



# HYDRAFORCE

High Performance Hydraulic Cartridge Valves  
and Electro-Hydraulic Control Systems

**NEW**  
Multi-Function  
High Performance  
Valves  
Now Available



***HYPERFORMANCE***<sup>™</sup>

**HIGH PRESSURE VALVES**

HydraForce, a global leader focused on development of hydraulic cartridge valve technology, has expanded and enhanced its line of *HyPerformance*™ valves to include multi-function high pressure valves. These new multi-function valves are designed to reduce the “hydraulic footprint” - the amount of space used on a machine for hydraulics - while increasing system functionality.

HydraForce valves offer the industry’s highest level of valve performance, enabling the most reliable application of cartridge technology in high duty cycle, high horsepower and high pressure equipment applications.



### **Meets Rigorous NFPA Standard T2.6.1**

The new H-Series *HyPerformance*™ valves supplement the high pressure standard valves currently released in the HydraForce catalog.

H-Series valves are differentiated by the National Fluid Power Association heavy duty qualification test standard (NFPA T 2.6.1) and the new cavity specification.

### **FEATURES:**

- 350 bar/5075 psi continuous operating pressure.
- 420 bar/6090 psi intermittent 10% duty cycle tested.
- Fatigue tested to 420 bar/6090 psi for 2 million cycles.
- Flows up to 379 lpm/100 gpm.
- 1000 hour salt spray tested.
- IP69K rated solenoid coils.
- Single-piece, high endurance PPDl Urethane seals rated to 107°C (225°F)
- Vibration tested (3-axis) to 20G RMS.
- Combined load-sense and relief valve functions

### **BENEFITS:**

High installation torque improves reliability under heavy duty cycle conditions.

Single-piece urethane seals eliminate back-up rings and improve ease of installation. Optional fluorocarbon seals with back-up rings are available. but will change valve life cycle.

Modified cavity, with bottom shoulder, enhances strength and prevents twisting or binding during installation, assuring accurate and consistent performance.

All High Performance Products are tested to the rigorous NFPA T 2.6.1 standard of 900K cycles at 350 bar/5075 psi and 100K at 420 bar/6090 psi to ensure long life and superior performance throughout the life of your machine.

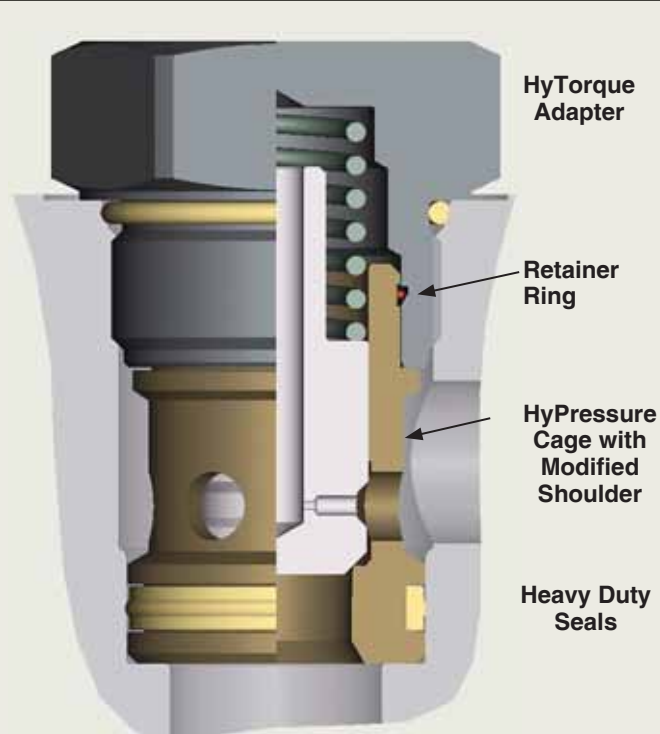
### **HYPRESSURE Reliability**

- H-Series valves are qualified at 1 million cycles at 350 bar / 5075 psi with pressure excursions to 420 bar / 6090 psi for 10% of the duty cycle.
- Burst pressure-tested up to 1379 bar/20,000 psi.
- Fatigue-tested to 420 bar for 2 million cycles with urethane seals.

### **HYPERFORMANCE Cavity**

- H-Series valves use a modified standard cavity with a bottom shoulder to support the cage.
- The valve cage is clamped between the adapter and the bottom shoulder in order to strengthen the pressure holding capability of the cartridge.
- The cavity profile is the same as the standard HydraForce profile with the exception of the bottom shoulder. A revised form tool is required in order to control the shoulder depth.

### **HYPERFORMANCE Construction**



Please consult the individual valve catalog pages for details on torque and cavity interchangeability.

### **HYFLOW – HYHORSEPOWER**

- H-Series valves have been released as a family of products ranging from the -08 cavity size to the metric -42 cavity, with flow ratings up to 379 lpm/100 gpm.

### **HYSTRENGTH Sealing**

- High strength, high temperature-rated PPDI Urethane seals provide reliability under heavy duty cycle operation. Back-up rings are eliminated for streamlined and reliable installation.
- HyPerformance valve performance is qualified with urethane seals. Other seals are available but will change the published life cycle of the valve.

### **HYTORQUE Installation**

- Installation torques of 3 to 4 times standard screw-in cartridges prevents back-out under heavy cyclic high pressure operation.
- The valve cage is retained in, but not fixed, to the adapter in order to prevent distortion or binding during installation.

### **HYVIBRATION Tolerance**

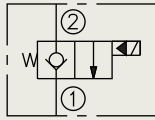
- Valve coils and stem tubes are tested to a 20G RMS 3-axis profile assuring reliability in severe mobile machinery applications.

### **HY-COIL Integrity**

- HydraForce coils are designed for continuous operation at +/-15% of rated voltage assuring reliable and safe operation under cold temperature, weak battery, and continuous duty conditions.
- IP69K-rated E-Coils are tested for severe application conditions including thermal shock, water immersion, vibration, dust, high pressure cleaning, severe load cycling, extreme storage temperatures, chemical resistance and humidity.
- H-Series valves used with E-Coils provide 1000-hour salt spray protection against red rust corrosion.

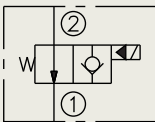
### High Pressure Solenoid Valves

**N.C. Poppet**  
Std. **SF08-20**  
27 lpm/7 gpm



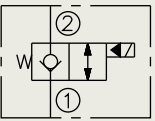
**HyP HSV10-20**  
75 lpm/20 gpm

**N.O. Poppet**  
Std. **SF08-21**  
39 lpm/10 gpm



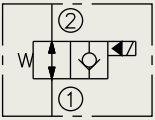
**HyP HSV10-21**  
75 lpm/20 gpm

**N.C. Bi-Directional**  
Std. **SF08-22**  
23 lpm/6 gpm



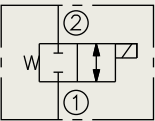
**HyP HSV10-22**  
75 lpm/20 gpm

**N.O. Bi-Directional**  
Std. **SF08-23**  
30 lpm/8 gpm

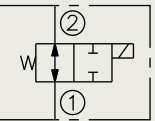


**HyP HSV10-23**  
76 lpm/20 gpm

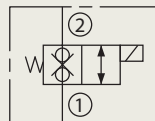
**N.C. Spool**  
**HyP HSV10-24**  
30 lpm/8 gpm  
Late 2011



**N.O. Spool**  
**HyP HSV10-25**  
30 lpm/8 gpm

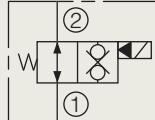


**N.C. Blocking/ Poppet**  
**HyP HSV10-28**  
76 lpm/20 gpm

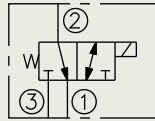


### High Pressure Solenoid Valves (cont'd.)

**N.O. Blocking/ Poppet**  
**HyP HSV10-29**  
76 lpm/20 gpm

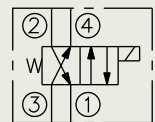


**3-Way Spool**  
Std. **SV58-30**  
15.1 lpm/4 gpm

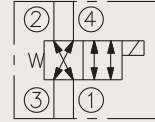


**HyP HSV10-30**  
22 lpm/5.8 gpm  
Early 2012

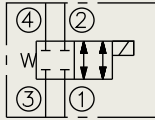
**4-Way N.O. Spool**  
Std. **SV58-40**  
11 lpm/3 gpm



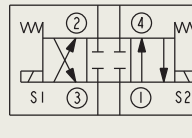
**HyP HSV10-40R**  
23 lpm/6 gpm



**4-Way N.C. Spool**  
Std. **SV58-41**  
17 lpm/4.5 gpm

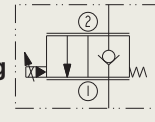


**4-Way 3-Position Spool**  
**HyP HSV10-47C**  
40 lpm/10 gpm  
Late 2011



### High Pressure Electro-Proportional Valves

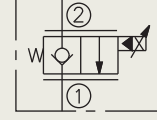
**Proportional Directional 2-Way, N.C. Blocking**



**HyP HSP10-20**  
53 lpm/14 gpm with 11 bar/160 psi compensation  
34 lpm/9 gpm with 5.5 bar/80 psi compensation  
**Available Soon**

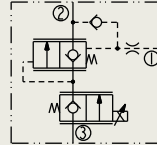
### Electro-Proportional Valves (cont'd.)

**Proportional Directional 2-Way, N.C.**  
**HyP HSP16-20**  
265 lpm/70 gpm



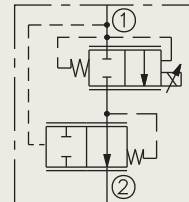
#### Multi-Function

**Proportional Directional 2-Way, N.C.**  
**HyP HSPEC16-30**  
150 lpm/40 gpm  
**Available Soon**



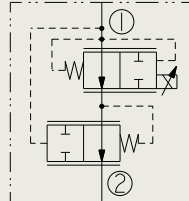
**Proportional Flow Control, Restrictive, N.C.**

**HyP HPV12-20**  
64 lpm/17 gpm  
**Available Soon**



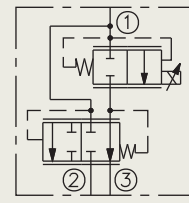
**Proportional Flow Control, Restrictive, N.O.**

**HyP HPV12-21**  
61 lpm/16 gpm  
**Available Soon**



**Proportional Flow Control, Bypass, N.C.**

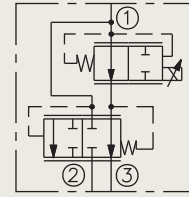
**HyP HPV12-30**  
64 lpm/17 gpm  
**Available Soon**



**HyP HPV16-30**  
151 lpm/40 gpm  
**Early 2012**

**Proportional Flow Control, Bypass, N.O.**

**HyP HPV12-31**  
57 lpm/15 gpm  
**Early 2012**



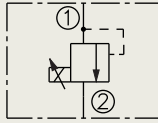
**HyP HPV16-31**  
79 lpm/21 gpm  
**Early 2012**

Valves labeled "Std." utilize standard HydraForce valve cavities, are rated at 345 bar/5000 psi, and are available now.

### Electro-Proportional Valves (cont'd.)

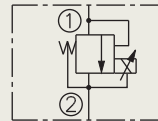
#### Proportional Pressure Control

Std. **TS58-20**  
7.6 lpm/2 gpm



#### Proportional Pressure Control

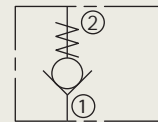
Std. **TS58-21F**  
1.9 lpm/0.5 gpm



### High Pressure Check & Directional Valves

#### Poppet, Check

Std. **CV50-20**  
57 lpm/15 gpm



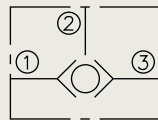
HyP **HCV12-20**  
95 lpm/25 gpm

HyP **HCV16-20**  
151 lpm/40 gpm

HyP **HCV42-M20**  
303 lpm/80 gpm

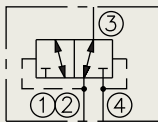
#### Shuttle

Std. **LS50-30**  
30 lpm/8 gpm



#### Hot Oil Shuttle

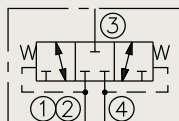
Std. **HS50-42**  
38 lpm/10 gpm



Std. **HS52-42**  
132 lpm/35 gpm

#### Hot Oil Shuttle

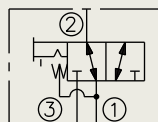
Std. **HS50-43**  
45 lpm/12 gpm



Std. **HS52-43**  
113 lpm/30 gpm

#### Manual Shift Spring Return

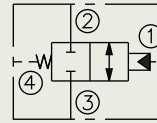
Std. **MP58-30**  
25 lpm/6.5 gpm



### High Pressure Check & Directional Valves (cont'd.)

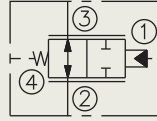
#### 2-Way Directional Pilot-Operated

HyP **HPD42-M44**  
265 lpm/70 gpm



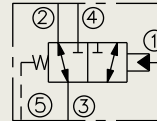
#### 2-Way Directional Pilot-Operated

HyP **HPD42-M45**  
265 lpm/70 gpm



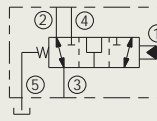
#### 3-Way Directional Pilot-Operated

HyP **HPD16-S50**  
10 lpm/150 gpm  
Available Soon



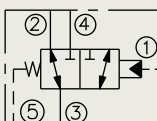
#### 3-Way Directional Pilot-Operated

HyP **HPD16-S50N**  
151 lpm/40 gpm  
Available Soon



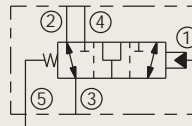
#### 3-Way Directional

Std. **PD42-S50**  
265 lpm/70 gpm



#### 3-Way Directional

HyP **HPD42-S50**  
265 lpm/70 gpm



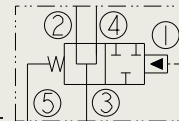
#### 3-Way Directional

HyP **HPD42-S50N**  
265 lpm/70 gpm



#### 3-Way Directional

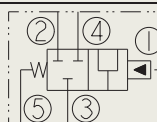
HyP **HPD16-S51**  
151 lpm/40 gpm



HyP **HPD42-S51**  
265 lpm/70 gpm with seal options N, S, and V  
246 lpm/65 gpm with seal options NS, VS, and US

#### 3-Way Directional Pilot-Operated

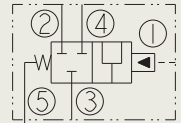
HyP **HPD16-S52**  
151 lpm/40 gpm  
Available Soon



### High Pressure Directional Valves (cont'd.)

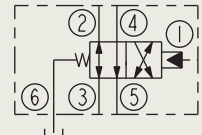
#### 3-Way Directional Pilot-Operated

HyP **HPD42-S52**  
265 lpm/70 gpm



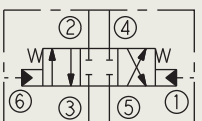
#### 4-Way Directional

HyP **HPD42-S60**  
189 lpm/50 gpm  
Late 2011



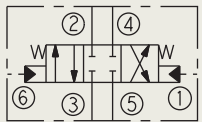
#### 4-Way 3-Pos. N.C.

HyP **HPD16-S67C**  
95 lpm/25 gpm  
Available Soon



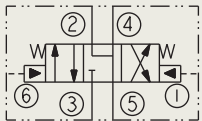
#### 4-Way 3-Pos. N.C.

HyP **HPD42-S67C**  
189 lpm/50 gpm



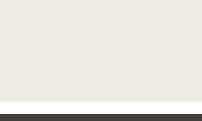
#### 4-Way 3-Pos. N.C.

HyP **HPD16-S67D**  
95 lpm/25 gpm  
Available Soon



#### 4-Way 3-Pos. N.C.

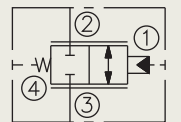
HyP **HPD42-S67D**  
189 lpm/50 gpm



### High Pressure Proportional Directional Valves

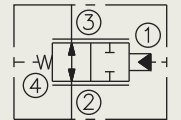
#### 2-Way N.C. Pilot-Operated

HyP **HPE42-M44**  
265 lpm/70 gpm



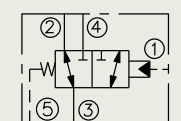
#### 2-Way N.O. Pilot-Operated

HyP **HPE42-M45**  
265 lpm/70 gpm  
Late 2011



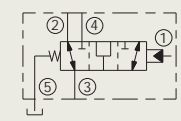
#### 3-Way N.O. Pilot-Operated

HyP **HPE42-S50**  
170 lpm/45 gpm  
Available Soon



#### 3-Way N.O. Pilot-Operated

HyP **HPE42-S50N**  
170 lpm/45 gpm  
Available Soon

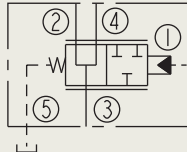


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### High Pressure Proportional Directional Valves (cont'd.)

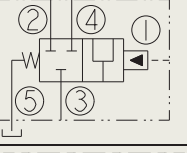
#### 3-Way Spool-Type

**HyP HPE16-S51**  
151 lpm/40 gpm  
**Available Soon**



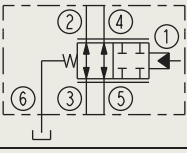
#### Pilot-Operated Spool-Type

**HyP HPE42-S52**  
189 lpm/50 gpm  
**Available Soon**



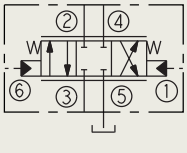
#### Pilot-Operated Spool-Type

**HyP HPE42-S62**  
189 lpm/50 gpm



#### 4-Way 3-Pos. N.C. Pilot-Operated

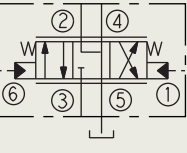
**HyP HPE16-S67C**  
90 lpm/24 gpm  
**Available Soon**



**HyP HPE42-S67C**  
150 lpm/40 gpm  
**Available Soon**

#### Pilot-Operated Meter-in and Meter-Out

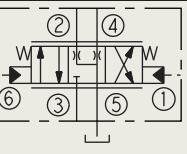
**HyP HPE16-S67D**  
95 lpm/25 gpm  
**Available Soon**



**HyP HPE42-S67D**  
170 lpm/45 gpm  
**Available Soon**

#### 3-Position Pilot-Operated

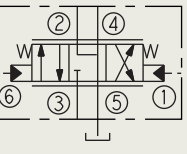
**HyP HPE16-S67H**  
95 lpm/25 gpm  
**Available Soon**



**HyP HPE42-S67H**  
150 lpm/40 gpm  
**Available Soon**

#### Pilot-Operated Meter-Out Only

**HyP HPE16-S67K**  
95 lpm/25 gpm  
**Available Soon**

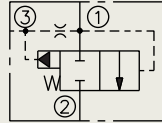


**HyP HPE42-S67K**  
170 lpm/45 gpm  
**Available Soon**

### High Pressure Vented Logic Elements

#### Vented Logic

**Std. EV10-S34**  
76 lpm/20 gpm



**Std. EV12-S34**  
113 lpm/30 gpm

**HyP HEV16-S34**  
190 lpm/50 gpm

**Std. EV20-S34**  
379 lpm/100 gpm

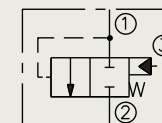
**HyP HEV32-S34**  
379 lpm/100 gpm

**HyP HEV42-S34**  
379 lpm/100 gpm

### High Pressure Piloted Logic Elements

#### Piloted Logic

**Std. EP08-S35**  
38 lpm/10 gpm



**Std. EP10-S35**  
76 lpm/20 gpm

**Std. EP12-S35**  
113 lpm/30 gpm

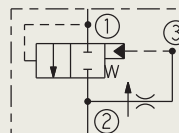
**Std. EP20-S35**  
379 lpm/100 gpm

**HyP HEP42-S35**  
379 lpm/100 gpm

#### Multi-Function

#### Pressure Compensating

**Std. EPFR58-S35**  
38 lpm/10 gpm



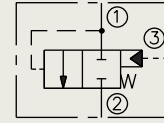
**Std. EPFR50-S35**  
76 lpm/20 gpm

**Std. EPFR52-S35**  
151 lpm/40 gpm

### High Pressure Piloted Logic Elements (cont'd.)

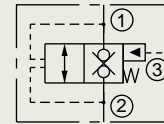
#### Pilot-to-Close

**HyP HEP16-S35**  
189 lpm/50 gpm



#### Poppet Logic

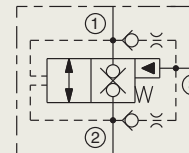
**Std. EP10-S38**  
113 lpm/30 gpm



**HyP HEP42-S38**  
303 lpm/80 gpm

#### Checked Logic

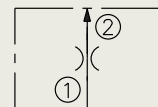
**HyP HEP42-S39**  
284 lpm/75 gpm



### High Pressure Flow Controls

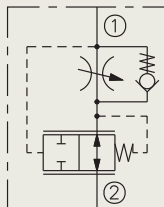
#### Pressure Compensated, Fixed

**Std. FR50-20F**  
22.7 lpm/6 gpm



#### Pressure Compensated, Adjustable

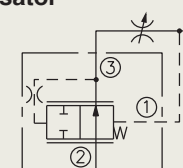
**Std. FR50-23**  
11.5 lpm/3 gpm



**Std. FR50-28**  
34 lpm/9 gpm

#### Pressure Compensator

**HyP HEC12-32**  
83 lpm/22 gpm

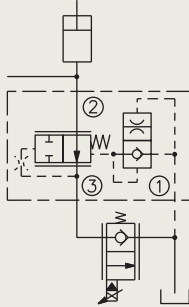


Valves labeled "Std." utilize standard HydraForce valve cavities, are rated at 345 bar/5000 psi, and are available now.

### High Pressure Flow Controls (cont'd.)

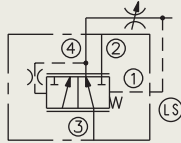
#### Pressure Compensator, Load Holding

**HyP HEC12-34**  
83 lpm/22 gpm



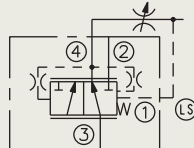
#### Pressure Compensator

**HyP HEC12-42**  
76 lpm/20 gpm



#### Pressure Compensator with Load Sense

**HyP HEC12-43**  
95 lpm/25 gpm

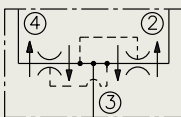


**HyP HEC32-43**

530 lpm/140 gpm with  
10.3 bar/150 psi spring  
379 lpm/100 gpm with  
5.5 bar/80 psi spring

#### Divider/Combiners

**Std. FD50-45**  
19 lpm/5 gpm



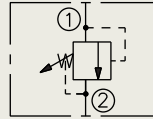
**Std. FD52-45**  
38 lpm/10 gpm

**Std. FD56-45**  
53 lpm/14 gpm

### High Pressure Pressure Controls

#### Direct-Acting Poppet

**Std. RV58-20**  
22 lpm/6 gpm

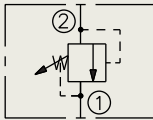


#### Dynamic Relief

**Std. RVD50-20**  
113 lpm/30 gpm

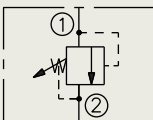
#### Differential Area Poppet

**Std. RV50-22**  
75 lpm/20 gpm



#### Pilot-Operated Spool

**Std. RV50-26**  
113 lpm/30 gpm

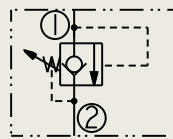


**Std. RV52-26**  
379 lpm/100 gpm

#### Multi-Function

#### Direct-Acting Poppet Relief with Anticavitation Reverse Flow Check

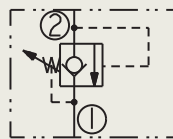
**HyP RVCV56-20**  
113.6 lpm/30 gpm from Port 1 to 2  
174.1 lpm/46 gpm from Port 2 to 1



#### Multi-Function

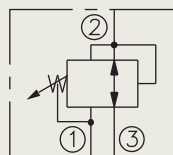
#### Direct-Acting Poppet Relief with Anticavitation Reverse Flow Check

**HyP RVCV10-22**  
37.9 lpm/10 gpm at  
68.9 bar/1000 psi Port 2 to 1  
68.1 lpm/18 gpm at  
275.8 bar/4000 psi Port 2 to 1  
and Reverse Flow  
**Available Soon**



#### Pressure Reducing/Relieving

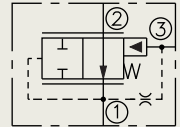
**Std. PRES50-30**  
11.4 lpm/3 gpm



### High Pressure Pressure Controls (cont'd.)

#### Pressure Reducing Pilot Element

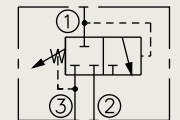
**Std. ER10-S30**  
68 lpm/18 gpm



**Std. ER12-S30**  
114 lpm/30 gpm

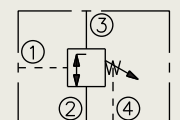
#### Sequence, Pilot-Operated

**Std. PS50-36**  
57 lpm/15 gpm



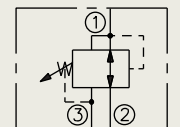
#### Sequence, Normally Closed

**Std. PS50-40**  
22 lpm/6 gpm



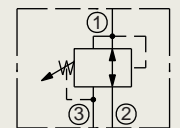
#### Reducing/Relieving, Pilot Operated

**Std. PR50-36**  
56 lpm/15 gpm



#### Reducing/Relieving, Direct-Acting

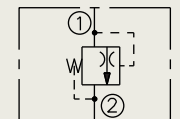
**Std. PR58-38**  
19 lpm/5 gpm



**Std. PR50-38**  
72 lpm/19 gpm

#### Thermal Relief

**Std. TR04-B20**



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**Main headquarters, engineering and manufacturing facility in Lincolnshire Illinois, just north of Chicago.**



**European headquarters, engineering and manufacturing facility in Birmingham, England.**



**Precision machining facility in Lincolnshire, Illinois.**



**Asian/Pacific headquarters, precision machining and cartridge assembly facility in Changzhou, China, near Shanghai.**

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**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: 0121 333 1800  
Fax: 0121 333 1810

Member: British Fluid Power Assoc.  
ISO 9001 & ISO 14001

**HYDRAFORCE CHINA LTD**

388 W. Huanghe Road  
Building 15A  
GDH Changzhou Airport Indl Park  
Xinbei District  
Changzhou, China 213022  
Phone: +86 186 2190 9398

**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: [bharatb@hydraforce.com](mailto:bharatb@hydraforce.com)

**HYDRAFORCE HYDRAULICS LTD**

Prager Ring 4-12  
D-66482 Zeilbrucken, Germany  
Tel: +49 (0) 6332 79 2350  
Mobile: +49 (0) 162 200 1553  
Fax: +49 (0) 6332 79 2359  
Email: [markusb@hydraforce.com](mailto:markusb@hydraforce.com)

**HYDRAFORCE KOREA LLC**

#306, Mirim Plaza  
1132-1, Jungdong, Wonmigu,  
Bucheon, Kyunggido, Korea  
Tel: +82 32 328 2170  
Fax: +82 32 328 2172  
Email: [jong-seongl@hydraforce.com](mailto:jong-seongl@hydraforce.com)



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