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INSTALLATION, OPERATING & MAINTENANCE INSTRUCTIONS
2-WAY N.C. SOLENOID VALVE
1/8" NPT, 1/4" NPT, 3/8" BARB
TYPE: 71214

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.

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To the extent that Parker, or its subsidiaries, or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

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DESCRIPTION

These valves are 2-way, direct operated models. They are normally closed (N.C.) and incorporate a diaphragm to isolate the operator from the fluid passing through the body. Only the diaphragm and valve body come in contact with the fluid. The 71214 is offered with a stainless steel, Noryl or Teflon body. 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

Normally closed type: 71214

De-energized: For valves with a stainless steel or Teflon body, pressure is connected to Port 2. For valves with Noryl bodies, an arrow marked on the body indicates flow direction. Pressure is blocked by the plunger and diaphragm assembly pressing on the body orifice. Note: For vacuum applications apply vacuum to port 1 or in the case of bodies having an arrow, on the downstream side of the arrow.

Energized: The plunger and diaphragm assembly is lifted off the orifice allowing flow through the valve (Port 2 to 1). For bodies without port markings, the direction of flow is indicated by an arrow marked on the body.

FLUIDCQDES

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.

CODE		FLUID
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 1oo°F(3a^{0}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.

INSTALLATION INSTRUCTIONS

Mounting position and pressure limits: Stainless steel and Teflon bodies can be mounted directly on piping or by using the two (2) #10-32 NF threaded holes in the bottom of the valve body. Mounting brackets are available and may be ordered separately. Noryl bodies have mounting holes suitable for #6 self-tapping screws.

CAUTION: *Valves with plastic bodies must be adequately supported to prevent excessive loads which can damage or fracture port connections. In addition, excessive torque when installing port fittings or mounting hole screws can result in damage to the threads or fracture of valve body.*

The 71214 is designed to be multi-poised and will perform properly when mounted in any position. However, for optimum life and performance the valve should be mounted vertically upright so as to minimize wear.

Line pressure must conform to nameplate rating.

Piping: Remove protective closures from the body. Connect line pressure to the inlet port. Any restriction on the outlet port side of the valve will increase the internal back pressure on the diaphragm and limit the flow. For specific information regarding acceptable back pressure conditions, consult our catalog.

For vacuum applications, apply vacuum to the outlet port.

Use of 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: Stainless steel 1/4" NPT 175 in-lbs., Noryl and Teflon 20 in-lbs. Do not use the sleeve or enclosure as a /ever when applying torque.*

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.

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 to the electrical circuit using standard electrical practices in compliance with local authorities and the National Electrical Code.

WARINING: *Valves to be installed in **Hazardous Locations,** must be outfitted with Hazardous Location coil 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/enclosure nut, rotate coil/enclosure to desired position, then retighten the nut with an input torque of 43-53 in-lbs.

DIN Coil and Terminal Box Assembly (Coil Code D100 D200 or D300; Option Code DB): 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 flathead 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 for 90°C or greater. Snap the plastic block back into place inside the metal enclosure. Replace the cover and tighten the cover screws with an input torque of 2 to 4 in-lbs. 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 4 to 8 in-lbs. of torque to the mounting screw.

Screw Terminal Coil and Terminal Box Assembly (Coil Code S100, S200, or S300; Option Code TB): Loosen cover screws and swing cover 90°C toward the conduit hub 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 for 90°C or greater. Replace the cover and tighten the cover screws with an input torque of 2 to 4 in-lbs. Press the terminal box and coil together. Secure the terminal box to the coil using the mounting screw provided. Apply 12 to 20 in-lbs. of 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/enclosure 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 and fluid temperatures, check the valve part number on the nameplate and refer to the catalog to determine the maximum temperatures.

MAINTENANCE

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: *In critical applications where failure or contamination from a perforated or torn diaphragm cannot be tolerated, the valve should be routinely disassembled and inspected for diaphragm condition. Follow Disassembly Instructions and inspect the*

diaphragm area under the seat and retention button on the armature side. Replace the diaphragm if any cuts, abrasions or tearing are present. Note that a seat impression will develop on the diaphragm face from the force of the return spring holding it against the orifice. This is normal and is not cause for replacement except for the Teflon diaphragm. Reassembly can cause a new impression to overlap the old one and result in a potential leak path. Follow reassembly procedures carefully.

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 valve need not be removed from the line.*

CAUTION: *Plastic valves must be adequately supported to prevent excessive loads or torque from being applied to port connections which could result in stripping threads or shearing port connections.*

To remove the coil assembly:

For both ordinary and hazardous location constructions, unscrew the nut on the top of the coil/enclosure. The wave washer and coil/enclosure can now be removed.

To disassemble the pressure vessel:

WAINING: *A faulty or perforated diaphragm could allow media to fill the plunger cavity. Necessary precautions should be taken to avoid contamination of maintenance personnel or the sounding area from any spilled media.*

CAUTION: *Do not use a pipe wrench directly on the sleeve. For the stainless steel valves, use a Skinner U99-011 wrench nut to remove and install the sleeve assembly. For the plastic body valves, the flange cap can be removed by hand in order to remove and install the sleeve assembly.*

For the stainless steel valves, slide the Skinner U99-011 wrench nut over the sleeve tube. Mate the wrench nut to the sleeve flange, turn the wrench nut and remove the sleeve assembly. For the plastic body valve unscrew the flange cap and remove the sleeve assembly. Now remove the return spring. An integral button on the operator side of the diaphragm is retained in a recess in the plunger. Consequently, the armature, retainer and diaphragm must be removed as an assembly. If the diaphragm is stuck to the body, it can be freed by cocking the plunger sideways. The assembly can then be lifted out.

The diaphragm can be removed from the plunger by grasping one side between the thumb and forefinger and pulling axially. The retainer is then free to slide off.

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

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.*

To reassemble the pressure vessel:

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

Place the diaphragm retainer over the stepped diameter of the plunger with the flat side of the retainer against the plunger shoulder. Press the diaphragm button into the plunger cavity. Rotate the diaphragm to assure complete engagement.

Apply a thin uniform film of Skinner H99-005 lubricant to the top surface of the plunger. This is the end opposite the diaphragm. Do not contaminate other_ valve parts, particularly any surfaces that come in contact with the media.

Place the return spring into the plunger cavity and install the assembly into the sleeve. On assemblies having a separate knurled flange cap, place the cap over the sleeve flange. Push the diaphragm/plunger assembly into the sleeve until it compresses the return spring and abuts the sleeve stop. This simulates the energized position. With the assembly held in this position, place a permanent magnet axially against the sleeve outside diameter. The magnet must bridge the threaded stop and tube wall to be of sufficient strength to retain the plunger assembly against the stop.

If a Teflon diaphragm liner is required, apply a thin uniform film of Skinner H99-005 lubricant to the face of the rubber diaphragm and carefully center the liner over the diaphragm. Press out any air bubbles and do not contaminate the face of the liner. Screw the body onto the assembly assuring the plunger remains in the energized position using a permanent magnet as described above.

Tighten sleeve assembly in the body with an input torque of 100 - 130 in-lbs for stainless steel bodies and hand tight (25 in-lbs) for plastic bodies.

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

Refer to the Installation Instructions for remaining installation procedures.

TROUBLE SHOOTING

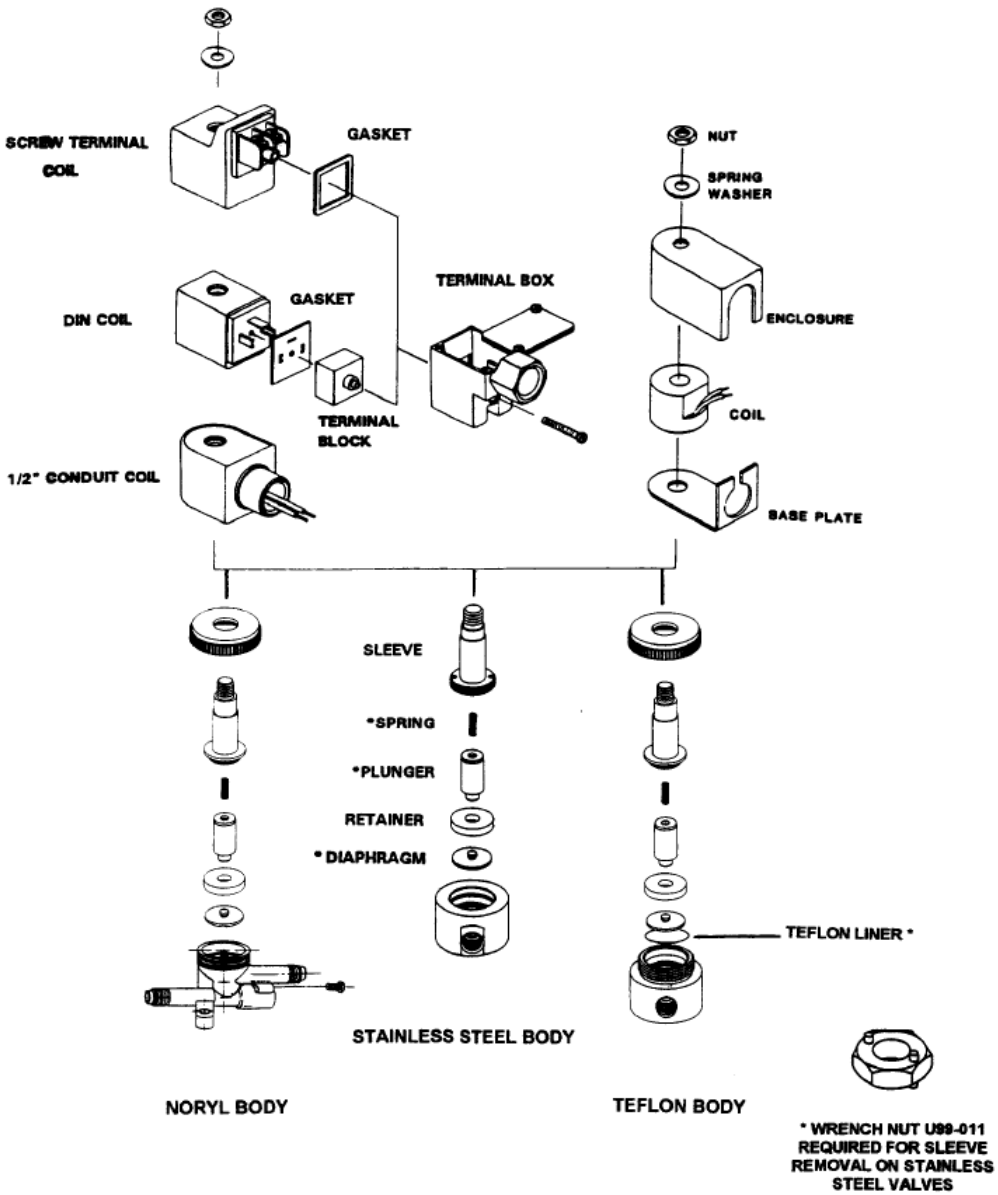
PROBLEM	PROCEDURE
Valve fails to operate.	1. Check electrical supply with voltmeter. Voltage must agree with nameplate rating. 2. Check coil with ohmmeter for shorted or open coil. 3. Make sure that pressure complies with nameplate rating.
Valve is sluggish or inoperative - electrical supply and pressure have been verified.	1. Disassemble valve as per the Disassembly Instructions. Check for media in the plunger cavity. Inspect diaphragm for cuts or tears and the body and retainer for nicks or scratches at the diaphragm clamping periphery. The plunger spring must not be broken. Replace spring if necessary.
External leakage at sleeve flange to body joint.	1. Check that sleeve is torqued to 25 in-lbs for plastic bodies, and 100-130 in-lbs for stainless steel. 2. If leakage persists, remove the sleeve and check the diaphragm for damage. The. Diaphragm not only isolates the operator but also serves as an external seal. Replace if defective. See the Disassembly Instructions for proper procedures.
Internal leakage at body port.	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 diaphragm. If damaged, replace the diaphragm. 3. Inspect orifice in the body for nicks. Damage may require a new valve or replacement parts.
Valve fails to close when de-energized.	1. Check flow and back-pressure against catalog ratings. As back-pressure increases, the allowable flow through the valve decreases. Check downstream lines for any restrictions or obstructions.

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 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 perfumed on the product by the purchaser or by third parties can impair its function and relieves Parker 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.


SCREW TERMINAL
COIL
GASKET
NUT
SPRING
WASHER
TERMINAL BOX
DIN COIL
GASKET
ENCLOSURE
TERMINAL
BLOCK
COIL
1/2" CONDUIT COIL
BASE PLATE
SLEEVE
*SPRING
*PLUNGER
RETAINER
* DIAPHRAGM
TEFLON LINER *
STAINLESS STEEL BODY
NORYL BODY
TEFLON BODY
* WRENCH NUT U99-011
REQUIRED FOR SLEEVE
REMOVAL ON STAINLESS
STEEL VALVES