



# 632 Series Gas Distribution System

## **INSTALLATION AND OPERATION INSTRUCTIONS**

**Before Installing or Operating, Read and Comply with These Instructions**

Controls Corporation of America  
1501 Harpers Road Virginia Beach, VA 23454  
To Order Call 1-800-225-0473 or 757-422-8330 • Fax 757-422-3125  
[www.concoa.com](http://www.concoa.com)

June 2006  
Supersedes February 2006

## DESCRIPTION OF PRODUCT

The 632 Series automatic gas switchover delivers a continuous supply of gas from a left and right cylinder bank configuration utilizing pressure differential technology. CONCOA's user-friendly priority arrow provides simple cylinder use identification and control from a single valve body design. The 632 is designed to distribute gaseous product from either liquid cans or high-pressure cylinders with a maximum inlet pressure of 4,500 PSIG. Inlet configurations for the 632 include single cylinder hose or 629 manifold.

## USER RESPONSIBILITY

This equipment will perform in conformity with the description contained in this manual and accompanying labels and/or inserts when installed, operated, maintained, and repaired in accordance with the instructions provided. This equipment must be checked periodically. Improperly working equipment should not be used. Parts that are broken, missing, worn, or distorted should be replaced immediately. CONCOA recommends that a telephone or written request for service advice be made to CONCOA Customer Service in Virginia Beach, Virginia, PHONE: 1-800-225-0473, FAX: 1-757-422-3125, or E-MAIL: info@concoa.com.

This equipment or any of its parts should not be altered without prior written approval by CONCOA. The user of this equipment shall have the sole responsibility for any malfunction that results from improper use, faulty maintenance, damage, improper repair, or alteration by anyone other than CONCOA or a service facility designated by CONCOA.

## CUSTOMER ASSISTANCE

In the event of equipment failure, call the CONCOA Customer Assistance Line: 1-800-225-0473. Please be prepared to provide the model number and serial number of the equipment involved, in addition to some details regarding its application. This would include inlet and outlet pressures, flow rate, environmental conditions, and gas service.

## Things to consider before removing the system from the box....

1. Know the properties and special handling requirements of the gas being used. During the design phase the end user must consider the total manifold gas capacity in accordance with NFPA 50 and 51. Many specialty gases are quite dangerous (flammable, simple asphyxiant, or oxidizers). Equipment failure or misuse may lead to the sudden release of service gas into the surrounding area. Proper safety measures should be established to handle these and other component failures.
2. Be sure that the assembly purchased is suitable for the gas and type of service intended. The label provides the following information:
  - a. Model number
  - b. Serial number

Be sure that the equipment received conforms to the order specifications. The user is responsible for selecting equipment compatible with the gas in use, and conditions of pressure, temperature, flow, etc. Selection information can be found in CONCOA technical data sheets. In addition, CONCOA representatives are trained to aid in the selection process.

3. Inspect the assembly upon receipt to be sure that there is no damage or contamination. Pay particular attention to connecting threads. While CONCOA assembles system components to exacting leak-tight standards, the customer should also inspect for any loosening of parts that may occur in shipping or installation. Loose parts may be dangerously propelled from an assembly. If there are adverse signs (leakage or other malfunction), return the assembly to the supplier. While it is advised that soiled regulators be returned for cleaning, simple external dust or grease may be removed by a clean cloth and if required with aqueous detergent suitable for the application. If there are signs of internal contamination, return to the supplier.
4. Before system startup, it is recommended that all systems be pressure tested, leak tested, and purged with an inert gas such as nitrogen. To accomplish this with connections other than a CGA 580, it will be necessary

to use an adapter. The recommended use of an adapter is for temporary use, for start-up and system checks only. Adapters should never be used on a permanent basis.

5. Comply with precautions listed in C.G.A. Pamphlet P-1, Safe Handling of Compressed Gases in Containers.

## **GENERAL SAFETY PRACTICES**

Under no circumstances should liquid product be allowed into the hoses or manifold.

Consult the cylinder distributor for the proper use of cylinders and for any restrictions on their use (such as flow rate and temperature requirements).

Store cylinders with valve caps screwed on, and cylinders chained to a supporting wall or column.

Handle cylinders carefully and only with valve caps screwed on. The cap will reduce the chance that the cylinder valve will break off if the cylinder is accidentally dropped or falls over. The cap also protects the cylinder valve from damage to screw threads, which could cause leaky connections.

All manifolds used with flammable gases should be provided with approved flashback arrestors to stop any burning gas in the pipeline from getting back to the manifold or cylinders.

No smoking should be permitted near oxygen, nitrous oxide, any other oxidizer, flammable gases, or flammable mixtures, or in areas where cylinders are stored.

Where oxygen or nitrous oxide is used, the manifold and cylinders must be kept clean. No oil, grease, or combustible substances should come in contact with oxygen or nitrous oxide storage or handling equipment. Such materials in contact with oxygen or nitrous oxide are readily ignitable and when ignited, will burn intensely.

Never use an open flame when leak testing.

Always open valves slowly when high-pressure gases are being used.

Always be sure that a cylinder contains the correct gas before connecting it to any manifold.

Always leak-test any manifold or distribution pipeline before using.

Always be sure that the gas in a pipeline is the correct gas for the intended use.

Always close all cylinder valves before disconnecting cylinders from a manifold.

Always remove all empty cylinders from a manifold before connecting full cylinders.

Always test cylinders to be sure the cylinders are full before connecting to a manifold.

Always secure cylinders, whether in use or in reserve.

All gas distribution piping systems must meet the appropriate industrial standards for the intended service and must be thoroughly cleaned before using. For the United States, some applicable safety rules and precautions are listed below:

1. American National Standards Institute standard Z49.1, Safety in Welding and Cutting, American Welding Society, 2501 NW Seventh Street, Miami, Florida 33125

2. N.F.P.A. Standard 51, Oxygen-Fuel Gas systems for Welding and Cutting, N.F.P.A., 470 Atlantic Avenue, Boston, Massachusetts 02210
3. N.F.P.A. Standard 51B, Cutting and Welding Processes (same address as #2).
4. CONCOA publication ADE 872, Safety Precautions in Welding and Cutting.
5. Local Ordinances
6. O.S.H.A. Standard 29 CFR
7. C.G.A. Pamphlet C-4, American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained.
8. C.G.A. Pamphlet G-4, Oxygen – Information on the properties, manufacture, transportation, storage, handling, and use of oxygen.
9. C.G.A. Pamphlet G-4.1, Equipment Cleaned for oxygen service.
10. C.G.A. Pamphlet G-4.4, Industrial Practices for Gas Oxygen Transmission and Distribution Piping Systems.
11. C.G.A. Pamphlet G-5, Hydrogen – Information on the properties, manufacture, transportation, storage, handling, and use of hydrogen.
12. C.G.A. Pamphlet G-6, Carbon Dioxide – Information on the properties, manufacture, transportation, storage, handling, and use of carbon dioxide.
13. C.G.A. Pamphlet G-6.1, Standard for Low Pressure Carbon Dioxide Systems at Consumer Sites.
14. C.G.A. Pamphlet P-1, Safe Handling of Compressed Gases in Containers.
15. C.G.A. Safety Bulletin SB-2, Oxygen Deficient Atmospheres.

\*C.G.A. pamphlets can be obtained from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202-3239, (703) 979-0900. Publications: (703) 979-4341. Fax: (703) 979-0134.

Keep all cylinders and manifolds away from any source of high temperature over 120°F (50°C) or possible fire hazards. High-pressure gas contained in a closed cylinder becomes increasingly dangerous when exposed to high temperature because pressure increases and the strength of the cylinder decreases. Manifolds installed in open locations should be protected from weather conditions. During winter, protect the manifold from ice and snow. In summer, shade the manifold and cylinders from continuous exposure to direct sunlight. Always leave access to the manifold for cylinder replacement. Always secure cylinders, whether in use or in reserve.

## **LOCATION**

The site chosen for the manifold installation shall be level, well ventilated, and at a safe distance from sources of flames, sparks, and excessive heat. The manifold should not be placed in an area that may subject the manifold to damage from passing trucks, cranes, or other heavy machines. Oxygen manifolds must not be installed under shafting, belting, or other places where oil can drip on them. Under no circumstances should liquid product be allowed into the hoses or manifold. For other location guidelines, see NFPA Standard 50 and 51.

## **INSTALLATION**

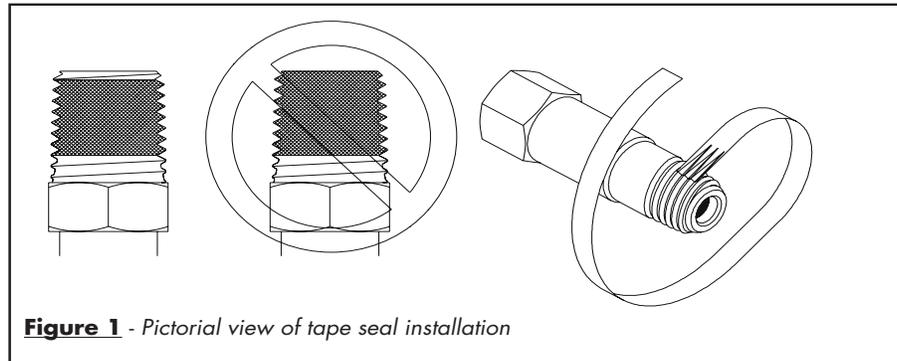
Installing the system:

1. Be sure to consider all factors when selecting materials.
2. Do not use oil or grease on fittings.
3. Be sure that all fittings are secure and leak tight. PTFE tape should be used on pipe threads as illustrated in Figure 1.
4. Purge devices: These devices can be purchased as accessories. Purge devices are used to remove toxic, corrosive, or flammable gases from the customer's system to a safe discharge area. This is particularly helpful when an internal problem occurs (such as regulator malfunction).

## INSTALLING INLET AND OUTLET CONNECTIONS

Use an open-end wrench, not a pipe wrench, to install accessories to the system. The NPT connections require the use of PTFE tape on the threads to make a gas tight seal. On stainless steel connections, the PTFE tape helps prevent the connections from galling together when tightening or loosening. Follow these rules when using PTFE tape.

Taping procedure:

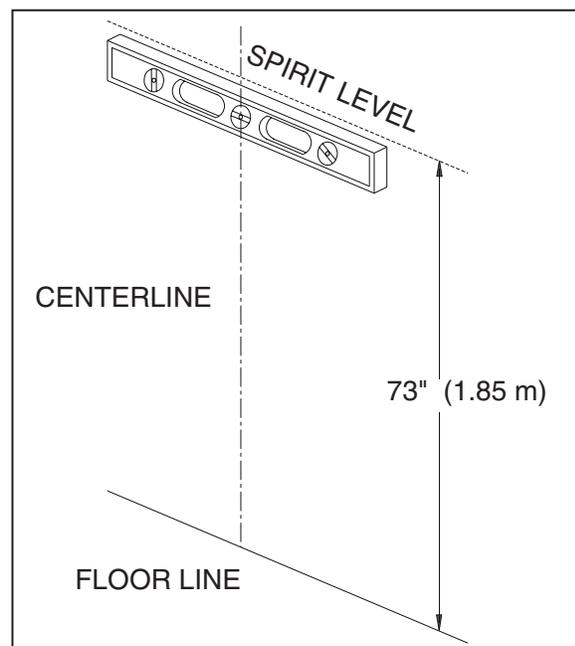


Before applying PTFE tape, inspect the NPT threads and if necessary, clean the fitting to remove any dirt or thread sealant that remains on the threads. Start the PTFE tape on the second thread as shown above; make sure the tape does not overlap the end of the fitting. As the tape is wrapped in the direction of the thread spiral, pull tightly on the end of tape so that the tape conforms to the threads. Apply two overlapping layers of PTFE tape. Cut off the excess tape and press the end firmly into the threads.

## WALL MOUNTING

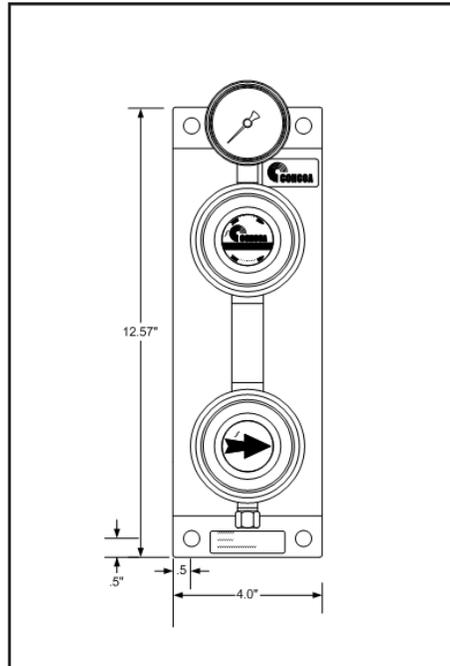
### 632 Installation with Single Hose

1. Determine and mark the vertical center line for installation of the base 632 System.
2. Measure from the floor 73" and make a mark on the line of center. Using a level, draw a horizontal line from the mark extending approximately 10 inches to the left and right of center. The height of 73" is recommended;



the typical installation for high-pressure cylinders needs 66 inches between the floor and the “INLET” port. Leave enough space between the cylinder tops and the manifold.

3. Place the upper edge of the panel on the horizontal line so that the 6700 Series delivery regulator is centered with the vertical line.



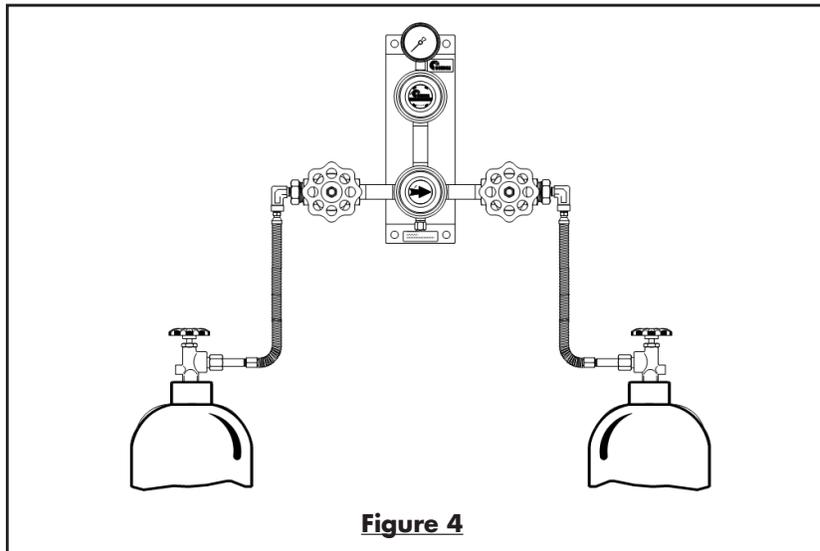
**Figure 3**

4. As illustrated in Figure 3, the 632 is secured to a panel that has mounting holes located at each corner.
5. Mark the location of the panel mounting holes.
6. Using the appropriate hardware, anchor the switchover mounting bracket to the wall. Make sure the panel is level.
7. Tape the ¼” M-NPT thread of the cylinder pigtail.
8. Secure the street elbow with a wrench while threading the taped male NPT end of the pigtail.
9. Repeat steps 7-8 for the opposite inlet of the switchover.
10. Refer to “Connecting a Cylinder” for directions on connecting the pigtail to the cylinder.
11. Refer to “Pressure Testing the System” to confirm that there are no leaks in the system.

## 632 Installation with Single Hose with Master Valve

This configuration does not include an inlet pressure gauge.

1. Determine and mark the vertical line of center for installation of the 632 system.
2. Measure from the floor 73” and make a mark on the line of center. Using a level, draw a horizontal line from the mark extending approximately 10 inches to the left and right of center as illustrated in Figure 2. The height of 73 inches is recommended; the typical installation for high-pressure cylinders needs 66 inches between the floor and the “Inlet” port. Leave enough space between the cylinder tops and the manifold.
3. Place the upper edge of the panel on the horizontal line so that the 6700 series delivery regulator is centered with the vertical line.
4. As illustrated in Figure 3, the 632 is secured to a panel that has mounting holes located at each corner.
5. Mark the location of the panel mounting holes.
6. Using appropriate hardware, anchor the switchover mounting bracket to the wall. Make sure the panel is level.
7. Tape the ¼” M-NPT thread of the cylinder pigtail.
8. Secure the street elbow located on the master valve with a wrench while threading the taped male NPT end of the pigtail as illustrated in Figure 4.
9. Repeat steps 6 through 7 for the opposite inlet of the switchover.

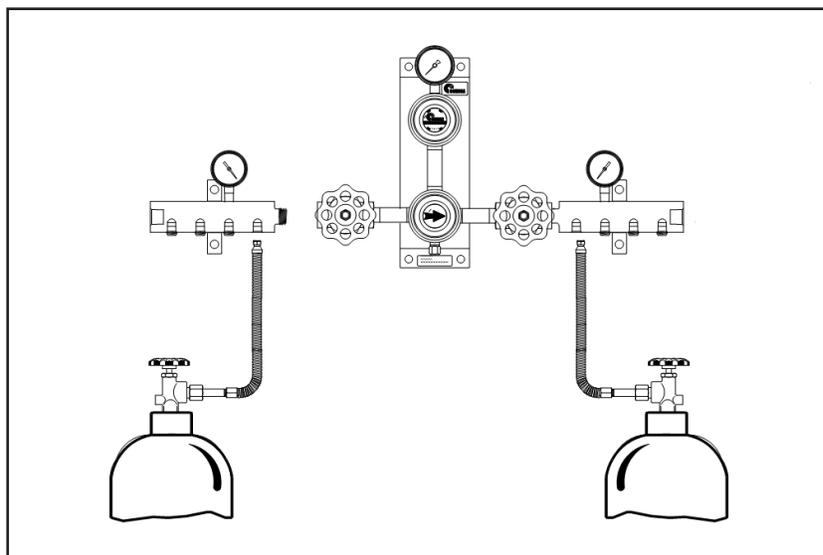


**Figure 4**

10. Refer to “Connecting a Cylinder” for directions on connecting the pigtail to the cylinder.
11. Refer to “Pressure Testing the System” to confirm that there are no leaks in the system.

## 632 Installation with a 629 Manifold

1. Determine and mark the vertical line of center for installation of the 632 system.
2. Measure from the floor 73” and make a mark on the line of center. Using a level, draw a horizontal line from the mark extending approximately 10 inches to the left and right of center as illustrated in Figure 2. The height of 73 inches is recommended; the typical installation for high-pressure cylinders needs 66 inches between the floor and the “Inlet” port. Leave enough space between the cylinder tops and the manifold.
3. Place the upper edge of the panel on the horizontal line so that the 6700 series delivery regulator is centered with the vertical line.
4. As illustrated in Figure 3, the 632 is secured to a panel that has mounting holes located at each corner.
5. Mark the location of the panel mounting holes.
6. Tape the ½” M-NPT thread on the micro-manifold.
7. Thread the male end of the micro-manifold into the switchover’s ½” F-NPT inlet.
8. If the manifold capacity is five or more cylinders install the micro-manifold extension kit into the
9. Secure the final micro-manifold with a wrench.



**Figure 5**

10. Repeat steps 5 through 9 for the opposite inlet of the switchover.
11. Relocate the assembly back on the wall so that the 632 panel mounting holes line up. Mark each 629 mounting bracket holes.
12. Using appropriate hardware, anchor the assembly mounting panel and brackets to the wall.
13. Make sure that all connections are tightened.
14. Apply Teflon tape to the ¼” M-NPT end of each pigtail.
15. Remove the desired number of ¼” F-NPT pipe plugs from the bottom of the micro-manifold block.
16. Install the pigtail into the micro-manifold ¼” F-NPT port as illustrated in Figure 5.
17. Repeat steps 13 through 16 for opposite manifold bank.
18. Refer to “Connecting a Cylinder” for directions on connecting the pigtail to the cylinder.
19. Refer to “Pressure Testing the System” to confirm that there are no leaks in the system.

## 632 Installation with 629 Manifold and Master Valve

1. Determine and mark the vertical line of center for installation of the 632 system.
2. Measure from the floor 73” and make a mark on the line of center. Using a level, draw a horizontal line from the mark extending approximately 10 inches to the left and right of center as illustrated in Figure 2. The height of 73 inches is recommended; the typical installation for high-pressure cylinders needs 66 inches between the floor and the “Inlet” port. Leave enough space between the cylinder tops and the manifold.
3. Place the upper edge of the panel on the horizontal line so that the 6700 series delivery regulator is centered with the vertical line.
4. As illustrated in Figure 3, the 632 is secured to a panel that has mounting holes located at each corner.
5. Mark the location of the panel mounting holes.
6. Tape the ½” M-NPT thread on the micro-manifold.
7. Thread the male end of the micro-manifold into right side master valve’s ½” F-NPT inlet.
8. If the manifold capacity is five or more cylinders install the micro-manifold extension kit into the ½” F-NPT end of the previous micro-manifold.
10. Secure the final micro-manifold with a wrench.
11. Repeat steps 6 through 10 for the opposite inlet of the switchover.
12. Relocate the assembly back on the wall so that the 632 panel mounting holes line up.
13. Mark each 629 mounting bracket holes.
14. Using appropriate hardware, anchor the assembly mounting panel and brackets to the wall.
15. Make sure that all connections are tightened.
16. Apply Teflon tape to the ¼” M-NPT end of each pigtail.
17. Remove the desired number of ¼” F-NPT pipe plugs from the bottom of the micro-manifold block.
18. Install the pigtail into the micro-manifold ¼” F-NPT port as illustrated in Figure 5.
19. Repeat steps 13 through 16 for opposite manifold bank.
20. Refer to “Connecting a Cylinder” for directions on connecting the pigtail to the cylinder.
21. Refer to “Pressure Testing the System” to confirm that there are no leaks in the system.

## CONNECTING A CYLINDER

While the 632 can function as a switchover with a liquid cylinder primary and high pressure reserve, it is not designed to provide optimal performance as obtained in the 600 series IntelliSwitch products. Additionally, maximum operating flows will be lower under certain pressure conditions.

The 629 series micro-manifolds included with the 632 should only be used with liquid cylinders if they are retro-fitted with burst disks for safety. Additionally, all flexible hoses used with liquid cylinders should be armor-cased to prevent failure.

For further information about using liquid cylinders with the 632, please contact CONCOA.

## Connecting High-Pressure Cylinders

Read the next section before installing cylinders. The 632 is designed to deliver gaseous phase from either liquid or high-pressure cylinders (4,500 Psi Max.). Never connect both liquid and high-pressure cylinders to the same manifold.

1. Before removing the cylinder cap, move the cylinder with a cylinder cart to the work site:
  - a. Secure cylinder to the floor, wall, stand or bench with the appropriate chain or strap, to prevent toppling.
  - b. Remove the cap if using a high-pressure cylinder. However, the large diameter ring located at the top of a liquid cylinder protects the cylinder valves instead of a cap
  - c. Be sure the cylinder valve is tightly closed (clockwise)
  - d. Remove the cylinder valve plug, if any.
  - e. Inspect the cylinder valve and threads for damage or contamination.
2. If replacing an empty cylinder,
  - a. Close the manifold master valve (if equipped) and each header valve (if using the 628 manifold).
  - b. Close the gas use valves on each cylinder on the depleted cylinder bank.
  - c. Loosen the pigtail CGA connection to the cylinder's gas use valve a quarter turn to depressurize.  
**WARNING: The operator should secure the pigtail with one hand until exhausting of gas has subsided.**
  - d. Finish removing the CGA connection from the gas use valve.
  - e. Repeat process for each additional liquid cylinder to be used on the manifold.
  - f. Replace the empty cylinders.
3. Secure the pigtail cylinder connection to the high-pressure cylinder valve in the following manner:
  - a. Thread the nut into the cylinder valve CGA connection. Do not cross thread or force. If it does not fit, the connection may be wrong for the type of gas being used.
  - b. Left-hand threads are used on flammable type cylinder connections. The notch in the middle of the hex nut can identify them.
  - c. Teflon gaskets or washers are used for some cylinder connections such as carbon dioxide CGA 320. Be sure the gasket is in good shape. Do not over-tighten to avoid deforming the gasket which may create a leak or failure.  
**WARNING: Never use oil or grease on regulator or cylinder fittings, as it may contaminate pure gases or create a fire hazard.**
4. Open each cylinder gas use valve after all new cylinders have been properly connected and secured.
5. Check all joints for leaks using oxygen compatible leak detection solution.
6. If a leak is detected, depressurize the system and fix leaking connection. Never attempt to fix a leak under pressure.
7. Once all connections are secure and leak free continue to the next step.
8. Open each cylinder gas use valve after all new cylinders have been properly connected and secured.
9. Open the manifold master valve (if equipped).
10. The 632 is ready for use.

## Connecting Liquid Cylinders

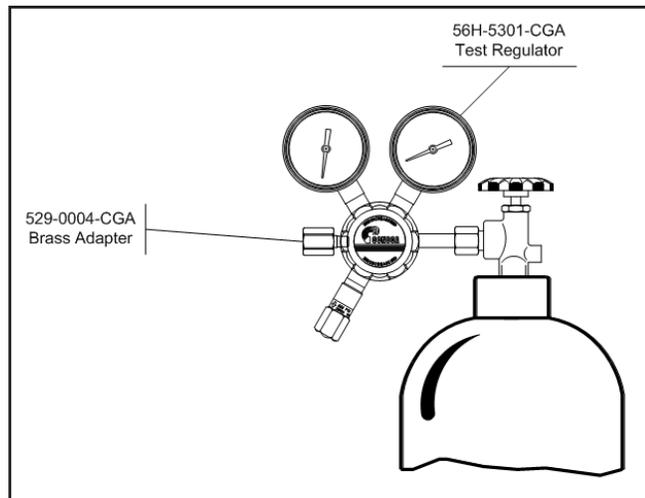
Read the next section before installing cylinders. The 632 is not designed for liquid cylinders to be used on both the left and right bank inlets at the same time. The 632 will work optimally with the priority arrow pointing left towards the left bank liquid cylinder with high-pressure cylinders on the right. It is recommended to use a 629-2xxx series vent manifold when supplying multiple liquid cans on one bank. The vent manifold is designed to provide headspace equalization via a common connection for multiple liquid cylinder vent use valves.

- 1) Before removing the cylinder cap, move the cylinder with a cylinder cart to the work site:
  - a) Secure cylinder to the floor, wall, stand or bench with the appropriate chain or strap to prevent toppling.
  - b) The large diameter ring located at the top of the liquid cylinder protects the piping and valves.
  - c) Be sure the cylinder valve is tightly closed. (Clockwise)
  - d) Remove the cylinder valve plug, if any.
- 2) If replacing an empty cylinder,
  - a) Close the manifold master valve (if equipped) and each header valve (if using the 628 manifold).
  - b) Close both the gas use and vent use valves on each liquid cylinder on the depleted cylinder bank.
  - c) Loosen the pigtail flare connection to the cylinder's vent use valve a quarter turn to depressurize the vent manifold. A restrictive flow orifice has been installed between the manifold block and the pigtail to prevent whipping during a cylinder exchange.  
**WARNING: The operator should secure the pigtail with one hand until exhausting of gas has subsided.**
  - d) Finish removing the flare connection.
  - e) Repeat process for each additional liquid cylinder to be used on the manifold.
  - f) Loosen the pigtail CGA connection to the cylinder's gas use valve a quarter turn to depressurize.  
**WARNING: The operator should secure the pigtail with one hand until exhausting of gas has subsided.**
  - g) Finish removing the CGA connection from the gas use valve.
  - h) Repeat process for each additional liquid cylinder to be used on the manifold.
  - i) Replace the empty cylinders.
- 3) Secure the pigtail cylinder connection to the liquid cylinder vent use valve in the following manner:
  - a) Thread the pigtail flare nut onto the vent use valve CGA 295 or 440-flare connection of each cylinder. Do not cross thread or force. If it does not fit, the connection may be wrong for the type of gas being used.  
**WARNING: Pay extra caution when reconnecting the pigtail to the new liquid cylinder vent use valve. Both the vent and liquid use valves incorporate the same connection.**
  - b) Open each vent use valve (counter clockwise).
- 4) Thread the pigtail CGA nut into the gas use valve connection of each cylinder. Do not cross thread or force. If it does not fit, the connection may be wrong for the type of gas being used. If the gas supply source is a liquid cylinder identify the gas use valve before making a connection.
  - a) Open each gas use valve (counter clockwise).  
**WARNING: The carbon dioxide liquid cylinder incorporates a CGA 320 connection on both the gas use and liquid fill valves. Premature pigtail failure may occur if a polymer lined pigtail is exposed to cryogenic liquid temperature.**
- 5) Open the liquid cylinder pressure building (PB) valve and adjust the PB regulator at least 50 psi above the pressure control device line pressure. A greater pressure differential may be required for higher flow requirements.
- 6) Check all joints for leaks using oxygen compatible leak detection solution.
- 7) If a leak is detected, depressurize the system and fix leaking connection. Never attempt to fix a leak under pressure.
- 8) Once all connections are secure and leak free continue to the next step.
- 9) Open each cylinder gas and vent use valves after all new liquid cylinders have been properly connected and secured.
- 10) Open the manifold master valve (if equipped) and each header valve (if using the 628 manifold).
- 11) The 632 manifold is ready for use.

## Pressure Testing the 632 Manifold

Before system startup, it is recommended that all systems be pressure tested, leak tested, and purged with a clean, dry inert gas like helium or argon.

1. Wear safety glasses and gloves.
2. Connect last pigtail on the manifold to a test cylinder regulated to 50 PSI as illustrated in Figure 6. Do not open the cylinder valves yet.
3. Make sure all pigtails have been properly secured to the 632 manifold.
4. Isolate the outlet of the pressure control device (Regulator or Switchover) from the piping leading to the point of use. This will allow you to confirm that the manifold and pressure control device is leak free. It is not uncommon for there to be a small leak in the pipe line or point of use.



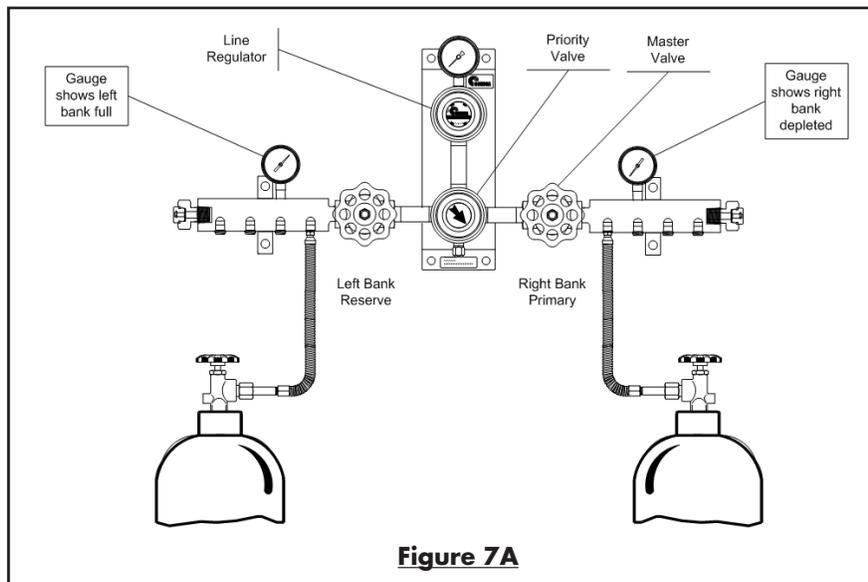
**Figure 6**

5. When first pressurizing, do not stand in front or in contact with regulator or switchover system.  
**WARNING: If the attached regulator is preset, or a switchover is without a line regulator, gas will escape from the delivery side of the pressure control device.**
6. Turn the adjusting screw or knob of the test regulator counter clockwise until it disengages the adjusting spring.
7. Slowly, open the test cylinder valve.
8. Next, adjust the test regulator to 50 PSI.
9. Wait 5-10 seconds for the system pressure to equalize.
10. Close the test cylinder valve.
11. Inspect all connections for leaks and fix any leaks. A leak detection solution may be applied to the connections (if compatible with the application) which indicates leaks by bubbling. To further check for leaks or if a leak detection solution can not be used, keep test cylinder valve closed for a period of time (24 hours) and observe the test regulator's low pressure gauge for a drop in pressure.
12. If a drop in pressure is observed, recheck all connections.
13. Depressurize the system and fix leaking connection. Never attempt to fix a leak under pressure.
14. Once all connections are secure and leak free continue to the next step.
15. Now set the outlet pressure of the pressure control device and open any isolation valve to allow the pipe line to pressurize.
16. Repeat steps 5 through 14.
17. When all leaks are fixed, close the test cylinder valve. Bleed system pressure to zero.
18. Repeat steps 1 through 17 with test regulator set at 500 PSI.
19. Disconnect the test cylinder and regulator.
20. Connect service gas cylinders to the manifold by following the section titled "Connecting a Cylinder"

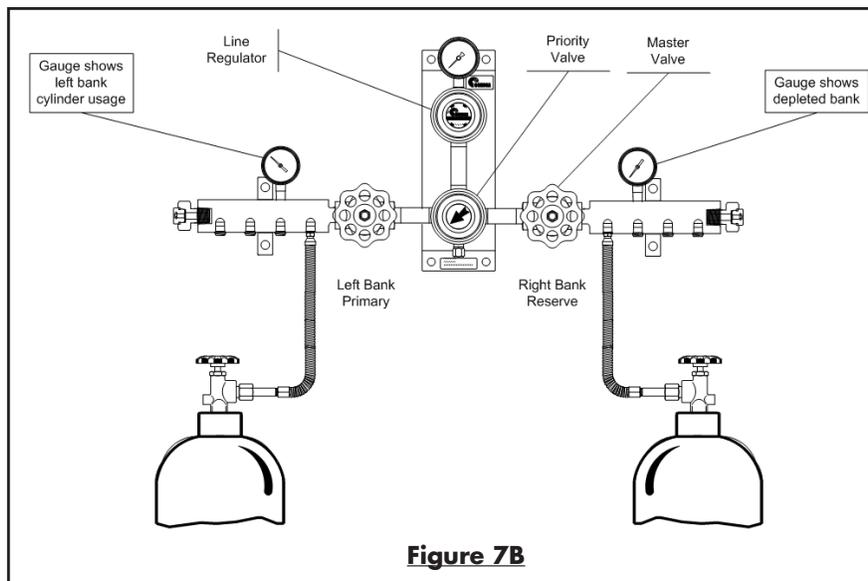
# OPERATION

## High-Pressure Primary with High-Pressure Reserve

1. At start up connect full cylinders to the left and right cylinder bank by following the appropriate section titled “Connecting a Cylinder”.
2. Rotate the priority valve to the high-pressure cylinder bank that you establish as primary.
3. Set the desired line pressure as required by the application. The 632 will automatically withdraw gas from the primary cylinder bank.
4. The 632 50-PSI and 120-PSI models will automatically switch over to the left cylinder bank at 215 PSI when the priority arrow is pointing to the right bank. The 632 will switch over to the right bank at 180 PSI with the arrow to the left. The 15 PSI model will switch at 80 PSI and 60 PSI respectively.
5. Bank depletion is conveyed by either a remote alarm or the inlet pressure gauge value has reached the respective switching pressure listed in step 4.
6. Isolate the manifold side that has depleted by closing it’s master valve (if equipped) as illustrated in Figure 7A.



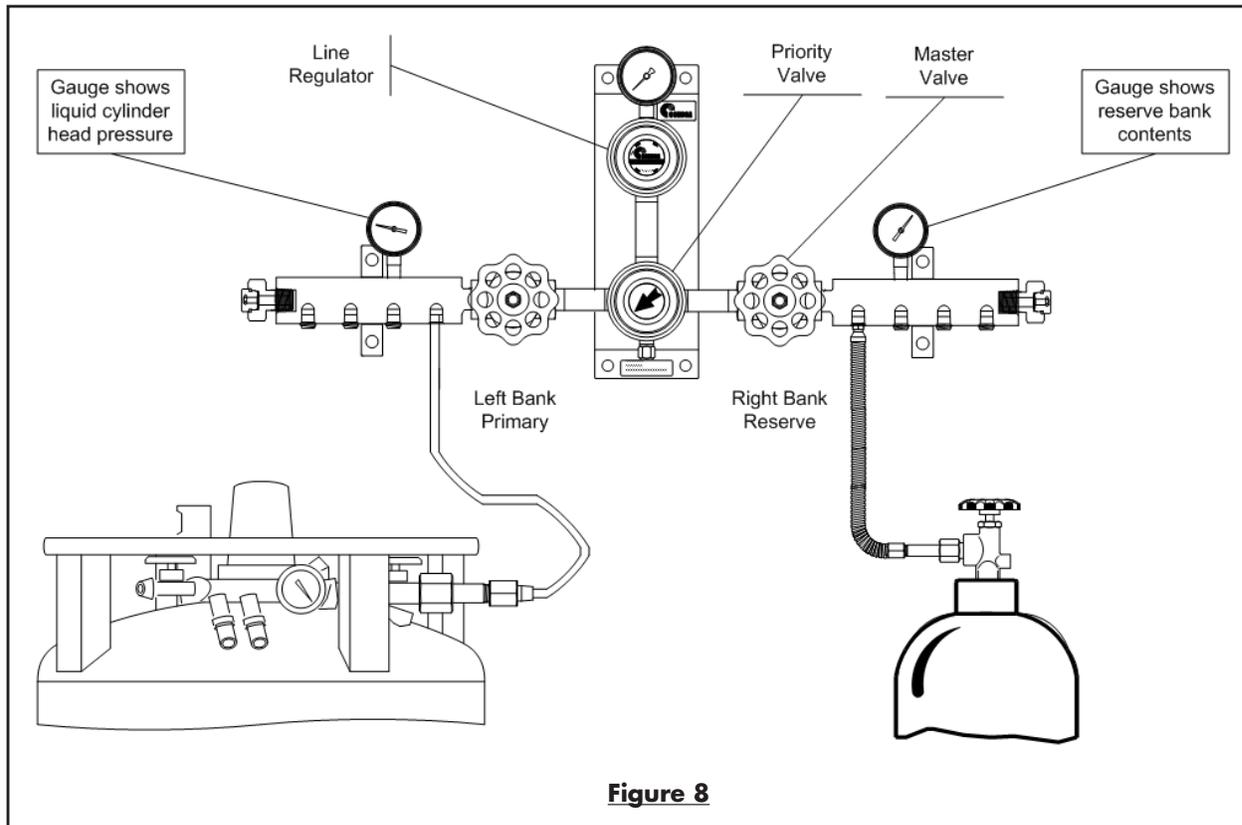
7. Rotate the 632 priority valve away from the depleted cylinder bank if both banks are high-pressure cylinders as illustrated in Figure 7B.



8. Replace the empty cylinders by following the section titled “Connecting High-Pressure Cylinders”.

## Liquid Cylinder Primary with High-Pressure Reserve

1. The 632 will work optimally as a liquid primary with a high-pressure reserve system by rotating the priority arrow towards the left bank while locating high-pressure cylinders on the right.
2. At start up connect full liquid cylinders on the left bank and high-pressure cylinders on the right bank by following the appropriate section titled “Connecting a Cylinder”.
3. Set the desired line pressure as required by the application. The 632 will automatically withdrawal gas from the primary cylinder bank.
4. The 632 50-psi and 120-psi models will automatically switch over to the right cylinder bank at 180 psi with the arrow to the left.
5. Bank depletion is conveyed by either a remote alarm or the inlet pressure gauge value has reached the respective switching pressure listed in step 4.
6. Isolate the manifold side that has depleted by closing it’s master valve (if equipped) as illustrated in Figure 8. Do not rotate priority valve if the 632 is being operated with a left bank primary liquid source and a right bank high-pressure reserve.
7. Replace the empty cylinders by following the section titled “Connecting High-Pressure Cylinders”.



## **MAINTENANCE**

At regular intervals, the 632 Series Gas Distribution System should be checked for leaks and proper function (see Troubleshooting). The pigtail check valve should also be checked for leaks when a depleted cylinder is removed. Note: the system inlet and pigtail should be pressurized when checking for leaks. Any leaks in the system should be corrected immediately.

## **TROUBLESHOOTING**

Typical symptoms listed below indicate MicroManifold system malfunctions needing repair. Replace immediately with a clean, repaired and tested, or new system.

1. Gas leakage from any joint.
2. Manifold master valve when closed does not cut off the gas supply to the regulator.
3. The system makes a noise or hums.

## **SERVICE**

A unit that is not function properly should not be used and should be returned to CONCOA for service. A Return Material Authorization (RMA) number must be issued for any product returned to CONCOA for service. Please contact a Customer Service Representative at 1-800-225-0473 to receive this number. You will be asked to provide:

1. Model Number
2. Gas Service
3. Inlet pressure and type of gas supply
4. Outlet pressure
5. Approximate gas usage

When shipping product back to CONCOA for repair the following steps should be followed:

1. Package the product sufficiently to prevent damage. If possible return product in its original packing.
2. Include RMA number on the outside of the carton.
3. Ship prepaid.
4. Include a written description of the problem you encountered with the product inside the package.
5. Include a statement of the gas service the product was used in.
6. Purge all equipment before shipping to protect the transporter and service personnel. Purging is especially important if the equipment has been in flammable gas service.

Return trip transportation charges are to be paid by the Buyer. In all cases where the warranty has expired, repairs will be made at current list price for the replacement part(s), plus a reasonable labor charge.

## Warranty Information

This equipment is sold by CONTROLS CORPORATION OF AMERICA under the warranties set forth in the following paragraphs. Such warranties are extended only with respect to the purchase of this equipment directly from CONTROLS CORPORATION OF AMERICA or its Authorized Distributors as new merchandise and are extended to the first Buyer thereof other than for the purpose of resale.

For a period of one (1) year from the date of original delivery (90 days in corrosive service) to Buyer or to Buyer's order, this equipment is warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in this manual and any accompanying labels and/or inserts, provided that the same is properly operated under conditions of normal use and that regular periodic maintenance and service is performed or replacements made in accordance with the instructions provided. The foregoing warranties shall not apply if the equipment has been repaired: other than by CONTROLS CORPORATION OF AMERICA or a designated service facility or in accordance with written instructions provided by CONTROLS CORPORATION OF AMERICA, or altered by anyone other than CONTROLS CORPORATION OF AMERICA, or if the equipment has been subject to abuse, misuse, negligence or accident.

CONTROLS CORPORATION OF AMERICA's sole and exclusive obligation and Buyer's sole and exclusive remedy under the above warranties is limited to repairing or replacing, free of charge, at CONTROLS CORPORATION OF AMERICA's option, the equipment or part, which is reported to its Authorized Distributor from whom purchased, and which if so advised, is returned with a statement of the observed deficiency, and proof of purchase of equipment or part not later than seven (7) days after the expiration date of the applicable warranty, to the nearest designated service facility during normal business hours, transportation charges prepaid, and which upon examination, is found not to comply with the above warranties. Return trip transportation charges for the equipment or part shall be paid by Buyer.

**CONTROLS CORPORATION OF AMERICA SHALL NOT BE OTHERWISE LIABLE FOR ANY DAMAGES INCLUDING BUT NOT LIMITED TO: INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, OR SPECIAL DAMAGES, WHETHER SUCH DAMAGES RESULT FROM NEGLIGENCE, BREACH OF WARRANTY OR OTHERWISE.**

**THERE ARE NO EXPRESS OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES HEREINABOVE SET FORTH. CONTROLS CORPORATION OF AMERICA MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE EQUIPMENT OR PARTS THEREOF.**



Controls Corporation of America  
1501 Harpers Road Virginia Beach, VA 23454  
To Order Call 1-800-225-0473 or 757-422-8330 • Fax 757-422-3125  
[www.concoa.com](http://www.concoa.com)