# P6 Pro Datasheet

## Product Overview

The P6 Pro is a compact servo proportional valve designed for precise control in smaller and mid-sized industrial systems. Its fast response and fine resolution make it well suited to machinery that depends on accurate motion management in a smaller footprint, such as injection moulding, ceramics, and automated handling systems. It installs easily into existing NG06 platforms and brings dependable day to day performance with minimal setup.

### Key Features

- Integrated electronics with spool position feedback
- Rated flow from 5 to 40 l/min (at 70 Bar ΔP)
- Drop-in replacement on NG06
- Bandwidth > 100 Hz
- Various power-off positions
- Low power consumption of less than 5 W
- Chip shear capability of greater than 400 N
- Mass of 630 g

### Configuration

The P6 Pro is designed to be easily configurable. The standard options are set out in the SKU selection on page 6. Non-standard customisations are also available, and our sales team would be happy to discuss your requirements.

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## Contact Us

If you have any questions about using the P6 Pro, or if you need a non-standard configuration, we would be happy to hear from you.

Contact us using the details below and one of our team will be able to assist you.


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DOMIN

# Technical Data

## General

| | | | |
|---|---|---|---|
| Design | | Direct Drive Servo Proportional Valve | |
| Actuation | | Rotary-Linear | |
| Size | | NG06 | |
| Mounting Interface | | ISO 4401-03-02 | |
| Ambient Temperature | °C (°F) | –20 to +60 (–4 to +140) | |
| Mass | kg (lb) | 0.63 (1.39) | |
| Vibration Resistance, All Axes[1] | g | 30 | |
| Shock Resistance, All Axes[2] | g | 50 | |

## Hydraulic Data

| | | | |
|---|---|---|---|
| Max. Operating Pressure (P, A, B) | Bar (psi) | 350 (5,000) | |
| Max. Operating Pressure (T) | Bar (psi) | 250 (3,600) | |
| Fluid | | Hydraulic Oil DIN 51524 | |
| Fluid Temperature | °C (°F) | –20 to +80 (–5 to +175) | |
| Filtration | | ISO 4406 (1999) 18/16/13 | |
| Viscosity | cSt | 5 to 500 | |
| Rated Flow[3] | l/min (gpm) | 5 to 25 (2.6 to 6.6) | 25 to 40 (6.6 to 10.6) |
| Flow Maximum | l/min (gpm) | 56 (14.8) | 89 (23.5) |
| Pressure Gain | %/% | > 40 | |
| Leakage at 100 bar | l/min (gpm) | < 0.5 (0.13) | |

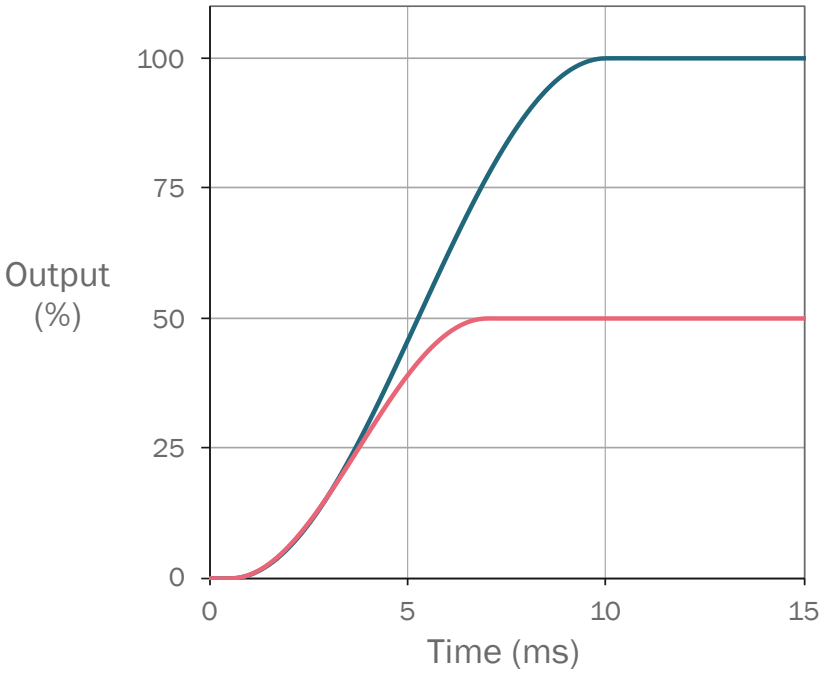
## Static/Dynamic Data

| | | |
|---|---|---|
| Response Time at 100%[4] | ms | < 10 |
| Frequency Response (-3dB gain, ±25% signal)[4] | Hz | > 100 |
| Frequency Response (-90deg phase, ±25% signal)[4] | Hz | > 100 |
| Hysteresis | % | < 0.2 |
| Threshold | % | < 0.1 |
| Null Shift | % | < 1 |

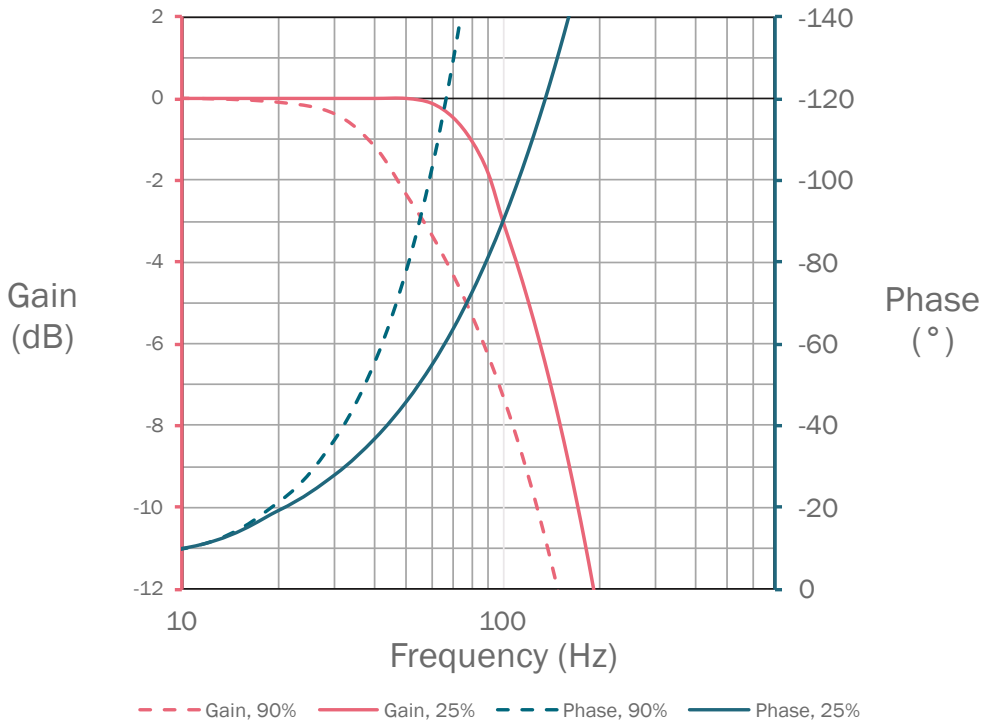
1. BS EN 60068-2 (20-35 Hz, 16 g for 15 minutes per axis, 35-2000 Hz, 35 g for 15 minutes per axis).
2. BS EN 60068-2 (20 shocks 50 g in Z axis).
3. Rated at a ΔP of 70 bar (35 bar per edge). 40 l/min only available for axis cut valves.
4. Measured as 90% output rise time with Δ70 bar P-T (two control edges).

# Performance Graphs

Step Response [1]




Frequency Response [1]



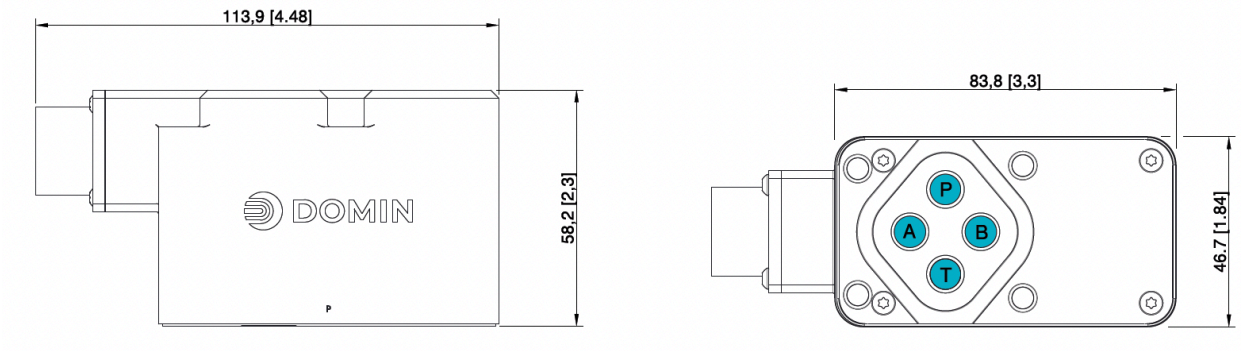

1. Measured at a 70 bar pressure drop.

# Standards References

| | |
|---|---|
| EMC Regulations: | Immunity: EN 61000-6-2, Emission: EN 61000-6-3 |
| Performance Tests: | ISO 10770-1 |
| Pressure Rating: | ISO 10771 |
| Hydraulic Interface: | ISO 4401-03-02 |

# Unit Dimensions

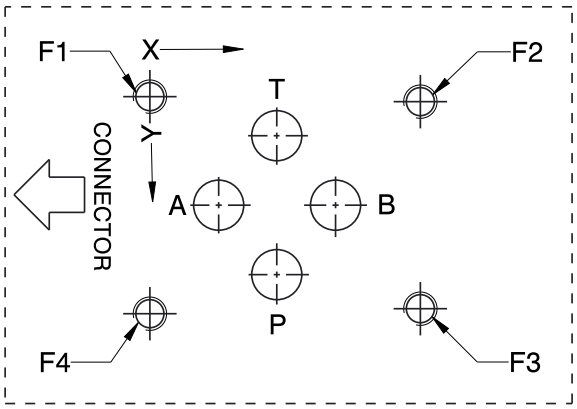
## Connector Code E and E4




Nominal dimensions are displayed in mm, [] indicates inches. Not to scale.

# Mounting Dimensions

| | | P | A | B | T | F1 | F2 | F3 | F4 |
|---|---|---|---|---|---|---|---|---|---|
| Diameter | mm | 7.5 | 7.5 | 7.5 | 7.5 | M5 | M5 | M5 | M5 |
| X Position | mm | 21.5 | 12.7 | 30.2 | 21.5 | 0 | 40.5 | 40.5 | 0 |
| Y Position | mm | 25.9 | 15.5 | 15.5 | 5.1 | 0 | 0.75 | 31.75 | 31 |




## Bolts (F1, F2, F3, F4)

Type: M5 x 55 mm DIN EN ISO 4762-10.9

Required Torque: 7.5 Nm (5.5 ft-lbf)

## O-Rings (P, A, B, T)

Type: 9.25 x Ø 1.78 (ISO 3601-1-012)

# LED Status

| LED Colour | LED State | Motor Drive State | Valve State |
|---|---|---|---|
| Green | Solid - On | Motor Drive On | Valve OK |
| | Flashing | Motor Drive On | Warning Present |
| Red | Solid - On | Motor Drive Off | Valve OK |
| | Flashing | Motor Drive Off | Error Present |

# SKU Selection

Use our SKU builder to configure your Domin Valve. If you need a non-standard setup or a bespoke option, just get in touch – we can tailor a solution to suit your exact requirements.

**P6 Pro - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - Custom ID**

| Code 1 | Rated Flow |
|---|---|
| 5 to 40 | l/min |
| 5 to 40R | l/min, Reverse |

| Code 2 | Flow Behaviour |
|---|---|
| A | Axis |
| B | Float Centre |
| D | Deadband |
| O | Overlap |
| X | Special Enquiries |

| Code 3 | I/O |
|---|---|
| A | ± 10 V |
| B | ± 20 mA |
| C | 4 to 20 mA |
| D | ± 5 V |
| E | ± 5 mA |
| F | ± 10 mA |
| X | Special Enquiries |

| Code 4 | Power-Off Position |
|---|---|
| B | Float |
| C | Passive |
| D | Blocked |
| PA | A Bias |
| PB | B Bias |
| X | Special Enquiries |

| Code 5 | Electrical Connector |
|---|---|
| E | 6 pin + PE |
| E4 | 4 pin |
| X | Special Enquiries |

| Code 6 | Enable Mode |
|---|---|
| N | No Enable Functionality |
| Y | Enable Mode |

| Code 7 | Fluid Type |
|---|---|
| R | Recommended Oil |
| X | Special Enquiries |

| Code 8 | Seal Material |
|---|---|
| N | Nitrile |
| V | Viton |
| X | Special Enquiries |

Code 9

## Code 1 Rated Flow

Any value in range 5 to 40 l/min rated at 35 bar ΔP per control edge. R – Suffix for reversal of A and B port e.g. 40R

$$Q = Q_N \sqrt{\frac{P}{70}}$$

Q = Calculated flow
$Q_N$ = Rated flow (at 70 bar)
P = Pressure

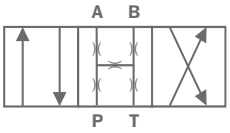
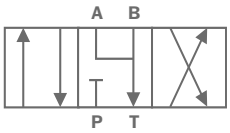
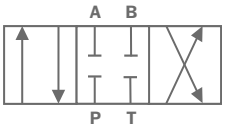
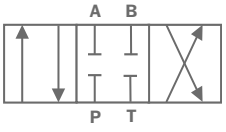
# Code 2 Flow Behaviour

The flow behaviour of the valve is defined in two sections, the mechanical spool cut that makes the hydraulic connections and the software characteristic (flow map) that controls the flow with respect to input demand.

By default, each hydraulic connection will have a default flow mapping, and the code will be simplified to a single letter. If a non-default flow mapping is desired a second letter will denote the flow map.
E.g., an Axis-Linear valve will have a single code A, an Axis-Deadband valve will have the code AD.

Please enquire for other options.

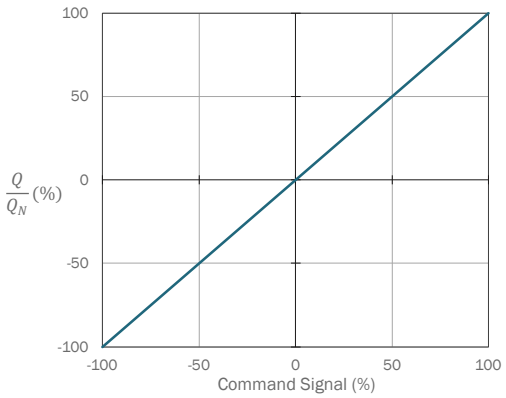
### Hydrualic Connections

| Code | Hydrualic Connection | Description | Symbol | Deafult Flow Map |
|---|---|---|---|---|
| A | Axis | 1% overlap |  | Linear |
| B | Float | 5% overlap P<br>5% underlap T |  | Deadband |
| D | Blocked | 5% overlap |  | Deadband |
| O | Overlap | 3% overlap |  | Gradual |
| X | For other options please enquire | | | |

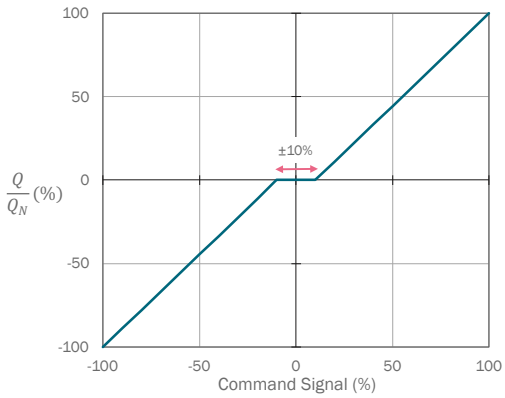
## Flow Map

| Code | Flow Map | Description |
|---|---|---|
| A | Linear | 100% flow gain across full range |
| D | Deadband | 0% flow gain between ±10% flow demand |
| O | Gradual | 0% flow gain between ±10% flow demand |

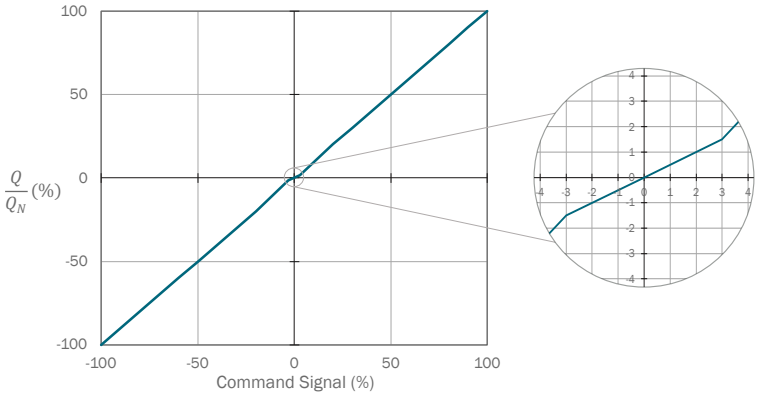
### A - Linear




### D - Deadband




### O - Gradual



## Code 3 Control Methods

| Code | Input Signal | Input Impedance | Output Signal | Output Load Impedance |
|---|---|---|---|---|
| A | ± 10 V | 200 kΩ | ± 10.5 V | - |
| D | ± 5 V | | ± 5.25 V | |
| E | ± 5 mA | 402 Ω | ± 5.25 mA | 600 Ω |
| F | ± 10 mA | | ± 10.5 mA | |
| B | ± 20 mA | | ± 21 mA | |
| C[1] | 4 to 20 mA | | 3.8 to 21 mA | 600 Ω |
| X | For other options please enquire | | | |

1. For 4 to 20 mA input signal, a current input below 2 mA will disable the motor drive
2. Valves with a current command signal use a 0.1% tolerance shunt resistor to measure demand current.
3. For differing input and output signals, use two letters, e.g. AC denotes ± 10 V input and 4 to 20 mA output

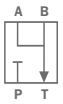
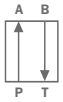
### Electrical

| | | |
|---|---|---|
| Supply Voltage (Operational) | V | 22 to 30 |
| Supply Voltage (Absolute)[1] | V | -0.5 to 33 |
| Current Consumption[2] | A | 0.2 |
| Peak Current Draw[3] | A | 4.5 |

1. Conditions outside the absolute maximum ratings may cause permanent damage to the valve. These are absolute ratings only. Operation of the product outside of the nominal operating conditions is not guaranteed and may affect product reliability
2. Approximate current consumption for 100 Hz at 25 % amplitude
3. The valve supply must be protected with a 5 AT fuse or equivalent overcurrent protection device

# Code 4 Power-Off Position

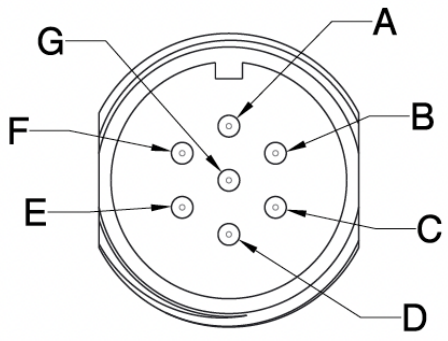
Power-off position defines the hydraulic connection that the valve will move to when the power / input is removed, or if the valve errors, or if the enable pin (if enable mode Y) is low

| Code | Name | Description | Symbol |
|---|---|---|---|
| B | Float | P blocked, A, B, T connected |   |
| C | Passive | Spool is intended to return to centre passively under typical flow conditions | |
| D | Blocked | All ports blocked | |
| PA | A Bias | P connected to A, B connected to T |   |
| PB | B Bias | P connected to B, A connected to T | |
| X | For other options please enquire | | |

# Code 5 Electrical Connectors

## 6 + PE Circular Connector (E)

| | |
|---|---|
| Type: | Case-Mounted |
| Termination: | Connector according to EN 175201-804/MIL 5015 equivalent, shell size 14 |
| Number of Contacts: | 7 |

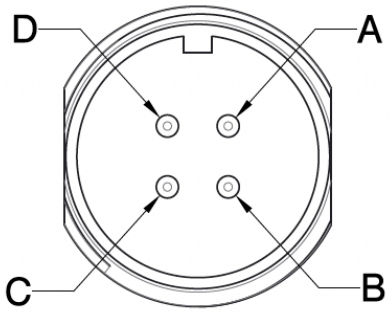



| Pin | Function | Description |
|---|---|---|
| A | Supply + | +24 V |
| B | Supply 0 V | 0 V |
| C[1] | Output –<br>Enable input | Output 0 V Reference<br>Drive enable input |
| D | Input + | Differential input signal, + |
| E | Input – | Differential input signal, – |
| F | Output + | Output Signal |
| G | Earth | - |

1. When the enable function is selected, the function of pin C is the enable input. This replaces the standard pin function.

## 4 Pin Circular Connector (E4)

| | |
|---|---|
| Type: | Case-Mounted |
| Termination: | Connector according to EN 175201-804/MIL 5015 equivalent, shell size 14 |
| Number of Contacts: | 4 |




| Pin | Function | Description |
|---|---|---|
| A | Supply + | +24 V |
| B | Input + | Differential input signal, + |
| C | Input – | Differential input signal, – |
| D | Supply 0 V | 0 V |

## Code 6 Enable Modes

Valves can be provided with an enable function. This allows the valve to be enabled or disabled by varying the voltage into the enable pin. Note that valves with a code C command type can also be enabled or disabled using the command signal; see the corresponding table above for further details. Enable function is only applicable with Code E electrical connector option.

| | |
|---|---|
| N | No Enable Functionality |
| Y | Enable mode |

| Normal Operating Conditions | | Units | Min. | Typical | Max. |
|---|---|---|---|---|---|
| Enable Mode | Drive On | V | 9 | - | 30 |
| | Drive Off | V | 0 | - | 5 |
| | Input Impedance | kΩ | - | 15 | - |

## Code 7 Fluid Types

| | |
|---|---|
| R | Recommended - any hydraulic oil in accordance with DIN 51524, filtered in accordance with ISO4406 18/16/13. Compatibility with water-free synthetic fluids available on enquiry. |
| X | For other options please enquire |

## Code 8 Seal Materials

| | |
|---|---|
| N | Nitrile (Shore 90) |
| V | Viton (Shore 85) |
| X | For other options please enquire |