Pattons medical

Automatic Changeover Medical Manifold

Installation, Operation and Maintenance Manual

Model Number:	
Date Purchased:	
Purchased from:	

For further technical assistance, service or replacement parts, please contact:

Patton's Medical
3201 South Boulevard
Charlotte, NC 28209

Customer Service: 1-866-960-0087
Phone: 704-529-5442
Fax: 704-525-5148

www.pattonsmedical.com

Patton's Medical reserves the right to make changes and improvements to update products sold previously without notice or obligation.

Issue Date: September, 2018

Table of Contents

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.

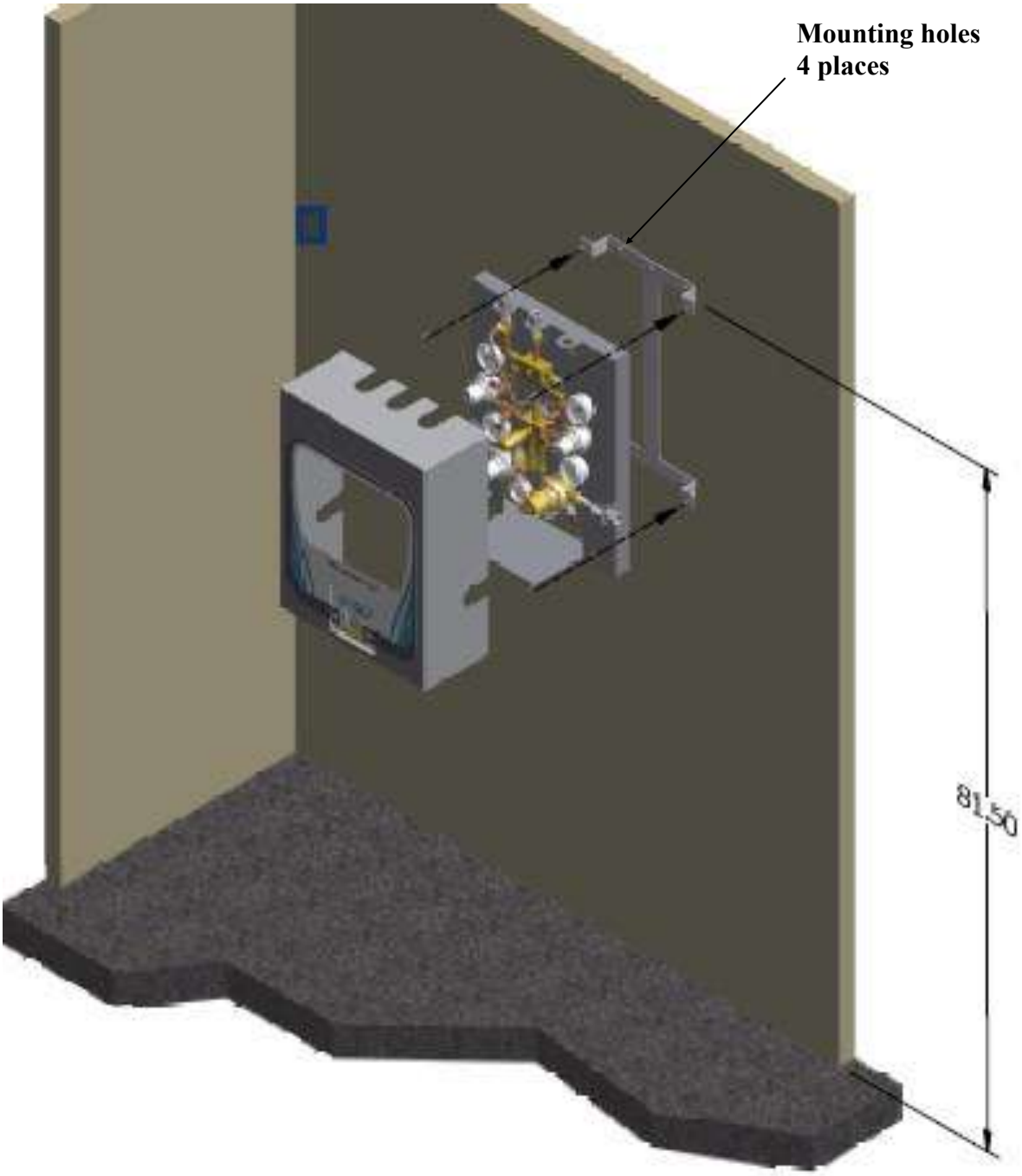
3.0 Shipping Details

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

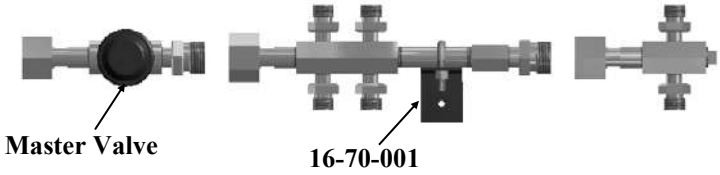
1. Remove manifold from shipping carton and place on cardboard insert face up.
2. Remove manifold cover by removing two screws on sides of the manifold enclosure.
3. Mark top holes in mounting brackets 81.5" from floor. This will allow clearance for "H" size bottles. If taller bottles are used adjust 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. A wall mounting bracket (part number 16-70-001) is included on each side. Attach wall bracket to wall using 3/8" anchors (supplied by others). Tighten u-bolts to header pipe.

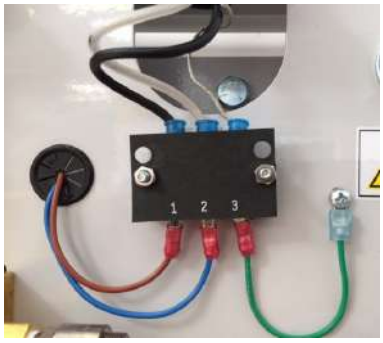


3. Secure cylinders to wall with optional wall mounting brackets and chain. (see be low)

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.



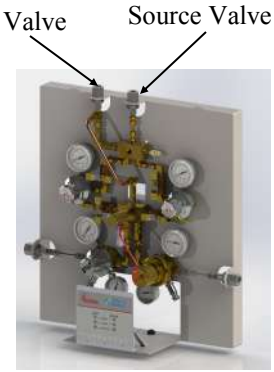
Brown	Hot	1
Blue	Common	2
Green	Ground	3

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

Three sets of remote alarm contacts are provided for building automation systems. Contacts will open if a switching failure occurs. 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.

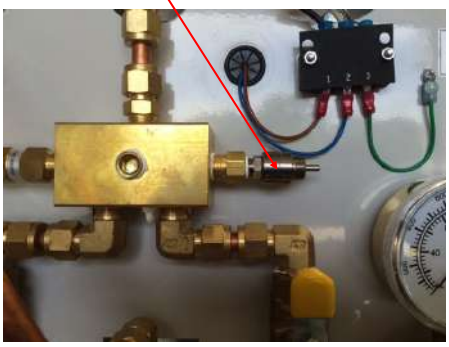


9.0 Initial Start-up

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.



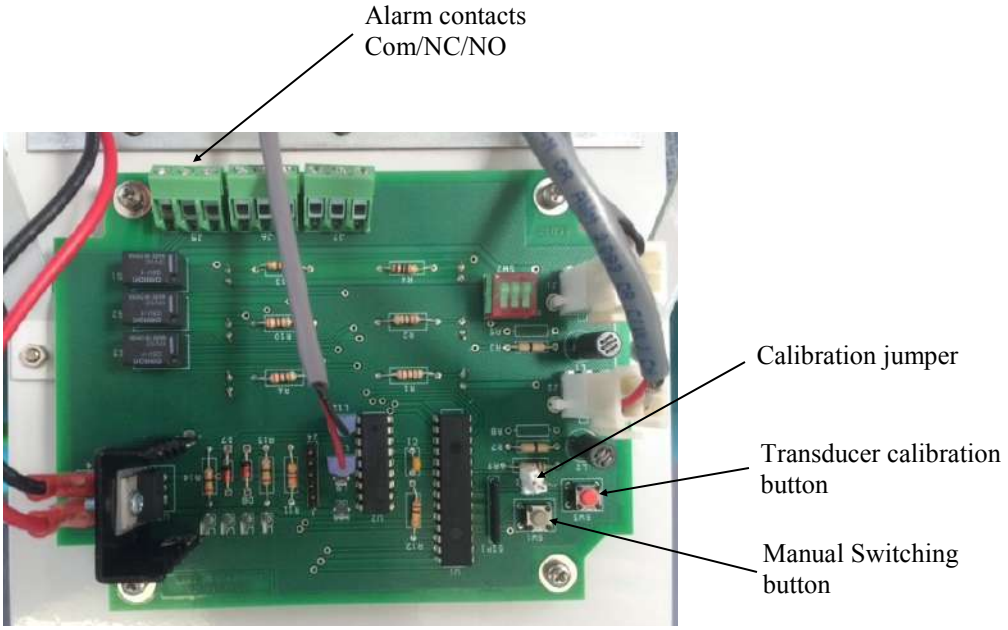
12. When the right side drops below the low limit the red "Replace" light will illuminate, alarm contacts will open and left side "In Use" green light will illuminate. Manifold is now flowing gas from left bank.
13. Slowly reopen one cylinder from right side. Red light turns off and green "Ready" light 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 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 closed 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

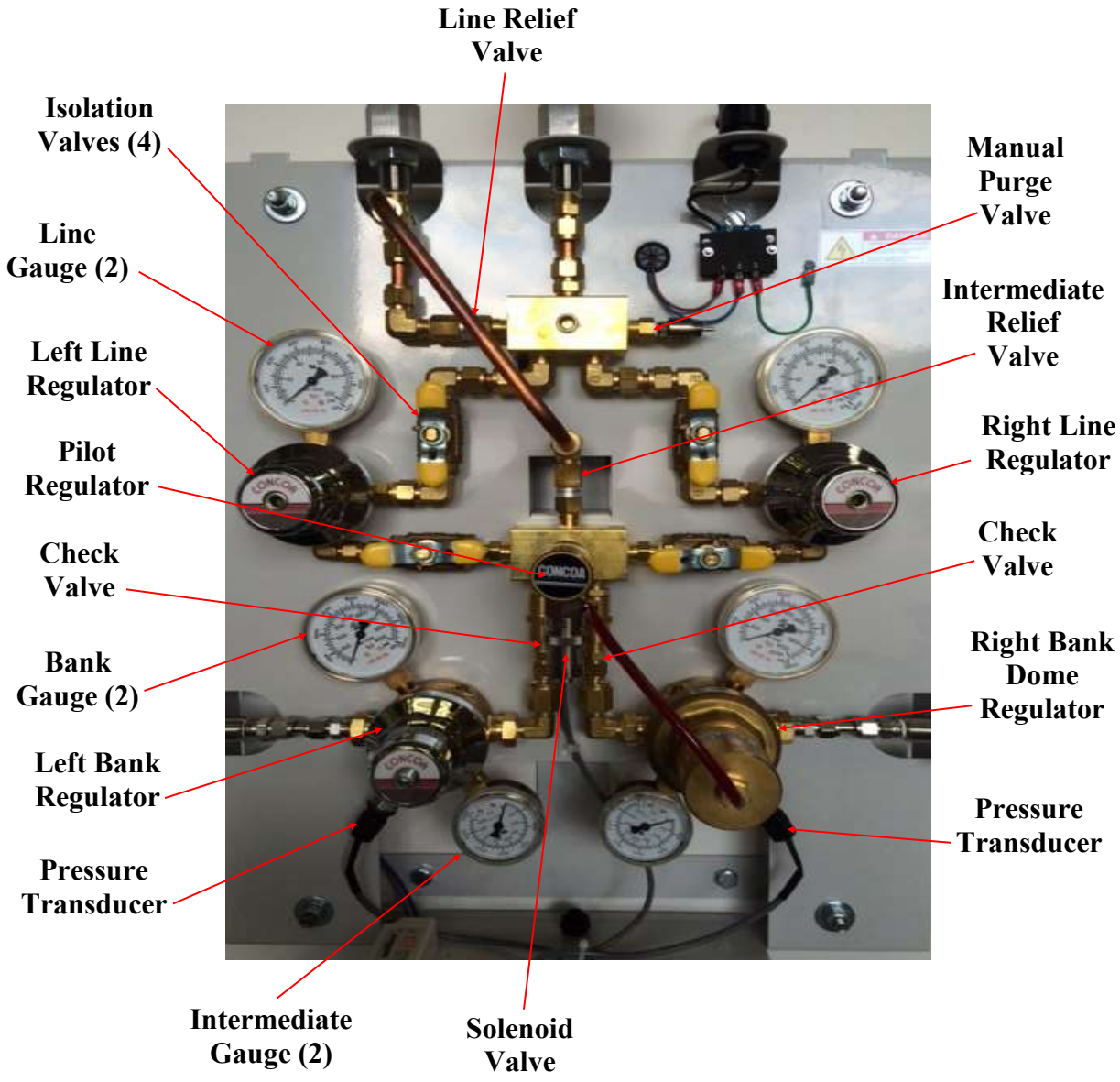
- Medical Air, Oxygen, Carbon Dioxide

180 PSI Delivery Pressure

- Nitrogen, Instrument Air

Patton's Medical Manifold	55	100	170
Maximum Inlet Pressure Right Side	3000 PSI	3000 PSI	3000 PSI
Maximum Inlet Pressure Left Side	3000 PSI	3000 PSI	3000 PSI
Intermediate Gauge/ Right Side/ Dome Loaded Regulator (static)	250-300 psi	250-300 psi	250-300 psi
Intermediate Gauge/ Left Side /Pre-set Regulator (static)	230 psi	242psi max	242 psi
Outlet Gauge/ Delivery Regulator. Left side (flowing)	55-60 psi	100-105 psi	170-175 psi
Outlet Gauge/ Delivery Regulator. Right side (flowing)	55-60 psi	100-105 psi	170-175 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 N2O) 55 PSI Delivery	27-80-052
Left Bank Regulator (not for CO2 or N2O) 55 PSI Delivery	27-80-053
Dome Regulator (for CO2 and N2O) 55 PSI Delivery	27-80-057
Left Bank Regulator (for CO2 and N2O) 55 PSI Delivery	27-80-058
Left Line Regulator 55 PSI Delivery (Oxy, Med Air, Helium, Argon)	27-80-054L
Right Line Regulator 55 PSI Delivery (Oxy, Med Air, Helium, Argon)	27-80-054R
Dome Regulator (not for CO2 or N2O) 100 PSI Delivery	27-80-052
Left Bank Regulator (not for CO2 or N2O) 100 PSI Delivery	27-80-053
Dome Regulator (for CO2 and N2O) 100 PSI Delivery	27-80-057
Left Bank Regulator (for CO2 and N2O) 100 PSI Delivery	27-80-058
Left Line Regulator 100 PSI Delivery (Nitrous Oxide, Carbon Dioxide)	27-80-055L
Right Line Regulator 100 PSI Delivery (Nitrous Oxide, Carbon Dioxide)	27-80-055R
Dome Regulator (not for CO2 or N2O) 170 PSI Delivery	27-80-052
Left Bank Regulator (not for CO2 or N2O) 170 PSI Delivery	27-80-053
Left Line Regulator 170 PSI Delivery (Nitrogen, Instrument Air)	27-80-056L
Right Line Regulator 170 PSI Delivery (Nitrogen, Instrument Air)	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 (375 PSI)	27-80-070
Line Pressure Relief for 55 & 100 PSI systems (225 PSI)	27-80-069
Isolation Valve for manifold	PMIV-M-07
Check Valve for N2O and CO2	27-80-072
Check Valve for all gases except N2O and CO2	27-80-071

15. Troubleshooting

Figure 2. Manifold with bracket screws removed to enable access to control board and view of inlet regulator 2"outlet (inter-stage) gauges.

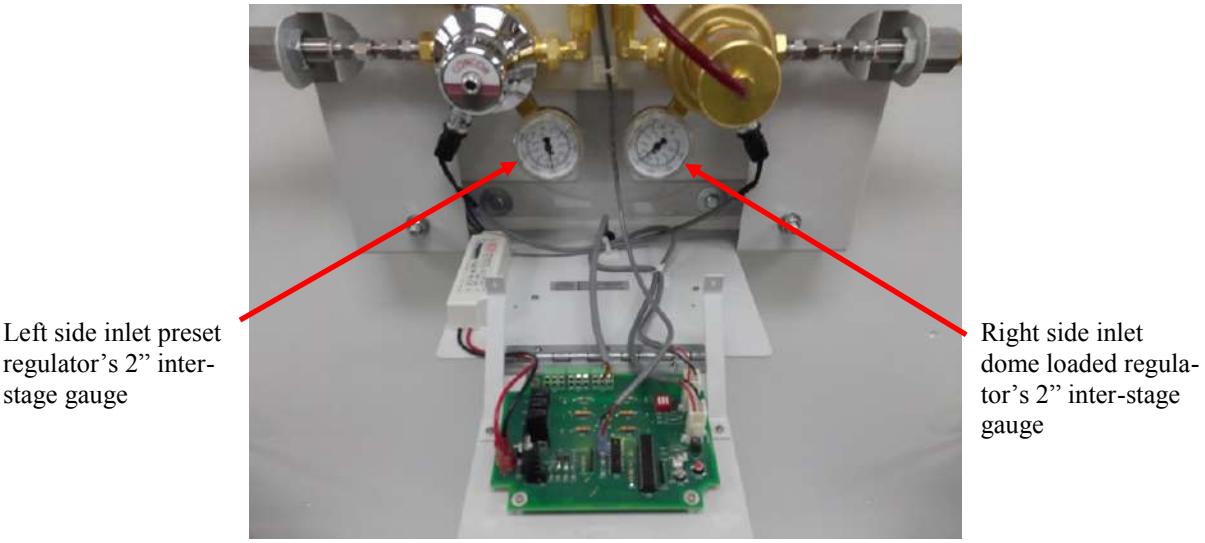


Figure 2

Figure 3. Circuit Board General Arrangement:

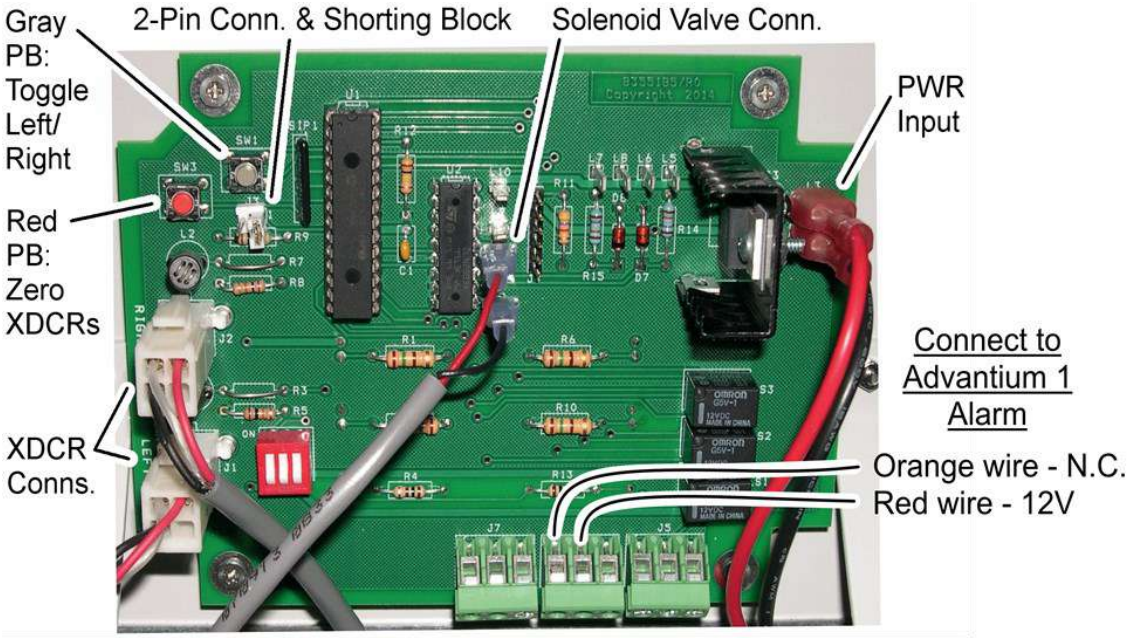


Figure 3

Zero the Transducers: J1 SW1 SW3 (See Figure 2)

CAUTION:

DO NOT HIT RED BUTTON WITH THE MANIFOLD PRESSURIZED.

1.Power up the system (plug it in).

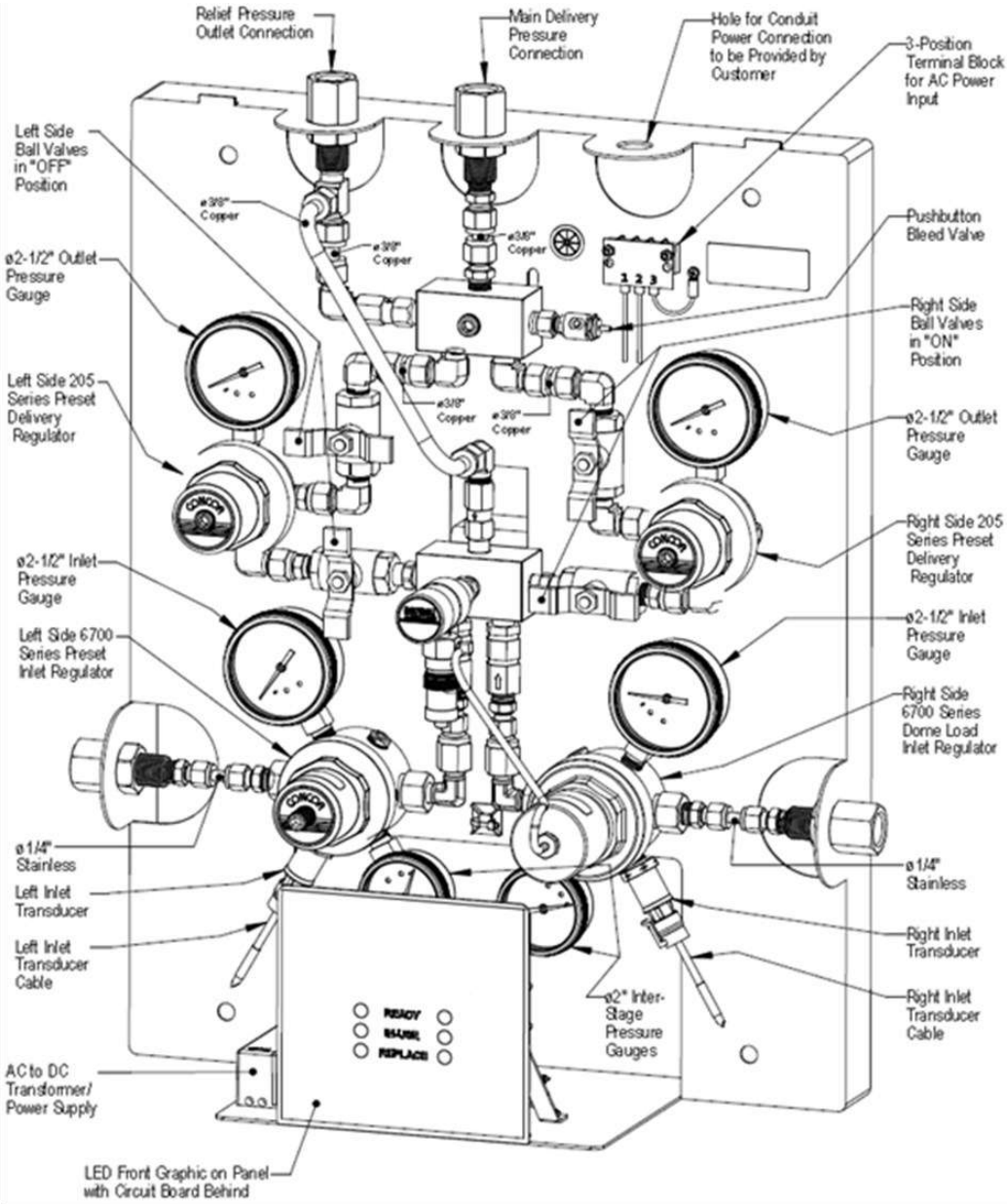
2. With the system de-pressurized (0 PSI on all gauges), locate the 2-pin jumper (J1) with a shunt/shorting block in the disconnect position (the shorting block is hanging on one pin – see picture above).

3. Remove the hanging shorting block, and place it over both pins (short the pins).

4. Locate the red push button (SW3) to the left of the shorting block, and press the red button ONE time.

5. Return the shunt to the disconnect position where the shorting block is hanging on one pin as illustrated above. – you have "zeroed" the transducers.

Figure 4. Manifold cover removed with detailed view of components.



LEDs:

"READY"
Means that the system has detected an adequate inlet pressure on the indicated side. Both may be on.

"IN-USE"
Means that the indicated side is the side from which gas is being supplied. Only one can be on.

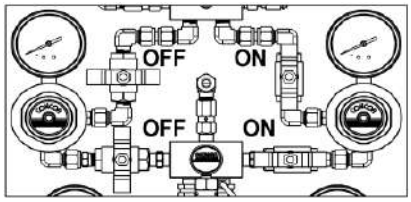
"REPLACE"
Means that the inlet pressure on the indicated side has fallen below an adequate level. Both may be on.

System Test:

1. De-pressurize the 57P system.

2. Isolate the left final line pressure regulator by closing the two left side ball valves, then activate the right final line pressure regulator by opening the two right side ball valves.

Figure 5. Isolation valves



3. Power up the system (plug it in).

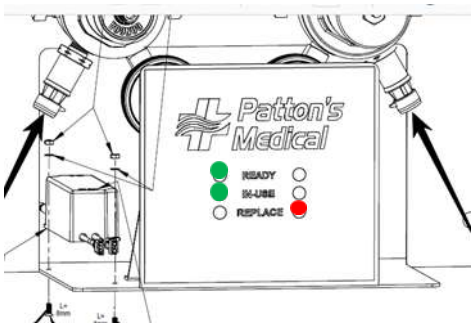
4. Pressurize the left inlet to 2100 psi +/- 100 psi using nitrogen or the intended gas and discharged to a safe location. Please note gases like CO2 are filled at lower pressures but greater than 350 psi for testing purposes.

5. If functioning properly, the system will set the "IN-USE" side to whichever side is first connected to a source that is greater than 350 PSI which is 100 PSI greater than the design switching pressure of 250 PSI.

6. Open and close the bleed valve's push button to verify flow. Close by releasing the bleed valve's push button.

7. The left side "READY" light and the left side "IN-USE" light should turn on. The right side "REPLACE" light should turn on.

Figure 6.Left Side In-Use Status lights



<u>8. Left side inlet preset regulator validation and adjustment.</u>

9. Read the pressure indicated on the left side bottom/inner 2" gauge (inter-stage pressure) as illustrated in Figure 2. Confirm that it meets the specification of 225 psi +/- 5 psi flowing (bleed valve venting) and 242 psi maximum in the static (non-

flowing) conditions. If not, adjust the left inlet regulator's setscrew to the appropriate pressure listed above and repeat step 9.

10. Verify that the **right side check valve** as illustrated in Figure 4, is sealing properly by observing the right side dome loaded regulator's bottom/inner 2" outlet gauge as illustrated in Figure 2. If this gauge shows an increase in pressure then the right side check valve should be replaced.

11. Confirm that both the left side line regulator isolation ball valves are closed. Now observe the left side line regulator outlet 2.5" gauge. If it reads 50 psi then the left side downstream isolation ball valve is leaking and needs replaced.

12. De-pressurize the left side.

13. Pressurize the right inlet to 2100 psi +/- 100 psi using nitrogen or the intended gas and discharged to a safe location. Please note gases like CO2 are filled at lower pressures but greater than 350 psi for testing purposes.

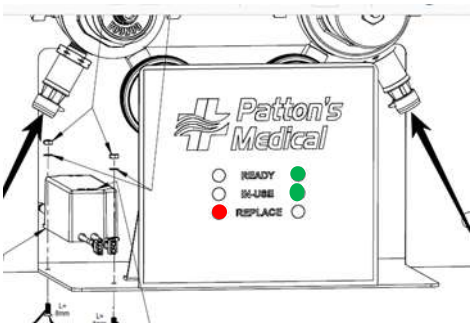
14. Push open and close the bleed valve to verify flow at the outlet.

15. The right side "READY" light and the right side "IN-USE" light should turn on. The left side "REPLACE" light should turn on as illustrated in Figure 7.

16. Verify that the **left side check valve** as illustrated in Figure 4, is sealing properly by observing the left side dome loaded regulator's bottom/inner 2" outlet gauge as illustrated in Figure 2. If this gauge shows an increase in pressure then the left side check valve should be replaced.

17. Confirm that both the left side line regulator isolation ball valves are closed. Now observe the left side line regulator outlet 2.5" gauge. If it reads 50 psi then the left side downstream isolation ball valve is leaking and needs replaced.

Figure 7. Status lights



19. Right Inlet Dome Regulator Validation and Adjustment.

20. Pressurize both sides to 2100 psi +/- 100 psi and then shutoff both side gas sources.
21. Read the pressure indicated on the right side bottom/inner 2" gauge (inter-stage pressure) as illustrated in Figure 2. Confirm that it meets the specification of 250-300 psi flowing. The right side in-use pressure of 250-300 psi is achieved by the addition of 50-75 psi dome pressure from the Clippard pilot valve and the regulator's preset range of 175-200 psi. If not, adjust the regulator's setscrew under the dome cap to the specification mentioned above as follows in steps 21-28.

22. Push the grey button (SW1) located on the circuit board illustrated in Figure 3 to put the left side in-use. The left ready, left in-use and right side ready LED's will illuminate while the right side in-use LED will turn off as illustrated in Figure 9.

23. With the left side in-use, the Clippard valve has vented the dome load pressure so now carefully disconnect the red tube from the valve's hose barb as illustrated in Figure 9.

Figure 9. Showing vent tube disconnected from valve and right side inlet regulator dome cap removed.

The left side is in-use when the Clippard valve isolates and vents the 50-75 psi pilot pressure after receiving a 11 -12v DC signal from circuit board

50-75 psi preset pilot regulator feeding the Clippard

Right side inlet dome regulator set

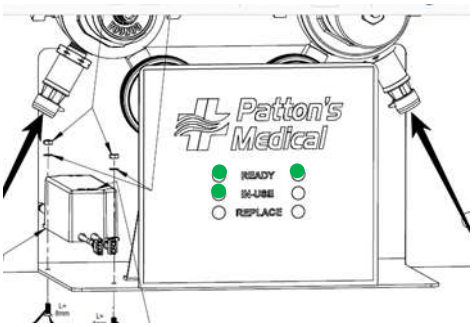
Dome cap o-ring enables a hand tight

24. With the tubing disconnected from the Clippard valve, remove the right side inlet

regulator's hand tight dome cap with attached tubing as illustrated in Figure 9.

25. Adjust set screw to 175-200 psi to achieve 250-300 psi when the 50-75 psi pilot pressure is added as the Clippard valve is de-energized (0 V dc).
26. Hand tighten the dome cap till it stops rotating allowing the o-ring to seal against the regulator bonnet.
27. Re-attach the red tube to the Clippard valve stainless barb.
28. Repeat steps 20-27 until the right side regulator's bottom/inner 2" gauge (inter-stage pressure) as illustrated in Figure 2. meets the specification of 250-300 psi flowing.
29. **Switching Validation.** With both sides pressurized to 2100 ±100 PSI both left and right side "READY" lights should turn on. The right side "REPLACE" light should turn off and the left side In-use LED should illuminate as illustrated in Figure 10.
30. If the right side In-use is illuminated then push the grey button (SW1) on the back of the circuit board illustrated in Figure 3 so that the circuit board status lights resemble Figure 10.

Figure 10. Status lights



31. Shut off the left side gas supply, and press the pushbutton bleed valve to vent the inlet pressure. Watch the left side inlet pressure gauge as pressure diminishes.

    When left side inlet pressure reaches some point between 200 PSI and 300 PSI:
    The "IN-USE" light should switch to the right side.
    The left side "READY" light should turn off.
    The left side "REPLACE" light should turn on..
    The pressure reading on the right side bottom/inner gauge (inter-stage pressure) should increase.
    Read the increased pressure, and confirm that it meets the specifications in section C. (in flowing and static conditions).

32. Turn the left side inlet pressure back on:
    The left side "READY" light should turn on, and the left side "REPLACE" light should turn off.
33. Shut off the right side gas supply, and press the pushbutton bleed valve to vent the inlet pressure. Watch the right side inlet pressure gauge as pressure diminishes.

When right side inlet pressure reaches some point between 200 PSI and 300 PSI:

- The "IN-USE" light should switch to the left side.
- The right side "READY" light should turn off.
- The right side "REPLACE" light should turn on.

34. With both sides fully pressurized and test valve open:
Near the top left corner of the circuit board see the gray pushbutton, and press it.

Each time the gray button is pressed, the "IN-USE" light should switch sides, and the right side bottom/inner gauge pressure should rise when right side is in use; fall when left side is in use.

Press a couple times and observe that the above happens repeatedly.

Section C. TROUBLESHOOTING

NOTE Pressures may vary depending on which unit is being serviced. Please refer to section C

DOESN'T POWER UP

Figure 11. 110V AC input terminal block.

a. Check the power supply at the wall and assure that the unit is plugged in.

b. If problem persists

a. Check the connections at the terminal block (located in the upper right hand corner of the manifold panel illustrated in

Figure 11) and measure the 110V AC voltage across terminals 1 and 2.

b. If you do not measure 110V AC then check source circuit breaker.

c. If you measure 110V AC but the problem persists

a. Check the black and red wire connections and measure the 12 V DC voltage across the transformer connections at L4 on the circuit board as illustrated in Figure 3.

B. If you do not measure 12V DC then replace the transformer.

d. If you measure 12V DC but the problem persists

a. Change the circuit board.

e. If problem persists

a. Contact the factory

MANIFOLD DOESN'T SWITCH

a. Press the gray button (SW1) located on the circuit board illustrated in Figure 3.

b. If you hear gas hissing or see bubbles during leak check identify the source and fix connection.

a. If a gas hissing sound is coming from the two-piece Clippard valve make sure the valve is secured to the valve base.

b. If the gas sound persists then power off the manifold, remove the wire from the solenoid terminals and separate the valve from its base to confirm that the sealing o-ring is present.

b. If the o-ring is not present then replace the Clippard solenoid valve.

c. If the gas hissing sound is still present make sure the red tube is properly secured to the solenoid valve bard and right side inlet regulator dome cap bard.

a. If not then reattach.

b. If attached but hissing persists then trim red hose and reattach to the leaking hose barb.

d. If the gas hissing sound persist leak check the right side inlet regulator dome cap for leaks.

a. Hand tighten dome cap illustrated in Figure 9.

b. If dome cap doesn't seal replace o-ring inside cap as illustrated in Figure 9.

If the manifold does not switch,

Check to see if the inlet pressure is above 300 psi. If it is, the transducers may have to be re-calibrated per Section A 1-5.

If problem persists

Check to see if the side that you are switching to has pressure greater than 300 psi.
If not then replace the empty with a full cylinder.

Figure 12. Illustrates the transducer cable being disconnected from the transducer which causes a break in the signal back to the circuit board illuminating the re-place LED.

If both the left and right side gas sources are full or above 300 psi then check the following to confirm the transducer is working properly.

Confirm that the transducer cable is securely connected via the snap lock connector to the circuit board and transducer.

If not then reattach the cable connector so that it snaps the locking mechanism in place. This connector is design to prevent pulling out without lifting the snap locking mecha-nism as illustrated in Figure 12.

If secured correctly, confirm that the 11-12V DC signal from the circuit board is present across the top two transducer cable con-nector pin locations illustrated in Figure 12.

If no 11-12V DC signal present then replace the cable and repeat step e.g. above.

If the 11-12V DC signal is still not present after replacing the cable then replace the board after shutting off power to the manifold and repeat step e.g.

If there is a 11-12V DC signal at the connector illustrated in Figure 12 then replace the transducer after shutting off the power to the manifold and repeat transducer calibration and step e.g. above.

If there is pressure greater than 300 psi on each side but the problem persists,

i. Confirm that the Clippard solenoid valve black and red wire connections are making contact on spade terminals located at L11 on the circuit board as illustrated in Figure 3.
ii. Confirm that the black and red wire connections from the circuit board are making contact on the Clippard valve spade terminals.

If wire connections are making contact but the problem persists

Confirm that the control board is sending a 11-12V DC signal when the Left side in-use LED is illuminated by measuring voltage across the black and red wires at L11 on the circuit board illustrated in Figure 3.

If a 12V DC signal is present from the transformer to the board but not from the L11 board terminals then replace the circuit board.

If signal is present at the L11 terminals on the board then confirm that the 11-12V DC signal is present at the Clippard solenoid valve terminals as illustrated in Figure 9.

If the signal from the board is not present at the Clippard solenoid valve terminals then replace the cable.

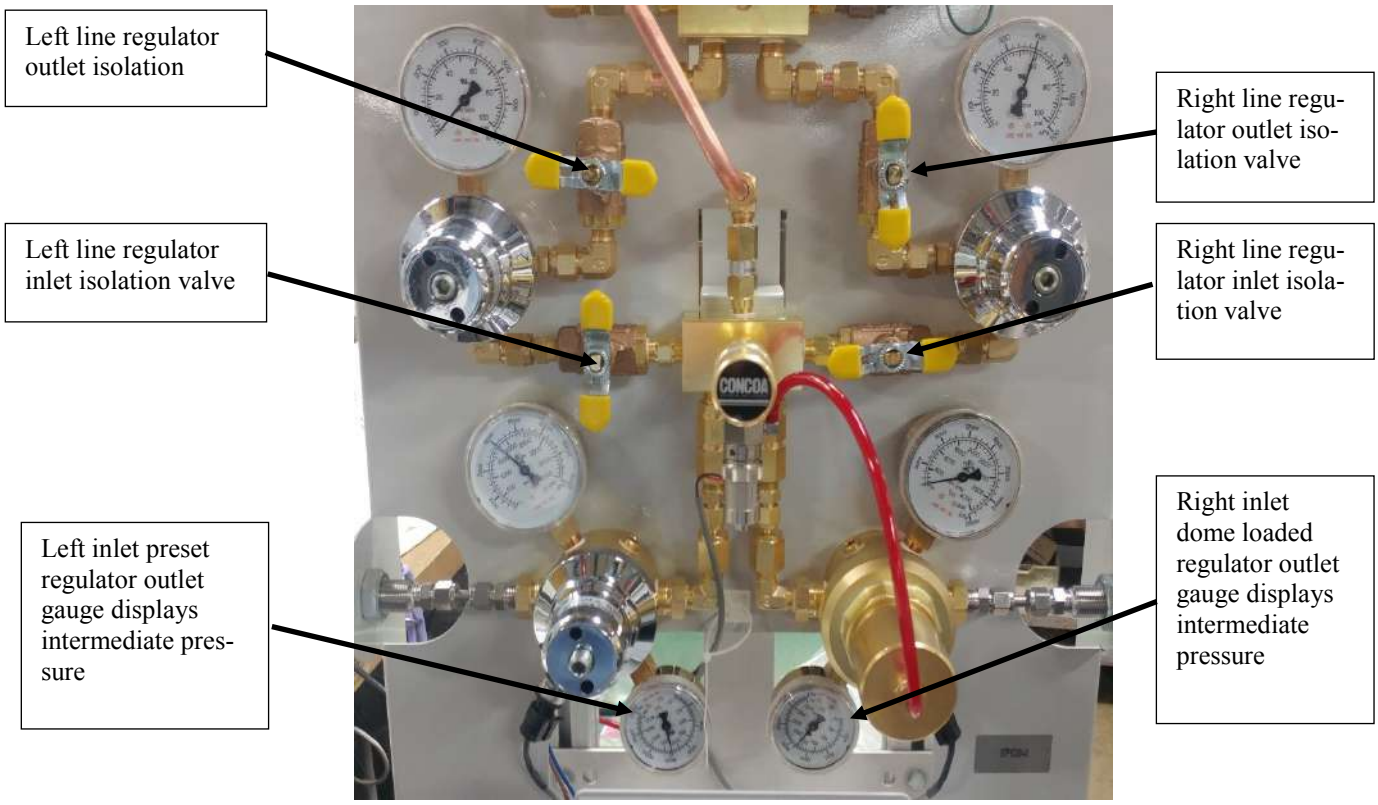
If the 11-12V DC signal is present at the Clippard solenoid valve when the Left side in-use LED is illuminated then shut off power to the manifold and replace the Clippard solenoid valve.

Note that if the Right side in-use LED is illuminated then there will be 0V going to the Clippard solenoid valve from the circuit board.

If after replacing the Clippard solenoid valve and there is a 11-12V DC signal present at the Clippard solenoid valve terminals and the Left in-use LED is illuminate and the inlet gas source is greater than 300 psi then replace the preset pilot regulator illustrated in Figure 9.

If the problem persists contact the factory.

Figure 13 Illustrates the gas flow path through the inlet and outlet regulator assemblies.



Delivery flow is too low or too high

If there is insufficient flow from the manifold do the following.

Ensure that the inlet supply gas sources cylinders are full.

Ensure that the outlet (intermediate) pressure from the preset and dome loaded inlet regulators meet the pressure settings listed in table C below.

Adjust the inlet regulator pressure settings per section B above as required.

Check each inlet regulator for leaks and flow restriction as follows.

Pressurize the right side to 2100 psi.

Push grey button on circuit board so that the right side is in use.

Shut off both line regulators inlet isolation valves illustrated in Figure 13.

Observe the dome loaded inlet regulator's outlet pressure gauge for 5 minutes.

If the preset outlet pressure does not stop increasing after the 5 minute period then the seat is bad and the regulator should be replaced.

Now open both the right side line regulator's isolation valves.
Press the push button bleed valve illustrated in Figure 4 **half way** in to simulate 50-75 cfh flow.
Observe the inlet regulator's pressure gauge.
If there is a 12 psi or more pressure drop on the inlet regulator's outlet gauge from static to flowing condition determined by the halfway position of the push button bleed valve then the regulator's filter is clogged and the filter or line regulator should be replaced.
Repeat steps C.i-x above but for the left side inlet regulator.

If problem persists

Make sure the appropriate line regulator inlet and outlet isolation valves are open.

If problem persists

Check the top line regulators one at a time for correct pressure.
If the pressure is not correct then adjust as follows.
Isolate the line regulator not in use by closing both the inlet and outlet isolation valves.
Open both the inlet and outlet valves to the line regulator to be used.
Press the push button bleed valve illustrated in Figure 4 **half way** in to simulate 50-75 cfh flow.
Observe the line regulator's pressure gauge.
Adjust the set screw to the appropriate pressure in the flowing condition.
If there is a 10 psi or more pressure drop on the line regulator gauge from static to flowing condition determined by the halfway position of the push button bleed valve then the regulator's filter is clogged and the line regulator should be replaced.
Repeat steps c.b.i-v for the opposite line regulator.
Once the outlet pressure is set, check each line regulator's seat for leaks as follows.
Isolate the outlet of both line regulators by closing the outlet isolation valve.
Open the inlet isolation valve of both line regulators.
Observe the line regulator's outlet pressure gauge for 5 minutes.
If the preset outlet pressure does not stop increasing after the 5 minute period then the seat is bad and the regulator should be replaced.

If problem persists

Contact the factory

Remote alarm does not work with the system

Is the remote alarm plugged in.

If problem persists

Check the remote alarm cable. (connection and voltage)

If problem persists

Contact factory

Table C: PRESSURE RATINGS

Patton's Medical Manifold	**55**	**100**	**170**
Maximum Inlet Pressure Right Side	3000 PSI	3000 PSI	3000 PSI
Maximum Inlet Pressure Left Side	3000 PSI	3000 PSI	3000 PSI
Intermediate Gauge/ Right Side/ Dome Loaded Regulator (static)	250-300 psi	250-300 psi	250-300 psi
Intermediate Gauge/ Left Side /Pre-set	230 psi	242psi max	242 psi
Outlet Gauge/ Delivery Regulator. Left side (flowing)	55-60 psi	100-105 psi	170-175 psi
Outlet Gauge/ Delivery Regulator. Right side (flowing)	55-60 psi	100-105 psi	170-175 psi

NOTE When grey Button is pressed to right side in use and then back to left side in-use. Right Side Dome load regulator outlet pressure will appear to be 220 to 230psi. This is because of the check Valve and preset regulator outlet pressure.

** NOTE** Unloaded pressure from the right side dome load regulator must be below the left side preset regulator. To adjust the dome load preset regulator the pilot tubing and dome cap must be removed to access the set screw. Please read below

Loaded 230psi

Unloaded 170psi

Preset 200 +/- 10

3201 South Boulevard
Charlotte, NC 28209
1-866-960-0087
www.pattonsmedical.com