

INCOVAL SERIES 12E



Quarter Turn Electric Actuators

520 In-Lbs to 79,650 In-Lbs Torque



Leading the Industry with Innovation by Design



The Incoval Series 12E Electric Actuator is a heavy duty, lightweight actuator providing reliable and high performance duty on quarter turn applications. Actuators are designed for direct mounting to all Incoval valves through the use of a unique removable bushing. Mounting base is designed in accordance with ISO 5211 standards.

Features

▶ **Housing**

Hard anodized aluminum casting and external epoxy powder coating protects against severe industrial environment.

▶ **Gearing**

Precisely machined double worm gear designed with minimum back-lash, low noise to yield high output torque.

▶ **Self Locking Gears**

Provided by double worm gearing to keep position of valve unchanged against reverse torque from valve.

▶ **Sealing**

Sealing is accomplished by single o-rings in all interfaces to meet IP 67 (standard) and double o-rings to meet IP 68 (optional).

▶ **Handwheel**

Handwheels of different sizes depending on actuator torques is provided on all actuators to insure easy operation.

▶ **Motor**

Specially designed induction motor to generate high starting torque and high efficiency. Each motor is equipped with thermal protector to prevent damage from overheating. Insulation is class F.

▶ **Internal Components Arrangements**

Internal mechanical and electrical components are designed in modular mounting arrangement and can be easily removed for maintenance purposes. Optional accessories are also available.

▶ **Limit Switches**

A pair of limit switches are activated by means of simple, reliable and adjustable cam plates, mounted directly on and driven by center column. The unique cam plate design does not allow over travel of limit switches. Two auxiliary limit switches are standard.

▶ **Torque Switches**

Electric actuators with 2,124 in-lbs and above are installed with torque switches for overload protection.

▶ **Heater**

A space heater is provided inside all the Series 12E Electric Actuators for prevention of condensation due to weather and temperature changes, as well as to keep internal components clean and dry.

▶ **Manual Override**

The manual override is engaged by pulling the lever and turning the handwheel. Lever declutches automatically when power supply is switched on. Handwheel does not turn as extra safety feature.

▶ **Visual Position Indicator**

The visual position indicator is directly mounted on the center drive column to show the visual position of the valve.

▶ **Stop Adjustment**

One each for open and close position (adjustable). Provides for +/- 5 degrees adjustment.

▶ **Mounting & Adaptation**

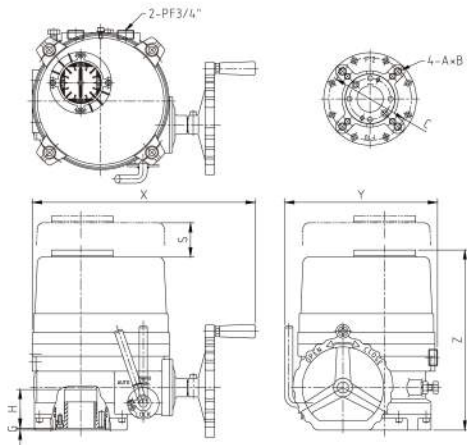
Bottom flange mounting dimensions conform to ISO 5211. An adaptor drive bushing is provided for every electric actuator to direct mount to all Incoval Series.

Technical Information

Model		12E 005	12E 010	12E 021	12E 050	12E 080	12E 300*
Rated torque (Lbs-Inch)		520	885	2,124	4,425	7,080	26,550
Rated torque (Nm)		60	100	240	500	800	3000
Operating time (second)	50Hz	17	21	26	31	39	59
	60Hz	14	18	22	26	32	50
Actuator Bushing Connection Sizes (Inch)	Double D	0.55 x 0.39 / 0.63 x 0.43	0.75 x 0.51	0.87 x 0.63	1.18 x 0.87	-	-
	Round & Keyed	-	-	-	1.38 / 0.39x0.39	1.38 / 0.39x0.39	1.97 / 0.39x0.47
Actuator Bushing Connection Sizes (mm)	Double D	14 x 10 / 16 x 11	19 x 13	22 x 16	30 x 22	-	-
	Round & Keyed	-	-	-	35 / 10x10	35 / 10x10	50 / 10 x 12
Rated current (A)	1Phase / 110V / 50HZ	1.25	0.98	1.62	3.6	3.9	-
	1Phase / 110V / 60HZ	1.25	1.1	1.72	3.9	4.2	-
	1Phase / 220V / 50HZ	0.4	0.52	0.87	1.5	2.05	3.75
	1Phase / 220V / 60HZ	0.4	0.58	0.9	1.6	2.2	3.85
	3Phase / 380V / 50HZ	N/A	0.43	0.32	0.52	0.82	1.6
	3Phase / 380V / 60HZ	N/A	0.33	0.32	0.56	0.88	2
	3Phase / 440V / 50HZ	N/A	0.59	0.32	0.55	0.82	2.5
	3Phase / 440V / 50HZ	N/A	0.42	0.35	0.58	0.88	2.4
	24 VDC	1.1	2.8	5	N/A	N/A	N/A
Motor insulation class		F	F	F	F	F	F
ISO 5211 mounting flange		F07	F07	F07/F10	F10/F12	F12/F14	F16
Weight (Lbs)		19	15	33	44	55	93
Weight (Kgs)		9	7	15	20	25	42
No. of handwheel turns		8.5	10	12	14	17	13

* Contact Factory for Delivery

Basic Actuator Dimensions (inch)



Type	12E 005	12E 010	12E 021	12E 050	12E 080	12E 300
Flange	F07	F07	F07	F10	F12	F16
ISO5211			F10	F12	F14	
C (Ø)	2.756	2.756	2.756	4.016	4.921	6.496
			4.016	4.921	5.512	
A	M8	M8	M8/M10	M10/M12	M12/M16	M20
B	0.551	0.551	0.551 / 0.669	0.669 / 0.826	0.787 / 0.984	1.259
G	0.196	0.118	0.118	0.118	0.118	0.197
H	1.377	1.457	2.244	2.441	2.638	3.543
S		3.937	4.528	5.709	6.693	8.85
X	9.488	10.157	13.307	14.055	14.961	17.32
Y	8.188	6.772	9.016	9.606	11.299	14.76
Z	10.078	8.661	10.197	11.339	12.323	15.15

Options Available

Remote monitoring and control

PK	Potentiometer kit (output signal : 0~1 K Ohm) High resolution potentiometer and precisely machined gearing are directly engaged with drive shaft to feedback continuous position of valve
CT	Current transmitter (output signal : 4 - 20 mA) Zero / Span Adjustment Convertible DIP Switch (4 wire to 2 wire)
RPC/Signal Configuration	Remote position controller (by input and output signal) Input : 4-20 mA, 0-10 VDC, 2~10 VDC, 1~5 VDC, 0~5 VDC Output : 4-20 mA, 0-10 VDC, 2~10 VDC, 1~5 VDC, 0~5 VDC Auto-calibration Reverse operating direction

Fail Safe

Fail safe actuators with battery back up are available in sizes 12E010-12E050. When main power is on, actuator works normally. Once power fails, actuator will move to a preset fail safe position. Input power from 85-265 VAC, 50/60HZ. Output controls are open /close/alarm relay. Actuator has 4 LED's to signal (full open and close over torque and power). Rechargeable battery.



Standard Specifications

Enclosure	▶ Weatherproof to IP67, NEMA 4, 4X and 6, o-ring sealed	Position indicator	▶ Continuous position indicator with arrow
Main power supply	▶ 110/220 VAC - 1Ph/50/60Hz ▶ 380/440 VAC - 3Ph/50/60Hz	Manual override	▶ De-clutchable
Control power supply	▶ 110/220 VAC - 1Ph/50/60Hz	Self locking	▶ Provided by double worm gearing (no brake)
Duty cycle (on-off)	▶ S2: 10Min~30Min / S4: 20~50%	Mechanical stop	▶ 1 each for each travel end (open and close), external & adjustable
Packing	▶ Graphite	Space heater (for anticondensation)	▶ 20W (110/220 VAC) for 12E 005 ▶ 5W (110/220 VAC) for 12E 010 and above
Drive pin	▶ 17-4- PH SS ASTM A564 - type 630	Conduit entries	▶ (2) 3/4" NPT
Duty cycle (modulating)	▶ S4, 30~50%, 300~1200 start/hour	Lubrication	▶ EP type grease
Motor	▶ Squirrel caged induction motor	Ambient temperature	▶ Basic actuator : -4°F to 158°F c/w control options : 14°F to 140°F
Torque switches	▶ 1 each for open and close (SPDT 250VAC/10A rating) except for 12E 005	Ambient humidity	▶ 90%RH max (non-condensing)
Stall protection / set temp.	▶ Built in thermal protection	Anti vibration	▶ XYZ 10g. 02~34Hz, 30 minutes
Travel angle	▶ 90° +/- 5°	External coating	▶ Polyester powder coated

How to Order

Series	Size	Motor and Power Supply			Actuator Enclosure	Actuator Bushings	Special Options
Series	Size	No of Phases	Volts	Hz	Insert Size	Insert Size	Special Options
12E= Quarter Turn Electric Actuator	005 = 520 In-Lbs	0=For DC option	1 = 110 VAC	0=For DC option	W = Waterproof IP 67	Please see "Bushing Codes" below	00= No special requirements
	010 = 885 In-Lbs	1 = 1 Phase	2 = 220 VAC	1 = 50 Hz	T = Watertight IP 68		MC = Modulating Control Card
	021 = 2,124 In-Lbs	3 = 3 Phase	3 = 380 VAC	2 = 60 Hz	E = Explosion Proof Ex d IIT 5		BB = Battery Back up
	050 = 4,425 In-Lbs		4 = 440 VAC				MB = Modulating Control Card+ Battery Back up
	080 = 7,080 In-Lbs		5 = 24 VDC				
	300 = 26,550 In-Lbs						

Incoval / Bray Valves				
Bushing Code	Dimensions (in.)	Dimensions (mm)	Applicable Actuator Size	Matching Valve Size
XXX	no insert	no insert	no insert	---
01D	0.551 x 0.394	14 x 10	005	2", 2.5", 3"
02D	0.630 x 0.433	16 x 11	005	4"
03D	0.748 x 0.512	19 x 13	010	5", 6"
04D	0.866 x 0.630	22 x 16	021	8"
05D	1.181 x 0.866	30 x 22	050	10" & 12"
22R	1.38 dia. (round & keyed)	35	050, 080	14" & 16"
23R	1.97 dia. (round & keyed)	50	300	18" & 20"
24R	2.50 dia. (round & keyed)	64	300	24"

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