



ADI 5852-C

High Purity Emergency Shut-Off Valve Kits

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

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DESCRIPTION OF PRODUCT

The High Purity Emergency Shut-Off valve kits are intended to be used in conjunction with any CONCOA regulator or CONCOA switchover. The High Purity Emergency Shut-Off valve kits interface with CONCOA's ESO system control module. The pneumatically controlled diaphragm valves are intended to attach to the inlets of CONCOA's regulators and switchovers – between the product and the inlet source. Alternatively, they can also be located in a process line where a process line shut-off is desired. The diaphragm valves feature:

- Metal to Metal Seals
- Bar stock Construction
- 1×10^{-9} Helium Leak Rate (cc/sec)

PART NUMBERS

5861001 - Single ¼" NPT Valve Kit, 316L Stainless Steel, 3500 PSI Max Inlet Pressure
5861002 - Dual ¼" NPT Valve Kit, 316L Stainless Steel, 3500 PSI Max Inlet Pressure
5862001 - Single ½" NPT Valve Kit, 316L Stainless Steel, 3500 PSI Max Inlet Pressure
5862002 - Dual ½" NPT Valve Kit, 316L Stainless Steel, 3500 PSI Max Inlet Pressure
5863001 - Single ½" NPT Valve Kit, 316L Stainless Steel, 500 PSI Max Inlet Press., Ultra-High Flow
5863002 - Dual ½" NPT Valve Kit, 316L Stainless Steel, 500 PSI Max Inlet Press., Ultra-High Flow



Be absolutely certain of the gas service and cylinder pressure before connection to any high-pressure gas cylinder.

INTENDED USE OF PRODUCT

The High Purity Emergency Shut-Off valve kits are normally closed diaphragm valves that will open to allow flow when pneumatic pressure is applied to the pilot port on each valve. The ESO system control module provides the pneumatic pressure for this valve under normal condition. When the ESO system control module gets an emergency input signal, it will vent the pneumatic pressure – thus shutting off the inlet pressure to the CONCOA regulator, switchover, or process line it is connected to.

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.

This equipment or any of its parts should not be altered without consultation with an authorized CONCOA representative. 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 center designated by CONCOA.

Things to consider before removing the system from the box:

1. Know the properties and special handling requirements of the gas being used. Many specialty gases are quite dangerous (flammable, pyrophoric, toxic, corrosive, simple asphyxiant, or oxidizers). Equipment failure or misuse may lead to problems such as a release of gas through the relief valve or regulator diaphragm. 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 valves included in the valve kits are marked with the following information:
 - a) Maximum Inlet Pressure
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.
 - b) Required pneumatic pressure and gas service.
Process gas is generally not suitable for use in the pneumatic actuator.
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 product 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.

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 and some details regarding its application. This would include inlet and outlet pressures, flow rate, environmental conditions, and gas service.

GENERAL SAFETY PRACTICES



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

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 test Emergency Shut-Off systems with non-flammable gas prior to use.

Check the function of the Emergency Shut-Off systems annually or as required by applicable regulation, whichever is more frequent.

General safety practices are continued on next page ...

General Safety Practices Continued



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. NFPA 55: Compressed Gases and Cryogenic Fluids Code (National Fire Protection Association)
2. International Fire Code (IFC)
3. International Building Code (IBC)
4. Local Ordinances
5. O.S.H.A. Standard 29 CFR
6. C.G.A. Pamphlet C-4, American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained.
7. C.G.A. Pamphlet G-4, Oxygen – Information on the properties, manufacture, transportation, storage, handling, and use of oxygen.
8. C.G.A. Pamphlet G-4.1, Equipment Cleaned for Oxygen Service.
9. C.G.A. Pamphlet G-4.4, Industrial Practices for Gaseous Oxygen Transmission and Distribution Piping Systems.
10. C.G.A. Pamphlet G-5, Hydrogen – Information on the properties, manufacture, transportation, storage, handling, and use of hydrogen.
11. C.G.A. Pamphlet G-6, Carbon Dioxide – Information on the properties, manufacture, transportation, storage, handling, and use of carbon dioxide.
12. C.G.A. Pamphlet G-6.1, Standard for Low Pressure Carbon Dioxide Systems at Consumer Sites.
13. C.G.A. Pamphlet P-1, Safe Handling of Compressed Gases in Containers.
14. C.G.A. Safety Bulletin SB-2, Oxygen Deficient Atmospheres.

*C.G.A. pamphlets can be obtained from:

Compressed Gas Association
1235 Jefferson Davis Highway
Arlington, VA 22202-3239
(703) 979-0900
Publications: (703) 979-4341. Fax: (703) 979-0134.

LOCATION

Keep all cylinders 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.

Cylinders installed in open locations should be protected from weather conditions. During winter, protect the cylinders from ice and snow. In summer, shade the cylinders from continuous exposure to direct sunlight.

Always leave access to the cylinder for cylinder replacement.

GENERAL INSTALLATION AND OPERATION

Installing Inlet and Outlet Connections:

CONCOA uses PTFE tape on all of its NPT connections.

NPT connections require the use of PTFE tape on the threads to make a gas tight seal. On stainless steel connections, PTFE tape also helps to prevent the connections from galling together when tightening or loosening. Follow the rules below when using PTFE tape:

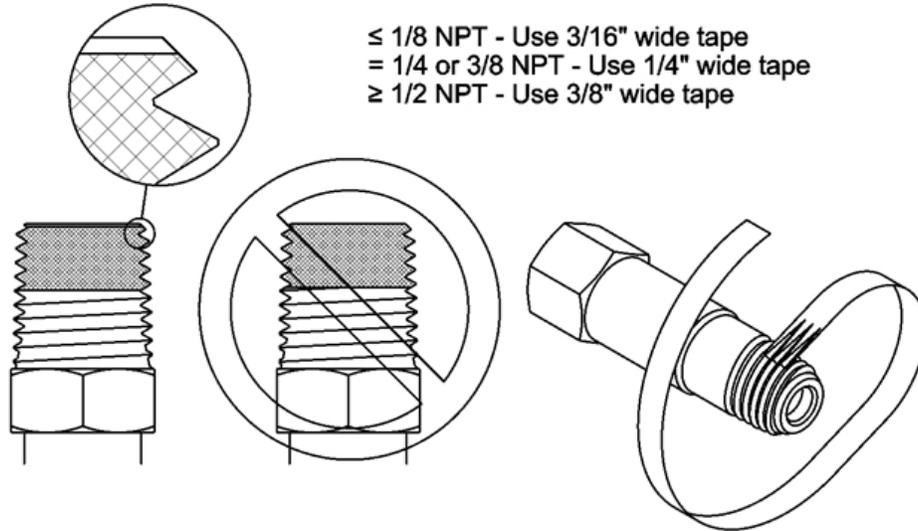


Figure 1 – Pictorial View of Tape Seal

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 first thread leaving a slight section of the chamfer exposed as shown in the figure 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 the tape so that the tape conforms to the threads. Apply at least 2 but no more than 3 layers of tape to the threads. Cut off excess tape, and press the end firmly into the threads.

Installation and Operation:

⚠ CAUTION

1. The High Purity Emergency Shut-Off valve kit shall be assembled inline between the CONCOA product and the inlet gas source –OR– in a process line using PTFE tape – See Installation Diagrams below:
 - Ensure that the Flow Direction Arrow points in the direction of gas flow.
 - Secure the tubing securely on the barbed connector in the pneumatic inlet.
 - For Dual Valve units, connect both pneumatic inlet ports to the tube tee (one ESO control module output will drive the entire switchover).
2. The pneumatic gas source from the CONCOA Emergency Shut-Off control module must be connected to the pneumatic input on the top of the Emergency Shut-Off valve using the provided tubing – note: max length of tube is 1000 ft. See required pneumatic input pressure in Figure 1.
3. Secure the tubing to the wall or surrounding area so that an inadvertent shut-off will not occur. If this tubing is cut or melts, it will vent the pneumatic pressure and shut-off the pressure (flow) downstream of the valve kit.
4. Before operation: Read and understand the instructions included with the CONCOA Emergency Shut-Off control module.

Installation diagrams:

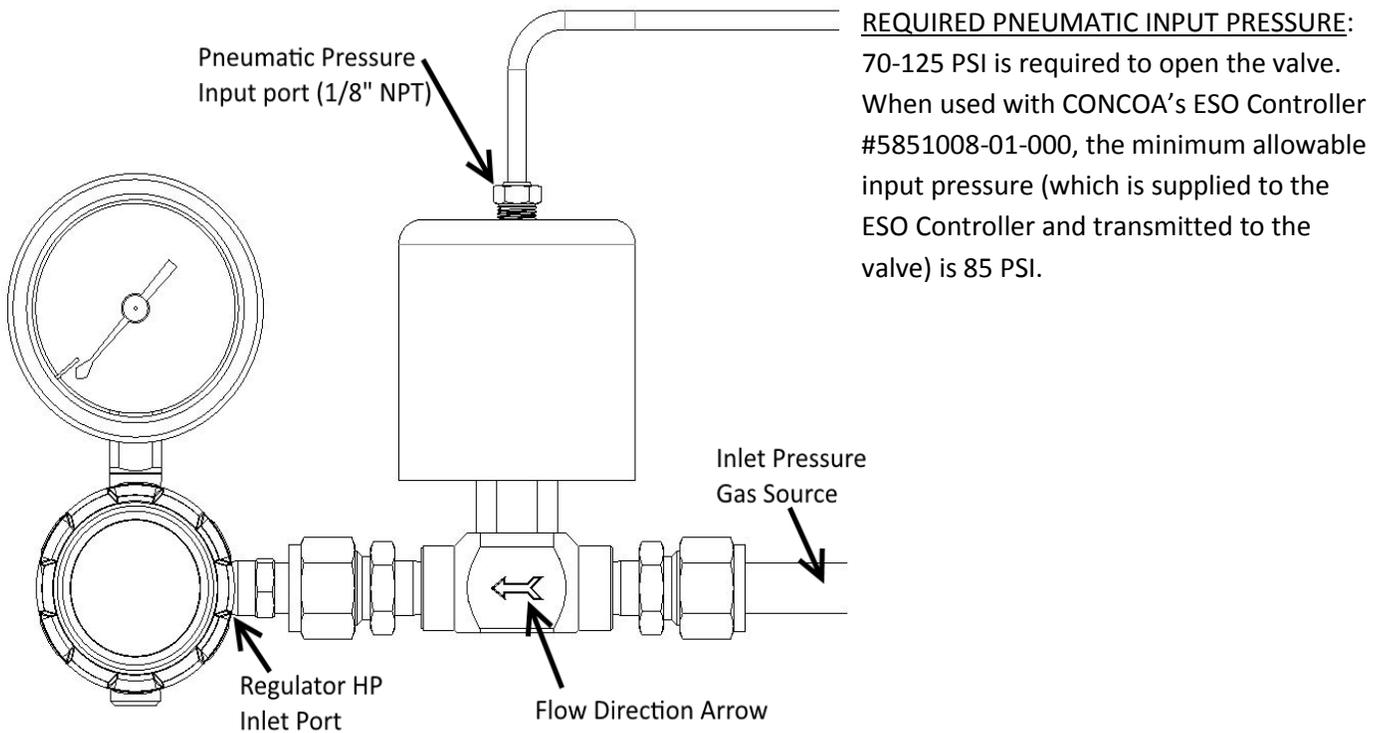


Figure 1
Connecting a Single Valve Kit to a Regulator

Installation diagrams (continued):

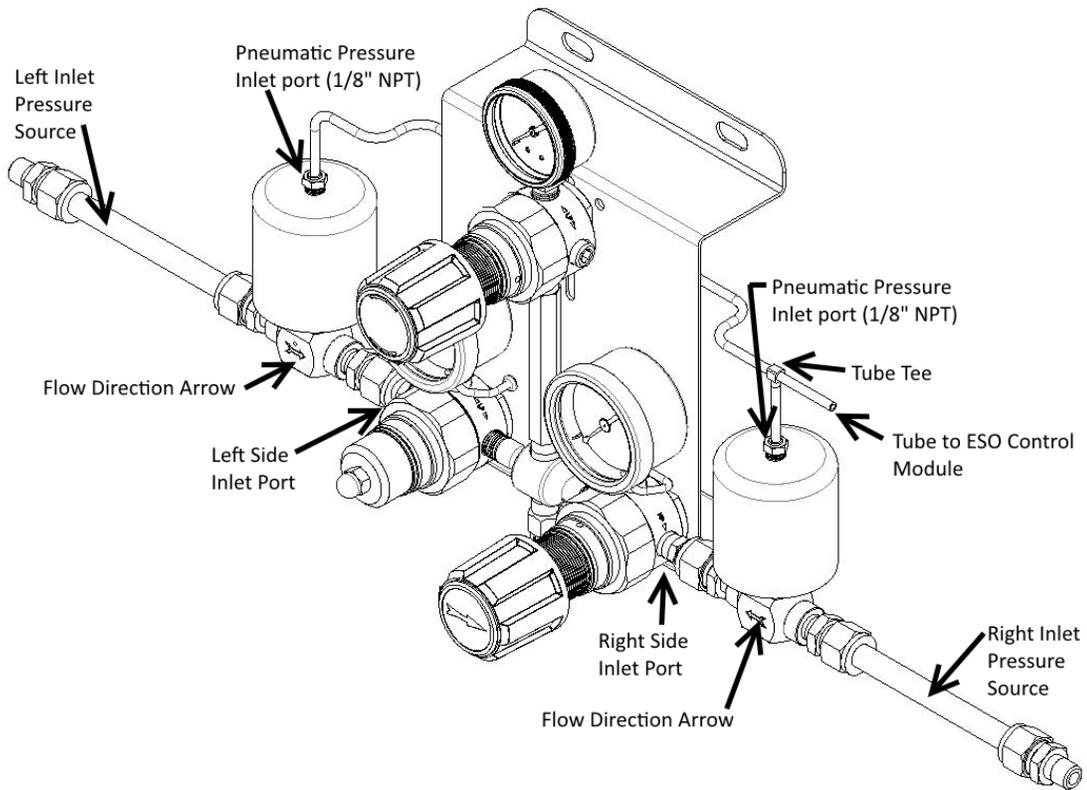


Figure 2
Connecting a Dual Valve Kit to a Switchover System

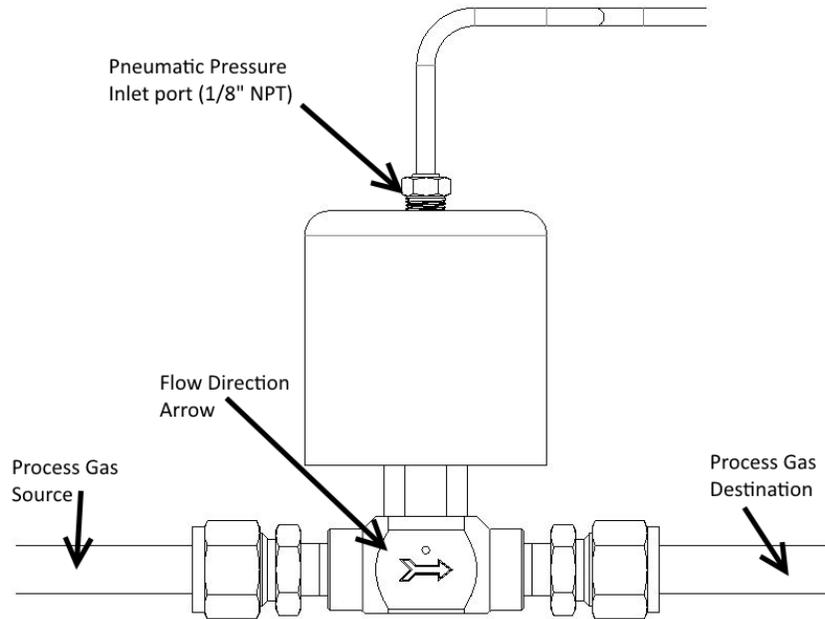


Figure 3
Connecting in a process line



Pressurizing the system for the first time:

Before system startup, it is recommended that all systems be pressure tested, leak tested, and purged with an inert gas such as nitrogen.

1. Wear safety glasses and gloves.
2. Be sure that both ends of all hoses or flexible hoses are secured before pressurizing.
3. Prior to supplying pilot pressure to the valve kit, test all valves for zero leaks. Once the valve kit's inlet has been pressurized, use leak detection solution (if compatible with the application) to ensure a full shut valve.
4. Follow instructions for startup instructions for the CONCOA Emergency Shut-Off control module before continuing to the next step.
5. When first pressurizing, do not stand in front of or contact the product. Slowly open the cylinder valve. Observe the high pressure gauge on the product (if available) for a rise in pressure up to full cylinder pressure.
6. Keep the hand wheel or wrench on the open cylinder valve at all times to allow prompt emergency shut-off.
7. 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 the leak detection solution cannot be used, close the cylinder valve for a period of time (recommended 24 hours), and observe the high pressure gauge for a drop in pressure. If so indicated, recheck the CGA connection and all other high-pressure port connections.

 **Never attempt to fix a leak under pressure.**

If leaks are detected, depressurize the system, and retighten the connection. Begin again at step 3.

MAINTENANCE

On regular intervals, the system should be checked for leaks and proper function. Any leaks in the system should be corrected immediately. The flexible hose check valve should also be checked for leaks when a depleted cylinder is removed.

Note: The system inlet and flexible hose should be pressurized when checking for leaks.

SERVICE

A unit that is not functioning properly should not be used. It is recommended that all servicing be done by a service center authorized by CONCOA. Contact the CONCOA Warranty Administrator in Virginia Beach, Virginia for systems still covered by the warranty. For items not covered by the warranty, contact the nearest CONCOA District Sales Office for assistance.

If so advised, the unit should be sent to a service center authorized by CONCOA. Do the following before shipping:

1. Adequately package the system. If possible package in the original shipping container.
2. Ship prepaid.
3. Include a statement of the observed deficiency.
4. Indicate the gas service that the equipment was used on.
5. Purge all equipment 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.

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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