



Pneumatic Division North America
 Richland, Michigan 49083

Installation & Service Instructions
V-408CP
H4 Series Valves
2-Position, 4-Way, 5-Ports &
3-Position, 4-Way, 5-Ports
Meets ISO 5599-2 / 5599-1
ISSUED: September, 2000
Supersedes: October, 1999
 ECN# P27805

⚠ WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

⚠ WARNING

This valve/base (with wiring in the base) has a standard ISO 5599-2: 1990 mounting interface. Valve bodies labeled Parker Model 45_, and bases marked ISO 2E, 3E, or 4E or simply O 2E, O 3E, or O 4E (opposite the junction box under the valve body) - and without blue wires in the base - can be connected to this valve/base, but may have incompatible wiring. Base wiring may be reversed, resulting in unpredictable machine function that may cause injury, property damage, or death. Completely test the machine for correct function before using, and rewire if necessary. Call 1-800-272-7537 for special ISO Valve Service Bulletin No. VAL-SIF73.

Introduction

Follow these instructions when installing, operating, or servicing the product.

Application Limits

These products are intended for use in general purpose compressed air systems only.

Operating Pressure Range:

	kPa	psig	bar
Minimum	280	40	2.8
Maximum	1030	150	10.3

Ambient Temperature Range: -15°C to 50°C (5°F to 120°F)

Voltage Range: Rated Voltage +10%, -15%

⚠ CAUTION: An interruption of 10 milliseconds or greater to the power supplied to the solenoid of a solenoid operated valve may cause the valve to shift. Provision must be made to prevent power interruption of this duration to avoid unintended, potentially hazardous, consequences.

Installation & Operating Instructions

⚠ CAUTION: Solenoid versions of this valve contain solid state components that can be damaged by transient voltage spikes, over-voltage or high temperature. To protect against premature solenoid failure, please read and adhere to the following:

1. If this solenoid operated valve is used in a circuit with other inductive loads, the solenoid should be electrically protected with a voltage suppression device (e.g. transient voltage suppressor or varistor) that has a minimum rating of 1.6 times the rated voltage of the solenoid valve and sufficient capacity to dissipate the energy of other inductive loads.
2. Operating voltage is 85-110% of rated voltage. These limits should not be exceeded.

Valve should be installed with reasonable accessibility for service whenever possible - repair service kits are available. Keep pipe or tubing lengths to a minimum with inside clean and free of dirt and chips. Pipe joint compound should be used sparingly and applied only to the male pipe - never to the female port. Do not use PTFE tape to seal pipe joints - pieces have a tendency to break off and lodge inside the unit, possibly causing malfunction. Valves will operate when mounted in any position.

Lubrication

All valves are pre-lubricated at assembly with a petroleum based grease. Filtered and lubricated air is necessary for maximum valve life and minimum maintenance. If in-service lubrication is used, lubricants should be a straight paraffin based mineral oil having an ISO viscosity grade of 32 (e.g. Sunvis 932).

NOTE: Once in-service lubrication is initiated, the practice should be continued in order to maximize valve life.

⚠ CAUTION: Do not use synthetic, reconstituted, or oils with an alcohol content or detergent additives.

⚠ WARNING

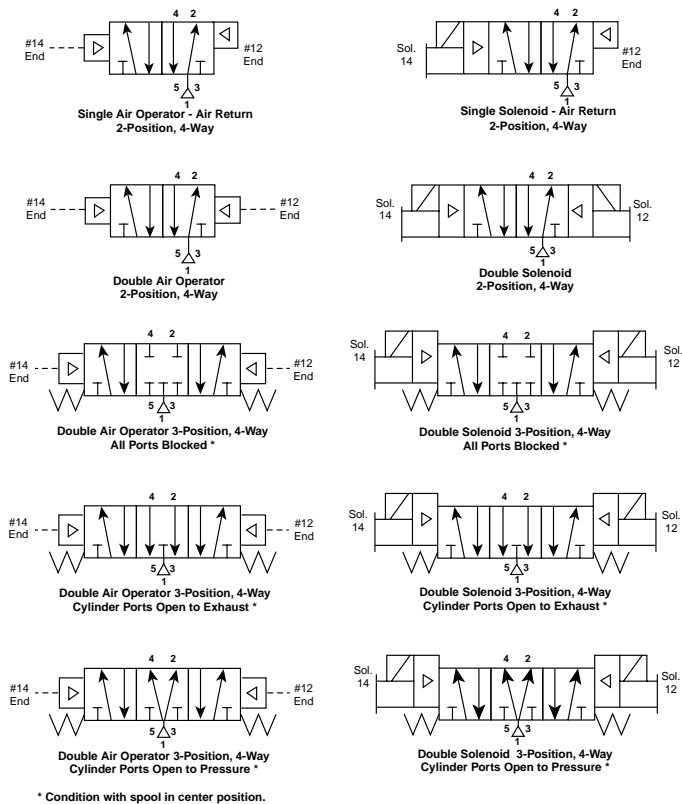
FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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 your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. 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 products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.

Symbols (Single pressure models are shown.)



Field Conversions

These valves can be converted in the field from internal pilot supply to external pilot supply or from single pressure to dual pressure - highest pressure at port #5 (40 psig minimum). These conversions are easily accomplished by changing the body to base gasket. In the 3-position valve, the effect of dual pressure is extremely important when the valve is in the center position. Therefore care should be used when selecting the proper 3-position valve configuration.

To obtain the desired configuration, replace the standard gasket with the appropriate gasket from the following chart:

CAUTION: When installing gaskets, always orient gasket as indicated on the gasket.

External pilot supply conversion
(single or dual pressure valves):

Model Number	Gasket Part Number	
	Solenoid Operators	Air Operators
H4	P00149	P00151

Dual pressure conversion
(highest pressure at port #5 - internal pilot supply):

Model Number	Gasket Part Number	
	Solenoid Operators	Single Air Operator (2-Position Valve only)
H4	P00153	P00158

Maintenance & Troubleshooting Hints

Valve Not Shifting Completely When Energized:

1. Check to insure that the proper voltage is supplied to the solenoids.
2. Check to insure that supply pressure is 280 kPa (40 psig) or greater at the valve's inlet when shifting valve.
3. Check for possible restrictions in air supply, such as undersized hoses, fittings, or quick disconnects.
4. Check to insure that the spool moves smoothly.
5. Check spool seals for proper installation, dirt, or damage.

Air Leakage Through Exhaust Ports:

1. Check for internal leakage in the cylinder being operated by the valve.
2. Check condition of the spool seals for proper alignment, damaged (nicked or broken) seals and dirt contamination.
3. Inspect the solenoid plunger guide, plunger, spring, and seat (as well as their mating parts) for dirt, nicks, or damage.
4. Check for missing, damaged, or incorrectly assembled o-rings and gaskets.

Noisy Solenoids:

1. Check to insure that voltage and pressure supplies are adequate.
2. Inspect the plunger guide, plunger, spring, and seat (as well as their mating parts) for dirt, nicks, or damage.
3. Replace worn or damaged parts. Reassemble and retest unit.

If you have questions concerning how to service this unit, contact your local authorized dealer or your customer service representative.

Service Kits Available

Valve Body Service Kit - 2-Position

Single Solenoid and Single Air Operator: PS1401P
(consists of item #s 1, 2, 4, 10, 14, 15, 24, 26, 29)

Double Solenoid and Double Air Operator: PS1402P
(consists of item #s 10, 14, 15, 24, 26, 29)

Valve Body Service Kit - 3-Position

Double Solenoid and Double Air Operators: PS1438P
(consists of item #s 10, 14, 15, 24, 26, 29, 31)

H4 Series Valves

Service Procedures

CAUTION: Turn air and electrical supplies off before servicing unit.

NOTE: When servicing valves equipped with solenoid(s) (item #18 only), note that the adapter blocks are permanently wired to the body. Handle the disassembled valve with care to avoid damage to the wire harness and solenoid adapter blocks.

Servicing Valve Body:

1. If necessary, remove valve body assembly from base. Then detach solenoid coil(s).
2. Remove the solenoid adapter block(s) and the return end cap (if present). Then remove pistons (piston assemblies), piston seals, and spool.
3. Remove bore seals and spacers by inserting a 1/4 inch hex wrench through the slotted holes in the bottom of the valve body and prying against the edge of the spacer until the seal pops loose. (Remove each seal and spacer individually.) Repeat this operation until all seals and spacers are removed.

NOTE: This is best accomplished by disassembling from both ends of the valve body.

4. Clean off the old grease from the valve body, spacers, pilot piston(s) (or piston assemblies), and other parts which are to be reinstalled into the valve. Using the grease packet supplied in the service kit, lubricate the new seals and the spool. Assembly is the reverse of disassembly. Take special care to assure that the gasket(s) have been positioned properly. Tighten the mounting screws for the pilot assembly (or air return operator) from 40 to 50 in-lbs. (4.5 to 5.6 N•m) of torque. Replace the body assembly on the base. Torque these mounting screws from 225 to 250 in-lbs. (25.4 to 28.2 N•m). Then screw nut onto plunger guide and torque from 30 to 40 in-lbs. (3.4 to 4.5 N•m).

Servicing Solenoid Coil:

1. Remove nut (item #19) which secures solenoid coil in place. Slide coil off of the plunger guide.
2. Slide new encapsulated coil onto plunger guide.
3. Then screw nut onto plunger guide and torque from 30 to 40 in-lbs. (3.4 to 4.5 N•m).

Voltage Code & Replacement Coil Kits

Voltage Code	Voltage			Coil Kit Number	
	60 Hz	50Hz	DC	With Indicator Light	Unlighted
B9* (Blue)	—	—	24	K252 030*	K252 029*
42	24	—	—	—	K252 031
43	—	24	—	—	K252 032
45	—	—	12	—	K252 032
49	—	—	24	K252 033	K252 034
51	—	—	48	—	K252 035
53	120	110	—	K252 036	K252 037
57	240	—	—	—	K252 038
59	—	240	—	—	K252 039
83**	120	110	—	K252 040**	K252 041**

* Low watt with surge suppression.
 ** This coil contains an MOV as standard for surge suppression.

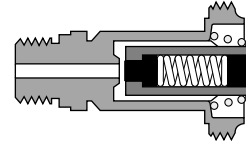
Servicing Plunger Assembly:

1. Remove the nut (item #19) which secures the solenoid coil to the plunger guide assembly. Then slide coil off of the plunger guide. Unscrew the plunger guide and remove plunger, spring, and o-ring (item #21).

2. Using a clean, lint free cloth, clean plunger guide, plunger, spring, and seat (which is permanently mounted in the adapter block). Replace plunger guide assembly if necessary.
3. Grease o-ring and place at bottom of threaded bore. Very lightly grease plunger. Reassemble plunger and spring into plunger guide. Screw plunger guide into adapter block and torque from 50 to 60 in-lbs (5.6 to 6.8 N•m).
4. Slide coil onto plunger guide and then screw nut onto plunger guide and torque from 30 to 40 in-lbs (3.4 to 4.5 N•m).

Plunger & Guide Assembly (Includes Plunger, Plunger Guide and Spring)

- K232 025 Standard Voltages
- K232 049 B9 Low Watt Voltage Code (Blue Coil)

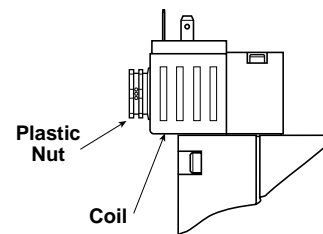


Manual Override Service:

- Use PS1825P Service Kit for non-locking override.
 Use PS1826P Service Kit for locking override
1. Remove retainer (item #17) with 1/4" hex key. Withdraw override stem (item #16) with seals and spring (Item #22). Discard parts.
 2. Inspect and remove any debris from the override hole in the solenoid block (item #25).
 3. From new kit, place spring in hole.
 4. Seals on stem must be greased. Install stem (with greased seals) in hole.
 5. Install threaded retainer in hole. Tighten to 40 to 50 in-lbs. (4.5 to 5.6 N•m).

Servicing Solenoid Coil: (22mm - 30mm CNOMO)

1. Remove plastic retaining nut which secures coil in place. Slide coil off stem.
2. Slide new coil onto existing stem and reinstall plastic retaining nut and tighten to hand tight.

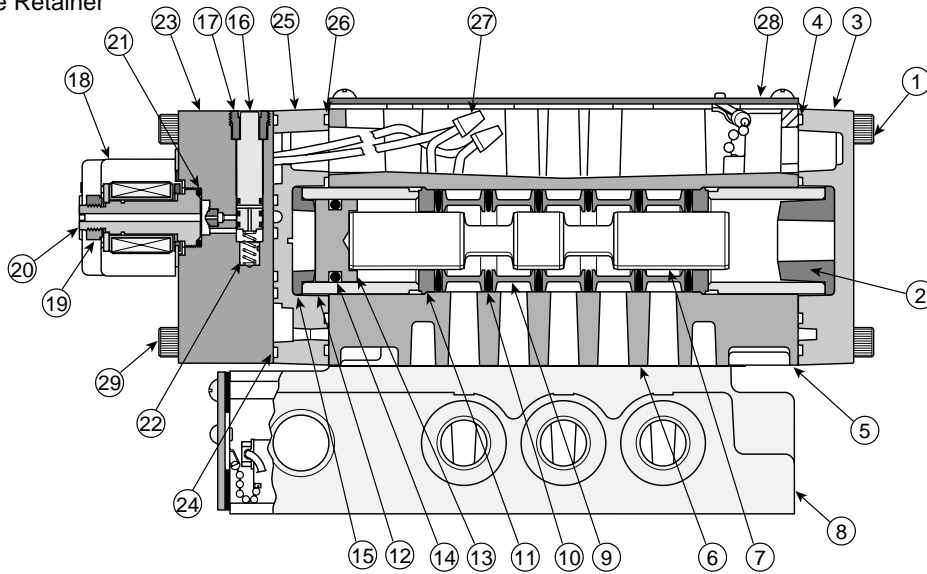


Voltage Code & Replacement Coil Kits (22mm-30mm CNOMO)

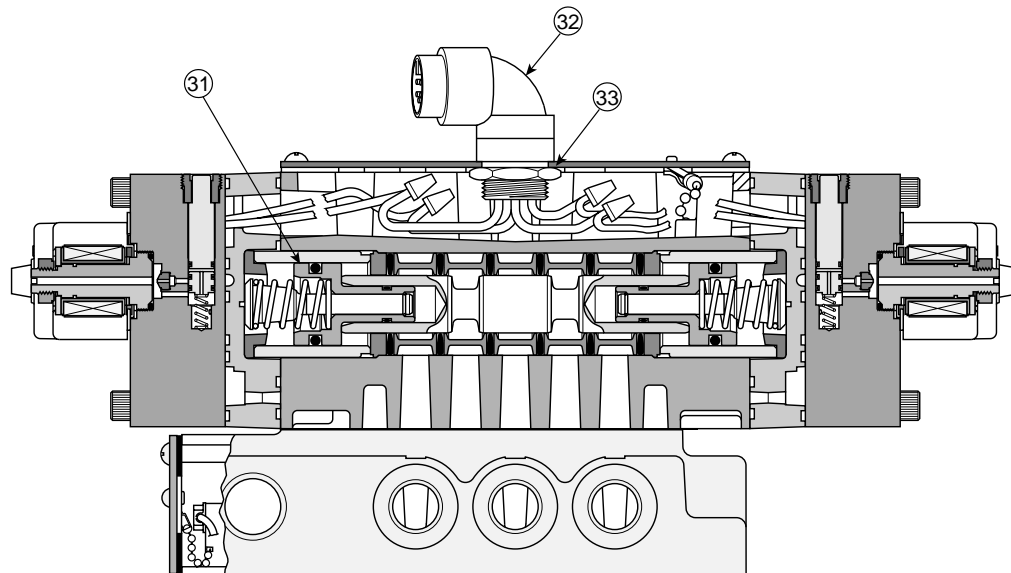
Voltage Code	Voltage			Coil Kit Number	
	60 Hz	50Hz	DC	22mm	30mm
42	24	—	—	PS155142P	PS155042P
49	—	—	24	PS155149P	PS155049P
53	120	110	—	PS155153P	PS155053P
57	240	—	—	PS155157P	PS155057P

Parts Identification List

Item#	Description	Item#	Description
1	Mounting Screw - air return to body	18	Solenoid Coil - includes gasket
2	End Bumper Seal for air return	19	Hex Nut, Solenoid
3	Air Return	20	Solenoid Plunger Guide Assembly
4	Gasket - body to air return (has a tab with an "A" on it)	21	O-ring - plunger guide assembly to adapter block
5	Body	22	Override Spring
6	Gasket - body to base	23	Adapter Block
7	Spool	24	Gasket - solenoid base or air operator to adapter (has a tab without any letter on it)
8	Subbase	25	Operator Adapter
9	Spacer	26	Gasket - adapter to body (has a tab with a "P" on it)
10	Seals for spool	27	Insulated Splicer
11	End Spacer	28	Cover
12	Sleeve	29	Mounting Screw - air operator or solenoid operator & adapter to body
13	Pilot Piston - 2-position valve	30	Mounting Screw - body to base (not shown)
14	O-ring for piston	31	Pilot Piston Assembly - 3-position valve
15	End Bumper Seal for solenoid or air operator	32	Automotive Receptacle
16	Manual Override Stem	33	Conduit Locknut
17	Override Retainer		



**Single Solenoid Operator - Air Return
(2-Position Valve)**

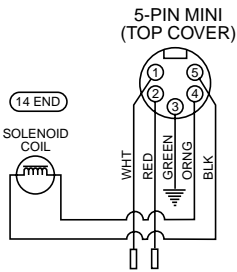


**Double Solenoid Operators (with Lights)
(3-Position Valve Shown)**

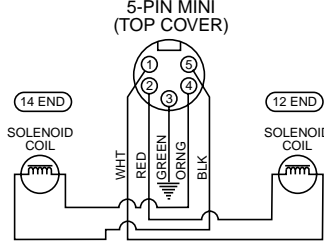
Automotive Connection – Wiring Options

Chrysler Connection (Straight or 90° Receptacle)

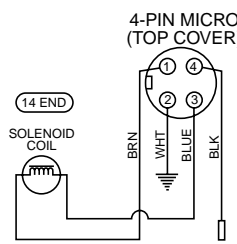
5-Pin Male/Single Solenoid
(Encl. Options 3 & 5, Auto Option C)



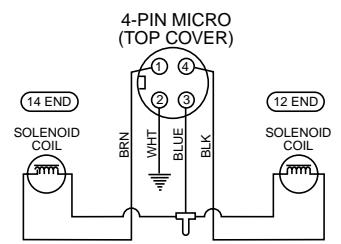
5-Pin Male/Double Solenoid
(Encl. Options 3 & 5, Auto Option C)



4-Pin Male/Single Solenoid
(Encl. Options 2 & 4, Auto Option C)

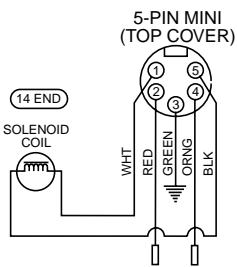


4-Pin Male/Double Solenoid
(Encl. Options 2 & 4, Auto Option C)

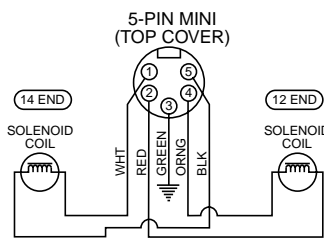


Ford Connection (Straight or 90° Receptacle)

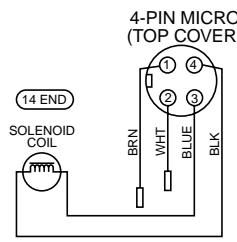
5-Pin Male/Single Solenoid
(Encl. Options 3 & 5, Auto Option F)



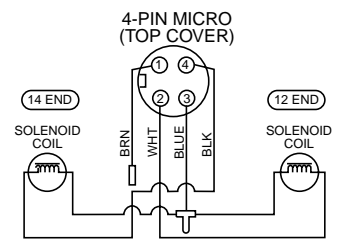
5-Pin Male/Double Solenoid
(Encl. Options 3 & 5, Auto Option F)



4-Pin Male/Single Solenoid
(Encl. Options 2 & 4, Auto Option F,G)

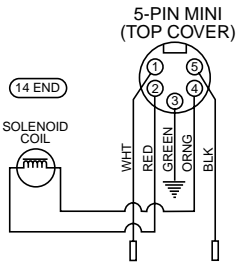


4-Pin Male/Double Solenoid
(Encl. Options 2 & 4, Auto Option F)

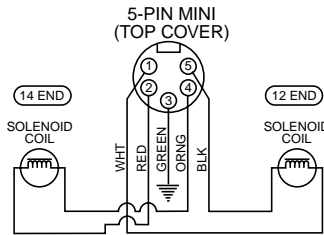


GM Connection (Straight or 90° Receptacle)

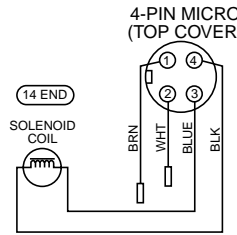
5-Pin Male/Single Solenoid
(Encl. Options 3 & 5, Auto Option G)



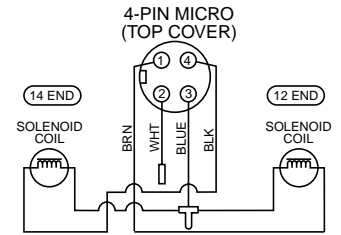
5-Pin Male/Double Solenoid
(Encl. Options 2 & 4, Auto Option G)



4-Pin Male/Single Solenoid
(Encl. Options 2 & 4, Auto Option F,G)



4-Pin Male/Double Solenoid
(Encl. Options 2 & 4, Auto Option G)

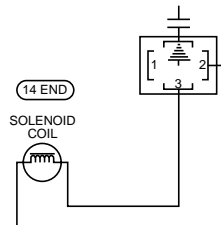


Automotive Connection – Thread Type

5-Pin Mini Connector - 7/8 UNF thread

4-Pin Micro Connector - M12 thread

30mm, 4-Pin ISO 4400 Single Solenoid
(Encl. Options V)



30mm, 4-Pin ISO 4400 Double Solenoid
(Encl. Options V)

