820 Series

High Performance solenoid valve | 2/2 - 3/3
PNEUMATIC DIVISION

MATRIX
mechatronics
The Pneumatic Solenoid Valves 820 Series are NC 2/2 type. The research about materials and new technological solutions allowed the realization of a shutter solenoid valve with an extremely simple operation principle and with avant-garde dynamic characteristics. The mass of the moving elements has been reduced to the minimum and every inner friction has been eliminated: in this way, we obtained response times of milliseconds and an operation life over 500 million cycles. Due to the possibility of controls of speed-up type, their dynamic characteristics are even more improved. Standard solenoid valves with 24 VDC control have a response time lower than 5 ms in opening and 2 ms in closing, with a maximum operation frequency of 200 Hz. On the contrary, solenoid valves with speed-up control have a response time lower than 1 ms, both in opening and in closing, with a maximum operation frequency of 500 Hz.

Besides high-speed characteristics, solenoid valves 820 Series offer flow rate values up to 180 l./minute (ANR), with feeding pressure from 0 to 8 bar. Controlling the valve through either PWM (Pulse Width Modulation) or PFM (Pulse Frequency Modulation) technique, it is possible to vary the passing flow rate and to obtain, in this way, a solenoid valve, having a proportional flow rate.

820 Series is available both in-line assembly and sub-plate version, equipped with such accessories as multi-position manifolds or 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.
- Selection systems.
- Metering systems.
- Biomedical and measure sector.

**Materials**

- Body in PPS.
- Flanges in Al.
- Seals in NBR.
### GENERAL CHARACTERISTICS

- **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**: 24 < 5 ms
- **RESPONSE TIME IN CLOSING**: 24 < 2 ms
- **MAXIMUM FREQUENCY**: 500 Hz
- **WEIGHT**: 25 g
- **PRODUCT LIFE EXPECTANCY**: ≥ 500 M/s cycles
- **IP RATING**: IP 62

### IDENTIFICATION CODE

- **FLOW RATE** (at 6 bar):
  - **M**: 100 Nl/min
  - **N**: 140 Nl/min (control tension XX/KK)
  - **O**: 180 Nl/min (control tension XX/KK)

- **VERSION**:
  - Body ported
  - Manifold

- **OUTLETS**:
  - 1 Outlet

- **FUNCTION**:
  - C: NC

- **TYPE**:
  - 2: 2/2

- **CONTROL TENSION**:
  - 24 VDC ± 10%: 2.9 W
  - XX: Speed-up in current (24 VDC): 1.3 W
  - KK: Speed-up in tension (24 VDC): 0.8 W

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

- **PORT CONNECTION**:
  - 0: Integrated cables IP 62 L = 500 mm
  - 1: Integrated cables IP 62 L = 100 mm
CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

N.B. KK MODELS ARE CONTROLLED IN TENSION

<table>
<thead>
<tr>
<th>Model</th>
<th>Tension Duty</th>
<th>Pressure Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>V1 = 24 VDC</td>
<td>t1 = 2.0 ms</td>
</tr>
<tr>
<td>N</td>
<td>V1 = 24 VDC</td>
<td>t1 = 2.0 ms</td>
</tr>
<tr>
<td>O</td>
<td>V1 = 24 VDC</td>
<td>t1 = 2.5 ms</td>
</tr>
</tbody>
</table>

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

N.B. XX MODELS ARE CONTROLLED IN CURRENT

<table>
<thead>
<tr>
<th>Model</th>
<th>Tension Duty</th>
<th>Pressure Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>I1 = 0.7 A</td>
<td>I2 = 0.3 A</td>
</tr>
<tr>
<td>N</td>
<td>I1 = 0.8 A</td>
<td>I2 = 0.3 A</td>
</tr>
<tr>
<td>O</td>
<td>I1 = 0.9 A</td>
<td>I2 = 0.3 A</td>
</tr>
</tbody>
</table>

FLOW RATE

Qm = 73 Nl/min
C = 15.7 Nl/min bar
b = 0.433
**GENERAL CHARACTERISTICS**

- **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**: 24 < 6 ms, XX/KK < 3 ms
- **RESPONSE TIME IN CLOSING**: 24 < 2 ms, XX/KK < 1 ms
- **MAXIMUM FREQUENCY**: 100 Hz, 200 Hz
- **WEIGHT**: 130 g
- **PRODUCT LIFE EXPECTANCY**: ≥ 500 M/s cycle
- **IP RATING**: IP 62

**IDENTIFICATION CODE**

- **FLOW RATE (at 6 bar)**
  - M 60 Nl/min
  - N 90 Nl/min (control tension XX KK)
  - O 120 Nl/min (control tension XX KK)

- **VERSION**
  - G Body ported

- **OUTLETS**
  - 1 Outlet

- **FUNCTION**
  - C NC

- **TYPE**
  - 3 3/3

- **CONTROL TENSION**
  - 24 24 VDC ± 10% 1.9 W
  - XX Speed-up in current (24 VDC) 1.3 W
  - KK Speed-up in tension (24 VDC) 0.8 W

- **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>3</td>
<td>0 - 8 bar M XX KK</td>
</tr>
</tbody>
</table>

- **PORT CONNECTION**
  - 0 Integrated cables IP 62 L = 500 mm
  - 1 Integrated cables IP 62 L = 100 mm
CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

N.B. KK MODELS ARE CONTROLLED IN TENSION

| M | V1 = 24 VDC | I1 = 2.0 ms | V2 = 5 VDC |
| N | V1 = 24 VDC | I1 = 2.5 ms | V2 = 5 VDC |
| O | V1 = 24 VDC | I1 = 3.0 ms | V2 = 5 VDC |

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

N.B. XX MODELS ARE CONTROLLED IN CURRENT

| M | I1 = 0.7 A | t1 = 2 ms | I2 = 0.3 A |
| N | I1 = 0.8 A | t1 = 2 ms | I2 = 0.3 A |
| O | I1 = 0.9 A | t1 = 2 ms | I2 = 0.3 A |

FLOW RATE N

\[ Q_n = 73 \text{ N/min} \]
\[ C = 15.7 \text{ N/min bar} \]
\[ b = 0.493 \]
ACCESSORIES

Manifold - 820 Series

Manifolds for multiple installing represent a fast and safe system of connection for all 820 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 valves</td>
<td>820.041 B</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>no. 8 Solenoid valves</td>
<td>820.042 C</td>
<td>120</td>
<td>110</td>
</tr>
</tbody>
</table>

4 position manifold - Assembly scheme