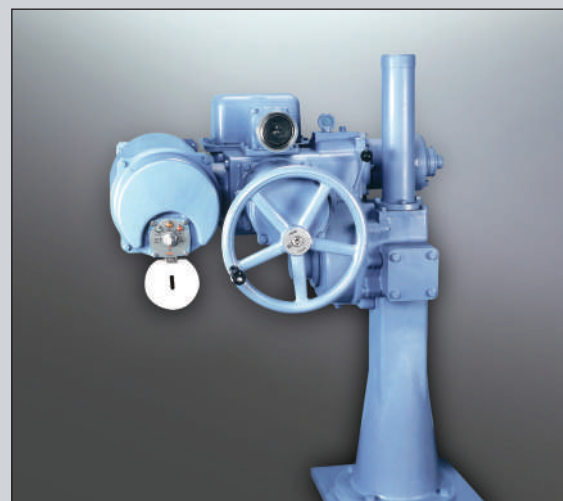




LTMD-Q Series
Multi-turn actuator 0.2~37kW (Nuclear Power Plant)



MW Series
Gear reducer - Worm, Bevel 51 ~ 30,600kgf.m



LEC Series
Self-descending actuator (1 ~ 20 Ton) 0.1 ~ 2.2kW



TM Series
Multi-turn 0.2~37kW



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TQ SERIES TQ-SMART SERIES

Quarter-Turn Actuator

Ever-Reliable

The specification of actuator is subject to change without prior notice for on-going product improvement. Publication No. CAT-07-002 REV5, 2019.11



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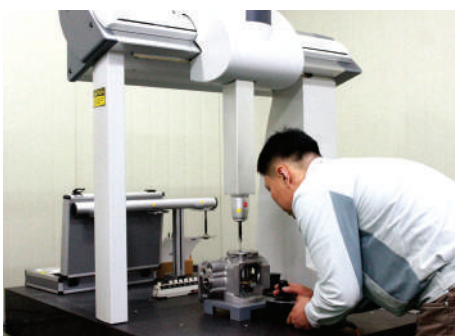




TQ SERIES

QUARTER-TURN ACTUATOR

TQ Series represents our devoted technology over 30 years of experience in the valve actuation, offering customer the reliable, quality assured, and cost-effective product.



Features

- Light, compact and corrosion resistant **Aluminum alloy enclosure.**
- **Double sealed** with V-shape ring and gasket to ensure IP68 grade, 8 meters under water for 72 hours.
- **Explosion proof** : Exd IIBT4-IEC-60079-0,-1
- Mechanically and electrically interlocked **Reversing Magnetic Contactor** to enhance the motor start-up.
- **2-wire fieldbus** communication protocols.
- **Non-intrusively set the position limit & torque**, using remote control kit and push buttons respectively.

Upgrades of TQ-Smart Series

- Features the same basic function and enclosure as TQ Series
- Non-intrusive Position & Torque setting
 - Easy setting and configuration using remote control kit and push buttons on operating panel
- Large 4-lined LCD display

Structure

① Motor

The squirrel cage induction motor with embedded thermostat. The built-in thermostat accurately detects the increased temperature to prevent form motor damaging.

② Position Indicator

Dial indicator ranging from 0 ~ 100%

Option : LCD display is available for the model with integral control unit

③ Limit switch

Setting and adjusting is easy by using a screwdriver

④ Torque switch

Automatically stops the motor when the torque larger than the set value set is applied to the valve shaft

⑤ Potentiometer

Slip mechanism is provided for easy modification of zero points, achieved by rotating the potentiometer shaft with a screwdriver

⑥ Integral control unit

※ Non-penetrating push buttons are integrated with the actuator.

※ The inner circuit board is isolated from the remote command signals by the opto-isolator to withstand the surge.

※ Once the torque switch triggers, the actuator responds to no other command signals until the reset button is pushed to protect motor and valve.

⑦ Handwheel

Side-mounted for easy access to manual operation

⑧ Change lever

Automatically declutches to switch-over from manual to electric operation

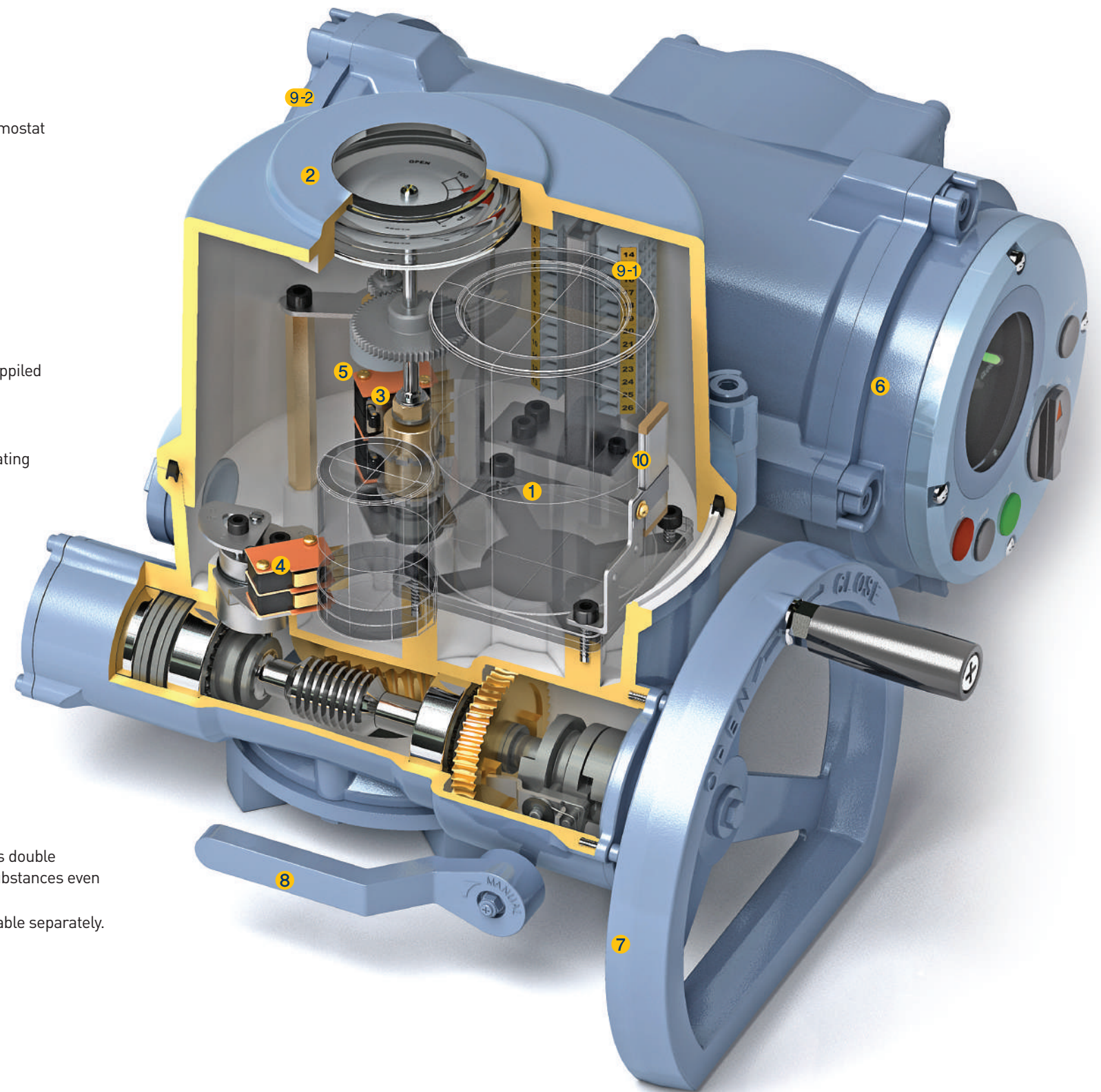
⑨ Terminal block

9-1 Basic type : located inside the actuator body.

9-2 Integral control unit type : located at the rear of integral control unit which is double sealed with V-ring and gasket to prevent the ingress of foreign objects or substances even when the terminal cover is removed for on-site wiring.

9-3 As an option for basic type : additional double sealed terminal block is available separately.

⑩ Space heater : themistor type(PTC - 5)



Specification

Standard

Enclosure	IP68 (under water, depth 8 meters for 72 hours)
Main Power	Single Phase 110/220V, Three Phase 220/380/400/440/460/480V, 50/60Hz, Direct current 24 ~ 220V
Control Power	Single Phase 110/220V
Motor	Squirrel caged induction motor, Class F, Duty S2, 10 minutes
Limit Switches	Open/Close 2ea respectively, Silver Alloy Contact 250VAC, 10A
Torque Switches	Open/Close 1ea respectively, Silver Alloy Contact 250VAC, 10A(TQ-010; N/A)
Rotating Angle	90° ± 10°
Terminal	26pins (TQ-010; 22pins)
Postion Indicator	Dial indicator 0~100%
Space Heater	PTC thermistor type 5W, 110~240VAC
Cable Entry	PF 1"X 3 (TQ-010, PF3/4"X3)
Manual/Electric Shifting	Automatic switch-over when motor starts up
Ambient Temperature	Basic/LED : -25℃~80℃ LCD : -25℃~70℃ (Option for low temperature : -40℃~60℃/-50℃~50℃/-60℃~50℃)
Lubricant	Grease EPO Class
Vibration/Shock	1G within the range of 10~40Hz (0.5G for integral types), Shock : 30G
Lifespan	Minimum 10,000 cycles (EN15714-2)
External Painting	Polyester powder coating after anodizing (Munsell No. 2.5PB5/2)

Option

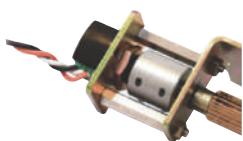
Integral Control Unit	Non-penetrating push buttons (Open/Stop/Close/Reset), Local/Off/Remote Selector, Open/Fault/Close LED lights, Reversing Contactor, Reverse phase detector, Monitor Relay, Double Sealed Terminal Block ※ Additional Option; Automatic Phase Correcting Function(TQ-010; N/A)
Potentiometer	1kΩ
Position Transmitter	Output 4~20mA DC
Addirional Switches (TQ-010; N/A)	Limit Switches Open/Close 2ea respectively, Torque Switches Open/Close 1ea respectively
Modulation	Input/Output 4~20mA DC (TQ-010; N/A)
Wide Traveling Angel	120°, 180°, 270° (TQ-010; N/A)
Extra Terminal Box	Double Sealed Terminal Block for Basic Type (38 pins, TQ-010; N/A)
LCD	Digital Display of Valve Position, Open/Close/Fault Status
Self Diagnosis	Accumulated running times, number of actions, the number of operation of position/torque switch triggered, and thermostat errors
Fieldbus Controls	Profibus-DP, Modbus-RTU, FF-H1, HART
Explosion Proof	Exd II BT4 (FM,CSA, ATEX)
Optional Coating	Refer to Enertork
Torque Reset	
Non-intrusive positon & torque setting, date logging(TQ-010; N/A)	

Smart Specification

LCD Screen Unit	<ul style="list-style-type: none">▶ Display the valve or damper's open position rate in "%"▶ Indicate the actuator's status by characters<ul style="list-style-type: none">- Display operating modes and status, open/close rate, torque value, etc.
Sensor Unit	<ul style="list-style-type: none">▶ Position Sensing<ul style="list-style-type: none">- High-resolution absolute encoder based on magnetic hall sensor- Total available rotation range : 13bit- Previous position memory holds when the main power is cut off and without battery▶ Torque Sensing<ul style="list-style-type: none">- Maximise life cycle for parts by the use of optical contactless resolver- Torque setting range on actuator is 40% ~ 100%.
Data Logging & Diagnostics	<ul style="list-style-type: none">▶ Display trend curve graph of operating characteristics of the actuator▶ Frequency log of position limit & torque limit reached▶ Indicate the current status of operation mode▶ Easy to set and configure▶ Smart HMI (Human-Machine Interface) app with supplied wireless connection. (Request only)
Wireless Settings & Controls	<ul style="list-style-type: none">▶ No need to open up covers to set and modify position/torque and others.▶ Use remote control kit and smart devices (PDA, Smartphone, and others) for setting, controlling and self-diagnosing of actuator.



Encoder



Torque Sensing



Remote Controller

Technical details

Performance

Model	Max. Output Torque	Operating Time(90°) 60/50Hz	Max. bore Diameter	Motor		Rated Current (A) 60/50Hz				Hand Wheel turns	Weight
				Power	Frame	1 Phase		3 Phase			
	kg·m	sec	mm	W	F	110V	220V	380V	440V	rev	kg
TQ-010	10	17/21	18	15	70	1.03/0.92	0.65/0.56	0.18/0.25	0.25/0.34	10	6.5
TQ-020	20	17/21	30	40	80	1.97/1.71	0.95/0.82	0.21/0.27	0.28/0.43	10	19
TQ-040	40	26/31	40	40	90	2.86/2.24	1.36/1.00	0.23/0.25	0.27/0.32	12.5	25
TQ-060	60	26/31	40	90	90	3.89/3.16	1.82/1.42	0.35/0.40	0.41/0.56	12.5	25
TQ-080	80	34/41	47	90	90	3.89/3.16	1.82/1.42	0.35/0.40	0.41/0.56	14.5	35
TQ-120	120	34/41	47	180	90	4.28/3.53	2.12/1.76	0.48/0.53	0.55/0.77	14.5	36
TQ-200	200	102/123	78	90	90	3.89/3.16	1.82/1.42	0.35/0.40	0.41/0.56	43.5	52
TQ-300	300	102/123	78	180	90	4.28/3.53	2.12/1.76	0.48/0.53	0.55/0.77	43.5	53