
INSTALLATION, OPERATING & MAINTENANCE INSTRUCTIONS
3-WAY N.C. , N.O., AND M.P. SOLENOID VALVE
1/8" AND 1/4" NPT
TYPE: 7131T, 7132T, 7133T



DESCRIPTION

These valves are 3-way, direct operated models. They are available in normally closed (N.C.), normally open (N.O.), and multi-purpose (M.P.) versions. The 7131T, 7132T and 7133T are offered in both brass and stainless steel body 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

Normally closed type: 7131T

De-energized: Pressure is connected to Port 1 and is blocked by the plunger seal pressing on the top body orifice. Flow is from port 2 to port 3.

Energized: The plunger is lifted off the orifice allowing flow through the valve (Port 1 to 2). Port 3 is blocked by the seal in the guide and seal assembly pressing against the bottom orifice.

Normally open type: 7132T

De-energized: Pressure is connected to Port 3 and fluid is free to flow out Port 2. Port 1 is blocked by the plunger seal pressing against the top body orifice.

Energized: The plunger is lifted off the top body orifice allowing flow from Port 2 to Port 1. Port 3 is blocked by the seal in the guide and seal assembly pressing against the bottom body orifice.

Multi-purpose type: 7133T

Pressure may be connected to either Port 1, Port 2 or Port 3, depending on the desired direction of flow. Pressure to Port 1: three-way normally closed. Pressure to Port 2: three-way directional control. Pressure to Port 3: three-way normally open.

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.

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 up from 125 to 400 SSU at 38°C
02	- Nos. 1 and 2 fuel oils, oils having viscosities not more than 40 SSU at 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: Valves can be mounted directly on piping or by using the two (2) #8-32 UNC threaded holes on the body. Mounting brackets are available and may be ordered separately.

The 7131T, 7132T, and 7133T 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. Loctite primer #764 and pipe sealant #567 are recommended when using stainless steel fittings with stainless steel valve bodies.

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: 1/8"

NPT - 100 in-lb., 1/4" NPT - 175 in-lb. Do not use the sleeve or enclosure as a lever 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. Filtration of 5-25 microns is recommended. 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 air line 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-lb.

DIN Coil and Terminal Box Assembly (Coil Code D100, D200 or D300; Option Code TB): 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 for 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-lb. 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° 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 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-lb. 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 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: *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: *Do not repair valves with the manual override option.*

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:

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:

Top end: Unscrew the sleeve assembly using a wrench applied directly to the hex flange. The plunger and return spring may now be removed.

Bottom end: Remove the retaining ring (special tool required). Remove the retaining disc, spring, O-ring plus the guide and seal assembly.

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.

Install the plunger and spring in the sleeve. Tighten the sleeve assembly in the body with an input torque of 130-150 in-lb for the stainless steel body valves and 260-270 in-lb for the brass body valves.

Install the pins, guide seal, spring, O-ring, retaining disc and retaining ring to the bottom of the body.

WARNING: The retaining ring must be properly seated in the body groove. If not properly seated retaining disc may blow out when pressure is reapplied.

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

Refer to the Installation Instructions for remaining installation procedures.

TROUBLE SHOOTING	
PROBLEM	PROCEDURE
Valve fails to operate	<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 inoperative - electrical supply and pressure check out	<ol style="list-style-type: none"> 1. Disassemble valve as per the Disassembly Instructions. Clean out extraneous matter. The plunger must be free to move without binding. The plunger spring must not be broken. Replace spring if necessary. 2. The (2) spacer pins must not bind in their holes. Replace if damaged.
External leakage at sleeve flange to body joint	<ol style="list-style-type: none"> 1. Check that sleeve is torqued to 130 - 150 in-lbs for the stainless steel body valves and 260 - 270 in-lbs for the brass body valves.
External leakage at bottom retaining ring area	<ol style="list-style-type: none"> 1. Disassemble bottom parts. Clean and check O-ring and the surfaces it contacts.
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 the surfaces of the rubber seals in the bottom of the plunger and in the guide seal assembly. If damaged, replace plunger. 3. Inspect orifices in the top and bottom of the body for nicks. Damage may require a new valve or replacement parts.

DECLARATION

Parker's Skinner Valve 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 Skinner 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.

