

Electric actuators type EA15-250



Product description

The electric actuators type EA15, EA25, EA45, EA120 and EA250 are not only excellent equipped, they also feature very high torques ranging from 20 Nm to 250 Nm. This makes it possible to automate a wide range of valves.

Function

Electric actuators are used to operate valves with a swiveling movement from 90° to 180°. The actuator can be installed on any common valves with an ISO 5211 interface.

The addition of accessories allows the actuator to be used not only as an open/close actuator, but also in continuously controlled operation.

Applications

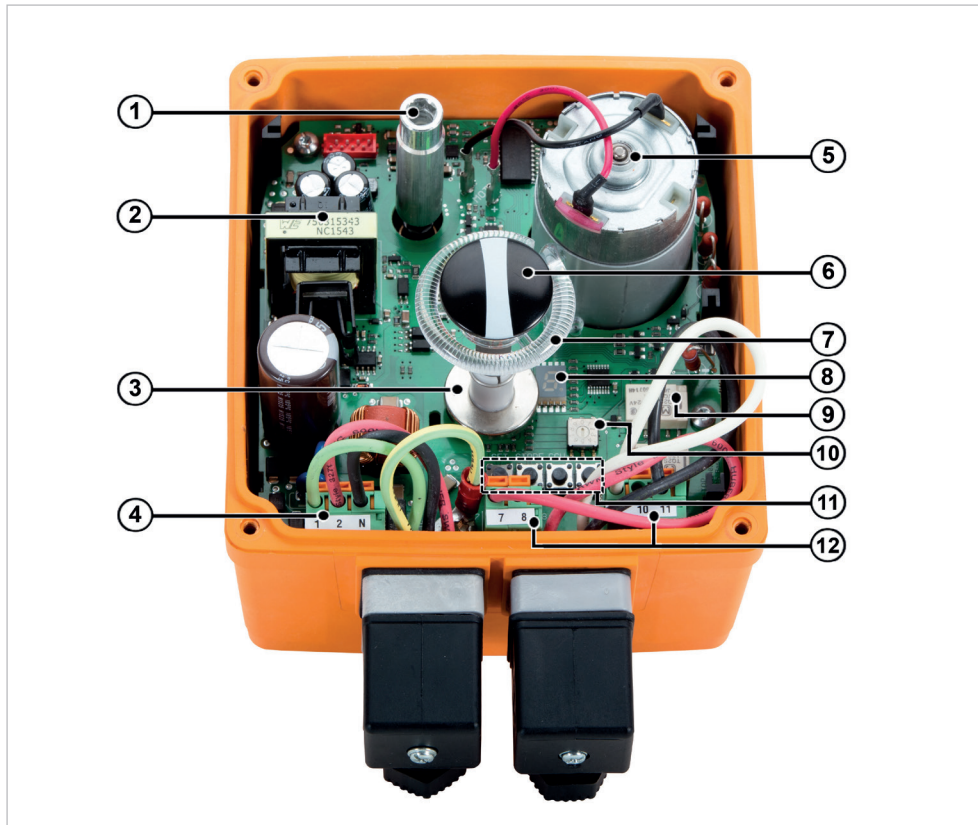
- Chemical process industry
- Water treatment
- Refrigeration

Benefits/features

- Position feedback via relays (open/close/middle)
- Integrated heating element to prevent condensation
- Optical position indicator with LED status monitoring
- Third position between „open“ and „closed“ optional
- Relay output for „ready to operate“ and 7-segment error display
- Integrated emergency manual override with magnetic lock
- Robust PP-GF housing with very good chemical resistance
- Long service life due to robust design and superior electronics
- Flexible configuration thanks to modular concept
- Numerous monitoring and control options
- Simple handling
- Can be used anywhere thanks to universal power supply and standard interfaces

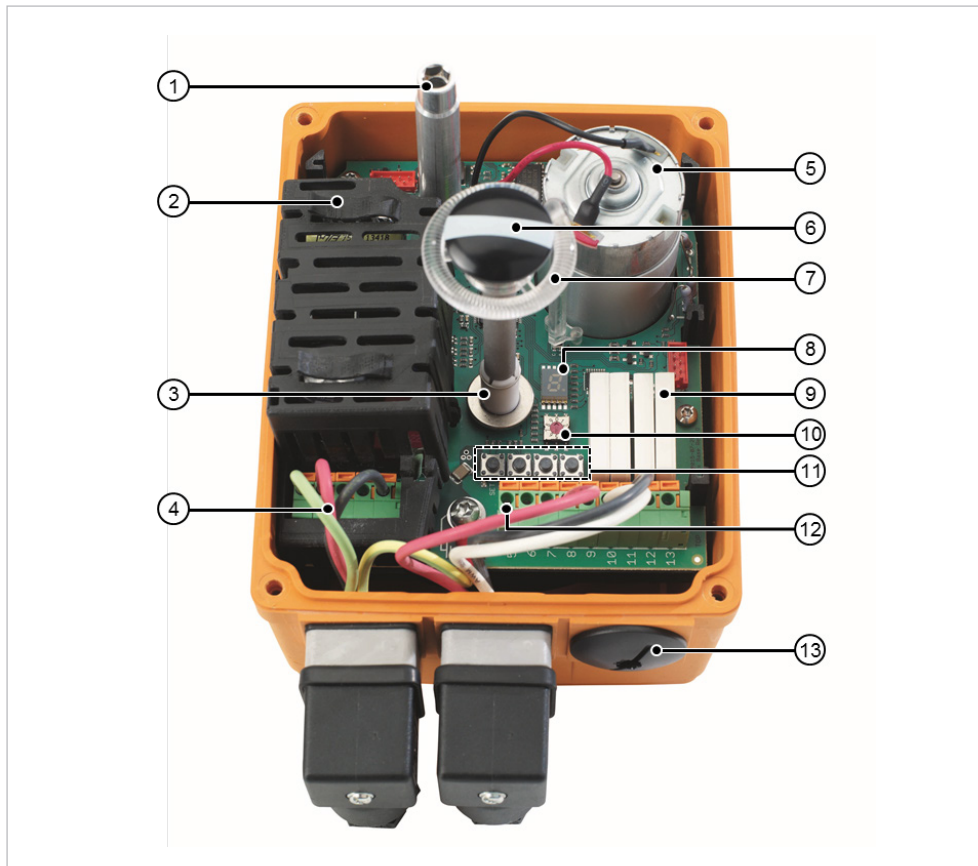
Technical data

The standard version of the EA15 electric actuator consists of the following elements:



- ① Shaft for emergency manual override
- ② Power supply unit with contact-protection installed at 230 V version
- ③ Digital position detection
- ④ Control for OPEN/CLOSED
- ⑤ DC motor
- ⑥ Optical position indicator
- ⑦ Light tube for LED status feedback
- ⑧ 7-segment error display
- ⑨ Feedback via relay for OPEN/CLOSED
- ⑩ Heating element (temperature threshold regulator)
- ⑪ Button for end stop adjustment
- ⑫ Signal output „ready-to-operate“ connection options for DIN plugs (Standard types only) & Cable glands (Standard & cUL types)

The standard version of the EA25/45/120/250 electric actuator consists of the following elements:



- ① Shaft for emergency manual override
- ② Power supply unit with contact-protection installed at 230 V version
- ③ Digital position detection
- ④ Control for OPEN/CLOSED/MIDDLE position
- ⑤ DC motor
- ⑥ Optical position indicator
- ⑦ Light tube for LED status feedback
- ⑧ 7-segment error display
- ⑨ Feedback via relay for OPEN/CLOSED/MIDDLE
- ⑩ Heating element (temperature threshold regulator)
- ⑪ Button for end position adjustment
- ⑫ Terminal block to connect position feedback
- ⑬ Connection options for DIN plugs (standard types only) or cable glands (standard & cUL types)

Specification		
Combinations	EA15	2-way ball valve type 546 Pro to DN50 3-way ball valve type 543 up to DN50
	EA 25	2-way ball valve type 546 Pro to DN50 3-way ball valve type 543 up to DN50
	EA45	2-way ball valve type 546 Pro up to DN65 Butterfly valve types 567 and 578, types 038 and 039
	EA120	2-way ball valve type 546 Pro up to DN100 Butterfly valve types 567 and 578, types 038 and 039
	EA250	Butterfly valve types 567 and 578, types 038 and 039
	Rated voltage	AC
AC/DC		24 V, 50/60 Hz
Rated voltage tolerance	± 15%	
Protection class	IP 65 (IP67)1) per EN 60529 Designed for wet & dry locations (NEC), designed for indoor use (UV light may cause discoloration)	
Contamination level	2 according to EN 61010-1	
Overload protection	Current/time-dependent (resetting)	
Overvoltage category	II	
Ambient temperature	-10 °C to +50 °C (14°F to +122°F)	
Max. installation altitude	2000m above sea level (AMSL)	
Allowable humidity	Max. 90 % relative humidity, non-condensing	
Housing material	PP GF for very good chemical resistance	

	EA15	EA25	EA45	EA120	EA250
Rated output	45 VA	45 VA	65 VA	60 VA	70 VA
Rated torque Mdn. (peak)	10 (20)	10 (25)	20 (45)	60 (120)	100 (250)
Duty cycle at 25 °C / 15 min	40%	100 %	50 %	50 %	35 %
Cycle time s/90° at Mdn.	5s	5 s	6 s	15 s	20 s
Connection	F05	F05	F05	F07	F07
Tested cycles (at 20 °C and Mdn.)	150 000	250 000	100 000	100 000	75 000
Weight	1.85 kg	2,193 kg	2,193 kg	3,356 kg	4,995 kg
Actuating angle		Max. 355°, set to 90°			

¹⁾When used with cable glands and vertical installation.

Options

Electrical ball valves

Type 127

Type 127 ball valves are based on the type 546 Pro ball valve and the EA15 (DN10 – DN50).

Ball valve, electric	Actuator, electric	Ball valve, hand-operated	Dimensions	Materials	Standards
Type 127	EA15	Type 546 Pro	DN10 – DN50	PVC-U, PVC-C, PP-h, ABS, PVDF	ISO/DIN, BS ASTM/ANSI, JIS

Type 179 – 184

Type 179 – 184 ball valves are based on the type 546 Pro ball valve and the EA25 (DN10 – DN50), EA45 (DN65 – DN80) or EA120 (DN90 – DN100) electric actuator. The 179 – 184 series is designed for applications with special process requirements.

Ball valve, electric	Actuator, electric	Ball valve, hand-operated	Dimensions	Materials	Standards
Type 179	EA25/45/120	Type 546 Pro	DN10 – DN100	PVC-U, PVC-C, ABS	ISO/DIN
Type 180	EA25/45/120	Type 546 Pro	DN10 – DN100	PP	ISO/DIN
Type 181	EA25/45/120	Type 546 Pro	DN10 – DN100	PVDF	ISO/DIN
Type 182	EA25/45/120	Type 546 Pro	DN10 – DN100	PVC-U, PVC-C	ASTM/ANSI
Type 183	EA25/45/120	Type 546 Pro	DN10 – DN100	PVC-U	BS
Type 184	EA25/45/120	Type 546 Pro	DN10 – DN100	PVC-U	JIS

Type 167 – 170

Type 167 – 170 ball valves are based on the type 543 ball valve and the EA25 electric actuator.

Ball valve, electric	Actuator, electric	Ball valve, hand-operated	Dimensions	Materials	Standards
Type 167	EA25	Type 543, horizontal	DN10 – DN50	PVC-U, ABS	ISO/DIN, ASTM/ANSI, JIS
Type 168	EA25	Type 543, horizontal	DN10 – DN50	PP	ISO/DIN
Type 170	EA25	Type 543, vertical	DN10 – DN50	PVC-U	ISO/DIN, JIS

Electric butterfly valves

Type 145 – 147

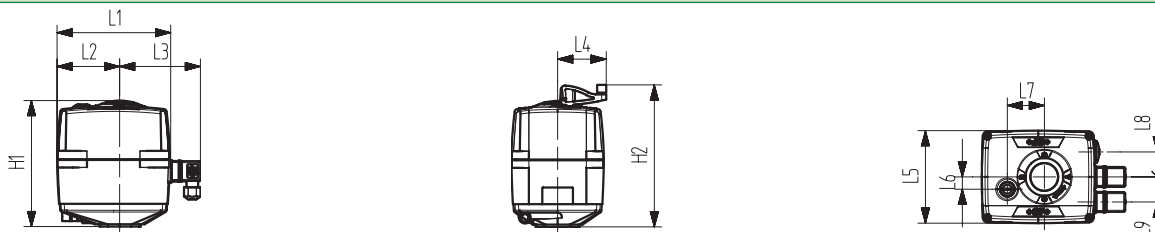
The type 145 electric butterfly valve is intended for wafer style installation and is adaptable to a variety of applications. With the optional positioner, its functional options range from a simple open/close valve to a precise flow control device.

The type 146/147 electric butterfly valve is intended for lug type or wafer style installation and is adaptable to a variety of applications. With the optional positioner, its functional options range from a simple open/close valve to a precise flow control device.

Butterfly valve, electric	Actuator, electric	Butterfly valve, hand-operated	Dimensions	Materials	Standards
Type 145	EA45/120/250	Type 567	DN50 – DN300	All	All standards
Type 146	EA45/120/250	Type 578	DN50 – DN300	All	ISO/DIN
Type 147	EA45/120/250	Type 578	DN50 – DN300	All	ASTM/ANSI

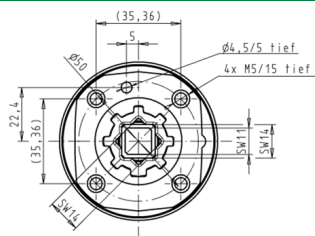
Dimensions

Actuator dimensions

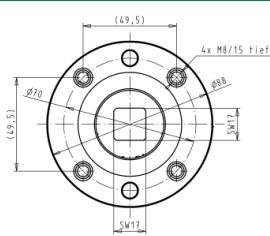


EA	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	H1 (mm)	H2 (mm)
EA15	122	83	77	64	122	16	49		33	137	158
EA25	150	83	108	64	122	16	49	33	33	167	189
EA45	150	83	108	64	122	16	49	33	33	167	189
EA120	150	83	108	64	122	16	49	33	33	190	212
EA250	150	83	108	64	122	16	49	33	33	200	221

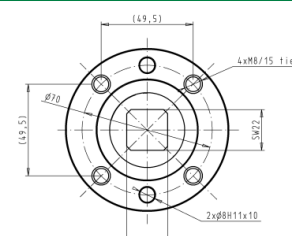
EA15-EA45



EA120

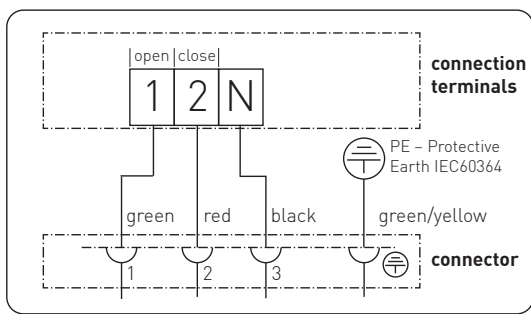


EA250

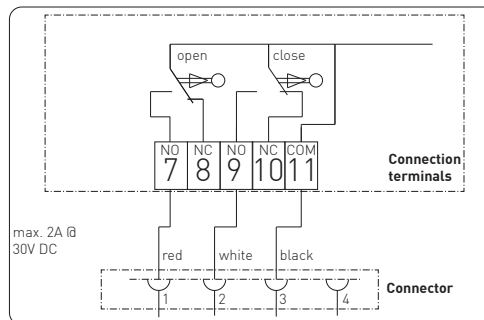


Connection diagram for standard version

EA15

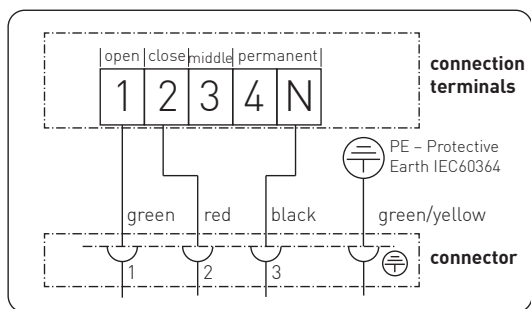


Actuator power

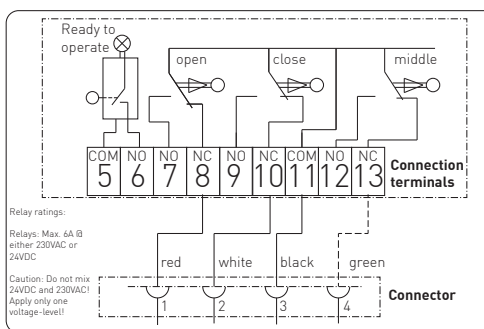


Feedback signals

EA25/45/120/250



Actuator power



Feedback signals

Position indicator

The position indicator shows the valve position. The valve positions can be read on the fitted cover. When the cover is fitted, the following image can be seen (Example ball valve):

	2-way	3-way horizontal (L)	3-way vertical (L)
Image of position indicator in valve position 1			
Valve function			
Actuating angle	0° - 90°	0° - 90°	0° - 180°
Valve position 1	A - B (OPEN) See image	A - C (Flow right side, outlet to the front) See image	B - C (Flow left side, bottom outlet) See image
Valve position 2	C - D (CLOSE)	B - C (Flow left side, outlet to the front)	A - C (Flow right side, bottom outlet)

By teaching in a „Middle position“ different possibilities can be achieved depending on the valve and the application. For example:

- 2-way ball valve: Middle position describes a position, permitting no 100% flow but for instance only half as strong.
- 3-way ball valve: Middle position describes a position of the ball in which both passages are slightly opened.
- 3-way ball valve: Middle position describes a position of the ball which closes both passages.

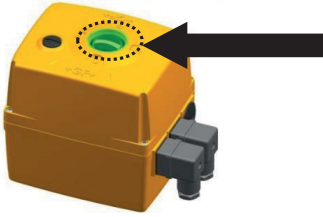
Ball valve and ball-type	3-way horizontal (L-ball)	3-way horizontal (L-ball)	3-way vertical (L-ball)
Function of the middle position	CLOSE (on both sides no flow)	„Mixing“ (both passages slightly opened)	CLOSE (on both sides no flow)
Actuating angle	0° - 180°	0° - 90°	0° - 180°
Position 1	A - C (OPEN right)	A - C (OPEN right)	B (-C) (OPEN left)
Position 2	B - C (OPEN left) 90°	A/C - B/C (partly opened) 45°	(C-) D (CLOSE) 90°
Position 3	B - D (CLOSE) 180°	B - C (OPEN left) 90°	A (-C) (OPEN right) 180°

(Function of the middle position as „Mixing“ with the 3-way ball valve vertical is only possible with the T-ball)

LED status feedback

The LED status feedback shows the valve positions and the current status of the actuator.

The following table shows the colour assignment of the LED:

	Color	Meaning
	Red	Open
	Green	Closed
	White	Middle
	Flashes white	Actuator moves
	Flashes yellow	Error
	Flashes blue	Adjustment mode
	Green/yellow	Setpoint value reached (at positioner)
	Turquoise	Adjustment run / operation of colour inversion

If the plant standard requires an inversion of the colour assignment, the customer can adjust this afterwards.

Accessories

EA15 / EA25 / EA45 / EA120 / EA250:

- Failsafe return unit
Battery incorporated into the housing for moving to a safe position in case of power outage (open or closed).

EA25 / EA45 / EA120 / EA250:

- Positioner
For continuous valve control with 4 – 20 mA or 0 – 10 V and 4-20mA Feedback
- Monitoring board
 - Cycle time extension
 - Cycle time monitoring
 - Cycle counter
 - Motor current monitoring
- Fieldbus connection
 - Profibus DP auxiliary card
 - AS interface module

i For further information on accessories, refer to Planning Fundamentals, chapter on “Accessories for Electrical Actuators”, and the online product catalog at www.gfps.com.

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