720 Series

Compact solenoid valve | 2/2-3/2 NC-NO
PNEUMATIC DIVISION

MATRIX mechatronics
Pneumatic solenoid valves of 720 Series are available in both NC and NO version. They include all innovations, which are present in Matrix solenoid valves, both in materials and in operating principles. They couple simplicity and reliability with high dynamic performance. Response times are of milliseconds range, while their operating life is over 500 million cycles. The Series comprises Vacuum versions designed for uses with vacuum technique.

Due to the facility to be speed-up controlled, dynamic characteristics become even more improved: standard solenoid valves equipped with 24 VDC control present response times lower than 5 ms in opening and 2 ms in closing, with a maximum operation frequency 200 Hz. On the contrary, solenoid valves equipped with speed-up control present a response time both in opening and closing lower than 2 ms, with a maximum operation frequency 300 Hz.

Besides high-speed characteristics, solenoid valves 720 Series offer flow rate value to 100 l/minute (ANR), with supply pressure from 0 to 8 bar.

720 Series is available both in line assembly version and on sub-plate and is equipped with a range of accessories such as multi-position manifolds and speed-up driver boards.

**Advantages**

- Compact dimension.
- High duct diameter and flow rate.
- Short response times.
- Insensitivity to frequency work and to vibrations.
- Low absorbed power.
- Precision, repetitiveness and flexibility.
- Long operating life.

**Applications**

- Process and precision instrumentation.
- Pressure and flow rate control devices.
- Positioning systems.
- Pilot systems.
- Selection systems.
- Metering systems.
- Biomedical and measure sector.
- Industrial automation.

**Materials**

- Body in PPS.
- Flanges in Al.
- Seals in NBR (shutters in HNBR on request).
**CONTROL:**
- DIRECT
- PFM
- PWM

**FLUID**
- Non-lubricated dry air, neutral gases (−10 to 50°C)

**FILTRATION RATING**
- Min 40 micron

**TEMPERATURE**
- −10 to 50°C (Standard version)

**RESPONSE TIME IN OPENING**
- 12 / 24 < 7 ms
- XX / KK < 2 ms
- JJ < 5 ms

**RESPONSE TIME IN CLOSING**
- 12 / 24 < 3 ms
- XX / KK < 2 ms
- JJ < 2 ms

**MAXIMUM FREQUENCY**
- 100 Hz
- 200 Hz
- 300 Hz

**WEIGHT**
- 35 g

**PRODUCT LIFE EXPECTANCY**
- ≥ 500 M/s cycles

**IP RATING**
- IP 62

**IDENTIFICATION CODE**

- **OUTLETS**  1 1 Outlet

- **FLOW RATE (at 6 bar)**
  - H  50 Nl./min
  - B  80 Nl./min
  - M  100 Nl./min (control tension: JJ, XX, KK)

- **VERSION**
  - Body ported
  - H  Body ported - HNBR Shutters
  - F  Manifold
  - J  Manifold - HNBR Shutters

- **No. ELECTRICAL CONTROLS**
  - 1  1 Control

- **PORT CONNECTION**
  - 0  Integrated cables IP 62 L = 500 mm
  - 1  Integrated cables IP 62 L = 100 mm

- **FUNCTION**
  - A  NO
  - C  NC

- **TYPE**
  - 2  2/2

- **CONTROL TENSION**
  - 12  24 VDC ±10 %  ED 100 %
  - 1.4 W
  - 24  24 VDC ±10 %  ED 100 %
  - 1.2 W
  - JJ  24 VDC ±10 %  ED 100 %
  - 1.9 W
  - XX  Speed-up in current  ED 100 %
  - KK  Speed-up in tension  ED 100 %

  (*) Only with Electronic Driver Boards PRB or UDB

- **OPERATING PRESSURE**

<table>
<thead>
<tr>
<th>RANGE</th>
<th>MODELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 - 4 bar  All</td>
</tr>
<tr>
<td>2</td>
<td>4 - 8 bar  All</td>
</tr>
<tr>
<td>3</td>
<td>0 - 8 bar  XX / KK</td>
</tr>
<tr>
<td>8</td>
<td>2 - 6 bar  All</td>
</tr>
</tbody>
</table>
CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

V1 = 24 VDC  t1 = 2 ms  V2 = 5 VDC

N.B. KK MODELS ARE CONTROLLED IN TENSION

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

I1 = 0.7 A  t1 = 2 ms  I2 = 0.3 A

N.B. XX MODELS ARE CONTROLLED IN CURRENT

FLOW RATE [M]

Qn = 67 Nl/min
C = 15.3 Nl/min bar
b = 0.35
**GENERAL CHARACTERISTICS**

- **FLUID**: Non-lubricated dry air, neutral gases (−10 + 50°C)
- **Filtration Rating**: Min 40 micron
- **Temperature**: −10 + 50°C (Standard version)
- **Response Time in Opening**: 12 / 24 < 7 ms JJ < 5 ms XX / KK < 2 ms
- **Response Time in Closing**: 12 / 24 < 3 ms JJ < 2 ms XX / KK < 2 ms
- **Maximum Frequency**: 100 Hz 200 Hz 300 Hz
- **Weight**: 35 g
- **Product Life Expectancy**: ≥ 500 M/s cycles
- **IP Rating**: IP 62

**IDENTIFICATION CODE**

- **H**
  - **Flow Rate** (at 6 bar)
    - H: 50 Nl./min
    - B: 80 Nl./min
    - M: 100 Nl./min (control tension JJ XX KK)
- **Function**
  - A: NO
  - C: NC
- **Type**
  - 3: 3/2
- **Outlet**
  - 1: 1 Outlet
- **Version**
  - Body ported
  - H: Body ported - HNBR Shutters
  - F: Manifold
  - J: Manifold - HNBR Shutters
- **No. Electrical Controls**
  - 1: 1 Control
- **Port Connection**
  - 0: Integrated cables IP 62 L = 500 mm
  - 1: Integrated cables IP 62 L = 100 mm
- **Control Tension**
  - 12: 12 VDC ± 10% ED 100% 1.4 W
  - 24: 24 VDC ± 10% ED 100% 1.2 W
  - JJ: 24 VDC ± 10% ED 100% 1.9 W
  - XX: Speed-up in current ED 100% —
  - KK: Speed-up in tension ED 100% —

**Operating Pressure**

<table>
<thead>
<tr>
<th>Range</th>
<th>Models</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>0 - 4 bar</td>
</tr>
<tr>
<td>2</td>
<td>4 - 8 bar</td>
</tr>
<tr>
<td>3</td>
<td>0 - 8 bar</td>
</tr>
<tr>
<td>8</td>
<td>2 - 6 bar</td>
</tr>
</tbody>
</table>
ACCESSORIES

<table>
<thead>
<tr>
<th>Reference</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>PUSH-IN FITTING Ø 4/6</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>SILENCER</td>
</tr>
</tbody>
</table>

NOTE: Inch size available

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

N.B. KK MODELS ARE CONTROLLED IN TENSION

V1 = 24 VDC
V2 = 5 VDC

Tension run
Pressure run

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

N.B. XX MODELS ARE CONTROLLED IN CURRENT

I1 (V1)
Pressure run

I1 = 0.7 A
I2 = 0.3 A

I1 = 2 ms
I2 = 2 ms

FLOW RATE M

Qn = 67 Nl/min
C = 15.3 Nl/min bar
b = 0.95
**GENERAL CHARACTERISTIC**

- **FLUID**: Non-lubricated dry air, neutral gases (−10 to 50°C)
- **FILTRATION RATING**: Min 40 micron
- **TEMPERATURE**: −10 to 50°C (Standard version)
- **RESPONSE TIME IN OPENING**: 12 / 24 < 7 ms JJ < 5 ms XX / KK < 2 ms
- **RESPONSE TIME IN CLOSING**: 12 / 24 < 3 ms JJ < 2 ms XX / KK < 2 ms
- **MAXIMUM FREQUENCY**: 100 Hz 200 Hz 300 Hz
- **WEIGHT**: 35 g
- **PRODUCT LIFE EXPECTANCY**: ≥ 500 M/s cycles
- **IP RATING**: IP 62

**IDENTIFICATION CODE**

- **H X 7 2 1 1 0 V A 2 2 4**

**ORIFICE**
- H \( \Phi_{eq} = 0.9 \text{ mm} \)
- B \( \Phi_{eq} = 1.3 \text{ mm} \)
- M \( \Phi_{eq} = 1.5 \text{ mm} \) (control tension JJ XX KK)

**VERSION**
- Body ported
- H Body ported - HNBR Shutters
- F Manifold
- J Manifold - HNBR Shutters

**No. ELECTRICAL CONTROLS**
- 1 1 Control

**PORT CONNECTION**
- 0 Integrated cables IP 62 L = 500 mm
- 1 Integrated cables IP 62 L = 100 mm

**CONTROL TENSION**
- 12 12 VDC ± 10% ED 100 % 1.4 W
- 24 24 VDC ± 10% ED 100 % 1.2 W
- JJ 24 VDC ± 10% ED 100 % (t) 1.9 W
- XX Speed-up in current ED 100 % (t) —
- KK Speed-up in tension ED 100 % (t) —

( ) Only with Electronic Driver Boards PRB or UDB

**OPERATING PRESSURE**

<table>
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<tr>
<th>RANGE</th>
<th>MODELS</th>
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<tbody>
<tr>
<td>V</td>
<td>10⁻⁵ Torr</td>
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</tbody>
</table>
CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

N.B. KK MODELS ARE CONTROLLED IN TENSION

V1 = 24 VDC  t1 = 2 ms  V2 = 5 VDC

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

N.B. XX MODELS ARE CONTROLLED IN CURRENT

I1 = 0.7 A  t1 = 2 ms  I2 = 0.3 A

ACCESSORIES

<table>
<thead>
<tr>
<th>Reference</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>VACUUM FITTING Ø 4/6</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>VACUUM FITTING Ø 4/6</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>PLUG</td>
</tr>
</tbody>
</table>

NOTE: Inch size available
721 VACUUM • 3/2

CONTROL: DIRECT

N. 1 NC

N. 1 NO

GENERAL CHARACTERISTICS

FLUID Non-lubricated dry air, neutral gasesi (−10 + 50°C)

FILTRATION RATING Min 40 micron

TEMPERATURE −10 + 50°C (Standard version)

RESPONSE TIME IN OPENING 12 / 24 < 7 ms JJ < 5 ms XX / KK < 2 ms

RESPONSE TIME IN CLOSING 12 / 24 < 3 ms JJ < 2 ms XX / KK < 2 ms

MAXIMUM FREQUENCY 100 Hz 200 Hz 300 Hz

WEIGHT 35 g

PRODUCT LIFE EXPECTANCY ≥ 500 M/s cycles

IP RATING IP 62

IDENTIFICATION CODE

H X 7 2 1 1 0 V A 3 2 4

• OUTLETs 1 1 Outlet

• ORIFICE
  H Ø eq = 0.9 mm
  B Ø eq = 1.3 mm
  M Ø eq = 1.5 mm (control tension JJ XX KK)

• VERSION
  Body ported
  Body ported - HNBR Shutters
  F Manifold
  J Manifold - HNBR Shutters

• No. ELECTRICAL CONTROLS 1 1 Control

• PORT CONNECTION
  0 Integrated cables IP 62 L = 500 mm
  1 Integrated cables IP 62 L = 100 mm

• FUNCTION
  A NO
  C NC

• TYPE 3 3/2

• CONTROL TENSION
  12 12 VDC ± 10 % ED 100 % 1.4 W
  24 24 VDC ± 10 % ED 100 % 1.2 W
  JJ 24 VDC ± 10 % ED 100 % (i) 1.9 W
  XX Speed-up in current ED 100 % (i) —
  KK Speed-up in tension ED 100 % (i) —
  (i) Only with Electronic Driver Boards PRB or UDB

• OPERATING PRESSURE
  RANGE MODELS
  V 10⁻⁵ Torr All
CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

V1 = 24 VDC  t1 = 2 ms  V2 = 5 VDC

N.B. KK MODELS ARE CONTROLLED IN TENSION

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

I1 = 0.7 A  t1 = 2 ms  I2 = 0.3 A

N.B. XX MODELS ARE CONTROLLED IN CURRENT

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</tr>
<tr>
<td>2</td>
<td>1</td>
<td>SILENCER</td>
</tr>
</tbody>
</table>

NOTE: Inch size available
Manifolds for multiple installing represent a fast and safe system of connection for all 720 Series models. Manifolds are available in patterns for 4 and 8 solenoid valves. They come in a kit with fastening screws, inlet push-in fittings, closure plug and sealing O-Rings.

**How to order manifolds - Available patterns**

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Kit code</th>
<th>Y (mm)</th>
<th>Z (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>no. 4 Solenoid</td>
<td>861.310 I</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Solenoid valves</td>
<td>861.321 T</td>
<td>120</td>
<td>110</td>
</tr>
</tbody>
</table>

4 position manifold - Assembly scheme