890 Series

High Performance compact solenoid multi-valve | 2/2 NC
PNEUMATIC DIVISION

MATRIX mechatronics

www.matrix.to.it
sales@matrix.to.it
Developed to satisfy the increasing needs of size reduction and performances optimization for important and technologically evolved industrial sectors such as textile, sorting and packaging, the new 890 Series offers high level technical characteristics and performances.

Matrix’s technology applied in the 890 Series, in fact, grants extremely fast response times combined with minimum sizes, ideals for all the applications where the dimension and the actuation speed are critical factors.

Multi-shutters design modularity offers a high flexibility, both in terms of flow rate and of utilizations density, combined with the maintenance-free operating life of half a billion cycles typical of Matrix’s products. These characteristics make the new 890 Series the ideal solutions even for the most demanding applications.

**Main Features**
- Compact dimensions and small footprint (46x46 mm)
- Light weight (160 - 250 g depending on models)
- Modular architecture design (1, 3, or 9 independent outlets)
- Multi-shutters proven technology (variable flowrate for improved flexibility)
- High performances (up to 800 Hz)
- Long operating life (half a billion cycles)
- Maintenance free
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: 24 < 5 ms, XX/KK < 1 ms

RESPONSE TIME IN CLOSING: 24 < 2 ms, XX/KK < 1 ms

MAXIMUM FREQUENCY: 200 Hz, 500 Hz

WEIGHT: 160 g

PRODUCT LIFE EXPECTANCY: ≥ 500 M/s cycles

IP RATING: IP 62

IDENTIFICATION CODE

- OUTLETS
  0: 9 Outlets without interface

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

- No. ELECTRICAL CONTROLS
  1: 1 Control (9 Outlets)
  3: 3 Controls (3 Outlets)
  9: 9 Controls (1 Outlet)

- FUNCTION
  C: NC

- TYPE
  2: 2/2

- CONTROL TENSION
  24: 24 VDC ± 10% 2.9 W (n)
  XX: Speed-up in current (48 VDC) 1.3 W (n)
  KK: Speed-up in tension (24 VDC) 0.8 W (n)
  (n) Single shutter

- OPERATING PRESSURE
  RANGE: 2 - 8 bar
  MODELS: All

- PORT CONNECTION
  0: Integrated cables IP 62 L = 500 mm
ACCESSORIES

<table>
<thead>
<tr>
<th>Reference</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Push-in fitting for D.12 tube</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK**

<table>
<thead>
<tr>
<th>M</th>
<th>V1 = 24 VDC</th>
<th>t = 2 ms</th>
<th>V2 = 5 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>V1 = 24 VDC</td>
<td>t = 2 ms</td>
<td>V2 = 5 VDC</td>
</tr>
<tr>
<td>O</td>
<td>V1 = 24 VDC</td>
<td>t = 3 ms</td>
<td>V2 = 5 VDC</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX**

<table>
<thead>
<tr>
<th>M</th>
<th>t = 0.5 A</th>
<th>t = 1.5 ms</th>
<th>I2 = 0.2 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>t = 0.8 A</td>
<td>t = 1.5 ms</td>
<td>I2 = 0.2 A</td>
</tr>
<tr>
<td>O</td>
<td>t = 1.0 A</td>
<td>t = 1.5 ms</td>
<td>I2 = 0.3 A</td>
</tr>
</tbody>
</table>

**FLOW RATE M**

\[ Q = 66 \text{ Nl/min} \]
\[ C = 14.3 \text{ Nl/min bar} \]
\[ b = 0.433 \]

**ELECTRICAL PORT CONNECTION**

<table>
<thead>
<tr>
<th>COLOUR</th>
<th>1 CONTROL</th>
<th>2 CONTROLS</th>
<th>3 CONTROLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLACK</td>
<td>COMMON</td>
<td>COMMON</td>
<td>COMMON</td>
</tr>
<tr>
<td>BROWN</td>
<td>—</td>
<td>1 - 2 - 9</td>
<td>1</td>
</tr>
<tr>
<td>RED</td>
<td>1</td>
<td>3 - 4 - 5</td>
<td>2</td>
</tr>
<tr>
<td>ORANGE</td>
<td>—</td>
<td>6 - 7 - 8</td>
<td>3</td>
</tr>
<tr>
<td>YELLOW</td>
<td>—</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>GREEN</td>
<td>—</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>BLUE</td>
<td>—</td>
<td>—</td>
<td>6</td>
</tr>
<tr>
<td>VIOLET</td>
<td>—</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>GREY</td>
<td>—</td>
<td>—</td>
<td>8</td>
</tr>
<tr>
<td>WHITE</td>
<td>—</td>
<td>—</td>
<td>9</td>
</tr>
</tbody>
</table>
**IDENTIFICATION CODE**

- **OUTLETS**
  - 1 Outlet

- **MAXIMUM FLOW RATE** (at 6 bar)
  - M 900 Nl/min
  - N 1260 Nl/min (control tension XX KK)
  - O 1620 Nl/min (control tension XX KK and Electrical control 3 9)

- **FUNCTION**
  - C NC

- **TYPE**
  - 2 2/2

- **CONTROL TENSION**
  - 24 24 VDC ± 10 % 2.9±26.1W
  - XX Speed-up in current (48 VDC) 1.3±12.1W
  - KK Speed-up in tension (24 VDC) 0.8±7.6W

- **OPERATING PRESSURE**
  - RANGE | MODELS
  - 2 - 8 bar | All

**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 XX / KK < 1 ms
- **RESPONSE TIME IN CLOSING** 24 < 2 ms XX / KK < 1 ms
- **MAXIMUM FREQUENCY** 200 Hz 500 Hz
- **WEIGHT** 260 g
- **PRODUCT LIFE EXPECTANCY** ≥ 500 M/s cycles
- **IP RATING** IP 62

**CONTROL:**
- DIRECT
- PFM
- PNM
- PWM

**No. ELECTRICAL CONTROLS**
- 1 1 Control
- 3 3 Controls
- 9 9 Controls

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

<table>
<thead>
<tr>
<th>Reference</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Push-in fitting for D.12 tube</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Push-in fitting for D.8 tube</td>
</tr>
</tbody>
</table>

Note: Inch size available

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

- N.B. KK MODELS ARE CONTROLLED IN TENSION

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>t1</th>
<th>V2</th>
<th>t2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>V1 = 24 VDC</td>
<td>t1 = 3 ms</td>
<td>V2 = 5 VDC</td>
<td>t2 = 4 ms</td>
</tr>
<tr>
<td>N</td>
<td>V1 = 24 VDC</td>
<td>t1 = 3 ms</td>
<td>V2 = 5 VDC</td>
<td>t2 = 4 ms</td>
</tr>
</tbody>
</table>

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

- N.B. XX MODELS ARE CONTROLLED IN CURRENT

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>1.1 A</td>
<td>1.2 A</td>
</tr>
<tr>
<td>N</td>
<td>1.1 A</td>
<td>1.2 A</td>
</tr>
</tbody>
</table>

FLOW RATE

- q = \frac{1}{128} \text{N/m\textsuperscript{2}} \cdot \text{bar}^{-1}
- C = \frac{1}{128} \text{N/m\textsuperscript{2}} \cdot \text{bar}^{-1}
- b = 0.29

ELECTRICAL PORT CONNECTION

<table>
<thead>
<tr>
<th>COLOUR</th>
<th>1 CONTROL</th>
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<th>3 CONTROLS</th>
<th>4 CONTROLS</th>
<th>5 CONTROLS</th>
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<tr>
<td>BLACK</td>
<td>COMMON</td>
<td>COMMON</td>
<td>COMMON</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BROWN</td>
<td>1 - 2 - 9</td>
<td>3 - 4 - 5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>6 - 7 - 8</td>
<td>3</td>
<td></td>
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<tr>
<td>ORANGE</td>
<td>1 - 9</td>
<td>6 - 7 - 8</td>
<td>3</td>
<td></td>
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<tr>
<td>YELLOW</td>
<td>1 - 2 - 9</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GREEN</td>
<td>1 - 2 - 9</td>
<td>3 - 4 - 5</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BLUE</td>
<td>1 - 2 - 9</td>
<td>3 - 4 - 5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIOLET</td>
<td>1 - 2 - 9</td>
<td>3 - 4 - 5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREY</td>
<td>1 - 2 - 9</td>
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<td>WHITE</td>
<td>1 - 2 - 9</td>
<td>3 - 4 - 5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On = 540 N/min
**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**
24 < 5 ms  XX / KK < 1 ms

**RESPONSE TIME IN CLOSING**
24 < 2 ms  XX / KK < 1 ms

**MAXIMUM FREQUENCY**
200 Hz  500 Hz

**WEIGHT**
250 g

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

**IP RATING**
IP 62

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**IDENTIFICATION CODE**

- **M**
  - MAXIMUM FLOW RATE (at 6 bar)
    - M 300 Nl/min
    - N 420 Nl/min (control tension XX / KK)
    - O 520 Nl/min (control tension XX / KK)

- **X**
  - OUTLETs
    - 3 outlets

- **8**
  - 3 Controls

- **9**
  - 9 Controls

- **3**

- **0**

- **C**
  - FUNCTION
    - C | NC

- **2**
  - TYPE
    - 2 | 2/2

- **24**
  - CONTROL TENSION
    - 24 VDC ± 10 %  2.9 + 8.7W
    - XX Speed-up in current (48 VDC)  1.3 + 4.0W
    - KK Speed-up in tension (24 VDC)  0.8 + 2.5W

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

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**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**: 24 < 5 ms  XX / KK < 1 ms
- **RESPONSE TIME IN CLOSING**: 24 < 2 ms  XX / KK < 1 ms
- **MAXIMUM FREQUENCY**: 200 Hz  500 Hz
- **WEIGHT**: 210 g
- **PRODUCT LIFE EXPECTANCY**: ≥ 500 M/s cycles
- **IP RATING**: IP 62

**IDENTIFICATION CODE**

- **M**: 100 Nl/min
- **N**: 140 Nl/min (control tension XX / KK )
- **O**: 180 Nl/min (control tension XX / KK )

- **OUTLETS**: 9 9 Outlets
- **FLOW RATE** (at 6 bar)
- **FUNCTION**: C  NC
- **TYPE**: 2  2/2

- **CONTROL TENSION**
  - 24 VDC ± 10%  2.9 W
  - XX  Speed-up in current (48 VDC)  1.3 W
  - KK  Speed-up in tension (24 VDC)  0.8 W

- **OPERATING PRESSURE**
  - **RANGE**  MODELS
    - 0  2 - 8 bar  All

**PORT CONNECTION**

- 0  Integrated cables  IP 62  L = 500 mm

**CONTROL**: DIRECT  PFM  PWM
ACCESSORIES

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<td>2</td>
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<td>Push-in fitting for D.4 tube</td>
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Notes: Inch size available

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK

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N.B. KK MODELS ARE CONTROLLED IN TENSION

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX

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N.B. XX MODELS ARE CONTROLLED IN CURRENT

FLOW RATE M

FLOW RATE M

ELECTRICAL PORT CONNECTION

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