



1. Model Designation & Output Drive Configuration

- 133 = EM133 DIN/ISO Female F03 Bolt Pattern, F03 Output Drive
- 144 = EM144 DIN/ISO Female F04 Bolt Pattern, F04 Output Drive
- 155 = EM155 DIN/ISO Female F05 Bolt Pattern, F05 Output Drive
- 300M = EM300 Male See catalog for dimensions (Matches 212 Mounting and Drive)
- 300F = EM300 DIN/ISO Female F04 Bolt Pattern, F04 Output Drive
- 310M = EM310 Male See catalog for dimensions, 75% Duty Cycle
- 310F = EM310 DIN/ISO Female F04 Bolt Pattern, F04 Output Drive, 75% Duty Cycle
- 320M = EM320 Male See catalog for dimension, 100% Duty Cycle
- 320F = EM320 DIN/ISO Female F04 Bolt Pattern, F04 Output Drive, 100% Duty Cycle
- 500M = EM500 Male See catalog for dimensions (Matches 400 Mounting and Drive)
- 510M = EM510 Male See catalog for dimensions (Matches 400 Mounting and Drive)
- 520M = EM520 Male See catalog for dimensions (Matches 400 Mounting and Drive)
- 500F = EM500 DIN/ISO Female F07 and F10 Bolt Pattern, F07 Output Drive
- 510F = EM510 DIN/ISO Female F07 and F10 Bolt Pattern, F07 Output Drive
- 520F = EM520 DIN/ISO Female F07 and F10 Bolt Pattern, F07 Output Drive
- 810 = EM810 Female See catalog for dimensions
- 820 = EM820 Female See catalog for dimensions
- 830 = EM830 Female See catalog for dimensions
- 840 = EM840 Female See catalog for dimensions
- SR5M = EMSR5M Male Spring Return See catalog for dimensions
- SR5F = EMSR5F Female Spring Return See catalog for dimensions

2. Speed of Operation in Seconds for 90° Degree

- | | | |
|------------------|-------------------|-------------------|
| 02 = 2 sec / 90° | 10 = 10 sec / 90° | 30 = 30 sec / 90° |
| 03 = 3 sec / 90° | 12 = 12 sec / 90° | 48 = 48 sec / 90° |
| 04 = 4 sec / 90° | 13 = 13 sec / 90° | 60 = 60 sec / 90° |
| 05 = 5 sec / 90° | 15 = 15 sec / 90° | 72 = 72 sec / 90° |
| 07 = 7 sec / 90° | 18 = 18 sec / 90° | |

3. Enclosure Ratings

- C4 = CSA Certified Enclosure NEMA 4 (Standard for all series)
- E4 = CSA General Certification (C4 plus Electrical and Drive train)
- C7 = CSA General Enclosure NEMA 4 and 7 Class 1 Div. 1 Groups C,D,E,F & G
- E7 = CSA General Certification (C7 plus Electrical and Drive train)



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4. Motor Voltages

01	=	24 VAC / 1Ph / 60Hz	12 = 48 VDC **
02	=	115 VAC / 1Ph / 50 or 60Hz	13 = 90 VDC **
03	=	220 VAC / 1Ph / 50 or 60Hz	14 = 125 VDC **
10	=	12 VDC	15 = 37 VDC **
11	=	24 VDC	16 = 74 VDC **

**** PLEASE NOTE: These motors are special order and will require a 14 to 16 week lead time.**

5. Trim/Options Designation -- *Please note: New Numbers may be added without notice.*

- 001 = Standard includes: EM100 – Brake
EM300 – Heat Resistor & Thermostat, Brake for AC Voltage 4 & 10 sec. Units
EM500 – Heat Resistor & Thermostat (Includes 510 & 520)
EM800 – Heat Resistor & Thermostat, Handwheel, 2 Auxiliary Switches,
and Brake for all units 6,000 lb-in and above
EMSR5- Heat Resistor, Brake
- 002 = 1 Auxiliary Switch
- 003 = 2 Auxiliary Switches
- 004 = Brake
- 005 = 1 Auxiliary Switch / Brake
- 006 = 2 Auxiliary Switches / Brake
- 007 = 1 K Ohm Potentiometer
- 008 = 1 Auxiliary Switch / 1 K Ohm Potentiometer
- 009 = 2 Auxiliary Switches / Brake / 1 K Ohm Potentiometer
- 010 = Brake / 1 K Ohm Pot
- 015 = 2 Auxiliary Switches / Heater & Thermostat
- 025 = Handwheel
- 026 = 4 Auxiliary Switches / Brake / 1 K Ohm Pot
- 027 = Heater & Thermostat (**Em100 Series Only**)
- 028 = Brake / Handwheel
- 029 = 2 Auxiliary Switches / Handwheel
- 030 = 2 Auxiliary Switches / Handwheel / Brake
- 031 = 2 Auxiliary Switches / Handwheel / Brake / 1 K Ohm Potentiometer
- 034 = 2 Auxiliary Switches/1 K Ohm Potentiometer
- 035 = Brake / 1 K Ohm Potentiometer / Handwheel
- 040 = 2 Auxiliary Switches / Handwheel
- 041 = 2 Auxiliary Switches / No Heater or Thermostat
- 049 = 4 Auxiliary Switches
- 050 = 4 Auxiliary Switches / Brake
- 051 = 4 Auxiliary Switches / Brake / Handwheel
- 052 = 2 Auxiliary Switches / Brake / Handwheel / 180° Rotation
- 093 = Brake / Beacon Indicator (Model 800)
- 094 = Brake / Heater Only

- 100 = Modulating (Standard Includes: 4-20ma Positioner, Where 4ma=CW & Fail=CW, Brake, Potentiometer, Transmitter, Heater and Thermostat)
- 102 = Modulating / 2 Auxiliary Switches
- 112 = Modulating / Handwheel



Actuators & Controls

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- 116 = Modulating / 2 Auxiliary Switches / Handwheel
- 118 = Modulating / Dual 1 K Ohm Potentiometer
- 120 = Positioning / Modulating / External Wiring
- 121 = Positioning / Modulating / External Wiring / 2 Auxiliary Switches
- 122 = Modulating (Includes: 4-20ma Positioner, Where 4ma=CW & Fail=CW, Brake, Potentiometer, Transmitter, Heater and Thermostat) / 270 Degree Rotation
- 123 = Modulating / Handwheel / No Brake
- 124 = 0-10 VDC Positioning/Modulating; 0 v = CW & Fail = CW
- 128 = Modulating / 2 Auxiliary Switches / 3 Heaters
- 129 = Modulating / High Resolution
- 130 = Modulating / No Brake
- 131 = Modulating / 4 Auxiliary Switches / Handwheel
- 132 = Modulating / Handwheel / 180 Degree Rotation
- 133 = Modulating / Dessicant Pack
- 134 = Modulating (Includes: 4-20ma Positioner, Factory Setting for 4ma=CCW & Fail=CW, Brake, Potentiometer, and Transmitter) / No Heater
- 187 = Modulating, Extra Heater
- 188 = Modulating, Extra Heater, Handwheel
- 189 = 5 K Ohm Pot
- 190 = Transmitter, Brake, Handwheel
- 191 = 1 K Ohm Potentiometer / Transmitter / Brake / 2 Auxiliary Switches / Handwheel
- 192 = Transmitter / 2 Auxiliary Switches
- 193 = External 4-20ma Modulating / 2 Auxiliary Switches
- 194 = External 4-20ma Modulating
- 197 = 1 K Ohm Potentiometer / Transmitter
- 198 = 1 K Ohm Potentiometer / Transmitter / Brake
- 199 = 1 K Ohm Potentiometer / Transmitter / Brake / 2 Auxiliary Switches

- 208 = Torque Limiting / 2 Aux. Switches / Handwheel / Local Remote Station / 24 VDC
- 209 = Relay Current Trip Module / 2 Auxiliary Switches
- 210 = Speed Control
- 211 = Speed Control / Brake / Handwheel
- 212 = Auto Sequence Timer

- 305 = Spring Return – CW
- 306 = Spring Return – CW / Modulating In Separate Box Mounted to Actuator
- 307 = Spring Return – CW / 2 Auxiliary Switches
- 308 = Spring Return – CCW / Modulating in Separate Box Mounted to Actuator
- 309 = Spring Return – CW / 2 Wire Control Relay 120 VAC Coil
- 310 = Spring Return – CW / Modulating in Separate Box Mounted to Actuator / 2 Auxiliary Switch
- 311 = Spring Return – CW / Modulating in Separate Box for Wall Mounting
- 312 = Spring Return – CW / Close Coupled Local-Remote Station
- 313 = Spring Return – CW / Modulating, No Separate Box
- 314 = Spring Return – CW / Modulating, No Separate Box / 2 Auxiliary Switches
- 315 = Spring Return – CW / Modulating in Separate Box for Wall Mounting / 2 Auxiliary Switches
- 355 = Spring Return – CCW
- 356 = Spring Return – CCW / Modulating, No Separate Box
- 357 = Spring Return – CCW / 2 Auxiliary Switches



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- 358 = Spring Return – CCW / Modulating, No Separate Box / 2 Auxiliary Switches
- 359 = Spring Return – CW / Surge Protector
- 360 = Spring Return – CW / 2 Auxiliary Switches / 25 Watt Heater
- 361 = Spring Return – CW / Silicone Free Grease in Spring Pack
- 362 = Spring Return – CW / 4 Auxiliary Switches
- 363 = Spring Return – CCW / Transmitter
- 364 = Spring Return – CW / Local Remote Station / Modulating
- 365 = Spring Return – CW / Special Motor for Increased Operating Speed / 2 Auxiliary Switches
- 366 = Spring Return – CW / Special Motor for Increased Operating Speed / 2 Auxiliary Switches,
1 K Ohm Pot / Transmitter

- 400 = Multi-Turn 5 Turn Box
- 401 = Multi-Turn 30 Turn Box
- 402 = Multi-Turn 30 Turn Box / Handwheel
- 404 = Multi-Turn 30 Turn Box / Brake
- 407 = Multi-Turn 30 Turn Box / Modulating
- 411 = Multi-Turn 30 Turn Box / Modulating / Handwheel
- 412 = Multi-Turn 5 Turn Box / Modulating / Handwheel
- 414 = Multi-Turn 5 Turn Box / 2 Auxiliary Switches
- 415 = Multi-Turn 20 Turn Box / Modulating / Handwheel
- 419 = Multi-Turn 20 Turn Box / Modulating
- 420 = Multi-Turn 20 Turn Box
- 423 = Multi-Turn 5 Turn Box / Positioning / Modulating
- 424 = Multi-Turn 20 Turn Box / Brake / 2 Auxiliary Switches
- 425 = Multi-Turn 30 Turn Box / Modulating / 2 Auxiliary Switches
- 426 = Multi-Turn 20 Turn Box / RCM-102C / 1 K Ohm Potentiometer / Handwheel / No Heater
- 427 = Multi-Turn 20 Turn Box / 1 K Ohm Potentiometer
- 428 = Multi-Turn 20 Turn Box / (2) 120 VAC Relays / 2 Auxiliary Switches
- 429 = Multi-Turn 5 Turn Box / Modulating / Handwheel / 2 Auxiliary Switches
- 430 = Multi-Turn 20 Turn Box / No Brake, No Heater, No Thermostat
- 431 = Multi-Turn 20 Turn Box / No Brake, No Heater, No Thermostat / Single Pt. Cams
- 432 = Multi-Turn 20 Turn Box / Single Pt. Cams
- 433 = Multi-Turn 20 Turn Box / 2 Wire Control Relay/24 VDC Coil / Energize Coil for CCW /
2 Auxiliary Switches / 1 K Ohm Pot
- 434 = Multi-Turn 30 Turn Box / Modulating / “Fail In Place” Set at Factory / Single Point Cams /
No Heater, Thermostat, or Brake
- 435 = Multi-Turn 30 Turn Box / Single Point Cams / No Heater, Thermostat, or Brake
- 436 = Multi-Turn 30 Turn Box / Modulating / “Fail In Place” Set at Factory / Single Point Cams /
No Heater, Thermostat, or Brake / High Resolution
- 437 = Multi-Turn 30 Turn Box / No Brake, No Heater, No Thermostat / Single Point Cams / 1 Auxiliary
Switch with Single Point Cam / No Terminal Strip
- 438 = Multi-Turn 30 Turn Box / Modulating / “Fail In Place” Set at Factory / Single Point Cams /
No Heater, Thermostat, or Brake / High Resolution / 1 Auxiliary Switch with Single Point Cam
- 439 = Multi-Turn 5 Turn Box / Positioning / Modulating / High Resolution
- 440 = Multi-Turn 5 Turn Box / CW & CCW Relays / 12 VDC Coils / Polarity Reversed via Relay
- 441 = Multi-Turn 30 Turn Box / Modulating / 2 Auxiliary Switches / Handwheel
- 442 = Multi-Turn 5 Turn Box / Modulating / Handwheel / Local Remote Station
- 444 = Multi-Turn 20 Turn Box / 2 Auxiliary Switches



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- 500 = 2 Position / 180° Rotation
- 502 = 2 Auxiliary Switches / Uni-Directional Cams
- 503 = 360° Cam Single Stop 2 Switch Uni-Directional
- 504 = 3 Position Either Extreme (180° and Under)
- 505 = 360 Cam Single Stop 2 Switch Uni-Directional / Brake
- 506 = 3 Position Either Extreme / Brake
- 508 = 3 Positions Either Extreme (180° & Over)
- 511 = 3 Positions / 2 Auxiliary Switches
- 512 = 3 Positions / Brake/ 2 Auxiliary Switches
- 513 = 3 Positions Either Extreme (180° & Under) / 1 K Ohm Potentiometer
- 514 = 4 Positions (270° & Under)
- 519 = 4 Positions (270° & Under) / Brake
- 523 = UNIT-DIRECTIONAL / 2 AUX. SWITCHES / BRAKE

- 600 = Uni-Directional
- 602 = Uni-Directional / 2 Auxiliary Switches
- 603 = Uni-Directional / 4 Position (2 Auxiliary Switches) / Brake
- 607 = Uni-Directional / 4 Position (2 Auxiliary Switches) / Brake / Single Pt. Cam
- 608 = Uni-Directional / 2 Position (180 Degree) Single Pt. Cam / 2 Auxiliary Switches / Brake

- 700 = 2 Wire Control Relay 24 VDC Coil / Energize Coil for CW
- 701 = 2 Wire Control Relay 24 VDC Coil / Brake/ Energize Coil for CW
- 702 = 2 Auxiliary Switches / Relay for 2 Wire Control/ Energize Coil for CW
- 703 = 2 Wire Control Relay / 24 VDC Coil / Energize Coil for CW / Handwheel
- 708 = Brake / 5 K Ohm Dual Potentiometer
- 709 = 5 K Ohm Dual Potentiometer
- 710 = Brake / 5 K Ohm Potentiometer
- 712 = 2 Wire Control Relay / 120 VAC Coil / Brake / 2 Auxiliary Switches / Energize Coil for CW
- 713 = 2 Wire Control Relay / 120 VAC Coil / Brake / Energize Coil for CW
- 714 = 2 Wire Control Relay / 110 VAC Coil / 2 Auxiliary Switches / Energize Coil for CW
- 715 = CW and CCW Relay / 120VAC Coil / 2 Auxiliary Switches
- 716 = CW and CCW Relay / 120 VAC Coil / 2 Wire Control Relay
- 717 = 2-Wire Control Relay / 24 VAC Coil / Energize Coil for CW
- 718 = CW and CCW Relay / 120 VAC Coil / 2 Auxiliary Switches / Handwheel
- 719 = 2-Wire Control Relay / 120 VAC Coil / Handwheel / Energize Coil for CW
- 720 = CW and CCW Relay / 120 VAC Coil / Handwheel
- 721 = 2 Wire Control Relay / 24 VDC Coil / 1 K Ohm Potentiometer / Energize Coil for CW
- 722 = CW and CCW Dual Coil, Latching Relay/ 24 VDC Coil
- 723 = 2 Wire Control Relay 24 VDC Coil / Energize Coil for CCW
- 724 = 2-Wire Control Relay / 120 VAC Coil / Energize Coil for CW
- 725 = 2-Wire Control Relay / 24 VAC Coil/ 1 K Ohm Potentiometer / Handwheel / Energize Coil for CW
- 726 = 2-Wire Control Relay / 24 VAC Coil / Energize Coil for CW / 1 K Ohm Potentiometer / Handwheel / Brake
- 727 = 2-Wire Control Relay / 120 VAC Coil / Energize Coil for CCW
- 728 = 2-Wire Control Relay / 120 VAC Coil / Energize Coil for CCW / Handwheel
- 729 = 120 VAC Control Relays CW & CCW / Brake



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- 730 = 120 VAC Control Relays CW & CCW / Handwheel / 2 Auxiliary Switches / Brake / Special Motor for 1600 in-lb Units
- 731 = 2-Wire Control Relay / 24 VAC Coil / Energize Coil for CW / Handwheel / Brake
- 732 = 2-Wire Control Relay / 110 VAC Coil / Energize Coil for CCW / 2 Auxiliary Switches
- 733 = 2-Wire Control Relay / 12 VDC Coil / Energize Coil for CW
- 734 = CW & CCW Relays / 12 VDC Coils / Polarity Reversed via Relays
- 735 = 2-Wire Control Relay / 12 VDC Coil / Energize Coil for CW / 2 Auxiliary Switches
- 736 = CW & CCW Relays / 120 VAC Coil / 2 Auxiliary Switches / Brake / Handwheel
- 737 = 2-Wire Control Relay / 24 VDC Coil / Energize Coil for CW / 2 Auxiliary Switches
- 740 = 2-Wire Control Relay / 120 VAC Coil / Energize Coil for CCW / 2 Auxiliary Switches / Brake

- 738 = CW and CCW Relay / 120VAC Coil / 2 Auxiliary Switches / Wired Per WD-0084
- 739 = CW and CCW Relay / 120VAC Coil / Wired Per WD-0084
- 740 = 2 Wire Control Relay / 120 VAC Coil / Brake / 2 Auxiliary Switches / Energize Coil for CCW

- 800 = Local Remote Station
- 801 = Local Remote Station / Modulating
- 803 = Local Remote Station / Transmitter
- 804 = Closed Coupled Local Remote Station / 4 Aux. Switches / Brake
- 805 = Closed Coupled Local Remote Station / 2 Aux. Switches

- 901 = 800 Series Gearbox with Special Bore (2.003/2.009 Diameter with .501 Key)
- 902 = Special Motor on 12 VDC Units / 2 Aux. Switches
- 906 = Desiccant Pack
- 910 = High Cycle Brake

6. Special Finishes

- B = Black Cover
- BR = High Resolution Modulating, Special Cams
- C = Cooper
- CA = Caltrol
- CH = Chevron
- FC = Fuel Cell (Customer Supplied Brakes)
- FS = Flow Solutions (Valve Mounting Supplied)
- L = Pason (Special Label Only)
- N = Nibco Blue Cover, 10-24 Mtg. Holes for SR-10 & SR-15
- O = Oxy (Reverse Acting Modulating / Add Set Screws)
- P = PBM Blue Cover
- PK = High Resolution Modulating
- PM = Premac (Lock washers on L.S. & SHCS on Indicator)
- R = Renfro (Fine Resolution Transmitter Gears, Special L.S. Wiring)
- ST = Special Torque
- V = Valve Teck (No Thermostat, Low Temp Resistor)
- W = Special Wiring for Babcocks-Wilcox
- 1 = 100 Series Aluminum Cover
- NY = New York City Transit Authority



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7. Examples

300M-30-47-02-100 = EM300M-30 Sec/90°- NEMA/CSA Type 4 Enclosure for Hazardous Locations –115Vac/1Ph/50-60Hz with 4-20mA Positioner

500F-10-C4-02-001 = EM500F-10 Sec/90°- NEMA/CSA Type 4 Enclosure – 115Vac/1Ph/50-60Hz

520F-30-C4-11-004 = EM520F-30 Sec/90°- NEMA/CSA Type 4 Enclosure – 24Vdc with Brake

810-18-C4-02-001 = EM810-18 Sec/90°- NEMA/CSA Type 4 Enclosure – 115Vac/1Ph/50-60Hz (Standard with no options but complete with 2 aux. switches, heater, thermostat, and brake)

830-18-C4-03-001 = EM830-18 Sec/90°- NEMA/CSA Type 4 Enclosure – 220Vac/1Ph/50-60Hz (Standard with no options but complete with 2 aux. switches, heater, thermostat, and brake)

8. Installation & Operating Manual (IOM) Numbers

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>USED ON</u>
21077-06/00	= EM-Series Operating & Installation Instructions	All
21078-09/01	= E/M Motor Brake Kit	All
21430	= Kit: Auxiliary Switch	EM4xx
21435	= Kit: POT	EM8xx
80071A	= Peaktronics Positioner DCM100-vDC	All
01597-11/01	= C1397 Controller Board Setup and Operating Instructions	All
C1415-05/01	= C1415 Controller Board Setup and Operating Instructions	All
C1418-05/01	= C1418 Actuator Position Transmitter	All
51961-09/00	= SR5 Spring Return	SR5
301352	= EM500 Manual Override Assembly	EM5xx
301473	= EM300 Manual Override Assembly	EM3xx
RCT-100	= Repeat Cycle Timer	All