SERIES FEATURES

- Patented MACSOLENOID® for fastest possible response times.
- Bonded balanced poppet for high flow, precise repeatability, and consistent operation.
- Balanced poppet permits versatility in function — may be used as 3-way or 2-way normally open or normally closed and may be used for vacuum, divertor, or selector applications.
- Extremely high cycle rate capability.
- Use on lube or non-lube service.
- Various solenoid enclosures and plug-in connectors.
- Optional surge suppression (M.O.V. or Diode) available.
- Low wattage DC solenoids — down to 1.8 watts.
- Patented MACSOLENOID® — virtually burn-out proof on AC service.

Consult “Precautions” page 356 before use, installation or service of MAC Valves.
VALVE CONFIGURATIONS AVAILABLE:

The 35 Series is a miniature 3 way or 2 way valve. This valve provides extremely fast response, long life and high flow in a surprisingly small package.

- Individual, stacking body or manifold base.
- 3 way—Normally Open or Normally Closed.
- 2 way—Normally Open or Normally Closed.
- Optional Normally Closed Only Models.
- Selectors & Divertors.

Consult “Precautions” page 356 before use, installation or service of MAC Valves.
Consult "Precautions" page 356 before use, installation or service of MAC Valves.

### Series 35

<table>
<thead>
<tr>
<th>Function</th>
<th>Port size</th>
<th>Flow (Max)</th>
<th>Individual mounting</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2 NO-NC, 2/2 NO-NC</td>
<td>1/8&quot;</td>
<td>0.17 C_v</td>
<td>inline</td>
<td>35</td>
</tr>
</tbody>
</table>

**OPERATIONAL BENEFITS**

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
6. Burn-out proof solenoid on AC service.

**HOW TO ORDER**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Universal valve</th>
<th>NC only valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; NPTF</td>
<td>35A-AAA-DXXX-XX</td>
<td>35A-AAB-DXXX-XX</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 (0.4 W)</td>
</tr>
<tr>
<td>DF</td>
<td>24 VDC (12.7 W)</td>
</tr>
</tbody>
</table>

**Options**

- Other options available, see page 353.

- with (2) # 10-32 ports in backside of valve
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Compressed air, vacuum, inert gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure range</td>
<td>Vacuum to 120 PSI</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)</td>
</tr>
<tr>
<td>Filtration</td>
<td>40 µ</td>
</tr>
<tr>
<td>Temperature range</td>
<td>0°F to 120°F (-18°C to 50°C)</td>
</tr>
<tr>
<td>Flow (at 6 bar, ΔP=1bar)</td>
<td>1.8 W : 0.08 Cv, 5.4 W : 0.15 Cv</td>
</tr>
<tr>
<td>Coil</td>
<td>General purpose class A, continuous duty, encapsulated</td>
</tr>
<tr>
<td>Voltage range</td>
<td>-15% to +10% of nominal voltage</td>
</tr>
<tr>
<td>Protection</td>
<td>Consult factory</td>
</tr>
<tr>
<td>Power</td>
<td>Inrush : 10.9 VA  Holding : 7.7 VA  = 1.8 to 12.7 W</td>
</tr>
<tr>
<td>Response times</td>
<td>24 VDC (5.4 W)  Energize : 6 ms  De-energize : 2 ms</td>
</tr>
<tr>
<td>120/60</td>
<td>Energize : 3-8 ms  De-energize : 2-7 ms</td>
</tr>
</tbody>
</table>

**Spare parts:**
- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402.

**Options:**
- BSPP threads.
- High flow up to 0.25 Cv, according to wattage and high flow mod.

**DIMENSIONS**

Dimensions shown are metric (mm)

Consult “Precautions” page 356 before use, installation or service of MAC Valves.
Consult “Precautions” page 356 before use, installation or service of MAC Valves.

**OPERATIONAL BENEFITS**

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
6. Burn-out proof solenoid on AC service.

**HOW TO ORDER**

<table>
<thead>
<tr>
<th>Port size</th>
<th>NC only valve</th>
<th>NO only valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8” NPTF</td>
<td>35A-SAC-DXXX-XXX</td>
<td>35A-SAD-DXXX-XXX</td>
</tr>
<tr>
<td># 10-32 UNF</td>
<td>35A-SBC-DXXX-XXX</td>
<td>35A-SBD-DXXX-XXX</td>
</tr>
</tbody>
</table>

**Solenoid Operator**

<table>
<thead>
<tr>
<th>XX</th>
<th>Voltage</th>
<th>Wire length</th>
<th>Manual operator</th>
<th>Electrical connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>AA</td>
<td>18” (flying leads)</td>
<td>1 Non-locking</td>
<td>KA Square connector</td>
</tr>
<tr>
<td>A</td>
<td>ABA</td>
<td>18” (flying leads)</td>
<td>2 Locking</td>
<td>KD Square connector with light</td>
</tr>
<tr>
<td>A</td>
<td>AC</td>
<td>18” (flying leads)</td>
<td>3 Locking</td>
<td>RA Flying leads</td>
</tr>
</tbody>
</table>

* Other options available, see page 353.

End plate kit required (Port size : 1/4”) : M-35001-01
Note: upon request, manifolds are mounted at the factory.
### Technical Data

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

**Pressure range:** Vacuum to 120 PSI

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

**Filtration:** 40 μ

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

**Flow (at 6 bar, 1 bar):**
- 1.8 W: 0.12 Cv
- 5.4 to 12.7 W: 0.16 Cv

**Coil:** General purpose class A, continuous duty, encapsulated

**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: 6 ms
  - De-energize: 2 ms
- 120/60 VAC
  - Energize: 3-8 ms
  - De-energize: 2-7 ms

**Spare parts:**
- Solenoid operator (power ≥ 5.4 W): DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body): 16402.
- Pressure seal (between valves): 16433.
- Tie-rod (x2): 19813.
- Inlet isolator: N-35002.
- Exhaust isolator: N-35003.
- Inlet & Exhaust isolator: N-35001.

**Options:**
- BSPP threads.
- High flow up to 0.25 Cv, according to wattage and high flow mod.

### Dimensions

Dimensions shown are metric (mm)

Consult "Precautions" page 356 before use, installation or service of MAC Valves.
Consult "Precautions" page 356 before use, installation or service of MAC Valves.

### OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
6. Burn-out proof solenoid on AC service.

### HOW TO ORDER

**SIDE CYLINDER PORTS**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Norm. closed Manifold base</th>
<th>Norm. open Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve less base (universal)</td>
<td>35A-800-Dxxxx-xxx</td>
<td>35A-800-Dxxxx-xxx</td>
</tr>
<tr>
<td># 10-32 UNF base</td>
<td>35A-8BE-Dxxxx-xxx</td>
<td>35A-8BF-Dxxxx-xxx</td>
</tr>
<tr>
<td>1/8&quot; NPTF base</td>
<td>35A-8AE-Dxxxx-xxx</td>
<td>35A-8AF-Dxxxx-xxx</td>
</tr>
</tbody>
</table>

**BOTTOM CYLINDER PORTS**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Norm. closed Manifold base</th>
<th>Norm. open Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve less base (universal)</td>
<td>35A-800-Dxxxx-xxx</td>
<td>35A-800-Dxxxx-xxx</td>
</tr>
<tr>
<td># 10-32 UNF base</td>
<td>35A-8GE-Dxxxx-xxx</td>
<td>35A-8GF-Dxxxx-xxx</td>
</tr>
<tr>
<td>1/8&quot; NPTF base</td>
<td>35A-8FE-Dxxxx-xxx</td>
<td>35A-8FF-Dxxxx-xxx</td>
</tr>
</tbody>
</table>

### SOLENOID OPERATOR

- **XX** Voltage
  - AA 120/60, 110/50
  - AB 240/60, 220/50
  - AC 24/60, 24/50
  - PB 24 VDC (1.8 W)
  - DA 24 VDC (4.8 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
  - BA Flying leads

* Other options available, see page 353.

End plate kit required (Port size : 1/4") : M-35003-01

Note: upon request, manifolds are mounted at the factory.

### OPTIONS

- 35A-EXX-Dxxxx-xxx - N.C. only valve
- 35A-FXX-Dxxxx-xxx - universal w/gage port
- 35A-OXX - no valve body (base only)
### TECHNICAL DATA

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

**Pressure range**: Vacuum to 120 PSI

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

**Filtration**: 40 μ

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

**Flow (at 6 bar, 1 bar)**: 1.8 W : 0.09 Cv, 5.4 to 12.7 W : 0.1 Cv

**Coil**: General purpose class A, continuous duty, encapsulated

**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 : 6 ms  De-energize : 2 ms
- 120/60  Energize : 3-8 ms  De-energize : 2-7 ms

### DIMENSIONS

Dimensions shown are metric (mm)

- **Spare parts**: • Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.  
  • Seal (between solenoid and valve body) : 16402.  
  • Pressure seal (between valve and base) : 16447.  
  • Pressure seal (between bases) : 16461.  
  • Tie-rod (x2) : 19753.  
  • Inlet isolator : N-35007.  
  • Exhaust isolator : N-35008.  
  • Inlet & Exhaust isolator : N-35006.

- **Options**: • BSPP threads.  
  • High flow up to 0.18 Cv, according to wattage and high flow mod.

Consult “Precautions” page 356 before use, installation or service of MAC Valves.
Consult “Precautions” page 356 before use, installation or service of MAC Valves.

### Function Port size Flow (Max) Manifold mounting Series

<table>
<thead>
<tr>
<th>Function</th>
<th>Port size</th>
<th>Flow (Max)</th>
<th>Sub-base with pressure regulators</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2 NO-NC, 2/2 NO-NC</td>
<td># 10-32, 1/8”</td>
<td>0.10 CV</td>
<td>Sub-base with pressure regulators</td>
</tr>
</tbody>
</table>

### OPERATIONAL BENEFITS

1. Balanced poppet, immune to variations of pressure.
2. Short stroke with high flow.
3. The patented solenoid develops high shifting forces.
4. Powerful return spring.
6. Burn-out proof solenoid on AC service.

### HOW TO ORDER

#### SIDE CYLINDER PORTS

<table>
<thead>
<tr>
<th>Port size</th>
<th>Norm. closed Manifold base</th>
<th>Norm. open Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve less base (universal)</td>
<td>35A-800-DXXX-XXX</td>
<td>35A-800-DXXX-XXX</td>
</tr>
<tr>
<td># 10-32 UNF base</td>
<td>35A-BBJ-DXXX-XXX</td>
<td>35A-BBJ-DXXX-XXX</td>
</tr>
<tr>
<td>1/8” NPTF base</td>
<td>35A-BAJ-DXXX-XXX</td>
<td>35A-BAJ-DXXX-XXX</td>
</tr>
</tbody>
</table>

#### BOTTOM CYLINDER PORTS

<table>
<thead>
<tr>
<th>Port size</th>
<th>Norm. closed Manifold base</th>
<th>Norm. open Manifold base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve less base (universal)</td>
<td>35A-800-DXXX-XXX</td>
<td>35A-800-DXXX-XXX</td>
</tr>
<tr>
<td># 10-32 UNF base</td>
<td>35A-BGJ-DXXX-XXX</td>
<td>35A-BGJ-DXXX-XXX</td>
</tr>
<tr>
<td>1/8” NPTF base</td>
<td>35A-BFJ-DXXX-XXX</td>
<td>35A-BFJ-DXXX-XXX</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 120/60, 110/50</td>
<td>18” (flying leads)</td>
<td>Non-locking</td>
<td>KA Square connector</td>
</tr>
<tr>
<td>AB 240/60, 220/50</td>
<td>J Connector</td>
<td>Locking</td>
<td>KD Square connector with light</td>
</tr>
<tr>
<td>AC 24/60, 24/50</td>
<td></td>
<td></td>
<td>BA Flying leads</td>
</tr>
<tr>
<td>PB 24 VDC (1.8 W)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA 24 VDC (5.4 W)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DF 24 VDC (12.7 W)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Other options available, see page 353.

End plate kit required (Port size : 1/4”) : M-35003-01
Note: upon request, manifolds are mounted at the factory.

### OPTIONS

- 35A-E0X-DXXX-XXX - N.C. only valve
- 35A-FXX-DXXX-XXX - universal w/gage port
- 35A-OXX - no valve body (base w/regulator)
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Compressed air, vacuum, inert gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure range</td>
<td>Vacuum to 120 PSI</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required, if used select a medium aniline point lubricant (between 180°F and 210°F)</td>
</tr>
<tr>
<td>Filtration</td>
<td>40 µ</td>
</tr>
<tr>
<td>Temperature range</td>
<td>0°F to 120°F (-18°C to 50°C)</td>
</tr>
<tr>
<td>Flow (at 6 bar, ΔP=1bar)</td>
<td>1.8 W : 0.09 Cv, 5.4 to 12.7 W : 0.1 Cv</td>
</tr>
</tbody>
</table>

**Coil**

| Voltage range | -15% to +10% of nominal voltage |
| Power | Consult factory |
| Response times | 24 VDC (5.4 W) Energize : 6 ms De-energize : 2 ms |
| | 120/60 Energize : 3-8 ms De-energize : 2-7 ms |

**Spare parts**

- Solenoid operator (power ≥ 5.4 W) : DXXX-XXX, including mounting screws 35013.
- Seal (between solenoid and valve body) : 16402. • Pressure seal (between valve and base) : 16447.
- Pressure seal (between bases) : 16461. • Tierrod (x2) : 19753. • Inlet isolator : N-35007. • Exhaust isolator : N-35008.
- Inlet & Exhaust isolator : N-35006. • Pressure regulator : 35A-00M (ADJ, KNOB) : 35A-00L (SLOTTED STEM).

**Options**

- BSPP threads. • High flow up to 0.18 Cv, according to wattage and high flow mod.

**DIMENSIONS**

Dimensions shown are metric (mm)

Consult "Precautions" page 356 before use, installation or service of MAC Valves.
### Series 35-45

#### HOW TO ORDER

**BODY TYPE**
- **Inline**
  - A: Individual Inline
  - D: Indiv. Inline w/2 Manifold Mount Ports
- **Manifold**
  - E: Manifold Body (N.C. Only)
  - G: Manifold Body w/Gage Port (N.C. Only)

**PORT SIZE**
- O: Manifold Body Only
- B: #10-32 UNF (Inline Only)
- D: M5 (Inline Only)

**VALVE FUNCTION/MANIFOLD TYPE**
- O: Manifold Body Only
- B: 3 way N.C. Only (Inline)

Note: There is no manifold base for the 35 series. The manifold valve can only mount to a circuit bar, see note below.

---

**BODY TYPE**
- **Inline**
  - A: 4 Port Body
  - B: 5 Port Body
  - D: 4 Port Body “O” Ring Mount - All Bottom Ports
  - E: 5 Port Body “O” Ring Mount -3 Bottom Ports Inlet and Cylinders
  - F: 4 Port Body “O” Ring Mount-Bottom Cylinder Ports Only
- **Base Mount**
  - O: For Base Only - No Valve
  - L: Base Mount Body
  - M: Base Mount Body with Gage Port

**PORT SIZE**
- O: Manifold Body Only
- A: 1/8" NPT
- B: #10-32 UNF
- C: 1/8" BSPP
- D: M5 (Metric)
- F: #10-32 UNF Bottom Ports
- G: M5 Bottom Ports
- H: "O" Ring Mount Ports
- J: 1/8" NPT Bottom Ports
- K: 1/8" BSPP Bottom Ports

---

**MANIFOLD MOUNT ACCESSORIES**
- M-45008-01: End Plate Kit
- 16455: Pressure Seal Between Manifold
- 19753: Tie Rod
- N-45008: Isolator Kit - Inlet and Exhaust
- N-45009: Isolator Kit - Inlet only
- N-45010: Isolator Kit - Exhaust only
- N-45015: End Cover Plate - Plain
- N-45016: End Cover Plate w/Flow Controls
- N-45017: Flow Control Needle Assembly

---

**VOLTAGE**
- FR: 12VDC [0.6 W]
- FS: 24VDC [0.6 W]

**LEAD LENGTH**
- A: 18" Leads
- B: 24" Leads
- C: 36" Leads
- D: 48" Leads
- E: 72" Leads
- J*: 6" Leads

**MANUAL OPERATOR**
- 0: No operator
- 1: Non-locking Recessed
- 2: Locking Recessed
- 3: Non-locking Extended
- 4: Locking Extended

*Use "J" for external plug-in connectors

---

**NOTE**: For valves mounted to a circuit bar reference MAC circuit bar Catalog for ordering info. For the 35 series circuit bar, use MOD FM01 after circuit bar part number.

---

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

### OPTIONS AVAILABLE FOR

- Solenoid valves 35, 45 and 82 Series

Consult “Precautions” page 356 before use, installation or service of MAC Valves.
### 1. VOLTAGE

<table>
<thead>
<tr>
<th>Code</th>
<th>Voltage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>120/60, 110/50</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>240/60, 220/50</td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>24/60, 24/50</td>
<td></td>
</tr>
<tr>
<td>AD</td>
<td>24/60</td>
<td></td>
</tr>
<tr>
<td>AE</td>
<td>200/60</td>
<td></td>
</tr>
<tr>
<td>AF</td>
<td>240/50</td>
<td></td>
</tr>
<tr>
<td>AG</td>
<td>100/50, 100/60, 110/60</td>
<td></td>
</tr>
<tr>
<td>DA</td>
<td>24 VDC (5.4 W)</td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>12 VDC (5.4 W)</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>12 VDC (7.5 W)</td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td>24 VDC (7.3 W)</td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>12 VDC (12.7 W) - CLSF only</td>
<td></td>
</tr>
<tr>
<td>DF</td>
<td>24 VDC (12.7 W) - CLSF only</td>
<td></td>
</tr>
<tr>
<td>DK</td>
<td>110 VDC (4.7 W)</td>
<td></td>
</tr>
<tr>
<td>DL</td>
<td>44 VDC (6 W)</td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td>36 VDC (5.3 W)</td>
<td></td>
</tr>
<tr>
<td>DN</td>
<td>6 VDC (6 W)</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>48 VDC (5.8 W)</td>
<td></td>
</tr>
<tr>
<td>DU</td>
<td>24 VDC (6 W)</td>
<td></td>
</tr>
<tr>
<td>EA</td>
<td>12 VDC (6 W)</td>
<td></td>
</tr>
<tr>
<td>FA</td>
<td>12 VDC (1.8 W)</td>
<td></td>
</tr>
<tr>
<td>FB</td>
<td>24 VDC (1.8 W)</td>
<td></td>
</tr>
<tr>
<td>FE</td>
<td>12 VDC (2.4 W)</td>
<td></td>
</tr>
<tr>
<td>FF</td>
<td>24 VDC (2.4 W)</td>
<td></td>
</tr>
</tbody>
</table>

### 2. WIRE LENGTH

<table>
<thead>
<tr>
<th>Code</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>18&quot;</td>
</tr>
<tr>
<td>B</td>
<td>24&quot;</td>
</tr>
<tr>
<td>C</td>
<td>36&quot;</td>
</tr>
<tr>
<td>D</td>
<td>48&quot;</td>
</tr>
<tr>
<td>E</td>
<td>72&quot;</td>
</tr>
<tr>
<td>F</td>
<td>96&quot;</td>
</tr>
<tr>
<td>J</td>
<td>For external plug-in connector (*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 356 before use, installation or service of MAC Valves.
### 3. MANUAL OPERATOR

<table>
<thead>
<tr>
<th>- D XX X - X XX</th>
<th>MANUAL OPERATOR</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>- D XX X - X XX</th>
<th>ELECTRICAL CONNECTION</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.