

Keystone EPI2

Electric Actuator

- The EPI2 is an intelligent quarter-turn electric actuator designed for direct mounting to a Keystone valve. Compact and lightweight, this all-in-one actuator fits all the features of larger, heavier actuators into a neat, innovative design.



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General Applications

The EPI2 electric actuator is available in six sizes and is designed for on/off or modulating control of the valve that the actuator is mounted to. The actuator is suitable for installation in a wide range of plants, including heavy industrial, chemical, petrochemical, and onshore/offshore Oil and Gas installations.

Technical Data

Power supply:	Single-phase from 24 to 48 V DC or AC at 50/60 Hz Single-phase from 100 to 240 V DC or AC at 50/60 Hz Three-phase from 208-240 V AC, 380-480 V AC, and 500-575 V AC
Voltage fluctuations:	+/-10%
Frequency:	+/- 5%
Torque output:	From 35 Nm to 2000 Nm / 26 lb.ft to 1475 lb.ft
Ambient temperature	
Standard temp range:	-25 °C to +70 °C / -13 °F to 158 °F
Low temp range:	-40 °C to +70 °C / -40 °F to 158 °F
Conduit entry:	M25 (Qty 4) or 1" NPT (Qty 4)
Travel Stroke:	90° ± 10° each direction (70° min and 110° max)

Features

- Low- or high-voltage power supply (DC, single-phase AC, or three-phase AC)
- Multiple adjustable stroking times to suit specific applications
- Interchangeable base plate and range of shaft inserts enable simple connection to any valve type
- Over-temperature protection is provided by a sensor located within the control enclosure, as to limit the temperature of the motor and control system
- Epicyclical gearing ensures reliable and smooth operation
- Top-mounted position indicator
- Constantly-engaged manual override (for use when power is lost), featuring a handwheel that does not rotate while the motor is in operation
- Optional local control panel for manual valve operation with additional open/closed indicator
- Simple upgrade options for modulating control and network communication via DeviceNet or Profibus DP protocols
- Latched-type output contacts for fully open/ fully closed remote indication. Output contacts for monitor and blinker/local selector indication are also available

Component Parts - 063/E006 - 125/E013 - 250/E025 - 500/E051 - 1000/E091

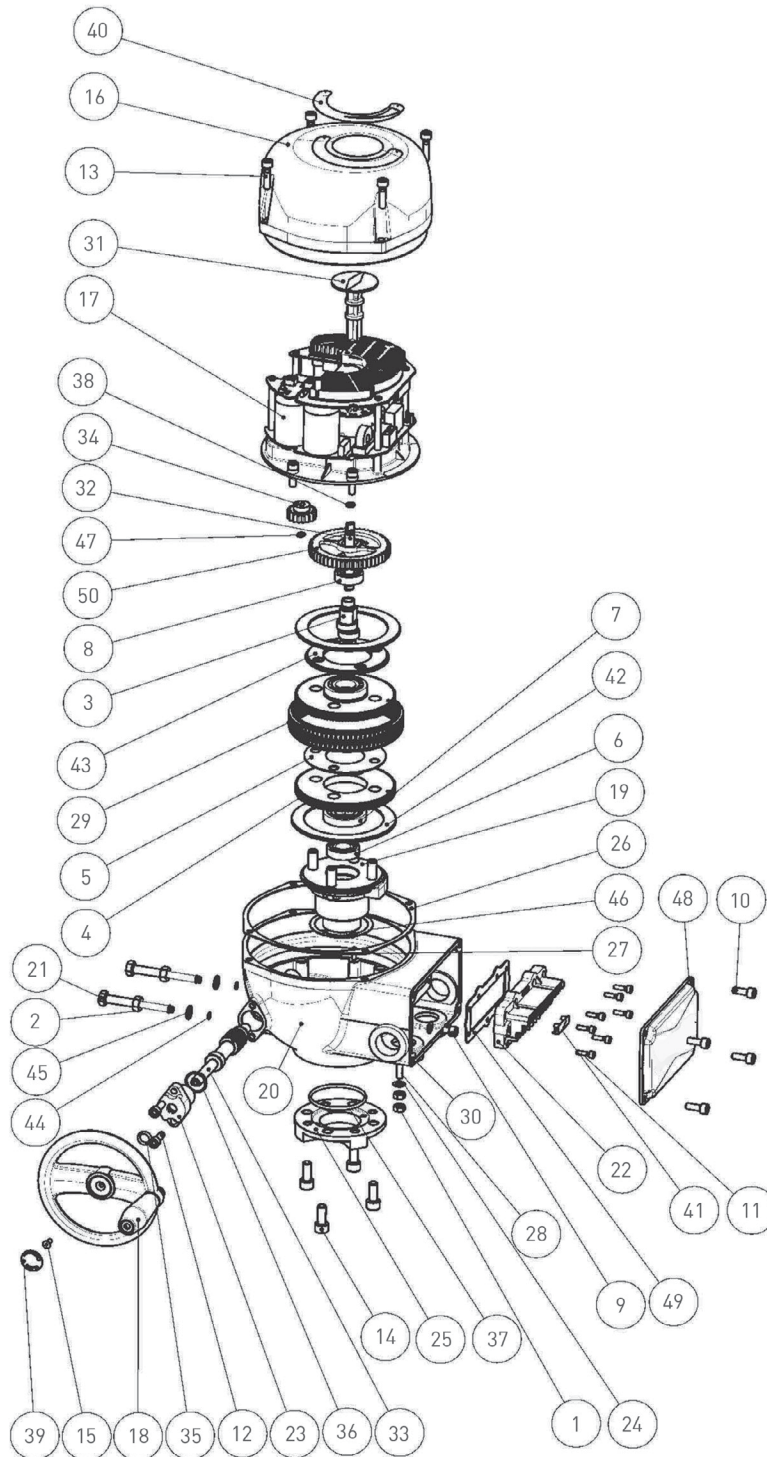
Table 1.

Part	Description	Quantity
1	Nut	2
2	Nut	2
3	Eccentric	1
4	Planocentric gear	2
5	Spacer	1
6	Ball bearing	1
7	Ball bearing	2
8	Ball bearing	1
9	ESH screw	1
10	HSHC screw	4
11	HSHC screw	7
12	HSHC screw	2
13	HSHC screw	4
14	HSHC screw	4
15	HSSC screw	1
16	Cover assembly	1
17	Drive and control unit	1
18	Handwheel	1
19	Output drive assembly	1
20	Standard housing	1
21	Stopper	2
22	Terminal block	1
23	Worm shaft flange	1
24	Anti-loosening washer	1
25	Base plate	1

Part	Description	Quantity
26	Cover gasket	1*
27	Dowel pin	1
28	Earth stud	1
29	Fixed anulus	1
30	Gasket	1*
31	Indicator	1
32	Indicator shaft	1
33	Manual worm shaft	1
34	Motor pinion	1
35	O-ring	1*
36	O-ring	1*
37	O-ring	1*
38	O-ring	1*
39	Plug	1
40	Position label	1
41	Power clamps protection	1
42	Ring	2
43	Ring for pins alignment	1
44	Ring	2
45	Seal washer 8.3	2
46	Sliding ring	1
47	Snap ring for shaft D.6	1
48	Terminal block cover	1
49	Terminal board gasket	1*
50	Wheel	1

* Indicates recommended spare parts.

Figure 1.



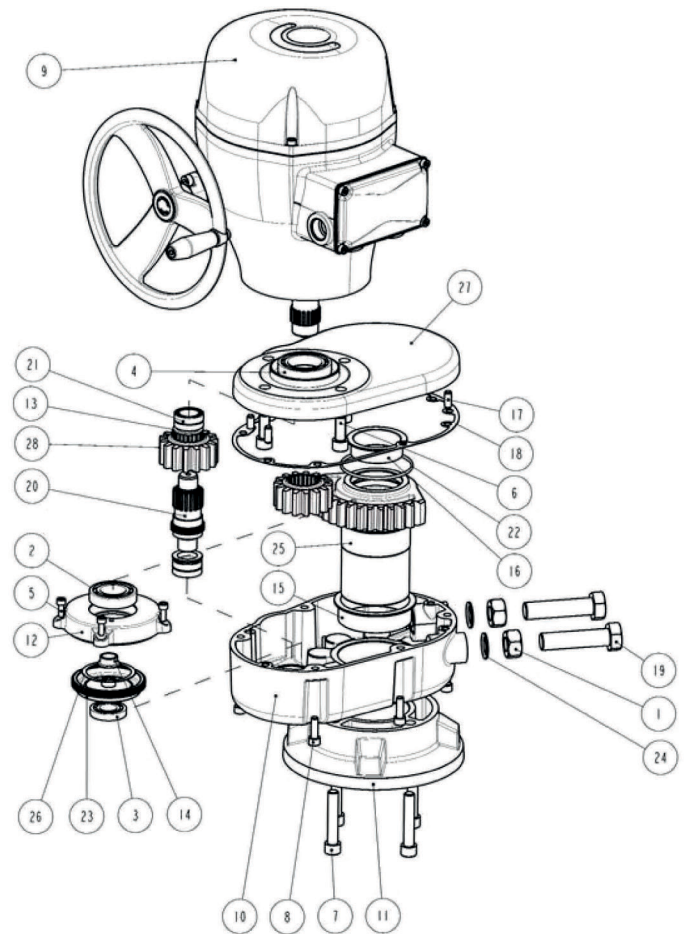
Components - Model 2000 / E171

Table 2.

Part	Description	Quantity
1	Nut M20 ISO 4032 EN 24032	2
2	Ball bearing type 6006	1
3	Ball bearing type 16004	1
4	Ball bearing type 61908	1
5	HSBC screw UNI5931- M6x16	3
6	HSBC screw UNI5931- M12x30	4
7	HSBC screw UNI5931- M12x65	4
8	HSBC screw UNI5931- M8x25 A4-70	6
9	EPI2 actuator	1
10	Base housing	1
11	Base plate ISO 5211 / F12-F16	1
12	Bearing support	1
13	Bushing	2
14	Bushing	1
15	Bushing	1
16	Bushing	1
17	Dowel pin UNI EN 22338 D 8x20 type B	4
18	Gasket	1*
19	Hex head screw M20x80 UNI EN 24017	2
20	Idle wheel shaft	1
21	Needle bearing type NKI 22/16	2
22	O-ring Di=82.22/W=2.62	1*
23	Position wheel	1
24	Seal washer 20.3	2
25	Selector gear	1
26	Sliding ring	1
27	Upper cover	1
28	Wheel	2

* Indicates recommended spare parts

Figure 2.



Design Features

Mechanical Connection to the Valve

The EPI2 features a multi-drilled base plate and a range of drive inserts to allow direct mounting to almost all valve types in accordance with EN ISO 5211 and other manufacturers' standards.

Power Supply

The EPI2 can simply be connected to a local power supply. The actuator can accept any single-phase input voltage (from 24 to 48 V DC or AC and 100 to 240 V DC or AC). Alternatively, three-phase voltages 208-240 V AC, 380-480 V AC, and 500-575 V AC are also available.

Electric Motor Thermostat

A thermostat to protect the motor temperature in hot applications is included as standard in the control circuit of the electric actuator.

Heater

An integral heater comes as standard within the actuator and is powered by the motor power supply. The heater is automatically activated when the temperature drops below 10 °C (50 °F) in order to prevent condensation.

Actuator Service

The standard EPI2 electric actuator is suitable for open/closed and modulating applications.

Compact and Light Design

The EPI2 is very compact and is balanced for easy installation to small valves, minimizing both load to the valve shaft and stress to the pipework.

Actuator Configuration

Each actuator is equipped with 2 rotary switches on the logic board to configure each function and parameter like position, torque, open/close speed and output contacts. Additionally each optional module has its own additional switches for its specific configuration.

Local Manual Override

A constantly-engaged manual override (which does not rotate during motor operation) is fitted to all EPI2 actuators.

Torque and Sizing

The EPI2 range is comprised of six models for operating torques up to 2000 Nm / 1475 lb.ft, with a configurable operation time from 15 to 180 seconds. The nominal output torque value is constant along the entire stroke..

Position Monitoring

The EPI2 provides a local mechanical position indicator. For remote indication, position is detectable via a non-contact sensor. The open and closed position are configured via the electronic control card.

Electronic Remote Controls

Internal drive to reverse the actuator rotation direction via remote control signals with internal 24 V DC or external 24 V DC/AC up to 120 V DC/AC power supply. As default, remote controls are configured as "3-wires" (1 signal to open and 1 signal to close); remote controls can be configured as "2-wires" (signal present to open, signal absent to close).

Output Contacts

4 latched-type output contacts for fully open/fully close remote indication; 1 output contact for blinker/local selector indication (local selector feature only with OM3 installed).

Monitor Relay

1 output contact for monitor (loss of power, torque alarm, high temperature alarm, travel alarm, position sensor, hardware malfunction, local interface malfunction, local selector in Local.

Optional Modules and Performance

Optional modules

OM1 I/O Additional Module

Analog position INPUT 4-20 mA or 0-10 V DC
Analog position OUTPUT 4-20 mA or 0-10 V DC
4 additional SPST output contacts

OM3 Local Interface

Local/remote selector
OP/CL pushbuttons
2 LEDs for local indication

OM13 3-wire Module

100/240 V AC
3-wire control module for open/close

OM9 Profibus DP V0/V1 Bus Communication Network Interface

OM11 DeviceNet Bus Communication Network Interface

Table 3.

Order Code	OM1 I/O additional module	OM3 local interface	OM9 PDP V0/V1	OM11 DeviceNet	OM13 3-wires module
1	✓				
3	✓	✓			
5		✓			
A			✓		
B		✓	✓		
C				✓	
D		✓		✓	
W					✓

NOTES:

1. Each optional module (OMx) will be provided with its own installation and maintenance instructions.
2. All modules except OM13 are available for both single phase and 3-phase voltage versions.
3. OM13 is not available with 3-phase supply and for LV version (single phase voltage from 24 to 48 V DC / V AC).

Performance and Approvals

Table 4. Operating Times

Model	Nominal torque (Nm / lb-ft)	Operating time (seconds 90°) at selected step		
		8	6	4
063	63 / 46	15	28	48
125	125 / 92	15	28	48
250	250 / 184	15	28	48
500	500 / 369	15	28	48
1000	1000 / 738	24	45	80
2000	2000 / 1475	53	100	180

Times are guaranteed with a tolerance of $\pm 10\%$ on the 90° stroke.

Table 5.

Approvals	
Waterproof	IP66/68 or NEMA 4/4X/6 (NEMA ICS6/NEMA 250) CAN/CSA C22.2 No 139 and UL 429-2009
Explosionproof	ATEX: Ex db eb IIB T5 Gb IECEx: Ex db eb IIB T5 Gb FM: Class I Zone 1 AEx db eb IIB T5 Gb FM-c: (CSA-C22.2) Ex db eb IIB T5 Gb INMETRO: Ex d e IIB T5 Gb EAC: Ex de IIB T5 Gb X CCC: Ex de IIB T5 Gb ATEX: Ex db eb h IIB T5 Gc (Size 2000 only) IECEx: Ex db eb h IIB T5 Gb (Size 2000 only)

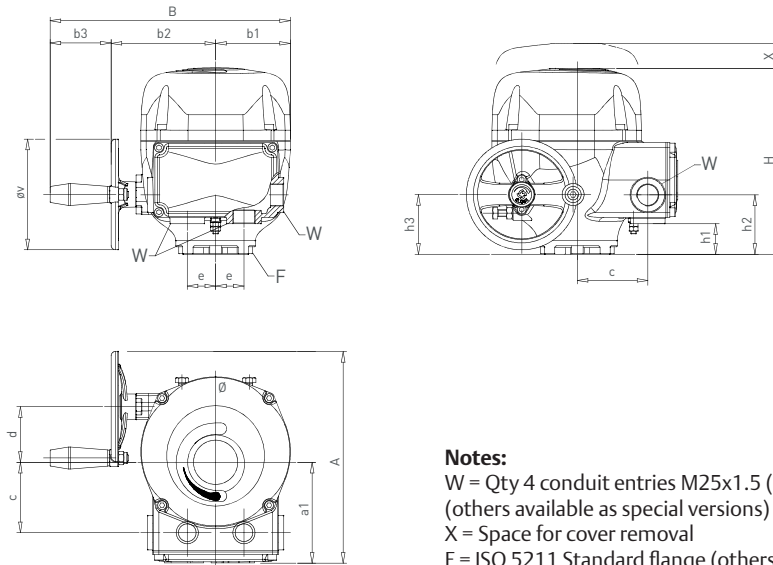
Table 6.

Applicable Directives and Regulations	
Electromagnetic compatibility directive (EMC)	comply with EMC Directive 2014/30/EU
Low voltage directive (LV)	comply Low Voltage Directive 2014/35/EU
Machinery directive	comply with the Machinery Directive 2006/42/EC
ATEX directive	comply with the ATEX Directive 2014/34/EU
Vibration and noise	1 to 500 Hz with 2 g peak acceleration (IEC60068-2-6-appendix B) 65 dB (grade A at 1 m distance) (UNI EN ISO 1680)

See Table 19 "Selection Guide" for dedicated product information.

Overall Dimensions Models 063/E006 - 125/E013 - 250/E025 - 500/E051- 1000/E091

Figure 3.



Notes:

W = Qty 4 conduit entries M25x1.5 (1" NPT) according to ISO 724/965-1 (others available as special versions)

X = Space for cover removal

F = ISO 5211 Standard flange (others available upon request)

Table 7. EPI2 base unit models 063/E006 to 1000/E091 - metric (mm, kg)

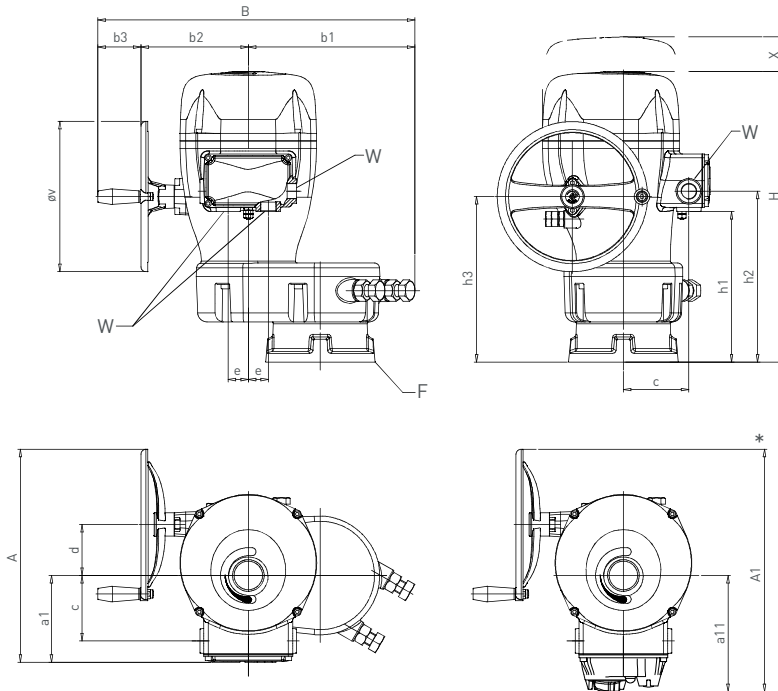
Model	A	B	H	a1	b1	b2	b3	c	d	e	h1	h2	h3	øv	x	F	kg
063/E006	239	272	210	114.0	85	118	69	80.0	63	32	35.5	67.0	67.5	125	175	F07	7.5
125/E013	239	272	230	114.0	85	118	69	80.0	63	32	53.5	86.0	86.5	125	175	F10	9.5
250/E025	295	332	287	129.0	109	154	69	95.0	76	32	63.5	95.0	92.0	180	230	F12	16.5
500/E051	295	332	287	129.0	109	154	69	95.0	76	32	63.5	95.0	92.0	180	230	F12	18.0
1000/E091	340	349	364	138.5	109	171	69	104.5	81	32	140.0	172.5	164.0	240	230	F16	26.0

Table 8. EPI2 base unit models 063/E006 to 1000/E091 - imperial (in, lb)

Model	A	B	H	a1	b1	b2	b3	c	d	e	h1	h2	h3	øv	x	F	lb
063/E006	9.41	10.71	8.27	4.49	3.35	4.65	2.72	3.15	2.48	1.26	1.40	2.64	2.67	4.92	6.89	F07	17
125/E013	9.41	10.71	9.06	4.49	3.35	4.65	2.72	3.15	2.48	1.26	2.11	3.39	3.41	4.92	6.89	F10	21
250/E025	11.61	13.07	11.30	5.08	4.29	6.06	2.72	3.74	2.99	1.26	2.50	3.74	3.62	7.09	9.06	F12	36
500/E051	11.61	13.07	11.30	5.08	4.29	6.06	2.72	3.74	2.99	1.26	2.50	3.74	3.62	7.09	9.06	F12	40
1000/E091	13.39	13.74	14.33	5.45	4.29	6.73	2.72	4.11	3.19	1.26	5.51	6.79	6.46	9.45	9.06	F16	57

Overall Dimensions - Model 2000/E171

Figure 4.



Notes:

W = Qty 4 conduit entries M25x1.5 (1" NPT) according to ISO 724/965-1 (others available as special versions)
 X = Space for cover removal
 F = ISO 5211 Standard flange (others available upon request)

Table 9. EPI2 Model 2000/E171 - metric (mm, kg)

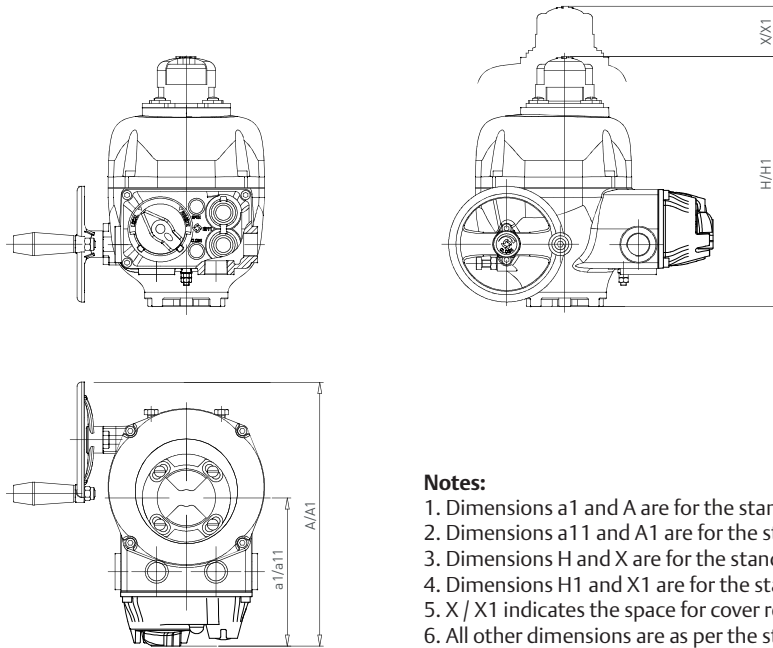
Model	A	A1	B	H	a1	a11	b1	b2	b3	c	d	e	h1	h2	h3	øv	x	F	kg
2000/E171	340	387	506	464	138.5	185.5	266	171	69	104.5	81	32	240	272.5	264	240	230	F10 and F14	45.0
2000/E171	340	387	506	464	138.5	185.5	266	171	69	104.5	81	32	240	272.5	264	240	230	F12 and F16	46.5

Table 10. EPI2 Model 2000/E171 - imperial (in, lb)

Model	A	A1	B	H	a1	a11	b1	b2	b3	c	d	e	h1	h2	h3	øv	x	F	lb
2000/E171	13.39	15.24	19.92	18.27	5.45	7.30	10.47	6.73	2.72	4.11	3.19	1.26	9.45	10.73	10.39	9.45	9.06	F10 and F14	99
2000/E171	13.39	15.24	19.92	18.27	5.45	7.30	10.47	6.73	2.72	4.11	3.19	1.26	9.45	10.73	10.39	9.45	9.06	F12 and F16	103

Overall Dimensions - Optional Modules

Figure 5.



Notes:

1. Dimensions a1 and A are for the standard unit.
2. Dimensions a11 and A1 are for the standard unit plus a local interface option.
3. Dimensions H and X are for the standard unit.
4. Dimensions H1 and X1 are for the standard unit plus a Beacon-type indicator.
5. X / X1 indicates the space for cover removal.
6. All other dimensions are as per the standard unit.

Table 11. EPI2 with optional modules - metric (mm, kg)

Model	A	A1	a1	a11	H	H1	X	X1	kg ^[1]	kg ^[2]
063/E006	239	285	114.0	160.0	210	270	175	265	7.5	8.0
125/E013	239	285	114.0	160.0	230	290	175	265	9.5	10.0
250/E025	295	341	129.0	175.0	287	347	230	330	15.5	16.0
500/E051	295	341	129.0	175.0	287	347	230	330	17.0	17.5
1000/E091	340	387	138.5	185.5	364	425	230	330	23.0	26.5

Table 12. EPI2 with optional modules - imperial (in, lb)

Model	A	A1	a1	a11	H	H1	X	X1	lb ^[1]	lb ^[2]
063/E006	9.41	11.22	4.49	6.30	8.27	10.63	6.89	10.43	17	18
125/E013	9.41	11.22	4.49	6.30	9.06	11.42	6.89	10.43	21	22
250/E025	11.61	13.43	5.08	6.89	11.30	13.66	9.06	12.99	34	35
500/E051	11.61	13.43	5.08	6.89	11.30	13.66	9.06	12.99	37	39
1000/E091	13.39	15.24	5.45	7.30	14.33	16.73	9.06	12.99	51	58

1. Weight with Beacon option module
2. Weight with local interface module

Output Drive Dimensions

Keystone Direct Mount System

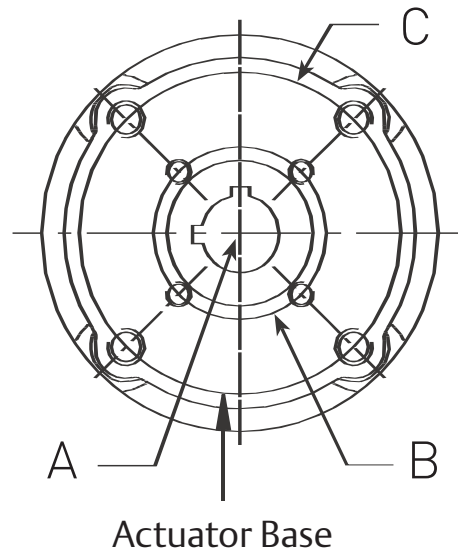
Keystone Valve pioneered direct mounting to compact valve actuator systems, and the EPI2 is no exception. The EPI2 continues in this customer-oriented vein by offering maximum mounting flexibility with every actuator purchased.

The EPI2 offers dual mounting bolt circles and dual shaft acceptance with most units. This feature allows fewer actuator models to cover more valve sizes and types.

Figure 6.



Figure 7.



A = Drive insert

B = First bolt circle

C = Second bolt circle

Output Flange

Figure 8.

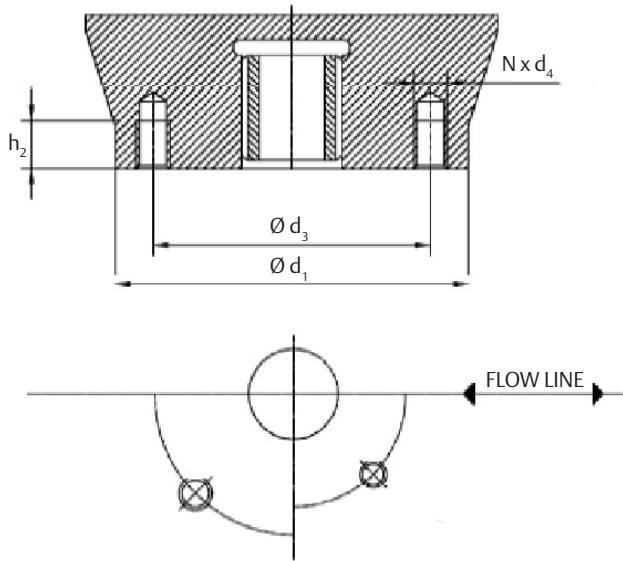


Table 13.

Model	EN ISO 5211 flange	d1		d3		d4	N	h2	
		in.	mm	in.	mm			in.	mm
063	F05	3.543	90	1.969	50	M6	4	0.354	9
	F07	3.543	90	2.756	70	M8	4	0.472	12
125	F07	4.921	125	2.756	70	M8	4	0.472	12
	F10	4.921	125	4.016	102	M10	4	0.591	15
250	F07	5.906	150	2.756	70	M8	4	0.472	12
	F10	5.906	150	4.016	102	M10	4	0.591	15
	F12	5.906	150	4.921	125	M12	4	0.709	18
500	F10	5.906	150	4.016	102	M10	4	0.039	1
	F12	5.906	150	4.921	125	M12	4	0.709	18
1000	F10	6.890	175	4.016	102	M10	4	0.591	15
	F14	6.890	175	5.512	140	M16	4	0.945	24
1000	F12	8.268	210	4.921	125	M12	4	0.709	18
	F16	8.268	210	6.496	165	M20	4	1.181	30
2000	F10	6.890	175	4.016	102	M10	4	0.591	15
	F14	6.890	175	5.512	140	M16	4	0.945	24
2000	F12	8.268	210	4.921	125	M12	4	0.709	18
	F16	8.268	210	6.496	165	M20	4	1.181	30

Table 14.

Model	NON ISO K flange	d1		d3		d4 (Metric)	N	h2	
		in.	mm	in.	mm			in.	mm
063	KF1	4.016	102	1.752	45	M6	4	0.354	9
	KF2	4.016	102	3.252	83	M10	4	0.591	15
125	KF2	4.016	102	3.252	83	M10	4	0.591	15
250	KF2	5.984	152	3.252	83	M10	4	0.591	15
	KF3	5.984	152	5.000	127	M12	4	0.709	18
500	KF2	5.984	152	3.252	83	M10	4	0.591	15
	KF3	5.984	152	5.000	127	M12	4	0.748	19
1000	KF3	7.992	203	5.000	127	M12	4	0.748	19
	KF4	7.992	203	6.496	165	M20	4	1.181	30
2000	KF3	7.992	203	5.000	127	M12	4	0.709	18
	KF4	7.992	203	6.496	165	M20	4	1.181	30

Table 15.

Model	NON ISO K flange	d1		d3		d4 (UNC)	N	h2	
		in.	mm	in.	mm			in.	mm
063	KF1	4.016	102	1.752	45	1/4" - 20 UNC	4	0.354	9
	KF2	4.016	102	3.252	83	3/8" - 16 UNC	4	0.591	15
125	KF2	4.016	102	3.252	83	3/8" - 16 UNC	4	0.591	15
250	KF2	5.984	152	3.252	83	3/8" - 16 UNC	4	0.866	22
	KF3	5.984	152	5.000	127	1/2" - 13 UNC	4	0.866	22
500	KF2	5.984	152	3.252	83	3/8" - 16 UNC	4	0.866	22
	KF3	5.984	152	5.000	127	1/2" - 13 UNC	4	0.866	22
1000	KF3	7.992	203	5.000	127	1/2" - 13 UNC	4	0.787	20
	KF4	7.992	203	6.496	165	3/4" - 10 UNC	4	1.181	30
2000	KF3	7.992	203	5.000	127	1/2" - 13 UNC	4	0.787	20
	KF4	7.992	203	6.496	165	3/4" - 10 UNC	4	1.181	30

Figure 9.

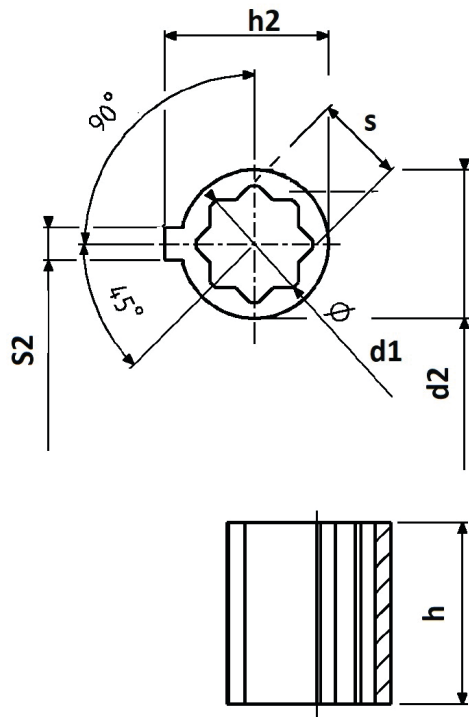
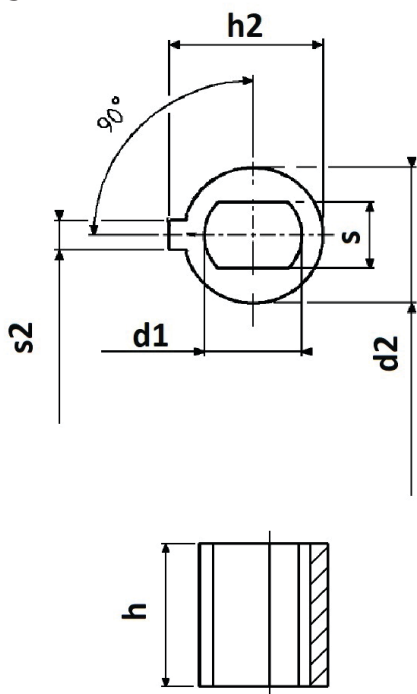


Table 16.

Star Drive (see Figure 9)

Model	Part Number	d2		S		d1		S2		h2		H (max stem height)	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-063	3400630310	1.125	29	0.669	17	0.885	22	0.250	6	1.240	31	1.378	35
EPI2-125	3401250310	1.377	35	0.866	22	1.122	28	0.393	10	1.496	38	2.126	54
EPI2-250	3401250310	1.377	35	0.866	22	1.122	28	0.393	10	1.496	38	2.126	54
EPI2-250	3405000310	1.875	48	1.062	27	1.437	36	0.5	13	2.02	51	2.204	56
EPI2-500	3405000310	1.875	48	1.062	27	1.437	36	0.500	13	2.020	51	2.204	56
EPI2-1000	3409000310	2.250	57	1.417	36	1.909	48	0.500	13	2.402	61	4.842	123
EPI2-2000	3409000310	2.250	57	1.417	36	1.909	48	0.500	13	2.402	61	4.842	123

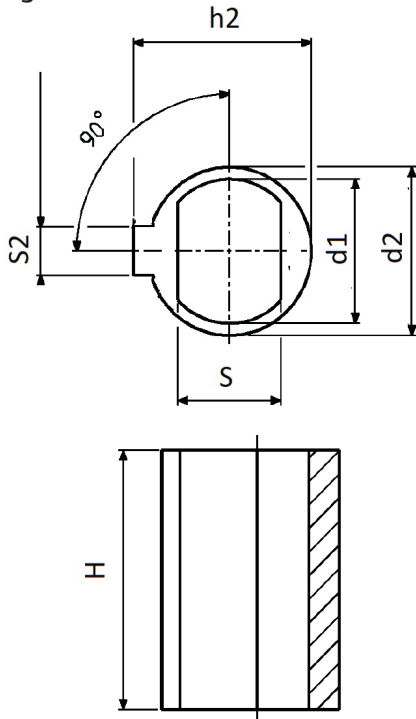
Figure 9.1.



Double D (see Figure 9.1)

Model	Part Number	d2		S		d1		S2		h2		H (max stem height)	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-063	3400630320	1.125	29	0.551	14	0.787	20	0.250	6	1.240	31	1.378	35
EPI2-063	3400630330	1.377	29	0.500	13	0.748	19	0.250	6	1.240	31	1.378	35

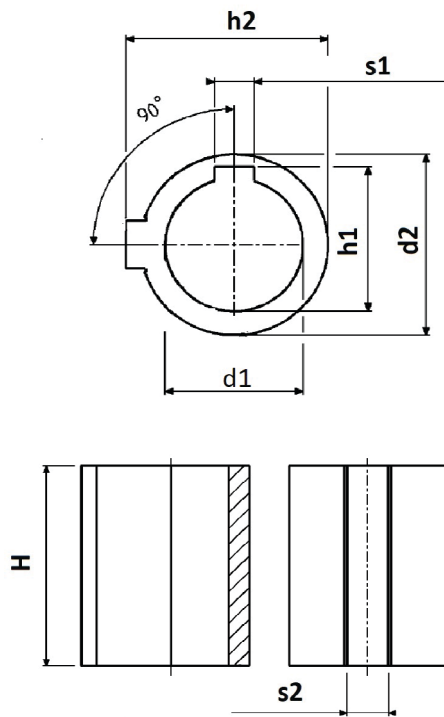
Figure 9.2.



Double D (see Figure 9.2)

Model	Part Number	d2		S		d1		S2		h2		H (max stem height)	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-125	3401250320	1.377	35	0.866	22	1.181	30	0.393	10	1.496	38	1.968	50
EPI2-250	3401250320	1.377	35	0.866	22	1.181	30	0.393	10	1.496	38	1.968	50
EPI2-250	3402500310	1.875	48	0.866	22	1.181	30	0.500	13	2.020	51	2.216	54
EPI2-500	3402500310	1.875	48	0.866	22	1.181	30	0.500	13	2.020	51	2.216	54

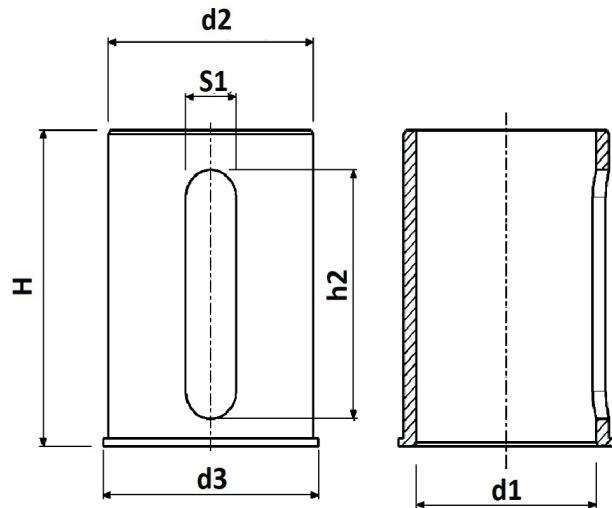
Figure 10.



Keyed (see Figure 10)

Model	Part Number	d2		S1		d1		S2		h2		H (max stem height)		h1	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-250	3405000320	1.875	48	0.393	10	1.377	35	0.500	13	2.020	51	2.204	56	1.496	38
EPI2-500	3405000320	1.875	48	0.393	10	1.377	35	0.500	13	2.020	51	2.204	56	1.496	38

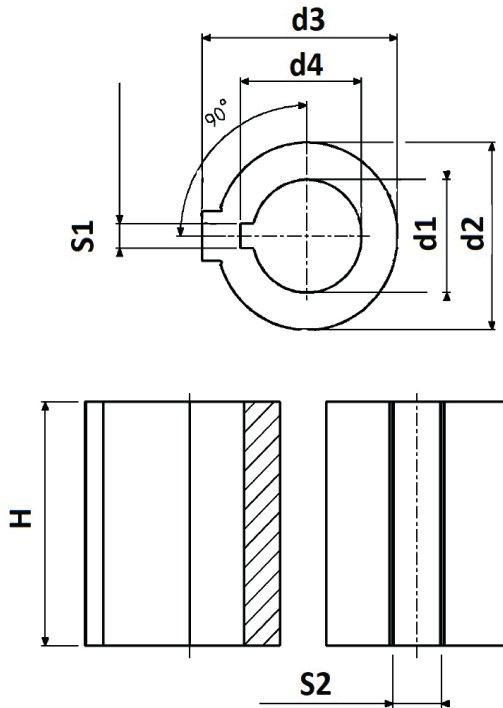
Figure 11.



Keyed (Special Key; see Figure 11)

Model	Part Number	d2		S1		d1		d1 (max)		h2		H (max stem height)		d3	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-1000	4409000320	2.250	57	0.551	14	1.968	50	-	-	2.480	63	4.842	123	2.362	60
EPI2-2000	4409000320	2.250	57	0.551	14	1.968	50	-	-	2.480	63	4.842	123	2.362	60
EPI2-1000	4409000330	2.250	57	0.500	13	1.879	48	-	-	3.149	80	4.842	123	2.362	60
EPI2-2000	4409000330	2.250	57	0.500	13	1.879	48	-	-	3.149	80	4.842	123	2.362	60
EPI2-1000 (Unmachined insert)	4409000361	2.250	57	0.500	13	0.704	18	1.968	50	2.480	63	4.842	123	2.362	60
EPI2-2000 (Unmachined insert)	4409000361	2.250	57	0.500	13	0.704	18	1.968	50	2.480	63	4.842	123	2.362	60

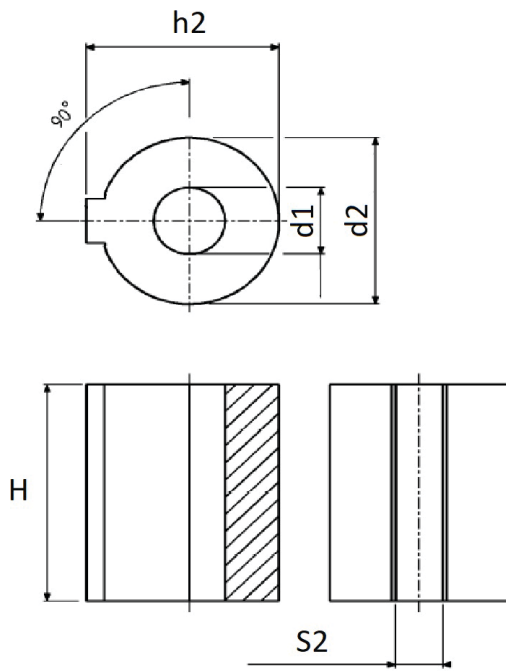
Figure 12.



Keyed (Special Key; see Figure 12)

Model	Part Number	d2		S1		d1		S2		d3		H (max stem height)		d4	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-125	3401250330	1.377	35	0.250	6	1 1/8	29	0.393	10	1.496	38	2.126	54	1.252	32
EPI2-250	3401250330	1.377	35	0.250	6	1 1/8	29	0.393	10	1.496	38	2.126	54	1.252	32
EPI2-250	3402500320	1.875	48	0.250	6	1 1/8	29	0.500	13	2.020	51	2.126	54	1.252	32
EPI2-500	3402500320	1.875	48	0.250	6	1 1/8	29	0.500	13	2.020	51	2.204	56	1.252	32
EPI2-500	3405000330	1.875	48	0.375	10	1 5/8	41	0.500	13	2.020	51	2.204	56	1.795	46

Figure 13.

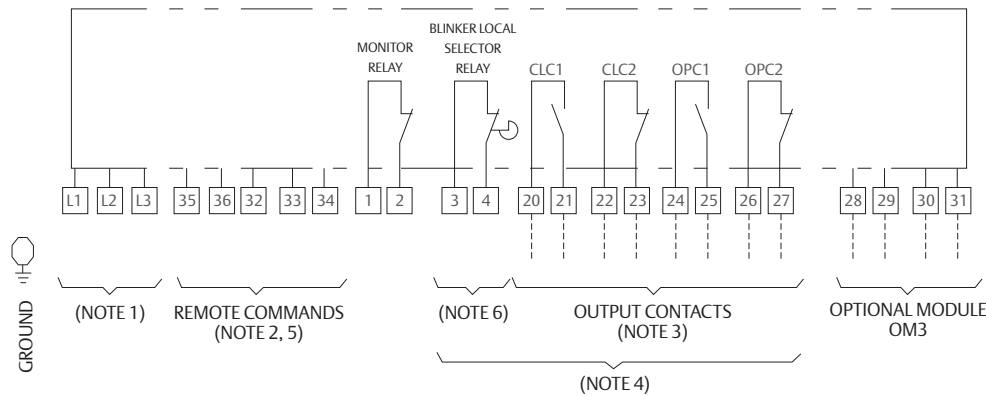


Unmachined Insert (Special Key; see Figure 13)

Model	Part Number	d2		S1		d1		S2		h2		H (max stem height)		d1 (max)	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EPI2-063	5400630360	1.125	29	-	-	0.393	10	0.250	6	1.240	31	1.378	35	0.885	22
EPI2-125	5401250360	1.377	35	-	-	0.551	14	0.393	10	1.496	38	2.126	54	1.122	28
EPI2-250	5401250360	1.377	35	-	-	0.551	14	0.393	10	1.496	38	2.126	54	1.122	28
EPI2-500	5405000360	1.875	48	-	-	0.748	19	0.500	13	2.020	51	2.204	56	1.437	36

Wiring Diagram

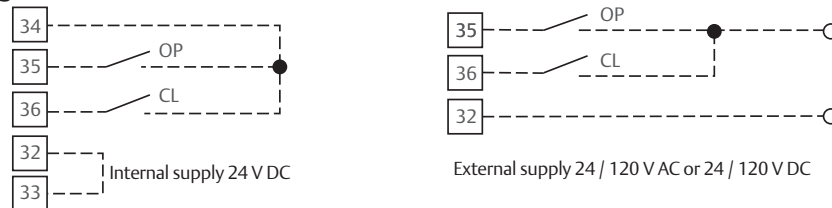
Figure 14.



NOTES:

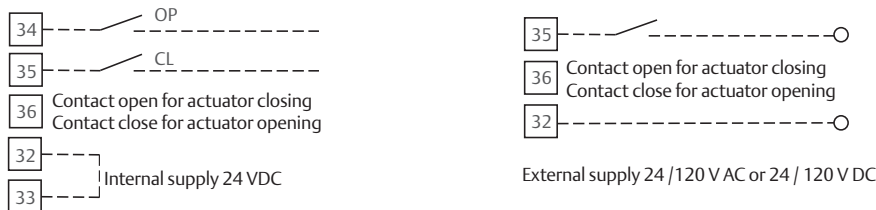
- 1) Power connection L1-L2 for V DC or V AC single phase motor supply: from 24 V to 48 V or from 100 V to 240 V. Power connection L1-L2-L3 for 3 phase motor supply from 208 V to 575 V. (Check on the actuator label for the correct voltage to be applied).
- 2a) Remote command options: standard configuration

Figure 15.



- 2b) Remote command options: 2 wires setting (to be configured)

Figure 16.



- 3. Contacts shown in intermediate position CLC1-CLC2 end of travel signaling in CLOSING. Contacts shown in intermediate position OPC1-OPC2 end of travel signaling in OPENING.
- 4. Output contact rating 240 V AC / 5 A - 30 V DC / 5 A - 120 V DC / 0.5 A. Output contacts (when used) have to be feed with the same external voltage.
- 5. Control command rating 24 to 120 V AC or V DC. Control signal: minimum duration > 600 ms. Total current drawn for remote controls < 25 mA.
- 6. Blinker or local selector monitoring function (when OM3 is present) to be configured.

Current Absorption - Single-Phase and DC Voltage

Table 17. Current absorption - single-phase and DC voltage

Model	Selected step	Operating time (s/90°)	Current absorption (A)											
			24 V AC	48 V AC	90 V AC	110 V AC	230 V AC	264 V AC	24 V DC	48 V DC	90 V DC	110 V DC	230 V DC	264 V DC
063/ E006	8	15	2.26	1.01	0.590	0.473	0.334	0.289	2.02	1.01	0.605	0.476	0.222	0.196
	6	28	1.60	0.84	0.405	0.334	0.253	0.217	1.53	0.75	0.415	0.343	0.158	0.138
	4	48	1.38	0.73	0.317	0.265	0.209	0.176	1.30	0.64	0.318	0.260	0.120	0.106
125/ E013	8	15	4.20	1.70	0.980	0.810	0.430	0.420	4.50	1.81	1.040	0.820	0.390	0.340
	6	28	2.60	1.28	0.780	0.630	0.370	0.340	2.65	1.27	0.810	0.640	0.300	0.260
	4	48	2.04	1.00	0.680	0.560	0.340	0.290	2.10	0.96	0.720	0.570	0.270	0.220
250/ E025	8	15	10.30	4.90	2.440	1.970	0.920	0.800	9.70	4.80	2.520	1.950	0.900	0.780
	6	28	8.20	3.80	1.650	1.350	0.640	0.570	7.20	3.60	1.650	1.320	0.630	0.540
	4	48	6.40	3.30	1.440	1.170	0.560	0.500	6.80	3.20	1.460	1.140	0.540	0.470
500/ E051	8	15	14.50	6.80	3.200	2.520	1.150	1.000	14.00	7.00	3.220	2.530	1.120	0.980
	6	28	9.50	4.60	1.900	1.550	0.760	0.670	9.30	4.50	1.920	1.540	0.720	0.620
	4	48	7.00	3.40	1.550	1.240	0.600	0.530	7.10	3.40	1.510	1.240	0.580	0.500
1000/ E091	8	24	14.50	6.80	3.200	2.520	1.150	1.000	14.00	7.00	3.220	2.530	1.120	0.980
	6	45	9.50	4.60	1.900	1.550	0.760	0.670	9.30	4.50	1.920	1.540	0.720	0.620
	4	80	7.00	3.40	1.550	1.240	0.600	0.530	7.10	3.40	1.510	1.240	0.580	0.500
2000/ E171	8	53	14.50	6.80	3.200	2.520	1.150	1.000	14.00	7.00	3.220	2.530	1.120	0.980
	6	100	9.50	4.60	1.900	1.550	0.760	0.670	9.30	4.50	1.920	1.540	0.720	0.620
	4	180	7.00	3.40	1.550	1.240	0.600	0.530	7.10	3.40	1.510	1.240	0.580	0.500

Current Absorption - Three-Phase Voltage

Table 18. Current absorption - three-phase voltage

Model	Selected step	Operating time (s/90°)	Current absorption (A)						
			208 V AC	240 V AC	380 V AC	400 V AC	480 V AC	500 V AC	575 V AC
063/E006	8	15	0.226			0.176			0.107
	6	28	0.165			0.101			0.080
	4	48	0.132			0.083			0.057
125/E013	8	15	0.344			0.227			0.171
	6	28	0.295			0.180			0.143
	4	48	0.245			0.155			0.125
250/E025	8	15	0.800	0.73	0.52		0.49	0.37	0.340
	6	28	0.590	0.56	0.41		0.35	0.29	0.280
	4	48	0.530	0.50	0.37		0.30	0.27	0.250
500/E051	8	15	1.073	0.97	0.65		0.58	0.46	0.430
	6	28	0.720	0.64	0.47		0.39	0.32	0.310
	4	48	0.590	0.55	0.41		0.32	0.29	0.280
1000/E091	8	24	1.073	0.97	0.65		0.58	0.46	0.430
	6	45	0.720	0.64	0.47		0.39	0.32	0.310
	4	80	0.590	0.55	0.41		0.32	0.29	0.280
2000/E171	8	53	1.073	0.97	0.65		0.58	0.46	0.430
	6	100	0.720	0.64	0.47		0.39	0.32	0.310
	4	180	0.590	0.55	0.41		0.32	0.29	0.280

Ordering Information

The model number on the first row below is KED063LVPD1M6D4, and only serves as an example of how to build a model number from Table 19.

Table 19. Selection Guide

		KED	063	LV	PD	1	M	6	D4
Product									
KPD	ISO5211 flange, star drive insert, 4 x M25 conduit entries								
KPE	ISO5211 flange, D or DD drive insert, 4 x M25 conduit entries								
KPB	ISO5211 flange, blank drive insert, 4 x M25 conduit entries								
KPU	Keystone flange, D or DD drive insert, 4 x M25 conduit entries, Metric bolt holes								
KPK	Keystone flange, blank drive insert, 4 x M25 conduit entries, Metric bolt holes								
KED	ISO5211 flange, star drive insert, 4 x 1" NPT conduit entries								
KEE	ISO5211 flange, D or DD drive insert, 4 x 1" NPT conduit entries								
KEB	ISO5211 flange, blank drive insert, 4 x 1" NPT conduit entries								
KEU	Keystone flange, D or DD drive insert, 4 x 1" NPT conduit entries, UNC bolt holes								
KEK	Keystone flange, blank drive insert, 4 x 1" NPT conduit entries, UNC bolt holes								
Models									
063	Model 063 (63 Nm / 46 lb.ft)		06B	Model 063 (63 Nm / 46 lb.ft) with Beacon					
125	Model 125 (125 Nm / 92 lb.ft)		12B	Model 125 (125 Nm / 92 lb.ft) with Beacon					
250	Model 250 (250 Nm / 184 lb.ft)		25B	Model 250 (250 Nm / 184 lb.ft) with Beacon					
500	Model 500 (500 Nm / 369 lb.ft)		50B	Model 500 (500 Nm / 369 lb.ft) with Beacon					
1K0	Model 1000 (1000 Nm / 738 lb.ft)		1KB	Model 1000 (1000 Nm / 738 lb.ft) with Beacon					
2K0	Model 2000 (2000 Nm / 1475 lb.ft)		2KB	Model 2000 (2000 Nm / 1475 lb.ft) with Beacon					
Voltage									
LV	Single-phase 24-48 V AC/DC		3A	Three-phase 208-240 V AC					
HV	Single-phase 100-240 V AC/DC		3B	Three-phase 380-480 V AC					
			3C	Three-phase 500-575 V AC					
Speed/Duty									
PD	Models 063-500 (15, 28, 48 seconds/90°), ON-OFF/S4-50%, 1200 St/h								
PE	Model 1000 (24, 45, 80 seconds/90°), ON-OFF/S4-50%, 1200 St/h								
PF	Model 2000 (53, 100, 180 seconds/90°), ON-OFF/S4-50%, 1200 St/h								
Optional Modules									
0	No optional modules	A	OM9	W	OM13				
1	OM1	B	OM3 + OM9						
3	OM1 + OM3	C	OM11						
5	OM3	D	OM3 + OM11						
Conduit Entry Plugs									
P	Plastic Plugs								
M	Metal Plugs (ATEX certified)								

KED

063 LV PD 1 M 6 D4

Approvals/Protections

0	Waterproof QPS-CSA (C22.2 -139) IP66/68M (NEMA 4/4X/6) [T°amb -40 °C to +60 °C / -40 °F to +140 °F]
2	Waterproof IP66/68M - NEMA 4/4X/6 [T°amb -25 °C to +70 °C / -13 °F to +158 °F]
3	Waterproof IP66/68M - NEMA 4/4X/6 [T°amb -40 °C to +70 °C / -40 °F to +158 °F]
4	ATEX Explosionproof Ex db eb IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
4	ATEX Explosionproof Ex db eb h IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F] (Size 2000 only)
D	* ATEX Explosionproof Ex db nA IIB T5 Gc / Ex tb IIIC T100 °C Db IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
D	* ATEX Explosionproof Ex db h nA IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F] (Size 2000 only)
9	ATEX Explosionproof Ex db eb IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
9	ATEX Explosionproof Ex db eb h IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F] (Size 2000 only)
E	* ATEX Explosionproof Ex db nA IIB T5 Gc / Ex tb IIIC T100 °C Db IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
E	* ATEX Explosionproof Ex db h nA IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F] (Size 2000 only)
F	IECEx Explosionproof Ex db eb IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68 [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
F	IECEx Explosionproof Ex db eb h IIB T5 Gb / Ex h tb IIIC T100 °C Db IP66/68 [T°amb -20 °C to +65 °C / -4 °F to +149 °F] (Size 2000 only)
H	* IECEx Explosionproof Ex db nA IIB T5 Gc / Ex tc IIIC T100 °C Dc IP66/68 [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
H	* IECEx Explosionproof Ex db h nA IIB T4 Gc / Ex h tc IIIC T100 °C Dc IP66/68 [T°amb -20 °C to +65 °C / -4 °F to +149 °F] (Size 2000 only)
G	IECEx Explosionproof Ex db eb IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68 [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
G	IECEx Explosionproof Ex db eb h IIB T5 Gb / Ex h tb IIIC T100 °C Db IP66/68 [T°amb -40 °C to +65 °C / -40 °F to +149 °F] (Size 2000 only)
I	* IECEx Explosionproof Ex db nA IIB T5 Gc / Ex tc IIIC T100 °C Dc IP66/68 [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
I	* IECEx Explosionproof Ex db h nA IIB T4 Gc / Ex h tc IIIC T100 °C Dc IP66/68 [T°amb -40 °C to +65 °C / -40 °F to +149 °F] (Size 2000 only)
6	FM Explosionproof Class I Zone 1 AEx db eb IIB T5 Gb - Class II, Division 1, Group E, F and G T4 - Class III T4, Type 4, 4x and 6 IP66 [T°amb -40 °C to 65 °C / -40 °F to +149 °F]
6	FM Explosionproof Class I Zone 1 AEx db eb IIB T5 Gb - Type 4, 4x and 6 IP66/68 [T°amb -40 °C to 65 °C / -40 °F to +149 °F] (Size 2000 only)
7	FM-c (per CSA-C22.2) Explosionproof Ex db eb IIB T5 Gb; Class II, Division 1, Group E, F and G; T4, Type 4, 4x and 6 IP66 [T°amb -40 °C to 65 °C / -40 °F to +149 °F]
7	FM-c (per CSA-C22.2) Explosionproof Ex db eb IIB T5 Gb; Type 4, 4x and 6 IP66/68 [T°amb -40 °C to 65 °C / -40 °F to +149 °F] (Size 2000 only)
B	INMETRO Explosionproof Ex d e IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
C	INMETRO Explosionproof Ex d e IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
L	* INMETRO Explosionproof Ex db nA IIB T5 Gc / Ex tc IIIC T100 °C Dc IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
M	* INMETRO Explosionproof Ex db nA IIB T5 Gc / Ex tc IIIC T100 °C Dc IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
N	EAC - Ex de IIB T5 Gb X [T°amb -40 °C to 65 °C / -40 °F to +149 °F]
O	* EAC - Ex de [ia] IIB T5 Gb X [T°amb -40 °C to 65 °C / -40 °F to +149 °F]
P	ECAS Explosionproof Ex db eb IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
P	ECAS Explosionproof Ex db eb h IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F] (Size 2000 only)
Q	* ECAS Explosionproof Ex db nA IIB T5 Gc / Ex tb IIIC T100 °C Db IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
Q	* ECAS Explosionproof Ex db h nA IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -20 °C to +65 °C / -4 °F to +149 °F] (Size 2000 only)
R	ECAS Explosionproof Ex db eb IIB T5 Gb / Ex tb IIIC T100 °C Db IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
R	ECAS Explosionproof Ex db eb h IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F] (Size 2000 only)
S	* ECAS Explosionproof Ex db nA IIB T5 Gc / Ex tb IIIC T100 °C Db IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
S	* ECAS Explosionproof Ex db h nA IIB T5 Gc / Ex h tc IIIC T100 °C Dc IP66/68M [T°amb -40 °C to +65 °C / -40 °F to +149 °F] (Size 2000 only)
T	CCC Explosionproof Ex de IIB T5 Gb / Ex tD A21 IP66/68 T100 °C [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
U	CCC Explosionproof Ex de IIB T5 Gb / Ex tD A21 IP66/68 T100 °C [T°amb -40 °C to +65 °C / -40 °F to +149 °F]
V	* CCC Explosionproof Ex d nA IIB T5 Gc / Ex tD A22 IP66/68 T100 °C [T°amb -20 °C to +65 °C / -4 °F to +149 °F]
Z	* CCC Explosionproof Ex d nA IIB T5 Gc / Ex tD A22 IP66/68 T100 °C [T°amb -40 °C to +65 °C / -40 °F to +149 °F]

Flange Insert

See Table 20

- * in the case of OM3 installed.

Table 20. Flange Insert

00	No flange insert
ISO5211	
B4	Model 063 flange ISO 5211/F05 and F07 - insert not machined (KxB_product)
B5	Model 125 flange ISO 5211/F07 and F10 - insert not machined (KxB_product)
B5	Model 250 flange ISO 5211/F07 and F10 and F12 - insert not machined (KxB_product)
B6	Model 500 flange ISO 5211/F10 and F12 - insert not machined (KxB_product)
B7	Models 1000 and 2000 flange ISO 5211/F10 and F14 - insert not machined (KxB_product)
BA	Models 1000 and 2000 flange ISO 5211/F12 and F16 - insert not machined (KxB_product)
D4	Model 063 flange ISO 5211/F05 and F07 - double-star, 17-star insert (KxD_product)
D5	Model 125 ISO 5211/F07 and F10 - double star, 22-star insert (KxD_product)
D5	Model 250 ISO 5211/F07 and F10 and F12 - double star, 22-star insert (KxD_product)
D6	Model 250 ISO 5211/F10 and F12 - double star, 27-star insert (KxD_product)
D6	Model 500 ISO 5211/F10 and F12 - double star, 27-star insert (KxD_product)
D7	Models 1000 and 2000 ISO 5211/F10 and F14 - double star, 36-star insert (KxD_product)
DA	Models 1000 and 2000 ISO 5211/F12 and F16 - double star, 36-star insert (KxD_product)
E3	Model 063 flange ISO 5211/F05 and F07 - Double D 20 mm x 14 mm insert (KxE_product)
E5	Model 125 ISO 5211/F07 and F10 - Double D 30 mm x 22 mm insert (KxE_product)
E5	Model 250 ISO 5211/F07 and F10 and F12 - Double D 30 mm x 22 mm insert (KxE_product)
E5	Model 500 ISO 5211 and F10 and F12 - Double D 30 mm x 22 mm insert (KxE_product)
E6	Model 250 flange ISO 5211/F10 and F12 - Keyed 35 mm x 10 mm x 8 mm insert (KxE_product)
E6	Model 500 flange ISO 5211/F10 and F12 - Keyed 35 mm x 10 mm x 8 mm insert (KxE_product)
E9	Models 1000 and 2000 ISO 5211/F12 and F16 - Keyed 50 mm x 14 mm x 9 mm insert (KxE_product)
EA	Models 1000 and 2000 ISO 5211/F10 and F14 - Keyed 50 mm x 14 mm x 9 mm insert (KxE_product)
Keystone and Non-ISO5211	
K4	Model 063 Keystone flange (1.75 in. and 3.25 in. bolt circles) - insert not machined (KxK_product)
K8	Model 125 Keystone flange (3.25 in. bolt circle) - insert not machined (KxK_product)
K8	Model 250 Keystone flange (3.25 in. and 5.00 in. bolt circles) - insert not machined (KxK_product)
KA	Model 500 Keystone flange (3.25 in. and 5.00 in. bolt circles) - insert not machined (KxK_product)
KC	Models 1000 and 2000 Keystone flange (5.00 in. and 6.50 in. bolt circles) - insert not machined (KxK_product)
U4	Model 063 Keystone flange - Insert DD 19 x 12.7 mm (KxU_product)
U8	Models 125 and 250 Keystone Flange - insert D 28.58 x 6.35 x 6.35 mm (KxU_product)
U8	Model 500 Keystone Flange - insert D 28.58 x 6.35 x 6.35 mm
UA	Model 500 Keystone Flange - insert D 41.28 x 9.53 x 9.53 mm (KxU_product)
UC	Models 1000 and 2000 Keystone Flange - insert D 47.63 x 12.7 x 12.7 mm (KxU_product)

Table 21. Code Conversion Table U.S markets only

The model number on the first row below is E006ALW5000, and only serves as an example of how to build a model number from Table 21. Ordering Part Number is as per model code indicated in Table 19.

Example	E	006	A	L	W5	00	0
Model							
E	EPI2 quarter-turn electric						
Size							
006	Model E006						
013	Model E013						
025	Model E025						
051	Model E051						
091	Model E091						
171	Model E171						
Local indicator							
A	Standard window						
Voltage ratings							
L	1-phase 24 - 48 V AC/DC						
H	1-phase 100 - 240 V AC/DC						
A	3-phases 208 - 240 V AC						
B	3-phases 380 - 480 V AC						
C	3-phases 500 - 575 V AC						
Classification and temperature rating							
W1	NEMA 4/4X/6 (IP66/68M) Ambient temp: -25 °C to 70 °C (-13 °F to 158 °F)						
W2	NEMA 4/4X/6 (IP66/68M) Ambient temp: -40 °C to 70 °C (-40 °F to 158 °F)						
W5	CSA 139 (C-US) NEMA 4/4X/6 (IP66/68M) AWWA Ambient temp: 40 °C to 60 °C (-40 °F to 140 °F)						
X5	FM_US Class I Zone 1 AEx db eb IIB T5 Gb - Class II, Division 1, Group E, F and G T4 - Class III T4, Type 4, 4x and 6 IP66 [T°amb -40 °C to 65 °C / -40 °F to +149 °F] (E006-E091)						
X6	FM_US Class I Zone 1 AEx db eb IIB T5 Gb - Type 4, 4x and 6 IP66/68 [T°amb -40 °C to 65 °C / -40 °F to +149 °F] (E171)						
X7	FM_C Ex db eb IIB T5 Gb; Class II, Division 1, Group E, F and G; T4, Type 4, 4x and 6 IP66 [T°amb -40 °C to 65 °C / -40 °F to +149 °F] (E006-E091)						
X8	FM_C Ex db eb IIB T5 Gb; Type 4, 4x and 6 IP66/68 [T°amb -40 °C to 65 °C / -40 °F to +149 °F] (E171)						
Option modules							
0	NONE, standard On-Off configuration						
1	Analog positioner						
5	Local interface (OM3)						
3	Analog positioner, local interface (OM1/OM3)						
A	PDP V0/V1 bus communication (OM9)						
B	Local interface (OM3), PDP V0/V1 bus communication (OM9)						
C	DeviceNet™ bus communication (OM11)						
D	Local interface (OM3), DeviceNet™ bus communication (OM11)						
W	3-wire interface card (OM13)						
Conduit Entry Plugs							
P	Plastic Plugs						
M	Metal Plugs (ATEX certified)						
Special option code							
0	Standard						

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