

# Electric Control Valves with fail-safe action, typetested Types 3213/5825, 3213/5725, 3213/5725-7 and 3214/5825, 3214/3374, 3214/3274, 3214/5725, 3214/5725-7



## Single-seated Globe Valve Type 3213, unbalanced Single-seated Globe Valve Type 3214, balanced

### Application

Globe valves mounted on electric actuators with fail-safe action to protect heating systems against excess temperatures or pressures.

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



The control valves consist of a globe valve and an electric actuator with fail-safe action. 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 typetested by the German technical inspectorate (TÜV) according to DIN EN 14597 and have been defined as shut-off and control devices.

### Typetested versions

– With **Type 3213 Globe Valve** · Unbalanced

Electric control valves		
Type 3213/5825	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Electric control valve/controller with electric actuator for domestic hot water heating		
Type 3213/5725	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Electric control valve/controller with electric actuator for heating and cooling applications		
Type 3213/5725-7	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 3214/5825	PN 16 to 40	DN 15 to 50
Type 3214/3374	PN 16 to 40	DN 65 to 100
Type 3214/3274	PN 16 to 40	DN 125 to 250
Electric control valve/controller with electric actuator for domestic hot water heating		
Type 3214/5725	PN 16 to 40	DN 15 to 50
Electric control valve/controller with electric actuator for heating and cooling applications		
Type 3214/5725-7	PN 16 to 40	DN 15 to 50



Fig. 1 · Type 3213/5825

Fig. 2 · Type 3214/3374

Fig. 3 · Type 3214/3274

### Register number

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

### Also available:

Type 3213 and Type 3214 Globe Valves with electric actuators or pneumatic actuators, not type-tested (refer to T 5868 EN).

### Principle of operation (Fig. 6)

A safety mechanism in the actuator is triggered when the voltage supply fails or the control signal is interrupted by the limitation equipment due to the temperature or pressure exceeding the adjusted 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 position of the plug stem determines the cross-sectional area released between the seat (2) and the plug (3).

In the pressure-balanced Type 3214 Valves, the upstream pressure is transmitted through a hole in the plug stem (6) and acts on the outside of the bellows. The downstream pressure 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 I. Refer to Data Sheet T 8081 EN for further details.

The plug is moved by changing the control signal acting on the actuator.

The valve and actuator have a force-locking connection for nominal sizes up to DN 50 and a form-fit connection for nominal sizes DN 65 and larger.

### Electric actuators

The Types 5825 and 3374 Electric Actuators as well as the Type 3274 Electrohydraulic Actuator can be controlled either using a three-stepping point signal or, in the version with positioner, with continuous signals from 0 (4) to 20 mA or from 0 (2) to 10 V. Various optional electric accessories can be mounted onto the control valve.

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

- **T 5824 EN:** Types 5824 and 5825 Electric Actuators
- **T 8331 EN:** Type 3374 Electric Actuator
- **T 8340 EN:** Type 3274 Electrohydraulic Actuator

### Controllers with electric actuators

The actuator consists of a digital controller which is integrated into the electric actuator housing. Type 5725 is suitable for domestic hot water heating, whereas Type 5725-7 is suited for heating and cooling applications. They are controlled by continuous signals which can be adjusted in ranges from 0 to 20 mA or 0 to 10 V.

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

- **T 5725 EN:** Types 5724 and 5725 Controllers with Electric Actuators for domestic hot water heating
- **T 5725-7 EN:** Type 5725-7 Controller with Electric Actuator for heating and cooling applications

### Installation of the control valve

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

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

### Ordering text

Unbalanced Control Valve Type (type-tested):

- 3213/5825,
- 3213/5725,  3213/5725-7

Version for steam:  yes,  no

Balanced Control Valve Type (type-tested):

- 3214/5825,  3214/3374,  3214/3274,
- 3214/5725,  3214/5725-7

Version up to 220 °C:  yes,  no

- Nominal size: DN ...
- Nominal pressure: PN ...
- $K_{VS}$  coefficient: ...
- Max. differential pressure  $\Delta p$  ...
- Max. temperature ...
- Body material ...

Further specifications for electric actuator

- Control signal:  three-stepping point signal,  continuous (positioner)
- Power supply ...
- Electric additional equipment ...

### Terms for control valve sizing

DIN EN 60534, Parts 2-1 and 2-2:  $F_L = 0.95$   $x_T = 0.75$

### Selection and sizing of the control valve

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

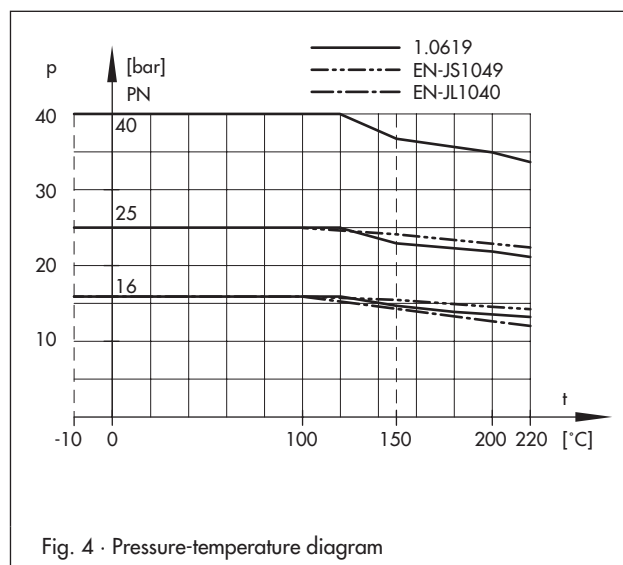
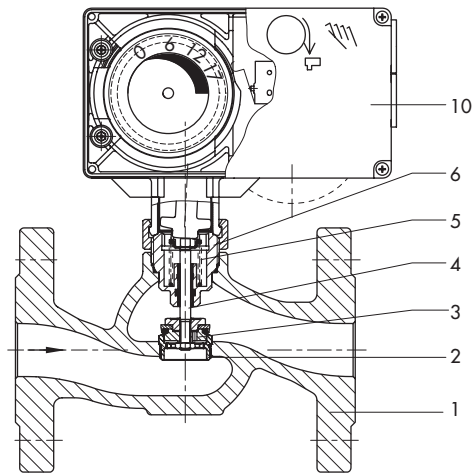
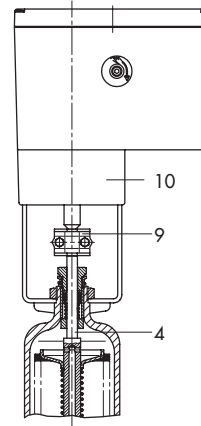


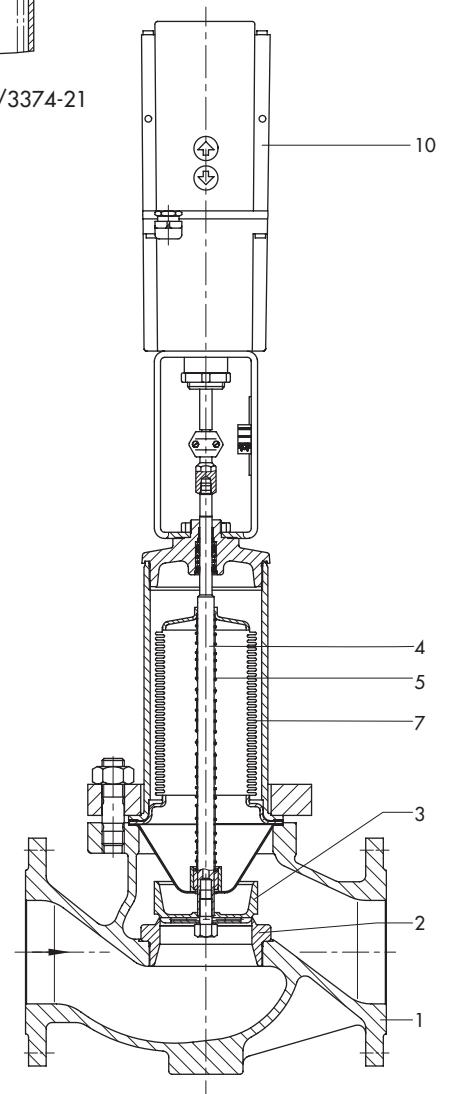
Fig. 4 · Pressure-temperature diagram



Functional diagram of Type 3213/5825



Type 3214/3374-21



Type 3214/3274

- |                |                     |
|----------------|---------------------|
| 1 Valve body   | 6 Guide nipple      |
| 2 Seat         | 7 Balancing bellows |
| 3 Plug         | 9 Stem connector    |
| 4 Plug stem    | 10 Actuator         |
| 5 Valve spring |                     |

Fig. 5 · Functional diagrams

**Table 1 · Technical data**

<b>Type 3213 Globe Valve</b>														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Nominal pressure	PN	25			16									
Max. perm. temperature (upright)	°C	150			150									
Version for steam	°C	200			On request									
Rated travel	mm	6			12			-						
Rangeability		50 : 1												
Leakage rate acc. to DIN EN 60534-4		Class I ( $\leq 0.05$ % of the $K_{VS}$ coefficient)												
<b>Type 3214 Globe Valve</b>														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Nominal pressure	PN	16 to 40												
Max. perm. temperature (upright)	°C	150			220			150 <sup>1)</sup>						
Version up to 220 °C	°C	220			-									
Rated travel	mm	6			12			15			30			
Rangeability		50 : 1			40 : 1			30 : 1						
Leakage rate acc. to DIN EN 60534-4		Class I ( $\leq 0.05$ % of the $K_{VS}$ coefficient)												

1) Special version with metal-seated plug or plug with PTFE soft sealing: 220 °C

**Table 2 · Materials** (Material number acc. to DIN EN)

<b>Type 3213 Globe Valve</b>				
Nominal pressure		PN 16	PN 25	PN 40
Valve body		EN-JL1040 (GG-25)	EN-JS1049 (GGG-40.3)	-
Seat		1.4305	1.4305	-
Plug		1.4305 with metal sealing	Brass with EPDM soft sealing or FPM (FKM) seal	-
Special version		-	$K_{VS} = 0.1$ to 2.5: 1.4305 with metal sealing	-
Plug stem		1.4305		-
Spring		1.4310		-
Guide nipple		Brass with EPDM seal or FPM (FKM) seal		-
Extension bonnet (version for steam)		1.4571		-
<b>Type 3214 Globe Valve</b>				
Nominal pressure		PN 16	PN 25	PN 40
Valve body		EN-JL1040 (GG-25)	EN-JS1049 (GGG40.3) or 1.0619 (GS-C 25)	1.0619 (GS-C 25)
Special version		EN-JS1049 or 1.0619	-	-
Seat and plug		CrNi steel · Special version with EPDM soft sealing		
DN 15 to 100		CrNiMo steel with EPDM soft sealing · Special version with metal sealing		
DN 125 to 250				
Plug stem		1.4301		
Spring		-		
Bellows housing		1.0425		
Balancing bellows		1.4571		
Guide nipple (DN 15 to 50)		Brass with EPDM seal or FPM (FKM) seal		
Packing (DN 65 to 250)		V-ring packing PTFE with carbon		
Extension bonnet for version up to 220 °C		1.4305 with EPDM seal or FPM (FKM) seal		

**Table 3 · Overview: Nominal sizes, K<sub>V</sub>S coefficients and maximum differential pressures**

<b>Type 3213 Globe Valve</b>														
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 <sub>V</sub> S coefficient		4	6.3	8	16	20	32							
Max. differential pressure	bar	10	10	10	2.9	2.9	1.6							
<b>Special version</b>														
K <sub>V</sub> S coefficient	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						
<b>Type 3214 Globe Valve</b>														
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 <sub>V</sub> S coefficient		4	6.3	8	16	20	32	50	80	125	200	320	500	600
with flow divider		-	-	-	-	-	-	38	60	95	150	210	315	375
Reduced K <sub>V</sub> S coefficient		2.5	2.5 · 4	2.5 · 4 · 6.3	8	8 · 16	8 · 16 · 20	-	-	-	-	-	-	-
Max. differential pressure	bar	25	25	25	25	25	25	20	20	16	16	12 <sup>1)</sup>	10 <sup>1)</sup>	10 <sup>1)</sup>

1) A special version must be used on using a Type 3274 Actuator in sizes DN 150 to DN 250 for applications with steam.

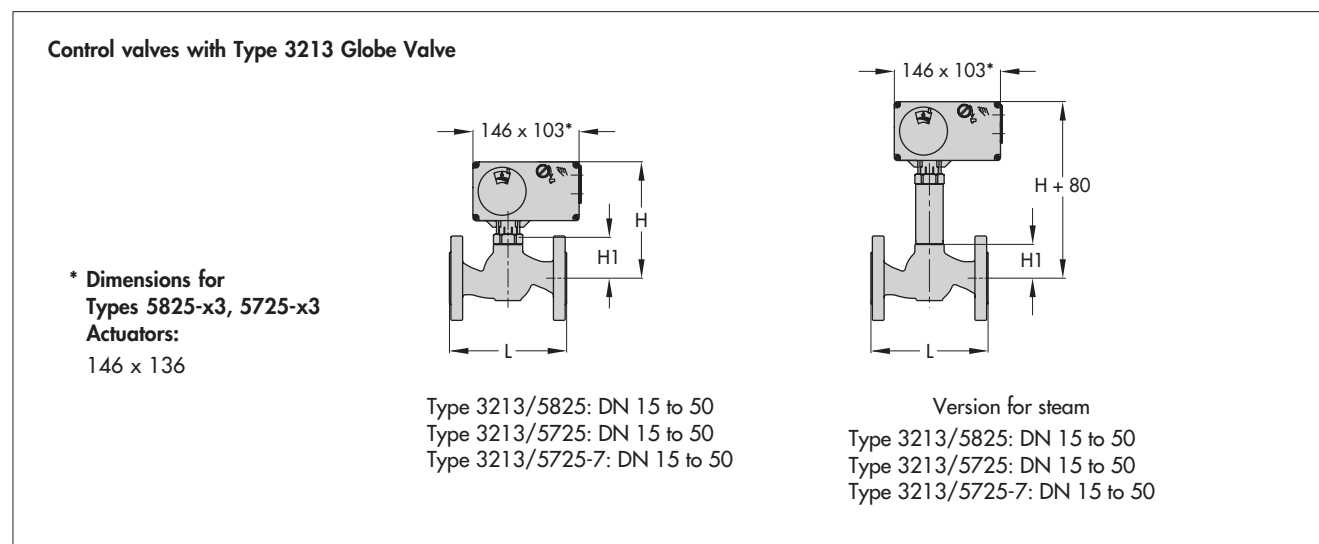
**Table 4 · Possible combinations**

<b>Type 3213 Globe Valve/actuator</b>														
Type	Refer to Data Sheet	Nominal size DN												
		15	20	25	32	40	50	65	80	100	125	150	200	250
<b>Electric actuators</b>														
5825-10	T 5824 EN	•	•	•	–									
5825-13 <sup>1)</sup>		•	•	•	–									
5825-20		–			•	•	•	–						
5825-23 <sup>1)</sup>		–			•	•	•							
<b>Controller with electric actuator for domestic hot water heating</b>														
5725-10	T 5724 EN	•	•	•	–									
5725-13 <sup>1)</sup>		•	•	•	–									
5725-20		–			•	•	•	–						
5725-23 <sup>1)</sup>		–			•	•	•							
<b>Controller with electric actuator for heating and cooling applications</b>														
5725-710	T 5725-7 EN	•	•	•	–									
5725-720		–			•	•	•	–						
<b>Type 3214 Globe Valve/actuator</b>														
Type	Refer to Data Sheet	Nominal size DN												
		15	20	25	32	40	50	65	80	100	125	150	200	250
<b>Electric actuators</b>														
5825-10	T 5824 EN	•	•	•				–						
5825-13 <sup>1)</sup>		•	•	•				–						
5825-20		–			•	•	•	–						
5825-23 <sup>1)</sup>		–			•	•	•	–						
3374-21	T 8331 EN	–					•	•	•	–				
3274-23	T 8340 EN	–									•	•	•	•
<b>Controller with electric actuator for domestic hot water heating</b>														
5725-10	T 5724 EN	•	•	•				–						
5725-13 <sup>1)</sup>		•	•	•				–						
5725-20		–			•	•	•	–						
5725-23 <sup>1)</sup>		–			•	•	•	–						
<b>Controller with electric actuator for heating and cooling applications</b>														
5725-710	T 5725-7 EN	•	•	•				–						
5725-720		–			•	•	•	–						

<sup>1)</sup> Version with half transit time

## Table 5 · Dimensions and weights

Table 5.1 · Control valves with Type 3213 Globe Valve								
Nominal size	DN		15	20	25	32	40	50
Length	Length L	mm	130	150	160	180	200	230
Height	Height H1	mm	60	60	60	125	125	125
	Height H	mm	190	190	190	255	255	255
Weight, approx. (version for steam + 0.3 kg)								
Type 3213/5825		kg	3.1	3.7	4.1	12.5	14.5	16.5
Types 3213/5725, 3213/5725-7		kg	3.15	3.75	4.15	12.55	14.55	16.55

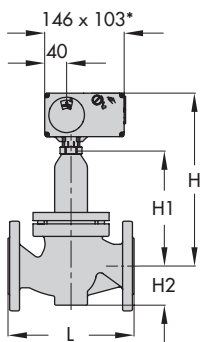


**Table 5.2 · Control valves with Type 3214 Globe Valve**

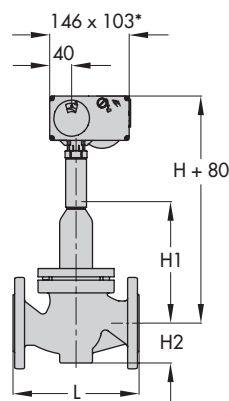
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
Length	Length L	mm	130	150	160	180	200	230	290	310	350	400	480	600	730
Height	Height H1	mm	225	225	225	225	225	225	305	305	355	580	710	860	860
	Height H	mm	350	350	350	350	350	350	599	599	649	900	1030	1180	1180
	Height H2	mm	55	55	55	72	72	72	100	100	120	145	175	270	270
	Height H3	mm	-									1050	1180	1330	1330
Weight, approx. (version up to 220 °C + 0.3 kg · Version for PN 25 and PN 40 + 15 %)															
Type 3214/5825	kg	7	7.5	8.5	15	15.5	18	-							
Type 3214/5725 Typ 3214/5725-7	kg	7.05	7.55	8.55	15.05	15.55	18.05	-							
Type 3214/3374	kg	-						35	40	47	-				
Type 3214/3274	kg	-						-			87	128	271	315	

**Control valves with Type 3214 Globe Valve**

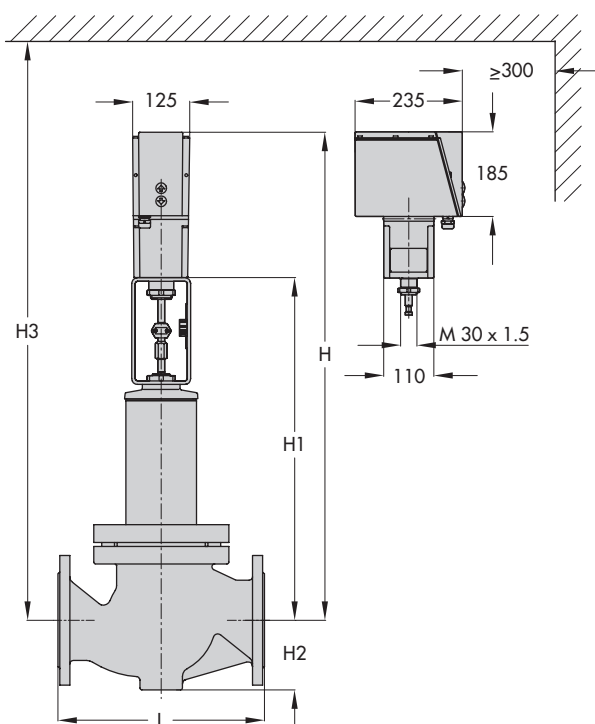
\* Dimensions for  
Types 5825-x3, 5725-x3  
Actuators:  
146 x 136



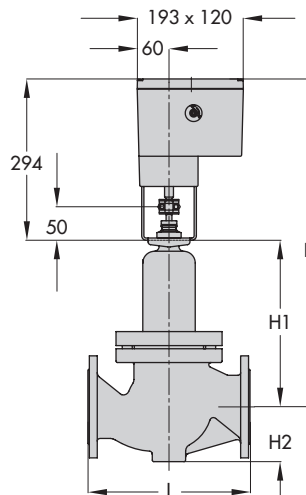
Type 3214/5825: DN 15 to 50  
Type 3214/5725: DN 15 to 50  
Type 3214/5725-7: DN 15 to 50



Version up to 220 °C  
Type 3214/5825: DN 15 to 50  
Type 3214/5725: DN 15 to 50  
Type 3214/5725-7: DN 15 to 50



Type 3214/3274: DN 125 to 250



Type 3214/3374-21: DN 65 to 100

Specification subject to change without notice.

