Fluid Control Division
Parker Hannifin Corporation
95 Edgewood Avenue
New Britain, CT 06051
Telephone (860) 827-2300

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INSTALLATION, OPERATING & MAINTENANCE INSTRUCTIONS
TWO AND THREE WAY C SERIES VALVES
VALVE TYPES: C2 AND CN2 2-WAY NORMALLY CLOSED
C3 AND C3A 3-WAY NORMALLY CLOSED
C4 3-WAY NORMALLY CLOSED
CS 3-WAY MULTI-PURPOSE

CE

DESCRIPTION

The Two and Three Way C Series Valves are direct acting.

PRINCIPLES OF OPERATION

Port Identification

Type C2	"1" and "2" Ports located in body.
Type CN2	Direction of flow is designated with arrows on the body.
Type C3	"1" Port and "2" Port located in body. "3" Port located in sleeve.
Type C3A	Same as C3 except, Exhaust Port not stamped.
Type C4	Normally Closed Port "1" in body. Common Port "2" in body and Normally Open Port "3" in sleeve.
Type C5	"3" Port located in sleeve. Cylinder Port "2" and Exhaust Port "1" are located in body.

Type C2 and CN2 - Two Way Normally Closed Valve

Pressure is applied to the Inlet Port "2". When the valve is de-energized, pressure is sealed off by the force of the plunger return spring and the seal in the plunger assembly. When the valve is energized the plunger moves upward permitting flow through the valve.

Type C3-C3A-Three Way Normally Closed Valve

Pressure is applied to the Inlet Port "1". With the valve de-energized, fluid is sealed off by the force of the plunger return spring and seal in the plunger assembly. Cylinder Port "2" is open to Exhaust Port "3".

When voltage is applied to the coil, the plunger assembly moves to open Inlet Port "1" to Cylinder Port "2". Exhaust Port "3" is sealed by the plunger assembly.

Type C4-Three Way Multi-purpose Valve

Pressure can be applied to any of the three ports. With the valve de-engergied the normally closed Port "1" is closed. The Common Port "2" is open to the normally open Port "3".

When voltage is applied to the coil, the plunger assembly moves to open the normally closed Port "1" to the Common Port "2".The normally open Port "3" is closed by the plunger assembly.

Type C6-Three Way Normally Open Valve

Pressure is applied to the Inlet Port "3" and flows out the Cylinder Port "2". The Exhaust Port "1" is sealed by the plunger assembly and spring.

When voltage is applied to the coil, the plunger assembly moves to seal the Inlet Port "3" and opens the Exhaust Port "1" to the Cylinder Port "2"

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.

		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 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 temperature, as well as valve ambient limitations, check the valve part number on the nameplate and refer to the catalog.

INSTALLATION INSTRUCTIONS

Port Identification-See Principles of Operation.

Mounting position and pressure limits: Valves can be mounted directly on piping and are designed to operate in any position. Two 10-32 tapped mounting holes 1/4" deep are provided in the base of the body. Line pressure must conform to the nameplate rating.

Piping: Remove closures from ports and connect lines to the proper ports, see valve types and port identifications in principles of operation. All valves incorporate 1/8" or 1/4" NPT connections. When threading pipe fittings into the sleeve port use an open end wrench on the flats of the adapter. Failure to do so may result in a leaky pipe joint and possible damage to valve ports. Connection tightening method should be hand tight, plus approximately 1 1/2 turns.

Caution: *Do not allow foreign particles, Teflon tape, or thread compound to enter valve.*

Caution: ***CN2 Plastic Bodied valves -*** As with all plastic plumbing parts, care must be taken not to over-torque pipe connections. Four (4) turns of pipe engagement in conjunction with a proper *sealant will provide an adequate connection. Do not exceed five (5) turns of engagement or 50 inch pounds torque, whichever occurs first. * The recommended pipe sealant ls Permatex "No More Leaks" or, equivalent sealant which will not attack plastic plumbing parts.

MEDIA FILTRATION

These valves have no sliding fits and are generally not sensitive to a small amount of foreign material. However, filtration of air or oil lines is recommended to protect the soft rubber inserts. Install the filter in the inlet side as close to the valve as possible. Dirt or foreign material in the media may cause excessive leakage, excessive wear or, in exceptional cases, malfunction.

Lubrication is not required although air line lubrication will substantially increase valve life.

ELECTRICL CONNECTION

Warning*: Tum off electrical power before connecting the valve to the power source.*

Electrical supply must conform to nameplate rating. Connect coil leads to electrical circuit using standard electrical practice.

TROUBLE SHOOTING

PROBLEM	PROCEDURE
Valve fails to operate.	1. Check electrical supply with voltmeter. 2. Check coil with ohm meter for shorts or open coil.
External leakage-valve leaks around sleeve assembly, metering stem, or manual override stem.	1. Remove "O" rings and inspect for imperfections-replace if defective. 2. Tighten flange to 135 inch pounds using wrench.
Internal leakage-sticking valve leaks internally-or plunger sticks in energized position.	1. Remove plunger and examine soft insert seal for excessive wear or dirt. If there is excessive wear-replace plunger assembly., 2. If insert is conspicuously swollen or hardened replace plunger. It is possible that a different type insert material should be used on application. Submit complete details of application to factory.
Noise or buzzing.	1. Check voltage with voltmeter to be sure it corresponds with nameplate rating. Also check pressure for same. 2. Examine inside of sleeve assembly for dirt or foreign material-remove any foreign matter.

Coil housings are available with grommets or 1/2" NPT conduit as standard. If the coil housing is located In an Inconvenient position the housing nut can be loosened, and the housing rotated to any convenient position. Then re-tighten the nut to 35 inch pounds torque.

COIL HOUSING 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 housing 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.

MAINTENANCE INSTRUCTIONS

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 plunger assembly, seals or "O" rings to any type of commercial cleaning fluid. Parts should be cleaned with a mild soap and water solution.*

DISASSEMBLY INSTRUCTIONS

C2, CN2, C3A FIG.1

Warning: *Depressurize system and tum off electrical power to the valve before attempting repair.*

Caution: *Do not* use *a pipe wrench directly* on *the sleeve. Instead, use a Skinner V0-233 wrench nut to remove and install the sleeve assembly.*

Shut off pressure and electricity to the valve. The valve need not be removed from the line. Remove the nut, nameplate and coil housing. If necessary, the coil can be removed from the housing. Remove the flux plate. With a Skinner wrench nut remove the sleeve from the body. Never use a wrench on the sleeve itself. Then remove the spring, plunger and flange seal from the body.

C3, 4, 5 FIG.2

Remove the sleeve adapter and adapter seal from the valve, then remove the nut and nameplate from the housing assembly. The coil and housing assembly can then be removed from the sleeve assembly. Then remove the flux plate. Using a wrench nut, remove the sleeve from the body. Never use a wrench on the sleeve itself. Then remove the spring, plunger and flange seal from the body.

Reassembly INSTRUCTIONS

FIG.1&2

Use mineral oil on the flange seal and place in valve body (omit oil if valve is used on oxygen service or is fitted with EPDM seals). Place plunger and spring in sleeve assembly and with a wrench nut fasten to valve body. Apply 135 inch pounds torque.

Assemble the flux plate and then the coil and housing. As they were removed add nameplate housing nut, adapter seal and sleeve adapter. Tighten housing nut with 35 inch pounds torque.

REPLACEMENT PARTS

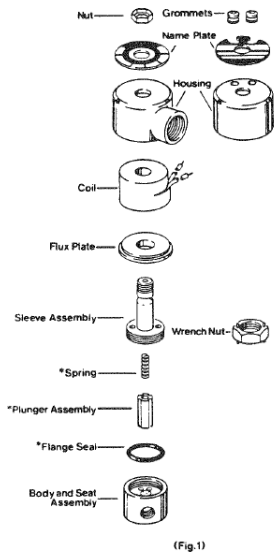
When ordering replacement parts or parts kits, specify valve number and voltage from the nameplate, and describe parts required. Parts kits are available for all catalog valves. Parts included in each kit are marked with an asterisk (*). The plunger assembly and spring are assembled.

DECLARATION

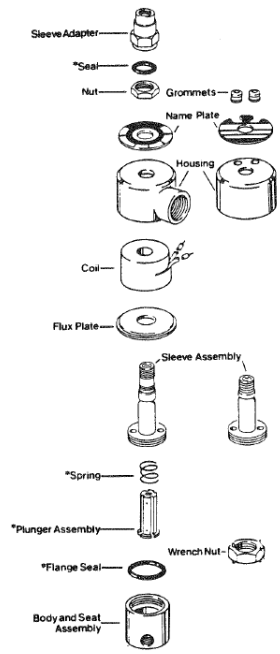
Parker's Fluid Control Division certifies its valve appliance products complies with the essential requirements of the applicable European Community Directives. We hereby confirm that the appliance has been manufactured in compliance with the applicable standards and is intended for installation in a 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.



(Fig.1)



(Fig. 2)