

Electronic Multi Turn MOV

KE Series *E*-Type



KVA CO., LTD.
Solution Partner of Valve Automation

KE Series

E-Type

KE series actuator has been developed after many years of field experiences with accumulated product and industrial knowledge. The KE product is a high performance electric multi-turn actuator equipped with safety, durability as well as convenient design for maintenance as required in all industry sectors.



User friendly

- › KE range uses modular components which allows easy maintenance at site.
- › Integrated control unit allows for easier inspection.
- › Indicator and display are located on the same cover therefore allowing local operators good visibility.
- › Each Actuator is provided with identification plates which provide details of the actuator specification, motor and terminal cover.



Product Features

Appearance

- > The controls and terminal block are located at the front of the operator which ensure good accessibility and convenient wiring no matter which direction the valve/actuator are installed.
- > Each KE actuator is supplied with a handwheel which is used emergency manual operation of the valve. The handwheel mechanism can be mounted top or side dependent on the valve torque.

Safety

- > All assembly parts are designed to assemble O-shape ring on the embossed groove which is perfectly protected against explosion proof, water proof and dust proof.
- > Temporary submersion to IP68 (10m 72hours)
- > Explosion-proof certification in accordance to Ex db IIC T4 Gb (Acetylene, Hydrogen)
- > SIL2 certification for safe operation and product stability (Option)

Convenience

- > The motor is designed to produce the maximum output torque with the highest efficiency.
- > An air vent is provided at the bottom of the main cover which allows easy disassembly when necessary.
- > Modularized unit for quick and easy inspection and repair.
- > A space heater is provided to maintain the internal temperature and avoid condensation.
- > Stainless fixings are included for corrosion protection
- > The Control knobs use a hall effect type switch (Non-penetrating) which ensures there are no shafts penetrating into the actuator, therefore no moisture penetration
- > All PCBs are coated to resist severe environmental operation and humidity. It also provides for enhanced durability.
- > Motor and actuator control power are separated to enhance maintainability.
- > Compared to other companies, Phase Discriminator and fuse are located in a separate space for improved maintenance.

형식

» KE Electronic (E Type)

> Embedded control device, Proportional control and communication available.

> Composition

- Motor & Driving Gear
- Control Unit
 - * Main Board, Power Board
 - * Absolute Encoder(Position, Torque)
 - * Operation Board(LCD Indicator(% Type) & LED)
 - * ESD(Emergency Shutdown)
- Local / Stop / Remote Selector Switch (LOCK TYPE)
- Open / Close Selector Switch (Return Type)
- Power Unit
 - * Magnetic Contactor, Transformer, Phase Discriminator, Terminal Block



> Features

- Proportional control and communication available

> Option

- ESD(Emergency Shutdown)
- 4~20mA Transmitter(2Wire, 4Wire)
- Proportional control
- Control Networks : Modbus, Profibus, Fieldbus



Applicable Valve**Gate Valve****Globe | Y-Globe Valve****Butterfly Valve | Damper****Ball | Plug Valve**

- > Polymer Valve
- > All type of valves which has manual handwheel.

Structure

» E-Type



※ The basic function and structure are the same as i Type.

- ① The Power Unit has an automatic conversion function that determines whether the incoming power is correct and allows the actuator to operate normally even when the reverse phase is entered.
- ② The Control Unit consists of the Main Board and Power Board and can be used in all models.
 - A humidity sensor is installed inside to prevent malfunction of the actuator by operating an alarm during moisture penetration, and prevents operation to achieve high temperature stability.
- ③ Display
 - > 0 to 100% Digitally displays the opening or closing position.
 - > Status and Fault is coded therefore easy to check.
- ④ Position and Torque Sensors are integrated into the Absolute Encoder for dependable and reliable operation.
 - > Precise control especially for modulating and accurate position control where we utilize a timing pulley (zero backlash)
 - > Strong durability against dust due to the structure of the module

Specifications

» Speed-Torque Table

Model	kw \ RPM	Max(Rated) Torque [kgf-m]								
		21	27.0	42	62	84	124	140	165	190
KE-01	0.2	10.5 (2.4)	8.5 (2.0)	7.0 (1.6)	5.5 (1.3)	4.5 (1.0)	3.0 (0.8)			
	0.4	20 (4.8)	17 (4.0)	13.5 (3.1)	11 (2.6)	9 (3.1)	6.5 (1.5)			
	0.75	30 (9.0)	30 (7.4)	25 (5.9)	20 (4.9)	18 (3.9)	12 (2.8)			
KE-02	0.75	41.0 (9.5)	35 (8.3)	30 (6.8)	24 (5.1)	18 (4.2)	13 (3.0)	11 (2.5)	9 (2.1)	8 (1.9)
	1.5		70.0 (16.6)	52 (13.6)	42 (10.3)	34 (8.4)	25 (6.0)	22 (5.0)	19 (4.3)	16 (3.8)
	2.2			70.0 (19.9)	62 (15.1)	50 (12.4)	35 (8.8)	32 (7.3)	26 (6.3)	24 (5.6)
	3.7				70.0 (25.0)	70.0 (20.8)	54 (14.8)	45 (12.3)	38 (10.6)	33 (9.3)
KE-03	3.7	185 (47.2)	170 (44.4)	125 (32.7)	95 (25.0)	75 (20.9)	52 (14.5)			
	5.5	250 (70.2)	250 (66.0)	185 (48.6)	140 (37.1)	115 (31.1)	80 (21.6)			
	7.5			250 (66.2)	190 (50.6)	155 (42.3)	110 (29.5)			
Control	Proportional	O			X			X		
	On-Off	O			O			O		
Starts per hour		200			100			50		
Install		Direct & Gear Box			Direct & Gear Box			Onlay Gear Box		
Worm Self Locking		O			X			X		

※ Above data described based on AC380V / 3PH / 60Hz, for others please contact us.

※ () Rating Torque

» Mechanical Table

Model	Max Torque		Max Thrust		Max Stem Dia (mm)		Flange Dia ISO No, TAB PCD/Size pilot dia	Weight inc. motor [kg]
	kgf.m	N.m	ton	kn	key	threaded		
KE-01	30.0	294	9	88.2	36	40	ϕ125, F10 102/4 x M10 ϕ70 *Option F12, F14	44
								45
								48
KE-02	70.0	686	13	127.4	52	60	ϕ175, F14 140/4xM16 ϕ100 *Option F16	55
								60
								63
KE-03	250.0	2450	27	264.6	80	95	ϕ300, F25 254/8xM16 ϕ200	70
								112
								118
								126

※ Weight : Based on Integral Type, excluding Thrust Unit

※ For other than above data, please contact us.

※ The flamepath gaps are less than that permitted by IEC60079-1 and must not be enlarged in service.

» 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	Allows S2 50%, 30min, 50~200 ignition per hour				
	Modulation	Allows S3 50%, 30min, 50~200 ignition per hour				
Motor	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° C which has 50~200 ignition 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					
Power Supply	Standard Voltages	Phase	Hz	KE-01	KE-02	KE-03
	220	3	60/50	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.					
Thermal Protection	Motor temperature protection device 3 Thermal Protectors are mounted in Winding of Motor to detect temperature Thermal Protector trips Actuator is the motor reaches temperature indicated below. For re-start of Thermal Protector, it is automatically reset if the motor is cooled down to a certain temperature.					
	Model	KE-01, 02		KE-03		
	Operating Temperature(To)	120℃ ±5℃		100℃ ±5℃		
	Reset Temperature(Tc)	76℃ ±15℃		56℃ ±15℃		
Safety	Safety Integrity Level(SIL02 Capable With 1001 Configuration					
Enclosures for Hazardous Area use	International Hazardous Area : IECEx_BAS_17,0076X_0 Ex db IIC T4 / Ta -30 to +70 ° C(-22 to +158 ° F) Korea Hazardous Area : KCs 18-AV2BO-0282X / 0283X / 0284X Ex d IIC T4 / Ta -30 to +70 ° C(-22 to +158 ° F)					
Operating Temperature	Ambient temperature range for Actuator operation is – 30~70° C(-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.					
Cable Entry	Entry No	1	2	3		
	Type 1	NPT1"	NPT1½"	NPT1"		
	Type 2	M25	M40	M25		
	Type 3	PF1	PF1½"	PF1"		
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		
Wiring	Terminal connection of all lines used inside is Wire to Wire connector and connection of PCB uses plug and socket for easy maintenance.					

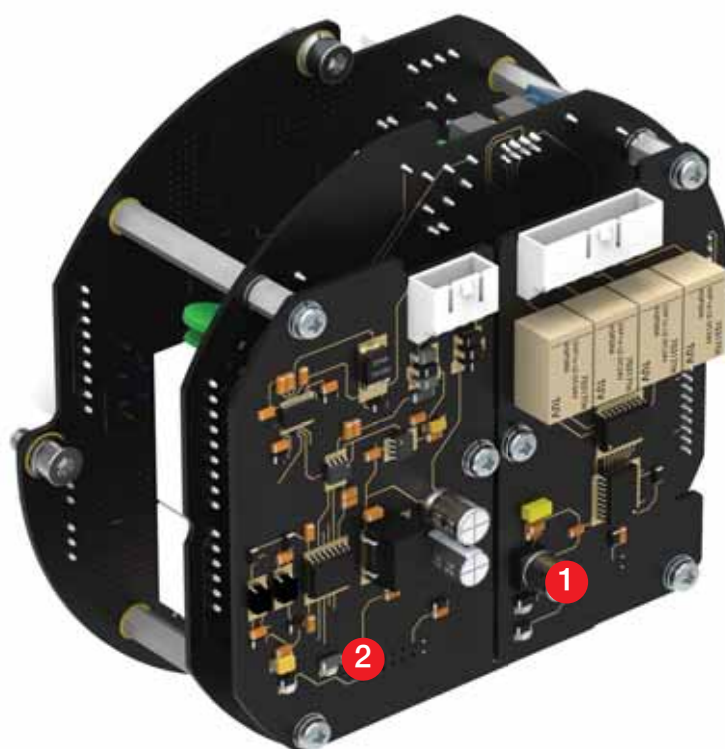
» Specification

Manual Hand wheel	A Hand wheel is provided for manual operation and is mounted in case of power supply problem or unexpected failure of actuator. The size of manual hand wheel is selected for the most efficient valve operation at the emergency operation.		
	Model	Standard / Ratio	Option
	KE-01	Direct / 1 : 1	Geared / 3 : 1
	KE-02	Direct / 1 : 1	Geared / 3,25 : 1
	KE-03	Geared / 20 : 1	Geared / 13,3 : 1
Space Heater	Ceramic Heater, AC100~250V, 5W		
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		
FireProofing(Optional)	FR Coating(FR SHELL) Type		
Position Sensing	Absolute Encoder Max drive sleeve turns : 1000 turns Latching Relay 250VAC 8A, Open/Close 2EA		
Torque Sensing	Type : Gear driven, Angle detection Relay 250VAC 5A, Open/Close 1EA		
Indicator	Digital Indicator Type(LCD 0~100%) Power, Open, Close, Fault LED Lamp		
Remote Power	Dry contact : 110VAC, 24VDC, Wet Contact : 110VAC, 24VDC		
Relay	Power Monitor Relay, Remote/Local Selector Relay, Open/Close Run Relay 250VAC 5A : 1A or 1B		

※ For other than above specifications, please contact us.

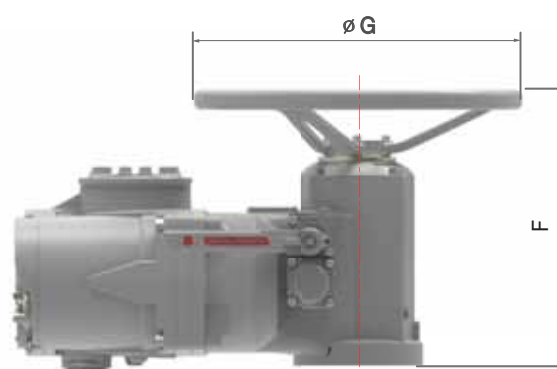
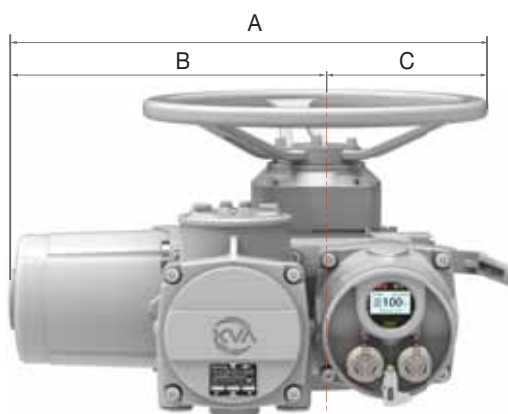
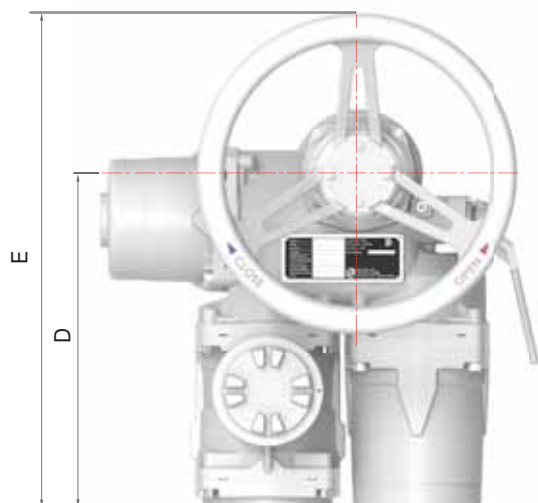
» E type Option

① I/O Option Board	Latching Relay 250VAC 8A, Open/Close 2EA(Programmable)
② Transmitter(2, 4Wire)	Input : AC100V~250V(4Wire) / DC24V(2Wire), Output 4~20mA, Precision $\pm 0.5\%$
② Proportional Control	Input, Output 4~20mA(Only Integral type)
② Communication	MODBUS MODULE : RS485, PROFIBUS, FIELDBUS



Size

» KE-01 / KE-02 Top Hand wheel

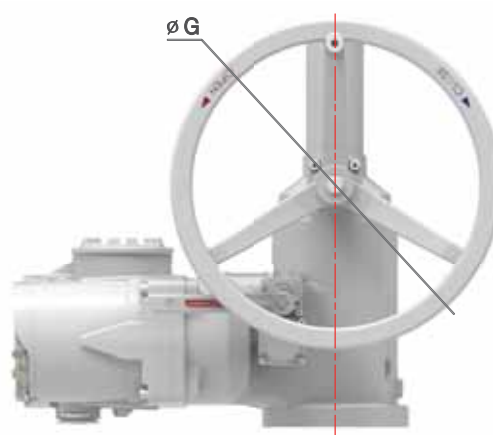
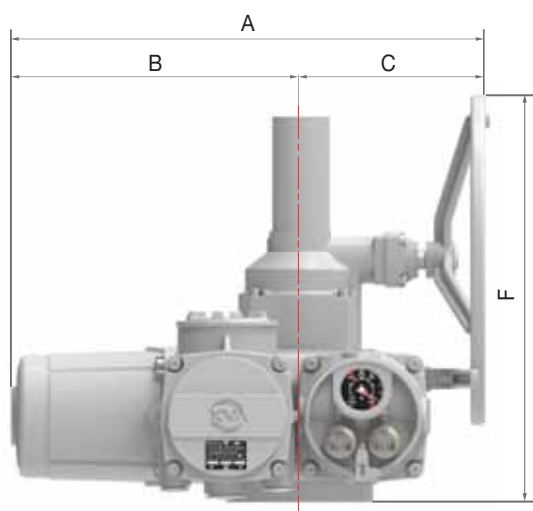
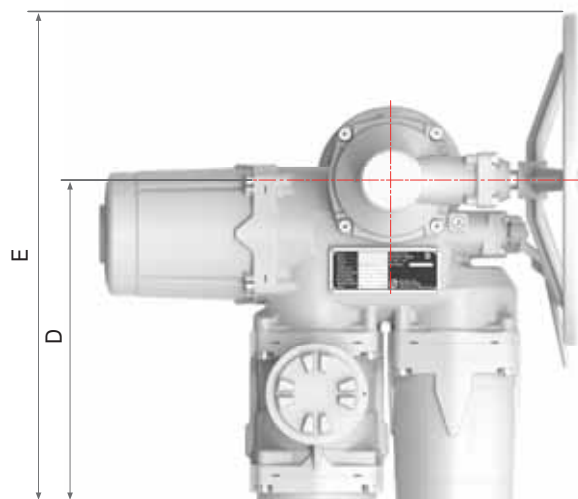


[Unit : mm]

Category	Top						
	A	B	C	D	E	F	G
KE-01020	505	305	200	417	617	338	400
KE-01040	505	305	200	417	617	338	400
KE-01075	520	320	200	417	617	338	400
KE-02075	553	327	225	435	660	372	450
KE-02150	617	392	225	435	660	372	450
KE-02220	617	392	225	435	660	372	450
KE-02370	780	480	300	435	660	372	600

※ The size may vary by specification or option. For detailed size, please refer to Approved Drawing.

» KE-01 / KE-02 Side Hand wheel

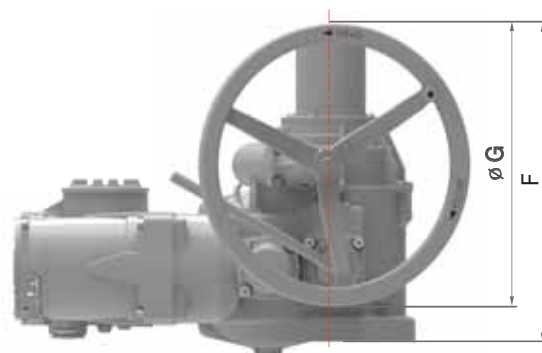
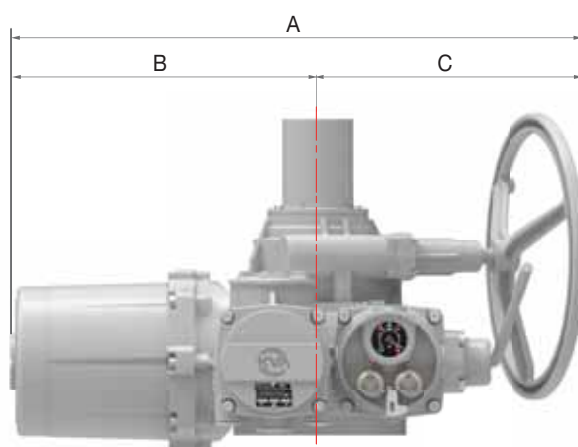
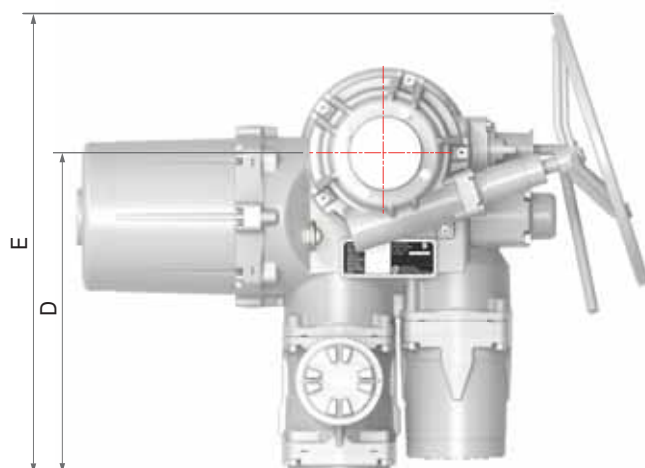


[Unit : mm]

Category	Side						
	A	B	C	D	E	F	G
KE-01020	464	305	160	417	587	440	320
KE-01040	464	305	160	417	587	440	320
KE-01075	479	320	160	417	587	440	320
KE-02075	553	328	225	435	686	554	450
KE-02150	617	392	225	435	686	554	450
KE-02220	617	392	225	435	686	554	450
KE-02370	705	480	225	435	686	554	450

※ The size may vary by specification or option, For detailed size, please refer to Approved Drawing.

>> KE-03

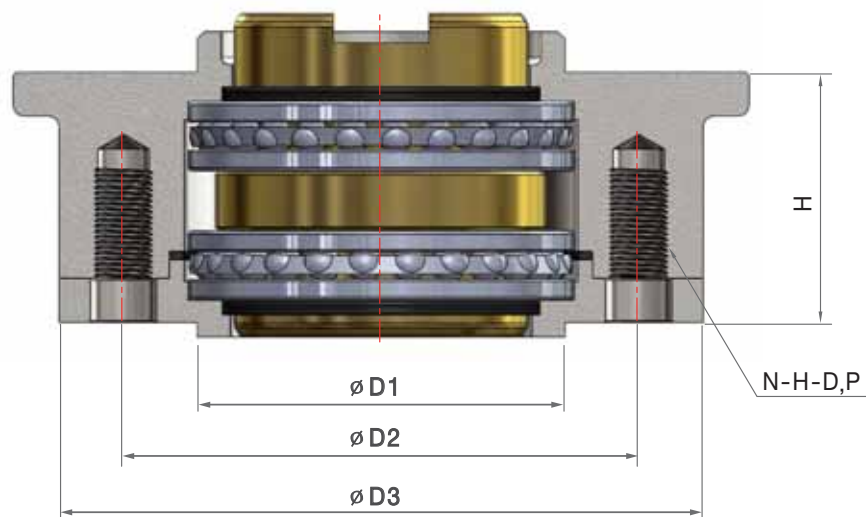


[Unit : mm]

Category	A	B	C	D	E	F	G
KE-03370	871	458	414	505	735	506	450
KE-03550	899	485	414	505	735	506	450
KE-03750	899	485	414	505	735	506	450

※ The size may vary by specification or option. For detailed size, please refer to Approved Drawing.

» Thrust Unit(ISO-5210/5211)



[Unit : mm]

Model	ISO	D1	D2	D3	N-H-DP	H	Weight [kg]	Remark
KE-01	F10	70	102	125	4-M10-35	63	5,3	Std
	F12	150	125	150	4-M12-35	63	6	
	F14	100	140	175	4-M16-14	67	6,5	
KE-02	F14	100	140	175	4-M16-37	68	10	Std
	F16	130	165	210	4-M20-42	68	11,5	
KE-03	F20	140	205	250	4-M16-50	116	35	
	F25	200	254	300	4-M16-50	115	40	Std
	F30	230	298	350	4-M20-55	115	50	

MODEL SELECTION GUIDE

Actuator					Valve				
KE-	-								
Series Name 					Valve Size 01 : 1"(25A) 02 : 2"(50A) ... 40 : 40"(1000A) ...				
Model 01 : 0~30kgf-m 02 : 0~70kgf-m 03 : 0~250kgf-m					Valve Type G : GATE L : GLOBE B : BALL U : BUTTERFLY(DAMPER) P : PLUG E : Other				
Motor Size 020 : 0,2kw 040 : 0,4 kw 075 : 0,75kw 150 : 1,5kw 220 : 2,2kw 370 : 3,7kw 550 : 5,5kw 750 : 7,5kw					Valve Rating 1 : ANSI 150 (JIS 10K) 2 : ANSI 300 (JIS 20K) 3 : ANSI 600 (JIS 30K) 4 : ANSI 900 5 : ANSI 1500 6 : ANSI 2500 7 : Other				
Control Type S : Standard Type i : Integral Type E : Electronic Type					Gear Box Type N : None V : BEVEL W : WORM S : SPUR				
Cable Entry Type N : 2-NPT1 ", 1-NPT1 ½" M : 2-M25, 1-M40 P : 2-PF1 ", 1-PF1 ½"									



KE-SERIES(MOV)



KQ-SERIES(MOV)



KA-SERIES(AOV)



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