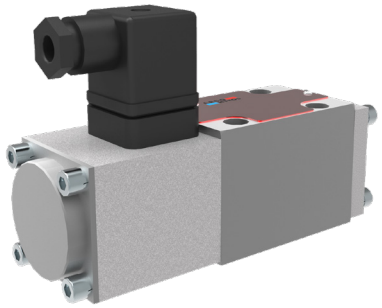
# PRL1

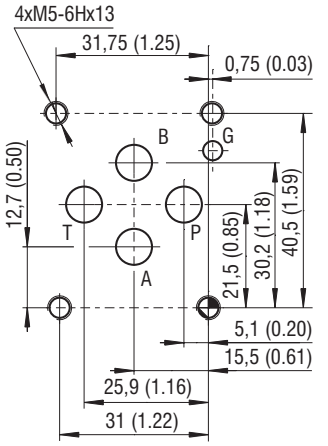
Size 06 (D03) • $Q_{max}$ 32 l/min (9 GPM) • $p_{max}$ 250 bar (3600 PSI)



## Technical Features

- Proportional valve for remote control of hydraulic motors and actuators
- High reliability
- Centre position maintained by springs consuming no electrical current
- Does not require level of filtration usually demanded by normal servo valves
- Single-stage design ensures high dynamic performance independent of pressure
- Can be supplied as a complete unit consisting of proportional directional valve, electronic control unit and electronic remote control lever
- Model with manual override can be supplied by request
- Control valve with subplate mounting surface acc. to ISO 4401, DIN 24340 (CETOP 03) standards
- In the standard version, the valve housing is phosphated and steel parts zinc-coated for 240 h salt spray protection acc. to ISO 9227
- Subplates - see catalogue HA 0002

**ISO 4401-03-02-0-05**




Ports P, A, B, T - max ∅7.5 mm (0.29 in)

## Technical Data

| Valve size | | 06 (D03) | | |
|---|---|---|---|---|
| Max. operating pressure | bar (PSI) | 250 (3630) | | |
| Rated flow at Δp = 70 bar | l/min (GPM) | 3.2 (0.85) | 16 (4.23) | 32 (8.45) |
| Rated flow at Δp = 10 bar | l/min (GPM) | 1.1(0.29) | 6.3 (1.66) | 12.5 (3.30) |
| Hysteresis | % | < 7 | | |
| Threshold | % | < 2 | | |
| Fluid temperature range | °C (°F) | -30 .... +80 (-22 ... +176) | | |
| Ambient temperature, max | °C (°F) | +50 (+122) | | |
| Weight | kg (lbs) | 1.8 (3.97) | | |

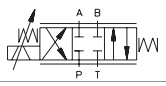
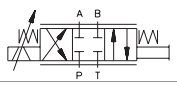
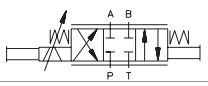
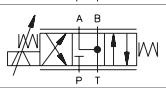
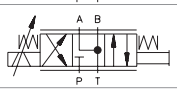
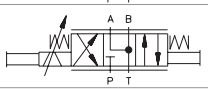
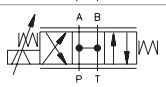
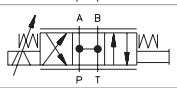
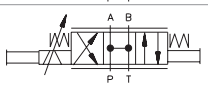
| Flow losses in l/min | | Spool lap | | | |
|---|---|---|---|---|---|
| at input pressure 100 bar, viscosity 35 mm²/s and middle position of spool | | | | | |
| | | 0 | 1 | 2 | 3 |
| PRL1-06-03-.-24 (12) | l/min | < 0.8 | < 0.2 | < 0.2 | < 2.0 |
| PRL1-06-16-.-24 (12) | | < 1.5 | < 0.2 | < 0.2 | - |
| PRL1-06-32-.-24 (12) | | < 1.5 | < 0.2 | < 0.2 | - |

| | Data Sheet | Type |
|---|---|---|
| General information | GI_0060 | Products and operating conditions |
| Mounting interface | SMT_0019 | Size 06 |
| Spare parts | SP_8010 | |

## Functional Description

Proportional directional valves PRL1 are designed for remote control of hydraulic motors and actuators. Great reliability is ensured by the robust direct single-stage design and spool actuation with linear motor. Ability of the linear motor is to shift the core into its middle position in case of disconnection of the supply voltage or failure of the cable. Electronic control unit EL2 has been developed to control the proportional valve.
The valve design concept does not require level of filtration usually demanded by normal servo valves.
The manual override enables the control spool to be continuously shifted into the required position. This can be done either from the side of the valve or from the side of the linear motor.
The shifting is not allowed to shift the spool from both sides simultaneously.
The PRL1-valve can also be used as a pilot stage for bigger proportional valves or logic elements (in this case as a unit controlling the pilot pressure).
The dynamic properties of the PRL1 valves allow them to be used in closed loop control systems with servo quality performance.

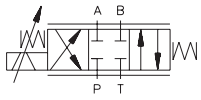
## Spool Symbols

| Symbols | PRL1-06-..-.-.. | PRL1-06-..-.-..N | PRL1-06-..-.-..NN |
|---|---|---|---|
| **Z11** |  |  |  |
| **Y11** |  |  |  |
| **H11** |  |  |  |

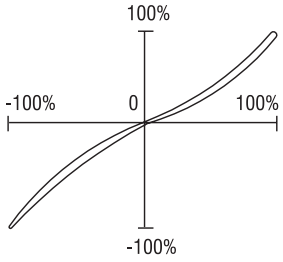
## Performance Curves measured at ν = 35 mm²/s (166 SUS) and t = 40 °C (104 °F)

### Spool lap 0

**Flow characteristic**

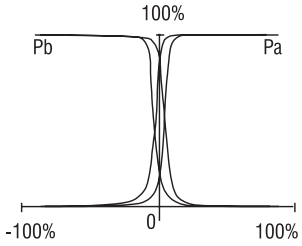



Q [l/min] / Command signal [%]



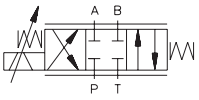

**Pressure characteristic**

$P_A$, $P_B$ [bar] / Command signal [%]

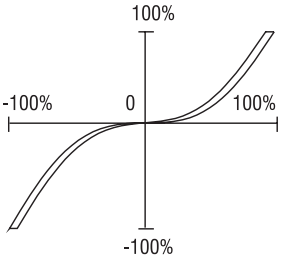



### Spool lap 1

**Flow characteristic**

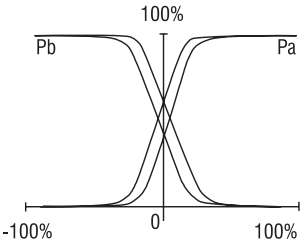



Q [l/min] / Command signal [%]

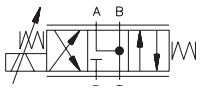



**Pressure characteristic**

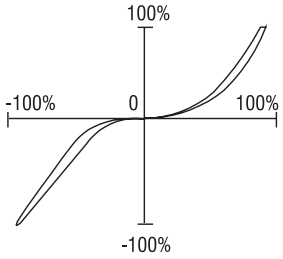
$P_A$, $P_B$ [bar] / Command signal [%]



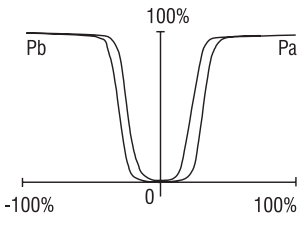

### Spool lap 2



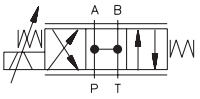

Q [l/min] / Command signal [%]



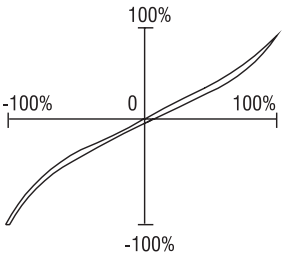

$P_A$, $P_B$ [bar] / Command signal [%]



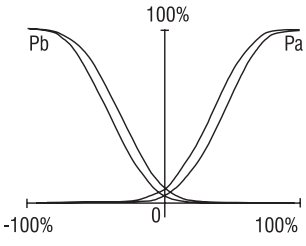

### Spool lap 3




Q [l/min] / Command signal [%]




$P_A$, $P_B$ [bar] / Command signal [%]




## Ordering Code

**PRL1-06-□-□-□□**

**Proportional directional valves with linear motor**

**Nominal size**
ISO 4401-03-02-0-05,
DIN 24340 (CETOP 03), size 06

**Nominal flow in l/min at the pressure difference at the valve**

| Δp 70 | (1015 ) | Δp 10 | (145) | [bar (PSI)] | |
|---|---|---|---|---|---|
| 3,2 | (0.8) | 1.1 | (0.29) | [l/min (GPM)] | **03** |
| 16 | (4.2) | 6.3 | (1.7) | [l/min (GPM)] | **16** |
| 32 | (8.5) | 12.5 | (3.3) | [l/min (GPM)] | **32** |

**Spool lap**

| | |
|---|---|
| „Z" zero | **0** |
| „Z" 25% overlap | **1** |
| „Y" 25% overlap | **2** |
| „H" pressure valve | **3** |

**Model**

| | |
|---|---|
| **No designation** | basic |
| **N** | manual override on the valve |
| **NN** | manual override on both the valve and linear motor |

**Nominal supply voltage of the control electronic**

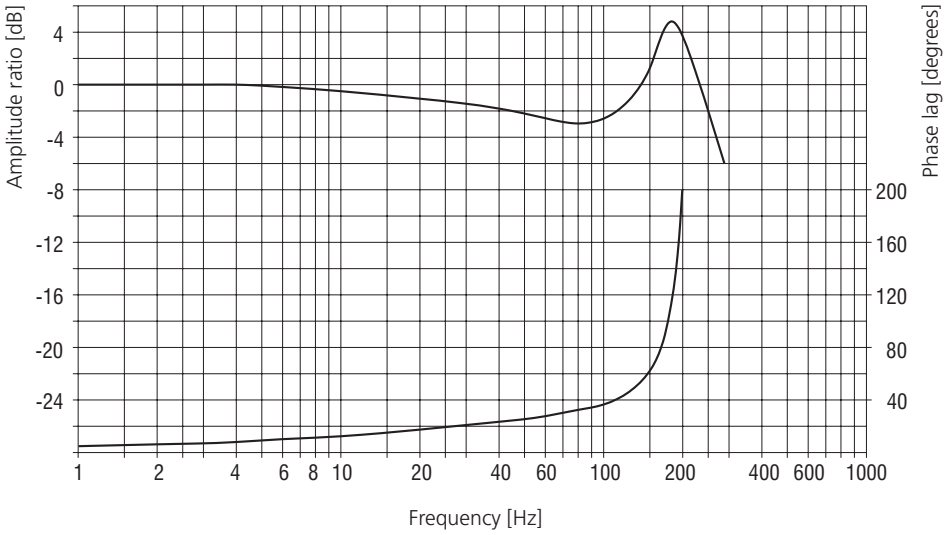
| | |
|---|---|
| **12** | 12V DC (11.2 - 14.7) |
| **24** | 24V DC (22.4 - 27.5) |

| | Spool lap | | | |
|---|---|---|---|---|
| | 0 | 1 | 2 | 3 |
| PRL1-06-03-.-24 (12) | ● | ● | ● | ● |
| PRL1-06-16-.-24 (12) | ● | ● | ● | |
| PRL1-06-32-.-24 (12) | ❍ | ❍ | ❍ | |

● common types
❍ restricted max. parameters, consultation with the manufacturer necessary. Additional flow rates delivered by request.

### Frequency Response

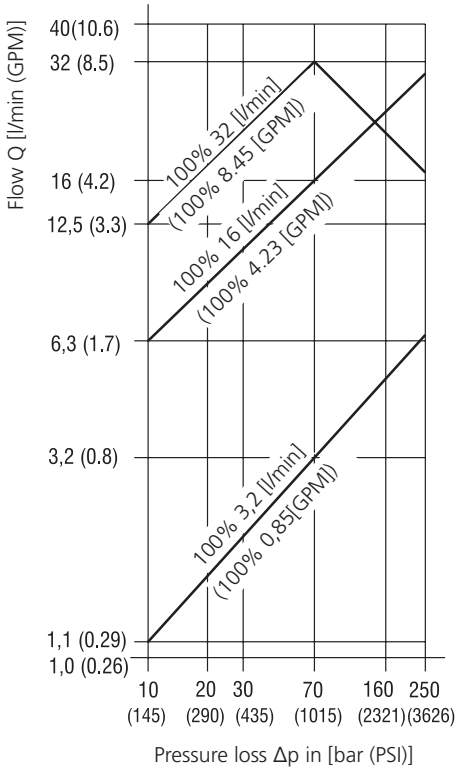
**PRL1-06-16-0-24**
$p_o$ = 100 bar
x = 25%




### Power characteristics

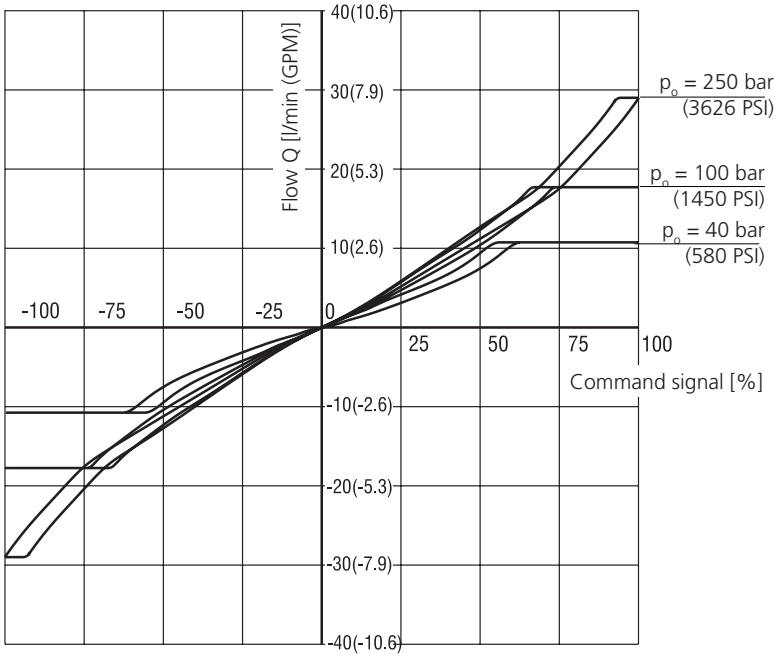
Measured at ν = 35 mm²/s (166 SUS) and t = 40 °C (104 °F)

**For nominal flow rates:**
3,2 and 16 and 32

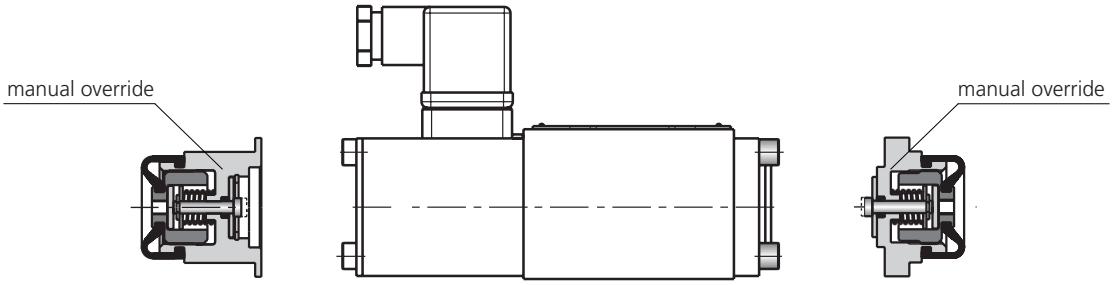



### Flow characteristics

**PRL1-06-16-0-24**



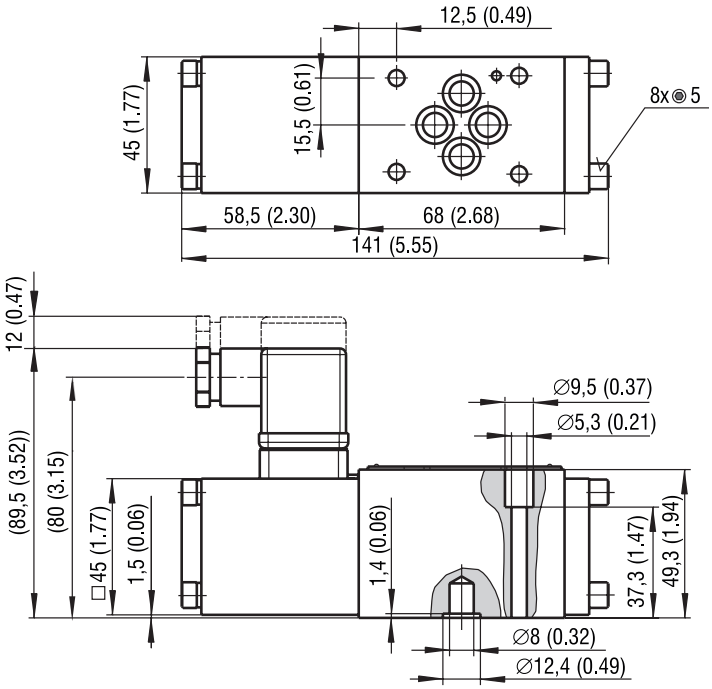
## **Manual Override** in millimeters (inches)



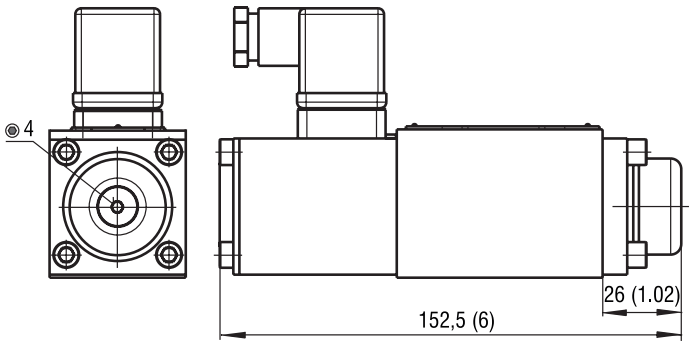

## **Dimensions** in millimeters (inches)

**PRL1-06-..-.-..**

Mounting screws 8.9 Nm (7 lbf.ft)
M5 x 45 DIN 912-10.9




**PRL1-06-..-.-..N**




**PRL1-06-..-.-..NN**