



Introduction

Tri-Tech Medical manifolds are cleaned, tested and prepared for the indicated gas service and are built in accordance with the Compressed Gas Association guidelines. The manifold consists of a regulator and a header, to provide an increased supply of gas for the specific gas application. Pressure gauges show system status and alert the need to replace depleted cylinders. Features of the manifold system include a regulator, flexible pigtails with check valves and mounting hardware.

Warranty

All Tri-Tech Medical manifolds are warranted against defects in materials and workmanship for the period of one year from date of purchase.



Caution !

Failure to follow the following instructions can result in personal injury or property damage:

- Never permit oil, grease, or other combustible materials to come in contact with cylinders, manifold, and connections. Oil and grease may react with explosive force when ignited while in contact with some gases – particularly oxygen and nitrous oxide.
- Cylinder, header and master valves should always be opened very **s-l-o-w-l-y**. Heat of recompression may ignite combustible materials creating an explosive force.
- Pigtails should never be kinked, twisted or bent into a radius smaller than 3 inches. Mistreatment may cause the pigtail to burst.
- Do not apply heat. Oil and grease may react with explosive force when ignited while in contact with some gases – particularly oxygen and nitrous oxide.
- Cylinders should always be secured with racks, chains, or straps. Unrestrained cylinders may fall over and damage or break off the cylinder valve which may propel the cylinder from its current position with great force.
- Oxygen manifolds and cylinders should be grounded. Static discharges and lightning may ignite materials in an oxygen atmosphere, creating an explosive force.
- Welding should not be performed near nitrous oxide piping. Excessive heat may cause the gas dissociate, creating an explosive force.

GENERAL INSTRUCTIONS

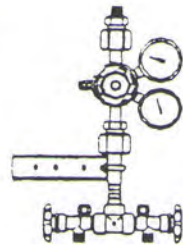
Manifolds should be installed in accordance with guidelines stated by the National Fire Protection Association, the Compressed Gas Association, OSHA, Canadian Standards Association, and all applicable local codes. The carbon dioxide and nitrous oxide manifolds should not be placed in a location where the temperature will exceed 120°F (49°C) or fall below 20°F (-7°C). The manifolds for all other gases should not be placed in a location where the temperature will exceed 120°F (49°C) or fall below -20°F (-29°C). A manifold placed in an open location should be protected against weather conditions. During winter, protect the manifold from ice and snow. In summer, shade the manifold and cylinders from continuous exposure to direct rays of the sun.

Leave all protective covers in place until their removal is required for installation. This precaution will keep moisture and debris from the piping interior, avoiding operational problems.

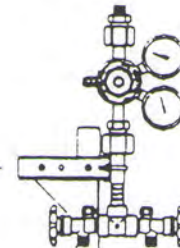
CAUTION:

- Remove all protective caps prior to assembly. The protective cap may ignite due to heat of recompression in oxygen systems.

Wall Mount



Floor Mount



60"

58 1/2"

Floor

FIGURE 1

MANIFOLD ASSEMBLY

1. Assemble the manifold outlet fitting to the regulator outlet (Figure 2).
2. Assemble the header assembly to the regulator inlet oriented as shown in Figure 2.

MANIFOLD INSTALLATION - WALL MOUNT APPLICATIONS

1. Determine and mark the vertical center line for installation of the manifold (Figure 2).
2. Measure from the floor to a point 60" in height* of this vertical line. Using a level, mark a horizontal line at this point extending approximately 3" to the left and 3" to the right of center.

(* — Suggested manifold height. Wall mounting heights may vary from one installation to another depending on available space, cylinder height, etc.)

3. Remove the U-bolt assemblies from the mounting brackets. Position the bracket so that the top of the bracket is aligned with the vertical line.
4. Mark the mounting holes and install fasteners suitable for the type of wall construction. (Figure 4)
5. Mount the manifold by placing the header on the bracket. Fit the U-bolt over the header pipe and tighten the mounting nuts. (Figure 4)

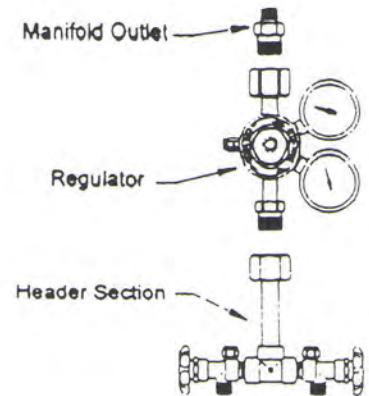


FIGURE 2

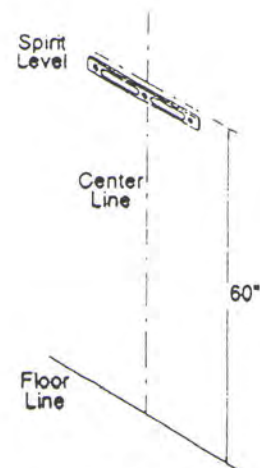


Figure 3

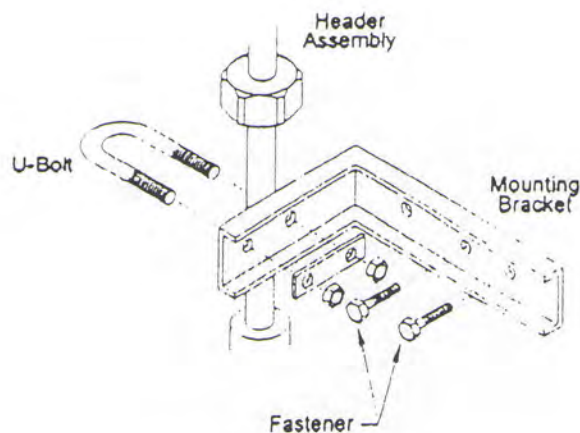


Figure 4

START UP AND CHECKING PROCEDURES

The SD series manifolds are designed to operate in two ways; to provide an increased supply of gas as well as higher flow rates than can be achieved using a single cylinder, or to provide a manual changeover to a reserve cylinder.

1. S-L-O-W-L-Y open the cylinder valve (turn counter-clockwise to open). The high pressure gauge will show the pressure of the cylinder. (Figure 15)
2. Adjust the delivery pressure of the regulator to the desired pressure. The selection of the regulator set pressure may vary due to application requirements. If a pressure setting less than 20 psig is required then a line regulator must be installed at the manifold outlet.
3. Simulate a depleted bank by closing the cylinder valves and creating a flow of gas through the manifold. The pressure readings on the gauges will drop.
4. S-L-O-W-L-Y open the cylinder valves (turn counter-clockwise to open).
5. The manifold is now ready to supply your system.

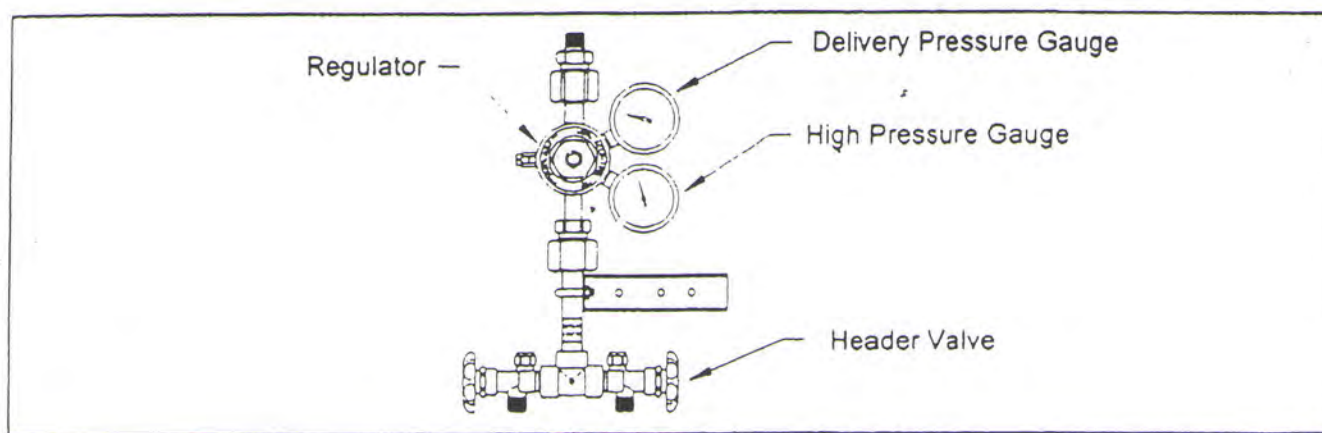


Figure 15

MANIFOLD OPERATION

The manifold control includes the following components and features: regulator, flexible pigtails with check valves and a header. The manifold is designed to use a line regulator (optional item) which can be mounted on the manifold outlet for delivery pressures less than 20 psig.

Gas flows through the manifold to the primary regulator and then through the line regulator (if installed). Final delivery pressure is controlled by either the line regulator or by the primary regulator should the application not require a line regulator. A line regulator is not provided with the manifold.

As cylinders deplete the high pressure gauge on the regulator along with any alarm systems installed will indicate that the bank of cylinders should be changed.

After replacing empty cylinders, the manifold is immediately ready for service. To insure proper operation, observe the following guidelines:

1. Carefully follow all instructions.
2. Establish proper flow direction of check valves.
3. Be sure the header shut-off valve is fully opened.
4. Be sure cylinder valves are fully opened.
5. Replace empty cylinders as soon as practical after the manifold has depleted.

CYLINDER REPLACEMENT & HANDLING

1. Shut off the cylinder valve and header valve on depleted cylinder.
2. S-L-O-W-L-Y loosen and remove the pigtail connection from the depleted cylinder.
3. Remove depleted cylinder and replace protective cap.
4. Remove protective cylinder caps from full replacement cylinders. With the valve outlet pointed away from you or anyone else, slowly open the cylinder valve slightly to blow out any dirt or contaminants which may have become lodged into the cylinder valve.
5. Place and secure full cylinder into position using chains, belts, or cylinder stands.
6. Connect pigtails to cylinder valves and tighten with wrench.
7. Open the header valve. S-L-O-W-L-Y turn each cylinder valve until each cylinder is fully on.
8. The manifold supply bank is now replenished and may be put in service by following instructions on page 4 (START UP AND CHECKING PROCEDURES).

GENERAL MAINTENANCE

1. Main section
 - a) Daily - record line pressure.
 - b) Monthly
 - 1) Check regulator for external leakage.
 - 2) Check valves for closure ability.
 - c) Annually - check relief valve pressures.
- replace regulator seats.
2. Manifold header
 - a) Daily - observe nitrous oxide and carbon dioxide systems for cylinder frosting or surface condensation. Should excessive condensation or frosting occur it may be necessary to increase manifold capacity.
 - b) Monthly
 - 1) Inspect valves for proper closure.
 - 2) Check cylinder pigtails for cleanliness, flexibility, wear, leakage, and thread damage. Replace damaged pigtails immediately.
 - 3) Inspect pigtail check valves for closure ability.
 - c) Every 4 Years
 - 1) Replace all pigtails