Ever Reliable

enertork

enertork

Website : www.enertork.com E-mail : sales@enertork.com

- **Main office/Factory** 344, Neungyeo-ro, Neungseo-myeon, Yeoju-si, Gyeonggi-do, 12646 **Tel** : 031-880-2800 **Fax** : 031-881-5860
- **Daegu Factory** 327B 8L, Daegu National Industrial Complex, 1287-7, Eung-am-ri, Guji-myeon, Dalseong-gun, Daegu
- **Seoul Office** Yunik Building 18th Fl., 430, Eonju-ro, Gangnam-gu, Seoul, 06210 **Tel** : 02-555-0883 **Fax** : 02-556-3026
- **UAE branch** Enertork Middle East General Trading L.L.C Makateb Building, Office #508, D89 Al Maktoum Road, Port Saeed, Deira, Dubai, UAE **Tel** : +971 4 2948355 **Fax** : +971 4 2943455 **P.O. Box** : 25660
- **Vietnam branch** No. 1 VSIP II-A, Street 30, Vietnam-Singapore Industrial Pack II-A, Vinh Tan Commune, Tan Yuen Town, Binh Duong Province, Vietnam **Tel** : +84 0274-380-3180 **Fax** : +84 0274-380-3190

www.enertork.com

Electric valve actuator recognized worldwide for accumulated technological capability of Enertork and its reliability and technological capacity in various industrial environments

TQ, TQi SERIES ACTUATOR

Part Turn
Electric Actuator

Ever Reliable

enertork

Ever Reliable

enertork

Reliable Enertork

Enertork is a specialized company that has been producing electric actuators and related products that drive industrial valves since 1987.
Enertork produces product lines that can be applied in various fields, ranging from water treatment such as water supply and sewage to power generation and petrochemical fields, and sells them to customers all over the world.

Enertork has a 3Q philosophy to fulfill customer needs.

Quick Delivery
Enertork honors delivery dates and proposes the fastest delivery time possible.

Quick Service
Enertork operates service organizations and systems to take action as quickly as possible if a problem occurs related to our product.

Quick Response
Enertork works to give our customers a sense of trust by responding to customer requests as soon as they are received.

CONTENTS

HISTORY

Acquired ISO 9001, 14001 quality and environment certification / Listed on KOSDAQ / Acquired certification for occupational health and safety management system

1987

Established

- '87 Established Morgan Korea

1991

Secured product technological capability

- '91 Registered as company for localization by KEPCO
- '91 Entered into technical partnership with Seibu in Japan
- '97 Acquired ISO 9001 quality certification (certification agency DNV)
- '98 Announced new actuator (jointly developed by Western Electric)

2006

Established base

- '02 Registered as qualified supplier for power generation facilities by 5 power generation companies in Korea
- '03 Acquired actuator class 1E (Q class) for nuclear power plants (Certification agency: NTS of U.S.)
- '06 Listed on KOSDAQ
- '08 Acquired CE certification

2010

Established base for overseas entry

- '10 Acquired certification for occupational health and safety management system (OSHAS/KOSHA 18001)
- '11 Changed company name to "Enertork"
- '13 Acquired FM/ATEX/CSA explosion-proof certification
- '19 Acquired NEP certification
- '20 Certified for outstanding products by Public Procurement Service

LINE UP

TX Series

A next-generation intelligent product that can be actively applied to evolving control systems.

TM Series

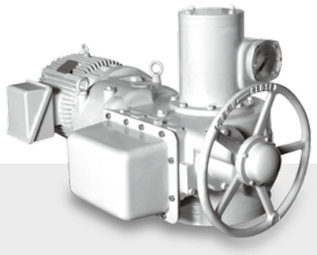
A multi-turn actuator that can be applied to various control solutions required in the fields of power generation, petrochemicals, steel, and water and sewage.

TM Smart Series

The non-intrusive method can be set by applying electronic control components to the mechanical TMi Series.

LTMD-Q Series

A product that can be applied in nuclear power plants and harsh environments.



TQ Smart Series

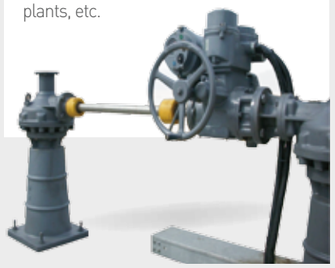
The non-intrusive method can be set by applying electronic control parts to the mechanical TQ Series.

WT Series

A quarter-turn actuator with simple specifications. This product can be applied to processes that require high operation speeds.

Water hoist

This product specializes the TM Series for spindle-type floodgate operation, and is supplied to water management facilities such as reservoirs, waterways, water purification plants, sewage treatment plants, etc.



LEC Series

This product is specialized for urgent closing of a floodgate. Fast operation is possible when operated manually.

TMA Series

A multi-turn actuator that can be applied to an area where electricity supply is difficult, such as power generation, petrochemicals, steel, and water and sewage facilities, and areas where electricity cannot be supplied in the event of an accident.

MW Series

This product is used to apply a multi-turn actuator to large-size BFV, ball valves, dampers, etc. A product exclusively for manual operation can also be provided.

EPD Series

A quarter-turn actuator used to drive industrial dampers.

EA / ER Series

A quarter-turn pneumatic actuator that is used for small and medium sized BFV, balls, dampers, etc.

TQ SERIES
TQi SERIES

Quarter-turn electric valve actuator

The TQ series is a quarter-turn actuator that can be applied to butterflies, ball valves, dampers, etc. The TQ i series is an actuator developed using the technological capability of Enertork and diverse field experience.

The TQ i series will satisfy all customer requirements with the addition of the latest features such as 2-wire communication and data logging to the reliability and durability of the TM series that has been widely used thus far.

Main specifications of TQ series

- Potentiometer slip device (for easy calibration)
- Completely eliminates possibility of rainwater penetration by adopting a non-penetration type switch
- Self-holding function when torque switch is operating
- Waterproof function satisfying IP68 (8m, 72 hours)
- Explosion-proof function satisfying Exd IIB T4 (optional)
- Large LCD display, data logging function (optional)
- Supports 2-wire fieldbus communication (Profibus-DP, FF, HART, Modbus etc./optional)
- Fire retarding (optional)
  - FR coating
  - Tested using UL 1709:2005 (certification agency: Lloyd's Register of Shipping)

Advantages and differentiated features of TQ series

- Provide product lineup that can satisfy the needs of various customers, such as fail safe, solar power generation system, etc.
- Customized functions can be implemented

TQ SERIES

Part Turn Actuator

❶ Motor

The built-in thermostat protects the motor from damage by fire by accurately detecting rising temperatures.

❷ Gate positioner

The exact location is displayed as a percentage. The percentage can be displayed on the LCD (digital) if the operation panel is the integrated type.

❸ Position limit switch

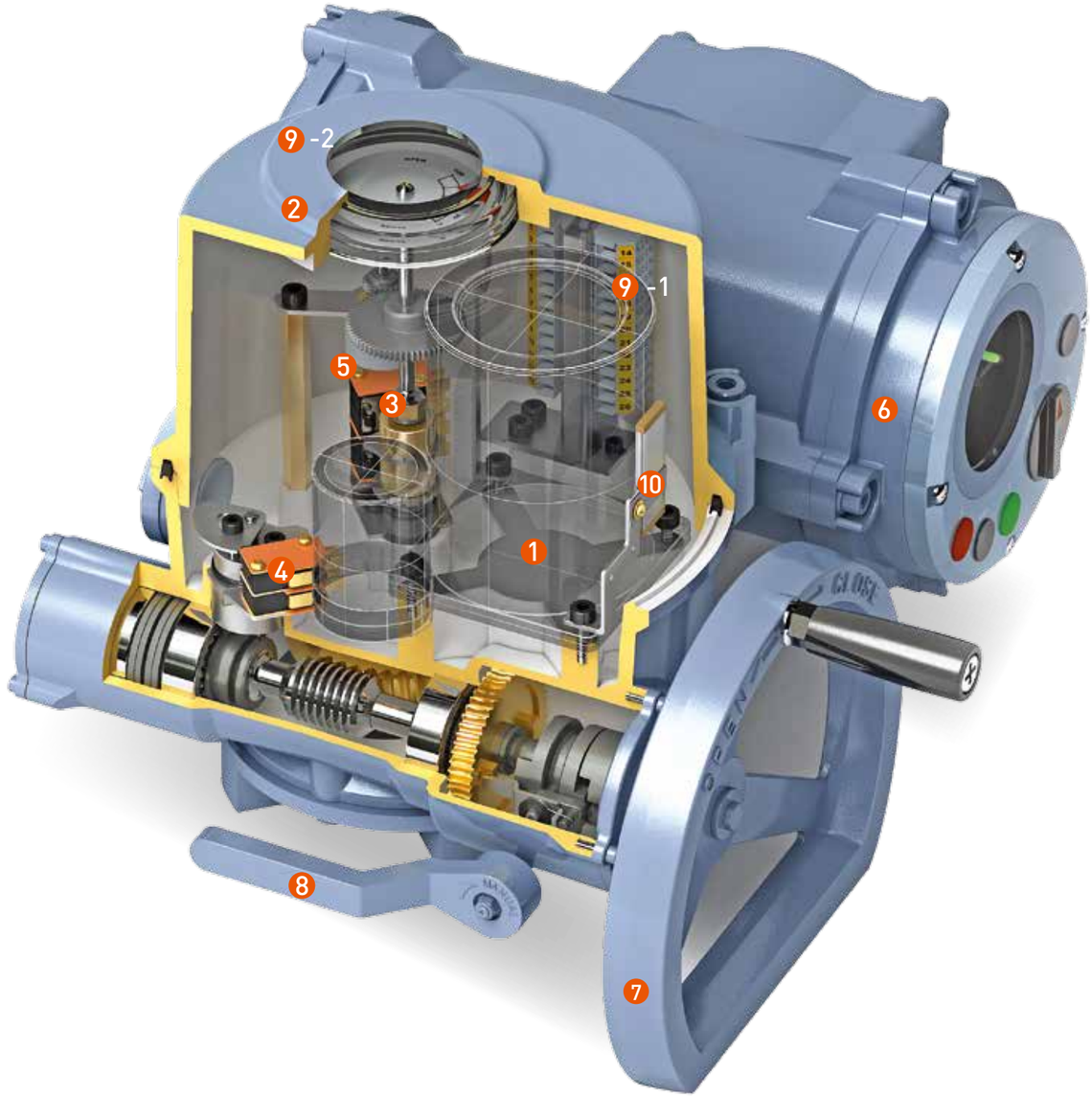
With a SLIP device adopted, the switch can be set conveniently by turning the cam with a flathead (⊖) screwdriver.

❹ Torque switch

The correct setting values are set for outbound products. The motor stops automatically when a force greater than the set value is applied.

❺ Potentiometer

With a SLIP device adopted, the zero point can be adjusted conveniently by turning the axis with a flathead (⊖) screwdriver.



❻ Integral unit

A non-penetrating structure where the front control unit is completely separated from the inside, with no need for a separate on-site control panel. The internal circuit is protected from external shock current because it is completely separated by the remote circuit and the insulation element. When the torque switch is operated, motor damage by fire and valve damage due to repeated operation are prevented using a “self-holding function”.

❼ Manual handle

The handle is installed at the site for convenience of operation.

❽ Manual switch lever

The motor can be conveniently switched from electric to manual, and the automatic return type is the standard for returning from manual to electric.

❾ Terminal block

9-1 The basic type is built into the main unit.

9-2 For the integrated operation panel, a circular terminal block is installed at the rear end of the integral unit. The terminal block is separated using a double-sealing structure using a V ring and O ring to protect the interior from moisture.

9-3 A separate external terminal box can be attached to the basic type if an additional contact point is needed or if there is concern for moisture penetration into the wiring service entrance.

❿ Space heater

A thermostat is installed that automatically regulates the temperature.

TQ, TQi SERIES

Standard specifications

Main power	1PH, 110/220V, 50/60Hz 3PH, 220/380/440/460/480, 50/60Hz 24 VDC
AC motor	Insulation class F, built-in thermostat / Available within voltage variation of ±10% Standard rating: S2, 10MIN
DC motor	Insulation class B / Available within voltage variation of ±10% Standard rating: S2, 10MIN
Output contact (position limit/torque switch)	Position limit switch: 2 ea. for open/close, silver alloy contact: 250VAC, 10A Torque switch: 2 ea. for open/close, silver alloy contact: 250VAC, 10A (excluding TQ-010)
Rotation angle	90°±10°
Gate positioner	Mechanical type continuous percentage indication type
Enclosure (waterproof grade)	IP-68 (72 hours duration at depth of 8 meters)
Space heater	Thermostat type (PTC-5) / 5W / 100-240VAC
Manual/electric switch	Automatic return; manually switch from electrical to manual using manual lever
Wiring service entrance	PF/NPT 1" (#28) x 3ea (TQ-010, PF/NPT ¾"(#22) x 3ea)
Operating ambient temperature	BASIC/LED Type : -25℃~+80℃, LCD Type : -25℃~+70℃, Fail Safe : 0℃~+50℃
Vibration/Shock	Vibration: 1g rms in frequency range of 10-55Hz (0.5g rms for integrated control panel) Shock: Maximum acceleration 5G
Coating	Aluminum: Anodizing + polyester (powder) Carbon steel: Double-coated epoxy paint Finish color: Munsell No. 2.5PB 5/2

Optional

Integrated operation panel	LED Non-penetration push switch (Open/Close/Stop/Reset) Non-penetration selection switch (Remote/Off/Local) Motor forward/reverse actuator (Magnetic contactor) Status display LED Reverse-phase protection function Monitor relay	LCD Non-penetration push switch (Open /Close/Stop/Reset) Non-penetration selection switch (Remote/Off/Local) Motor forward/reverse actuator (Magnetic contactor) Character LCD and status display LED Reverse-phase protection function Monitor Relay Save history of operation incl. operating time, usage times, torque and limit, etc.
Temperature range	Low temperature : -40℃~+50℃, -50℃~+50℃ (BASIC/LED TYPE)	
Adding output contacts (position limit/torque switch)	Position limit switch - 2 ea. for open/close, silver alloy contact 250VAC, 10A	
Wiring service entrance	NPT, G, etc.	
Potentiometer	1kΩ	
Transmitter (position value)	DC 4-20mA	
Proportional control	Input : DC 4-20mA, Output : DC 4-20mA (Excluding TQ-010)	
Rotation angle	120°, 180°, 270° (Excluding TQ-010)	
Explosion-proof	Exd IIB T4 (*Excluding DC motor type)	
Fieldbus control (2-wire control)	Profibus-DP(Single/Redundancy) / Modbus-RTU / Foundation Fieldbus-H1 / HART / Wireless	
Motor forward and reverse actuator	SSR (Solid State Relay)	
FailSafe	Battery backup unit (voltage: 24VDC, capacity: 3.0Ah/6.0Ah/9.0Ah), operable when main power supply is interrupted (Open/Close/Stay-put can be selected)	
Others	Surge protector, arrester	

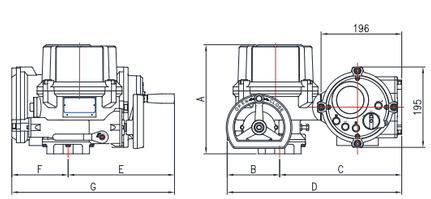
Specifications

Model	Number of sets*	Frequency	Maximum torque	Operating time	Allowable stem diameter		Motor		Rated current					Handle operating RPM	Weight	
					Key type	Square type	Capacity	Flange	Single phase		Three phase				Basic	Integral
		Hz	kg.m	SEC.	Φmm	□mm	W	F	110V	220V	220V	380V	440V	rev.	kg	kg
TQ-010	Set 1	60	10	17	18	13	15	70	1.03	0.65	N/A	N/A	N/A	10	6.5	N/A
	Set 2	50	10	20					0.92	0.56	N/A	N/A	N/A	10		
TQ-020	Set 1	60	20	17	30	22	40	80	1.97	0.95	0.38	0.21	0.28	10	10	19
	Set 2		12	8										5		
	Set 1	50	20	20					1.71	0.82	0.52	0.27	0.43	10		
	Set 2		12	10										5		
TQ-040	Set 1	60	40	25	40	29	40	90	2.86	1.36	0.35	0.23	0.27	12.5	16	25
	Set 2		24	13										6.3		
	Set 1	50	40	30					2.24	1.00	0.45	0.25	0.32	12.5		
	Set 2		24	15										6.3		
TQ-060	Set 1	60	60	25	40	29	90	90	3.89	1.82	0.56	0.35	0.41	12.5	16	25
	Set 2		36	13										6.3		
	Set 1	50	60	30					3.16	1.42	0.77	0.4	0.56	12.5		
	Set 2		36	15										6.3		
TQ-080	Set 1	60	80	34	47	35	90	90	3.89	1.82	0.56	0.35	0.41	14.5	26	35
	Set 2		48	17										7.3		
	Set 1	50	80	40					3.16	1.42	0.77	0.4	0.56	14.5		
	Set 2		48	20										7.3		
TQ-120	Set 1	60	120	34	47	35	180	90	7.1	3.7	3.5	1.7	1.9	14.5	27	36
	Set 2		72	17										7.3		
	Set 1	50	120	40					3.53	1.76	1.42	0.53	0.77	14.5		
	Set 2		72	20										7.3		
TQ-200	Set 1	60	200	100	78	58	90	90	3.89	1.82	0.56	0.35	0.41	43.5	66	75
	Set 2		120	51										21.8		
	Set 1	50	200	115					3.16	1.42	0.77	0.4	0.56	43.5		
	Set 2		120	60										21.8		
TQ-300	Set 1	60	300	100	78	58	180	90	7.1	3.7	3.5	1.7	1.9	43.5	67	76
	Set 2		180	51										21.8		
	Set 1	50	300	115					3.53	1.76	1.42	0.53	0.77	43.5		
	Set 2		180	60										21.8		

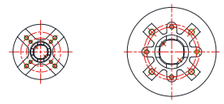
* Set 1 : Standard operating time & standard max. torque output
  Set 2 : Faster operating time, but max. torque output is lower than Set 1.

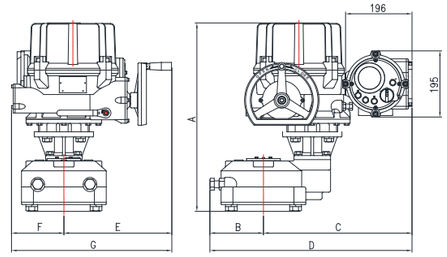
Dimensions

Model	Base ISO 5211	ØP	Thread specification	Tap depth	A	B	C	D	E	F	G
TQ-010	F05/F07	Ø50/Ø70	M6/M8	10/15	217	117	-	-	236	-	-
TQ-020	F07/F10	Ø70/Ø102	M8/M10	15/18	265	130	296	426	258	137	395
TQ-040	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-060	F10/F12	Ø102/Ø125	M10/M12	15/18	287	175	288	463	272	136	408
TQ-080	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-120	F12/F14	Ø125/Ø140	M12/M16	18/24	321	200	293	493	319	155	474
TQ-200	F16	Ø165	M20	30	556	159	439	319	319	155	474
TQ-300	F16	Ø165	M20	30	556	159	439	319	319	155	474



TQ-010~060 TQ-080~120





TQ-200~300

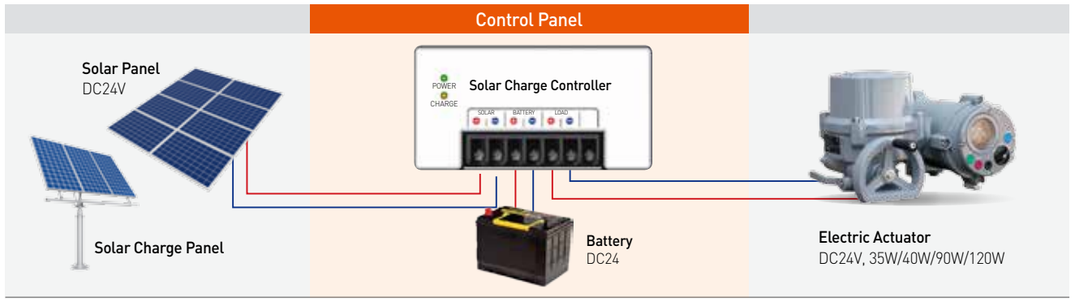
TQ, TQi SERIES

DC Motor

Model	Maximum output torque	Operating time(90°)	Allowable stem diameter	Motor		Rated current	Handle operation ROM	Weight	Battery capacity*
				Capacity	Flange				
	kg.m	sec	mm	W	F	A	rev	kg	Ah
TQ-010D	10	15 ± 3	18	15	70	6	10	6.5	-
TQ-020D	20	15 ± 3	30	35	80	10	10	19	3
TQ-040D	40	23 ± 5	40	40	90	12	12.5	25	3
TQ-060D	60	23 ± 5	40	90	90	15	12.5	25	6
TQ-080D	80	30 ± 6	47	90	90	16	14.5	35	6
TQ-120D	120	30 ± 6	47	120	90	22	14.5	36	9
TQ-200D	200	90 ± 10	78	90	90	16	43.5	75	9
TQ-300D	300	90 ± 10	78	120	90	22	43.5	76	9

* Battery: Applicable when fail safe is supported
※Specifications for TQ-Series with DC MOTOR is slightly different. Please consult with our sales staff for more information.

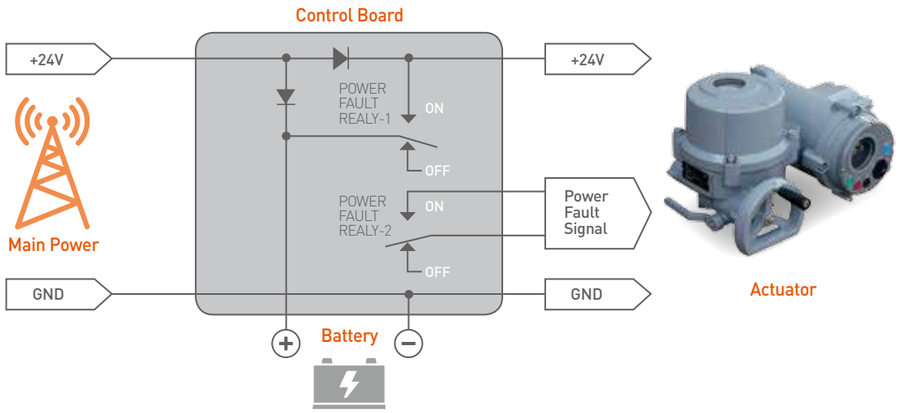
■ Solar Panel System



* The solar panel and battery capacity are selected according to the operating conditions of the actuator.

■ Fail Safe

Operation method	Battery backup unit (voltage: 24V, capacity: 3.0Ah / 6.0Ah / 9.0Ah, life: 2 years) Emergency safety control should be completed within 30 minutes if the main power is cut off. Rated torque can be operated 5 times
Function	Open, close, and hold can be selected (controllable by local and remote commands)
Trigger	When main power is cut off



Special Option

■ Separated Integral Type

- If it is dangerous or uncomfortable for the operator to use the integrated type operation panel, it can be relocated.
- If piping vibrates severely, the integrated operation panel can be relocated to protect electronic devices.

There are two types of the integrated operation panel - the standing type that is secured to the floor, and the wall bracket type that can be attached to the wall.

▼Wall Bracket Type

▼Stand Type

Ever Reliable enertork

Customer service

Model selection : The performance of electric valves, electric flooding gates, and electric dampers depends on the correct selection of the actuator from the aspect of rotation speed and torque. Cost effectiveness is also an important factor when selecting an actuator. Enertork is prepared to assist customers in all processes necessary for actuator selection, such as torque/thrust calculation, installation method, and selection of options.

Spare parts supply : Both individual parts and component assembly parts will be delivered in a timely manner.

Electric valve supply : Enertork supplies actuators. If desired by the customer, Enertork can also supply electric valves, electric flooding gates, and electric dampers with full quality assurance.

Manual valve motorization/related installation parts supply : When a customer motorizes manual valves or installs an actuator on site, the customer needs various installation parts such as mounting flanges, stands, levers, fittings, etc. Enertork is prepared to assist customers to acquire the proper related installation parts from the design phase to the delivery phase.

Standard materials table

Part		Material	KS/JIS NO.	ASTM NO.
Enclosure	TQ-010~120	Alloy die casting(ALDC)	D6006/H5302	B85
	TQ-200/300	Gear case : Cast iron(FCD)	D4301/G5501	A126
Thrust unit		Ductile cast iron(FCD)	D4302/G5502	A536
Worm	1st	Carbon steel(SM45C)	D3752/G4051	1050
	2nd	Chromium molybdenum(SCM)	D3711/G4105	A322
Worm heel	TQ-010~120	High strength brass casting(HBsC)	D6007/H5102	B584
Spur gear	TQ-200/300	Carbon steel(SM45C)	D3752/G4051	1050
Stem bush	Key	Carbon steel(SM45C)	D3752/G4051	1050
Grease		Lithium grease(EP 0)	M2130/K2220	-

Warranty

All processes, ranging from design to delivery, including the parts and component assembly parts inspection, are thoroughly controlled in accordance with ISO9001 and our own quality assurance procedures. The torque values, sleeve RPM, current value, voltage, limit switch and torque switch performance, and manual/electric switching performance of each actuator are inspected before delivery, and a test result report is issued for each actuator.

Reliable Enertork

1 Showroom 2 Training room 3 Product design 4 Quality assurance
5 6 Processing 7 Assembly 8 Testing and inspection

Ever Reliable

enertork

▪ Status of major certification acquisition


DNV·GL

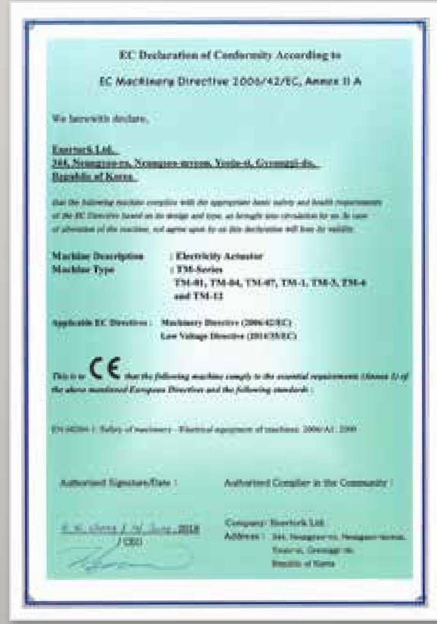
MANAGEMENT SYSTEM CERTIFICATE

Enertork Ltd.

ISO 9001:2015, KS Q ISO 9001:2015

DESIGN AND MANUFACTURE OF ELECTRIC ACTUATOR

ISO9001 Certified by DNV


EC Declaration of Conformity According to EC Machinery Directive 2006/42/EC, Annex II A

CE Certification


EU-TYPE EXAMINATION CERTIFICATE

FM/ATEX Certification


CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

FM Certificate


DNV·GL

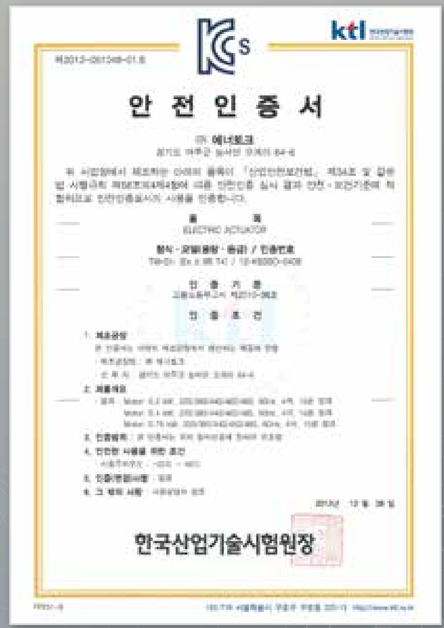
MANAGEMENT SYSTEM CERTIFICATE

Enertork Ltd.

ISO 14001:2015, KS I ISO 14001:2015

DESIGN AND MANUFACTURE OF ELECTRIC ACTUATOR

ISO14001 Certified by DNV


안 전 인 증 서

한국산업기술시험원장

KCs explosion-proof certification


SGS TÜV

CERTIFICATE

SIL certification


ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ

СЕРТИФИКАТ СООТВЕТСТВИЯ

TRCU Certification

MEMO