

# Electric actuators type EA25-250

## Small & Light



### Product description

The electric actuators type EA25, EA45, EA120 and EA250 are not only excellently equipped, they also feature very high peak torques ranging from 25 Nm to 250 Nm. Therefore they are able to automate a wide range of valves.

### Function

Electric actuators are used to operate valves with a rotating angle from 90° to 180°. The actuators can be installed on any common valves with interface according to ISO 5211.

Accessories allow using them not only as an on/off actuator but also in continuous operation.

### Applications

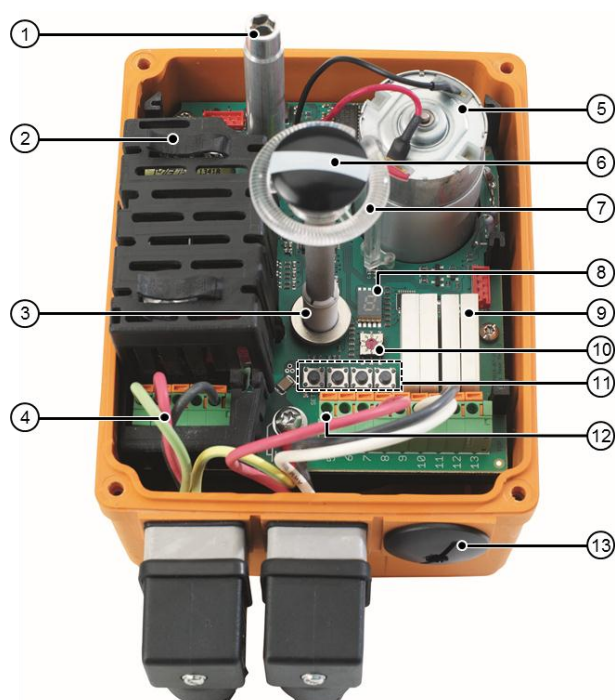
- Chemical Process Industry
- Water Treatment
- Refrigeration

### Benefits/Features

- Position feedback via relays (OPEN/CLOSE/MIDDLE)
- Heating element to prevent condensation
- Optical position indicator with LED status monitoring
- Third position between "OPEN" and "CLOSE" optional
- Relay output for "ready to operate"
- 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
- Easy handling
- Can be used anywhere thanks to universal power supply and standard interfaces

## Technical data

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



Nr.	Description
1	Shaft for emergency manual override hand crank
2	Power supply with cover at 230V version
3	Digital position detection
4	Control for OPEN/CLOSE/MIDDLE
5	DC motor
6	Optical position indicator
7	Light tube for LED status feedback
8	7-segment error display
9	Position feedback via relays for OPEN/CLOSE/MIDDLE
10	Heating element (temperature threshold regulator)
11	Buttons for end position adjustment
12	Signal output "ready-to-operate"
13	Connection options for DIN plugs or cable glands

## Spezifikation

<b>Combinations</b>	EA25	2-way ball valve type 546 to DN50 3-way ball valve type 543 up to DN50
	EA45	2-way ball valve type 546 DN65 Butterfly valve types 567 and 578, types 038 and 039 up to DN65
	EA120	2-way ball valve type 546 DN80/DN100 Butterfly valve types 567 and 578, types 038 and 039 DN80-DN200
	EA250	Butterfly valve types 567 and 578, types 038 and 039 DN250/300
<b>Rated voltage</b>	AC	100 – 230 V, 50/60 Hz
	AC/DC	24 V, 50/60 Hz
<b>Rated voltage tolerance</b>		± 15%
<b>Protection class</b>		IP 65 (IP67) <sup>1)</sup> per EN 60529
<b>Contamination level</b>		2 according to EN 61010-1
<b>Overload protection</b>		Current/time-dependent (resetting)
<b>Overvoltage category</b>		II
<b>Ambient temperature</b>		-10 °C to +50 °C
<b>Allowable humidity</b>		Max. 90 % relative humidity, non-condensing
<b>Housing material</b>		PP-GF for very good chemical resistance

<sup>1)</sup> When used with cable glands and vertical installation.

	EA25	EA45	EA120	EA250
<b>Rated output</b>	AC: 35 VA at 100 – 230 V	AC: 55 VA at 100 – 230 V	AC: 50 VA at 100 – 230 V	AC: 60 VA at 100 – 230 V
	AC/DC: 40 VA at 24 V	AC/DC: 60 VA at 24 V	AC/DC: 55 VA at 24 V	AC/DC: 65 VA at 24 V
<b>Rated torque Mdn. (peak)</b>	10 (25) Nm	20 (45) Nm	60 (120) Nm	100 (250) Nm
<b>Duty cycle</b>	100%	50 %	50 %	35 %
<b>Cycle time s/90° at Mdn.</b>	5 s	6s	15 s	20 s
<b>Connection</b>	F05	F05	F07	F07
<b>Tested cycles (at 20 °C and Mdn.)</b>	250 000	100 000	100 000	75 000
<b>Weight</b>	2.1 kg	2.2 kg	3.6 kg	5.0 kg
<b>Actuating angle</b>	Max. 355°, set to 90°			

## Options

### Electrical ball valves

#### Type 179 - 184

Type 179 – 184 ball valves are based on the type 546 ball valve and the EA25 (DN10 – DN50), EA45 (DN65) or EA120 (DN80 – 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	DN10 – DN100	PVC-U, PVC-C, ABS	ISO/DIN
Type 180	EA25/45/120	Type 546	DN10 – DN100	PP	ISO/DIN
Type 181	EA25/45/120	Type 546	DN10 – DN100	PVDF	ISO/DIN
Type 182	EA25/45/120	Type 546	DN10 – DN100	PVC-U, PVC-C	ASTM/ANSI
Type 183	EA25/45/120	Type 546	DN10 – DN100	PVC-U	BS
Type 184	EA25/45/120	Type 546	DN10 – DN100	PVC-U	JIS

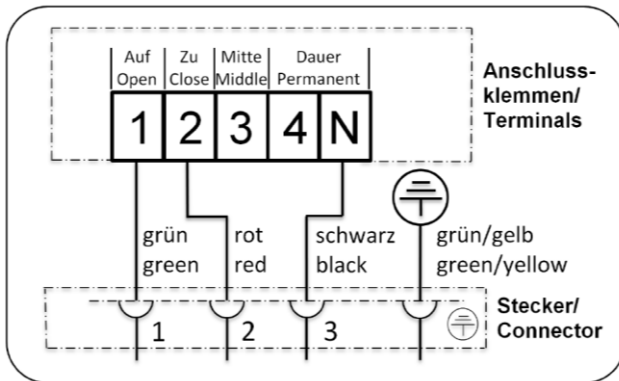
#### Type 167 - 170

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

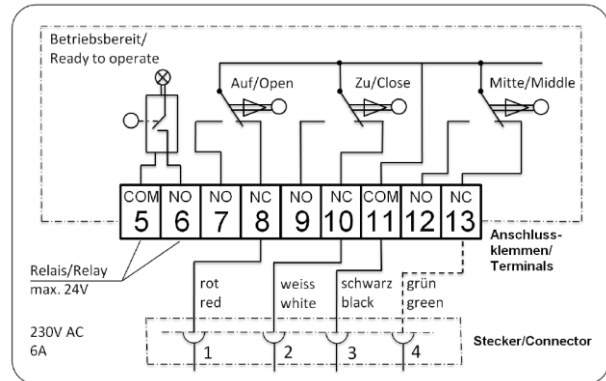
Ball valve, electric	Actuator electric	Ball valve, hand-operated	Dimensions	Materials	Standards
Type 167	EA25	Type 543 horizontal	DN10 – DN50	PVC-U, ABS	ISO/DIN, ASTM/ANSI, JIS
Type 168	EA25	Type 543 horizontal	DN10 – DN50	PP	ISO/DIN
Type 170	EA25	Type 543 vertical	DN10 – DN50	PVC-U	ISO/DIN, JIS



### Connection diagram for standard version



Actuator activation



Feedback signals

### Optical 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)
<b>Image of position indicator in valve position 1</b>			
<b>Valve function</b>			
<b>Actuating angle</b>	0° - 90°	0° - 90°	0° - 180°
<b>Valve position 1</b>	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
<b>Valve position 2</b>	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, limiting the 100% flow for instance only half.
- 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.