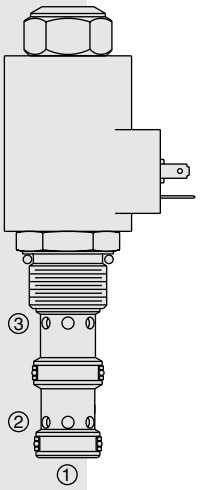
ZL72-31 Proportional, Bi-Directional Flow Control,

U.S. Patent 6,167,906



DESCRIPTION

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

OPERATION

The **ZL72-31** provides regulated flow in both directions: from port ② to port ③, or from port ③ to port ②. Port ① should be blocked. Regulated flow is inversely proportional to electric current applied to the solenoid.

Operation of Manual Override:

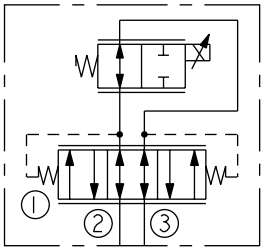
To Engage: Turn clockwise approximately 1 turn to reach start point. Continue another approximately 5 turns to full shift.

To Disengage: Turn counterclockwise approximately 6 turns until positive stop is found.

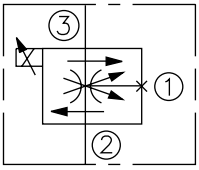
FEATURES

- 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.

SYMBOLS



ABBREVIATED SYMBOL:



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 1.5 amp

Electrical: 2 standard voltage ratings

Coil Voltage	Threshold Current	Max. Control Current
12 VDC	150 ± 50 mA	1250 ± 100 mA
24 VDC	75 ± 25 mA	625 ± 50 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.

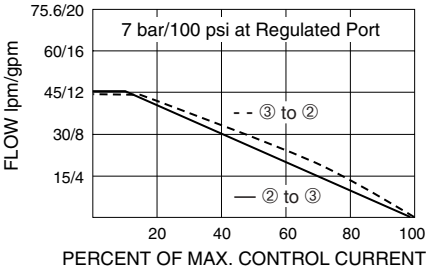
Cavity: VC12-3; See page 9.112.1

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

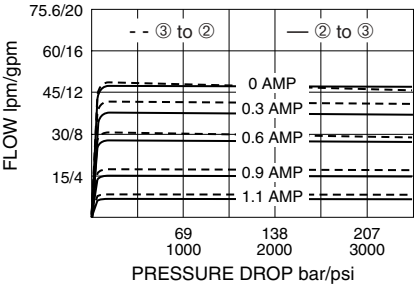
Seal Kit: SK12-3X-MM; See page 8.650.1

PERFORMANCE

Regulated Flow vs. Current
240 bar/3500 psi; 12V Coil; 110 Hz PWM
32 cSt/150 ssu oil at 40°C



Regulated Flow vs. Pressure Drop
240 bar/3500 psi; 12V Coil; 110 Hz PWM
32 cSt/150 ssu oil at 40°C



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 Open — ZL72-31

DIMENSIONS

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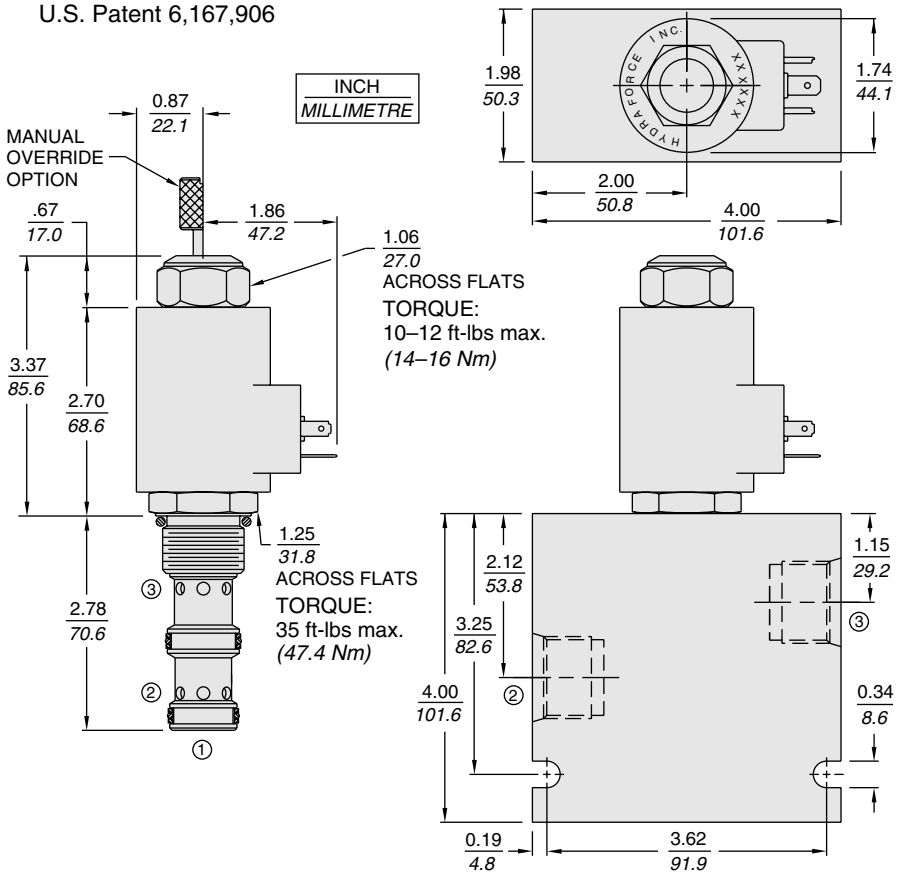

MATERIALS

Cartridge: Weight: 0.19 kg. (0.42 lbs.); Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-ups standard.

Standard Ported Body: Weight: 0.36 kg. (0.80 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

ZL72-31 __ - ___ - __ - __ __

Option(s)
None (Blank)
Manual Override **M**

Porting
Cartridge Only **0**
SAE 6 **6T**
SAE 8 **8T**
SAE 10 **10T**

Seals
N Buna N (Std.)
V Fluorocarbon

Voltage
0 Less Coil
12 12 VDC
24 24 VDC

Coils with internal diode are available. Consult factory.

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