MAR 100, 250

NEMA 4 Enclosure

Approvals

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

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 & 2, Groups C & D
CSA NRTL/C—Class II, Divisions 1 & 2, Groups E, F & 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

A.C. Voltages	D.C. Voltages
MAR100 MAR120 MAR160 MAR250 MAR800	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
-40°C to +65°C
Optional: -60°F to +150°F
-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

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)

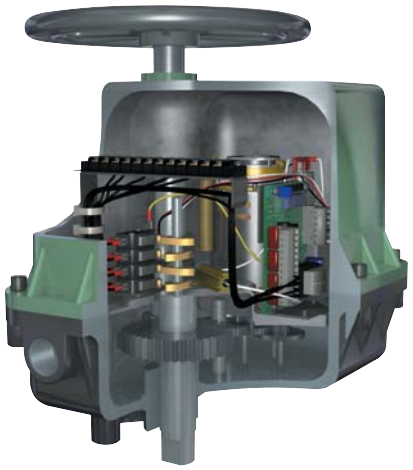
Speed Range

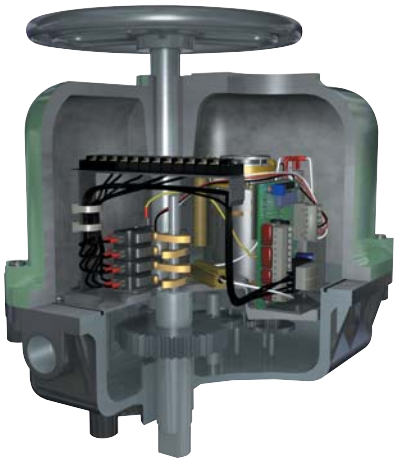
1.25 to 60 seconds for 90° revolution

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





MAR

115 & 230 VAC, 1 Phase, 50/60 Hz.

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 115 Vac, 1Ph., 50/60 Hz.	Duty Cycle Rating 230 Vac, 1Ph., 50/60 Hz.	Current Ratings 115 VAC		Current Ratings 230 VAC	
						N.L.A.*	L.R.A.*	N.L.A.*	L.R.A.*
MAR100-16	1,500 (169)	Part Turn	16 seconds/90° (19 seconds/90°)	100% (2)	50% (2)	.55	1.55	.25	.85
MAR100-30	1,800 (203)	Part Turn	30 seconds/90° (35 seconds/90°)	100% (2)	50% (2)	.50	.60	.30	.35
MAR100-60	2500 (282)	Part Turn	60 seconds/90° (70 seconds/90°)	100% (2)	50% (2)	.35	.55	.20	.35
MAR120-1.25	1,500 (169)	Part Turn	1.25 seconds/90° (2 seconds/90°)	25% (1)	25% (1)	3.30	7.40	1.30	3.60
MAR120-1.25 MT	1,500 (169)	Multi-Turn	12 RPM (10 RPM)	25% (2)	25% (2)	3.30	7.40	1.30	3.60
MAR160-8	1,920 (217)	Part Turn	8 seconds/90° (9 seconds/90°)	50% (1)	50% (1)	.75	1.65	.70	1.05
MAR160-16	2,000 (226)	Part Turn	16 seconds/90° (19 seconds/90°)	75% (2)	50% (2)	.60	1.60	.35	.90
MAR160-30	2,500 (282)	Part Turn	30 seconds/90° (35 seconds/90°)	75% (2)	50% (2)	.65	.70	.45	.50
MAR160-60	2,800 (316)	Part Turn	60 seconds/90° (70 seconds/90°)	100% (2)	50% (2)	.50	.60	.30	.35
MAR250-3	3,500 (395)	Part Turn	3 seconds/90° (4 seconds/90°)	25% (1)	50% (1)	3.30	7.40	.90	3.40
MAR250-3MT	3,500 (395)	Multi-Turn	5 RPM (4 RPM)	25% (2)	50% (2)	3.30	7.40	.90	3.40
MAR250-8	3,000 (339)	Part Turn	8 seconds/90° (9 seconds/90°)	40% (1)	50% (1)	1.60	2.20	1.00	1.25
MAR250-16	4,000 (452)	Part Turn	16 seconds/90° (19 seconds/90°)	50% (2)	50% (2)	1.10	1.80	.70	1.05
MAR250-30	5,000 (565)	Part Turn	30 seconds/90° (35 seconds/90°)	50% (2)	50% (2)	.75	1.65	.50	.95
MAR250-60	5,000 (565)	Part Turn	60 seconds/90° (70 seconds/90°)	75% (2)	50% (2)	.65	.70	.30	.35
MAR800-12	7,500 (847)	Part Turn	12 seconds/90° (14 seconds/90°)	25% (1)	25% (1)	3.30	7.40	.90	3.40
MAR800-30	10,000 (1,130)	Part Turn	30 seconds/90° (35 seconds/90°)	40% (2)	50% (2)	1.60	2.20	1.00	1.20
MAR800-60	10,000 (1,130)	Part Turn	60 seconds/90° (70 seconds/90°)	75% (2)	50% (2)	.55	1.55	.50	.95
MAR1600-70	21,000 (2,373)	Part Turn	70 seconds/90° (82 seconds/90°)	25% (2)	50% (2)	3.30	7.40	.90	3.40
MAR 4000-170	48,000 (5,424)	Part Turn	170 seconds/90° (200 seconds/90°)	25% (2)	50% (2)	3.30	7.40	.90	3.40

* (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 it's rated load - maximum published torque.

Isolation Relays

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

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.

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 & 24 VDC

DCR

Model	Output Torque Inch Pounds (N.m)	Type	No Load Speed of Operation	Duty Cycle Rating 12 VDC	Duty Cycle Rating 24 VDC	Current Ratings 12 VDC		Current Ratings 24 VDC	
						N.L.A.*	L.R.A.*	N.L.A.*	L.R.A.*
DCR100-30	2,000 (225)	Part Turn	11.5 seconds/90°	50% (2)	50% (2)	.90	5.80	.50	2.40
DCR160-16	2,200 (248)	Part Turn	5.5 seconds/90°	50% (1)	50% (1)	1.00	12.50	.75	6.80
DCR160-60	3,600 (406)	Part Turn	22 seconds/90°	50% (2)	50% (2)	.90	5.80	.50	2.40
DCR250-8	3,000 (339)	Part Turn	3.2 seconds/90°	50% (1)	50% (1)	1.00	22.00	.75	12.30
DCR250-16	4,000 (452)	Part Turn	5.7 seconds/90°	50% (1)	50% (1)	1.00	22.00	.75	12.30
DCR250-30	5,000 (565)	Part Turn	11.2 seconds/90°	50% (2)	50% (2)	1.00	12.50	.75	6.80
DCR800-30	10,000 (1,130)	Part Turn	13.3 seconds/90°	50% (2)	50% (2)	1.00	22.00	.75	12.30
DCR800-60	10,000 (1,130)	Part Turn	23 seconds/90°	50% (2)	50% (2)	1.00	12.50	.75	6.80

24 VAC

MAR

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 24 VAC	Current Ratings 24 VAC	
					N.L.A.*	L.R.A.*
MAR100-16	1,500 (169)	Part Turn	16 seconds/90° (19 seconds/90°)	50% (2)	5.60	6.00
MAR100-30	1,800 (203)	Part Turn	30 seconds/90° (35 seconds/90°)	75% (2)	2.40	4.50
MAR100-60	2,500 (282)	Part Turn	60 seconds/90° (70 seconds/90°)	100% (2)	1.80	3.80
MAR160-30	2,500 (282)	Part Turn	30 seconds/90° (35 seconds/90°)	75% (2)	4.50	5.00
MAR160-60	2,800 (316)	Part-Turn	60 seconds/90° (70 seconds/90°)	75% (2)	2.40	4.50
MAR250-60	5,000 (565)	Part Turn	60 seconds/90° (70 seconds/90°)	50% (2)	4.50	5.00

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

Limit Switches (MAR Models)

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

Ratings: 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

220 & 440 VAC, 3 Phase, 60 Hz.

MAR

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 220 Vac, 3Ph., 60 Hz.	Duty Cycle Rating 440 Vac, 3Ph., 60 Hz.	Current Ratings 220 VAC		Current Ratings 440 VAC	
						N.L.A.*	L.R.A.*	N.L.A.*	L.R.A.*
MAR100-16	1,500 (169)	Part Turn	16 seconds/90° (19 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR120-1.25	1,500 (169)	Part Turn	1.25 seconds/90° (2 seconds/90°)	25%	25%	1.60	3.50	.82	1.80
MAR120-1.25 MT	1,500 (169)	Multi-Turn	12 RPM (10 RPM)	25%	25%	1.60	3.50	.82	1.80
MAR160-8	1,920 (217)	Part Turn	8 seconds/90° (9 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR160-16	2,000 (226)	Part Turn	16 seconds/90° (19 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR250-3	3,500 (316)	Part Turn	3 seconds/90° (4 seconds/90°)	25%	25%	1.60	3.50	.82	1.80
MAR250-3MT	3,500 (316)	Multi-Turn	5 RPM (4 RPM)	25%	25%	1.60	3.50	.82	1.80
MAR250-16	4,000 (452)	Part Turn	16 seconds/90° (19 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR250-30	5,000 (565)	Part Turn	30 seconds/90° (35 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR250-60	5,000 (565)	Part Turn	60 seconds/90° (70 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR800-12	7,500 (847)	Part Turn	12 seconds/90° (14 seconds/90°)	25%	25%	1.60	3.50	.82	1.80
MAR800-30	10,000 (1,130)	Part Turn	30 seconds/90° (35 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR800-60	10,000 (1,130)	Part Turn	60 seconds/90° (70 seconds/90°)	25%	25%	.34	1.20	.15	.75
MAR 1600-70	21,000 (2,373)	Part Turn	70 seconds/90° (80 seconds/90°)	25%	25%	1.60	3.50	.82	1.80
MAR 4000-170	48,000 (5,424)	Part Turn	170 seconds/90° (200 seconds/90°)	25%	25%	1.60	3.50	.82	1.80

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.

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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 it's rated load - maximum published torque.

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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.

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