

World Top Valve Automation Company

Valve Actuator



KE-SERIES



KQ-SERIES



KA-SERIES



KVA CO., LTD, is one of the leading manufacturers of air-motor valve actuator (AOV) and electric-motor operated valve actuator (MOV) that automate valves in various industrial fields. Since 2003, the first launch of its AOV solutions expanded to over 90 per cent share in the domestic market in Korea and widely proven its reliability and superiority in Oil Refinery, Petrochemical areas. It's electrical actuator MOV is rapidly growing its market recognition among the global players since 2011, and now KVA is devoting itself to expand its market experiences in global Oil Refinery, Petrochemical, Power & Energy Plant and Water works areas.

Business Introduction



KE-SERIES(MOV)



KQ-SERIES(MOV)



KA-SERIES(AOV)

- New Valve Automation
- Existing Valve Automation
- Actuator Maintenance

KVA is..

from	March 2003
business	Valve Actuator Manufacturing and Service
conforming	ISO 9001, ISO 14001, KOSHA Ex, IEC Ex
Where	Cheongju, Republic of Korea
Clients	HDO / Hyundai Chem. / SK Energy / SK Innovation / GS Caltex / Hanwha Total / DAEHAN Oil Pipeline Corp. / Samsung Eng. / Huvis / KOLON / LG Chem (Over 50 Oil, Petrochem. / Power Plant / Water Treatment Companies)

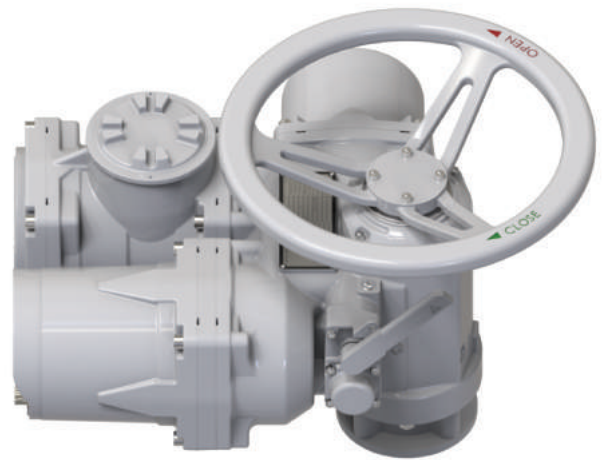
Milestone

2017	IECEX Certification acquired for KE series, Position Transmitter for KA series
2015	INNO-BIZ Company, Patent listed for MOV - Absolute Encoder
2013	ISO 14001, Vendor listed for Korea Power Plant Companies Company Relocation
2010	Built own R&D Center MOV conforming Korean EX standards launch Patent listed for MOV Key-lock system, safety selector
2009	New AOV models launch
2008	ISO 9001, KOSHA EX d Ilc T4
2007	First shipment to abroad - SK Indonesia
2006	Vendor Listed - SK Energy
2005	Vendor Listed - LG Petrochemical, Lotte Petrochemical
2003	Company Incorporation, AOV launch Vendor Listed - Samsung Atofina, SK Gas, LG Chemical, YNCC, Hyundai Oilbank, Hyundai E&C, Hyundai Engineering

KE Series

Electric Multi-Turn Actuator

KE SERIES ACTUATOR is developed thanks to various field experiences and accumulated technology of KVA for customer convenience. This product is high performance electric Multi-Turn actuator equipped with safety, durability and convenient maintenance required at the industrial field.



Applicable Valve



Gate Valve



Globe Valve

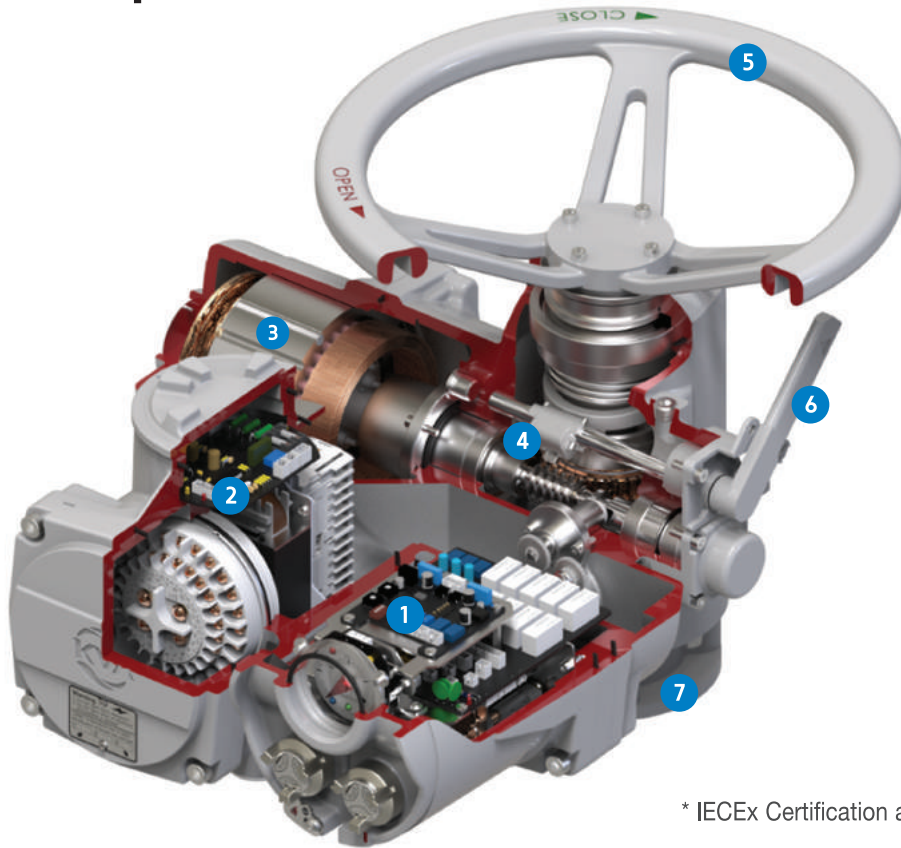


Butterfly Valve



Damper

» Main Components



* IECEx Certification acquired

1. Control Unit

- > Switch Unit and control board are All-in-one type for easy maintenance which is used commonly for all models.
 - Control board : Limit Switch Board, Connection Board, LED Board, OP Board, Phase Discriminator
 - S type, i Type iT Type are applied respectively.

2. Power Unit & Terminal Block

- > Actuator Motor's Magnet contract for prescribed rotation and control power supply transformer are All-in-one type for easy check and maintenance.
- > Independent Terminal Block is double sealing structure and internal control part, power and cable connection part are sealed for enhanced durability.

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 (See KE Series Speed -Torque Table)
- > Internal power and signal delivery axis is double sealing structure that is excellent for sealing.
- > Top and bottom part of operating axis is Oil Seal type which is excellent for sealing against leakage

5. Manual Handle Wheel

- > It is not rotated at manual operation and it is direct connection with drive shaft. Easy open/ close of valve is available due to hammer blow equipment.

6. Auto/Manual Selector Lever

- > It is Auto Declutch Type and when Motor is run, it is turned to Auto status.

7. Thrust Unit

- > With independent structure, is strengthens applicability of thrust force against heavy load and it is easy for replacement, disassembly and repair.

»» Type

Standard Type : KE - S

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



- > Motor & Driving Gear
- > Control Unit
 - Switch Unit, Space Heater
 - Position Limit Switch, Torque Limit Switch
 - Local Mechanical Indicator(% Type)
- > Power Unit
 - Terminal Block

Integral Type : KE - i

It is designed for both site control and remote control (Panel) by the embeded control device.



- > Motor & Driving Gear
- > Control Unit
 - Switch Unit, Space Heater
 - Connection Board + LED Board + O,P Board, Interposing Relay(DC24V, AC110V)
 - Position Limit Switch, Torque Limit Switch
 - Local Mechanical Indicator(% Type)
- > Local / Stop / Remote Selector Switch (Lock Type)
- > Open / Close Selector Switch (Return Type)
- > Power Unit
 - Magnetic Contactor, Transformer, Phase Discriminator, Terminal Block

Interllgent Type : KE - iT

Embeded control device, Proportional control and communication available.



- > Motor & Driving Gear
- > Control Unit
 - Switch Unit, Space Heater
 - Connection Board + LED Board + O,P Board, Interposing Relay(DC24V, AC110V)
 - Position Limit Switch, Torque Limit Switch
 - Local Mechanical Indicator(% Type)
- > Local / Stop / Remote Selector Switch (Lock Type)
- > Open / Close Selector Switch (Return Type)
- > Power Unit
 - Magnetic Contactor, Transformer, Phase Discriminator, Terminal Block

» Specification

Design Specification	KE 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	It allows S3 50%, 15min, 50~200 ignition per hour				
	Modulation	It allows S3 50%, 30min, 50~200 ignition 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 S3 50% of T4 135℃, which has 50 ~ 200 ignitions per hour, CLASS A and B On-off / Inching or Class C Modulating 4-pole : 1800rpm(60Hz), 1500rpm(50Hz) Squirrel cage ph Induction Type Motor</p>					
Enclosures for Hazardous Area use	<p>International Hazardous Area - IECEx_BAS_17,0076X_0 Ex db IIC T4 / Ta -30 to +70 ℃(-22 to +158°F) Korea Hazardous Area - KCs Ex d IIC T4 / Ta -30 to +70 ℃(-22 to +158 °F)</p>					
Operating Temperature	<p>Ambient temperature range for Actuator operation is -30~70℃ (-22 to +158 °F). If the temperature is beyond the range, please contact us. KE Series' IP rating for explosion proof and non explosion proof area is IP68 / NEMA 6P, water proof.</p>					
Power Supply	Standard Voltages	Phase	Hz	KE-01	KE-02	KE-03
	220	3	60	o	o	x
	220	3	50	o	o	x
	380, 440, 460, 480	3	60	o	o	o
	380, 400, 415, 440, 460, 480	3	50	o	o	o
	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	KE SERIES' standard Cable entry is as below.					
	Entry No	1	2	3		
	Type 1	NPT1"	NPT1 ½"	NPT1"		
	Type 2	M25	M40	M25		
Terminal Block	External wiring part of KE Series' Terminal is isolated from internal part. Terminal internal and external wiring is designed as Screw Type against vibration.					
	Main Power Supply Terminal	4Pin		M6 x 10L Screw type		
	Signal Terminal	48Pin		M4 x 10L Screw type		
	Please close the safety cover after the Main Power U, V, W, E are wired.					
Position Limit Switch	<p>Type : Gear driven, Cam operated, snap Action Max drive sleeve turns : 5000 turns Micro Switch - 250VAC 10A, 1a/1b, Relay - 2C / 250VAC 8A</p>					
Torque Limit Switch	<p>Type : Gear driven, Cam operated, snap Action Micro Switch - 250VAC 10A, 1a/1b, Relay - 2C / 250VAC 8A</p>					
Indicator	<p>Type : Mechanical of Continuous Pointer(0~100%) Power, Open, Close, Fault, Blink LED Lamp</p>					
Space Heater	PTC Self-limiting Heater, AC100~250V, 30W					
Remote Power	Dry contact(AC110V), Option : Interposing Relay -DC24V, AC110V					

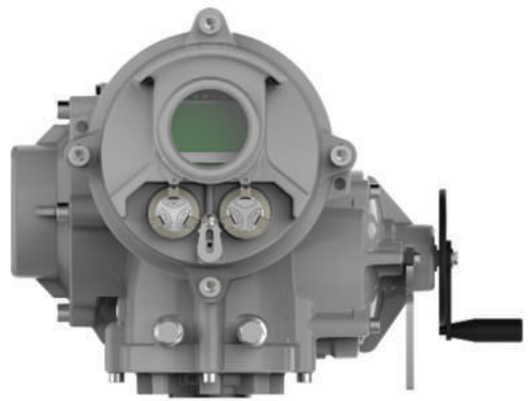
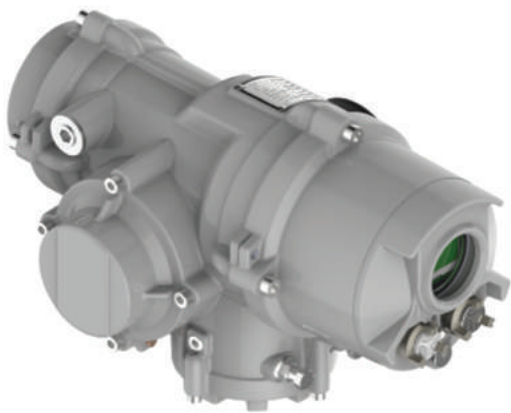
KQ Series

Electric Multi-Turn Actuator

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



Applicable Valve

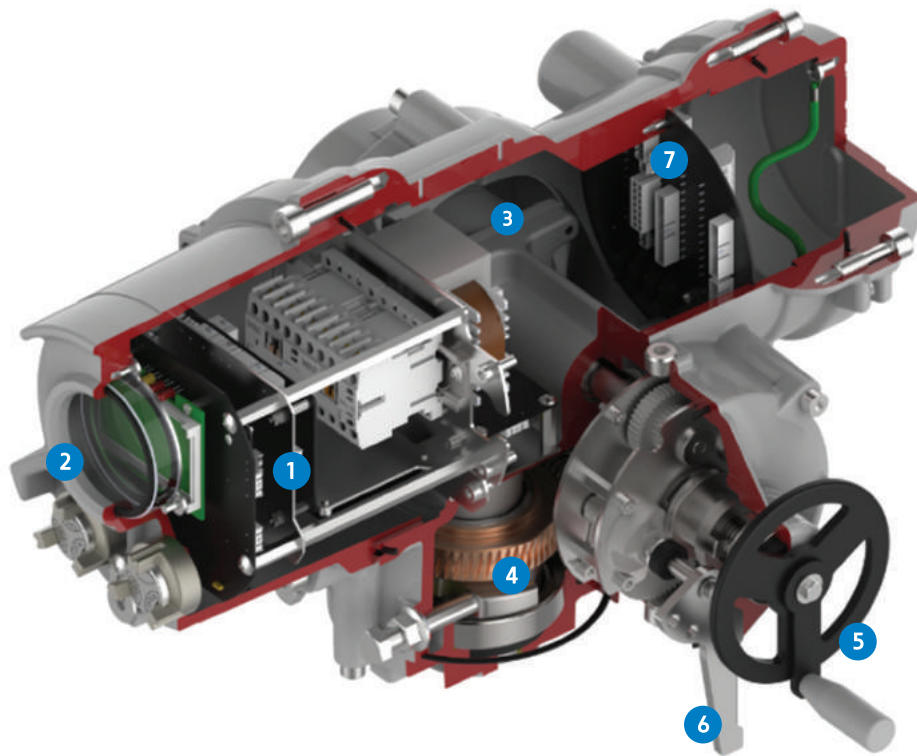


Multi - Turn(KQM)



Part - Turn(KQ)

» Main Components



* Patent
Absolute Encoder
No.10-1582529

1. Control Unit

- > Unit design for easier maintenance.
 - *Control board : Main Board, Power Board, LED Board, OP Board
- > Actuator motor's magnet contact for rotation and reverse rotation, and transformer for control power supply are integrated for easy inspection and maintenance.

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)

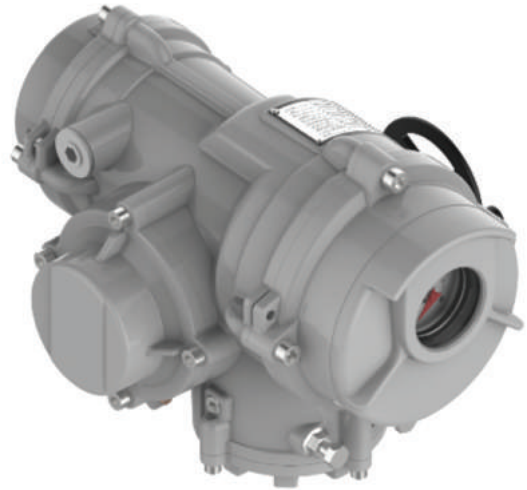
- > Its independent structure enhances the applicability of the thrust force in high load, and it is easy to replace and disassemble.

» Type

Standard Type : KQ & KQM-S

Composition

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



Intelligent Type : KQ & KQM-i

Composition

- > Motor & Driving Gear
- > Control Unit
 - Main Board + Power Board + O,P Board + I/O Board
 - Magnetic Contactor, Transformer
 - Auto Phase control
- > Terminal Block
- > Absolute encoder, Torque Sensor
- > Local / Stop / Remote Selector Switch (Lock Type)
- > Open / Close Selector Switch (Return Type)
- > Local digital Indicator(% Type)



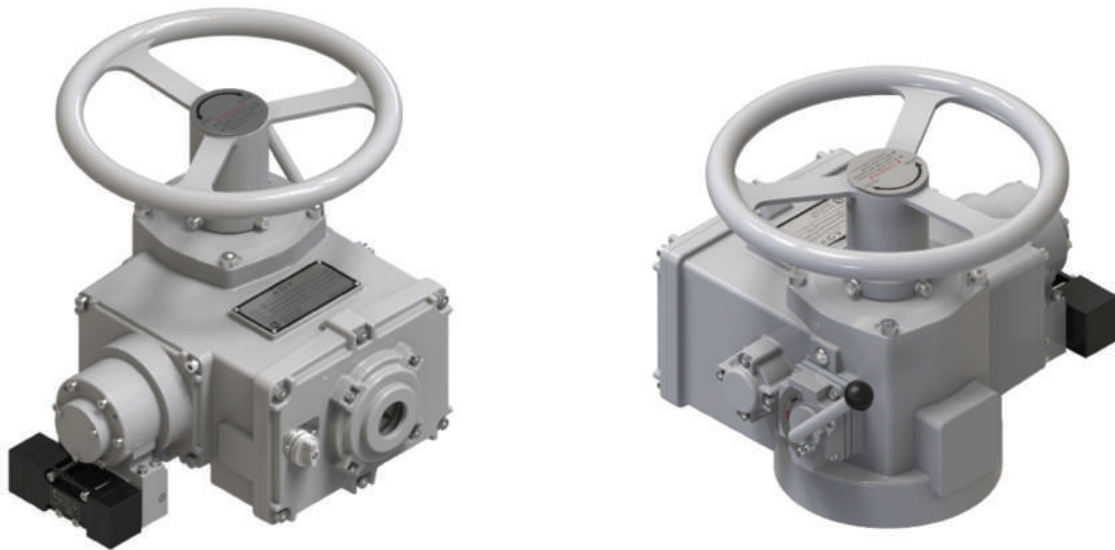
» Specification

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, 50~200 ignitions per hour.		
	Modulation	Allows S4 40%, 15min, 50~200 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℃ or 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>			
Operating Temperature	<p>Ambient temperature range for Actuator operation is -30~70℃ (-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	<p>Standard Type : Micro Switch(omron) - 250VAC 5A, 1a/1b Intelligent Type : Absolute Encoder - Relay 250VAC 5A, 1a/1b</p>			
Torque Sensing	<p>Standard Type : Torque Unit(KVA) - 250VAC 5A, 1a/1b Intelligent Type : Current & Voltage - Relay 250VAC 5A, 1a/1b</p>			
Indicator	<p>Standard Type : Mechanical of Continuous Pointer(0~100%) Intelligent Type : Digital Indicator(0~100%)</p>			
Remote Power	Dry contact(AC110V), Option : Interposing Relay - DC24V, AC110V			

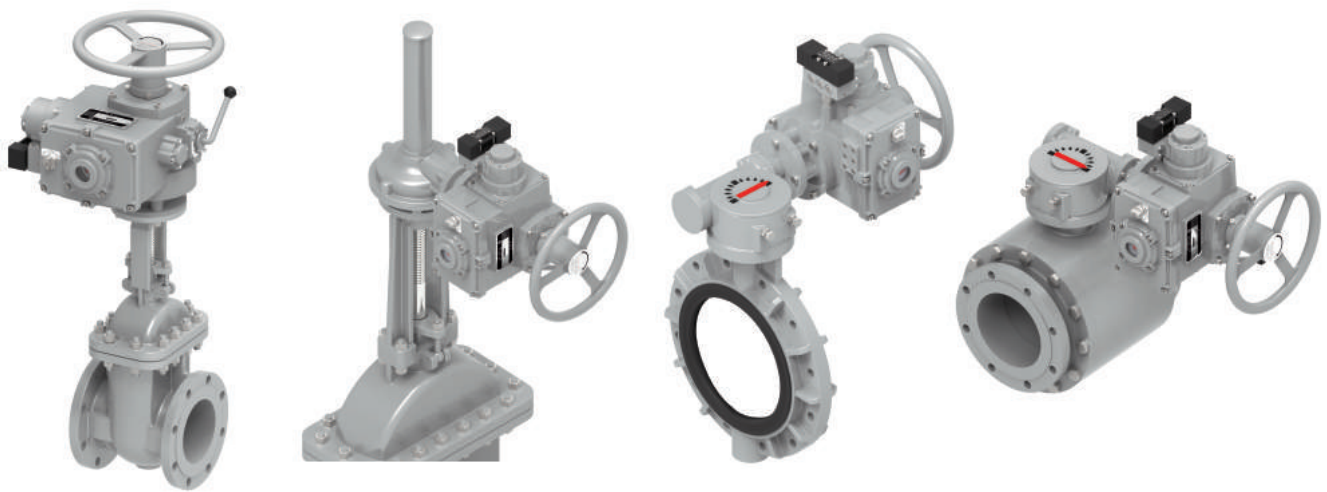
KA Series

Air Motor Multi-Turn Actuator

Air motor operated valve actuator (AOV) is an actuator for automatic open/close of valves and dampers installed in the site by adjusting torque with the media of decelerator device such as gear using air motor which is rotated by gas pressure such as air or nitrogen.



Applicable Valve



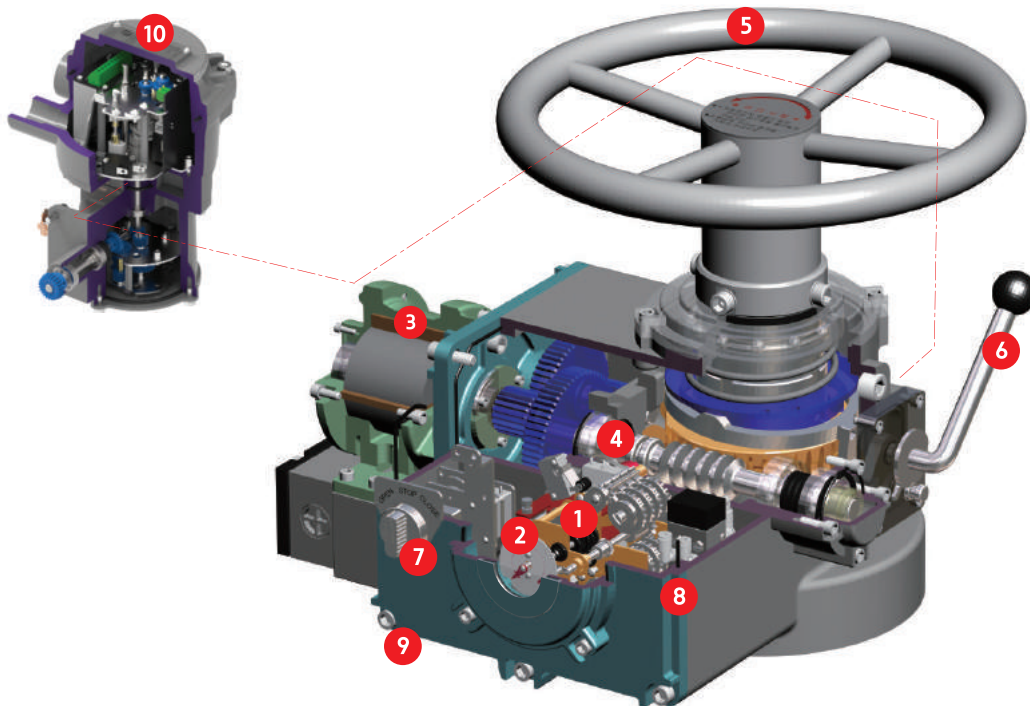
Gate Valve

Globe Valve

Butterfly Valve

Damper

» Main Components



1. Switch Unit

- > It ensures reduction of failure and increase of maintenance convenience through component integration.
- > It consists of Gear Unit, Logic Valve, Limit Switch, Torque Switch.

2. Indicator

- > It adopts % method continuous gear indicator that can check valve opening status and position during operation perfectly.
- It adopts indication rotation type that enhances visible effect in order to reduce open/ close control error.
- > As it is double seal type, it inhibits window dew condensation.

3. Air Motor

- > It designs air motor in Vane method that secures Torque and RPM for smooth operation.

4. Driving Line

- > As main power delivery gear is operated at Oil Bath, it ensures durability at long-term use.
- > Internal power and signal delivery axis adopts Oil Seal and O-ring structure that is excellent sealing capacity.
- > Operating axis top and bottom is made with Quad-Ring structure which is excellent for sealing against leakage

5. Manual Handle Wheel

- > Handle is rotated at operation. It is direct connection type with Drive shaft and it is easy for open/ close of valve with hammer blow device.

6. Auto/Manual Selector Lever

- > It is Manual Declutch Type that needs to convert auto and manual position using selection lever.
- Changeover for automatic and manual is made using lever and clutch. If it is converted to manual, it can control manual handle. If it is converted to automation, it is designed to open valve using Open/Stop/Close Selector Switch.

7. Selector Switch

- > It is made of metallic material that secures safety against external shock. Control axis uses oil seal that is excellent in sealing of inside the device.

8. Sealing and Cover Design

- > Sealing of cover assembly part applies O-Ring to enhance sealing function considerably. And, Bolt fixed type complies with explosion proof design criteria that enhances stability of fixing components.

9. Standardized the Signal Air Supply Connection is NPT 1/4".

10. Position Transmitter

- > Perfect operation of Open, Close Dry Contact or 4~20mA. (Certified SGS Baseefa "EX db IIC T6")

»» Type

A Type

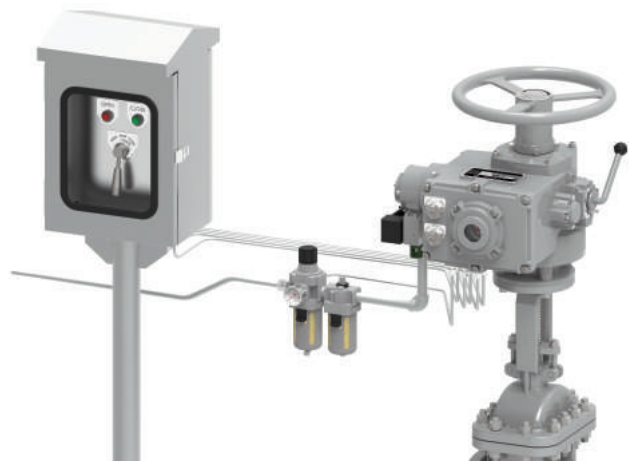
It is the most general valve automation method that enables the valve's open, close operation by using OPEN/STOP/CLOSE select switch at the AOV body

B Type

Enables the valve operation in remote distance via control switch box.
If necessary, it can visualize the valve's open, close status by receiving FEED-BACK signal.
(Max, distance 30~40m)



A Type



B Type

C Type

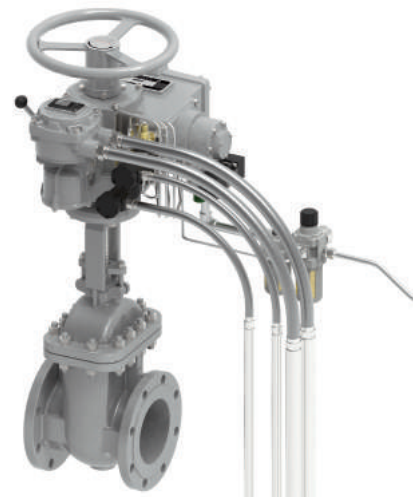
It is automation type that enables valve control in Local or control room remote control.

D Type

Basically it is similar to C type, But it uses POSITION TRANSMITTER(attached LIMIT SWITCH, R/I CONVERTER POTENTIOMETER) which is available for 4~20mA and DRY CONTACT output.



C Type



D Type

» Specification

Design Specification	KA Series Actuator is perfect air operate actuator for applications that use multi-turn valves.																				
Motor	Air Supply Pressure : 4.0 to 7.0[kg/cm ²]																				
	<table border="1"> <thead> <tr> <th>Size</th> <th>RPM</th> <th>Air Consumption*1)</th> <th>Min Pipe</th> </tr> </thead> <tbody> <tr> <td>4AM</td> <td>2800</td> <td>850</td> <td>15A</td> </tr> <tr> <td>6AM</td> <td>2800</td> <td>1100</td> <td>15A</td> </tr> <tr> <td>12AM</td> <td>2800</td> <td>2200</td> <td>20A</td> </tr> <tr> <td>16AM</td> <td>2000</td> <td>3200</td> <td>25A</td> </tr> </tbody> </table>	Size	RPM	Air Consumption*1)	Min Pipe	4AM	2800	850	15A	6AM	2800	1100	15A	12AM	2800	2200	20A	16AM	2000	3200	25A
	Size	RPM	Air Consumption*1)	Min Pipe																	
	4AM	2800	850	15A																	
	6AM	2800	1100	15A																	
12AM	2800	2200	20A																		
16AM	2000	3200	25A																		
1) Air Consumption(Based, Δp=4.0 kgf/cm ²)[Nl/min]																					
Noise Level	Not over than 85db within 1m																				
Hand wheel, Select lever	Rotation type hand wheel, Fixed type lever																				
Operating Temperature	Operational ambient temperature is -20~70℃(-22 to +158°F)																				
IP GRADE	IP66																				
Position Limit Switch	Gear driven, Cam operated, snap Action Type Max drive sleeve turns : 5000 turns																				
Torque Limit Switch	Open, Close : Slip Action Type																				
Indicator	Type : Mechanical of Continuous Pointer(0~100%)																				
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																				

»» Experience

Oil Refinery Plant

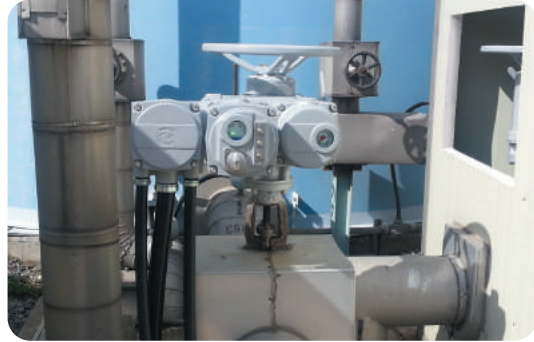


Petrochemical Plant



» Experience

Power Plant



Water Treatment Plant





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