



INSTALLATION, OPERATING & MAINTENANCE INSTRUCTIONS

2-WAY N.C. SOLENOID VALVES 3/8", 1/2", 3/4", 1", 1-1/4", AND 1-1/2" NPT VALVE TYPES: 73218



This document is intended for use as a complementary resource to the User Safety Responsibility Statements located in product literature and posted to www.parker.com/safety.

WARNING



FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS ("Products") COULD CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

Possible consequences of failure or improper selection, or improper use of these Products include, but are not limited to:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work piece or component parts being thrown off at high speeds
- Failure of a device to function properly, for example, failure to clamp or unclamp an associated item or device
- Explosion
- Sudden moving or falling objects
- Release of toxic or otherwise injurious liquids or gases
- Electrical shorts or burn out of equipment

Before selecting or using any of these Products, it is important that you read and follow the subsequent instructions.

This document and other information from Parker Hannifin Corporation, its subsidiaries, and authorized distributors provide Product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the Product in the current Product literature and in any other materials provided from Parker or its subsidiaries or authorized distributors. Due to the variety of operating conditions and applications for these Products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety, and warning requirements of the application are met.

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DESCRIPTION

These valves are 2-way, pilot operated models requiring a minimum operating pressure differential to insure valve operation. They are available in normally closed (N.C.) versions and are offered in a combination of brass and stainless steel construction. Valves may be ordered with either NEMA 2, 4, 4X integrated coils for ordinary locations or NEMA 4, 4X, 7, and 9 for hazardous locations: Divisions I and II; Class I, Groups A, B, C, and D; Class II, Groups E, F, and G. Additional solenoid coils and enclosures are offered as described in our catalog.

PRINCIPLES OF OPERATION

The inlet port of the 73218 valves is stamped "P" on the valve body. The outlet port is not marked.

Normally closed type: 73218

De-energized: Pressure is connected to the inlet port. Flow through the valve is prevented by a plunger closing off the diaphragm pilot orifice and a diaphragm sealing against the main orifice.

Energized: The plunger is lifted off the pilot orifice and vents the pressure behind the diaphragm. The venting creates a pressure imbalance across the diaphragm, which causes the diaphragm to open the main orifice allowing flow through the valve.

CAUTION: *A minimum operating pressure differential of 5 psi is required for proper valve operation.*

FLUID CODES

Listed below are the codes utilized by Underwriters Laboratories (UL) and the Canadian Standards Association (CSA) for various common fluids. The codes for those fluids that are approved or certified by the agencies for use with each valve are printed on the outside of the individual packaging.

<u>CODE</u>	<u>FLUID</u>
A	- Air or nontoxic, nonflammable gases
Ac	- Acetylene
F	- Common refrigerants except ammonia
G	- City gas supplied by public utilities
Ga	- Gasoline
HO	- Petroleum based hydraulic oils having viscosities of 125 to 400 SSU at 100° F (38°C)
02	- Nos. 1 and 2 fuel oils, oils having viscosities not more than 40 SSU at 100° F (38°C)
02 - 06	- No. 2 through No. 6 oil
Ox	- Oxygen
S	- Steam

W - Water or other aqueous nonflammable liquids for the maximum fluid temperatures, as well as valve ambient limitations, check the valve part number on the nameplate and refer to the catalog or the outside of the shipping package.

INSTALLATION INSTRUCTIONS

Mounting position and pressure limits: Valves can be mounted directly on piping. Mounting brackets are available and may be ordered separately.

The 73218 valves are designed to be multi-poised and so will perform properly when mounted in any position. However, for optimum life and performance the valves should be mounted vertically upright so as to minimize

wear and reduce the possibility of foreign matter accumulating inside the sleeve area.

Line pressure must conform to nameplate rating.

Piping: Remove protective closures from the ports. Connect line pressure to the inlet port. Use of Teflon tape, thread compound or sealants is permissible, but should be applied sparingly to male pipe threads only.

CAUTION: *Do not allow foreign particles, Teflon tape, or thread compound to enter valve. Tightening torque should not exceed the following values for each port size:*

Only wrench flats provided on the body should be used when applying torque. Do not use sleeve or enclosure as a lever.

Media filtration: Normally filtration is not required, but dirt or foreign material in the media may cause excessive leakage, wear, or in exceptional cases, malfunction. If filtration is used, install the filter on the inlet side as close to the valve as possible. Clean periodically depending on service conditions.

Lubrication: Lubrication is not required although airline lubrication will substantially increase valve life.

CAUTION: *Valves which have seals or other components made from ethylene propylene rubber must not be exposed to petroleum based lubricants or other hydrocarbons.*

Electrical connection: Electrical supply must conform to nameplate rating. Connect coil leads or terminals to the electrical circuit using standard electrical practices in compliance with local authorities and the National Electrical Code.

WARNING: *Valves to be installed in Hazardous Locations, must be outfitted with Hazardous Location coils only. Verify nameplate data and coil part number before installing the valve*

WARNING: Turn off electrical power before connecting the valve to the power source.

If the coil assembly is located in an inconvenient orientation, it may be reoriented to facilitate installation. Loosen coil assembly nut, rotate coil assembly to desired position, then retighten the nut with an input torque of 43-53 in-lbs.

DIN Coil and Terminal Box Assembly (Coil / Option Codes D1DB, D2DB, D3DB): Loosen cover screws and swing cover 90° toward the conduit hub in order to access the interior space. Separate the plastic block containing the screw terminals from the metal enclosure using a small flat head screwdriver. Feed the lead wires through the conduit hub and attach them to the appropriate screw terminal. For electrical connection within the terminal box, use field wire that is rated 90° C or greater. Snap the plastic block back into place inside the metal enclosure. Replace the cover and hand-tighten the cover screws. Place the gasket over the DIN spades on the coil and press the terminal box and coil together. Secure the terminal box to the coil using the mounting screw provided. Apply 20 to 30 in-lbs. torque to the mounting screw.

Screw Terminal Coil and Terminal Box Assembly (Coil /Option Codes S1TB, S2TB, S3TB): Loosen cover screws and swing cover 90°C toward the conduit boss in order to access the interior space. Feed the lead wires through the conduit hub and attach them to the appropriate screw terminal. For electrical connection within the terminal box, use field wire that is rated 90°C or greater. Replace the cover and hand-tighten the cover screws. Press the terminal box and coil together. Secure the terminal box to the coil using the mounting screw provided. Apply 20 to 30 in-lbs. torque to the mounting screw.

CAUTION: When the DIN or Screw Terminal coils are used with the Terminal Box Assembly, be sure to apply a wrench to the wrench flats on the conduit hub when installing electrical conduit.

Coil/enclosure temperature: Standard valves are supplied with coils designed for continuous duty service. Normal free space must be provided for proper ventilation. When the coil is energized continuously for long periods of time, the coil assembly will become hot. The coil is designed to operate permanently under these conditions. Any excessive heating will be indicated by smoking and/or odor of burning coil insulation.

For the maximum valve ambient conditions, as well as the fluid temperatures, check the valve part number on the nameplate and refer to the catalog or the outside of the shipping package.

MAINTENAIICE

Note: Depending on service conditions, fluid being used, filtration, and lubrication, it may be required to periodically clean and/or replace worn components. See Disassembly Instructions.

CAUTION: Do not expose plastic or elastomeric materials to any type of commercial cleaning fluid. Parts should be cleaned with a mild soap and water solution.

DISASSEMBLY INSTRUCTIONS

WARNING: Depressurize system and turn off electrical power to the valve before attempting repair.

The valves need not be removed from the line. To remove the coil assembly:

Normally Closed Valves - For both ordinary and hazardous location constructions, unscrew the nut on the top of the coil assembly. The wave washer and coil assembly can now be removed.

To disassemble the pressure vessel:

CAUTION: If the sleeve assembly does not have a hex style flange, do not use a pipe wrench directly on the sleeve. Instead, use a Skinner U99-011 wrench nut to remove the sleeve assembly.

Normally Closed Valves - Slide the Skinner U99-011 wrench nut over the sleeve tube. To unscrew the sleeve assembly, mate the wrench nut to the sleeve flange and turn the wrench nut. The plunger, return spring, and flange seal may now be removed.

Unscrew the cover screws. If the cover cannot be easily lifted off the body, laterally tap the cover or gently pry the cover from the body with a screwdriver. Care must be taken not to damage the diaphragm, cover, or body. Diaphragm return spring(s), diaphragm assembly, and O-rings can now be removed.

Replacement Parts: When ordering replacement parts kits, specify valve number and voltage from nameplate. Parts kits are available for each valve. Parts included in each kit are marked with an **asterisk (*)**. See exploded views.

REASSEMBLY INSTRUCTIONS

To reassemble the pressure vessel:

WARNING: When replacing coils, valves equipped with **Hazardous Location** coils must use **Hazardous Location** replacement coils only. Verify nameplate data and coil part number before installing the replacement coil.

Refer to exploded view drawings. Parts must be replaced in the order shown.

Install the diaphragm assembly into the body. For 3/8" through 1-1/4" NPT ported valves, make sure that the diaphragm tab is located over the outlet port of the body. For 1-1/2" NPT ported valves, the diaphragm tab must be located 30 degrees counter-clockwise from the outlet port when viewed from the diaphragm side.

The diaphragm bolt holes and flow holes must line up with the appropriate bolt and flow holes in the valve body. Tighten the cover screws with an input torque of 65-85 in-lbs. for the 3/8" through 3/4" NPT port sizes, and 110-150 in-lbs. for the 1" through 1-1/2" NPT port size valves.

Install the plunger and spring in the sleeve. Tighten sleeve assembly with an input torque of 130-150 in-lbs.

With coil assembly repositioned on the sleeve, slide the wave washer over the sleeve and tighten coil assembly nut with an input torque of 43-53 in-lbs.

Refer to the Installation Instructions for remaining installation procedures.

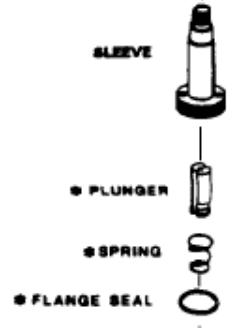
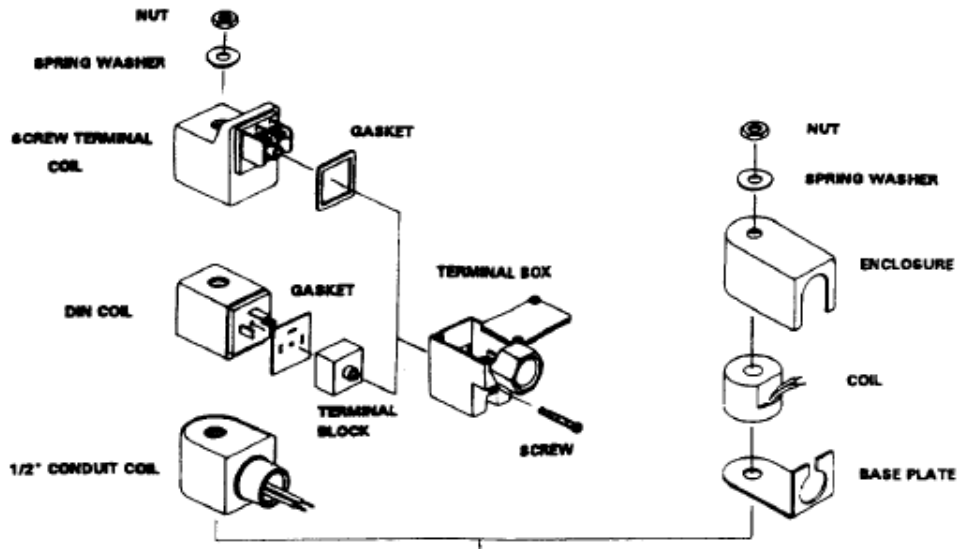
TROUBLE SHOOTING	
PROBLEM	PROCEDURE
Valve fails to open	<ol style="list-style-type: none"> 1. Check electrical supply with voltmeter. Voltage must agree with nameplate rating. 2. Check coil with ohmmeter for shorted or open coil. 3. Make sure that pressure complies with nameplate rating.
Valve is sluggish or in operative - electrical supply and pressure conditions are verified.	<ol style="list-style-type: none"> 1. Disassemble valve as per the Disassembly Instructions. Clean out all extraneous matter ensuring passages are clear. 2. The plunger must be free to move without binding. The plunger spring must not be broken. Replace spring if necessary. 3. The diaphragm must also be free to move without binding. Check diaphragm bleed hole and pilot orifice for clogging or tearing. Damaged bleed hole may require replacing the diaphragm. Examine diaphragm return spring(s) and replace if broken.
External leakage at sleeve flange to cover joint	<ol style="list-style-type: none"> 1. Check that sleeves torques at 130-150 in-lbs. 2. If leakage persists, remove sleeve and check flange seal for damage. Replace if defective.
External leakage at flange joint between body and cover	<ol style="list-style-type: none"> 1. Retighten cover screws with an input torque of 65-85 in-lbs. For the 3/8" through 3/4" NPT port size valves, and 110-150 in-lbs. For the 1" through 1-1/2" NPT port size valves. 2. If leakage persists, diaphragm, O-ring, and/or body or cover with damaged sealing surfaces may have to be repaired or replaced.
Internal leakage	<ol style="list-style-type: none"> 1. Disassemble valve as per the Disassembly Instructions. Remove extraneous matter. Clean parts in a mild soap and water solution. 2. Examine surface of the plunger seal and diaphragm. If damaged replace plunger or diaphragm. 3. Inspect orifices in the body, cover, and diaphragm for nicks or dirt. Clean as necessary. Damage may require a new valve or replacement parts. 4. Examine surfaces of diaphragm or seal in contact with the main orifice. Clean if dirty or replace if damaged or worn. 5. Check all springs. If broken, replace.

DECLARATION

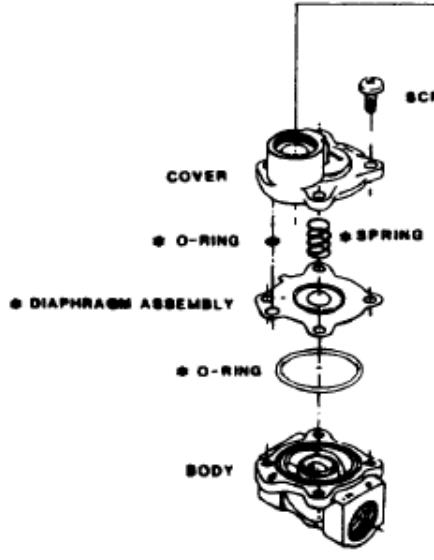
Parker's Fluid Control Division certifies its valve appliance products complies with the essential requirements of the applicable European Community Directives. We hereby confirm that the appliance has been manufactured in compliance with the applicable standards and is intended for installation in a machine or application where commissioning is prohibited until evidence has been provided that the machine or application is also in compliance with EC directives.

The data supplied in the Parker valve catalogs and general Installation, Operating & Maintenance Instructions are to be consulted and pertinent accident prevention regulations followed during product installation and use. Any unauthorized work performed on the product by the purchaser or by third parties can impair its function and relieves Parker Hannifin of all warranty claims and liability for any misuse and resulting damage.

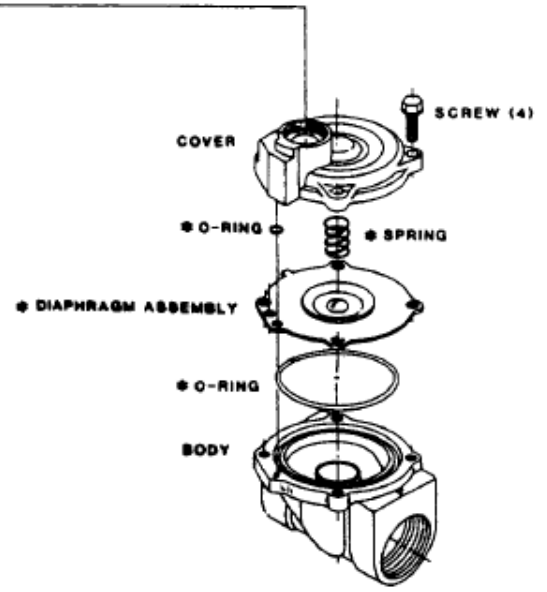
A separate Declaration of Conformity or Manufacturer's declaration is available upon request. Please provide valve identification numbers and order serial numbers of products concerned.




 *WRENCH NUT U99-011
 REQUIRED FOR SLEEVE
 REMOVAL



3/8" - 3/4" NPT



1" - 1 1/2" NPT

[Note: All drawings are for representative purposes only.]