Installation, Operation and Maintenance Manual

Andersen Medical Gas
12 Place Lafitte
Madisonville, LA 70447
http://www.TheMedicalGas.com
1-866-288-3783
<table>
<thead>
<tr>
<th>Model Number:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date Purchased:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Purchased from:</th>
</tr>
</thead>
</table>

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: August 3, 2015
Table of Contents

1.0 General Information
2.0 Description
3.0 Shipping Details
4.0 Cabinet mounting Instructions
5.0 Header Bar Installation
6.0 Power Supply Connection
7.0 Master Alarm Contacts
8.0 Outlet Valve and Relief Valve Connection
9.0 Initial Start-up
10.0 Control board
11. Testing for leaks
12. Specifications
13. Manifold Parts Layout
14. Manifold Parts List
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.

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-240/1/50-60 VAC</td>
<td>40 micron</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Inlet Pressure</th>
<th>Inlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000 PSIG (210 BAR)</td>
<td>CGA 1340</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 140°F (-18° to 60°C)</td>
<td>1/2” NPT for Main Valve (included)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>Flow Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>54 lbs.</td>
<td>1200 SCFH @80psi</td>
</tr>
</tbody>
</table>

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
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 below)

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.

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>Hot</td>
<td>1</td>
</tr>
<tr>
<td>Blue</td>
<td>Common</td>
<td>2</td>
</tr>
<tr>
<td>Green</td>
<td>Ground</td>
<td>3</td>
</tr>
</tbody>
</table>

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

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.
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.
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 transducers). 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


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

<table>
<thead>
<tr>
<th>Delivery Pressure</th>
<th>55 PSI</th>
<th>100 PSI</th>
<th>180 PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate Pressure - Ready Bank</td>
<td>190 PSI</td>
<td>230 PSI</td>
<td>260 PSI</td>
</tr>
<tr>
<td>Intermediate Relief Valve</td>
<td>375</td>
<td>375</td>
<td>375</td>
</tr>
<tr>
<td>Line Pressure Relief Valve</td>
<td>75 PSI</td>
<td>150 PSI</td>
<td>225 PSI</td>
</tr>
<tr>
<td>Maximum Inlet Pressure</td>
<td>3000 PSI</td>
<td>3000 PSI</td>
<td>3000 PSI</td>
</tr>
</tbody>
</table>
13. Manifold Parts Layout

- Line Relief Valve
- Isolation Valves (4)
- Line Gauge (2)
- Left Line Regulator
- Pilot Regulator
- Check Valve
- Bank Gauge (2)
- Left Bank Regulator
- Pressure Transducer
- Intermediate Gauge (2)
- Solenoid Valve
- Intermediate Relief Valve
- Manual Purge Valve
- Right Line Regulator
- Check Valve
- Right Bank Dome Regulator
- Pressure Transducer
13. Manifold Parts Layout

- Power Supply 27-80-066
- Control Board 27-80-064
14. Manifold Parts List

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