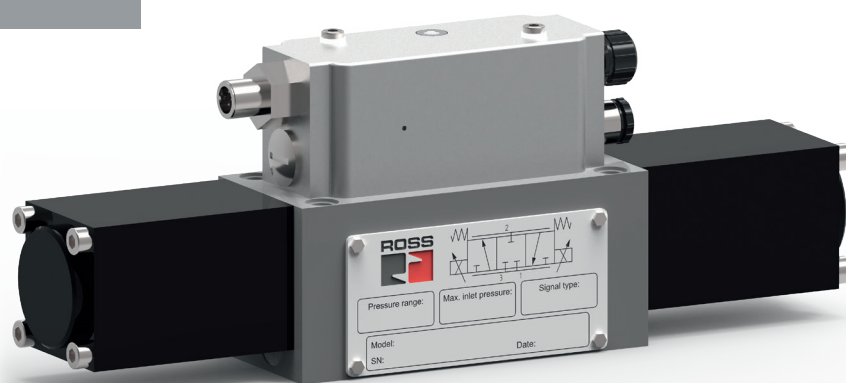
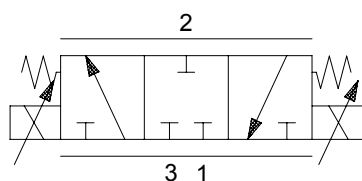


# PV40

## Proportional Pressure Control Valve

120P71

**ROSS**  
a global family



|                             |                                                    |                                                         |
|-----------------------------|----------------------------------------------------|---------------------------------------------------------|
| Series <sup>(1)</sup>       | 120P71                                             |                                                         |
| Function                    | 3/3-Way (Permanent exhaust function at zero value) |                                                         |
| Medium                      | Compressed air or other neutral gases              |                                                         |
| Orifice size                | 12 mm                                              |                                                         |
| Nominal flow <sup>(2)</sup> | 3200 NL/min                                        |                                                         |
| Max. inlet pressure         | 5 bar                                              |                                                         |
| Ambient temperature         | 0 – 75 °C                                          |                                                         |
| Enclosure rating            | IP 65 (plugged)                                    |                                                         |
| Materials                   | Valve body                                         | Aluminum alloy, clear anodized                          |
|                             | Valve internals                                    | Stainless steel                                         |
|                             | Reset spring                                       | Stainless steel                                         |
|                             | Seals                                              | FKM (Viton)                                             |
| Actuator                    | Solenoid                                           | Supply voltage 24 VDC<br>Max. current consumption 1.6 A |
| Fluidic interface           | Base mounted                                       |                                                         |

### NOTE

When using other media (e.g. air) at temperatures below 4° C, make sure that these are free of water vapor to prevent formation of ice.

<sup>(1)</sup> Order number see Page .6

<sup>(2)</sup> Inlet pressure = 7 bar (abs.),  
Outlet pressure = 6 bar (abs.),  
Opening degree = 100 %

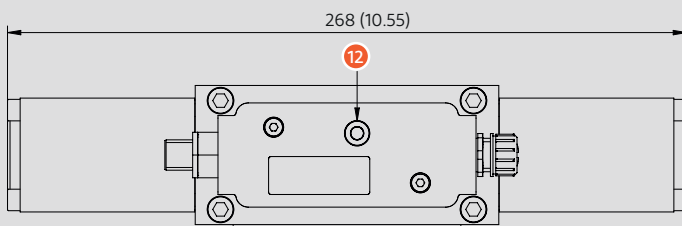
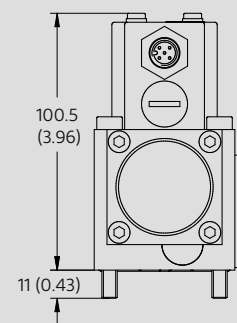
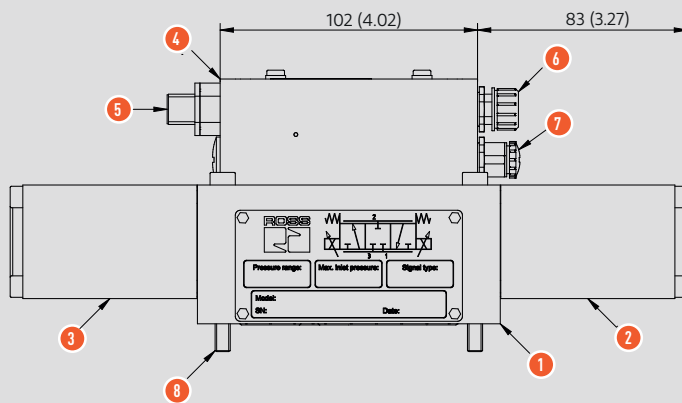
Standard conditions:  
1013,25 mbar, 20°C,  
0 % relative humidity

## DESCRIPTION

The proportional pressure control valve was specifically developed for pneumatic systems which require rapid pressurization. The control valve is able to continuously pressurize as well as de-pressurize within the entire pressure range. Once the set value has been reached, the inlet poppet and exhaust poppet remain closed and there is no need for further pneumatic energy if the pressure in the downstream system remains stable.

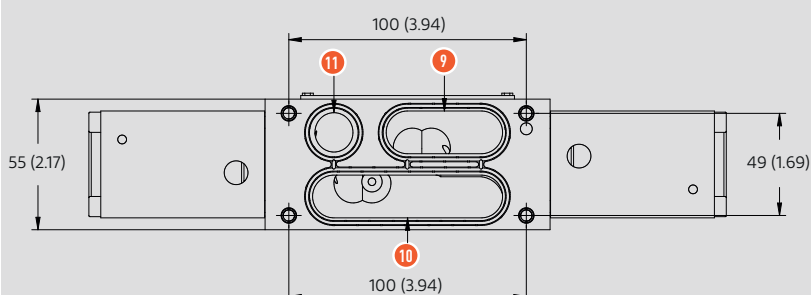
The valve has been designed with a small hysteresis to produce accurate and repeatable actual values and to maintain an optimal degree of efficiency. The combination of a force balanced construction and our proven poppet technology provides excellent sealing properties and provides true shut-off characteristics.

## COMPONENTS AND DIMENSIONS - MM (INCH)



## COMPONENTS- DESCRIPTIONS

- 1 Valve body
- 2 Inlet solenoid
- 3 Outlet solenoid
- 4 Electrical housing
- 5 Electrical interface
- 6 Communication interface Input
- 7 Communication interface Output
- 8 Mounting screws (M6x65)
- 9 Port 1 (supply)
- 10 Port 2 (output)
- 11 Port 3 (exhaust)
- 12 LED (state signaling)



**OPTIMUM OPERATING CONDITIONS**

|                     |                                                                               |
|---------------------|-------------------------------------------------------------------------------|
| Inlet pressure      | at least 2 bar and<br>at least 0.5 bar above max. required operating pressure |
| Ambient temperature | 15 – 50 °C                                                                    |
| Supply voltage      | 24 VDC                                                                        |

**PERFORMANCE CHARACTERISTICS <sup>(1)</sup>**

|                              |                                                                         |
|------------------------------|-------------------------------------------------------------------------|
| Control speed <sup>(2)</sup> | 90 % of set value: approx. 100 ms<br>100 % of set value: approx. 200 ms |
| Control accuracy             | ± 0.01 bar                                                              |
| Repeatability                | ± 0.01 bar                                                              |

<sup>(1)</sup> valid for Optimum  
Operating Control

<sup>(2)</sup> related to a 2.5 l volume

**ELECTRICAL CONTROL**

Once the supply voltage is applied a total exhaust is initiated and the valve is operational after approximately 2 seconds.

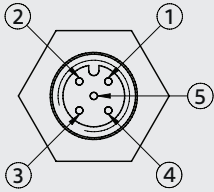
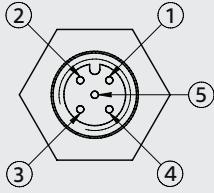
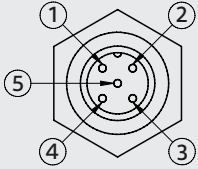
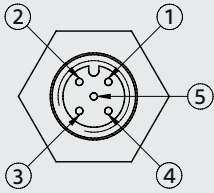
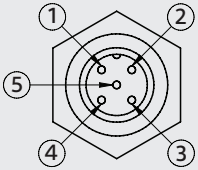
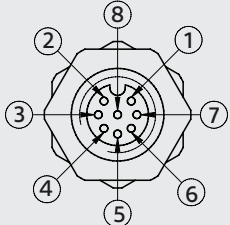
The electronics of the valve controls the pressure proportionally to the required set value across the full pressure range utilizing for example a 4 – 20 mA (depends on valve type) signal. A quick exhaust function can be achieved by supplying the minimum set value of 4 mA (depends on valve type).

At zero value (for example 4 mA, depends on valve type) the permanent exhaust function causes the exhaust poppet to remain open.

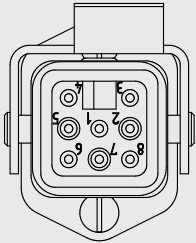
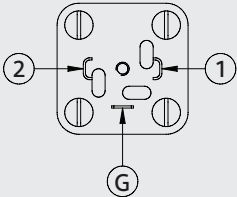
**ELECTRICAL CHARACTERISTICS**

|                          |              |
|--------------------------|--------------|
| Supply voltage           | 24 VDC ± 10% |
| Max. current consumption | 1.6 A        |

## ELECTRICAL CONNECTION AND PIN CONFIGURATION

|            |                                                                                                                                        |       |                |                                                                                       |
|------------|----------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|---------------------------------------------------------------------------------------|
| M12M5      | <ul style="list-style-type: none"> <li>• 5-pin flange connector</li> <li>• M12X1</li> <li>• A-coded</li> <li>• positionable</li> </ul> | PIN 1 | + 24 V         |    |
|            |                                                                                                                                        | PIN 2 | Set value +    |                                                                                       |
|            |                                                                                                                                        | PIN 3 | 0 V            |                                                                                       |
|            |                                                                                                                                        | PIN 4 | Actual value + |                                                                                       |
|            |                                                                                                                                        | PIN 5 | PE             |                                                                                       |
| M12D5      | <ul style="list-style-type: none"> <li>• 5-pin flange connector</li> <li>• M12X1</li> <li>• A-coded</li> <li>• positionable</li> </ul> | PIN 1 | + 24 V         |    |
|            |                                                                                                                                        | PIN 2 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 3 | 0 V            |                                                                                       |
|            |                                                                                                                                        | PIN 4 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 5 | NC             |                                                                                       |
|            | <ul style="list-style-type: none"> <li>• 5-pin flange coupling</li> <li>• M12X1</li> <li>• A-coded</li> <li>• positionable</li> </ul>  | PIN 1 | Set value -    |   |
|            |                                                                                                                                        | PIN 2 | Set value +    |                                                                                       |
|            |                                                                                                                                        | PIN 3 | Actual value + |                                                                                       |
|            |                                                                                                                                        | PIN 4 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 5 | PE             |                                                                                       |
| M12D5-PCAV | <ul style="list-style-type: none"> <li>• 5-pin flange connector</li> <li>• M12X1</li> <li>• A-coded</li> <li>• positionable</li> </ul> | PIN 1 | + 24 V         |  |
|            |                                                                                                                                        | PIN 2 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 3 | 0 V            |                                                                                       |
|            |                                                                                                                                        | PIN 4 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 5 | NC             |                                                                                       |
|            | <ul style="list-style-type: none"> <li>• 5-pin flange coupling</li> <li>• M12X1</li> <li>• A-coded</li> <li>• positionable</li> </ul>  | PIN 1 | NC             |  |
|            |                                                                                                                                        | PIN 2 | Set value +    |                                                                                       |
|            |                                                                                                                                        | PIN 3 | Set value -    |                                                                                       |
|            |                                                                                                                                        | PIN 4 | Actual value + |                                                                                       |
|            |                                                                                                                                        | PIN 5 | PE             |                                                                                       |
| M12M8      | <ul style="list-style-type: none"> <li>• 8-pin flange connector</li> <li>• M12X1</li> <li>• A-coded</li> <li>• positionable</li> </ul> | PIN 1 | 0 V            |  |
|            |                                                                                                                                        | PIN 2 | + 24 V         |                                                                                       |
|            |                                                                                                                                        | PIN 3 | Actual value + |                                                                                       |
|            |                                                                                                                                        | PIN 4 | Set value -    |                                                                                       |
|            |                                                                                                                                        | PIN 5 | Set value +    |                                                                                       |
|            |                                                                                                                                        | PIN 6 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 7 | NC             |                                                                                       |
|            |                                                                                                                                        | PIN 8 | PE             |                                                                                       |

ELECTRICAL CONNECTION AND PIN CONFIGURATION

|       |                                          |       |                |                                                                                     |
|-------|------------------------------------------|-------|----------------|-------------------------------------------------------------------------------------|
| WRMM8 | • 8-poliger Wieland revos MINI connector | PIN 1 | 0 V            |  |
|       |                                          | PIN 2 | Set value -    |                                                                                     |
|       |                                          | PIN 3 | Set value +    |                                                                                     |
|       |                                          | PIN 4 | + 24 V         |                                                                                     |
|       |                                          | PIN 5 | Actual value - |                                                                                     |
|       |                                          | PIN 6 | Actual value + |                                                                                     |
|       |                                          | PIN 7 | NC             |                                                                                     |
|       |                                          | PIN 8 | PE             |                                                                                     |
| CPAM3 | • 3-pin cable plug connector Form A3     | PIN 1 | + 24 V         |  |
|       |                                          | PIN 2 | Set value +    |                                                                                     |
|       |                                          | PIN G | 0 V            |                                                                                     |

## COMMUNICATION INTERFACE

The *Proportional Pressure Control Valve* has a communication interface that can be used by the customer. Valves on a machine can be connected to each other and to the *Diagnostics Tablet for Proportional Pressure Control Valves* by a communication field bus. The tablet can be used to monitor and analyze the operation of valves, especially their pressure build-up process. Additionally, the tablet has a configurable monitoring function that records valve events continuously and logs them into a long-term log.

## PROPORTIONAL PRESSURE CONTROL VALVE MODELS

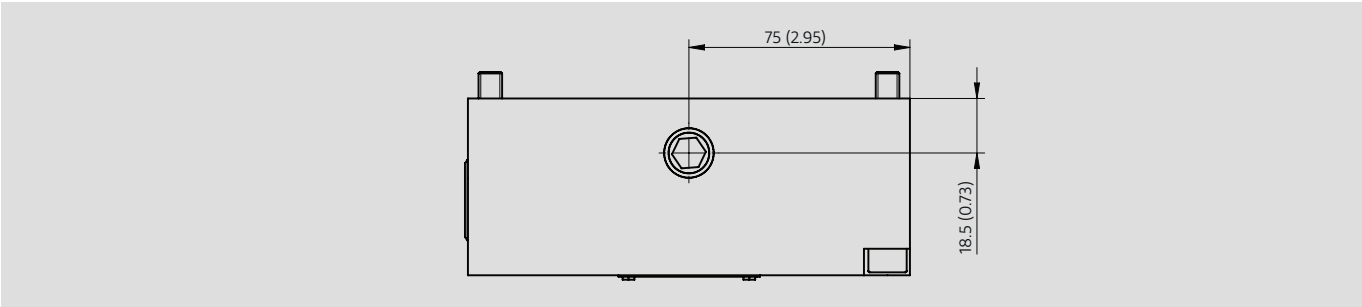
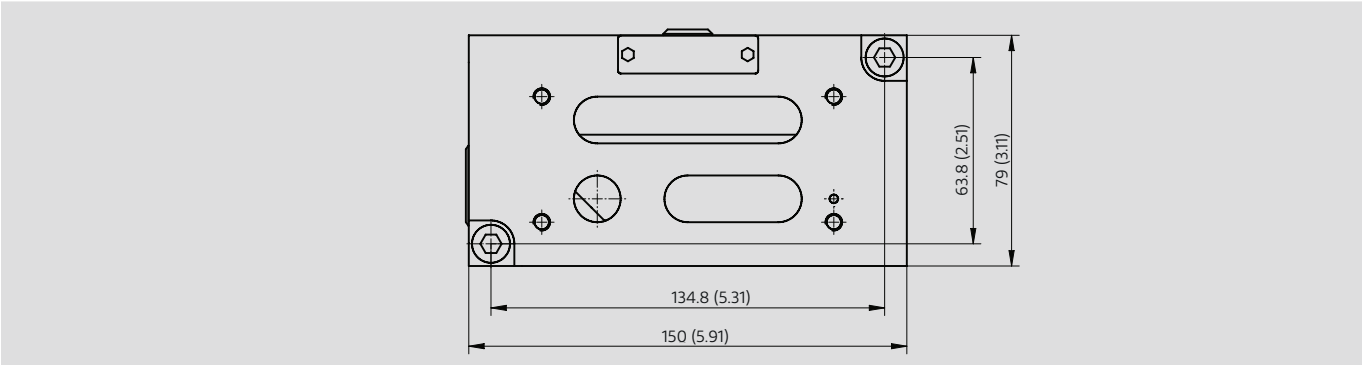
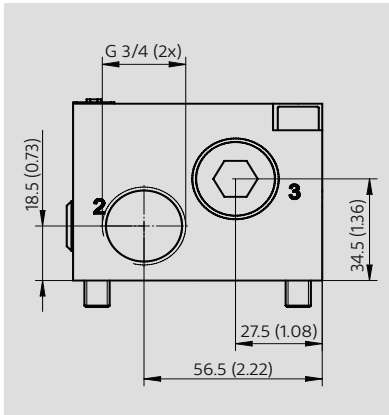
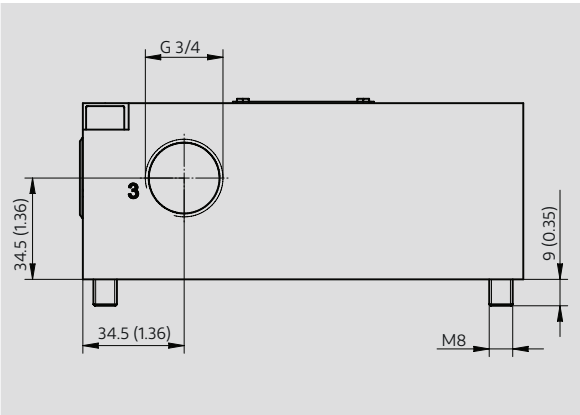
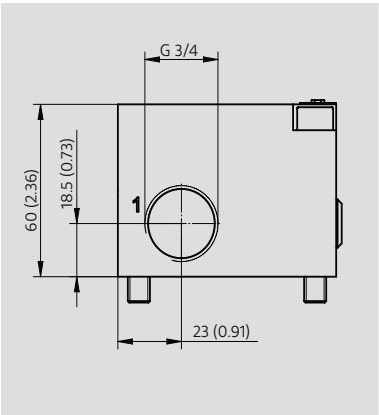
| ORDER NUMBER | OPERATING PRESSURE | ELECTRICAL CONTROL | ELECTRICAL CONNECTION <sup>(1)</sup> |
|--------------|--------------------|--------------------|--------------------------------------|
| 120P710000P  | 0–4.0 bar          | 4–20 mA            | M12M5                                |
| 120P710001P  | 0–3.5 bar          | 4–20 mA            | M12M5                                |
| 120P710002P  | 0–3.5 bar          | 0–10 V             | M12D5                                |
| 120P710003P  | 0–3.5 bar          | 4–20 mA            | M12D5-PCAV                           |
| 120P710004P  | 0–4.0 bar          | 4–20 mA            | M12M8                                |
| 120P710005P  | 0–3.9 bar          | 0–10 V             | CPAM3                                |
| 120P710007P  | 0–3.5 bar          | 4–20 mA            | M12D5                                |
| 120P710008P  | 0–4.0 bar          | 4–20 mA            | WRMM8                                |

<sup>(1)</sup> Please refer to *Electrical Connection and Pin Configuration*.

SUB-BASE MODELS AND DIMENSIONS – MM (INCH)

| ORDER NUMBER | CONNECTION SIZE |
|--------------|-----------------|
| 120P190501   | G 3/4           |

Other sub-bases on request.



## ACCESSORIES

| ORDER NUMBER                                                                                                                     | DESCRIPTION                                                                                                                                         | NOTE                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RESK4770.10                                                                                                                      | Diagnostics Tablet for Proportional Pressure Control Valves                                                                                         | For parameterization, analysis and monitoring of valves during regular operation.                                                                                       |
| RESK4771.10                                                                                                                      | Diagnostics and Test Unit for Proportional Pressure Control Valves                                                                                  | For parameterization, analysis and monitoring of valves during regular operation. Test function through own voltage and signal supply in combination with the test rig. |
| RESK4771.1                                                                                                                       | Test Rig for Proportional Pressure Control Valves                                                                                                   | Test rig with test volume and pressure sensor.                                                                                                                          |
| On request                                                                                                                       | Adapter cable kit for <i>Diagnostics and Test Unit for Proportional Pressure Control Valves</i>                                                     | For electrical connection of the valve to the <i>Diagnostics and Test Unit</i> according to the valves electrical connection.                                           |
| On request                                                                                                                       | Sub-base adapter for <i>Test Rig for Proportional Pressure Control Valves</i>                                                                       | For mechanical adaptation of the valve with the test rig according to the pneumatic interface.                                                                          |
| PROBUSKAB0050-M12B<br>PROBUSKAB0100-M12B<br>PROBUSKAB0200-M12B<br>PROBUSKAB0300-M12B<br>PROBUSKAB0500-M12B<br>PROBUSKAB1000-M12B | 0.5 m Field Bus Cable<br>1.0 m Field Bus Cable<br>2.0 m Field Bus Cable<br>3.0 m Field Bus Cable<br>5.0 m Field Bus Cable<br>10.0 m Field Bus Cable | For fieldbus cabling of valves via the communication interface and for connection to the <i>Diagnostics Tablet or Diagnostics and Test Unit</i> .                       |
| PROBUS-TERM-M12B                                                                                                                 | Field Bus Terminator                                                                                                                                | For field bus termination at the last valve of the field bus line.                                                                                                      |