



5ZV High Purity Zone Valve Box

INSTALLATION AND OPERATION INSTRUCTIONS

Before Installing or Operating, Read and Comply with These Instructions

Controls Corporation of America
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INTRODUCTION

The 5ZV zone valve box is intended for flow control in a piping system of laboratory gases. The 5ZV can consist of up to four stainless steel valves capable of handling pressures up to 1,000PSIG or max gauge. This product allows the end-user to isolate and/or shutoff gases for particular zones. With indicator knobs, the valve status can be determined quickly. Valve boxes can be plumbed from right to left or left to right making the 5ZV extremely versatile.

Valves

- Each valve is Helium leak checked in both the open and closed position.
- Status indicator knobs.
- PTFE seats
- Stainless steel diaphragms
- Valves body is of stainless steel construction rated to 1,000PSIG or max gauge.
- -15°F – 125°F

Enclosure

- Cold rolled steel with white powder-coat finish.
- Flush cabinet door with continuous hinge for full access
- Vented enclosure optional.
- Door hinge can be configured as right hand or left hand.

CONCOA's 5ZV zone valve boxes are cleaned for oxygen service in accordance with the recommended methods of Compressed Gas Association, Inc. as published in CGA G-4.1: 2009, and CONCOA's oxygen component cleaning procedure MP-500.

Warning: Maximum allowable working pressure indicated on product labeling is for the valves only. Ratings for peripherals/accessories may be less than the pressure indicated on the product label. Do not exceed the pressure ratings of the attached peripherals/accessories and the valve's maximum allowable working pressure.

Warning: For valves with tube fittings, select the appropriate tubing. Use seamless tubing with the proper consideration given to wall thickness and material.

Warning: Flammable and toxic gases should only be used with a 5ZV properly vented with forced air.

Warning: This unit is NOT appropriate for the delivery of medical gases to patients as part of a medical gas pipeline.

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, distorted or contaminated, 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 SERVICE

In the event of equipment failure, call CONCOA Customer Service. Please be prepared to provide the model number and serial number of the equipment involved, in addition to some details regarding its application.

Things to consider before removing product from the box...

1. Know the properties and special handling requirements of the gas being used. Many gases are quite dangerous (flammable, toxic, corrosive, simple asphyxiant, or oxidizers). Proper safety measures should be established to handle component failures.

2. Be sure that the assembly purchased is suitable for the gas and type of service intended. The system label provides the following information:
 - a. Model Number
 - b. Serial number
 - c. Maximum inlet pressure

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3. Inspect the assembly upon receipt to be sure that there is no damage or contamination. 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. If there are adverse signs (leakage or other malfunction), return the assembly to the supplier.
4. Before system start-up, it is recommended that all systems be pressure tested, leak tested, and purged with an inert gas such as Nitrogen.

GENERAL SAFETY PRACTICES

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

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

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

For the United States, some applicable safety rules and precautions are listed below:

1. Local Ordinances
2. O.S.H.A. Standard 29 CFR
3. C.G.A. Pamphlet G-4, Oxygen – Information on the properties, manufacture, transportation, storage, handling, and use of oxygen.

4. C.G.A. Pamphlet G-4.1, Equipment Cleaned for oxygen service.
5. C.G.A. Pamphlet G-4.4, Industrial Practices for Gaseous Oxygen Transmission and Distribution Piping Systems.
6. C.G.A. Pamphlet G-5, Hydrogen – Information on the properties, manufacture, transportation, storage, handling, and use of hydrogen.
7. C.G.A. Pamphlet G-6, Carbon Dioxide – Information on the properties, manufacture, transportation, storage, handling, and use of carbon dioxide.
8. ANSI/ASME A13.1 Pipe Labeling Requirements and Standards.
9. NFPA 55 Compressed Gases and Cryogenic Fluids Code.
10. American Welding Society standard for brazing procedure qualification, ANSI/AWS B2.2-91

*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.

INSTALLATION

Please observe the previously mentioned safety precautions before actual installation.

- a. **BE SURE TO CONSIDER ALL FACTORS WHEN SELECTING MATERIALS.** For example, if you have both high pressure and corrosive service, select material that is suitable for both.
- b. Do not use oil or grease on fittings, especially not on oxidizing gas service equipment.
- c. Be sure that all fittings are secure and leak tight. PTFE thread tape should be used on pipe fittings, but avoid impinging on the gas stream before applying PTFE thread 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 thread tape on the second thread as shown on p.7. 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.

A. Compression tube fitting tightening instructions for 1 in.

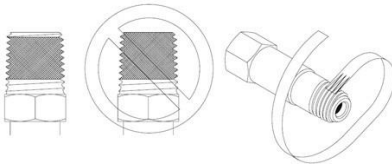


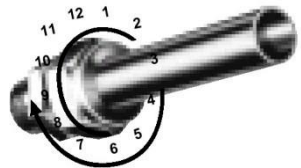
Figure 1. Tape Installation procedures.

(25mm) and smaller fittings:

1. Assure that all components that make up the compression fitting are in place.
2. Insert tube into the assembled fitting until tube is resting against the internal shoulder of the Swagelok fitting.

Tube must bottom out against internal shoulder of tube fitting. Failure to follow this step may lead to tubing pullout in the field.

3. Tighten nut finger tight.
4. Mark nut at 6 o'clock position.
5. While holding the fitting body steady, tighten the nut as follow:



Size $\frac{1}{4}$ " and above: Tighten the nut 1-1/4 turns (one full turn and continue until scribe mark reaches the 9 o'clock position).

Size $\frac{3}{16}$ " and below (including 2, 3, and 4 mm): tighten the nut $\frac{3}{4}$ turn to the 3 o'clock position.

6. It is recommended that the installer use a No-Go gauge to control gap. If the gauge will not enter the gap, the fitting is sufficiently tightened. If the gauge will enter the gap, additional tightening is required.

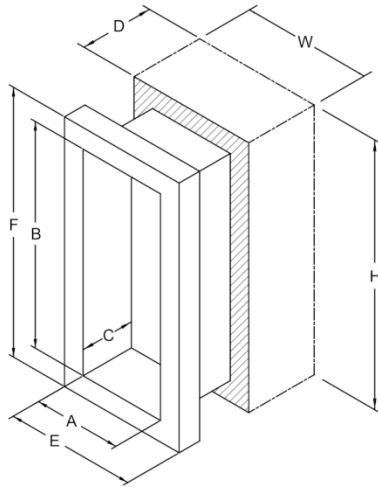


B. Reassembly instructions:

You may disassemble and reassemble a compression tube fitting, port connector, cap and plug many times.

1. Insert tubing with pre-swaged ferruled into the fitting body until the front ferrule seats.
2. Rotate the nut with a wrench to the previously pulled-up position. At this point, a significant increase in resistance will be encountered.
3. Tighten slightly with a wrench. Note: Do not use the gap inspection gauge with reassembled fittings.

Mounting:



Tub Inner Dimension			Frame Outer Dimension		Wall Opening		
A	B	C	E	F	W	H	D
9-1/2"	24"	6"	14"	28-1/2"	10-1/2"	25"	4"

- Wall Opening Rough-in Dimensions. (W x D x H) 10 1/2" x 4" x 25"

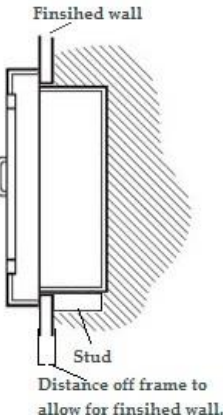
It is advised that the installer reference local codes regarding dimensions above finished floor.

Open valve box door and remove the four screws that connect front panel to valve box.

Install the top of the bottom cross member between studs 12 1/8" below desire center line.

Next, frame in above and at both sides of the cabinet. Note: On load bearing walls, the studs must be doubled on either side of the valve box. If a stud must be cut to install the box, a load bearing header must be installed above the valve box.

Figure 2



Place valve box in position determined by finished wall thickness and mark location of pre drilled holes on studding located at the top and bottom. Valve box must be attached by at least 4 points. (See Figure 2)

Remove box and predrill studs with appropriate pilot bit determined by screws to be used.

Place box in position and attach with suitable screws shimming valve box at each drill point to level and provide stability.

Return valve box door assembly to verify freedom of movement. If it binds, shim as necessary.

Remove door assembly for finished wall installation.

Piping and Labeling:

CONCOA provides color-coded self-adhesive gas service labels for identification of service and direction of flow. The installing contractor is to apply labels to each valve within the assembly for proper gas service identification, according to the manufacturer's instructions. Labels required indicating area controlled shall be furnished and installed by the installing contractor.

NITROGEN	→
BREATHING AIR	→
COMPRESSED AIR	→
NITROUS OXIDE	→
HELIUM	→
CARBON DIOXIDE	→
OXYGEN	→
ARGON	→
ACETYLENE	→
HYDROGEN	→
MEDICAL AIR	→
METHANE	→
PROPANE	→
LABORATORY AIR	→
LABORATORY VACUUM	→



Zone Valve Boxes ordered with stainless steel tube fittings will have two 9” stainless steel tube stubs per valve.

Zone Valve Boxes ordered with brass tube fittings will have two 9” copper tube stubs per valve.

After valve box is hung, swage tube stubs using gauging instructions given on previous pages.

When joint connection method creates heat, installer must wrap tube stub with a wet rag on the outside of valve box and open valve to allow air flow.

Use leak detection fluid on all joints prior to finished wall installation.

Verification of cross-connection should also precede finished wall installation.

All piping and piping supports shall conform to local code.

OPERATION

Read the “Safety” and “Installation” sections before operating your equipment.

2.1 It is advised that high purity systems be thoroughly purged before use.

2.2 All valve knobs should be turned fully clockwise to be closed.

2.3 Put on safety glasses and gloves.

2.4 To avoid damage to valve parts, pressurize the system slowly. If 5ZV was ordered with gauges, observe a rise in pressure up to proper line pressure.

2.5 Observe all connections for leaks.

- a. An approved leak detection solution may be applied to the connections, if compatible to your usage. Leaks are indicated

- by bubbling.
- b. Again check for leaks on the all pressure ports.
- c. Contact your CONCOA representative if you have any questions.

Pressurization of piping and valves shall be done slowly. When the knob indicator displays a red “C”, the valve is in the closed position. To open, turn knob counter-clockwise until the indicator displays a green “O”. If the 5ZV is equipped with gauges, the pressure shown will be your inlet pressure.

General

A unit which is not functioning properly should not be used until all required repairs have been completed and the unit has been tested to ascertain that it is in proper operating order.

SERVICE

It is recommended that all servicing be done by a service facility authorized by CONCOA. Contact the CONCOA Customer Service Department in Virginia Beach or the nearest CONCOA District Sales Office for assistance.

If so advised, the unit should be sent to a service facility authorized by CONCOA, adequately packaged, in the original shipping container if possible, and shipped prepaid, with a statement of observed deficiency. The gas service that the equipment has been subjected to must be clearly identified.

All equipment must be purged before shipment to protect the transporter and service personnel. The purging is especially important if the equipment has been in hazardous or corrosive gas service. Return trip transportation charges are to be paid by Buyer. In all cases other than where warranty is applicable, repairs will be made at current list price for the replacement part(s) plus a reasonable labor charge.

Test product for leaks on a routine schedule.

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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 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 operated under improper conditions or outside published specifications; or if the equipment has been damaged or does not function due to improper installation, improper supply of required utilities, accident, abuse, misuse, natural disaster, insufficient or excessive electrical supply, abnormal mechanical or environmental conditions, or debris or particles in the gas or liquid source of supply.

CONTROLS CORPORATION OF AMERICA's sole and exclusive obligation and Buyer's sole and exclusive remedy under the above warranties is limited to repairing using new or reconditioned parts or replacing, free of charge except for labor if permanently installed for the continuous supply of gas by other than a technician certified by CONTROLS CORPORATION OF AMERICA specifically to do so, at CONTROLS CORPORATION OF AMERICA's option, the equipment or part, which is either (1) 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 with return trip transportation charges for the equipment or part paid by Buyer or (2) in the case of designated equipment permanently installed for the continuous supply of gas, reported to an Authorized Service Center with proof of initial installation no later than seven (7) days after the expiration date of the applicable warranty, and which is evaluated for compliance with the above warranties by technician certified by CONTROLS CORPORATION OF AMERICA, and which is determined by CONTROLS CORPORATION OF AMERICA based on said evaluation to be non-compliant.

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.



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