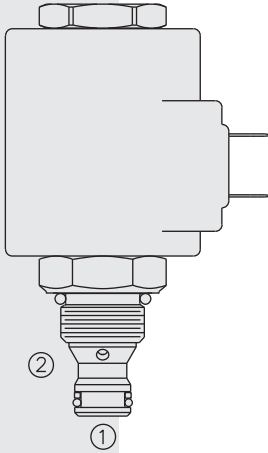


ELECTRO-PROPORTIONAL VALVES—PRESSURE CONTROLS

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 ± 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); (D) 241–6.9 bar (3500–100 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 sus); See Temperature and Oil Viscosity, page 9.060.1

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

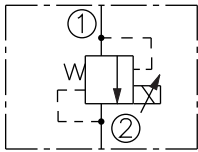
Seal Kit: SK08-2X-B; See page 8.650.1

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:

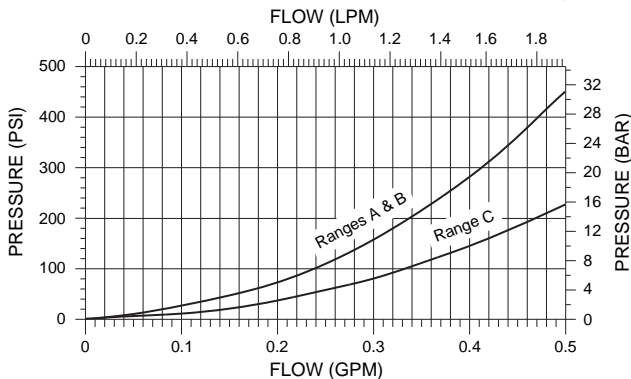


PERFORMANCE

PRESSURE DROP VS. FLOW CHARACTERISTIC

Flow from Port ① to Port ② with Coil Energized

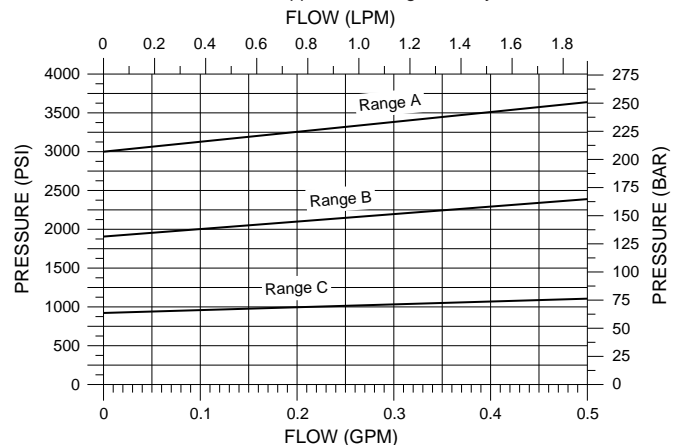
Body and Line Pressure Drop: 0.34 bar/5 psi at 1.90 lpm/0.5 gpm



TYPICAL RELIEF PRESSURE VS. FLOW CHARACTERISTIC

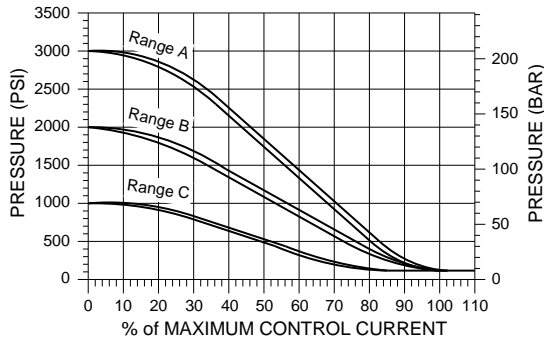
Typical Relieving Pressure Port ① to Port ②

No Current Applied; Cartridge in Body



PERFORMANCE (continued)

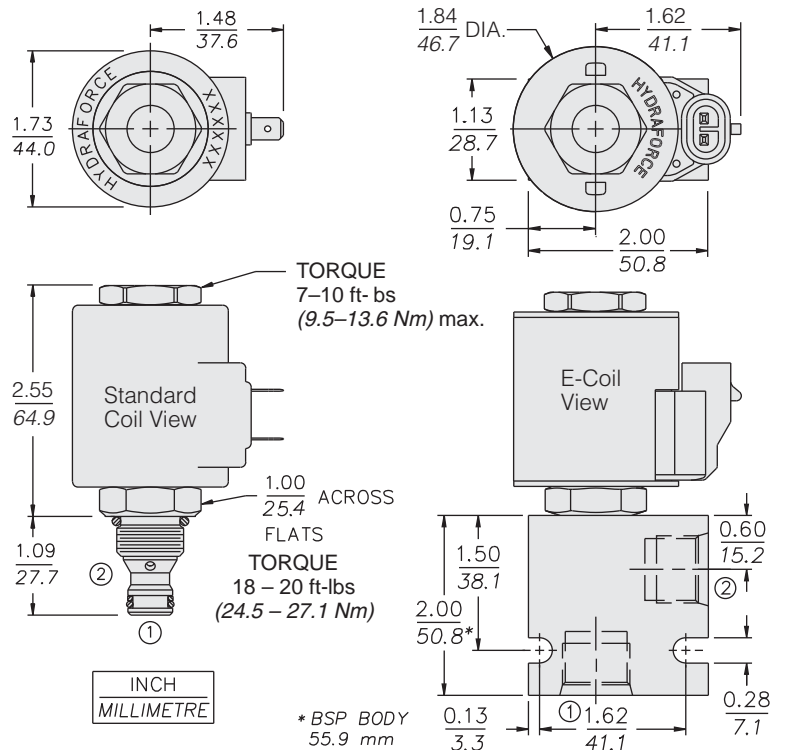
RELIEF PRESSURE VS. CURRENT 200 Hz PWM
Relieving Pressure Port ① to Port ②
with Constant Flow of 0.76 lpm/0.2 gpm
Body and Line Pressure Drop: 0.34 bar/5 psi at 1.90 lpm/0.5 gpm



Recommended Electronic Controllers:
Model **EFDR2** Multi-Input Fan Drive Controller.
For more information go to:
<http://www.hydraforce.com/Electro/fandrive.htm>
or
Recommended Electronic Controllers
catalog page 2.001.1 (Table 2)

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 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.008.1

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

TS38-21		-	-	-	-	-
Maximum Operating Pressure						Termination Std. Coil
207 bar (3000 psi)	A					DS Dual Spades
138 bar (2000 psi)	B					DG DIN 43650
69 bar (1000 psi)	C					DL Leadwires (2)
241 bar (3500 psi)	D					DL/W Leads w/Weatherpak® Connectors
						DR Deutsch DT04-2P
						Termination E-Coil
Porting						ER Deutsch DT04-2P (IP69K Rated)
Cartridge Only	0					EY Metri-Pack® 150 (IP69K Rated)
SAE 6	6T					
3/8 in. BSP*	3B					
1/2 in. BSP*	4B					
						Coils with internal diode are available. Consult factory.
Seals						Voltage
Buna N (Std.)	N					0 Less Coil
Fluorocarbon	V					10 10 VDC (1.30 amps max.)
						12 12 VDC (1.10 amps max.)
						20 20 VDC (0.65 amps max.)
						24 24 VDC (0.55 amps max.)