Installation & Maintenance Instructions

2-WAY AND 3-WAY PUSH-TYPE HYDRAMOTOR SOLENOID VALVES
NORMALLY CLOSED OPERATION - 1/2" OR 3/4" RP AND NPT

SERIES 148A

⚠ WARNING To reduce the risk of death, serious injury, or property damage:

- **Personnel installing, maintaining, or operating this equipment must be qualified and follow these instructions. See also separate solenoid installation & maintenance instructions. Keep this document.**
- **Before installing or maintaining the valve, turn off electrical power, depressurize valve, extinguish all open flames and avoid any type of sparking or ignition. Drain hazardous or combustible fluid to a safe area.**

⚠ WARNING READ THE INSTRUCTIONS BEFORE USAGE, this control must be installed in conformity with applying approvals.

⚠ WARNING To prevent the possibility of death, serious injury or property damage, the 148A Fuel Oil Valve must be installed and serviced (tested) only by a qualified service technician. The following hazards must be avoided:

- **Electrical hazard.** Turn off all electrical power to Hydramotor Actuator. More than one circuit may exist.
- **Pressure hazard.** Depressurize valve and drain hazardous or combustible fluid to a safe area before inspection or removal of the valve or actuator from service.
- **Hydraulic power hazard.** Do not put fingers between the Hydramotor output shaft and cup washer or any unyielding surface when energizing or de-energizing the actuator. Install all covers before operation.
- **Explosion/fire hazard.** Extinguish all open flames and avoid any type of sparking or ignition during leakage testing.

-SERVICE NOTICE-

Except for replacement of the Hydramotor Actuator, 148A Fuel Oil Valves are not repairable. When any performance problems are detected during routine inspection, replace valve immediately.

See separate P149A Series Hydramotor Actuator Installation and Maintenance Instructions for information on: Actuator specifications, installation, positioning/mounting, wiring and field service of actuator.

DESCRIPTION

148A are a 2 or 3-way normally closed, electro hydraulically operated push-type, brass body, safety shutoff valves with a spring-loaded stem which, upon power interruption, drives the PTFE seat firmly closed within one second to provide reliable ON/OFF control of fuel oil.

These valves are used mainly for #2, #4, #5, and #6 fuel oil shutoff service throughout the commercial and industrial heating equipment market. Typical market segments include burners, boilers, ovens, furnaces, and heat-treating equipment. All 148A Series valves come with Proof of Closure as a standard feature, but can only be utilized with Actuator with POC switch option.

Pressure and Seat Leakage Testing

Leakage testing frequency shall be at least annually in accordance with NFPA-86 or original equipment manufacturer recommendations. For instructions, refer to section on Testing for Internal (Seat) Leakage and Figures 2 and 3.

OPERATION

148A is a normally closed, push-to-open valve, with pressure applied at port number 1. It opens when the valve stem is depressed by an energized P149A actuator. A return spring closes the valve when its actuator is de-energized or removed. The P149A actuator is retracted by its own internal spring.

When in a 3-way configuration as shown in Figure 1, the 148A valve operates in the following manner:

- Actuator De-energized: Flow is from port 1 to port 3. Port number 2 is closed.
- Actuator Energized: Flow is from port 1 to port 2. Port number 3 is closed.

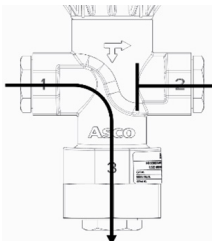
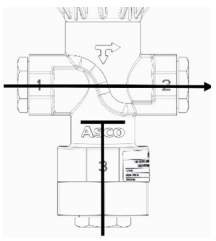
Actuator De-Energized	Actuator Energized
	

Figure 1. 3-Way Flow Diagrams

When in 2-way configuration as shown in Figure 2, Port 3 is plugged and flow in the 148A valve is from port 1 to 2. There is no flow through port 3.

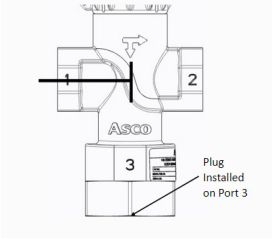
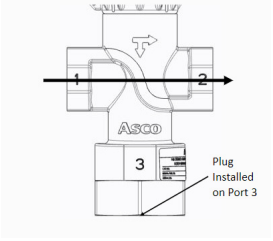
Actuator De-Energized	Actuator Energized
	

Figure 2. 2-Way Flow Diagrams

Operating Pressure Differentials:

No minimum operating pressure differential required.
Maximum: 300 PSIG

Temperature Limitations

Ambient temperature: -40°F to +150°F (-40°C to +66°C).

Fluid temperature: 300°F (148.9°C) maximum.

NOTICE **Some fuel oils approved for use in this valve have a flashpoint below the max fluid temperature which the valve is rated for.**

Part Number Generation

Connection Type
8 = NPT body connections
E = ISO 7/1 "Rp" body connections

Product Series
148 = Valve Body

Revision
A = Initial Release

Operation
2 = 2 way (Plug)
3 = 3 way

Pipe Connections
00 = 1/2 (Reducers)
01 = 3/4

Not Used / Available
00 = Not Used / Available

Option List
A00 = None

Not Used / Available
00 = Not Used / Available

8 148 A 2 00 00 A00 00

Figure 3. 148A Series Product Codification

INSTALLATION

Check nameplate for correct catalog number, pressure, and service. Check the catalog number against specifications shown in the Part Number Generation Section to ensure that the valve meets the requirements of the application. Never apply incompatible fluids or exceed pressure rating of the valve. Contact ASCO or your supplier for more information about this valve or other valve options if this valve is not suitable for your application.

Positioning

Valve body may be mounted in any position.

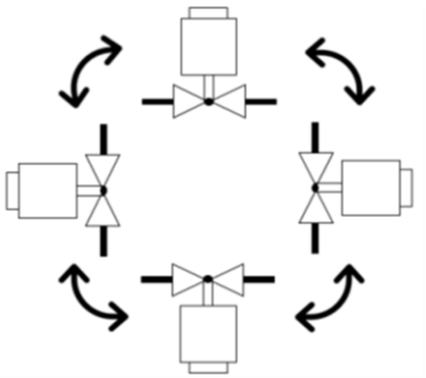


Figure 4. _148A Series Mounting Positions

Piping

NOTICE **Piping must comply with applicable local and national codes and ordinances.**

NOTICE **Valve/Actuator interface has a protective cap over the stem connection, do not remove protective cap until actuator is ready to be installed on valve body. Please refer to Installation & Maintenance Instructions for actuator installation instructions.**

Connect piping to valve according to 1 and 2 markings and flow arrow on the side of valve body (see flow diagram). Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Compound to also be sparingly applied to all male threads of adapters and plugs installed on valve. If 1/2" piping connection is required, please install 3/4" to 1/2" adapters included with the 148 Valve shown in Figure 5. For three-way application, a 3/4" to 1/2" adapter is also included for port 3. If used for a two-way application, apply pipe compound to plug, included with 148 Valve shown in Figure 5 and torque to wrench tight on the 3rd port.

Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or actuator as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point. Valve should be checked for external leakage at piping connections after installation, see Testing for External Leakage section.

NOTICE **To protect the valve seal, install a strainer or filter, suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600 and 8601 for strainers.**

⚠ WARNING **To prevent the possibility of death, serious injury or property damage, only use ASCO brand P149A Series Actuators with the 148A Fuel oil valves. The use of actuators other than the ASCO brand may cause a safety issue and will void your warranty.**

NOTICE **To avoid damage to the valve body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If PTFE tape, paste, spray or similar lubricant is used, use extra care when tightening due to reduced friction.**

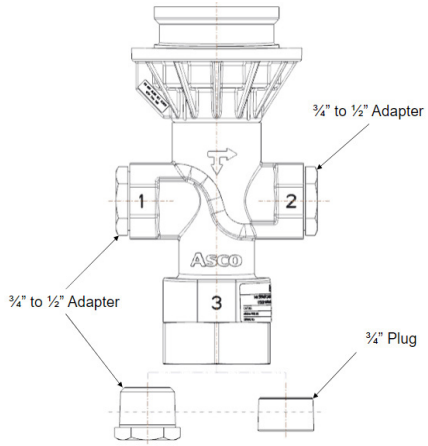


Figure 5. Pipe Connection Options

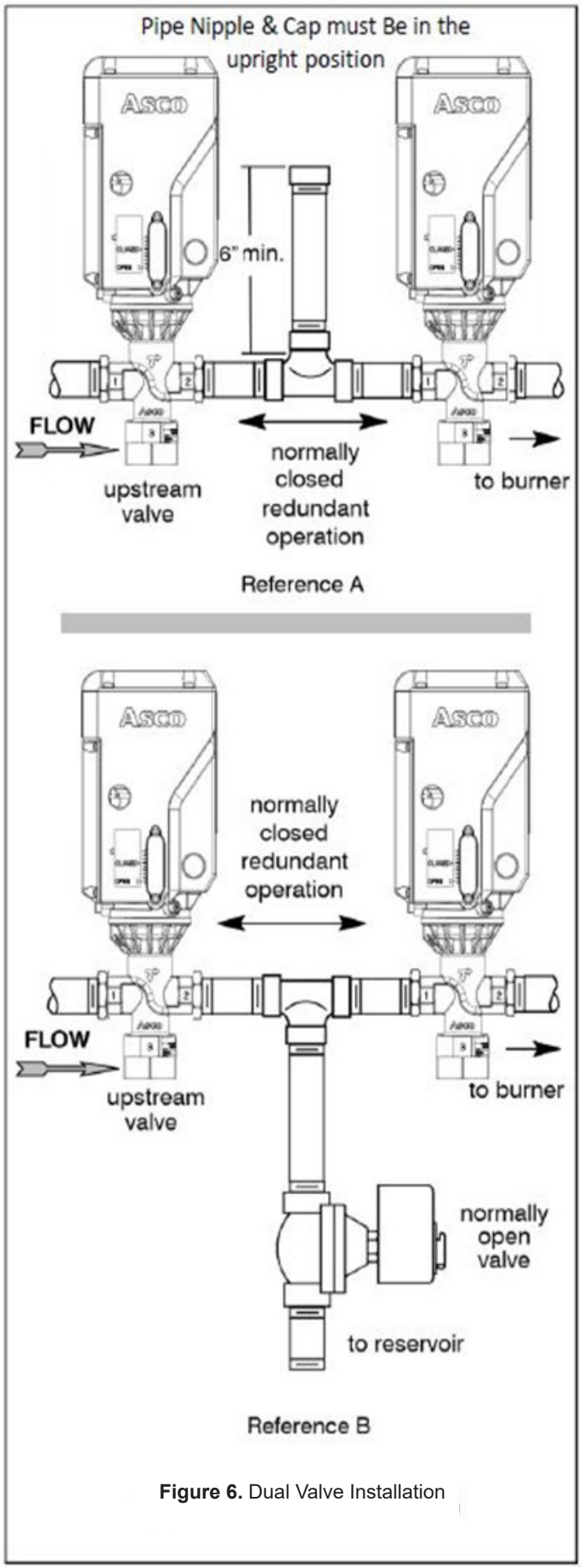


Figure 6. Dual Valve Installation

-IMPORTANT SERVICE NOTICE-

Dual Valve Installation for Fuel Oil Service 148A Series valves used in a Dual Valve Fuel Oil Train may require additional installation considerations because of the possibility of reverse pressure or hydraulic lock-up. Reverse pressure can occur when oil is trapped between the two valves and expands due to increased temperature which may force the upstream valve disc to become partially dislodged from the valve seat. Hydraulic lock-up can occur if the downstream valve closes before the upstream valve, trapping oil between the two valves, possibly causing upstream valve seat to partially engage but not to trip the proof-of-closure switch. It is recommended that these factors be taken into consideration in your piping scheme by adding a Pipe Nipple and Cap between the two normally closed valves. See Figure 6 for installation illustration. An alternate method is to use a normally open valve to bleed off fuel oil to a reservoir when the two valves are closed.

Testing for External Leakage

⚠ WARNING Explosion/Fire Hazard. To prevent the possibility of death, severe injury or property damage from the possible release of combustible gas to the atmosphere, extinguish all open flames and avoid any type of sparking or ignition.

1. Block media flow on downstream side of valve.
2. Apply pressure to valve within nameplate rating and energize actuator.
3. Apply a soapy solution or a commercially available leak detecting solution to the pipe connections, and/or inlet/outlet thread adapter connections and check for bubbles. If the valve has been tested for seat leakage, apply the solution around the bonnet/body joint and pipe plugs.
4. If leakage exists. Depressurize valve and turn off electrical power supply. Tighten connections and retest following the above steps.

MAINTENANCE

Preventive Maintenance

- Prepare and follow a routine inspection schedule based on the media, environment, and frequency of use. This should include periodic internal and external leakage checks.
- Keep the medium flowing through the valve as free from dirt and foreign material as possible. Depending on medium and service conditions, clean valve strainer, filter or dripple gas required to keep the valve free of contamination. In the extreme case, contamination will cause faulty valve operation and the valve may fail to open or close.
- While in service, the valve should be operated at least once a month to ensure proper opening and closing.

VALVE KITS

Reducer and plug kits are available to fit the 148A series valve onto 1/2" piping or to have the valve perform as a 2-way rather than a 3-way if desired. See Table 1 for all available Kit Numbers for this series. Valves ordered with 3-way operation are equivalent to catalog numbers of the same pipe size/type and options with 2-way operation when fitted with a plug kit. Example: 8148A30000A0000 is equal to 8148A20000A0000 fitted with plug kit. Same applies when valve ordered with 3/4" pipe connection is fitted with reducer kit.

Description	Pipe Reducers 3/4" → 1/2"		Pipe Plug 3/4" (NPT, ISO)	
	NPT	ISO	NPT	ISO
Quantities	1	1	1	1
Kit Number	M200868	M200869	M200870	M200871