**SERIES FEATURES**

- Unique patented MACSOLENOID® for fastest possible response times.
- Balanced poppet pilot valve for high flow, precise repeatability, and consistent operation.
- Large spool piston for maximum shifting force even at minimum operating pressure.
- Air/spring return for consistent shifting on single solenoid models.
- MAC spool and bore combination for wiping away contamination, eliminating sticking, and use on non-lube service.
- Patented virtually burn-out proof AC solenoid.
- Plug-in design of valves, bases, flow controls, and regulators for modular assembly and ease of maintenance.
- Optional low wattage DC solenoids down to 1.8 watts.
- Indicator lights in valve body or base and non-plug-in models available.
- Very high flow in a very compact package.
SPOOL CONFIGURATIONS

**SINGLE OPERATOR**
- SINGLE INLET - DUAL EXHAUST
- SHOWN WITH "B" OPERATOR ENERGIZED

**DOUBLE OPERATOR**
- SINGLE INLET - DUAL EXHAUST
- SHOWN WITH "B" OPERATOR ENERGIZED

**SINGLE OPERATOR**
- DUAL INLET - SINGLE EXHAUST
- SHOWN WITH "B" OPERATOR ENERGIZED

**DOUBLE OPERATOR**
- DUAL INLET - SINGLE EXHAUST
- SHOWN WITH "B" OPERATOR ENERGIZED

**3 POSITION CLOSED CENTER**

**3 POSITION OPEN CENTER**

**3 POSITION SINGLE PRESSURE**
- PRESSURE CENTER

**3 POSITION DUAL PRESSURE**
- PRESSURE CENTER

Consult "Precautions" page 364 before use, installation or service of MAC Valves.
**OPERATIONAL BENEFITS**

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return force thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
7. Pilot valve with balanced poppet, high flow, short and consistent response times.
8. Long service life.

**HOW TO ORDER**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Pilot air</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; NPTF</td>
<td>Internal</td>
</tr>
<tr>
<td>1/4&quot; NPTF</td>
<td>Internal</td>
</tr>
<tr>
<td>3/8&quot; NPTF</td>
<td>Internal</td>
</tr>
</tbody>
</table>

**Solenoid Operator**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Wire length</th>
<th>Manual operator</th>
<th>Electrical connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>18&quot; (Flying leads)</td>
<td>Non-locking</td>
<td>KA Square connector</td>
</tr>
<tr>
<td>AB</td>
<td>Connector</td>
<td>Locking</td>
<td>KD Square connector with light</td>
</tr>
<tr>
<td>AC</td>
<td></td>
<td></td>
<td>JB Rectangular connector</td>
</tr>
<tr>
<td>FB</td>
<td></td>
<td></td>
<td>JD Rectangular connector with light</td>
</tr>
<tr>
<td>DA</td>
<td></td>
<td></td>
<td>JB Flying leads</td>
</tr>
</tbody>
</table>

* Other options available, see page 361.

**OPTIONS**

- For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H. (Requires sandwich regulator, see pressure regulator section.)

- TP (Piped pilot exhaust)
  - For pilot exhaust out main exhaust, replace B by E. Also, TM pilot body is replaced by TU pilot body.
  - Main exhaust cannot be restricted. Available only on single pressure valves.

- Replace A by B for bottom ports (1/8" or 1/4" only)
- Replace A by C for side and bottom ports (1/8" or 1/4" only)
**TECHNICAL DATA**

**Fluid:** Compressed air, vacuum, inert gases

**Pressure range:**
- Internal pilot: single operator and 3 positions: 25-150 PSI; double operator: 10-150 PSI
- External pilot: vacuum to 150 PSI

**Pilot pressure:**
- Single operator and 3 positions: 25-150 PSI; Double operator: 10-150 PSI

**Lubrication:** Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

**Filtration:** 40 µ

**Temperature range:** 0°F to 120°F [-18°C to 50°C]

**Flow (at 6 bar, ∆P=1 bar):**
- 1/8" : (0.9 Cv), 1/4" : (1.3 Cv), 3/8" : (1.35 Cv)

**Coil:** Epoxy encapsulated - class A wires - Continuous duty.

**Voltage range:** -15% to +10% of nominal voltage

**Protection:** Consult factory

**Power:**
- Inrush: 10.9 VA
- Holding: 7.7 VA
- = 1.8 to 12.7 W

**Response times:**
- 24 VDC (5.4 W) Energize: 9 ms De-energize: 6 ms
- 120/60 Energize: 5-12 ms De-energize: 6-13 ms

**Spare parts:**
- Solenoid operator [power ≥ 5.4 W]: DXXX-XXX, including mounting screws 35013.
- Seal between solenoid and pilot body: 16402.
- Pilot valve: TM-DXXX-XXX, including seal 16447.
- Mounting screw pilot to main valve: 35023.
- Pressure seal between valve and base: 16446.
- Mounting screw valve to base (x2): 35211.

**Options:**
- BSPP threads.
- Flow controls (Part N°: FC82A-BA)
- Explosion-proof model.

**DIMENSIONS**

Dimensions shown are metric (mm)

---

Consult “Precautions” page 364 before use, installation or service of MAC Valves.
### Operational Benefits

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return force thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
7. Pilot valve with balanced poppet, high flow, short and consistent response times.
8. Long service life.

### How to Order

<table>
<thead>
<tr>
<th>Port size</th>
<th>Pilot air</th>
<th>Function</th>
<th>Port size</th>
<th>Flow (Max)</th>
<th>Individual mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; NPTF</td>
<td>Internal</td>
<td>4/2 - 4/3</td>
<td>1/8&quot; - 1/4&quot; - 3/8&quot;</td>
<td>1.35 Cv</td>
<td>sub-base &quot;plug-in&quot;</td>
</tr>
</tbody>
</table>

### Options

**Valve less base**
- **Internal**:
  - 82A-AAA-TM-DxxP-xDA
  - 82A-BAA-TM-DxxP-xDA
  - 82A-AAA-TM-DxxP-xDA
  - 82A-AAA-TM-DxxP-xDA
  - 82A-AAA-TM-DxxP-xDA
  - 82A-AAA-TM-DxxP-xDA
  - 82A-AAA-TM-DxxP-xDA
  - 82A-AAA-TM-DxxP-xDA

**External**:
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA
- 82A-AAA-TM-DxxP-xDA

**Manual operator**
- 1 Non-locking
- 2 Locking

**Voltage**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>120/60, 110/50</td>
</tr>
<tr>
<td>AB</td>
<td>240/60, 220/50</td>
</tr>
<tr>
<td>AC</td>
<td>24/60, 24/50</td>
</tr>
<tr>
<td>FB</td>
<td>24 VDC (1.8 W)</td>
</tr>
<tr>
<td>DA</td>
<td>24 VDC (5.4 W)</td>
</tr>
<tr>
<td>DF</td>
<td>24 VDC (12.7 W)</td>
</tr>
</tbody>
</table>

* Other options available, see page 361.
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Compressed air, vacuum, inert gases</th>
</tr>
</thead>
</table>
| Pressure range             | Internal pilot: single operator and 3 positions: 25-150 PSI  
                            | Double operator: 10-150 PSI   |
|                           | External pilot: vacuum to 150 PSI   |
| Pilot pressure             | Single operator and 3 positions: 25-150 PSI  
                            | Double operator: 10-150 PSI   |
| Lubrication                | Not required, if used select a medium aniline point lubricant (between 180°F to 210°F) |
| Filtration                 | 40 µ                                |
| Temperature range          | 0°F to 120°F (-18°C to 50°C)        |
| Flow (at 6 bar, ΔP=1bar)   | 1/8" : (0.9 Cv), 1/4" : (1.3 Cv), 3/8" : (1.35 Cv) |
| Coils                      | Epoxy encapsulated - class A wires - Continuous duty. |
| Voltage range              | -15% to +10% of nominal voltage     |
| Protection                 | Consult factory                     |
| Power                      | - Inrush: 10.9 VA  
                            | Holding: 7.7 VA  
                            | = 1.8 to 12.7 W   |
| Response times             | 24 VDC (5.4 W)  
                            | Energize: 9 ms  
                            | De-energize: 6 ms |
|                           | Energize: 5.12 ms  
                            | De-energize: 6.13 ms |
|                           | 120/60  
                            | Energize: 5.12 ms  
                            | De-energize: 6.13 ms |

**Spare parts:**
- Solenoid operator (power ≥ 5.4 W) : DXXP-XDA, including mounting screws 35013.
- Seal between solenoid and pilot body : 16402.
- Pilot valve : TM-DXXP-XDA, including seal 16447.
- Mounting screw pilot to main valve : 35023.
- Pressure seal between valve and base : 16446.
- Mounting screw valve to base (x2) : 35211.

**Options:**
- BSPP threads.
- Flow controls (Part N°. FC82A-AA)
- Explosion-proof model.
- Lights in base.

**DIMENSIONS**

Dimensions shown are metric (mm)

- 149.0 DOUBLE OPERATOR
- 120.5 SINGLE OPERATOR
- 1/8" - 27 NPTF EXTERNAL PILOT PORT
- 1/2" NPSM

Consult “Precautions” page 364 before use, installation or service of MAC Valves.
**OPERATIONAL BENEFITS**

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return force thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
7. Pilot valve with balanced poppet, high flow, short and consistent response times.
8. Long service life.

**HOW TO ORDER**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Pilot air</th>
<th>4/2 Single operator</th>
<th>4/2 Double operator</th>
<th>4/3 Closed center</th>
<th>4/3 Open center</th>
<th>4/3 Pressure center</th>
</tr>
</thead>
</table>

**Solenoid Operator**

- XX: Voltage
  - AA: 120/60, 110/50
  - AB: 240/60, 220/50
  - AC: 24/60, 24/50
  - FB: 24 VDC (1.8 W)
  - DA: 24 VDC (5.4 W)
  - DF: 24 VDC (12.7 W)

- X: Wire length
  - A: 18" (Flying leads)
  - J: Connector

- X: Manual operator
  - 1: Non-locking
  - 2: Locking

- XX: Electrical connection
  - KA: Square connector
  - KD: Square connector with light
  - JB: Rectangular connector
  - JD: Rectangular connector with light
  - BA: Flying leads

* Other options available, see page 361.

**Options**

- 82A-AB-000-TM-DXXX-XX
  - For pilot exhaust out main exhaust replace B by E. Also, TM pilot body is replaced by TU pilot body. Main exhaust cannot be restricted (No flow controls) available with single pressure valve only.
  - For piped pilot exhaust replace TM by TP.
  - For dual pressure valves, replace A by C, B by D, E by M, F by L, G by H.
    (Requires sandwich regulator - see pressure regulator section)

- 82A-XX-BKA-TM-DXXX-XX
  - Replace K by L for bottom cyl. ports
  - Replace K by M for bottom inlet port
  - Replace K by N for bottom inlet and cyl. ports
  - Replace K by P for bottom and end cyl. ports
  - Replace K by R for bottom and end cyl. ports w/bottom inlet
  - Replace K by S for selector base with side ports
**TECHNICAL DATA**

**Fluid:** Compressed air, vacuum, inert gases

**Pressure range:**
- Internal pilot: single operator and 3 positions: 25-150 PSI
- Double operator: 10-150 PSI
- External pilot: vacuum to 150 PSI

**Pilot pressure:**
- Single operator and 3 positions: 25-150 PSI
- Double pilot: 10-150 PSI

**Lubrication:** Not required, if used select a medium aniline point lubricant (between 180°F to 210°F)

**Filtration:** 40 μ

**Temperature range:** 0°F to 120°F (-18°C to 50°C)

**Flow (at 6 bar, ∆P=1bar):**
- 1/4" (1.3 Cv), 3/8" : (1.35 Cv)

**Coil:** Epoxy encapsulated - class A wires - Continuous duty.

**Voltage range:** -15% to +10% of nominal voltage

**Protection:** Consult factory

**Power:**
- Inrush: 10.9 VA
- Holding: 7.7 VA
- = 1.8 to 12.7 W

**Response times:**
- 24 VDC (5.4 W)
  - Energize: 9 ms
  - De-energize: 6 ms
- 120/60
  - Energize: 5-12 ms
  - De-energize: 6-13 ms

**Spare parts:**
- Solenoid operator (power ≥ 5.4 W): DXXXX-XXX, including mounting screws 35013.
- Seal between solenoid and pilot body: 16402.
- Pilot valve: TMXXXXXXX, including seal 16447.
- Mounting screw pilot to main valve: 35023.
- Pressure seal between valve and base: 16446.
- Mounting screw valve to base (x2): 35211.
- Tie-rod (x2): 19731.
- Fastening kit: NA82005-01.

**Options:**
- BSPP threads.
- Flow controls [Part N°. FC82A-BA]
- Explosion-proof model.

**DIMENSIONS**

Dimensions shown are metric (mm)

Consult "Precautions" page 364 before use, installation or service of MAC Valves.
Direct solenoid and solenoid pilot operated valves

Series 82

Function | Port size | Flow (Max) | Manifold mounting | Series
---|---|---|---|---
4/2 - 4/3 | 1/4" - 3/8" | 1.35 Cv | sub-base "plug-in" | 35

**OPERATIONAL BENEFITS**

1. Balanced spool, immune to variations of pressure.
2. Short stroke with high flow.
3. The piston (booster) provides maximum shifting forces.
4. Powerful return force thanks to the combination of mechanical and air springs.
5. Bonded spool with minimum friction, shifting in a glass-like finished bore.
7. Pilot valve with balanced poppet, high flow, short and consistent response times.
8. Long service life.

**HOW TO ORDER**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Pilot air</th>
<th>Single operator</th>
<th>Double operator</th>
<th>Closed center</th>
<th>Open center</th>
<th>Pressure center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve less base</td>
<td></td>
<td>82A-AA-000-TM-DisfP-xDA</td>
<td>82A-BA-000-TM-DisfP-xDA</td>
<td>82A-AA-000-TM-DisfP-xDA</td>
<td>82A-BA-000-TM-DisfP-xDA</td>
<td>82A-AA-000-TM-DisfP-xDA</td>
</tr>
</tbody>
</table>

**Solenoid Operator**

<table>
<thead>
<tr>
<th>XX</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>120/60, 110/50</td>
</tr>
<tr>
<td>AB</td>
<td>240/60, 220/50</td>
</tr>
<tr>
<td>AC</td>
<td>24/60, 24/50</td>
</tr>
<tr>
<td>FB</td>
<td>24 VDC (1.8 W)</td>
</tr>
<tr>
<td>DA</td>
<td>24 VDC (5.4 W)</td>
</tr>
<tr>
<td>DF</td>
<td>24 VDC (11.7 W)</td>
</tr>
</tbody>
</table>

* Other options available, see page 361.

**Options**

- Replace K by L for bottom cyl. ports
- Replace K by M for bottom inlet port
- Replace K by N for bottom inlet and cyl. ports
- Replace K by P for bottom and end cyl. ports
- Replace K by R for bottom and end cyl. ports w/bottom inlet
- Replace K by S for selector base with side ports

Consult “Precautions” page 364 before use, installation or service of MAC Valves.
**TECHNICAL DATA**

**Fluid:** Compressed air, vacuum, inert gases

**Pressure range:**
- Internal pilot: single operator and 3 positions: 25-150 PSI
- Double operator: 10-150 PSI
- External pilot: vacuum to 150 PSI

**Pilot pressure:**
- Single operator and 3 positions: 25-150 PSI
- Double operator: 10-150 PSI

**Lubrication:** Not required, if used select a medium antiseptic lubricant (between 180°F to 210°F)

**Filtration:**
- 40 µm

**Temperature range:** 0°F to 120°F (-18°C to 50°C)

**Flow (at 6 bar, ∆P=1 bar):**
- 1/4" (1.3 Cv), 3/8" : (1.35 Cv)

**Coil:**
- Epoxy encapsulated - Class A wires - Continuous duty.

**Voltage range:**
- -15% to +10% of nominal voltage

**Protection:**
- Consult factory

**Power:**
- Inrush: 10.9 VA
- Holding: 7.7 VA
- = 1.8 to 12.7 W

**Response times:**
- 24 VDC (5.4 W)
  - Energize: 9 ms
  - De-energize: 6 ms
- 120/60
  - Energize: 5-12 ms
  - De-energize: 6-13 ms

**Spare parts:**
- Solenoid operator (power ≥ 5.4 W): DXFXDA, including mounting screws 35013.
- Seal between solenoid and pilot body: 16402.
- Pilot valve: TM-DXFXDA, including seal 16447.
- Mounting screw pilot to main valve: 35023.
- Pressure seal between valve and base: 16446.
- Mounting screw valve to base (x2): 35211.
- Tie-rod (x2): 19731.
- Fastening kit: N-82005-01.
- BSPP threads.
- Flow controls (Part No.: FC82A-AA)
- Explosion-proof model.
- Lights in base.

**Options:**
- "Precautions" page 364 before use, installation or service of MAC Valves.

**DIMENSIONS**

Dimensions shown are metric (mm)

---

Consult "Precautions" page 364 before use, installation or service of MAC Valves.
**SPOOL TYPE - VALVE FUNCTION**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Individual base or manifold only</td>
</tr>
<tr>
<td>A</td>
<td>Single Operator - single pressure</td>
</tr>
<tr>
<td>B</td>
<td>Double operator - single pressure</td>
</tr>
<tr>
<td>C</td>
<td>Single operator - dual pressure</td>
</tr>
<tr>
<td>D</td>
<td>Double operator - dual pressure</td>
</tr>
<tr>
<td>E</td>
<td>3 position closed center</td>
</tr>
<tr>
<td>F</td>
<td>3 position open center</td>
</tr>
<tr>
<td>G</td>
<td>3 position single pressure, pressure center</td>
</tr>
<tr>
<td>H</td>
<td>Single solenoid single pressure, solenoid on B end</td>
</tr>
<tr>
<td>J</td>
<td>3 position dual pressure, pressure center</td>
</tr>
<tr>
<td>K</td>
<td>3 position dual pressure, open center</td>
</tr>
<tr>
<td>L</td>
<td>3 position dual pressure, closed center</td>
</tr>
</tbody>
</table>

*Note: For dual pressure w/o regulators consult factory.*

**IND. & MANIFOLD BASE PORT CONFIG.**

**INDIVIDUAL BASE PORTS**

- Valve only - no base
- Standard side ports (1/8", 1/4", or 3/8")
- Bottom ports only*
- Side and bottom ports*
- Side inlet, side exhaust, bottom cylinder ports*
- Bottom ports available in 1/8" & 1/4" only in individual base

**MANIFOLD BASE PORTS**

- Standard ports (1/4" or 3/8" only)
- Bottom cylinder ports*
- Bottom inlet port
- Bottom inlet and cylinder ports*
- Bottom cylinder & end cylinder ports w/bottom inlet port*
- Selector base - standard side ports

* Bottom ports available in 1/4" & 3/8" only on manifold.

**PILOT VALVE OPTIONS - (XX - DXXX - XXX)**

**PILOT EXHAUST**

- Muffled exhaust

**VOLTAGE**

- 12VDC (0.6w)
- 24VDC (0.6w)

**LEAD WIRE LENGTH**

- Plug-in Valve/Base--
  - Plug-in 8" - standard
  - 18" 4 48"
  - 24" 5 72"
  - 36" 6 96"
- Non Plug-in Valve/Base--
  - 18" 2 42"
  - 24" 3 66"
  - 36" 4 90"
  - 48" 5 120"

**MANUAL OPERATOR**

- No manual operator
- Nonlocking operator
- Locking operator
- Nonlocking extended operator
- Locking extended operator

**ELECTRICAL CONN.**

- Plug-in Valve/Base--
  - Plug-in (standard)
- Non Plug-in Valve/Base--
  - Grommet
  - Conduit 1/2" NPS
  - Metal conduit 1/2" NPS
  - Metal conduit w/grd. 1/2" NPS

**HOW TO ORDER 82 SERIES FLOW CONTROL MODULE**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FC 82A-AA</td>
<td>Plug-in flow control assembly</td>
</tr>
<tr>
<td>FC 82A-BA</td>
<td>Non plug-in flow control assembly</td>
</tr>
</tbody>
</table>

*If flow control module is to be installed between valve and base or valve and manifold at the factory, add "-9 after the flow control model number, i.e., FC82A-9. The flow control model number should follow the valve model number on which it is to be installed.*

**NOTE:** Reference regulator ordering section if a sandwich regulator is required.

**NOTE:** If a flow control assembly is used with the dual pressure regulator option, only the flow control on the "A" end is functional. (Controls both cylinder ports.)

Consult "Precautions" page 364 before use, installation or service of MAC Valves.
Codification table for voltages / Wire length / Manual operators / Electrical connections

<table>
<thead>
<tr>
<th>VALVE CODE</th>
<th>- D XX X - X XX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

OPTIONS AVAILABLE FOR

- Solenoid valves 35, 45 and 82 Series
### 1. Voltage

<table>
<thead>
<tr>
<th>Options</th>
<th>Voltage Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>120/60, 110/50</td>
</tr>
<tr>
<td>AB</td>
<td>240/60, 220/50</td>
</tr>
<tr>
<td>AC</td>
<td>24/60, 24/50</td>
</tr>
<tr>
<td>AD</td>
<td>24/60</td>
</tr>
<tr>
<td>AE</td>
<td>200/60</td>
</tr>
<tr>
<td>AF</td>
<td>240/50</td>
</tr>
<tr>
<td>AG</td>
<td>100/50, 100/60, 110/60</td>
</tr>
<tr>
<td>DA</td>
<td>24 VDC (5.4 W)</td>
</tr>
<tr>
<td>DB</td>
<td>12 VDC (5.4 W)</td>
</tr>
<tr>
<td>DC</td>
<td>12 VDC (7.5 W)</td>
</tr>
<tr>
<td>DD</td>
<td>24 VDC (7.3 W)</td>
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<tr>
<td>DE</td>
<td>12 VDC (12.7 W) - CLSF only</td>
</tr>
<tr>
<td>DF</td>
<td>24 VDC (12.7 W) - CLSF only</td>
</tr>
<tr>
<td>DK</td>
<td>110 VDC (4.7 W)</td>
</tr>
<tr>
<td>DL</td>
<td>64 VDC (6 W)</td>
</tr>
<tr>
<td>DM</td>
<td>36 VDC (5.3 W)</td>
</tr>
<tr>
<td>DN</td>
<td>6 VDC (6 W)</td>
</tr>
<tr>
<td>DP</td>
<td>48 VDC (5.8 W)</td>
</tr>
<tr>
<td>DU</td>
<td>24 VDC (6 W)</td>
</tr>
<tr>
<td>EA</td>
<td>12 VDC (6 W)</td>
</tr>
<tr>
<td>FA</td>
<td>12 VDC (1.8 W)</td>
</tr>
<tr>
<td>FB</td>
<td>24 VDC (1.8 W)</td>
</tr>
<tr>
<td>FE</td>
<td>12 VDC (2.4 W)</td>
</tr>
<tr>
<td>FF</td>
<td>24 VDC (2.4 W)</td>
</tr>
</tbody>
</table>

### 2. Wire Length

<table>
<thead>
<tr>
<th>Options</th>
<th>Wire Length Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>18”</td>
</tr>
<tr>
<td>B</td>
<td>24”</td>
</tr>
<tr>
<td>C</td>
<td>36”</td>
</tr>
<tr>
<td>D</td>
<td>48”</td>
</tr>
<tr>
<td>E</td>
<td>72”</td>
</tr>
<tr>
<td>F</td>
<td>96”</td>
</tr>
<tr>
<td>J</td>
<td>For external plug-in connector (&quot;J&quot;, &quot;K&quot; &amp; &quot;T&quot; type electrical connection)</td>
</tr>
<tr>
<td>P</td>
<td>For plug-in valves (82 Series only)</td>
</tr>
</tbody>
</table>

Consult “Precautions” page 364 before use, installation or service of MAC Valves.
3. **MANUAL OPERATOR**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No operator</td>
</tr>
<tr>
<td>1</td>
<td>Non-locking recessed</td>
</tr>
<tr>
<td>2</td>
<td>Locking recessed</td>
</tr>
<tr>
<td>3</td>
<td>Non-locking extended</td>
</tr>
<tr>
<td>4</td>
<td>Locking extended</td>
</tr>
</tbody>
</table>

4. **ELECTRICAL CONNECTION**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>Flying leads</td>
</tr>
<tr>
<td>BK</td>
<td>BA with protection diode</td>
</tr>
<tr>
<td>BL</td>
<td>BA with protection varistor (M.O.V.)</td>
</tr>
<tr>
<td>**CA</td>
<td>1/2&quot; NPS conduit</td>
</tr>
<tr>
<td>**CM</td>
<td>1/2&quot; NPS metal conduit</td>
</tr>
<tr>
<td>**CN</td>
<td>1/2&quot; NPS metal conduit w/ground</td>
</tr>
<tr>
<td>**JB</td>
<td>Rectangular connector</td>
</tr>
<tr>
<td>**JD</td>
<td>Rectangular connector with light</td>
</tr>
<tr>
<td>**JM</td>
<td>Rectangular connector, male only</td>
</tr>
<tr>
<td>KA</td>
<td>Square connector</td>
</tr>
<tr>
<td>KB</td>
<td>Square connector with protection diode</td>
</tr>
<tr>
<td>KC</td>
<td>Square connector with protection varistor (M.O.V.)</td>
</tr>
<tr>
<td>KD</td>
<td>Square connector with light</td>
</tr>
<tr>
<td>KE</td>
<td>Square connector with light and protection diode</td>
</tr>
<tr>
<td>KF</td>
<td>Square connector with light and protection varistor (M.O.V.)</td>
</tr>
<tr>
<td>KG</td>
<td>Square connector with LED light &amp; diode</td>
</tr>
<tr>
<td>KJ</td>
<td>Square connector (male only)</td>
</tr>
<tr>
<td>**KK</td>
<td>Square connector with protection diode (male only)</td>
</tr>
<tr>
<td>**KL</td>
<td>Square connector with protection varistor (male only) (M.O.V.)</td>
</tr>
<tr>
<td>TA</td>
<td>Dual tabs</td>
</tr>
<tr>
<td>TB</td>
<td>TA with protection diode</td>
</tr>
<tr>
<td>TD</td>
<td>TA with light</td>
</tr>
<tr>
<td>TE</td>
<td>TA with light and protection diode</td>
</tr>
<tr>
<td>TJ</td>
<td>Dual tabs (male only)</td>
</tr>
<tr>
<td>TK</td>
<td>TJ with protection diode</td>
</tr>
<tr>
<td>TM</td>
<td>TJ with light</td>
</tr>
<tr>
<td>TN</td>
<td>TJ with light and protection diode</td>
</tr>
<tr>
<td>**DA</td>
<td>Plug-in connector</td>
</tr>
<tr>
<td>**DK</td>
<td>DA with protection diode</td>
</tr>
<tr>
<td>**DL</td>
<td>DA with protection varistor (M.O.V.)</td>
</tr>
<tr>
<td>**FM</td>
<td>Plug-in</td>
</tr>
<tr>
<td>**FN</td>
<td>Plug-in with diode</td>
</tr>
<tr>
<td>**FP</td>
<td>Plug-in with M.O.V.</td>
</tr>
</tbody>
</table>

* To be used with 82 Series only
** Inline valves only for 35 & 45 series. No restrictions for 82 series.

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