

P12 Pro Datasheet

Product Overview

The Domin P12 Pro the two-stage servo proportional valve using the P6 Pro as its pilot stage. The P12 Pro is designed to deliver industrial performance for NG16 systems where stable, repeatable control and predictable lifecycle cost are the priority.

The P12 Pro delivers required performance without the complexity of traditional servo valves, prioritising compact size, low mass, and robustness for continuous operation. Compatibility with standard NG16 interfaces enables easier commissioning, stable long-term behaviour, and reduced maintenance in production systems.

Key Features

- Onboard electronics with spool position feedback
- Rated flow of up to 580 l/min (35 bar ΔP per edge)
- Based on the NG16 port pattern
- Bandwidth > 60 Hz (-3 dB, $\pm 25\%$ of full stroke)
- Low power consumption of less than 5 W

Customisation

The P12 Pro is designed to be customised. Standard modifications include:

- Choice of rated flows 160-580 l/min
- Multiple voltage or current control options
- Various seal materials available
- Non-standard configurations are available

Contents

| | |
|---------------------------|---|
| Technical Data | 2 |
| Performance Graphs | 3 |
| Standard References..... | 4 |
| Unit Dimensions | 4 |
| Mounting Dimensions | 5 |
| LED Status | 5 |
| SKU Selection | 6 |

Contact Us

If you have any questions about using the P12 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 there to assist you.

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domin.com



Technical Data

General Data

| | | |
|----------------------|-----------------------|------------------------|
| Design | Two-Stage Servo Valve | |
| Actuation | Direct Drive Pilot | |
| Size | NG16 | |
| Mounting Interface | ISO 4401-07-07 | |
| Ambient Temperature | °C (°F) | -20 to +60 (-4 to 140) |
| Mass | kg (lb) | < 7 (15.4) |
| Vibration Resistance | g | 10 |
| Shock Resistance | g | 15 |
| IP | IP65 | |

Hydraulic Data

| | | |
|---|-----------------------------|------------------------|
| Max. Operating Pressure (P, A, B, X) | bar (psi) | 350 |
| Max. Operating Pressure (Y, T) | bar (psi) | 250 |
| Fluid | Hydraulic Oil DIN 51524-535 | |
| Fluid Temperature | °C (°F) | -20 to +60 (-4 to 140) |
| Viscosity | cSt | 10 to 400 |
| Rated Flow (35 bar per edge) ⁽¹⁾ | l/min (gpm) | 580 (153) |
| Flow Maximum | l/min (gpm) | 1000 (264) |
| Pilot Leakage ⁽²⁾ | l/min (gpm) | 1.3 (0.34) |
| Main Stage Leakage ⁽²⁾ | l/min (gpm) | 1.2 (0.32) |
| Filtration | ISO 4406 (1999) 18/16/13 | |

Static/Dynamic Data

| | | |
|---|----|-------|
| Response Time ⁽³⁾ | ms | < 12 |
| Frequency Response (-3dB gain, ±25% signal) ⁽³⁾ | Hz | > 60 |
| Frequency Response (-90deg phase, ±25% signal) ⁽³⁾ | Hz | > 60 |
| Hysteresis | % | < 0.2 |
| Threshold | % | < 0.1 |
| Null Shift | % | < 1 |

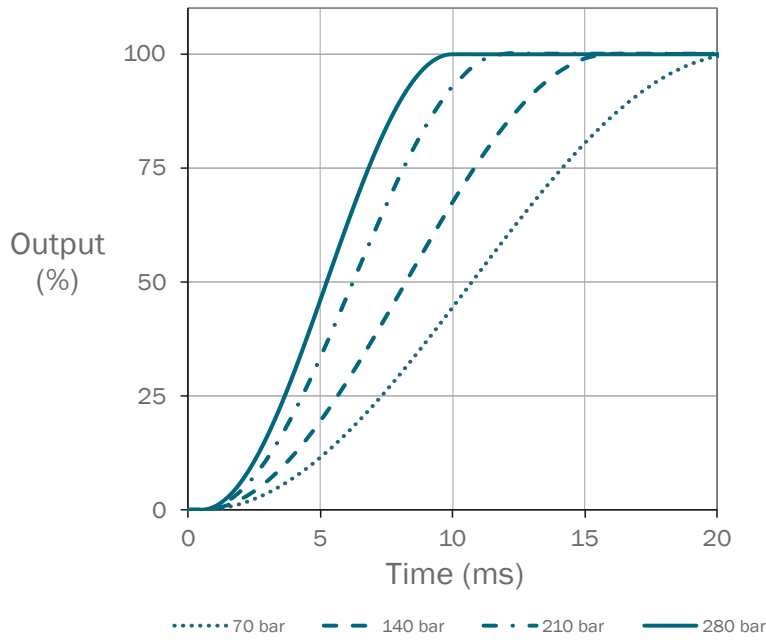
1. Based on an axis cut (A) value.

2. Measured at a test pressure (P.T) of 100 bar.

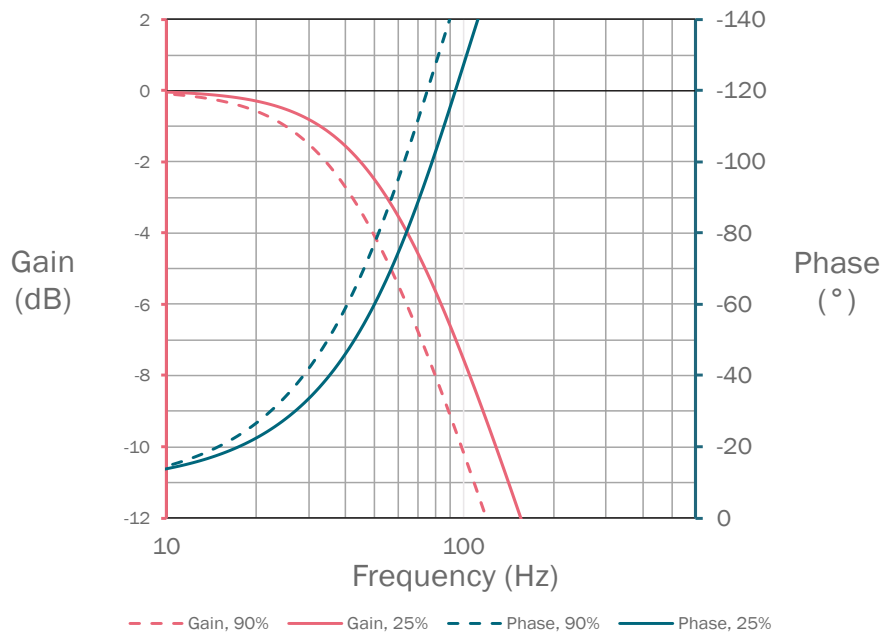
3. Measured at 210 bar pilot pressure, ISO 32 oil at 40°C.

Performance Graphs

Step Response



Frequency Response⁽¹⁾



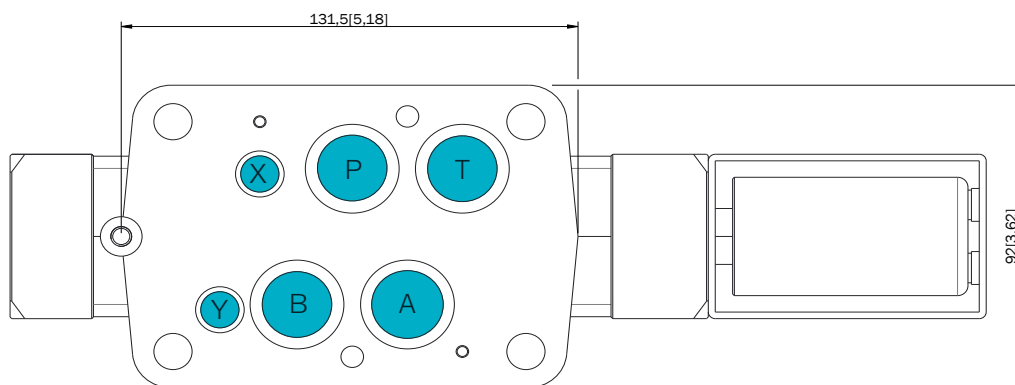
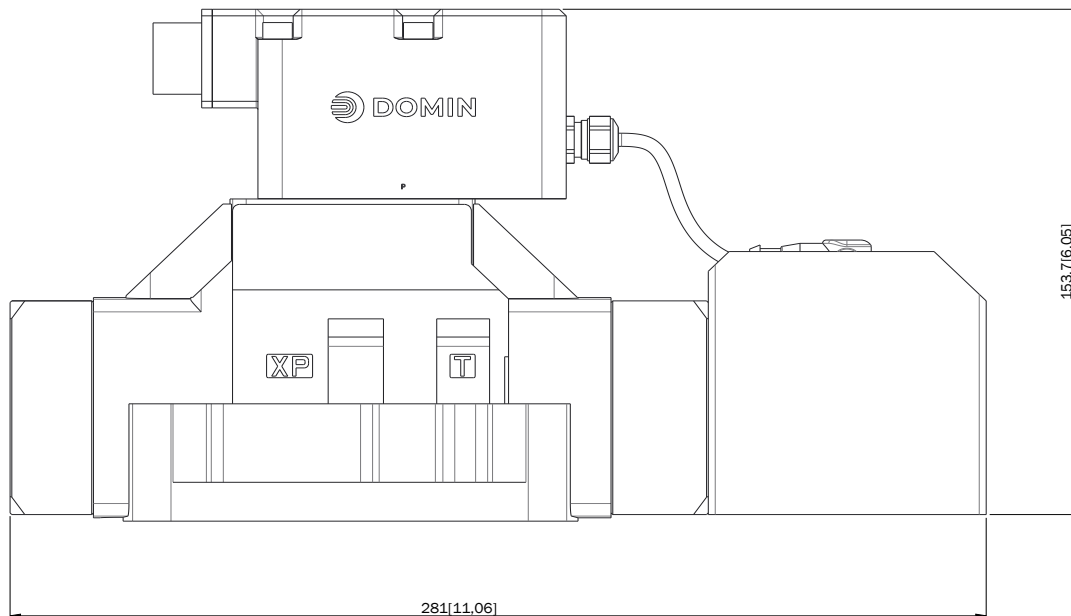
1. Measured at a 210 bar pressure drop.

Standards References

| | |
|----------------------|--|
| EMC Regulations: | Emission: EN 61000-6-3, Immunity: EN 61000-6-2 |
| Performance Tests: | ISO 10770-1 |
| Pressure Rating: | ISO 10771-1 |
| Hydraulic Interface: | ISO 4401-07-07 ⁽¹⁾ |

1. Ports over-sized to 20 mm.

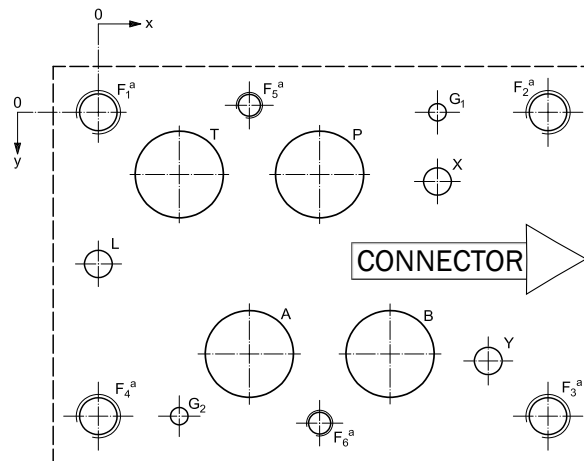
Unit Dimensions



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

Mounting Dimensions

| | | P | A | B | T | L | X | Y | F1 | F2 | F3 | F4 | F5 | F6 |
|------------|----|------|------|------|------|------|------|------|-----|-------|-------|------|------|------|
| Diameter | mm | 20 | 20 | 20 | 20 | 6.3 | 6.3 | 6.3 | M10 | M10 | M10 | M10 | M6 | M6 |
| X Position | mm | 50 | 34.1 | 65.9 | 18.3 | 0 | 76.6 | 88.1 | 0 | 101.6 | 101.6 | 0 | 34.1 | 50 |
| Y Position | mm | 14.3 | 55.6 | 55.6 | 14.3 | 34.9 | 15.9 | 57.2 | 0 | 0 | 69.9 | 69.9 | -1.6 | 71.5 |



Bolts (F1, F2, F3, F4)

Type: M10 x 50 mm DIN EN ISO 4762-8.8
 Required Torque: 40 Nm (29.5)

(F5, F6)

M6 x 50 mm DIN EN ISO 4762-8.8
 8 Nm (5.9)

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

Type: 22.22 x Ø 2.62
 Material: NBR or Viton, 90 Shore A

(L, X, Y)

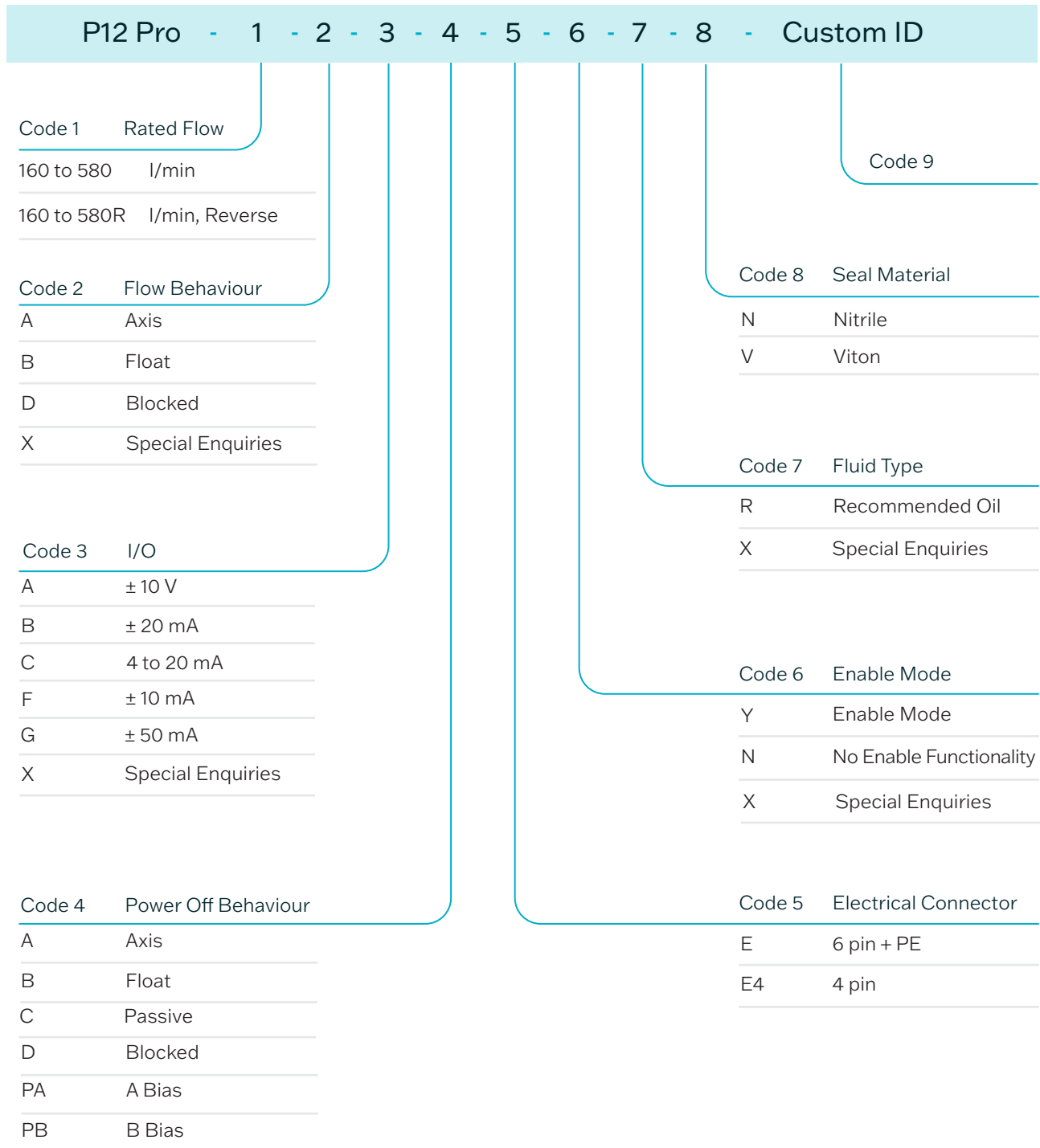
10.82 x Ø 1.78
 NBR or Viton, 90 Shore A

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.



1. Flow rating set in value software - dynamic performance measured set as 580 l/min flow.

Code 1 Rated Flow

Any value in range 250 to 580 l/min rated at 35 bar ΔP per control edge. R – Suffix for reversal of A and B port e.g. 580R

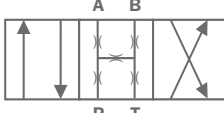
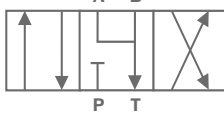
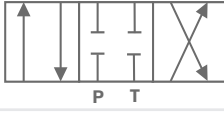
$$Q = Q_N \sqrt{\frac{P}{70}}$$

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

Code 2 Flow Behaviour

Flow behaviour is defined by key elements within the SKU, including flow rate, centre flow, and power-off position. The properties that define each aspect are described in detail below.

Hydraulic Connections

| Code | Hydraulic Connection | Description | Symbol | Default Flow Map |
|------|----------------------------------|-------------------------------|--|------------------|
| A | Axis | 1% overlap |  | Linear |
| B | Float | 5% overlap P 5% underlap T |  | Deadband |
| D | Blocked | 5% overlap |  | Deadband |
| X | For other options please enquire | | | |

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.

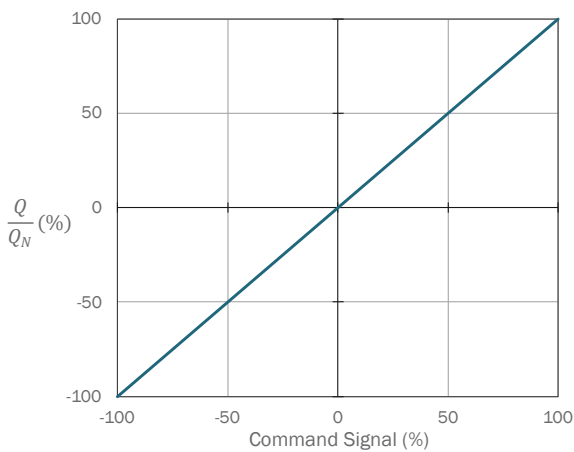
Please enquire for options.

Flow Map

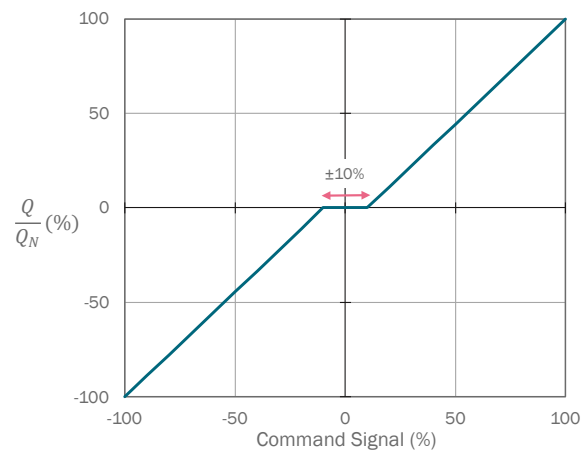
Flow mapping is how the valve behaves from its command signal, drives how much flow is being delivered at any given command signal. These behaviours are independent of the edge-condition and mechanical behaviour; However, they may be typically used in combination with the above.

| Code | Flow Map | Description |
|------|----------|---|
| A | Linear | 100% flow gain across full range |
| D | Deadband | 0% flow gain between $\pm 10\%$ flow demand |
| O | Gradual | 50% flow gain between $\pm 3\%$ flow demand |

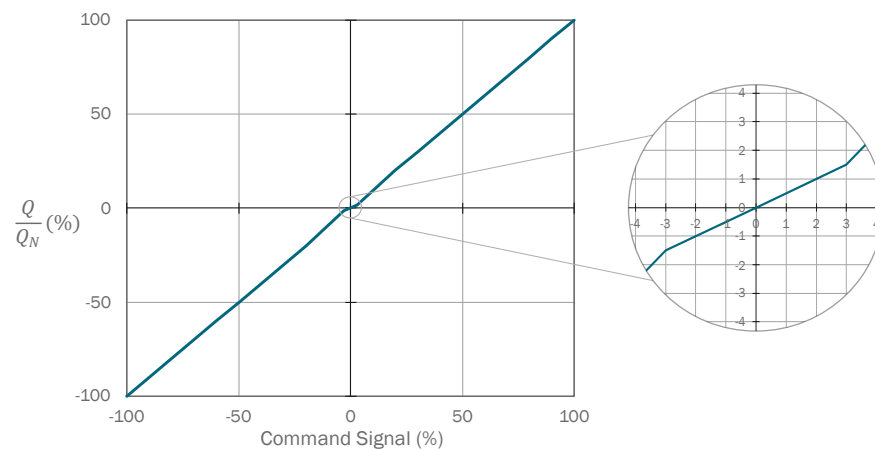
A - Axis



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 | - |
| B | ± 20 mA | | ± 21 mA | |
| C ⁽¹⁾ | 4 to 20 mA | 402 Ω | 3.8 to 21 mA | 600 Ω |
| F | ± 10 mA | | ± 10.5 mA | |
| G ⁽²⁾ | ± 50 mA | 200 Ω | - | - |
| X | For other options please enquire | | | |

1. For 4 to 20mA input signal, a current input below 2 mA will disable the motor drive

2. Configuration available for Input only. Default output will be Control Mode - A

Electrical

| | | |
|--|---|------------|
| Supply Voltage (Operational) | V | 22 to 30 |
| Supply Voltage (Absolute) ⁽¹⁾ | V | -0.5 to 33 |
| 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. The valve supply must be protected with a 5 AT fuse or equivalent overcurrent protection device

Code 4 Power Off Behaviour

Power off behaviour 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 |
|------|----------------------------------|---|---|
| A | Axis | Leakage flow across all edges |  |
| 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 | | |

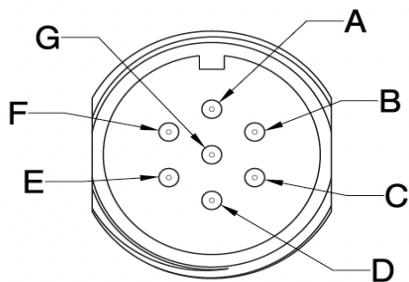
Code 5 Electrical Connectors

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 - Enable input | Output 0 V Reference Drive enable input |
| D | Input + | Differential input signal, + |
| E | Input - | Differential input signal, - |
| F | Output + | Output Signal |
| G | Earth | - |

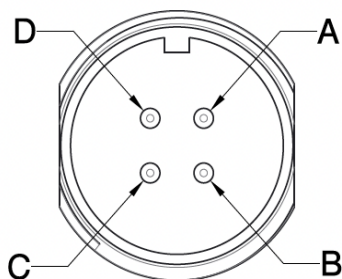
1. When the enable function is selected, the function of pin C is the enable input. This replaces the standard pin function.

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 on

| 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