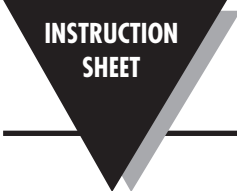
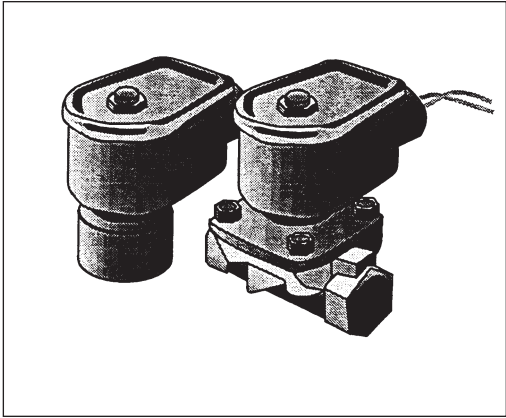




# SV100 and SV200 SERIES

Solenoid Valves



M1103/0308

## DESCRIPTION

The OMEGA® SV100 and SV200 Series Solenoid Valves for liquids and gases cover most industrial and laboratory applications. The valves are available in sizes ranging from 1/4" to 2" NPT, with CV's as high as 38. OMEGA also offers general purpose 2, 3, and 4-way valves made of brass or stainless steel, and specialty valves for hot water and steam applications.

**WARNING:** When using solenoid valves, the possibility of creating damaging water hammers exists. Install proper surge suppressors on the line in front of susceptible electronic pressure, flow, and pH equipment.

## TWO-WAY VALVES

### Two-way Normally Closed Valves (121-128, 201-207, 221-225, 231-235, 281-287)

When the valve is de-energized, flow through the valve is prevented. When the valve is energized, flow through the valve occurs.



Figure 1. Two-way Valves

### Two-way Normally Open Valves (131-133, 211-217, 291-295)

When the valve is de-energized, flow through the valve occurs. When the valve energizes, flow through the valve is prevented.

### Anti-Water Hammer Solenoid Valves (SV283-287, 291-295)

The closing time on these valves can be adjusted by a 4-position selector. Position 1 allows fast closing, while 4 allows slowest closing setting. SV281 and SV282 are anti-water hammer valves, but they do not have this adjustment for varying the closing time. Normally Closed anti-water hammer valves SV283-287 are supplied with a manual override.

## THREE-WAY VALVES

### Three-way Normally Closed Valves (SV241, 242, 261)

A three-way Normally Closed valve has three ports labeled 1, 2, and 3. When de-energized, no flow occurs from Port 1, but there is flow from Port 2 to Port 3. When energized, flow occurs from Port 1 to 2, but no flow occurs from Port 3. Normally three-way valves are used to control larger pneumatically-activated valves. When controlling pneumatic-activated valves, Port 1 is connected to the pressure source, Port 2 is connected to the cylinder controlling the pneumatic activation, and Port 3 is the exhaust port vented to the room. Refer to Figure 2.

### Multi-Purpose Three-Way Valve (SV251)

The SV251 has the same flow paths as above, except supply pressure can be connected to any of the ports to set a variety of functions. When the valve is being used to control a pneumatically-activated cylinder, it can serve as a Normally Open or a Normally Closed valve by selecting the proper ports. To configure it as a Normally Closed three-way valve, Port 1 is supply pressure, Port 2 is connected to pneumatic cylinder, and Port 3 is exhaust port. To configure as a Normally Open, three-way valve, Port 3 is pressure supply, Port 2 is connected to the pneumatic cylinder, Port 1 is exhaust port. Refer to Figure 2.

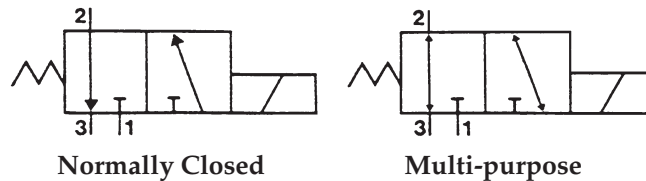


Figure 2. Three-way Valves

## FOUR-WAY VALVE (SV271)

The SV271 is a four-way directional control valve. A four-way valve has ports labeled 1, 2, 3, 4, and 5. When de-energized, pressure is supplied to Port 1 which is open to cylinder Port 4, and closed to cylinder Port 2. Port 4 is closed to exhaust Port 5. When energized, pressure Port 1 is closed to cylinder Port 4, and is open to cylinder Port 2. Cylinder Port 2 is closed to exhaust Port 3. Cylinder Port 4 is open to exhaust Port 5. Refer to Figure 3.

The SV271 can be used as a three-way Normally Closed valve by plugging Port 4, or as a Normally Open valve by plugging Port 2, keeping Port 1 as supply pressure, and Ports 3 and 5 open as exhaust ports. Refer to Figure 3.

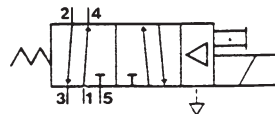


Figure 3. Four-way Valve

Note: Quick Exhaust Valve SV261 and four-way valve SV271 have sleeve pilot exhaust ports which cannot be blocked.

## PRESSURE REQUIREMENTS

Actual line pressures must be below maximum line pressures listed on valve label. No minimum pressure is required except for the following valves:

128, 203-207, 211-217, 283-287, 291-295:	5 PSID
SV271:	15 PSID
SV281-282:	3 PSID
SV261:	2 PSID



## LUBRICATION

Lubrication is not required, although it will increase valve life.

**CAUTION:** Hot water and steam valves have parts made of ethylene propylene rubber and must not be exposed to petroleum-based lubricants or other hydrocarbons.

## MOUNTING POSITION

Valves are mounted directly on piping and are designed to operate in any position. SV128 must be mounted in an upright position.

## PIPING INSTALLATION

Remove plastic caps from valve body. Connect piping to valve body. Use of thread compounds or sealants is permissible (OMEGA PTFE Tape).

**CAUTION:** Do not allow foreign particles or thread compound to enter valve.

Body port tightening torques should not exceed the following:

- 100 in-lbs for 1/8" NPT
- 175 in-lbs for 1/4" NPT
- 225 in-lbs for 3/8" NPT
- 300 in-lbs for 1/2" NPT
- 450 in-lbs for 3/4" NPT
- 600 in-lbs for 1v NPT
- 700 in-lbs for 1-1/4" NPT
- 750 in-lbs for 1-1/2" NPT
- 950 in-lbs for 2v NPT

## MEDIA FILTRATION

Media filtration normally is not required, although direct or foreign material in media may cause excessive leakage, excessive wear, or in extreme cases, malfunction. If filtration is used, install the filter in the inlet side as close to the valve as possible. Clean periodically, depending on service. Filtration of 100 microns or better is recommended on 128, 203-207, 211-217. Filtration of 5-25 microns or better is recommended on SV241, 242, 251, 261, 271.

## ELECTRICAL WIRING

Electrical supply must conform to nameplate rating. Connect coil leads to electrical circuit using standard electrical practice. If the coil is located in an inconvenient location, it may be re-oriented to facilitate installation. To re-orient the coil, loosen sleeve nut, rotate coil to desired position, re-tighten sleeve nut (43-53 in-lbs). The coils have two wires and either wire can be hot or neutral.



## SPECIFICATIONS

### CONSTRUCTION

All the solenoid valves are a two-piece modular construction. The two parts are the coil and valve body. To separate the two pieces, remove the nut on the top of the sleeve.

### WETTED PARTS

SV100 Series:	Stainless steel, copper, and seal, 128 polysulfone additional
SV200 Series:	Brass, stainless steel, copper and seal SV201, 202, 281, 282 FKM additional; SV211, 212 ruby and FKM additional; SV241, 242, 251 Delrin additional; SV271 aluminum, Delrin, stainless steel, copper and seal

### SEAL

Kel-F (3M trademark):	121
FKM:	122-127, 131-133, 241, 242, 251
PTFE:	128
Buna-N (Nitrile):	201-207, 211-217, 261, 271, 281-287, 291-295
EPDM (Ethylene Propylene Terpolymer):	SV221-225, 231-235

### AMBIENT TEMPERATURE

10 watt coil:	15 to 150°F
22 watt coil:	15 to 77°F
Steam valves (SV231-235):	15 to 122°F

### COIL

10 watts, 120 Vac, Class F:	121, 128, 201-207, 211-217, 221-225, 261, 271, 281-287, 291-295
10 watts, 120 Vac, Class H:	SV122-127, 131-133, 231-235, 241, 242, 251

## 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 from 125 to 400 SSU at 38°C
LP	Liquid propane gas
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 outside of the shipping package.

<b>PART NO.</b>	<b>VALVE TYPE</b>	<b>PORT MARKING</b>
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2-Way Normally Closed Valves

SV121-127	Direct Acting	1 = OUT, 2 = IN
SV106, SV128	Pilot Operated	2 = IN, 1 = OUT
SV201, 202	Direct Lift	Flow
SV222-225, 232-235	Pilot Operated	Arrow
SV203-207		
SV281-287	Direct Operated	1 = IN, 2 = OUT
SV221, SV231		

2-Way Normally Open Valves

SV131-133	Direct Operated	2 = OUT, 3 = IN
SV211-217, 291-295	Pilot Operated	Flow Arrow

3-Way Normally Closed Valves

SV241, SV242	Direct Operated	1 = Pressure 2 = Cylinder 3 = Exhaust
SV261	Direct Operated	1 = Pressure 2 = Cylinder 3 = Exhaust (0 = Pilot Exhaust)

3-Way Multipurpose Valves

SV251	Direct Operated	1, 2 or 3 = Pressure
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4-Way Directional Control Valves

SV271	Pilot Operated	1 = Pressure 2 = Cylinder A 3 = Exhaust A 4 = Cylinder B 5 = Exhaust B
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OMEGAnet® Online Service  
omega.com

Internet e-mail  
info@omega.com

### Servicing North America:

**U.S.A.:**  
ISO 9001 Certified  
One Omega Drive, Box 4047  
Stamford, CT 06907-0047  
Tel: (203) 359-1660  
FAX: (203) 359-7700  
e-mail: info@omega.com

**Canada:**  
976 Bergar  
Laval (Quebec) H7L 5A1, Canada  
Tel: (514) 856-6928  
FAX: (514) 856-6886  
e-mail: info@omega.ca

### For immediate technical or application assistance:

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En Español: (001) 203-359-7803  
FAX: (001) 203-359-7807  
e-mail: espanol@omega.com  
info@omega.com.mx

### Servicing Europe:

**Czech Republic:** Frystatska 184, 733 01 Karviná, Czech Republic  
Tel: +420 (0)59 6311899  
FAX: +420 (0)59 6311114  
Toll Free: 0800-1-66342  
e-mail: info@omegashop.cz

**Germany/Austria:** Daimlerstrasse 26, D-75392 Deckenpfronn, Germany  
Tel: +49 (0)7056 9398-0  
FAX: +49 (0)7056 9398-29  
Toll Free in Germany: 0800 639 7678  
e-mail: info@omega.de

**United Kingdom:** One Omega Drive, River Bend Technology Centre  
ISO 9002 Certified  
Northbank, Irlam, Manchester  
M44 5BD United Kingdom  
Tel: +44 (0)161 777 6611  
FAX: +44 (0)161 777 6622  
Toll Free in United Kingdom: 0800-488-488  
e-mail: sales@omega.co.uk

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## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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## RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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