

Part number:

**HYDROMA**

HYDRAULICKÉ SYSTÉMY

**HIDROMA  
SISTEMS**

UKŁADY HYDRAULICZNE

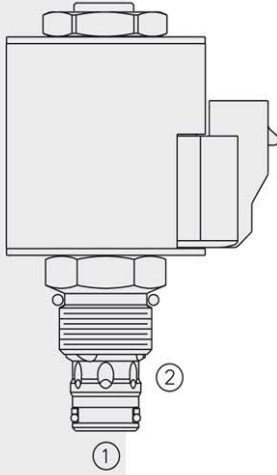
**HYDROMA**

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

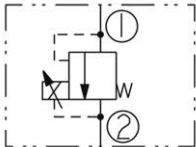
## ELECTRO-PROPORTIONAL VALVES—PRESSURE CONTROLS

# TS10-27 Proportional Pressure Relief Valve with

U.S. Patents  
6,267,350  
&  
7,137,406

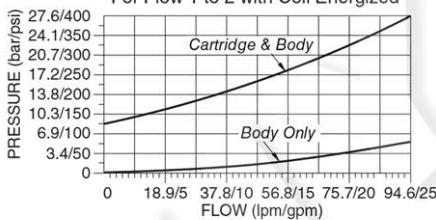


### ISO SYMBOL

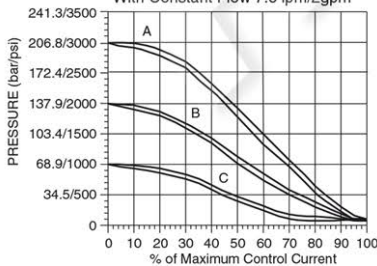


### PERFORMANCE

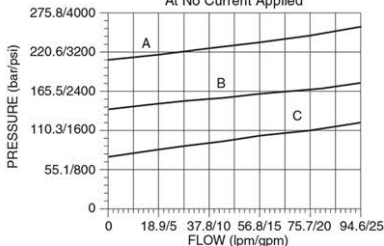
Pressure Drop vs. Flow Characteristic  
For Flow 1 to 2 with Coil Energized



TS10-27 A, B, C Relief Pressure vs. Current (DC)  
Relieving Pressure 1 to 2;  
With Constant Flow 7.6 lpm/2gpm



TS10-27 A, B, C  
Typical Relief Pressure vs. Flow  
Typical Relieving Pressure 1 to 2  
At No Current Applied



### DESCRIPTION

A screw-in, cartridge-style, pilot-operated, spool-type hydraulic relief valve, which can be infinitely adjusted across a prescribed range using a variable electric input. Pressure output is inversely proportional to DC current input. This valve is intended for use as a pressure-limiting device in demanding applications.

### OPERATION

The **TS10-27** blocks flow from 1 to 2 until sufficient pressure is present at 1 to open the valve by overcoming the preset induced spring force. With no current applied, the valve will relieve at  $\pm 50$  psi of the range maximum. Applying current to the coil decreases the induced spring force, thereby reducing the valve setting.

Note: This valve is ideal for hydraulic fan drive applications. Consult factory for electronic controllers specifically designed for fan drive applications.

### FEATURES

- Adjustable or fixed relief pressure settings.
- Higher pressure 330.9 bar (4800 psi) factory-set model F available.
- 12 and 24 volt coils standard.
- Corrosion-resistant, 1000-hour-salt-spray-rated protective coating standard.
- Industry common cavity.

### RATINGS

**Pressure Rating (For TS10-27A, B and C):** 275.8 bar (4000 psi) at Port 1;  
(For TS10-27F): 330.9 bar (4800 psi) at Port 1

**Proof Pressure (For TS10-27A, B and C):** 344.7 bar (5000 psi) at Port 1; 206.8 bar (3000 psi) at Port 2; (For TS10-27F): 413.7 bar (6000 psi) at Port 1 and 206.8 bar (3000 psi) at Port 2

**Burst Pressure:** 814 bar (11,800 psi) at all ports

**Relief Pressure Range at Zero Current - A:** 206.8-6.9 bar (300-100 psi);

**B):** 138-6.9 bar (2000-100 psi); **C):** 69-6.9 bar (1000-100 psi); **F):** 275.8 to 55.2 bar (4000 to 800 psi)

### Electrical Parameters:

Coil	*Typical Max. Current (A) at 0 gpm		Typical Resistance $\pm 5\%$ @ 20°C (ohms)		Typical Apparent Inductance (mH)	
	12 VDC	24 VDC	12 VDC	24 VDC	12 VDC	24 VDC
D-Coil	1.10	0.55	6.7 $\pm 5\%$	25 $\pm 5\%$	134 mH	500 mH
E-Coil	1.20	0.55	7.32 $\pm 5\%$	29.3 $\pm 5\%$	139 mH	560 mH

\* For TS10-27F, Max. Current Range for 12 VDC D-coils is 1.25 to 0.95 and E-coils is 1.35 to 1.05. For 24 VDC D-coils it is 0.63 to 0.47 and E-coils 0.68 to 0.52. Consult factory for current range of specified pressure setting.

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

**A):** 206.8-6.9 bar (3000-100 psi) **B):** 138-6.9 bar (2000-100 psi)

**C):** 69-6.9 bar (1000-100 psi) **F):** Factory Set: 275.8-55.2 bar (4000-800 psi)

Note: Tank port pressure is additive to valve setting.

**Rated Flow:** 75.7 lpm (20 gpm),  $\Delta P = 20.7$  to 24.1 bar (300 to 350 psi), cartridge only, 1 to 2 coil energized

**Hysteresis (PMW 200 Hz):** **A):** 3.2%; **B):** 3.0%; **C):** 4.8% **F):** 4%

**Pressure Rise:** **A):** 0.48 bar/lpm (26.5 psi/gpm); **B):** 0.36 bar/lpm (20 psi/gpm);

**C):** 0.46 bar/lpm (25 psi/gpm) **F):** 1.86 bar/lpm (27 psi/gpm)

**Operating Fluid Temperature:** -40 to 100°C (-40 to 212°F) with standard Buna N seals; -26 to 204°C (-15 to 400°F) with fluorocarbon seals; -54 to 107°C (-65 to 225°F) 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

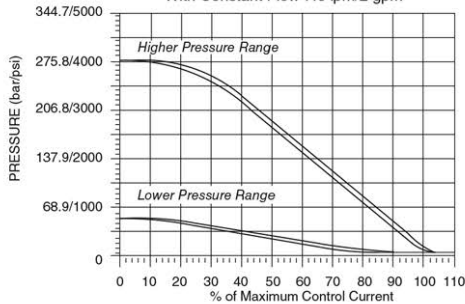
**Cavity:** VC10-2; See page 9.110.1 **Cavity Tool:** CT10-2XX; See page 8.600.1

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

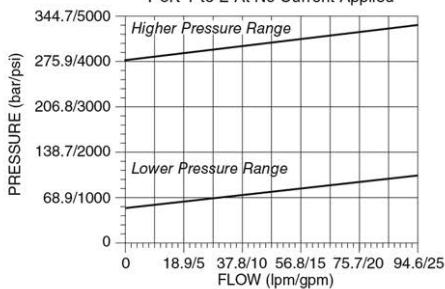
**Coil Nut:** Part No. 4540550; For E-coils manufactured prior to 1-1-04, see page 3.400.1 for coil nut info.

## PERFORMANCE (continued)

TS10-27F Relief Pressure vs. Current (DC)  
Relieving Pressure 1 to 2;  
With Constant Flow 7.6 lpm/2 gpm

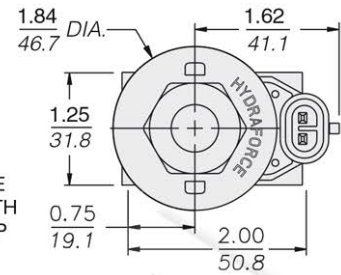
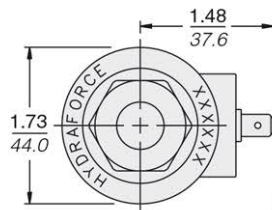


TS10-27F Typical Relief Pressure vs. Flow  
Port 1 to 2 At No Current Applied

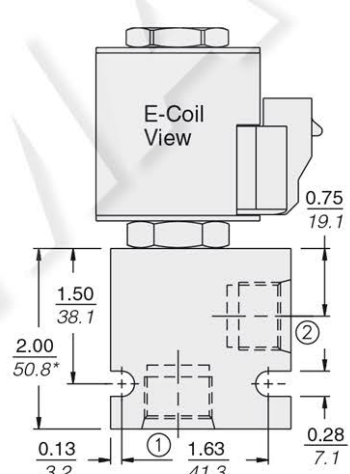
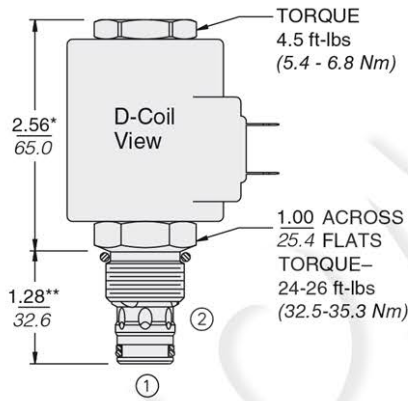


## DIMENSIONS

U.S. Patents 6,267,350 & 7,137,406



COIL MUST BE  
INSTALLED WITH  
LETTERING UP



INCH  
MILLIMETRE

\*BSP BODY  
55.9 mm

\* Dimensions for F are 2.589 (65.76)

\*\* Dimensions for F are 1.25 (31.8)

ALUMINUM BODY SHOWN FOR A, B, C;  
FOR F, THE HIGHER PRESSURE  
DUCTILE IRON BODY IS RECOMMENDED.  
DIMENSIONS WILL DIFFER.

## MATERIALS

**Cartridge:** Weight: 0.18 kg (0.40 lb) 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-up recommended for pressures over 240 bar (3500 psi).

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

**Standard Coil:** Weight: 0.27 kg (0.6 lb) Unitized thermoplastic encapsulated, Class H high temperature magnet wire. See page 3.200.1

**E-Coil:** Weight: 0.41 kg (0.9 lb) Fully encapsulated with rugged external metal shell. Rated up to IP69K with integral connectors. See page 3.400.1.

## TO ORDER

### TS10-27

**Pressure Code**  
207 bar (3000 psi) **A**  
138 bar (2000 psi) **B**  
69 bar (1000 psi) **C**  
Factory-Set **F**

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

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

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

**Pressure Setting  
(For TS10-27F)**  
(in psi)  
2650 psi 26.5  
(in bar)  
100 bar M100

**Coil Termination** **E-Coil** **D-Coil**  
Deutsch DT04-2P **ER** (IP69K) **DR** (IP65)  
Metri-Pack® 150 **EY** (IP69K) **DY** (IP65)  
Dual Lead Wires **EL** (IP69K) **DL** (IP65)  
Amp Jr. Timer **EJ** (IP67) —  
DIN 43650 **EG** (IP65) **DG** (IP65)  
Dual Spades — **DS** (IP65)

For Coils with Zener Diode, add "Z" to option code.  
For example: "ER/Z". Not available on all models.  
See coil option info. on pages 3.200.1 & 3.400.1

**Voltage**  
**0** Less Coil  
**12** 12 VDC (1.10 amps max.)  
**24** 24 VDC (0.55 amps max.)

2.862.2