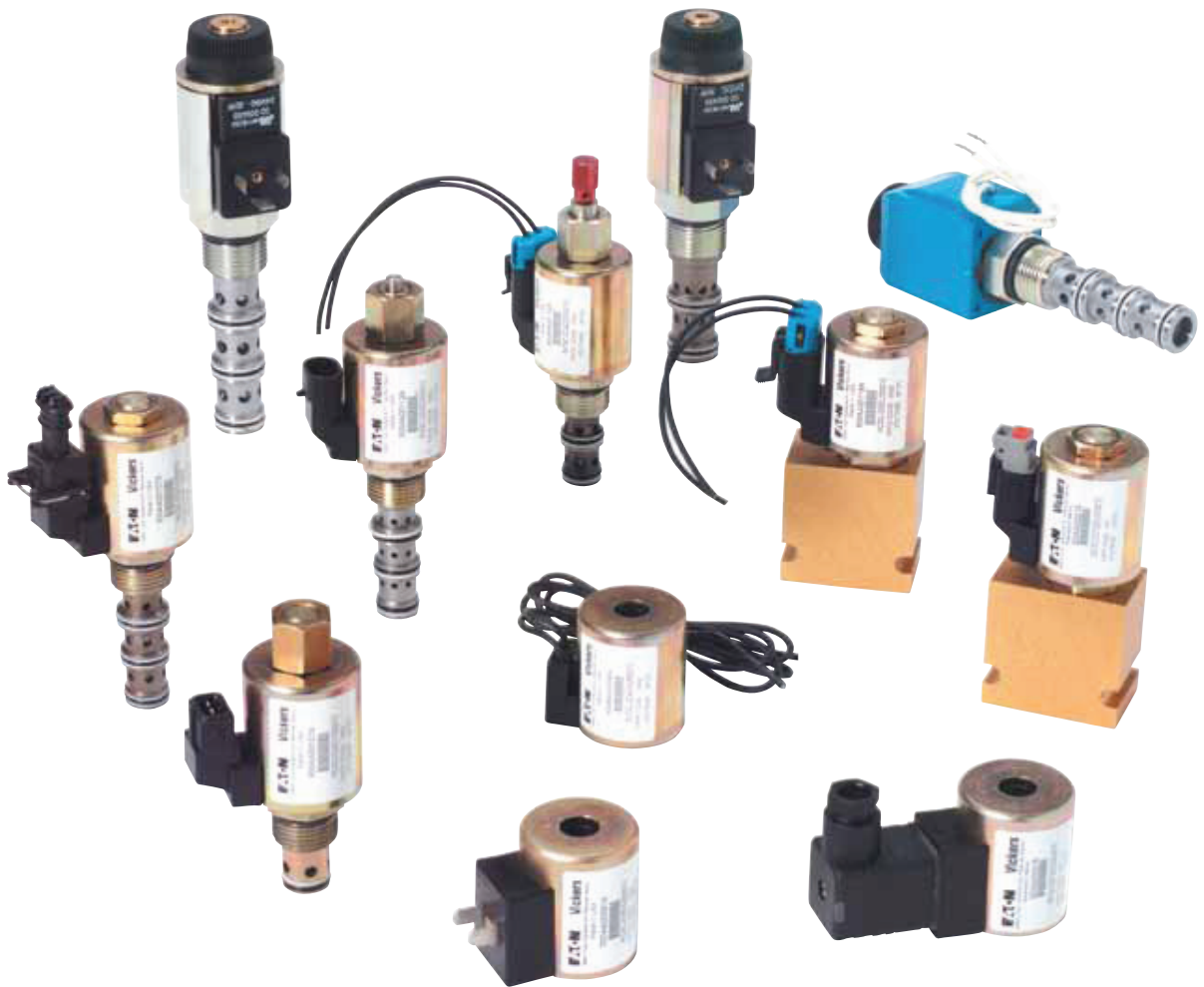




Powering Business Worldwide

Solenoid Valves

Poppet and Spool type solenoid actuated valves for applications up to 350 bar (5000 psi) and 227 L/min (60 USgpm)



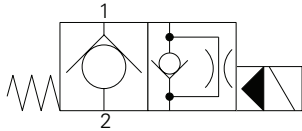
Solenoid Valves

Section Contents/Valve Locator

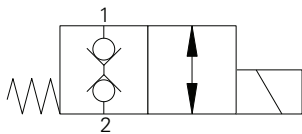
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Model	Page
Solenoid Valves - Section Overview.....	A-7
Coils.....	A-8

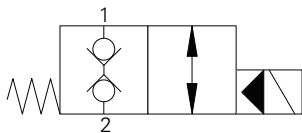
Functional Symbol



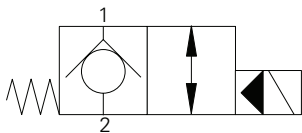
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 2/2, NC, poppet</i>				
		L/min (USgpm)	bar (psi)	
SV5-8-C	C-12-3	23 (6)	210 (3000)	A-100
SV15-8-C	C-8-2	37 (10)	350 (5000)	A-110
SV1-10-C	C-10-2	45 (12)	210 (3000)	A-146
SV11-10-C	C-10-2	45 (12)	350 (5000)	A-150
SV12-10-C	C-10-2	23 (6)	350 (5000)	A-160



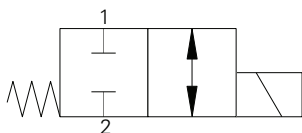
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 2/2, NC, bi-directional, poppet</i>				
		L/min (USgpm)	bar (psi)	
SBV2-8-C	C-8-2	1 (0.25)	210 (3000)	A-116
SBV12-8-C	C-8-2	1 (0.25)	350 (5000)	A-120
S217A	A879	10 (2.6)	210 (3000)	A-130



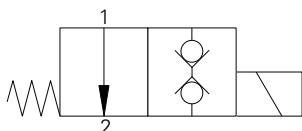
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 2/2, NC, bi-directional, poppet</i>				
		L/min (USgpm)	bar (psi)	
SBV1-8-C	C-8-2	60 (15)	210 (3000)	A-136
SBV11-8-C	C-8-2	60 (15)	350 (5000)	A-140
SBV1-10-C	C-10-2	76 (20)	210 (3000)	A-176
SBV11-10-C	C-10-2	76 (20)	350 (5000)	A-180
SBV1-12-C	C-12-2/2U	114 (30)	210 (3000)	A-206
SBV11-12-C	C-12-2/2U	114 (30)	350 (5000)	A-210



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 2/2, NC, poppet</i>				
		L/min (USgpm)	bar (psi)	
SV3-10-C	C-10-2	45 (12)	210 (3000)	A-170
SV13-10-C	C-10-2	45 (12)	350 (5000)	A-172
SV3-12-C	C-12-2	114 (30)	210 (3000)	A-190
SV13-12-C	C-12-2	114 (30)	350 (5000)	A-200
SV1-16-C	C-16-2	132 (35)	210 (3000)	A-220
SV13-16-C	C-16-2	132 (35)	350 (5000)	A-230
SV2-20-C	C-20-2	227 (60)	210 (3000)	A-240
SV13-20-C	C-20-2	227 (60)	350 (5000)	A-244



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 2/2, NC, spool</i>				
		L/min (USgpm)	bar (psi)	
SV4-8-C	C-8-2	11 (3)	210 (3000)	A-250
SV14-8-C	C-8-2	11 (3)	350 (5000)	A-260
SV4-10-C	C-10-2	23 (6)	210 (3000)	A-270
SV14-10-C	C-10-2	23 (6)	210 (3000)	A-276

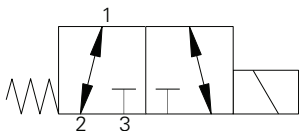
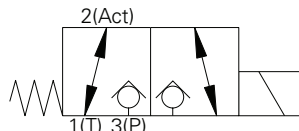
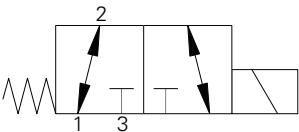
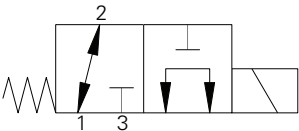
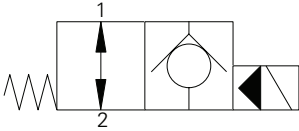
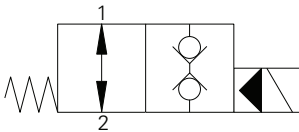
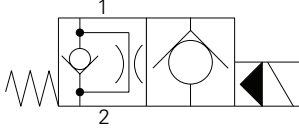


Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 2/2, NO, poppet</i>				
		L/min (USgpm)	bar (psi)	
S207	A879	1 (.25)	350 (5000)	A-280

Solenoid Valves

Valve Locator

Functional Symbol



Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 2/2, NO, poppet</i>				
SV5-8-0	C-8-2	23 (6)	210 (3000)	A-290
SV15-8-0	C-8-2	37 (10)	350 (5000)	A-300
SV5-10-0	C-10-2	45 (12)	210 (3000)	A-326
SV15-10-0	C-10-2	45 (12)	350 (5000)	A-330

Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 2/2, NO, bi-directional, poppet</i>				
SBV11-8-0	C-8-2	60 (15)	350 (5000)	A-310
SBV11-10-0	C-10-2	76 (20)	350 (5000)	A-350
SBV11-12-0	C-12-2/2U	114 (30)	350 (5000)	A-380

Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 2/2, NO, poppet</i>				
SV3-10-0	C-10-2	45 (12)	210 (3000)	A-320
SV13-10-0	C-10-2	45 (12)	350 (5000)	A-340
SV3-12-0	C-12-2/2U	114 (30)	210 (3000)	A-360
SV13-12-0	C-12-2/2U	114 (30)	350 (5000)	A-370
SV3-16-0	C-16-2	132 (35)	210 (3000)	A-390
SV13-16-0	C-16-2	132 (35)	350 (5000)	A-400
SV3-20-0	C-20-2	227 (60)	210 (3000)	A-410
SV13-20-0	C-20-2	227 (60)	350 (5000)	A-420

Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 2/2, NO, spool</i>				
SV4-8-0	C-8-2	13 (4)	210 (3000)	A-430
SV14-8-0	C-8-2	13 (4)	350 (5000)	A-440
SV4-10-0	C-10-2	23 (6)	210 (3000)	A-450
SV14-10-0	C-10-2	23 (6)	350 (5000)	A-460

Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 3/2, spool</i>				
SV4-8-3	C-8-3	13 (4)	210 (3000)	A-490
SV4-10-3	C-10-3	23 (6)	210 (3000)	A-580
S521N	C-10-3	44 (11)	210 (3000)	A-520
SV4A/B-12-3	C-12-3	42 (11)	210 (3000)	A-630
SV14A/B-12-3	C-12-3	42 (11)	350 (5000)	A-640

Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 3/2, poppet</i>				
S229	A3531	12 (3)	210 (3000)	A-500

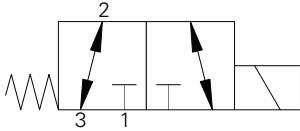
Model	Cavity	Flow Rating	Typical Pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Solenoid 3/2, spool</i>				
S520N	C-10-3	40 (10)	210 (3000)	A-510

Solenoid Valves

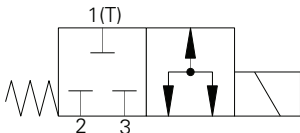
Valve Locator

A

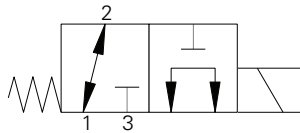
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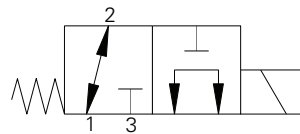
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 3/2, spool</i>				
S525N	C-10-3	30 (8)	210 (3000)	A-530



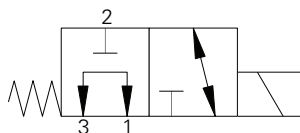
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 3/2, spool</i>				
S526N-2	C-10-3	35 (9)	210 (3000)	A-540



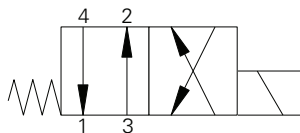
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 3/2, spool</i>				
SV1-8-3	C-8-3	11 (3)	210 (3000)	A-470
SV11-8-3	C-8-3	11 (3)	350 (5000)	A-480
SV1-10-3	C-10-3	23 (6)	210 (3000)	A-550
SV11-10-3	C-10-3	23 (6)	350 (5000)	A-560



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 3/2, spool</i>				
SV11A/B-10-3	C-10-3	23 (6)	350 (5000)	A-570
SV1A/B-12-3	C-12-3	38-42 (10-11)	210 (3000)	A-590
SV11A/B-12-3	C-12-3	38 (10)	350 (5000)	A-600



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 3/2, spool</i>				
SV2A/B-12-3	C-12-3	30-38 (8-10)	210 (3000)	A-610
SV12A/B-12-3	C-12-3	30 (8)	350 (5000)	A-620

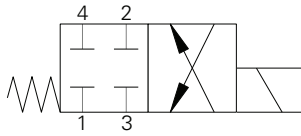


Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>				
SV1-8-4	C-8-4	11 (3)	210 (3000)	A-650
SV11-8-4	C-8-4	11 (3)	350 (5000)	A-660
SV1-10-4	C-10-4	23 (6)	210 (3000)	A-690
SV11-10-4	C-10-4	23 (6)	350 (5000)	A-710
S542	C-10-4	25 (9)	210 (3000)	A-700

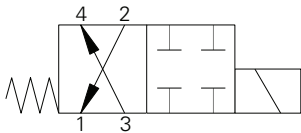
Solenoid Valves

Valve Locator

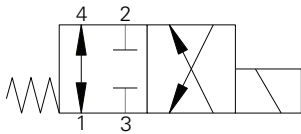
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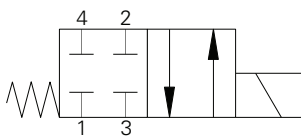
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>		L/min (USgpm)	bar (psi)	
SV2-8-4	C-8-4	13 (4)	210 (3000)	A-670
SV12-8-4	C-8-4	13 (4)	350 (5000)	A-680
SV2-10-4	C-10-4	23 (6)	210 (3000)	A-730
SV2A/B-12-4	C-12-4	42 (11)	210 (3000)	A-790
SV12A/B-12-4	C-12-4	42 (11)	350 (5000)	A-800
S541	C-10-4	30 (8)	210 (3000)	A-720



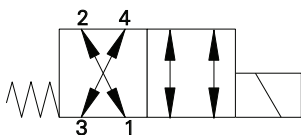
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>		L/min (USgpm)	bar (psi)	
SV3-10-4	C-10-4	23 (6)	210 (3000)	A-740
SV3A/B-12-4	C-12-4	53 (14)	210 (3000)	A-810
SV13A/B-12-4	C-12-4	53 (14)	350 (5000)	A-820



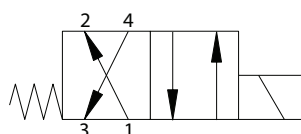
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>		L/min (USgpm)	bar (psi)	
SV4-10-4	C-10-4	23 (6)	210 (3000)	A-750



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>		L/min (USgpm)	bar (psi)	
SV5-10-4	C-10-4	23 (6)	210 (3000)	A-760
SV5A/B-12-4	C-12-4	46 (12)	210 (3000)	A-830
SV15A/B-12-4	C-12-4	53 (14)	350 (5000)	A-840



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>		L/min (USgpm)	bar (psi)	
SV17A/B-10-4	C-10-4	23 (6)	350 (5000)	A-780



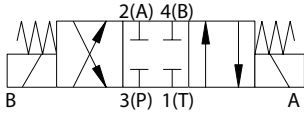
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/2, spool</i>		L/min (USgpm)	bar (psi)	
SV7-10-4	C-10-4	17 (5)	210 (3000)	A-770
SV7A/B-12-4	C-12-4	46 (12)	210 (3000)	A-850
SV17A/B-12-4	C-12-4	46 (12)	350 (5000)	A-860

Solenoid Valves

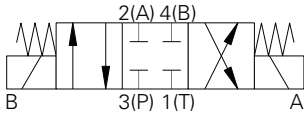
Valve Locator

A

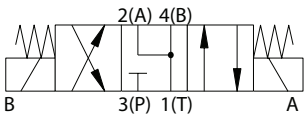
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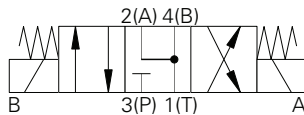
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9-8-E	C-8-4	13 (4)	210 (3000)	A-870



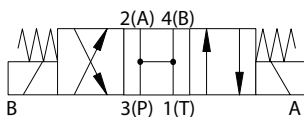
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9A-10-E	C-10-4	22 (5.8)	210 (3000)	A-910



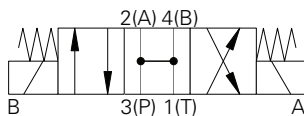
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9-8-F	C-8-4	13 (4)	210 (3000)	A-871



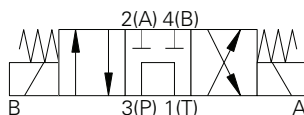
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9A-10-F	C-10-4	25 (6.5)	210 (3000)	A-911



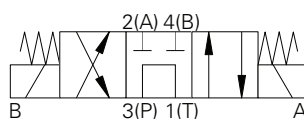
Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9-8-B	C-8-4	13.2 (3.5)	210 (3000)	A-872



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9A-10-B	C-10-4	34 (8.9)	210 (3000)	A-913



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9-8-A	C-8-4	11.0 (3.0)	210 (3000)	A-873



Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		L/min (USgpm)	bar (psi)	
SV9A-10-A	C-10-4	25 (6.5)	210 (3000)	A-914

Solenoid Valves

Section Overview

Quality Products and Innovative Solutions

This catalog gives basic specifications for the full line of Eaton's Integrated Hydraulics screw-in cartridge solenoid valves. Its purpose is to provide a quick, convenient reference tool when choosing Eaton's Integrated Hydraulics cartridge valves or designing a system using these components.

Two pressure ratings are shown for all products featured in this catalog - typical application pressure and fatigue pressure. The typical application pressure rating is the maximum recommended operating pressure for the valve in a given system.

The fatigue pressure rating is the pressure for the valve to be free for infinite life from metal fatigue.

Eaton's Integrated Hydraulics solenoid valves are offered with the widest choice of flow paths and position options to satisfy most requirements. These options include:

- 2-way, 2-position, normally open and normally closed spool and poppet valves
- 3-way, 2-position spool valves
- 4-way, 2-position spool valves
- 4-way, 3-position spool valves

Valve Features and Benefits

- Products in this catalog have been fatigue tested for one million cycles at 132% or 10 million cycles at 115% of rated pressure
- Rated flows up to 227 L/min (60 USgpm)
- Poppet and spool designs
- Standard cartridge cavities
- All operating parts are hardened steel, ground and honed for long life and low leakage
- Cartridge design for maximum flexibility and minimal manifold space requirements
- Optional low-cost manual override is available on selected models
- All exposed surfaces are zinc dichromate plated to resist corrosion
- All aluminum manifolds are gold anodized to resist corrosion
- Reliable, economical and compact
- Manual override options are available on all solenoid valves except SBV series valves

Note: Solenoid valve coil details are shown in section C.

Solenoid Valves

Coils

A

Coil Features and Benefits

The solenoid operated directional valves in this catalog are offered with a choice of standard voltages and several types of electrical connections. For other coil ratings and connections, consult your Eaton representative.

Standard AC coils are internally rectified to supply them with DC current, therefore they have no "inrush" current value.

- Coils are rated for continuous duty
- Coils are interchangeable for serviceability

- Variety of voltages and terminations
- Coils offer a one-piece weather-proof encapsulated design, eliminating the need for extra seals
- AC voltage coils are internally full-wave rectified for 50 to 60 cycle (Hz) applications

An arc suppression diode molded into the coil is available as a standard option on DC coils. Also available, are explosion-proof coils and cartridges that are CSA approved and recognized by the US Underwriters Laboratories.

Protection of Internally Rectified Coils

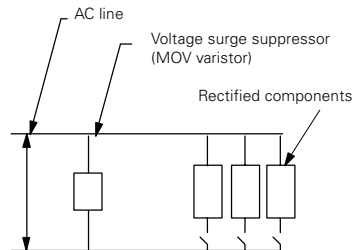
The rectifiers used in these coils may require protection from high voltage surges in some electrical circuits containing highly inductive or capacitive components. These include certain types of motors, solenoids, relays, and transformers.

Protection is simple and inexpensive. It consists of installing a commercially available voltage surge suppressor like the General Electric MOV varistor V130LA20A for 115 volts AC or the V250LA20A for 230 volts AC, across the AC line supplying the rectified

components. A single suppressor will normally protect all of the rectified components in the circuit, as shown in the surge suppressor circuit diagram below.

Surge Suppressor Circuit Diagram

Note: Solenoid valve coil details are shown in section C.



All voltage surge producing components must be installed on this side of suppressor.

Switches on relay contacts only. Relay coils must be connected on the line side of the surge suppressor.

No inductive or capacitive loads can be installed between the surge suppressor and rectified valves without additional precautions.



CAUTION

Coils may be hot to touch if used in continuous applications.



WARNING

Application of these products beyond published performance specifications may cause valve malfunction which may result in personal injury and/or damage to the machine.



WARNING

Maintain in 5-8 Nm (4-6 ft lbs) maximum torque on valve tube nut. Overtightening may cause valve or coil failure.