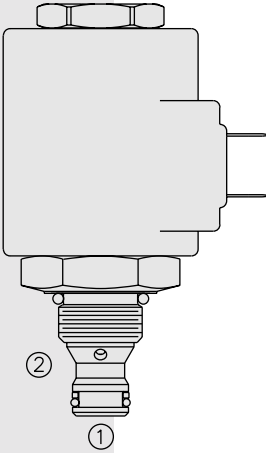


## TS38-21 Proportional Electric Relief Valve

U.S. Patent  
6,267,350



### DESCRIPTION

A screw-in, cartridge-style, single-stage, poppet-type pressure relieving valve, which can be infinitely adjusted across a prescribed range using a variable electric input. Pressure output is inversely proportional to DC current input.

### OPERATION

The TS38-21 blocks flow from ① to ② until sufficient pressure is present at ① to open the valve by overcoming the preset spring force. With no current applied, the valve will relieve at  $\pm 50$  psi of the spring maximum. Applying current to the coil reduces the induced spring force thereby reducing the valve setting.

### FEATURES

- 12 and 24 volt coils standard.
- Optional waterproof E-Coils rated up to IP69K.
- Industry common cavity.
- Hardened parts for long life.

### RATINGS

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

**Maximum Control Current:** 1.10 amps for 12 VDC coil; 0.55 amps for 24 VDC coil

**Relief Pressure Range from Zero to Maximum Control Current:**

Minimum Pressure is factory adjustable.

**(A)** 207–6.9 bar (3000–100 psi)

**(B)** 138–6.9 bar (2000–100 psi)

**(C)** 69–6.9 bar (1000–100 psi)

**Rated Flow:** 1.1 lpm/0.3 gpm;  $\Delta P = 10$  bar (150 psi), cartridge only,  
① to ② coil energized

**Flow Path:** Free Flow: ① to ② coil energized; Relieving: ① to ② coil de-energized

**Temperature:** -40 to 120°C (-40 to 250°F) with standard 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 ssu)

**Installation Recommendation:** When possible, the valve should be mounted below the reservoir oil level. This will maintain oil in the armature preventing trapped air instability. If this is not feasible, mount the valve horizontally for best results.

**Cavity:** VC08-2; See page 9.108.1; **Cavity Tool:** CT08-2XX; See page 8.600.1

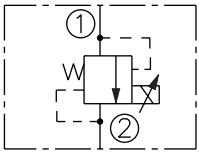
**Seal Kit:** SK08-2X-B; See page 8.650.1

**Coil Nut:** Part No. 4540550;

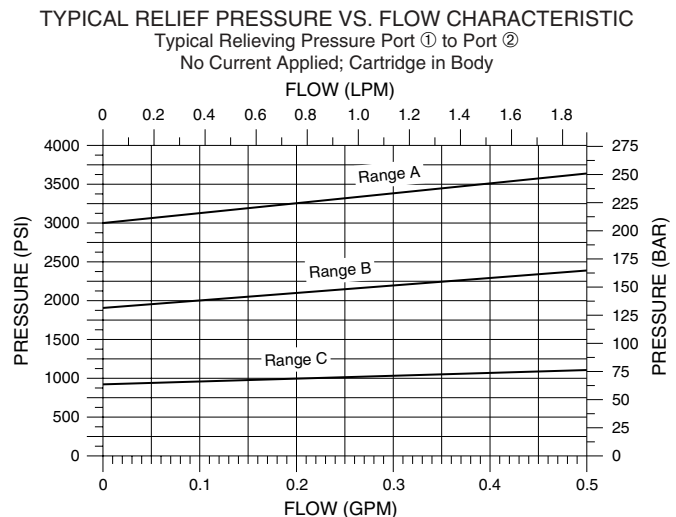
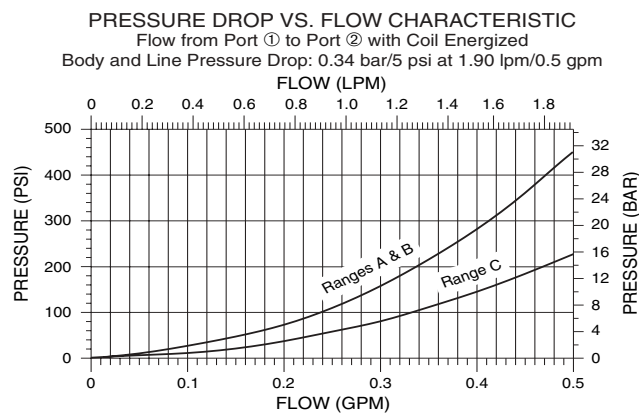
For E-coils manufactured prior to 1-1-04, see page 3.400.1 for coil nut info.

### SYMBOLS

#### USAS/ISO:

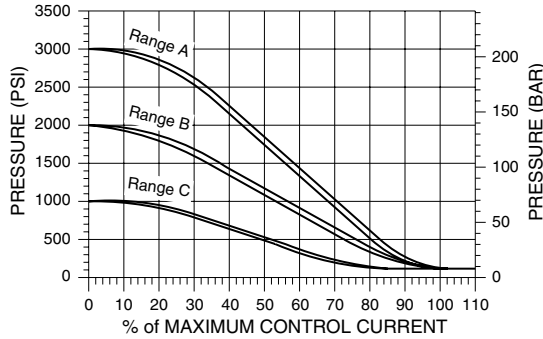


### PERFORMANCE



**PERFORMANCE (continued)**

RELIEF PRESSURE VS. CURRENT 200 Hz PWM  
Relieving Pressure Port ① to Port ②  
with Constant Flow of 0.76 lpm/0.2 gpm  
Body and Line Pressure Drop: 0.34 bar/5 psi at 1.90 lpm/0.5 gpm

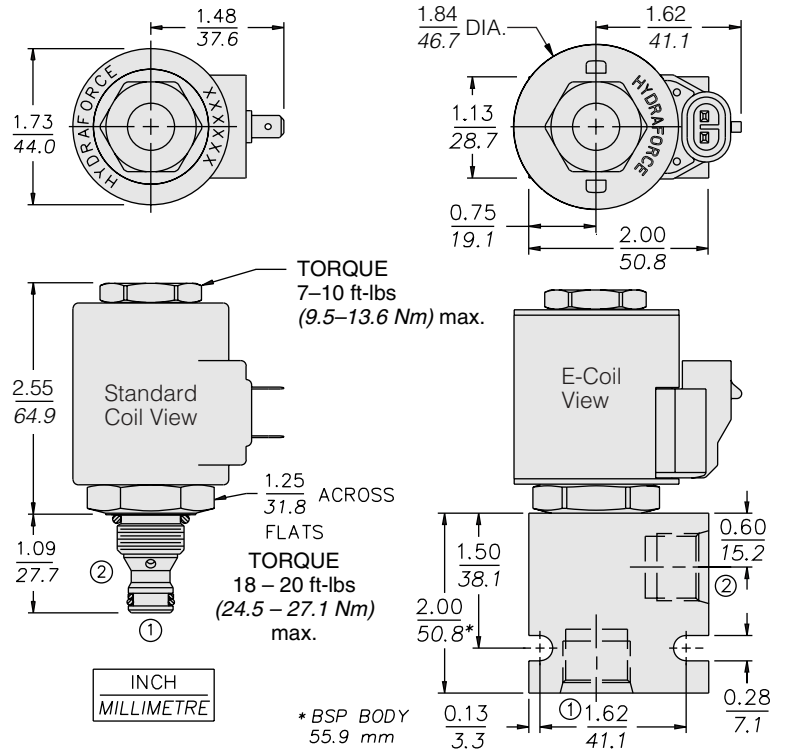


**Recommended Controllers (See Section 3)**

Input Sig. w/12V or 24V Coil	DIN Coil Mount	PCB Board	Metal Box	DIN Rail Mount
0-5 VDC	4000161	4000194	4000174	4000136
0-10 VDC	4000165	4000141	4000182	4000137
4-20 mA	4000169	4000143	4000186	4000139
PWM	—	4000144	4000133	4000140

**DIMENSIONS**

U.S. Patent 6,267,350



**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.

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi); See page 8.008.1. Ductile iron and steel bodies available; dimensions may differ; consult factory.

**Standard Coil:** Weight: 0.32 kg. (0.7 lbs.); Unitized, thermoplastic encapsulated, Class H high temperature magnetwire; See page 3.200.1.

**E-Coil:** Weight: 0.41 kg. (0.9 lbs.); Fully encapsulated with rugged external metal shell; Rated up to IP69K with integral connectors; **Note: See page 3.400.1 for all E-Coil retrofit applications.**

**TO ORDER**

<b>TS38-21</b>	-	-	-	-	-	-	-	-	-
<b>Maximum Operating Pressure</b>									
207 bar (3000 psi)	<b>A</b>								
138 bar (2000 psi)	<b>B</b>								
69 bar (1000 psi)	<b>C</b>								
<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>								
*BSP Body; U.K. Mfr. Only									
<b>Seals</b>									
Buna N (Std.)	<b>N</b>								
Fluorocarbon	<b>V</b>								
<b>Termination Std. Coil</b>									
<b>DS</b> Dual Spades									
<b>DG</b> DIN 43650									
<b>DL</b> Leadwires (2)									
<b>DL/W</b> Leads w/Weatherpak® Connectors									
<b>DR</b> Deutsch DT04-2P									
<b>Termination E-Coil</b>									
<b>ER</b> Deutsch DT04-2P (IP69K Rated)									
<b>EY</b> Metri-Pack® 150 (IP69K Rated)									
Coils with internal diode are available. Consult factory.									
<b>Voltage</b>									
<b>0</b> Less Coil									
<b>10</b> 10 VDC (1.30 amps max.)									
<b>12</b> 12 VDC (1.10 amps max.)									
<b>20</b> 20 VDC (0.65 amps max.)									
<b>24</b> 24 VDC (0.55 amps max.)									