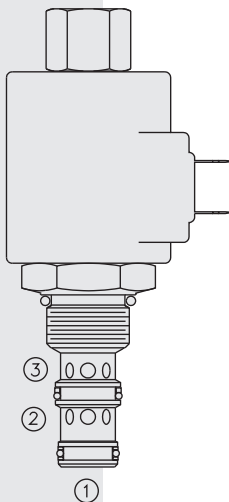
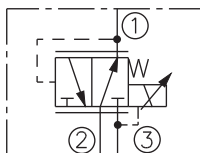


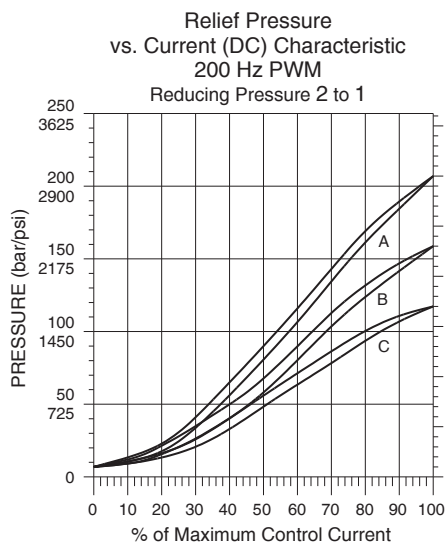
ELECTRO-PROPORTIONAL VALVES - PRESSURE CONTROL

TS10-36 Proportional Electric Reducing/RelievingU.S. Patent
7,137,406

ISO SYMBOL



PERFORMANCE



DESCRIPTION

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

OPERATION

With current applied to the valve coil, the **TS10-36** blocks flow from 2 to 1 until sufficient pressure is present at 1 to open the pilot section by offsetting the electrically induced solenoid force. Increasing electric current will increase the control (reduced) pressure at 1. With no current applied to the solenoid, the valve will relieve pressure at 1 at approximately 6,9 bar (100 psi), regardless of pressure at 2.

The TS10-36 has an optional manual override feature. This allows the valve to be set when the electric supply is lost. The manual setting is added to the electric setting, so when using the manual override feature to establish a minimum setting, care is required to prevent the system from becoming over-pressurized.

FEATURES

- Manual override option.
- Industry common cavity.
- 12 and 24 volt coils standard.
- Optional waterproof E-Coils rated up to IP69K.

RATINGS

Maximum Operating Pressure: 241 bar (3500 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	7.25 \pm 5%	28.35 \pm 5%	141	626
E-Coil	1.20	0.60	7.3 \pm 5%	29.4 \pm 5%	139	600

Relief Pressure Range from Zero to Maximum Control Current:

A: 6.9–207 bar (100–3000 psi)

B: 6.9–159 bar (100–2300 psi)

C: 6.9–117 bar (100–1700 psi)

Rated Flow: 57 lpm (15 gpm), $\Delta P=22.8$ bar (330 psi), Cartridge only, 1 to 3 coil de-energized

Maximum Pilot Flow: 0.21 lpm (0.08 gpm)

Flow Path: Free Flow: 1 to 3 coil de-energized; Reduced: 2 to 1 coil energized; Relieving: 1 to 3 coil energized

Temperature: -40 to 100°C (-40 to 212°F) for Buna N seals
-26° to 204°C (-15° to 400°F) with Fluorocarbon V 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: 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 (X = seal option)

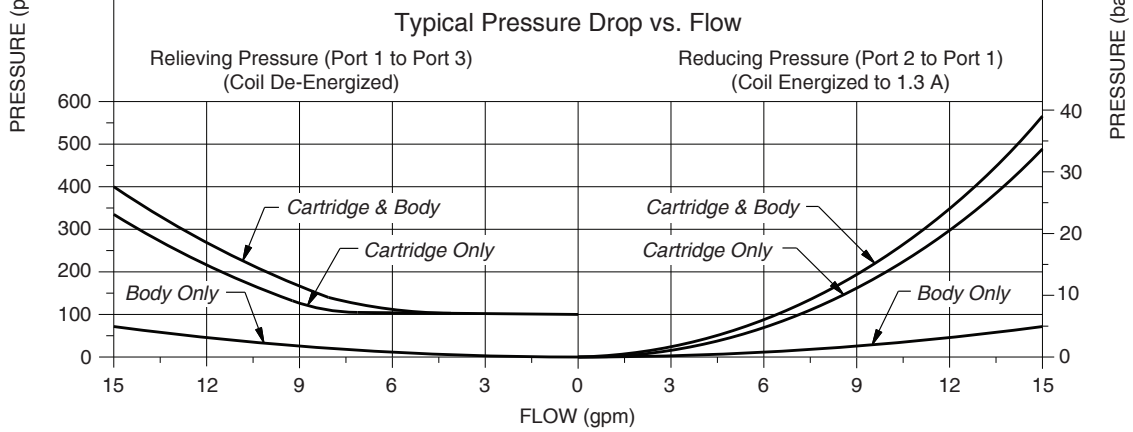
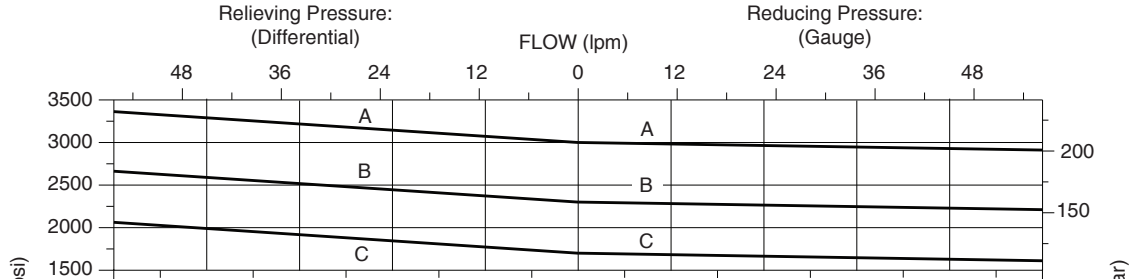
Coil Nut: Part No. 4540560; For E-coils made prior to 1-1-04, see page 3.400.1

Valve w/Internally Piloted Spool

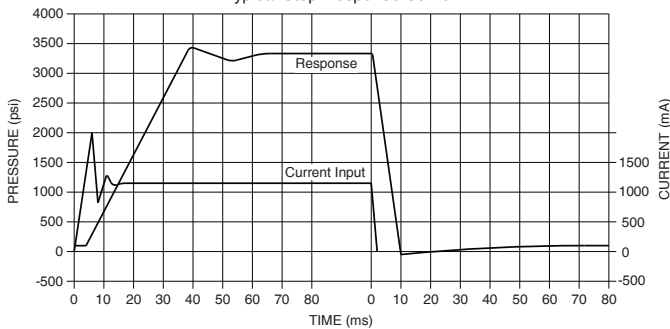
TS10-36

PERFORMANCE (cont'd)

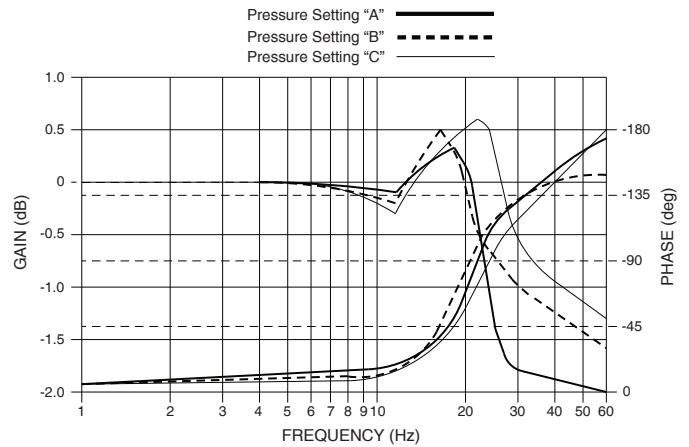
Typical Relieving/Reducing Pressure vs. Flow @ Maximum Current
Cartridge in Body Shown for TS10-36A, B and C



Typical Step Response Curve



Typical Frequency Response Curves

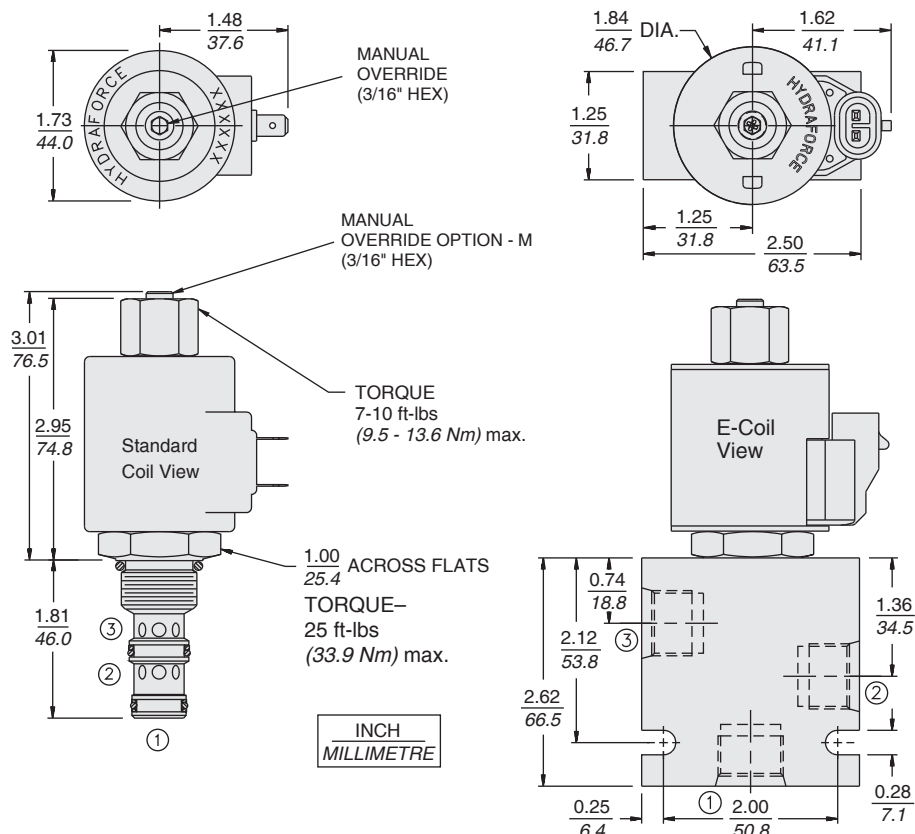


ELECTRO-PROPORTIONAL VALVES - PRESSURE CONTROL

TS10-36 continued

DIMENSIONS

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



Recommended Electronic Controllers:
See page 2.001.1 or our Electronics catalog.

INITIAL SETUP:

Before operating valve, use the manual override to manually set pressure to 200 to 300 psi. Before operating electrically, manual override must be fully backed out—turn CCW using using 3/16" hex key wrench—until positive stop is reached.

TORQUE
7-10 ft-lbs
(9.5 - 13.6 Nm) max.

1.00
25.4
ACROSS FLATS
TORQUE—
25 ft-lbs
(33.9 Nm) max.

INCH
MILLIMETRE

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.
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.

Standard Coil: Weight: 0.27 kg. (0.6 lbs.)
Unitized thermoplastic encapsulated, Class H high temperature magnet-wire. 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. See page 3.400.1

TO ORDER

TS10-36

Maximum Relief Pressure
207 bar (3000 psi) **A**
159 bar (2300 psi) **B**
117 bar (1700 psi) **C**

Option

None (Blank)
Manual Override **M**

Porting

Cartridge Only **0**
SAE 6 **6T**
SAE 8 **8T**
3/8 in. BSP* **3B**

*BSP Body; U.K. Mfr. Only

Seals

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

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
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.)