DATA SHEET

T 5869 EN

Single-seated Type 3213 Globe Valve, without pressure balancing
Single-seated Type 3214 Globe Valve with pressure balancing
Electric control valves with fail-safe action, tested according to DIN EN 14597 · Types 3213/5827-A, 3213/5725-3, 3213/5725-8 and 3214/5827-A, 3214/3374, 3214/5725-3, 3214/5725-8

Application

Globe valves mounted on electric actuators with safety function to protect heating systems against excess temperatures or pressures · Suitable for water and steam

DN 15 to 250 · PN 16 to 40 · Temperatures up to 220 °C



Fig. 1: *Type 3213/5827*



Fig. 2: *Type 3214/3374*

The control valves consist of a globe valve and an electric actuator with safety function. The control valves can take on the task of a shut-off valve within safety interlock circuits triggered by the signal of a temperature or pressure limiting device or upon power supply failure.

The control valves are tested by the German technical surveillance association TÜV according to DIN EN 14597 and have been defined as shut-off and control devices.

Versions tested according to DIN EN 14597

– With **Type 3213 Globe Valve** without pressure balancing

Electric control valves		
Type 3213/5827-A	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Electric control valves with electric actuator with process controller for domestic hot water heating		
Type 3213/5725-3	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Electric control valves with electric actuator with process controller for heating and cooling applications		
Type 3213/5725-8	PN 25	DN 15 to 25
	PN 16	DN 32 to 50

– With **Type 3214 Globe Valve** balanced by a corrosion-resistant metal bellows

Electric control valves		
Type 3214/5827-A	PN 16 to 40	DN 15 to 50
Type 3214/3374	PN 16 to 40	DN 65 to 250
Electric control valves with electric actuator with process controller for domestic hot water heating		
Type 3214/5725-3	PN 16 to 40	DN 15 to 50
Electric control valves with electric actuator with process controller for heating and cooling applications		
Type 3214/5725-8	PN 16 to 40	DN 15 to 50

Register number

The actuators with fail-safe action are tested by the German technical surveillance association TÜV according to DIN EN 14597 in conjunction with the listed valves. The register number is available on request.

Also available: Type 3213 and Type 3214 Globe Valves with electric or pneumatic actuator (without testing according to DIN EN 14597), see Data Sheet ▶ T 5868

Principle of operation

A safety mechanism in the actuator is triggered when the supply voltage fails or the control signal is interrupted by the limitation equipment due to the temperature or pressure exceeding the adjust-

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ed limit. As a result, the valve is closed by the force of the compression springs in the actuator.

The medium flows through the single-seated globe valve in the direction indicated by the arrow. The cross-sectional area of flow between the seat (2) and plug (3) is determined by the position of the plug stem.

The Type 3214 Valve is pressure-balanced. The pressure upstream of the plug is transferred through a hole in the plug stem (4) and acts on the outside of the balancing bellows, whereas the pressure downstream of the plug acts on the inside of the bellows. As a result, the forces created by the differential pressure that act on the plug are eliminated. The Type 3214 Globe Valve can also be fitted with a flow divider ST 1. Refer to Data Sheet ▶ T 8081 for details.

The plug is moved by changing the control signal applied to the actuator. The valve and actuator have a force-locking connection for valve sizes up to DN 50 and a form-fit connection for valve sizes DN 65 and larger.

Electric actuators

The Types 5827 and 3374 Electric Actuators can be controlled by three-step signals or, in the version with positioner, with signals from 0/4 to 20 mA or 0/2 to 10 V. Various electrical accessories can be optionally installed.

Refer to the data sheets for more details on the electric actuators:

- ▶ T 5827: Type 5827 Electric Actuator
- ▶ T 8331: Type 3374 Electric Actuator

Electric actuators with process controllers

The electric actuator with process controller consists of a linear actuator with an integrated digital controller. The TROVIS 5725-3 Actuator is suitable for domestic hot water heating. TROVIS 5725-8 has two PID control modules and is ready-wired for heating and cooling applications.

Refer to the data sheets for more details on the electric actuators with process controller:

- ▶ T 5724: TROVIS 5725-3 Electric Actuator with Process Controller for domestic hot water heating
- ▶ T 5724-8: TROVIS 5725-8 Electric Actuator with Process Controller for heating and cooling applications

Installation

Install the valve with the actuator in the upright position. Other mounting positions on request.

In safety interlock circuits, a strainer (e.g. Type 2 NI, see Data Sheet ▶ T 1015) must be installed upstream of the valve in the direction of flow.

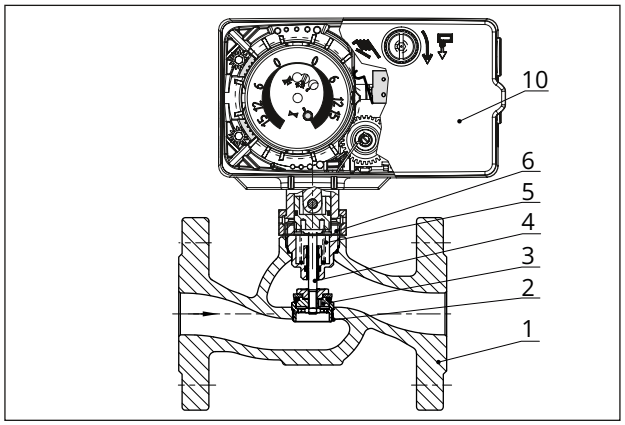


Fig. 3: *Type 3213/5827*

1	Valve body	5	Valve spring
2	Seat	6	Guide nipple
3	Plug	10	Actuator
4	Plug stem		

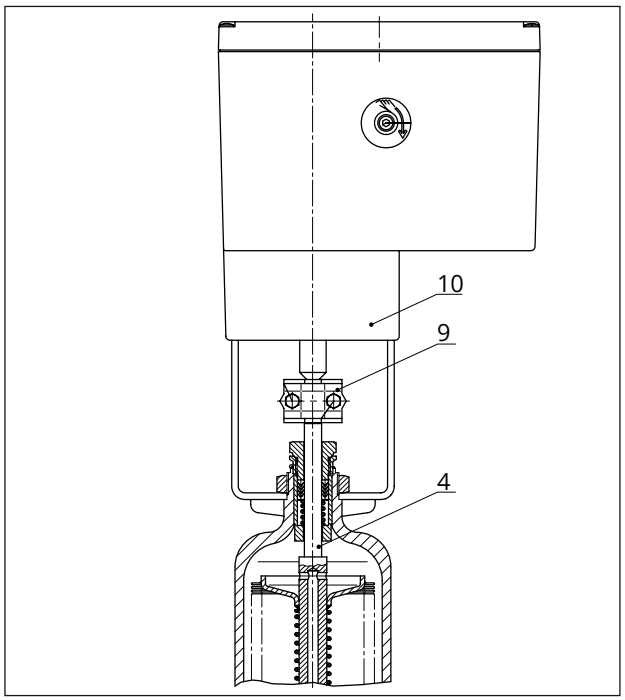


Fig. 4: *Type 3214/3374-21*

4	Plug stem	10	Actuator
9	Stem connector		

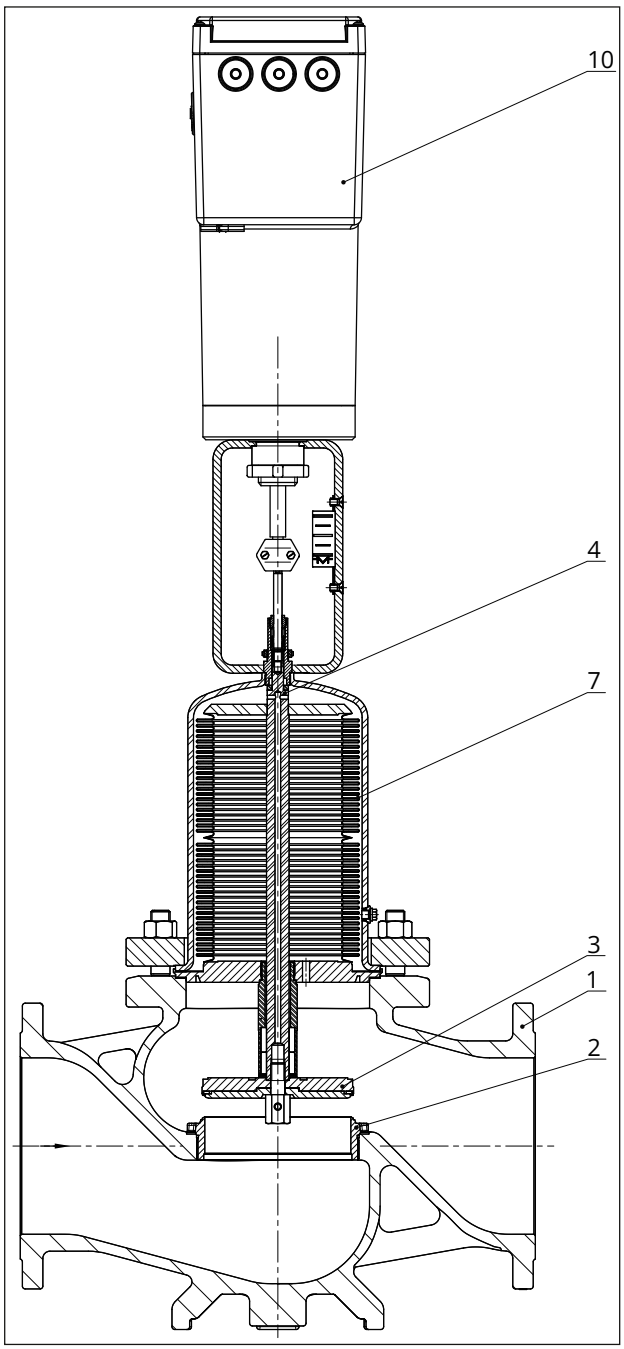


Fig. 5: *Type 3214/3374-27*

1	Valve body	4	Plug stem
2	Seat	7	Balancing bellows
3	Plug	10	Actuator

Associated Mounting and Operating Instructions ▶ EB 5868/5869

Ordering text

Type .... Control Valve without pressure balancing, tested according to DIN EN 14597:

❑ 3213/5827-A, ❑ 3213/5725-3, ❑ 3213/5725-8

Version for steam: ❑ yes, ❑ no

Type .... Control Valve with pressure balancing, tested according to DIN EN 14597:

❑ 3214/5827-A, ❑ 3214/3374, ❑ 3214/5725-3, ❑ 3213/5725-8

Version up to 220 °C: ❑ yes, ❑ no

- Nominal size: DN ...
- Pressure rating PN ...
- K_{VS} coefficient: ...
- Max. differential pressure Δp: ...
- Max. temperature: ...
- Body material: ...

Further specifications on the electric actuator

- Control: ❑ three-step signal, ❑ positioner
- Supply voltage: ...
- Electric additional equipment: ...

Flow rate calculation

Terms for control valve sizing according to DIN IEC 60534-2-1 and DIN IEC 60534-2-2: F_L = 0.95, x_T = 0.75

Selection and sizing of the control valve

1. Calculate K_{VS} coefficient according to DIN EN 60534.
2. Select nominal size DN and K_{VS} coefficient from Table 3.
3. Check the permissible differential pressure from Table 3.
4. Check the permissible temperature and select the valve version from Table 1.
5. Select the suitable actuator from Table 3 and from the technical data of the actuator.
6. Select materials, pressure and temperature from Table 1 to Table 3, from the technical data of the actuator and from the pressure-temperature diagram (Fig. 6).
7. Select additional accessories depending on the electric actuator. Refer to technical data of the actuators for more details.

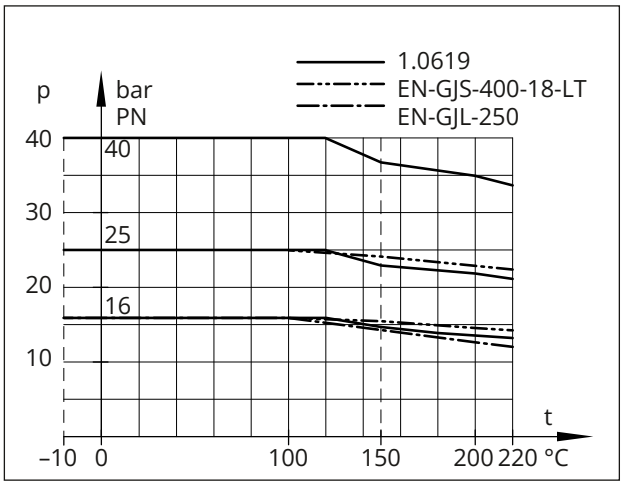


Fig. 6: *Pressure-temperature diagram*

Table 1: *Technical data*

Type 3213 Globe Valve															
Nominal size		**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
Pressure rating		PN	25			16			–						
Max. permissible temperature (upright position)		°C	150[1]			150[1]									
	Version for steam	°C	200			On request									
Rated travel		mm	6			12									
Rangeability			50:1												
Leakage class acc. to DIN EN 60534-4			Class I (≤0.05 % of K_{VS})												
Conformity[2]			CE												
Type 3214 Globe Valve balanced by a bellows															
Nominal size		**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
Pressure rating		PN	16 to 40												
Max. permissible temperature (upright position)		°C	150[3]						220			150[4]			
	Version up to 220 °C	°C	220						–						
Rated travel		mm	6			12			15			30			
Rangeability			50:1						40:1			30:1			
Leakage class acc. to DIN EN 60534-4			Class I (≤0.05 % of K_{VS})									Class I (≤0.01 % of K_{VS})			
Conformity			CE												

1) Use an intermediate insulating piece (1990-1712).
   - For medium temperatures between -10 and +5 °C (actuators according to Table 4 and Table 5)
   - In networks with a constant medium temperature >135 °C (TROVIS 5725-3, TROVIS 5725-8, Type 5827 Actuators)

2) Field of applications are the control of Group II fluids according to Pressure Equipment Directive 2014/68/EU. Footnote 1) on the permissible temperature range and the corresponding details applies.

3) Use an intermediate insulating piece (1990-1712).
   - For medium temperatures between -10 and +5 °C (TROVIS 5725-3/5725-8 and Type 5827 Actuators)
   - In networks with a constant medium temperature >135 °C (TROVIS 5725-3, TROVIS 5725-8, Type 5827 Actuators)

4) Special version with plug with metal seal or PTFE soft seal: 220 °C

Table 2: *Materials · Material numbers according to DIN EN*

Type 3213 Globe Valve			
Pressure rating	**PN 16**	**PN 25**	**PN 40**
Valve body	EN-GJL-250 (GG-25)	EN-GJS-400-18-LT (GGG-40.3)	–
Seat	1.4305		–
Plug	1.4305 with metal seal	Brass with EPDM soft seal or FKM seal	–
Special version	–	K_{VS} = 0.1 to 2.5: 1.4305 with metal seal	–
Plug stem	1.4305		–
Spring	1.4310		–
Guide nipple	Brass with EPDM seal or FKM seal		–
Insulating section with version for steam	1.4571		–
Type 3214 Globe Valve balanced by a bellows			
Pressure rating	**PN 16**	**PN 25**	**PN 40**
Valve body	EN-GJL-250 (GG-25)	EN-GJS-400-18-LT (GGG-40.3) or 1.0619 (GS-C 25)	1.0619 (GS-C 25)
Special version	EN-GJS-400-18-LT or 1.0619	–	–
Seat and plug			
DN 15 to 100	CrNi steel · Special version with EPDM soft seal		
DN 125 to 250	CrNiMo steel with EPDM soft seal · Special version with metal seal		
Plug stem	1.4301		
Spring	–		
Bellows housing	1.0425		
Balancing bellows	1.4571		
Guide nipple (DN 15 to 50)	Brass with EPDM seal		
Packing (DN 65 to 250)	PTFE with carbon V-ring packing		
Insulating section for version up to 220 °C	1.4305 with EPDM seal		

Table 3: *Nominal sizes, K_{VS} coefficients and maximum differential pressures*

Type 3213 Globe Valve														
Nominal size	**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
Rated travel	mm	6	6	6	12	12	12							
K_{VS} coefficients		4	6.3	8	16	20	32							
Max. differential pressure	bar	10	10	10	2.9	2.9	1.6							
Special version														
K_{VS} coefficients		0.1 · 0.16 · 0.25 · 0.4 · 0.63 · 1.0 · 1.6 · 2.5	2.5	–	–	–	40							
Max. differential pressure	bar	20	10	10	–	–	–	1						
Type 3214 Globe Valve														
Nominal size	**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
Rated travel	mm	6	6	6	12	12	12	15	15	15	30	30	30	30
K_{VS} coefficients		4	6.3	8	16	20	32	50	80	125	200	320	500	600
Flow divider		–	–	–	–	–	–	38	60	95	150	210	315	375
Reduced K_{VS} coefficient		2.5	2.5	2.5	8	8 · 16	8 · 16	–	–	–	–	–	–	–
Max. differential pressure	bar	25	25	25	25	25	25	20	20	16	16	12	10	10

Table 4: *Possible combinations with Type 3213*

Type 3213 Globe Valve/actuator													
Type/ TROVIS	Refer to data sheet for details	Nominal size DN											
		15	20	25	32	40	50	65	80	100	125	150	200	250
Electric actuators														
5827-A1	▶ T 5827	•	•	•	–	–	–							
5827-A2	▶ T 5827	–	–	–	•	•	•							
Electric actuators with process controllers for domestic hot water heating														
5725-310	▶ T 5724	•	•	•	–	–	–							
5725-313[1)]	▶ T 5724	•	•	•	–	–	–				–			
5725-320	▶ T 5724	–	–	–	•	•	•							
5725-323[1)]	▶ T 5724	–	–	–	•	•	•							
Electric actuators with process controller for heating and cooling applications														
5725-810	▶ T 5724-8	•	•	•	–	–	–							
5725-820	▶ T 5724-8	–	–	–	•	•	•							

[1)] Version with half transit time

Table 5: *Possible combinations with Type 3214*

Type 3214 Globe Valve/actuator														
Type/ TROVIS	Refer to data sheet for details	Nominal size DN												
		15	20	25	32	40	50	65	80	100	125	150	200	250
Electric actuators														
5827-A1	▶ T 5827	•	•	•	–	–	–	–	–	–	–	–	–	–
5827-A2	▶ T 5827	–	–	–	•	•	•	–	–	–	–	–	–	–
3374-21	▶ T 8331	–	–	–	–	–	–	•	•	•	–	–	–	–
3374-27	▶ T 8331	–	–	–	–	–	–	–	–	–	•	•	•	•
Electric actuators with process controllers for domestic hot water heating														
5725-310	▶ T 5724	•	•	•	–	–	–	–	–	–	–	–	–	–
5725-313[1)]	▶ T 5724	•	•	•	–	–	–	–	–	–	–	–	–	–
5725-320	▶ T 5724	–	–	–	•	•	•	–	–	–	–	–	–	–
5725-323[1)]	▶ T 5724	–	–	–	•	•	•	–	–	–	–	–	–	–
Electric actuators with process controller for heating and cooling applications														
5725-810	▶ T 5724-8	•	•	•	–	–	–	–	–	–	–	–	–	–
5725-820	▶ T 5724-8	–	–	–	•	•	•	–	–	–	–	–	–	–

[1)] Version with half transit time

Dimensions and weights with actuator

Table 6: *Control valves with Type 3213 Globe Valve*

Nominal size	DN	15	20	25	32	40	50
Overall length L	mm	130	150	160	180	200	230
Height H1	mm	60	60	60	125	125	125
Height H	mm	190[2)]	190[2)]	190[2)]	255[2)]	255[2)]	255[2)]

Nominal size	DN	15	20	25	32	40	50
Weight[1]	kg (approx.)						
Type 3213/5827		3.1	3.7	4.1	12.5	14.5	16.5
Types 3213/5725-3, 3213/5725-8		3.15	3.75	4.15	12.55	14.55	16.55

1) Version for steam: +0.3 kg

2) The dimension H increases by 3 mm when a Type 5827 Actuator is used.

Dimensions and weights with actuator

Table 7: *Control valves with Type 3214 Globe Valve*

Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Overall length L	mm	130	150	160	180	200	230	290	310	350	400	480	600	730
Height H1	mm	225	225	225	225	225	225	305	305	355	580	710	860	860
Height H	mm	350[2]	350[2]	350[2]	350[2]	350[2]	350[2]	599	599	649	873	1003	1153	1153
Height H2	mm	55	55	55	72	72	72	100	100	120	145	175	270	270
Height H3	mm	–	–	–	–	–	–	–	–	–	1050	1180	1330	1330
Weight[1]	kg (approx.)													
Type 3214/5827		7.0	7.5	8.5	15.0	15.5	18.0	–	–	–	–	–	–	–
Types 3214/5725-3, 3214/5725-8		7.05	7.55	8.55	15.05	15.55	18.05	–	–	–	–	–	–	–
Type 3214/3374-21		–	–	–	–	–	–	35	40	47	–	–	–	–
Type 3214/3374-27		–	–	–	–	–	–	–	–	–	82	123	266	310

1) Version up to 220 °C: +0.3 kg · Version for PN 25 and 40: +15 %

2) The dimension H increases by 3 mm when a Type 5827 Actuator is used.

Dimensional drawings of electric control valves with Type 3213 Globe Valve

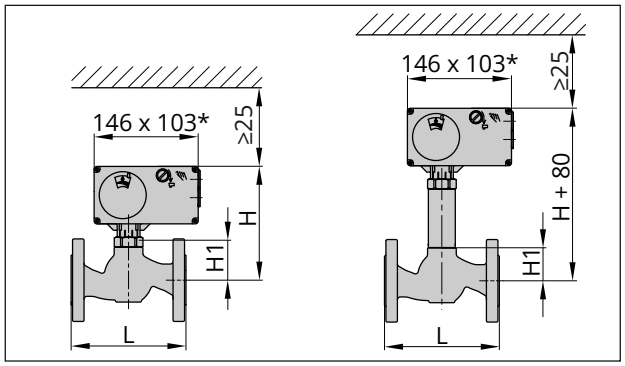


Fig. 7: *Type 3213/5725-3: DN 15 to 50*
Type 3213/5725-8: DN 15 to 50
Version for steam (right)

* **Dimensions for TROVIS 5725-3x3 Actuator:** 146x136

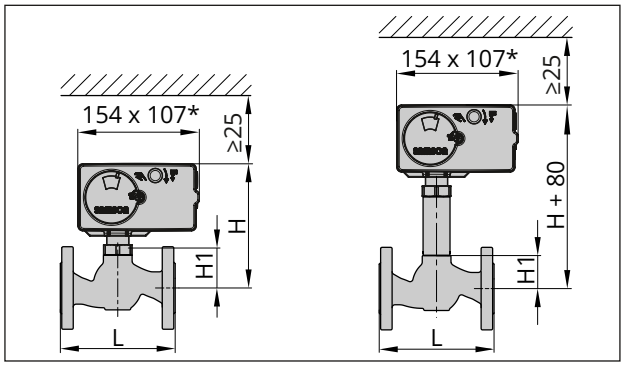


Fig. 8: *Type 3213/5827: DN 15 to 50*
Version for steam (right)

* **Dimensions for actuators with double stroking speed:** 154x140

Dimensional drawings of electric control valves with Type 3214 Globe Valve

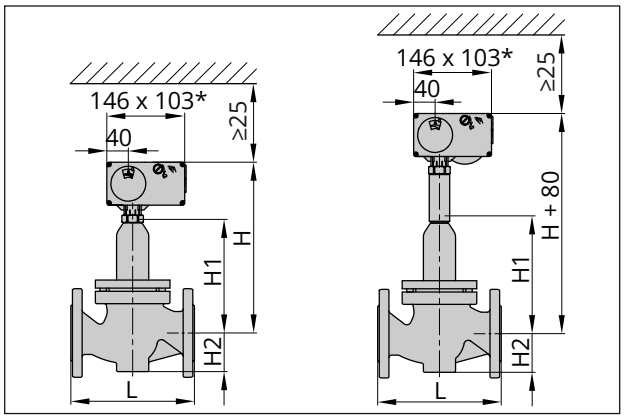


Fig. 9: *Type 3214/5725-3: DN 15 to 50*
Type 3214/5725-8: DN 15 to 50
Version up to 220 °C (right)

* **Dimensions for TROVIS 5725-3x3 Actuator:** 146x136

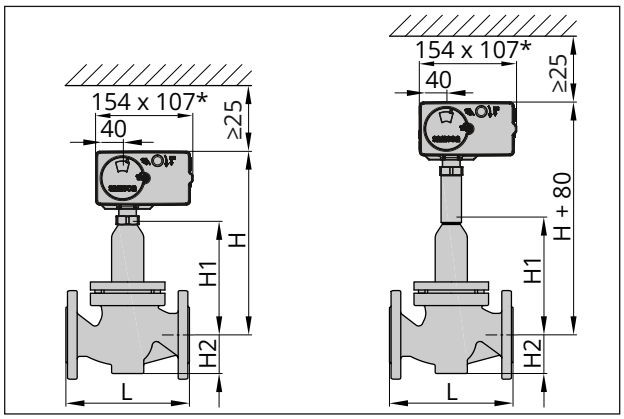


Fig. 10: *Type 3214/5827: DN 15 to 50*
Version up to 220 °C (right)

* **Dimensions for actuators with double stroking speed:** 154x140

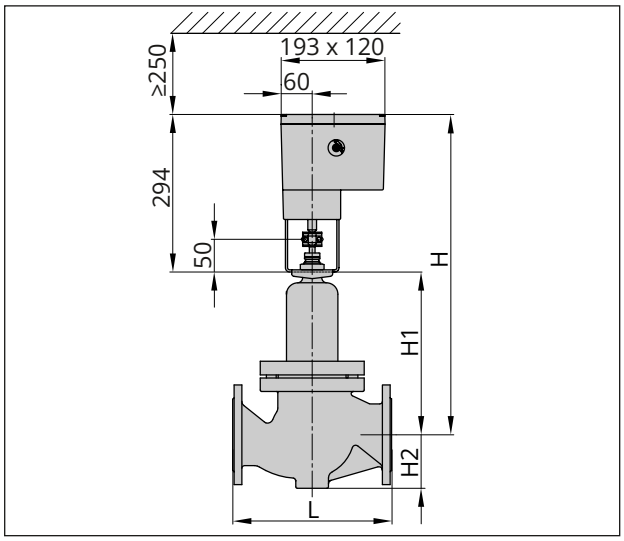


Fig. 11: *Type 3214/3374-21: DN 65 to 100*

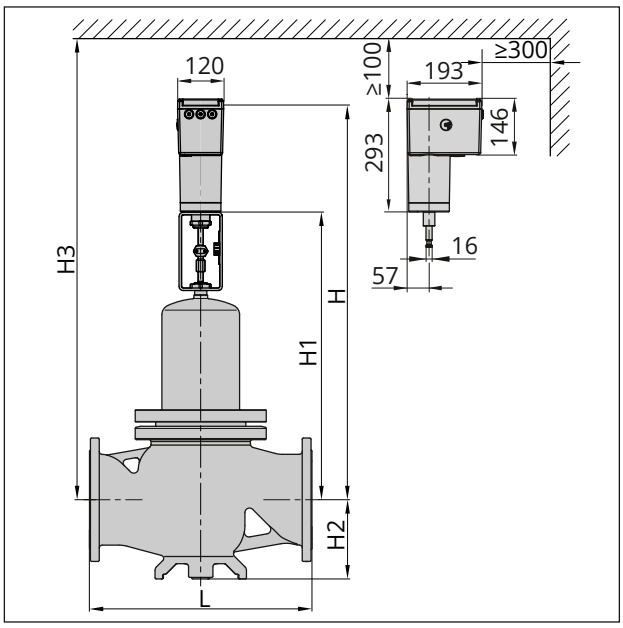


Fig. 12: *Type 3214/3374-27: DN 125 to 250*