

# *Product Guide*

**Hydraulic Cartridge Valves  
Manifold Systems  
Electronic Controls**



 **HYDRAFORCE**  
POWER FORWARD

[www.hydraforce.com](http://www.hydraforce.com)



With a unique blend of customized design solutions and superior product performance, HydraForce is leading the way in manufacturing the highest quality hydraulic cartridge valves, manifolds and electro-hydraulic controls.

### Multifunction Valves

HydraForce multifunction valves incorporate two or more hydraulic functions in a single valve, allowing the design of a lighter, more compact valve package.

### Our Vision

To be an independent provider of innovative technical solutions that can change the world

### Our Mission

To create world wide customer delight by providing the highest quality products and the most responsive customer support in the world at a globally competitive cost

While custom design solutions are our specialty, HydraForce also provides many standard products. This Product Guide is a quick reference to the products available from HydraForce and its 120 stocking distributors. If you don't see what you need, contact HydraForce or your distributor for application support.

### Hydraulic Cartridge Valves

HydraForce is the largest manufacturer of cartridge-style hydraulic valves in the world with a range of products that encompasses flow, directional and pressure controls, solenoid and electro-proportional options. Standard valves are grouped by category, with ISO graphic symbols, flow, and pressure ratings.



### HyPerformance™ Valves

Designed for pressures up to 350 bar (5075 psi), HyPerformance or H-series valves meet more rigorous performance testing standards than standard models.



### High Quality, Precision Manufacturing

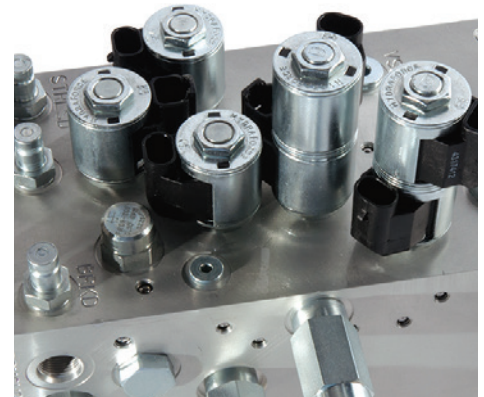
HydraForce uses the most advanced equipment and processes for machining, assembly, and product testing. By maintaining precise control of the fit and clearances in critical valve subassemblies, HydraForce is able to create high quality products that perform consistently. Precise procedures and state-of-the-art assembly equipment enable HydraForce to meet critical tolerances for more efficient hydraulic circuits.

Our equipment includes the following:

- Automated honing/bore-sizing equipment to 0.00005 tolerances
- Automated parts cleaning and assembly equipment

### Product Qualification

HydraForce's product qualification policy includes fatigue and pressure testing to NFPA T2.6.1. Standard products are tested for at least one-million cycle capability. Other qualification testing can be done to meet specific customer requirements.



### Manifold Systems

Optimizing the performance of your machine starts with creative hydraulic integrated circuits. Our design staff will collaborate with you and verify your design prior to manufacturing a prototype. Then we'll make any necessary refinements and engineer your product to meet your exact specifications. With proprietary innovations like our i-Design manifold tool, designing your hydraulic control schematic is easier than ever. The result is a performance- and configuration-optimized hydraulic solution that is designed exclusively for you.

Every HydraForce manifold is hydraulic function tested to a documented customer or product-specific test procedure. Manifolds produced at our U.S., U.K., and China facilities conform to the requirements of the ISO 9001 Certified Standard. HydraForce will mount customer specified fittings or other components not of our manufacture on request.

HydraForce can provide the following options for your custom hydraulic control system manifold:

- Steel, aluminum, cast or ductile iron manifold blocks
- Anodized or zinc plating for protection in severe environments
- Industry-common valve cavities
- Fittings, CETOP valves, and accessory components available
- “FastTrak” service for quick delivery of a working prototype
- i-Design hydraulic system design software available free of charge to qualified users

[info.hydraforce.com/download/i-design](http://info.hydraforce.com/download/i-design)



## Electronic Controls

HydraForce is pleased to offer a full line of electronic vehicle control products integrating engine, transmission, and other machine functions into a common J1939 or CAN Open data link control circuit.

These systems consist of rugged, field-proven components suitable for heavy-duty operating conditions. PWM digital signal logic maximizes efficiency, response, and signal integrity under harsh environmental conditions. Reliability has been proven through extensive testing, as well as years of real-world application experience.

This is a complete line of the most rugged, heavy-duty vehicle machine controllers, monitors, displays, and electrical connectors for motion control and integrated machine control applications in mobile, off-highway and material handling equipment.

[www.hydraforce.com/electronics](http://www.hydraforce.com/electronics)

- Reliable operation in the most demanding mobile equipment applications
- Operating temperatures from -40 to 85 °C (-40 to 185 °F)
- Chemical splash immunity
- Moisture resistance to IP67 specifications
- Fully resistant to EMI/RFI
- Vibration resistant to 8  $G_{rms}$  (random) 24–200 Hz, 3-axis

## INTEGR8

ENGINEERED HYDRAULIC CONTROL SOLUTIONS

### INTEGR8

As an industry leader, HydraForce offers a unique series of innovative engineered hydraulic control solutions called INTEGR8. These solutions are designed to save engineering time and maximize efficiency. Specifically, they take the guesswork out for the most common hydraulic functions by providing engineered circuits featuring the best valve configurations. Now i-Design v4 features a built-in library of INTEGR8 circuits to accelerate the design process.

All INTEGR8 circuits are 100% logic and function tested.

**At HydraForce we believe that better performance comes from working together.**



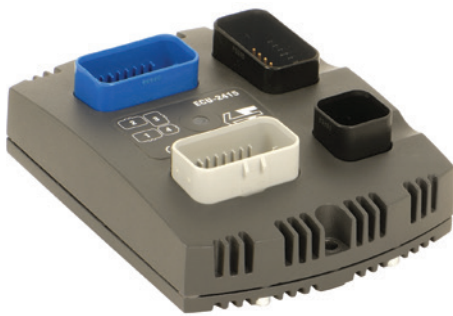
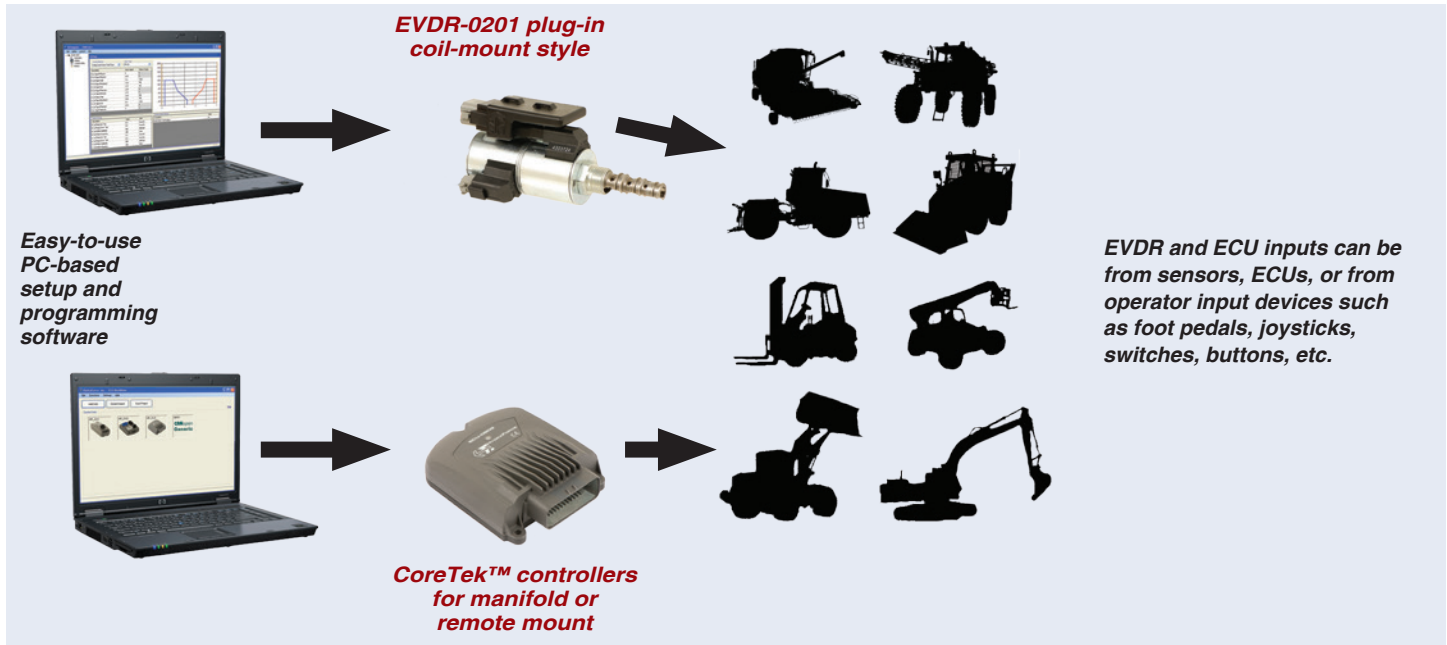
Our engineers and field representatives work with you to design your hydraulic control system. When you work with HydraForce, you can select from the broadest product range in the industry.

All HydraForce products meet global quality standards including ISO 9001, QS 9000. Every cartridge valve, manifold, and electrohydraulic control goes through rigorous testing and inspection to perform beyond industry standards.



**Contact us for additional product information:**

US: +1-847-793-2000  
UK: +44-121-333-1800  
China: +86-519-6988-1200



### CoreTek™ Machine Controllers

HydraForce offers a line of general-purpose programmable controllers that can be used as stand-alone controllers or integrated with other CAN networked devices. These controllers are designed to withstand the environmental demands of mobile off-highway equipment applications. They feature flexible input and output configuration.

All of the controllers are fully sealed for use in all weather conditions within a compact cast aluminum housing (ECU-0809 is zinc plastic). No external cooling or heat dissipation is required.

These controllers are programmed using the powerful CoDeSys™ Programming Tool. This open software environment offers maximum flexibility and painless machine servicing.



### EVDR-0201

With J1939 communication capabilities, the HydraForce EVDR-0201 proportional hydraulic valve driver can accept inputs from virtually any analog or SAE J1939 operator interface device: joystick, potentiometer, sensor, master controller, and more. It drives one or two proportional solenoids and mounts on the coil with an integrated DT06-2S Deutsch™ connector.

### Displays

Hydraforce is pleased to now offer operator display/input devices. These rugged units are programmable operator panels specifically designed for use with hydraulically powered mobile equipment. They offer the operator convenient and state-of-the-art control of hydraulic functions. The 4.3 or 7 inch (109/177 mm) displays feature 8 or 12 programmable soft keys, three hard keys, video input, a Java-based programming tool, and CAN communications.



### Drivers, Sensors, and Controllers

Hydraforce extends machine system integration with pressure sensors, temperature sensors, input modules, and drivers to build complete machine control systems. These rugged devices keep controllers aware of machine operating conditions and carry instructions to valves operating the system.

## Electronics

### CoreTek™ ECUs

Model	Outputs	Inputs	CAN
ECU-0710	10	7	Yes
ECU-0809	8	9	Yes
ECU-2415	24	15	Yes
ECU-2032	20	32	Yes
ECU-2820	28	20	Yes

### Drivers and controllers

Model	Outputs	Inputs	CAN
EVDR-0201	2	1 (universal)	Yes
EVDR1A	2	1 (universal)	No
EVDR4	6	6 (universal)	No
EVDR5	7	6 (universal)	Yes
EVDR7	2	5 (universal)	Yes
EVDR9	9	J1939	Yes
EVDR10	J1939	10 (universal)	Yes

### Display/operator input device

Model	Display size	Inputs	Outputs
A3F - Touch screen	109 mm (4.3 in)	4 analog/digital 1 video	3 digital
A3S	109 mm (4.3 in)	None	None
A6F - Touch screen	177 mm (7 in)	4 analog/digital 3 video	3 digital
A6S	177 mm (7 in)	1 video	None

### DIN coil mount controllers

Model	Input	Output
7114950	0 to 5 Vdc 10 k $\Omega$ potentiometer 0-20 mA	2000 mA max.
4000161	0 to 5 Vdc 10 k $\Omega$ potentiometer 0-20 mA	1200 mA max.
4000070	0 to 10 Vdc 0-20 mA	2000 mA max.
4000165	0 to 10 Vdc 0-20 mA	1200 mA max.
4000169	4 to 20 mA	1200 mA max.
4000172	10 k $\Omega$ potentiometer 0 to 5 Vdc	2000 mA max.
4000236	10 k $\Omega$ potentiometer 0 to 5 Vdc	2000 mA max.
4000072	Soft shift 12/24 Vdc 0.1 to 5 sec.	2000 mA max.
400226	Soft shift 12/24 Vdc 0.1 to 5 sec.	650 mA max.

### Remote mount (PCB only) controllers

Model	Input	Output
4000046	0 to 5 Vdc 10 k $\Omega$ potentiometer 0-20 mA	2000 mA max.
4000194	0 to 5 Vdc 10 k potentiometer 0-20 mA	1200 mA max.
4000141	0 to 10 Vdc 0-20 mA	2000 mA max.

### Remote mount, metal box style controllers

Model	Input	Output
4000182	0 to 10 Vdc 0-20 mA	1200 mA max.
4000130	4 to 20 mA	1200 mA max.
4000133	PWM input	2000 mA max.

### DIN-rail mount controllers

Model	Input	Output
4000136	0 to 5 Vdc 10 k $\Omega$ potentiometer 0-20 mA	2000 mA max.
4000137	0 to 10 Vdc 0-20 mA	2000 mA max.
4000139	4 to 20 mA	1200 mA max.
4000140	PWM input	2000 mA max.

### Dual solenoid driver, multifunction

Model	Input	Output
4000149	0 to 5 Vdc $\pm$ 5 Vdc 0 to 10 Vdc 0 to 20 mA $\pm$ 20 mA	2000 mA max.
4000230	0 to 5 Vdc $\pm$ 5 Vdc 0 to 10 Vdc 0 to 20 mA $\pm$ 20 mA	2000 mA max.

### Heavy-duty pressure sensor

Model	Pressure rating
ERP035	0 to 35 bar (500 psi)
ERP414	0 to 414 bar (6000 psi)

### Thermistor temperature sensor

Model	Temp range	Output signal
ERT120	-40 to 150 °C (-40 to 300 °F)	436 to 5428 $\Omega$
ERT130	-40 to 135 °C (-40 to 275 °F)	46 to 18.5 k $\Omega$
ERT150	-40 to 150 °C (-40 to 300 °F)	33 to 26 k $\Omega$

## H-Series High Pressure Valves

Throughout the product line, H-Series versions are available for applications up to 350 bar (5075 psi). These valves are tested to the rigorous NFPA T2.6.1 standard. They are also 1000 hour salt-spray tested in accordance with ASTM B117.

Modified installation cavity with supporting shoulder and retained slip-fit connection between cage and adapter allow higher installation torque without damaging components. Solenoid tube design is altered for high burst pressure. Heavy-duty single-piece urethane seals resist extrusion.

### Features:

- 350 bar (5075 psi) pressure rating
- 420 bar (6090 psi) intermittent (10% duty cycle)
- Fatigue tested two-million cycles at 420 bar (6090 psi)
- Flows up to 379 lpm (100 gpm)
- IP69K rated solenoid coils
- Single-piece, high endurance PPD1 urethane seals rated to 107 °C (225 °F)
- Vibration tested (3-axis) to 20 G<sub>rms</sub>
- Combined load-sense and relief valve functions



## Accessories

HydraForce Valve Size	Cavity Thread Size
04	7/16-20UNF-2B
07	5/8-18UNF-2B
08, 38, 58, 98	3/4-16UNF-2B
10, 50, 70	7/8-14UNF-2B
12, 52, 72	1-1/16-12UN-2B
16, 76	1-5/16-12UN-2B
20	1-5/8-12UN-2B
42	M42 x 2,0-6H

### Valve Housings

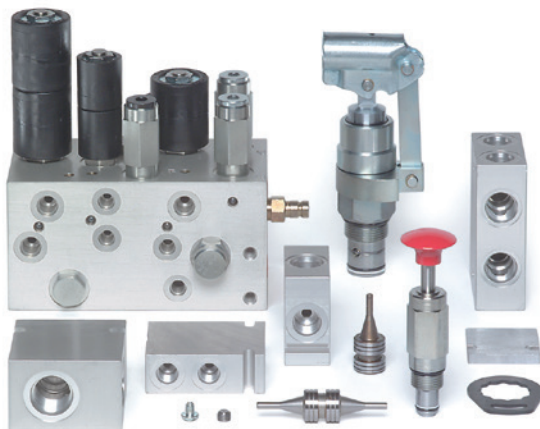
Single cavity housings are available in a wide variety of port sizes for industry-common valve cavity sizes. Anodized aluminum housings are rated up to 240 bar (3500 psi). Steel and ductile iron housings are available in select sizes for high-pressures up to 350 bar (5075 psi).

### Custom Manifold Accessories

A full line of manifold accessories are available from stock including: cavity plugs, orifice discs, port plugs, orifice plugs, pilot pistons, screen cartridges, as well as cavity form tools and finishing tools.

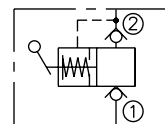
### Hand Pumps

Three versions of hand operated piston and check valve pumps are available for manual operation of piloted features like brake release or emergency lowering of power-down functions.



## Hand Pumps

**Hand pump**  
see catalog for operating force requirements



Model	Pressure bar (psi)	Disp. cm <sup>3</sup> (in <sup>3</sup> )
HP10-20	207 (3000)	1.36 (0.083)
HP10-21	207 (3000)	10.6 (0.65)
HP16-21	207 (3000)	21.3 (1.3)

**HydraForce multifunction valves** incorporate two or more functions into a single valve, allowing for the design of a lighter, more compact valve package. Multifunction valves reduce manifold size, number of ports, and machining costs, while increasing flow passage efficiency. The result is more responsive machine performance and efficient use of available horsepower.

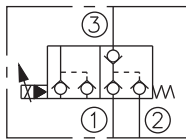
- Directional valves with isolated load-sense checks
- Solenoid valves with internal flow checks
- Solenoid valves with Integrated pressure relief
- Proportional flow controls with integrated pressure compensation
- Logic elements with built-in relief
- Logic elements with flow regulation
- Flow controls with adjustable pressure relief



## Multifunction Valves

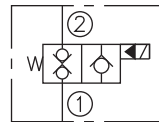
**Solenoid valve, poppet type, normally closed, load sense port**

US Pat. 7,921,880



Model	Pressure bar (psi)	Flow lpm (gpm)
SVCL10-30	240 (3500)	57 (15)
SVCL16-30	250 (3625)	151 (40)

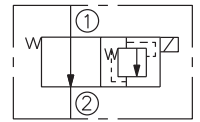
**Solenoid valve, poppet type, normally closed, internal outlet flow check**



Model	Pressure bar (psi)	Flow lpm (gpm)
SVCV08-20	207 (3000)	23 (6)
SVCV12-20	240 (3500)	114 (30)

**Solenoid valve, normally open, integral pressure relief**

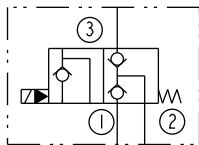
US Pat. 7,137,406



Model	Pressure bar (psi)	Flow lpm (gpm)
SVRV10-26	297 (4300)	76 (20)
SVRV12-26F	297 (4300)	189 (50)

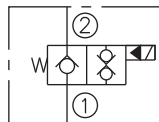
**Solenoid valve, poppet type, normally open, load sense port**

US Pat. 7,921,880



Model	Pressure bar (psi)	Flow lpm (gpm)
SVCL10-32	250 (3625)	57 (15)

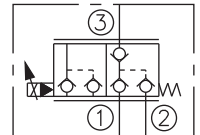
**Solenoid valve, poppet type, normally open, internal outlet flow check**



Model	Pressure bar (psi)	Flow lpm (gpm)
SVCV08-21	207 (3000)	23 (6)

**Proportional flow control, normally closed, isolated load sense port**

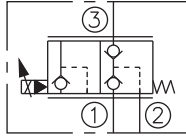
US Pat. 7,921,880



Model	Pressure bar (psi)	Flow lpm (gpm)
SPCL10-30	250 (3625)	57 (15)
SPCL16-30	250 (3625)	152 (40)

**Proportional flow control, normally closed, load sense port**

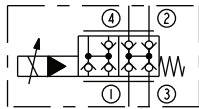
US Pat. 7,921,880



Model	Pressure bar (psi)	Flow lpm (gpm)
SPCL10-32	250 (3625)	57 (15)
SPCL16-32	250 (3625)	152 (40)

**Proportional directional valve, 2-position, 4-way, normally closed, isolated load sense port**

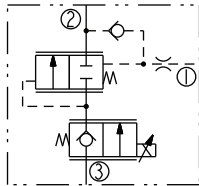
US Pat. 7,921,880



Model	Pressure bar (psi)	Flow lpm (gpm)
SPCL16-40	250 (3625)	152 (40)

**Proportional flow control valve with integral compensator**

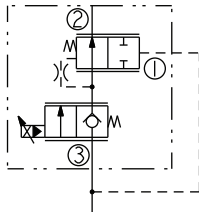
US Pat. 7,261,030



Model	Pressure bar (psi)	Flow lpm (gpm)
HSPEC10-30	350 (5075)	35 (9)
HSPEC12-30	350 (5075)	70 (18)
HSPEC16-30	350 (5075)	132 (35)

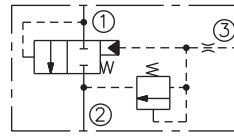
**Proportional flow control valve with integral compensator**

US Pat. 7,261,030



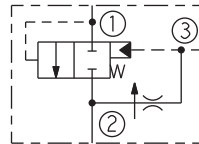
Model	Pressure bar (psi)	Flow lpm (gpm)
HSPEC12-34	350 (5075)	61 (16)

**Piloted logic element with built-in relief**



Model	Pressure bar (psi)	Flow lpm (gpm)
ECR16-S35	240 (3500)	189 (50)

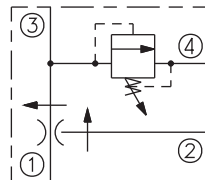
**Logic element with flow regulator**



Model	Pressure bar (psi)	Flow lpm (gpm)
EPFR16-S35	240 (3500)	189 (50)
EPFR20-S35	320 (4600)	303 (80)
EPFR50-S35	345 (5000)	76 (20)
EPFR52-S35	345 (5000)	151 (40)
EPFR58-S35	345 (5000)	38 (10)

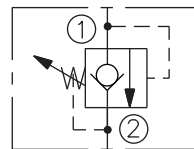
**Flow control with adjustable pressure relief**

US Pat. 7,063,100



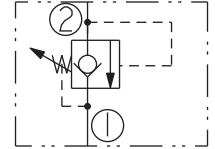
Model	Pressure bar (psi)	Flow lpm (gpm)
FRRV10-41F	207 (3000)	38 (10)
FRRV12-41F	207 (3000)	76 (20)

**Relief valve, direct acting with anti-cavitation check**



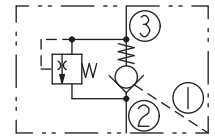
Model	Pressure bar (psi)	Flow lpm (gpm)
RVCV56-20	420 (6100)	175 (46)

**Relief valve, direct acting with anti-cavitation check**



Model	Pressure bar (psi)	Flow lpm (gpm)
RVCV10-22H	275 (4000)	68 (18)

**Check, pilot to open, integrated thermal relief**



Model	Pressure bar (psi)	Flow lpm (gpm)
PC10-38	240 (3500)	45 (12)

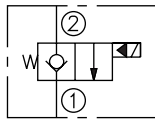




- Continuous-duty coils with a wide range of voltages, terminations, and diode options
- Designed for mobile operating environments including low voltage, high and low temperatures, and exposed environmental conditions
- Industry common cavity sizes -07, -08, -10, -12, -16, -20, as well as drop-in-style construction
- Series E water/weather-resistant coils with integral connectors rated up to IP69K
- Manual override option on most models
- Integral position sensors available on some models

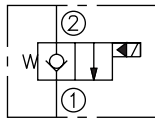
## Solenoid Valves

Solenoid valve, piloted poppet type, normally closed



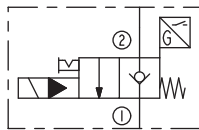
Model	Pressure bar (psi)	Flow lpm (gpm)
SF08-20	345 (5000)	19 (5)

Solenoid valve, poppet type, normally closed



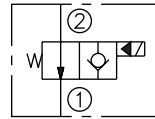
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-20	207 (3000)	23 (6)
SV08-20J	207 (3000)	23 (6)
HSV10-20	350 (5075)	76 (20)
SV10-20	240 (3500)	57 (15)
HSV12-20	350 (5075)	114 (30)
SV12-20	240 (3500)	114 (30)
SV16-20	240 (3500)	95 (25)

Solenoid valve, poppet type, normally closed, integral position sensor



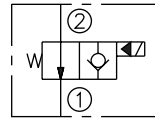
Model	Pressure bar (psi)	Flow lpm (gpm)
SV58-P20A	345 (5000)	19 (5)

Solenoid valve, piloted poppet type, normally open



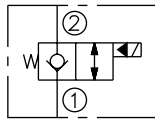
Model	Pressure bar (psi)	Flow lpm (gpm)
SF08-21	345 (5000)	30 (8)

Solenoid valve, poppet type, normally open



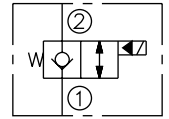
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-21	207 (3000)	30 (8)
HSV10-21	350 (5075)	76 (20)
SV10-21	207 (3000)	68 (18)
SV12-21	240 (3500)	114 (30)
HSV12-21	350 (5075)	114 (30)
SV16-21	207 (3000)	132 (35)

Solenoid valve, piloted poppet type, normally closed, bidirectional



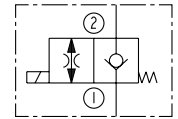
Model	Pressure bar (psi)	Flow lpm (gpm)
SF08-22	345 (5000)	23 (6)
SF20-22	345 (5000)	303 (80)

Solenoid valve, poppet type, normally closed, bidirectional



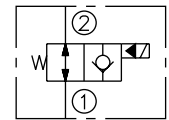
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-22	207 (3000)	27 (7)
HSV10-22	350 (5075)	76 (20)
SV10-22	240 (3500)	57 (15)
HSV12-22	350 (5075)	114 (30)
SV12-22	240 (3500)	114 (30)
SV16-22	240 (3500)	151 (40)

Solenoid valve, needle type, normally closed



Model	Pressure bar (psi)	Flow lpm (gpm)
SL08-22	207 (3000)	1.5 (0.4)

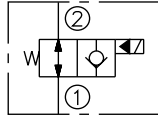
Solenoid valve, piloted poppet type, normally open, bidirectional



Model	Pressure bar (psi)	Flow lpm (gpm)
SF08-23	345 (5000)	30 (8)
SF20-23	345 (5000)	303 (80)

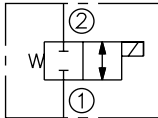
# Solenoid On/Off Valves

**Solenoid valve, poppet type, normally open, bidirectional**



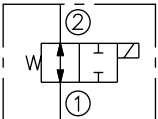
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-23	207 (3000)	30 (8)
HSV10-23	350 (5075)	76 (20)
SV10-23	207 (3000)	68 (18)
SV12-23	240 (3500)	114 (30)
SV16-23	207 (3000)	132 (35)

**Solenoid valve, spool type, normally closed, bidirectional**



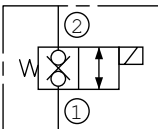
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-24	207 (3000)	17 (4)
HSV10-24	350 (5075)	30 (8)
SV10-24	207 (3000)	38 (10)
SV12-24	240 (3500)	76 (20)

**Solenoid valve, spool type, normally open, bidirectional**



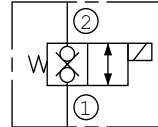
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-25	207 (3000)	10 (3)
HSV10-25	350 (5075)	30 (8)
SV10-25	207 (3000)	22 (6)
SV12-25	240 (3500)	76 (20)

**Solenoid valve, blocking, normally closed, low flow**



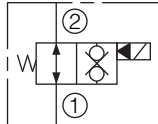
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-26	207 (3000)	1.9 (0.5)
SV38-26	207 (3000)	3.4 (0.9)

**Solenoid valve, blocking, normally closed, bidirectional**



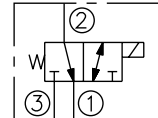
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-28	207 (3000)	11 (3)
HSV10-28	350 (5075)	76 (20)
SV10-28	240 (3500)	76 (20)
HSV12-28	350 (5075)	114 (30)
SV12-28	240 (3500)	114 (30)
SV20-28	207 (3000)	303 (80)
SV38-28	207 (3000)	19 (5)

**Solenoid valve, poppet type, normally open**



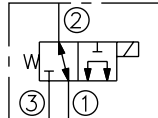
Model	Pressure bar (psi)	Flow lpm (gpm)
HSV10-29	350 (5075)	76 (20)
SV10-29	240 (3500)	76 (20)
SV12-29	240 (3500)	114 (30)

**Solenoid valve, 2-position, 3-way**



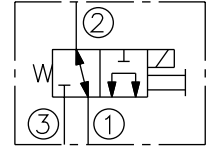
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-30	207 (3000)	15 (4)
SV38-30	207 (3000)	18 (5)
SV58-30	345 (5000)	15 (4)

**Solenoid valve, 2-position, 3-way**



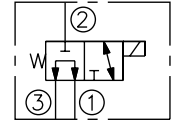
Model	Pressure bar (psi)	Flow lpm (gpm)
SV07-31	207 (3000)	6 (2)
SV08-31	207 (3000)	11 (3)
SV10-31	207 (3000)	22 (6)
SV12-31	240 (3500)	60 (16)

**Solenoid valve, 2-position, 3-way**



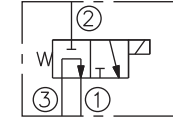
Model	Pressure bar (psi)	Flow lpm (gpm)
SV38-31J	207 (3000)	11 (3)

**Solenoid valve, 2-position, 3-way**



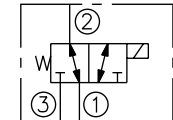
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-33	207 (3000)	11 (3)
SV12-33	240 (3500)	60 (16)

**Solenoid valve, 2-position, 3-way**



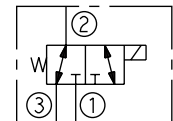
Model	Pressure bar (psi)	Flow lpm (gpm)
SV10-33	207 (3000)	19 (5)

**Solenoid valve, 2-position, 3-way**



Model	Pressure bar (psi)	Flow lpm (gpm)
SV07-34	207 (3000)	13 (3)
SV10-34	207 (3000)	23 (6)
SV12-34	240 (3500)	60 (16)

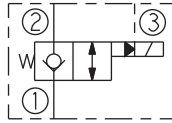
**Solenoid valve, 2-position, 3-way**



Model	Pressure bar (psi)	Flow lpm (gpm)
SV07-35	207 (3000)	11 (3)
SV08-35	207 (3000)	11 (3)

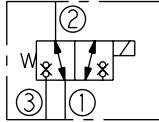
# Solenoid On/Off Valves

Solenoid valve, poppet type, normally closed, internally piloted, high flow



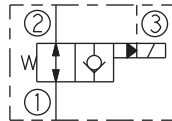
Model	Pressure bar (psi)	Flow lpm (gpm)
SV20-S38	293 (4250)	378 (100)

Solenoid valve, poppet type, normally closed, internally piloted, high flow



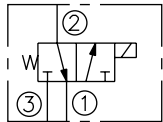
Model	Pressure bar (psi)	Flow lpm (gpm)
SV38-38	207 (3000)	11 (3)

Solenoid valve, poppet type, normally open, internally piloted, high flow



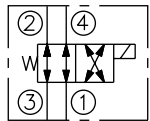
Model	Pressure bar (psi)	Flow lpm (gpm)
SV20-S39	293 (4250)	378 (100)

Solenoid valve, 2-position, 3-way, drop-in



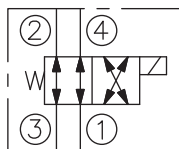
Model	Pressure bar (psi)	Flow lpm (gpm)
SV98-T39	45 (650)	30 (8)

Solenoid directional valve, 2-position, 4-way, open transition



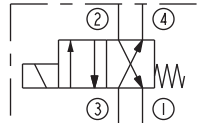
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-40	207 (3000)	11 (3)
SV10-40	207 (3000)	23 (6)
SV58-40	345 (5000)	11 (3)

Solenoid directional valve, 2-position, 4-way, closed transition



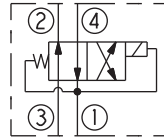
Model	Pressure bar (psi)	Flow lpm (gpm)
SV10-40A	207 (3000)	38 (10)

Solenoid directional valve, 2-position, 4-way, open transition



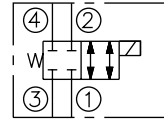
Model	Pressure bar (psi)	Flow lpm (gpm)
HSV10-40R	350 (5075)	23 (6)
SV12-40R	240 (3500)	60 (16)

Solenoid directional valve, 2-position, 4-way, drop-in



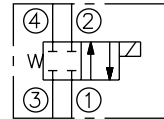
Model	Pressure bar (psi)	Flow lpm (gpm)
SV98-T40	30 (435)	30 (8)

Solenoid directional valve, 2-position, 4-way, normally closed



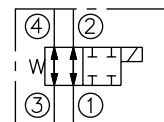
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-41	207 (3000)	13 (3)
SV10-41	207 (3000)	26 (7)
SV58-41	345 (5000)	26 (7)

Solenoid directional valve, 2-position, 4-way, normally closed



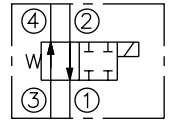
Model	Pressure bar (psi)	Flow lpm (gpm)
SV12-41	240 (3500)	60 (16)

Solenoid directional valve, 2-position, 4-way



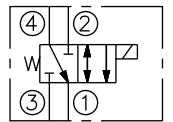
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-42	207 (3000)	11 (3)
SV10-42	207 (3000)	23 (6)

Solenoid directional valve, 2-position, 4-way



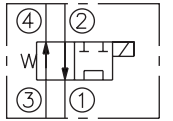
Model	Pressure bar (psi)	Flow lpm (gpm)
SV12-42	240 (3500)	60 (16)

Solenoid directional valve, 2-position, 4-way



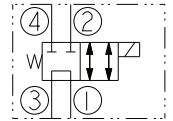
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-43	207 (3000)	11 (3)
SV10-43	207 (3000)	22 (6)

Solenoid directional valve, 2-position, 4-way



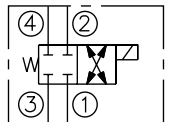
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-44	207 (3000)	11 (3)
SV10-44	207 (3000)	22 (6)

Solenoid valve, 4-way, 2-position, spool type



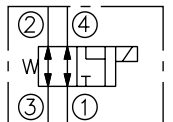
Model	Pressure bar (psi)	Flow lpm (gpm)
HSV10-44R	350 (5075)	23 (6)

Solenoid directional valve, 2-position, 4-way



Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-45	207 (3000)	11 (3)

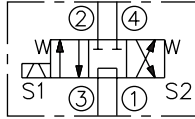
Solenoid directional valve, 2-position, 4-way



Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-46	207 (3000)	11 (3)

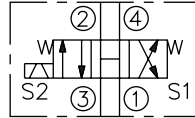
# Solenoid On/Off Valves

**Solenoid directional valve, 3-position, 4-way, tandem center**



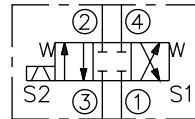
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-47A	207 (3000)	11 (3)
SV10-47A	240 (3500)	19 (5)

**Solenoid directional valve, 3-position, 4-way, open center**



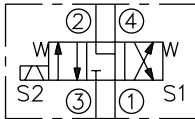
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-47B	207 (3000)	11 (3)
SV10-47B	240 (3500)	23 (6)

**Solenoid directional valve, 3-position, 4-way, closed center**



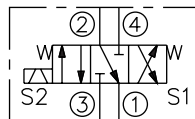
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-47C	207 (3000)	11 (3)
HSV10-47C	350 (5075)	38 (10)
SV10-47C	240 (3500)	23 (6)
HSV12-47C	350 (5075)	57 (15)

**Solenoid directional valve, 3-position, 4-way, motor center**



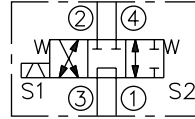
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-47D	207 (3000)	11 (3)
HSV10-47D	350 (5075)	34 (9)
SV10-47D	240 (3500)	23 (6)

**Solenoid directional valve, 3-position, 4-way**



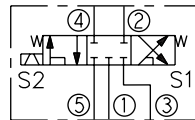
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-47E	207 (3000)	11 (3)
SV10-47E	250 (3625)	30 (8)

**Solenoid directional valve, 3-position, 4-way, tandem center**



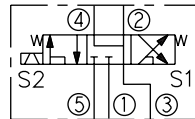
Model	Pressure bar (psi)	Flow lpm (gpm)
SV10-47F	240 (3500)	15 (4)

**Solenoid directional valve, 3-position, 5-way, closed center, load sense port**



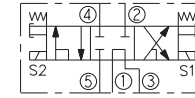
Model	Pressure bar (psi)	Flow lpm (gpm)
SV10-57C	250 (3625)	20 (5)

**Solenoid directional valve, 3-position, 5-way, motor center, load sense port**



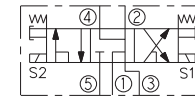
Model	Pressure bar (psi)	Flow lpm (gpm)
SV10-57D	250 (3625)	20 (5)

**Solenoid directional valve, 3-position, 5-way, closed center, brake release port**



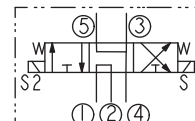
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-58C	207 (3000)	13 (3)
SV10-58C	250 (3625)	30 (8)

**Solenoid directional valve, 3-position, 5-way, motor center, brake release port**



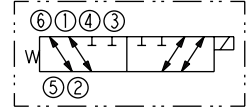
Model	Pressure bar (psi)	Flow lpm (gpm)
SV08-58D	240 (3500)	13 (4)
SV10-58D	250 (3625)	30 (8)

**Solenoid directional valve, 3-position, 5-way, motor center, power beyond port**



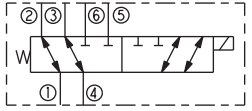
Model	Pressure bar (psi)	Flow lpm (gpm)
SV10-59D	207 (3000)	15 (4)

**Solenoid selector valve, 2-position, 6-way**



Model	Pressure bar (psi)	Flow lpm (gpm)
SV12-60	240 (3500)	45 (12)

**Solenoid selector valve, 2-position, 6-way**



Model	Pressure bar (psi)	Flow lpm (gpm)
SV80-61	207 (3000)	8 (2)

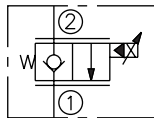
# Electro-proportional Valves



- Designed for reliability in mobile machinery applications and exposed environmental conditions
- Excellent linearity and low hysteresis
- Hardened precision spools and cages for long life
- Industry common cavity sizes enable interchangeability with non-proportional valves
- Drop-in style, sealed, proportional clutch actuation, and piloting valves
- Series E water/weather-resistant coils with integral connectors rated up to IP69K
- Patented high strength solenoid tube for all 3-position HSP valves

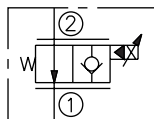
## Electro-proportional Valves

Proportional flow control, poppet type, normally closed



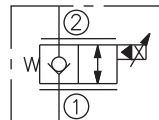
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-20	207 (3000)	22 (6)
SP08-20A	207 (3000)	30 (8)
HSP10-20	350 (5075)	53 (14)
SP10-20	250 (3625)	68 (18)
SP12-20	250 (3625)	100 (26)
HSP16-20	350 (5075)	265 (70)
SP16-20	250 (3625)	265 (70)

Proportional flow control, poppet type, normally open



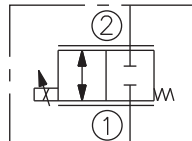
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-21	207 (3000)	23 (6)
HSP10-21	350 (5075)	53 (14)
SP10-21	250 (3625)	61 (16)
SP12-21	250 (3625)	200 (53)
HSP16-21	350 (5075)	95 (25)
SP16-21	250 (3625)	265 (70)

Proportional flow control, spool type, normally closed, bidirectional



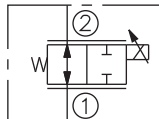
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-22	207 (3000)	30 (8)

Proportional flow control, spool type, normally open, bidirectional



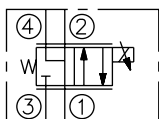
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-24	207 (3000)	11 (3)
SP10-24	207 (3000)	27 (7)

Proportional flow control, spool type, normally open, bidirectional



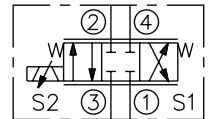
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-25	207 (3000)	15 (4)
SP10-25	207 (3000)	19 (5)

Proportional flow control, 2-position, 4-way



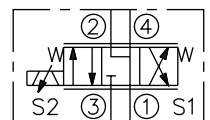
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-46R	250 (3625)	11 (3)
SP10-46R	250 (3625)	23 (6)

Proportional directional control, 3-position, 4-way, closed center



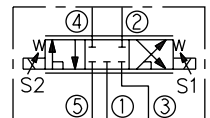
Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-47C	240 (3500)	11 (3)
*HSP10-47C	350 (5075)	33 (9)
SP10-47C	248 (3600)	22 (6)
*HSP12-47C	350 (5075)	56 (15)
SP08-47CL	240 (3500)	8 (2)

Proportional directional control, 3-position, 4-way, motor center



Model	Pressure bar (psi)	Flow lpm (gpm)
SP08-47D	240 (3500)	11 (3)
*HSP10-47D	350 (5075)	35 (9)
SP10-47D	207 (3000)	22 (6)
*HSP12-47D	350 (5075)	56 (15)
SP08-47DL	240 (3500)	8 (2)

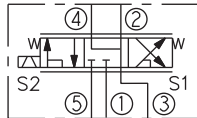
Proportional directional valve, 3-position, 5-way, closed center, load sense port



Model	Pressure bar (psi)	Flow lpm (gpm)
SP10-57C	250 (3625)	23 (6)

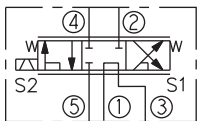
\* US Pat. 8,253,063

Proportional directional valve, 3-position, 5-way, motor center, load sense port



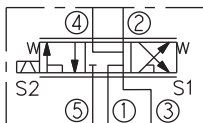
Model	Pressure bar (psi)	Flow lpm (gpm)
SP10-57D	250 (3625)	23 (6)
SP08-57D	240 (3500)	10 (3)

Proportional directional valve, 3-position, 5-way, closed center, brake release port



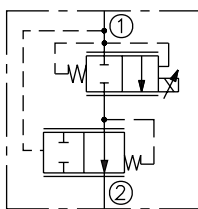
Model	Pressure bar (psi)	Flow lpm (gpm)
SP10-58C	250 (3625)	23 (6)

Proportional directional valve, 3-position, 5-way, motor center, load sense port, brake release



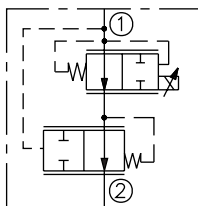
Model	Pressure bar (psi)	Flow lpm (gpm)
SP10-58D	250 (3625)	23 (6)
SP08-58D	240 (3500)	15 (4)

Pressure-compensated proportional flow control valve, normally closed



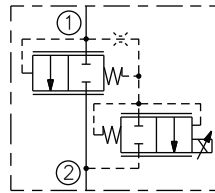
Model	Pressure bar (psi)	Flow lpm (gpm)
*HPV12-20	350 (5075)	68 (18)
PV72-20	240 (3500)	64 (17)

Pressure-compensated proportional flow control valve, normally open



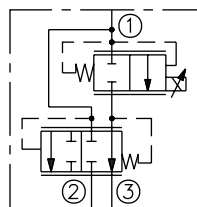
Model	Pressure bar (psi)	Flow lpm (gpm)
*HPV12-21	350 (5075)	61 (16)
PV72-21	240 (3500)	56 (15)

Proportional flow control, normally closed



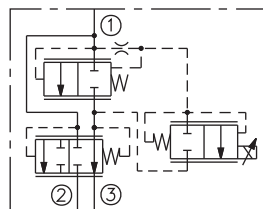
Model	Pressure bar (psi)	Flow lpm (gpm)
PV16-23	240 (3500)	170 (45)

Proportional flow control, normally closed, priority bypass



Model	Pressure bar (psi)	Flow lpm (gpm)
PV08-30	240 (3500)	23 (6)
*HPV12-30	350 (5075)	76 (20)
*HPV16-30	350 (5075)	151 (40)
PV70-30	240 (3500)	30 (8)
PV72-30	240 (3500)	114 (30)
PV76-30A	240 (3500)	95 (25)

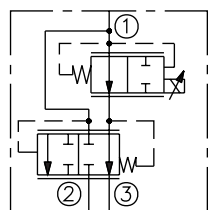
Proportional flow control, 2-stage, normally closed, priority bypass



US Pat. 6,966,329

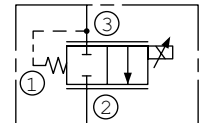
Model	Pressure bar (psi)	Flow lpm (gpm)
PV42-M30	240 (3500)	190 (50)

Proportional flow control, normally open, priority bypass



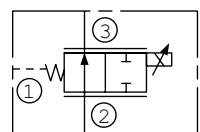
Model	Pressure bar (psi)	Flow lpm (gpm)
PV08-31	240 (3500)	23 (6)
*HPV12-31	350 (5075)	76 (20)
HPV16-31	350 (5075)	151 (40)
PV70-31	240 (3500)	50 (13)
PV72-31	240 (3500)	114 (30)
PV76-31A	240 (3500)	80 (21)

Proportional flow control, normally closed



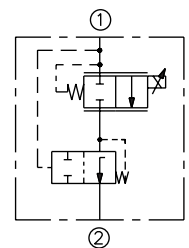
Model	Pressure bar (psi)	Flow lpm (gpm)
PV70-33	207 (3000)	30 (8)
PV72-33	240 (3500)	75 (20)

Proportional flow control, normally open



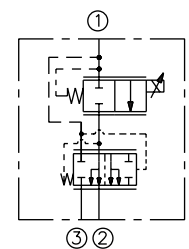
Model	Pressure bar (psi)	Flow lpm (gpm)
PV70-35	207 (3000)	30 (8)
PV72-35	207 (3000)	75 (20)

Proportional flow regulator, normally closed



Model	Pressure bar (psi)	Flow lpm (gpm)
PFR70-33x-E	207 (3000)	30 (8)
PFR72-33x-L	207 (3000)	60 (16)

Proportional flow regulator, normally closed, priority bypass



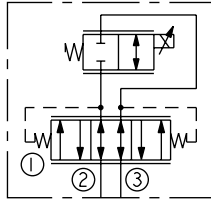
Model	Pressure bar (psi)	Flow lpm (gpm)
PFR70-33x-F	207 (3000)	30 (8)
PFR70-33x-J	207 (3000)	30 (8)
PFR72-33x-J	207 (3000)	60 (16)

\* US Pat. 8,253,063

# Electro-proportional Valves

Pressure compensated proportional flow control, normally closed

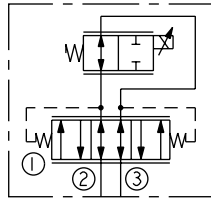
US Pat. 6,167,906



Model	Pressure bar (psi)	Flow lpm (gpm)
ZL70-30	240 (3500)	20 (5)
ZL72-30	240 (3500)	50 (13)

Pressure compensated proportional flow control, normally open

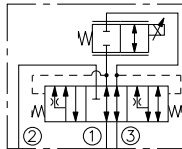
US Pat. 6,167,906



Model	Pressure bar (psi)	Flow lpm (gpm)
ZL70-31	240 (3500)	19 (5)
ZL72-31	240 (3500)	50 (13)

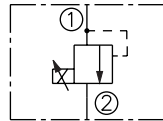
Pressure compensated proportional flow control, priority bypass

US Pat. 6,116,263



Model	Pressure bar (psi)	Flow lpm (gpm)
ZL70-36	240 (3500)	19 (5)
ZL72-36	240 (3500)	45 (12)

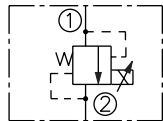
Proportional pressure control valve, relief, increasing pressure with current



Model	Pressure bar (psi)	Flow lpm (gpm)
TS08-20	35 (500)	4 (1)
TS38-20	248 (3600)	11 (3)
TS58-20	345 (5000)	8 (2)

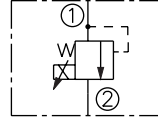
Proportional pressure control valve, relief, decreasing pressure with current

US Pat. 6,267,350



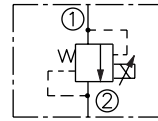
Model	Pressure bar (psi)	Flow lpm (gpm)
TS38-21	240 (3500)	1.1 (0.3)
TS58-21F	393 (5700)	1.9 (0.5)

Proportional pressure control valve, pilot operated, relief, increasing pressure with current



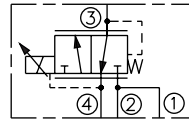
Model	Pressure bar (psi)	Flow lpm (gpm)
TS10-26	240 (3500)	95 (25)
TS12-26	240 (3500)	189 (50)

Proportional pressure control valve, pilot operated, relief, decreasing pressure with current



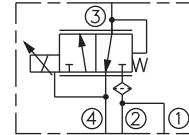
Model	Pressure bar (psi)	Flow lpm (gpm)
TS08-27	240 (3500)	25 (6)
TS10-27	275 (4000)	76 (20)
TS12-27	240 (3500)	186 (49)

Proportional pressure reducing/relieving valve, pilot operated



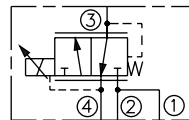
Model	Pressure bar (psi)	Flow lpm (gpm)
TS98-30	24 (350)	30 (8)

Proportional pressure reducing/relieving valve, pilot operated



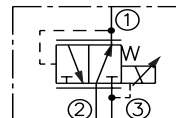
Model	Pressure bar (psi)	Flow lpm (gpm)
TS90-31	207 (3000)	38 (10)

Proportional pressure reducing/relieving valve, pilot operated, drop-in



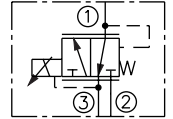
Model	Pressure bar (psi)	Flow lpm (gpm)
TS98-T34	30 (435)	30 (8)

Proportional pressure reducing/relieving valve, pilot operated



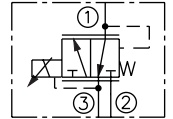
Model	Pressure bar (psi)	Flow lpm (gpm)
TS10-36	240 (3500)	57 (15)
TS12-36	275 (4000)	189 (50)

Proportional pressure reducing/relieving valve



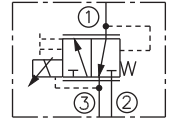
Model	Pressure bar (psi)	Flow lpm (gpm)
EHPR08-33	207 (3000)	4 (1)

Proportional pressure reducing/relieving valve, drop-in



Model	Pressure bar (psi)	Flow lpm (gpm)
EHPR98-T33	240 (3500)	4 (1)

Proportional pressure reducing/relieving valve, drop-in



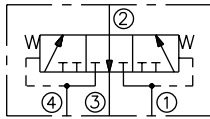
Model	Pressure bar (psi)	Flow lpm (gpm)
EHPR98-T35	103 (1500)	6 (2)
EHPR98-T38	240 (3500)	19 (5)
EHPR98-T38B	240 (3500)	19 (5)



- Industry-common cavity sizes  
-04, -08, -10, -12, -16, -20 and -42
- Hydraulically piloted or manually-operated directional and logic valves enable circuit flexibility and performance optimization
- Proportional, piloted 3-position, 4-way directional valves for flow rates up to 170 lpm (45 gpm)
- Hardened precision seats, spools and cages for long life and low leakage

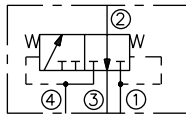
## Directional Valves

### Brake release valve



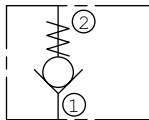
Model	Pressure bar (psi)	Flow lpm (gpm)
BV10-40	240 (3500)	8 (2)

### Brake release valve, 2-position, 3-way



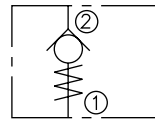
Model	Pressure bar (psi)	Flow lpm (gpm)
BV10-42	240 (3500)	8 (2)

### Check valve



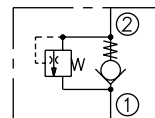
Model	Pressure bar (psi)	Flow lpm (gpm)
CV04-20	240 (3500)	5 (1.5)
CV04-B20	240 (3500)	5 (1.3)
HCV06-20	350 (5075)	19 (5)
CV08-20	240 (3500)	30 (8)
HCV08-20	350 (5075)	30 (8)
CV10-20	240 (3500)	75 (20)
CV50-20	345 (5000)	57 (15)
CV12-20	240 (3500)	95 (25)
HCV12-20	350 (5075)	95 (25)
CV16-20	240 (3500)	151 (40)
HCV16-20	350 (5075)	151 (40)
CV42-M20	240 (3500)	378 (100)
HCV42-M20	350 (5075)	303 (80)

### Check valve



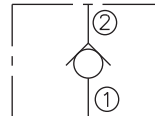
Model	Pressure bar (psi)	Flow lpm (gpm)
CV08-21	240 (3500)	30 (8)
CV12-21	240 (3500)	114 (30)
CV10-24	240 (3500)	57 (15)

### Check valve



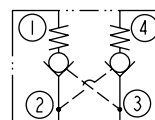
Model	Pressure bar (psi)	Flow lpm (gpm)
CV10-28	240 (3500)	45 (12)

### Check valve disk



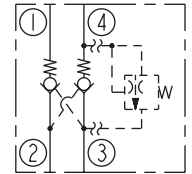
Model	Pressure bar (psi)	Flow lpm (gpm)
CVD08	250 (3625)	1.9 (0.5)
CVD10	250 (3625)	1.9 (0.5)

### Pilot operated check valve, dual



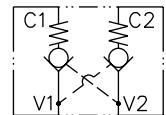
Model	Pressure bar (psi)	Flow lpm (gpm)
DC08-40	240 (3500)	19 (5)

### Pilot operated check valve, dual



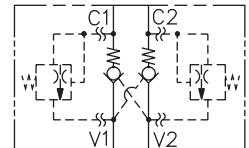
Model	Pressure bar (psi)	Flow lpm (gpm)
DC10-40	240 (3500)	30 (8)

### Pilot operated check valve with thermal relief, dual cartridges in manifold



Model	Pressure bar (psi)	Flow lpm (gpm)
DCV08	240 (3500)	30 (8)

### Pilot operated check valve with thermal relief, dual cartridges in manifold

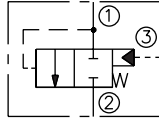


Model	Pressure bar (psi)	Flow lpm (gpm)
DCV10	240 (3500)	76 (20)



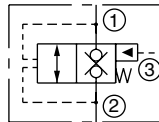
# Directional Valves

Logic element, spool type, 2-position, 2-way, externally piloted



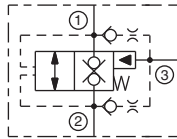
Model	Pressure bar (psi)	Flow lpm (gpm)
EP08-35	345 (5000)	38 (10)
EP10-S35	345 (5000)	76 (20)
EP12-S35	345 (5000)	151 (40)
EP16-S35	240 (3500)	189 (50)
HEP16-S35	350 (5075)	190 (50)
EP20-S35	345 (5000)	379 (100)
HEP42-S35	350 (5075)	379 (100)

Logic element, poppet type, 2-position, 2-way, externally piloted



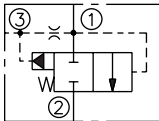
Model	Pressure bar (psi)	Flow lpm (gpm)
EP10-S38	350 (5075)	114 (30)
EP20-S38	240 (3500)	303 (80)
HEP42-S38	350 (5075)	284 (75)

Logic element, poppet type, 2-position, 2-way, externally piloted



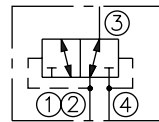
Model	Pressure bar (psi)	Flow lpm (gpm)
EP20-S39	240 (3500)	285 (75)
HEP42-S39	350 (5075)	284 (75)

Logic element, spool type, vented



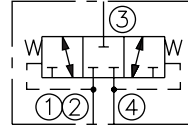
Model	Pressure bar (psi)	Flow lpm (gpm)
EV58-34	345 (5000)	38 (10)
EV10-S34	345 (5000)	76 (20)
EV12-S34	345 (5000)	151 (40)
EV16-S34	240 (3500)	189 (50)
HEV16-S34	350 (5075)	190 (50)
EV20-S34	345 (5000)	379 (100)
HEV42-S34	350 (5075)	379 (100)

Low side (hot oil) shuttle valve, springless



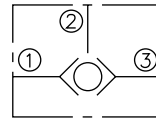
Model	Pressure bar (psi)	Flow lpm (gpm)
HS10-42	207 (3000)	38 (10)
HS50-42	207 (3000)	38 (10)
HS52-42	345 (5000)	45 (12)

Low side (hot oil) shuttle valve



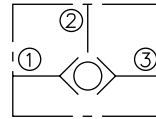
Model	Pressure bar (psi)	Flow lpm (gpm)
HS50-43	345 (5000)	132 (35)
HS52-43	345 (5000)	113 (30)

Load shuttle, ball type, down-hole mount



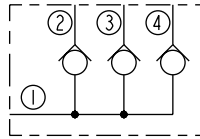
Model	Pressure bar (psi)	Flow lpm (gpm)
LS04-B30	240 (3500)	5 (1.3)
HLS06-B30	350 (5075)	8 (2)

Load shuttle, ball type



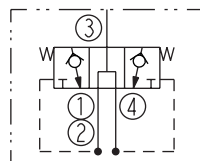
Model	Pressure bar (psi)	Flow lpm (gpm)
HLS06-30	350 (5075)	8 (2)
LS08-30	240 (3500)	19 (5)
LS10-30	240 (3500)	30 (8)
LS50-30	345 (5000)	30 (8)

Load shuttle network, 3 branch



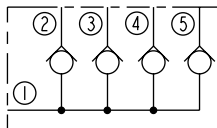
Model	Pressure bar (psi)	Flow lpm (gpm)
LS10-40	240 (3500)	1.9 (0.5)

Load shuttle, inverted



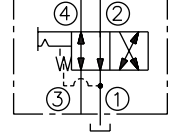
Model	Pressure bar (psi)	Flow lpm (gpm)
LS10-41	240 (3500)	15 (4)

Load shuttle network, 4 branch



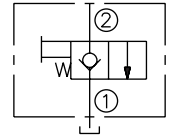
Model	Pressure bar (psi)	Flow lpm (gpm)
LS10-50	240 (3500)	1.9 (0.5)

Manual 2-position, 4-way valve, push to shift, spring return



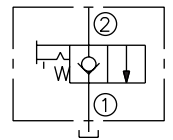
Model	Pressure bar (psi)	Flow lpm (gpm)
MD10-40	207 (3000)	38 (10)

Manual 2-position, 2-way valve, pull to open, spring return



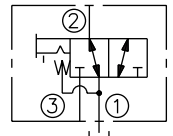
Model	Pressure bar (psi)	Flow lpm (gpm)
MP08-20	207 (3000)	53 (14)
MP10-20	207 (3000)	57 (15)

Manual 2-position, 2-way valve, pull to open, with lock



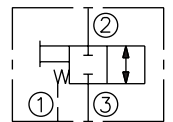
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-22	207 (3000)	57 (15)

Manual 2-position, 3-way valve, pull to shift, blocked transition



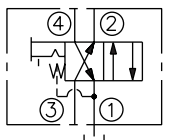
Model	Pressure bar (psi)	Flow lpm (gpm)
MP08-30	240 (3500)	25 (7)
MP58-30	345 (5000)	25 (7)

Manual 2-position, 2-way valve, pull to open, spring return, vented spring



Model	Pressure bar (psi)	Flow lpm (gpm)
MP08-34	240 (3500)	38 (10)

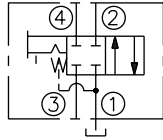
Manual 2-position, 4-way valve, pull to shift, spring return, open transition



Model	Pressure bar (psi)	Flow lpm (gpm)
MP08-40	240 (3500)	12 (3)
MP10-40	207 (3000)	22 (6)

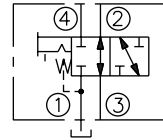
# Directional Valves

Manual 2-position, 4-way valve, pull to shift, spring return, closed transition



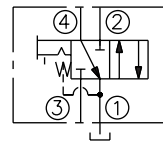
Model	Pressure bar (psi)	Flow lpm (gpm)
MP08-41	240 (3500)	12 (3)
MP10-41	207 (3000)	12 (3)

Manual 2-position, 4-way valve, pull to shift, spring return, closed transition



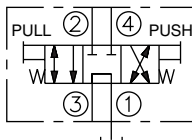
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-42	207 (3000)	12 (3)

Manual 2-position, 4-way valve, pull to shift, spring return, open transition



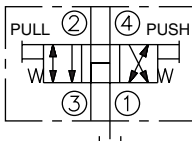
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-43	207 (3000)	12 (3)

Manual 3-position, 4-way valve, push/pull operation, tandem center



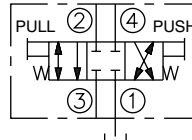
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-47A	207 (3000)	15 (4)

Manual 3-position, 4-way valve, push/pull operation, open center



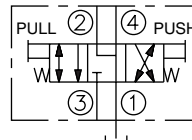
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-47B	207 (3000)	11 (3)

Manual 3-position, 4-way valve, push/pull operation, closed center



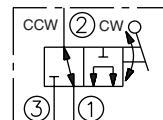
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-47C	207 (3000)	23 (6)

Manual 3-position, 4-way valve, push/pull operation, motor center



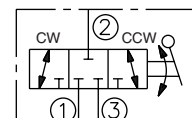
Model	Pressure bar (psi)	Flow lpm (gpm)
MP10-47D	207 (3000)	23 (6)

Manual rotary, 2-position, 3-way valve, tandem center



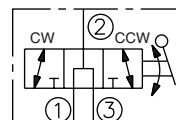
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-31	240 (3500)	38 (10)

Manual rotary, 3-position, 3-way valve, closed center



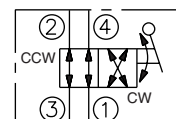
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-37A	240 (3500)	38 (10)

Manual rotary, 3-position, 3-way valve, open center



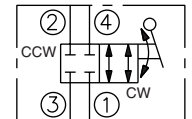
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-37B	240 (3500)	38 (10)

Manual rotary, 2-position, 4-way valve, blocked transition



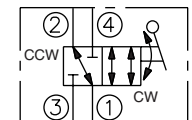
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-40	240 (3500)	11 (3)

Manual rotary, 2-position, 4-way valve, blocked transition



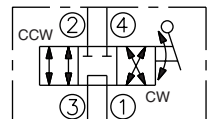
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-41	240 (3500)	11 (3)

Manual rotary, 2-position, 4-way valve, open transition, port 4 blocked



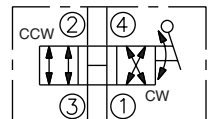
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-43	240 (3500)	11 (3)

Manual rotary, 3-position, 4-way valve, tandem center



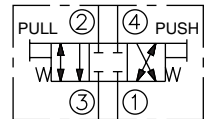
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-47A	240 (3500)	11 (3)

Manual rotary, 3-position, 4-way valve, open center



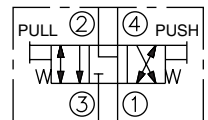
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-47B	240 (3500)	11 (3)

Manual rotary, 3-position, 4-way valve, closed center



Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-47C	240 (3500)	11 (3)

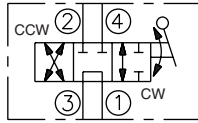
Manual rotary, 3-position, 4-way valve, motor center



Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-47D	240 (3500)	11 (3)

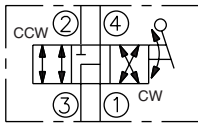
# Directional Valves

Manual rotary, 3-position, 4-way valve, tandem center



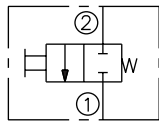
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-47F	240 (3500)	11 (3)

Manual rotary, 3-position, 4-way valve, motor center



Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-47G	240 (3500)	11 (3)

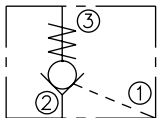
Manual valve, push to open



Model	Pressure bar (psi)	Flow lpm (gpm)
MV06-20	240 (3500)	115 (30)
MV08-22	207 (3000)	38 (10)

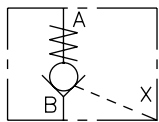
Check, pilot to open

see catalog for pilot ratio



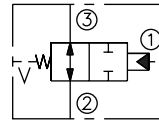
Model	Pressure bar (psi)	Flow lpm (gpm)
PC08-30	240 (3500)	26 (7)
HPC08-30	350 (5075)	30 (8)
PC10-30	240 (3500)	26 (7)
PC10-32	240 (3500)	30 (8)

Check, pilot to open



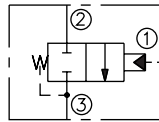
Model	Pressure bar (psi)	Flow lpm (gpm)
PCV10	240 (3500)	60 (16)
HPCV16	350 (5075)	151 (40)
PCV16	240 (3500)	151 (40)

Spool valve, piloted, 2-position, 2-way, normally open, external vent



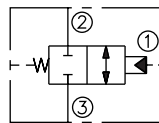
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-30	240 (3500)	38 (10)
PD12-30	240 (3500)	113 (30)

Spool valve, piloted, 2-position, 2-way, normally closed, internal vent



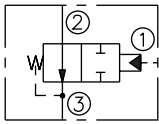
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-32	240 (3500)	38 (10)
PD12-32	240 (3500)	113 (30)

Spool valve, piloted, 2-position, 2-way, normally closed, external vent



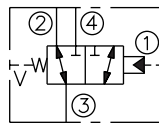
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-34	240 (3500)	38 (10)
PD12-34	240 (3500)	113 (30)

Spool valve, piloted, 2-position, 2-way, normally closed, internal vent



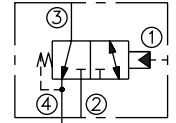
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-35	240 (3500)	38 (10)
PD12-35	240 (3500)	113 (30)

Spool valve, piloted, 2-position, 3-way, external vent



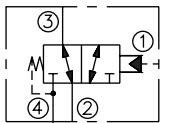
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-40	240 (3500)	38 (10)
PD12-40	240 (3500)	113 (30)
PD16-40	240 (3500)	170 (45)
PD42-M40	345 (5000)	265 (70)

Spool valve, piloted, 2-position, 3-way, internal vent, open transition



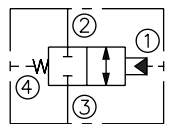
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-41	240 (3500)	45 (12)
PD12-41	240 (3500)	113 (30)
PD16-41	240 (3500)	189 (50)
PD42-M41	345 (5000)	265 (70)

Spool valve, piloted, 2-position, 3-way, internal vent, open transition



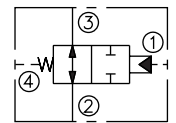
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-42	240 (3500)	38 (10)
PD12-42	240 (3500)	113 (30)
PD16-42	240 (3500)	189 (50)
PD42-M42	345 (5000)	265 (70)

Spool valve, piloted, 2-position, normally closed



Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-44	240 (3500)	32 (8)
PD12-44	240 (3500)	113 (30)
PD16-44	240 (3500)	189 (50)
HPD42-M44	350 (5075)	265 (70)

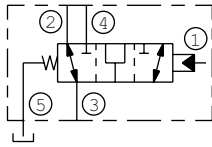
Spool valve, piloted, 2-position, normally open



Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-45	240 (3500)	45 (12)
PD12-45	240 (3500)	113 (30)
PD16-45	240 (3500)	189 (50)
PD42-M45	345 (5000)	265 (70)
HPD42-M45	350 (5075)	265 (70)

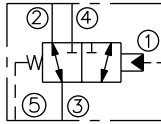
# Directional Valves

Spool valve, piloted,  
2-position, 3-way, open  
transition



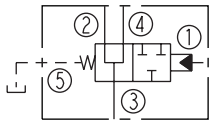
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-50	240 (3500)	38 (10)

Spool valve, piloted,  
2-position, 3-way, open  
transition



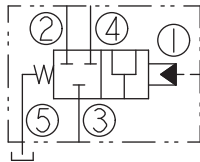
Model	Pressure bar (psi)	Flow lpm (gpm)
PD12-S50	240 (3500)	95 (25)
HPD16-S50	350 (5075)	151 (40)
PD16-S50	240 (3500)	170 (45)
PD42-S50	345 (5000)	265 (70)
HPD42-S50	350 (5075)	265 (70)

Spool valve, piloted,  
2-position, 3-way



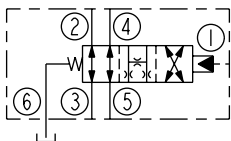
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-51	240 (3500)	45 (12)
HPD16-S51	350 (5075)	151 (40)
PD16-S51	240 (3500)	151 (40)
HPD42-S51	240 (3500)	246 (65)

Spool valve, piloted,  
2-position, 3-way



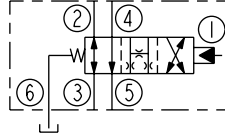
Model	Pressure bar (psi)	Flow lpm (gpm)
HPD16-S52	350 (5075)	151 (40)
HPD42-S52	350 (5075)	265 (70)

Spool valve, piloted,  
2-position, 4-way, open  
transition



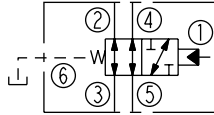
Model	Pressure bar (psi)	Flow lpm (gpm)
PD12-S60N	345 (5000)	56 (15)

Spool valve, piloted,  
2-position, 4-way, open  
transition



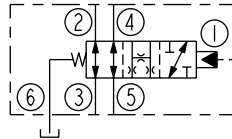
Model	Pressure bar (psi)	Flow lpm (gpm)
PD16-S60N	240 (3500)	95 (25)
PD42-S60N	324 (4700)	189 (50)

Spool valve, piloted,  
2-position, 4-way



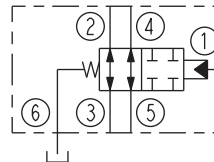
Model	Pressure bar (psi)	Flow lpm (gpm)
HPD42-S61	350 (5075)	189 (50)

Spool valve, piloted,  
2-position, 4-way, open  
transition



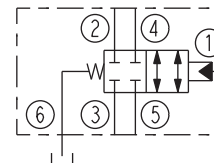
Model	Pressure bar (psi)	Flow lpm (gpm)
PD12-S61N	240 (3500)	56 (15)
PD16-S61N	240 (3500)	151 (40)

Spool valve, piloted,  
2-position, 4-way



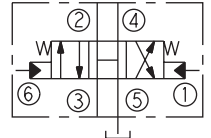
Model	Pressure bar (psi)	Flow lpm (gpm)
PD10-S62	250 (3625)	53 (14)
HPD42-S62	350 (5075)	189 (50)

Spool valve, piloted,  
2-position, 4-way



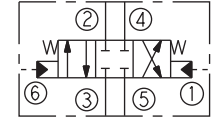
Model	Pressure bar (psi)	Flow lpm (gpm)
PD16-S63	240 (3500)	151 (40)
HPD42-S63	350 (5075)	189 (50)

Spool valve, piloted,  
3-position, 4-way, open  
center



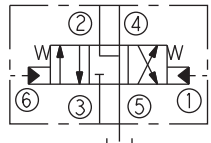
Model	Pressure bar (psi)	Flow lpm (gpm)
PD42-S67B	324 (3625)	189 (50)

Spool valve, piloted,  
3-position, 4-way,  
closed center



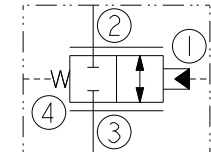
Model	Pressure bar (psi)	Flow lpm (gpm)
PD16-S67C	240 (3500)	95 (25)
HPD16-S67C	350 (5075)	95 (25)
HPD42-S67C	350 (5075)	189 (50)

Spool valve, piloted,  
3-position, 4-way,  
motor center



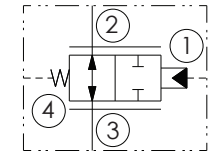
Model	Pressure bar (psi)	Flow lpm (gpm)
PD16-S67D	240 (3500)	95 (25)
HPD16-S67D	350 (5075)	95 (25)
HPD42-S67D	350 (5075)	189 (50)

Spool valve, piloted,  
2-way



Model	Pressure bar (psi)	Flow lpm (gpm)
HPE42-M44	350 (5075)	170 (45)

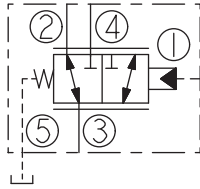
Spool valve, piloted,  
2-way



Model	Pressure bar (psi)	Flow lpm (gpm)
HPE42-M45	350 (5075)	170 (45)

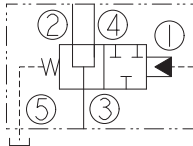
# Directional Valves

Spool valve, piloted, proportional, 3-way



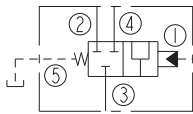
Model	Pressure bar (psi)	Flow lpm (gpm)
HPE42-S50	350 (5075)	170 (45)

Spool valve, piloted, proportional, 3-way



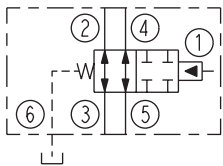
Model	Pressure bar (psi)	Flow lpm (gpm)
HPE42-S51	350 (5075)	170 (45)

Spool valve, piloted, proportional, 3-way



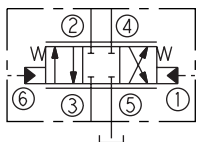
Model	Pressure bar (psi)	Flow lpm (gpm)
HPE42-S52	350 (5075)	170 (45)

Spool valve, piloted, proportional, 4-way



Model	Pressure bar (psi)	Flow lpm (gpm)
HPE42-S62	350 (5075)	170 (45)

Spool valve, piloted, proportional, 3-position, 4-way, closed center

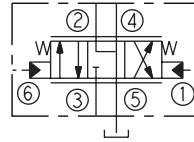


US Pat. 6,554,014

Model	Pressure bar (psi)	Flow lpm (gpm)
PE12-S67C	345 (5000)	45 (12)
HPE16-S67C	350 (5075)	95 (25)
PE16-S67C	345 (5000)	90 (24)
HPE42-S67C	350 (5075)	170 (45)
PE42-S67C	345 (5000)	170 (45)

Spool valve, piloted, proportional, 3-position, 4-way, motor center

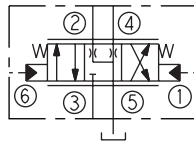
US Pat. 6,554,014



Model	Pressure bar (psi)	Flow lpm (gpm)
PE12-S67D	345 (5000)	45 (12)
HPE16-S67D	350 (5075)	95 (25)
PE16-S67D	345 (5000)	90 (24)
PE42-S67D	345 (5000)	170 (45)
HPE42-S67D	350 (5075)	170 (45)

Spool valve, piloted, proportional, 3-position, 4-way, motor center

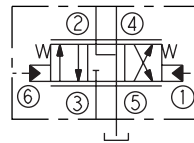
US Pat. 6,554,014



Model	Pressure bar (psi)	Flow lpm (gpm)
PE12-S67H	345 (5000)	45 (12)
HPE16-S67H	350 (5075)	95 (25)
PE16-S67H	345 (5000)	90 (24)
PE42-S67H	345 (5000)	170 (45)
HPE42-S67H	350 (5075)	170 (45)

Spool valve, piloted, proportional, 3-position, 4-way, motor center

US Pat. 6,554,014



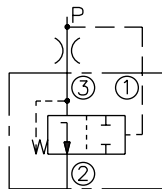
Model	Pressure bar (psi)	Flow lpm (gpm)
PE12-S67K	345 (5000)	45 (12)
HPE16-S67K	350 (5075)	95 (25)
PE16-S67K	345 (5000)	90 (24)
PE42-S67K	345 (5000)	170 (45)
HPE42-S67K	345 (5000)	170 (45)



- Variable or fixed orifice restrictor valves
- Pressure compensated flow regulators
- Pressure compensators for restrictive, bypass and priority circuits, with load-sensing system compatibility
- Optional settings and adjustment styles available
- Flow dividers/combiners for cylinder synchronizing and anti-stall applications
- Industry common cavity sizes

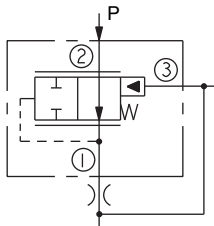
## Flow Control Valves

### Pressure compensator



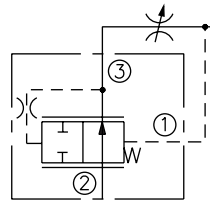
Model	Pressure bar (psi)	Flow lpm (gpm)
EC10-30	207 (3000)	30 (8)
EC12-30	240 (3500)	58 (15)
EC50-30	345 (5000)	30 (8)

### Pressure compensator



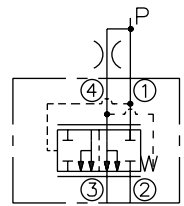
Model	Pressure bar (psi)	Flow lpm (gpm)
EC10-S31	240 (3500)	30 (8)

### Pressure compensator



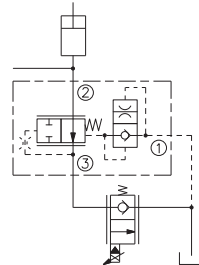
Model	Pressure bar (psi)	Flow lpm (gpm)
EC08-32	240 (3500)	11 (3)
EC10-32	207 (3000)	38 (10)
EC12-32	240 (3500)	57 (15)
HEC12-32	350 (5075)	83 (22)
EC16-32	240 (3500)	152 (40)
HEC16-32	350 (5075)	151 (40)

### Pressure compensator, bypass type



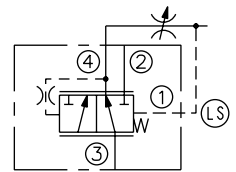
Model	Pressure bar (psi)	Flow lpm (gpm)
EC10-40	207 (3000)	38 (10)
EC12-40	240 (3500)	80 (21)
EC16-40	240 (3500)	180 (48)
EC42-M40	240 (3500)	303 (80)
EC50-40	240 (3500)	38 (10)

### Pressure compensator



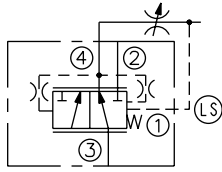
Model	Pressure bar (psi)	Flow lpm (gpm)
EC12-34	240 (3500)	83 (22)
HEC12-34	350 (5075)	83 (22)
EC16-34	240 (3500)	170 (45)

### Pressure compensator with static load sense



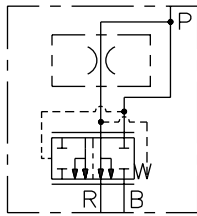
Model	Pressure bar (psi)	Flow lpm (gpm)
EC10-42	240 (3500)	38 (10)
EC12-42	345 (5000)	76 (20)
HEC12-42	350 (5075)	95 (25)
EC16-42	240 (3500)	190 (50)
EC42-M42	240 (3500)	303 (80)
EC50-42	345 (5000)	38 (10)

## Pressure compensator with dynamic load sense



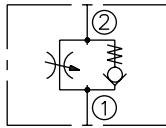
Model	Pressure bar (psi)	Flow lpm (gpm)
EC10-43	240 (3500)	34 (9)
EC50-43	345 (5000)	45 (12)
EC12-43	345 (5000)	95 (25)
HEC12-43	350 (5075)	95 (25)
EC16-43	240 (3500)	190 (50)
HEC32-43	350 (5075)	530 (140)
EC42-M43	240 (3500)	303 (80)

## Pressure compensator, in line body



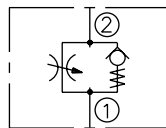
Model	Pressure bar (psi)	Flow lpm (gpm)
ECV10-44	207 (3000)	38 (10)

## Flow control with reverse flow check



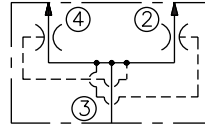
Model	Pressure bar (psi)	Flow lpm (gpm)
FC10-20	240 (3500)	45 (12)
FC12-20	240 (3500)	129 (34)
FC08-20F	240 (3500)	45 (12)

## Flow control with reverse flow check



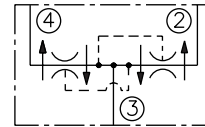
Model	Pressure bar (psi)	Flow lpm (gpm)
FC10-21	240 (3500)	57 (15)

## Flow divider/combiner



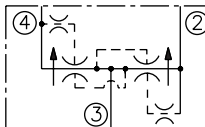
Model	Pressure bar (psi)	Flow lpm (gpm)
FD10-40	240 (3500)	45 (12)
FD12-40	240 (3500)	91 (24)
FD16-40	240 (3500)	150 (40)

## Flow divider/combiner, cylinder synchronizing



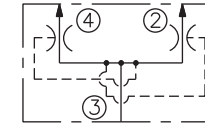
Model	Pressure bar (psi)	Flow lpm (gpm)
FD10-41	240 (3500)	45 (12)
FD12-41	240 (3500)	91 (24)

## Flow divider/combiner, anti-stall



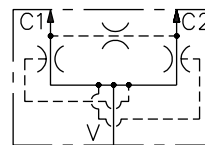
Model	Pressure bar (psi)	Flow lpm (gpm)
FD10-42	240 (3500)	61 (16)
FD16-42	240 (3500)	151 (40)

## Flow divider/combiner, multifunction



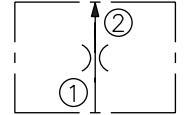
Model	Pressure bar (psi)	Flow lpm (gpm)
FD50-45	345 (5000)	57 (15)
FD52-45	345 (5000)	106 (28)
FD56-45	345 (5000)	197 (52)

## Flow divider/combiner, cartridge in manifold



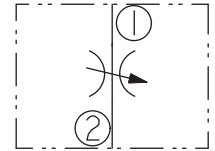
Model	Pressure bar (psi)	Flow lpm (gpm)
FDC16	207 (3000)	151 (40)

## Flow regulator, pressure compensated



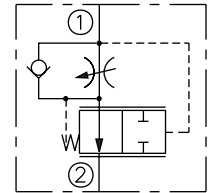
Model	Pressure bar (psi)	Flow lpm (gpm)
FR08-20F	240 (3500)	8 (2)
FR10-20F	240 (3500)	23 (6)
FR50-20F	345 (5000)	23 (6)
FR12-20F	345 (5000)	55 (15)
FR16-20F	240 (3500)	113 (30)

## Manual rotary flow control



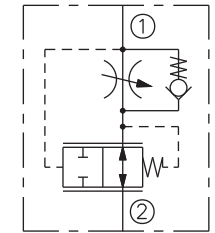
Model	Pressure bar (psi)	Flow lpm (gpm)
MR10-20	240 (3500)	53 (14)

## Flow regulator, pressure compensated



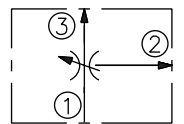
Model	Pressure bar (psi)	Flow lpm (gpm)
FR12-23	240 (3500)	77 (20)

## Flow regulator, pressure compensated



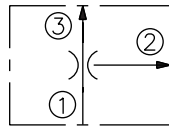
Model	Pressure bar (psi)	Flow lpm (gpm)
FR50-23	345 (5000)	12 (3)
FR50-28	345 (5000)	34 (9)

## Flow regulator, pressure compensated, priority bypass type, adjustable



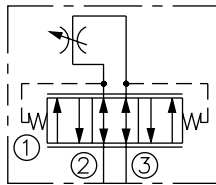
Model	Pressure bar (psi)	Flow lpm (gpm)
FR10-30A	207 (3000)	23 (6)

**Flow regulator, pressure compensated, priority bypass type**



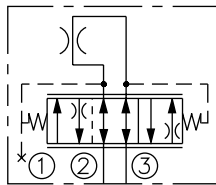
Model	Pressure bar (psi)	Flow lpm (gpm)
FR08-30F	207 (3000)	11 (3)
FR10-30F	207 (3000)	38 (10)
FR12-30F	240 (3500)	95 (25)
FR16-30F	240 (3500)	113 (30)

**Flow regulator, pressure compensated, with adjustable orifice**



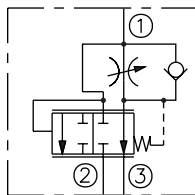
Model	Pressure bar (psi)	Flow lpm (gpm)
FR10-32	240 (3500)	19 (5)
FR12-32	240 (3500)	50 (13)

**Flow regulator, pressure compensated, fixed orifice**



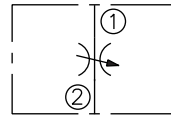
Model	Pressure bar (psi)	Flow lpm (gpm)
FR10-32F	240 (3500)	19 (5)

**Flow regulator, pressure compensated, bypass type, with adjustable orifice**



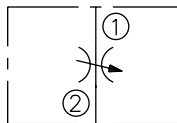
Model	Pressure bar (psi)	Flow lpm (gpm)
FR10-33	240 (3500)	26 (7)
FR12-33	240 (3500)	114 (30)
FR10-39	240 (3500)	57 (15)

**Needle valve**



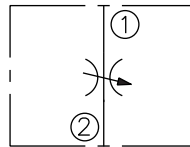
Model	Pressure bar (psi)	Flow lpm (gpm)
NV08-20	240 (3500)	42 (11)
NV10-20	240 (3500)	45 (12)
NV12-20	240 (3500)	114 (30)
NV10-22	240 (3500)	57 (15)

**Needle valve, positive shut-off**



Model	Pressure bar (psi)	Flow lpm (gpm)
NV08-21	240 (3500)	38 (10)
NV10-21	240 (3500)	57 (15)

**Needle valve, fine adjustment**



Model	Pressure bar (psi)	Flow lpm (gpm)
NV08-23	240 (3500)	38 (10)

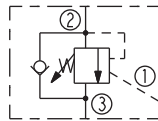




- Pressure relief, reducing/relieving, unloading and sequencing operations
- Industry common cavity sizes up to -16 303 lpm (80 gpm)
- Pilot-operated, direct-acting, and differential-area pressure regulators for all application conditions
- RVD valve offers fast response with low pressure rise, low hysteresis, and low internal leakage
- Operating pressures up to 350 bar (5075 psi)
- Optional spring ranges and adjustment styles
- Externally plumbed pressure reducing options

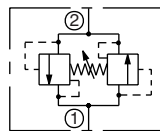
## Pressure Control Valves

### Counterbalance valve



Model	Pressure bar (psi)	Flow lpm (gpm)
CB10-30	207 (3000)	19 (5)

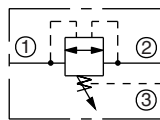
### Relief valve, bidirectional



Model	Pressure bar (psi)	Flow lpm (gpm)
CR10-28	240 (3500)	60 (16)

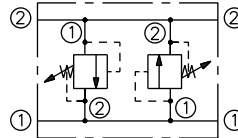
### Relief valve, bidirectional, vented

US Pat. 7,069,945



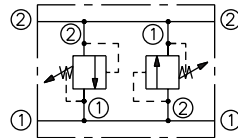
Model	Pressure bar (psi)	Flow lpm (gpm)
CR08-38	207 (3000)	30 (8)

### Crossover relief valve, direct acting, dual cartridges in manifold



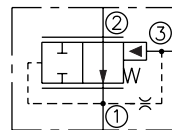
Model	Pressure bar (psi)	Flow lpm (gpm)
CRV08-20	228 (3300)	22 (6)
CRV10-20	240 (3500)	38 (10)

### Crossover relief valve, differential area, dual cartridges in manifold



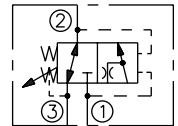
Model	Pressure bar (psi)	Flow lpm (gpm)
CRV08-22	180 (2600)	30 (8)
CRV10-22	240 (3500)	113 (30)

### Logic element, spool type, pressure reducing



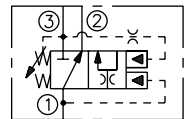
Model	Pressure bar (psi)	Flow lpm (gpm)
ER10-S30	345 (5000)	68 (18)
ER12-S30	345 (5000)	114 (30)

### Kickdown sequence valve, internal pilot/drain



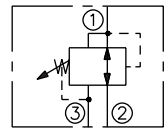
Model	Pressure bar (psi)	Flow lpm (gpm)
KS10-30	207 (3000)	11 (3)

### Kickdown sequence valve, internal pilot/drain



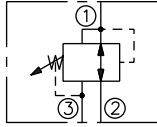
Model	Pressure bar (psi)	Flow lpm (gpm)
KS10-31	207 (3000)	19 (5)

### Pressure reducing/relieving valve



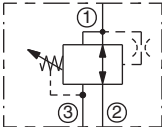
Model	Pressure bar (psi)	Flow lpm (gpm)
PR08-32	240 (3500)	11 (3)
PR10-32	207 (3000)	30 (8)

Pressure reducing/relieving valve, pilot operated



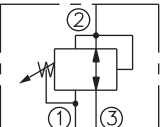
Model	Pressure bar (psi)	Flow lpm (gpm)
PR10-36	240 (3500)	56 (15)
PR50-36	345 (5000)	56 (15)
PR12-36	275 (4000)	189 (50)

Pressure reducing/relieving valve, direct acting



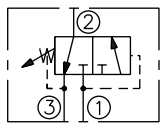
Model	Pressure bar (psi)	Flow lpm (gpm)
PR58-38	345 (5000)	19 (5)
PR50-38	345 (5000)	72 (19)

Pressure reducing/relieving valve



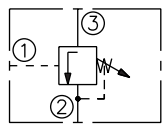
Model	Pressure bar (psi)	Flow lpm (gpm)
PRES50-30	345 (5000)	11 (3)

Sequence valve with internal pilot and drain



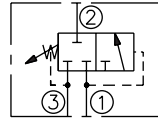
Model	Pressure bar (psi)	Flow lpm (gpm)
PS08-30	240 (3500)	22 (6)
PS10-30	207 (3000)	38 (10)
PS10-31	240 (3500)	22 (6)

Sequence valve with external pilot, internal drain



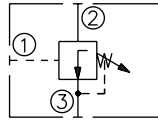
Model	Pressure bar (psi)	Flow lpm (gpm)
PS08-32	240 (3500)	19 (5)
PS10-32	207 (3000)	38 (10)
PS10-33	240 (3500)	23 (6)

Sequence valve with internal pilot and drain



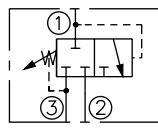
Model	Pressure bar (psi)	Flow lpm (gpm)
PS10-34	207 (3000)	117 (31)

Sequence valve with external pilot, internal drain



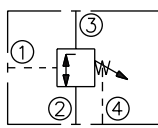
Model	Pressure bar (psi)	Flow lpm (gpm)
PS08-35	240 (3500)	19 (5)
PS10-35	138 (2000)	56 (15)

Sequence valve with internal pilot, external drain



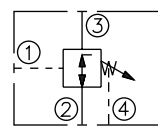
Model	Pressure bar (psi)	Flow lpm (gpm)
PS10-36	240 (3500)	56 (15)
PS50-36	331 (4800)	56 (15)

Sequence valve, normally closed with external pilot and drain



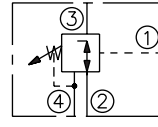
Model	Pressure bar (psi)	Flow lpm (gpm)
PS10-40	240 (3500)	38 (10)
PS50-40	345 (5000)	38 (10)

Sequence valve, normally open with external pilot and drain



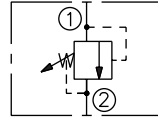
Model	Pressure bar (psi)	Flow lpm (gpm)
PS10-41	240 (3500)	38 (10)

Sequence valve, 3-way, external pilot and drain



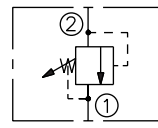
Model	Pressure bar (psi)	Flow lpm (gpm)
PS10-43	240 (3500)	38 (10)

Relief valve, direct acting, poppet type



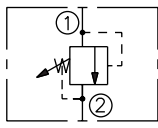
Model	Pressure bar (psi)	Flow lpm (gpm)
RV08-20	275 (4000)	23 (6)
RV58-20	345 (5000)	22 (6)
RV10-20	228 (3300)	38 (10)

Relief valve, differential area, poppet type



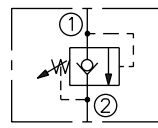
Model	Pressure bar (psi)	Flow lpm (gpm)
RV08-22	248 (3600)	30 (8)
RV10-22	240 (3500)	114 (30)
RV50-22	345 (5000)	76 (20)

Relief valve, pilot operated, spool type



Model	Pressure bar (psi)	Flow lpm (gpm)
RV10-26	240 (3500)	114 (30)
RV50-26	345 (5000)	114 (30)
RV12-26	240 (3500)	170 (45)
RV16-26	275 (4000)	303 (80)
RV52-26	345 (5000)	170 (45)
RV56-26	345 (5000)	379 (100)

Relief valve, pilot operated with reverse-flow check

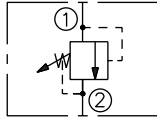


U.S. Pats. 7,069,945  
7,069,945

Model	Pressure bar (psi)	Flow lpm (gpm)
RV10-28	289 (4200)	114 (30)
RV50-28	345 (5000)	114 (30)

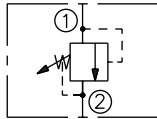
# Pressure Control Valves

Relief valve, direct acting, poppet type, low flow



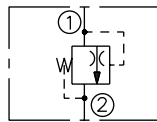
Model	Pressure bar (psi)	Flow lpm (gpm)
RV08-29	240 (3500)	1.9 (0.5)

Relief valve, direct acting, poppet type



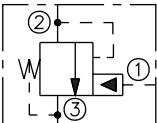
Model	Pressure bar (psi)	Flow lpm (gpm)
HRVD08-20	240 (3500)	53 (14)
RVD50-20	350 (5075)	114 (30)
RVD50-20P	385 (5575)	114 (30)

Thermal relief valve, poppet type



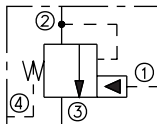
Model	Pressure bar (psi)	Flow lpm (gpm)
TR04-B20	414 (6000)	no rating

Unloading pilot, internal drain



Model	Pressure bar (psi)	Flow lpm (gpm)
UP10-31	207 (3000)	4 (1)

Remote sequence valve, unloading pilot



Model	Pressure bar (psi)	Flow lpm (gpm)
UP10-40	207 (3000)	4 (1)



**MAIN HEADQUARTERS, ENGINEERING AND MANUFACTURING FACILITY IN LINCOLNSHIRE ILLINOIS, JUST NORTH OF CHICAGO.**



**INNOVATION AND TECHNOLOGY CENTER IN VERNON HILLS, ILLINOIS.**



**EUROPEAN HEADQUARTERS, ENGINEERING AND MANUFACTURING FACILITY IN BIRMINGHAM, ENGLAND.**



**ASIAN/PACIFIC HEADQUARTERS, PRECISION MACHINING AND MANIFOLD ASSEMBLY FACILITY IN CHANGZHOU, CHINA, NEAR SHANGHAI.**

**RoHS COMPLIANT** HydraForce valve and manifold products comply with the European Council and Parliament RoHS directive 2002/95/EC limiting the use of hazardous substances. For all other products, consult factory.

### **HYDRAFORCE INC**

500 Barclay Blvd.  
Lincolnshire, IL 60069  
Phone: 847 793 2300  
Fax: 847 793 0086

Member: National Fluid Power Assoc.  
ISO 9001

### **HYDRAFORCE HYDRAULICS LTD**

St. Stephens Street  
Birmingham B6 4RG England  
Phone: 44 121 333 1800  
Fax: 44 121 333 1810

Member: British Fluid Power Association  
and Verband Deutscher Maschinen -  
und Anlagenbau e.V. (VDMA)  
ISO 9001 & ISO 14001

### **HYDRAFORCE HYDRAULIC SYSTEMS (CHANGZHOU) CO., LTD**

388 W. Huanghe Road, Building 15A  
GDH Changzhou Airport Indl Park Xinbei District  
Changzhou, China 213022  
Phone: +86 519 6988 1200  
Fax: +86 519 6988 1205  
ISO 9001

### **NEW GLOBAL SALES OFFICES**

#### **HYDRAFORCE HYDRAULICS - INDIA**

Vatika Business Centre  
Suite No. 22, Level 5, C Wing  
Techpark One, Airport Road  
Yerwada, Pune 411006  
Maharashtra, India  
Tel: +91 020 40111304  
Fax: +91 020 40111105  
Email: Nileshr@hydraforce.com

#### **HYDRAFORCE HYDRAULICS LTD**

Prager Ring 4-12  
D-66482 Zweibrücken, Germany  
Tel: +49 (0) 6332 79 2350  
Fax: +49 (0) 6332 79 2359  
Member: Verband Deutscher Maschinen -  
und Anlagenbau e.V. (VDMA)  
Email: Sales-Germany@hydraforce.com

#### **HYDRAFORCE KOREA LLC**

A-506 Bupyeong Woorim Lions Valley, 283  
Bupyeong-daero, Bupyeong-gu,  
Incheon, Korea 403-911  
Tel: +82 32 623 5818  
Fax: +82 32 623 5819  
Email: jong-seongl@hydraforce.com

