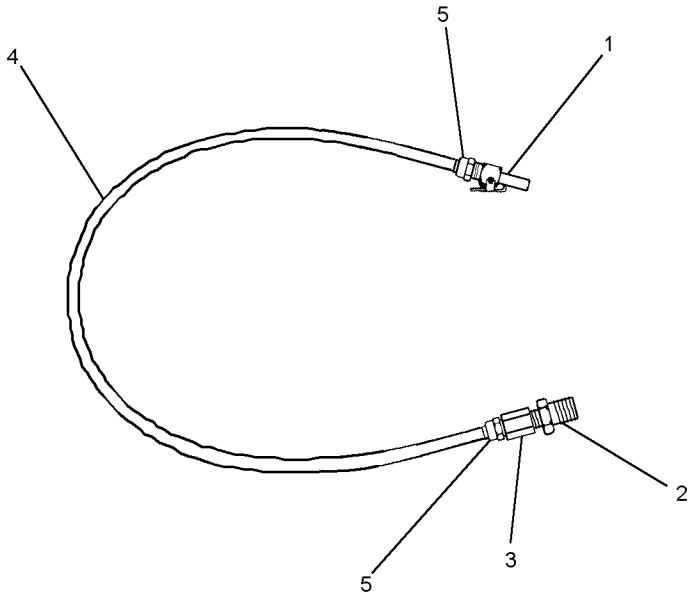


ADAPTER
VIEW A

1. #5 SLEEVE (MS20819-5J)
2. #5 B-NUT (AN818-5J)
3. 5/16 OD STAINLESS STEEL (MIL-T-6845-5)
4. #5 B-NUT (MS21921-5J)
5. STEEL SLEEVE (MS21922-5)

NOTE:

SOME ACTIVITIES MAY NEED TO BUILD AN ADAPTER WITH TWO FLARED ENDS IN ORDER TO HOOK UP TO N_2 INPUT CONNECTION (18)



LINE ASSEMBLY
VIEW B

1. QUICK DISCONNECT (F361-1339-1)
2. ADAPTER (AN816-5K) OR NIPPLE (ER816-5J)
   (DEPENDING ON P/N 2150 OR P/N 2170 BEING TESTED)
3. POLY FLO FEMALE CONNECTOR (266P1/4 IN X 1/8 IN) (266-P04 X 02)
4. 1/4 IN POLY FLO TUBING
5. POLY FLO NUT AND SLEEVE ASSEMBLY (261-P04)

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Figure 10-4. Adapter and Line Assembly

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	Fabricate IAW figure 10-4
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Ensure manifold assembly has been disassembled, cleaned, lubricated and reassembled and was received from squadron with appropriate fittings for the filler, C1, C2, C3, and outlet ports. The high pressure manifold assembly shall be returned to the squadron or supply with fittings installed in the filler, C1, C2, C3, and outlet ports after the Bench Test has been completed.

2. Cap outlet and bottle ports C1, C2, and C3 of the manifold assembly.

3. Connect filler port of manifold assembly to N_2 INPUT connection (18) in altitude chamber using adapter (figure 10-4) and flared fitting No. 4 to No. 5 or No. 5 to No. 5, as required.

4. Ensure all test stand valves and regulators are properly secured and open nitrogen cylinder. Cylinder pressure indicated on SUPPLY PRESSURE gage (9) shall be at least 1500 psig.

5. Position manifold assembly in altitude chamber and close altitude chamber door.

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

7. Using HIGH PRESS. regulator (Q), slowly apply 500 psig to manifold assembly.

WARNING

Prior to use, inspect leak detection compound. Compound which is not clear and free from suspended materials/sediment is considered contaminated and shall be disposed of.

8. Open altitude chamber door. Apply leak detection compound to all fittings and body seams to check for leakage. No leakage is allowed. Record results on Performance Test Sheet.

9. Reposition manifold in altitude chamber and close altitude chamber door.

10. Using HIGH PRESS. regulator (Q), slowly apply 1500 psig to manifold assembly as indicated on REGULATED HIGH PRESS. gage (10).

11. Open altitude chamber door. Apply leak detection compound to all fitting and body seams to check for leakage. No leakage is allowed. Record results on Performance Test Sheet.

12. Turn HIGH PRESS. regulator (Q) to vent and open SYSTEM BLEED Valve (S) to bleed pressure from manifold assembly.

13. Close SYSTEM BLEED. valve (S) and turn INLET PRESS. ON/OFF valve (L) to OFF.

14. Dry manifold assembly of all leak detection compound.

15. If manifold assembly failed external leakage test, refer to Troubleshooting (table 10-2). If no leakage occurred, proceed to next test.

10-27. OUTLET FLOW CHECK VALVE LEAKAGE TEST. To perform the Outlet Flow Check 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

Support Equipment Required

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

CAUTION

The manifold assembly shall be positioned with C1, C2, and C3 arrows pointing up during the entire bench test to allow poppets to seat properly.

1. Disconnect filler port from N_2 INPUT Connection (18) in altitude chamber.

Table 10-2. Troubleshooting (External Leakage Test)

Trouble	Probable Cause	Remedy
C1, C2, C3, outlet and filler ports leaking.	Adapters (1) loose, threads stripped or scarred nipple seating surface.	Tighten adapter (1) or replace.
Leakage between upper, inner, and lower bodies.	Bolts (2) loose or stripped; packing damaged.	Torque bolts (2) to 150 in-lb or replace bolts (2). Replace packing (3).
	Stripped threads in lower body (8). Damaged upper body (4) or inner body (6).	Replace defective body assembly as necessary.
Notes: 1. Unless otherwise noted, index numbers in parentheses refer to figure 10-6.		

2. Remove caps from C1, C2, and C3 ports.

3. Connect adapter and line assembly (figure 10-4) from C3 port to 20 to 200 CCM leakage connection (20) in altitude chamber. Turn INLET PRESS. ON/OFF valve to ON.

4. (Oxygen test stand model 1316AS100 only.) Place overboard ON/OFF valve (T) to ON position.

5. Remove cap from manifold outlet port and connect manifold outlet port to N_2 INPUT connection (18) in altitude chamber.

6. Using LOW PRESS. regulator (N), slowly apply 50 psig to manifold outlet port, as indicated on N_2 inlet pressure gage (27). Observe OVERBOARD LEAKAGE rotameter (6). Maximum allowable leakage is 50 CCM. Record reading on Performance Test Sheet.

7. Back out (counterclockwise) on LOW PRESS regulator (N) until spring tension is released.

8. Close altitude chamber door.

9. Using HIGH PRESS. regulator (Q), slowly apply 1000 psig to manifold outlet port, as indicated on REGULATED HIGH PRESS. gage (10). Observe OVERBOARD LEAKAGE rotameter (6). Maximum allowable leakage is 50 CCM. Record reading on Performance Test Sheet.

10. Turn HIGH PRESS. regulator (Q) to vent open SYSTEM BLEED valve (S).

11. Open chamber door.

12. Disconnect line form C3 port and connect to C2 port.

13. Repeat steps 5 through 11.

14. Disconnect line from C2 port and connect to C1 port.

15. Repeat steps 5 through 11.

16. Disconnect adapter and line assembly from 20 to 200 LEAKAGE connection (20) and manifold C1 port. Disconnect manifold outlet port from N_2 INPUT connection (18) in altitude chamber. Secure all test stand valves.

17. If leakage occurred during test, refer to troubleshooting (table 10-3). If no leakage was present, proceed to next test.

10-28. FILLER FLOW CHECK VALVE LEAKAGE TEST. To perform the Filler Flow Check 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 10-3. Troubleshooting (Outlet Flow Check Valve Leakage Test)

Trouble	Probable Cause	Remedy
C1, C2, and C3 ports have leakage in excess of 50 CCM.	Poppets in Inner Body (6) dirty or damaged.	Clean or replace Poppets (5).
	Poppet seating surface in Inner body (6) dirty or damaged.	Clean or replace Inner Body.
Notes: 1. Unless otherwise noted, index numbers in parentheses refer to figure 10-6.		

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	Fabricate IAW figure 10-4
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Cap outlet port of manifold and check valve assembly.

2. Cap C1 and C2 ports.

3. Connect C3 port to N_2 INPUT connection (18) in altitude chamber.

4. Using adapter and line assembly (figure 10-4), connect filler port to 20 to 200 LEAKAGE connection (20) in altitude chamber.

5. Position manifold check valve assembly in altitude chamber and close door.

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

7. Using LOW PRESS. regulator (N), slowly apply 50 psig to C3 port as indicated on N_2 INPUT PRESS. gage (27).

8. Record leakage from OVERBOARD LEAKAGE rotameter (6) on Performance Test Sheet. Leakage shall not exceed 50 CCM.

9. Back out (counterclockwise) on LOW PRESS. regulator (N) until spring tension is released.

10. Using HIGH PRESS. regulator (Q), slowly apply 1000 psig to manifold C3 port as indicated on REGULATED HIGH PRESS. gage (10).

11. Record leakage from OVERBOARD LEAKAGE rotameter (6) on Performance Test Sheet. Leakage shall not exceed 50 CCM.

12. Turn HIGH PRESS. regulator (Q) to VENT position, open SYSTEM BLEED valve (S) and bleed pressure from regulated high pressure system. Close SYSTEM BLEED valve (S).

13. Disconnect C3 port from N_2 INPUT connection (18).

14. Remove cap from C2 port N_2 INPUT connection (18).

15. Cap C3 port and reposition manifold assembly in altitude chamber.

16. Repeat steps 4 through 12.

17. Disconnect C2 port from N_2 INPUT connection.

18. Remove cap from C1 port and cap C2 port.

19. Connect C1 port from N_2 INPUT connection.

20. Repeat steps 4 through 12.

21. Disconnect C1 port from N_2 INPUT connection (18).

Table 10-4. Troubleshooting (Filler Flow Check Valve Leakage Test)

Trouble	Probable Cause	Remedy
Manifold assembly has leakage in excess of 50 CCM.	Poppets (5) in lower body dirty or damaged.	Clean or replace poppets (5).
	Poppet seating surface in lower body (8) dirty or damaged.	Clean or replace lower body (8).
Notes: 1. Unless otherwise noted, index numbers in parentheses refer to figure 10-6.		

22. Turn INLET PRESS. valve (L) to OFF.

23. Disconnect filler port from 20 to 200 CC LEAKAGE connection (20) and disconnect adapter form filler port.

24. (Oxygen test stand model 1316AS100 only.) Place overboard ON/OFF valve (T) to OFF position.

25. If leakage occurred, refer to troubleshooting (table 10-4). If leakage was not present, proceed to next test.

10-29. CHECK VALVE AND OUTLET FLOW TEST. To perform the Check Valve and Outlet Flow 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 Systems Components Test Stand	1172AS100 or 1316AS100

1. Connect N_2 Regulator Model 8-250 or equivalent to outside source of high pressure nitrogen supply, other than test stand.

2. Cap manifold C2, C3 and outlet ports.

3. Connect manifold filler port to outside source of high pressure nitrogen.

4. Connect manifold C1 port to N_2 INPUT connection (18) in altitude chamber and position manifold assembly in altitude chamber.

5. Turn INLET PRESS. ON/OFF valve (L) to ON and place FLOW SELECTOR valve (M) in the SUIT SIMULATOR position.

6. Open cylinder supplying outside source of nitrogen.

7. Using Nitrogen Regulator Model 8-250, slowly apply 140 psig to manifold assembly as indicated on nitrogen supply output gage and N_2 INPUT PRESS. gage (27) in altitude chamber.

NOTE

When performing step 8, ensure 140 psig is maintained on nitrogen supply output gage.

8. Slowly open VENT PRESS. valve (H) until the equivalent of 50 lpm flow is indicated VENT FLOW Manometer (3).

9. Record reading from N_2 INPUT PRESS. gage (27) on Performance Test Sheet. Nitrogen supply outlet gage and N_2 INPUT PRESS. gage (27) shall not differ more than 20 psig. Close VENT PRESS. valve (H).

10. Back out (counterclockwise) on Nitrogen Regulator Model 8-250 until spring tension is released. Open VENT PRESS. valve (H) until no pressure is indicated on N_2 INPUT PRESS. gage (28) and nitrogen regulator supply gage. Close VENT PRESS. valve (H).

11. Disconnect manifold C1 port from N_2 INPUT connection (18).

12. Uncap manifold C2 port and cap manifold C1 port. Connect manifold C2 port to N_2 INPUT connection (18). Position manifold assembly in altitude chamber.

13. Repeat steps 7 through 10.

14. Disconnect manifold C2 port from N_2 INPUT connection.

15. Uncap manifold C3 port and cap manifold C2 port. Connect manifold C3 port to N_2 INPUT connection (18). Position manifold assembly in altitude chamber.

16. Repeat steps 7 through 10.

17. Disconnect manifold C3 port from N_2 INPUT connection (18).

18. Uncap manifold outlet port and cap manifold C3 port. Connect manifold outlet to N_2 INPUT connection (18).

19. Repeat steps 7 through 10.

20. Close nitrogen supply cylinder.

21. Disconnect manifold assembly from N_2 INPUT connection (18) in altitude chamber and nitrogen supply cylinder.

22. Secure all test stand valves (turn all test stand valves fully to the right and back out (counterclock wise) on LOW PRESS. regulator (N) until spring tension is released and turn HIGH PRESS. regulator (Q) to VENT position.

23. Uncap manifold assembly C1, C2, and C3 ports.

24. If manifold assembly failed Check Valve and Outlet Flow Test, refer to troubleshooting (table 10-5). Proceed to Oxygen Purge (paragraph 10-30).

10-30. OXYGEN PURGE.

10-31. To perform the Oxygen Purge, proceed as follows:

Materials Required

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

WARNING

Do not use oxygen test stand for performing oxygen purge.

1. Connect manifold assembly filler port to regulated high pressure oxygen source.

2. Purge manifold assembly with 200 psig flow of oxygen for 3 minutes.

3. Secure high pressure oxygen source and disconnect manifold assembly.

Table 10-5. Troubleshooting (Check Valve and Outlet Flow Test)

Trouble	Probable Cause	Remedy
Pressure drop between two gages exceeds 20 psig.	Filler, C1, C2, C3, or Outlet Adapter Fitting (1) blocked.	Clean Adapter fitting (1).
	Poppet (5) in inner body (6) or lower body (8), dirty or damaged.	Clean or replace poppets (5).
	Blocked or damaged port in upper body (4), inner body (6), or lower body (8).	Clean or replace upper body (4), inner body (6), or lower body (8).
Notes: 1. Unless otherwise noted, index numbers in parentheses refer to figure 10-6.		

10-32. DISASSEMBLY.

10-33. To disassemble the high pressure oxygen manifold and check valve assembly, use index numbers assigned to figure 10-6 unless otherwise noted. The manifold and check valve assembly must be completely disassembled each time a repair action is required to ensure the assembly is free of dirt, grease and other hydrocarbons. Disassemble the manifold and check valve assembly as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth	—
As Required	Material, Rubber	—

CAUTION

All disassembly, inspection, repair and assembly must be done on benches having good lighting and in an area provided with air conditioning. Walls, floor and ceiling should have a smooth finish and should be painted with a non chalking paint which can be kept clean and dust free. If manifold assembly is not going to be reassembled immediately after inspection and cleaning, stow all component parts in a plastic bag to protect them form dirt and moisture.

NOTE

Discard all O-rings, anti-sieze tape, safety wire, and lead seals removed during disassembly. No special tools are required to disassemble manifold and check valve assembly.

1. Remove adapter/nipple fittings (1) from filler, outlet, C1, C2, and C3 ports.

CAUTION

When performing step 2, wrap two flat surfaces on filler and outlet port sides of lower body (8) with a material such as cloth or rubber to protect lower body from damage when installing in vise (figure 10-5).

2. Carefully position lower body (8) into vise with two flat surfaces on bottom sides of lower body, mating jaws of vise with inner body (6). C1, C2, and C3 arrows are pointing up.

3. Using wire cutters, carefully cut and remove safety wire from four bolts (2). Discard safety wire.

4. Loosen, but do not completely remove four bolts (2).

5. Remove high pressure oxygen manifold and check valve assembly from vise.

6. Remove four bolts (2) from manifold and check valve assembly. Separate upper body (4), inner body (6), and lower body (8).

7. Remove and discard three O-ring packing (3) from upper body (4) and three O-ring packing from inner body (6).

8. Remove three poppet assemblies (5) from inner body (6) and three poppet assemblies (5) from lower body (8).

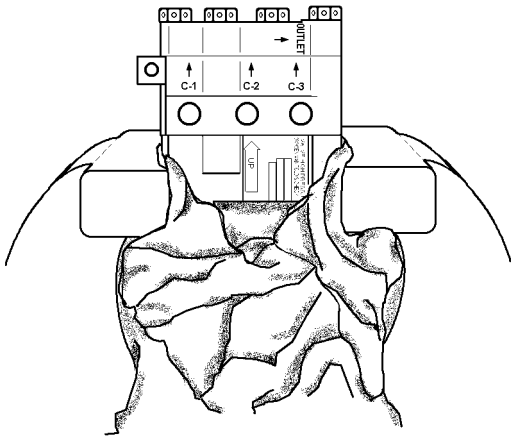

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Figure 10-5. Installing Manifold and Check Valve Assembly in Vise

10-34. CLEANING.

10-35. To clean manifold and check valve assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Distilled Water	NIIN 00-356-4936
As Required	Soap, Liquid, Ivory Dishwashing or Equivalent	Local Purchase
As Required	Nitrogen, Oil-free, Water Pumped, Type I, Class I, Grade B	Fed Spec BB-N-411 NIIN 00-985-7275

NOTE

If your command has not received the materials and special equipment required to perform the new oxygen cleaning procedures outlined in Chapter 4, utilize Cleaning of Oxygen Lines paragraph for cleaning of metal parts of manifold and check valve with the exception of poppet assemblies. Clean poppet assemblies with a mild soap and water solution (such as Ivory Liquid), rinse with distilled water and blow dry with water pumped nitrogen.

1. Clean all metal parts using procedures outlined in Chapter 4.

2. Clean all O-ring packing, using distilled water and blow dry with clean, oil free water pumped nitrogen.

10-36. INSPECTION.

10-37. Visually inspect all component parts for defects as follows:

1. Inspect poppet assemblies (5) for burrs, cracks, distortion, damaged rubber seats, and other obvious damage. Replace all defective poppet assemblies.

2. Inspect upper body (4) for damaged threads, corrosion pits, scarred or damaged interior ports, damaged mating surface, and any other obvious damage. Replace if upper body assembly is defective.

3. Inspect inner body (6) poppet seating surfaces for corrosion pits, scarred or damaged interior ports, damaged mating surfaces, damaged threads, and any other obvious damage. Replace if inner body assembly is defective.

4. Inspect lower body (8) poppet seating surfaces for corrosion pits, scarred or damaged interior ports, damaged mating surfaces, damaged helicoil inserts, damaged threads, and any other obvious damage. Replace if lower body assembly is defective.

10-38. LUBRICATION.

10-39. Lubricate O-ring packing with a light film of Krytox 240 AC or equivalent.

10-40. ASSEMBLY.

10-41. To assemble manifold and check valve assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240 AC Lubricant	NIIN 00-961-8995 (CAGE 73925)
As Required	Lockwire	MS20995C20
As Required	Tape, Anti-seize	MIL-T-27730A, NIIN 00-889-3535 (CAGE 81349)

Support Equipment Required

Quantity	Description	Reference Number
As Required	Wrench, Torque, 300 in-lb	TE25A (CAGE 55719) NIIN 00-776-1841

NOTE

Index numbers in parentheses refer to figure 10-6 unless otherwise noted.

1. Carefully insert three poppet assemblies (5) into top ports of lower body (8).

2. Install three O-ring packing (3) into cavities on bottom side of inner body (6).

3. Position inner body (6) onto lower body (8).

4. Carefully insert three poppets (5) into top ports of inner body (6).

5. Install three O-ring packing (3) into cavities on bottom side of upper body (4).

6. Position upper body (4) onto inner body (6) and lower body (8).

7. Insert four bolts (2) into upper body (4), inner body (6) and lower body (8) and cross check tighten four bolts (2) evenly until the three bodies mate together. Place manifold assembly in vise (figure 10-5).

8. Sequentially torque four bolts (2) to 60 in-lb, then to 100 in-lb and finally, 150 in-lb. Safety wire four bolts (2).

9. Wrap pipe threads of 5 fittings (1) with two turns of antisieze tape.

10. Install 1 each of fitting (1) into filler port, outlet port, C1, C2, and C3 ports. Tighten all fittings hand tight, then using a wrench, tighten an additional one to two turns maximum. If leakage occurs when performing External Leakage Test during Bench Test, tighten fittings (1) an additional 1/2 to one full turn.

11. Perform Bench Test.

Section 10-5. Illustrated Parts Breakdown

10-42. GENERAL.

10-43. This section lists and illustrates the assemblies and detail parts of the High Pressure Oxygen Manifold Check Valve Assembly (P/Ns 2140, 2150, and 2170), manufactured by Carleton Technologies, Inc.

10-44. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.

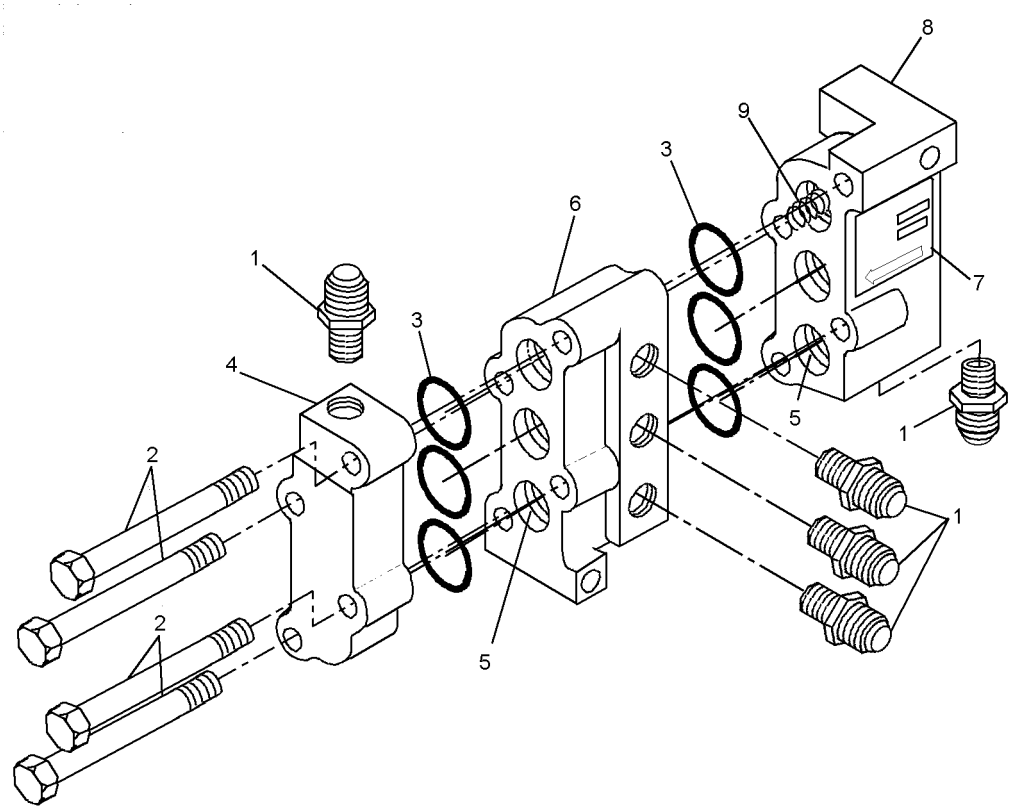

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Figure 10-6. High Pressure Oxygen Manifold and Check Valve Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
10-6	2170	VALVE ASSEMBLY, High Pressure . . . . . Oxygen Manifold and Check (With Flareless Adapters ER816-5J or Equivalent) (31441) (Lockheed Spec Cont DWG 654229-101)	1	A
	2150	VALVE ASSEMBLY, High Pressure . . . . . Oxygen Manifold and Check (With Flared Adapters AN816-5K or Equivalent) (31441) (Lockheed Spec Cont DWG 654229-1)	1	B
	2140	VALVE ASSEMBLY, High Pressure . . . . . Oxygen Manifold and Check (Without Adapters) (31441) (Lockheed Spec Cont DWG 654229-3)	1	C
-1	ER816-5J	. NIPPLE	5	A
	2159	. ADAPTER	5	A
	AN816-5K	. ADAPTER	5	B
-2	MS20074-04-22	. BOLT	4	
-3	MS9068-015	. PACKING	6	
-4	2152-1	. BODY, Upper (31441)	1	
-5	2155-1	. POPPET ASSEMBLY (31441)	6	
-6	2153-1	. BODY, Inner (31441)	1	
-7	2158-1	. PLATE, Identification (31441)	1	
-8	2154-1	. BODY ASSEMBLY, Lower (31441)	1	
-9	2157-1	. . INSERT, Helicoil, 3585-4CN x 318 (31441) . .	1	

NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code
AN816-5K	10-6-1	PAHZZ
ER816-5J	10-6-1	PAHZZ
MS20074-04-22	10-6-2	PAHZZ
MS9068-015	10-6-3	PAHZZ
2140	10-6	PAOHH
2150	10-6	PAOHH
2152-1	10-6-4	PAHZZ
2153-1	10-6-6	PAHZZ
2154-1	10-6-8	PAHZZ
2155-1	10-6-5	PAHZZ
2157-1	10-6-9	PAHZZ
2158-1	10-6-7	MD
2159	10-6-1	PAHZZ
2170	10-6	PAOHH

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