



Relief valves are available in direct-acting poppet, differential area poppet, and pilot-operated spool types. Models are available for flows up to 303 lpm (80 gpm). Bi-directional relief valves are available for flows to 60 lpm (16 gpm). Thermal relief valves are designed to protect components from thermal expansion of trapped fluid.

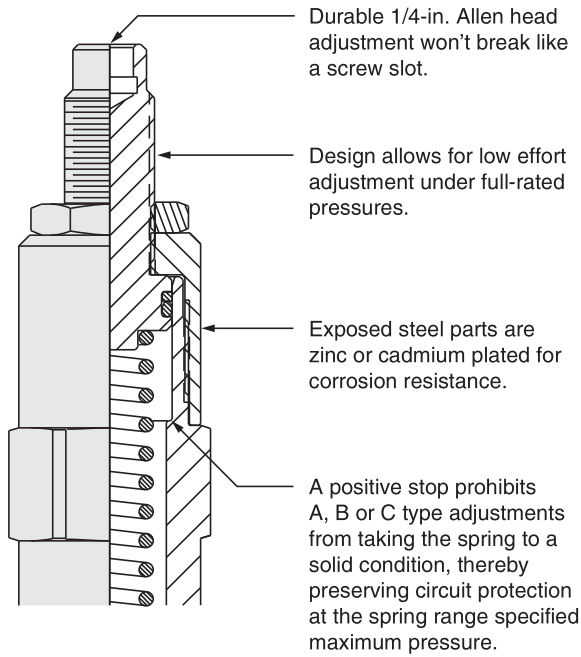
Pressure reducing valves, with optional spring ranges, are designed to regulate the pressure in a secondary circuit. Models are available for flows up to 68 lpm (18 gpm).

Sequence valves direct oil to or from a secondary circuit once a predetermined pressure is attained in the controlling circuit. A wide range of sequence valves, with optional spring ranges, are available to provide unique circuit logic. Models are available for flows up to 56 lpm (15 gpm).

- Relief, reducing and sequence type valves.
- Rapid response to pressure surges.
- Operating pressures to 345 bar (5000 psi).
- Hardened precision poppets, seats, spools and cages for long life and low leakage.
- Industry common cavities—compact sizes.
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges.

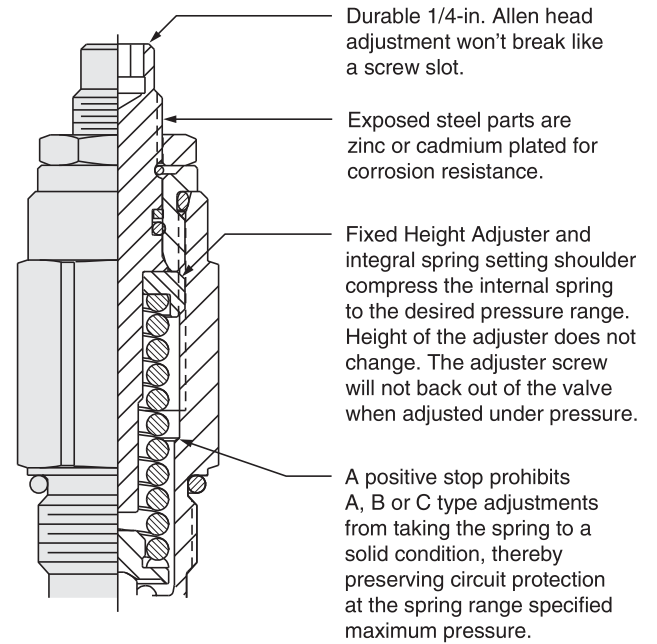
# Pressure Adjustment Options

## “A” — 1/4-in. Hex Allen Head

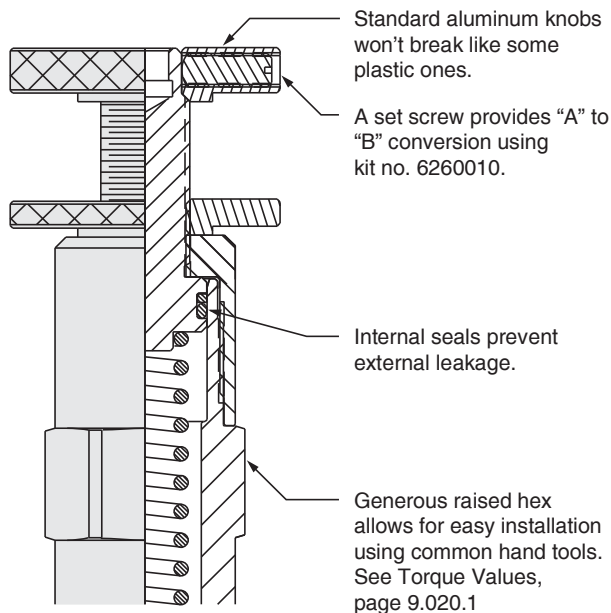


## “A-Alt.” — 1/4-in. Hex Allen Head

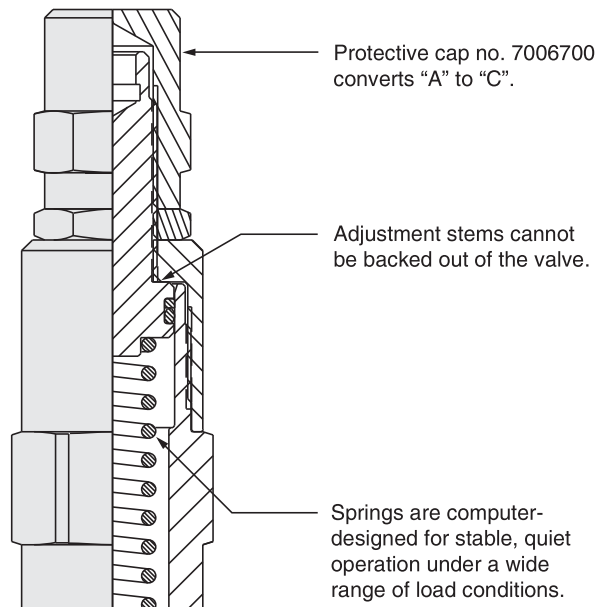
For valve models RVD50-20 and CB10-30 only.



## “B” — 1 1/2-in. Diameter Aluminum Knob

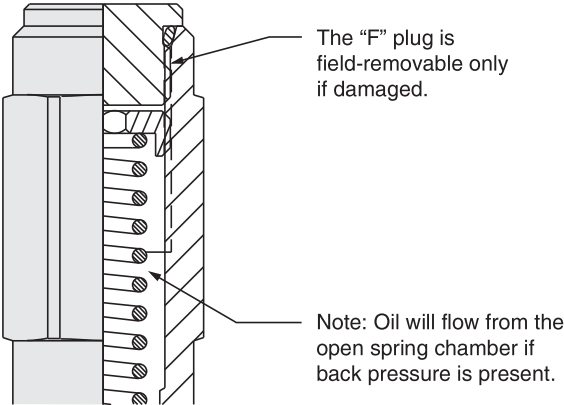


## “C” — 1/4-in. Hex with Cover Cap

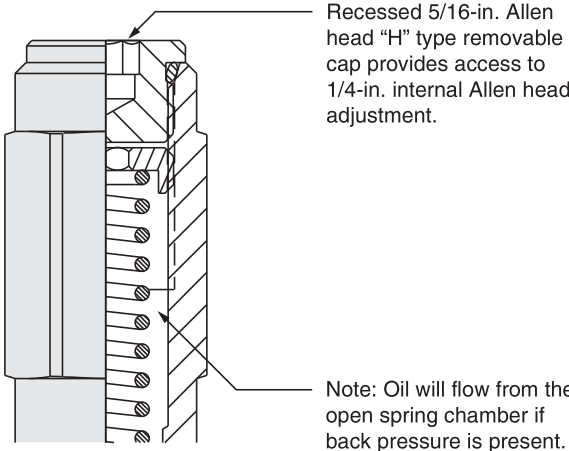


# Pressure Adjustment Options (cont'd)

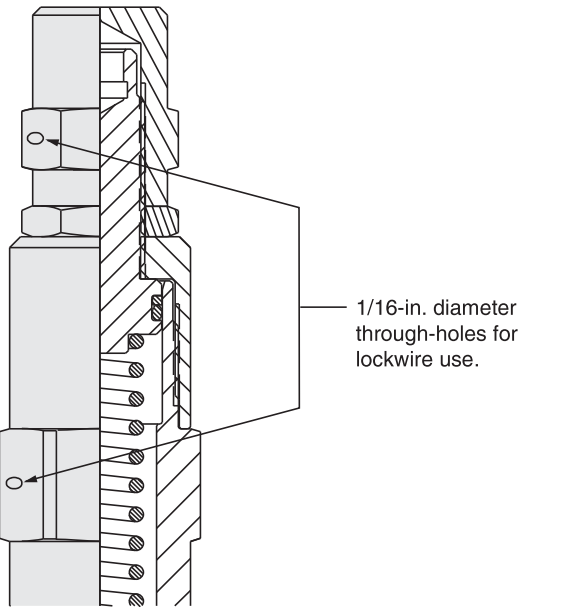
## “F” — Factory Preset, Non-Adjustable



## “H” — Factory Preset, Adjustable



## “L” — Option “C” with Lockwire Holes

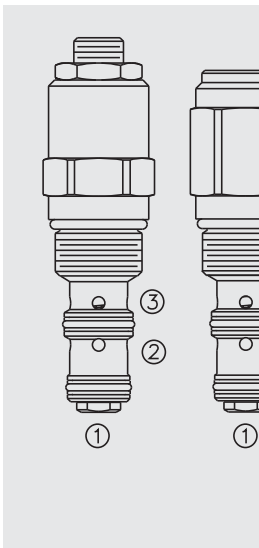


## Adjusting Without a Gauge

Percent of Spring Pressure Range Achieved at 1 Revolution:

Valve Size	Adj. Type A, B, C, L
-08	12.5%
-10	10%
-12	10%

# CB10-30 Motion Control Valve



## DESCRIPTION

A low leakage, pilot-operated motion control valve designed to regulate the lowering of over-running loads, while providing free reverse flow and thermal relief protection at the actuator..

## OPERATION

The **CB10-30** is a low leakage, poppet-style control valve designed to restrict flow from port 2 to port 3 in relation to the pilot signal supplied at port 1. The valve includes free flow reverse flow and thermal relief protection at port 2. For maximum safety, motion control valves are designed to be screwed into an actuator or actuator mounted housing; or according to user specifications they can be incorporated into other manifold configurations.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** up to 207 bar (3000 psi)

**Flow:** up to 19 lpm (5 gpm); see performance chart

**Internal Leakage:** 10 drops per minute up to 85% of pressure setting

**Pressure Setting Defined:** Pressure evident at 15 to 25 drops per minute

**Pilot Ratio:** 7 to 1

**Standard Spring Ranges:**

**Code 22:** 17 to 152 bar (250 to 2200 psi)

**Code 25:** 0 to 172 bar (0 to 2500 psi): F option only

**Code 30:** 55 to 207 bar (800 to 3000 psi)

**Temperature:** -40 to 120°C with standard Buna N seals

-35 to 204°C with Fluorocarbon seals

-54 to 107°C with Polyurethane seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

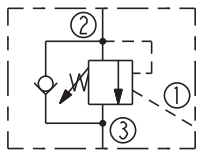
**Cavity:** VC10-3, Variation A; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

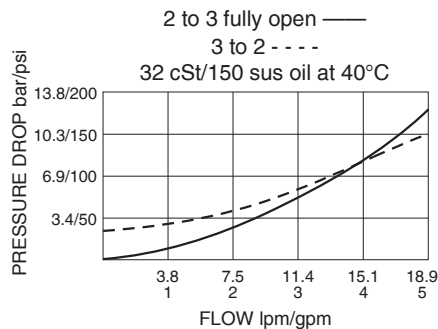
**Seal Kit:** SK10-3X-MM; See page 8.650.1

## SYMBOLS

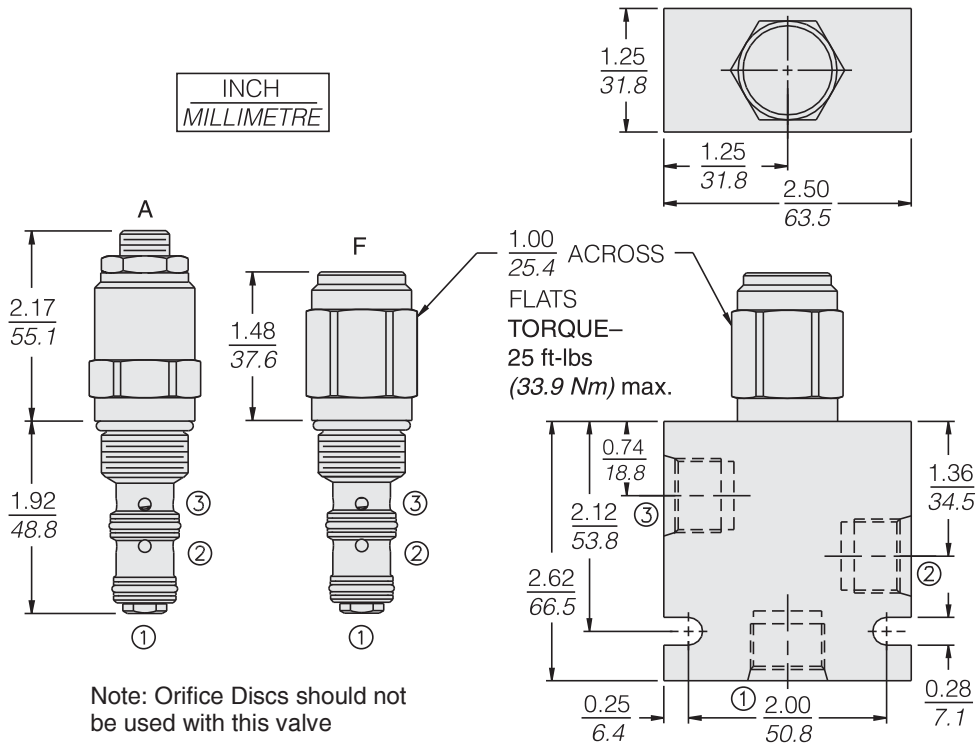
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DIMENSIONS



## MATERIALS

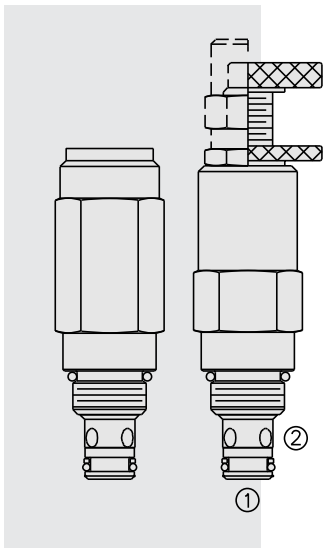
**Cartridge:** Weight: 0.21 kg. (0.47 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1.

## TO ORDER

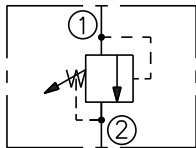
<b>CB10-30</b>		/	
<b>Adjustment Option</b>		<b>Setting in bar<sup>†</sup></b>	
*1/4 in. Hex Allen Head	<b>A</b>	(Blank)	for Adjustable, or Specify, for example:
Factory Preset		<b>M25</b>	25 bar
Non-Adjustable	<b>F</b>	<b>M100</b>	100 bar
*See page 6.003.1 for 'A-Alt' Fixed Height Adjuster details.		<b>Setting in psi<sup>†</sup></b>	
		(Blank)	for Adjustable, or Specify, for example:
		<b>9.0</b>	900 psi
		<b>21.0</b>	2100 psi
		<sup>†</sup> Adjustable valves will be preset to approx. 50% of spring max. potential.	
<b>Porting</b>		<b>Spring Range</b>	
Cartridge Only	<b>0</b>	<b>22</b>	17 to 152 bar (250 to 2200 psi)
SAE 6	<b>6T</b>	<b>25</b>	0 to 172 bar (0 to 2500 psi)
SAE 8	<b>8T</b>	<b>30</b>	155 to 207 bar (800 to 3000 psi)
1/4 in. BSP*	<b>2B</b>	Spring Range 25 requires Adjustment option F.	
3/8 in. BSP*	<b>3B</b>		
*BSP Body; U.K. Mfr Only			
<b>Seals</b>			
	Buna N (Std.)	<b>N</b>	
	Fluorocarbon	<b>V</b>	
	Polyurethane	<b>P</b>	

# RV08-20 Relief, Direct-Acting Poppet

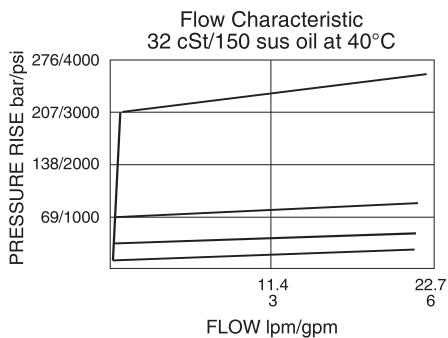


## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, poppet-type, hydraulic relief valve intended for lower flow circuits requiring low internal leakage.

## OPERATION

The RV08-20 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the spring-opposed poppet from its seat.

For settings over 228 bar (3300 psi), see model RV58-20.

Note: The RV08-20 may be used in cross-over relief applications (back pressure on 2) with the use of the "C" double back-up ring seal option. See Ordering Table.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustment options A, B, and C: positive stops prevent springs from going solid.
- Optional spring ranges to 248 bar (3600 psi).
- Rapid response to pressure changes.
- Compact size.

## RATINGS

**Operating Pressure:** 248 bar (3600 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at max. setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 75% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 80% of crack pressure

**Standard Spring Ranges:** Due to manufacturing tolerances, it may be possible to adjust the valve either lower or higher than the nominal ratings shown below.

Spring Model Code	Nominal Factory Rating	Maximum Solid Adjustment
5	3.45 – 34.48 bar (50 – 500 psi)	48.28 bar (700 psi)
9	6.90 – 75.86 bar (100 – 1100 psi)	103.45 bar (1500 psi)
18	17.24 – 158.62 bar (250 – 2300 psi)	200 bar (2900 psi)
33	17.24 – 248.28 bar (250 – 3600 psi)	303.45 bar (4400 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

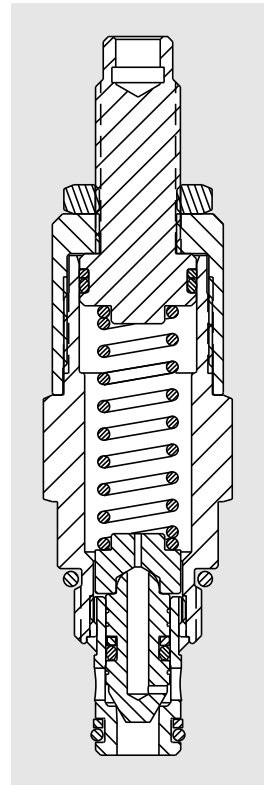
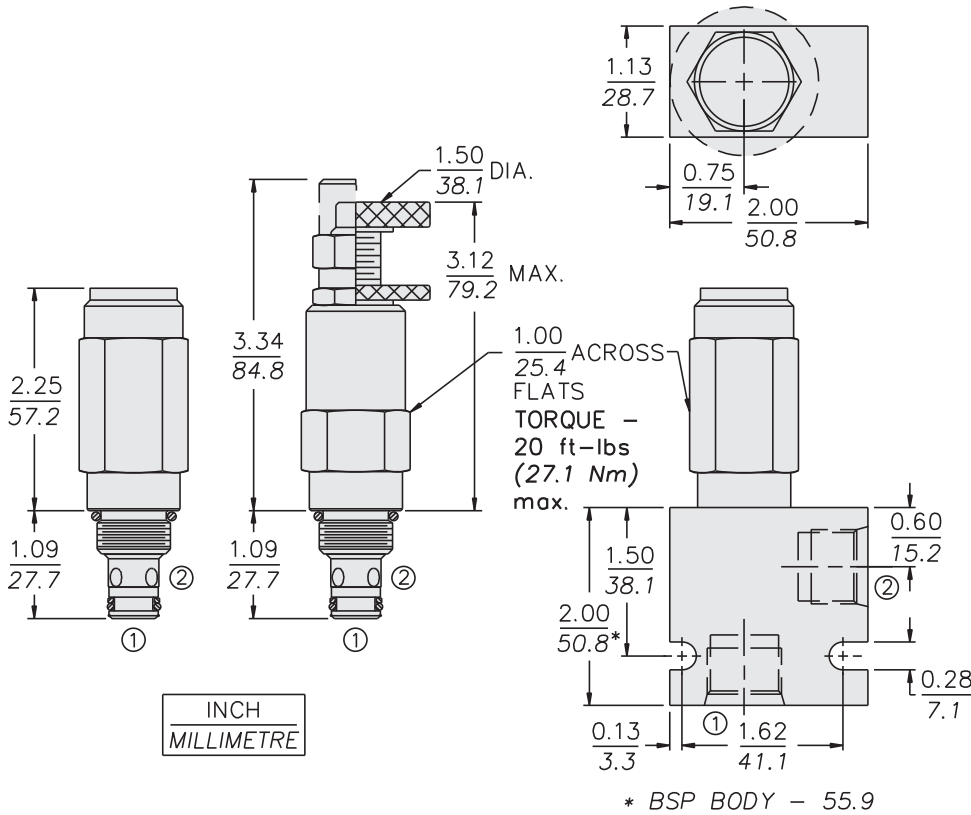
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC08-2; See page 9.108.1

**Cavity Tool:** CT08-2XX; See page 8.600.1

**Seal Kit:** SK08-2X-B; See page 8.650.1; SK08-2X-M (for cross-over relief application)

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.23 kg. (0.50 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and back-up standard. Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**

**RV08-20** - - - /

**Adjustment Option**

- 1/4 in. Hex Allen Head **A**
- 1-1/2 in. Dia. Alum. Knob **B**
- Option A w/ Cover Cap **C**
- Factory Preset Non-Adj. **F**
- Factory Preset Hidden Adj. **H**
- Option C w/ Lockwire Holes **L**

**Porting**

- Cartridge Only **0**
- SAE 4 **4T**
- SAE 6 **6T**
- 1/4 in. BSP\* **2B**
- 3/8 in. BSP\* **3B**
- 1/2 in. BSP\* **4B**

\*BSP Body; U.K. Mfr. Only

**Seals**

- Pressure on P Only:**
- N** Buna N (Std.)
- V** Fluorocarbon
- Bidirectional Pressure:**
- NC** Buna N
- VC** Fluorocarbon

**Setting in bar<sup>†</sup>**

(Blank) for Adjustable, or Specify, for example:

- M25** 25 bar
- M100** 100 bar

**Setting in psi<sup>†</sup>**

(Blank) for Adjustable, or Specify, for example:

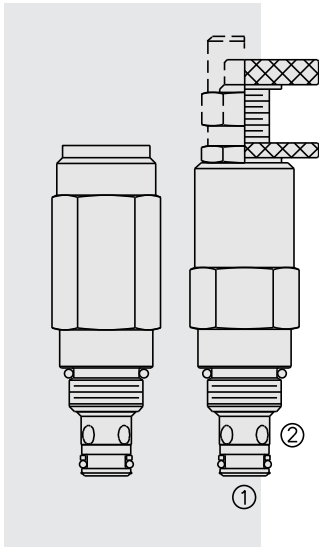
- 9.0** 900 psi
- 23.5** 2350 psi

**Spring Range**

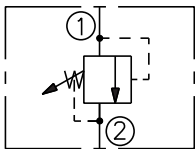
- 5** 3.45 to 34.48 bar (50 to 500 psi)
- 9** 6.90 to 75.86 bar (100 to 1100 psi)
- 18** 17.24 to 158.62 bar (250 to 2300 psi)
- 33** 17.24 to 248.28 bar (250 to 3600 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

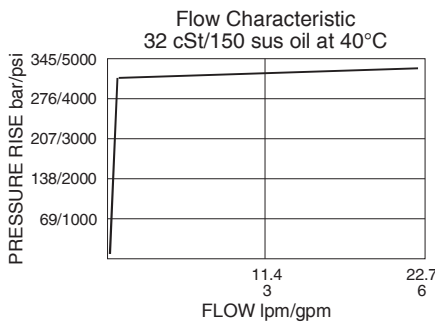
# RV58-20 Relief, Direct-Acting Poppet, High Pressure



**ISO SYMBOL:**



**PERFORMANCE** (Cartridge Only)



**DESCRIPTION**

A screw-in, cartridge-style, direct-acting, poppet-type, hydraulic relief valve intended for lower flow circuits requiring low internal leakage at higher pressures.

**OPERATION**

The RV58-20 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the spring-opposed poppet from its seat.

Note: The RV58-20 may not be used in cross-over relief applications (back pressure on 2).

**FEATURES**

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Rapid response to pressure changes.
- Compact size.

**RATINGS**

**Operating Pressure:** 345 bar (5000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 75% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 80% of crack pressure

**Standard Spring Range:** 55.2 to 317.2 bar (800 to 4600 psi)

**Operating Temperature:** -54 to 107°C with standard Polyurethane seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC08-2; See page 9.108.1

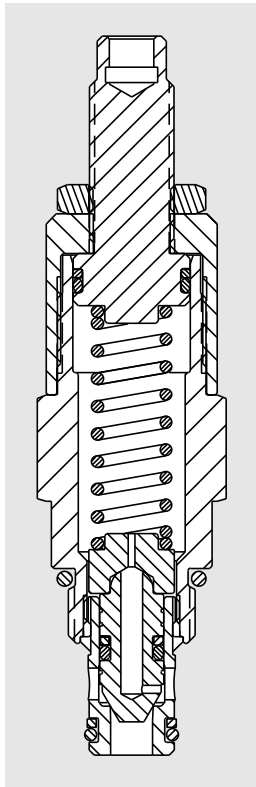
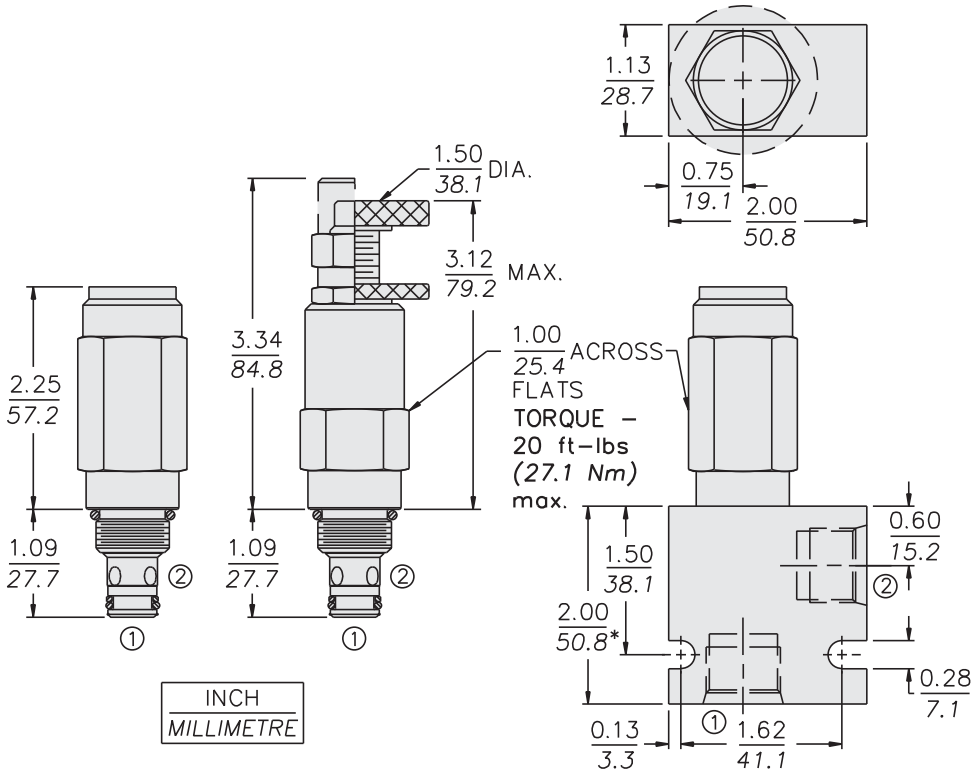
**Cavity Tool:** CT08-2XX; See page 8.600.1

**Seal Kit:** SK58-2X-B; See page 8.650.1



**RV58-20**

**DIMENSIONS**

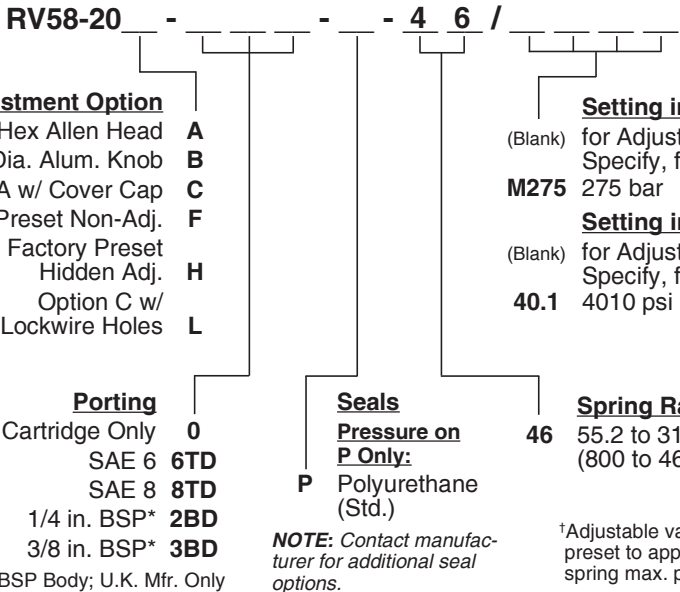


**MATERIALS**

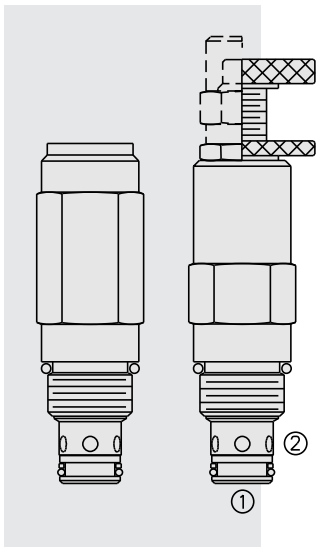
**Cartridge:** Weight: 0.23 kg. (0.50 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Polyurethane O-rings and back-up standard. Anodized aluminum knobs and caps.

**Ported Body:** Weight: 0.54 kg. (1.20 lbs.); Ductile Iron (code "D") standard, consult factory for weight, dimensions may differ. Rated to 345 bar (5000 psi). See page 8.008.1.

**TO ORDER**



# RV10-20 Relief, Direct-Acting Poppet



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, poppet-type, hydraulic relief valve intended for use as a pressure limiting device for common hydraulic circuit protection.

## OPERATION

The **RV10-20** blocks flow from 1 to 2 until sufficient pressure is present at 2 to force the poppet from its seat.

The cartridge offers fast response to load changes in typical hydraulic circuits requiring low internal leakage.

NOTE: The RV10-20 may be used in cross-over relief applications (back pressure on 2) with the use of the "C" double back-up ring seal option. See Ordering Table.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustment options A, B, and C: positive stops prevent springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 228 bar (3300 psi).
- Rapid response to pressure surges.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 228 bar (3300 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 80% of nominal setting

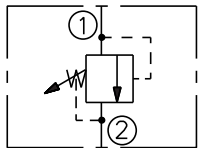
**Crack (Set) Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 85% of crack pressure

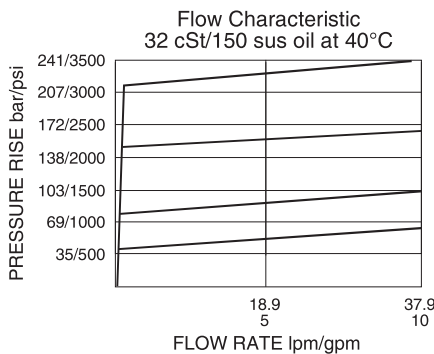
**Standard Spring Ranges:** Due to manufacturing tolerances, it may be possible to adjust the valve either lower or higher than the nominal ratings shown below.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



Spring Model Code	Nominal Factory Rating	Maximum Solid Adjustment
6	3.45 – 41.38 bar (50 – 600 psi)	55.17 bar (800 psi)
12	10.34 – 82.76 bar (150 – 1200 psi)	110.34 bar (1600 psi)
23	17.24 – 158.62 bar (250 – 2300 psi)	200 bar (2900 psi)
33	17.24 – 227.59 bar (250 – 3300 psi)	255.17 bar (3700 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

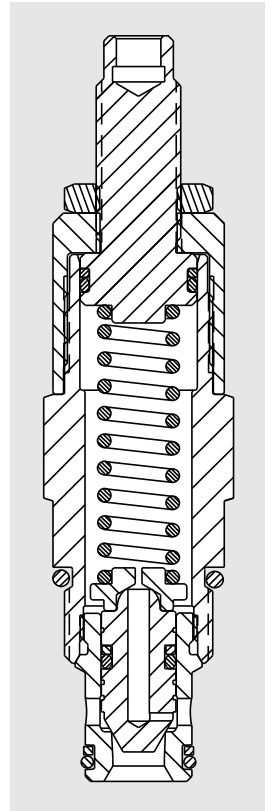
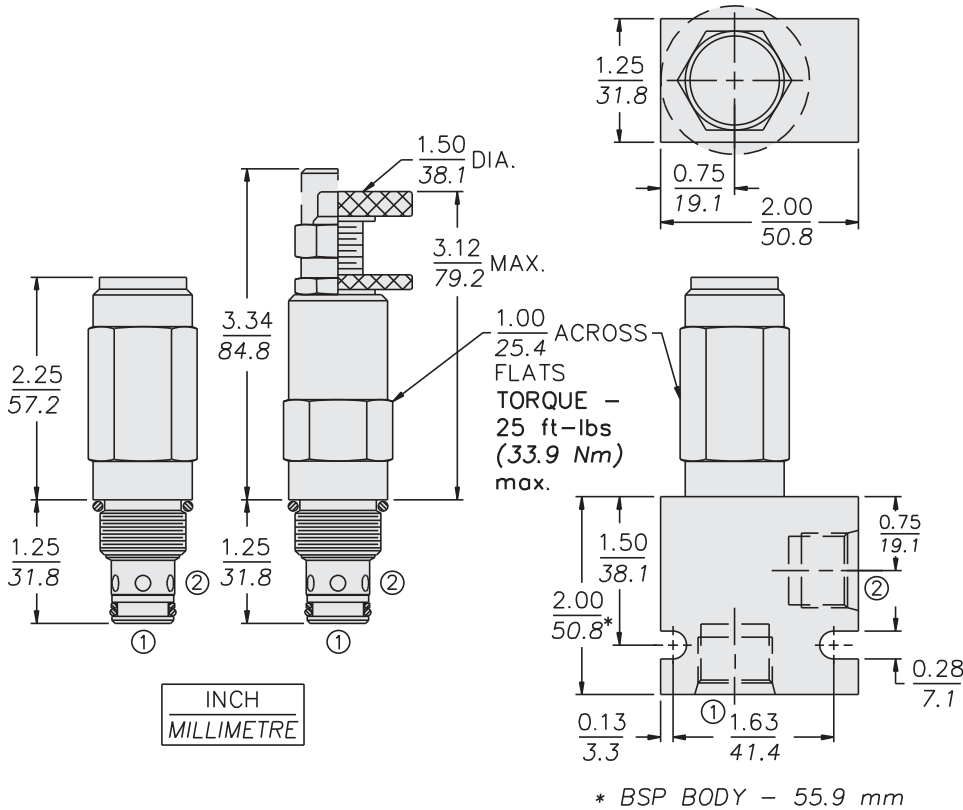
**Cavity:** VC10-2; See page 9.110.1

**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK10-2X-B; See page 8.650.1; SK10-2X-M (for cross-over relief application)

# RV10-20

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.23 kg. (0.50 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-up standard;  
 Anodized aluminum knobs.

**Standard Ported Body:** Weight:  
 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

## TO ORDER

### RV10-20

- Adjustment Option**
- 1/4 in. Hex Allen Head **A**
  - 1-1/2 in. Dia. Alum. Knob **B**
  - Option A w/ Cover Cap **C**
  - Factory Preset Non-Adj. **F**
  - Factory Preset Hidden Adj. **H**
  - Option C w/ Lockwire Holes **L**

- Porting**
- Cartridge Only **0**
  - SAE 6 **6T**
  - SAE 8 **8T**
  - 1/4 in. BSP\* **2B**
  - 3/8 in. BSP\* **3B**
  - 1/2 in. BSP\* **4B**

\*BSP Body; U.K. Mfr. Only

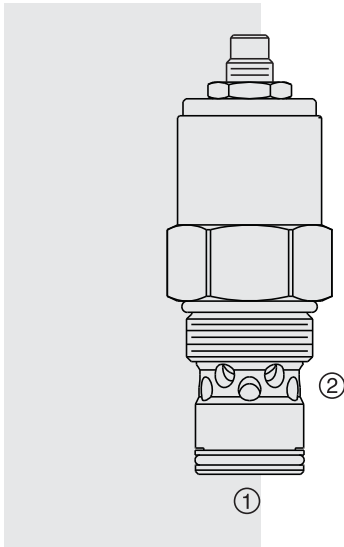
- Seals**
- Pressure on P Only:**
- N** Buna N (Std.)
  - V** Fluorocarbon
- Bidirectional Pressure:**
- NC** Buna N
  - VC** Fluorocarbon

- Setting in bar<sup>†</sup>**
- (Blank) for Adjustable, or Specify, for example:
- M25** 25 bar
  - M100** 100 bar
- Setting in psi<sup>†</sup>**
- (Blank) for Adjustable, or Specify, for example:
- 9.0** 900 psi
  - 23.5** 2350 psi

- Spring Range**
- 6** 3.45 to 41.38 bar (50 to 600 psi)
  - 12** 10.34 to 82.76 bar (150 to 1200 psi)
  - 23** 17.24 to 158.62 bar (250 to 2300 psi)
  - 33** 17.24 to 227.59 bar (250 to 3300 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max.

# RVCV56-20 Relief, Direct Acting, Anti-Cavitation



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, poppet-type hydraulic relief valve with a built-in reverse-flow anti-cavitation check valve. It is intended for use as a pressure limiting and regulating device in demanding, high-pressure hydraulic circuits which require fast response, low hysteresis, low leakage, low pressure override, and reverse free-flow features.

## OPERATION

The RVCV56-20 blocks flow from 1 to 2 until sufficient pressure is present at 1 to displace the poppet off its seat. Relief flow discharges to port 2. Reverse flow occurs from 2 to 1 when differential pressure between 2 and 1 exceeds the check spring value.

## FEATURES

- Maximum pressure 420.6 bar (6100 psi) at port 1.
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Fast, smooth response to pressure surges.

## RATINGS

**Pressure Rating:** 420 bar (6100 psi) at port 1; 70 bar (1000 psi) at port 2

**Proof Pressure:** 480 bar (7000 psi)

**Burst Pressure:** 965 bar (14,000 psi)

**Flow Rating:** Port 1 to 2: 115 lpm (30 gpm); Port 2 to 1: 175 lpm (46 gpm)

**Overshoot:** Less than 20% of setting

**Adjustable Pressure Range, Port 1 to 2:** 140 bar (2000 psi) minimum; 420 bar (6100 psi) maximum

**Crack Pressure Defined:** 0.95 lpm (0.25 gpm)

**Maximum Reseat Pressure, Port 1 to 2:** 85% of crack pressure

**Leakage at Port 2:** 10 drops/minute (0.53 ml/minute) at 103.4 bar (1500 psi) max.

**Anti-Cavitation Crack Pressure, Port 1 to 2:** 0.34 ± 0.07 bar (5 ± 1.0 psi)

**Temperature:** with Buna N seals: -40°C to 100°C (-40°F to 212°F);

with Fluorocarbon seals: -26°C to 204°C (-15°F to 400°F);

with Polyurethane seals: -54°C to 107°C (-65°F to 225°F)

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

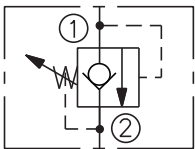
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC16-2; See page 9.116.1

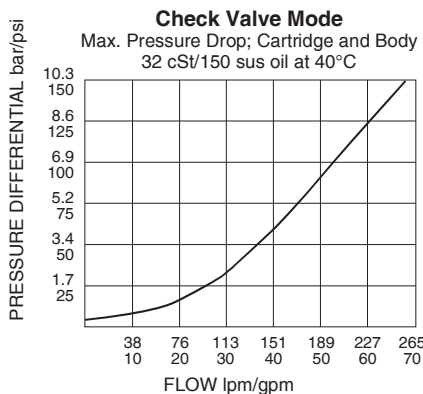
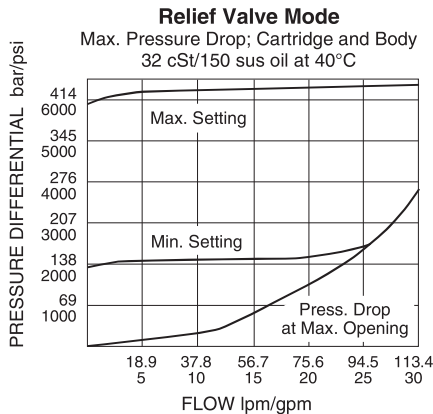
**Cavity Tool:** CT16-2XX; See page 8.600.1

**Seal Kit:** SK16-2x-B; See page 8.650.1

## ISO SYMBOL

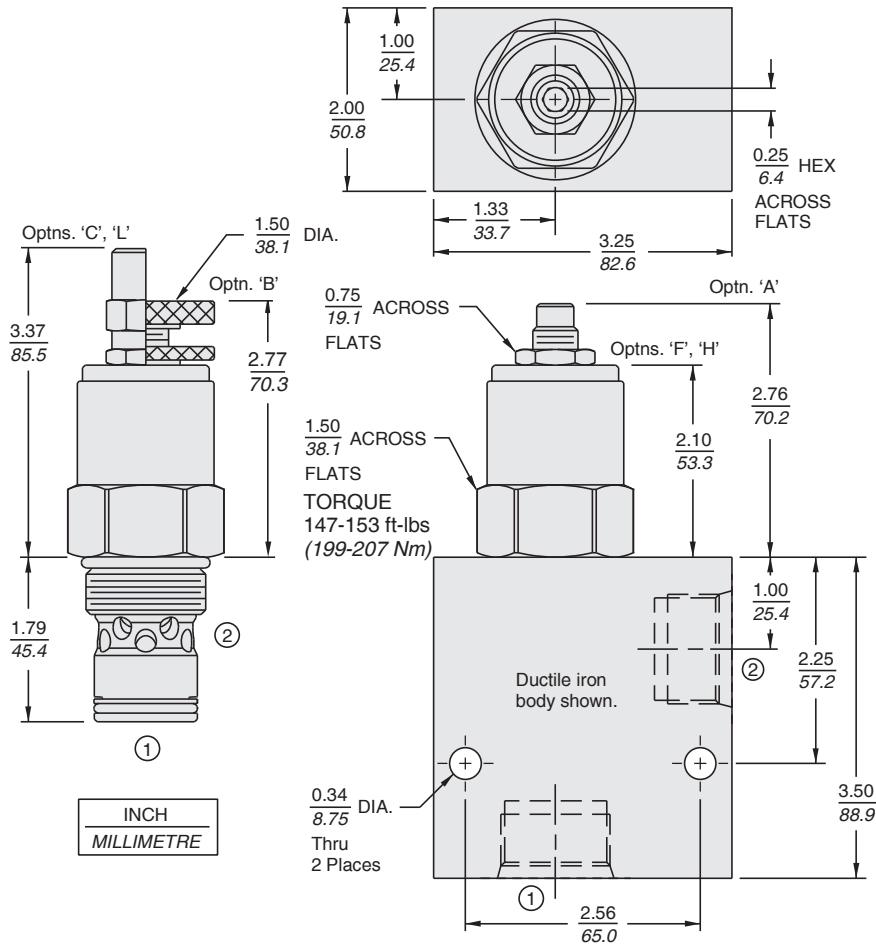


## PERFORMANCE



**RVCV56-20**

**DIMENSIONS**



**MATERIALS**

**Cartridge:**

Weight:

Option	A	B	C,L	F,H
lb	1.27	1.33	1.36	1.24
kg	0.58	0.60	0.62	0.56

Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
O-rings and polyester elastomer back-up standard.

**Ported Body:** Aluminum: 0.57 kg. (1.25 lbs.); Anodized high-strength 6061 T6 Aluminum alloy, rated to 207 bar (3000 psi). Ductile iron body required for operation over 207 bar (3000 psi). See page 8.016.1

**TO ORDER**

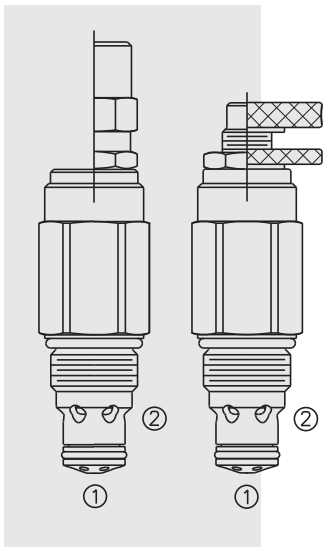
**RVCV56-20**

- Adjustment Option**  
 1/4 in. Hex Allen Head **A**  
 1-1/2 in. Dia. Alum. Knob **B**  
 Option A w/ Cover Cap **C**  
 Factory Preset Non-Adj. **F**  
 Factory Preset Hidden Adj. **H**  
 Option C w/ Lockwire Holes **L**

- Porting**  
 Cartridge Only **0**  
 SAE 12 **12T**  
 SAE 12 Ductile Iron **12TD**  
 SAE 16 **16T**  
 SAE 16 Ductile Iron **16TD**  
 3/4 in. BSP\* **6B**  
 3/4 in. BSP\* Ductile Iron **6BD**  
 1 in. BSP\* **8B**  
 3/4 in. BSP\* Ductile Iron **8BD**  
 \*BSP Body; UK Mfr. Only

- Setting in bar**  
 Specify, for example: **M210** 210 bar  
**Setting in psi**  
 Specify, for example: **30.0** 3000 psi
- Pressure Range**  
**30** 137.9 to 206.8 bar (2000 to 3000 psi)  
**45** 213.7 to 310.3 bar (3100 to 4500 psi)  
**60** 317.2 to 420.6 bar (4600 to 6100 psi)
- Seals**  
**N** Buna N  
**V** Fluorocarbon  
**P** Polyurethane

# RVD50-20 Relief, Poppet-Type, High Pressure



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, poppet-type, hydraulic relief valve intended for use as a pressure limiting device for common hydraulic circuit protection.

## OPERATION

The RVD50-20 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the poppet from its seat.

The cartridge offers fast response to load changes in typical hydraulic circuits requiring low hysteresis, low pressure rise and low internal leakage.

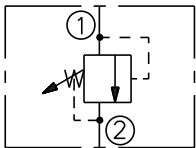
**For cross-over applications**, maximum recommended flow is 37.9 lpm (10 gpm) and maximum pressure is 207 bar (3000 psi). See Ordering Table.

## FEATURES

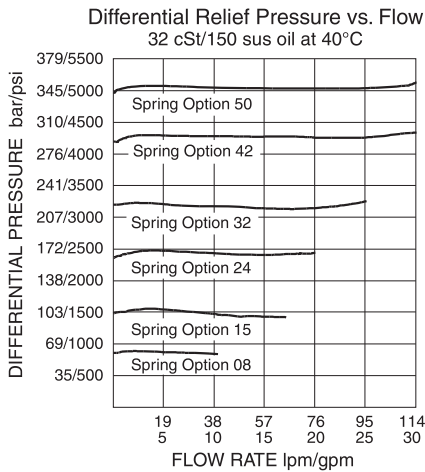
- Adjustments cannot be backed out of the valve.
- Height of the adjuster does not change when the pressure setting is adjusted.
- Adjustment options A, B, and C: positive stops prevent springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 345 bar (5000 psi).
- Rapid response to pressure surges.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Maximum Operating Pressure:** 414 bar (6000 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 80% of nominal setting

**Crack (Set) Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 85% of crack pressure

**Standard Spring Ranges:** Due to manufacturing tolerances, it may be possible to adjust the valve either lower or higher than the nominal ratings shown below.

Model Code **08**: 13.7 bar to 58.6 bar (200 psi to 850 psi)

Model Code **15**: 41.4 bar to 103.4 bar (600 psi to 1500 psi)

Model Code **24**: 96.5 bar to 165.5 bar (1400 psi to 2400 psi)

Model Code **32**: 137.9 bar to 220.6 bar (2000 psi to 3200 psi)

Model Code **42**: 206.8 bar to 289.6 bar (3000 psi to 4200 psi)

Model Code **50**: 275.8 bar to 344.7 bar (4000 psi to 5000 psi)

**Storage Temperature:** -40°C to 120°C with standard Buna N seals

-35°C to 204°C with Fluorocarbon seals

-54°C to 107°C with Polyurethane seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-2; See page 9.110.1

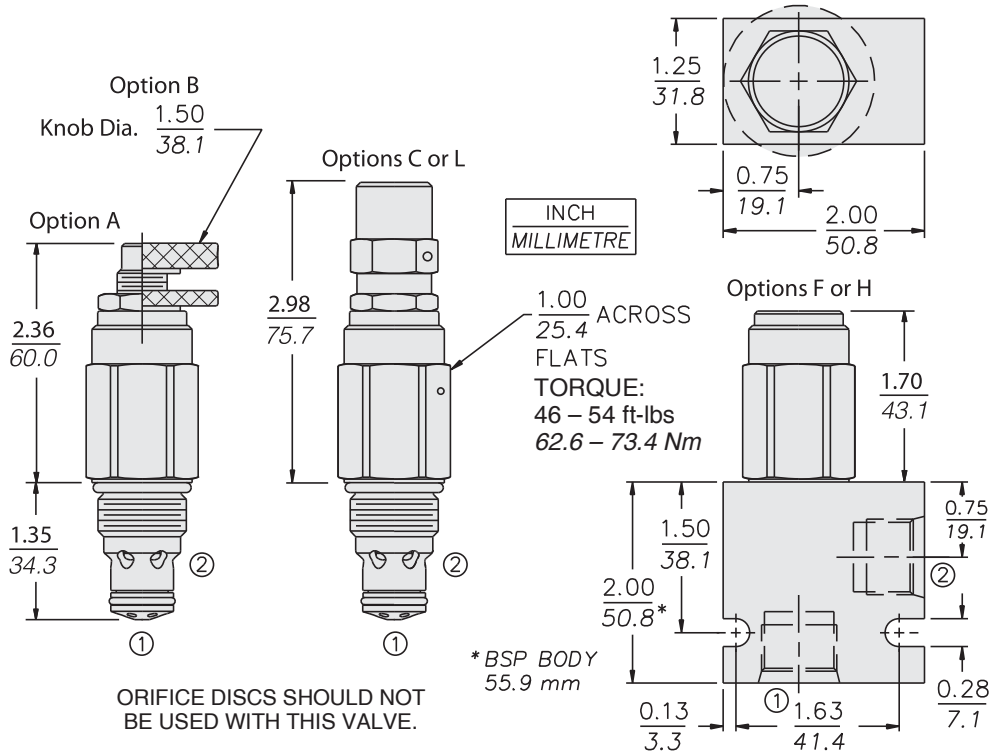
**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK10-2X-B; See page 8.650.1;

SK10-2X-M for cross-over relief application – max. pressure 207 bar (3000 psi)

**RVD50-20**

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.56 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-up standard;  
Anodized aluminum knobs.

**Standard Ported Body:** Weight:  
0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

**RVD50-20**

**Adjustment Option**  
\*Fixed Height Adjuster  
1/4 in. Hex Allen Head **A**  
1-1/2 in. Dia. Alum. Knob **B**  
Option A w/ Cover Cap **C**  
Factory Preset Non-Adj. **F**  
Factory Preset Hidden Adjustment **H**  
Option C w/Lockwire Holes **L**

\*See page 6.003.1 for 'A-Alt' Fixed Height Adjuster details.

**Porting**  
Cartridge Only **0**  
SAE 6 **6T**  
SAE 8 **8T**  
1/4 in. BSP\* **2B**  
3/8 in. BSP\* **3B**  
1/2 in. BSP\* **4B**

\*BSP Body; U.K. Mfr. Only

**Seals**  
**Pressure on P Only:**  
**N** Buna N (Std.)  
**V** Fluorocarbon  
**P** Polyurethane  
**Bidirectional Pressure:**  
**NC** Buna N  
**VC** Fluorocarbon  
**PC** Polyurethane

**Setting in bar<sup>†</sup>**  
(Blank) for Adjustable, or Specify, for example:  
**M25** 25 bar  
**M100** 100 bar  
**Setting in psi<sup>†</sup>**  
(Blank) for Adjustable, or Specify, for example:  
**9.0** 900 psi  
**23.5** 2350 psi

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max.

**Spring Range**  
**08** 13.7 to 58.6 bar (200 to 850 psi)  
**15** 41.4 to 103.4 bar (600 to 1500 psi)  
**24** 96.5 to 165.5 bar (1400 to 2400 psi)  
**32** 137.9 to 220.6 bar (2000 to 3200 psi)  
**42** 206.8 to 289.6 bar (3000 to 4200 psi)  
**50** 275.8 to 344.7 bar (4000 to 5000 psi)

---

***RVD50-20P Relief, Poppet-Type, High Pressure***

For more information on ***RVD50-20P***,  
please visit our website at  
[www.hydraforce.com](http://www.hydraforce.com)



***PED-certified as Safety Accessory***

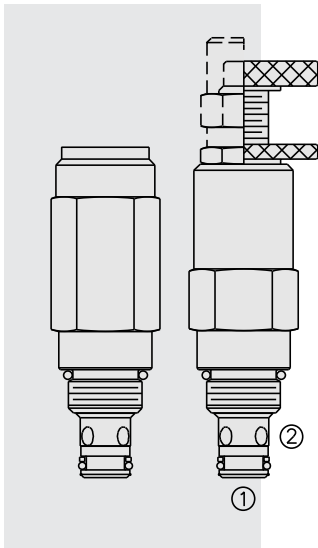
***RVD50-20P***

## ***RV10-21F***

For more information on ***RV10-21F***,  
please visit our website at  
[www.hydraforce.com](http://www.hydraforce.com)

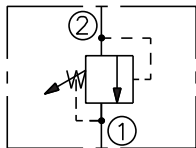


# RV08-22 Relief, Differential Area Poppet

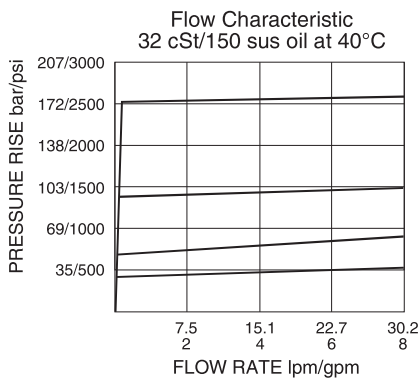


## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, differential area, poppet-type hydraulic relief valve for use as a pressure limiting device in more demanding hydraulic circuits, requiring low hysteresis and low internal leakage.

## OPERATION

The **RV08-22** blocks flow from 2 to 1 until sufficient pressure is present at 2 to force the poppet from its seat.

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

**NOTE:** The RV08-22 may be used in cross-over relief applications (back pressure on 1) with the use of the "C" double back-up ring seal option. See Ordering Table.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustment options A, B, and C: positive stops prevent springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 221 bar (3200 psi).
- Smooth response to pressure surges.
- Industry common cavity.
- Compact size.

## RATINGS

**Operating Pressure:** 248 bar (3600 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Ranges:** Due to manufacturing tolerances, it may be possible to field-adjust the valve higher than the nominal ratings shown below.

Spring Model Code	Nominal Factory Rating	Maximum Solid Adjustment
4	3.4 – 27.6 bar (50 – 400 psi)	41.4 bar (600 psi)
7	6.9 – 62.1 bar (100 – 900 psi)	89.7 bar (1300 psi)
13	6.9 – 117.2 bar (100 – 1700 psi)	158.6 bar (2300 psi)
26	17.2 – 220.7 bar (250 – 3200 psi)	275.9 bar (4000 psi)
*35	17.2 – 248.3 bar (250 – 3600 psi)	275.9 bar (4000 psi)

\*Spring Code 35 is available with factory pre-set (F and H) options only.

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

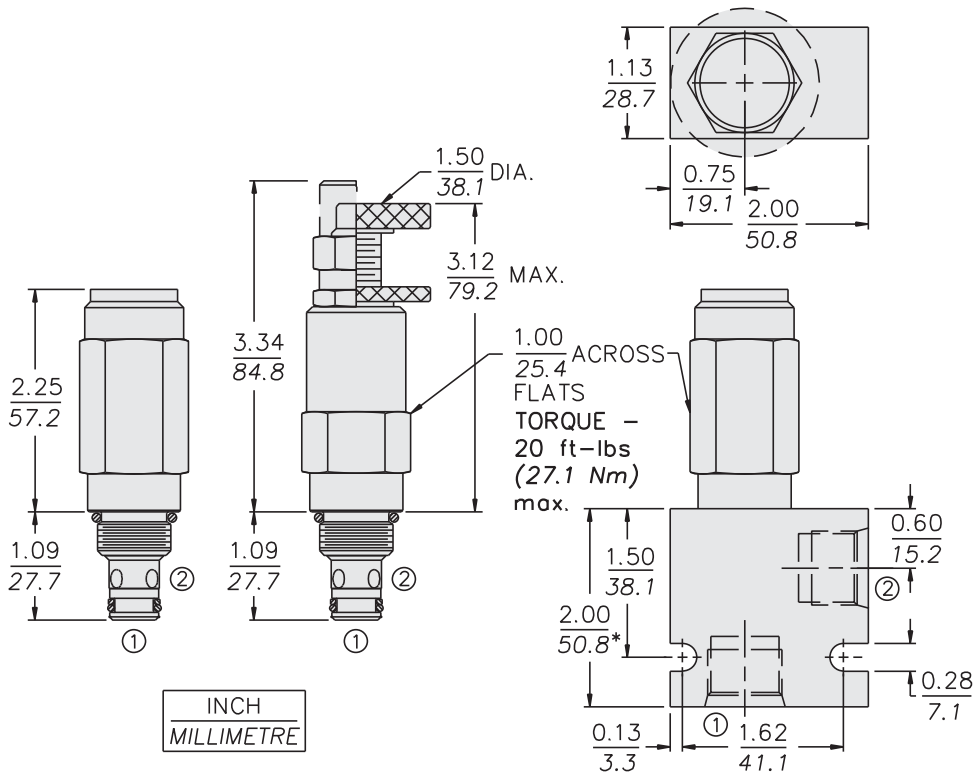
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC08-2; See Page 9.108.1

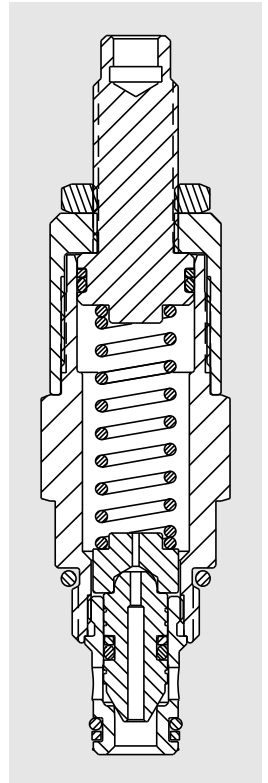
**Cavity Tool:** CT08-2XX; See page 8.600.1

**Seal Kit:** SK08-2X-T; See page 8.650.1; SK08-2X-M (for cross-over relief application)

**DIMENSIONS**



\* BSP BODY - 55.9



**MATERIALS**

**Cartridge:** Weight: 0.22 kg. (0.48 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and back-up standard. Anodized aluminum knob.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**

**RV08-22** - - - /

**Adjustment Option**

- 1/4 in. Hex Allen Head **A**
- 1-1/2 in. Dia. Alum. Knob **B**
- Option A w/ Cover Cap **C**
- Factory Preset Non-Adj. **F**
- Factory Preset Hidden Adj. **H**
- Option C w/ Lockwire Holes **L**

**Porting**

- Cartridge Only **0**
- SAE 4 **4T**
- SAE 6 **6T**
- 1/4 in. BSP\* **2B**
- 3/8 in. BSP\* **3B**
- 1/2 in. BSP\* **4B**

\*BSP Body; U.K. Mfr. Only

**Seals**

- Pressure on P Only:**
- N** Buna N (Std.)
- V** Fluorocarbon
- Bidirectional Pressure:**
- NC** Buna N
- VC** Fluorocarbon

**Setting in bar<sup>†</sup>**

(Blank) for Adjustable, or Specify, for example:

- M25** 25 bar
- M100** 100 bar

**Setting in psi<sup>†</sup>**

(Blank) for Adjustable, or Specify, for example:

- 9.0** 900 psi
- 23.5** 2350 psi

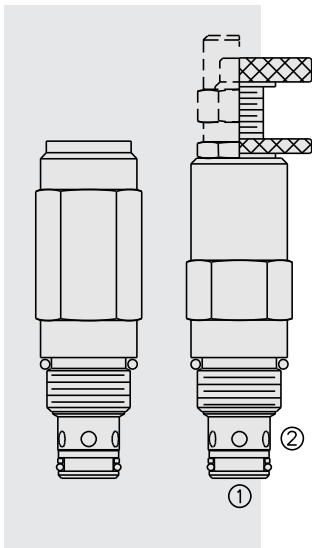
<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max.

**Spring Range**

- 4** 3.4 to 27.6 bar (50 to 400 psi)
- 7** 6.9 to 62.1 bar (100 to 900 psi)
- 13** 6.9 to 117.2 bar (100 to 1700 psi)
- 26** 17.2 to 220.7 bar (250 to 3200 psi)
- 35** 17.24 to 248.3 bar (250 to 3600 psi)

**Note:** Spring Code 35 is available with factory pre-set (F and H) options only.

# RV10-22 Relief, Differential Area Poppet



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, differential area poppet-type hydraulic relief valve for use as a pressure limiting device in more demanding hydraulic circuits, requiring low hysteresis and low internal leakage.

## OPERATION

The RV10-22 blocks flow from 2 to 1 until sufficient pressure is present at 2 to force the poppet from its seat.

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

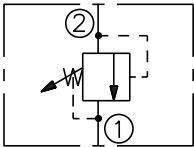
Note: The RV10-22 may be used in cross-over relief applications (back pressure on 1) with the use of the "C" double back-up ring seal option. See Ordering Table.

## FEATURES

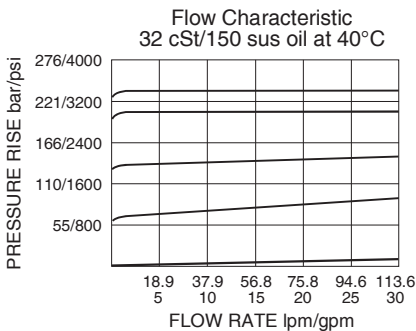
- Adjustments cannot be backed out of the valve.
- Adjustment options A, B, and C: positive stops prevent springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 241 bar (3500 psi).
- Smooth response to pressure surges.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 241 bar (3500 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Pressure Rise:** 0.34 bar/l (5 psi/g)

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 85% of nominal setting

**Crack (Set) Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Standard Spring Ranges:** Due to manufacturing tolerances, it may be possible to adjust the valve either lower or higher than the nominal ratings shown below.

Spring Model Code	Nominal Factory Rating	Maximum Solid Adjustment
6	10.34 – 41.38 bar (150 – 600 psi)	55.17 bar (800 psi)
13	10.34 – 89.66 bar (150 – 1300 psi)	117.24 bar (1700 psi)
25	25.86 – 165.52 bar (375 – 2400 psi)	206.9 bar (3000 psi)
35	17.24 – 241.38 bar (250 – 3500 psi)	296.55 bar (4300 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

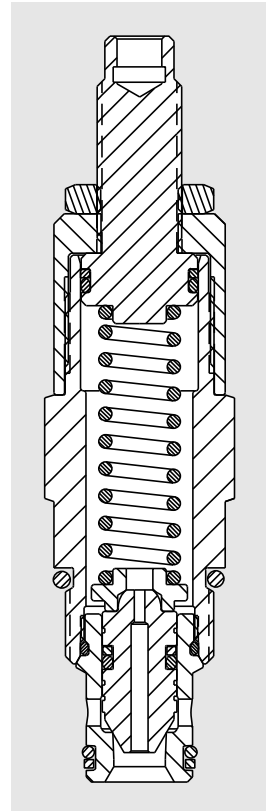
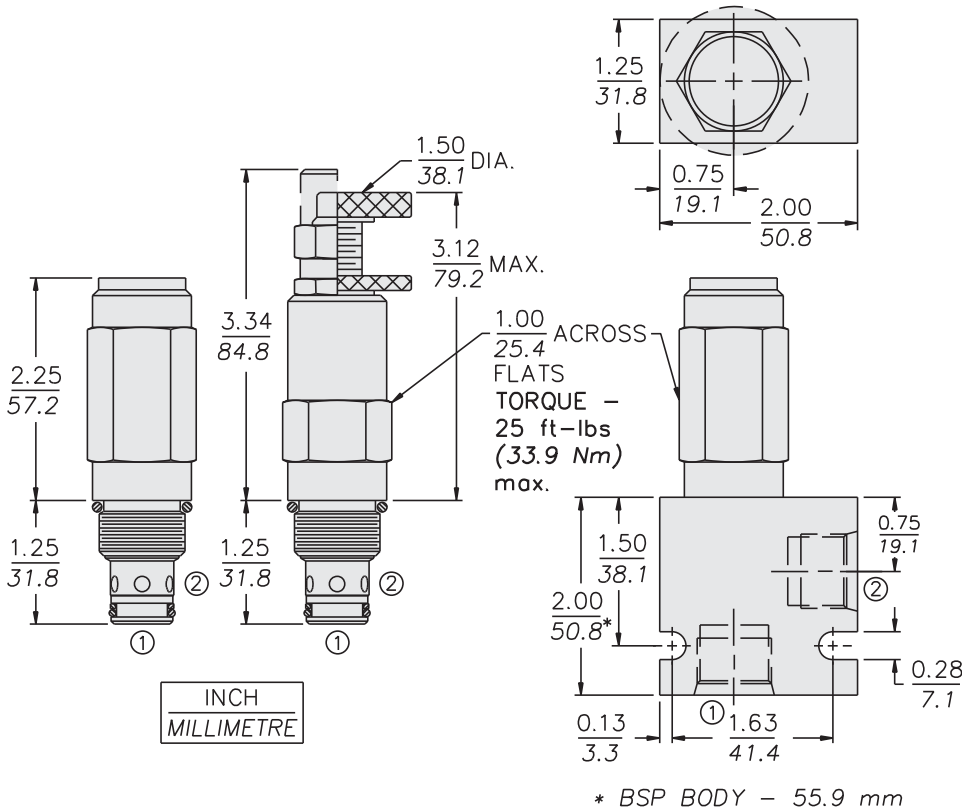
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-2; See page 9.110.1

**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK10-2X-T; See page 8.650.1; SK10-2X-M (for cross-over relief application)

**DIMENSIONS**



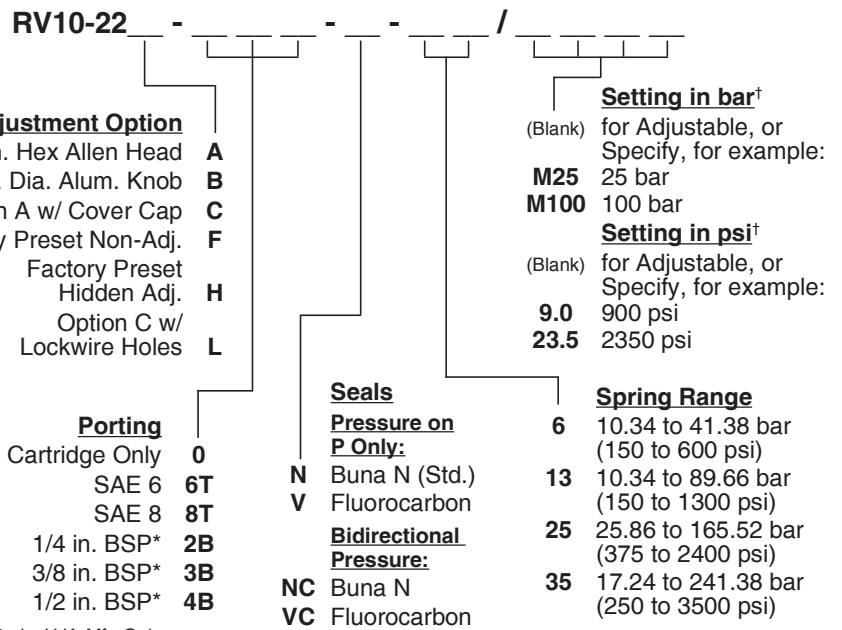
**MATERIALS**

**Cartridge:** Weight: 0.23 kg. (0.50 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Optional polyurethane seals with Fluorocarbon back-ups recommended for pressures over 207 bar (3000 psi). Anodized aluminum knob.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**Note:** For higher flow applications, bodies with SAE 10 and SAE 12 ports are available. See page 8.010.1

**TO ORDER**



\*BSP Body; U.K. Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

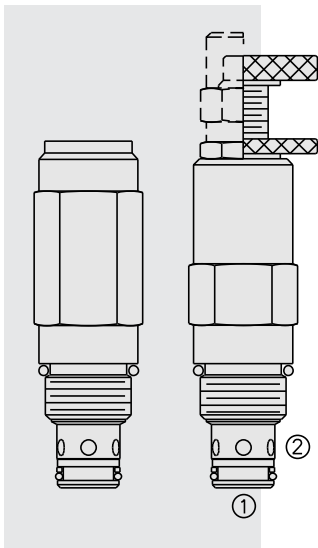
***RVCV10-22***

For more information on ***RVCV10-22***,  
please visit our website at  
[www.hydraforce.com](http://www.hydraforce.com)



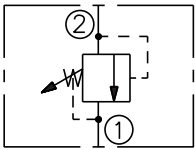


# RV50-22 Relief, Differential Area Poppet

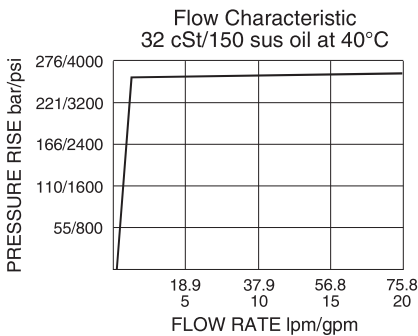


## SYMBOLS

### USAS/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, differential area, poppet-type hydraulic relief valve for use as a pressure limiting device in more demanding hydraulic circuits requiring low hysteresis and low internal leakage at high working pressures.

## OPERATION

The RV50-22 blocks flow from 2 to 1 until sufficient pressure is present at 2 to force the poppet from its seat.

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

Note: The RV50-22 may not be used in cross-over relief applications (back pressure on 1).

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened poppet and cage for long life.
- Smooth response to pressure surges.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 345 bar (5000 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting. Pressure rise will vary with setting due to flow forces. Consult factory for specific flow characteristic values.

**Pressure Rise:** 0.34 bar/l (5 psi/g)

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 85% of nominal setting

**Crack (Set) Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Standard Spring Range:** 34.5 to 344.8 bar (500 to 5000 psi) at 80% accuracy

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

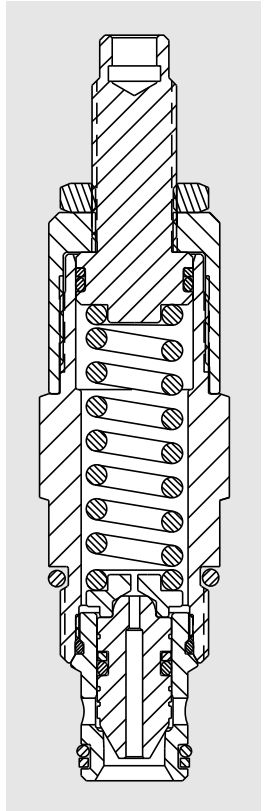
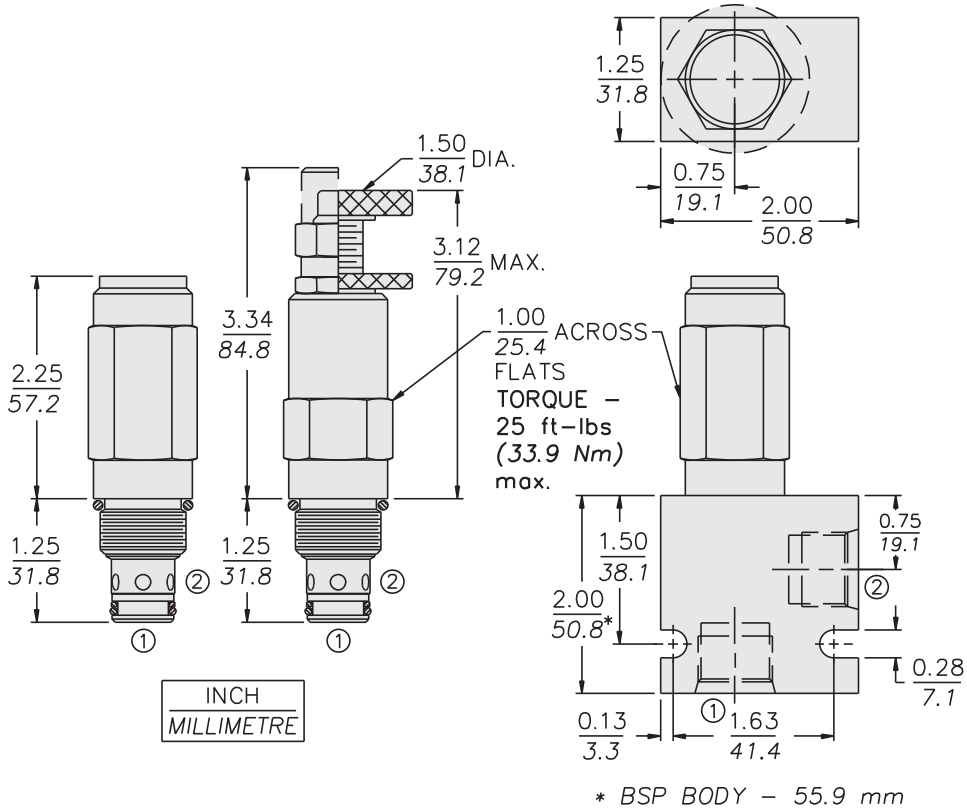
**Cavity:** VC10-2; See page 9.110.1

**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK10-2P-T; See page 8.650.1

**RV50-22**

**DIMENSIONS**

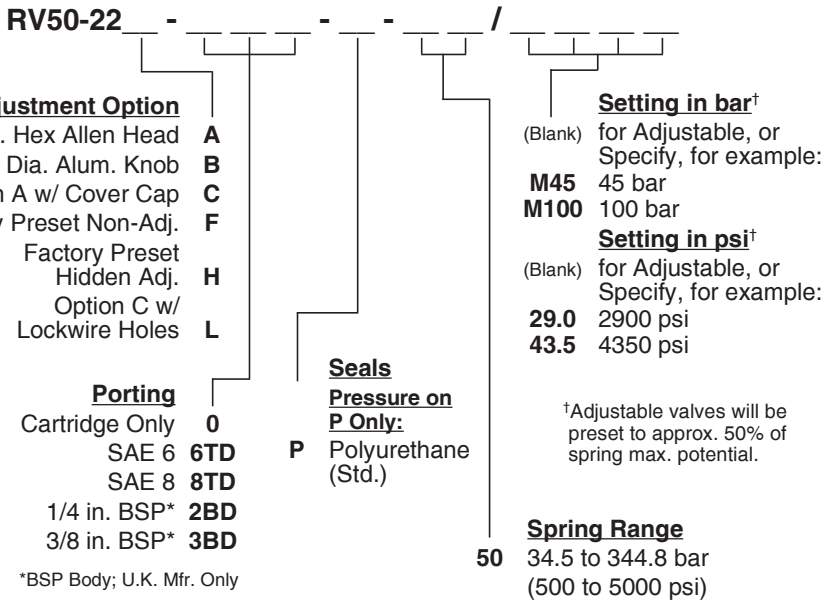


**MATERIALS**

**Cartridge:** Weight: 0.23 kg. (0.50 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Polyurethane seals with  
 Fluorocarbon back-ups for  
 pressures over 240 bar (3500 psi).  
 Anodized aluminum knob.

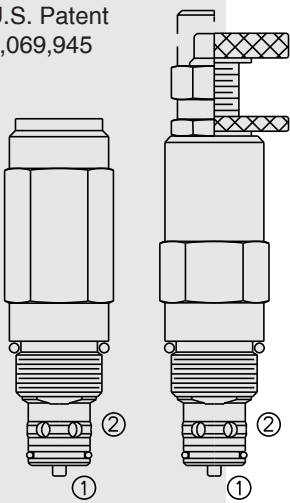
**Ported Body:** Weight: 0.54 kg.  
 (1.2 lbs.) Ductile Iron (code "D")  
 standard, consult factory for  
 weight, dimensions may differ.  
 Rated to 345 bar (5000 psi).  
 See page 8.010.1.

**TO ORDER**



# RV10-23 Relief, Pilot-Operated

U.S. Patent  
7,069,945



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, two-stage, hydraulic relief valve intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response, low hysteresis, low leakage and low pressure overshoot.

## OPERATION

The RV10-23 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the pilot stage open, allowing the main stage to shift, opening 1 to 2.

**Note:** The RV10-23 may be used in cross-over relief applications, however, it is not recommended for use as in parallel cross-over relief or anti-cavitation applications. Consult factory for proper flow path connections.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Hardened spool and cage for long life.
- Fast response.
- Industry common cavity.

## RATINGS:

**Operating Pressure Range:** 20.7 to 240 bar (300 to 3500 psi)

**Flow:** 7.6 to 113.6 lpm (2 to 30 gpm)

**Internal Leakage:** 0.5 ml/minute (10 drops/minute) max. to 80% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Pressure Rise:** at 240 bar (3500 psi): 0.15 bar/lpm (8 psi/gpm)

**Operating Temperature:** with Buna N seals: -54 to 135°C (-65 to 275°F)

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

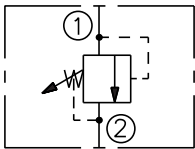
**Cavity:** VC10-2, Variation "A"; See page 9.110.1

**Cavity Tool:** CT10-2XX; See page 8.600.1

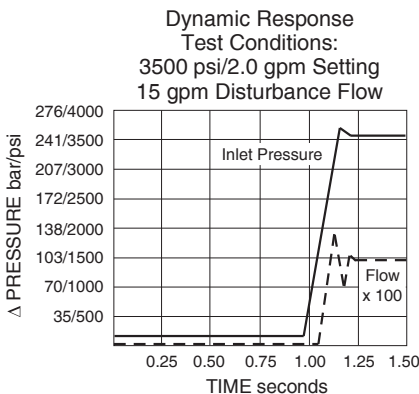
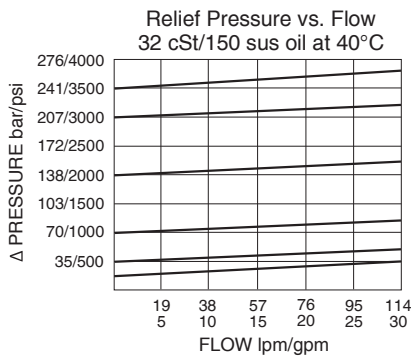
**Seal Kit:** SK10-2X-M; See page 8.650.1

## SYMBOLS

### USAS/ISO:



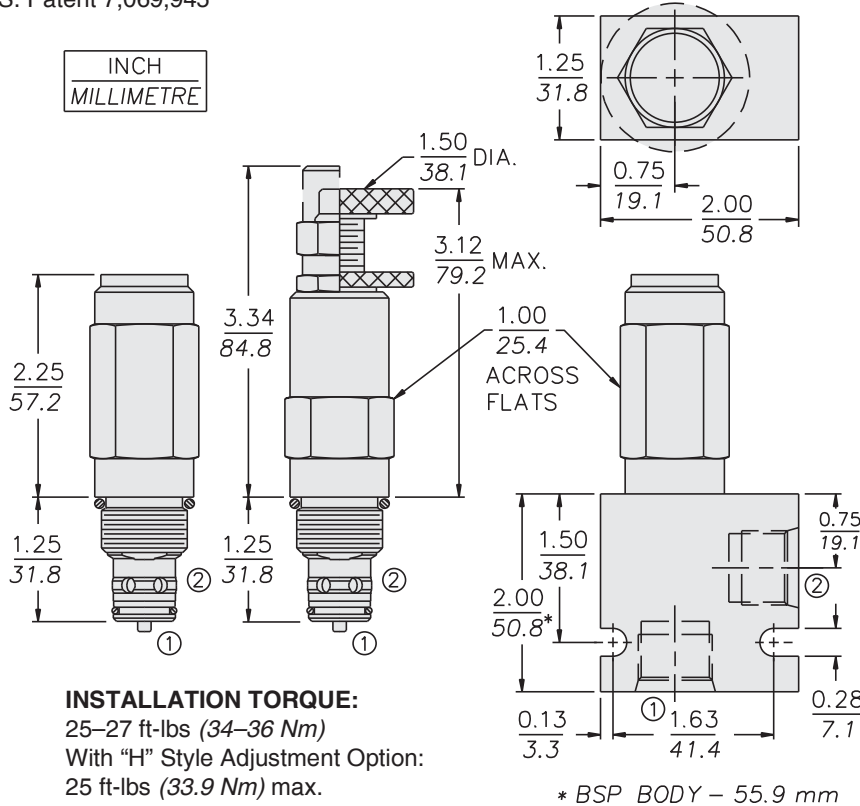
## PERFORMANCE (Cartridge Only)



Note: This new model RV10-23 should be used instead of the older model RV10-24 (page 6.062.1) which is being discontinued. For applications where low-overshoot and reverse free-flow features are required, see model RV10-28 (page 6.170.1).

**DIMENSIONS**

U.S. Patent 7,069,945



**INSTALLATION TORQUE:**  
 25–27 ft-lbs (34–36 Nm)  
 With “H” Style Adjustment Option:  
 25 ft-lbs (33.9 Nm) max.

**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs.  
 Optional polyurethane seals with Fluorocarbon back-up recommended for pressures over 240 bar (3500 psi).

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

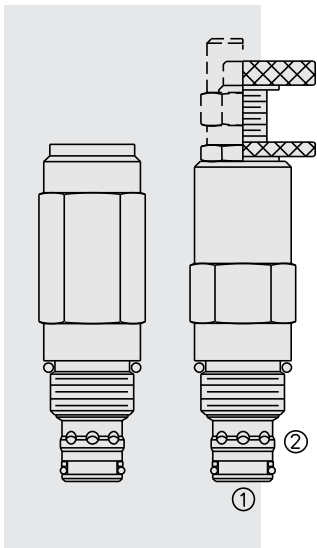
**RV10-23** - - - /

<p><b>Adjustment Option</b>                  1/4 in. Hex Allen Head <b>A</b>                  1-1/2 in. Dia. Alum. Knob <b>B</b>                  Option A w/ Cover Cap <b>C</b>                  Factory Preset Non-Adj. <b>F</b>                  Factory Preset Hidden Adj. <b>H</b>                  Option C w/ Lockwire Holes <b>L</b></p>	<p><b>Porting</b>                  Cartridge Only <b>0</b>                  SAE 6 <b>6T</b>                  SAE 8 <b>8T</b>                  3/8 in. BSP* <b>3B</b>                  1/2 in. BSP* <b>4B</b></p>	<p><b>Seals Pressure on P Only:</b>  <b>N</b> Buna N (Std.)  <b>V</b> Fluorocarbon</p>	<p><b>Setting in bar†</b>                  (Blank) for Adjustable, or Specify, for example:  <b>M21</b> 21 bar (Minimum)  <b>M100</b> 100 bar  <b>Setting in psi†</b>                  (Blank) for Adjustable, or Specify, for example:  <b>3.0</b> 300 psi (Minimum)  <b>23.5</b> 2350 psi  <b>Spring Range</b>  <b>35</b> 20.7 to 241.4 bar (300 to 3500 psi)</p>
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\*BSP Body; U.K. Mfr. Only

†Adjustable valves will be preset to approx. 50% of spring max. potential, or 21 bar (300 psi), whichever is less.

# RV10-26 Relief, Pilot-Operated Spool



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated (two-stage), spool-type hydraulic relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response and low hysteresis.

## OPERATION

The RV10-26 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the piloting relief off its seat, allowing the main (second stage) spool to shift, opening 1 to 2.

The cartridge offers smooth transition in response to load changes in demanding hydraulic circuits.

**NOTE: The RV10-26 cannot be used in crossover relief applications.**

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Optional spring ranges to 210 bar (3000 psi).
- Fast, smooth response to pressure surges.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 115 cc/minute (7 cu. in./minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Ranges:**

6.9 to 27.6 bar (100 to 400 psi);

10.3 to 103.4 bar (150 to 1500 psi);

27.6 to 206.9 bar (400 to 3000 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

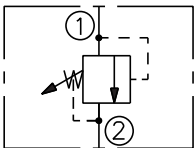
**Cavity:** VC10-2; See page 9.110.1

**Cavity Tool:** CT10-2XX; See page 8.600.1

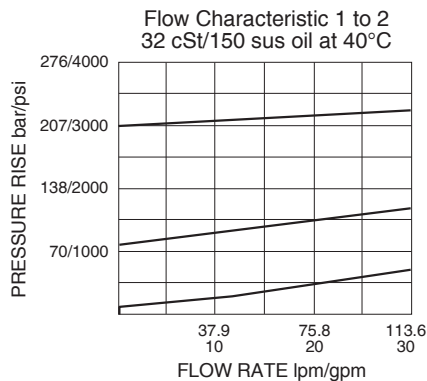
**Seal Kit:** SK10-2N-B; See page 8.650.1

## SYMBOLS

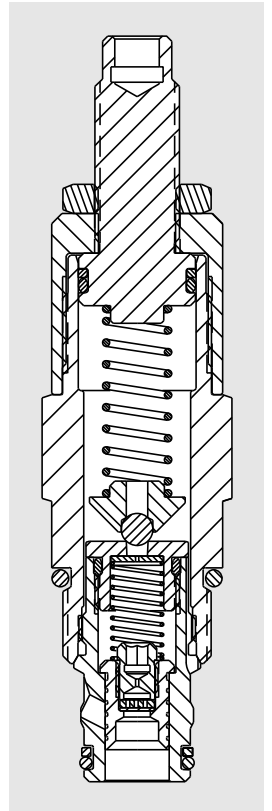
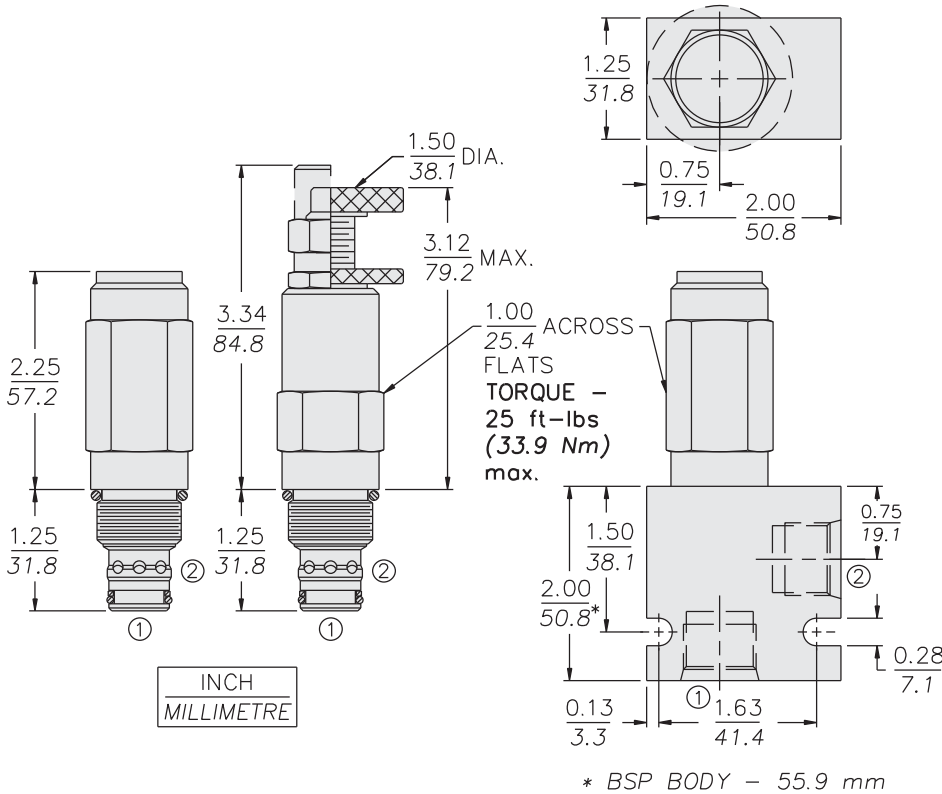
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs.  
 Optional polyurethane seals with Fluorocarbon back-up recommended for pressures over 240 bar (3500 psi).

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.)  
 Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1.

**TO ORDER**

**RV10-26** - - - - /

- Adjustment Option**  
 1/4 in. Hex Allen Head **A**  
 1-1/2 in. Dia. Alum. Knob **B**  
 Option A w/ Cover Cap **C**  
 Factory Preset Non-Adj. **F**  
 Factory Preset Hidden Adjustment **H**  
 Option C with Lockwire Holes **L**

- Porting**  
 Cartridge Only **0**  
 SAE 6 **6T**  
 SAE 8 **8T**  
 3/8 in. BSP\* **3B**  
 1/2 in. BSP\* **4B**

- Seals**  
**Pressure on P Only:**  
**N** Buna N (Std.)  
**V** Fluorocarbon

- Setting in bar<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**M25** 25 bar  
**M100** 100 bar  
**Setting in psi<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**9.0** 900 psi  
**23.5** 2350 psi

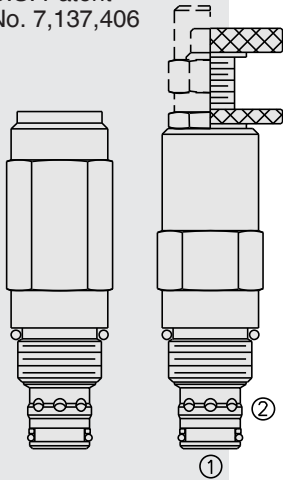
- Spring Range**  
**4** 6.9 to 27.6 bar (100 to 400 psi)  
**15** 10.3 to 103.4 bar (150 to 1500 psi)  
**30** 27.6 to 206.9 bar (400 to 3000 psi)

\*BSP Body; U.K. Mfr. Only

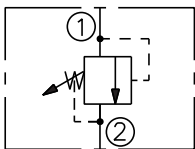
<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# RV50-26 Relief, Pilot-Operated Spool

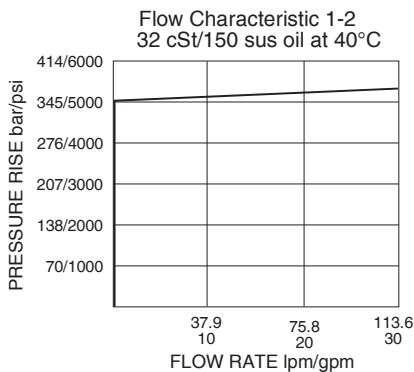
U.S. Patent  
No. 7,137,406



## ISO SYMBOL



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated (two-stage), spool-type hydraulic relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response and low hysteresis.

## OPERATION

The RV50-26 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the piloting relief off its seat, allowing the main (second stage) spool to shift, opening 1 to 2.

The cartridge offers smooth transition in response to load changes in demanding hydraulic circuits.

**NOTE: The RV50-26 may not be used in cross-over relief applications (back pressure on 2).**

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Fast, smooth response to pressure surges.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 345 bar (5000 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting. Pressure rise will vary with setting due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 115 cc/minute (7 cu. in./minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Ranges:** 27.6 to 345 bar (400 to 5000 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-2; See page 9.110.1

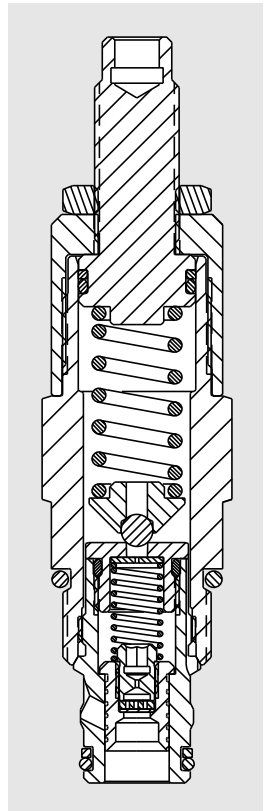
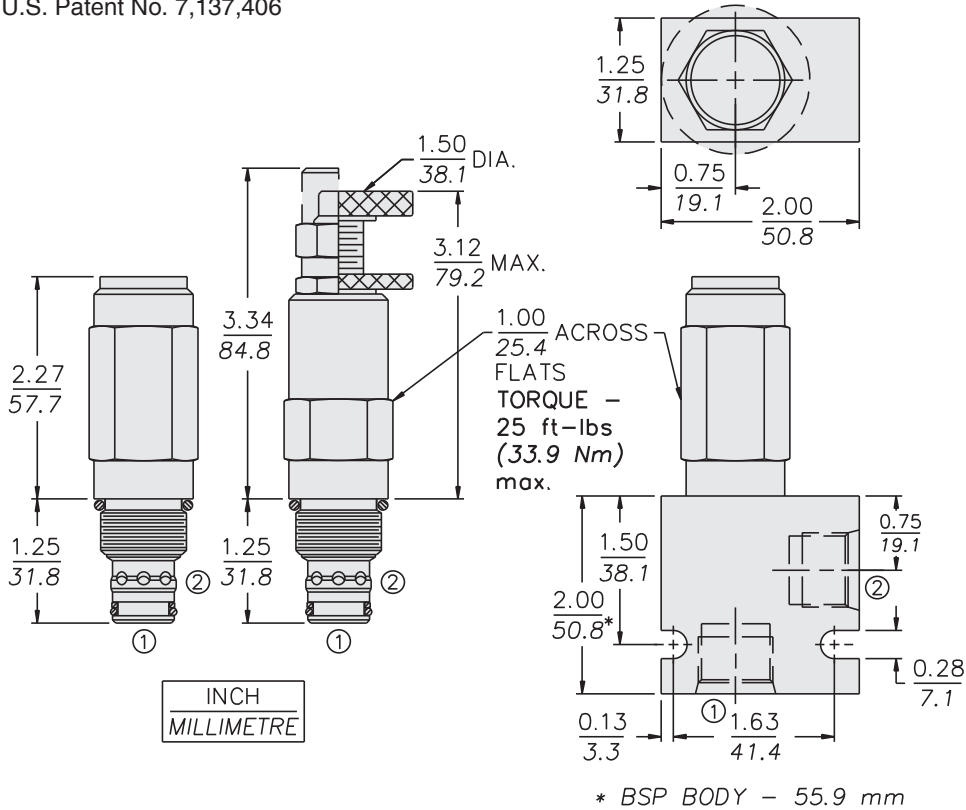
**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK50-2X-B; See page 8.650.1



## DIMENSIONS

U.S. Patent No. 7,137,406

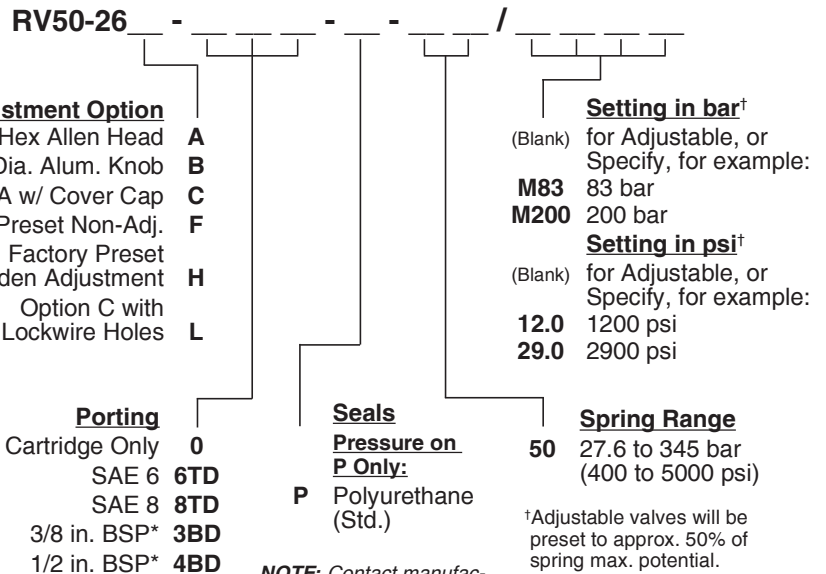


## MATERIALS

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Poly-urethane seals with  
 Fluorocarbon back-ups for  
 pressures over 240 bar (3500 psi).  
 Anodized aluminum knobs.

**Ported Body:** Weight: 0.54 kg.  
 (1.2 lbs.) Ductile Iron (code "D")  
 standard, consult factory for  
 weight, dimensions may differ.  
 Rated to 345 bar (5000 psi).  
 See page 8.010.1

## TO ORDER

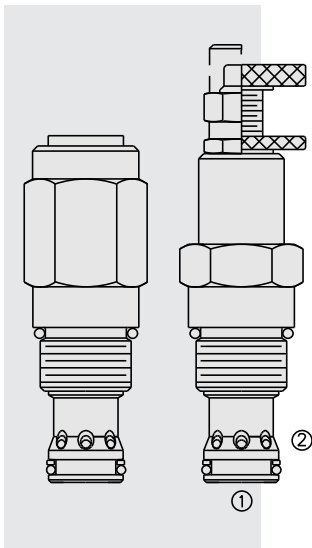


\*BSP Body; U.K. Mfr. Only

**NOTE:** Contact manufacturer for additional seal options.

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# RV12-26 Relief, Pilot-Operated Spool



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated (two-stage), spool-type hydraulic relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response and low hysteresis.

## OPERATION

The RV12-26 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the piloting relief off its seat, allowing the main (second stage) spool to shift, opening 1 to 2.

The cartridge offers smooth transition in response to load changes in demanding hydraulic circuits.

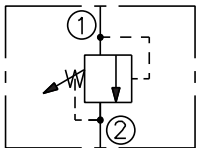
**NOTE: The RV12-26 cannot be used in crossover relief applications.**

## FEATURES

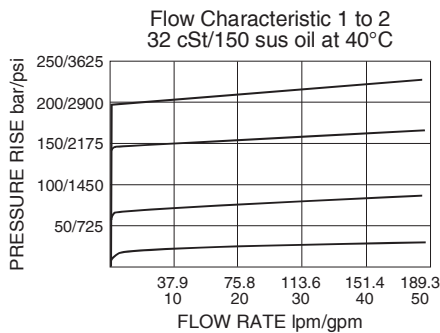
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Optional spring ranges to 241 bar (3500 psi).
- Fast, smooth response to pressure surges.
- Cost effective cavity.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 241 bar (3500 psi)

**Proof Pressure:** 420 bar (6090 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 115 cc/minute (7 cu. in./minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Ranges:**

6.9 to 27.6 bar (100 to 400 psi); 13.8 to 110.3 bar (200 to 1600 psi);

31.0 to 206.9 bar (450 to 3000 psi); 34.5 to 241.4 bar (500 to 3500 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

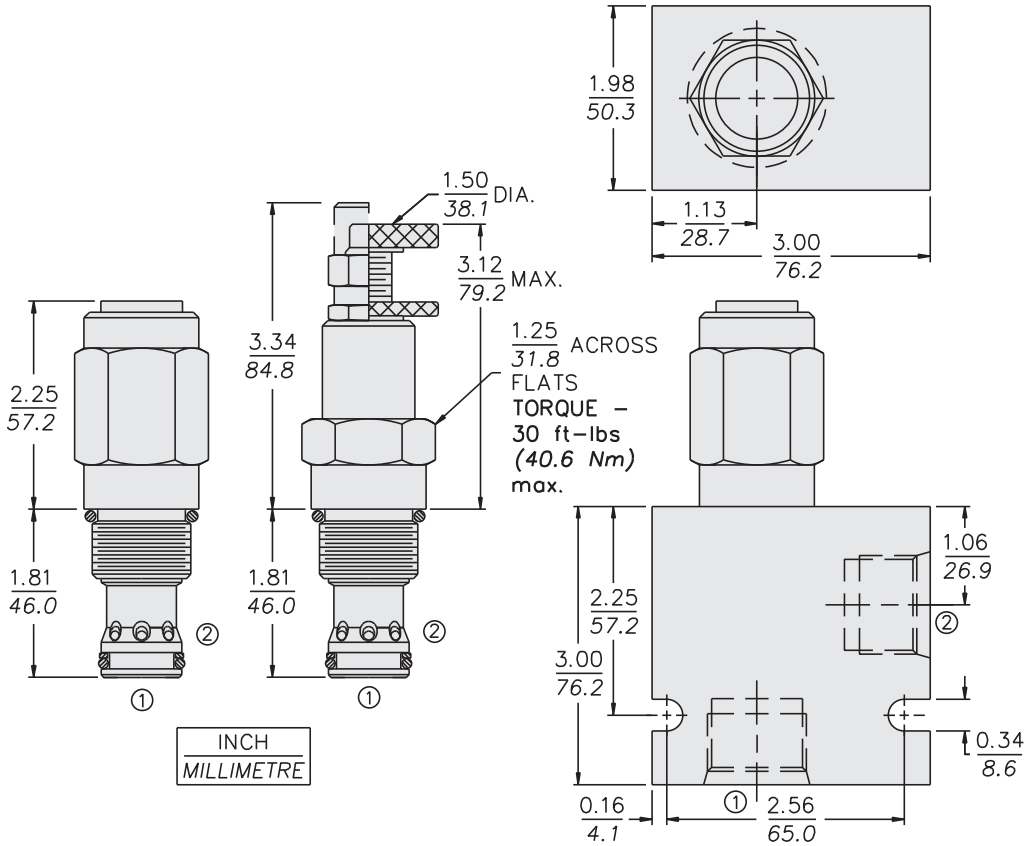
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC12-2; See page 9.112.1

**Cavity Tool:** CT12-2XX; See page 8.600.1

**Seal Kit:** SK12-2X-B; See page 8.650.1

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.34 kg. (0.75 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-up standard.  
 Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.57 kg. (1.25 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.012.1

**TO ORDER**

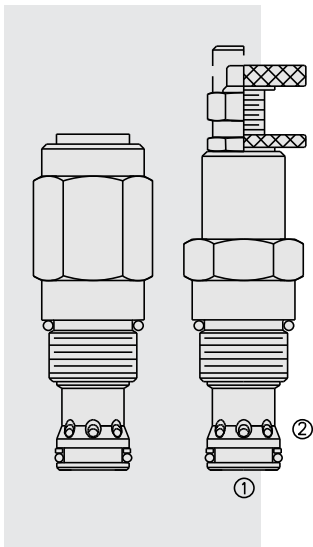
**RV12-26 - - - /**

<b>Adjustment Option</b>			<b>Setting in bar<sup>†</sup></b>	
1/4 in. Hex Allen Head	<b>A</b>		(Blank)	for Adjustable, or
1-1/2 in. Dia. Alum. Knob	<b>B</b>			Specify, for example:
Option A w/Cover Cap	<b>C</b>		<b>M25</b>	25 bar
Factory Preset Non-Adjst.	<b>F</b>		<b>M100</b>	100 bar
Factory Preset			<b>Setting in psi<sup>†</sup></b>	
Hidden Adjustment	<b>H</b>		(Blank)	for Adjustable, or
Option C with				Specify, for example:
Lockwire Holes	<b>L</b>		<b>9.0</b>	900 psi
			<b>23.5</b>	2350 psi
<b>Porting</b>			<b>Spring Range</b>	
Cartridge Only	<b>0</b>		<b>4</b>	6.9 to 27.6 bar
SAE 10	<b>10T</b>			(100 to 400 psi)
SAE 12	<b>12T</b>		<b>15</b>	3.8 to 110.3 bar
SAE 16	<b>16T</b>			(200 to 1600 psi)
1/2 in. BSP*	<b>4B</b>	<b>N</b>	<b>30</b>	31.0 to 206.9 bar
3/4 in. BSP*	<b>6B</b>	<b>V</b>		(450 to 3000 psi)
1 in. BSP*	<b>8B</b>		<b>35</b>	34.5 to 241.4 bar
				(500 to 3500 psi)
		<b>Seals</b>		
		<b>Pressure on</b>		
		<b>P Only:</b>		
		<b>N</b>		Buna N (Std.)
		<b>V</b>		Fluorocarbon

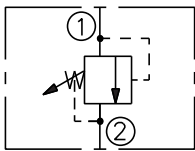
\*BSP Body; UK Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

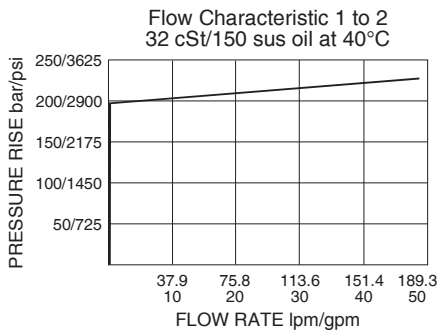
# RV52-26 Relief, Pilot-Operated Spool



**ISO SYMBOL:**



**PERFORMANCE** (Cartridge Only)



**DESCRIPTION**

A screw-in, cartridge-style, pilot-operated (two-stage), spool-type hydraulic relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response and low hysteresis.

**OPERATION**

The RV52-26 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the piloting relief off its seat, allowing the main (second stage) spool to shift, opening 1 to 2.

The cartridge offers smooth transition in response to load changes in demanding hydraulic circuits.

**NOTE: The RV52-26 cannot be used in cross-over relief applications.**

**FEATURES**

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Fast, smooth response to pressure surges.
- Cost effective cavity.

**RATINGS**

**Operating Pressure:** 345 bar (5000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 115 cc/minute (7 cu. in/minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Range:** 83 to 345 bar (1200 to 5000 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

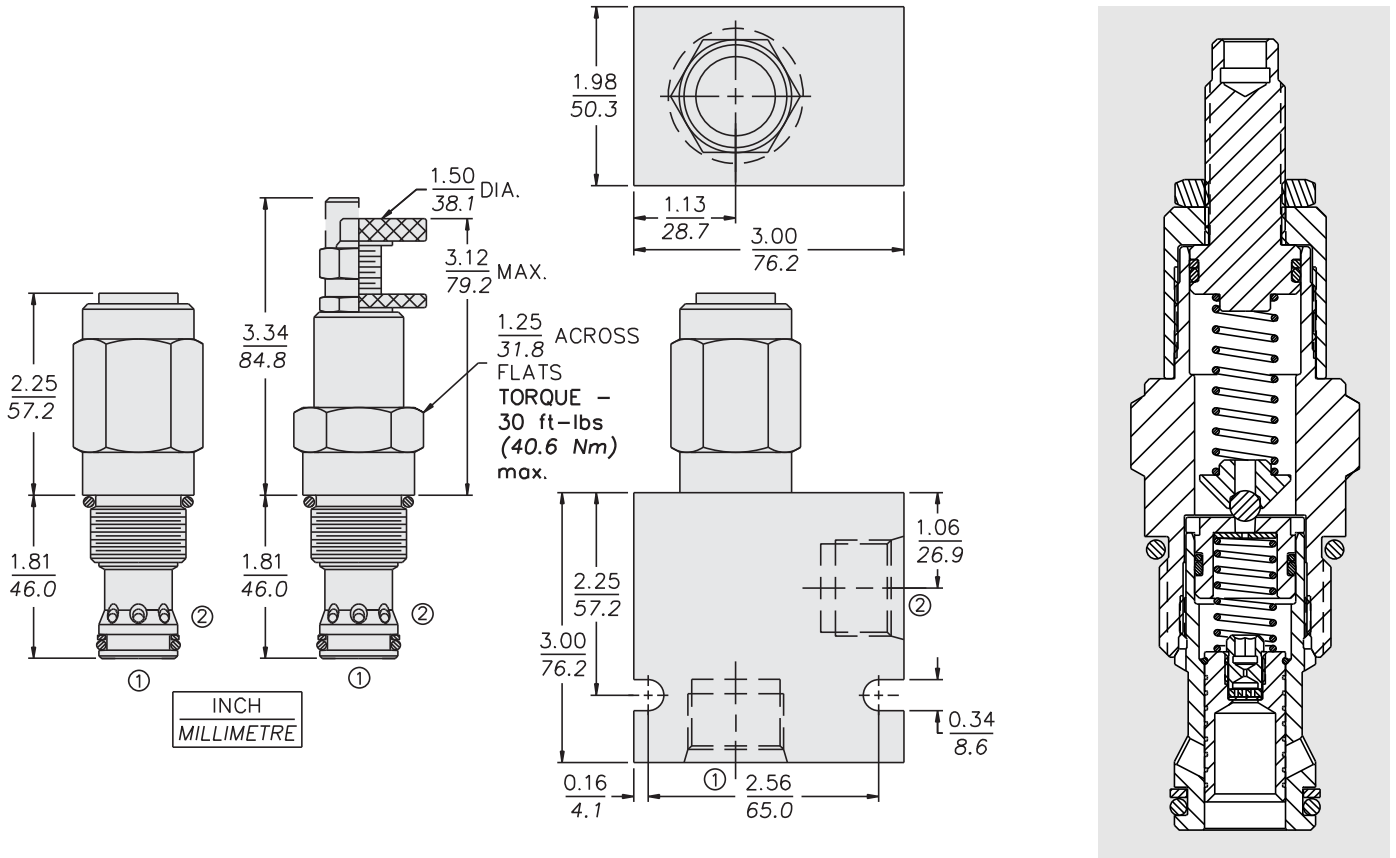
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC12-2; See page 9.112.1

**Cavity Tool:** CT12-2XX; See page 8.600.1

**Seal Kit:** SK52-2X-B; See page 8.650.1

**DIMENSIONS**

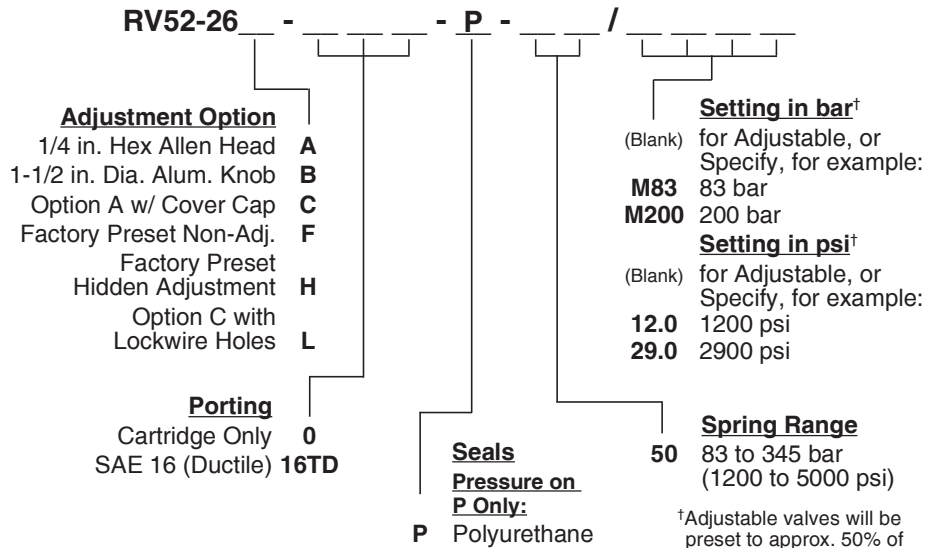


**MATERIALS**

**Cartridge:** Weight: 0.34 kg. (0.75 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Polyurethane O-rings and back-up standard. Anodized aluminum knobs.

**Ported Body:** Weight: 1.81 kg. (4.0 lbs.)  
 Ductile Iron (code "D") standard, consult factory for weight, dimensions may differ.  
 Rated to 345 bar (5000 psi);  
 See page 8.012.1

**TO ORDER**

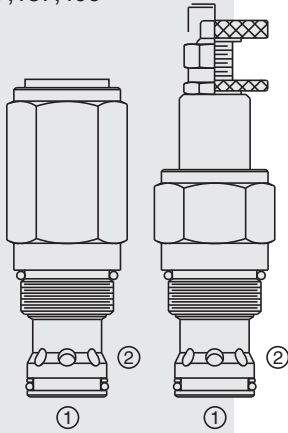


**NOTE:** Contact manufacturer for additional seal options.

†Adjustable valves will be preset to approx. 50% of spring max. potential.

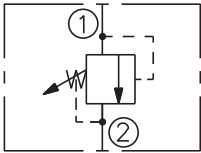
# RV16-26 Relief, Pilot-Operated Spool

U.S. Patent  
7,137,406

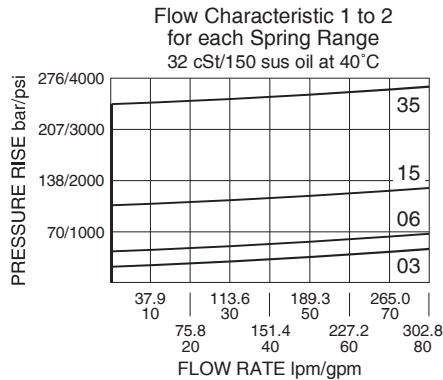


## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated (two-stage), spool-type hydraulic relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response and low hysteresis.

## OPERATION

The RV16-26 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the piloting relief off its seat, allowing the main (second stage) spool to shift, opening 1 to 2.

The cartridge offers smooth transition in response to load changes in demanding hydraulic circuits.

**NOTE: The RV16-26 cannot be used in cross-over relief applications.**

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Optional spring ranges to 275.8 bar (4000 psi).
- Fast, smooth response to pressure surges.

## RATINGS

**Operating Pressure:** 275.8 bar (4000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 115 cc/minute (7 cu. in./minute) max. for pressure settings below 138 bar (2000 psi); 197 cc/minute (30 cu. in./minute) for pressure settings of 138 bar (2000 psi) or higher. Leakage measured at 85% of nominal setting.

**Crack Pressure Defined:** bar (psi) evident at 7.61 lpm (2 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Ranges:**

- 03:** 9.66–20.70 bar (140–300 psi);
- 06:** 15.87–41.41 bar (230–600 psi);
- 15:** 36.63–103.52 bar (530–1500 psi);
- 35:** 82.82–241.55 bar (1200–3500 psi)

**Temperature:** -40 to 70°C (-40 to 160°F)

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

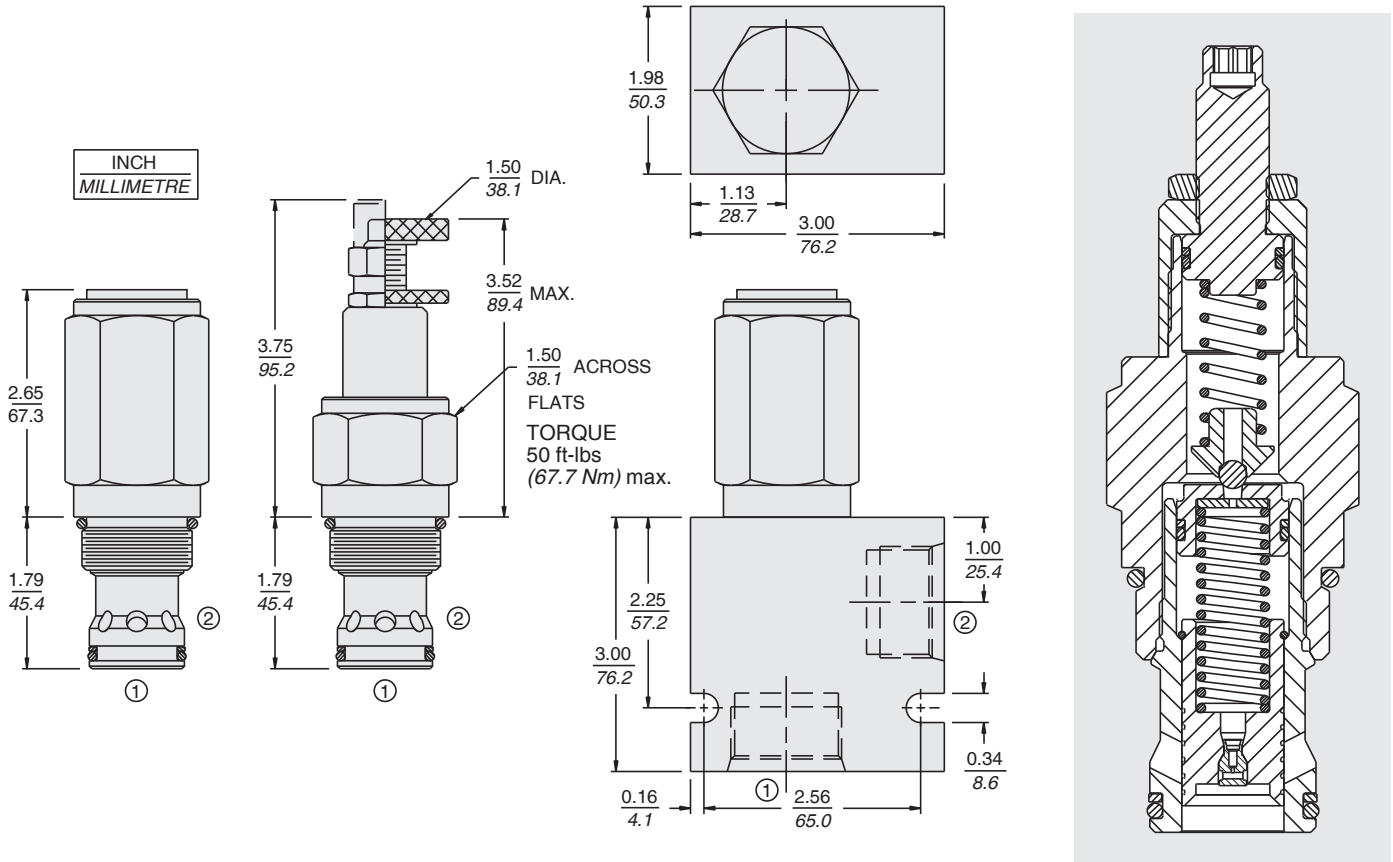
**Cavity:** VC16-2; See page 9.116.1

**Cavity Tool:** CT16-2XX; See page 8.600.1

**Seal Kit:** SK16-2X-B; See page 8.650.1

# RV16-26

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.73 kg. (1.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-up standard.  
 Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.57 kg. (1.25 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.016.1

## TO ORDER

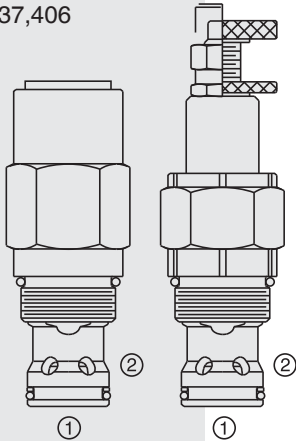
<b>RV16-26</b> - - - /		
<b>Adjustment Option</b>		<b>Setting in bar<sup>†</sup></b>
1/4 in. Hex Allen Head	<b>A</b>	(Blank) for Adjustable, or
1-1/2 in. Dia. Alum. Knob	<b>B</b>	Specify, for example:
Option A w/ Cover Cap	<b>C</b>	<b>M25</b> 25 bar
Factory Preset Non-Adj.	<b>F</b>	<b>M100</b> 100 bar
Factory Preset		<b>Setting in psi<sup>†</sup></b>
Hidden Adjustment	<b>H</b>	(Blank) for Adjustable, or
Option (C) with		Specify, for example:
Lockwire Holes	<b>L</b>	<b>9.0</b> 900 psi
		<b>23.5</b> 2350 psi
<b>Porting</b>		<b>Spring Range</b>
Cartridge Only	<b>0</b>	<b>03</b> 9.7 to 20.7 bar
SAE 12	<b>12T</b>	(140 to 300 psi)
SAE 16	<b>16T</b>	<b>06</b> 15.9 to 41.4 bar
3/4 in. BSP*	<b>6B</b>	(230 to 600 psi)
1 in. BSP*	<b>8B</b>	<b>15</b> 36.6 to 103.5 bar
		(530 to 1500 psi)
		<b>35</b> 82.8 to 241.6 bar
		(1200 to 3500 psi)
	<b>Seals</b>	
	<b>Pressure on</b>	
	<b>P Only:</b>	
	<b>N</b> Buna N (Std.)	
	<b>V</b> Fluorocarbon	
	<b>P</b> Polyurethane	

\*BSP Body; UK Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# RV56-26 Relief, Pilot-Operated, High Pressure

U.S. Patent  
7,137,406



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated (two-stage), spool-type hydraulic relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response and low hysteresis.

## OPERATION

The RV56-26 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the piloting relief off its seat, allowing the main (second stage) spool to shift, opening 1 to 2. The cartridge offers smooth transition in response to load changes in demanding hydraulic circuits.

**NOTE: The RV56-26 cannot be used in cross-over relief applications.**

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Fast, smooth response to pressure surges.

## RATINGS

**Rated Pressure Range at Crack:** 207 to 345 bar (3000 to 5000 psi)

**Crack Pressure Defined:** bar (psi) evident at 7.57 lpm (2.0 gpm) attained.

**Reseat Pressure:** Nominal 90% of crack pressure.

**Flow:** See Performance Chart

**Internal Leakage:** Measured under 85% of pressure setting at 38°C (100°F):  
213 ml/minute (13 cu. in./minute).

**Spring Range:** Model Code 50: 206.8 to 344.7 bar (3000 to 5000 psi)

**Operating Temperature:** with polyurethane seals: -54°C to 107°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of  
7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

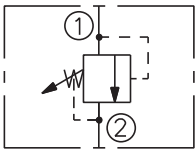
**Cavity:** VC16-2; See page 9.116.1

**Cavity Tool:** CT16-2XX; See page 8.600.1

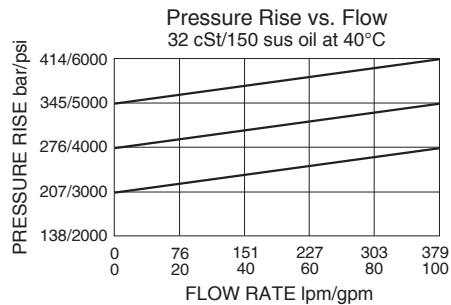
**Seal Kit:** SK16-2P-B; See page 8.650.1

## SYMBOLS

### USASI/ISO:



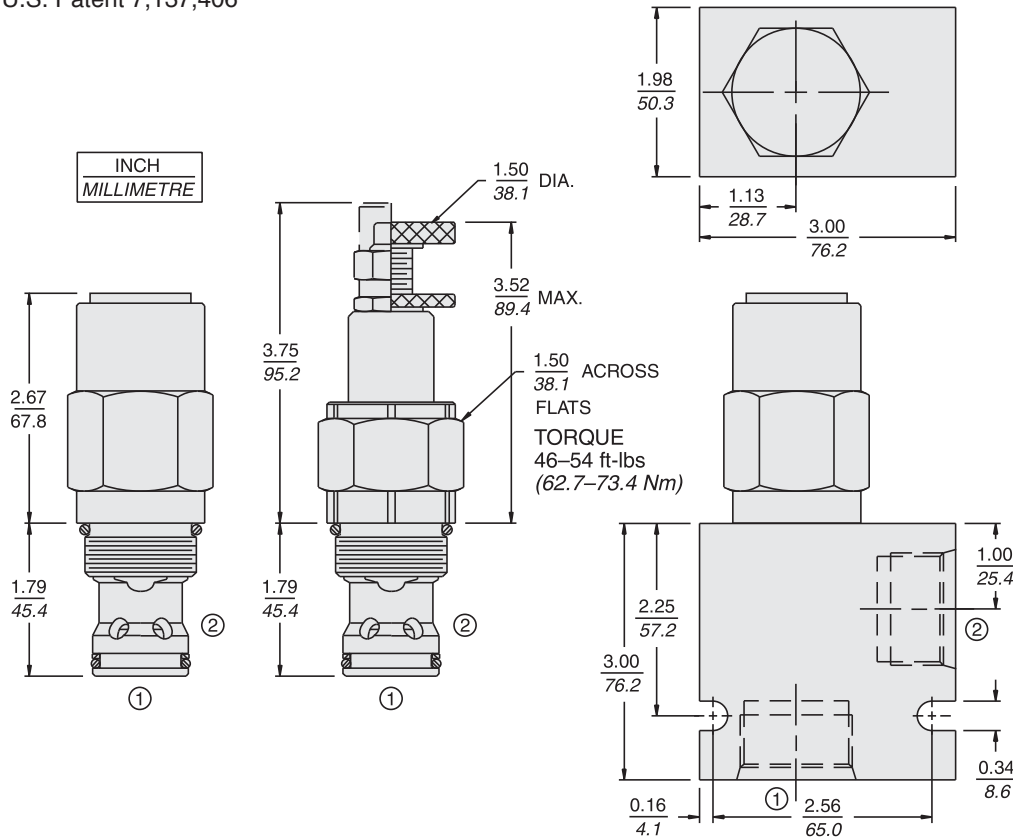
## PERFORMANCE (Cartridge Only)





**DIMENSIONS**

U.S. Patent 7,137,406



**MATERIALS**

**Cartridge:** Weight: 0.7 kg. (1.54 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-up standard.  
 Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.57 kg. (1.25 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.016.1

**TO ORDER**

**RV56-26**

- Adjustment Option**  
 1/4 in. Hex Allen Head **A**  
 1-1/2 in. Dia. Alum. Knob **B**  
 Option A w/ Cover Cap **C**  
 Factory Preset Non-Adj. **F**  
 Factory Preset Hidden Adjustment **H**

- Porting**  
 Cartridge Only **0**  
 SAE 12 **12T**  
 SAE 16 **16T**  
 3/4 in. BSP\* **6B**  
 1 in. BSP\* **8B**

\*BSP Body; UK Mfr. Only

- Seals**  
**P** Polyurethane

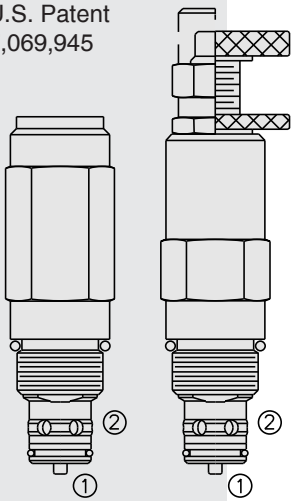
- Setting in bar<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**M207** 207 bar  
**M345** 345 bar  
**Setting in psi<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**30.0** 3000 psi  
**50.0** 5000 psi

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

- Spring Range**  
**50** 206.8 to 344.7 bar (3000 to 5000 psi)

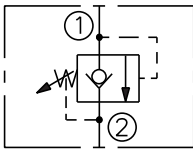
# RV10-28 Relief, Pilot-Operated w/Reverse Check

U.S. Patent  
7,069,945

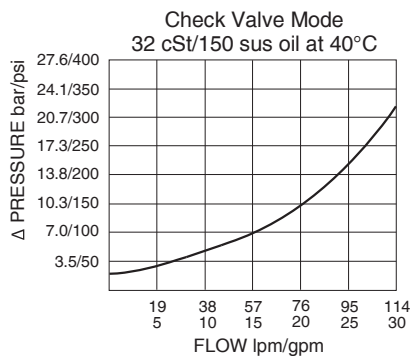
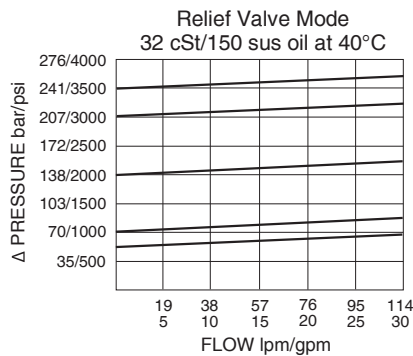


## SYMBOLS

USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, two-stage, hydraulic relief valve with reverse flow check valve. It is intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response, low hysteresis, low leakage, low pressure overshoot and reverse free flow features.

## OPERATION

The RV10-28 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the pilot stage open, allowing the main stage to shift, opening 1 to 2.

The relief flow path is from 1 to 2. Reverse flow, from 2 to 1, occurs when the pressure at 2 is at least 2.1 bar (30 psi) higher than at port 1.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Hardened spool and cage for long life.
- Fast response.
- Industry common cavity.

## RATINGS: Relief Valve Mode

**Operating Pressure Range:** 240 bar (3500 psi)

**Flow:** 7.6 to 113.6 lpm (2 to 30 gpm)

**Internal Leakage:** 0.5 ml/minute (10 drops/minute) max. to 80% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Pressure Rise:** at 240 bar (3500 psi): 0.15 bar/lpm (8 psi/gpm)

**Response Time:** Relief to Check switch under 250 bar/53 lpm (3500 psi/14 gpm) condition: 0.6 seconds

## RATINGS: Check Valve Mode

**Crack Pressure:** 2.1 bar (30 psi)

**Response Time:** Check to Relief switch under 250 bar/53 lpm (3500 psi/14 gpm) condition: 0.3 seconds

## RATINGS: Overall

**Operating Temperature:** with Buna N seals: -54 to 135°C (-65 to 275°F)

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-2, Variation "A"; See page 9.110.1

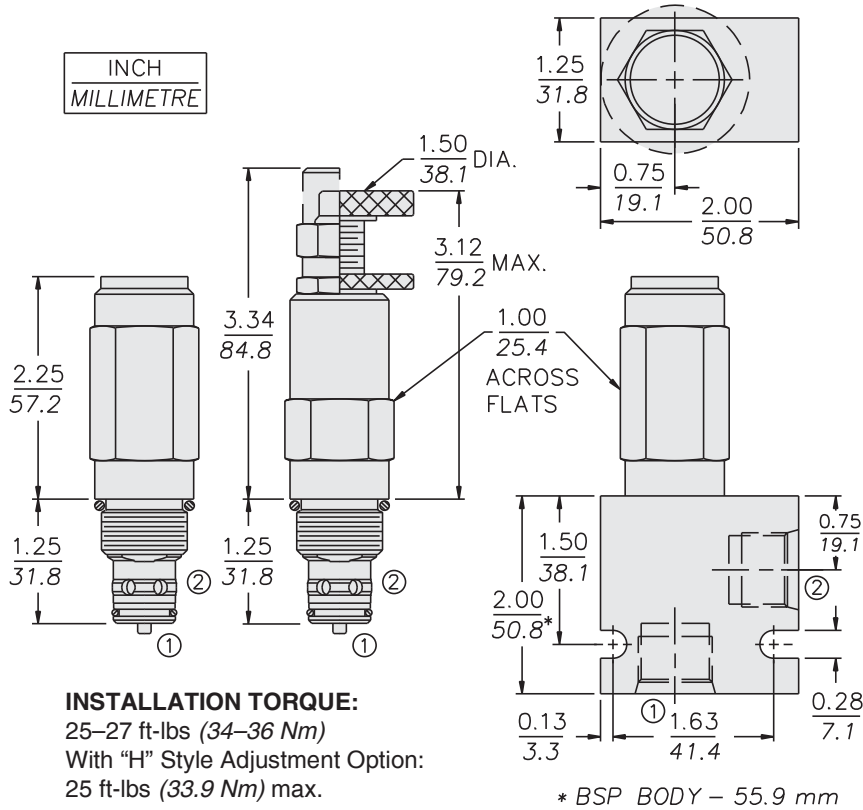
**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK10-2X-M; See page 8.650.1

Note: This new model RV10-28 should be used instead of the older model RV10-24 (page 6.062.1) which is being discontinued. For applications that do not require low-overshoot and reverse free-flow features, see model RV10-23 (page 6.060.1).

**DIMENSIONS**

U.S. Patent 7,069,945



**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Anodized aluminum knobs.  
Optional polyurethane seals with Fluorocarbon back-up recommended for pressures over 240 bar (3500 psi).

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

**RV10-28** - - - /

- Adjustment Option**  
1/4 in. Hex Allen Head **A**  
1-1/2 in. Dia. Alum. Knob **B**  
Option A w/ Cover Cap **C**  
Factory Preset Non-Adj. **F**  
Factory Preset Hidden Adj. **H**  
Option C w/ Lockwire Holes **L**

- Porting**  
Cartridge Only **0**  
SAE 6 **6T**  
SAE 8 **8T**  
3/8 in. BSP\* **3B**  
1/2 in. BSP\* **4B**

\*BSP Body; U.K. Mfr. Only

- Seals**  
**Pressure on P Only:**  
**N** Buna N (Std.)  
**V** Fluorocarbon

- Setting in bar†**  
(Blank) for Adjustable, or Specify, for example:  
**M52** 52 bar (Minimum)  
**M100** 100 bar  
**Setting in psi†**  
(Blank) for Adjustable, or Specify, for example:  
**7.5** 750 psi (Minimum)  
**23.5** 2350 psi

- Spring Range**  
**35** 51.7 to 241.4 bar (750 to 3500 psi)

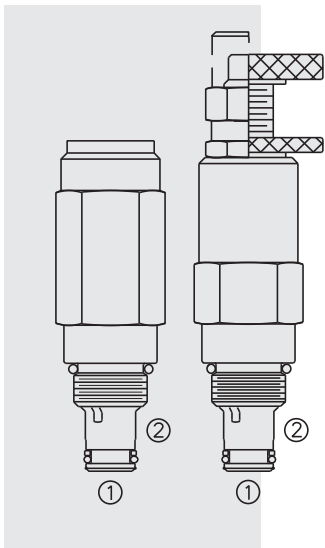
†Adjustable valves will be preset to approx. 50% of spring max. potential, or 52 bar (750 psi), whichever is less.

***RV50-28***

For more information on ***RV50-28***,  
please visit our website at  
[www.hydraforce.com](http://www.hydraforce.com)

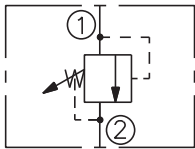


# RV08-29 Relief, Direct-Acting Poppet

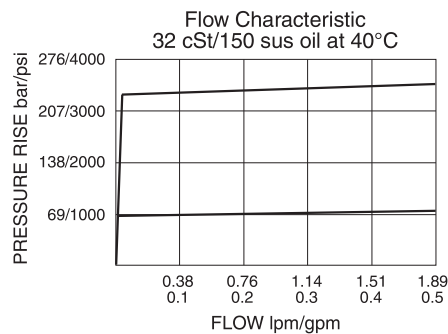


## SYMBOLS

### USAS/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, poppet-type, hydraulic relief valve intended for stable function in very low flow circuits that control pilot-operated valves.

## OPERATION

The RV08-29 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the spring-opposed poppet from its seat.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Hardened poppet and cage for long life.
- Optional spring ranges to 241 bar (3500 psi).
- Smooth response to pressure surges.
- Industry common cavity.
- Compact size.

## RATINGS

**Operating Pressure:** 241 bar (3500 psi)

**Flow:** Up to 1.89 lpm (0.5 gpm); see performance curve.

**Internal Leakage:** 3 ml/minute (0.18 cu. in./minute) max. to 80% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 80% of crack pressure

**Temperature:** -40° to 100°C with standard Buna seals;

-26° to 204°C with Fluorocarbon seals; -54° to 104°C with Polyurethane seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

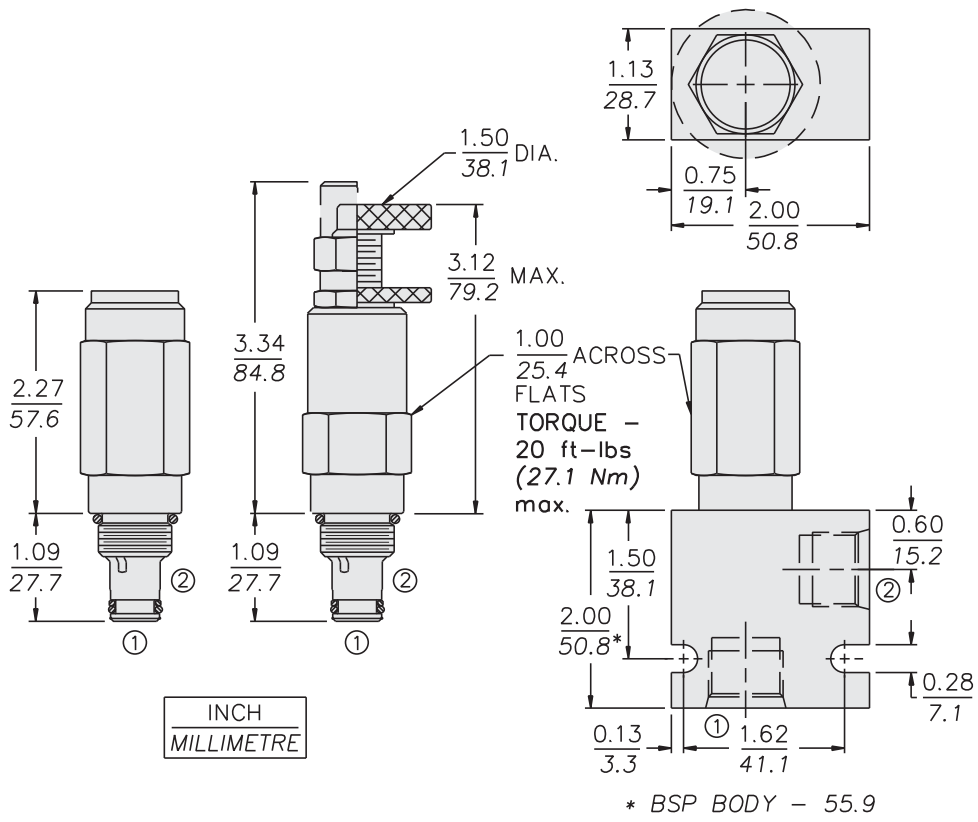
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC08-2; See page 9.108.1

**Cavity Tool:** CT08-2XX; See page 8.600.1

**Seal Kit:** SK08-2X-B; See page 8.650.1

**DIMENSIONS**

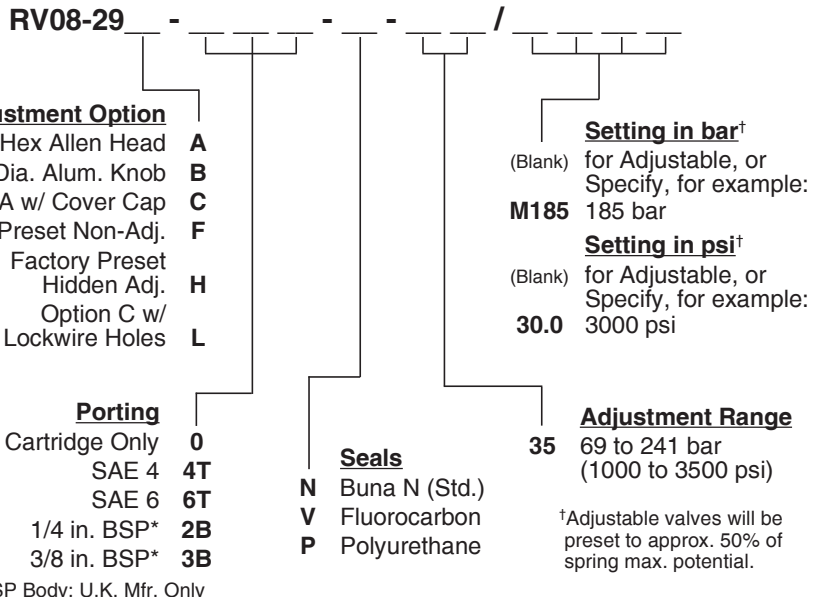


**MATERIALS**

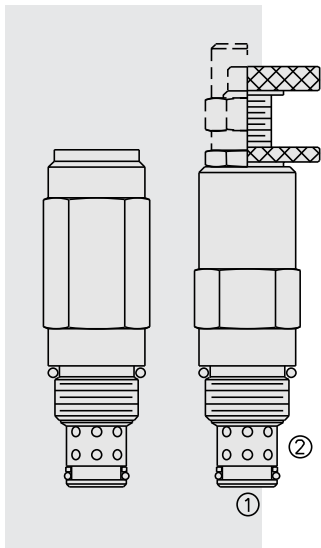
**Cartridge:** Weight: 0.23 kg. (0.50 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and back-up standard. Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**

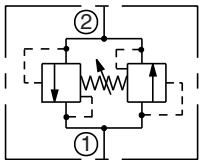


# CR10-28 Relief, Bi-Directional

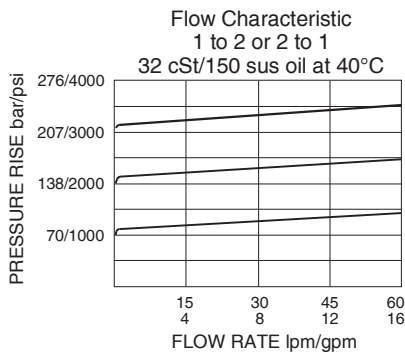


## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, differential area, poppet-type, bi-directional relief valve.

## OPERATION

The **CR10-28** is a direct-acting, dual cross-over relief valve in a single cartridge format. When pressure at either port exceeds the nominal setting value, flow will be transmitted to the opposite port. Back pressure at either port will affect the nominal setting of the opposite port on a 1:1 basis.

For correlation purposes, pre-set value will be measured at port 2. Pressure at port 1 will not exceed  $\pm 150$  psi from the port 2 value.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened parts for long life.
- Industry common cavity.

## RATINGS

**Maximum Operating Pressure:** 240 bar (3500 psi)

**Adjustable Pressure Range:** 14 to 210 bar (200 to 3000 psi); Two springs;  
Pressure is set at port 2

**Proof Pressure:** 345 bar (5000 psi)

**Reseat Pressure:** 90% of crack (crack pressure at 0.95 lpm/0.25 gpm)

**Maximum Difference for Crack Pressure in Both Directions:** 10.5 bar (150 psi)

**Flow Range:** 60 lpm (16 gpm); see performance chart

**Maximum Internal Leakage:** when reseal to 80% of crack pressure: 33 ml/minute  
(2 cu. in./minute)

**Cycle Limitations:** Internal seal life is limited to 300,000 cycles in either direction at maximum setting

**Temperature:** -40 to 120°C with Buna N seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-2; See page 9.110.1

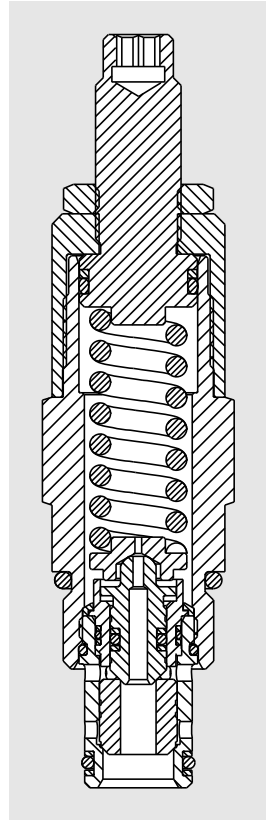
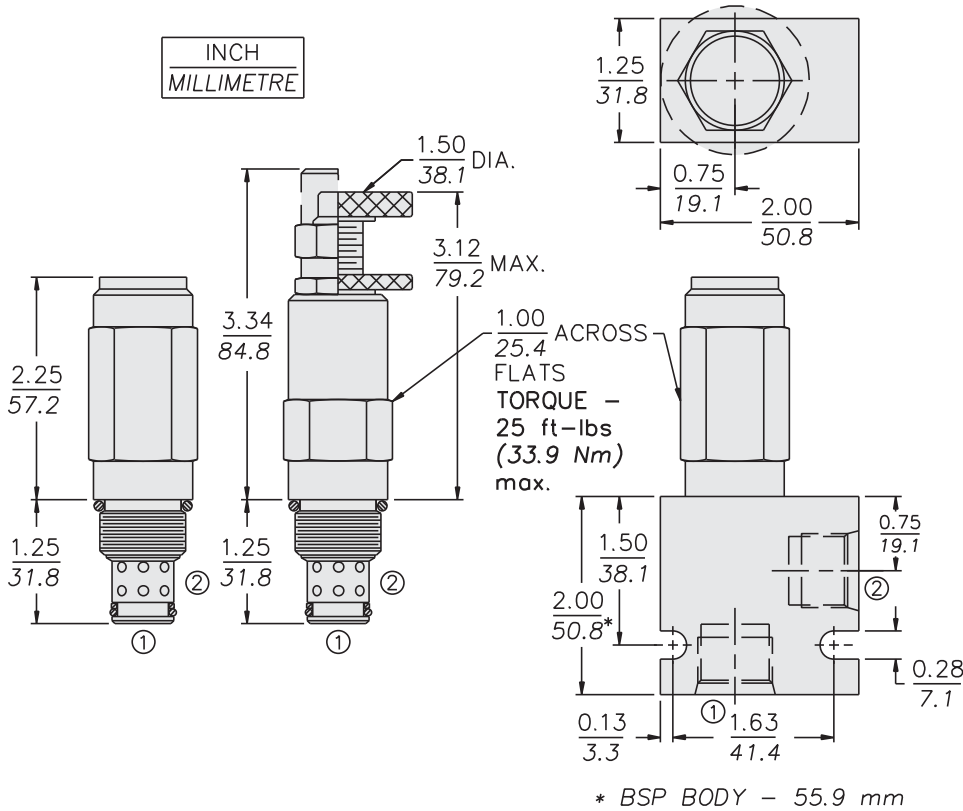
**Cavity Tool:** CT10-2XX; See page 8.600.1

**Seal Kit:** SK10-2X-B; See page 8.650.1



**CR10-28**

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.22 kg. (0.5 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and TFE backup standard. Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**Note:** Orifice Disc should not be used with this product.

**TO ORDER**

**CR10-28** - - - - /

**Adjustment Option**

- 1/4 in. Hex Allen Head **A**
- 1-1/2 in. Dia. Alum. Knob **B**
- Option A w/ Cover Cap **C**
- Factory Preset Non-Adjst. **F**
- Factory Preset Hidden Adjustment **H**
- Option C w/Lockwire Holes **L**

**Porting**

- Cartridge Only **0**
- SAE 6 **6T**
- SAE 8 **8T**
- 3/8 in. BSP\* **3B**
- 1/2 in. BSP\* **4B**

\*BSP Body; U.K. Mfr.

Only

**Seals**

- N** Buna N (Std.)
- V** Fluorocarbon

**Setting in bar<sup>†</sup>**

(Blank) for Adjustable, or Specify, for example:

- M25** 25 bar
- M100** 100 bar

**Setting in psi<sup>†</sup>**

(Blank) for Adjustable, or Specify, for example:

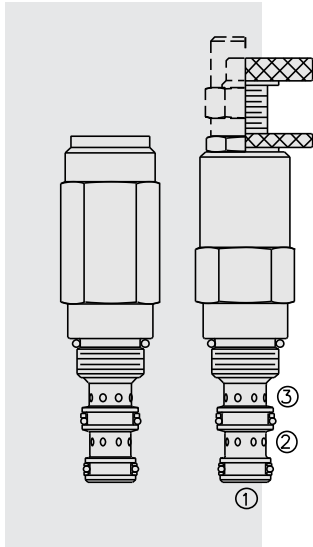
- 9.0** 900 psi
- 23.5** 2350 psi

**Spring Range**

- 24** 14 to 168 bar (200 to 2400 psi)
- 30** 160 to 210 bar (2300 to 3000 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# CR08-38 Bi-Directional Relief Valve, Vented



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, differential area, poppet-type, bi-directional relief valve, intended for use as a pressure limiting device in demanding hydraulic circuits.

## OPERATION

The CR08-38 is a direct-acting, dual cross-over relief valve in a single cartridge format. It blocks flow from 1 to 2 bi-directionally, with the spring chamber constantly drained at 3.

On attainment of a pre-determined pressure at either 1 or 2, the poppet is forced from its seat. Back pressure on port 3 will affect the nominal setting on a 2:1 basis.

**NOTE:** If pressure is applied simultaneously at port 1 and port 2, the pressure is additive and may cause the valve to shift at a pressure lower than the pre set pressure setting.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened parts for long life.
- Industry common cavity.

## RATINGS

**Maximum Operating Pressure:** 205 bar (3000 psi)

**Adjustable Pressure Range:** 68–205 bar (1000–3000 psi); Pressure is set at port 2

**Proof Pressure:** 345 bar (5000 psi)

**Reseat Pressure:** 80% of Crack; Crack: 0.96 lpm (0.25 gpm)

**Maximum Difference for Crack Pressure in Both Directions:** 20.7 bar (300 psi)

**Flow Range:** 30 lpm (8 gpm); See performance chart

**Maximum Internal Leakage:** When reseal to 75% of crack pressure: 0.4 cc/minute (8 drops/minute maximum)

**Cycle Limitations:** Internal seal life is limited to 300,000 cycles in either direction at maximum setting

**Temperature:** -40 to 120°C with Buna N seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

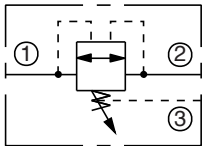
**Cavity:** VC08-3; See page 9.108.1

**Cavity Tool:** CT08-3XX; See page 8.600.1

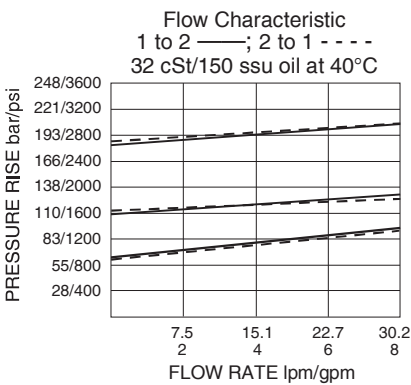
**Seal Kit:** SK08-3X-BM; See page 8.650.1

## SYMBOLS

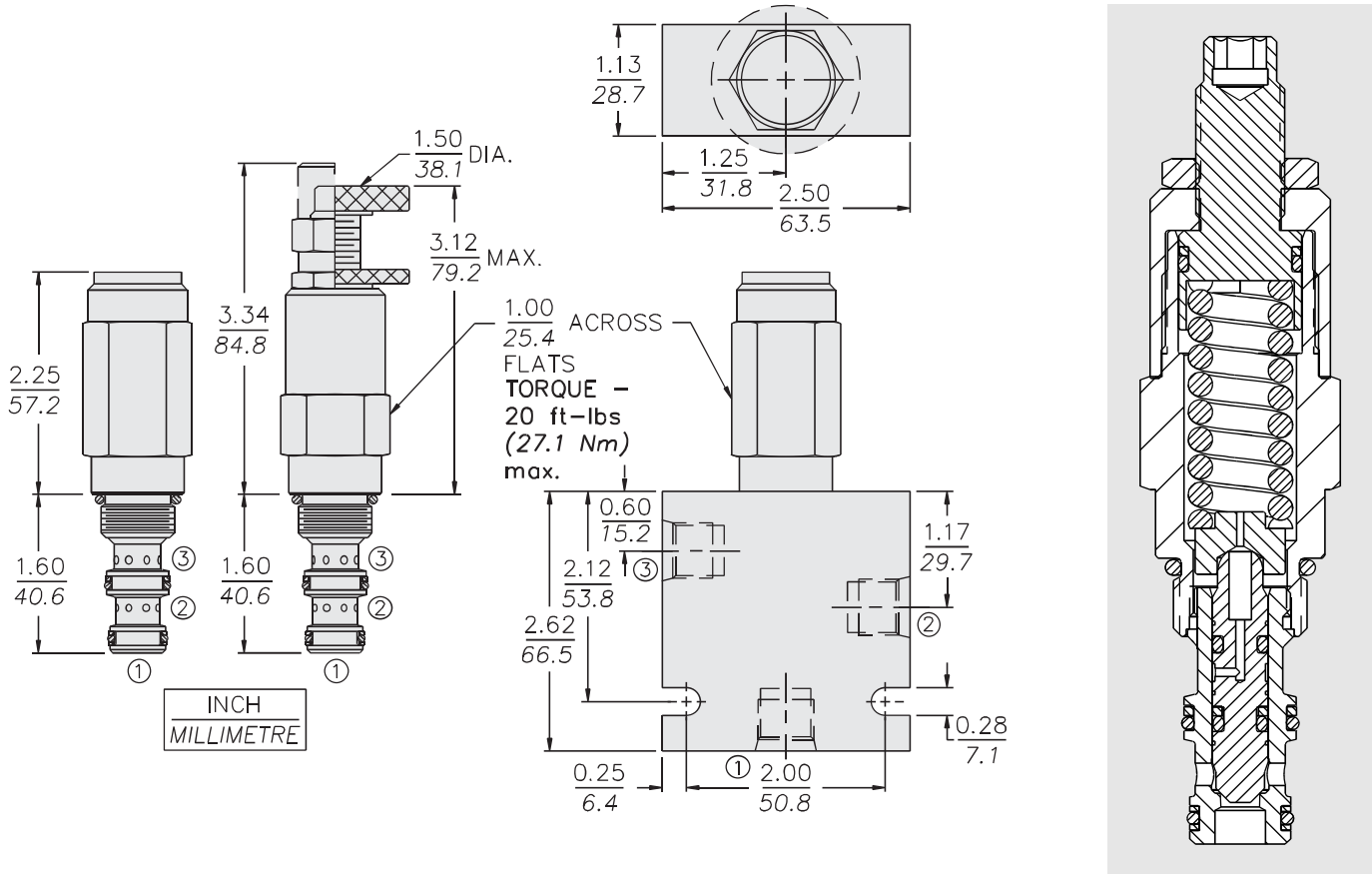
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**



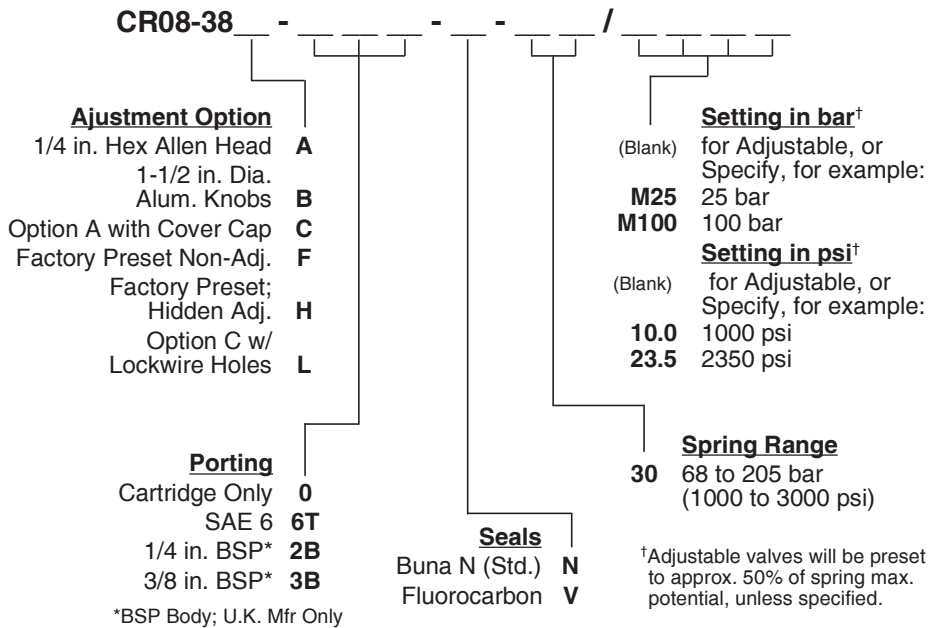
**MATERIALS**

**Cartridge:** Weight: 0.14 kg. (0.30 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and TFE back-ups standard. Anodized aluminum knob.

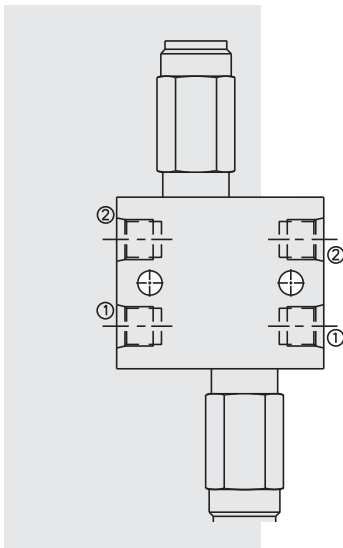
**Standard Ported Body:** Weight: 0.27 kg. (0.60 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**Note:** Orifice Disc should not be used with this valve.

**TO ORDER**



# CRV08-20 Cross-Over Relief, Direct-Acting Poppet



## DESCRIPTION

The **CRV08-20** cross-port relief uses two RV08-20 cartridges in an in-line plumbed housing. It is typically used to protect a hydraulic cylinder or motor from load-induced pressure surges. The cartridges used are screw-in, direct-acting, poppet-type valves, intended for use in lower flow circuits, requiring low internal leakage.

## OPERATION

The CRV08-20 manifold allows flow to pass through the separated 1 to 2 passages at low pressure loss. If pressure in either passage exceeds the valve setting, flow will cross over to the opposite passage.

Note: Back-pressure at the outlet port of the relief cartridges will increase the nominal setting of the valve on a 1:1 basis (i.e. 6.9 bar/100 psi back-pressure increases the nominal setting by 6.9 bar/100 psi).

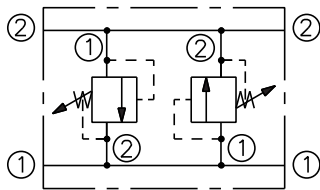
See catalog page 6.010.1 for cartridge specifications.

## FEATURES

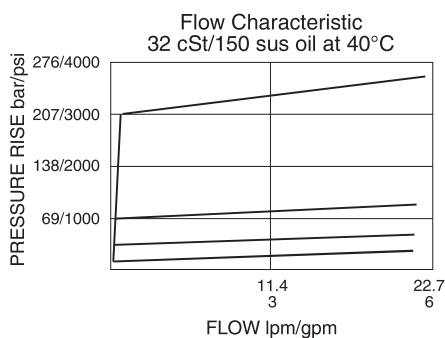
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 228 bar (3300 psi).
- Rapid response to pressure changes.
- Compact size.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 228 bar (3300 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at max. setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 75% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 80% of crack pressure

**Standard Spring Ranges:**

- 3.4 to 34.5 bar (50 to 500 psi);
- 3.4 to 62.0 bar (50 to 900 psi);
- 6.9 to 124 bar (100 to 1800 psi);
- 6.9 to 227.5 bar (100 to 3300 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

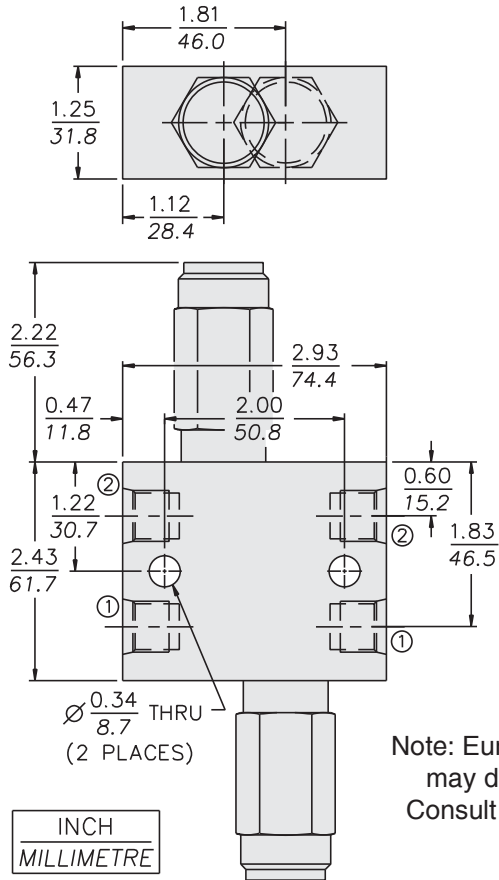
**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

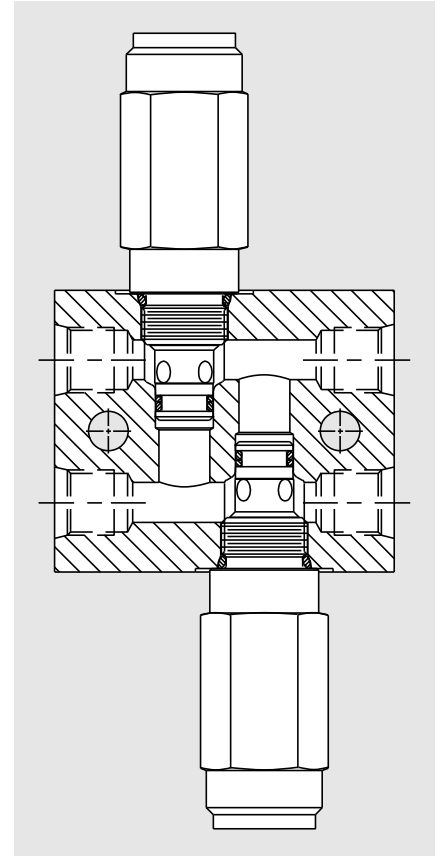
**Seal Kit:** SK08-2X-M (for cross-over relief application) (2 required)

**Body Part Number:** 7070160

## DIMENSIONS



Note: European manufactured version may differ in design/dimensions. Consult HydraForce Hydraulics Ltd.



## MATERIALS

**Cartridges:** (2 Required) Weight: 0.23 kg. (0.50 lbs.) Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and Fluorocarbon back-ups standard. Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi).

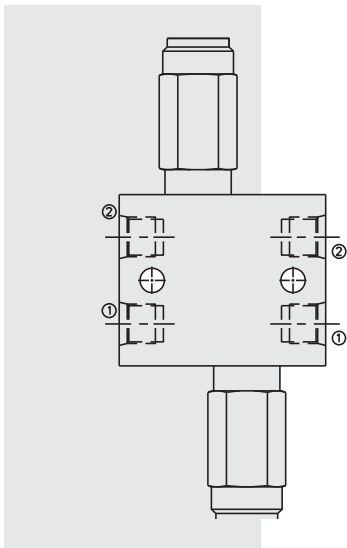
## TO ORDER

<b>CRV08-20 - 6T - - - / - - - / - - -</b>	
<p><b>Adjustment Option</b></p> <p><b>A</b> 1/4 in. Hex Allen Head  <b>B</b> 1-1/2 in. Dia. Alum. Knob  <b>C</b> Option A w/ Cover Cap  <b>F</b> Factory Preset Non-Adj.  <b>H</b> Factory Preset Hidden Adj.  <b>L</b> Option C w/ Lockwire Holes</p>	<p><b>Setting in bar<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:  <b>M25</b> 25 bar  <b>M100</b> 100 bar</p> <p><b>Setting in psi<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:  <b>9.0</b> 900 psi  <b>23.5</b> 2350 psi</p>
<p><b>Porting</b></p> <p>6T SAE 6</p>	<p><b>Seals</b></p> <p><b>Bidirectional Pressure:</b></p> <p><b>NC</b> Buna N  <b>VC</b> Fluorocarbon</p>
	<p><b>Spring Range</b></p> <p><b>5</b> 3.4 to 34.5 bar (50 to 500 psi)  <b>9</b> 3.4 to 62.0 bar (50 to 900 psi)  <b>18</b> 6.9 to 124 bar (100 to 1800 psi)  <b>33</b> 6.9 to 227.5 bar (100 to 3300 psi)</p>

**Repeat** to supply setting group if both valves are not to be set at the same pressures.

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# CRV10-20 Cross-Over Relief, Direct-Acting Poppet



## DESCRIPTION

The **CRV10-20** cross-port relief uses two RV10-20 cartridges in an in-line plumbed housing. It is typically used to protect a hydraulic cylinder or motor from load-induced pressure surges. The cartridges used are screw-in, direct-acting, poppet-type valves, intended for use in lower flow circuits, requiring low internal leakage.

## OPERATION

The CRV10-20 manifold allows flow to pass through the separated 1 to 2 passages at low pressure loss. If pressure in either passage exceeds the valve setting, flow will cross over to the opposite passage.

Note: Back-pressure at the outlet port of the relief cartridges will increase the nominal setting of the valve on a 1:1 basis (i.e. 6.9 bar/100 psi back-pressure increases the nominal setting by 6.9 bar/100 psi).

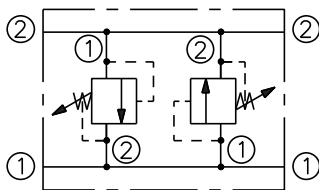
See catalog page 6.020.1 for cartridge specifications.

## FEATURES

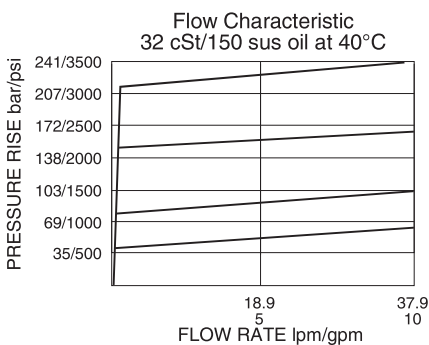
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 228 bar (3300 psi).
- Rapid response to pressure surges.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 80% of nominal setting

**Crack (Set) Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 85% of crack pressure

### Standard Spring Ranges:

- 6.9 to 41.4 bar (100 to 600 psi);
- 10.3 to 82.8 bar (150 to 1200 psi);
- 34.5 to 158.7 bar (500 to 2300 psi);
- 34.5 to 227.6 bar (500 to 3300 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

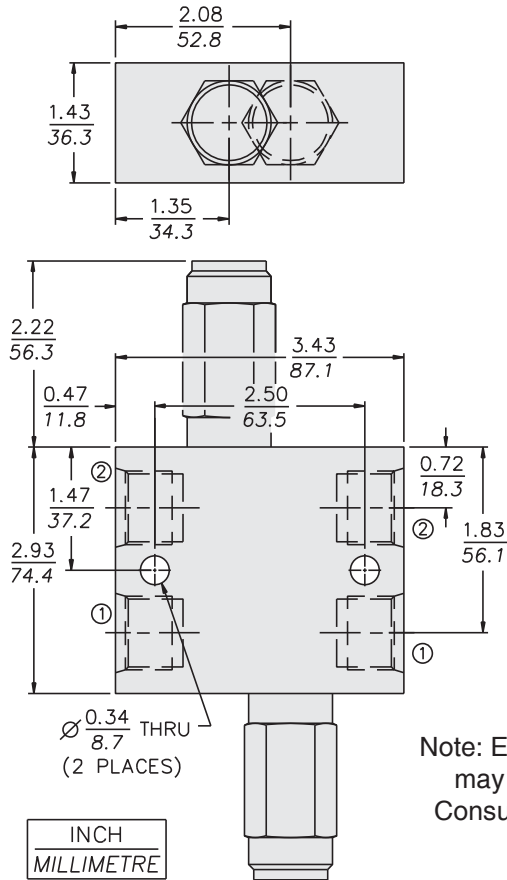
**Installation:** No restrictions; See page 9.020.1

**Seal Kit:** SK10-2X-M (for cross-over relief application)

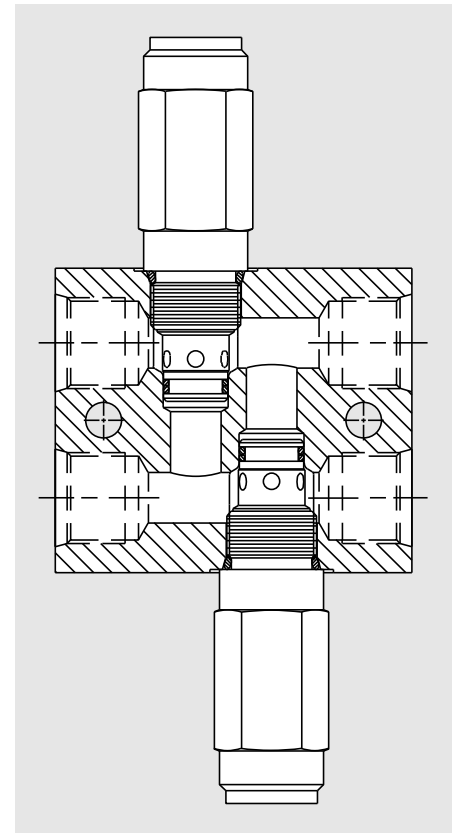
**Body Part Number:** 7070170

# CRV10-20

## DIMENSIONS



Note: European manufactured version may differ in design/dimensions. Consult HydraForce Hydraulics Ltd.

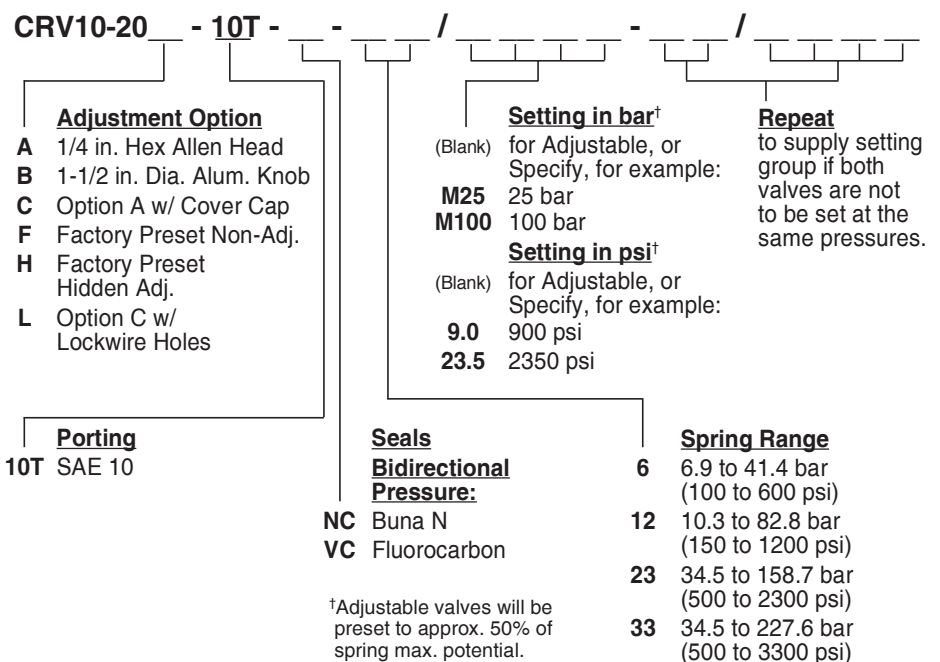


## MATERIALS

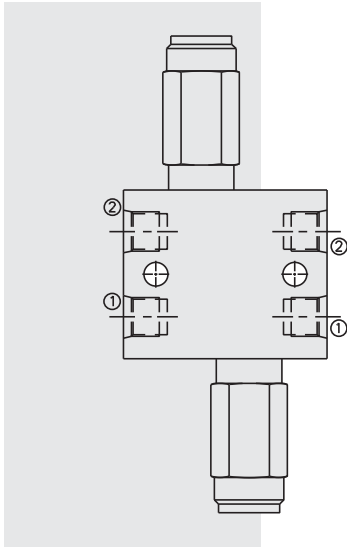
**Cartridges:** (2 Required) Weight: 0.23 kg. (0.50 lbs.); Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and Fluorocarbon back-ups standard. Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.50 kg. (1.10 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi).

## TO ORDER



# CRV08-22 Cross-Over Relief, Differential Area Poppet



## DESCRIPTION

The **CRV08-22** cross-port relief uses two RV08-22 cartridges in an in-line plumbed housing. It is typically used to protect a hydraulic cylinder or motor from load-induced pressure surges. The cartridges used are screw-in, differential area, poppet-type valves, intended for use in lower flow circuits requiring low internal leakage.

## OPERATION

The CRV08-22 manifold allows flow to pass through the separated 1 to 2 passages at low pressure loss. If pressure in either passage exceeds the valve setting, flow will cross over to the opposite passage.

Note: Back-pressure at the outlet port of the relief cartridges will increase the nominal setting of the valve on a 1:1 basis (i.e. 6.9 bar/100 psi back-pressure increases the nominal setting by 6.9 bar/100 psi).

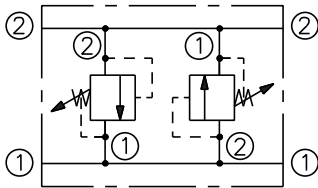
See catalog page 6.045.1 for cartridge specifications.

## FEATURES

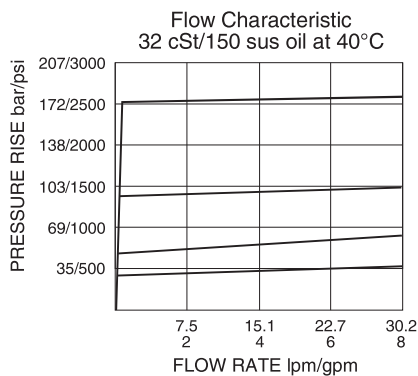
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 180 bar (2600 psi).
- Smooth response to pressure surges.
- Industry common cavity.
- Compact size.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 180 bar (2600 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Standard Spring Ranges:**

- 3.4 to 27.6 bar (50 to 400 psi);
- 6.9 to 48.3 bar (100 to 700 psi);
- 10.3 to 89.7 bar (150 to 1300 psi);
- 13.8 to 179.3 bar (200 to 2600 psi)

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

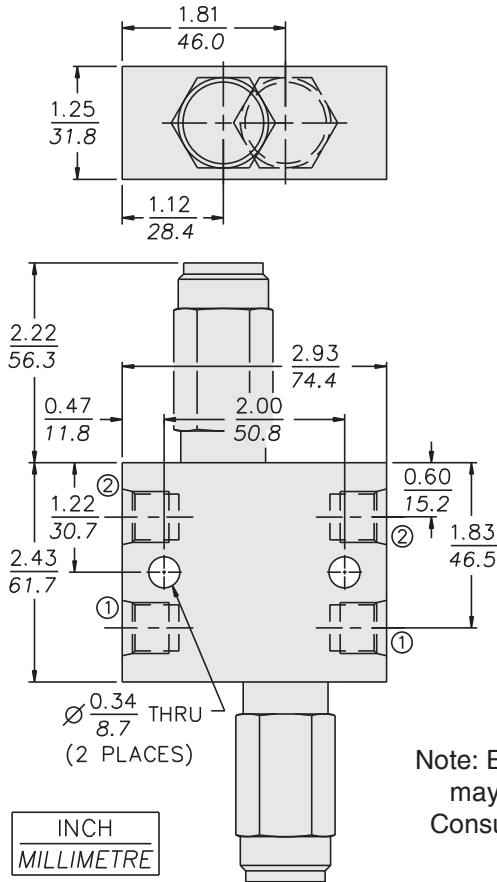
**Installation:** No restrictions; See page 9.020.1

**Seal Kit:** SK08-2X-M (for cross-over relief application) (2 required)

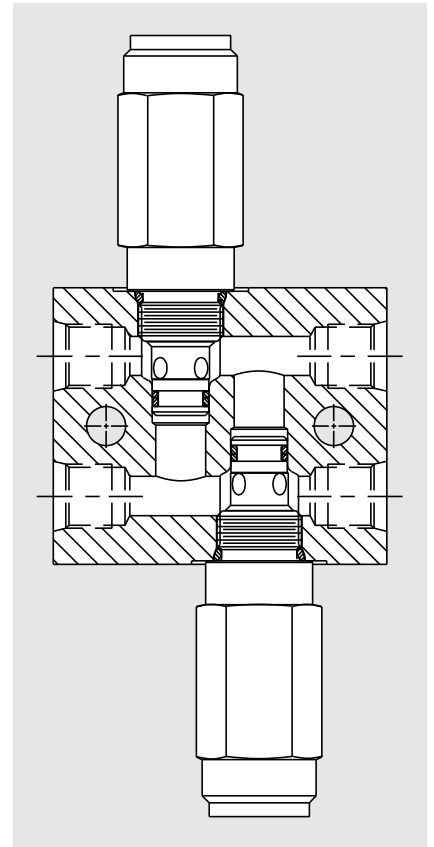
**Body Part Number:** 7070160



## DIMENSIONS



Note: European manufactured version may differ in design/dimensions. Consult HydraForce Hydraulics Ltd.



## MATERIALS

**Cartridges:** (2 Required) Weight: 0.22 kg. (0.48 lbs.) Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and Fluorocarbon back-ups standard. Anodized aluminum knob.

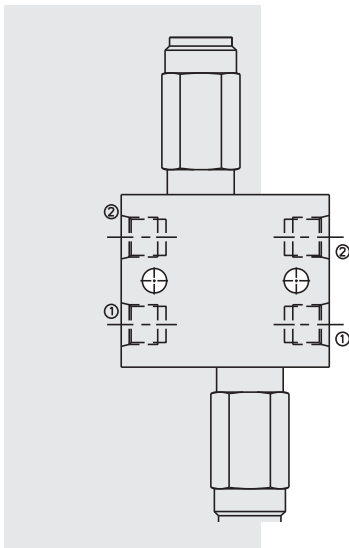
**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi).

## TO ORDER

CRV08-22		- 6T -		/		-		/	
<b>Adjustment Option</b>				<b>Setting in bar<sup>†</sup></b>		<b>Repeat</b>			
<b>A</b>	1/4 in. Hex Allen Head			(Blank)	for Adjustable, or Specify, for example:		to supply setting group if both valves are not to be set at the same pressures.		
<b>B</b>	1-1/2 in. Dia. Alum. Knob			<b>M25</b>	25 bar				
<b>C</b>	Option A w/ Cover Cap			<b>M100</b>	100 bar				
<b>F</b>	Factory Preset Non-Adj.			<b>Setting in psi<sup>†</sup></b>					
<b>H</b>	Factory Preset Hidden Adj.			(Blank)	for Adjustable, or Specify, for example:				
<b>L</b>	Option C w/ Lockwire Holes			<b>9.0</b>	900 psi				
				<b>23.5</b>	2350 psi				
<b>Porting</b>				<b>Seals</b>		<b>Spring Range</b>			
6T SAE 6				<b>Bidirectional Pressure:</b>		<b>4</b>	3.4 to 27.6 bar (50 to 400 psi)		
				<b>NC</b> Buna N		<b>7</b>	6.9 to 48.3 bar (100 to 700 psi)		
				<b>VC</b> Fluorocarbon		<b>13</b>	10.3 to 89.7 bar (150 to 1300 psi)		
						<b>26</b>	13.8 to 179.3 bar (200 to 2600 psi)		

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# CRV10-22 Cross-Over Relief, Differential Area Poppet



## DESCRIPTION

The **CRV10-22** cross-port relief uses two RV10-22 cartridges in an in-line plumbed housing. It is typically used to protect a hydraulic cylinder or motor from load-induced pressure surges. The cartridges used are screw-in, differential area, poppet-type valves, intended for use in lower flow circuits requiring low internal leakage.

## OPERATION

The CRV10-22 manifold allows flow to pass through the separated 1 to 2 passages at low pressure loss. If pressure in either passage exceeds the valve setting, flow will cross over to the opposite passage.

Note: Back-pressure at the outlet port of the relief cartridges will increase the nominal setting of the valve on a 1:1 basis (i.e. 6.9 bar/100 psi back-pressure increases the nominal setting by 6.9 bar/100 psi).

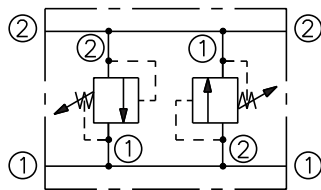
See catalog page 6.050.1 for cartridge specifications.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened poppet and cage for long life.
- Optional spring ranges to 240 bar (3500 psi).
- Smooth response to pressure surges.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

**Pressure Rise:** 0.34 bar/l (5 psi/g)

**Internal Leakage:** 0.25 cc/minute (5 drops/minute) max. to 85% of nominal setting

**Crack (Set) Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained

### Standard Spring Ranges:

6.9 to 41.4 bar (100 to 600 psi) at 90% crack vs. reseal accuracy;

10.3 to 89.7 bar (150 to 1300 psi) at 90% accuracy;

34.5 to 172.4 bar (500 to 2500 psi) at 90% accuracy;

34.5 to 241.4 bar (500 to 3500 psi) at 90% accuracy

**Temperature:** -40 to 120°C

**Filtration:** See page 9.010.1

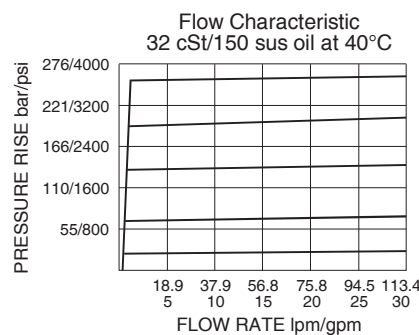
**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Seal Kit:** SK10-2X-M (for cross-over relief application) (2 required)

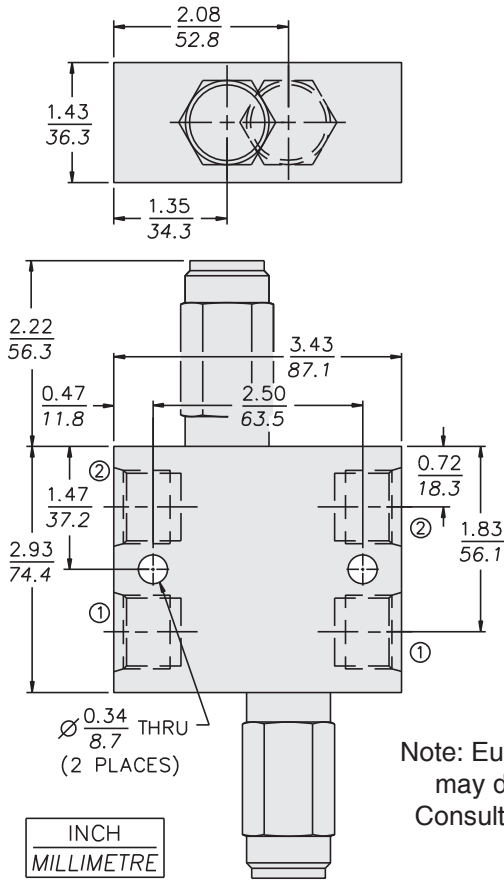
**Body Part Number:** 7070170

## PERFORMANCE (Cartridge Only)

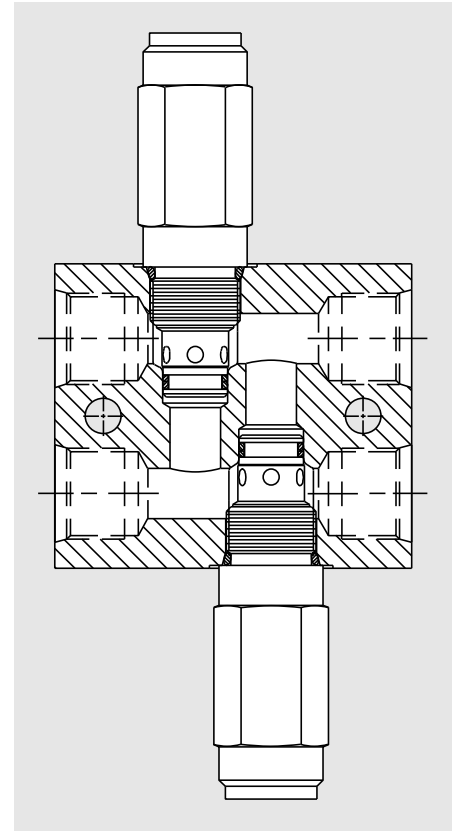


**CRV10-22**

**DIMENSIONS**



Note: European manufactured version may differ in design/dimensions. Consult HydraForce Hydraulics Ltd.



**MATERIALS**

**Cartridges:** (2 Required) Weight: 0.23 kg. (0.50 lbs.) Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and Fluorocarbon back-ups standard. Anodized aluminum knob.

**Standard Ported Body:** Weight: 0.50 kg. (1.10 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi).

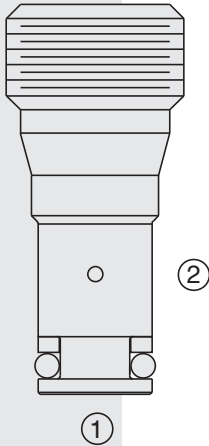
**TO ORDER**

**CRV10-22 - 10T - - / - /**

<p><b>Adjustment Option</b></p> <p><b>A</b> 1/4 in. Hex Allen Head  <b>B</b> 1-1/2 in. Dia. Alum. Knob  <b>C</b> Option A w/ Cover Cap  <b>F</b> Factory Preset Non-Adj.  <b>H</b> Factory Preset Hidden Adjustment  <b>L</b> Option C w/Lockwire Holes</p>	<p><b>Setting in bar<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:  <b>M25</b> 25 bar  <b>M100</b> 100 bar</p> <p><b>Setting in psi<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:  <b>9.0</b> 900 psi  <b>23.5</b> 2350 psi</p>	<p><b>Repeat</b> to supply setting group if both valves are not to be set at the same pressures.</p>
<p><b>Porting</b></p> <p>10T SAE 10</p>	<p><b>Seals</b></p> <p><b>Bidirectional Pressure:</b></p> <p><b>NC</b> Buna N  <b>VC</b> Fluorocarbon</p>	<p><b>Spring Range</b></p> <p><b>6</b> 6.9 to 41.4 bar (100 to 600 psi)  <b>13</b> 10.3 to 89.7 bar (150 to 1300 psi)  <b>25</b> 34.5 to 172.4 bar (500 to 2500 psi)  <b>35</b> 34.5 to 241.4 bar (500 to 3500 psi)</p>

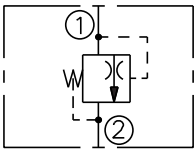
<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

## TR04-B20 Thermal Relief Valve



### SYMBOLS

#### USASI/ISO:



### DESCRIPTION

A screw-in, cartridge-style, poppet-type, thermal relief valve intended to prevent cylinder damage resulting from temperature induced pressure intensification. This valve is not intended to be used as a dynamic relief valve, or as protection against load-induced pressure spikes.

### OPERATION

The **TR04-B20** blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the spring opposed poppet from its seat. Pressure at port 2 should not, at any time, be more than 500 psi above the pressure at port 1.

### FEATURES

- Miniature size.
- Hardened parts for long life.
- Below surface mount.
- Low Leakage.

### RATINGS

**Maximum Operating Pressure:** 414 bar (6000 psi)

**Leakage:** 1 drop/minute to 90% of crack setting

**Reseat Characteristic:** 10 drops/minute at 85% of pressure setting

**Temperature:** -40 to 120°C with Buna N seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

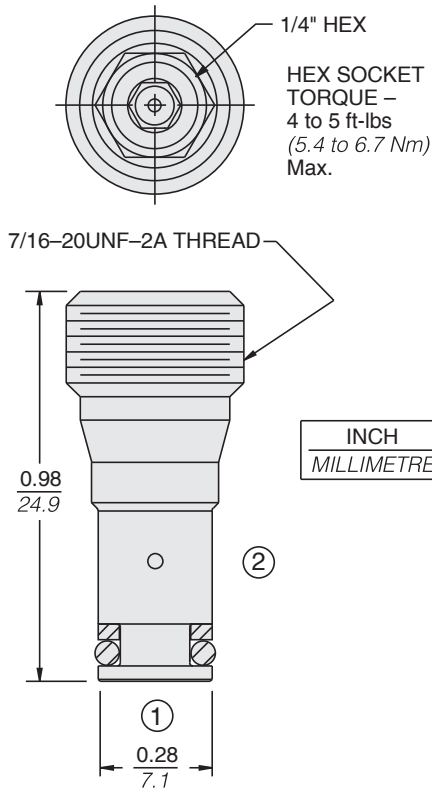
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC04-B2; See page 9.104.1

**Cavity Tool:** CT04-B3xx; See page 8.600.1

**Seal Kit:** SK04-B2x-B; See page 8.650.1

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.05 kg. (0.12 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and TFE back-ups standard, Polyurethane optional.

**TO ORDER**

TR04-B20 - 0 - -

**Spring Setting**

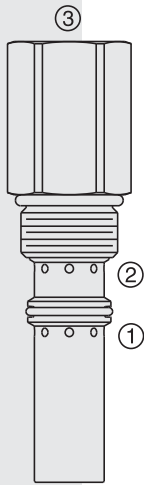
- 40** 276 to 286 bar (4000 to 4150 psi)
- 52** 359 to 369 bar (5200 to 5350 psi)
- 60** 414 to 424 bar (6000 to 6150 psi)

Non-standard spring settings are available for OEM applications. Consult factory.

**Seals**

- N** Buna N (Standard for Spring Setting 40)
- V** Fluorocarbon (Optional for Spring Setting 40)
- P** Polyurethane (Standard for Spring Settings 52 and 60)

# PRES50-30 Pressure Reducing/Relieving



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type reducing/relieving valve designed to act as a pressure regulating device for secondary circuits. It is intended for use in stable-input flow circuits.

## OPERATION

In its steady state, the **PRES50-30** allows bidirectional flow from 3 to 2 with the spring chamber constantly drained at 1. Upon attainment of a predetermined pressure at 2, the valve will shift to block flow at 3, thereby regulating pressure at 2. In this mode, the valve will also relieve port 2 to port 1 at a variable value over the set reducing pressure.

The tank port pressure is additive to the pressure setting at a ratio of 1:1.

## FEATURES

- High Pressure steel adapter on inlet port 3 withstands up to 345 bar (5000 psi).
- Hardened spool and cage for long life.

## RATINGS

**Maximum Rated Pressure at Supply Port:** 345 bar (5000 psi)

**Regulated Pressure Range:** 31 to 55.2 bar (450 to 800 psi) at no-flow

**Maximum Tank Port Pressure:** 68.9 bar (1000 psi)

**Rated Flow:** 11.4 lpm (3 gpm) maximum

**Maximum Internal Leakage:** 131 ml/minute (8 cu. in./minute)

**Temperature:** -40 to 100°C with Buna N seals

-26°C to 204°C with Fluorocarbon seals

-54°C to 107°C with Polyurethane seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

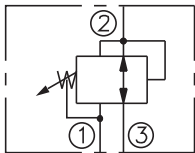
**Cavity:** VC98-3; See page 9.110.1

**Cavity Tool:** CT98-3XX; See page 8.600.1

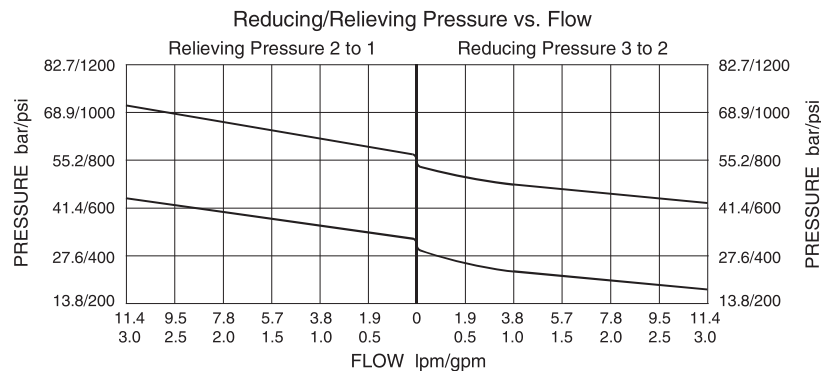
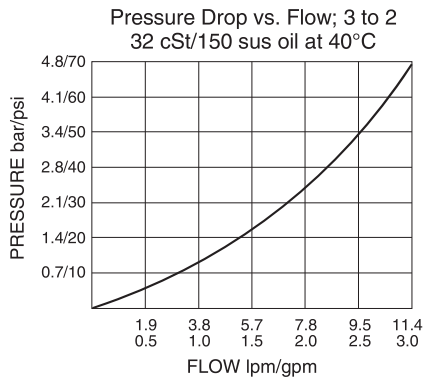
**Seal Kit:** SK10-2X-0\_SPL; See page 8.650.1

## SYMBOLS

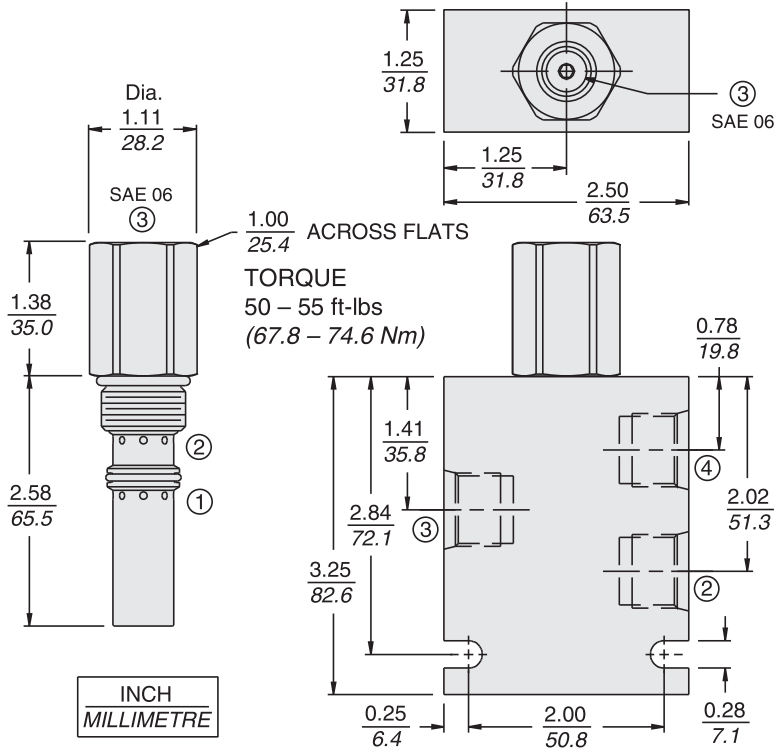
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**



Note: Either body port 2 or body port 3 can be blocked.

**MATERIALS**

**Cartridge:** Weight: 0.22 kg. (0.49 lbs.);  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 O-rings standard.

**Standard Ported Body:** Weight:  
 0.34 kg. (0.75 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1.

**TO ORDER**

**PRES50-30 - - - 08 / 04.5**

**Porting**  
 Cartridge Only **0**  
 SAE 6 **6T**  
 SAE 8 **8T**

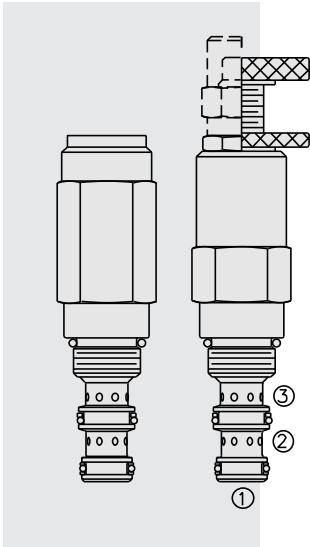
**Seals**  
 Buna N **N**  
 Fluourocarbon **V**  
 Polyurethane **P**

**Pressure Setting**  
**04.5** 31.0 bar (450 psi)

**Spring Range**  
**08** 31.0 to 55.2 bar (450 to 800 psi)

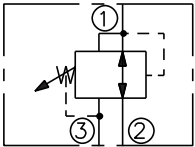
Polyurethane seals are required for operation over 241 bar/3500 psi.

# PR08-32 Pressure Reducing/Relieving

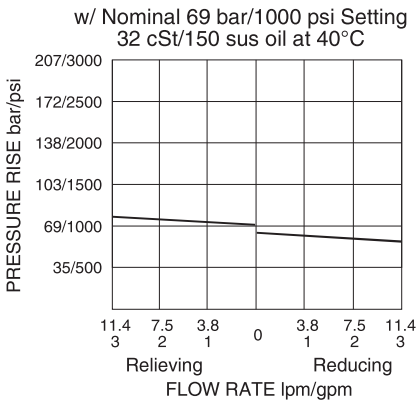


## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic pressure reducing/relieving valve with internal pilot and internal spring chamber drain, designed to act as a pressure-regulating device for secondary circuits. It is intended for use in stable input flow circuits.

## OPERATION

In its steady state, the **PR08-32** allows flow to pass bidirectionally from 2 to 1, with the spring chamber constantly drained at 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to block flow at 2, thereby regulating pressure at 1. In this mode, the valve also will relieve 1 to 3 at a variable value over the set reducing pressure.

**Note:** Direct-acting PR series valves may not be suitable for some static load applications. Consult factory.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 152 bar (2200 psi).
- Hardened spool and cage for long life.
- Industry common cavity.
- Compact size.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Proof Pressure:** 390 bar (5700 psi)

**Flow:** 11.4 lpm (3 gpm) max.

**Internal Leakage 2 to 3:** 82 cc/minute (5 cu. in/minute) max. at 207 bar (3000 psi) to 90% of nominal setting

### Standard Spring Ranges (Reducing Function):

- 3.4 to 20.7 bar (50 to 300 psi);
- 10.4 to 41.4 bar (150 to 600 psi);
- 20.7 to 82.8 bar (300 to 1200 psi);
- 34.5 to 151.7 bar (500 to 2200 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

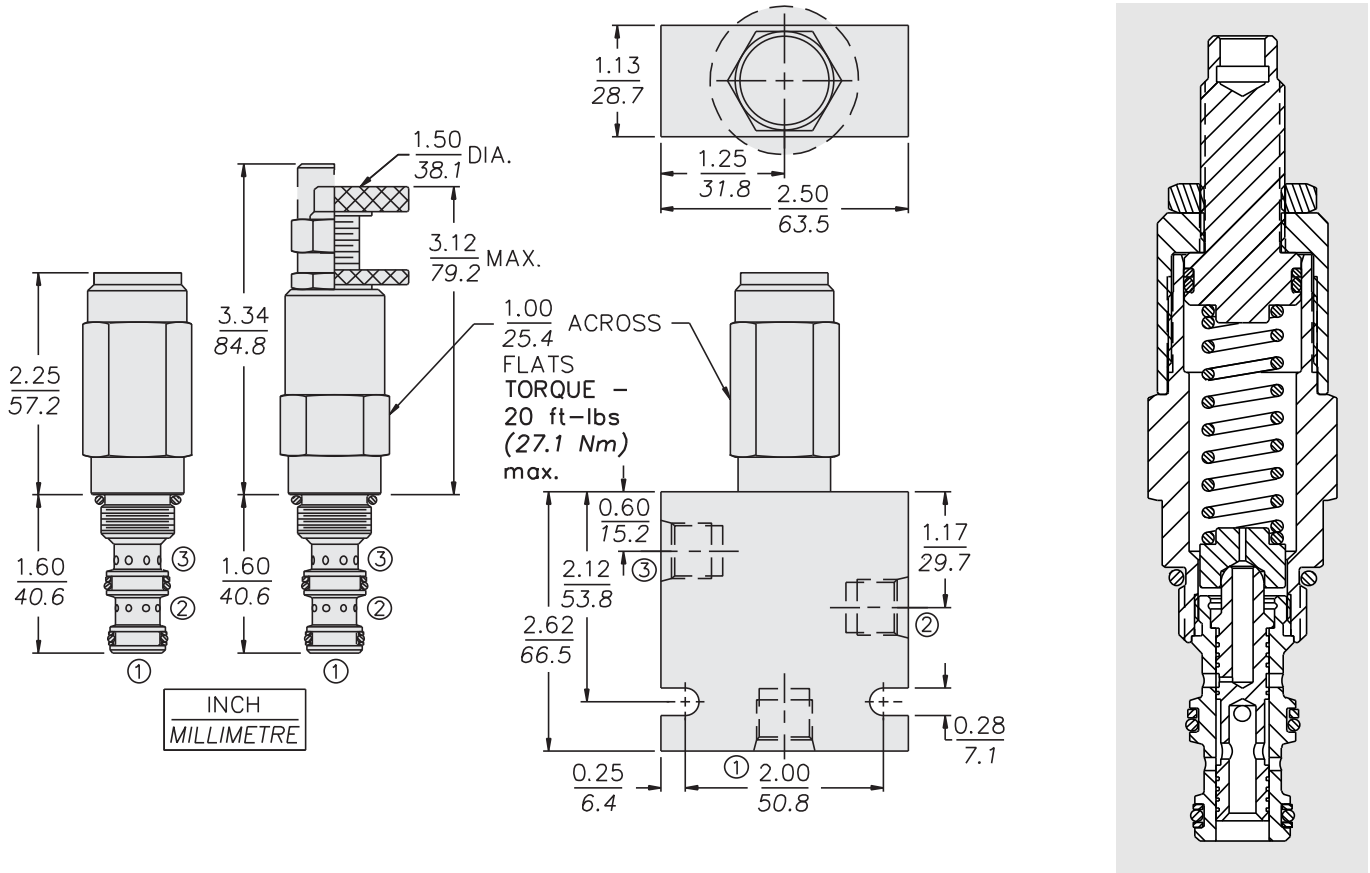
**Cavity:** VC08-3; See page 9.108.1

**Cavity Tool:** CT08-3XX; See page 8.600.1

**Seal Kit:** SK08-3X-BM; See page 8.650.1



**DIMENSIONS**

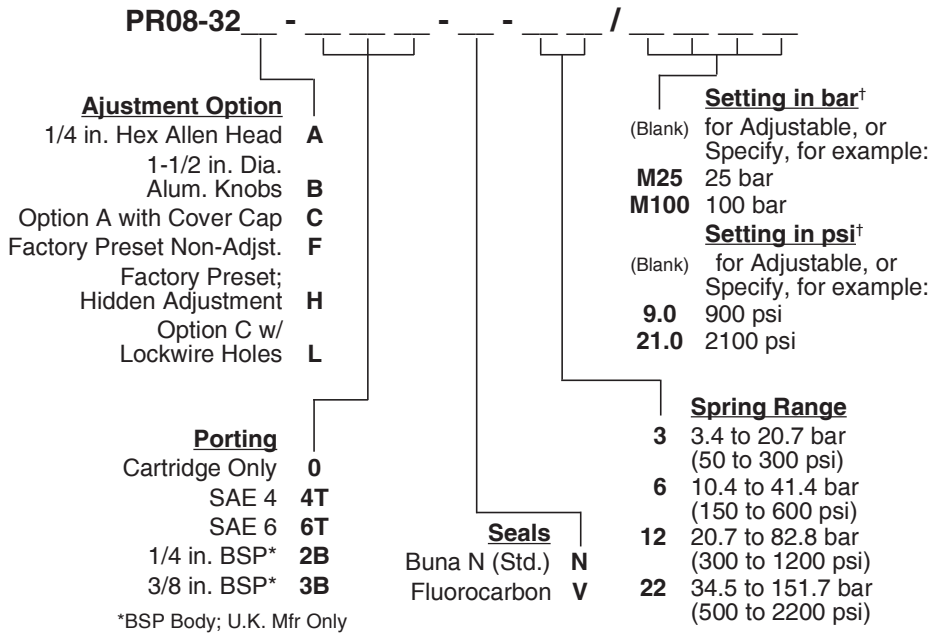


**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and back-ups standard. Anodized aluminum knob.

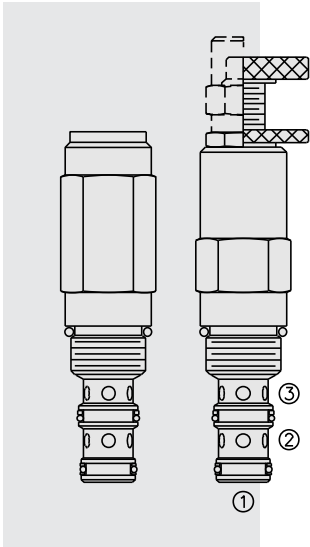
**Standard Ported Body:** Weight: 0.27 kg. (0.60 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**



<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PR10-32 Pressure Reducing/Relieving



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic pressure reducing/relieving valve with internal pilot and internal spring chamber drain, designed to act as a pressure-regulating device for secondary circuits. It is intended for use in stable input flow circuits.

## OPERATION

In its steady state, the **PR10-32** allows flow to pass bidirectionally from 2 to 1, with the spring chamber constantly drained at 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to restrict input flow at 2, thereby regulating pressure at 1. In this mode, the valve will also relieve 1 to 3 at approximately 10 bar (150 psi) over the reducing setting.

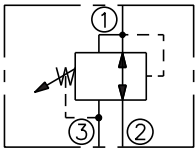
**Note:** Direct-acting PR series valves may not be suitable for some static load applications. Consult factory.

## FEATURES

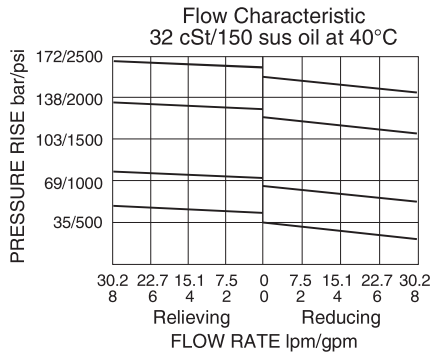
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 145 bar (2100 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 207 bar (3000 psi)

**Flow:** See Performance Chart

**Internal Leakage 2 to 3:** 82 cc/minute (5 cu. in/minute) max.  
at  $\Delta P$  207 bar (3000 psi)

### Standard Spring Ranges (Reducing Function):

- 5.5 to 27.6 bar (80 to 400 psi)
- 13.8 to 55.2 bar (200 to 800 psi)
- 20.7 to 103 bar (300 to 1500 psi)
- 27.6 to 145 bar (400 to 2100 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

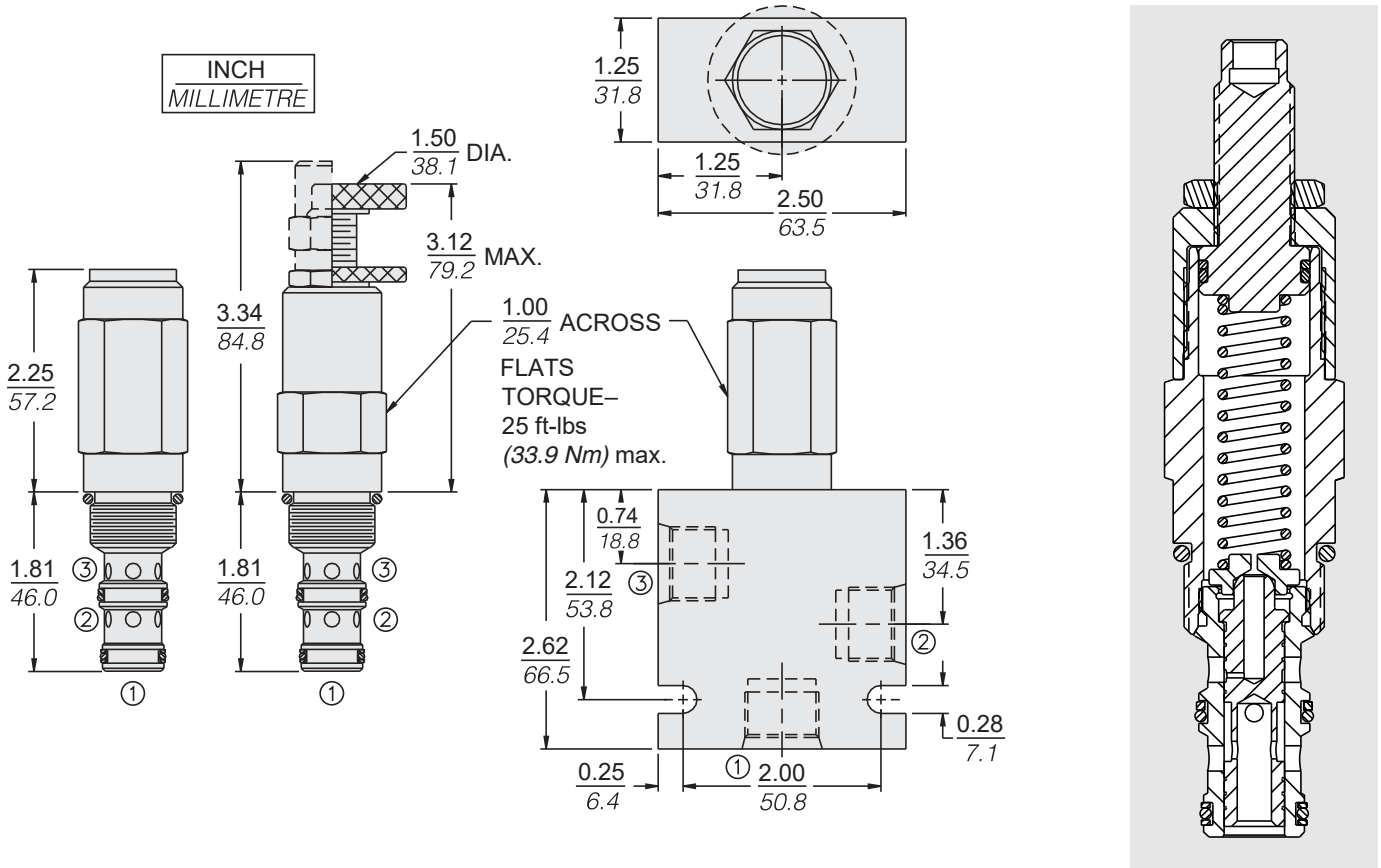
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

**Seal Kit:** SK10-3X-BM; See page 8.650.1

**DIMENSIONS**

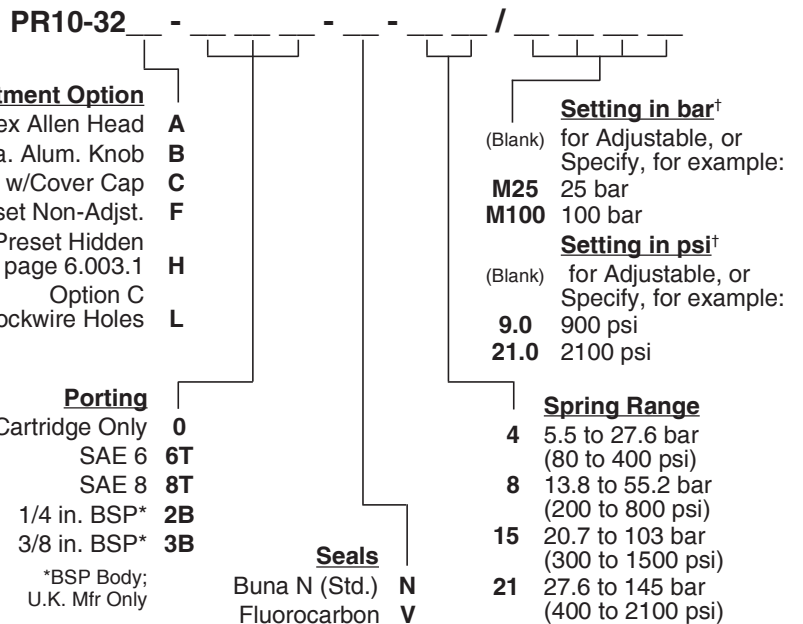


**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

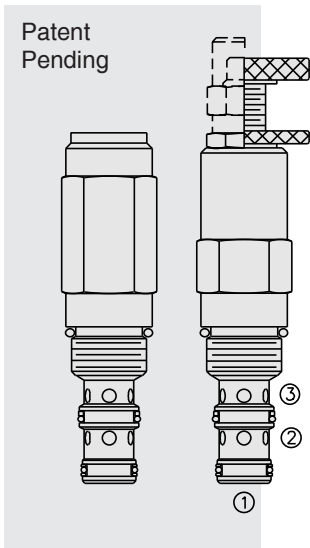
**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1.

**TO ORDER**



<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PR10-36 Pressure Reducing/Relieving, Pilot-Operated



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, spool-type, hydraulic pressure reducing/relieving valve with internal pilot and internal spring chamber drain, designed to act as a pressure-regulating device for secondary circuits.

## OPERATION

In its steady state, the **PR10-36** allows flow to pass bidirectionally from 2 to 1, with the spring chamber constantly drained at 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to restrict input flow at 2, thereby regulating pressure at 1. In this mode, the valve will also relieve 1 to 3.

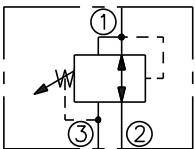
Deadband (from reducing to relieving) pressure rise over reduced pressure setting:  
 Non-flow condition: approximately 0.55 bar (8 psi); with flow: approximately 2.1 bar (30 psi).

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## RATINGS

**Operating Pressure:** 210 bar (3000 psi)

**Proof Pressure:** 390 bar (5700 psi)

**Flow:** See Performance Chart

**Pilot Orifice:** Pilot-operated through 0.51 mm (0.020 inch) hole

**Standard Spring Ranges (Reducing Function):**

- 6.9 to 27.6 bar (100 to 400 psi);
- 10.3 to 103 bar (150 to 1500 psi);
- 27.6 to 207 bar (400 to 3000 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

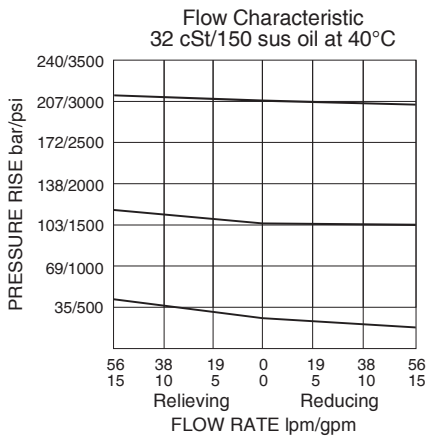
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

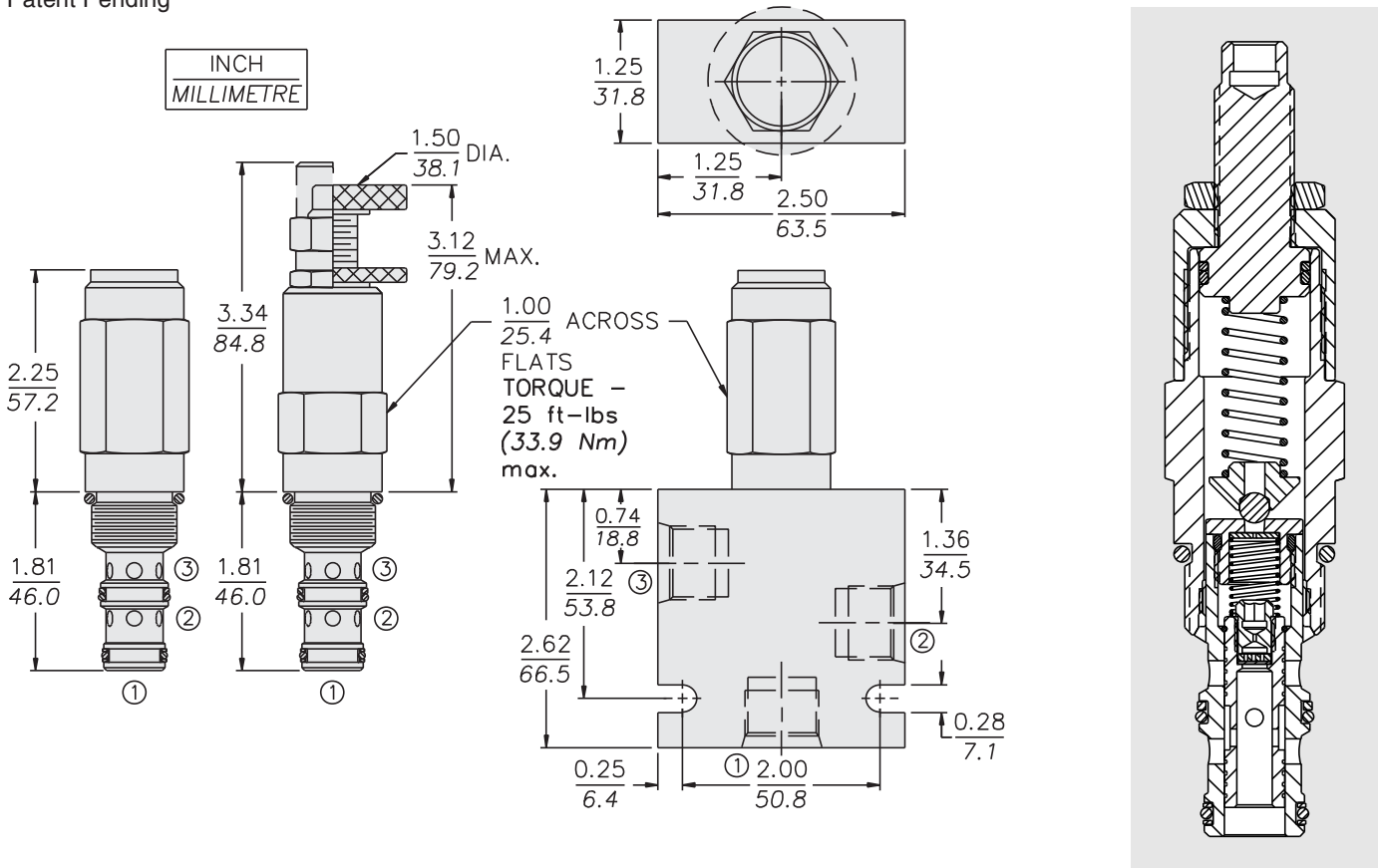
**Seal Kit:** SK10-3X-BM; See page 8.650.1

## PERFORMANCE (Cartridge Only)



**DIMENSIONS**

Patent Pending



**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

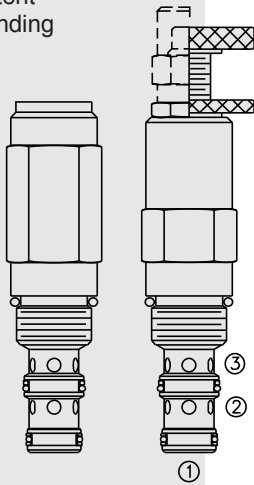
**PR10-36** - - - - /

<b>Adjustment Option</b>									
1/4 in. Hex Allen Head	<b>A</b>								
1-1/2 in. Dia. Alum. Knob	<b>B</b>								
Option A w/Cover Cap	<b>C</b>								
Factory Preset Non-Adj.	<b>F</b>								
Factory Preset Hidden	<b>H</b>								
Option C	<b>L</b>								
w/Lockwire Holes									
<b>Porting</b>									
Cartridge Only	<b>0</b>								
SAE 6	<b>6T</b>								
SAE 8	<b>8T</b>								
1/4 in. BSP*	<b>2B</b>								
3/8 in. BSP*	<b>3B</b>								
*BSP Body; U.K. Mfr Only									
<b>Seals</b>									
Buna N (Std.)	<b>N</b>								
Fluorocarbon	<b>V</b>								
<b>Setting in bar<sup>†</sup></b>									
(Blank) for Adjustable, or Specify, for example:									
<b>M25</b>									
<b>M100</b>									
<b>Setting in psi<sup>†</sup></b>									
(Blank) for Adjustable, or Specify, for example:									
<b>9.0</b>									
<b>23.5</b>									
<b>Spring Range</b>									
<b>4</b>									
<b>15</b>									
<b>30</b>									

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PR50-36 Pressure Reducing/Relieving, Pilot-Operated

Patent Pending



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, spool-type, hydraulic pressure reducing/relieving valve with internal pilot and internal spring chamber drain, designed to act as a pressure-regulating device for secondary circuits.

## OPERATION

In its steady state, the **PR50-36** allows flow to pass bidirectionally from 2 to 1, with the spring chamber constantly drained at 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to restrict input flow at 2, thereby regulating pressure at 1. In this mode, the valve will also relieve 1 to 3.

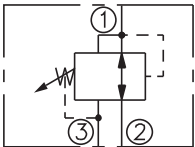
Deadband (from reducing to relieving) pressure rise over reduced pressure setting:  
 Non-flow condition: approximately 0.55 bar (8 psi); with flow: approximately 2.1 bar (30 psi).

## FEATURES

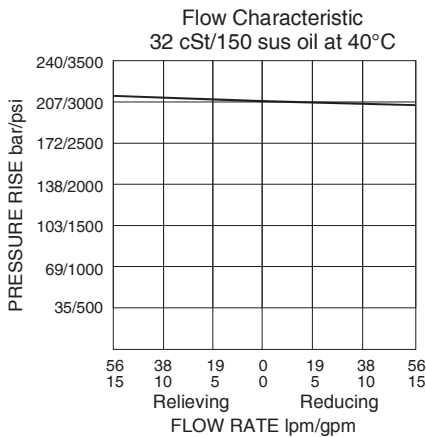
- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 345 bar (5000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## RATINGS

**Operating Pressure:** 345 bar (5000 psi)

**Flow:** See Performance Chart

**Pilot Orifice:** Pilot-operated through 0.51 mm (0.020 inch) hole

**Standard Spring Ranges (Reducing Function):** 27.6 to 103.4 bar (400 to 1500 psi);  
 103.4 to 206.9 bar (1500 to 3000 psi); 206.9 to 344.8 bar (3000 to 5000 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-3; See page 9.110.1

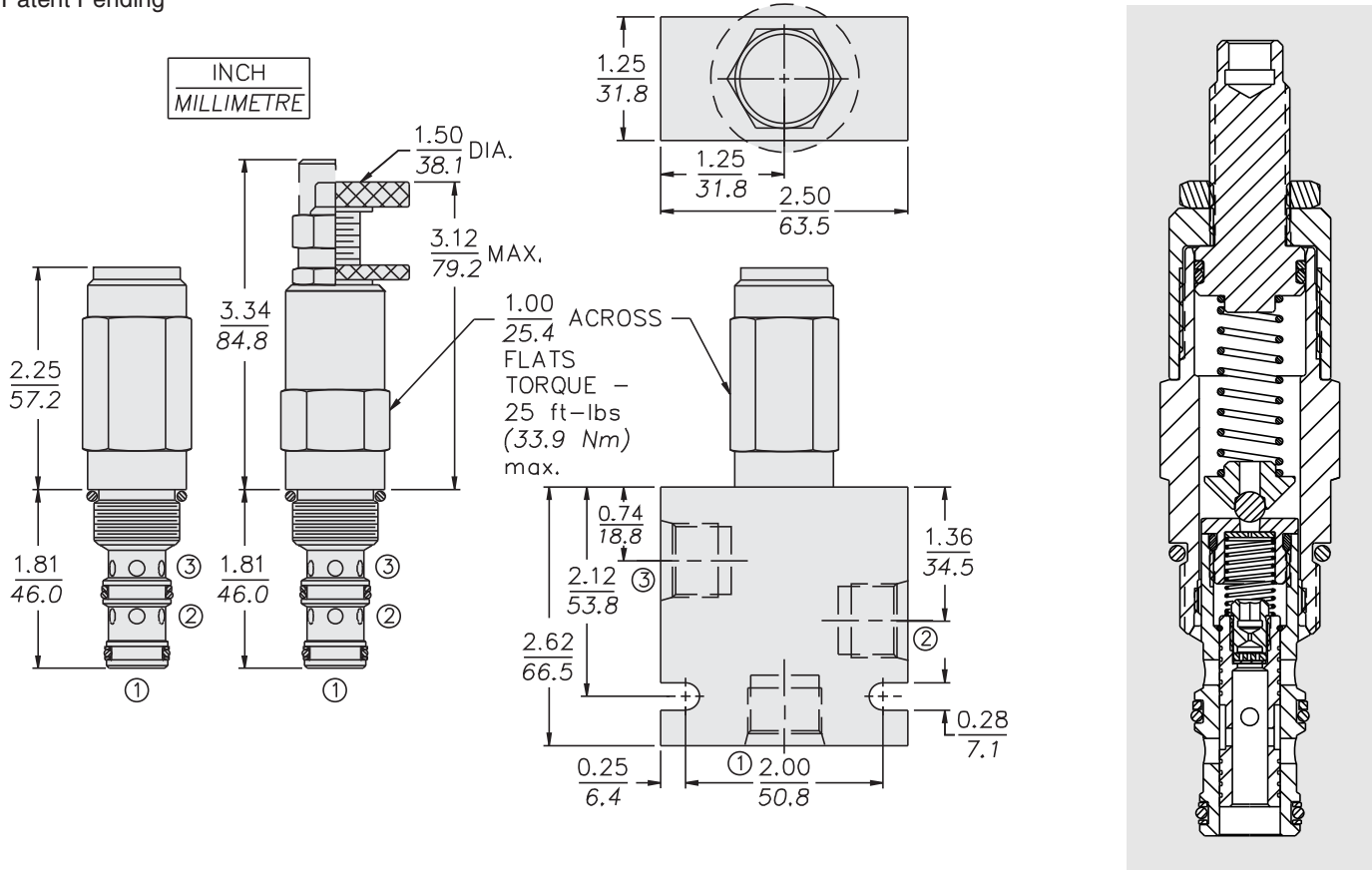
**Cavity Tool:** CT10-3XX; See page 8.600.1

**Seal Kit:** SK10-3P-BM; See page 8.650.1

**PR50-36**

**DIMENSIONS**

Patent Pending

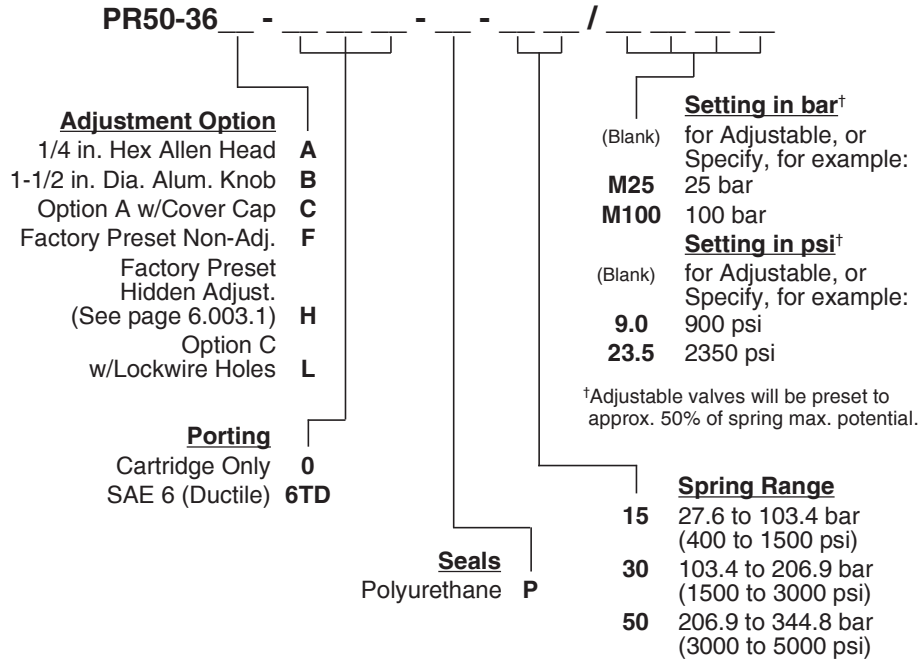


**MATERIALS**

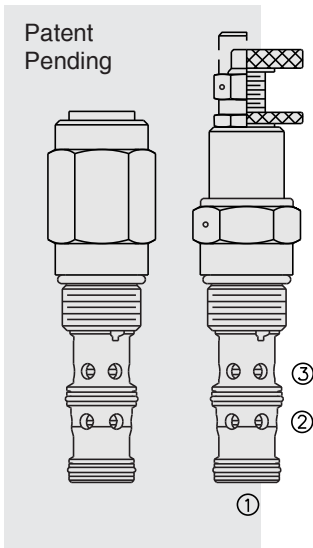
**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Polyurethane O-rings and Fluorocarbon back-ups standard.  
Anodized aluminum knobs and caps.

**Ported Body:** Weight: 0.64 kg. (1.41 lbs.)  
Ductile Iron (code "D") standard, consult factory for weight, dimensions may differ.  
Rated to 345 bar (5000 psi).  
See page 8.010.1

**TO ORDER**



# PR12-36 Pressure Reducing/Relieving, Pilot-Operated



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, spool-type, hydraulic pressure reducing/relieving valve with internal pilot and internal spring chamber drain, designed to act as a pressure-regulating device in secondary circuits.

## OPERATION

In its steady state, the **PR12-36** allows flow to pass bidirectionally from 2 to 1, with the spring chamber constantly drained at 3.

On attainment of a pre-determined pressure at 1, the spool shifts to restrict input flow from port 2, thereby regulating pressure at 1. In this mode, the valve will also relieve 1 to 3.

Flow Path: Reducing: 2 to 1; Relieving: 1 to 3.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).

## RATINGS

**Operating Pressure:** Ports 1 and 2: 276 bar (4000 psi)

**Maximum Tank Pressure:** Port 3: 69 bar (1000 psi)

**Flow:** See Performance Chart

### Standard Spring Ranges (Reducing Function):

- Code 04: 6.9 to 27.6 bar (100 to 400 psi);
- Code 30: 20.7 to 207 bar (300 to 3000 psi)

**Maximum Pilot Flow and Leakage:** 0.49 lpm (0.13 gpm) with max. control current and with inlet pressure at 276 bar (4000 psi) at regulated flow of 3.8 lpm (1 gpm).

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

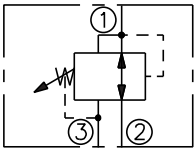
**Cavity:** VC12-3; See page 9.110.1

**Cavity Tool:** CT12-3XX; See page 8.600.1

**Seal Kit:** SK12-3X-BM; See page 8.650.1

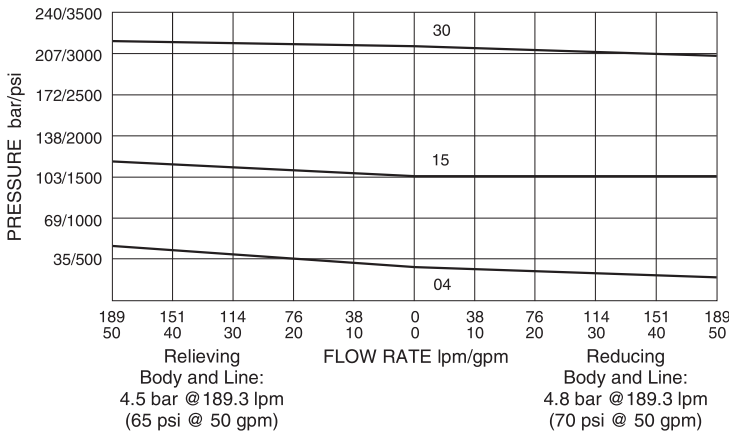
## SYMBOL

### USASI/ISO:



## PERFORMANCE (Cartridge Only)

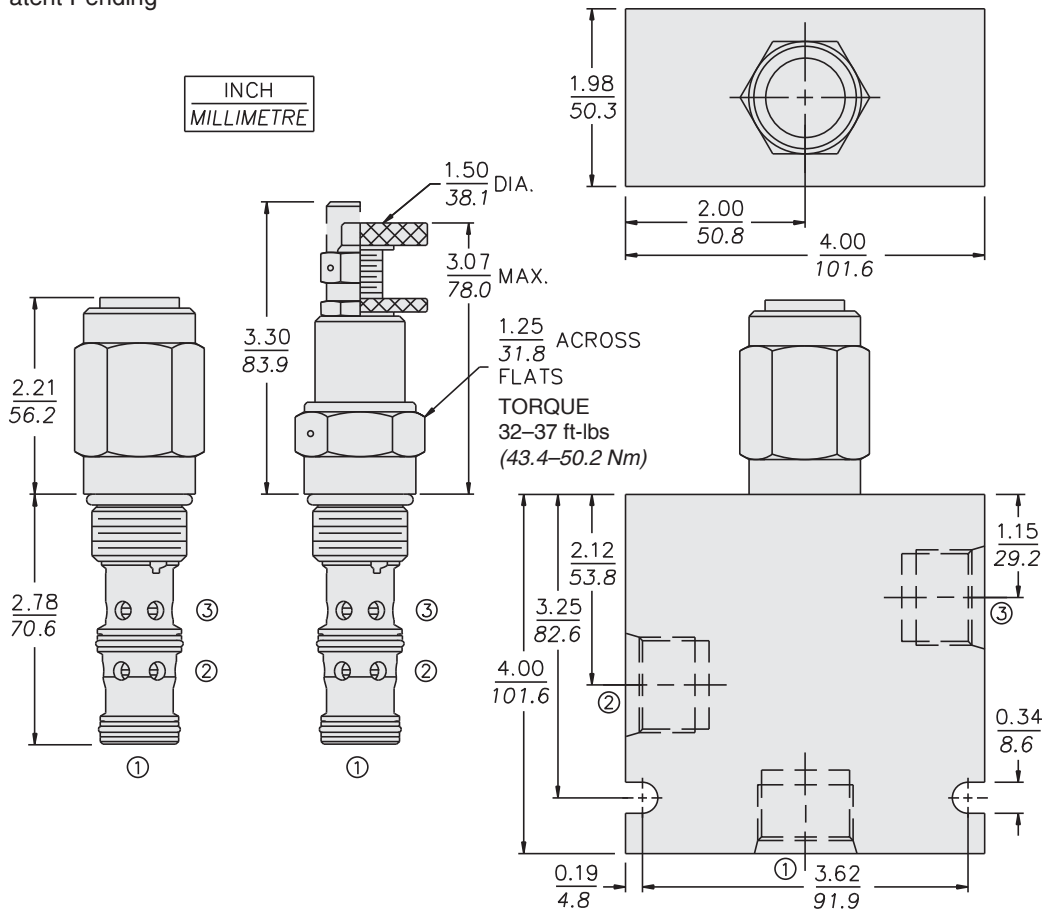
Typical Pressure vs. Flow at Maximum Pressure Setting for Different Spring Ranges  
32 cSt/150 sus oil at 40C





**DIMENSIONS**

Patent Pending



**MATERIALS**

**Cartridge:** Weight: 0.39 kg. (0.85 lbs.) with "A" adjustment and "30" spring; Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-ups standard. Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 1.13 kg. (2.5 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron available; dimensions may differ. See page 8.012.1

**TO ORDER**

**PR12-36** - - - - /

- Adjustment Option**  
 1/4 in. Hex Allen Head **A**  
 1-1/2 in. Dia. Alum. Knob **B**  
 Option A w/Cover Cap **C**  
 Factory Preset Non-Adj. **F**  
 Factory Preset Hidden Adjustment. (See page 6.003.1) **H**  
 Option C w/Lockwire Holes **L**

- Porting**  
 Cartridge Only **0**  
 SAE 8 **8T**  
 SAE 10 **10T**  
 SAE 12 **12T**  
 1/2 in. BSP\* **4B**  
 3/4 in. BSP\* **6B**

- Seals**  
 Buna N (Std.) **N**  
 Fluorocarbon **V**  
 Polyurethane **P**

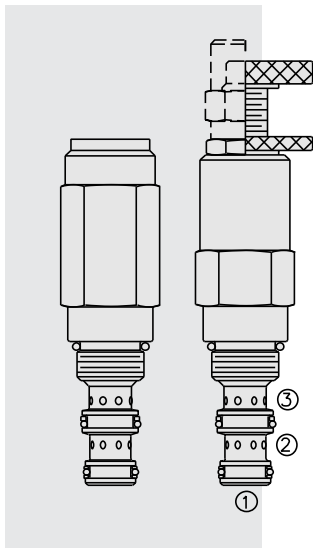
- Setting in bar<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**M25** 25 bar  
**M100** 100 bar  
**Setting in psi<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**9.0** 900 psi  
**23.5** 2350 psi

- Spring Range**  
**4** 6.9 to 27.6 bar (100 to 400 psi)  
**30** 20.7 to 207 bar (300 to 3000 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

\*BSP Body; U.K. Mfr. Only

# PR58-38 Pressure Reducing/Relieving Spool Valve



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic pressure reducing/relieving valve, with internal pilot and internal spring-chamber drain. It is designed to act as a pressure regulating valve for secondary circuits. Internal damping makes this valve particularly suitable for use in circuits with unstable input flows in demanding applications requiring enhanced stability.

## OPERATION

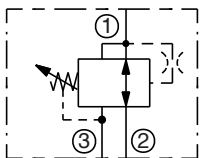
In its steady state, the **PR58-38** allows flow to pass bidirectionally from port 2 to port 1, with the spring chamber constantly drained at port 3. Upon attainment of a predetermined pressure at 1, the spool shifts to block flow at 2, thereby regulating pressure at 1. In this mode, the valve will also relieve from port 1 to port 3, at a user-specified value over the set reducing pressure. Tank port pressure is additive to the pressure setting at a ratio of 1:1.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 220 bar (3200 psi).
- Hardened parts for long life.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## RATINGS

**Maximum Operating Pressure:** 345 bar (5000 psi)

**Regulated Pressure Range:** 10.3–220.6 bar (150–3200 psi)

**Note:** 241 bar (3500 psi) maximum for 'F' and 'H' adjustment options.

**Maximum Rated Flow:** 18.9 lpm (5 gpm); See performance chart

**Maximum Internal Leakage to Port 3:** 82 ml/minute (5.0 cu. in./minute)

**Temperature:** -40 to 100°C with Buna N seals; -26 to 204°C with Fluorocarbon seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

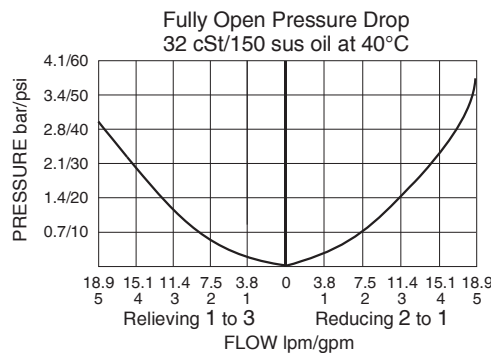
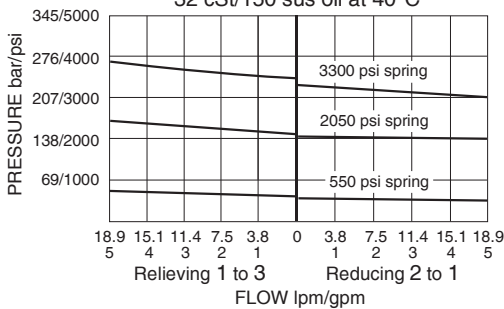
**Cavity:** VC08-3; See page 9.108.1

**Cavity Tool:** CT08-3XX; See page 8.600.1

**Seal Kit:** SK08-3X-BM; See page 8.650.1

## PERFORMANCE (Cartridge Only)

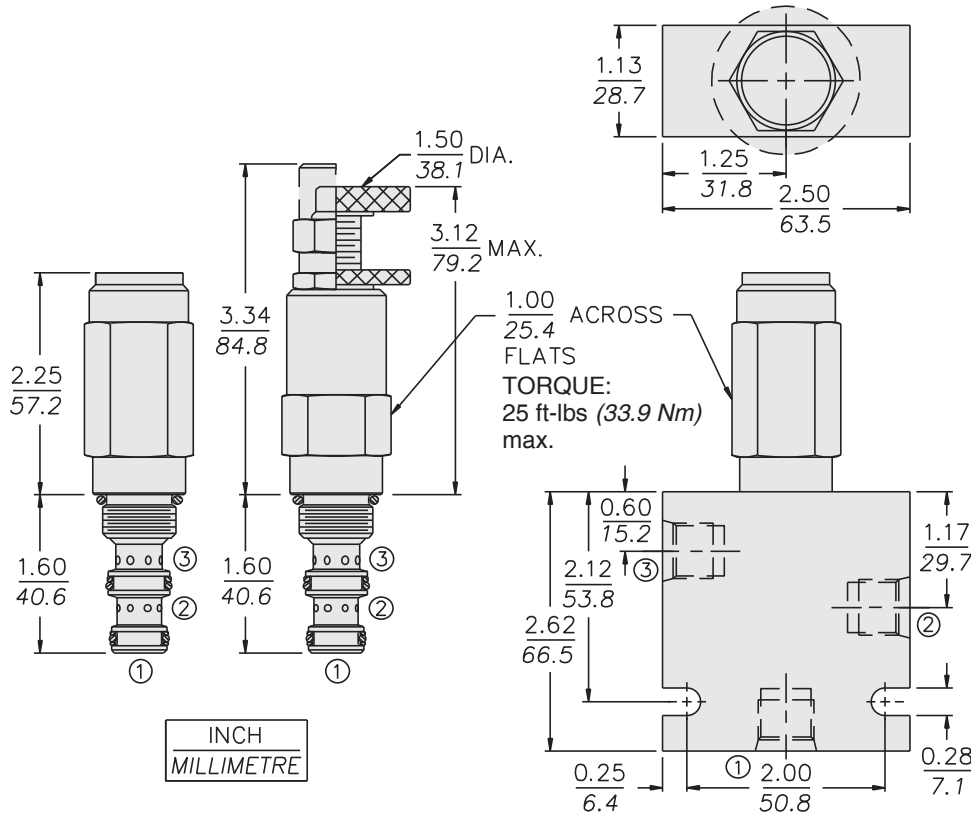
Typical Relieving and Reducing Pressure vs. Flow  
Maximum Setting for All Springs  
32 cSt/150 sus oil at 40°C



# Damped, Direct-Acting

# PR58-38

## DIMENSIONS



INCH  
MILLIMETRE

## MATERIALS

**Cartridge:** Weight: 0.27 kg. (0.59 lbs.) maximum (some models may weigh less). Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and TFE back-ups standard. Anodized aluminum knob.

**Standard Ported Body:** Weight: 0.27 kg. (0.60 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron (code D) bodies are required for operation over 207 bar (3000 psi), dimensions may differ. See page 8.008.1

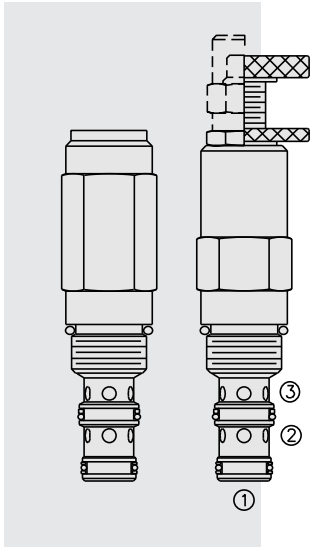
**Note:** Orifice Disc should not be used with this valve.

## TO ORDER

**PR58-38** - - - /

<p><b>Adjustment Option</b></p> <p>1/4 in. Hex Allen Head <b>A</b></p> <p>1-1/2 in. Dia. Alum. Knobs <b>B</b></p> <p>Option A with Cover Cap <b>C</b></p> <p>Factory Preset Non-Adj. <b>F</b></p> <p>Factory Preset; Hidden Adjustment <b>H</b></p> <p>Option C w/Lockwire Holes <b>L</b></p>		<p><b>Relief setting in bar<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:</p> <p><b>M25</b> 25 bar</p> <p><b>M100</b> 100 bar</p> <p><b>Relief setting in psi<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:</p> <p><b>10.0</b> 1000 psi</p> <p><b>23.5</b> 2350 psi</p> <p><b>Note:</b> 241 bar/3500 psi max. for F and H adjustment options.</p>	
<p><b>Porting</b></p> <p>Cartridge Only <b>0</b></p> <p>SAE 6 <b>6T</b></p> <p>SAE 6 <b>6TD</b></p> <p>1/4 in. BSP* <b>2B</b></p> <p>1/4 in. BSP* <b>2BD</b></p> <p>3/8 in. BSP* <b>3B</b></p> <p>3/8 in. BSP* <b>3BD</b></p> <p>*BSP Body; U.K. Mfr Only</p>		<p><b>Seals</b></p> <p>Buna N (Std.) <b>N</b></p> <p>Fluorocarbon <b>V</b></p> <p>Polyurethane <b>P</b></p> <p><b>Note:</b> Polyurethane seals are required for operation over 241 bar (3500 psi).</p>	
		<p><b>Spring Range</b></p> <p><b>05</b> 10.3 to 37.9 bar (150 to 550 psi)</p> <p><b>20</b> 34.5 to 141.4 bar (500 to 2050 psi)</p> <p><b>32</b> 55.2 to 220.6 bar (800 to 3200 psi)</p> <p><sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential, unless specified.</p>	

# PR50-38 Pressure Reducing/Relieving Spool Valve



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic pressure reducing/relieving valve, with internal pilot and internal spring-chamber drain. It is designed to act as a pressure regulating valve for secondary circuits. Internal damping makes this valve particularly suitable for use in circuits with unstable input flows in demanding applications requiring enhanced stability..

## OPERATION

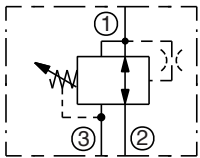
In its steady state, the **PR50-38** allows flow to pass bidirectionally from port 2 to port 1, with the spring chamber constantly drained at port 3. Upon attainment of a predetermined pressure at 1, the spool shifts to block flow at 2, thereby regulating pressure at 1. In this mode, the valve will also relieve from port 1 to port 3, at a variable value over the set reducing pressure. Tank port pressure is additive to the pressure setting at a ratio of 1:1.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 227.5 bar (3300 psi).
- Hardened parts for long life.
- Industry common cavity.

## SYMBOLS

### USASI/ISO:



## RATINGS

**Maximum Rated Pressure at Supply Port:** 345 bar (5000 psi)

**Regulated Pressure Range:** 10.3 to 227.5 bar (150 to 3300 psi)

**Maximum Rated Flow:** See Performance Chart

**Maximum Internal Leakage to Port 3:** 82 ml per minute (5.0 cu. in. per minute)

**Temperature:** -40 to 120°C with standard Buna seals;  
-35 to 204°C with Fluorocarbon seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

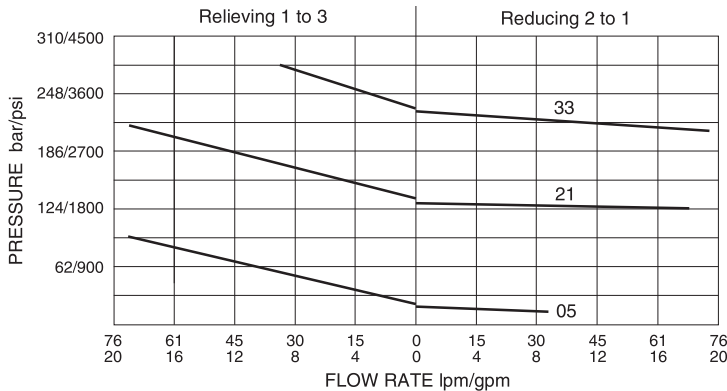
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

**Seal Kit:** SK10-3X-BM; See page 8.650.1

## PERFORMANCE (Cartridge Only)

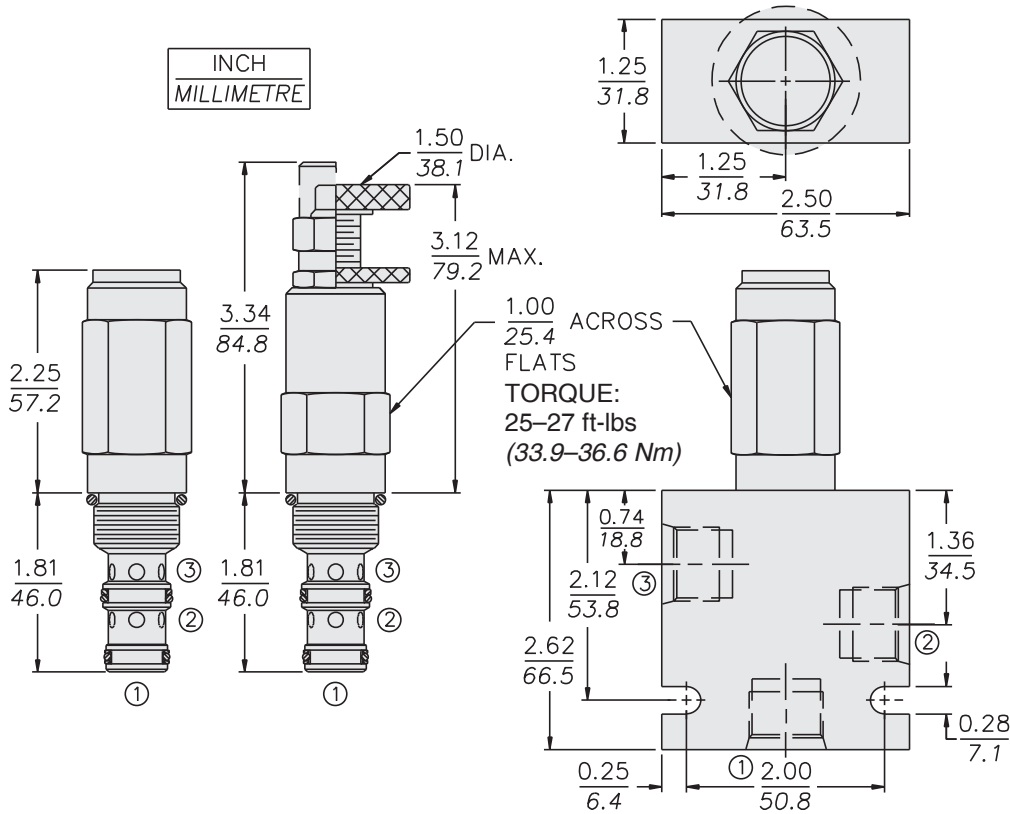
Typical Relieving and Reducing Pressure vs. Flow  
at Maximum Pressure Setting for Different Spring Ranges  
32 cSt/150 sus oil at 40C



# Damped, Direct-Acting

# PR50-38

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.27 to 0.31 kg. (0.59 to 0.69 lbs.) depending on adjustment type. Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-ups standard. Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron (code D) bodies are required for operation over 207 bar (3000 psi), dimensions may differ; consult factory. See page 8.010.1

**Note:** Orifice Disc should not be used with this valve.

## TO ORDER

### PR50-38

#### Adjustment Option

- 1/4 in. Hex Allen Head **A**
- 1-1/2 in. Dia. Alum. Knob **B**
- Option A w/Cover Cap **C**
- Factory Preset Non-Adj. **F**
- Factory Preset Hidden Adj. (See page 6.003.1) **H**
- Option C w/Lockwire Holes **L**

#### Screen

- No Screen (blank)
- 150µ Screen **S**

#### Porting

- Cartridge Only **0**
- SAE 6 **6T**
- SAE 6 **6TD**
- SAE 8 **8T**
- SAE 8 **8TD**
- 1/4 in. BSP\* **2B**
- 1/4 in. BSP\* **2BD**
- 3/8 in. BSP\* **3B**
- 3/8 in. BSP\* **3BD**

\*BSP Body; U.K. Mfr Only

#### Seals

- Buna N (Std.) **N**
- Fluorocarbon **V**
- Polyurethane **P**

Note: Polyurethane seals are required for operation over 241 bar (3500 psi).

#### Setting in bar<sup>†</sup>

(Blank) for Adjustable, or Specify, for example:

- M25** 25 bar
- M100** 100 bar

#### Setting in psi<sup>†</sup>

(Blank) for Adjustable, or Specify, for example:

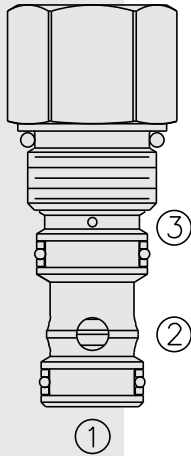
- 9.0** 900 psi
- 23.5** 2350 psi

#### Spring Range

- 05** 10.3 to 37.9 bar (150 to 550 psi)
- 21** 34.5 to 144.8 bar (500 to 2100 psi)
- 33** 55.2 to 227.5 bar (800 to 3300 psi)

<sup>†</sup> Adjustable valves will be preset to approx. 50% of spring max. potential.

# ER10-S30 Pressure Reducing Spool Logic Element



## DESCRIPTION

A screw-in, cartridge-style, spring biased, pressure reducing logic element.

## OPERATION

In its steady state, the **ER10-S30** allows flow from 2 to 1 with the spring chamber constantly drained at 3. On attainment of a pre-determined pressure at 1, set by a (remote) pilot relief valve connected to port 3, the spool shifts to restrict input flow at 2, thereby regulating pressure at 1.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 350 bar (5000 psi); Polyurethane seals are recommended for operation up to 5000 psi; Aluminum bodies are rated up to 3000 psi.

**Proof Pressure:** 390 bar (5700 psi)

**Flow:** See Performance Chart

**Maximum Pilot Flow:** 5.3 lpm (1.4 gpm)

**Bias Spring:** 6.9 bar (100 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

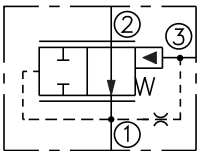
**Cavity:** VC10-S3; See page 9.110.1

**Cavity Tool:** CT10-S3XX; See page 8.600.1

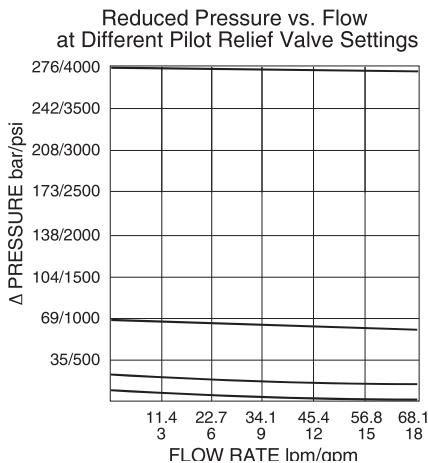
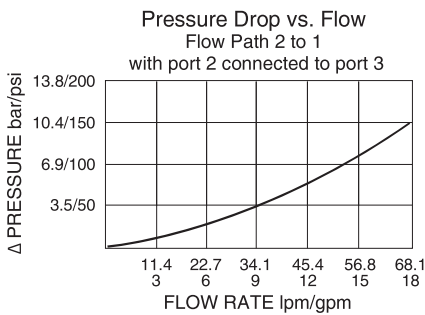
**Seal Kit:** SK10-3X-BM; See page 8.650.1

## SYMBOLS

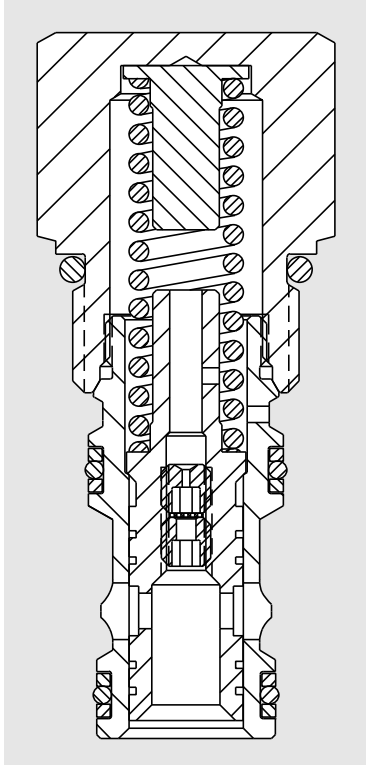
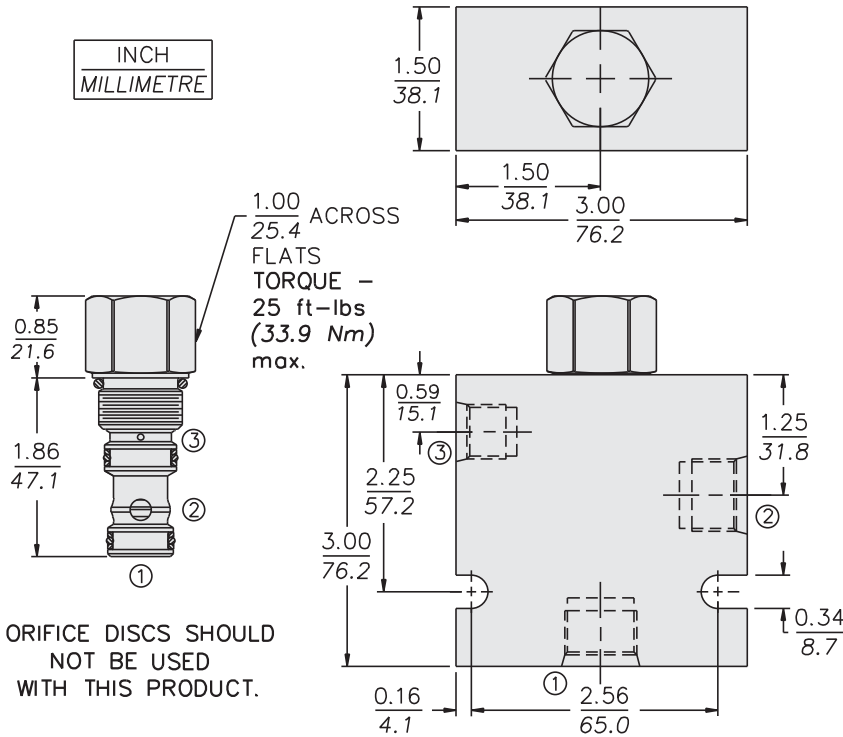
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**

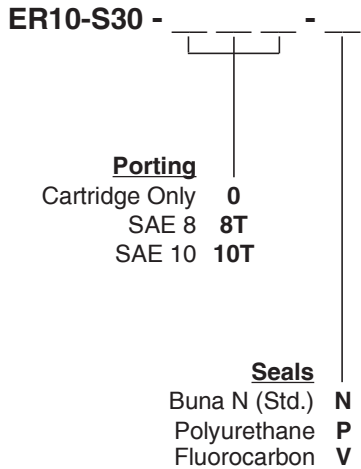


**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.

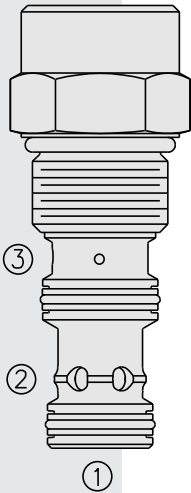
**Standard Ported Body:** Weight:  
0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**



Note: Polyurethane seals are recommended for operation over 241 bar (3500 psi)

# ER12-S30 Pressure Reducing Spool Logic Element



## DESCRIPTION

A screw-in, cartridge-style, spring biased, pressure reducing logic element.

## OPERATION

In its steady state, the **ER12-S30** allows flow from 2 to 1 with the spring chamber constantly drained at 3. On attainment of a pre-determined pressure at 1, set by a (remote) pilot relief valve connected to port 3, the spool shifts to restrict input flow at 2, thereby regulating pressure at 1.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 350 bar (5000 psi); Polyurethane seals are recommended for operation up to 5000 psi; Aluminum bodies for this product are rated to 3000 psi

**Proof Pressure:** 390 bar (5700 psi)

**Flow:** See Performance Chart

**Maximum Pilot Flow:** 9.5 lpm (2.5 gpm)

**Bias Spring:** 8.3 bar (120 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

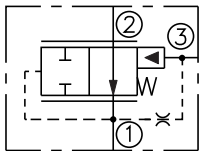
**Cavity:** VC12-S3; See page 9.112.1

**Cavity Tool:** CT12-S3XX; See page 8.600.1

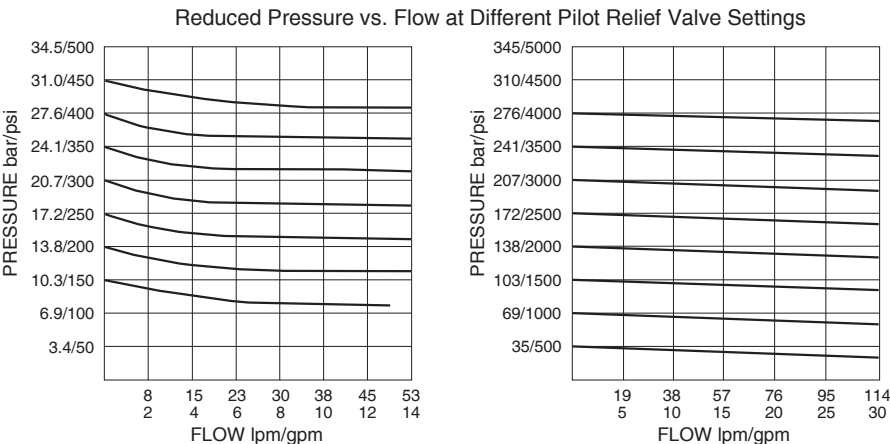
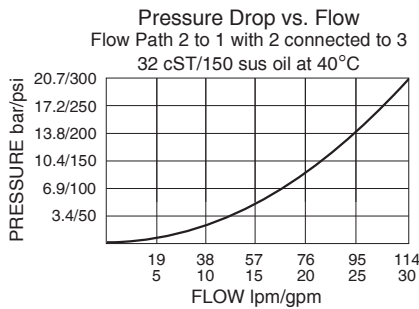
**Seal Kit:** SK12-3X-BM; See page 8.650.1

## SYMBOLS

### USASI/ISO:

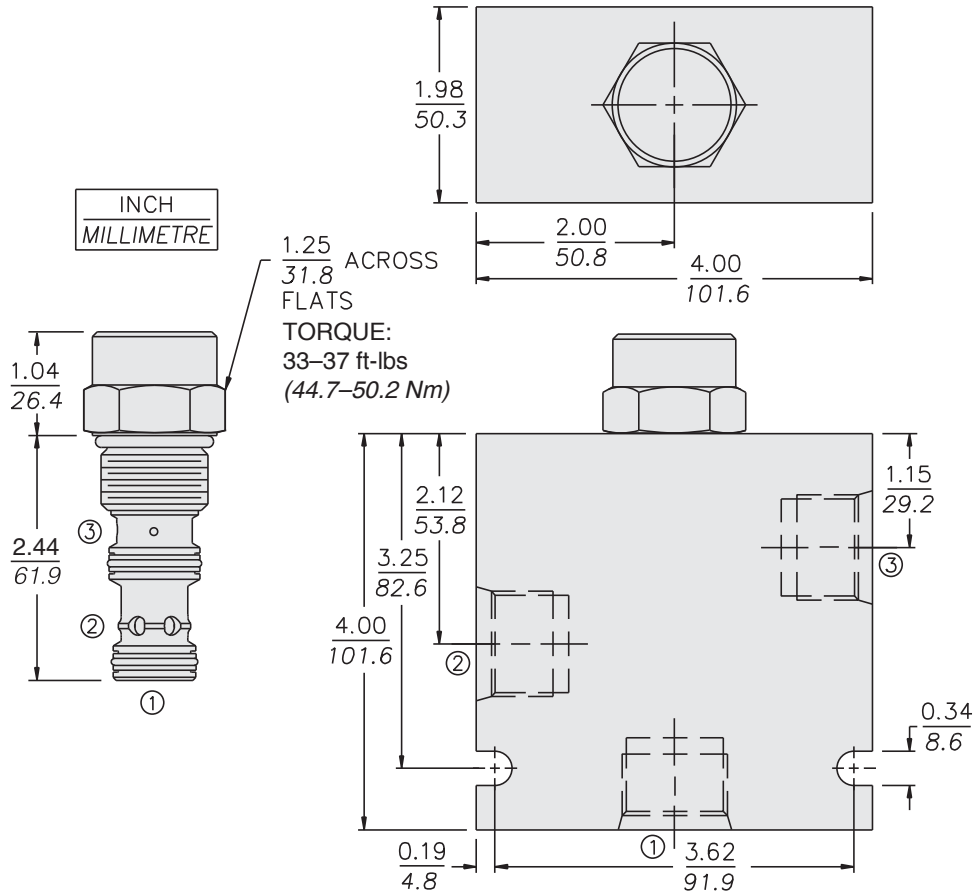


## PERFORMANCE (Cartridge Only)





## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.29 kg. (0.63 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.

**Standard Ported Body:** Weight:  
1.13 kg. (2.5 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.012.1.

## TO ORDER

ER12-S30 - -

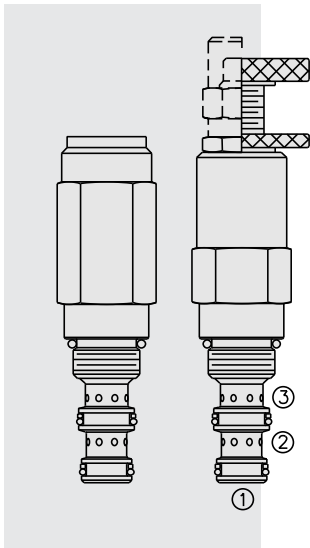
**Porting**  
Cartridge Only **0**  
SAE 8 **8T**  
SAE 10 **10T**  
SAE 12 **12T**  
1/2 in. BSP\* **4B**  
3/4 in. BSP\* **6B**

\*BSP Body; U.K. Mfr. Only

**Seals**  
Buna N (Std.) **N**  
Polyurethane **P**  
Fluorocarbon **V**

Note: Polyurethane seals are recommended for operation over 241 bar (3500 psi)

# PS08-30 Sequence, Internal Pilot & Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain, designed to direct oil to a secondary circuit once a pre-determined pressure level is attained in the primary circuit.

## OPERATION

In its steady state, the **PS08-30** blocks flow at 1, while allowing flow to pass from 2 to 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to open 1 to 2.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 165.5 bar (2400 psi).
- Hardened spool and cage for long life.
- Compact size.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 90% of nominal setting

### Standard Spring Ranges:

- 3.4 to 20.7 bar (50 to 300 psi);
- 6.9 to 41.4 bar (100 to 600 psi);
- 10.3 to 89.7 bar (150 to 1300 psi);
- 31.0 to 165.5 bar (450 to 2400 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

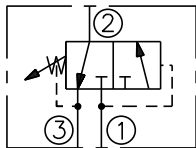
**Cavity:** VC08-3; See page 9.108.1

**Cavity Tool:** CT08-3XX; See page 8.600.1

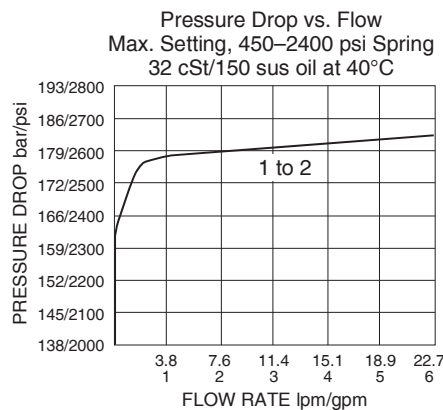
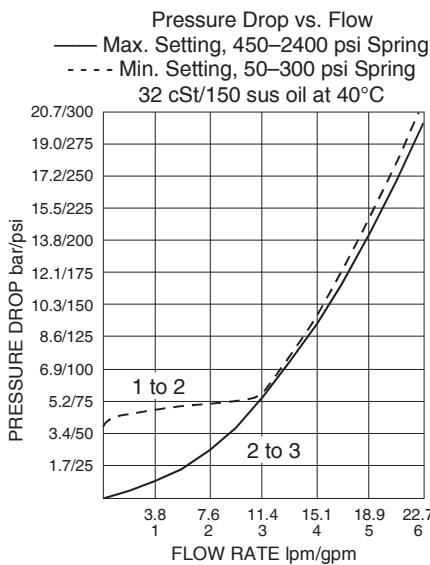
**Seal Kit:** SK08-3X-BB; See page 8.650.1

## SYMBOLS

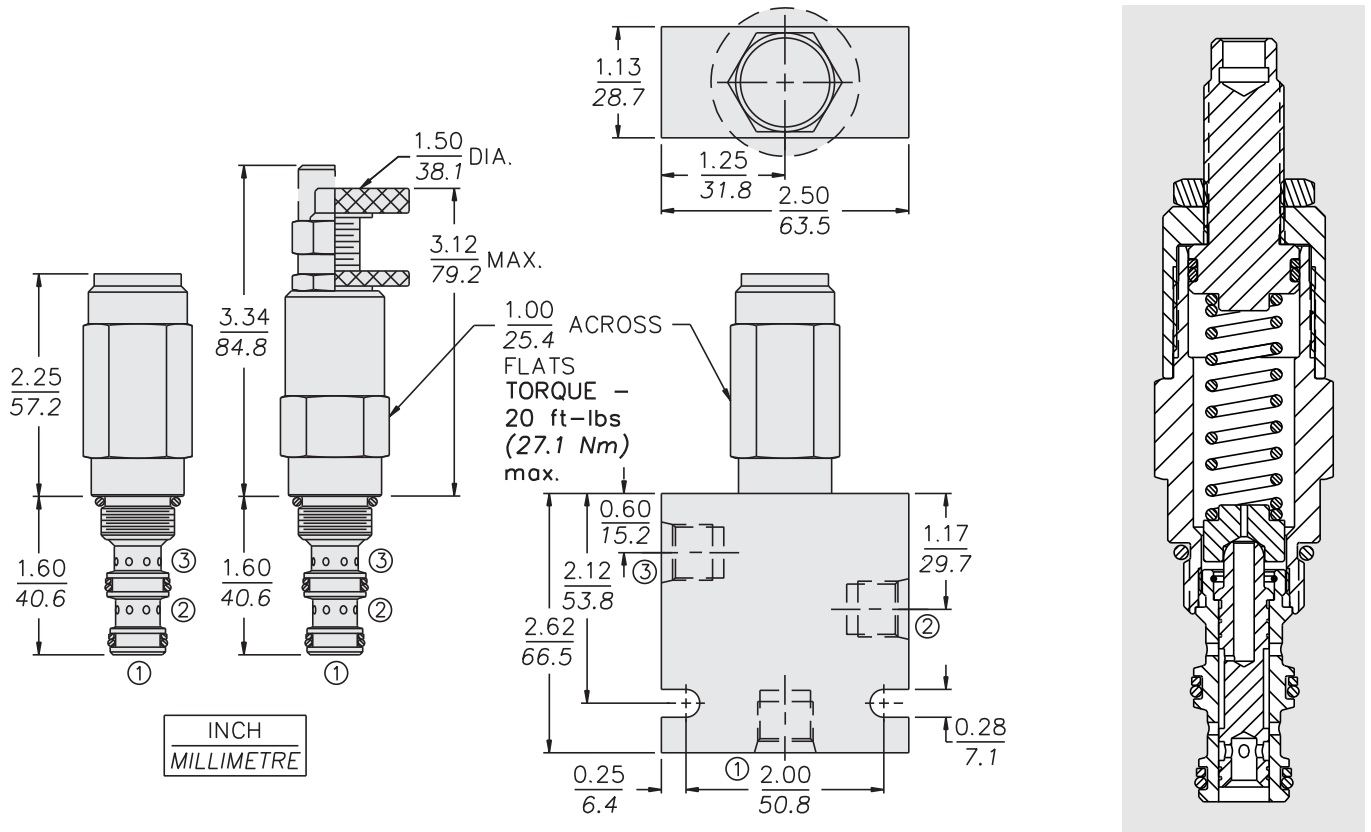
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**

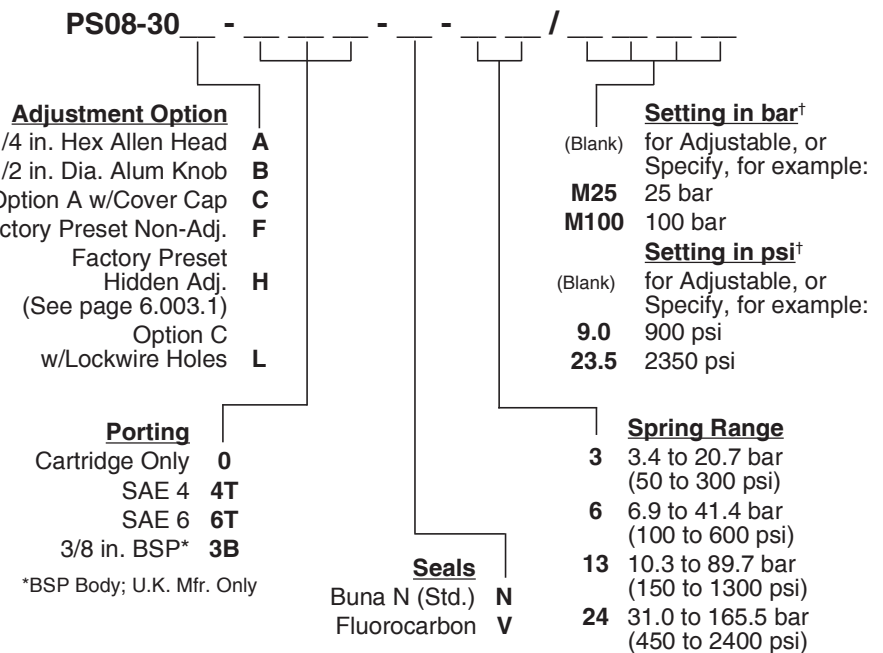


**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and back-ups standard. Anodized aluminum knobs.

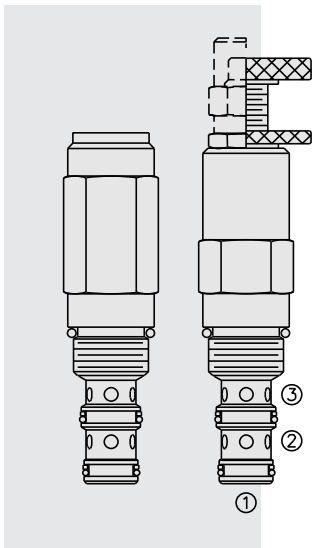
**Standard Ported Body:** Weight: 0.27 kg. (0.60 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**



<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS10-30 Sequence, Internal Pilot & Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain, designed to direct flow to a secondary circuit once a pre-determined pressure level is attained in the primary circuit.

## OPERATION

In its steady state, the **PS10-30** blocks flow at 1, while allowing flow to pass from 2 to 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to open 1 to 2.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 144.8 bar (2100 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 207 bar (3000 psi)

**Flow:** See Performance Chart

**Internal Leakage 1 to 2:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Standard Spring Ranges:**

2.8 to 27.6 bar (40 to 400 psi);

14.5 to 144.8 bar (210 to 2100 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

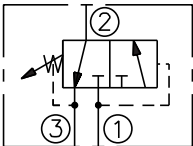
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

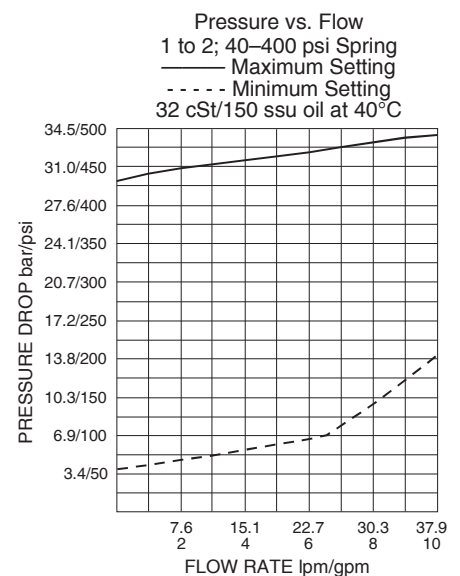
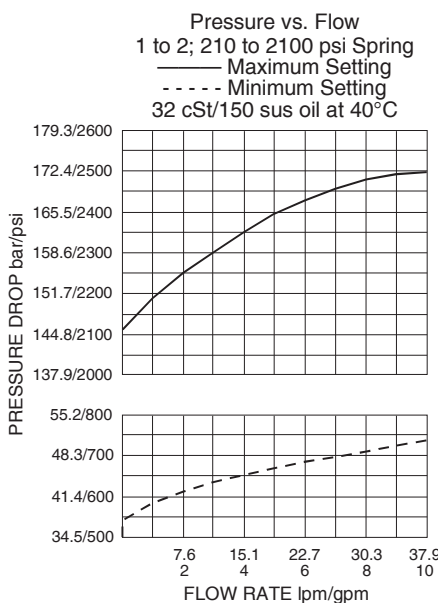
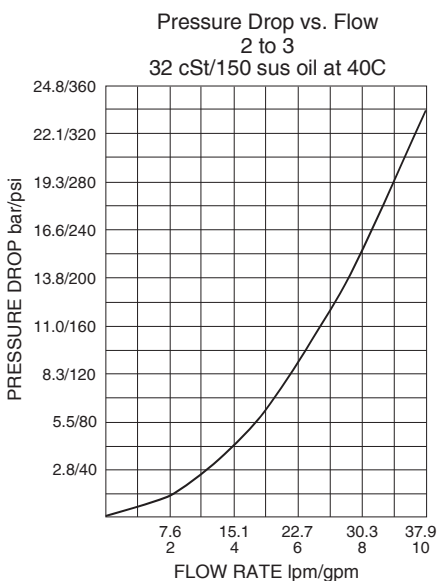
**Seal Kit:** SK10-3X-BB; See page 8.650.1

## SYMBOLS

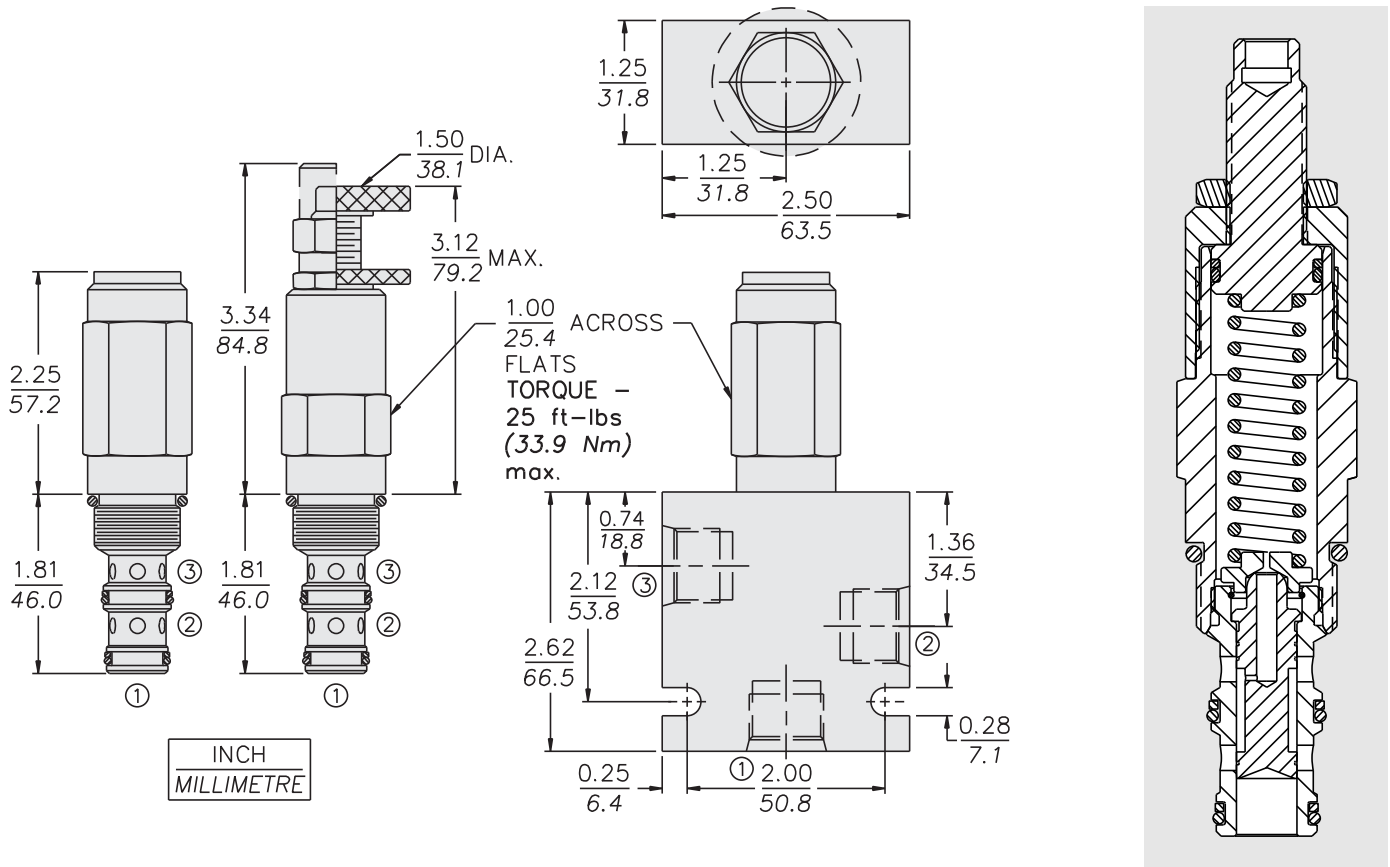
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.). Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

**PS10-30** - - - /

**Adjustment Option**

- 1/4 in. Hex Allen Head **A**
- 1-1/2 in. Dia. Alum Knob **B**
- Option A w/Cover Cap **C**
- Factory Preset Non-Adj. **F**
- Factory Preset Hidden Adj. **H**
- Option C w/Lockwire Holes **L**

**Porting**

- Cartridge Only **0**
- SAE 6 **6T**
- SAE 8 **8T**
- 1/4 in. BSP\* **2B**
- 3/8 in. BSP\* **3B**

\*BSP Body; U.K. Mfr. Only

**Seals**

- Buna N (Std.) **N**
- Fluorocarbon **V**

**Setting in bar†**

(Blank) for Adjustable, or Specify, for example:

- M25** 25 bar
- M100** 100 bar

**Setting in psi†**

(Blank) for Adjustable, or Specify, for example:

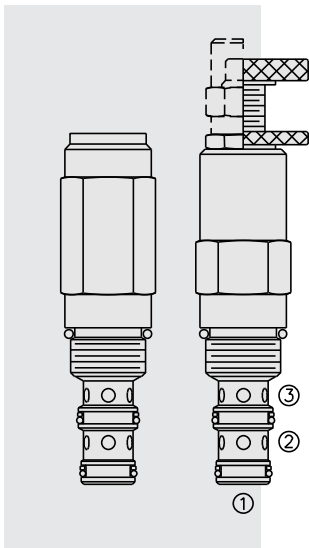
- 9.0** 900 psi
- 21.0** 2100 psi

**Spring Range**

- 4** 2.8 to 27.6 bar (40 to 400 psi)
- 21** 14.5 to 144.8 bar (210 to 2100 psi)

†Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS10-31 Sequence, Internal Pilot & Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain, designed to direct flow to a secondary circuit once a pre-determined pressure level is attained in the primary circuit.

## OPERATION

In its steady state, the **PS10-31** blocks flow at 1, while allowing flow to pass from 2 to 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to open 1 to 2.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Spring range to 240 bar (3500 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage 1 to 2:** 82 cc/minute (5 cu. in./minute) max.  
to 85% of nominal setting

**Standard Spring Range:** 35 to 240 bar (500 to 3500 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

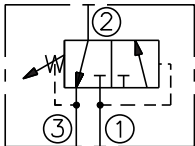
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

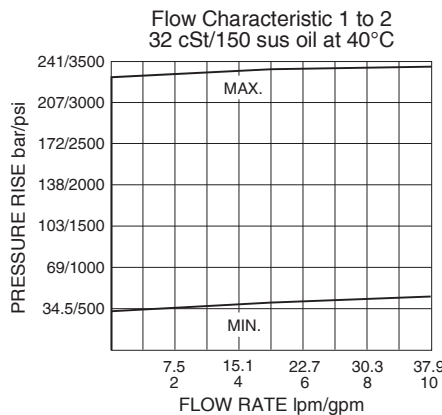
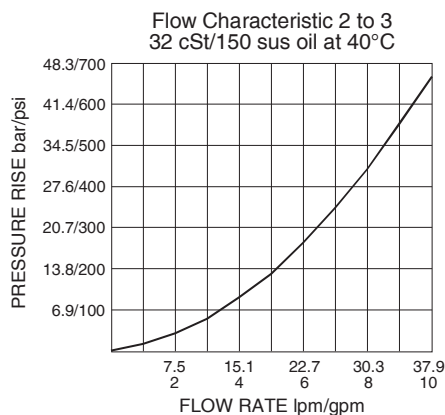
**Seal Kit** SK10-3X-BB; See page 8.650.1

## SYMBOLS

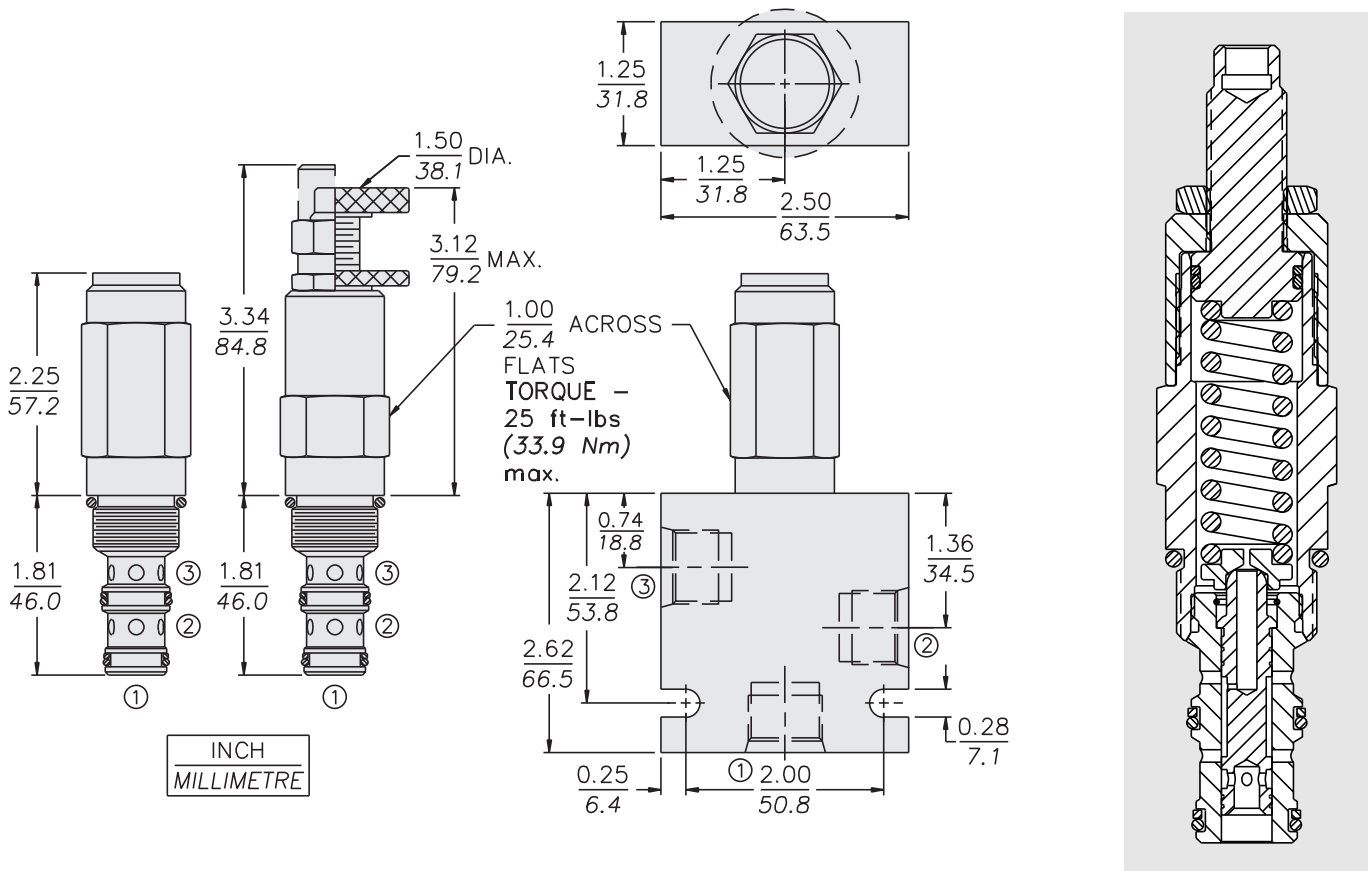
### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DIMENSIONS



## MATERIALS

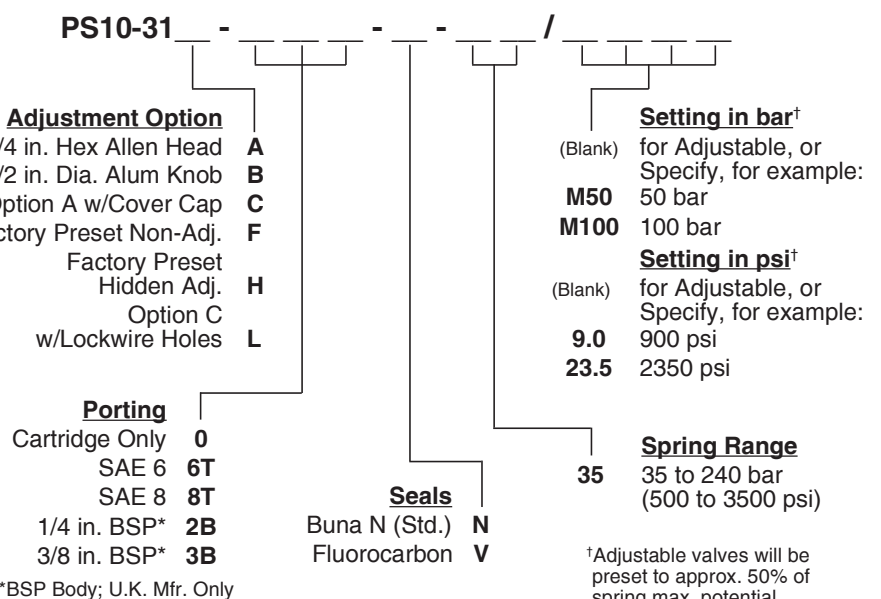
**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)

Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Anodized aluminum knobs and caps.

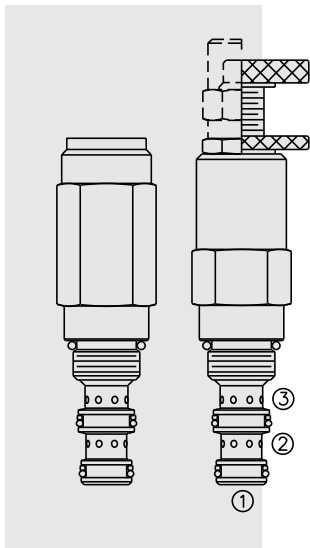
**Standard Ported Body:** Weight:

0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

## TO ORDER



# PS08-32 Sequence, External Pilot, Internal Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and internal spring chamber drain.

## OPERATION

In its steady state, the **PS08-32** blocks flow from 3 to 2. On attainment of a pre-determined pressure at 1, the valve shifts to open 3 to 2.

Back pressure at 2 will have a direct (1:1) effect on the valve's setting because the spring chamber is vented out 2.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 165.5 bar (2400 psi).
- Hardened spool and cage for long life.
- Compact size.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 90% of nominal setting

**Standard Spring Ranges:**

- 3.4 to 20.7 bar (50 to 300 psi);
- 6.9 to 41.4 bar (100 to 600 psi);
- 10.3 to 89.7 bar (150 to 1300 psi);
- 20.7 to 165.5 bar (300 to 2400 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

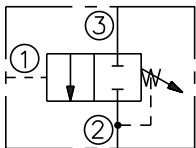
**Cavity:** VC08-3; See page 9.108.1

**Cavity Tool:** CT08-3XX; See page 8.600.1

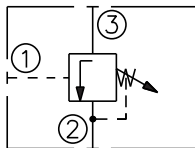
**Seal Kit:** SK08-3X-TB; See page 8.650.1

## SYMBOLS

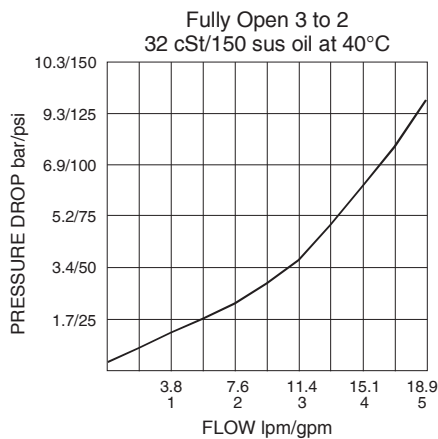
**USASI:**



**ISO:**

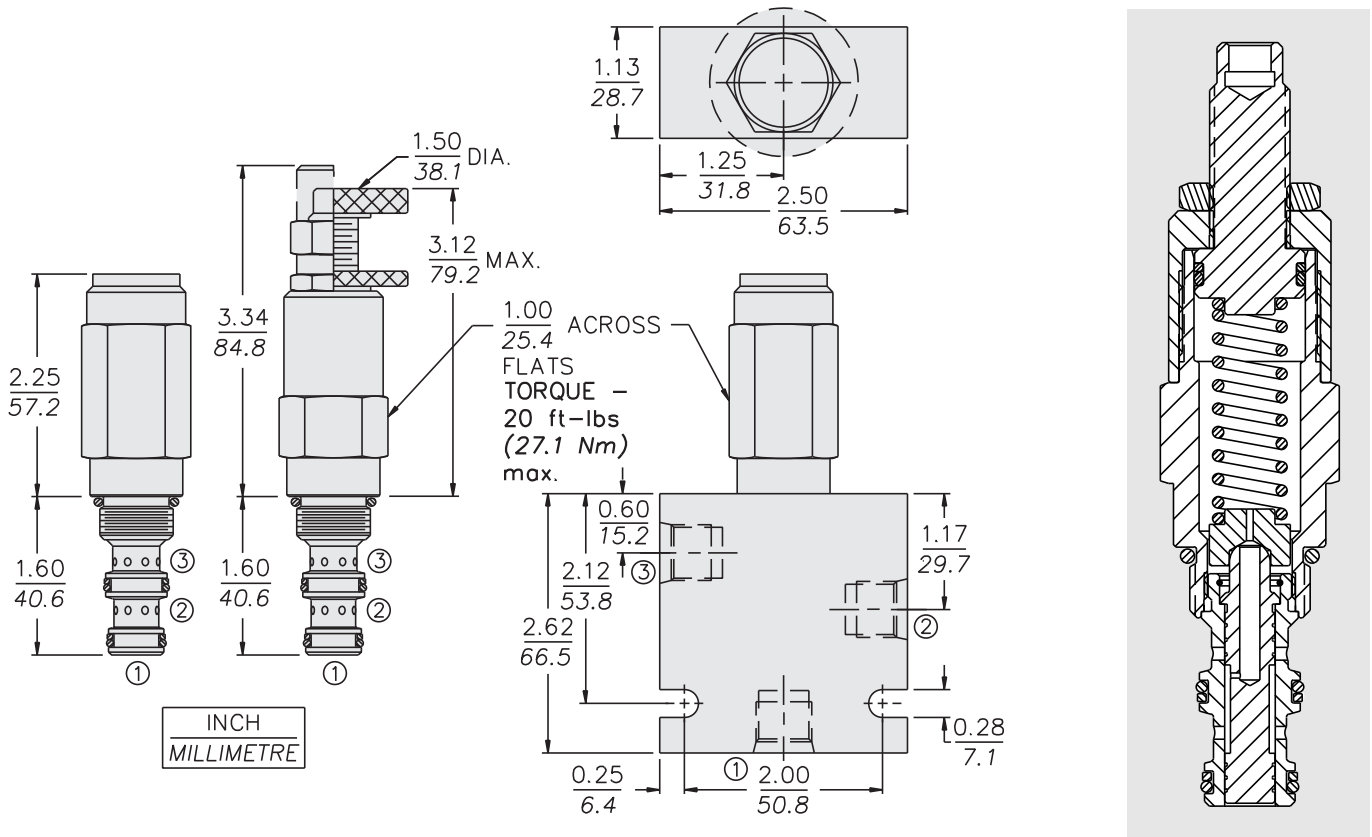


## PERFORMANCE (Cartridge Only)





**DIMENSIONS**

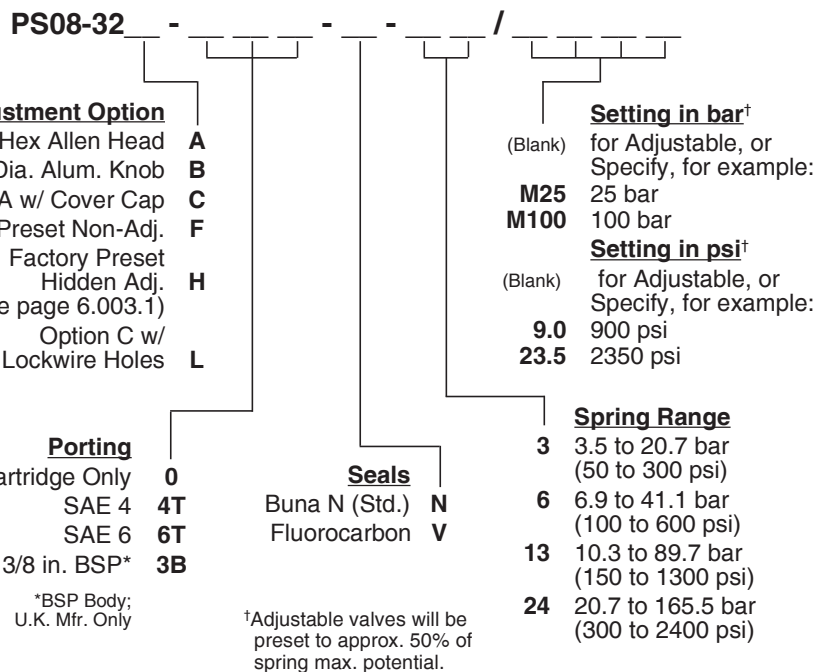


**MATERIALS**

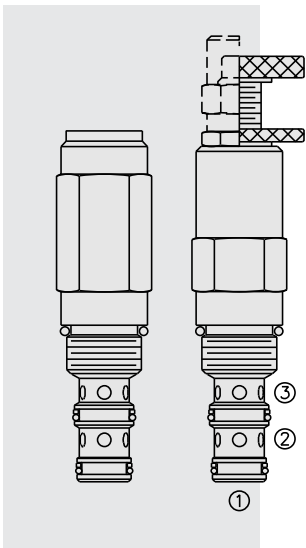
**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and back-ups standard.

**Standard Ported Body:** Weight: 0.27 kg. (0.60 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**



# PS10-32 Sequence, External Pilot, Internal Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and internal spring chamber drain.

## OPERATION

In its steady state, **PS10-32** blocks flow from 3 to 2.

On attainment of a pre-determined pressure at 1, the cartridge shifts to open 3 to 2. Since the spring chamber is vented at 2, back pressure at 2 will directly (1:1) affect the valve's setting.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 145 bar (2100 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 207 bar (3000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 90% of nominal setting

**Standard Spring Ranges:**

- 5.5 to 27.6 bar (80 to 400 psi)
- 13.8 to 55.2 bar (200 to 800 psi)
- 20.7 to 103.4 bar (300 to 1500 psi)
- 27.6 to 144.8 bar (400 to 2100 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

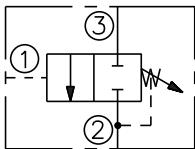
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

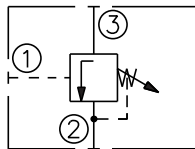
**Seal Kit:** SK10-3X-TB; See page 8.650.1

## SYMBOLS

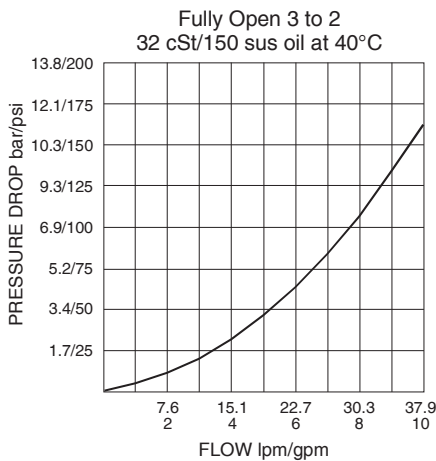
**USASI:**



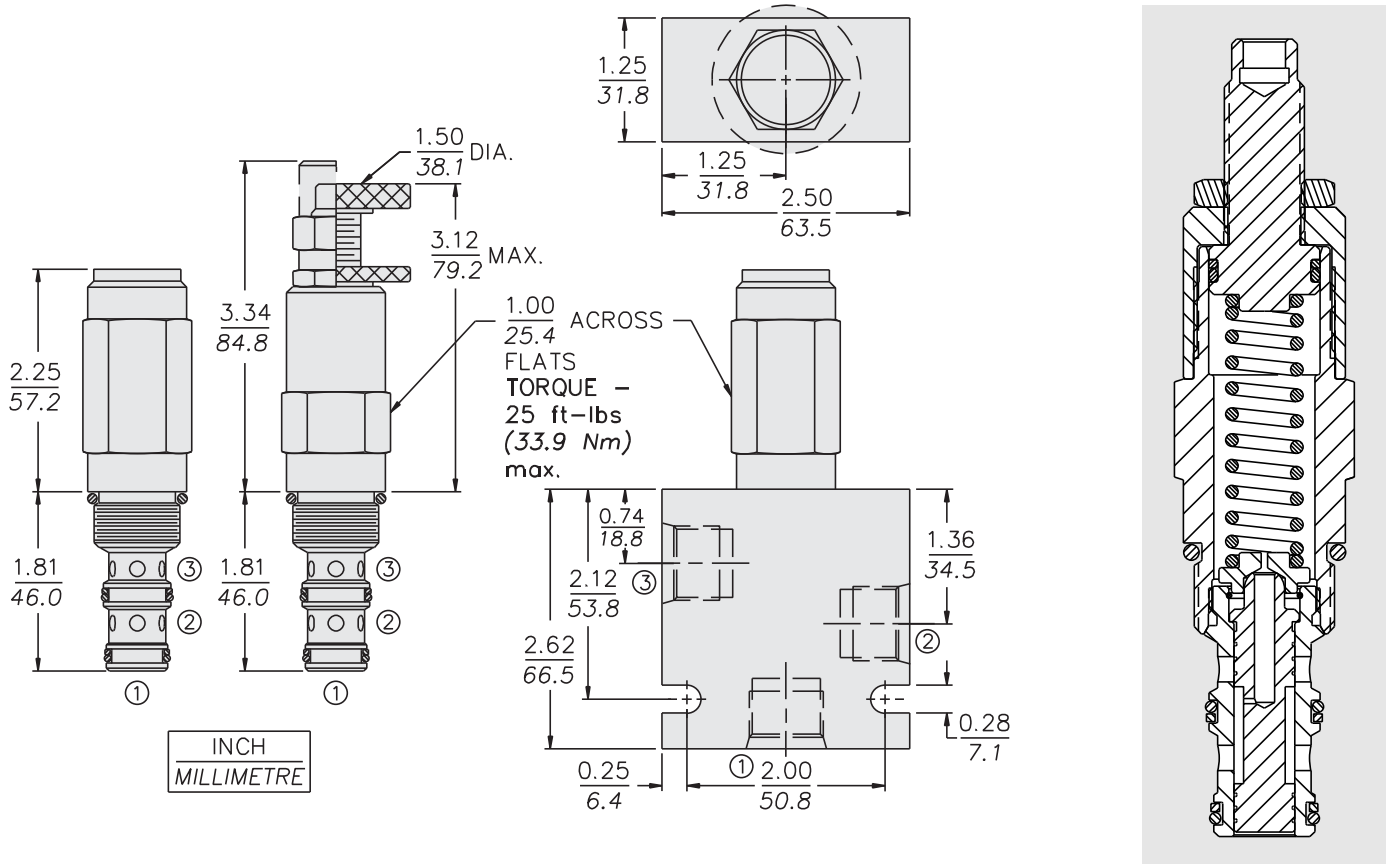
**ISO:**



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**

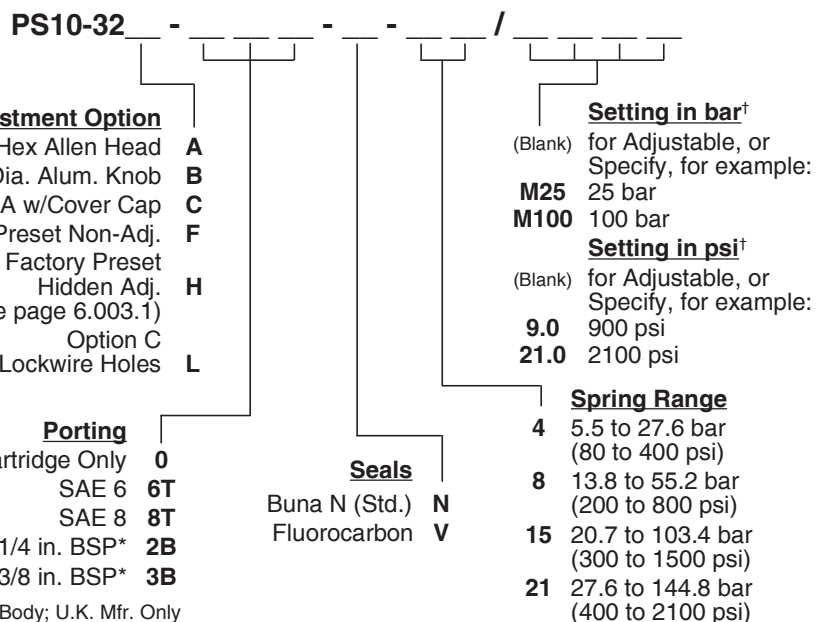


**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

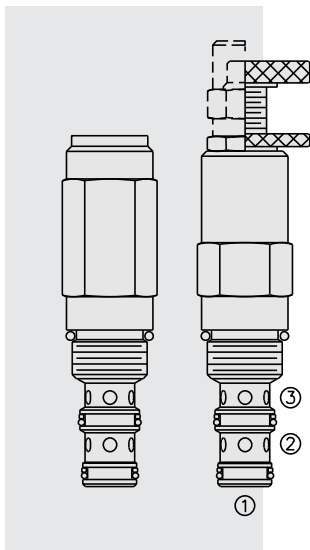
**TO ORDER**



\*BSP Body; U.K. Mfr. Only

<sup>†</sup> Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS10-33 Sequence, External Pilot, Internal Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and internal spring chamber drain.

## OPERATION

In its steady state, the **PS10-33** blocks flow from 3 to 2.

On attainment of a pre-determined pressure at 1, the cartridge shifts to open 3 to 2. Since the spring chamber is vented at 2, back pressure at 2 will directly (1:1) affect the valve's setting.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Spring range to 240 bar (3500 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 90% of nominal setting

**Standard Spring Range:** 35 to 240 bar (500 to 3500 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

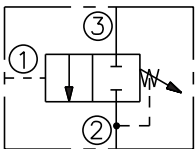
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

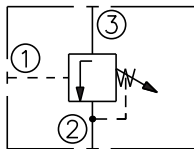
**Seal Kit:** SK10-3X-TB; See page 8.650.1

## SYMBOLS

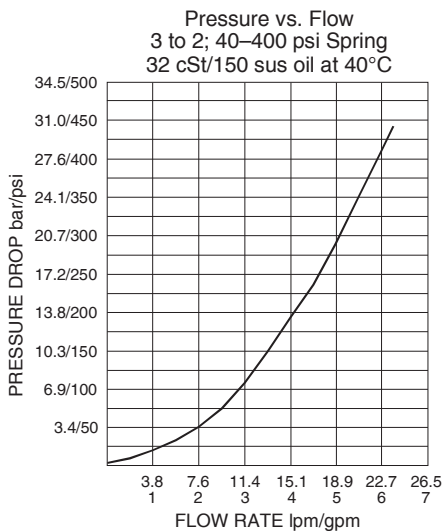
### USASI:



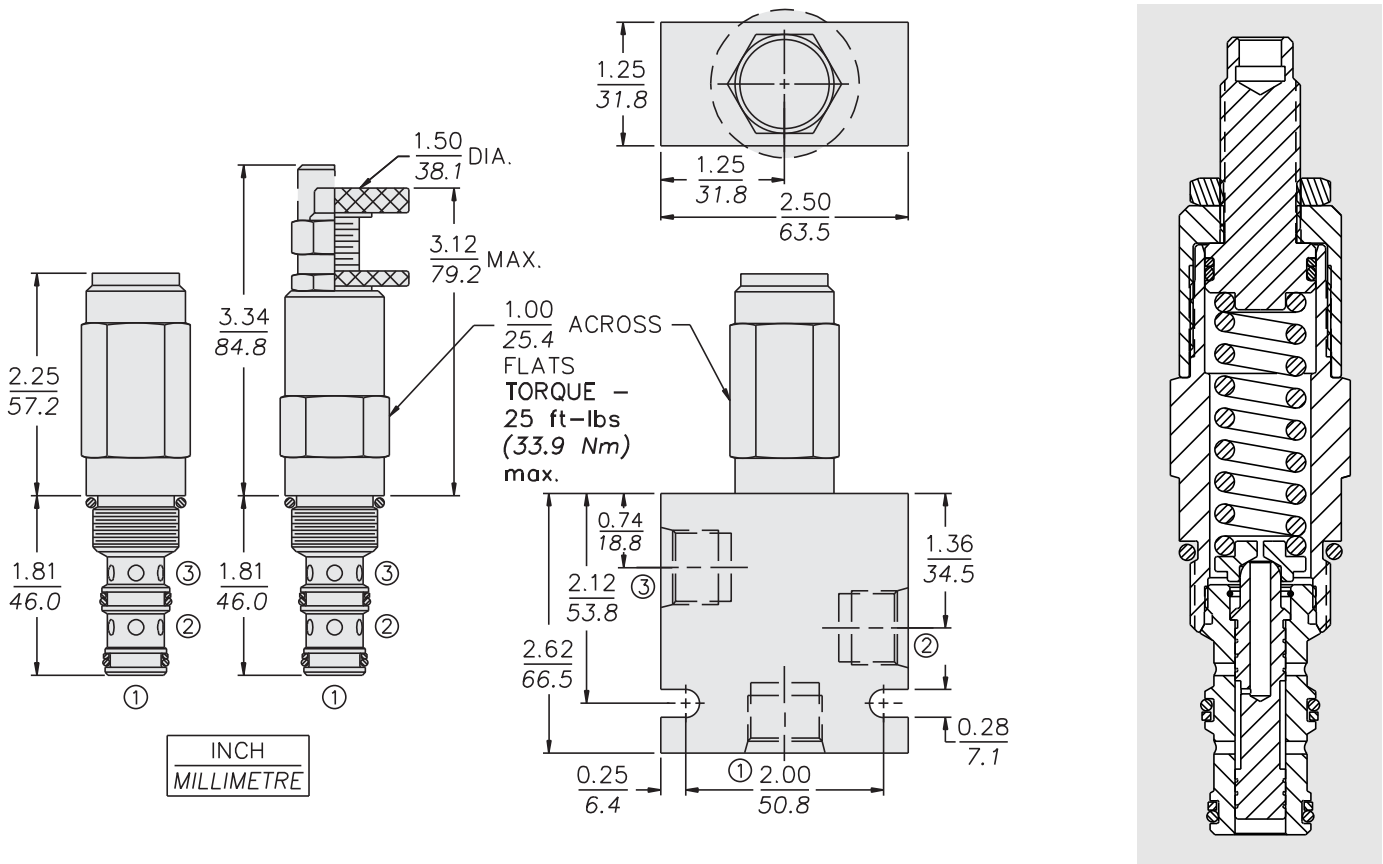
### ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester  
elastomer back-ups standard.  
Anodized aluminum knobs.

**Standard Ported Body:** Weight:  
0.36 kg. (0.80 lbs.) Anodized  
high-strength 6061 T6 aluminum  
alloy, rated to 207 bar (3000 psi).  
Ductile iron bodies available;  
dimensions may differ.  
See page 8.010.1

**TO ORDER**

**PS10-33**

- Adjustment Option**
- 1/4 in. Hex Allen Head **A**
  - 1-1/2 in. Dia. Alum. Knob **B**
  - Option A w/Cover Cap **C**
  - Factory Preset Non-Adjst. **F**
  - Factory Preset  
Hidden Adjustment  
(See page 6.003.1) **H**
  - Option C w/  
Lockwire Holes **L**

- Porting**
- Cartridge Only **0**
  - SAE 6 **6T**
  - SAE 8 **8T**
  - 1/4 in. BSP\* **2B**
  - 3/8 in. BSP\* **3B**

- Seals**
- Buna N (Std.) **N**
  - Fluorocarbon **V**

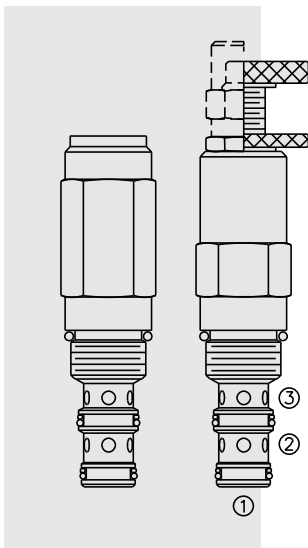
- Setting in bar†**
- (Blank) for Adjustable, or  
Specify, for example:  
**M50** 50 bar  
**M100** 100 bar
  - Setting in psi†**
  - (Blank) for Adjustable, or  
Specify, for example:  
**9.0** 900 psi  
**23.5** 2350 psi

- Spring Range**
- 35** 35 to 240 bar  
(500 to 3500 psi)

† Adjustable valves will be  
preset to approx. 50% of  
spring max. potential.

\*BSP Body; U.K. Mfr. Only

# PS10-34 Sequence, Internal Pilot & Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain.

## OPERATION

In its steady state, the **PS10-34** blocks flow from 1 to 2, with the spring chamber drained at 3.

On attainment of a predetermined pressure at 1, the cartridge shifts to open 1 to 2. Note that back-pressure on 3 adds to the spring setting value.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 117.2 bar (1700 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** to 207 bar (3000 psi)

**Sequence Pressure Max.:** to 117 bar (1700 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Standard Spring Ranges:**

6.9 to 48.3 bar (100 to 700 psi);

20.7 to 117.2 bar (300 to 1700 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

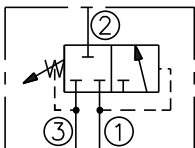
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

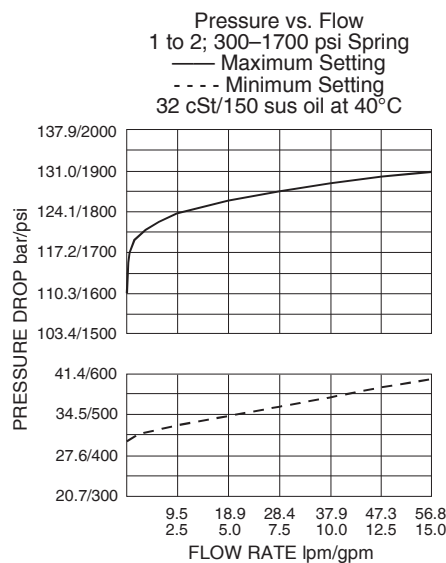
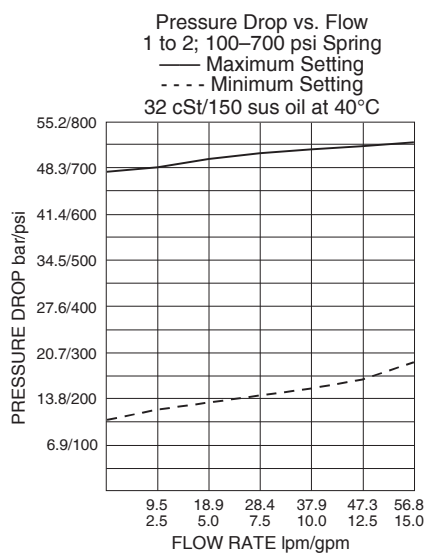
**Seal Kit:** SK10-3X-BM; See page 8.650.1

## SYMBOLS

### USASI/ISO:

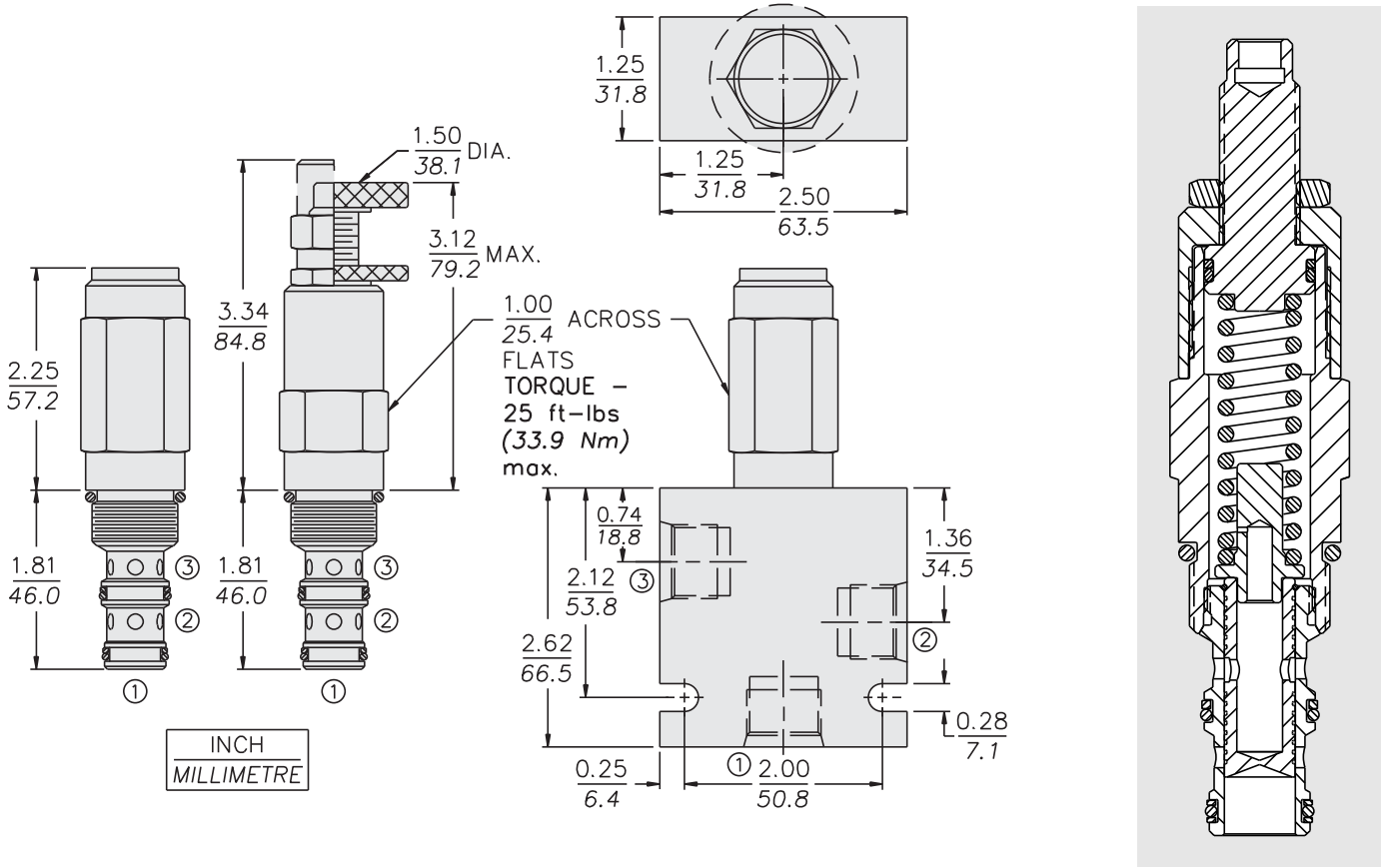


## PERFORMANCE (Cartridge Only)



**PS10-34**

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.)  
 Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi).  
 Ductile iron bodies available; dimensions may differ.  
 See page 8.010.1

**TO ORDER**

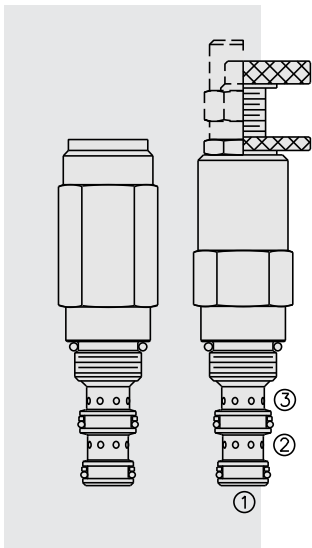
**PS10-34** - - - /

- |   |  |  |  |
|---|--|--|--|
| <p><b>Adjustment Option</b><br/>                 1/4 in. Hex Allen Head <b>A</b><br/>                 1-1/2 in. Dia. Alum Knob <b>B</b><br/>                 Option A w/Cover Cap <b>C</b><br/>                 Factory Preset Non-Adjst. <b>F</b><br/>                 Factory Preset Hidden Adjustment <b>H</b><br/>                 Option C w/Lockwire Holes <b>L</b></p> | <p><b>Porting</b><br/>                 Cartridge Only <b>0</b><br/>                 SAE 6 <b>6T</b><br/>                 SAE 8 <b>8T</b><br/>                 1/4 in. BSP* <b>2B</b><br/>                 3/8 in. BSP* <b>3B</b></p> | <p><b>Seals</b><br/>                 Buna N (Std.) <b>N</b><br/>                 Fluorocarbon <b>V</b></p> | <p><b>Setting in bars<sup>†</sup></b><br/>                 (Blank) for Adjustable, or Specify, for example:<br/> <b>M25</b> 25 bar<br/> <b>M100</b> 100 bar<br/> <b>Setting in psi<sup>†</sup></b><br/>                 (Blank) for Adjustable, or Specify, for example:<br/> <b>9.0</b> 900 psi<br/> <b>16.0</b> 1600 psi</p> |
|   |  |  | <p><b>Spring Range</b><br/> <b>7</b> 6.9 to 48.3 bar (100 to 700 psi)<br/> <b>17</b> 20.7 to 117.2 bar (300 to 1700 psi)</p>   |

\*BSP Body; U.K. Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS08-35 Sequence, External Pilot, Internal Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and internal spring chamber drain.

## OPERATION

In its steady state, the **PS08-35** allows flow from 2 to 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to close 2 to 3. Since the spring chamber is vented at 3, back pressure at 3 will directly (1:1) affect the valve's setting.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 165.5 bar (2400 psi).
- Hardened spool and cage for long life.
- Compact size.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. at full close

**Standard Spring Ranges:**

- 3.4 to 20.7 bar (50 to 300 psi);
- 6.9 to 41.4 bar (100 to 600 psi);
- 10.3 to 89.7 bar (150 to 1300 psi);
- 20.7 to 165.5 bar (300 to 2400 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

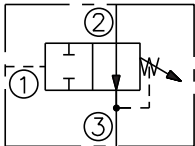
**Cavity:** VC08-3; See page 9.108.1

**Cavity Tool:** CT08-3XX; See page 8.600.1

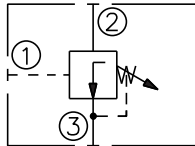
**Seal Kit:** SK08-3X-BM; See page 8.650.1

## SYMBOLS

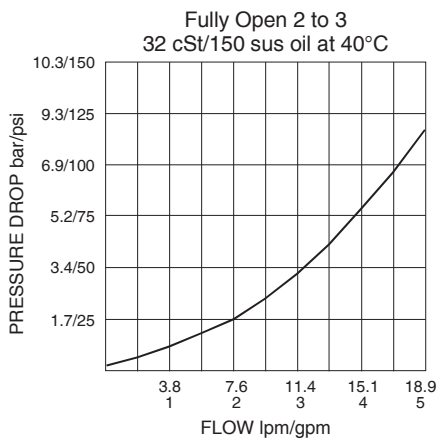
### USASI:



### ISO:

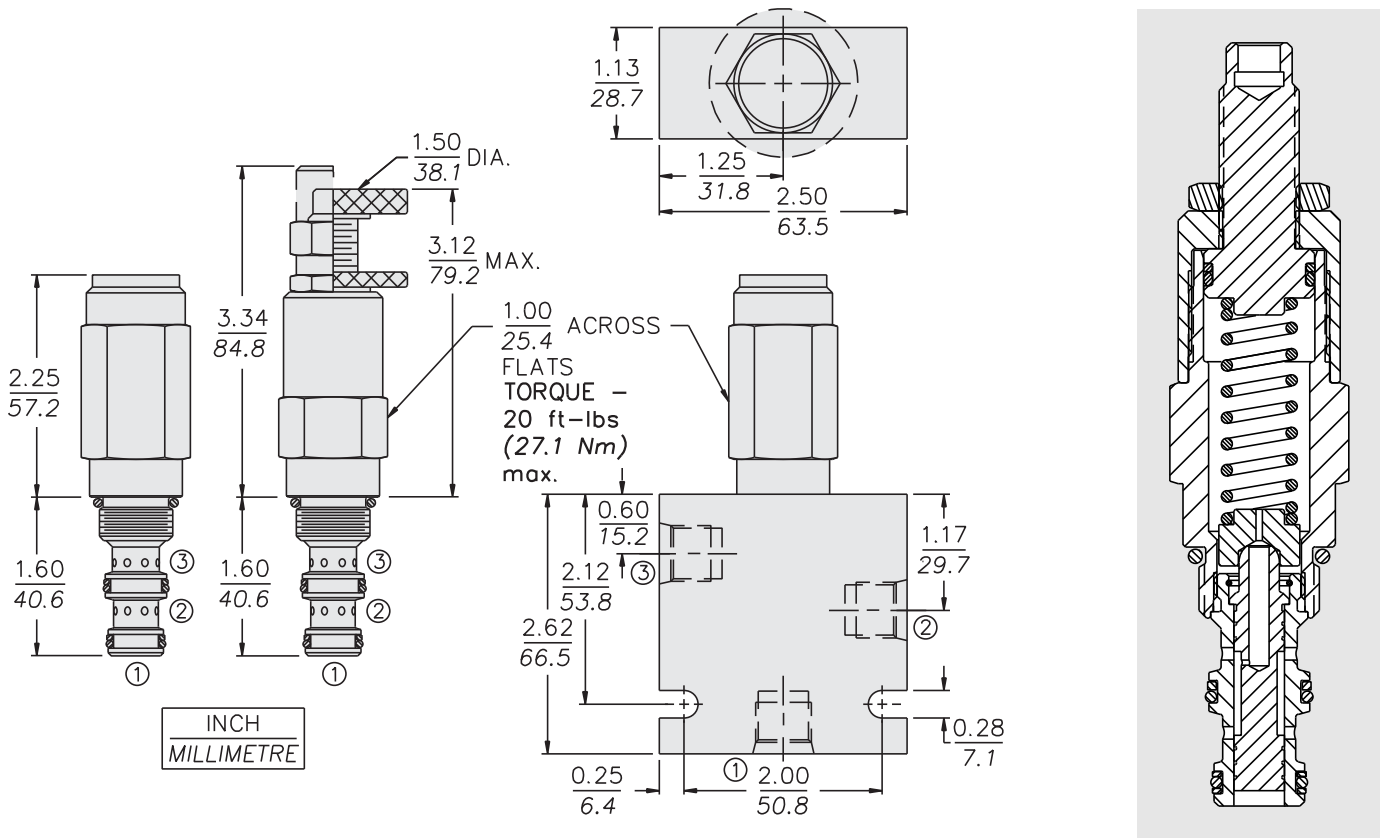


## PERFORMANCE (Cartridge Only)





**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and back-ups standard; Anodized aluminum knobs.

**Standard Ported Body:** Weight: 0.27 kg. (0.60 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

**TO ORDER**

**PS08-35**

- Adjustment Option**
- 1/4 in. Hex Allen Head **A**
  - 1-1/2 in. Dia. Alum. Knob **B**
  - Option A w/Cover Cap **C**
  - Factory Preset Non-Adjst. **F**
  - Factory Preset Hidden Adjustment (See page 6.003.1) **H**
  - Option C w/Lockwire Holes **L**

- Porting**
- Cartridge Only **0**
  - SAE 4 **4T**
  - SAE 6 **6T**
  - 3/8 in. BSP\* **3B**

\*BSP Body; U.K. Mfr. Only

**Seals**

- Buna N (Std.) **N**
- Fluorocarbon **V**

**Setting in bar<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**M25** 25 bar  
**M100** 100 bar

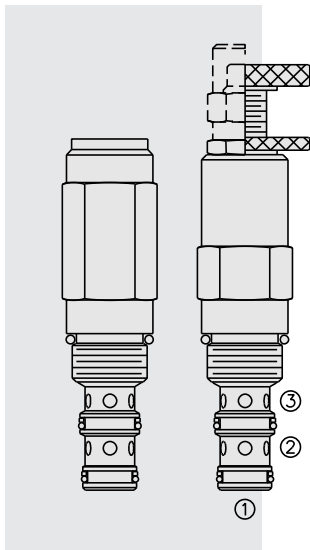
**Setting in psi<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**9.0** 900 psi  
**23.5** 2350 psi

**Spring Range**

- 3** 3.4 to 20.7 bar (50 to 300 psi)
- 6** 6.9 to 41.4 bar (100 to 600 psi)
- 13** 10.3 to 89.7 bar (150 to 1300 psi)
- 24** 20.7 to 165.5 bar (300 to 2400 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS10-35 Sequence, External Pilot, Internal Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and internal spring chamber drain.

## OPERATION

In its steady state, the **PS10-35** allows flow from 2 to 3.

On attainment of a pre-determined pressure at 1, the cartridge shifts to close 2 to 3. Since the spring chamber is vented at 3, back pressure at 3 will directly (1:1) affect the valve's setting.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened spool and cage for long life.
- Compact size.

## RATINGS

**Operating Pressure:** 138 bar (2000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. at full close

**Standard Spring Ranges:** 6.9 to 138 bar (100 to 2000 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

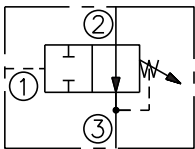
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

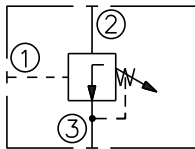
**Seal Kit:** SK10-3X-BM; See page 8.650.1

## SYMBOLS

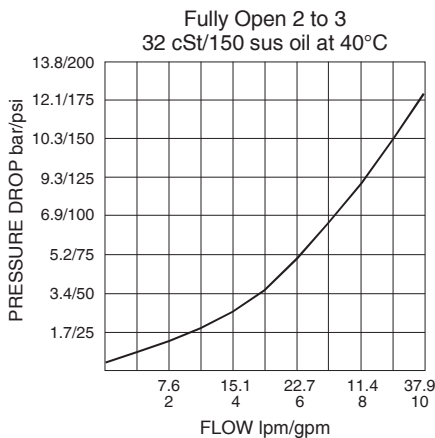
### USASI:



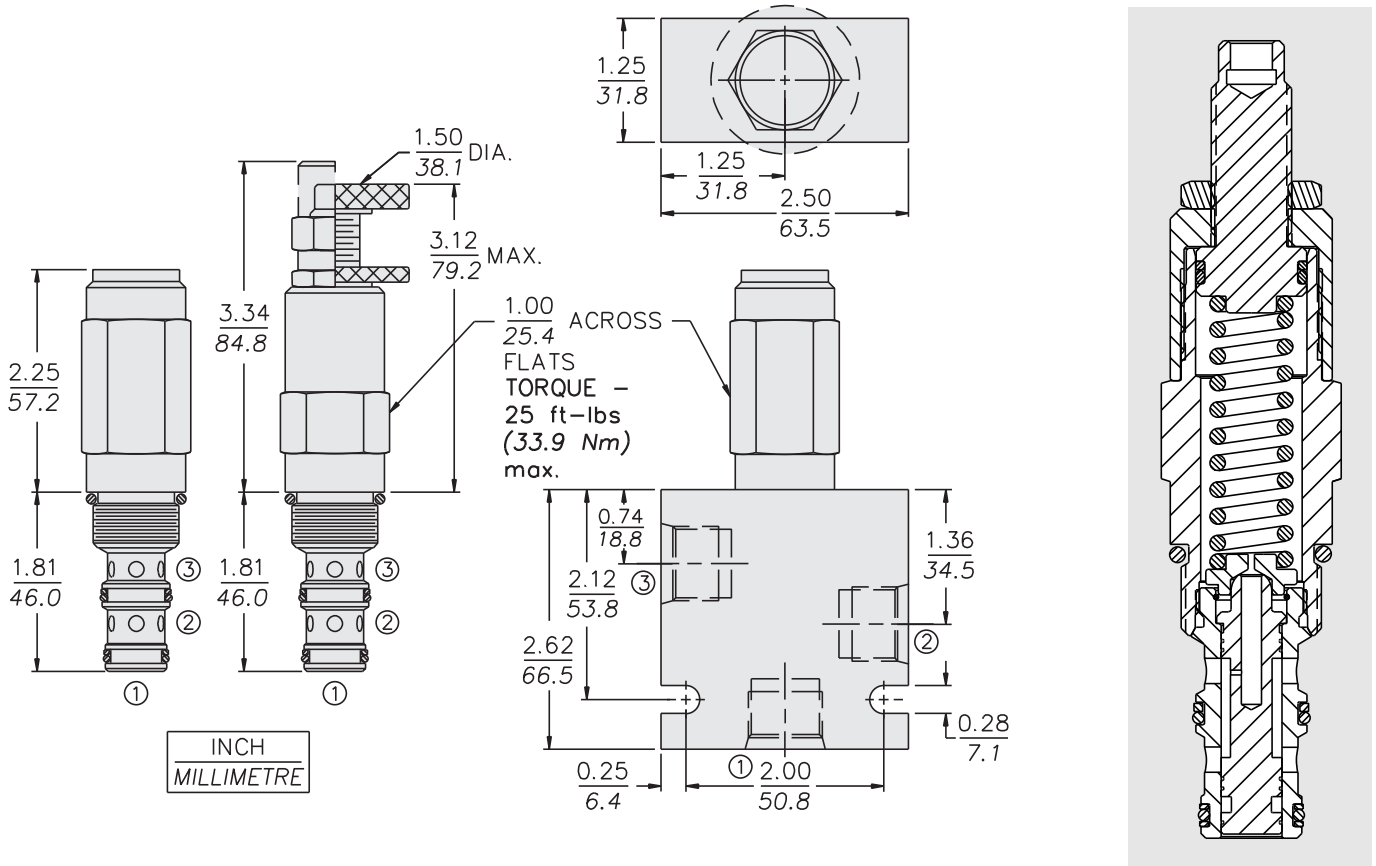
### ISO:



## PERFORMANCE (Cartridge Only)



**DIMENSIONS**

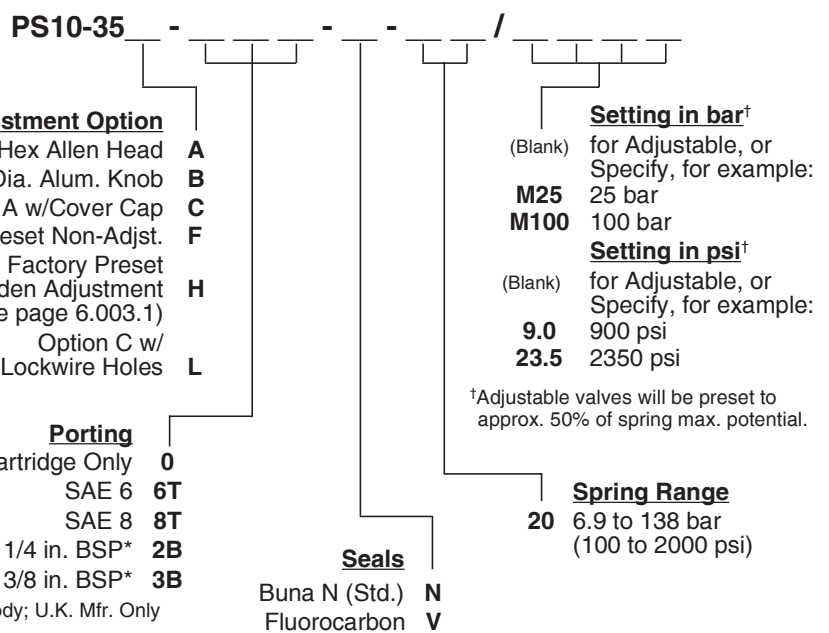


**MATERIALS**

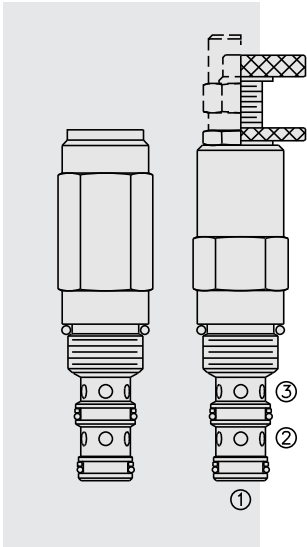
**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.)  
 Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi).  
 Ductile iron bodies available; dimensions may differ.  
 See page 8.010.1

**TO ORDER**



# PS10-36 Pilot-Operated Sequence, Internal Pilot,



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, spool-type, hydraulic sequence valve with internal pilot and external spring chamber drain.

## OPERATION

In its steady state, the **PS10-36** blocks flow from 1 to 2, with the spring chamber drained at 3.

On attainment of a predetermined pressure at 1, the cartridge shifts to open 1 to 2. Note that back-pressure on 3 adds to the spring setting value.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** to 240 bar (3500 psi)

**Sequence Pressure Max.:** to 207 bar (3000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Pilot Orifice:** Pilot-operated through 0.51 mm (0.02 inch) hole

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained 1 to 2

**Standard Spring Ranges:**

- 5.5 to 27.6 bar (80 to 400 psi)
- 10.3 to 103.4 bar (150 to 1500 psi)
- 24.1 to 206.9 bar (350 to 3000 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

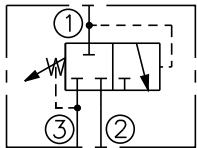
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

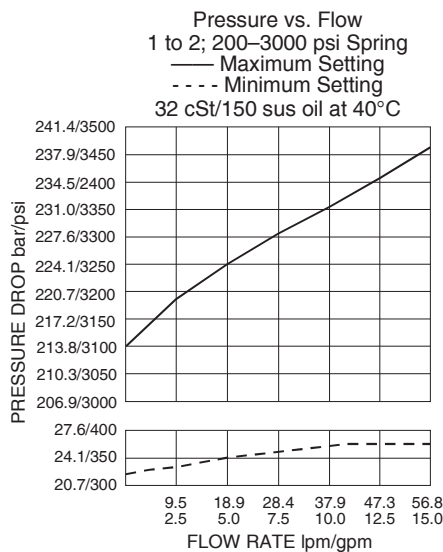
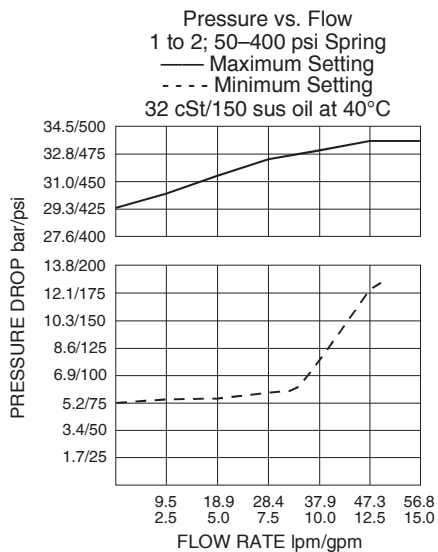
**Seal Kit:** SK10-3X-BM; See page 8.650.1

## SYMBOLS

### USASI/ISO:



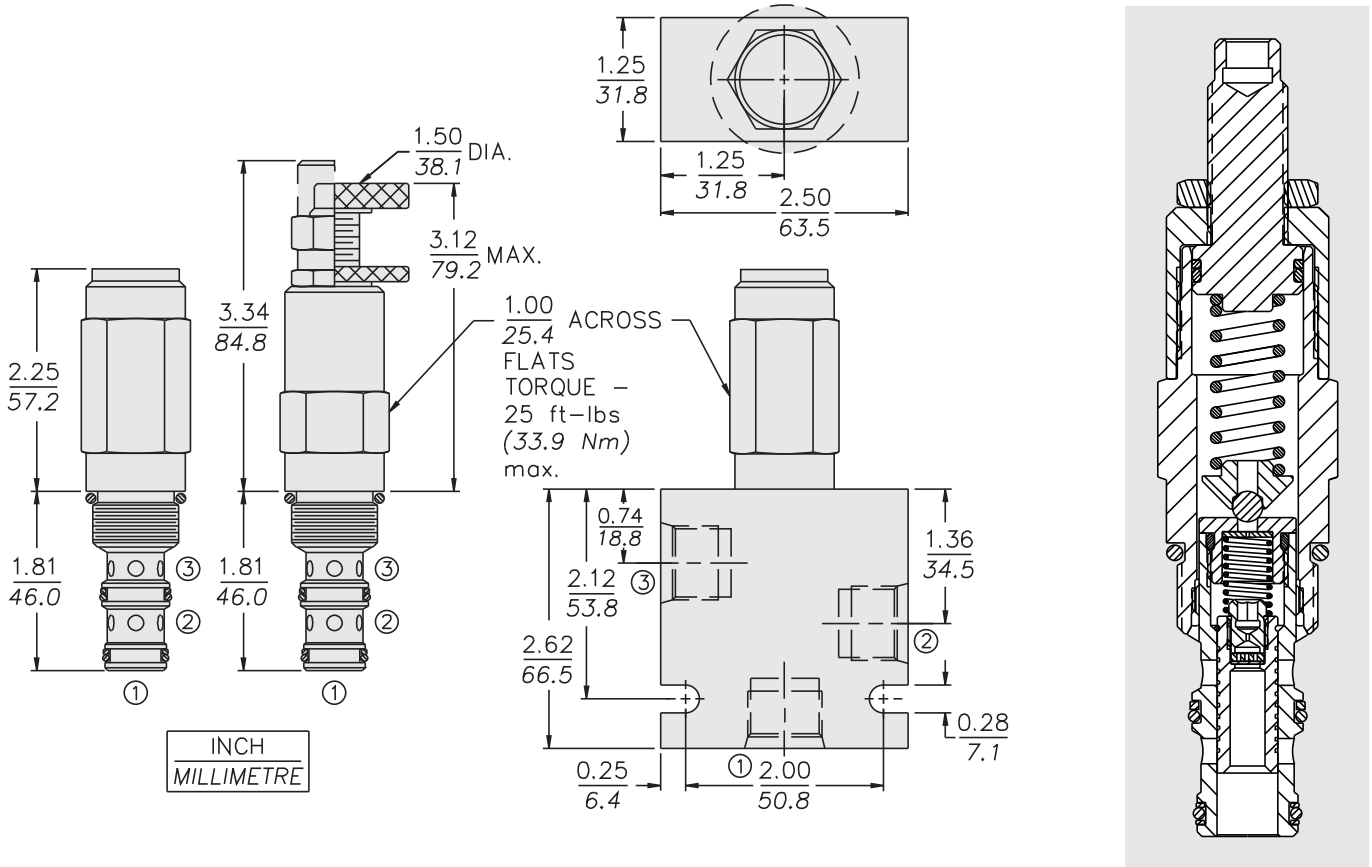
## PERFORMANCE (Cartridge Only)



**External Drain**

**PS10-36**

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi)  
 Ductile iron bodies available; dimensions may differ.  
 See page 8.010.1.

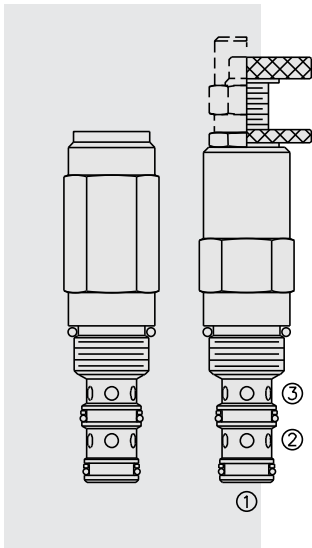
**TO ORDER**

<b>PS10-36</b>		/	
<b>Adjustment Option</b>	<b>A</b>	<b>B</b>	<b>C</b>
1/4 in. Hex Allen Head			
1-1/2 in. Dia. Alum Knob			
Option A w/Cover Cap			
Factory Preset Non-Adjst.			
Factory Preset Hidden Adjustment			
Option C w/Lockwire Holes			
<b>L</b>			
<b>Porting</b>	<b>0</b>	<b>6T</b>	<b>8T</b>
Cartridge Only			
SAE 6			
SAE 8			
1/4 in. BSP*		<b>2B</b>	<b>3B</b>
3/8 in. BSP*			
<b>Seals</b>	<b>N</b>	<b>V</b>	
Buna N (Std.)			
Fluorocarbon			
<b>Setting in bar<sup>†</sup></b>	<b>M25</b>	<b>M100</b>	
(Blank) for Adjustable, or Specify, for example:			
25 bar			
100 bar			
<b>Setting in psi<sup>†</sup></b>	<b>9.0</b>	<b>21.0</b>	
(Blank) for Adjustable, or Specify, for example:			
900 psi			
2100 psi			
<b>Spring Range</b>	<b>04</b>	<b>15</b>	<b>30</b>
5.5 to 27.6 bar (80 to 400 psi)			
10.3 to 103.4 bar (150 to 1500 psi)			
24.1 to 206.9 bar (350 to 3000 psi)			

\*BSP Body; U.K. Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS50-36 Pilot-Operated Sequence, Internal Pilot,



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain.

## OPERATION

In its steady state, the **PS50-36** blocks flow from 1 to 2, with the spring chamber drained at 3.

On attainment of a predetermined pressure at 1, the cartridge shifts to open 1 to 2. Note that back-pressure on 3 adds to the spring setting value.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Spring range to 331 bar (4800 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 331 bar (4800 psi) on ports 1 and 2;  
240 bar (3500 psi) on port 3

**Sequence Pressure Max.:** 331 bar (4800 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Pilot Orifice:** Pilot-operated through 0.51 mm (0.20 inch) hole

**Crack Pressure Defined:** bar (psi) evident at 0.95 lpm (0.25 gpm) attained 1 to 2

**Standard Spring Range:** 27.6 to 331 bar (400 to 4800 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

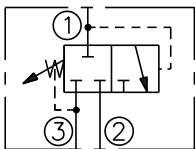
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

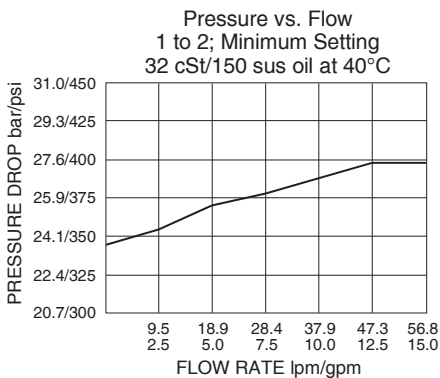
**Seal Kit:** SK10-3P-BM; See page 8.650.1

## SYMBOLS

### USASI/ISO:



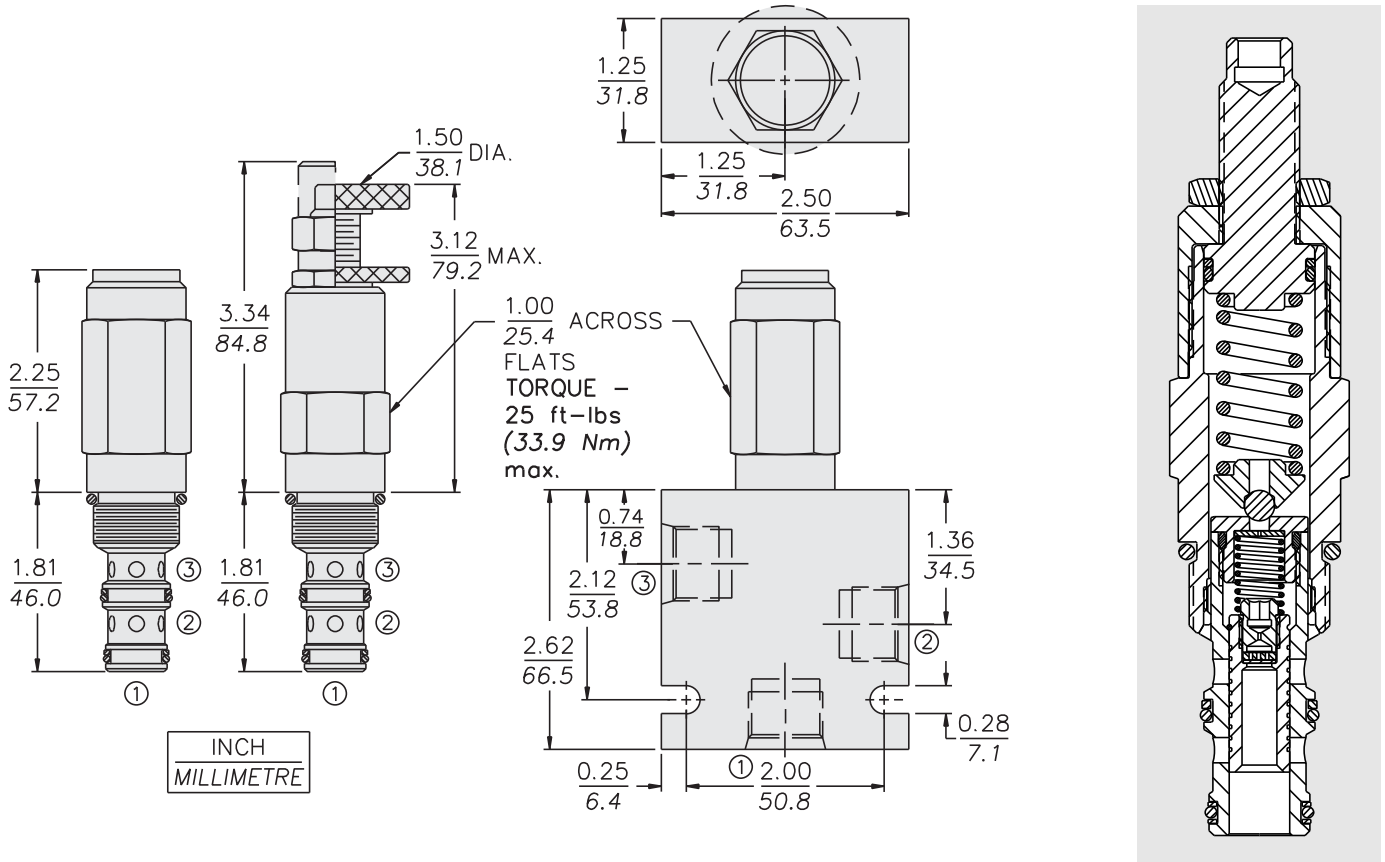
## PERFORMANCE (Cartridge Only)



# External Drain

# PS50-36

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)

Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Polyurethane O-rings and polyester elastomer back-ups standard. Anodized aluminum knobs and caps.

**Ported Body:** Weight: 0.64 kg. (1.41 lbs.) Ductile Iron (code "D") standard, consult factory for weight, dimensions may differ. Rated to 345 bar (5000 psi). See page 8.010.1.

## TO ORDER

PS50-36

### Adjustment Option

1/4 in. Hex Allen Head **A**  
1-1/2 in. Dia. Alum Knob **B**  
Option A w/Cover Cap **C**  
Factory Preset Non-Adjst **F**  
Factory Preset **H**  
Hidden Adjustment **H**  
Option C **L**  
w/Lockwire Holes **L**

### Porting

Cartridge Only **0**  
SAE 6 (Ductile) **6TD**

### Seals

Polyurethane **P**

50

### Setting in bar<sup>†</sup>

(Blank) for Adjustable, or

Specify, for example:

**M25** 25 bar

**M100** 100 bar

### Setting in psi<sup>†</sup>

(Blank) for Adjustable, or

Specify, for example:

**9.0** 900 psi

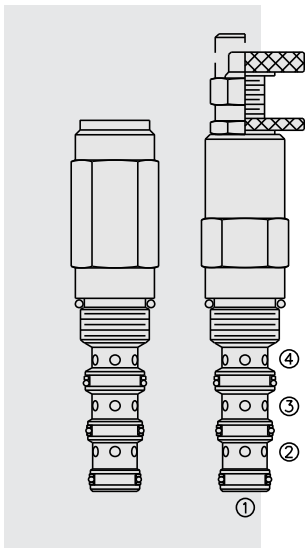
**21.0** 2100 psi

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

### Spring Range

27.6 to 331 bar  
(400 to 4800 psi)

# PS10-40 Sequence, Normally Closed . . .



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and spring chamber drain. It is designed to function as a pressure-signalled, remote pilot-operated, two-way, normally closed valve. A separate spring chamber drain galley allows port 3 or 2 to be fully pressurized.

## OPERATION

In neutral (unpiloted), the **PS10-40** blocks flow between 3 and 2 bidirectionally. The spring chamber is constantly vented at 4. On attainment of a pre-determined pressure at 1, the cartridge shifts to open 3 to 2 bidirectionally.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 151.7 bar (2200 psi).
- Hardened precision spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Spring Ranges:** 2.8 to 27.6 bar (40 to 400 psi); 15.2 to 151.7 bar (220 to 2200 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

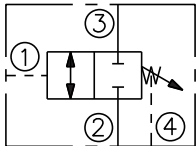
**Cavity:** VC10-4; See page 9.110.1

**Cavity Tool:** CT10-4XX; See page 8.600.1

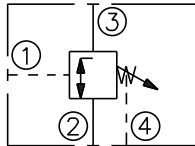
**Seal Kit:** SK10-4X-BMM; See page 8.650.1

## SYMBOLS

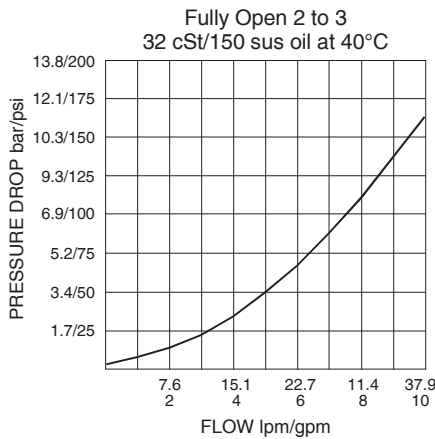
### USASI:



### ISO:



## PERFORMANCE (Cartridge Only)

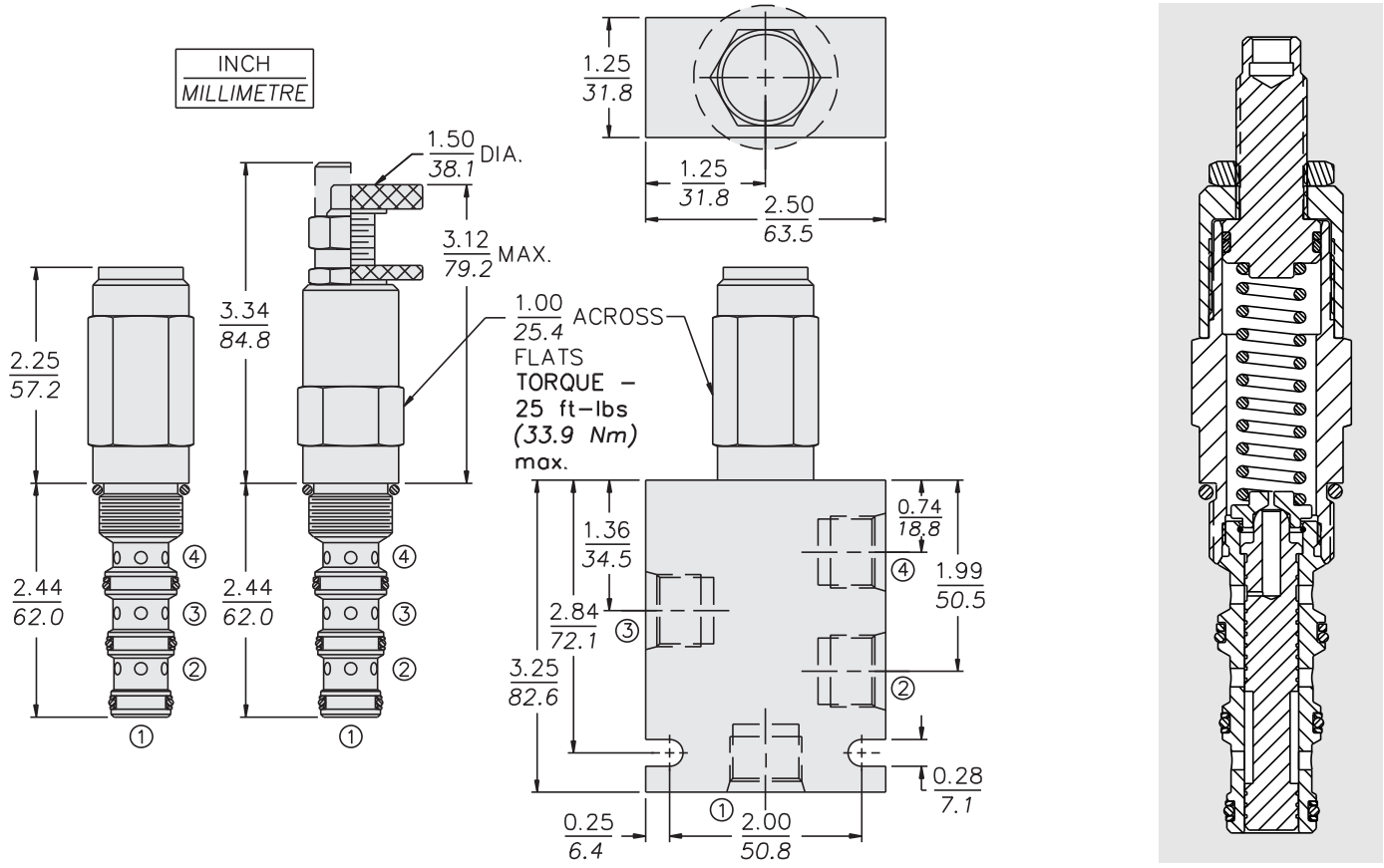




# with External Pilot and Drain

# PS10-40

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.34 kg. (0.70 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.34 kg. (0.70 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available, dimensions may differ. See page 8.010.1

## TO ORDER

**PS10-40** - - - /

**Adjustment Option**

- 1/4 in. Hex Allen Head **A**
- 1-1/2 in. Dia. Alum Knob **B**
- Option A w/Cover Cap **C**
- Factory Preset Non-Adjst. **F**
- Factory Preset Hidden Adjustment **H**
- Option C w/Lockwire Holes **L**

**Porting**

- Cartridge Only **0**
- SAE 6 **6T**
- SAE 8 **8T**
- 1/4 in. BSP\* **2B**
- 3/8 in. BSP\* **3B**

\*BSP Body; U.K. Mfr. Only

**Seals**

- Buna N (Std.) **N**
- Fluorocarbon **V**
- Polyurethane **P**

**Setting in bar<sup>†</sup>**

- (Blank) for Adjustable, or Specify. Example: **M25** 25 bar
- M100** 100 bar

**Setting in psi<sup>†</sup>**

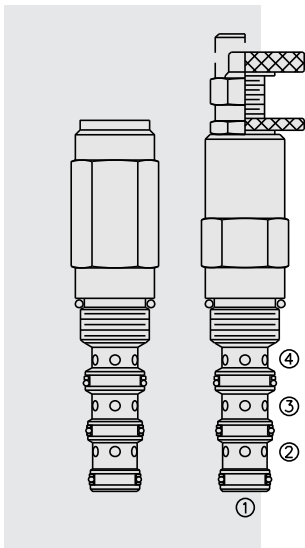
- (Blank) for Adjustable, or Specify. Example: **9.0** 900 psi
- 21.0** 2100 psi

**Spring Range**

- 4** 2.8 to 27.6 bar (40 to 400 psi)
- 22** 15.2 to 151.7 bar (220 to 2200 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS50-40 Sequence, Normally Closed . . .



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and spring chamber drain. It is designed to function as a pressure-signalled, remote pilot-operated, two-way, normally closed valve. A separate spring chamber drain galley allows port 3 or 2 to be fully pressurized.

## OPERATION

In neutral (unpiloted), the **PS50-40** blocks flow between 3 and 2 bidirectionally. The spring chamber is constantly vented at 4. On attainment of a pre-determined pressure at 1, the cartridge shifts to open 3 to 2 bidirectionally.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 241 bar (3500 psi).
- Hardened precision spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 345 bar (5000 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Spring Ranges:** 2.8 to 27.6 bar (40 to 400 psi); 20.7 to 241 bar (300 to 3500 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

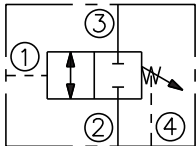
**Cavity:** VC10-4; See page 9.110.1

**Cavity Tool:** CT10-4XX; See page 8.600.1

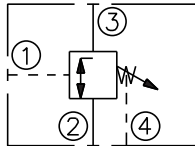
**Seal Kit:** SK10-4P-BMM; See page 8.650.1

## SYMBOLS

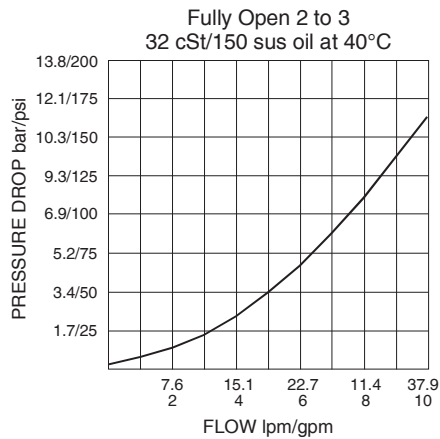
### USASI:



### ISO:



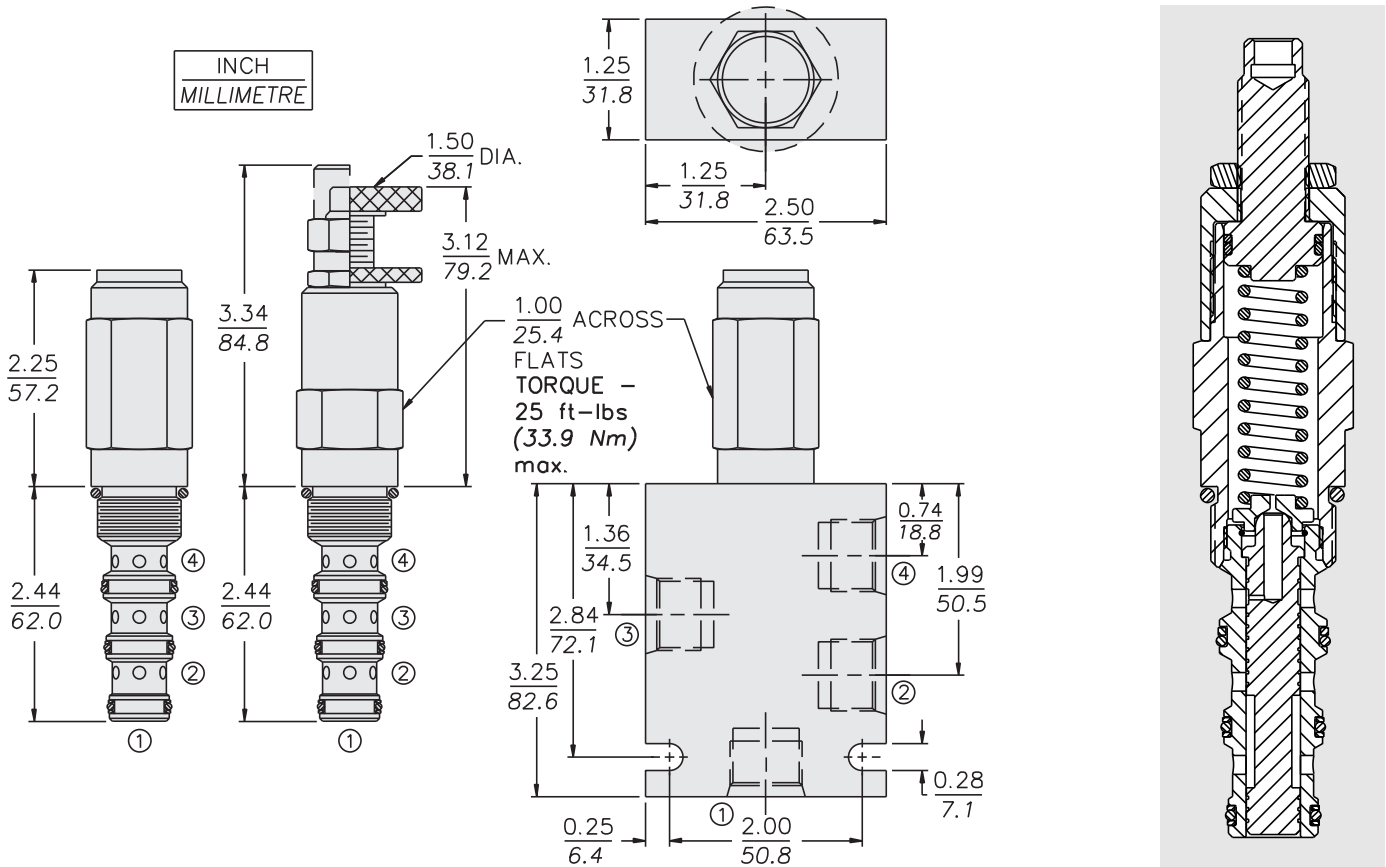
## PERFORMANCE (Cartridge Only)



# with External Pilot and Drain

# PS50-40

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.34 kg. (0.70 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.34 kg. (0.70 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi).  
Ductile iron body required for operation over 207 bar (3000 psi), dimensions may differ.  
See page 8.010.1

## TO ORDER

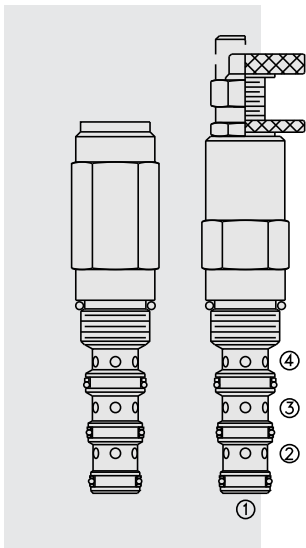
<p><b>Adjustment Option</b></p> <p>1/4 in. Hex Allen Head <b>A</b></p> <p>1-1/2 in. Dia. Alum Knob <b>B</b></p> <p>Option A w/Cover Cap <b>C</b></p> <p>Factory Preset Non-Adjst. <b>F</b></p> <p>Factory Preset Hidden Adj. <b>H</b></p> <p>Option C w/Lockwire Holes <b>L</b></p>	<p><b>Porting</b></p> <p>Cartridge Only <b>0</b></p> <p>SAE 6 <b>6T</b></p> <p>SAE 8 <b>8T</b></p> <p>1/4 in. BSP* <b>2B</b></p> <p>3/8 in. BSP* <b>3B</b></p>	<p><b>Seals</b></p> <p>Polyurethane <b>P</b></p>	<p><b>Setting in bar<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify. Example: <b>M25</b> 25 bar</p> <p><b>M100</b> 100 bar</p> <p><b>Setting in psi<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify. Example: <b>9.0</b> 900 psi</p> <p><b>21.0</b> 2100 psi</p>	<p><b>Spring Range</b></p> <p><b>4</b> 2.8 to 27.6 bar (40 to 400 psi)</p> <p><b>35</b> 20.7 to 241 bar (300 to 3500 psi)</p>
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\*BSP Body; U.K. Mfr. Only

Note: Ductile Iron body required for operation over 241 bar (3500 psi).

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS10-41 Sequence, N.O., External Pilot & Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and spring chamber drain. It is designed to function as a pressure-signalled, remote pilot-operated, two-way, normally open valve. A separate spring chamber drain galley allows port 3 or 2 to be fully pressurized.

## OPERATION

In neutral (unpiloted), the **PS10-41** allows flow between 3 and 2 bidirectionally.

The spring chamber is constantly vented at 4.

On attainment of a pre-determined pressure at 1, the cartridge shifts to close 3 to 2 bidirectionally.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 151.7 bar (2200 psi).
- Hardened precision spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Standard Spring Ranges:** 2.8 to 27.6 bar (40 to 400 psi); 15.2 to 151.7 bar (220 to 2200 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

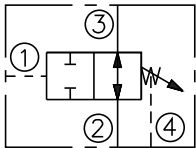
**Cavity:** VC10-4; See page 9.110.1

**Cavity Tool:** CT10-4XX; See page 8.600.1

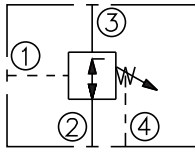
**Seal Kit:** SK10-4X-BMM; See page 8.650.1

## SYMBOLS

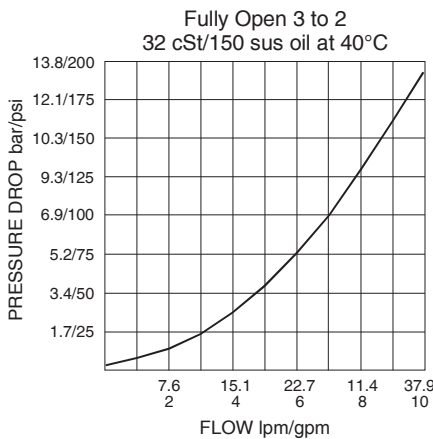
### USASI:



### ISO:

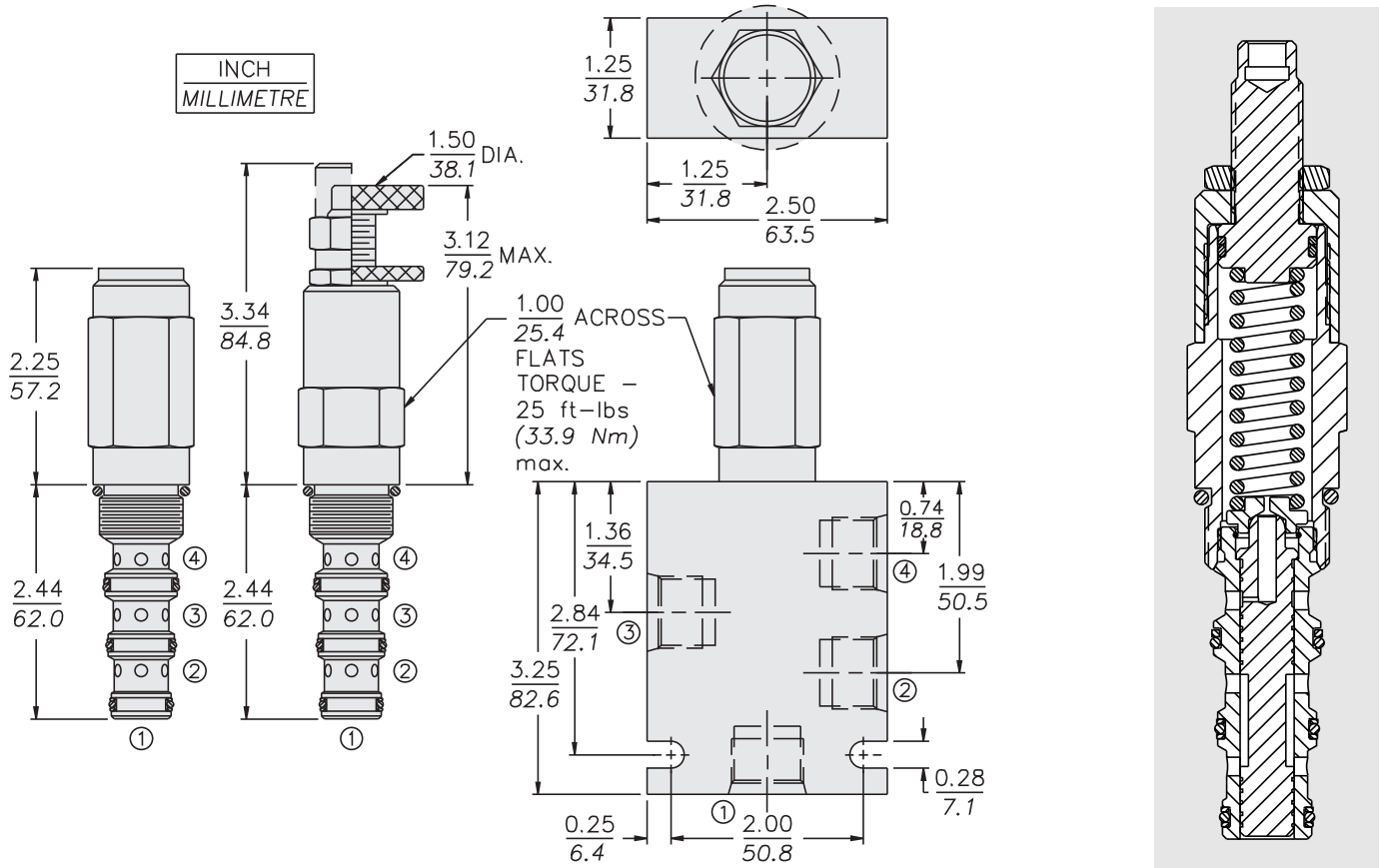


## PERFORMANCE (Cartridge Only)



**PS10-41**

**DIMENSIONS**



**MATERIALS**

**Cartridge:** Weight: 0.34 kg. (0.70 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.34 kg. (0.70 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron and steel bodies available; dimensions may differ. See page 8.010.1.

**TO ORDER**

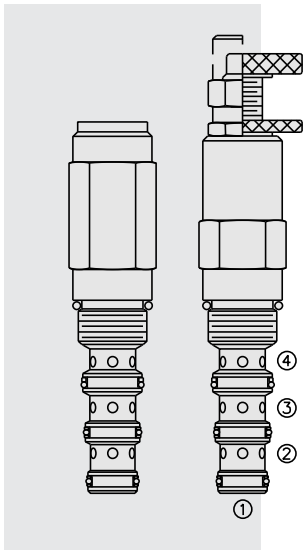
**PS10-41** - - - /

<p><b>Adjustment Option</b></p> <p>1/4 in. Hex Allen Head <b>A</b></p> <p>1-1/2 in. Dia. Alum Knob <b>B</b></p> <p>Option A w/Cover Cap <b>C</b></p> <p>Factory Preset Non-Adjst. <b>F</b></p> <p>Factory Preset Hidden Adjustment <b>H</b></p> <p>Option C w/Lockwire Holes <b>L</b></p>	<p><b>Porting</b></p> <p>Cartridge Only <b>0</b></p> <p>SAE 6 <b>6T</b></p> <p>SAE 8 <b>8T</b></p> <p>1/4 in. BSP* <b>2B</b></p> <p>3/8 in. BSP* <b>3B</b></p>	<p><b>Seals</b></p> <p>Buna N (Std.) <b>N</b></p> <p>Fluorocarbon <b>V</b></p>	<p><b>Setting in bars<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:</p> <p><b>M25</b> 25 bar</p> <p><b>M100</b> 100 bar</p> <p><b>Setting in psi<sup>†</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:</p> <p><b>9.0</b> 900 psi</p> <p><b>21.0</b> 2100 psi</p>	<p><b>Spring Range</b></p> <p><b>4</b> 2.8 to 27.6 bar (40 to 400 psi)</p> <p><b>22</b> 15.2 to 151.7 bar (220 to 2200 psi)</p>
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\*BSP Body; U.K. Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# PS10-43 Sequence, 3-Way, External Pilot/Internal Drain



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with external pilot and internal spring chamber drain. It is designed to function as a remote pilot-operated three-way valve.

## OPERATION

In neutral (unpiloted), the **PS10-43** allows flow between 3 and 2 bidirectionally, while blocking at 4.

The spring chamber is constantly vented at 4.

On attainment of a pre-determined pressure at 1, the cartridge shifts to close 3 to 2, while opening 3 to 4. Note that back-pressure value at 4 must be added to the selected pressure setting to determine pilot pressure.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 151.7 bar (2200 psi).
- Hardened precision spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 240 bar (3500 psi)

**Flow:** See Performance Chart

**Internal Leakage:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Standard Spring Ranges:** 2.8 to 27.6 bar (40 to 400 psi);  
15.2 to 151.7 bar (220 to 2200 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

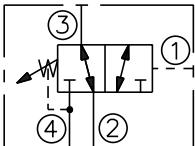
**Cavity:** VC10-4; See page 9.110.1

**Cavity Tool:** CT10-4XX; See page 8.600.1

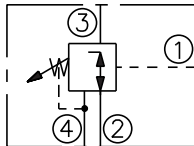
**Seal Kit:** SK10-4X-BMM; See page 8.650.1

## SYMBOLS

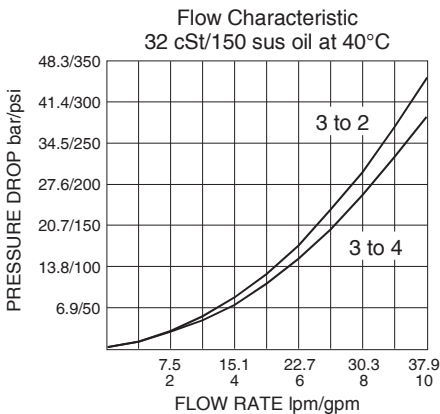
### USASI:



### ISO:

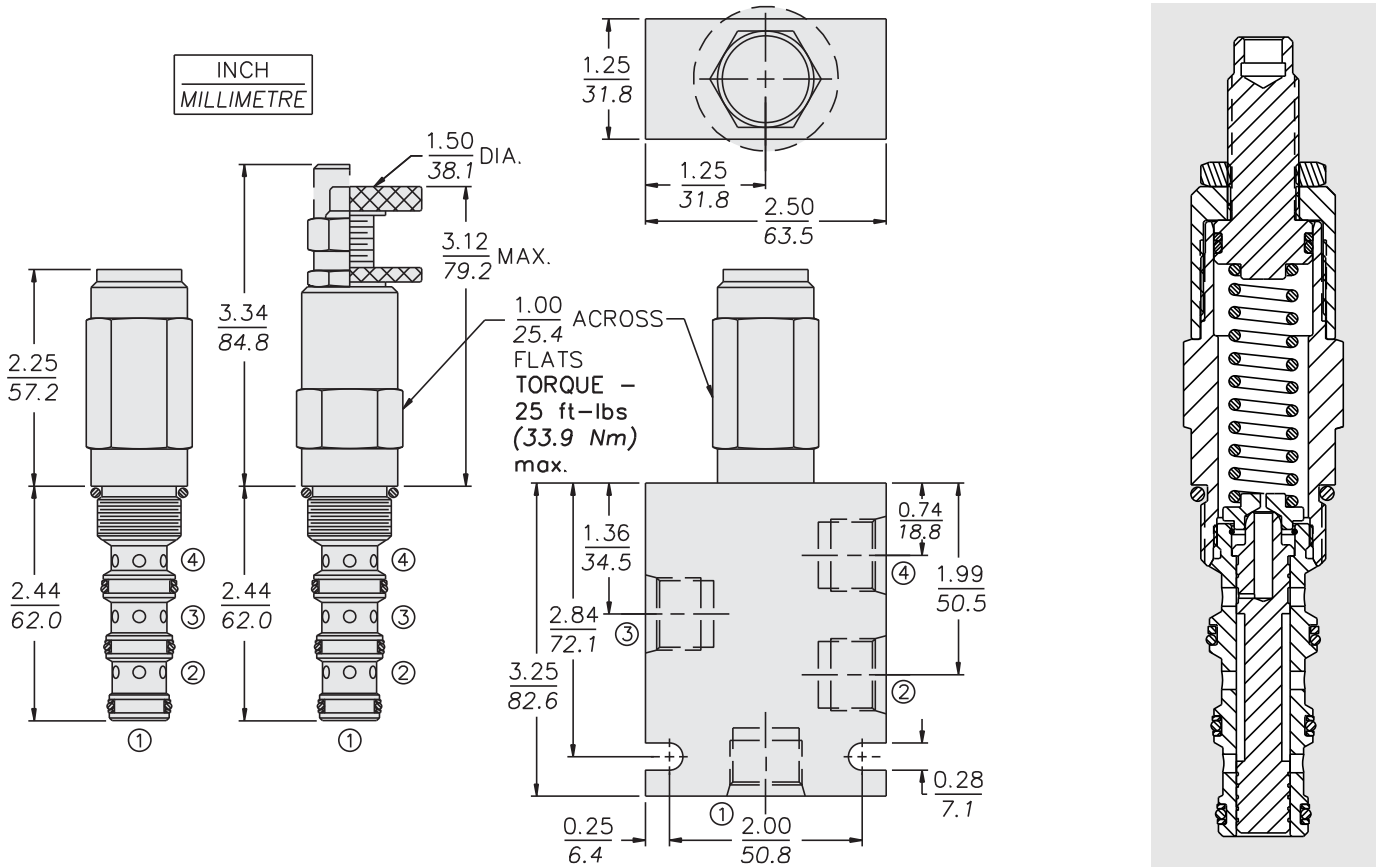


## PERFORMANCE (Cartridge Only)



# PS10-43

## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.34 kg. (0.70 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.34 kg. (0.70 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

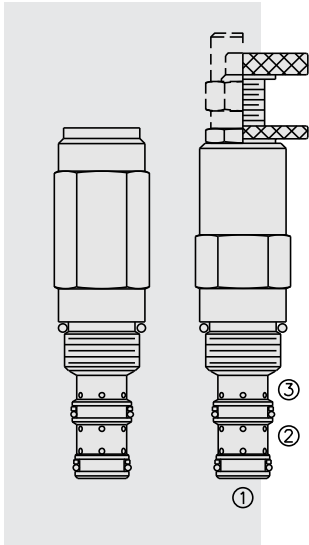
## TO ORDER

<b>PS10-43</b> - - - /		
<b>Adjustment Option</b>		<b>Setting in bar<sup>†</sup></b>
1/4 in. Hex Allen Head	<b>A</b>	(Blank) for Adjustable, or Specify, for example:
1-1/2 in. Dia. Alum Knob	<b>B</b>	<b>M25</b> 25 bar
Option A w/Cover Cap	<b>C</b>	<b>M100</b> 100 bar
Factory Preset Non-Adjst.	<b>F</b>	<b>Setting in psi<sup>†</sup></b>
Factory Preset		(Blank) for Adjustable, or Specify, for example:
Hidden Adjustment	<b>H</b>	<b>9.0</b> 900 psi
Option C		<b>21.0</b> 2100 psi
w/Lockwire Holes	<b>L</b>	
<b>Porting</b>		<b>Spring Range</b>
Cartridge Only	<b>0</b>	<b>4</b> 2.8 to 27.6 bar (40 to 400 psi)
SAE 6	<b>6T</b>	<b>22</b> 15.2 to 151.7 bar (220 to 2200 psi)
SAE 8	<b>8T</b>	
1/4 in. BSP*	<b>2B</b>	
3/8 in. BSP*	<b>3B</b>	
<b>Seals</b>		
Buna N (Std.)	<b>N</b>	
Fluorocarbon	<b>V</b>	

\*BSP Body; U.K. Mfr. Only

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential.

# KS10-30 Kick-Down, Sequence, Internal Pilot



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain, designed to direct flow to a secondary circuit once a pre-determined pressure level is attained in the primary circuit. The valve will remain shifted until the pressure in the secondary circuit falls below a lower pressure setting determined by a second spring.

## OPERATION

In its steady state, the **KS10-30** blocks flow at 1, while allowing flow to pass from 2 to 3. On attainment of a pre-determined pressure at 1, the cartridge shifts to open 1 to 2. The 1 to 2 flow path will remain open until the pressure in the secondary circuit falls below a lower pressure setting determined by a second spring.

Note: Primary spring setting should be greater than secondary spring value.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 207 bar (3000 psi)

**Flow:** See Performance Chart

**Internal Leakage 1 to 2:** 82 cc/minute (5 cu. in./minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 1 when 0.95 lpm (0.25 gpm) attained 1 to 2

**Standard Spring Ranges (Primary Spring):**

10 to 103 bar (150 to 1500 psi); 27.6 to 207 bar (400 to 3000 psi)

**Standard Spring Setting (Optional Secondary Spring):**

7 bar (100 psi); 10 bar (150 psi); 14 bar (200 psi); 17 bar (250 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

**Installation:** No restrictions; See page 9.020.1

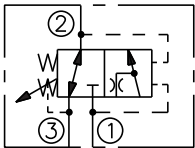
**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

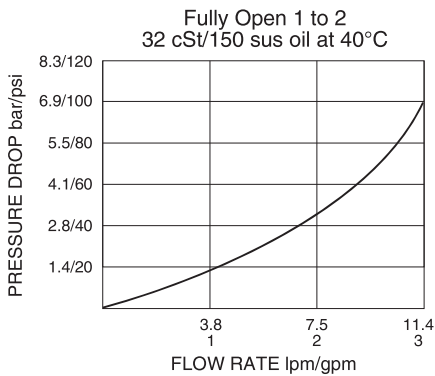
**Seal Kit:** SK10-3X-BB; See page 8.650.1

## SYMBOLS

### USASI/ISO:

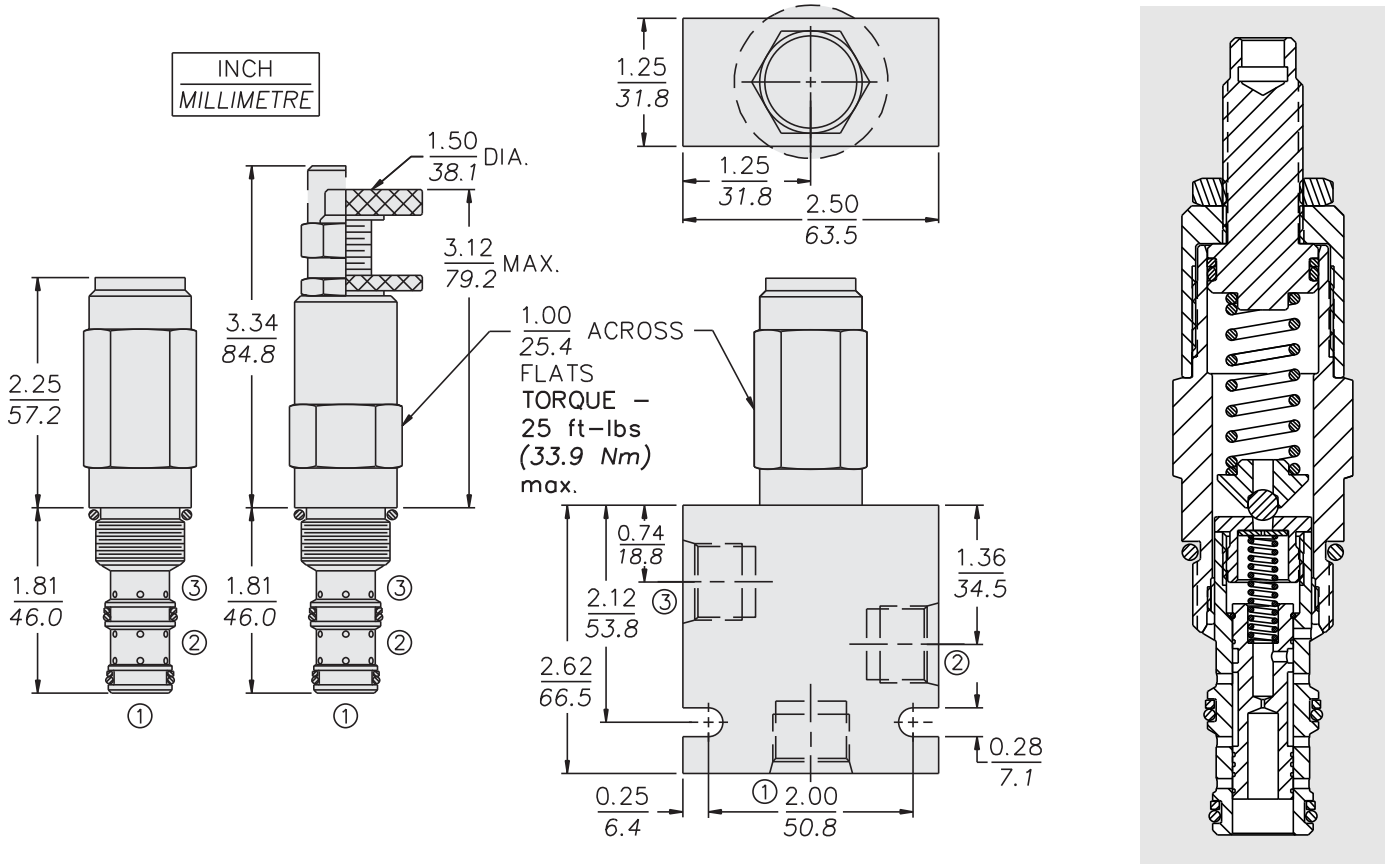


## PERFORMANCE (Cartridge Only)





## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.)  
 Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

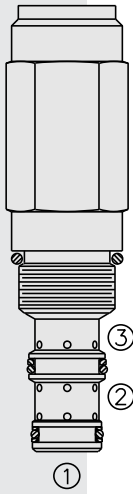
## TO ORDER

**KS10-30** - - - /

<p><b>Adjustment Option</b></p> <ul style="list-style-type: none"> <li>1/4 in. Hex Allen Head <b>A</b></li> <li>1-1/2 in. Dia. Alum Knob <b>B</b></li> <li>Option A w/Cover Cap <b>C</b></li> <li>Factory Preset Non-Adjst. <b>F</b></li> <li>Factory Preset Hidden Adjustment <b>H</b></li> <li>Option C w/Lockwire Holes <b>L</b></li> </ul>	<p><b>Porting</b></p> <ul style="list-style-type: none"> <li>Cartridge Only <b>0</b></li> <li>SAE 6 <b>6T</b></li> <li>SAE 8 <b>8T</b></li> <li>1/4 in. BSP* <b>2B</b></li> <li>3/8 in. BSP* <b>3B</b></li> </ul>	<p><b>Seals</b></p> <ul style="list-style-type: none"> <li>Buna N (Std.) <b>N</b></li> <li>Fluorocarbon <b>V</b></li> </ul>	<p><b>Primary Spring Setting<sup>‡</sup></b></p> <p>(Blank) for Adjustable, or Specify, for example:</p> <ul style="list-style-type: none"> <li><b>9.0</b> 900 psi</li> <li><b>21.0</b> 2100 psi</li> </ul> <p><b>Secondary Spring Setting</b></p> <ul style="list-style-type: none"> <li><b>A</b> 7 bar (100 psi)</li> <li><b>B</b> 10 bar (150 psi)</li> <li><b>C</b> 14 bar (200 psi)</li> <li><b>D</b> 17 bar (250 psi)</li> </ul> <p><b>Primary Spring Range</b></p> <ul style="list-style-type: none"> <li><b>15</b> 10 to 103 bar (150 to 1500 psi)</li> <li><b>30</b> 27.6 to 207 bar (400 to 3000 psi)</li> </ul>
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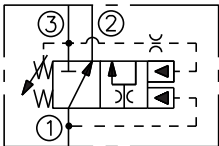
\*BSP Body; U.K. Mfr. Only      †Adjustable valves will be preset to approx. 50% of spring max. potential.

# KS10-31 Kick-Down, Sequence, Internal Pilot

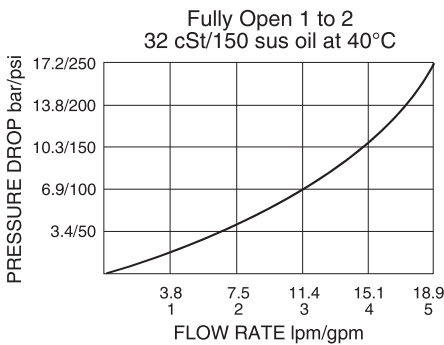


## SYMBOLS

### USASI/ISO:



## PERFORMANCE (Cartridge Only)



## DESCRIPTION

A screw-in, cartridge-style, direct-acting, spool-type, hydraulic sequence valve with internal pilot and spring chamber drain, designed to direct flow to a secondary circuit once a pre-determined pressure level is attained in the primary circuit. The valve will remain shifted until the pressure in the secondary circuit falls below a lower pressure setting determined by a second spring.

## OPERATION

In its steady state, the **KS10-31** blocks flow at 3, while allowing flow to pass from 1 to 2. On attainment of a pre-determined pressure at 1, the cartridge shifts to open 2 to 3.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Optional spring ranges to 207 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 207 bar (3000 psi)

**Flow:** See Performance Chart

**Internal Leakage 1 to 2:** 115 cc/minute (7 cu. in./minute) max. to 85% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 1 when 0.95 lpm (0.25 gpm) attained 2 to 3

**Standard Spring Ranges (Primary Spring):**  
27.6 to 207 bar (400 to 3000 psi)

**Standard Spring Setting (Optional Secondary Spring):**  
7 bar (100 psi); 10 bar (150 psi); 14 bar (200 psi); 17 bar (250 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

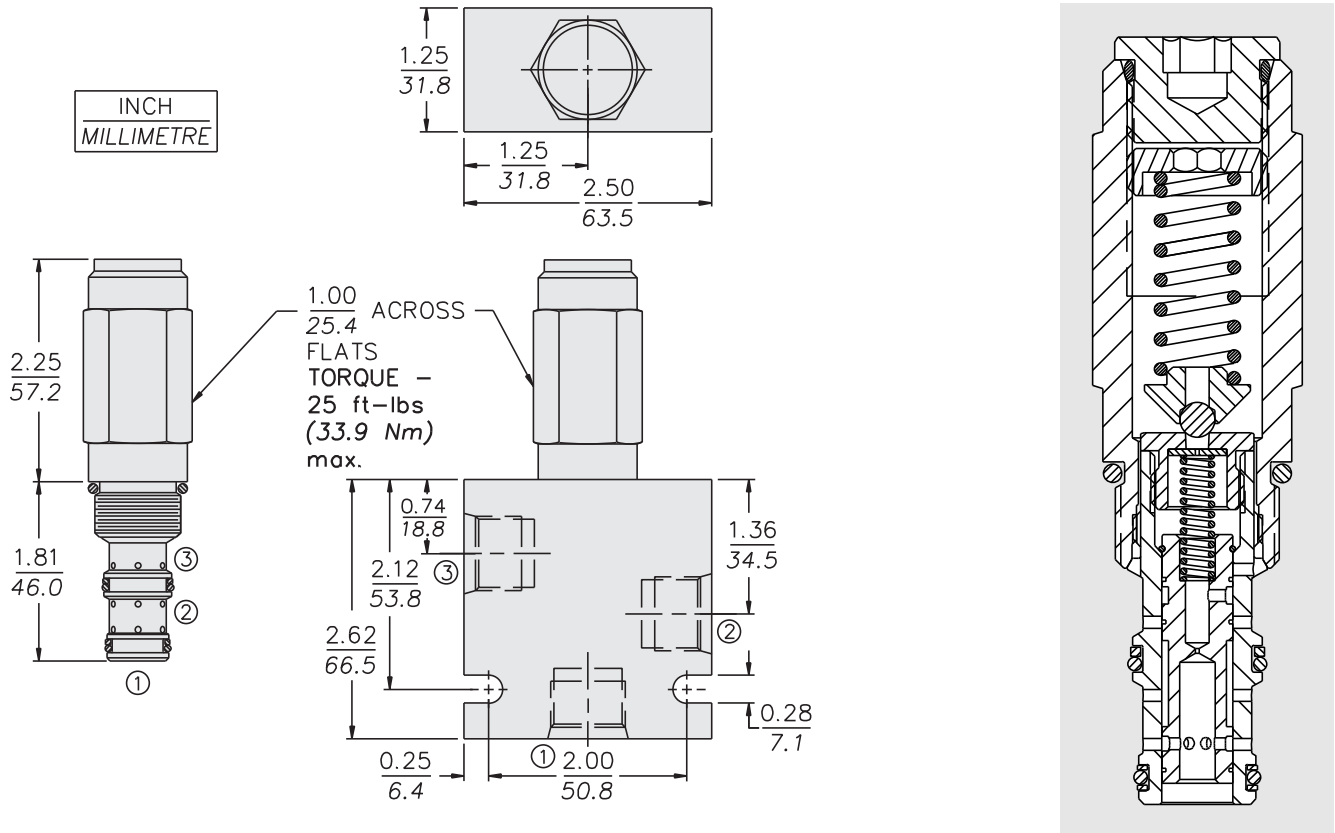
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

**Seal Kit:** SK10-3X-BB; See page 8.650.1

**DIMENSIONS**

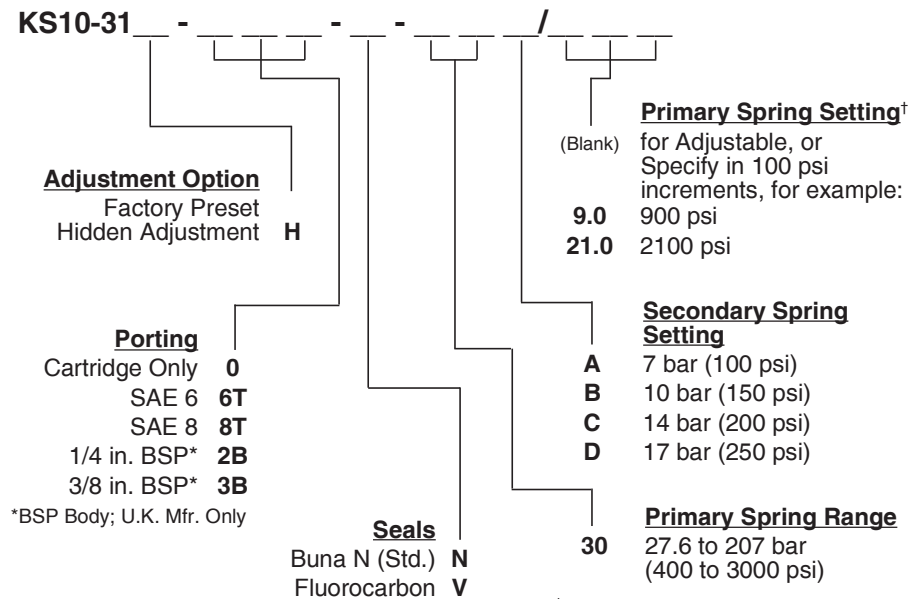


**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

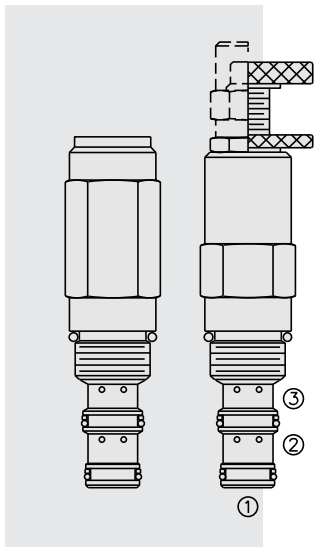
**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.)  
 Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

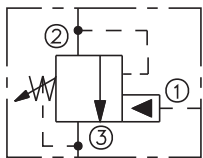


†Adjustable valves will be preset to approx. 50% of spring max. potential.

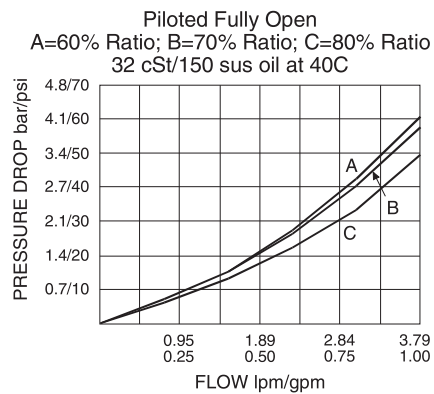
# UP10-31 Unloading Pilot, Internal Drain



## SYMBOL



## PERFORMANCE (Cartridge Only)



**Note:** This valve, the UP10-31, is the replacement for the obsolete UP10-30.

## DESCRIPTION

A screw-in, cartridge-style, remote sequence, pilot unloading valve, with optional fixed “unload/reload” pressure ratios for use in accumulator-type hydraulic systems.

## OPERATION

In its steady state, the **UP10-31** blocks flow from 2 to 3. On attainment of a pre-determined pressure at 1, the spool shifts to allow flow from 2 to 3.

Since the spring chamber is vented at 3, back pressure at 3 will directly (1:1) affect the valve’s setting.

If pressure at 1 drops to a level below the ratio-established reload value, the valve will close, blocking flow from 2 to 3.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Spring range to 206 bar (3000 psi).
- Hardened spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 207 bar (3000 psi)

**Flow:** 3.8 lpm (1 gpm)

**Ratio Between Unloading & Reloading Pressure:** 60% ±5%; 70% ±5%; 80% ±5%

**Pressure Setting Range:** 69 to 207 bar (1000 to 3000 psi)

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

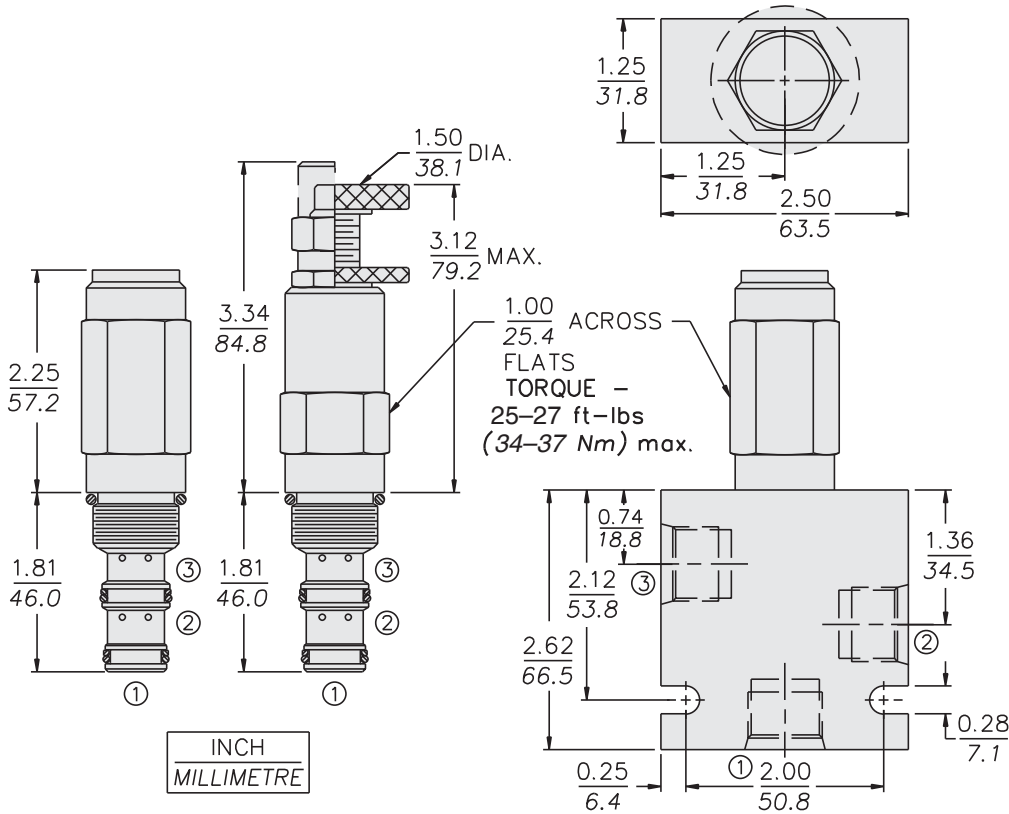
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-3; See page 9.110.1

**Cavity Tool:** CT10-3XX; See page 8.600.1

**Seal Kit:** SK10-3X-MM; See page 8.650.1

**DIMENSIONS**



INCH  
MILLIMETRE

**MATERIALS**

**Cartridge:** Weight: 0.27 kg. (0.60 lbs.)  
Steel with hardened work surfaces.  
Zinc-plated exposed surfaces.  
Buna N O-rings and polyester elastomer back-ups standard.  
Anodized aluminum knobs.

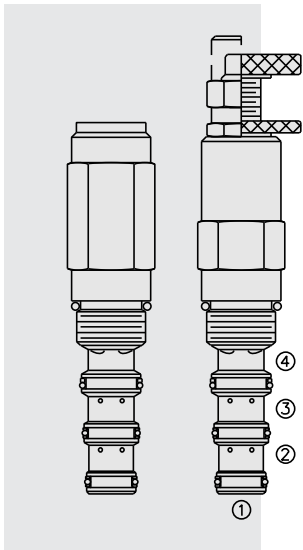
**Standard Ported Body:** Weight: 0.36 kg. (0.80 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

**UP10-31 - - - - - 30 /**

<b>Adjustment Option</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>F</b>	<b>H</b>	<b>L</b>
1/4 in. Hex Allen Head						
1-1/2 in. Dia. Alum Knob						
Option A w/Cover Cap						
Factory Preset Non-Adjst.						
Factory Preset						
Hidden Adjustment						
(See page 6.003.1)						
Option C						
w/Lockwire Holes						
<b>Porting</b>	<b>0</b>	<b>6T</b>	<b>8T</b>	<b>2B</b>	<b>3B</b>	
Cartridge Only						
SAE 6						
SAE 8						
1/4 in. BSP*						
3/8 in. BSP*						
*BSP Body; U.K. Mfr. Only						
<b>Seals</b>	<b>N</b>	<b>V</b>				
Buna N (Std.)						
Fluorocarbon						
<b>Setting in bar<sup>†</sup></b>						
(Blank) for Adjustable, or						
Specify, for example:						
<b>M69</b>						
69 bar						
<b>M207</b>						
207 bar						
<b>Setting in psi<sup>†</sup></b>						
(Blank) for Adjustable, or						
Specify, for example:						
<b>10.0</b>						
1000 psi						
<b>23.5</b>						
2350 psi						
<sup>†</sup> Adjustable valves will be preset to approx. 50% of spring max. potential.						
<b>Pressure Ratio</b>	<b>60</b>	<b>70</b>	<b>80</b>			
60% Ratio						
70% Ratio						
80% Ratio						

# UP10-40 Piloted Unloading Valve



## DESCRIPTION

A screw-in, cartridge-style, remote sequence, piloted unloading valve with optional fixed unload/reload pressure ratios of 60%, 70% or 80%, for use in accumulator-type hydraulic systems..

## OPERATION

In its steady state, the **UP10-40** blocks flow from 2 to 3. On attainment of a pre-determined pressure at 1, the spool shifts to allow flow from 2 to 3. The spring chamber is vented to 4.

If pressure at 1 drops to a level below the ratio-established reload value, the valve will close, blocking flow from 2 to 3.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Adjustments prohibit springs from going solid.
- Hardened precision spool and cage for long life.
- Industry common cavity.

## RATINGS

**Operating Pressure:** 206 bar (3000 psi) with standard Buna N seals

**Flow:** 3.8 lpm (1 gpm); See Performance Chart

**Pressure Setting Range:** 69 to 207 bar (1000 to 3000 psi)

**Loading and Unloading Ratios:** 60% ±5%, 70% ±5%, 80% ±5%

**Temperature:** -40 to 120°C with standard Buna seals

**Filtration:** See page 9.010.1

**Fluids:** Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

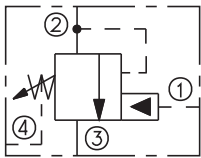
**Installation:** No restrictions; See page 9.020.1

**Cavity:** VC10-4; See page 9.110.1

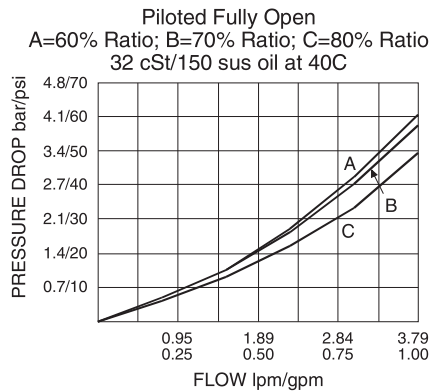
**Cavity Tool:** CT10-4XX; See page 8.600.1

**Seal Kit:** SK10-4X-MMM; See page 8.650.1

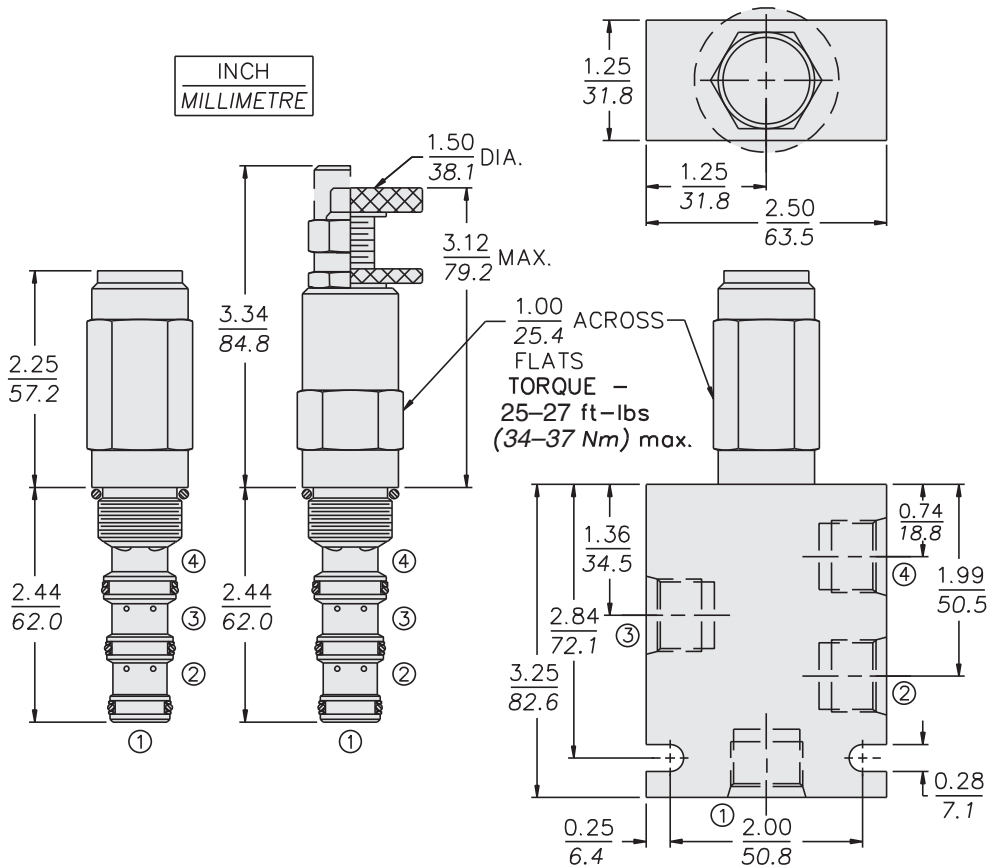
## SYMBOL



## PERFORMANCE (Cartridge Only)



## DIMENSIONS



## MATERIALS

**Cartridge:** Weight: 0.34 kg. (0.70 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs and caps.

**Standard Ported Body:** Weight: 0.34 kg. (0.70 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

## TO ORDER

