Patton's Medical

Automatic Changeover Medical Manifold

Installation, Operation and Maintenance Manual

Model Number:	
Date Purchased:	
Purchased from:	

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1.0 General Information

The NFPA99 compliant dome biased fully-automatic dual line medical manifold offers continuous, fail-safe pressure and flow control from high pressure medical cylinders. The manifold provides an uninterrupted supply to the facility at a constant pressure. Signal contacts are provided to indicate when the "Secondary" Bank is in use. No manual resetting is required when the Primary Bank is replaced and system pressure level returns to the Primary Bank.

Power Requirements
100-240/1/50-60 VAC
Maximum Inlet Pressure
3,000 PSIG (210 BAR)
Temperature Range
0 to 140°F (-18° to 60°C)
Weight
54 lbs.

Filter
40 micron
Inlet Connection
CGA 1340
Outlet Connection
1/2" NPT for Main Valve (included)
Flow Capacity
1200 SCFH @80psi

Materials:

Bodies
Brass barstock
Seats
Viton®, Neoprene

Seals
PTFE, Neoprene and Viton®
Enclosure
Powder Coated Steel NEMA 1 Enclosure, removable front cover for ease of service.

Features:

- High Flow Regulators
- NEMA 1 enclosure
- Micro-processor control
- Master alarm interface(Secondary in Use)
- Service button allows technician to manually alternate banks
- Simple Installation and set-up
- Pushbutton for transducer calibration
- Pushbutton bleed valves to aide in setting primary regulators
- Primary Source Valve included (1/2" NPT male x brazed in field)
- Separate Wall Mounting bracket included for ease of installation by single technician
- NFPA 99 compliant

Note: A transfer or manifold room shall maintain a temperature not greater than 52°C (125°F) and not less than –7°C. (per NFPA 9.3.6.8)

2.0 Description

Patton's Medical dome loaded manifold is manufactured to supply an uninterrupted source of gas to a medical facility. Manifold will have multiple cylinders divided into two equal banks on the left side and right side. One bank is the primary side the other is the secondary side. One side will be online or "in use" the other will be in secondary or "ready".

Indicator lights will display the status of the gas supply. When the primary bank of cylinders reaches the low setting the red light will display to "Replace" that bank of cylinders. The normally closed alarm contacts will open sending a signal to the remote indicator (Master Alarm - NFPA).

When cylinders are replaced the red light will go out and green light will illuminate automatically. Alarm contacts will close sending remote signal indicating the cylinders have been replaced.

Supply voltage of 100-240 VAC is converted to 12 VDC to power the manifold. Two sets of remote alarm contacts are supplied.

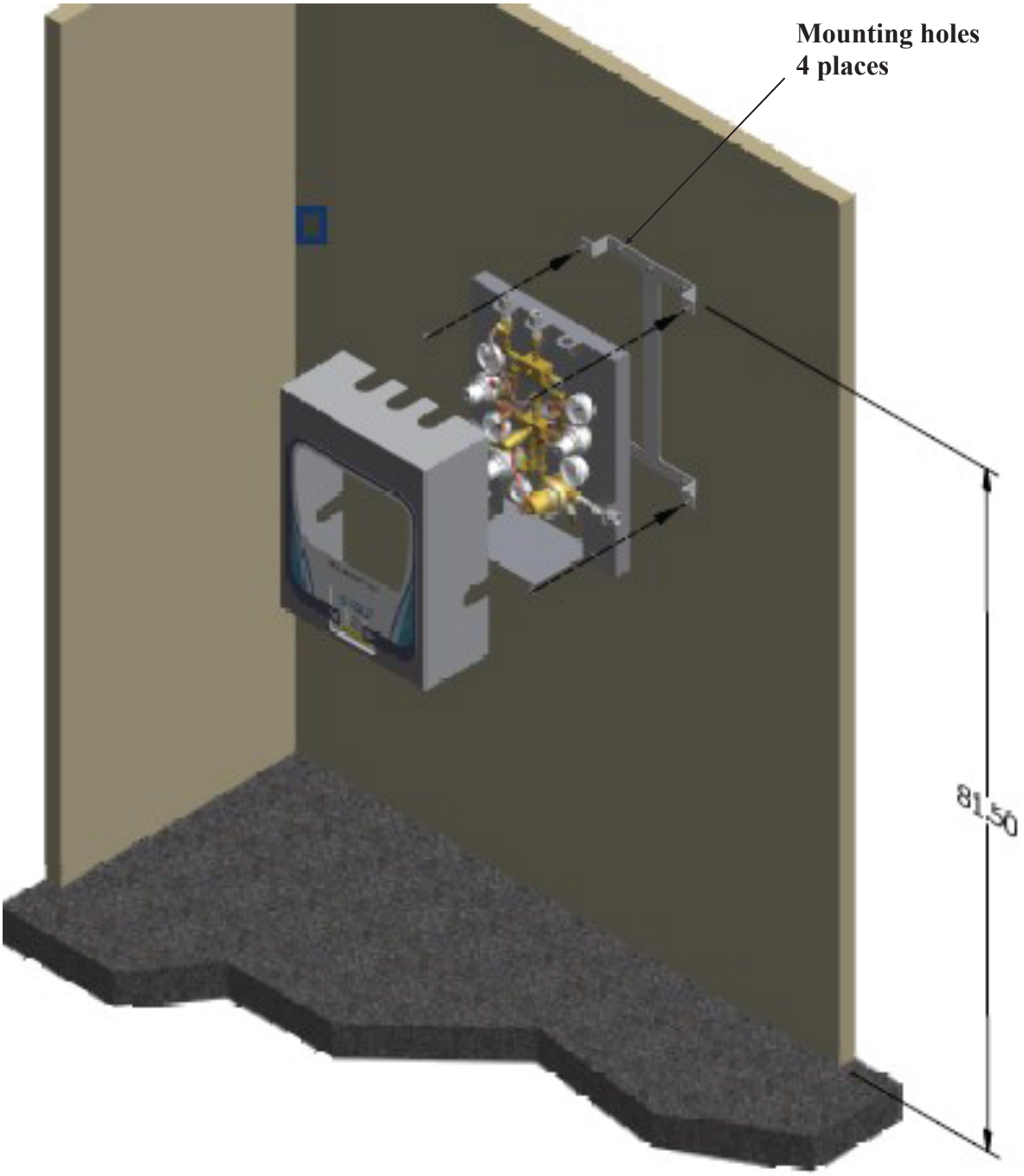
3.0 Shipping Details

The manifold system will be shipped in two or more boxes. The manifold cabinet will be in one box, the wall mounting bracket, CGA fittings, 3/8" washers and nuts for attaching to mounting bracket, 3/4" source valve and Installation and operation manual in another box. Additional boxes may contain appropriate number of header extensions and pigtails. Pigtails for Oxygen and Helium are pre-bent rigid copper. All other gases are use stainless steel flex type. The manifold is made for wall mounting but can be ordered with floor mounting bracket as well.

4.0 Cabinet Mounting Instructions

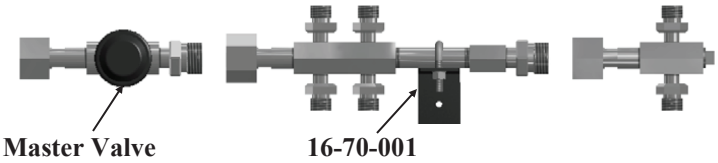
1. Remove manifold from shipping carton and place on cardboard insert face up.
2. Remove manifold cover by removing two screws on sides of the manifold enclosure.
3. Mark top holes in mounting brackets 81.5" from floor. This will allow clearance for "H" size bottles. If taller bottles are used adjust accordingly. Mark all four mounting holes. (See Drawing next page)
4. Drill holes for anchors to mount the bracket (3/8" anchors) supplied by others. Mount bracket to wall.
5. Lift manifold onto four 3/8" studs on mounting bracket. Secure manifold to mounting bracket using four 3/8" washers and nuts.

4.0 Cabinet Mounting Instructions (continued)



5.0 Header Bar Installation

1. Attach the Master Valve assembly to both sides of the manifold (Do not use Thread sealant on connections)
2. Attach the header bar assembly's using the union nuts to the master valve's. If header bar is larger than a 5x5 a wall mounting bracket (part number 16-70-001) is included on each side for each additional 4th or 5th cylinder (see below). Attach wall bracket to wall using 3/8" anchors (supplied by others). Tighten u-bolts to header pipe.

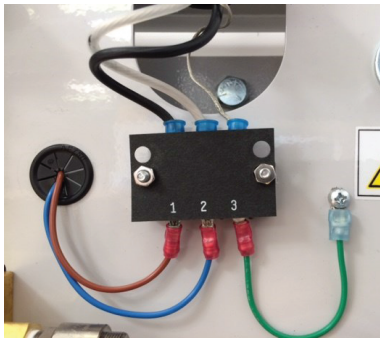


3. Secure cylinders to wall with optional wall mounting brackets and chain. (see be low)

4. Remove plastic caps from header bar and install pigtails to the header bar connections and cylinders.

6.0 Power Supply Connection

1. Supply 100 VAC to 240 VAC 12 to 14 AWG copper wire. Circuit breaker 15 amp max. A 1/2" conduit connection is provided at the top of enclosure. Current draw is .55 amps.

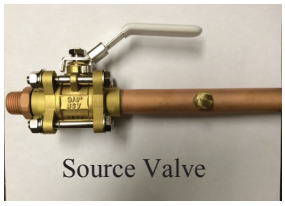


Brown	Hot	1
Blue	Common	2
Green	Ground	3

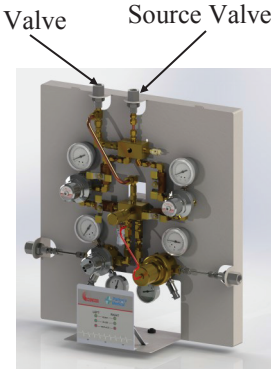
7.0 Master Alarm Contacts (NFPA) " switch-over has occurred"

Two sets of remote alarm contacts are provided for building automation systems. Contacts will open if a switching failure occurs or a loss of power. The alarm contacts are rated for 0.4 amps @ 24VDC. Connection is made through bottom of enclosure.

8.0 Outlet Valve and Relief Valve Connection

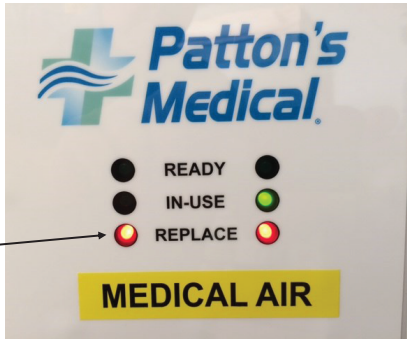


The Source Valve is shipped loose. The source valve is supplied with 1/2" NPT fitting for connection to top of manifold and 3/4" nominal copper for facility connection. A 1/8" plugged port is provided on top of the source valve and can be removed for purging. The relief valve connection is 1/2" NPT located on top of the manifold.



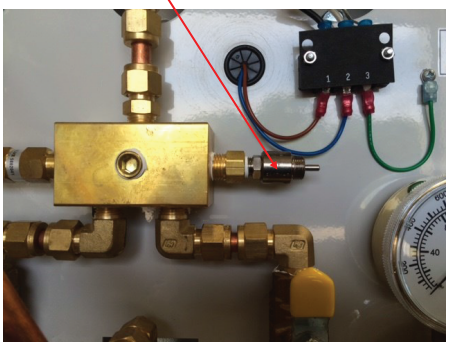
9.0 Initial Start-up

1. Close 3/4" Source Valve.
2. Fully open master valve on both sides of manifold.
3. Open all four regulator isolation valves.
4. Apply power to manifold.
5. "Replace" lights illuminated on both sides.
6. Slowly open one cylinder on right side.



9.0 Initial Start-up (continued)

7. "Ready" and "In use" lights illuminate.
8. Slowly open one cylinder on left side of manifold.
9. "Ready" light illuminates on left side.
10. Slowly close right side cylinder that is open.
11. Press relief valve and drop pressure slowly.



12. When the right side drops below the low limit the red "Replace" light will illuminate, alarm contacts will open and left side "In Use" green light will illuminate. Manifold is now flowing gas from left bank.
13. Slowly reopen one cylinder from right side. Red light turns off and green "Ready" light turns on.
14. Slowly close left side cylinder that is open.
15. Press relief valve and drop pressure slowly.
16. When the left side drops below the low limit the red "Replace" light (local signal) will illuminate, alarm contacts (Remote signal-NFPA to master alarm) will open and right side "In Use" green light will illuminate. Manifold is now flowing gas from the right bank.
17. Reopen one cylinder from left side. Red light goes out and green "Ready" light is illuminated. Alarm contacts should reclose at this time.

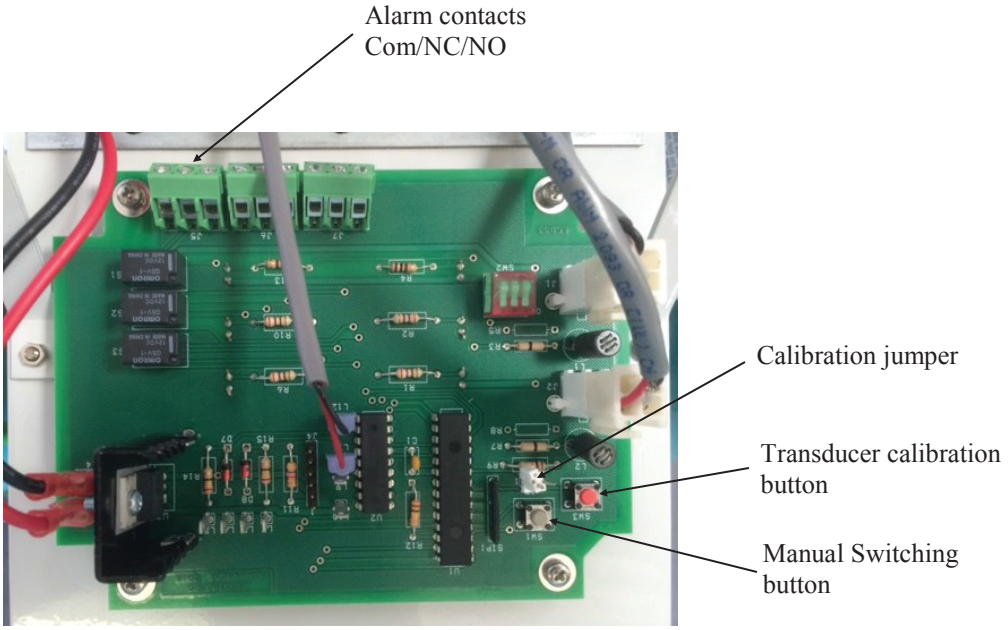
Note:

If a power loss occurs the switching alarm contact will open sending an alarm to master control panel.

The manifold will continue to supply gas until all cylinders are empty.

10.0 Control board

1. Manual switching can be accomplished by pressing gray button on control board.
2. Transducers are calibrated by moving jumper to connect both pins and pressing red calibration button with 0 PSI on transducers. (Required only when replacing trans ducers). Remove jumper from 1 pin after calibration.
3. Three sets of remote alarm contacts are supplied for connection to master alarm panel or other BMS systems. **(Normally open contact will be closed if no alarm condition is present)**



11. Testing for leaks

1. Close 3/4" source shut-off valve.

2. Make sure master valve is open on the right and left side of manifold.

3. Slowly open a cylinder on both sides of the manifold.

4. Check for leaks at all cylinder extension joints using a commercial leak detector which is compatible with oxygen.

5. If leaks are detected close valves on cylinders that were opened. Repair leaks and verify leaks are eliminated.

6. Wipe off excess leak detector after testing. Avoid getting leak detector on electrical components or connections.

12. Specifications

The Patton's Medical Automatic Changeover Manifold is designed in accordance with the latest revision of NFPA 99.
Three types of Patton's Medical manifolds are available depending on the delivery pressure and gas type.

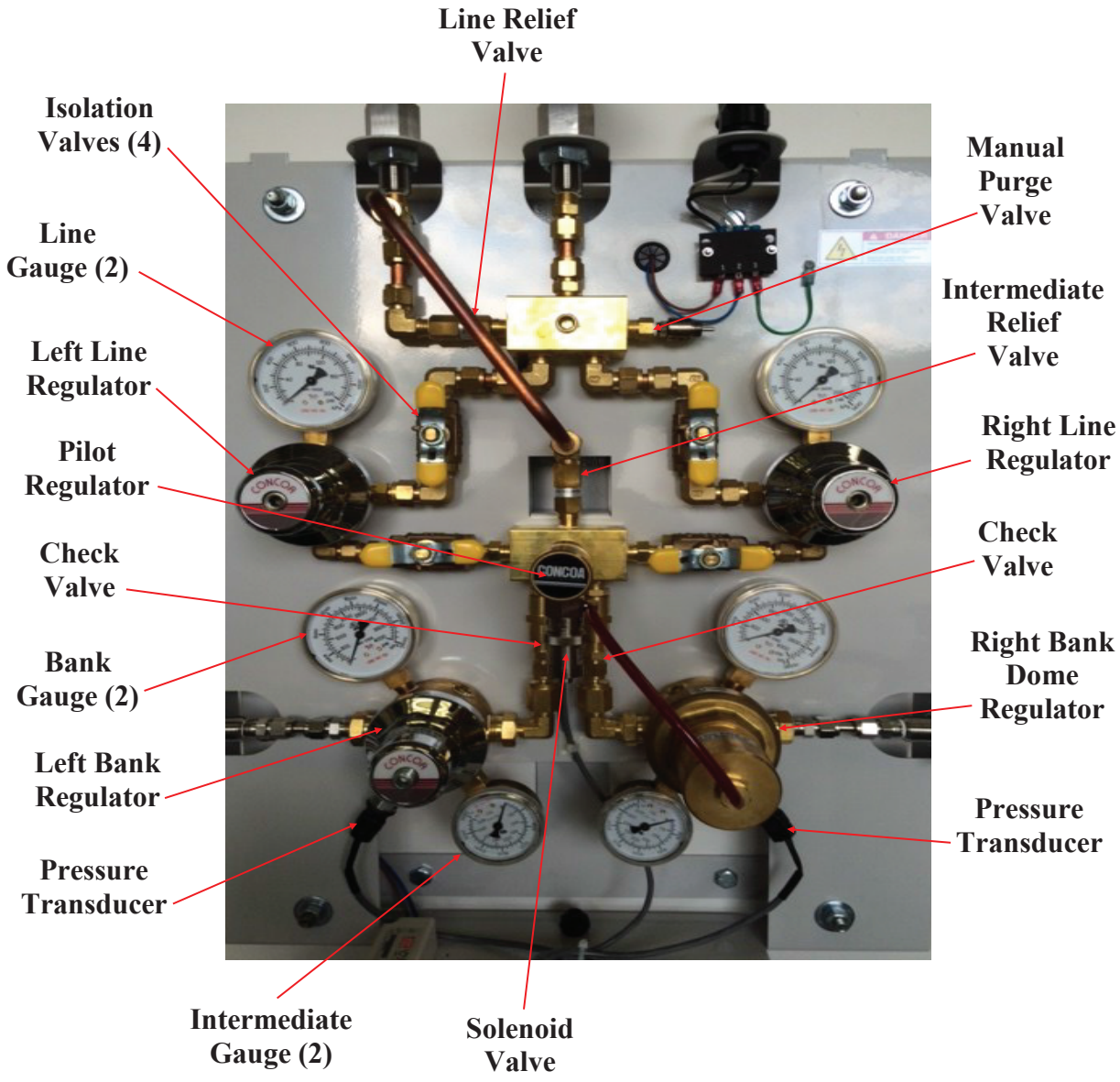
55 PSI Delivery Pressure
- Oxygen, Nitrous Oxide, Medical Air, Carbon Dioxide, Helium, Argon

100 PSI Delivery Pressure
- Medical Air, Oxygen, Carbon Dioxide

180 PSI Delivery Pressure
- Nitrogen, Instrument Air

Delivery Pressure	55	100	180
Intermediate Pressure - Ready Bank	190 PSI	230 PSI	260 PSI
Intermediate Relief Valve	375	375	375
Line Pressure Relief Valve	225 PSI	225 PSI	375 PSI
Maximum Inlet Pressure	3000 PSI	3000 PSI	3000 PSI

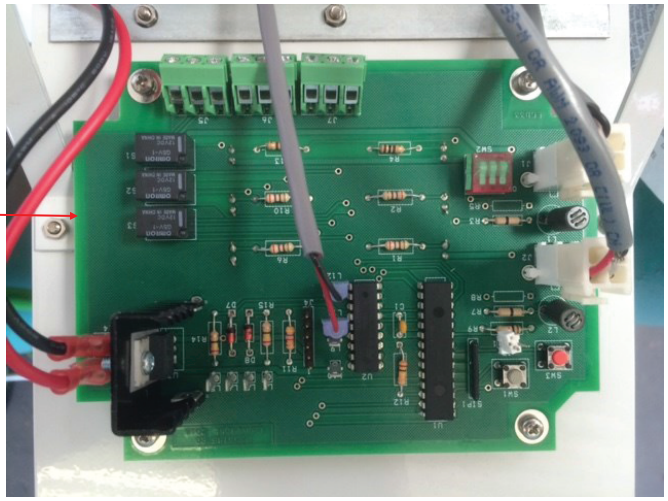
13. Manifold Parts Layout



13. Manifold Parts Layout

Power Supply 27-80-066

Control Board 27-80-064



14. Manifold Parts List

Description	Part #
Pilot Regulator	27-80-050
Dome Regulator (not for CO2 or NO2) 55 PSI Delivery	27-80-052
Left Bank Regulator (not for CO2 or NO2) 55 PSI Delivery	27-80-053
Dome Regulator (for CO2 and NO2) 55 PSI Delivery	27-80-057
Left Bank Regulator (for CO2 and NO2) 55 PSI Delivery	27-80-058
Left Line Regulator 55 PSI Delivery	27-80-054L
Right Line Regulator 55 PSI Delivery	27-80-054R
Dome Regulator (not for CO2 or NO2) 100 PSI Delivery	27-80-052
Left Bank Regulator (not for CO2 or NO2) 100 PSI Delivery	27-80-053
Dome Regulator (for CO2 and NO2) 100 PSI Delivery	27-80-057
Left Bank Regulator (for CO2 and NO2) 100 PSI Delivery	27-80-058
Left Line Regulator 100 PSI Delivery	27-80-055L
Right Line Regulator 100 PSI Delivery	27-80-055R
Dome Regulator (not for CO2 or NO2) 170 PSI Delivery	27-80-052
Left Bank Regulator (not for CO2 or NO2) 170 PSI Delivery	27-80-053
Left Line Regulator 170 PSI Delivery	27-80-056L
Right Line Regulator 170 PSI Delivery	27-80-056R
Bank Pressure Gauge	27-80-061
Intermediate Pressure Gauge	27-80-062
Line Pressure Gauge 0-100 PSI	27-80-063
Line Pressure Gauge 0-200 PSI	27-80-068
Pressure Transducer	27-80-059
Solenoid Valve	27-80-065
Power Supply	27-80-066
Front Cover	27-80-067
Intermediate Relief Valve & Line pressure for 170 PSI systems	27-80-070
Line Pressure Relief for 55 & 100 PSI systems	27-80-069
Isolation Valve for manifold	PMIV-M-07

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