



#### Application

Electrohydraulic actuator for plant engineering and HVAC

#### Special features

The electrohydraulic actuator is used to position Series 240, 250 and 280 Control Valves.

- Compact design with electric or mechanical override
- Available with or without fail-safe action
- Actuator with fail-action "actuator stem extends" tested by the German Technical Inspectorate (TÜV) according to DIN EN 14597 in combination with various SAMSON valves
- Safe functioning due to force-dependent deactivation of the motor when end positions are reached or when overload occurs
- Installation of positioner, resistance transmitters and electric or inductive limit contacts in the terminal box

#### Versions (see technical data on page 5)

- With electric override (see Fig. 1):
  - Manual override with two pushbuttons
  - Type 3274-13/-14
- With mechanical override (see Fig. 2):
  - Mechanical override implemented using an Allen key (width across flats 24 mm) at the additional gear housing
  - Type 3274-17/-18
- Versions with fail-safe action and with electric override:
  - Types 3274-21/-22/-23

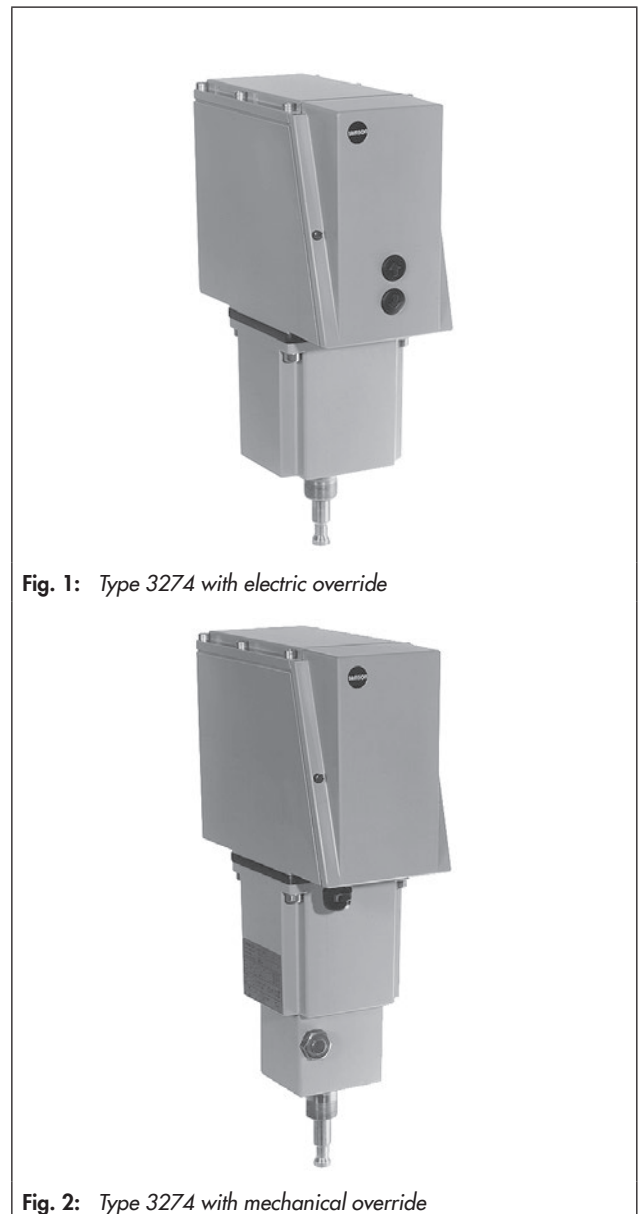


Fig. 1: Type 3274 with electric override

Fig. 2: Type 3274 with mechanical override

## Options

- Accessories  
The actuator can be fitted with a various combination of accessories.
- Positioners  
The positioner compares the 0/4 to 20 mA or 0/2 to 10 V control signal issued by the controller with the position of a potentiometer which is proportional to the travel. It issues a corresponding three-step signal.
- Priority circuit  
The version with positioner is fitted with a priority circuit which is activated at terminals 82 and 83.
- Position transmitter  
In the version with three-step control, a potentiometer (0 to 1000  $\Omega$ ) is used to issue a 0/4 to 20 mA or 0/2 to 10 V output signal, which is proportional to the travel.
- Resistance transmitters  
An actuator can be equipped with two resistance transmitters. A segment gear is driven by a shaft. An easily adjustable transmission mechanism including a twin pinion ensures that the angle of rotation remains the same for rated travels of 15 and 30 mm.
- Mechanical limit contacts  
The actuators can be fitted with a maximum of three mechanical changeover switches, which are actuated by continuously adjustable cam disks. Optionally, the actuators can be equipped with two limit contacts, which are actuated by continuously adjustable cam disks. The motor is switched off by force-dependent fixed switches in the actuator housing (1).  
Actuators with fail-safe action only have one force-dependent switch since these actuators are only moved in the other direction by the force of the springs (5.7 and 5.8).

## Design and principle of operation (see Fig. 3)

The pressure-tight actuator housing (1), which also serves as the oil reservoir, contains the cylinder housing (2), cylinder (5.1) and piston (5.2), motor (6.1), pump (6.2) and solenoid pilot valves (6.4).

The oil pump (6.2) driven by the motor (6.1) feeds compressed oil to the corresponding cylinder chamber over the check valve (6.3) and pilot valve (6.4). The solenoid valves are closed in the de-energized state and open when a controller output signal is applied. When an end position is reached or when the thrust is too high due to external forces, the motor is switched off.

Depending on the version, the actuators have no compression springs or are equipped with one or two compression springs (5.7, 5.8). The motor in Types 3274-21 to -23 can only move the stem in one direction. The stem is moved by spring force in the other direction.

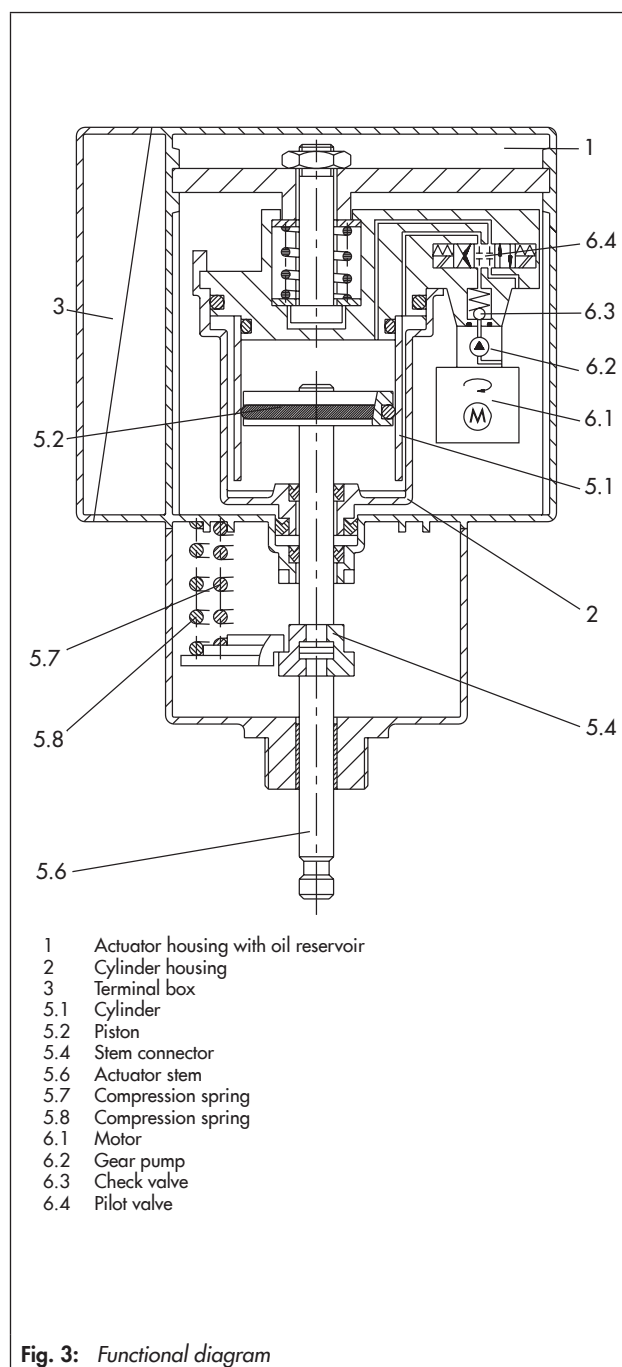


Fig. 3: Functional diagram

– **Electric override**

Actuators with electric override have two pushbuttons to extend or retract the actuator stem.

– **Mechanical override**

The actuators with mechanical override have an additional gear housing. An Allen key must be inserted to activate the override function. In combination with a release button on the top of the actuator housing, the actuator stem can be extended or retracted.

– **Fail-safe action**

Versions with fail-safe action have a spring-return mechanism and an additional safety solenoid valve which opens when the power supply is interrupted, reducing the pressure on the cylinder chamber. The spring assembly moves the valve plug to the fail-safe position. The direction of action (actuator stem extends or retracts) depends on how the springs are arranged in the actuator.

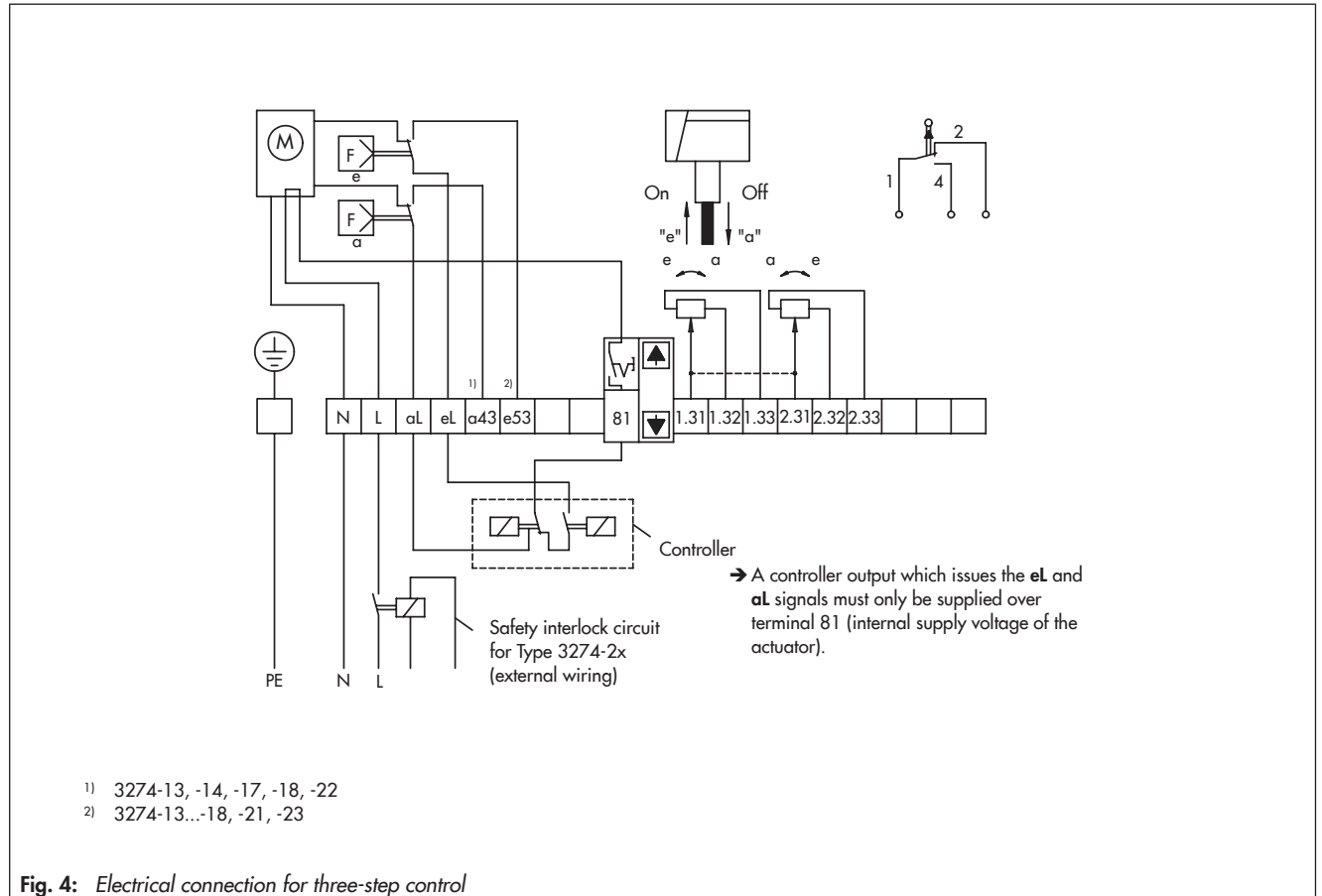
**Mounting**

The actuator is fastened to the valve bonnet with a ring nut. The actuator and plug stems are fastened together by a stem connector. The actuator mainly consists of the actuator housing, motor with oil pump and cylinder housing with piston.

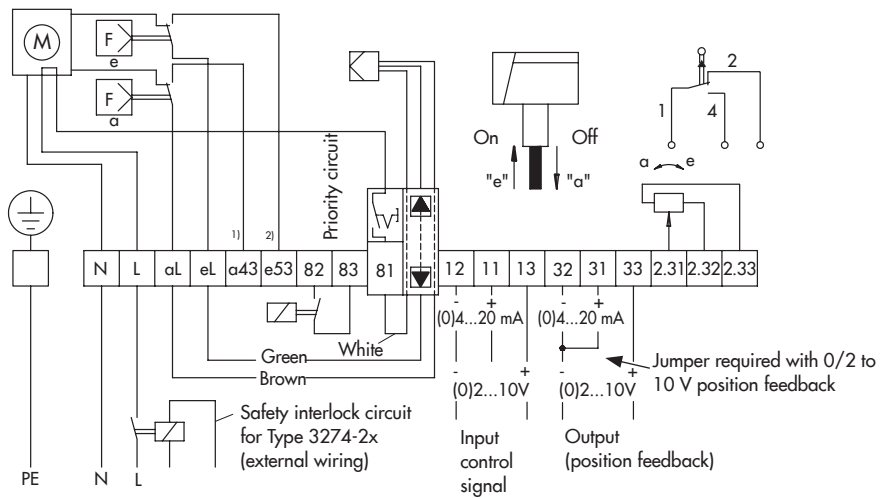
**Electrical connection (see Fig. 4 to Fig. 6)**

Figs. 4 and 6 schematically illustrate the different means of connection, depending on how the version is equipped. The mechanical limit contacts are provided with screwed connections. They are connected directly, not over the terminal block.

Especially for 24 V actuators, lines with a sufficiently large cross-section must be laid in order to guarantee that the permissible voltage tolerances of  $\pm 10\%$  are kept.

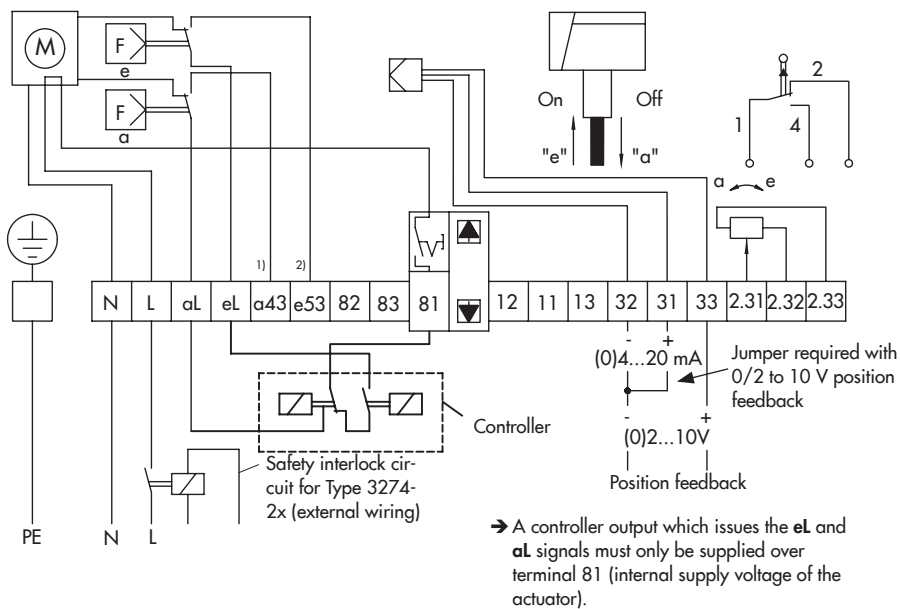


**Fig. 4:** Electrical connection for three-step control




- 1) 3274-13, -14, -17, -18, -22  
 2) 3274-13...-18, -21, -23

**Fig. 5:** Electrical connection for version with positioner



**Fig. 6:** Electrical connection for three-step version with position transmitter

**Table 1: Technical data**

Actuator	Type 3274	-13	-14	-17	-18	-21	-22	-23
Manual override		Electric		Mechanical		Electric		
Fail-safe action		Without		Without		With		
Direction of action: stem retracts		-		-			•	
Direction of action: stem extends		-		-		•		•
Rated travel		15 or 30 mm						
Transit time for rated travel		60 s with 15 mm travel · 120 s with 30 mm travel Faster motor <sup>1)</sup> : 30 s with 15 mm travel · 60 s with 30 mm travel						
Stroking speed in mm/s		0.25; faster motor <sup>1)</sup> : 0.5						
Stroking speed for fail-safe action in mm/s		-		-		1	1	1.3
	Standard	-		-		3.3	3.3	5
	Optional	-		-		3.3	3.3	5
Weight		12 kg		15 kg		12 kg		
Supply voltage		230 V and 24 V, 50 or 60 Hz (±10 %)						
Power consumption with power supply		24 V, 230 V/50 Hz: 90 VA 24 V, 230 V/60 Hz: 110 VA 230 V/50 Hz with faster motor: 150 VA 230 V/60 Hz with faster motor: 185 VA Positioner: 3 VA						
Permissible ambient temperature		-10 to +60 °C						
Permissible storage temperature		-25 to +70 °C						
Degree of protection		IP 65 according to EN 60529						
Electromagnetic compatibility		According to EN 61326-1, EN 61000-6-2, EN 61000-6-3						
Conformity								
<b>Thrust in N</b>								
Travel: 15 mm	Retracts	4300	500	4300	500	2100	1800	500
	Extends	4300	7700	4300	7700	2000	2300	3400
Travel: 30 mm	Retracts	4300	500	4300	500	2100	1800	500
	Extends	4300	7300	4300	7300	1800	2100	3000
<b>Accessories</b>								
Positioner		Same supply voltage as actuator						
Input signal		0/4 to 20 mA, (R <sub>i</sub> = 50 Ω) · 0/2 to 10 V DC (R <sub>i</sub> = 10 Ω)						
Zero shift		0 to 100 %						
Change of range		30 to 100 %						
Position feedback		0/4 to 20 mA, R <sub>B</sub> ≤ 200 Ω · 0/2 to 10 V DC, R <sub>B</sub> ≤ 2 kΩ						
Hysteresis		Approx. 3 %						
Resistance transmitters		0 to 1000 Ω, 0 to 200 Ω, 0 to 100 Ω, 0 to 275 Ω, 0 to 138 Ω; (useable range approx. 80 % of nominal value) perm. load 0.5 W						
Mechanical limit contacts		Maximum three separately adjustable changeover switches, max. 250 V AC, 5 A						
Inductive limit contacts		SJ2-N proximity switch (NC contact only)						
	Control circuit	Values corresponding to isolating switch amplifier used						
<b>Materials</b>								
Housing and cover		Die-cast aluminum						
Cylinder		Hydraulic cylinder tube						
Piston		Steel/NBR combination						
Piston stem		C45, hard chrome-plated						
Actuator stem		1.4104						
Hydraulic oil		Special HLP, silicone-free						

<sup>1)</sup> Not for actuators with 24 V supply voltage

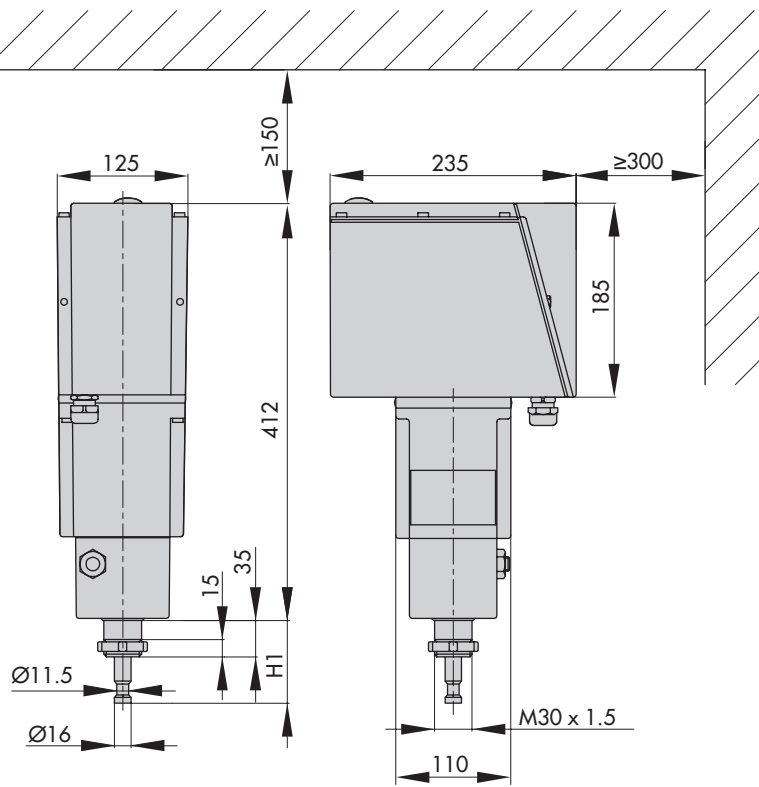


Fig. 7: Actuator with mechanical override

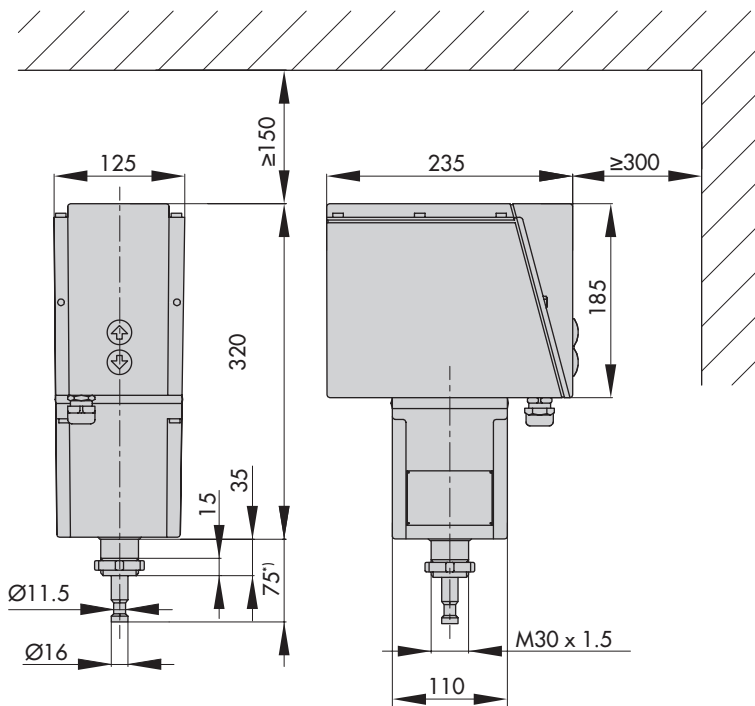


Fig. 8: Actuator with electric override

## Accessories

<b>For all versions <sup>1)</sup></b>
Positioner
Position transmitter
Resistance transmitter
Mechanical limit contact
Inductive limit contact <sup>2)</sup>

<sup>1)</sup> Order numbers on request

<sup>2)</sup> Can only be installed by SAMSON's After-sales Service

**Table 2:** *Combination of accessories*

Accessories									
Positioner <sup>1)</sup>	•	•							
Position transmitter <sup>1)</sup>			•	•					
Resistance transmitter 1	•	•	•	•	•	•	•	•	
Resistance transmitter 2	•	•	•	•	•	•			
Mechanical limit contact 1								•	•
Mechanical limit contact 2	•		•		•		•		•
Mechanical limit contact 3	•		•		•		•		•
Inductive limit contact 1		•		•		•		•	•
Inductive limit contact 2		•		•		•		•	•

<sup>1)</sup> Resistance transmitter 1 is used internally

## Ordering text

Type 3274-... Electrohydraulic Actuator

Rated travel

15/30 mm

Fail-safe action (only with electric override)

Stem extends/Stem retracts/Without

Supply voltage

230/24 V, 50/60 Hz

Version for Type 3214 Valves, DN 150 to 250, if needed

Positioners

Input signal

0/2 to 10 V or 0/4 to 20 mA

Position transmitter

0/2 to 10 V or 0/4 to 20 mA

Resistance transmitters

0 to 1000  $\Omega$

0 to ...  $\Omega$

Limit contacts

Mechanical or inductive

## Associated Mounting and Operating Instructions

– Type 3274

► **EB 8340**