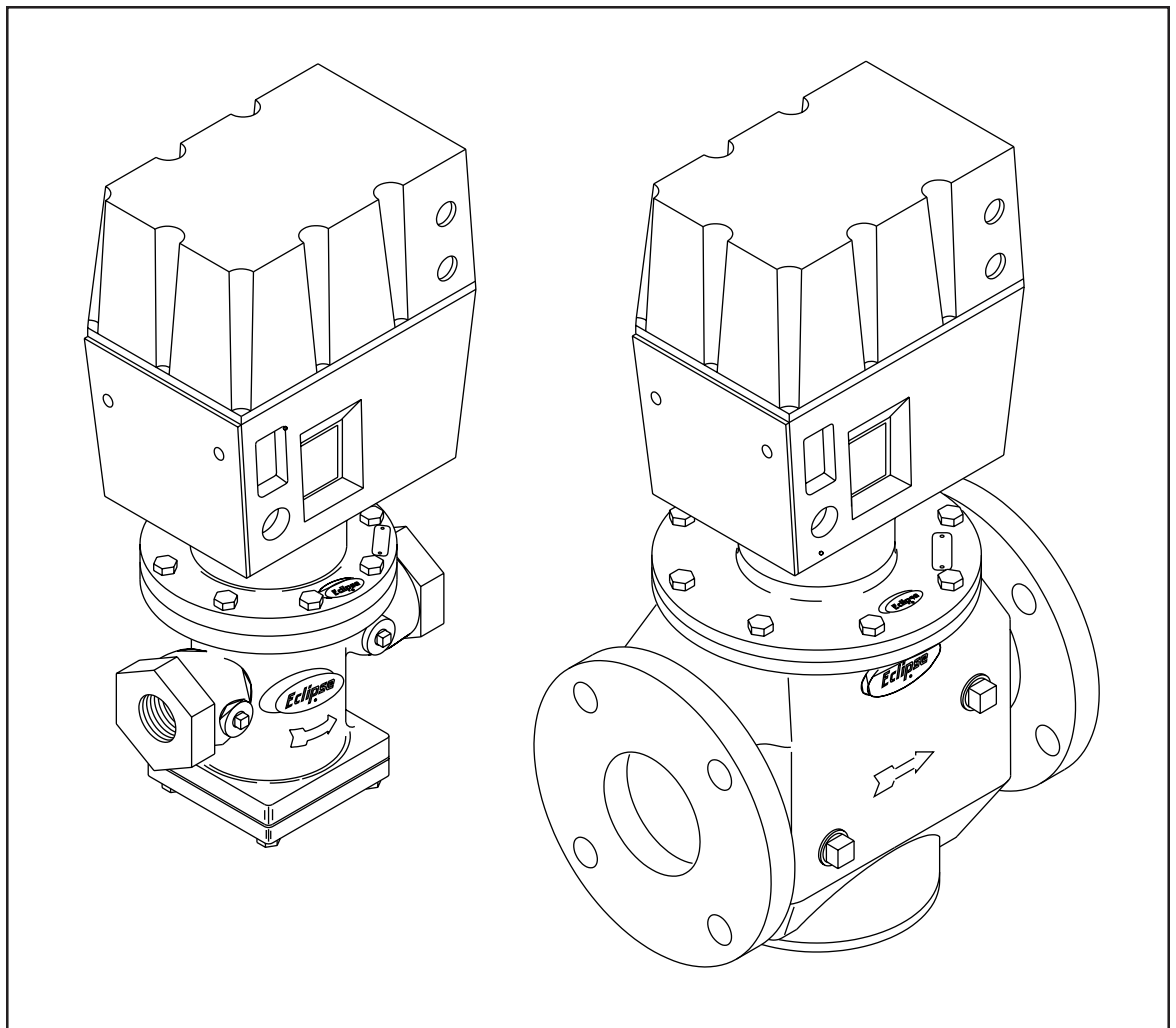




# *AutoTite Automatic Gas ShutOff Valves*

*Series 2000AT*

*Version 1.01*



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Eclipse Combustion, Inc., for a period of three years from shipment, warrants each 2000 AT valve to the original purchaser to be free from defects in material and workmanship under normal use as defined hereafter. Any operation expressly prohibited in this Guide, any adjustment or assembly procedures not recommended or authorized in these instructions, shall void the warranty.



# ***About this manual***

## **AUDIENCE**

This manual has been written for the people who select and install the product and the mechanics who work on it. They are expected to have previous experience with this kind of equipment.

## **SCOPE**

This manual contains essential information for the proper installation and operation of the Eclipse AutoTite Automatic Gas Shut-Off Valve, Series 2000 AT.

Following the instructions in this manual should assure trouble-free installation and operation of the valve. Read this manual carefully. Make sure that you understand its structure and contents. Obey all the safety instructions.

Do not deviate from any instructions or application limits in this manual without written consent from Eclipse Combustion, Inc.

If you do not understand any part of the information in this manual, do not continue. Contact your Eclipse sales office or Eclipse Combustion, Inc., Rockford, Illinois.

## **IMPORTANT NOTICES**

- Read this manual carefully. Make sure that you understand the structure and contents of this manual.
- Obey all the safety instructions.
- Do not deviate from any instructions or application limits in this manual without written advice from Eclipse Combustion, Inc.
- If you do not understand any part of the information in this manual, then do not continue. Contact your Eclipse representative or Eclipse Combustion, Inc.

## DOCUMENT CONVENTIONS

There are several special symbols in this document. You must know their meaning and importance.

The explanation of these symbols follows below. Please read it thoroughly.



### **Danger:**

**Indicates hazards or unsafe practices which WILL result in severe personal injury or even death. Only qualified and well-trained personnel are allowed to carry out these instructions or procedures.**

**Act with great care and follow the instructions.**



### **Warning:**

**Indicates hazards or unsafe practices which could result in severe personal injury or damage.**

**Act with great care and follow the instructions.**



### **Caution:**

*Indicates hazards or unsafe practices which could result in damage to the machine or minor personal injury.*

*Act carefully.*



### **Note:**

*Indicates an important part of the text.*

*Read the text thoroughly.*

## HOW TO GET HELP

If you need help, you can contact your local Eclipse Combustion sales office. You can also contact Eclipse Combustion, Inc. at:

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Rockford, Illinois 61103 USA  
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e-mail: [eclipse@eclipsenet.com](mailto:eclipse@eclipsenet.com)  
<http://www.eclipsenet.com>

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# Introduction

## WHAT THIS SECTION TELLS YOU

### PRODUCT DESCRIPTION

In this section, you will find a description of the features available on the Eclipse AutoTite Automatic Gas Shut-Off Valve.

The Eclipse AutoTite Series 2000 AT valve is designed to be an automatic gas supply shut-off to a combustion system. The valve has a 30 psi (2bar) differential pressure rating and opens smoothly, minimizing any gas pressure surge to downstream components. When either an interlocking switch in the system opens or electrical power fails, the valve closes within one second.

The AutoTite valve is available in sizes of 1" through 3" and is offered with NPT or Rc threads. The NPT versions are UL listed, FM Approved and CSA certified whereas the Rc versions have CE marking. These valves meet the system shutoff requirements of NFPA 86 and EN746-2 which include position indication and proof of closure.



Note:

*NFPA 86 standard requires that burner systems over 150,000 Btu/hr be equipped with safety shut-off valves with position indication. It also requires that systems over 400,000 Btu/hr include at least one valve that meets a "proven closed" requirement when integrated into the pre-ignition interlock circuit. The 2000 AT Valve, with the standard auxiliary switches, meets both of these requirements.*

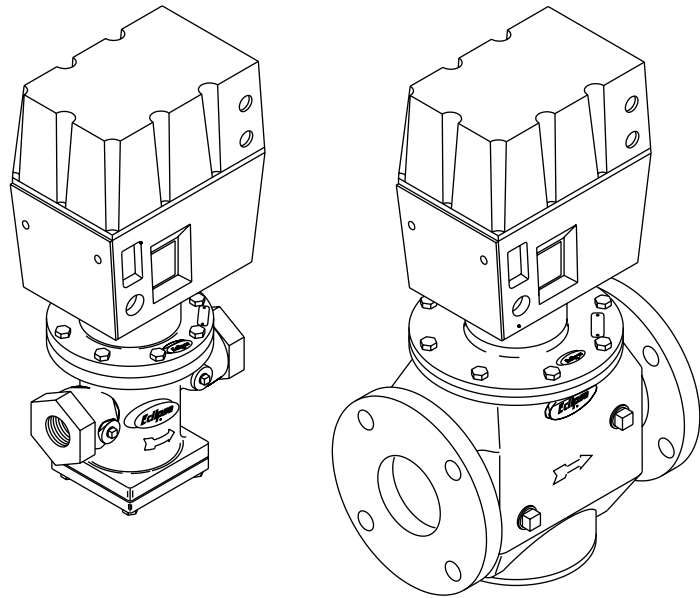


Note:

*EN746-2 standards require that a closed position switch be provided for interlocking into control systems for verifying position before automatic start-up of burner(s).*

Each AutoTite valve has two switches for auxiliary function uses. One switch is factory set to activate when the valve is opened and can be adjusted in the field to operate at any point in the valve stroke. The second switch is factory set to activate when the valve is fully closed and is not field adjustable. These switches can be used to activate other controls within the user's system.

### ***AutoTite Automatic Gas Shut-Off Valves***



The AutoTite valve is available with 110V 50Hz, 120V 60Hz and 220-240V 50/60Hz actuators with general purpose, watertight, and dust & oil mist tight enclosures. These actuators can be rotated 360° for ease of installation. The 220-240V/50Hz valve can be mounted in any position in increments of 90° whereas the other models are multipurpose.

#### **ADDITIONAL FEATURES**

- Actuator is field replaceable without removing valve body.
- Valve can be positioned in several orientations: upright, upside down or horizontally.
- 1/4" ports, located upstream and downstream on both sides of the valve body, can be used for pressure tap fittings, pressure gages, leak detection systems and pressure switch connections.
- One second maximum closing time.
- Positive shutoff using soft-seat disc.
- Two built-in auxiliary switches.
- Visual indication of valve position.
- Cast iron body with stainless steel internals.
- Factory tested before shipment.

# Installation

## INTRODUCTION

In this section you will find the information and instructions that you need to install the valve and actuator. The 2000 AT valve is designed to provide control of gaseous fluid (air, natural gas, propane and butane) flow in applications in which there is minimal exposure to water.



### Caution

*The presence of water in the gas can result in corrosion which will limit the life of the valve. Also, at temperatures below 32°F (0°C), the water will freeze which could result in valve failure.*

The 2000 AT valve is operated by a hydraulic actuator which allows the valve to close when power is discontinued. When mounted together, the actuator and valve can be installed in any position. Sufficient clearance should be maintained to allow for installation and servicing. See dimensional and mounting information provided in the Data Sheet 756-1 (NPT Models) or 756-2 (Rc Models).

## VALVE INSTALLATION



### Warning:

**Shut off gas supply and disconnect actuator power prior to valve installation.**

## General Information

- Gas flow through the valve must be in the direction indicated by the arrow on the valve body: otherwise, the valve may not shut off.
- The valve must be installed in a location that will remain within the temperature limits stated in the Data Sheet 756-1 or 756-2.
- Pipe must be free of scale or other foreign materials before connecting to the valve body.
- Do not use the valve to support adjacent piping.
- For ease of installation, install the valve body prior to attaching the actuator. This will also prevent possible actuator damage.
- A strainer shall be installed in the gas line upstream of the shutoff valve to prevent the ingress of foreign matter.



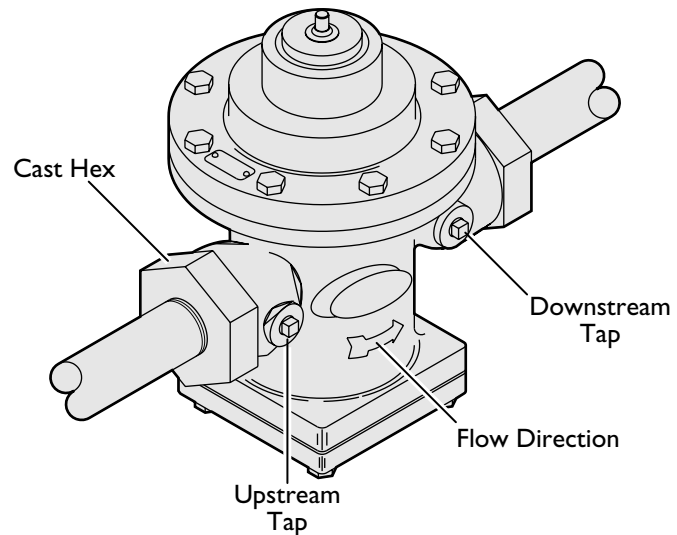
### Note:

*Prior to installation, ensure that there will be 2" (51 mm) clearance above the actuator to allow for installation or removal.*



**VALVE/PIPE CONNECTIONS**  
(1" through 2" Sizes)

**VALVE COMPONENT IDENTIFICATION**



1. Remove the protective caps from the ends of the valve.
2. Apply a moderate amount of pipe sealant to the **male pipe threads only**.



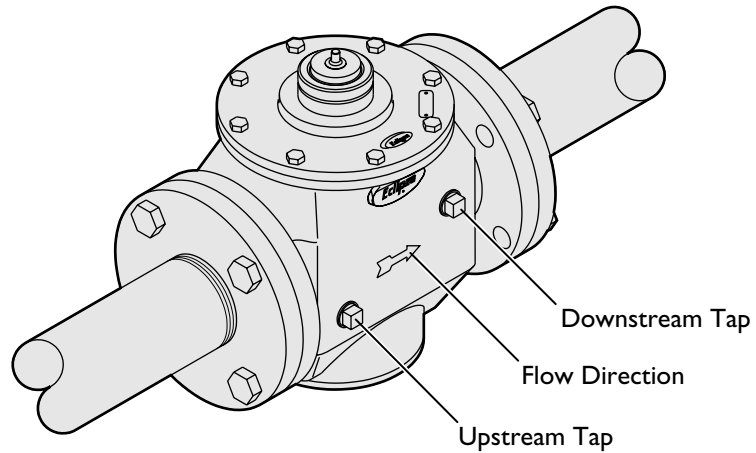
Note:

*Excessive pipe sealant could contaminate the valve seat, thus preventing the valve from closing properly.*

3. Mount the valve in accordance with the allowable mounting positions as shown in Data Sheet 756-1 or 756-2.
4. Install the valve with the flow in the direction of the arrow on the valve body.
5. Tighten the pipe into the valve body, reacting the torque at the cast hex portion of the valve body, adjacent to that pipe.

**VALVE/PIPE CONNECTIONS**  
(2-1/2" & 3" Sizes, Threaded Flanges)

**VALVE COMPONENT IDENTIFICATION**



1. Apply a moderate amount of pipe sealant to the **male pipe threads only**.
2. Insert the pipe into the flanges and tighten. Wipe excess pipe sealant from the inside of the pipe/flange connection. Handle the flanges in a manner which will prevent damage to the seal face.



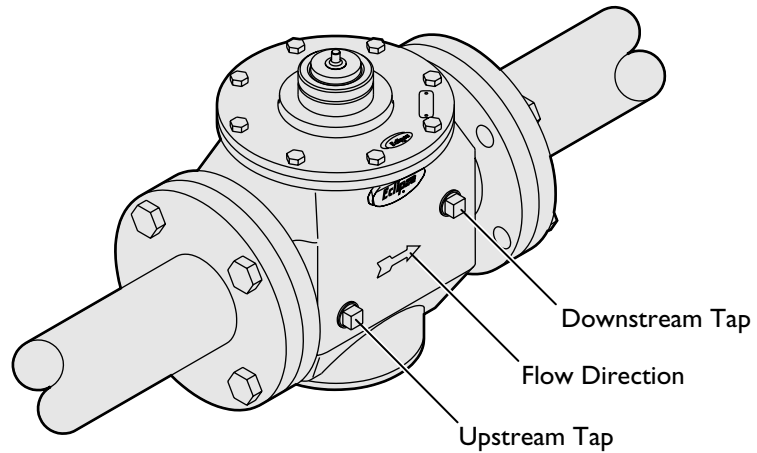
Note:

*Excessive pipe sealant could contaminate the valve seat, thus preventing the valve from closing properly.*

3. Remove the plastic caps from the ends of the valve. Handle the valves in a manner to prevent damage to the flange seal face.
4. Mount the valve in accordance with the allowable mounting positions as shown in Data Sheet 756-1 or 756-2.
5. Install the valve into the gas line with the flow in the direction of the arrow on the valve body.
6. Attach the pipe flanges to the valve flanges, installing gaskets between them. Make sure the gasket lies flat between the flanges.
7. Tighten the four bolts on each flange so that the faces bear uniformly on the gasket. **Torque the nuts to 61-75 lb-ft (82.7-101.7 Nm).**

**VALVE/PIPE CONNECTIONS**  
(2-1/2" & 3" Sizes, Weld-On Flanges)

**VALVE COMPONENT IDENTIFICATION**



1. Remove the plastic caps from the ends of the valve. Handle the valves in a manner to prevent damage to the flange seal face.
2. Attach the pipe flanges to the valve flanges, installing gaskets between them. Make sure the gasket lies flat between the flanges.
3. Tighten the four bolts on each flange so that the faces bear uniformly on the gasket. **Do not torque at this time.**
4. Mount the valve in accordance with the allowable mounting positions as shown in Data Sheet 756-1 or 756-2.
5. Install the valve into the gas line with the flow in the direction of the arrow on the valve body. Insert the pipe into the flanges, stopping approximately 1/4" (6mm) from the flange face.
6. Tack weld the flanges to the pipe using a suitable filler material which is compatible with the ASTM A105 forged steel flanges and the steel pipe being used (probably ASTM A53 or A106).



Note:

*Surfaces for welding shall be clean and free of paint, oil, rust, scale or other material which is detrimental to welding.*

7. Unbolt and remove the valve. Apply fillet welds on the inside and outside between the flanges and the pipe. The inside weld is not to extend beyond the face of the flange.
8. Reinstall the valve into the gas train. Attach the pipe flanges to the valve flanges, installing gaskets between them. Make sure the gasket lies flat between the flanges.
9. Tighten the four bolts on each flange so that the faces bear uniformly on the gasket. **Torque the nuts to 61-75 lb-ft (82.7-101.7 Nm).**

## ACTUATOR INSTALLATION

### General Information



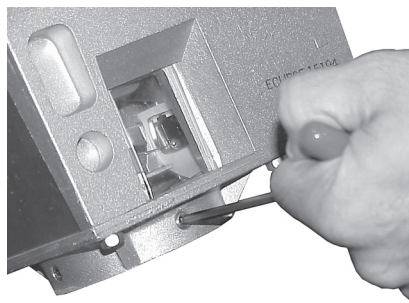
**Caution:**

Shut off power before attaching wires to the actuator to prevent electrical shock.

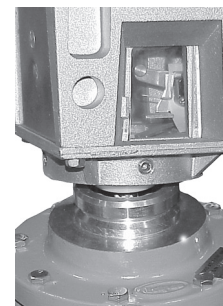
- The actuator installs directly to the valve bonnet and is secured by two set screws positioned 90 degrees apart.
- The actuator should be positioned to allow access for making wire connections. Two knockouts for 1/2" conduit are located on each side of the actuator.
- Wiring of actuators must be carried out by a competent person, who will comply with current regulations, standards and requirements.
- After actuator installation is complete, check out the valve-actuator operation per the instructions defined in the "Operation Checkout" section on page 15.

### Actuator Mounting

1. Check to see that the O-ring inside the bottom of the actuator collar is lubricated (water tight construction actuator only). If not, apply a small amount of a non-silicone base lubricant such as Petrolatum or Lubriplate Aero Lube.
2. Loosen the two set screws in actuator collar using a 5/32 allen wrench. Back them out enough to clear the valve bonnet when the actuator is installed. *Photo A*
3. Slip the actuator onto the valve bonnet *Photo B* (actuator weight approximately 17.7lb / 8 kg). Rotate the actuator to the desired position to accommodate wiring. (See Data Sheet 756-1 or 756-2).
4. Tighten the two set screws in the actuator collar *Photo C* (the set screws will engage in the machined V-groove *Photo D* of the bonnet). **Torque the set screws between 75-95 lb-in (8.5-10.7 Nm).**



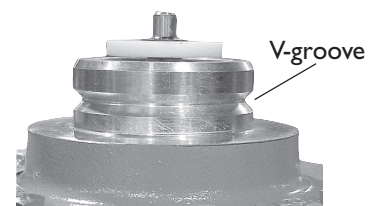
**Photo A**



**Photo B**



**Photo C**



**Photo D**

## Actuator Wiring



### Warning:

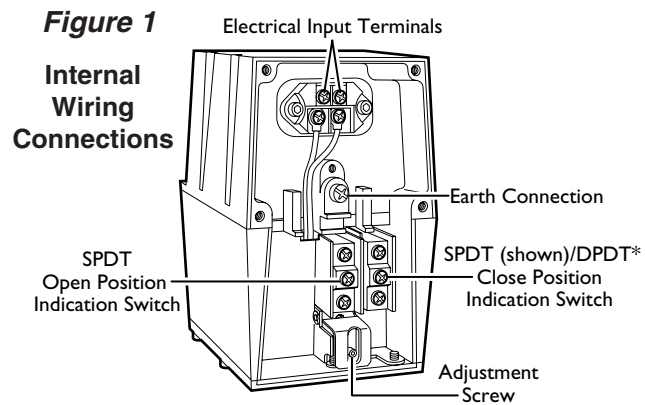
Shut off power before making electrical connections. Failure to do so could result in electrical shock or equipment damage.

### Note:



Wiring must comply with all applicable state and local electrical codes, ordinances and regulations.

1. Check actuator nameplate to make certain that electrical characteristics correspond with electrical service being used.
2. Remove the actuator nameplate. Figure 1 illustrates how the actuator will look with the cover removed.



\* SPDT for General Purpose Actuator and DPDT for Dust and Oil Mist Tight and Water Tight Actuators.

3. Remove knockouts from actuator housing for 1/2" threaded conduit connections as required. Attach conduit to actuator. For dust and oil mist tight and raintight applications, conduit connections with the same (or better) ratings are required.
4. Diagrams noting the external connections to the actuator are located on the backside of the actuator nameplate and shown in Figure 2.
5. Connect the power supply to terminals 1 and 2.
6. The open and closed position indicator switches are dependant upon the actuator model used. See Figure 2.

The SPDT switches will accept wires up to 14AWG (2.08mm<sup>2</sup>) whereas DPDT switches will accept wires up to 16AWG (1.31mm<sup>2</sup>).

To use 14AWG (2.08mm<sup>2</sup>) wire on a DPDT switch, use a fork type wire terminal for a #6 screw. The terminal must not exceed 1/4" (6mm) in overall width in order to fit on the microswitch.

For a typical combustion system wiring diagram, see Figure 3.

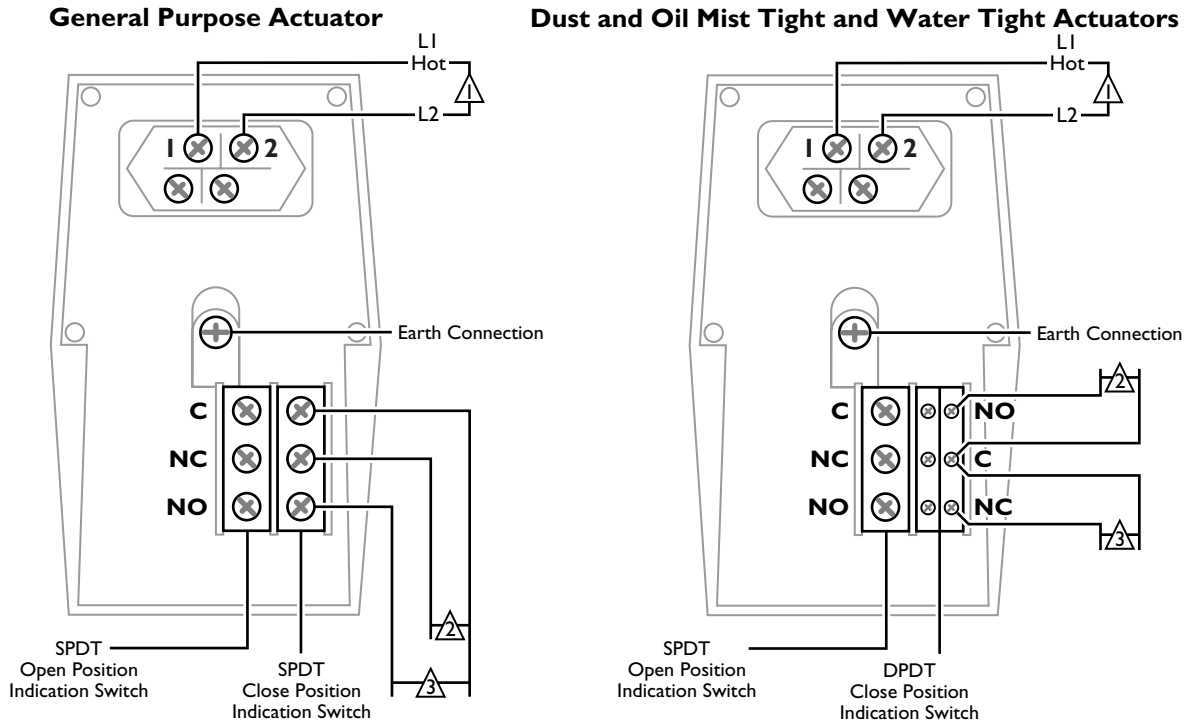
### Note:



Wiring to switches must be rated according to the load being switched (less than or equal to 10A).

7. Reinstall the nameplate on the actuator when wiring connections are complete.

**Figure 2 External Wire Connections**

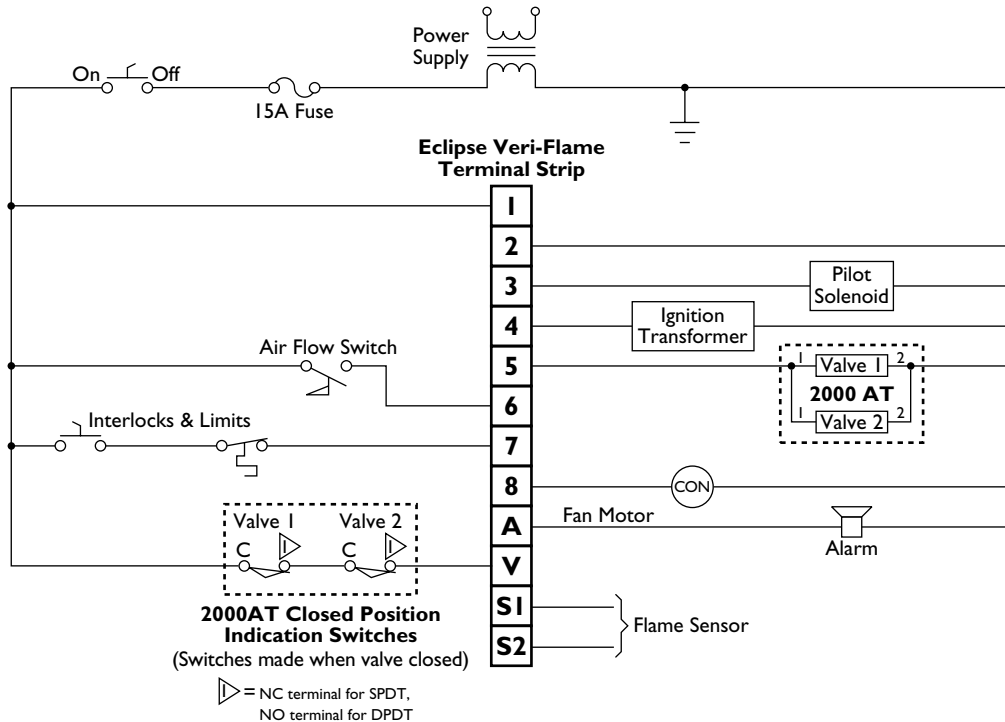


= Power supply. Provide overload protection (i.e. fuse) and disconnect means (i.e. switch) as required.

= Switch between these two leads is **closed when valve is shut** (de-energized).

= Switch between these two leads is **open when valve is shut** (de-energized).

**Figure 3 Typical Veri-Flame Combustion Safeguard Wiring Diagram Using Two 2000AT Valves per NFPA 86 or EN 746-2 Requirements as Applicable**



## Auxiliary Switch Adjustment



### Note:

The open position auxiliary switch is adjustable throughout the open stroke of the actuator. It is factory set to trip when the valve is 90% open. The closed position indication switch is not adjustable.

1. Remove the nameplate from the actuator. Adjust the switch using a 7/64 allen wrench. Turn the adjusting screw (see Figure 1 on page 13 for location) clockwise to cause the switch to operate earlier in the stroke and counterclockwise to cause the switch to operate later in the stroke.
2. Reinstall the nameplate once the switch adjustment is complete.

### Warning:

**Do not allow fuel to accumulate in the combustion chamber. Fuel/air mixture could be explosive.**



### Caution:



Do not put system into service until proper checkouts have been performed. All tests to be performed by a trained technician. Close all manual shut-off valves as soon as trouble occurs. Failure to do so could result in explosion or electrocution.

3. After installation is complete, cycle the valve several times (with the main gas shutoff valve closed) by energizing and de-energizing the actuator to open and close the valve.

## OPERATION CHECKOUT

# Maintenance & Troubleshooting

## INTRODUCTION

In this section, you will find the information and instructions that you need to maintain and troubleshoot the valve and actuator. There is also information to order replacement parts as needed.

## MAINTENANCE



### **Warning:**

**Turn off gas and disconnect electric supply before working on the valve and/or actuator. Service should be carried out by a competent person, who will comply with current regulations, standards and requirements.**

## Scheduled Maintenance

- Set up an inspection and maintenance schedule for the 2000 AT automatic shut-off valve and other valve train components.
- Cycle the actuator/valve periodically. Interrupt electrical power to simulate an unsafe condition. If the valve does not close within one second, remove it from service and replace with a new unit.
- None of the components in the valve body assembly are replaceable and therefore should not be serviced in the field. The auxiliary switches in the actuator are field replaceable per the instructions defined below.

## Open & Closed Positions Indication Switch Replacement

An SPDT close position indication switch is used on the general purpose actuators whereas a DPDT switch is used on the dust and oil mist tight and watertight actuators. All three actuators have a SPDT open position auxiliary switch. If either switch fails, a replacement can be ordered for installation in the field. When replacing the switch in the field, follow the instructions listed below.



### **Warning:**

**Shut off power and close manual gas cock before servicing actuator. Failure to do so could result in electrical shock or equipment damage.**

1. Remove the actuator nameplate.
2. Using a 5/32 allen wrench, loosen the two set screws that secure the actuator to the valve bonnet (see Photo A on page 12 for screw locations). Remove the actuator from the valve; if necessary, disconnect the wiring and conduit.
3. Disconnect the wires from the terminals on the switch. Remove the two switch mounting screws located on the actuator base (a sealant is applied to the screws on Water Tight actuators).
4. Insert the new switch and fasten with the replacement screws provided.



5. Reinstall the actuator as described in the Actuator Mounting section.
6. Reconnect the conduits and wiring as required.
7. Cycle the valve several times to verify operation of the replaced switch. If the open position switch was replaced, adjust as defined in the "Auxiliary Switch Adjustment" section on page 21.

**TROUBLESHOOTING**

| PROBLEM                          | POSSIBLE CAUSE                        | SOLUTION  |
|----------------------------------|---------------------------------------|---|
| Valve will not open.             | • No power at actuator.               | Check power to actuator.<br>Correct system problem.                               |
|                                  | • Actuator is incorrectly wired.      | Check power to actuator.<br>Rewire power to terminals 1 & 2.                      |
|                                  | • Actuator is not functioning.        | Remove actuator from valve body and energize.<br>Replace actuator.                |
|                                  | • Valve is stuck.                     | Replace valve and actuator.   |
| Valve will not seal when closed. | • Contamination or mechanical damage. | Valve body not field serviceable; replace valve and actuator.                     |
| Open switch not made.            | • Mechanical/electrical failure.      | Cycle valve (open/close) while checking valve with multimeter.<br>Replace switch. |
|                                  | • Switch is incorrectly wired.        | Check power to switch.<br>Rewire switch.  |
| Closed switch not made.          | • Mechanical/electrical failure.      | Cycle valve (open/close) while checking valve with multimeter.<br>Replace switch. |
|                                  | • Switch is incorrectly wired.        | Check power to switch.<br>Rewire switch.  |

**REPLACEMENT PARTS**

**Actuator Replacement Part Numbers**

|                 | General Purpose |          | Dust & Oil Mist Tight |          | Water Tight |          |
|-----------------|-----------------|----------|-----------------------|----------|-------------|----------|
|                 | 110/120V        | 220-240V | 110/120V              | 220-240V | 110/120V    | 220-240V |
| <b>Part No.</b> | 15194           | 15196    | 15940                 | 15950    | 14756       | 14757    |

**Switch Replacement Part Numbers**

| Switch Type   | Part No. |
|---|----------|
| SPDT Open Position Indication Auxiliary Switch Kit  | 16839    |
| SPDT Close Position Indication Auxiliary Switch Kit | 16840    |
| DPDT Close Position Indication Auxiliary Switch Kit | 16841    |



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