RCS Actuators
MAR 100, 250

NEMA 4 Enclosure

**Approvals**
- MAR Models Only
- Canadian Standards Association
- CSA NRTL/C—Enclosure 4

**Models**
- A.C. Voltages
  - MAR100
  - MAR120
  - MAR160
  - MAR250
  - MAR800
- D.C. Voltages
  - DCR100
  - DCR160
  - DCR250
  - DCR800

**Typical Application**
For on/off and modulating control of:
- Part turn ball, butterfly or plug valves
- Multi-turn valve types
- Rotary dampers
- Rotating equipment

**Temperature Range**
- Standard: -40°F to +150°F
- Optional: -60°F to +150°F
- -50°C to +65°C
(Note: With Heaters Installed)

**Voltage**
- 115 VAC, 1 Phase, 50/60 Hz.
- 230 VAC, 1 Phase, 50/60 Hz.
- 24 VAC, 1 Phase, 50/60 Hz.
- 220 VAC, 3 Phase, 60 Hz.
- 440 VAC, 3 Phase, 60 Hz.
- 12 VDC
- 24 VDC

**Torque Range**
- 1,500 to 10,000 inch pounds
  (13.5 to 112 newton meters)

**Speed Range**
- 1.25 to 60 seconds for 90° revolution
- 6.6 and 12 RPM for multi-turns

**Standard Features**
- AC (Single and Three Phase) Voltages
- 4 SPDT Switches, PTC Heater
- DC Voltages
- 2 SPDT (High Current) Switches

NEMA 4/6/7 Enclosure

**Approvals**
- MAR Models Only
- Canadian Standards Association
- CSA NRTL/C—Enclosure 4 and 6
- CSA NRTL/C—Class I, Divisions 1 and 2, Groups C and D
- CSA NRTL/C—Class II, Divisions 1 and 2, Groups E, F and G
- CSA NRTL/C—Approved to UL standard No. 429, Electrically Operated Valves
- CSA NRTL/C—Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion—proof and Dust—Ignition—proof Hazardous (Classified) Locations

**Models**
- D.C. Voltages
  - DCR100
  - DCR160
  - DCR250
  - DCR800

**Voltage**
- 115 VAC, 1 Phase, 50/60 Hz.
- 230 VAC, 1 Phase, 50/60 Hz.
- 24 VAC, 1 Phase, 50/60 Hz.
- 220 VAC, 3 Phase, 60 Hz.
- 440 VAC, 3 Phase, 60 Hz.
- 12 VDC
- 24 VDC

**Temperature Range**
- Standard: -40°C to +65°C
- Optional: -60°C to +150°C
- -50°C to +65°C
(Note: With Heaters Installed)

Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour or a maximum of 3 hours.
### 115 and 230 VAC, 1 Phase, 50/60 Hz.

<table>
<thead>
<tr>
<th>Model</th>
<th>Output Torque Inch Pounds (N.m)</th>
<th>Type</th>
<th>Speed of Operation 60 Hz (50 Hz)</th>
<th>Duty Cycle Rating 115 Vac 1Ph, 50/60 Hz</th>
<th>Duty Cycle Rating 230 Vac 1Ph, 50/60 Hz</th>
<th>Current Ratings 115 Vac</th>
<th>Current Ratings 230 Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR100-16</td>
<td>1500 (169)</td>
<td>Part Turn</td>
<td>16 seconds/90° (19 seconds/90°)</td>
<td>100% (2)</td>
<td>50% (2)</td>
<td>0.55</td>
<td>1.55</td>
</tr>
<tr>
<td>MAR100-30</td>
<td>1800 (203)</td>
<td>Part Turn</td>
<td>30 seconds/90° (35 seconds/90°)</td>
<td>100% (2)</td>
<td>50% (2)</td>
<td>0.50</td>
<td>0.60</td>
</tr>
<tr>
<td>MAR100-60</td>
<td>2500 (282)</td>
<td>Part Turn</td>
<td>60 seconds/90° (70 seconds/90°)</td>
<td>100% (2)</td>
<td>50% (2)</td>
<td>0.35</td>
<td>0.55</td>
</tr>
<tr>
<td>MAR120-1.25</td>
<td>1500 (169)</td>
<td>Part Turn</td>
<td>1.25 seconds/90° (2 seconds/90°)</td>
<td>25% (1)</td>
<td>25% (1)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
<tr>
<td>MAR120-1.25 MT</td>
<td>1500 (169)</td>
<td>Multi-Turn</td>
<td>12 RPM (10 RPM)</td>
<td>25% (2)</td>
<td>25% (2)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
<tr>
<td>MAR160-8</td>
<td>1920 (217)</td>
<td>Part Turn</td>
<td>8 seconds/90° (9 seconds/90°)</td>
<td>50% (1)</td>
<td>50% (1)</td>
<td>0.75</td>
<td>1.65</td>
</tr>
<tr>
<td>MAR160-16</td>
<td>2000 (226)</td>
<td>Part Turn</td>
<td>16 seconds/90° (19 seconds/90°)</td>
<td>75% (2)</td>
<td>50% (2)</td>
<td>0.60</td>
<td>1.60</td>
</tr>
<tr>
<td>MAR160-30</td>
<td>2500 (282)</td>
<td>Part Turn</td>
<td>30 seconds/90° (35 seconds/90°)</td>
<td>75% (2)</td>
<td>50% (2)</td>
<td>0.65</td>
<td>0.70</td>
</tr>
<tr>
<td>MAR160-60</td>
<td>2800 (316)</td>
<td>Part Turn</td>
<td>60 seconds/90° (70 seconds/90°)</td>
<td>100% (2)</td>
<td>50% (2)</td>
<td>0.50</td>
<td>0.60</td>
</tr>
<tr>
<td>MAR250-3</td>
<td>3500 (395)</td>
<td>Part Turn</td>
<td>3 seconds/90° (4 seconds/90°)</td>
<td>25% (1)</td>
<td>50% (1)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
<tr>
<td>MAR250-3MT</td>
<td>3500 (395)</td>
<td>Multi-Turn</td>
<td>5 RPM (4 RPM)</td>
<td>25% (2)</td>
<td>50% (2)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
<tr>
<td>MAR250-8</td>
<td>3000 (339)</td>
<td>Part Turn</td>
<td>8 seconds/90° (9 seconds/90°)</td>
<td>40% (1)</td>
<td>50% (1)</td>
<td>1.60</td>
<td>2.20</td>
</tr>
<tr>
<td>MAR250-16</td>
<td>4000 (452)</td>
<td>Part Turn</td>
<td>16 seconds/90° (19 seconds/90°)</td>
<td>50% (2)</td>
<td>50% (2)</td>
<td>1.10</td>
<td>1.80</td>
</tr>
<tr>
<td>MAR250-30</td>
<td>5000 (565)</td>
<td>Part Turn</td>
<td>30 seconds/90° (35 seconds/90°)</td>
<td>50% (2)</td>
<td>50% (2)</td>
<td>0.75</td>
<td>1.65</td>
</tr>
<tr>
<td>MAR250-60</td>
<td>5000 (565)</td>
<td>Part Turn</td>
<td>60 seconds/90° (70 seconds/90°)</td>
<td>75% (2)</td>
<td>50% (2)</td>
<td>0.65</td>
<td>0.70</td>
</tr>
<tr>
<td>MAR800-12</td>
<td>7500 (847)</td>
<td>Part Turn</td>
<td>12 seconds/90° (14 seconds/90°)</td>
<td>25% (1)</td>
<td>25% (1)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
<tr>
<td>MAR800-30</td>
<td>10000 (1130)</td>
<td>Part Turn</td>
<td>30 seconds/90° (35 seconds/90°)</td>
<td>40% (2)</td>
<td>50% (2)</td>
<td>1.60</td>
<td>2.20</td>
</tr>
<tr>
<td>MAR800-60</td>
<td>10000 (1130)</td>
<td>Part Turn</td>
<td>60 seconds/90° (70 seconds/90°)</td>
<td>75% (2)</td>
<td>50% (2)</td>
<td>0.55</td>
<td>1.55</td>
</tr>
<tr>
<td>MAR1600-70</td>
<td>21000 (2373)</td>
<td>Part Turn</td>
<td>70 seconds/90° (82 seconds/90°)</td>
<td>25% (2)</td>
<td>50% (2)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
<tr>
<td>MAR4000-170</td>
<td>48000 (5424)</td>
<td>Part Turn</td>
<td>170 seconds/90° (200 seconds/90°)</td>
<td>25% (2)</td>
<td>50% (2)</td>
<td>3.30</td>
<td>7.40</td>
</tr>
</tbody>
</table>

*(N.L.A.) - No Load Ampere  (L.R.A.) - Locked Rotor Ampere  (1) - Open/Close Service  (2) - Open/Close or Modulating Service

### Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at its rated load – maximum published torque.

### Standard Modulating Duty Rating

- 12 motor starts (corrections) per minute.
- At the rated duty cycle for that model.
- With the speed of operation a minimum of 15 seconds for 90° or slower.
- With positioning accuracy of (+/-) 1% of total span.

### Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring. Consult factory.

NOTE: Multi-turn models are available with the following number of turns: 1, 4, 5, 8, 13, 18, 26 or 50. Must be specified when the order is placed.
# 12 AND 24 VDC

**Output Torque**  

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Speed of Operation</th>
<th>Duty Cycle Rating 12 VDC</th>
<th>Duty Cycle Rating 24 VDC</th>
<th>Current Ratings 12 VAC</th>
<th>Current Ratings 24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC100-30</td>
<td>Part Turn</td>
<td>11.5 seconds/90°</td>
<td>50% (2)</td>
<td>0.90</td>
<td>5.80</td>
<td>0.50</td>
</tr>
<tr>
<td>DC160-16</td>
<td>Part Turn</td>
<td>5.5 seconds/90°</td>
<td>50% (1)</td>
<td>1.00</td>
<td>12.50</td>
<td>0.75</td>
</tr>
<tr>
<td>DC160-60</td>
<td>Part Turn</td>
<td>22 seconds/90°</td>
<td>50% (2)</td>
<td>0.90</td>
<td>5.80</td>
<td>0.50</td>
</tr>
<tr>
<td>DCR160-8</td>
<td>Part Turn</td>
<td>3.2 seconds/90°</td>
<td>50% (1)</td>
<td>1.00</td>
<td>22.00</td>
<td>0.75</td>
</tr>
<tr>
<td>DCR160-16</td>
<td>Part Turn</td>
<td>5.7 seconds/90°</td>
<td>50% (1)</td>
<td>1.00</td>
<td>22.00</td>
<td>0.75</td>
</tr>
<tr>
<td>DCR160-30</td>
<td>Part Turn</td>
<td>11.2 seconds/90°</td>
<td>50% (2)</td>
<td>1.00</td>
<td>12.50</td>
<td>0.75</td>
</tr>
<tr>
<td>DCR800-30</td>
<td>Part Turn</td>
<td>13.3 seconds/90°</td>
<td>50% (2)</td>
<td>1.00</td>
<td>22.00</td>
<td>0.75</td>
</tr>
<tr>
<td>DCR800-60</td>
<td>Part Turn</td>
<td>23 seconds/90°</td>
<td>50% (2)</td>
<td>1.00</td>
<td>12.50</td>
<td>0.75</td>
</tr>
</tbody>
</table>

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# 24 VAC

**Output Torque**  

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Speed of Operation</th>
<th>Duty Cycle Rating 24 VDC</th>
<th>Current Ratings 24 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR100-16</td>
<td>Part Turn</td>
<td>16 seconds/90°</td>
<td>50% (2)</td>
<td>5.60</td>
</tr>
<tr>
<td>MAR100-30</td>
<td>Part Turn</td>
<td>30 seconds/90°</td>
<td>75% (2)</td>
<td>2.40</td>
</tr>
<tr>
<td>MAR100-60</td>
<td>Part Turn</td>
<td>60 seconds/90°</td>
<td>100% (2)</td>
<td>1.80</td>
</tr>
<tr>
<td>MAR160-30</td>
<td>Part Turn</td>
<td>30 seconds/90°</td>
<td>75% (2)</td>
<td>4.50</td>
</tr>
<tr>
<td>MAR160-60</td>
<td>Part Turn</td>
<td>60 seconds/90°</td>
<td>75% (2)</td>
<td>2.40</td>
</tr>
<tr>
<td>MAR250-60</td>
<td>Part Turn</td>
<td>60 seconds/90°</td>
<td>50% (2)</td>
<td>4.50</td>
</tr>
</tbody>
</table>

*(N.L.A.) - No Load Ampere  (L.R.A.) - Locked Rotor Ampere  (1) - Open/Close Service  (2) - Open/Close or Modulating Service

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**Limit Switches (MAR Models)**

Standard: Four - single pole, double throw type (SPDT) with an option for 2 additional

Ratings:  
- UL and CSA listed.  
- UL and CSA listed.  
- 15 amp & 1/2 H.P. at 125 or 250 VAC  
- 1/2 amp at 125 VDC;  
- 1/4 amp at 250 VDC  
- Lamp Load: 5 amp at 120 VAC

Optional: All double pole, double throw type (DPDT)

Ratings:  
- UL and CSA listed.  
- 10 amp at 125/250 VAC (form ZZ);  
- 1/2 H.P. at 125 VDC; 3/4 H.P. at 250 VAC

**Limit Switches (DCR Models)**

Ratings:  
- UL and CSA listed.  
- MIL-PRF-8805 Qualified Listing  
- 25 amp at 277 VAC; 1 H.P. at 125 VAC;  
- 2 H.P. at 250 VAC

**Isolation Relays**

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring, Consult factory.

**Heater**

PTC (Positive Temperature Coefficient)  
Heater standard in an AC Voltage Models
## Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Output Torque (Inch Pounds/N.m)</th>
<th>Type</th>
<th>Speed of Operation (60 Hz, 50 Hz.)</th>
<th>Duty Cycle Rating 220 Vac (3Ph., 60 Hz.)</th>
<th>Duty Cycle Rating 440 Vac (3Ph., 60 Hz.)</th>
<th>Current Ratings 220 Vac</th>
<th>Current Ratings 440 Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR100-16</td>
<td>1500 (169)</td>
<td>Part Turn</td>
<td>16 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR120-1.25</td>
<td>1500 (169)</td>
<td>Part Turn</td>
<td>1.25 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>1.60 3.50 0.82 1.80</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR120-1.25 MT</td>
<td>1500 (169)</td>
<td>Multi-Turn</td>
<td>12 RPM (10 RPM)</td>
<td>25%</td>
<td>25%</td>
<td>1.60 3.50 0.82 1.80</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR160-8</td>
<td>1920 (217)</td>
<td>Part Turn</td>
<td>8 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
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<td>Part Turn</td>
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<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR250-3</td>
<td>3500 (316)</td>
<td>Part Turn</td>
<td>3 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>1.60 3.50 0.82 1.80</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR250-3MT</td>
<td>3500 (316)</td>
<td>Multi-Turn</td>
<td>5 RPM (4 RPM)</td>
<td>25%</td>
<td>25%</td>
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<td>0.15 0.75</td>
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<tr>
<td>MAR250-16</td>
<td>4000 (452)</td>
<td>Part Turn</td>
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<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
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<td>MAR250-30</td>
<td>5000 (565)</td>
<td>Part Turn</td>
<td>30 seconds/90º</td>
<td>25%</td>
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<td>0.34 1.20 0.15 0.75</td>
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</tr>
<tr>
<td>MAR250-60</td>
<td>5000 (565)</td>
<td>Part Turn</td>
<td>40 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR800-12</td>
<td>7500 (847)</td>
<td>Part Turn</td>
<td>12 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>1.60 3.50 0.82 1.80</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR800-30</td>
<td>10000 (1130)</td>
<td>Part Turn</td>
<td>30 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR800-60</td>
<td>10000 (1130)</td>
<td>Part Turn</td>
<td>60 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>0.34 1.20 0.15 0.75</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR1600-20</td>
<td>21000 (2373)</td>
<td>Part Turn</td>
<td>70 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>1.60 3.50 0.82 1.80</td>
<td>0.15 0.75</td>
</tr>
<tr>
<td>MAR4000-170</td>
<td>48000 (5424)</td>
<td>Part Turn</td>
<td>170 seconds/90º</td>
<td>25%</td>
<td>25%</td>
<td>1.60 3.50 0.82 1.80</td>
<td>0.15 0.75</td>
</tr>
</tbody>
</table>

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