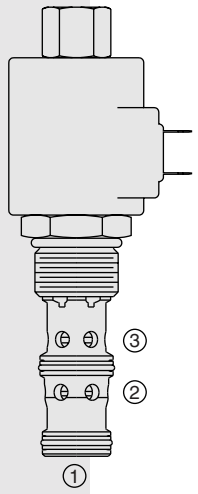
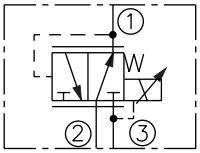
TS12-36 Proportional Electric Reducing/Relieving

Patent Pending



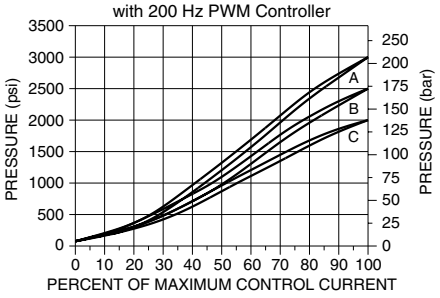
SYMBOLS

USASI/ISO:

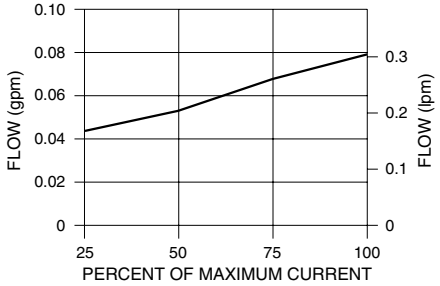


PERFORMANCE

Reducing Pressure vs. Current
for Flow @ 0 gpm; Port 2 to Port 1
with 200 Hz PWM Controller



Typical Pilot Flow & Leakage vs. Current
241 bar (3500 psi) Inlet Pressure
at 3.8–37.8 lpm (1–10 gpm)
with 200 Hz PWM Controller



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

The **TS12-36** allows flow from ② to ① until pressure at ① equals the setting determined by the coil current. Port ③ is typically connected to the reservoir. If external load increases the pressure at ① beyond this setting, pressure is relieved by allowing flow from ① to ③. Minimum pressure at ① without any current is 100 psi.

If external circuitry allows the pressure at ② to fall below the pressure at ①, the valve will allow free flow from ① to ② regardless of the setting of the valve or the amount of current in the coil.

FEATURES

• Optional airbleed screw. • 12 and 24 volt coils, standard or optional waterproofed.

RATINGS

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

Maximum Tank Pressure: Port ③: 68.9 bar (1000 psi); Note: Tank pressure is additive to regulated pressure.

Reduced Pressure Range from Zero to Maximum Controlled Current:
A: 6.9–207 bar (100–3000 psi); **B:** 6.9–172 bar (100–2500 psi)
C: 6.9–138 bar (100–2000 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).

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

Performance Life: Less than 5% change in the slope of the pressure vs current characteristics over one million cycles.

Hysteresis: Less than 3%.

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

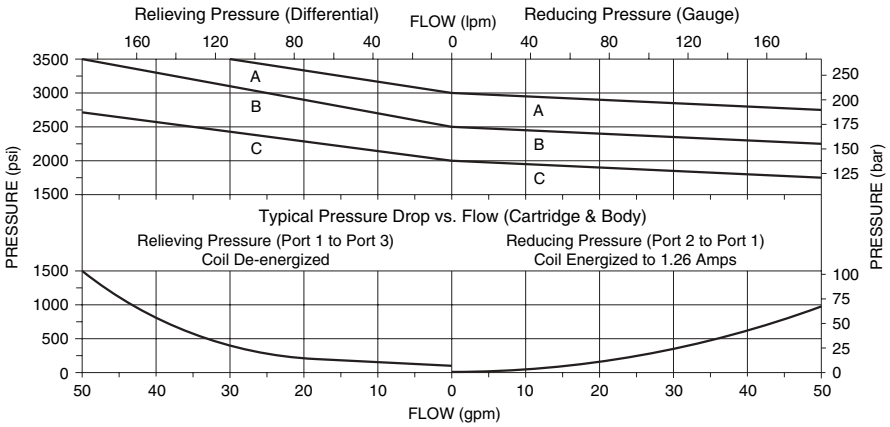
Installation Recommendation: When possible, the valve should be mounted below the reservoir oil level. This will maintain oil in the armature preventing trapped air instability. If this is not feasible, mount the valve horizontally for best results.

Cavity: 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

Coil Nut: Part No. 4526330;
For E-coils manufactured prior to 1-1-04, see page 3.400.1 for coil nut info.

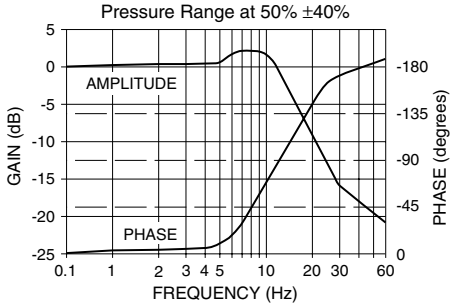
Typical Pressure vs. Flow at Maximum Current for Pressure options A, B and C
Body & Line Relieving ΔP: 4.5 bar @ 189.3 lpm (65 psi @ 50 gpm)
Body & Line Reducing ΔP: 4.8 bar @ 189.3 lpm (70 psi @ 50 gpm)



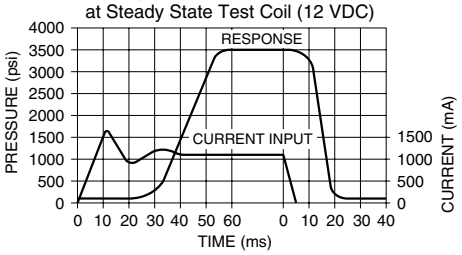
Valve w/Internally Piloted Spool — TS12-36

PERFORMANCE (cont'd)

Typical Frequency Response Curves
Flow at 0 gpm; Inlet Pressure at 241 bar (3500 psi)
Pressure Range at 50% ±40%



Typical Step Response Curve
Flow at 0 gpm, Inlet Pressure at 241 bar (3500 psi)
Voltage Set to Produce 1.1 amps
at Steady State Test Coil (12 VDC)

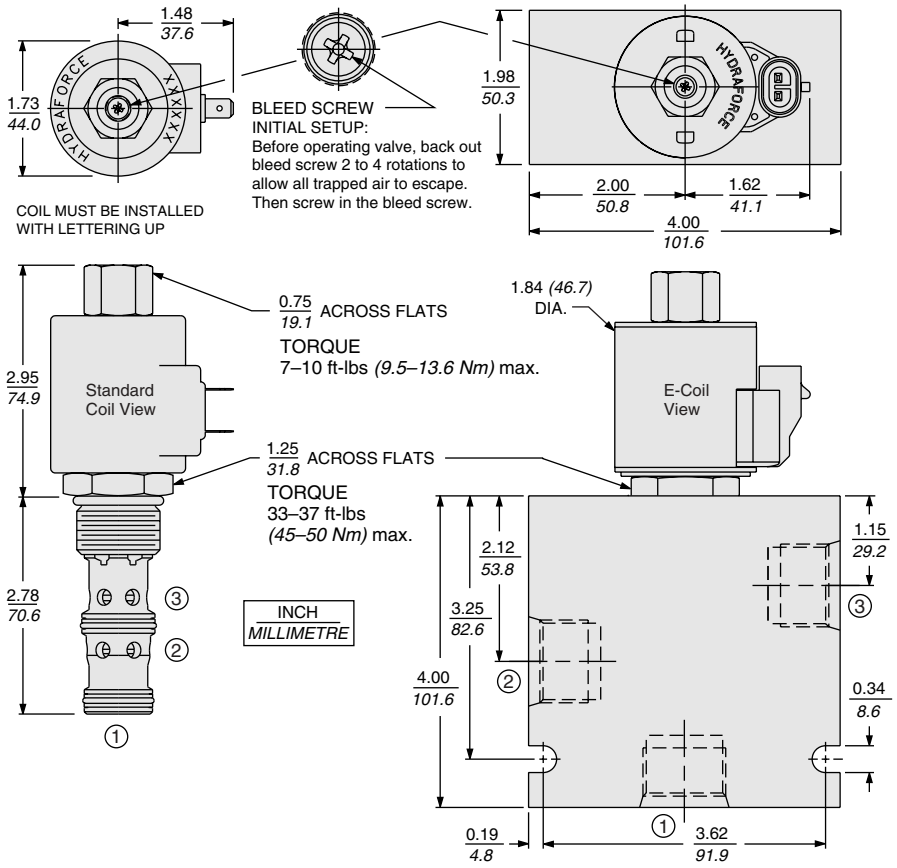


Recommended Controllers (See Section 3)

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

Patent Pending



MATERIALS

Cartridge: Weight: 0.30 kg. (0.66 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: 0.23 kg. (0.50 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi); See page 8.010.1. 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 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; **Note: See page 3.400.1 for all E-Coil retrofit applications.**

TO ORDER

TS12-36 ___ - ___ - ___ ___ ___

Maximum Reducing Pressure
207 bar (3000 psi) **A**
172 bar (2500 psi) **B**
138 bar (2000 psi) **C**

Option(s)
None (Blank)
Bleed Screw **S**

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
N Buna N (Std.)
V Fluorocarbon

Voltage
0 Less Coil*
12 12 VDC
24 24 VDC
* Includes Coil nut.

Termination Std. Coil
DS Dual Spades
DG DIN 43650
DL Leadwires (2)
DL/W Leads w/Weatherpak® Connectors
DR Deutsch DT04-2P

Termination E-Coil
ER Deutsch DT04-2P (IP69K Rated)
EY Metri-Pack® 150 (IP69K Rated)

Coils with internal diode are available. Consult factory.