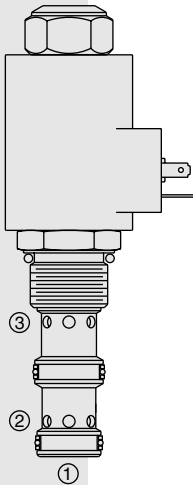


ELECTRO-PROPORTIONAL VALVES—FLOW CONTROLS

ZL72-33 Proportional, Bi-Directional Flow Control,

U.S. Patent
6,116,263



DESCRIPTION

A solenoid-operated, electrically-variable, three-port, pressure-compensated, spool-type, normally closed when de-energized, proportional, bi-directional, priority-type flow control valve. An internal compensator spool provides compensated flow across the proportional orifice regardless of flow direction.

OPERATION

The ZL72-33 provides regulated flow from port ① to port ③ with bypass at port ②; or regulated flow from port ③ to port ② with port ① blocked externally, typically with a check valve (see symbol drawing). Regulated flow is proportional to electric current applied to the solenoid.

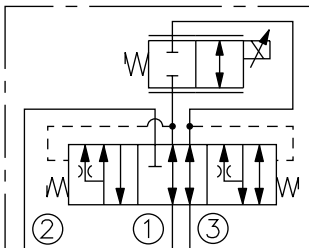
Application Notes: The ZL72-33 may be used for single-acting cylinder applications where lowering is provided by gravity force. A minimum load (defined on performance curve as minimum pressure at port ③) is required for uninterrupted lowering.

The hydraulic circuit must include a check valve and a poppet-type solenoid valve connected as shown on the circuit symbol and placed close to the ZL72-33 valve, if possible in the same manifold. Consult factory.

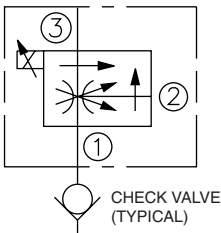
Operation of Manual Override: To Engage: Turn clockwise approximately 1 turn to reach start point. Continue another approximately 5 turns to full shift. To Disengage: Turn counterclockwise approximately 6 turns until positive stop is found.

SYMBOLS

USASI/ISO:



ABBREVIATED SYMBOL:



FEATURES

- Excellent linearity and hysteresis characteristics.
- Hardened spool and cage for long life.
- Efficient wet armature construction.
- Optional coil voltages and terminations.
- Cartridges voltage interchangeable.
- Unitized, molded coil design.
- Coil waterproofing standard.
- Manual override option.

RATINGS

Maximum Operating Pressure: 240 bar (3500 psi)

Regulated Flow: 0-50 lpm (0-13 gpm)

Internal Leakage: 0.38 lpm (0.10 gpm) maximum at 0 current

Electrical: 2 standard voltage ratings

| Coil Voltage | Threshold Current | Max. Control Current |
|--------------|-------------------|----------------------|
| 12 VDC | 250 ± 100 mA | 1500 ± 200 mA |
| 24 VDC | 125 ± 50 mA | 750 ± 100 mA |

Temperature: -40 to 120°C with Buna N seals

Filtration: See page 9.010.1

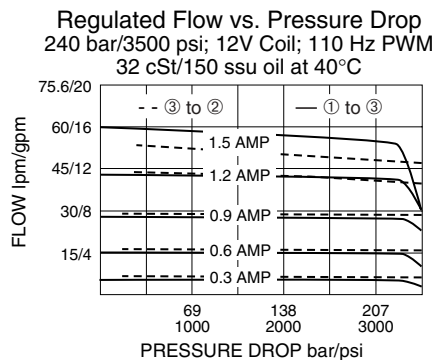
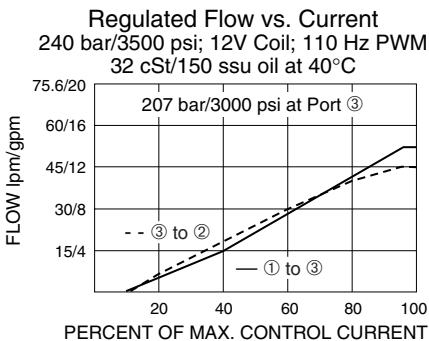
Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 ssu)

Installation: No restrictions; See page 9.020.1.

Cavity: VC12-3; See page 9.112.1; **Cavity Tool:** CT12-3X-XX; See page 8.600.1

Seal Kit: SK12-3X-MM; See page 8.650.1

PERFORMANCE



Recommended Controllers (See Section 3)

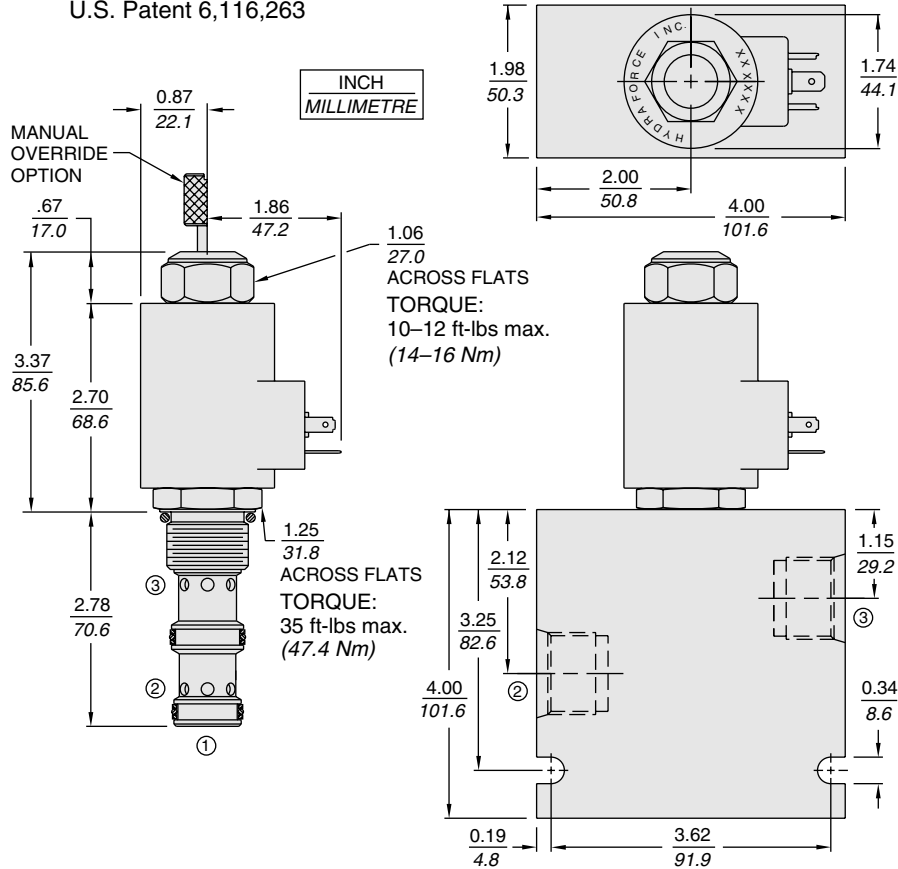
| Input Sig. w/12V Coil | DIN Coil Mount | PCB Board | Metal Box | DIN Rail Mount |
|-----------------------|----------------|-----------|-----------|----------------|
| 0-5 VDC | 7114950 | 4000046 | 4000049 | 4000136 |
| 0-10 VDC | 4000070 | 4000141 | 4000124 | 4000137 |
| 4-20 mA | 4000123 | 4000143 | 4000130 | 4000139 |
| PWM | — | 4000144 | 4000133 | 4000140 |
| w/24V Coil | | | | |
| 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 |

Normally Closed

ZL72-33

DIMENSIONS

U.S. Patent 6,116,263



MATERIALS

Cartridge: Weight: 0.34 kg. (0.7 lbs.); Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-ups standard.

Standard Ported Body: Weight: 0.98 kg. (2.15 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi); See page 8.012.1. Steel and ductile iron bodies available; dimensions may differ; consult factory.

Coil: Weight: 0.32 kg. (0.7 lbs.); Unitized thermoplastic encapsulated, Class H high temperature magnet-wire; See page 3.200.1.

TO ORDER

| | | | | | | | | |
|---------------------|--------------------------------|---|---|---|---|---|---|---|
| ZL72-33 | | - | - | - | - | - | - | - |
| Option(s) | | | | | | | | |
| None (Blank) | | | | | | | | |
| Manual Override | M | | | | | | | |
| Porting | | | | | | | | |
| Cartridge Only | 0 | | | | | | | |
| SAE 10 | 10T | | | | | | | |
| SAE 12 | 12T | | | | | | | |
| SAE 16 | 16T | | | | | | | |
| Terminations | | | | | | | | |
| DS | Dual Spades | | | | | | | |
| DG | DIN 43650 | | | | | | | |
| DL | Leadwires (2) | | | | | | | |
| DL/W | Leads w/Weatherpak® Connectors | | | | | | | |
| DR | Deutsch DT04-2P | | | | | | | |
| Voltage | | | | | | | | |
| 0 | Less Coil | | | | | | | |
| 12 | 12 VDC | | | | | | | |
| 24 | 24 VDC | | | | | | | |
| Seals | | | | | | | | |
| N | Buna N (Std.) | | | | | | | |
| V | Fluorocarbon | | | | | | | |

Coils with internal diode are available. Consult factory.