

rotork®

Keeping the World Flowing
for Future Generations



- › Accurate and repeatable position control with up to 0.1% accuracy
- › All electric solution for linear, part-turn and multi-turn control valve and pump applications
- › Explosionproof to international standards
- › Less than 1 watt standby power
- › Optional Reserve Power Pack (RPP) for fail-to-position functionality
- › Adjustable speed control
- › Brushless DC motor for reliable, accurate, S9 / Class D continuous modulation capability
- › Encoder technology for dependable position measurement
- › Suitable for mounting in any orientation
- › Built-in HMI allows for quick and simple setup
- › Permanently lubricated, maintenance-free drive train
- › Zero stick slip during operation
- › Optional integral local controls and positional display
- › Suitable for 1-phase or DC power supplies
- › Compatible with a wide variety of fieldbus, hardwired and analogue site systems

CMA Range

Linear, Part-Turn and Multi-Turn
Control Valve Actuators

The CMA range delivers precise position control and continuous modulation for a variety of linear, part-turn and multi-turn control valve and pump applications.

CMA actuators can be optimised for the specific application with the addition of local controls, a positional display and a Reserve Power Pack for fail-to-position functionality.



HART
COMMUNICATION PROTOCOL

Pakscan™ **Modbus®**

PROFIBUS

RIRO

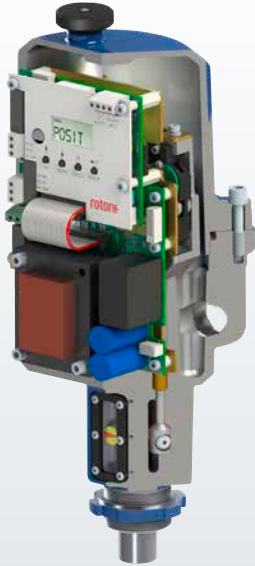
FOUNDATION

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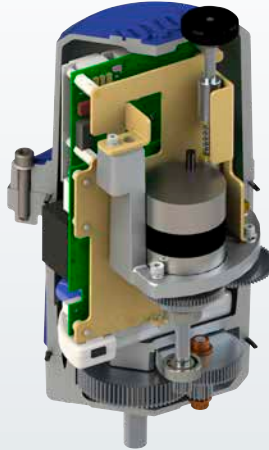
Advanced Engineering

CML
Linear Actuator



CML-100 to CML-750

CMR
Multi-Turn Actuator



CMR-50 to CMR-250

CMQ
Part-Turn Actuator



CMQ-250 to CMQ-1000

Encoder Technology

All variants of CMA actuators utilise absolute encoder technology to measure actuator position. The encoder is directly driven from the output drive to avoid any backlash present in the drive gearing.

User Interface

Configuration of all setting parameters is performed with push button navigation and the six-segment LCD display.

DC Brushless Motor

The CMA uses a high efficiency, continuous rated, brushless DC motor allowing for maintenance-free, continuous modulation duty.



Options – Local Controls and Reserve Power Pack (RPP)

Hand Drive

Manual operation of the valve is possible by depressing and rotating the simple, robust hand drive mechanism.

Geartrain

The simple yet durable, efficient spur gear drive train is lubricated for life with proven high reliability.

Output Drive

The CMQ base conforms to MSS SP-101 or ISO 5211. CML and CMR may be adapted to suit individual valves.

Optional Local Controls – CML, CMR & CMQ

Integral local control selectors can be fitted to facilitate Local, Stop or Remote mode selection and local Open and Close input. The local control option includes a vivid LED display to provide clear position and status indication.

Optional Reserve Power Pack (RPP) – CML & CMQ

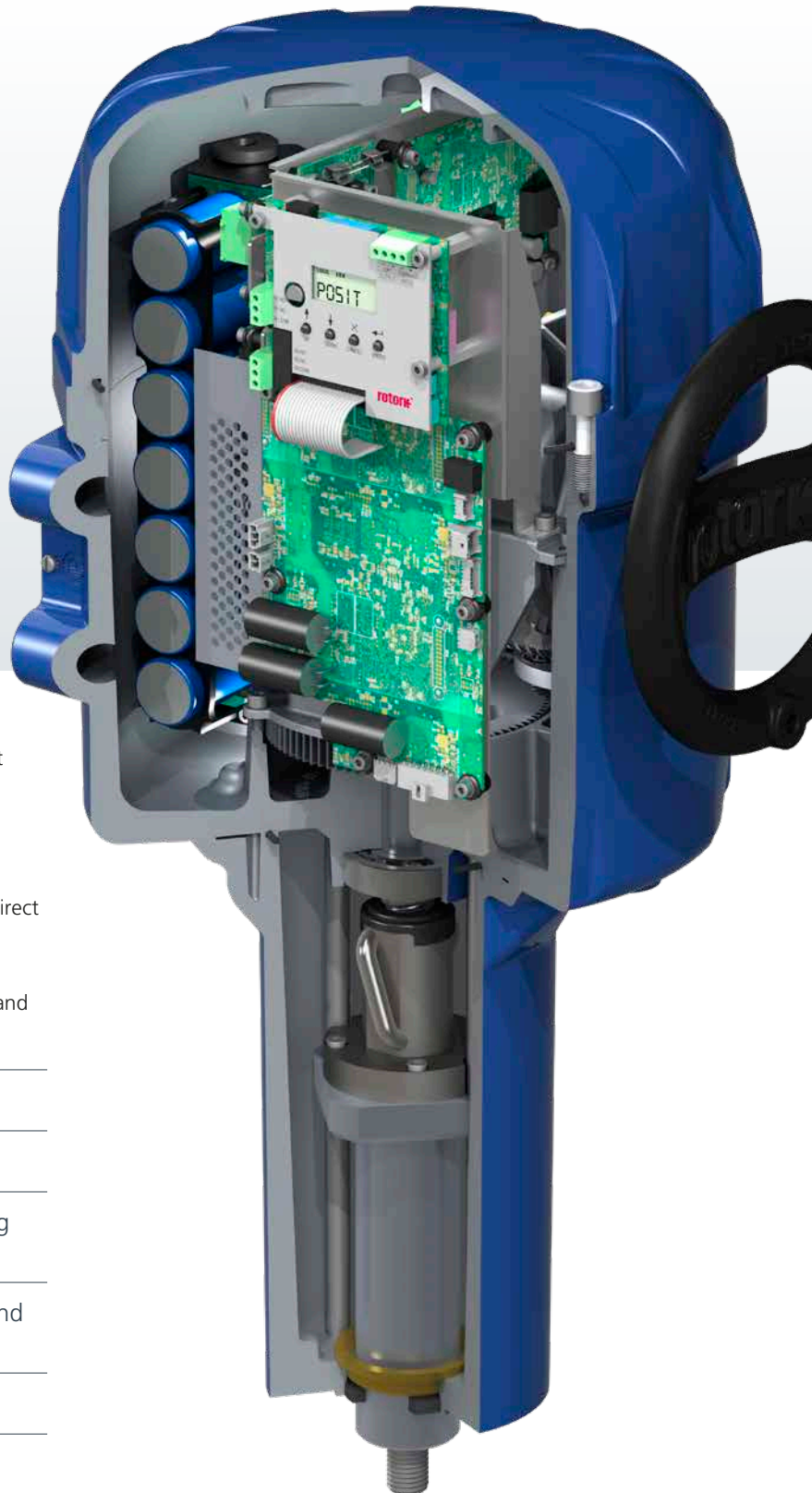
Fail-to-position capability can be added to the local control option on CML and CMQ actuators. Super capacitor technology ensures enough stored electrical energy to perform the power loss action without any degradation due to repeat charging/discharging.

Advanced Engineering

CML Linear Actuator



CML-1500 to CML-3000



Increased Linear Actuator Performance

CML-1500 and CML-3000 deliver increased thrust output and stroke length to enable the electric automation of larger control valves with higher pressure ratings.

CML-1500 and CML-3000 maintain the array of features and functions available with CMA range actuators while substantially extending the performance capabilities for direct drive linear valves.

CMA electric actuators can also offer significant emission reductions compared to equivalent pneumatic actuators and the necessary infrastructure required to support them.

- › Seating thrust up to 4,500 lbf (20 kN)
- › Modulating thrust up to 3,000 lbf (13.3 kN)
- › Accurate and repeatable position control using 4-20 mA signal with 0.1% accuracy
- › Ball screw drive train for increased reliability and efficiency at higher thrust
- › Integral local controls and positional display
- › Electric solution for advanced automation of large control valves

Performance summary

Speed or operating time values shown below are at 100% speed setting. Speed can be reduced to 50% in 1% increments.

CMA actuators are suitable for S9 (IEC60034) / Class D (EN15714-2) operating duty.

The rated force (thrust or torque) for each size of actuator is detailed below. Operating time tolerance +/-10%.

CML and CMQ self locking units can resist backdriving forces from the valve up to 125% of rated load without movement. CMA resolution is up to 0.1%.

CML: Linear Actuator

Model	Min Modulating Thrust		Max Modulating Thrust		Max Seating Thrust*		Max Speed		Max Stroke	
	lbf	N	lbf	N	lbf	N	inches/sec	mm/sec	inches	mm
CML-100	60	267	100	445	150	667	0.25	6.35	1.5	38.1
CML-250	150	667	250	1,112	375	1,668	0.13	3.18	1.5	38.1
CML-750	450	2,002	750	3,336	1,125	5,004	0.13	3.18	2.0	50.8
CML-1500	900	4,003	1,500	6,672	2,250	10,009	0.23	5.72	4.5	114.3
CML-3000	1,800	8,007	3,000	13,345	4,500	20,017	0.23	5.72	4.5	114.3

Note: CML-750 operating speed may reduce when operating below -25 °C (-13 °F).
12 VDC CML-1500 and CML-3000 may reduce operating speed to 10% in order to maintain operating thrust through stroke.

CMQ: Part-Turn Actuator

Model	Min Modulating Torque		Max Modulating Torque		Max Seating Torque*		CMQ High Speed Operating Time secs	CMQ Self Locking Operating Time secs
	lbf.in	Nm	lbf.in	Nm	lbf.in	Nm		
CMQ-250	150	16.9	250	28.2	375	42.4	5	10
CMQ-500	300	33.9	500	56.5	750	84.7	7.5	15
CMQ-1000	600	67.8	1000	113.0	1,100	124.3	11	22

Note: CMQ low speed units are self-locking up to 125% of rated load. CMQ high speed units are not self-locking.

* **Seating Torque and Thrust** – Some applications require tight seating of the valve in the close position. The CMA has a selective seating capability. The seating torque/thrust values shown for CML and CMQ are the forces available to close a valve tightly at the end of travel. The seating torque/thrust option can be selected and configured during setup (at “close action” selection, choose “torque” or “thrust” as applicable).

CMR: Multi-Turn Actuator

Model	Min Torque		Max Torque		Max Speed RPM	Min Stroke turns	Max Stroke turns
	lbf.in	Nm	lbf.in	Nm			
CMR-50	20	2.3	50	5.6	11	0.25	320
CMR-89	35.6	4.0	89	10.1	24	0.25	320
CMR-100	40	4.5	100	11.3	10	0.25	320
CMR-125	50	5.6	125	14.1	18	0.25	320
CMR-200	80	9.0	200	22.6	5	0.25	320
CMR-250	100	11.3	250	28.2	10	0.25	320

For further information, refer to CMA Range brochure PUB094-001.

A full listing of the Rotork sales and service network is available on our website.

www.rotork.com

Corporate Headquarters
Rotork plc
tel +44 (0)1225 733200
email mail@rotork.com

USA
Rotork Controls Inc.
tel +1 (585) 247 2304
email info@rotork.com

Electric Actuators and Control Systems
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