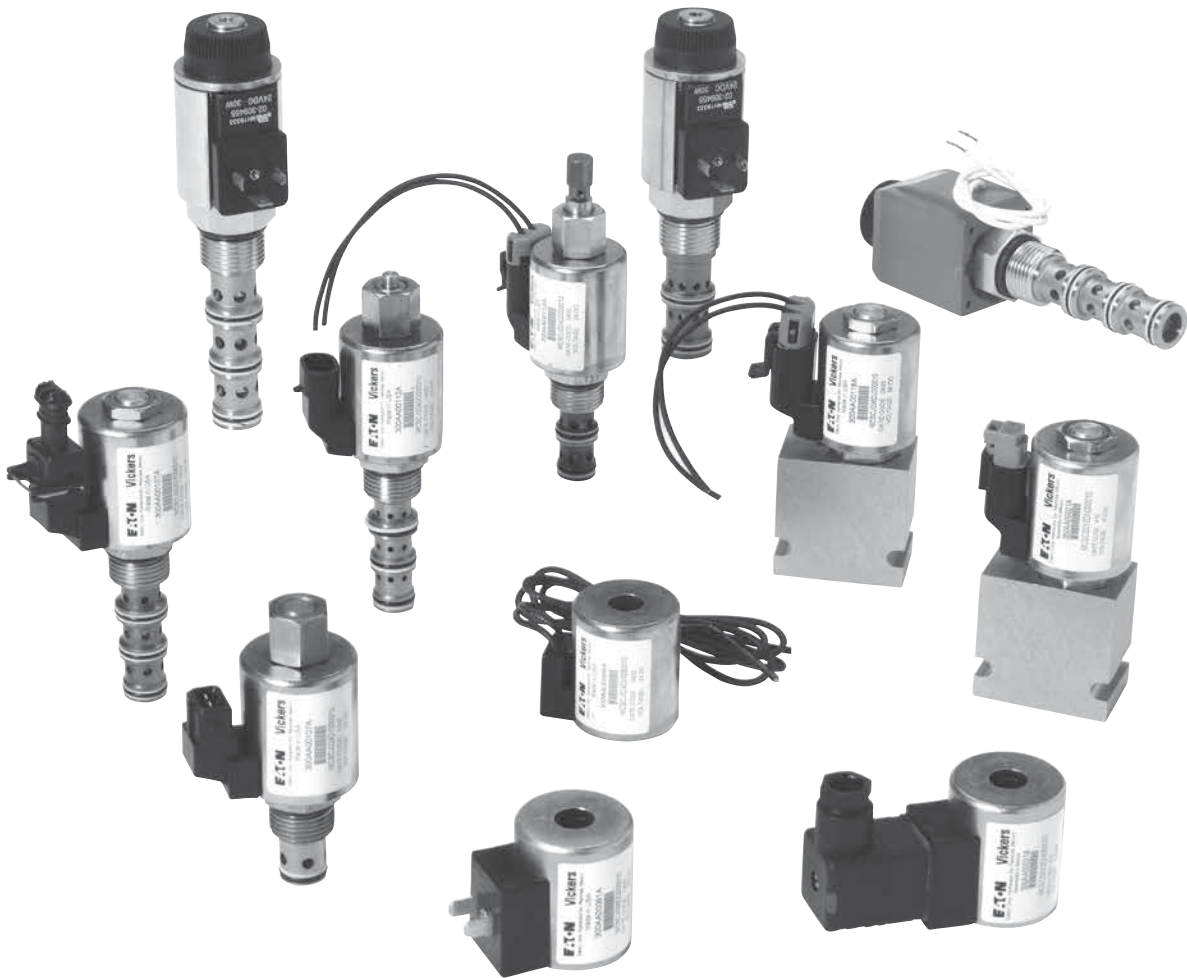


# Screw-in cartridge valves (SiCVs)

## Introduction



*Powering Business Worldwide*



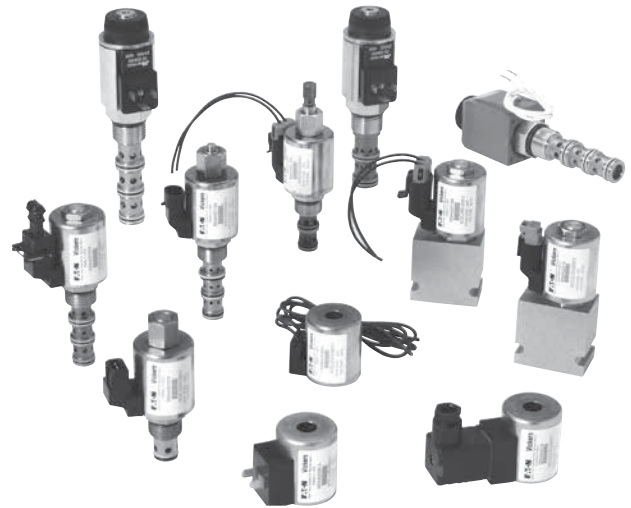
# Screw-in cartridge valves (SiCVs)

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# Screw-in cartridge valves (SiCVs)

## Introduction

For over seventy years, the Vickers and Integrated Hydraulics brands have provided its customers with quality products and innovative solutions for all their power and motion control needs. The products featured in this catalog represent the very best in screw-in cartridge valve technology. Eaton is committed to maintaining this position by offering the most comprehensive range of cartridge valves for stationary and on/off highway equipment. This catalog gives detailed specifications for the entire line of Eaton's screw-in cartridge valves. Its purpose is to provide a quick, convenient reference tool when choosing cartridge valves or designing a system using these components. It is divided into sections according to valve function.



### Hydraulic integrated circuits

Hydraulic Integrated Circuits (HICs) are valve packages containing combinations of screw-in cartridge valves in a manifold block. The package is dedicated to the hydraulic control of a particular application. HICs can be as extensive as necessary to meet the most complex applications or as simple as two or three cartridges in a basic single manifold.

All HIC packages are designed and manufactured by Eaton to customer specifications. Manifolds can be designed to hold the requisite cartridges, pilot pistons, orifice discs, or any other components needed for individual applications and integrated with other Eaton components. Standard cavity tooling provides precision machining of standard cartridge cavities.

### Global support

Eaton's world-wide distribution and service network is quick, reliable, and responsive to the customer's needs. Our customers can rest assured that no matter where they're located, Eaton will be there with unrivaled products and technical expertise.

### Technical support

Quality products are only part of Eaton's commitment to our customers. We also provide advisory, planning and design services specifically geared to your application and backed by on-time delivery.

### Features and benefits

Eaton's screw-in cartridge valves provide many advantages over traditional hydraulic valves. While offering the same control functions as traditional hydraulic valves, screw-in cartridge valves are compact, reliable, and economical.

The concept of combining multiple cartridge valves in a common manifold offers both the mobile and industrial user substantial cost-saving advantages that cannot be achieved with traditional valving. Here are some of the advantages of Eaton cartridge valves:

- Response times and efficiency gains, by eliminating many of the hoses, tubes and fittings necessary in traditional installations
- Fewer potential leakage points than with conventional valves ensuring cleaner, safer application environments
- Compact and neat assemblies for economy of space and weight
- Increased ability to withstand vibration, giving optimum machine reliability and performance
- Multiple mounting configurations offers maximum design flexibility
- Greater contamination tolerance
- Faster cycle times
- Lower noise levels
- Faster on-site servicing and troubleshooting
- Resistance to fluid contamination
- Hardened ground steel operating parts

## Materials

Cartridge bodies are manufactured from high grade cold drawn steel bar, with the internal working parts hardened and ground for maximum performance and durability. Our line bodies, Hydraulic Integrated Circuit blocks and special bodies are manufactured from high strength, wrought aluminum bar and mild steel or stainless steel, dependant upon the exact requirements of individual applications. Various specialized coatings/ finishes are obtainable for when environmentally unfriendly conditions are a consideration. For complete specifications and compatibilities, please consult our technical department.

It is recommended that for pressures above 210 bar (3000 psi) steel bodies are used. Whilst in most cases the aluminum bodies are strong enough, if transient peak pressures are encountered frequently, there is a possibility of fatigue.

## Ports

The ports on all our bodies are BSP (parallel) and SAE O-ring and range in size from 1/4" to 1-1/4". NPT ports are available on request.

## Seals

We use Nitrile as standard for temperatures of -30° C to +90° C (unless otherwise stated). Viton seals are available on request. Polyurethane seals are also available on some valves but care must be taken in their application with regard to fluid compatibility.

## Temperature ranges

Temperature ranges quoted throughout this catalog relate to the seal material only. The viscosity index of the fluid should also be taken into account when selecting a valve. If in doubt please contact our technical department.

## Fluids

Recommended fluid is mineral oil.

**Note:** All our test performances are carried out by using hydraulic oil with a viscosity of 21.8 or 32 cSt at 40°C. For water based fluids, i.e., 95/5 and 60/40 emulsion consult factory.

## Filtration

Our valves utilize precision hydraulic components and we recommend a filtration level of between 15 and 25 microns, to produce a cleanliness level of ISO4406:2000 Class 18/16/13, dependent on the type of valve used. Replace filter elements regularly, try to avoid filter bypass condition - special attention should also be paid to filtration when first commissioning the system or machine, when contamination levels are high.

## Tamperproof devices

Various tamperproofing methods are available upon request for our range of cartridges and valves.

## Cartridge valve installation

The correct machining of cavities to suit our range of cartridges is critical. Cavity tools are available for sale or hire and certified drawings are available upon request. All drawings and information contained within this catalog are for guidance only. Where dimensions and actual valve usage is critical, please consult our technical department for full specifications and compatibilities. We reserve the right to alter specifications without notice or incurring obligation.

**Note:** It is important that each designer analyses all aspects of their application including consequences of any failure and review the information concerning the product or system in the current product catalog. The responsibility for final selection rests with the customer.

## Torque figures

The torque values stated in this catalog are for testing purposes only. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish. Contact main office for further information.

## Adjustment

The adjustment range and Max setting figures shown throughout this catalog give the design range for each valve, higher or lower values may be attainable but should not be used without first contacting our Engineering department. Setting must ALWAYS be carried out using an appropriate gauge and it must NOT be assumed that screwing an adjuster to its maximum or minimum position will yield the maximum or minimum stated design setting for that valve.

## Pressure equipment directive

All our pressure control valves are designed to be "Pressure Accessories" in accordance with article 3 section 3 of the Pressure Equipment Directive and Sound Engineering Practice and sold in good faith as such. For "Safety Accessories" as defined in article 3 section 1.4 of the Pressure Equipment Directive.

## Note for products intended to be sold in European Economic Area:

Please note that "safety devices" or other safety functions mentioned in any product literature are not necessarily "safety components" as defined by the Machinery Directive 2006/42/EC, unless otherwise state together with the CE mark and specific reference to said directive.

## Limited warranty

Please see our website for details.



# Hydraulic integrated circuits

High performance in one compact, efficient package

## Customized solutions from a single source

Eaton is a major supplier of Hydraulic Integrated Circuits (HIC) manifold block systems. Application and use of HIC packages has spread across virtually every market and is a major growth area increasing at a rate 2 to 3 times the growth rate for the rest of the hydraulics industry.

Market trend forces are fueling growth away from line mounted valves to subplate

mounted valves to, ultimately, HIC Manifold Valve Systems. Operating costs - reduced complexity, elimination of leakage, and improved serviceability - as well as initial installed cost factors - compact size, lower purchase cost, reduced customer engineering, fewer component parts and a higher level of integration - are contributing to this trend.

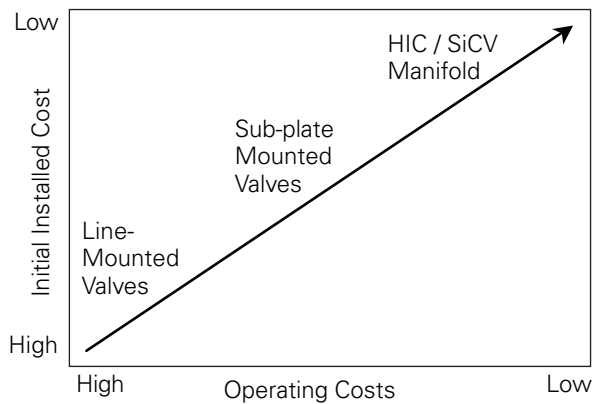
## No leaks, no lines

HIC packages are created to meet specific circuit or installation requirements where two or more valves are required. The valves are packaged by hydraulic product suppliers, or OEMs, into either aluminum or steel blocks instead of using traditional cast iron individual in-line valve bodies. This permits the creation of compact, leak-free valve control system packages while eliminating the cost and time to connect the valves together with lines and fittings. This capability satisfies many application requirements where available space for hydraulic components is limited. HIC packages are ideally suited for a quick and easy, low cost hydraulic circuit which has repetitive applications. This requirement actually led to the development of the screw-in cartridge valve (SiCV) concept.

## From screw-in cartridge valves to complete systems

SiCVs gained their initial market success and position in the agricultural equipment industry in the late 1960s. SiCV technology rapidly spread from the traditional basic valve control functions of flow pressure and direction to many specialty valve control functions that were not always practical or economical in the traditional cast iron housing configuration. From these modest but demanding beginnings in the agricultural vehicle and implement markets, the concept of packaging two or more valves to form a unique control system and/or subsystem quickly spread into other cost sensitive high volume markets. Examples include aerial work platforms, lift trucks, road pavers, road rollers, concrete pavers, small construct equipment vehicles, and mining equipment.

## Market trends



## The evolution of the hic package

This technology has evolved from labor intensive, costly line and subplate mounted components to compact leakfree HIC packages.

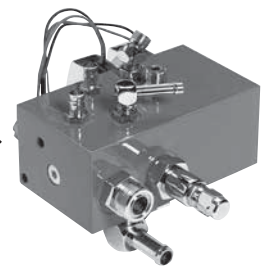
### Line mounted valves



### Mounted sub-plate mounted



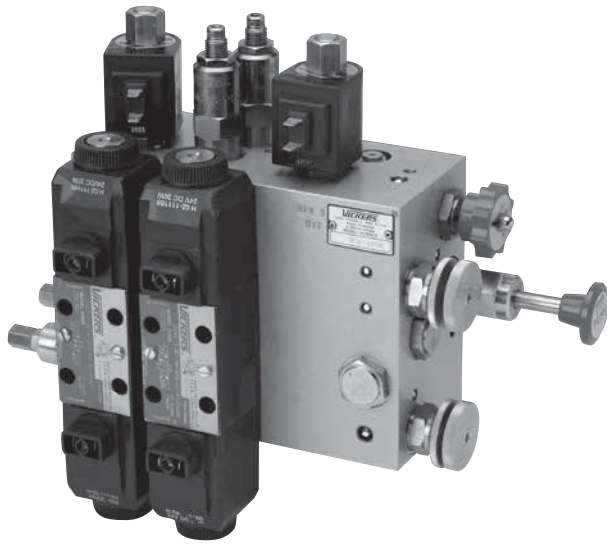
### HIC package



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# Hydraulic integrated circuits

High performance in one compact, efficient package



## Better results in many applications

More industries are becoming aware of the advantages of HIC packages:

- Low installed cost
- Leak-free packaging
- Reduced hydraulic line clutter
- Smaller package size

As awareness increases, usage of HIC packages is spreading to specialty

vehicles and machines including paper cutting machines, newspaper printing presses, tree removal/planting vehicles, and utility trucks.

As more and more HIC packages continue to appear in the marketplace the use has spread to encompass virtually every conceivable market where hydraulic systems can be applied.

## Trouble-free installation and troubleshooting

The HIC package may be designed by Eaton or customers to satisfy specific performance or installation requirements. The key design feature is the combination of two or more control functions into a compact manifold block where internal passages eliminate the need for interconnecting lines and fittings between valves. The construction eliminates not only potential leakage points, but also the procurement, storage, handling and installation costs associated with traditional line mounted valve systems. The only lines and fittings required are those for the system inlet and return and the connections to the actuators being controlled. In addition, the HIC is a complete package with no time or procurement problems to complete the installation of the circuit due to the possible shortage of one or more valves. Conveniently located SICVs in a single manifold block provide faster field servicing and troubleshooting, maximizing machine utilization.

## Features and benefits

- An efficient low maintenance system - the cartridge concept facilitates improved productivity from customized circuits
- Compact, unitized design-maximum savings on lines and fittings costs plus faster installation and system start up
- Fewer potential leakage points - ensure a cleaner, safer application environment
- Increase ability to withstand vibration - gives optimum machine reliability
- Faster response time and enhance efficiency - response time and power transmission efficiency gains by eliminating many of the hoses, tubes and fittings necessary in traditional installations
- Compact, neat assembly - provides space and weight savings
- Ability to manifold other valves such as Vickers Directional Controls DG valves & CMX valves - provides increased systems flexibility to control multiple and diverse actuators
- Components sourced from a single supplier - simplifies procurement processing and reduces acquisition costs



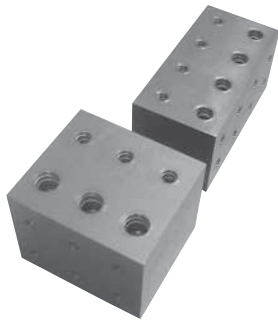
*Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.*



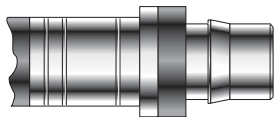


# Aluminum and steel manifold packages

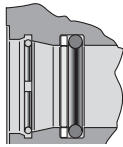
with direct port stc connections



STC Ports in action



STC Hose/Connector



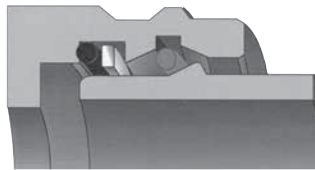
STC Port

## Design features

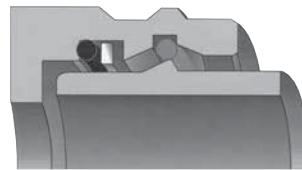
- Positive round-wire style latching mechanism
- Swivels for installation, (in absence of pressure)
- Low profile, compact design
- Elastomeric o-ring seal –available in many materials
- Dual purpose dust seal/ release sleeve
- Simple stamped release tool for disconnecting
- Zinc plated steel construction

## Benefits

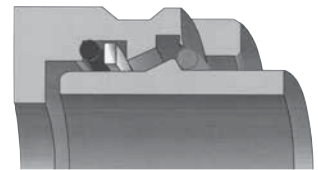
- Fast reliable one-hand STC connections requiring no assembly tools
- Easy installation in confined areas
- Eliminates cross-threading, over-or under-torquing, and hose twisting
- Resists loosening when vibration is present
- Zero leak performance per SAE J1176
- Repairable seals for increased useful life
- Direct porting eliminates adapters to maximize cost savings
- Resists external contamination
- Design allows easy disconnection with release tool
- Ease of assembly for HICs with multiple ports in tight spaces



Male connector is inserted into the female connector. The male shoulder spreads the latch ring open.



Latch ring is in its open position which allows the male shoulder to slide past the latch ring.



Male and female are locked into place. As fluid pressure is applied, the latch ring is wedged between the male shoulder and the female angle.

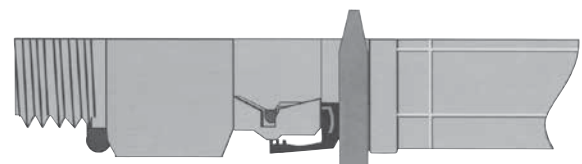
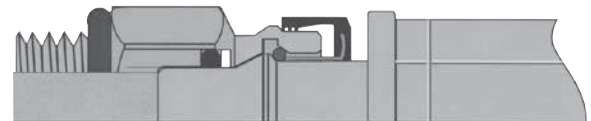
## How to use STC

STC assembly action

**Note:** Always remember to verify that your STC connection has been made successfully by pulling the connection.

The proper connection and disconnection of STC is outlined in Bulletin JA535E.

As the STC tool is inserted behind the release sleeve, the steel insert pushes the latching ring forward into a groove in the female half I.D., thus allowing the two halves to be pulled apart. The thickness of the tool moves the sleeve forward far enough to disconnect, so prying sideways with the tool is unnecessary.

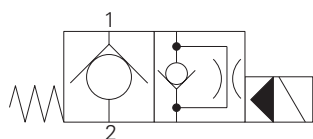


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

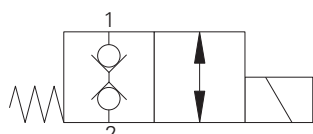




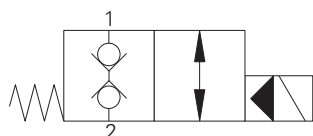
### Functional symbol



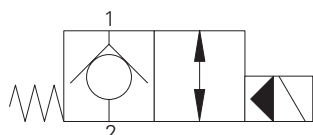
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NC, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV5-8-C	C-8-2	23 (6)	210 (3000)	A-12
SV15-8-C	C-8-2	37 (10)	350 (5000)	A-14
SV1-10-C	C-10-2	45 (12)	210 (3000)	A-26
SV11-10-C	C-10-2	45 (12)	350 (5000)	A-28
SV12-10-C	C-10-2	23 (6)	350 (5000)	A-28



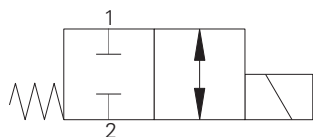
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NC, bi-directional, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SBV2-8-C	C-8-2	1 (0.25)	210 (3000)	A-16
SBV12-8-C	C-8-2	1 (0.25)	350 (5000)	A-18
S217A	A879	10 (2.6)	210 (3000)	A-20
S519A	A879	12 (3)	210 (3000)	A-22



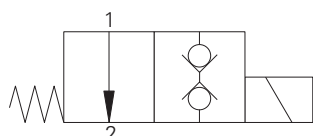
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NC, bi-directional, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SBV11-8-C	C-8-2	60 (15)	350 (5000)	A-24
SBV1-10-C	C-10-2	76 (20)	210 (3000)	A-26
SBV11-10-C	C-10-2	76 (20)	350 (5000)	A-28
SBV1-12-C	C-12-2/2U	114 (30)	210 (3000)	A-44
SBV11-12-C	C-12-2/2U	114 (30)	350 (5000)	A-46



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NC, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV3-8-C	C-8-2	23 (6)	210 (3000)	A-30
SV3-10-C	C-10-2	45 (12)	210 (3000)	A-32
SV13-10-C	C-10-2	45 (12)	350 (5000)	A-34
SV3-12-C	C-12-2	114 (30)	210 (3000)	A-40
SV13-12-C	C-12-2	114 (30)	350 (5000)	A-42
SV1-16-C	C-16-2	132 (35)	210 (3000)	A-48
SV13-16-C	C-16-2	132 (35)	350 (5000)	A-50
SV2-20-C	C-20-2	227 (60)	210 (3000)	A-52
SV13-20-C	C-20-2	227 (60)	350 (5000)	A-54



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NC, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV4-8-C	C-8-2	11 (3)	210 (3000)	A-56
SV14-8-C	C-8-2	11 (3)	350 (5000)	A-58
SV4-10-C	C-10-2	23 (6)	210 (3000)	A-60
SV14-10-C	C-10-2	23 (6)	350 (5000)	A-62



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NO, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
S207	A879	1 (.25)	350 (5000)	A-64

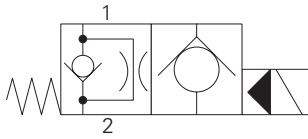
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



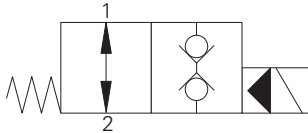
# Solenoid valves

## Valve locator

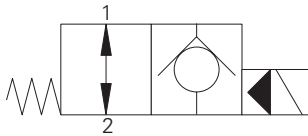
### Functional symbol



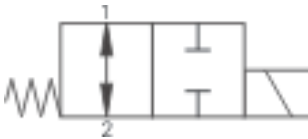
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NO, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV5-8-0	C-8-2	23 (6)	210 (3000)	A-66
SV15-8-0	C-8-2	37 (10)	350 (5000)	A-68
SV5-10-0	C-10-2	45 (12)	210 (3000)	A-76
SV15-10-0	C-10-2	45 (12)	350 (5000)	A-78



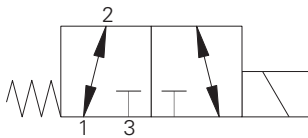
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NO, bi-directional, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SBV11-8-0	C-8-2	60 (15)	350 (5000)	A-70
SBV11-10-0	C-10-2	76 (20)	350 (5000)	A-82
SBV11-12-0	C-12-2/2U	114 (30)	350 (5000)	A-88



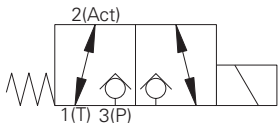
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NO, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV3-8-0	C-8-2	23 (6)	210 (3000)	A-72
SV3-10-0	C-10-2	45 (12)	210 (3000)	A-74
SV13-10-0	C-10-2	45 (12)	350 (5000)	A-80
SV3-12-0	C-12-2/2U	114 (30)	210 (3000)	A-84
SV13-12-0	C-12-2/2U	114 (30)	350 (5000)	A-86
SV3-16-0	C-16-2	132 (35)	210 (3000)	A-90
SV13-16-0	C-16-2	132 (35)	350 (5000)	A-92
SV3-20-0	C-20-2	227 (60)	210 (3000)	A-94
SV13-20-0	C-20-2	227 (60)	350 (5000)	A-96



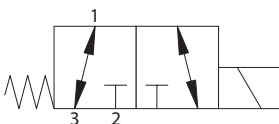
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 2/2, NO, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV4-8-0	C-8-2	13 (4)	210 (3000)	A-98
SV14-8-0	C-8-2	13 (4)	350 (5000)	A-100
SV4-10-0	C-10-2	23 (6)	210 (3000)	A-102
SV14-10-0	C-10-2	23 (6)	350 (5000)	A-104



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV4-8-3	C-8-3	13 (4)	210 (3000)	A-110
SV4-10-3	C-10-3	23 (6)	210 (3000)	A-128
S521N	C-10-3	44 (11)	210 (3000)	A--
SV4A/B-12-3	C-12-3	42 (11)	210 (3000)	A--
SV14A/B-12-3	C-12-3	42 (11)	350 (5000)	A-141



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
S229	A3531	12 (3)	210 (3000)	A-112

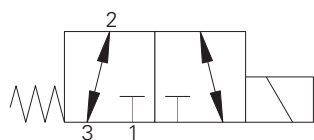


Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
S520H	C-10-3	40 (10)	210 (3000)	A-114

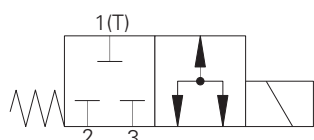
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



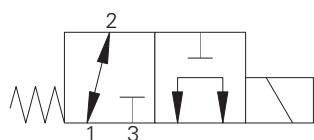
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
S525H	C-10-3	30 (8)	210 (3000)	A-118



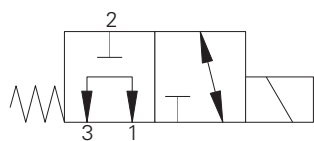
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
S526N-2	C-10-3	35 (9)	210 (3000)	A-120



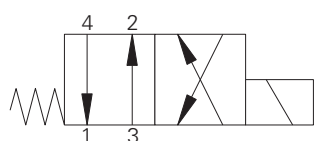
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV1-8-3	C-8-3	11 (3)	210 (3000)	A-106
SV11-8-3	C-8-3	11 (3)	350 (5000)	A-108
SV1-10-3	C-10-3	23 (6)	210 (3000)	A-122
SV11-10-3	C-10-3	23 (6)	350 (5000)	A-124



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV11A/B-10-3	C-10-3	23 (6)	350 (5000)	A-126
SV1A/B-12-3	C-12-3	38-42 (10-11)	210 (3000)	A--
SV11A/B-12-3	C-12-3	38 (10)	350 (5000)	A--



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 3/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV2A/B-12-3	C-12-3	30-38 (8-10)	210 (3000)	A--
SV12A/B-12-3	C-12-3	30 (8)	350 (5000)	A--



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV1-8-4	C-8-4	11 (3)	210 (3000)	A-142
SV11-8-4	C-8-4	11 (3)	350 (5000)	A-144
SV1-10-4	C-10-4	23 (6)	210 (3000)	A-150
SV11-10-4	C-10-4	23 (6)	350 (5000)	A-154
S542	C-10-4	25 (9)	210 (3000)	A-152

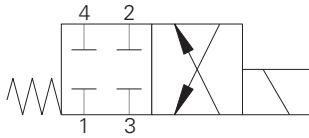
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



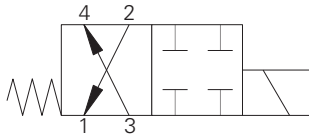
# Solenoid valves

## Valve locator

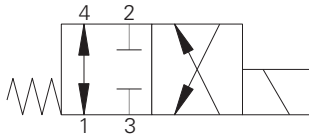
### Functional symbol



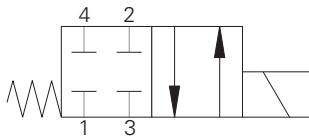
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV2-8-4	C-8-4	13 (4)	210 (3000)	A-146
SV12-8-4	C-8-4	13 (4)	350 (5000)	A-148
SV2-10-4	C-10-4	23 (6)	210 (3000)	A-158
SV2A/B-12-4	C-12-4	42 (11)	210 (3000)	A--
SV12A/B-12-4	C-12-4	42 (11)	350 (5000)	A--
S541	C-10-4	30 (8)	210 (3000)	A-156



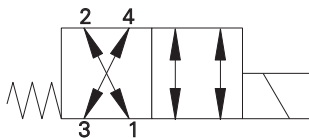
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV3-10-4	C-10-4	23 (6)	210 (3000)	A-160
SV3A/B-12-4	C-12-4	53 (14)	210 (3000)	A--
SV13A/B-12-4	C-12-4	35 (14)	350 (5000)	A--



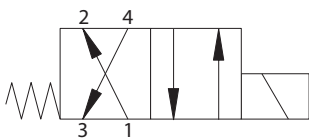
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV4-10-4	C-10-4	23 (6)	210 (3000)	A-162



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV5-10-4	C-10-4	23 (6)	210 (3000)	A-164
SV5A/B-12-4	C-12-4	46 (12)	210 (3000)	A-178
SV15A/B-12-4	C-12-4	53 (14)	350 (5000)	A-180



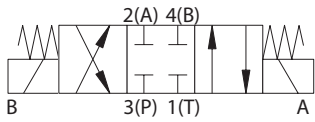
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV17A/B-10-4	C-10-4	23 (6)	350 (5000)	A-184



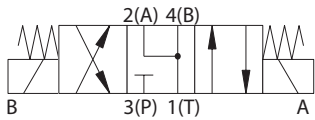
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/2, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV7-10-4	C-10-4	17 (5)	210 (3000)	A-166
SV7A/B-12-4	C-12-4	46 (12)	210 (3000)	A-182
SV17A/B-12-4	C-12-4	46 (12)	350 (5000)	A-184

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

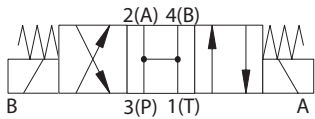
### Functional symbol



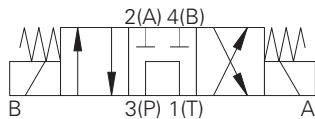
Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/3, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV9-8-E	C-8-4	13 (4)	210 (3000)	A-190
SV9-10-E	C-10-4	19(5)	210(3000)	A-194
SV9A-10-E	C-10-4	22 (5.8)	210 (3000)	A-198



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/3, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV9-8-F	C-8-4	13 (4)	210 (3000)	A-187
SV9-10-F	C-10-4	23 (6)	210 (3000)	A-195
SV9A-10-F	C-10-4	25 (6.5)	210 (3000)	A-199



Model	Cavity	Flow rating	Typical Pressure	Page
<i>Solenoid 4/3, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV9-8-B	C-8-4	13.2 (3.5)	210 (3000)	A-188
SV9-10-B	C-10-4	23 (6)	210 (3000)	A-193
SV9A-10-B	C-10-4	34 (8.9)	210 (3000)	A-200



Model	Cavity	Flow rating	Typical pressure	Page
<i>Solenoid 4/3, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SV9-8-A	C-8-4	11.0 (3.0)	210 (3000)	A-189
SV9-10-A	C-10-4	19 (5)	210 (3000)	A-192
SV9A-10-A	C-10-4	25 (6.5)	210 (3000)	A-201

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

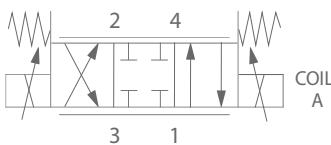
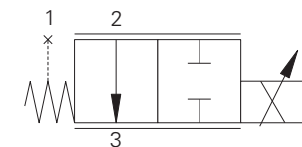
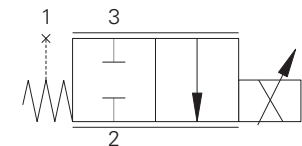
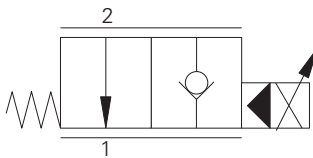
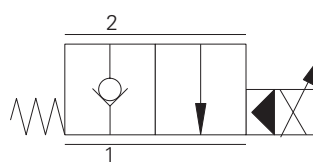
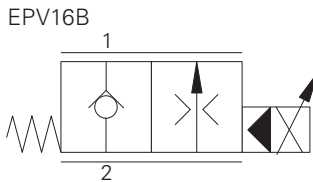
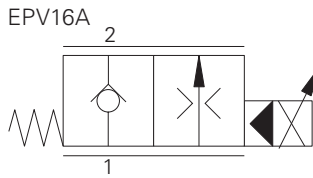
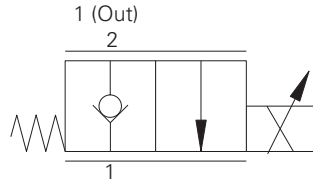
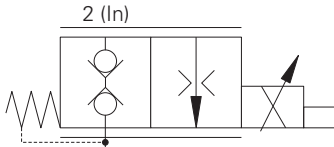


# Proportional valves

## Valve locator/section contents

**Note:** Proportional valve solenoid coils and electronic valve drivers are covered in section C of this Catalog.

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional bi-directional poppet</i>				
PFR21H	A879	18 (5)	210 (3000)	B-8

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional bi-directional poppet</i>				
EPV10	C-10-2	0-30 (0-8)	350 (5000)	B-10

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional flow control, NC, poppet</i>				
EPV16A	C-16-3SU (undercut)	0-160	280 (4000)	B-17
EPV16B	C-16-3SU (undercut)	0-160	280 (4000)	B-18

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional flow control, NC, poppet</i>				
ESV1-8-C	C-8-2	31 (9)	210 (3000)	B-20
ESV1-10-C	C-10-2	70 (19)	210 (3000)	B-22
ESV1-12-C	C-12-2	104 (27)	210 (3000)	B-24

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional flow control, NO, poppet</i>				
ESV1-8-O	C-8-2	31 (9)	210 (3000)	B-26
ESV1-10-O	C-10-2	70 (19)	210 (3000)	B-28
ESV1-12-O	C-12-2	104 (27)	210 (3000)	B-30

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional flow control, NC, spool</i>				
EKV1-10-C	C-10-3	38 (10)	210 (3000)	B-32
EKV1-12-C	C-12-3	77 (20)	210 (3000)	B-36

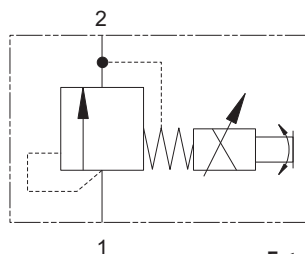
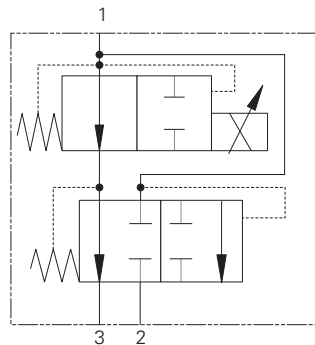
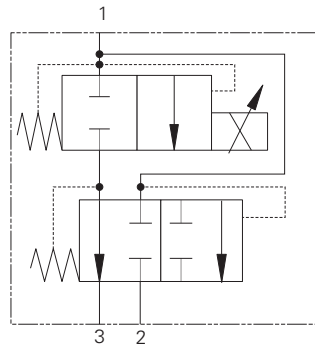
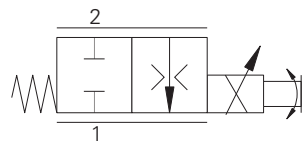
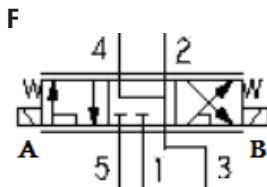
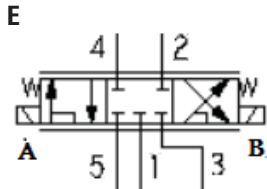
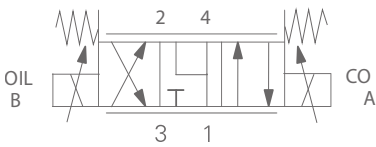
Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional flow control, NO, spool</i>				
EKV1-10-O	C-10-3	30 (10)	210 (3000)	B-40
EKV1-12-O	C-12-3	104 (28)	210 (3000)	B-44

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Proportional 4-way, 3-position flow control, NO, spool</i>				
ESV9-8				B-50
ESV9-10-E	C-10-4	22 (5.8)	250 (3600)	B-52

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
<i>Proportional 4-way, 3-position flow control, NC, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
ESV9-10-F	C-10-4	22 (5.8)	250 (3600)	B-52

Model	Cavity	Flow rating	Typical pressure	Page
<i>Proportional flow Control, NC, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
ESVL9-10-E	C-10-5S	23 (2.9)	250 (3600)	B-53
ESVL9-10-F	C-10-5S	23 (2.9)	250 (3600)	B-54

Model	Cavity	Flow rating	Typical pressure	Page
<i>Proportional flow</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PFR24A	A6701	18 (5)	210 (3000)	B-57

Model	Cavity	Flow rating	Typical pressure	Page
<i>Proportional flow, NC, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
EFV2-12-C	C-12-3	<114 (30)	210 (3000)	B-59

Model	Cavity	Flow rating	Typical pressure	Page
<i>Proportional flow, NO, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
EFV2-12-O	C-12-3	<114 (<30)	210 (3000)	B-63

Model	Cavity	Flow rating	Typical pressure	Page
<i>Proportional relief</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PDR21A	A879	1.5 (.3)	350 (5000)	B-67

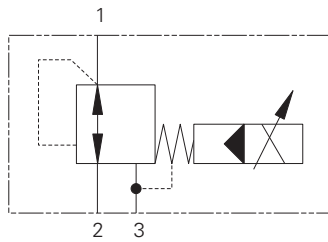
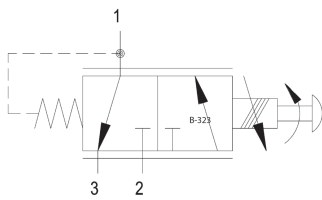
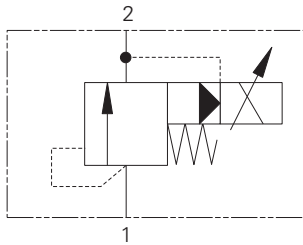
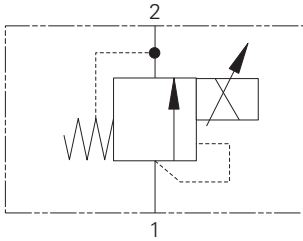
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Proportional valves

## Valve locator/section contents

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Proportional inverse relief, poppet</i>				
IRV1-10	C-10-2	1 (.25)	210 (3000)	B-69
IRV2-10	C-10-2	57 (15)	240 (3500)	B-71

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Proportional relief, spool</i>				
ERV1-10	C-10-2	<60 (15)	210 (3000)	B-73
ERV1-16	C-16-2	<132 (<39)	210 (3000)	B-75
EPPV5	TC06025	8 (2.1)	50 (725)	B-81
EPPV6	TC06023	8 (2.1)	50 (725)	B-83

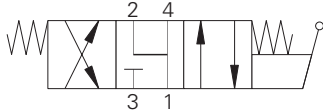
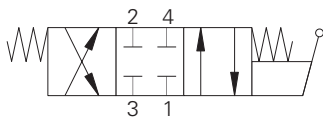
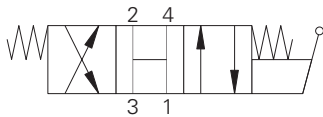
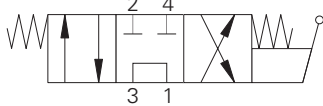
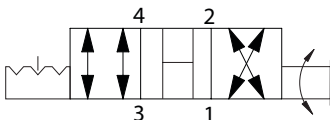
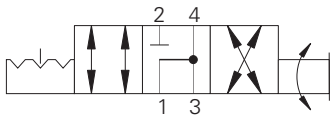
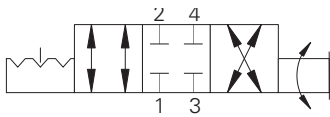
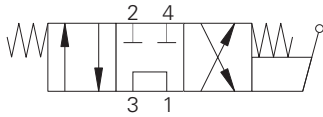
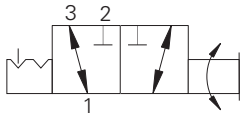
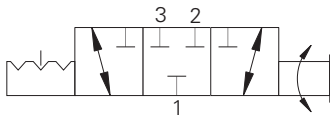
Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Proportional reducing/relief, spool</i>				
PPD22A	A879	20 (5)	210 (3000)	B-77
EPRV2-8	C-8-3	7.6 (2)	35 (500)	B-79

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Proportional reducing/relief, spool</i>				
EPRV1-10	C-10-3	8 (2)	35 (500)	B-85
EPRV3-10	C-10-3	30 (8)	210 (3000)	B-87
EPRV1-16	C-16-3	7.6 (2)	35 (500)	B-89

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual rotary valve</i>				
MRV3-10	C-10-3	23 (6)	210 (3000)	D-10
MRV13-10	C-10-3	23 (6)	350 (5000)	D-12
MRV13-12	C-12-3	46 (12)	350 (5000)	D-14
MRV3-16	C-16-3	64 (17)	210 (3000)	D-16
MRV13-16	C-16-3	64 (17)	350 (5000)	D-18

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual rotary valve</i>				
MRV4-10	C-10-4	11 (3)	210 (3000)	D-20
MRV14-10	C-10-4	11 (3)	350 (5000)	D-22
MRV14-12	C-12-4	23 (6)	350 (5000)	D-24
MRV4-16	C-16-4	45 (12)	210 (3000)	D-26
MRV14-16	C-16-4	45 (12)	350 (5000)	D-28

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual rotary valve</i>				
MRV5-10	C-10-4	11 (3)	210 (3000)	D-30
MRV15-10	C-10-4	11 (3)	350 (5000)	D-32
MRV15-12	C-12-4	23 (6)	350 (5000)	D-34
MRV5-16	C-16-4	45 (12)	210 (3000)	D-36
MRV15-16	C-16-4	45 (12)	350 (5000)	D-38

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual rotary valve</i>				
MRV6-10	C-10-4	11 (3)	210 (3000)	D-40
MRV6-16	C-16-4	11 (3)	300 (5000)	D-42

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual rotary valve</i>				
MRV7-10	C-10-4	11 (3)	210 (3000)	D-44

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual lever valve, spool</i>				
MLV9-12-A	C-12-4	60 (13.9)	210 (3000)	D-46

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual lever valve, spool</i>				
MLV9-12-B	C-12-4	60 (15.9)	210 (3000)	D-47

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual lever valve, spool</i>				
MLV9-12-E	C-12-4	60 (15.9)	210 (3000)	D-48

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual lever valve, spool</i>				
MLV9-12-F	C-12-4	60 (15.9)	210 (3000)	D-49

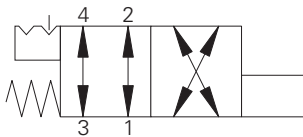
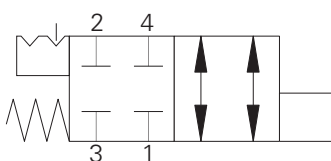
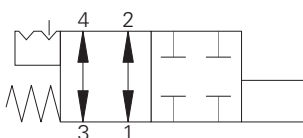
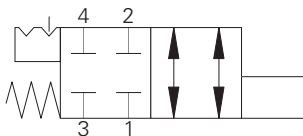
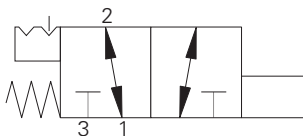
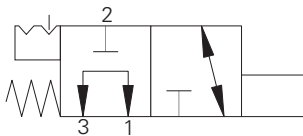
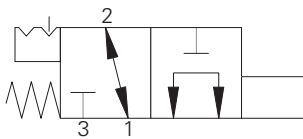
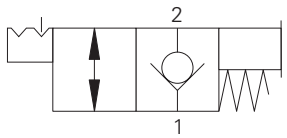
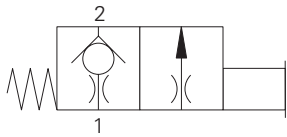
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Directional controls

## Valve locator

### Functional symbol



Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Check MO</i>				
3CP2	A879	5.5-15 (1.4-4)	210 (3000)	D-52

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual pull valve, NC</i>				
MPV1-10	C-10-2	45 (12)	210 (3000)	D-54
MPV3-10	C-10-2	45 (12)	210 (3000)	D-56

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV1-12	C-12-3	41.8 (11)	210 (3000)	D-58
MSV11-10	C-10-3	23 (6)	350 (5000)	D-60
MSV11-12	C-12-3	30 (8)	350 (5000)	D-62
MSV12-12	C-12-3	38 (10)	350 (5000)	D-66

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV2-12	C-12-3	38 (10)	210 (3000)	D-64

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV5-12	C-12-3	41.8 (11)	210 (3000)	D-68
MSV15-12	C-12-3	41.8 (11)	350 (5000)	D-70

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV3-12	C-12-4	53.2 (14)	210 (3000)	D-72
MSV13-12	C-12-4	53.2 (14)	350 (5000)	D-74

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV4-12	C-12-4	53.2 (14)	210 (3000)	D-76
MSV14-12	C-12-4	53.2 (14)	350 (5000)	D-78

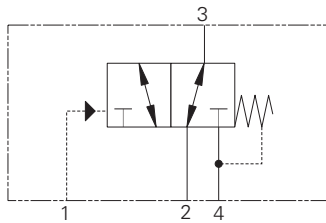
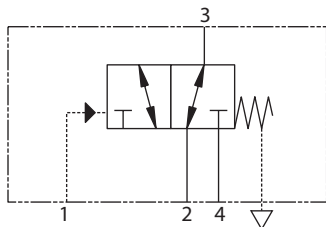
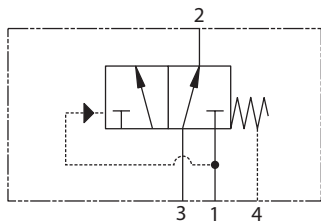
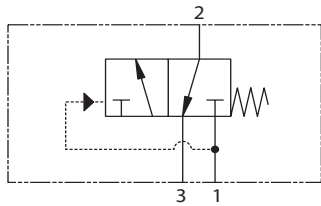
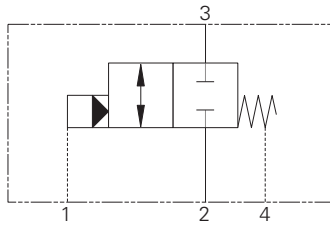
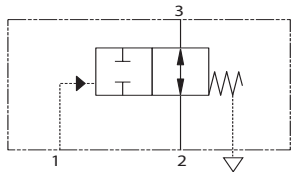
Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV6-12	C-12-4	53.2 (14)	210 (3000)	D-80
MSV16-12	C-12-4	53.2 (14)	350 (5000)	D-82

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Manual push valve</i>				
MSV17-10	C-12-4	20 (5.3)	350 (5000)	D-84
MSV7-12	C-12-4	45 (11.9)	210 (3000)	D-86
MSV17-12	C-12-4	20 (5)	350 (5000)	D-88

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pilot to shift 2/2 valve</i>				
PTS7-10	C-10-3	30 (8)	210 (3000)	D-90
PTS17-10	C-10-3	30 (8)	350 (5000)	D-92
PTS17-12	C-12-3	114 (30)	350 (5000)	D-94

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pilot to shift 2/2 valve</i>				
1RDS702	A21145	80 (20)	420 (6090)	D-100

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Brake sequence</i>				
1SB10	A893	10 (2.5)	350 (5000)	D-96

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Brake release shuttle</i>				
1SB304	A5302	30 (8)	350 (5000)	D-98

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pilot to shift valve</i>				
PTS1-10	C-10-4	30 (8)	210 (3000)	D-102
PTS11-12	C-12-4	76 (20)	350 (5000)	D-104
PTS11-10	C-10-4	30 (8)	350 (5000)	D-106
PTS1-16	C-16-4	132 (35)	210 (3000)	D-108
PTS11-16	C-16-4	132 (35)	350 (5000)	D-110
PTS1-20	C-20-4	265 (70)	210 (3000)	D-113

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pilot to shift valve</i>				
PTS12-10	C-10-4	30 (8)	350 (5000)	D-114
PTS12-12	C-12-4	114 (30)	350 (5000)	D-116
PTS2-16	C-16-4	132 (35)	210 (3000)	D-118
PTS12-16	C-16-4	132 (35)	350 (5000)	D-120
PTS2-20	C-20-4	265 (70)	210 (3000)	D-122

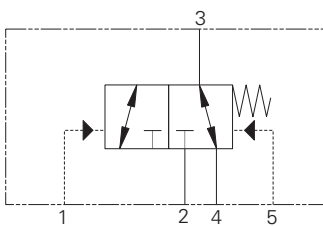
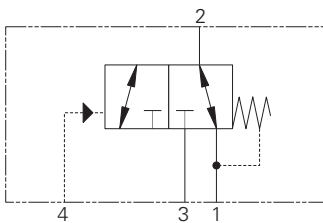
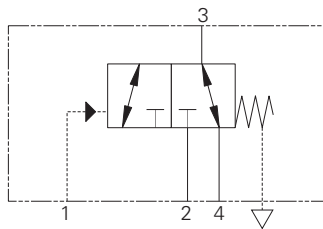
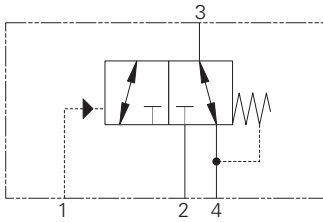
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# Directional controls

## Valve locator

### Functional symbol



Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS13-10	C-10-4	30 (8)	350 (5000)	D-124
PTS13-12	C-12-4	114 (30)	350 (5000)	D-126
PTS3-16	C-16-4	132 (35)	210 (3000)	D-128
PTS13-16	C-16-4	132 (35)	350 (5000)	D-130
PTS3-20	C-20-4	265 (70)	210 (3000)	D-132
PTS6-16	C-16-4	132 (35)	210 (3000)	D-146
PTS16-16	C-16-4	132 (35)	350 (5000)	D-148

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS14-12	C-12-4	114 (30)	350 (5000)	D-134
PTS14-16	C-16-4	132 (35)	350 (5000)	D-136
PTS5-16	C-16-4	132 (35)	210 (3000)	D-142
PTS15-16	C-16-4	132 (35)	350 (5000)	D-144

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS5-10	C-10-3	11 (3)	210 (3000)	D-138
PTS15-12	C-12-3	105 (28)	350 (5000)	D-140

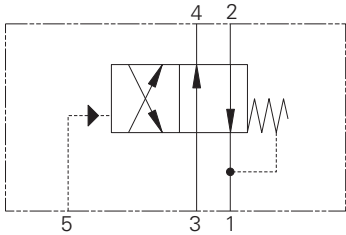
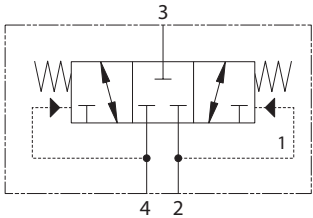
Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS9-8	C-8-5S	19 (5)	280 (4000)	D-150
PTS9-10	C-10-5S	38 (10)	280 (4000)	D-152
PTS9-12	C-12-5S	76 (20)	280 (4000)	D-154
PTS9-16	C-16-5S	151 (40)	280 (4000)	D-156
PTS9-20	C-20-5S	230 (60)	280 (4000)	D-158

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.





Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
<i>Sequence</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
DSV4-10	C-10-4	26 (6.9)	350 (5000)	D-160
DSV4-12	C-12-4	113 (29.9)	350 (5000)	D-162
DSV4-16	C-16-4	190 (50)	350 (5000)	D-164

Model	Cavity	Flow rating	Typical pressure	Page
<i>Pilot to shift valve</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PTS6-10	C-10-4	23 (6)	210 (3000)	D-166
PTS16-10	C-10-4	23 (6)	350 (5000)	D-168
PTS16-12	C-12-4	76 (20)	350 (5000)	D-170

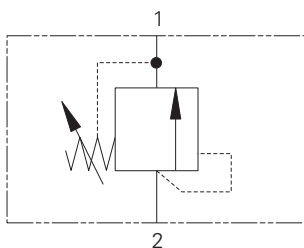
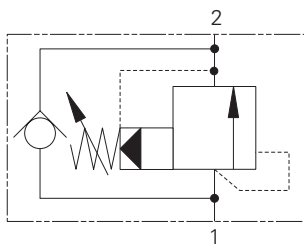
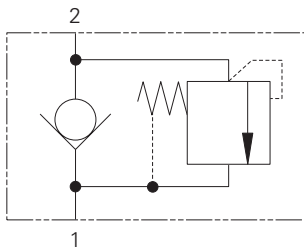
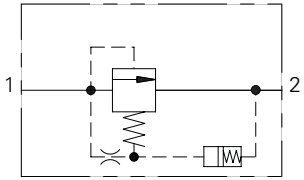
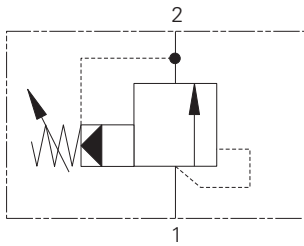
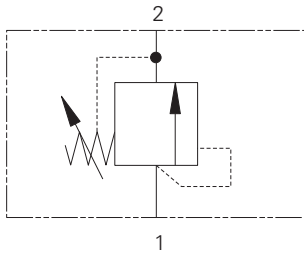
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# Pressure controls

## Valve locator

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Relief valve, poppet</i>				
1DR2	A879	1.2 (0.3)	400 (5800)	E-10
1DR30	A879	30 (8)	400 (5800)	E-12
RV1-10	C-10-2	30 (8)	210 (3000)	E-14
RV1-12	C-12-2 (u)	114 (30)	350 (5000)	E-16

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Relief valve, spool</i>				
RV5-10	C-10-2	114 (30)	350 (5000)	E-18
RV11-12	C-12-2 (u)	190 (50)	350 (5000)	E-20
1AR100	A881	150 (40)	400 (5800)	E-22
RV5-16	C-16-2	300 (80)	350 (5000)	E-24

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Shockless Relief Valve, Poppet</i>				
1ARD100	A881	100 (26)	210 (3000)	E-26

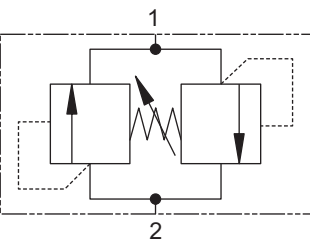
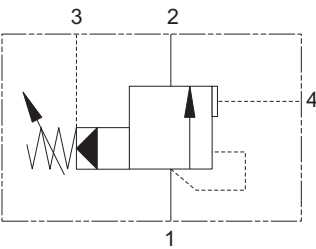
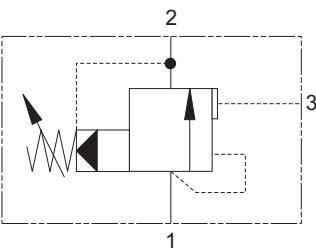
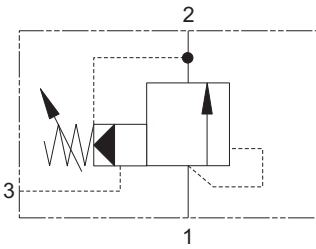
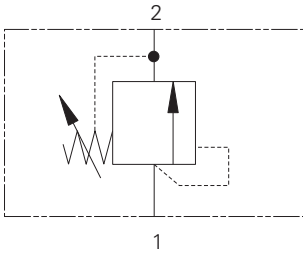
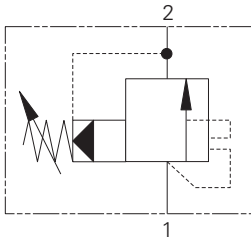
Model	Cavity	Flow Rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Relief valve, poppet</i>				
RV4-10	C-10-2	1/45 (0.25/12)	350 (5000)	E-28

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Relief valve, spool</i>				
RV2-10	C-10-2	12-114 (3-30)	350 (5000)	E-30
1ARC100	A881	150 (40)	400 (5800)	E-32

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Relief valve, poppet</i>				
RV8-8	C-8-2	30 (8)	350 (5000)	E-34
RV3-10	C-10-2	76 (20)	250 (3600)	E-36
RV8-10	C-10-2	76 (20)	350 (5000)	E-38
RV3-12	C-12-2 (u)	132 (35)	350 (5000)	E-40
RV8-12	C-12-2 (u)	132 (35)	350 (5000)	E-42
RV8-16	C-16-2	300 (80)	350 (5000)	E-44
1LR300	A1126	380 (100)	350 (5000)	E-46

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**Functional symbol**



Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Relief valve, spool, unloading</i>				
1UAR100	A881	150 (40)	350 (5000)	E-48

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Relief valve, spool</i>				
1GR30	A881	30 (8)	160 (2300)	E-50
1GR60	CVA20-01-0	60 (16)	40 (600)	E-52
1GR100	A881	150 (40)	40 (600)	E-54

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Relief ventable, spool</i>				
1VR100	A3146	100 (26)	350 (5000)	E-56
1VR200	A16102	200 (52)	350 (5000)	E-58

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Unloading</i>				
1UL60	A3146	60 (16)	350 (5000)	E-60

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Unloading</i>				
1PUL60	A12088	60 (16)	350 (5000)	E-62
1PUL200	A3145	200 (52)	350 (5000)	E-64

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Relief dual</i>				
1CLLR50	C-10-2	50 (12)	250 (3625)	E-66
1CLLR100	A878	150 (40)	350 (5000)	E-68

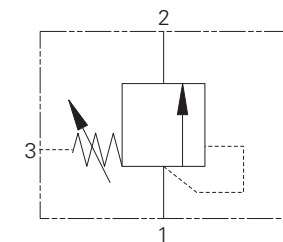
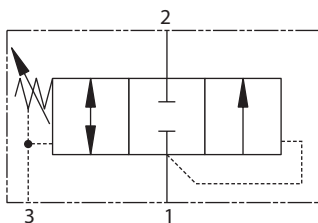
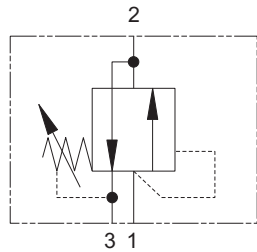
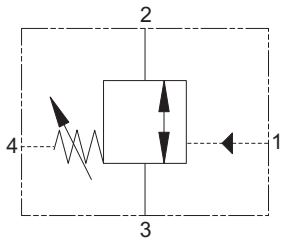
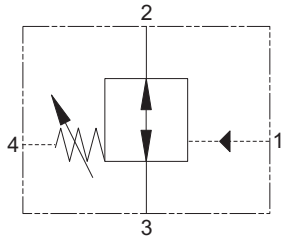
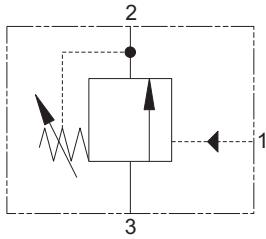
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Pressure controls

## Valve locator

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pressure sequence valve, spool</i>				
PSV2-8	C-8-3	23 (6)	210 (3000)	E-70
PSV4-8	C-8-3	15 (4)	350 (5000)	E-72
PSV2-10	C-10-3	23 (6)	210 (3000)	E-78
PSV4-10	C-10-3	15 (4)	210 (3000)	E-80

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Series sequence valve, NO, spool</i>				
PSV8-10	C-10-4	23 (6)	210 (3000)	E-74

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Series sequence valve, NC, spool</i>				
PSV10-10	C-10-4	23 (6)	210 (3000)	E-76

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Series sequence valve, spool</i>				
PSV1-10	C-10-3	23 (6)	210 (3000)	E-82
PSV5-10	C-10-3	8 (2)	210 (3000)	E-84

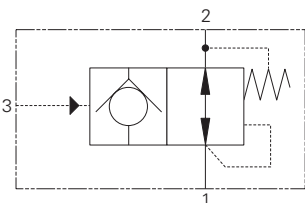
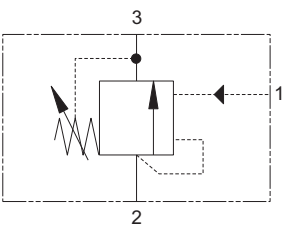
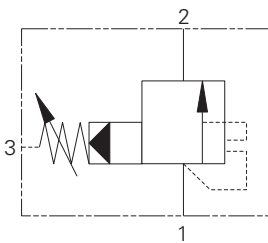
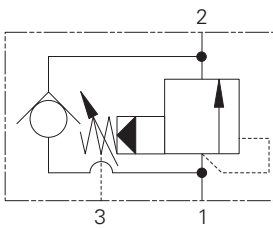
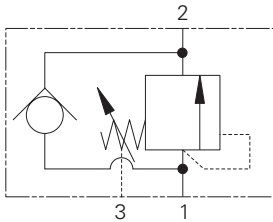
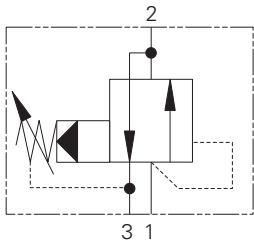
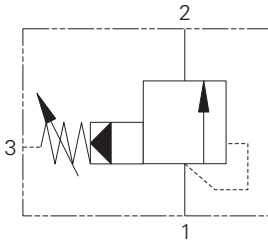
Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Series sequence valve, spool</i>				
PSV3-10	C-10-3	23 (6)	210 (3000)	E-86

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Series sequence valve, spool</i>				
PSV7-10	C-10-3	23 (6)	210 (3000)	E-88
1DS30	A880	30 (8)	140 (2000)	E-90
1DS60	CVA-22-06-0	60 (16)	40 (600)	E-92
1DS100	A880	150 (40)	40 (600)	E-94

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
<i>Series sequence valve, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1PS60	CVA-22-06-0	60 (16)	350 (5000)	E-96
1PS100	A880	150 (40)	350 (5000)	E-98
1PS200	A16102	250 (60)	350 (5000)	E-102
PSV11-16	C-16-3S	230 (60)	350 (5000)	E-104

Model	Cavity	Flow rating	Typical pressure	Page
<i>Series sequence valve, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PSV1-16	C-16-3	95 (25)	350 (5000)	E-100

Model	Cavity	Flow rating	Typical pressure	Page
<i>Series sequence valve, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1PSC30	A6610	30 (8)	350 (5000)	E-106

Model	Cavity	Flow rating	Typical pressure	Page
<i>Series sequence valve, spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1PSC100	A880	150 (40)	350 (5000)	E-108

Model	Cavity	Flow rating	Typical pressure	Page
<i>Series sequence valve, spool, unloading</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1UPS100	A880	150 (40)	350 (5000)	E-110

Model	Cavity	Flow rating	Typical pressure	Page
<i>Pilot unloading valve</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PUV3-10	C-10-3	4 (1)	210 (3000)	E-112

Model	Cavity	Flow Rating	Typical Pressure	Page
<i>Accumulator discharge valve</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
ADV1-16	C-16-3S	30 (8)	210 (3000)	E-114

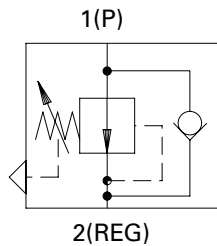
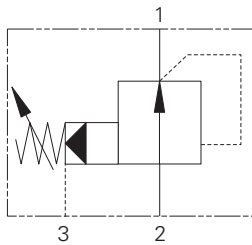
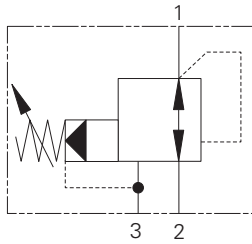
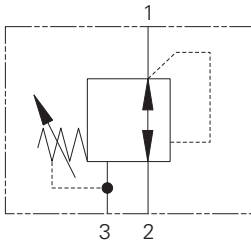
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Pressure controls

## Valve locator

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
<i>Pressure reducing valve, spool</i>				
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PRV1-10	C-10-3	15 (4)	165 (2400)	E-116

Model	Cavity	Flow rating	Typical pressure	Page
<i>Pressure reducing valve, spool</i>				
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
PRV2-10	C-10-3	38 (10)	240 (3500)	E-118
PRV12-10	C-10-3	45 (12)	350 (5000)	E-120
PRV12-12	C-12-3	114 (30)	350 (5000)	E-122
PRV2-16	C-16-3	151 (40)	350 (5000)	E-126

Model	Cavity	Flow rating	Typical pressure	Page
<i>Pressure reducing valve, spool</i>				
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1PA100	A880	100 (26)	10-350 (150-5000)	E-124
1PA200	A16102	200 (52)	350 (5000)	E-128

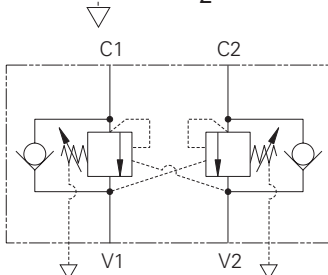
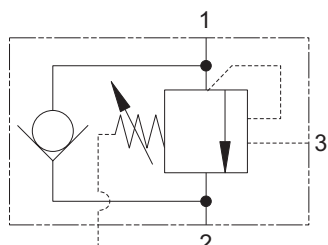
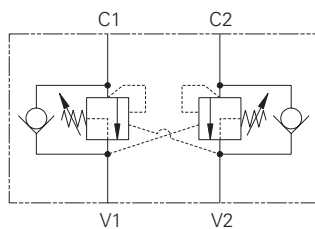
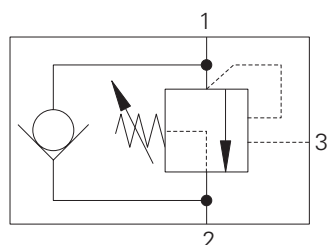
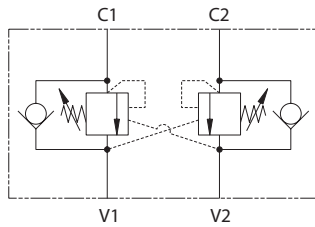
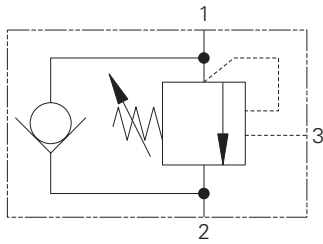
Model	Cavity	Flow rating	Typical pressure	Page
<i>Pressure reducing valve with check</i>				
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1PDC5	C-12-2	6 (1.5)	350 (5000)	E-130

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.





Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>OCV standard</i>				
1CE20	A22903	20 (5)	270 (4000)	F-10
1CE30	A6610	30 (8)	270 (4000)	F-12
1CEH30	A6610	30 (8)	350 (5000)	F-14
1CE90	A12336	90 (23)	270 (4000)	F-30
1CEH90	A12336	90 (23)	350 (5000)	F-32
1CE120	A877	120 (32)	270 (4000)	F-48
1CE140	A20081	140 (37)	340 (4390)	F-58
1CE300	A6935	300 (80)	270 (4000)	F-64
1SE30	A20090-T11A	30 (8)	270 (4000)	F-76
1SE90	A20092-T2A	90 (23)	270 (4000)	F-84
1SE140	A20094-T17A	140 (37)	340 (4390)	F-92

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>OCV part balanced</i>				
1CER30	A6610	30 (8)	270 (4000)	F-16
1CERH30	A6610	30 (8)	350 (5000)	F-18
1CER90	A12336	90 (23)	270 (4000)	F-34
1CERH90	A12336	90 (23)	350 (5000)	F-36
1CER140	A20081	140 (37)	340 (4390)	F-60
1SER30	A20090-T11A	30 (8)	270 (4000)	F-78
1SER90	A20092-T2A	90 (23)	270 (4000)	F-86
1SER140	A20094-T17A	140 (37)	340 (4390)	F-96

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>OCV fully balanced</i>				
1CEB30	A6610	30 (8)	270 (4000)	F-20
1CEB90	A12336	90 (23)	270 (4000)	F-38
1CEB120	A877	120 (32)	270 (4000)	F-50
1CEB300	A6935	300 (80)	270 (4000)	F-66
1SEB30	A20090-T11A	30 (8)	270 (4000)	F-80
1SEB90	A20092-T2A	90 (23)	270 (4000)	F-88

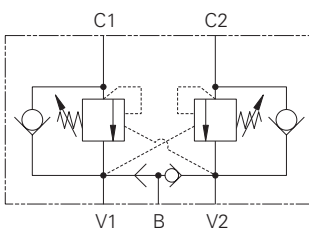
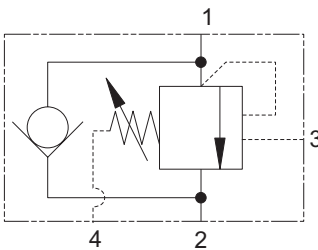
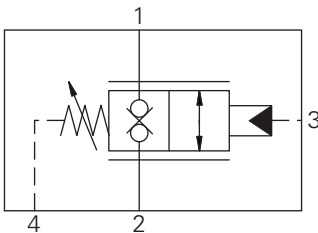
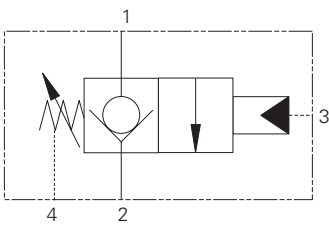
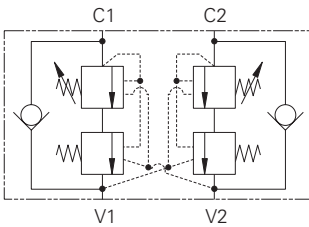
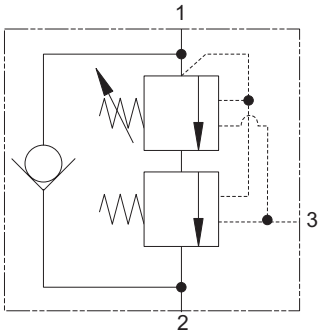
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# Motion controls

## Valve locatorh

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>OCV counterbalanced</i>				
1CEL30	A6610	30 (8)	380 (5510)	F-24
1CEL90	A12336	90 (23)	380 (5510)	F-42
1CEL140	A20081	140 (37)	380 (5510)	F-62
1SEL30	A20090-T11A	30 (8)	380 (5510)	F-82
1SEL90	A20092-T2A	90 (23)	380 (5510)	F-90
1SEL140	A20094-T17A	140 (37)	380 (5510)	F-96

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>OCV zero differential</i>				
1CPBD30	AXP 20530	30 (8)	350 (5000)	F-26
1CPBD90	A12196	90 (23)	350 (5000)	F-44
1CPBD120	A6726	180 (47)	400 (5800)	F-54
1CPBD300	A13098	300 (80)	400 (5800)	F-70

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>OCV normally closed zero differential</i>				
1CPPD90	A12196	90 (23)	350 (5000)	F-46
1CPPD300	A13098	300 (80)	350 (5000)	F-72

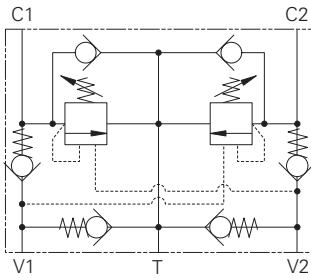
Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>OCV fully balanced</i>				
1CEBD30	A20530	30 (8)	350 (5000)	F-22
1CEBD90	A12196	90 (23)	270 (4000)	F-40
1CEBD120	A6726	180 (47)	270 (4000)	F-52
1CEBD300	A13098	300 (80)	270 (4000)	F-68

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Motion control valve, with brake shuttle</i>				
1CEESH35		30 (8)	270 (4000)	F-98
1CEESH95		90 (23)	270 (4000)	F-100
1CEESH150		150 (40)	270 (4000)	F-102
1CEESH350		300 (80)	270 (4000)	F-104

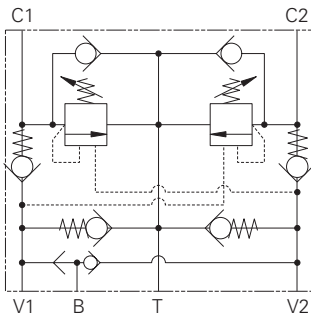
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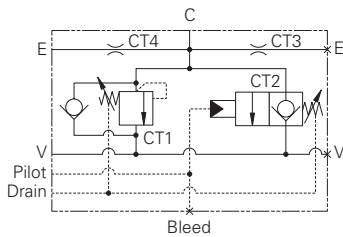
### Functional symbol



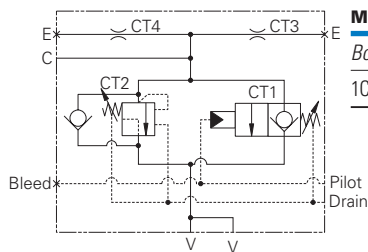
Model	Cavity	Flow rating		Page
		L/min (USgpm)	bar (psi)	
<i>Motion control valve &amp; lock</i>				
1CEEC35		30 (8)	270 (4000)	F-106
1CEEC95		95 (25)	270 (4000)	F-108
1CEEC150		150 (40)	270 (4000)	F-110
1CEEC350		300 (80)	270 (4000)	F-112



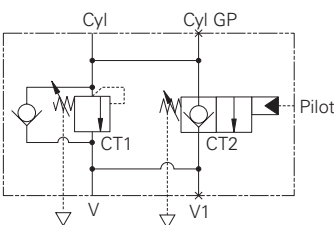
Model	Cavity	Flow rating		Page
		L/min (USgpm)	bar (psi)	
<i>Motion control valve &amp; lock with brake shuttle</i>				
1CEEC3H35		30 (8)	270 (4000)	F-114
1CEEC3H95		95 (25)	270 (4000)	F-116
1CEEC3H150		150 (40)	270 (4000)	F-118
1CEEC3H350		350 (80)	270 (4000)	F-120



Model	Cavity	Flow rating		Page
		L/min (USgpm)	bar (psi)	
<i>BoomLoc</i>				
1CEBL256		250 (66)	350 (5000)	F-124
1CEBL356		350 (92)	350 (5000)	F-126



Model	Cavity	Flow rating		Page
		L/min (USgpm)	bar (psi)	
<i>BoomLoc</i>				
1CEBL556		550 (145)	400 (5800)	F-128



Model	Cavity	Flow rating		Page
		L/min (USgpm)	bar (psi)	
<i>BoomLoc</i>				
1CEBL31F3W35P		30 (8)	350 (5000)	F-130

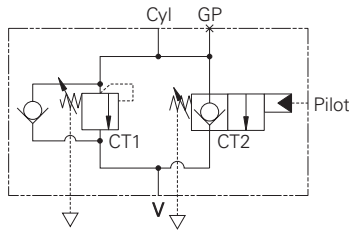
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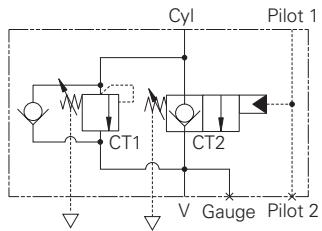
# Motion controls

## Valve locator

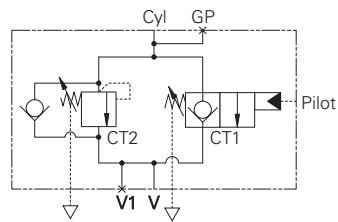
### Functional symbol



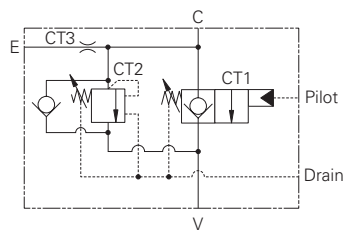
Model	Cavity	Flow rating	Typical pressure	Page
<i>BoomLoc</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1CEBL31F1/2635P		30 (8)	350 (5000)	F-133



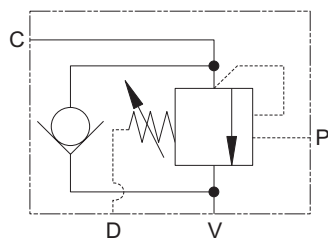
Model	Cavity	Flow rating	Typical pressure	Page
<i>BoomLoc</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1CEBL31F4W35P		30 (8)	350 (5000)	F-135



Model	Cavity	Flow rating	Typical pressure	Page
<i>BoomLoc</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1CEBL91F4W35P		90 (24)	350 (5000)	F-136



Model	Cavity	Flow rating	Typical pressure	Page
<i>BoomLoc</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1CEBL151F4W35P		150 (40)	350 (5000)	F-138

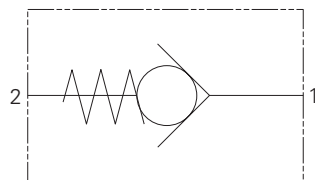


Model	Cavity	Flow rating	Typical pressure	Page
<i>BoomLoc</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1CEBL153F4W35P		150 (40)	350 (5000)	F-140

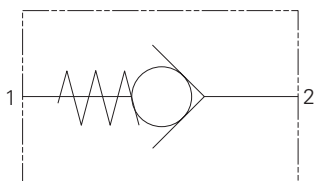
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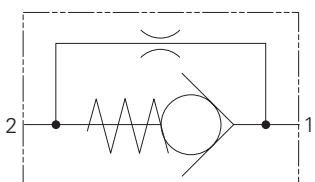
### Functional symbol



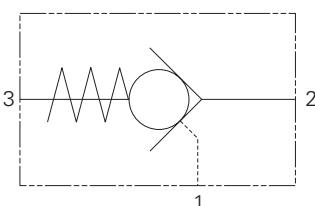
Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Check valve, direct</i>				
FPR1/4	Inline	12 (3)	350 (5000)	G-8
FPR3/8	Inline	30 (8)	350 (5000)	G-8
FPR1/2	Inline	45 (12)	350 (5000)	G-8
FPR3/4	Inline	85 (22)	300 (4300)	G-8
FPR1	Inline	140 (37)	250 (3600)	G-8
FPR11/4	Inline	220 (58)	250 (3600)	G-8
FPR11/2	Inline	310 (82)	210 (3000)	G-8
3CA20	A879	40 (10)	350 (5000)	G-10
CV3-4	C-4-2	7.6 (2)	350 (5000)	G-12
CV3-8	C-8-2	30 (8)	350 (5000)	G-14
CV3-10	C-10-2	76 (20)	210 (3000)	G-16
CV13-10	C-10-2	76 (20)	350 (5000)	G-16
CV11-12	C-12-2 (u)	114 (30)	350 (5000)	G-20
CV1-16	C-16-2	151 (40)	210 (3000)	G-22
CV11-16	C-16-2	151 (40)	350 (5000)	G-22
CV2-20	C-20-2	227 (60)	210 (3000)	G-24
3CA300	C-20-2	300 (80)	350 (5000)	G-26



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Check valve, direct</i>				
CV16-10	C-10-2	76 (20)	350 (5000)	G-30



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Check valve, with bypass orifice</i>				
CV6-4	C-4-2	7.5 (2)	350 (5000)	G-28
CV6-10	C-10-2	76 (20)	350 (5000)	G-30
CV6-16	C-16-2	151 (40)	210 (3000)	G-34



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Check valve, pilot-to-open</i>				
SPC2-8	C-8-3	19 (5)	240 (3500)	G-38
SPC2-10	C-10-3	23 (6)	240 (3500)	G-40

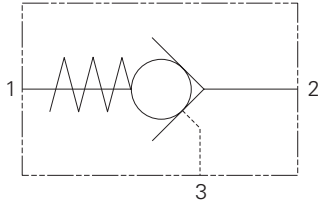
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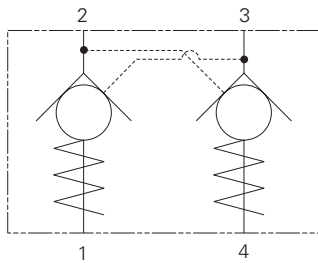
# Check valves

## Valve locator

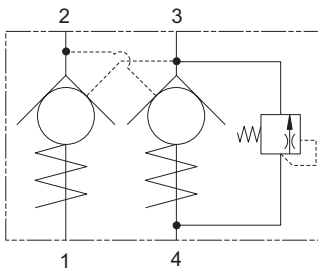
### Functional symbol



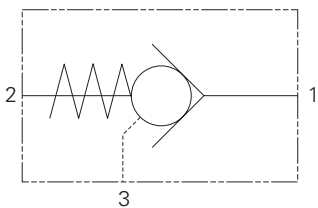
Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Check valve, pilot-to-open</i>				
4CK30	A6610	30 (8)	350 (5000)	G-42
4CK90	A12336	90 (24)	350 (5000)	G-44
4CKD90	A12336	90 (24)	420 (6000)	G-46
4CK120	A877	120 (32)	350 (5000)	G-48
4CK300	A6935	300 (80)	350 (5000)	G-50
4SK30	A20090-T11A	30 (8)	350 (5000)	G-54
4SK90	A20092-T2A	90 (24)	350 (5000)	G-56
4SK140	A20094-T17A	140 (37)	350 (5000)	G-58
4KD25	Inline	25 (6)	700 (10000)	G-64



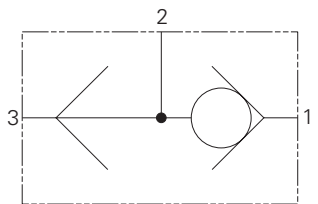
Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Dual pilot checks</i>				
DPC2-8	C-8-4	19 (5)	240 (3500)	G-60



Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Dual pilot checks with thermal relief</i>				
4CKKT50	A12744	25 (6.6)	300 (4350)	G-62



Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Check valve, pilot-to-close</i>				
5CK30	A6610	30 (8)	350 (5000)	G-66
5CK120	A877	120 (32)	350 (5000)	G-68
5CK300	A6935	250 (65)	350 (5000)	G-70

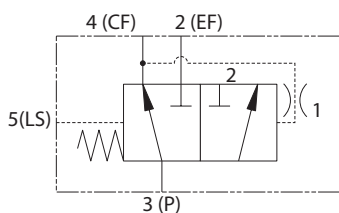
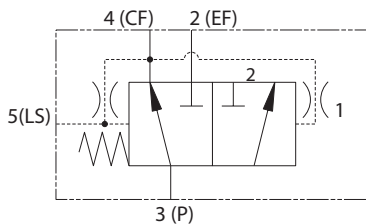
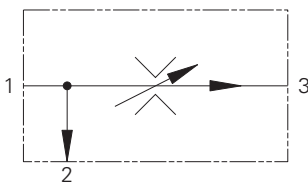
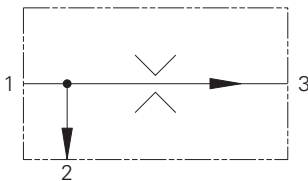
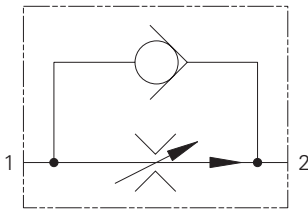
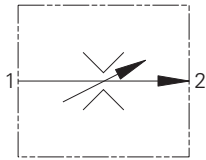
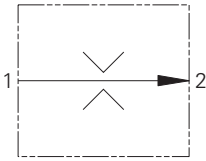


Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Shuttle</i>				
1SH10	A16927	20 (5)	350 (5000)	G-72
1SH60	C-I-M18-3	50 (13)	350 (5000)	G-74
DSV1-10	C-10-3	23 (6)	210 (3000)	G-76
DSV2-4	C-4-3	3 (.75)	240 (3500)	G-78
DSV2-8	C-8-3	23 (6)	240 (3500)	G-80
DSV3-XX-B	Inline	170 (45)	350 (5000)	G-82

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Flow regulator valve, fixed</i>				
FR5-8	C-8-2	10 (25)	280 (4000)	H-10
FR5-10	C-10-2	23 (6)	280 (4000)	H-12
FR1-16	C-16-2	114 (30)	210 (3000)	H-14
FR1-20	C-20-2	227 (60)	210 (3000)	H-16

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Flow regulator valve, adjustable</i>				
FR2-10	C-10-2	38 (10)	210 (3000)	H-18
FR2-16	C-16-2	114 (30)	210 (3000)	H-20

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Flow regulator with check</i>				
2CFRC60	A7447	4-60 (1-16)	350 (5000)	H-22
FAR1-10	C-10-2	1-38 (0.25-10)	310 (4500)	H-24
FAR1-12	C-12-2(u)	1.5-95 (0.4-25)	310 (4500)	H-26
FAR1-16	C-16-2	3.8-114 (1-30)	310 (4500)	H-28

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Priority flow regulator, bypass, fixed</i>				
PFR5-8	C-8-3	<10 (2.5)	280 (4000)	H-32
PFR5-10	C-10-3	<23 (6)	280 (4000)	H-34
PFR15-10	C-10-3	<38 (10)	350 (5000)	H-36
PFR11-12	C-12-3	<30 (8)	350 (5000)	H-38
PFR11-16	C-16-3	<114 (30)	350 (5000)	H-40

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Priority flow regulator, bypass, adjustable</i>				
2CFP60	CVA-27-04-0	<60 (16)	350 (5000)	H-42
PFR2-10	C-10-3	<60 (15)	210 (3000)	H-30
PFR12-10	C-10-3	<64 (17)	350 (5000)	H-44
PFR12-12	C-12-3	<45 (12)	350 (5000)	H-46
PFR2-16	C-16-3	<114 (30)	210 (3000)	H-48
PFR12-16	C-16-3	<114 (30)	350 (5000)	H-50

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Priority flow regulator</i>				
PFRD/S-12	C-12-5S	76 (20)	280 (4000)	H-52
PFRD/S-16	C-16-5S	150 (40)	280 (4000)	H-54
PFRD/S-20	C-20-5S	230 (60)	240 (3500)	H-56

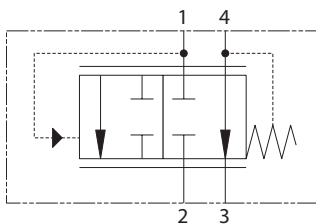
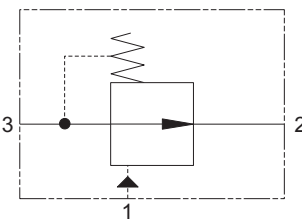
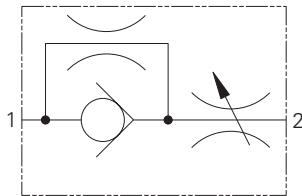
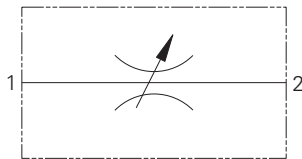
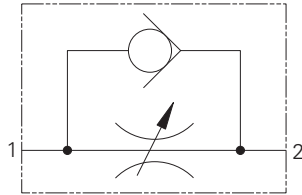
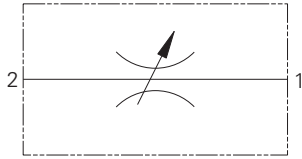
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Flow controls

## Valve locator

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Manual rotary flow restrictor</i>				
MRV2-10	C-10-2	<56 (15)	210 (3000)	H-58
MRV2-16	C-16-2	<170.3 (45)	210 (3000)	H-60

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Needle valve</i>				
2CR80	A7447	<80 (20)	350 (5000)	H-62

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Needle valve</i>				
NV1-8	C-8-2	<45 (12)	280 (4000)	H-64
NV1-10	C-10-2	<45 (12)	210 (3000)	H-66
FCV7-10	C-10-2	<45 (12)	210 (3000)	H-72
FCV11-12	C-12-2(u)	<114 (30)	350 (5000)	H-74
FCV6-16	C-16-2	<208 (55)	210 (3000)	H-76

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Needle valve</i>				
NV1-16	C-16-2	<151 (40)	210 (3000)	H-68
NV1-20	C-20-2	<265 (70)	210 (3000)	H-70

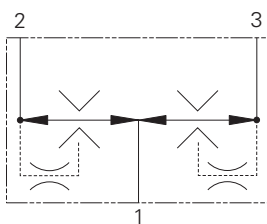
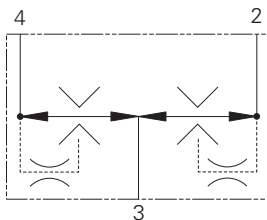
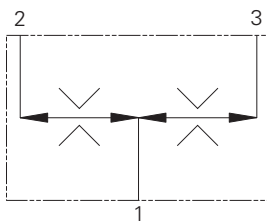
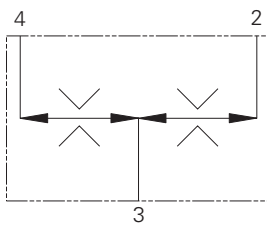
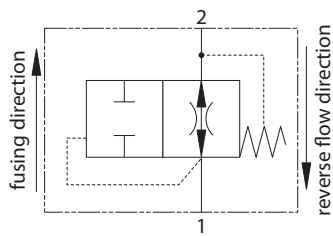
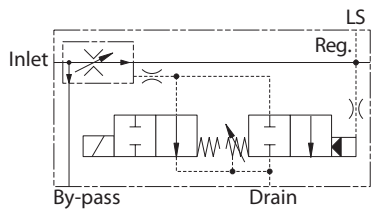
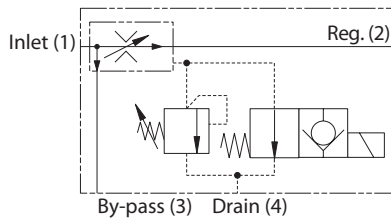
Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pressure compensator, restrictive</i>				
PCS3-10	C-10-3	<38 (10)	210 (3000)	H-78
PCS13-10	C-10-3	<38 (10)	350 (5000)	H-80
PCS3-12	C-12-3	<58 (15)	240 (3500)	H-82
PCS13-12	C-12-3	<58 (15)	350 (5000)	H-84
PCS3-16	C-16-3	<114 (30)	210 (3000)	H-86
PCS13-16	C-16-3	<114 (30)	350 (5000)	H-88
PCS3-20	C-20-3	<189 (50)	210 (3000)	H-90

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pressure compensator bypass/priority</i>				
PCS4-10	C-10-4	<38 (10)	210 (3000)	H-92
PCS14-10	C-10-4	<38 (10)	350 (5000)	H-94
PCS4-12	C-12-4	<58 (15)	240 (3500)	H-96
PCS14-12	C-12-4	<58 (15)	350 (5000)	H-98
PCS4-16	C-16-4	<114 (30)	210 (3000)	H-100
PCS14-16	C-16-4	<114 (30)	350 (5000)	H-102
PCS4-20	C-20-4	<189 (50)	210 (3000)	H-104

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow regulator/diverter</i>				
2FPH55		<55 (14)	280 (4000)	H-106
2FPH95		<95 (25)	350 (5000)	H-106
2FPH195		<160 (42)	350 (5000)	H-106

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow regulator/diverter</i>				
2FPH250		<200 (52)	350 (5000)	H-106
2FPH350		<350 (92)	350 (5000)	H-106

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow fuse</i>				
VF1-10	C-10-2	23 (6)	210 (3000)	H-110
VF11-10	C-10-2	23 (6)	350 (5000)	H-110
VF1-16	C-16-2	114 (30)	210 (3000)	H-112

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow divider/combiner</i>				
FDC1-16	C-16-4	<178 (47)	210 (3000)	H-114
FDC11-16	C-16-4	<140 (37)	350 (5000)	H-116
2CFD50	A12744	<40 (10.5)	350 (5000)	H-118
2CFD200	CVB-42-04-0	<220 (58)	280 (4000)	H-120

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow divider/combiner</i>				
FDC1-20	Inline	<141 (37)	210 (3000)	H-122

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow divider/combiner, posi-traction</i>				
FDC3-16	C-16-4	<152 (40)	210 (3000)	H-124

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow divider/combiner, posi-traction</i>				
FDC3-20	Inline	<570 (150)	210 (3000)	H-126

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

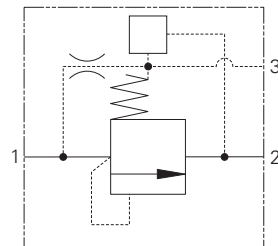
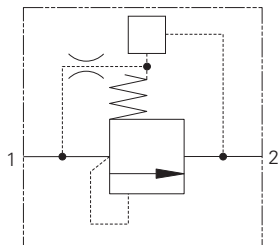


# Logic elements

## Valve locator

### Functional symbol

Various



Model	Cavity	Flow rating	Typical pressure	Page
<i>Logic element spool</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
DPS2-8	C-8-3S	30 (8)	350 (5000)	I-14
DPS2-10	C-10-3S	60 (15)	290 (4200)	I-16
DPS2-12	C-12-3S	114 (30)	350 (5000)	I-18
DPS2-16	C-16-3S	189 (50)	290 (4200)	I-20
DPS2-20	C-20-3S	303 (80)	290 (4200)	I-20

Model	Cavity	Rating	Pressure	Page
<i>Logic element Poppet</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
DPS2-10	C-10-3S	60 (15)	350 (5000)	I-60
DPS2-12	C-12-3S	114 (30)	350 (5000)	I-18
DPS2-16	C-16-3S	189 (50)	350 (5000)	I-20
DPS2-20	C-20-3S	303 (80)	350 (5000)	I-22

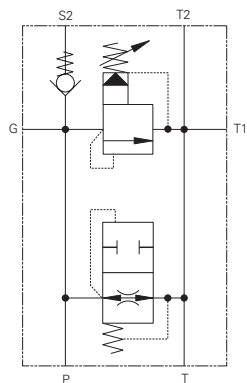
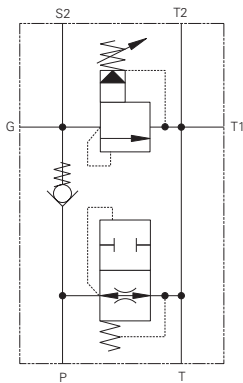
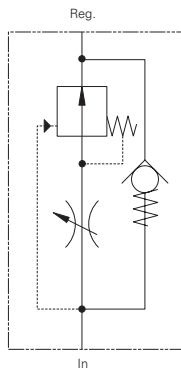
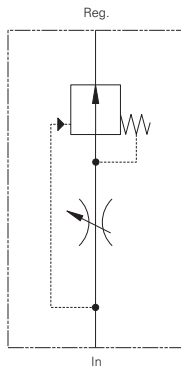
Model	Cavity	Flow rating	Typical pressure	Page
<i>Logic element</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
LE402	C-20-2	350 (95)	350 (5000)	I-26

Model	Cavity	Flow rating	Typical pressure	Page
<i>Logic element</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
LEV402	A21773	400 (100)	250 (3500)	I-28

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow control, full range adjustable</i>				
FC-1	Inline	36 (9)	210 (3000)	K-10
FC-2	Inline	57 (15)	210 (3000)	K-12
FC-3	Inline	114 (30)	210 (3000)	K-14
FC-4	Inline	190 (50)	210 (3000)	K-16

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow control, full range adjustable</i>				
FRC-1	Inline	36 (9)	210 (3000)	K-18
FRC-2	Inline	57 (15)	210 (3000)	K-20
FRC-3	Inline	114 (30)	210 (3000)	K-22
FRC-4	Inline	190 (50)	210 (3000)	K-24

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pump control, single pump circulation</i>				
PCC1-12	Inline	114 (30)	210 (3000)	K-26
PCC1-16	Inline	228 (60)	210 (3000)	K-28

Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Pump control, single pump circulation</i>				
PCC2-12	Inline	114 (30)	5-210 (3000)	K-30
PCC2-16	Inline	228 (60)	10-210 (3000)	K-32

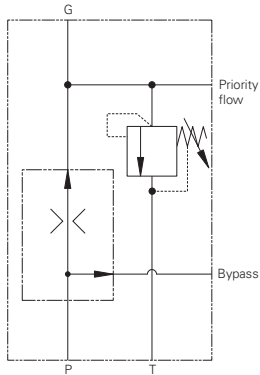
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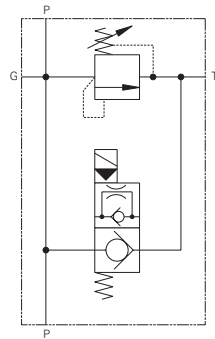
# Circuit maker solutions

## Valve locator

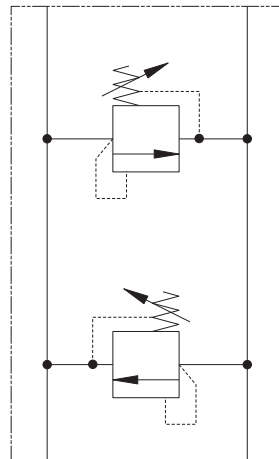
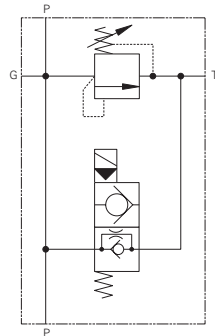
### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Flow control, relief on priority flow</i>				
PFRR-8	Inline	15 (4)	7-210 (3000)	K-34
PFRR-10	Inline	57 (15)	7-210 (3000)	K-36
PFRR-16	Inline	152 (40)	7-210 (3000)	K-38



Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Relief valve, solenoid actuated</i>				
SRV-8	Inline	23 (6)	210 (3000)	K-40
SRV-10	Inline	57 (15)	210 (3000)	K-42
SRV-12	Inline	114 (30)	210 (3000)	K-44
SRV-16	Inline	225 (60)	210 (3000)	K-46
SRV-20	Inline	300 (80)	210 (3000)	K-48

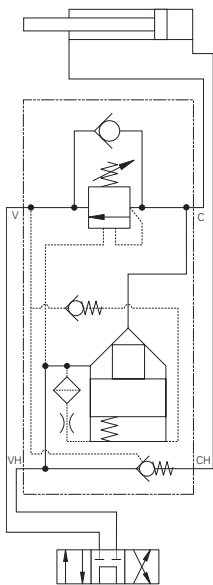
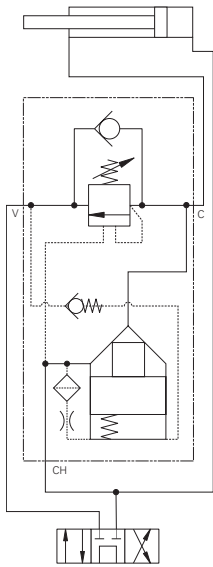


Model	Cavity	Flow rating	Typical pressure	Page
		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
<i>Cross port relief</i>				
CRV-10	Inline	26 (20)	210 (3000)	K-50
CRV-16	Inline	303 (80)	172 (2500)	K-52

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
<i>Regenerative valve, pressure</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
RGV-30	Inline	57 (15)	210 (3000)	K-54
RGV-90	Inline	114 (30)	210 (3000)	K-56

Model	Cavity	Flow rating	Typical pressure	Page
<i>Regenerative valve, pressure</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
RLV-30	Inline	57 (15)	210 (3000)	K-58
RLV-90	Inline	114 (30)	210 (3000)	K-60

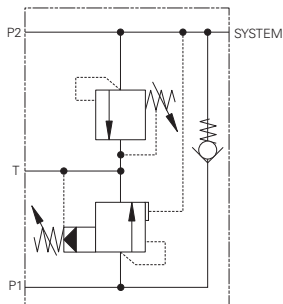
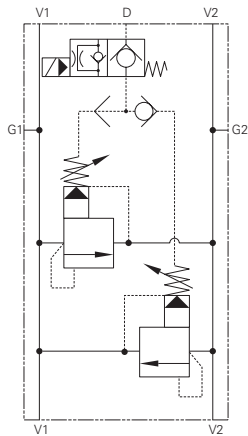
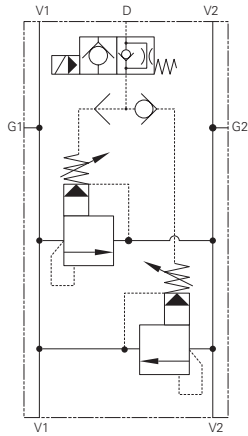
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Circuit maker solutions

## Valve locator

### Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
<i>Relief valve, cross port solenoid</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
SCR-1		114 (30)	210 (3000)	K-62

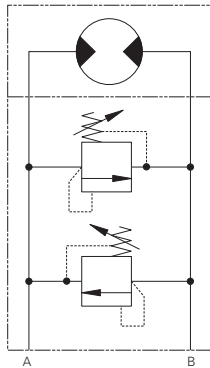
Model	Cavity	Flow rating	Typical pressure	Page
<i>Unloading valve</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
1UL255		200 (52)	350 (5000)	K-64

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

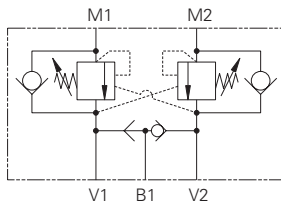




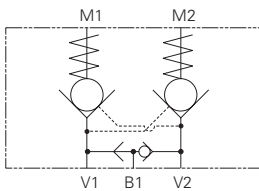
### Functional symbol



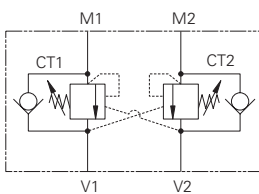
Model	Cavity	Flow rating	Typical pressure	Page
<i>Motor mounted relief</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
H & T Motors		76 (20)	210 (3000)	K-68
2000 Motors		76 (20)	210 (3000)	K-69
OMP		150 (40)	350 (5000)	K-74
OMS		150 (40)	350 (5000)	K--



Model	Cavity	Flow rating	Typical pressure	Page
<i>Motor mounted OCV with brake shuttle</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
H & T Motors		60 (15)	210 (3000)	K-70
2000 Motors		60 (15)	210 (3000)	K-72
OMP		30 (8)	270 (4000)	K-74
OMS		90 (23)	270 (4000)	K-76



Model	Cavity	Flow rating	Typical pressure	Page
<i>Motor mounted P.O. check with brake shuttle</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
H & T Motors		60 (15)	210 (3000)	K-78
2000 Motors		60 (15)	210 (3000)	K-80



Model	Cavity	Flow rating	Typical pressure	Page
<i>Motor mounted OCV</i>		<b>L/min (USgpm)</b>	<b>bar (psi)</b>	
OMP		30 (8)	270 (4000)	K-83
OMS		90 (23)	270 (4000)	K-85

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



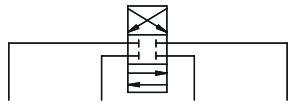
# Pressure control functions

Sandwich valves locator

ISO 4401-03/CETOP 03 series



**Caution**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

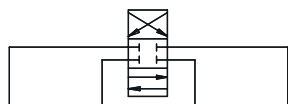


Function	Functional symbol	Model code	Housing kit	
	P T B A		Model Part No.	
Relief valve P-T		RV1 10 * * A321P **/**** 00	A321P 02-185342	RV1-10 Section E C-10-2
Relief valve A-T		RV1 10 * * A321A **/**** 00	A321A 02-185340	RV1-10 Section E C-10-2
Relief valve B-T		RV1 10 * * A321B **/**** 00	A321B 02-185341	RV1-10 Section E C-10-2
Proportional Relief valve P-T		ERV1 10* *** A321P *** * 00	A321P 02-185342	ERV1-10 Section B C-10-2
Proportional Relief valve A-T		ERV1 10* *** A321A *** * 00	A321A 02-185340	ERV1-10 Section B C-10-2
Proportional Relief valve B-T		ERV1 10* *** A321B *** * 00	A321B 02-185341	ERV1-10 Section B C-10-2
Relief valve P-T		RV5 10 * * A321P **/**** 00	A321P 02-185342	RV5-10 Section B C-10-2
Relief valve A-T		RV5 10 * * A321A **/**** 00	A321A 02-185340	RV5-10 Section E C-10-2
Relief valve B-T		RV5 10 * * A321B **/**** 00	A321B 02-185341	RV5-10 Section E C-10-2
	P T B A			

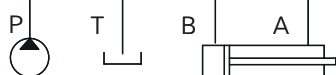
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit
Solenoid Controlled Relief Valve P-T Normally Opened		SRV 10 * 0 S A322P 35/ ** ** Refer to page L-20 for model code breakdown	Model Part No. A322P 02 185344 Cartridge Cartridge Data Sheet SV5-8/RV-1-10 Section A/E C-8-2/C-10-2
Solenoid Controlled Relief Valve P-T Normally Closed		SRV 10 * C S A322P 35/**** ** Refer to page L-20 for model code breakdown	Model Part No. A322P 02-185344 Cartridge SV5-8-C/ RV1-10 Cartridge Data Sheet Section A/E C-8-2/C-10-2
Dual Relief Valve A-T, B-T		1DR30 * A311W A** *B** * Refer to page L-21 for model code breakdown	Model Part No. A311W 02-185364 Cartridge Cartridge Data Sheet 1DR30 qty 2 Section E C-8-2 qty. 2
Dual Relief valve A-T, B-T		RVS 10 * * A312W A**/****B**/**** 00 Refer to page L-20 for model code breakdown	Model Part No. A312W 02-185365 Cartridge Cartridge Data Sheet RV1-10 qty 2 Section E C-10-2 qty 2
Dual Relief valve A-T, B-T		RV5 10 * * A312W A**/****B**/**** 00 Refer to page L-20 for model code breakdown	Model Part No. A312W 02-185365 Cartridge Cartridge Data Sheet RV5-10 qty 2 Section E C-10-2 qty 2
Cross Port Relief Valve A-B		RV5A 10 * * A321W A**/****B**/****00 Refer to page L-20 for model code breakdown	Hsg kit: model A321W 02-185343 Cartridge Cartridge Data Sheet RV3A-10 qty 2 Section E C-10-2 qty 2
Cross Port Relief Valve A-B		RV3A 10 * * A321W A**/****B**/**** 00 Refer to page L-20 for model code breakdown	Model Part No. A321W 02-185343 Cartridge Cartridge Data Sheet RV5-10 qty 2 Section E C-10-2 qty 2
Sequence Valve In to P		PSV7 10 * * A316P **/**** 00 Refer to page L-21 for model code breakdown	Model Part No. A316P 02-185374 Cartridge Cartridge Data Sheet PSV7-10 Section E C-10-3
Sequence Valve In to A Reverse FF Check		PSV7 10 * * A316A **/**** 00 Refer to page L-21 for model code breakdown	Model Part No. A316A 02-185372 Cartridge PSV7-10/ CV3-10 Cartridge Data Sheet Section E/G C-10-3/C-10-2



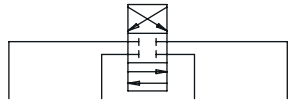
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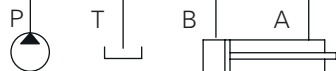
# Pressure control functions

## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit	
Sequence Valve Out of A Reverse FF Check		PSV7 10 * * A319A **/**** 00 Refer to page L-21 for model code breakdown	Model Part No.	A319A 02-185377
Sequence Valve In to B Reverse FF Check		PSV7 10 * * A316B **/**** 00 Refer to page L-21 for model code breakdown	Cartridge Cartridge Data Sheet Cavity	PSV7-10/ CV3-10 Section E/G C-10-3/C-10-2
Sequence Valve Out of B Reverse FF Check		PSV7 10 * * A319B **/**** 00 Refer to page L-21 for model code breakdown	Model Part No. Cartridge Cartridge Data Sheet Cavity	A319B 02-185378 PSV7-10/ CV3-10 Section E/G C-10-3/C-10-2
Reducing Valve on (P) Drained to T		PRV2 10 * * A326P **/**** 00 Refer to page L-21 for model code breakdown	Model Part No. Cartridge Cartridge Data Sheet Cavity	A326P 02-185353 PRV2-10 Section E C-10-3
Reducing on A Drained to T Reverse FF Check		PRV2 10 * * A310A **/**** 00 Refer to page L-21 for model code breakdown	Model Part No. Cartridge Cartridge Data Sheet Cavity	A310A 02-185362 PRV2-10/ CV3-10 Section E/G C-10-3/C-10-2
Reducing on B Drained to T Reverse FF Check		PRV2 10 * * A310B **/**** 00 Refer to page L-21 for model code breakdown	Hsg kit: model Part No. Cartridge Cartridge Data Sheet Cavity	A310B 02-185363 PRV2-10/CV3-10 Section E/G C-10-3/C-10-2
Pressure Compensator Restrictive on P w/Shuttle Sense from A & B		PCR 10 * A309P *** 00 Refer to page L-22 for model code breakdown	Model Part No. Cartridge Cartridge Data Sheet Cavity	A309P 02-185381 DPS2-10-F-F-0/ DSV2-8 Section L/G C-10-3S/C-8-3
Pressure Compensator Bypass to T w/Shuttle Sense from A & B		PCB 10 * * A319P *** 00 Refer to page L-22 for model code breakdown	Model Part No. Cartridge Cartridge Data Sheet Cavity	A319P 02-185382 DPS2-10-P-F-0/ DSV2-8 Section L/G C-8-3/C-10-3S

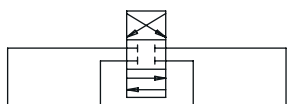


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Check & pilot check functions



Function	Functional symbol	Model code	Housing kit	
Pilot Operated Check Valve On A Pilot from B		4CK30 * A323A *** 00	Model	A323A
Pilot Operated Check Valve On B Pilot from A		4CK30 * A323B *** 00	Model	A323B
Pilot Operated Check Valve On A & B Cross Piloted		4CK30 * A323W *** 00	Model	A323W
Check Valve On P		CV3 8 * P A307P *** 00	Model Part No.	A307P 02-185356
Check Valve On P		CV3 10 * P A324P *** 00	Model Part No.	A324P 02-185350
Check Valve on T		CV3 8 * P A307T *** 00	Hsg kit: model Part No.	A307T 02-185357
Check Valve On T		CV3 10 * P A308T *** 00	Model Part No.	A308T 02-185360
Check Valve On A Free Flow Out		CV3 8 * P A307A *** 00	Model Part No.	A307A 02-185354
Check Valve On A Free Flow Out		CV3 10 * P A314A *** 00	Model Part No.	A314A 02-185367

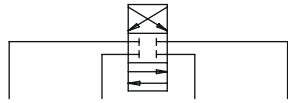
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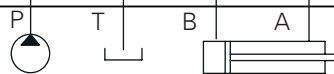
# Check and flow control functions

## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol				Model code	Housing kit	
	P	T	B	A		Model Part No.	
Check Valve On B Free Flow Out					CV3 8 * P A307B *** 00	Model Part No. A307B 02-185355	Cartridge Cartridge Data Sheet CV3-8 Section G C-8-2
Check Valve On B Free Flow Out					CV3 10 * P A314B *** 00	Model Part No. A314B 02-185368	Cartridge Cartridge Data Sheet CV3-10 Section G C-10-2
Check Valve On T On A & B					CV3 8 * P A320T *** 00	Model Part No. A320T 02-185379	Cartridge Cartridge Data Sheet CV3-8 qty 2 Section G C-8-2 qty 2
Check Valve on T to A & B					CV10 10 * P A317P *** 00	Model Part No. A317T 02-185375	Cartridge Cartridge Data Sheet CV3-10 qty 2 Section G C-10-2 qty 2
Anti-Cavitation Check P-T					CV16 10 * P A321P *** 00	Model Part No. A321P 02-185342	Cartridge Cartridge Data Sheet CV16-10-P-0-5 Section G C-10-2
Shuttle Valve A & B Output External					DSV2 8 * B A309W 00	Model Part No. A309W 02-185361	Cartridge Cartridge Data Sheet DSV2-8-B-0 Section G C-8-3
Flow Control Meter in P					NV1 10 * * A324P 00	Model Part No. A324P 02-185350	Cartridge Cartridge Data Sheet NV1-10 Section H C-10-2
Flow Control & Check Meter in A					FCV7 10 * * A324A FF 00	Model Part No. A324A 02-185348	Cartridge Cartridge Data Sheet FCV7-10 Section H C-10-2
Flow Control & Check Meter Out A					FCV7 10 * * A314A FF 00	Model Part No. A314A 02-185367	Cartridge Cartridge Data Sheet FCV7-10 Section H C-10-2
Flow Control & Check Meter in B					FCV7 10 * * A324B FF 00	Model Part No. A324B 02-185349	Cartridge Cartridge Data Sheet FCV7-10 Section H C-10-2



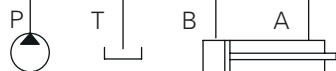
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional Symbol				Model Code	Housing Kit	
	P	T	B	A		Model Part No.	Cartridge Cartridge Data Sheet Cavity
Flow Control & Check Meter Out B					FCV7 10 * * A314B FF 00	Model Part No. A314B 02-185368	Cartridge Cartridge Data Sheet Section H C-10-2
Flow Control & Check Meter In A & B					FCV7 10 * * A324W FF 00 Refer to page L-22 for model code breakdown	Model Part No. A324W 02-185351	Cartridge Cartridge Data Sheet Section H C-10-2 qty 2
Flow Control & Check Meter Out A & B					FCV7 10 * * A314W FF 00 Refer to page L-22 for model code breakdown	Model Part No. A314W 02-185369	Cartridge Cartridge Data Sheet Section H C-8-2 qty 2
Flow Regulator Pressure Compensated and Check Meter in P					FAR1 10 * * A324P *** 00	Model Part No. A324P 02-185350	Cartridge Cartridge Data Sheet Section H C-10-2
Flow Regulator Pressure Compensated and Check Meter in A					FAR1 10 * * A314A *** 00	Model Part No. A314A 02-185367	Cartridge Cartridge Data Sheet Section H C-10-2
Flow Regulator Pressure Compensated and Check Meter Out A					FAR1 10 * * A324A *** 00	Hsg kit: model Part No. A324A 02-185348	Cartridge Cartridge Data Sheet Section H C-10-2
Flow Regulator Pressure Compensated and Check Meter in B					FAR1 10 * * A314B *** 00	Model Part No. A314B 02-185368	Cartridge Cartridge Data Sheet Section H C-10-2
Flow Regulator Pressure Compensated and Check Meter Out B					FAR1 10 * * A324B *** 00	Model Part No. A324B 02-185349	Cartridge Cartridge Data Sheet Section H C-10-2
Flow Regulator Pressure Compensated and Check Meter In A & B					FAR1 10 * * A314W A***B*** 00	Model Part No. A314W 02-185369	Cartridge Cartridge Data Sheet Section H C-10-2 qty 2



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Flow control & solenoid control functions

## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

Function	Functional symbol	Model code	Housing kit
Flow Regulator Pressure Compensated and Check Meter Out A & B		FAR1 10 * * A324W A***B*** 00	Model Part No. A324W 02-185351 Cartridge Cartridge Data Sheet FAR1-10 qty 2 Section H C-10-2 qty 2 Cavity
Proportional Flow Control Pressure Compensation on P		EPV 10 * * A313P *** * * 00 Refer to page L-23 for model code breakdown	Model Part No. A313P 02-185366 Cartridge EPV-10, DPS2-10 Cartridge Data Sheet Section I & B C-10-2/C-10-3S Cavity
Solenoid 2 Way Poppet Type (P-T), N/C		SV3 10 * C A325P *** * 00	Model Part No. A325P 02-185352 Cartridge Cartridge Data Sheet SV3-10-C Section A C-10-2 Cavity
Solenoid 2 Way Poppet Type (P-T), N/O		SV3 10 * O A325P *** * 00	Model Part No. A325P 02-185352 Cartridge Cartridge Data Sheet SV3-10-O Section A C-10-2 Cavity
Solenoid 2 Way Spool type (P-T), N/C		SV4 10 * C A325P *** * 00	Model Part No. A325P 02-185352 Cartridge Cartridge Data Sheet SV4-10-C Section A C-10-2 Cavity
Solenoid 2 Way Spool Type (P-T), N/O		SV4 10 * O A325P *** * 00	Model Part No. A325P 02-185352 Cartridge Cartridge Data Sheet SV4-10-O Section A C-10-2 Cavity
Solenoid 2 Way Poppet Type Blocked on A Normally Closed		SV3 10 * C A324A *** * 00	Model Part No. A324A 02-185348 Cartridge Cartridge Data Sheet SV3-10-C Section A C-10-2 Cavity

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

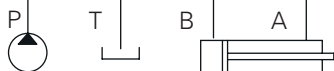


**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol				Model code	Housing kit	
	P	T	B	A		Model Part No.	Cartridge Cartridge Data Sheet Cavity
Poppet Type Blocked on A Normally Open					SV3 10 * 0 A324A *** * 00	A324A 02-185348	SV3-10-0 Section A C-10-2
Spool Type Blocked on A Normally Closed					SV4 10 * C A324A *** * 00	A324A 02-185348	SV4-10-C Section A C-10-2
Spool Type Blocked on A Normally Open					SV4 10 * 0 A324A *** * 00	A324A 02-185348	SV4-10-0 Section A C-10-2
Poppet Type Blocked on B Normally Closed					SV3 10 * C A324B *** * 00	A324B 02-185349	SVC3-10-C Section A C-10-2
Poppet Type Blocked on B Normally Open					SV3 10 * 0 A324B *** * 00	A324B 02-185349	SV3-10-C Section A C-10-2
Spool Type Blocked on B Normally Closed					SV4 10 * C A324B *** * 00	A324B 02-185349	SV4-10-C Section A C-10-2
Spool Type Blocked on B Normally Open					SV4 10 * 0 A324B *** * 00	A324B 02-185349	SV4-10-0 Section A C-10-2
Poppet Type Blocked on A & B Normally Closed					SV3 10 * C A324W *** * 00	A324W 02-185351	SV3-10-C qty 2 Section A C-10-2 qty 2
Poppet Type Blocked on A & B Normally Open					SV3 10 * 0 A324W *** * 00	A324W 02-185351	SV3-10-0 qty 2 Section A C-10-2 qty 2



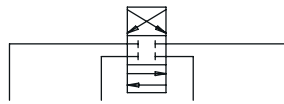
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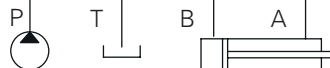
# Solenoid control functions

## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



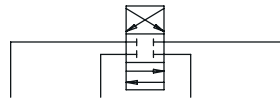
Function	Functional symbol	Model code	Housing kit
Spool Type Blocked On A & B Normally Closed		SV4 10 * C A324W *** * 00	Model Part No. A324W 02-185351 Cartridge Cartridge Data Sheet Cavity SV4-10-C qty 2 Section A C-10-2 qty 2
Spool Type Blocked on A & B Normally Open		SV4 10 * O A324W *** * 00	Model Part No. A324W 02-185351 Cartridge Cartridge Data Sheet Cavity SV4-10-O qty 2 Section A C-10-2 qty 2
Poppet Type Load Holding On A Normally Closed		SV3 10 * C A314A *** * 00	Model Part No. A314A 02-185367 Cartridge Cartridge Data Sheet Cavity SV3-10-C Section A C-10-2
Poppet Type Load Holding on A Normally Open		SV3 10 * O A314A *** * 00	Model Part No. A314A 02-185367 Cartridge Cartridge Data Sheet Cavity SV3-10-O Section A C-10-2
Poppet Type Load Holding on B Normally Closed		SV3 10 * C A314B *** * 00	Model Part No. A314B 02-185368 Cartridge Cartridge Data Sheet Cavity SV3-10-C Section A C-10-2
Poppet Type Load Holding on B Normally Open		SV3 10 * O A314B *** * 00	Model Part No. A314B 02-185368 Cartridge Cartridge Data Sheet Cavity SV3-10-O Section A C-10-2
Poppet Type Load Holding on A & B Normally Closed		SV3 10 * C A314W *** * 00	Model Part No. A314W 02-185369 Cartridge Cartridge Data Sheet Cavity SV3-10-C qty 2 Section A C-10-2 qty 2
Poppet Type Load Holding on A & B Normally Open		SV3 10 * O A314W *** * 00	Model Part No. A314W 02-185369 Cartridge Cartridge Data Sheet Cavity SV3-10-O qty 2 Section A C-10-2 qty 2



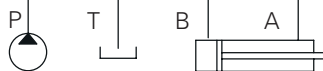
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol				Model code	Housing kit	
	P	T	B	A			
Poppet Type Bi-Directional Load Holding on A Normally Closed					SBV11 10 * C A314A *** * 00	Model Part No.	A314A 02-185367
Poppet Type Bi-Directional Load Holding on A Normally Open					SBV11 10 * O A314A *** * 00	Model Part No.	A314A 02-185367
Poppet Type Bi-Directional Load Holding on B Normally Closed					SBV11 10 * C A314B *** * 00	Model Part No.	A314B 02-185368
Poppet Type Bi-Directional Load Holding on B Normally Open					SBV11 10 * O A314B *** * 00	Model Part No.	A314B 02-185368
Poppet Type Bi-Directional Load Holding on A & B Normally Closed					SBV11 10 * C A314W *** * 00	Model Part No.	A314W 02-185369
Poppet Type Bi-Directional Load Holding on A & B Normally Open					SBV11 10 * O A314W *** * 00	Model Part No.	A314W 02-185369



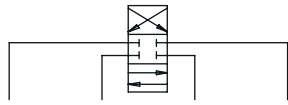
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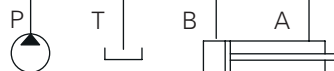
# Solenoid control functions

## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



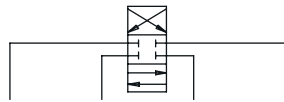
Function	Functional symbol				Model code	Housing kit	
	P	T	B	A		Model Part No.	
Poppet Type Unload A - T Normally Closed					SV3 10 * C A315A *** 00	A315A 02-185370	Cartridge Data Sheet SV3-10-C Section A C-10-2
Poppet Type Unload A - T Normally Open					SV3 10 * O A315A *** 00	A315A 02-185370	Cartridge Data Sheet SV3-10-O Section A C-10-2
Spool Type Unload A - T Normally Closed					SV4 10 * C A315A *** 00	A315A 02-185370	Cartridge Data Sheet SV4-10-C Section A C-10-2
Spool Type Unload A - T Normally Open					SV4 10 * O A315A *** 00	A315A 02-185370	Cartridge Data Sheet SV4-10-O Section A C-10-2
Poppet Type Unload B - T Normally Closed					SV3 10 * C A315B *** 00	A315B 02-185371	Cartridge Data Sheet SV3-10-C Section A C-10-2
Poppet Type Unload B - T Normally Open					SV3 10 * O A315B *** 00	A315B 02-185371	Cartridge Data Sheet SV3-10-O Section A C-10-2
Poppet Type Unload B - T Normally Closed					SV4 10 * C A315B *** 00	A315B 02-185371	Cartridge Data Sheet SV4-10-C Section A C-10-2



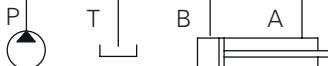
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit
2 Way Spool Type Unload B - T Normally Open		SV4 10 * 0 A315B *** * 00	Model Part No. A315B 02-185371 Cartridge Cartridge Data Sheet Section A Cavity C-10-2
2 Way Poppet Type Unload A & B - T Normally Closed		SV3 10 * C A317T *** * 00	Model Part No. A317T 02-185375 Cartridge Cartridge Data Sheet Section A Cavity C-10-2 qty 2
2 Way Poppet Type Unload A & B - T Normally Open		SV3 10 * 0 A317T *** * 00	Model Part No. A317T 02-185375 Cartridge Cartridge Data Sheet Section A Cavity C-10-2 qty 2
2 Way Spool Type Unload A & B - T Normally Closed		SV4 10 * C A317T *** * 00	Model Part No. A317T 02-185375 Cartridge Cartridge Data Sheet Section A Cavity C-10-2 qty 2
2 Way Spool Type Unload A & B - T Normally Open		SV4 10 * 0 A317T *** * 00	Model Part No. A317T 02-185375 Cartridge Cartridge Data Sheet Section A Cavity C-10-2 qty 2
Poppet Type Bi-Directional Blocked A - B & B - A Normally Closed		SBV11 10 * C A318W *** * 00	Model Part No. A318W 02-185376 Cartridge Cartridge Data Sheet Section A Cavity C-10-2
Poppet Type Bi-Directional Blocked A - B & B - A Normally Open		SBV11 10 * 0 A318W *** * 00	Model Part No. A318W 02-185376 Cartridge Cartridge Data Sheet Section A Cavity C-10-2



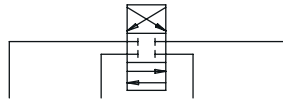
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Solenoid control & load control functions

## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit
Solenoid Valve Spool Type Blocked A to B & B to A Normally Closed		SV4 10 * C A318W *** * 00	Model Part No. A318W 02-185376 Cartridge Cartridge Data Sheet Cavity SV4-10-C Section A C-10-2
Solenoid Valve Spool Type Blocked A to B & B to A Normally Open		SV4 10 * O A318W *** * 00	Model Part No. A318W 02-185376 Cartridge Cartridge Data Sheet Cavity SV4-10-O Section A C-10-2
Solenoid 3-Way Selector on P		SV1 10 * 3 A326P *** * 00	Model Part No. A326P 02-185353 Cartridge Cartridge Data Sheet Cavity SV1-10-3 Section A C-10-3
Solenoid 3-Way Selector on P		SV4 10 * 3 A326P *** * 00	Model Part No. A326P 02-185353 Cartridge Cartridge Data Sheet Cavity SV4-10-3 Section A C-10-3
Manual Rotary Selector on P		MRV3 10 * K A236P 00	Model Part No. A326P 02-185353 Cartridge Cartridge Data Sheet Cavity MRV3-10-K-0 Section D C-10-3

# Load control functions

Function	Functional symbol	Model code	Housing kit
Counterbalance Valve on A Pilot from B		1CE30- * A323A-*** **	Model A323A Cartridge Cartridge Data Sheet Cavity 1CE30 Section F A6610
Counterbalance Valve on B Pilot from A		1CE30- * A323B-*** **	Model A323B Cartridge Cartridge Data Sheet Cavity 1CE30 Section F A6610
Counterbalance Valve On A & B Cross Piloted		1CE30- * A323WA-*** **/* ** Refer to page L-23 for model code breakdown	Model A323W Cartridge Cartridge Data Sheet Cavity 1CE30 qty 2 Section F A6610 qty 2

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**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

**Note:** O-Rings to be ordered separately.

# Spacer/blanking/linking plates



Function	Functional symbol	Part number
Spacer Plate 10mm(.39) Thick		02-185273 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Blanking Plate		02-185274 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate P to A with B & T Blocked		02-185275 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate P to A & B to T		02-185276 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate P to B & A to T		02-185277 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate P to T with A & B Blocked		02-185278 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate A to B with P & T Blocked		02-185279 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate P to B with A & T Blocked		02-185280 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282
Linking Plate P to A & B with T Blocked		02-185281 Buna N O-Ring Kit 02-184951 Viton O-Ring Kit 02-185282

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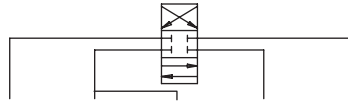


# Pressure control functions

Sandwich valves  
ISO 05/DO5/NG 10/CETOP5 series

## Caution

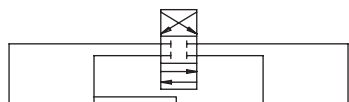
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit	
Relief valve P-T		RV1-12**A521P**/****00	Model Part No.	A521P 6021302-001
Relief valve A-T		RV1-12**A521A**/****00	Model Part No.	A521A 6021299-001
Relief valve B-T		RV1-12**A521B**/****00	Model Part No.	A521B 6021295-001
Relief valve P-T		RV11-12**A521P**/****00	Model Part No.	A521P 6021302-001
Relief valve A-T		RV11-12**A521A**/****00	Model Part No.	A521A 6021299-001
Relief valve B-T		RV11-12**A521B**/****00	Model Part No.	A521B 6021295-001
Dual Relief valve A-T, B-T		RV1-10**A511W A**/**B**/**	Model Part No.	A511W 6021337-001
Dual Relief valve A-T, B-T		RV1-12**A512W A**/**B**/**	Model Part No.	A512W 6021184-001

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.





Function	Functional symbol	Model code	Housing kit
Dual Relief Valve A-T, B-T		RV11-12**A512W A**/**B**/**	Model Part No. A512W 6021184-001 Cartridge Cartridge data sheet Cavity RV11-12 [qty2] Section E C-12-2 [qty2]
Cross Port Relief Valve A-B		RV3-12**A521WA**/**B**/**	Model Part No. A521W 6021158-001 Cartridge Cartridge data sheet Cavity RV3-12 [qty2] Section E C-12-2 [qty2]
Cross Port Relief Valve A-B		RV11-12**A521WA**/**B**/**	Model Part No. A521W 6021158-001 Cartridge Cartridge data sheet Cavity RV11-12 [qty2] Section E C-12-2 [qty2]
Reducing Valve on P Drained to T		PRV12-12**A526P**/**00	Model Part No. A526P 6021329-001 Cartridge Cartridge data sheet Cavity PRV12-12 Section E C-12-3
Reducing Valve on B Drained to T Reverse FF Check		PRV12-12** A510B**/**00	Model Part No. A510B 6021352-001 Cartridge Cartridge data sheet Cavity PRV12-12/CV11-12 Section E & G C-12-3/C-12-2

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

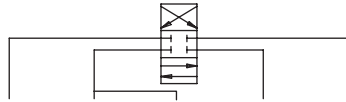


# Check functions

Sandwich valves  
ISO 05/DO5/NG 10/CETOP5 series

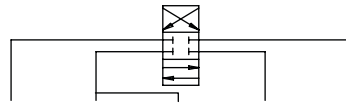
## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit	
Check Valve on P		CV11-12*P A524P***00	Model Part No.	A524P 6021186-001
Check Valve on A Free Flow Out		CV3-10*P A507A***00	Model Part No.	A507A 6021185-001
Check Valve on A Free Flow out		CV11-12*P A514A ***00	Model Part No.	A514A 6021288-001
Check in A Piloted from B		4CK90*A523A**00	Model Part No.	A523A 6021282-001
Check in A & B Cross Piloted		4CK90*A523W**00	Model Part No.	A523W 5999906-001
Check Valve on B Free Flow out		CV11-12*P A514B ***00	Model Part No.	A514B 6021273-001
Shuttle Valve A and B Output External		DSV2-8*B A509W 00	Model Part No.	A509W 6021189-001

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



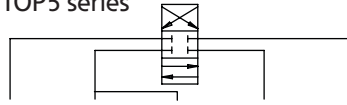
Function	Functional symbol	Model code	Housing kit	
Flow Regulator Pressure Compensated and Check Meter in P		FAR1-12** A524P ***00	Model Part No.	A524P 6021186-001
Flow Regulator Pressure Compensated and Check Meter in A		FAR1-12** A514A ***00	Model Part No.	A514A 6021288-001
Flow Regulator Pressure Compensated and Check meter out A		FAR1-12** A524A ***00	Model Part No.	A524A 6021181-001
Flow Regulator Pressure Compensated and Check meter in B		FAR1-12** A514B ***00	Model Part No.	A514B 6021273-001
Flow Regulator Pressure Compensated and Check meter out B		FAR1-12** A524B ***00	Model Part No.	A524B 6021182-001
Flow Regulator Pressure Compensated and Check meter in A & B		FAR1-12** A514W A***B***00	Model Part No.	A514W 4998388-001
Flow Regulator Pressure Compensated and Check meter out A & B		FAR1-12** A524W A***B***00	Model Part No.	A524W 4998389-001

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Solenoid control functions

Sandwich valves  
ISO 05/DO5/NG 10/CETOP5 series



## Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

Function	Functional symbol	Model code	Housing kit	
Solenoid 2/2 Poppet type (P-T) Normally Closed		SV3-12*C A525P *** *00	Model Part No. A525P 6021293-001	Cartridge Cartridge data sheet Cavity SV3-12-C Section A C-12-2
Solenoid 2/2 Poppet type (P-T) Normally Open		SV3-12*0 A525P *** *00	Model Part No. A525P 6021273-001	Cartridge Cartridge data sheet Cavity SV3-12-0 Section A C-12-2
Solenoid 2/2 Poppet type Blocked on A Normally Closed		SV3-12*C A524A *** *00	Model Part No. A524A 6021181-001	Cartridge Cartridge data sheet Cavity SV3-12-C Section A C-12-2
Solenoid 2/2 Poppet type Blocked on A Normally Open		SV3-12*0A524A *** *00	Model Part No. A524A 6021181-001	Cartridge Cartridge data sheet Cavity SV3-12-0 Section A C-12-2
Poppet type Blocked on B Normally Closed		SV3-12*C A524B *** *00	Model Part No. A524B 6021182-001	Cartridge Cartridge data sheet Cavity SV3-12-C Section A C-12-2
Poppet type Blocked on B Normally Open		SV3-12*0 A524B *** *00	Model Part No. A524B 6021182-001	Cartridge Cartridge data sheet Cavity SV3-10-0 Section A C-12-2
Poppet type Load Holding on A & B Normally Closed		SV3-12*C A524W *** *00	Model Part No. A524W 4998379-001	Cartridge Cartridge data sheet Cavity SV3-12-C qty 2 Section A C-12-2 qty 2
Poppet type Load Holding on A & B Normally Open		SV3-12*0 A524W*** *00	Model Part No. A524W 4998379-001	Cartridge Cartridge data sheet Cavity SV3-12-0 qty 2 Section A C-12-2 qty 2
Poppet type Load Holding on A Normally Closed		SV3-12*C A514A *** *00	Model Part No. A514A 6021288-001	Cartridge Cartridge data sheet Cavity SV3-12-C Section A C-12-2
Poppet type Load Holding on A Normally Open		SV3-12*0 A514A *** *00	Model Part No. A514A 6021288-001	Cartridge Cartridge data sheet Cavity SV3-12-0 Section A C-12-2
Poppet type Load Holding on B Normally Open		SV3-12*0 * A514A ****00	Model Part No. A514A 6021288-001	Cartridge Cartridge data sheet Cavity SV3-10-0 Section A C-12-2



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Solenoid control functions



Function	Functional Symbol	Model Code	Housing Kit
Poppet type Load Holding on B Normally Closed		SV3-12-C A514B *** *00	Model Part No. A514B 6021273-001 Cartridge Cartridge data sheet Cavity SV3-12-C Section A C-12-2
Poppet type Load Holding on B Normally Open		SV3-12*0 A514B *** *00	Model Part No. A514B 6021273-001 Cartridge Cartridge data sheet Cavity SV3-12-0 Section A C-12-2
Poppet type Load Holding on A & B Normally Closed		SV3-12*C A514W *** *00	Model Part No. A514W 4998388-001 Cartridge Cartridge data sheet Cavity SV3-12-C qty 2 Section A C-12-2 qty 2
Poppet type Load Holding on A & B Normally Closed		SV3-12*0 A514W*** *00	Model Part No. A514W 4998388-001 Cartridge Cartridge data sheet Cavity SV3-12-0 qty 2 Section A C-12-2 qty 2
Poppet Bi-Directional Load Holding on A Normally Closed		SBV11-10*C A514A *** *00	Model Part No. A514A 6021181-001 Cartridge Cartridge data sheet Cavity SBV11-12-C Section A C-12-2
Poppet Bi-Directional Load Holding on A Normally Open		SBV11-10*0 A514A *** *00	Model Part No. A514A 6021181-001 Cartridge Cartridge data sheet Cavity SBV11-12-0 Section A C-12-2
Poppet Bi-Directional Load Holding on B Normally Closed		SBV11-10*C A514B *** *00	Model Part No. A514B 6021273-001 Cartridge Cartridge data sheet Cavity SBV11-12-C Section A C-12-2
Poppet Bi-Directional Load Holding on B Normally Open		SBV11-10*0 A514B *** *00	Model Part No. A514B 6021273-001 Cartridge Cartridge data sheet Cavity SBV11-12-0 Section A C-12-2
Poppet Bi-Directional Load Holding on A & B Normally Clc		SBV11-12*C A514W *** *00	Model Part No. A514W 4998388-001 Cartridge Cartridge data sheet Cavity SBV11-12-C qty 2 Section A C-12-2 qty 2
Poppet Bi-Directional Load Holding on A & B Normally Open		SBV11-12*0 A514W *** *00	Model Part No. A514W 4998388-001 Cartridge Cartridge data sheet Cavity SBV11-12-0 qty 2 Section A C-12-2 qty 2
Poppet Bi-Directional Blocked A and B Normally Closed		SBV11-12*C A518W *** *00	Model Part No. A518W 6021277-001 Cartridge Cartridge data sheet Cavity SBV11-12-C Section A C-12-2
Poppet Bi-Directional Blocked A and B Normally Open		SBV11-12*0 A518W *** *00	Model Part No. A518W 6021277-001 Cartridge Cartridge data sheet Cavity SBV11-12-0 Section A C-12-2
Solenoid 3-Way Selector on P		SV11-12*3 A526P *** *00	Model Part No. A526P 6021329-001 Cartridge Cartridge data sheet Cavity SV11-12-3 Section A C-12-3

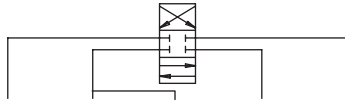
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



# Load control functions

## ⚠ Caution

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



Function	Functional symbol	Model code	Housing kit	
Overcenter in A Pilot from B		1CE90 * A523AA 20S/*B20S/** **	Model Part No.	A523A 6021282-001
Overcenter in A & B Cross Piloted		1CE90 * A523WA 20S/*B20S/** **	Model Part No.	A523W 5999906-001



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

**⚠ Caution**

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**Note:** O-Rings to be ordered separately.

# Blanking and linking plates

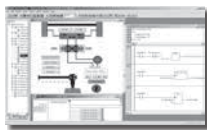


Function	Functional symbol	Part number
Blanking Plate		6030861-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate P to A with B & T Blocked		6030883-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate P to A & B to T		6030885-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate P to B & A to T		6030887-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate P to T with A & B Blocked		6030889-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate A to B with P & T Blocked		6030891-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate P to B with A & T Blocked		6030893-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000
Linking Plate P to A & B with T Blocked		6030895-001 Buna N O-Ring Kit 9900941-000 Viton O-Ring Kit 9900942-000

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*Powering Business Worldwide*

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