

World Top Valve Automation Company

Part & Multi-turn Electric Valve Actuators

KQ-SERIES



KQ SERIES

Intelligent Electric Actuator Part-turn & Multi-turn

KVA is proud to introduce brand new KQ & KQM series actuators which have developed by its endless challenge and innovation.

This product is high performance electric Part-turn & Multi-turn actuator equipped with safety and durability required at the industrial field.



- > KQ : Actuator for 90 degree part-turn valves. It outputs 1,5 times more torque than existing actuators.
- > KQM : Actuator for small size multi-turn valves with compact design.
It decreased the weight dramatically.
- > KVA provides the best service in all parts of clients' facilities such as field inspection, installation and maintenance.



Product Features

Appearance

- > Compact Size
- > For good visibility, indicator and control parts are located in one phase.
- > Easy for manual control by Side Mounting hand wheel.

Safety

- > All assembly parts of KQ SERIES is designed to assemble O-shape ring on the embossed groove which is perfectly protected against explosion proof, water proof and dust proof.
- > Water proof IP-68 (10m 72 hours water proof available)
- > Best safety design with Ex db IIC T4 Gb (acetylene, hydrogen) level.
- > Absolute Encoder memorizes valve position during power is off.

Convenience

- > Motor's torque delivery efficiency is maximized to enhance output torque of actuator and it expands scope of selection of actuator according to categorization by characteristics of use (S Type, i Type)
- > Alarm details will be exposed as the text for easier inspection.
- > Connector type terminal enables quicker maintenance in case of failure.
- > A space heater is applied to secure internal components from corrosion by humidity(depends of model) and the use of stainless steel is obligated.
- > Coated PCBs are adapted to resist in severe environment operation and humidity, and it provides enhanced durability.
- > System setting is available without disassembling cover.
- > Easy control by adopting rotatable knob and prevention from moisture penetration by to non-penetrating switch design
- > It is not requiring an additional tool for the setting.

Type

» STANDARD TYPE : KQ & KQM - S

> It is designed for open/close control by external control panel only.

> Composition

- Motor & Driving Gear
- Position Limit Switch
- Local Position Indicator(% Type)
- Terminal Block
- Space Heater

> Features

- Interlocking panel configuration for several actuators is available to lower installation cost
- Installable in narrow space by its compact size
- Separated Controller Box for Input/Output control
- Suitable for attachment to small valve due to light weight,

> Option

- 4~20mA Transmitter(Potentiometer + R/I Converter)
- Add Limit Switch



» INTEGRAL TYPE : KQ & KQM- i

> It is designed for both site control and remote control (panel) by the embedded control device.

> Composition

- Motor & Driving Gear
- Control Unit
 - * Main Board + Power Board + I/O Board
 - * Magnetic Contactor, Transformer
 - * Auto Phase Detector
- Terminal Block
- Absolute encoder, Torque Sensor
- Local / Stop / Remote Selector Switch (Lock Type)
- Open / Close Selector Switch (Return Type)
- Local digital Indicator(% Type)
- Operating time recorder(by embedded micro processor)

> Features

- Integrated black box function for proportional control, phase control and monitoring.
- The digital indicator enables to check the valve's open/closed state and the actuators error histories in text or lamp.

> Option

- Proportional control
- 4~20mA Transmitter
- Communication : MODBUS MODULE : RS485, PROFIBUS, FIELD BUS
- Add Limite Relay



Structure

»» Main Components

1. Control Unit

- > Unit design for easier maintenance.
 - * Control board : Main Board, Power Board, I/O Board, Encoder Board
- > Actuator motor's magnet contact for rotation and reverse rotation, and transformer for control power supply are integrated for easy inspection and maintenance.
- > Maximized reliability by embedded temperature and humidity sensor. It prevents actuator malfunction in case of moisture penetration or abnormal operation in higher temperature condition than ranged temperature.

2. Display

- > Good visibility by adopting large size display.
- > Indicates open, close state in 0~100 per cent(%) in digital.
- > Actuator status and error details are expressed in the text.

3. Motor

- > High torque low inertia motor is applied.

4. Driving Line

- > Main power delivery gear is operated at Oil Bath that ensures durability at long-term use.
 - * It enhances valve safety with Self Locking.
- > Internal power and signal delivery axis is double sealing structure that is excellent for sealing.
- > Top and bottom part of operating shaft are secured by oil seal against leakage.

5. Manual Hand Wheel

- > Located on the side for easier manual operation.
- > Wheel is not rotate during automatic operation. It directly connect to Drive shaft and its hammer blow device enables easier valve operation.

6. Auto/Manual Selector Lever

- > It is Auto Declutch Type and it will be switched to Auto mode when the motor operates.

7. Terminal Block

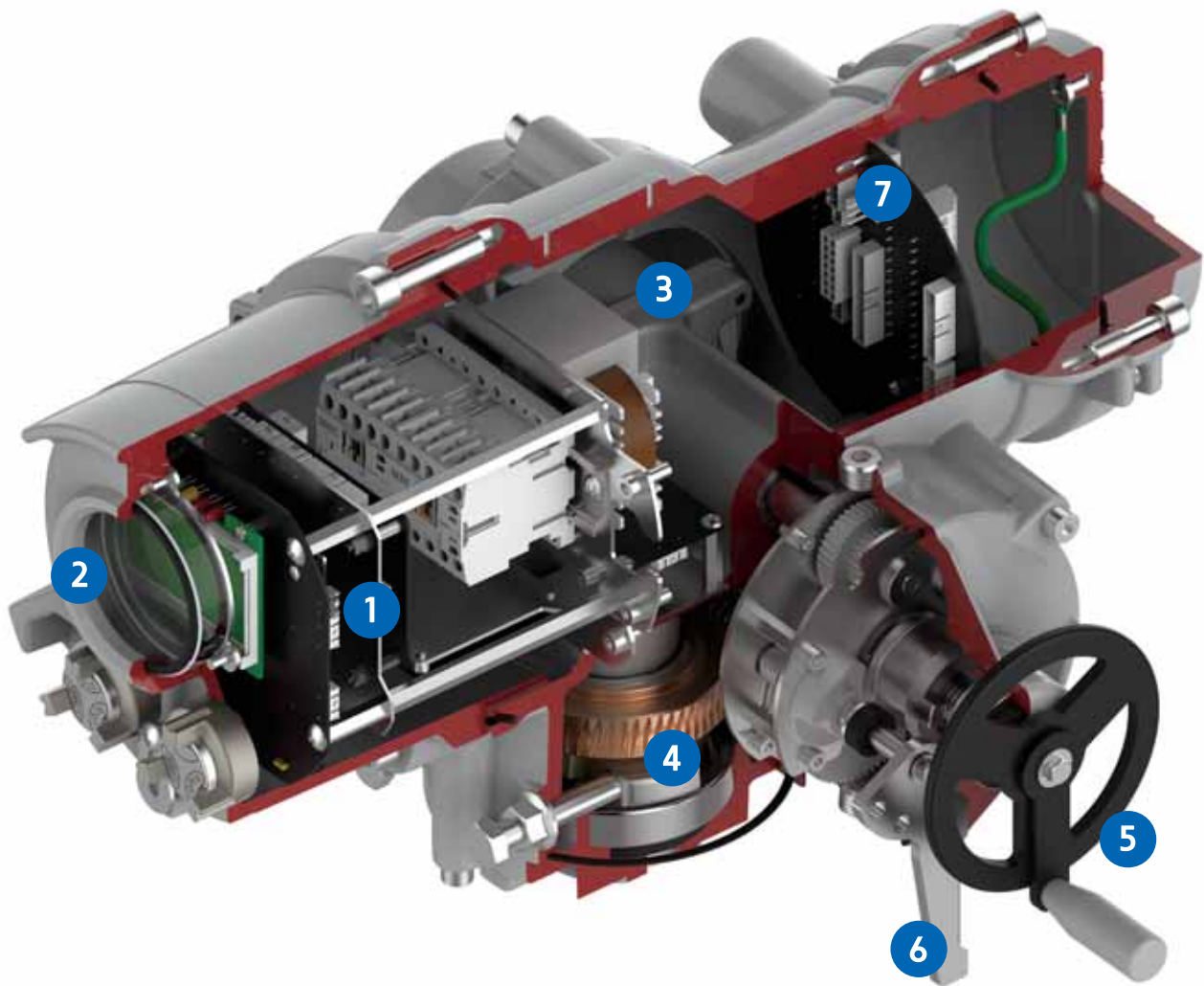
- > Connector type for easier maintenance.

8. Thrust(KQM Only)

- > Its independent structure enhances the applicability of the thrust force in high load, and it is easy to replace and disassemble.

KQ SERIES

Intelligent Electric Actuator
Part-turn & Multi-turn



Patent
Absolute Encoder
No. 10-1582529

Specifications

»» KQ Max Torque & Operation Time

Part-Turn Standard type

Model	Motor Size [W]	Max Torque[kgf-m]			Stroke Time (90°) 60/50Hz [sec]	Hand wheel rotation [rev]	Remark
		1Phase	3Phase	DC			
		110V	380V	24V			
KQ-0S	15	10	-	-	18/23	33	
	25	20	25	-			
	40	30	50	14	25/30 (13)	45	
	60	-	-	20	(14)		
KQ-1S	60	60	80	-	27/33	41	
	90	70	100	-	27/33		
	150	-	180	110	33/39 (19)	46,5	
	180	110	-	-	31/39		
	200	-	250	150	31/39 (19)		

※ Above data described based on AC380V / 3PH, and () is indicating DC motor operation time.

Part-Turn Standard type

Model	Motor Size [W]	Max Torque[kgf-m]			Stroke Time (90°) 60/50Hz [sec]	Hand wheel rotation [rev]	Remark
		1Phase	3Phase	DC			
		110V	380V	24V			
KQ-1SQ	200	-	200	-	11/13	20	

※ For other than above data, please contact us.

»» Mechanical Table

Model KQ-	Allowed Torque		Allowed Stem Diameter(mm)	ISO No. : Flange Dia/Tab PCD/bolt Size pilot dia, mm	Remark
	kgf.m	N.m	key		
0S015	20,0	196	32	F10 : O,D90/P,C,D70/4xM8/55 - F07	
0S025	30,0	294	32	F10 : O,D125 / P,C,D102 / 4xM10/70 - F14	
0S040	50,0	490	32	F10 : O,D125 / P,C,D102 / 4xM10/70 - F14	
1S060	60,0	980	50	F14 : O,D175/P,C,D140/4xM16/100 - F16	
1S090	80,0	1470	50	F14 : O,D175/P,C,D140/4xM16/100 - F16	
1S150	150,0	1960	50	F14 : O,D175/P,C,D140/4xM16/100 - F16	
1S180	250,0	2450	50	F14 : O,D175/P,C,D140/4xM16/100 - F25	
1S200	250,0	2450	50	F14 : O,D175/P,C,D140/4xM16/100 - F25	

» KQM Max Torque & RPM Data

AC Power

□ 60Hz - 1 ϕ

Power	RPM		4	8	12	18	24	29	36	43,5	54
	W										
1 ϕ 110V	60		17	3,5	4	3,0	2	1,5	1,5	-	-
	90		8,5	4	4,9	3,5	2	2	-	-	-
1 ϕ 220V	180		11,5	5,5	6,5	5	3	2,5	2,5	2	-

□ 60Hz - 3 ϕ

Power	RPM		3,5	7,5	11,3	16,5	22,5	27	34	40,5	50,5
	W										
3 ϕ 380V	60		9,5	3,5	5,5	4	2,5	2	2	1,5	-
	90		12	6	7	5	3,5	3	2,5	2	1,5
	150		17	8,5	10	7,5	5	4	3,5	3	2,5
	180		32	16	19	14	9,5	7,5	7	5,5	4,5

□ 50Hz - 1 ϕ

Power	RPM		3	7	9,5	14,5	19,5	23,5	29,5	35,5	44
	W										
1 ϕ 110V	60		5	2,5	2,5	2	1,5	-	-	-	-
	90		7,5	6,5	4	3	2	1,5	-	-	-
1 ϕ 220V	180		10	5	6	4,5	3	2,5	2	1,5	-

□ 50Hz - 3 ϕ

Power	RPM		3	6,5	9,5	14,5	19,5	23,5	29,5	35,5	44
	W										
3 ϕ 380V	60		9,5	4,5	5,5	4	2,5	2	2	1,5	-
	90		15,5	7,5	9	6,5	4,5	4	3	2,5	2
	150		26,5	13	15,5	11,5	7,5	6,5	5,5	4,5	3,5
	180		38,3	19	22	16,5	11	9,5	8	6,5	5,5

DC Power

Power	RPM		6,5	13,5	19,5	19,5	40	48	60	72	89
	W										
DC24V	150		12,1	6	7	5	3,5	3	2,5	2	1,5
	200		16,5	8	9,5	7	4,5	4	3,5	3	2,5

※ For other than above data, please contact us.

» Mechanical Table

Model KQ-	Allowed Torque		Allowed Stem Diameter(mm)	ISO No. : Flange Dia/Tab PCD/bolt Size pilot dia.
	kgf,m	N,m	threaded	
KQM-0S	30,0	300	25	F10 : O,D125 / P,C,D102 / 4xM10/70 - F07

» Specification

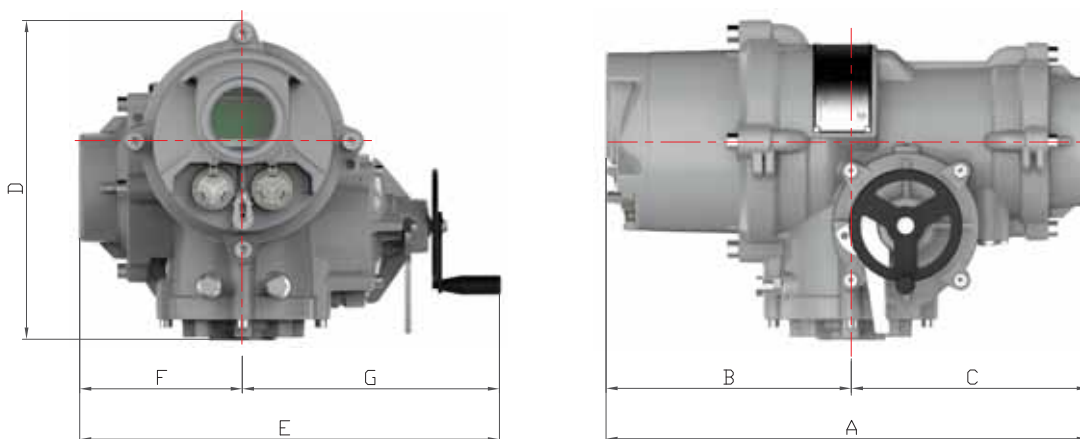
Design Specification	KQ Actuator complies with "EN 15714-2 Industrial Valve - Part II: Electric industry valve actuator - Basic requirements and motor actuator standard".			
Duty Rating	On-off & Inching	Allows S3 40%, 15min, 50~100 ignitions per hour.		
	Modulation	Allows S4 40%, 15min, 50~100 ignitions per hour.		
Motor	<p>Motor must be designed with low inertia and insulation grade must be F or above. Hazardous area certification of motor is T4 135°C Ⅱ S3 40%, which has 50~100 times ignitions per hour. It restricts 15 minutes of use per 100% nominal torque of the rating. AC 15, 25, 40, 60, 90, 120, 150, 180, 200w DC 40, 60, 90, 120, 150, 200w</p>			
Thermal Protection	<p>Harness is made with UL3398 PE Cable that ensures durability up to Rated 300V and 150°C and is excellent in heat resistance, cold resistance, oil resistance, chemical resistance and electric stability. It has low loss of dielectric and dielectric substance and has no change of electric characteristics at high temperature and high frequency. Terminal connection of all lines used inside is Wire to Wire connector and connection of PCB uses plug and socket for easy maintenance.</p>			
	Operating Temperature(To)	120°C ±5°C		
Operating Temperature	<p>Ambient temperature range for Actuator operation is - 30~70°C (-22 to +158 °F). If the temperature is beyond the range, please contact us. KQ Series' IP rating for explosion proof and non explosion proof area is IP68 / NEMA 6P, water proof.</p>			
Power Supply	1ph 110, 220V / 3ph 220, 380, 440, 460V, 480V / 50, 60Hz / DC24V			
	Voltage tolerance	+/-10%	※1	
	Hertz tolerance	+/-5%	※1	
	Max. starting voltage reduction	Max -15%		
※1 - Applicable to rated torque performance: Cycle and speed are not guaranteed.				
Cable Entry	Entry No	1	2	3
	Type 1	1NPT1"	NPT1 ½"	NPT1"
	Type 2	M25	M25	M25
Terminal Block	Main : 3P - Screw type / Signal 48P Push type			
Position Sensing	Standard Type : Micro Switch(omron) - 250VAC 5A, 1a/1b Intelligent Type : Absolute Encoder - Relay 250VAC 5A, Open : 2A*2, Close : 2A*2			
Torque Sensing	Standard Type : Torque Unit(KVA) - 250VAC 5A, 1a/1b Intelligent Type : Current & Voltage - Relay 250VAC 5A, Open : 1A*2, Close : 1A*2			
Indicator	Standard Type : Mechanical of Continuous Pointer(0~100%) Intelligent Type : Digital Indicator(0~100%)			
Monitor Relay	Power Relay(250VAC 8A, 1C) Local & Remote Relay(250VAC 5A / Respectively 1a)			
Remote Power	Dry contact(AC110V), Option : Interposing Relay - DC24V, AC110V			
Noise Level	Noise at 1m does not exceed 70dB.			
Lubrication	Grease Moly(EP0 type)			
Materials	Aluminium Alloy, Nodular graphite casting, Steel or Bronze			
Surface Treatment	Anodizing : 10 micron min			
External Coating	Power Coating : 60 micron min / Colour: Munsell No. 4,9B 6,7 / 0,2			
Durability Life	Open/Close 10,000 Cycle of Rated load			

*2 : Contact can be selected as N,O or N,C

Options

Transmitter	4~20mA
Proportional Control	Input, Output 4~20mA(Only Intelligent type)
I/O Option Board	Add Limit Relay, Torque Status Relay
2Wire Control	MODBUS MODULE : RS485, PROFIBUS, FIELD BUS

Size



Model	Base	N-Tap Size	A	B	C	D	E	F	G
KQ-0S-S	F10	4-M10	430	190	240	324	430	170	260
KQ-1S-S	F14	4-M16	440	190	250	378	506	205	301
KQ-1SQ-S	F14	4-M16	440	190	250	378	645	344	301
KQM-0S-S	F10	4-M10	490	250	240	370	465	205	260
KQ-0S-I	F10	4-M10	490	250	240	324	430	170	260
KQ-1S-I	F14	4-M16	500	250	250	378	506	205	301
KQ-1SQ-I	F14	4-M16	500	250	250	378	645	344	301
KQM-0S-I	F10	4-M10	490	250	240	370	465	205	260

※ The size may vary upon specifications or options. For detailed size, please refer to Approved Drawing.



KE-SERIES(MOV)



KQ-SERIES(MOV)



KA-SERIES(AOV)



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