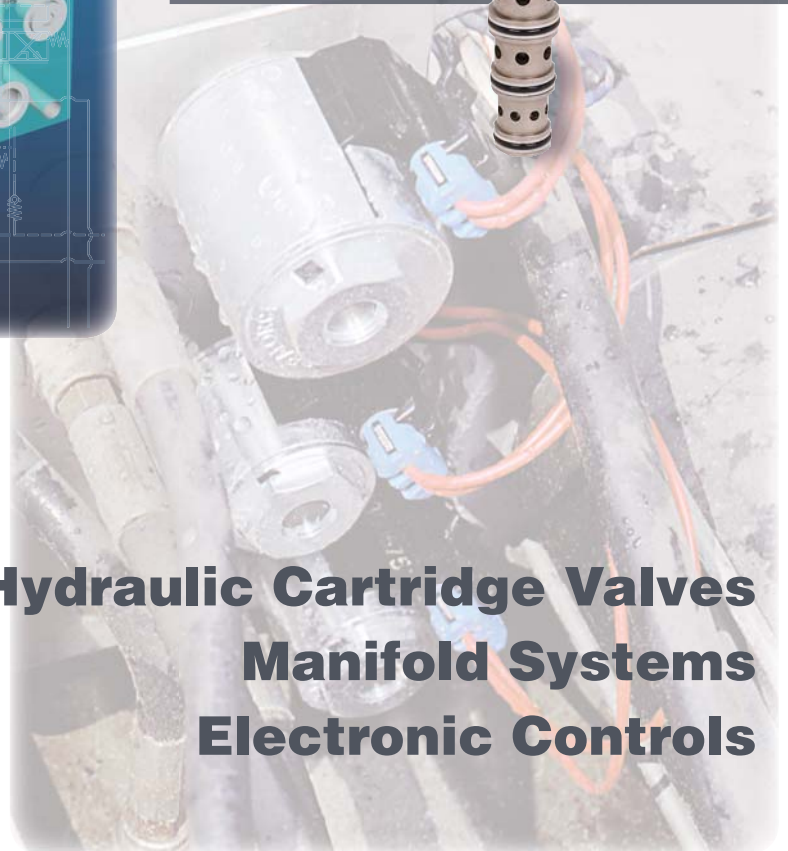
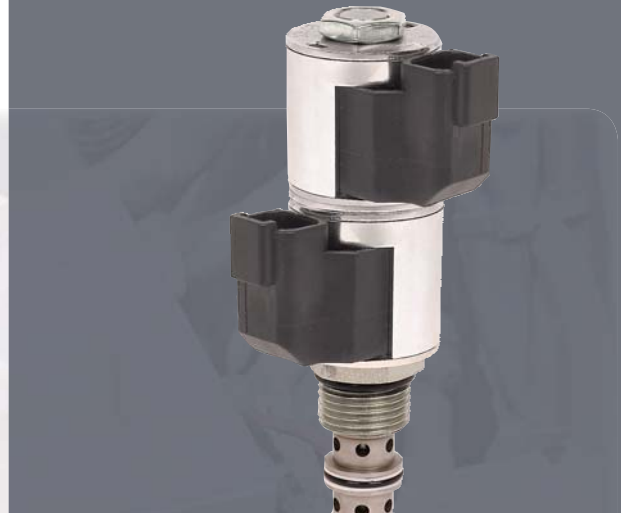
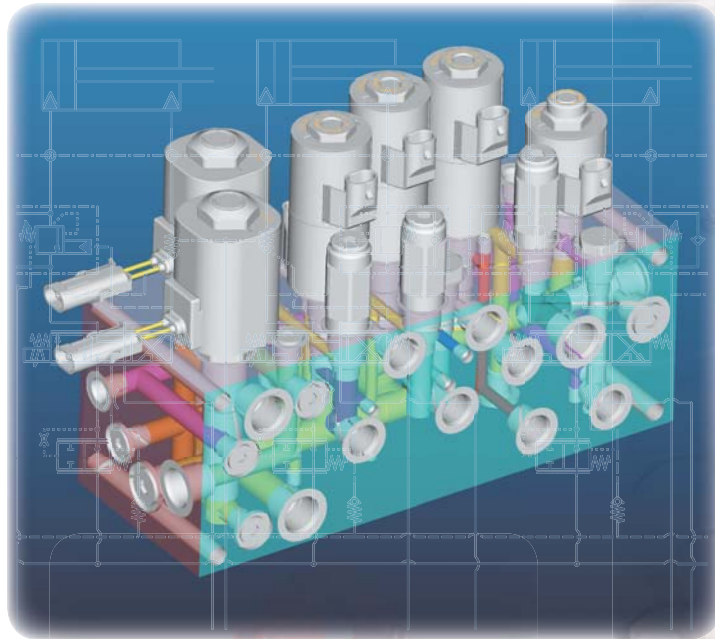


**HYDRAFORCE**



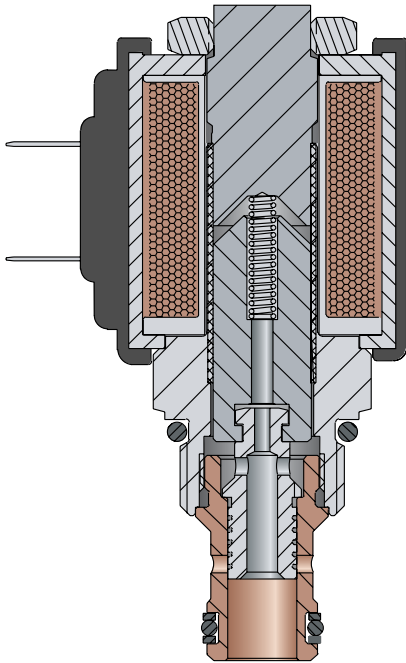
**Hydraulic Cartridge Valves  
Manifold Systems  
Electronic Controls**

**Product Guide 2008**

# Here's what makes HydraForce the Industry Leader

## Complete Product Line

HydraForce offers the industry's widest range of high performance hydraulic cartridge valves, manifold assemblies, and electronic controls. Our standard product line includes a full range of directional, pressure and flow control valves for flow rates up to **379 lpm/100 gpm** and operating pressures up to **350 bar/5000 psi**.



## Engineering Innovation

HydraForce continues to pioneer the development of proportional and electro-proportional hydraulic valves and controls, as well as a growing family of multi-function valves offering lower-cost, more compact hydraulic circuitry. Our engineers are highly recognized for their innovative, high quality, cost-effective valve designs and application solutions.



## Latest Technology

HydraForce is now offering a full line of electronic vehicle control products that integrate various machine functions into a common J1939 or CAN Data Link control circuit.



## Quality, Reliability

HydraForce products are endurance and performance qualified to ensure reliability under the harsh operating conditions in off-highway, material handling and mobile equipment applications. In addition, valves and manifold assemblies are 100% tested prior to shipment, assuring consistent and reliable performance. Valve components are machined within precise tolerances utilizing the most advanced CNC equipment. HydraForce is recognized and certified by many global equipment manufacturers for superior product quality and reliability, on-time delivery, and world-class technical standards.



## Worldwide Support

HydraForce products are marketed and serviced worldwide by a highly qualified and experienced network of international distributors, supported by factory application engineers and customer support specialists.



# Custom Manifolds, Accessories and Electronic Controls



## System Application Expertise

Custom manifolds consolidate and optimize the many control functions of a machine's hydraulic circuitry. External connections are minimized. Installation time and maintenance are reduced. Valve replacement, when necessary, is fast and easy. All manifolds are 100% circuit logic and function tested. HydraForce produces a wide range of custom valves, manifolds and electro-hydraulic systems for customer-specific applications.

- Steel, aluminum, cast or ductile iron manifold blocks.
- Anodized or zinc plated for protection in severe environments.
- Industry-common valve cavities.
- Fittings, CETOP valves and accessory components can be included.
- "FastTrak" service for quick delivery of a working prototype.
- i-Design Hydraulic System design software available free of charge to qualified users.

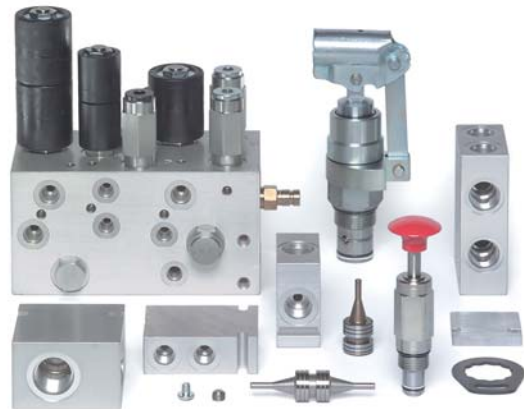


## Valve Housings

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 345 bar (5000 psi).

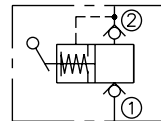
## Custom Manifold Accessories

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.

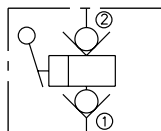


## Hand Pumps

Model HP10-20



Models HPxx-21



### HydraForce Valve Size

04  
07  
08, 38, 58, 98  
10, 50, 70  
12, 52, 72  
16, 76  
20  
42

### Cavity Thread Size

7/16-20UNF-2B  
5/8-18UNF-2B  
3/4-16UNF-2B  
7/8-14UNF-2B  
1-1/16-12UN-2B  
1-5/16-12UN-2B  
1-5/8-12UN-2B  
M42 x 2,0-6H



## Heavy-Duty Electronic Controls and Complete Machine Control Systems

HydraForce offers a full line of vehicle controls, joysticks, shifters, sensors, monitors, displays and electrical connectors for integrated control applications in mobile, off-highway and material handling and industrial equipment.

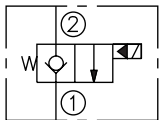
- Rugged and reliable in the most demanding mobile equipment applications.
- Operating temperatures from -40 to 110°C
- Chemical splash immunity.
- Moisture resistance to IP67 specifications.
- Fully resistant to EMI/RFI.
- Vibration resistant to 8 Grms (random) 24-200 Hz, 3-axis

# Solenoid Valves

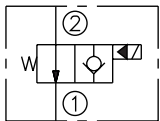


- Continuous-duty coils with a wide range of voltages, terminations and diode options.
- Designed for mobile operating environments including low-voltage, high and low temperatures, and exposed environmental conditions.
- Industry-common cavity sizes -07, -08, -10, -12, -16, -20, as well as drop-in-style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

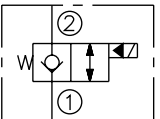
## Poppet-Type, 2-Way Valves



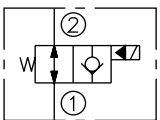
**Normally Closed**  
Models SVxx-20,  
SF08-20



**Normally Open**  
Models SVxx-21  
and SF08-21

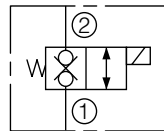


**Normally Closed with  
Reverse Flow Energized**  
Models SVxx-22,  
SL08-22 and SFxx-22

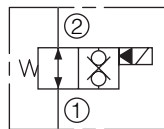


**Normally Open with  
Reverse Flow Energized**  
Models SVxx-23  
and SFxx-23

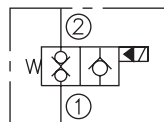
## Poppet-Type, 2-Way Blocking Valves



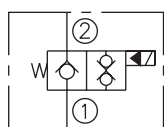
**Normally Closed**  
Models SVxx-26,  
SVxx-28



**Normally Open**  
Models SVxx-29  
**-NEW-**

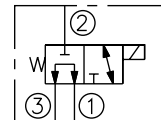


**Normally Closed  
with Outlet Check**  
Model SVCV08-20  
**-NEW-**

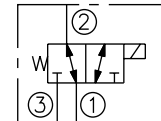


**Normally Open  
with Outlet Check**  
Model SVCV08-21  
**-NEW-**

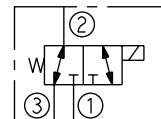
## Spool-Type, 3-Way Valves (cont'd.)



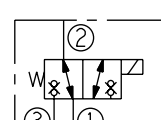
Models SVxx-33



Models SVxx-34

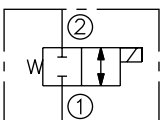


Model SV07-35

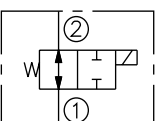


Model SV38-38

## Spool-Type, 2-Way Valves

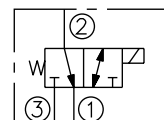


**Normally Closed**  
Models SVxx-24

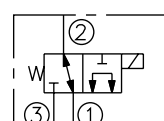


**Normally Open**  
Models SVxx-25

## Spool-Type, 3-Way Valves

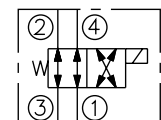


Model SV08-30

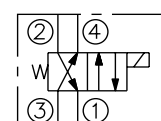


Models SVxx-31

## Spool-Type, 4-Way, 2-Position Valves

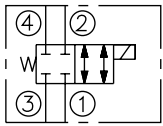


Model SVxx-40

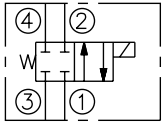


Model SV12-40R

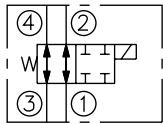
## Spool-Type, 4-Way, 2-Position (cont'd)



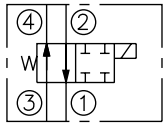
Models SVxx-41



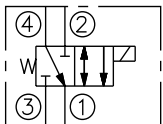
Model SV12-41



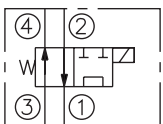
Models SV08-42,  
SV10-42



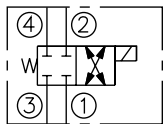
Model SV12-42



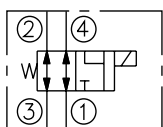
Models SVxx-43



Models SVxx-44

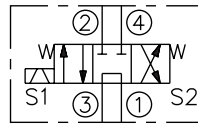


Model SV08-45

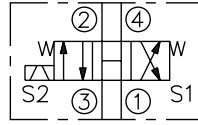


Model SV08-46

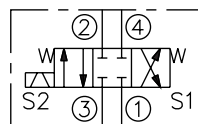
## Spool-Type, 4-Way, 3-Position Valves



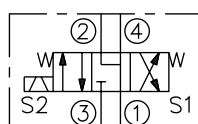
**Tandem Center**  
Models SVxx-47A



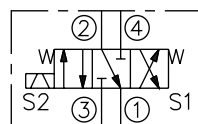
**Open Center**  
Models SVxx-47B



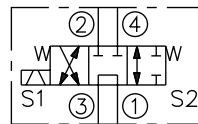
**Closed Center**  
Models SVxx-47C



**"Motor" Spool**  
Models SVxx-47D

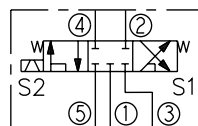


Model SV08-47E

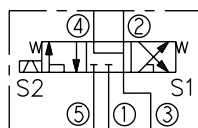


**Modified Tandem Center**  
Model SV10-47F

## Spool-Type, 5-Way, 3-Position Valves

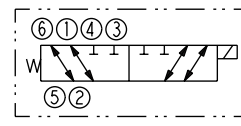


**with Load Sense Port**  
Model SV10-57C

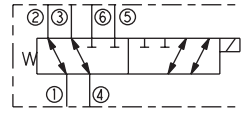


**with Load Sense Port**  
Model SV10-57D

## Spool-Type, 6-Way, 2-Position Valves

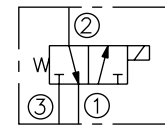


Model SV12-60



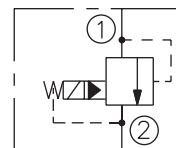
**for Selector or  
Series/Parallel  
Drive Circuits**  
Model SV80-61  
**-NEW-**

## Spool-Type, 3-Way, 2-Position, Drop-In Style



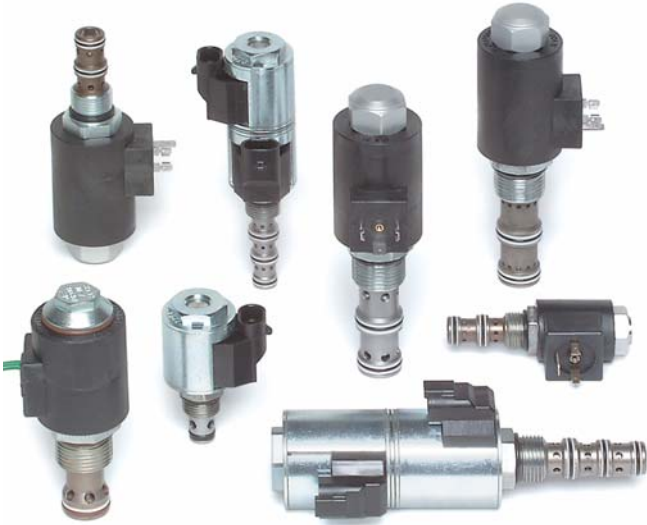
Model SV98-T39

## Spool-Type, 2-Way, with Internal Relief



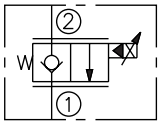
**Normally Open**  
Model SVRV10-26  
**-NEW-**

# Electro-Proportional Valves

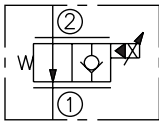


- Designed for reliability in mobile machinery applications and in exposed environmental conditions.
- Excellent linearity and low hysteresis.
- Hardened precision spools and cages for long life.
- Industry-common cavity sizes enable interchangeability with non-proportional valves.
- Drop-in-style, sealed,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

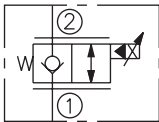
## Proportional Directional Valves, 2-Way



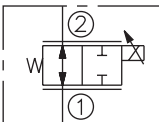
**Normally Closed**  
Models SPxx-20



**Normally Open**  
Model SP08-21

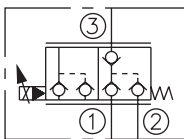


**Normally Closed, Bi-Directional**  
Model SP08-22  
**-NEW-**

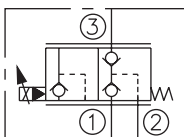


**Normally Open, Bi-Directional**  
Model SP08-25  
**-NEW-**

## Proportional Directional Valves, 3-Port

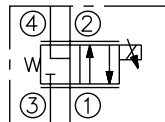


**Normally Closed with Check-Isolated Load Sense**  
Model SPCL10-30  
**-NEW-**

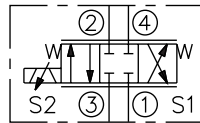


**Normally Closed with Non-Isolated Load Sense**  
Model SPCL10-32  
**-NEW-**

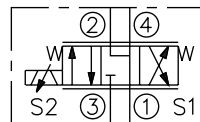
## Proportional Directional Valves, 4-Way



**2-Position, Normally Closed**  
Models SPxx-46R

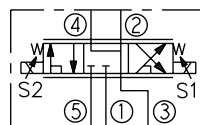


**3-Position, Closed Center**  
Models SPxx-47C and SP08-47CL

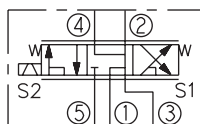


**3-Position, “Motor Spool”**  
Models SPxx-47D and SP08-47DL

## Proportional Directional Valves, 5-Way

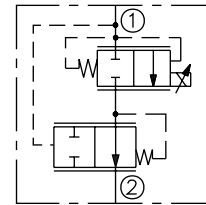


**3-Position, with Load Sense**  
Models SP10-57C and SP10-57D  
**-NEW-**

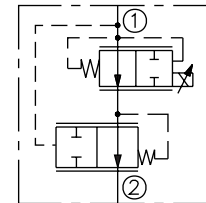


**3-Position, with Brake Release Port**  
Models SP10-58C and SP10-58D  
**-NEW-**

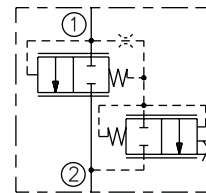
## Proportional Flow Control Valves 2-Way



**Restrictive, Normally Closed**  
Model PV72-20

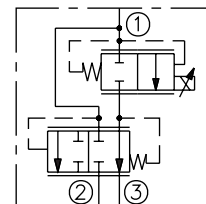


**Restrictive, Normally Open**  
Model PV72-21



**Normally Closed**  
Model PV16-23  
**-NEW-**

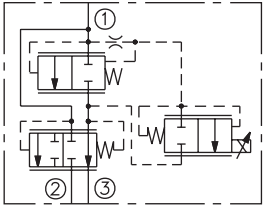
## Proportional Flow Control Valves 3-Way



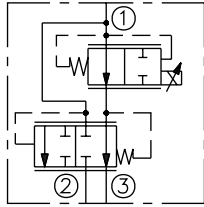
**Bypass, Normally Closed**  
Models PVxx-30 and PV76-30A

# Electro-Proportional Valves

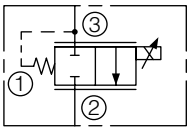
## Proportional Flow Control Valves, 3-Way (cont'd.)



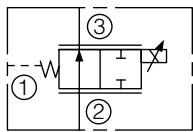
**Bypass, Normally Closed**  
Model PV42-M30  
**-NEW-**



**Bypass, Normally Open**  
Models PVxx-31 and PV76-31A

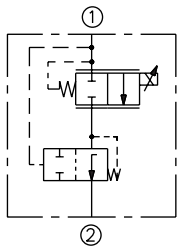


**Normally Closed**  
Models PV7x-33

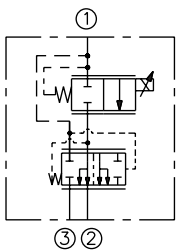


**Normally Open**  
Models PV7x-35

## Proportional Flow Regulators, Pressure Compensated

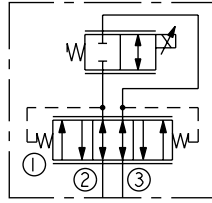


**2-Port, Normally Closed**  
Models PFR7x-33x

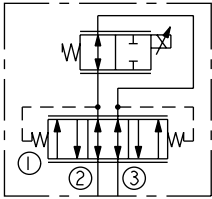


**3-Port, Normally Closed Priority Bypass**  
Models PFR7x-33x

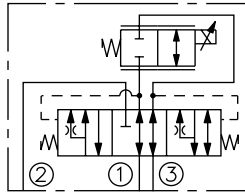
## Proportional Flow Control Valves, Bi-Directional



**Normally Closed**  
Models ZL7x-30

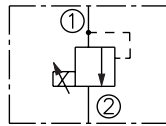


**Normally Open**  
Models ZL7x-31

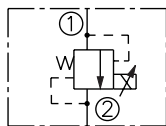


**Normally Closed**  
Models ZL7x-33 and ZL7x-36

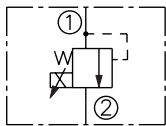
## Proportional Pressure Control Valves, Relief



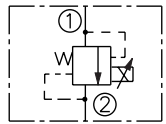
**Increasing Pressure with Increasing Current**  
Models TSxx-20



**Decreasing Pressure with Increasing Current**  
Model TS38-21

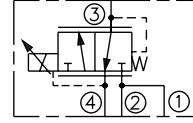


**Pilot-Operated Relief, Increasing Pressure with Increasing Current**  
Models TSxx-26

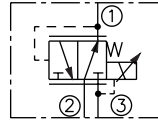


**Pilot-Operated Relief, Decreasing Pressure with Increasing Current**  
Model TSxx-27

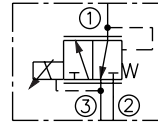
## Proportional Pressure Control Valves, Reducing/Relieving



**Internal Pilot Operated**  
Models TS98-3x and \*TS98-T34  
\*Drop-In Type



**Pilot Operated**  
Models TSxx-36

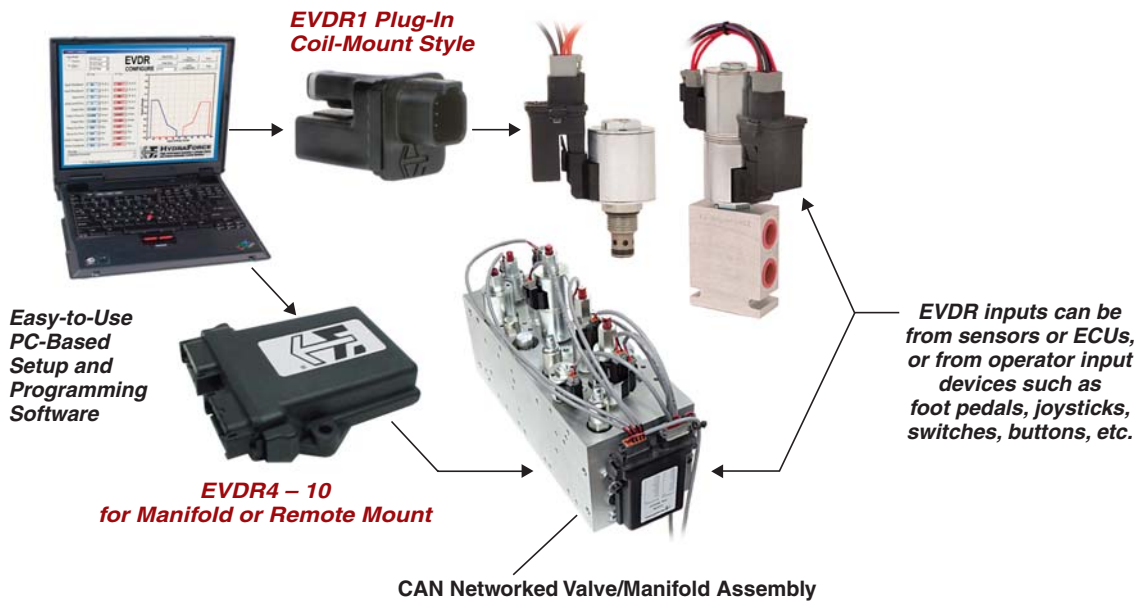


**Direct Operated**  
Model EHPR08-33 and \*EHPR98-T33  
\*Drop-In Type

# Heavy Duty Electronic Machine Control Systems

## Rugged, Reliable Electro-Hydraulic Controllers and Systems

**NEW** PC-Programmable EVDR controllers, heavy-duty ECU machine controllers, and proportional valve drivers, support a wide range of machine control installations.



### EVDR1, EFDR1, ETDR1 Plug-In-Style Controllers for Valve Coil Mounting

The EVDR1 is a general-purpose PC-programmable controller for HydraForce proportional directional, flow or pressure control valves.

EFDR1 for proportional fan drive control, and ETDR1 for transmission control applications.

ExDR1-type controllers are designed for convenient plug-in coil mounting on valve coils with the Deutsch electrical connector.



**EVDR4 and EVDR5** can drive four proportional and one on/off valve with customer-programmable interface. The EVDR4 is stand-alone. The EVDR5 uses a CAN communications interface.

**EVDR6** Operates six on/off coils using J1939 CAN Communications port.

**EVDR9 and EVDR10** CAN expansion modules provide up to nine networked outputs and ten inputs using a J1939 interface.



### ECU Heavy-Duty Machine Controllers

Customer-programmable or HydraForce-programmable using an intuitive function-block-style software programming tool.

Rugged and reliable in the most demanding mobile equipment applications.

Environmentally-sealed with chemical splash immunity.

Vibration resistant to 8 Grms; Temperature range from -40°C to 100°C.

Tested for resistance to EMI/RFI.

Model ECU-MS: 25 inputs; 12 or 20 outputs.

Model ECU-MM: 44 inputs; 20 outputs.

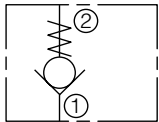
Model ECU-ML: 72 inputs; 26 outputs.

# Directional Valves

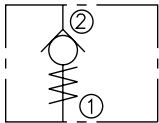


- Industry-common cavity sizes -04, -08, -10, -12, -16, -20 and -42.
- Hydraulically piloted or manually-operated directional and logic valves enable circuit flexibility and performance optimization.
- Proportional, piloted 3-position, 4-way directional valves for flow rates up to 170 lpm/45 gpm.
- Hardened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

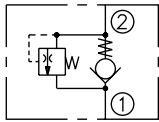
## Check Valves



**Guided**  
Models CVxx-20,  
CV04-B20, CV42-M20

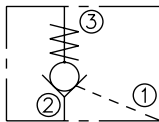


**Guided, Reverse Flow Direction**  
Models CVxx-21,  
CV10-23, CV10-24

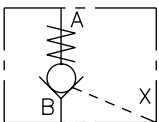


**Guided, with Thermal Relief**  
Models CV10-28

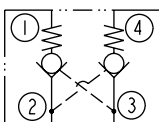
## Pilot-Operated Check Valves, Lock Valves



**Check, Pilot-to-Open**  
Models PCxx-30  
and PC10-32

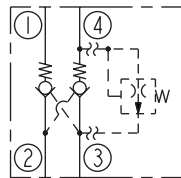


**Check, Pilot-to-Open, In-Line Plumbed Valve**  
Models PCVxx

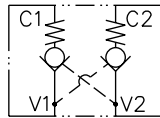


**Check, Dual Pilot-to-Open**  
Model DC08-40

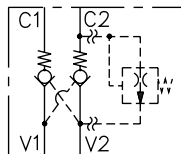
## Pilot-Operated Check Valves, Lock Valves (cont'd.)



**Check, Dual Pilot-to-Open with Optional Thermal Relief**  
Model DC10-40

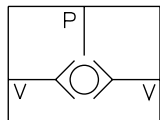


**Check, Dual Pilot-to-Open, In-Line Plumbed**  
Model DCV08

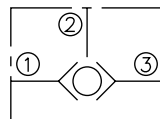


**Lock Valve with Thermal Relief Option, In-Line Plumbed**  
Model DCVxx

## Load Shuttle Valves

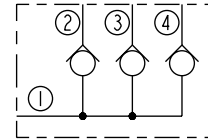


**Ball-Type, In-Line Plumbed**  
Model LSV1

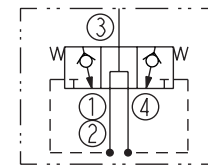


**Ball-Type**  
Models LSxx-30  
and LS04-B30

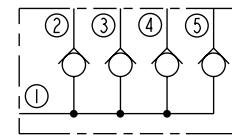
## Load Shuttle Valves (cont'd.)



**Network**  
Model LS10-40

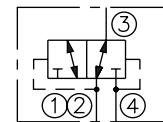


**Inverted**  
Model LS10-41

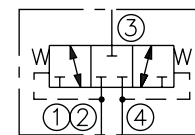


**Network**  
Model LS10-50

## Low Side (Hot Oil) Shuttle Valves



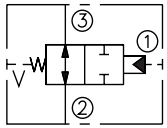
**Normally Closed, Springless**  
Models HSxx-42



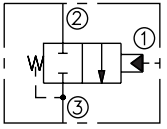
**Spring Centered**  
Models HS5x-43

# Directional Valves

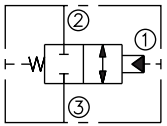
## Piloted, 2-Way Spool, Vented



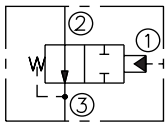
**Normally Open, External Vent**  
Models PDxx-30



**Normally Closed, Internal Vent**  
Models PDxx-32

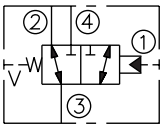


**Normally Closed, External Vent**  
Models PDxx-34

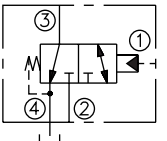


**Normally Open, Internal Vent**  
Models PDxx-35

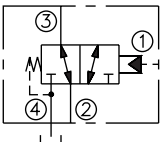
## Piloted, 3-Way Spool, Vented



**External Vent**  
Models PDxx-40 and PD42-M40

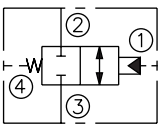


**Internal Vent**  
Models PDxx-41 and PD42-M41

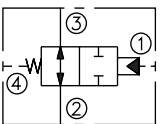


**Internal Vent**  
Models PDxx-42 and PD42-M42

## Piloted, 2-Way Spool, Ported Vent

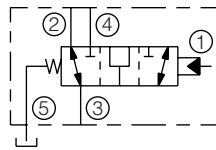


Models PDxx-44

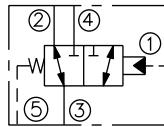


Models PDxx-45 and PD42-M45

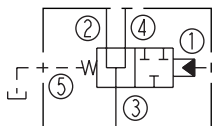
## Piloted, 3-Way Spool, Ported Vent



Model PD10-50

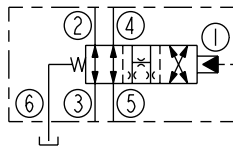


Model PD12-S50

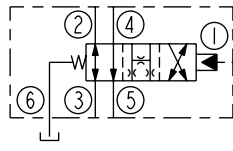


Model PD16-S51

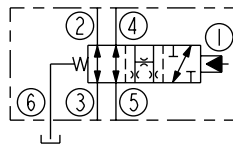
## Piloted, 4-Way Spool, with Vented Spring



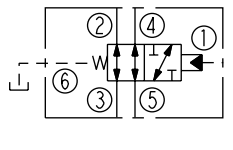
Model PD12-S60N



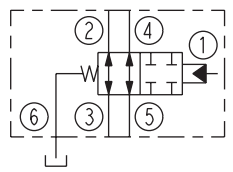
Models PD16-S60N and PD42-S60N



Model PD12-S61N

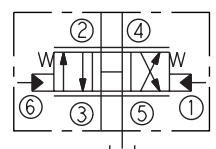


Model PD16-S61N



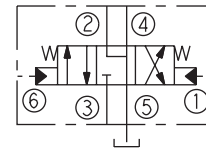
Model PD10-S62  
**-NEW-**

## Piloted, 4-Way Spool



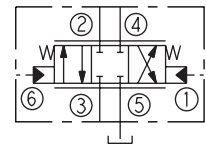
Model PD42-S67B

## Piloted, 4-Way Spool (cont'd.)

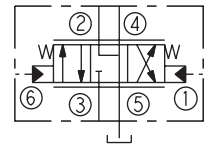


Model PD16-S67D  
**-NEW-**

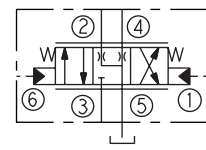
## Piloted-Operated, Proportional



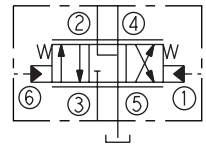
Models PExx-S67C



**Meter-In and Meter-Out**  
Models PExx-S67D

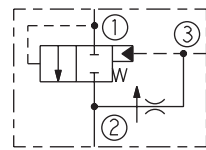


Models PExx-S67H



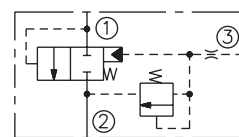
**Meter-In Only**  
Models PExx-S67K

## Pressure-Compensated Logic Elements with Flow Regulation

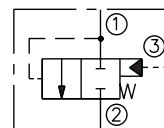


Models EPFR58-35 and EPFRxx-S35  
**-NEW-**

## Piloted Logic Elements



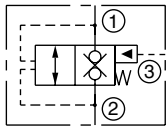
**with Built-In Pressure Relief**  
Model ECR16-S35  
**-NEW-**



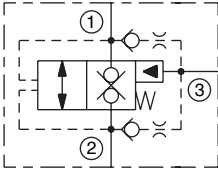
**Spool-Type**  
Models EP08-35 and EPxx-S35

# Directional Valves

## Piloted Logic Elements (cont'd.)

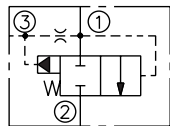


**Poppet-Type**  
Models EPxx-S38



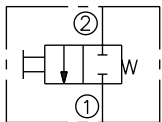
**Poppet-Type, Vented, with Two Built-In Checks**  
Model EP20-S39  
**-NEW-**

## Vented, Spool-Type Logic Elements

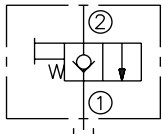


Models EVxx-S34

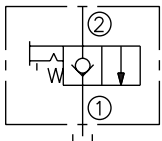
## Manually-Operated, 2-Way Valves



Model MV08-22

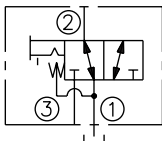


**Spring Return, Pull-to-Open, Normally Closed**  
Models MP08-20 and \*MP10-20  
\*Lock Position Option

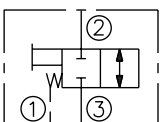


**Spring Return, Pull-to-Open, Normally Closed**  
Models \*MP10-22  
\*Lock Position Option

## Manually-Operated, 3-Way Valves

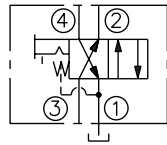


**Spring Return, Pull-to-Shift**  
Model \*MP08-30  
\*Lock Position Option

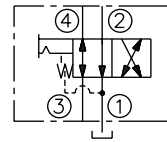


**Spring Return, Pull-to-Shift**  
Model MP08-34

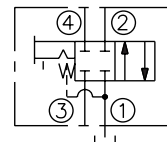
## Manually-Operated, 4-Way Valves



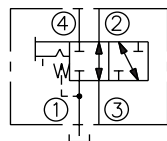
**Spring Return, Pull-to-Shift**  
Model \*MPxx-40  
\*Lock Position Option



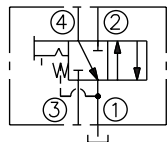
**Spring Return, Push-to-Shift**  
Model MD10-40



**Spring Return, Pull-to-Shift**  
Model \*MPxx-41  
\*Lock Position Option

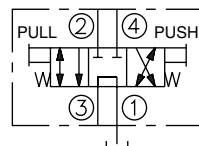


**Spring Return, Pull-to-Shift**  
Model \*MP10-42  
\*Lock Position Option

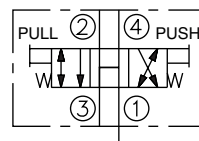


**Spring Return, Pull-to-Shift**  
Model \*MP10-43  
\*Lock Position Option

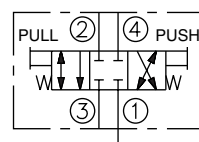
## Manually-Operated, 3-Position, 4-Way Valves, Pull/Push-to-Shift



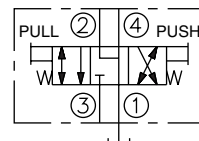
**Tandem Center**  
Model MP10-47A



**Open Center**  
Model MP10-47B

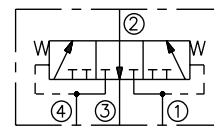


**Closed Center**  
Model MP10-47C

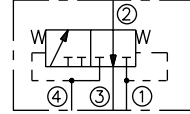


**"Motor Spool"**  
Model MP10-47D

## Brake Release Valves

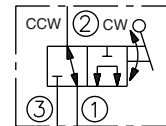


Model BV10-40

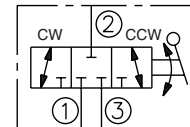


Model BV10-42

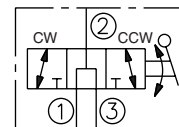
## Manual Rotary Valves, 3-Way



**2-Position**  
Model MR10-31

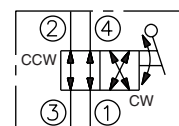


**3-Position**  
Spring Center Option  
Model MR10-37A

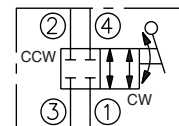


**3-Position**  
Spring Center Option  
Model MR10-37B

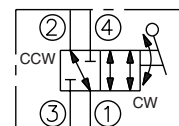
## Manual Rotary Valves, 4-Way, 2-Position



Model MR10-40



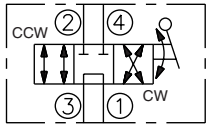
Model MR10-41



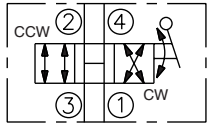
Model MR10-43

# Directional Valves

## Manual Rotary Valves, 4-Way, 3-Position with Optional Spring Center

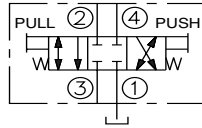


**Tandem Center**  
Model MR10-47A

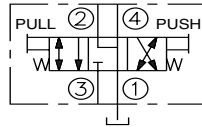


**Open Center**  
Model MR10-47B

## Manual Rotary Valves, 4-Way, 3-Position with Optional Spring Center

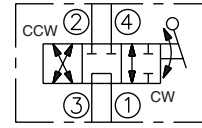


**Closed Center**  
Model MR10-47C

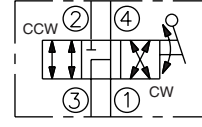


**"Motor Spool"**  
Model MR10-47D

## Manual Rotary Valves, 4-Way, 3-Position with Optional Spring Center



Model MR10-47F



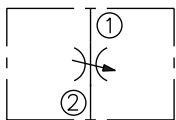
Model MR10-47G

# Flow Control Valves

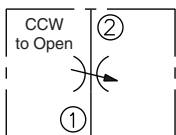


- Variable or fixed orifice restrictor valves.
- Pressure-compensated flow regulators.
- Pressure compensators for restrictive, bypass and priority circuits, with load-sensing system compatibility.
- Optional settings and adjustment styles available.
- Flow dividers/combiners for cylinder synchronizing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

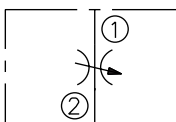
## Needle Valves & Rotary Flow Control



**Needle Valves**  
Models NVxx-20  
and NV10-22

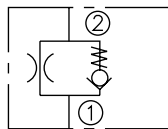


**Rotary Flow Control**  
Model MR10-20

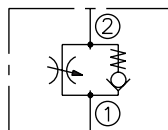


**Needle Valves,  
Fine Adjustment**  
Model NVxx-21

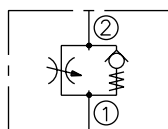
## Flow Controls, Free Flow



**Port 1 to Port 2**  
Model FC08-20F

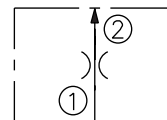


**Port 1 to Port 2**  
Model FCxx-20



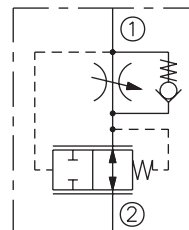
**Port 2 to Port 1**  
Model FC10-21

## Flow Regulators, Pressure Compensated



**Fixed Setting**  
Model FRxx-20F

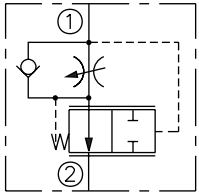
## Flow Regulators, Restrictive, Adjustable



**Pressure Compensated**  
Models FR50-23  
and FR50-28  
**-NEW-**

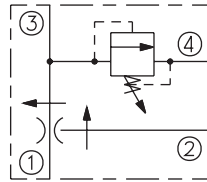
# Flow Control Valves

## Flow Regulator, Restrictive



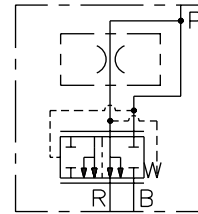
**Adjustable Orifice**  
Model FR12-23

## Flow Regulator with Pressure Relief



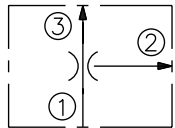
**Priority Type**  
Models FRRVxx-41F  
**-NEW-**

## Pressure Compensators (cont'd.)



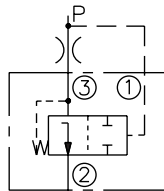
**Priority Bypass Spool Element, Line Plumbed Body**  
Model ECV10-44

## Flow Regulators, Priority Bypass, Pressure Compensated



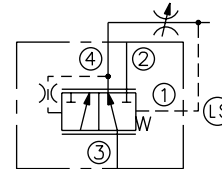
**Fixed Setting**  
Models FRxx-30F

## Pressure Compensators



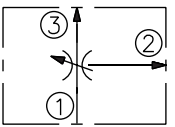
**Spool Element**  
Models ECxx-30

## Pressure Compensators, Load Sensing

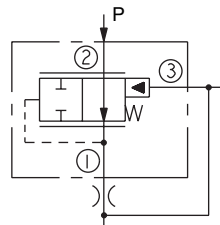


**Priority Type**  
Models ECxx-42

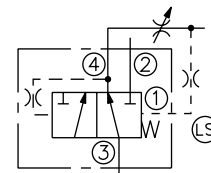
## Flow Regulators, Adjustable, Pressure Compensated



**Priority Bypass, Limited Range Adjustable**  
Model FR10-30A

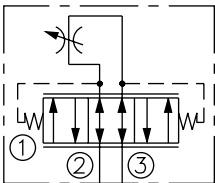


Model EC10-S31

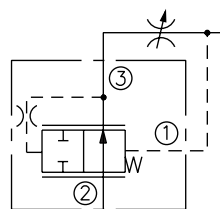


**Priority-on-Demand Static Load Sense**  
Model EC42-M42

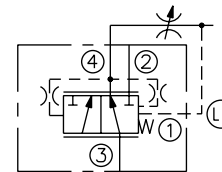
## Flow Regulators, Adjustable, Pressure Compensated



**Bi-Directional**  
Model FRxx-32

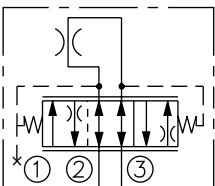


Model ECxx-32

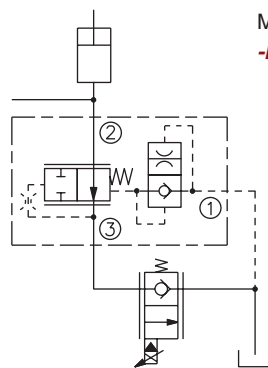


**Dynamic Load Sense**  
Models ECxx-43

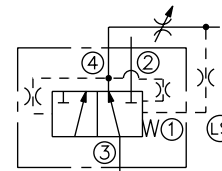
## Flow Regulator, Fixed Orifice



**Bi-Directional**  
Model FR10-32F

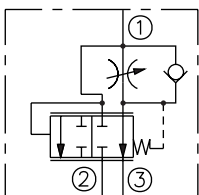


Model ECxx-34  
**-NEW-**

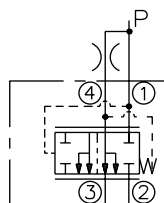


**Dynamic Load Sense, Priority-On-Demand**  
Model EC42-M43

## Flow Control, Bypass

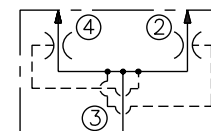


**Adjustable Orifice**  
Model FR10-32F

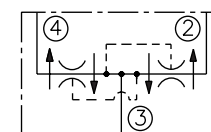


**Priority Bypass Spool Element**  
Models ECxx-40 and EC42-M40

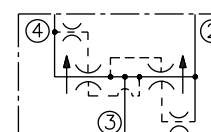
## Flow Dividers/Combiners



Models FDxx-40



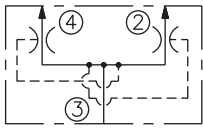
**Cylinder Synchronizing**  
Models FDxx-41



**Anti-Stall**  
Models FDxx-42

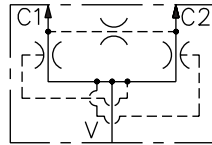
# Flow Control Valves

## Flow Dividers/Combiners (cont'd.)



**Heavy Duty,  
Multi-Function**  
Models FD50-44  
and FD5x-45  
**-NEW-**

## Flow Dividers/Combiners (cont'd.)



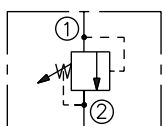
**with Balance  
Orifice**  
Model FDC16

# Pressure Control Valves

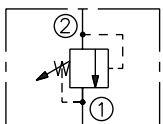


- Pressure relief, reducing/relieving, unloading and sequencing operations.
- Industry common cavity sizes up to -16 (303 lpm/80 gpm).
- Pilot operated, direct-acting, and differential-area pressure regulators for all application conditions.
- Operating pressures up to 350 bar/5000 psi.
- Optional spring ranges and adjustment styles.

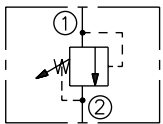
## Relief Valves, Poppet-Type



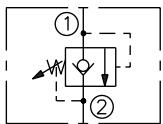
**Direct-Acting**  
Models RVxx-20



**Differential Area  
Poppet, Port 2 to 1**  
Models RVxx-22

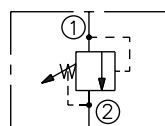


**Differential Area  
Poppet, Port 1 to 2**  
Models RVxx-23



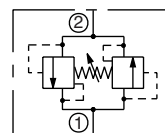
**Pilot-Operated Poppet  
with Reverse Check**  
Models RV10-24  
and RV10-28

## Relief Valves, Spool-Type

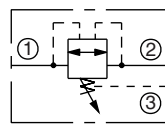


**Pilot-Operated**  
Models RVxx-26

## Relief Valves, Bi-Directional

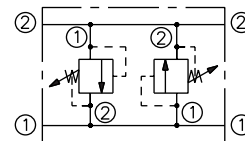


Model CR10-28

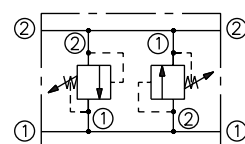


Model CR08-38

## Cross-Over Relief Valves

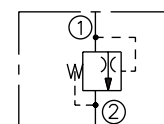


**Direct-Acting  
Poppet**  
Models CRVxx-20



**Differential Area  
Poppet**  
Models CRVxx-22

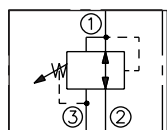
## Thermal Relief Valve



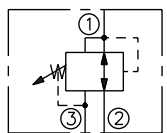
Model TR04-B20

# Pressure Control Valves

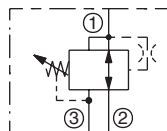
## Pressure Reducing/Relieving Valves



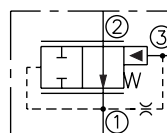
Models PRxx-32



**Pilot-Operated**  
Models PRxx-36

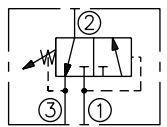


**Spool-Type, Damped, Direct-Acting**  
Models PR5x-38  
**-NEW-**

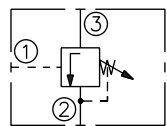


**Pressure Reducing Logic Element**  
Models ERxx-S30

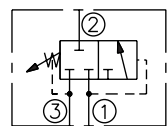
## Sequence with Pilot and Internal Vent



**Internal Pilot and Vent**  
Models PSxx-30 and PS10-31

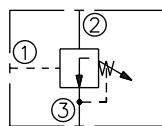


**External Pilot and Internal Vent**  
Models PSxx-32 and PS10-33

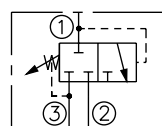


**Internal Pilot and Vent**  
Model PS10-34

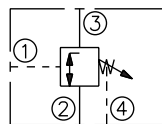
## Sequence Valves with Pilot and Drain



**External Pilot, Internal Drain**  
Models PSxx-35

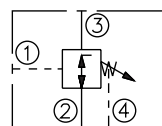


**Internal Pilot-Operated, External Drain**  
Models PSxx-36

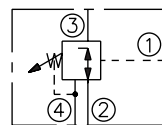


**Normally-Closed, External Pilot and Drain**  
Models PSxx-40

## Sequence Valves with External Pilot

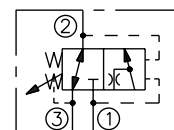


**Normally-Open, External Pilot and Vent**  
Model PS10-41

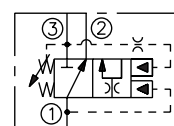


Model PS10-43

## Sequence Valves, Kick-Down

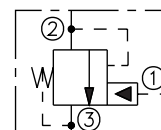


Model KS10-30

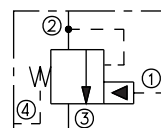


**Internal Pilot**  
Model KS10-31

## Unloading Pilot Valves



**Internal Drain**  
Models UP10-30 and UP10-31



**Remote Sequence**  
Model UP10-40

## Product Guide 2008

For over twenty years, HydraForce has been producing high-performance hydraulic and electro-hydraulic control products for both in-plant equipment and for mobile machinery. Our products are designed to provide superior reliability and performance under the demanding duty-cycle requirements of the heavy-duty industrial equipment markets, as well as the severe environmental conditions of the off-highway and mobile equipment markets. Customer visits are always welcomed.

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From North America Call Toll Free: 1 800 682 6875

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

Member: National Fluid Power Association  
ISO 9001 & QS 9000

**HYDRAFORCE HYDRAULICS LTD**  
St. Stephens Street  
Birmingham B6 4RG England  
Phone: 0121 333 1800  
Fax: 0121 333 1810

Member: British Fluid Power Association  
ISO 9001 & ISO 14001