

Electric Control Valves Types 3213/5857, 3213/5824 and Types 3214/5824, 3214/3374, 3214/3274



Pneumatic Control Valves Type 3213/2780 and Type 3214/2780-2

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

Application

Control valves for heating, ventilation and air-conditioning
DN 15 to DN 50 · PN 16 to PN 40 · Versions up to 150 °C and up to 220 °C



The control valves consist of either an unbalanced Type 3213 Globe Valve or a balanced Type 3214 Globe Valve with either an electric, electrohydraulic or pneumatic actuator.

Special features

- Single-seated Type 3213 Globe Valve without pressure balancing or Type 3214 Globe Valve with pressure balancing
- Type 3213 Valve available as special version for steam
- Type 3214 in DN 65 and larger also available with flow divider
- Connection between valve and actuator: Force-locking up to DN 50, form-fit connection for DN 65 to DN 250

Versions

- With **Type 3213 Globe Valve** · Unbalanced, in nominal sizes DN 15 to 50

Electric control valves		
Type 3213/5857	PN 25	DN 15 to 25
Type 3213/5824	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Pneumatic control valves		
Type 3213/2780-1	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Type 3213/2780-2 · Fig. 1 w. integral positioner attachment	PN 25	DN 15 to 25
	PN 16	DN 32 to 50

- With **Type 3214 Globe Valve** · Balanced by a stainless steel bellows, in nominal sizes DN 15 to 250

Electric control valves		
Type 3214/5824 · Fig. 2	PN 16 to 40	DN 15 to 50
Type 3214/3374 · Fig. 3	PN 16 to 40	DN 65 to 250
Type 3214/3274 · Fig. 4	PN 16 to 40	DN 125 to 250
Pneumatic control valves		
Type 3214/2780-2 w. integral positioner attachment	PN 16 to 40	DN 65 to 100

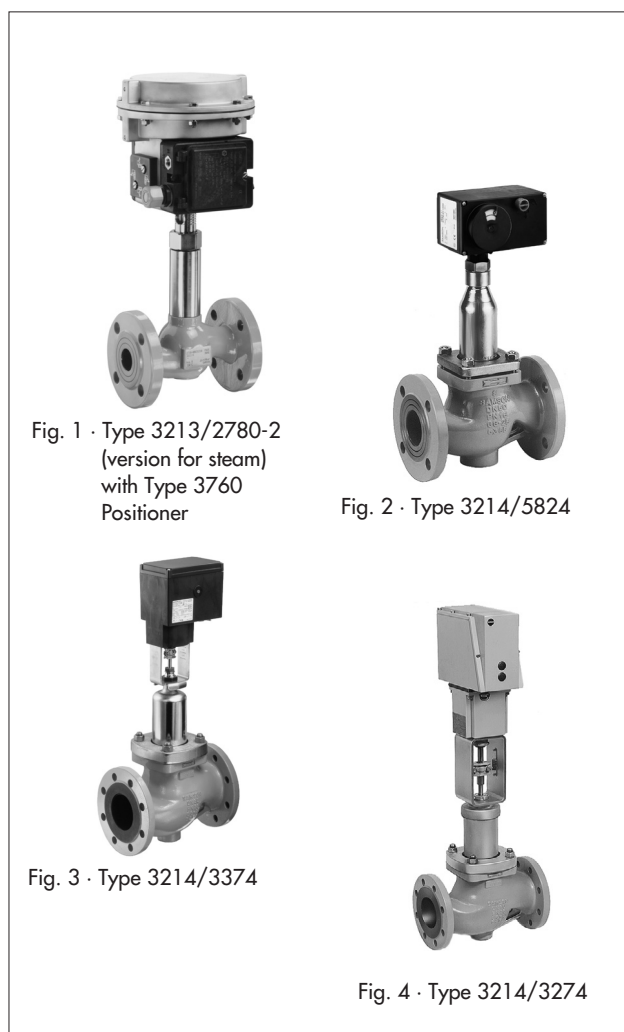


Fig. 1 · Type 3213/2780-2 (version for steam) with Type 3760 Positioner

Fig. 2 · Type 3214/5824

Fig. 3 · Type 3214/3374

Fig. 4 · Type 3214/3274

Also available:

- Type 3213 and Type 3214 Globe Valves mounted on controllers with electric actuators (refer to T 5768 EN)
- Type 3213 and Type 3214 Globe Valves mounted on electric actuators with safety function (refer to T 5869 EN)
- Type 3213 and Type 3214 Globe Valves mounted on controllers with electric actuators with safety function (refer to T 5769 EN)

Principle of operation (Fig. 6)

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 plug is moved by changing the control signal acting on the actuator. The signal of Types 5857, 5824 and 3374 **Electric Actuators** as well as Type 3274 **Electrohydraulic Actuator** is a three-point stepping signal or, when an additional electric positioner is used, an analog signal of 0 to 20 mA, 4 to 20 mA or 0 (2) to 10 V-.

The electric actuators can be equipped with additional accessories.

Refer to Data Sheet for details	
Type 5857	-> Data Sheet T 5857 EN
Type 5824	-> Data Sheet T 5824 EN
Type 3374	-> Data Sheet T 8331 EN
Type 3274	-> Data Sheet T 8340 EN

A signal pressure between 0.4 to 1 bar is supplied to the loading pressure connection of the Type 2780-1 **Pneumatic Actuator**. The signal pressure of Type 2780-2 Pneumatic Actuator depends on the nominal size and fail-safe position of the valve as follows:

- Type 3213: 0.4 to 2 bar
- Type 3214: 2.1 to 3.3 bar for "Actuator stem extends"
0.4 to 1.4 bar for "Actuator stem retracts"

Refer to Data Sheet for details	
Type 2780-1/-2	-> Data Sheet T 5840 EN

Installation

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

Ordering text

Electric control valve (see T 5857 EN, T 5824 EN, T 8331 EN, T 8340 EN)

- Type 3213/5857, Type 3213/5824,
Type 3214/5824, Type 3214/3374, Type 3214/3274
- Power supply ...V, ... Hz
- With/without limit switches, potentiometer, positioner

Pneumatic control valve (see also T 5840 EN)

- Type 3213/2780-1, Type 3213/2780-2,
Type 3214/2780-2
- Type 2780-2 with/without Type 3760 Positioner
- DN ..., PN ..., K_{VS} ...,
- Max. differential pressure Δp ... bar, max. temperature ... °C
- Body material ...

Terms for control valve sizing

acc. to 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 appropriate K_V coefficient according to DIN EN 60534.
2. Select valve size and K_{VS} coefficient from Table 2.
3. Check permissible differential pressure from Table 2.
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 actuator:
 - Type 5857 -> T 5857 EN
 - Type 5824 -> T 5824 EN
 - Type 3374 -> T 8331 EN
 - Type 3274 -> T 8340 EN
 - Type 2780 -> T 5840 EN
6. Select materials, pressure and temperature from Tables 1, 2, from the technical data and the pressure-temperature diagram (Fig. 5).

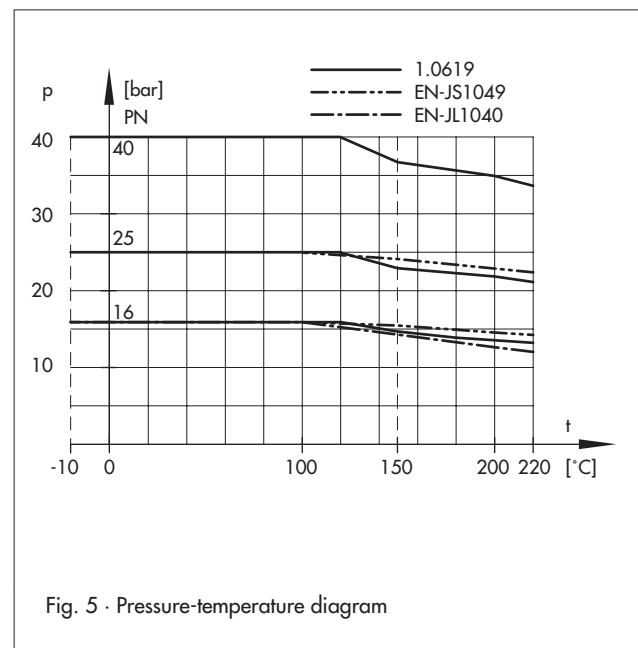
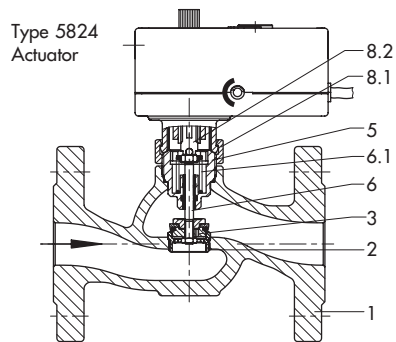
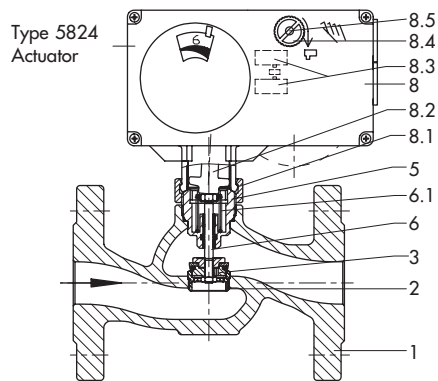


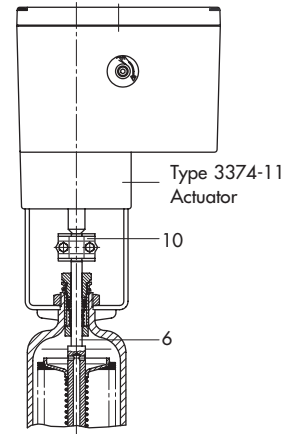
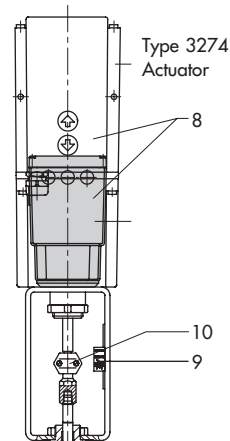
Fig. 5 · Pressure-temperature diagram



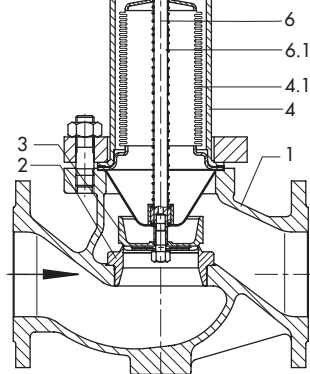
Type 3213/5857



Type 3213/5824

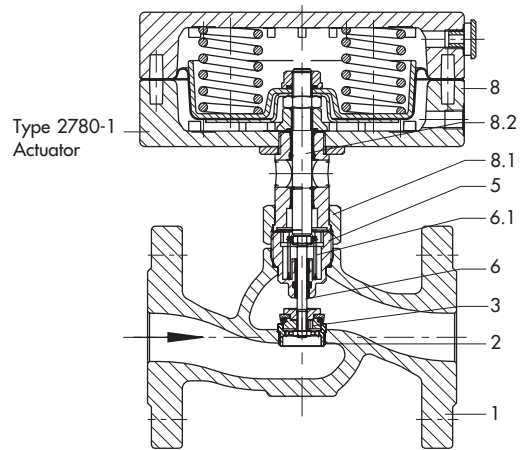


Partial view of Type 3214/3374-11



Type 3214/3274
Type 3214/3374-15

- 1 Valve body
- 2 Seat
- 3 Plug
- 4 Bellows housing
- 4.1 Balancing bellows
- 5 Adapter
- 6 Plug stem
- 6.1 Spring
- 8 Actuator
- 8.1 Coupling nut
- 8.2 Actuator stem
- 8.3 Torque switch
- 8.4 Handwheel
- 8.5 Actuating shaft
- 9 Travel indicator scale
- 10 Stem connector



Type 3213/2780-1

Fig. 6 · Functional diagrams

Table 1.1 · Technical data

Type 3213 Globe Valve														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Nominal pressure		PN 25			PN 16									
Perm. temperature (upright)	°C	150			150									
Version for steam	°C	200			On request									
Rated travel	mm	6			12									
Rangeability		50 : 1												
Leakage class		Class I (< 0.05 % of Kvs)												
Type 3214 Globe Valve														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Nominal pressure		PN 16 to 40												
Perm. temperature (upright)	°C	150			220			150 ¹⁾						
Version up to 220 °C	°C	220						-						
Rated travel	mm	6			12			15			30			
Rangeability		50 : 1			40 : 1			30 : 1						
Leakage class		Class I (< 0.05 % of Kvs)												

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

Table 1.2 · Materials · Material number acc. to DIN EN

Type 3213 Globe Valve				
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		-	Kvs = 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		-
Insulating section (version for steam)		1.4571		-
Type 3214 Globe Valve				
Nominal pressure		PN 16	PN 25	PN 40
Valve body		EN-JL1040 (GG-25)	EN-JS1049 (GGG-40.3) or 1.0619 (GS-C 25)	1.0619 (GS-C 25)
Special version		EN-JS1049 or 1.0619	-	-
Seat and plug	DN 15 to 100	CrNi steel · Special version with EPDM soft sealing		
	DN 125 to 250	CrNiMo steel with EPDM soft sealing · Special version with metal sealing		
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		
Insulating section for version up to 220 °C		1.4305 with EPDM seal or FPM (FKM) seal		

Table 2 · Overview: 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				12									
K _{Vs}		4	6.3	8	16	20	32	-							
Maximum differential pressure in bar															
Types 2780 and 5824		10			2.9	2.9	1.6	-							
Type 5857		5			-										
Special version															
K _{Vs}	0.1 · 0.16 0.25 · 0.4 0.63 · 1.0 1.6	2.5	2.5	-			40	-							
Maximum differential pressure in bar															
Types 2780 and 5824		20	10	10	-	-	-	1	-						
Type 5857		20	5	5	5	-	-	-	-						
Type 3214 Globe Valve															
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
Rated travel	mm	6				12				15			30		
K _{Vs}		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 _{Vs}		2.5	2.5 · 4	2.5 · 4 · 6.3	8	8 · 16	8 · 16 · 20	-							
Max. diff. pressure		25						20 ¹⁾		16	12 ²⁾	10 ²⁾			

1) With Type 2780-2 Actuator: $\Delta p = 16$ bar

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

Table 3 · Possible combinations for Type 3213 and Type 3214 Globe Valves/actuators

Type 3213 Globe Valve															
Actuator	Type	Refer to Data Sheet for details	Nominal size DN												
			15	20	25	32	40	50	65	80	100	125	150	200	250
Electric	5857	T 5857 EN	•	•	•	-	-	-							
	5824-10	T 5824 EN	•	•	•	-	-	-							
	5824-13		•	•	•	-	-	-							
	5824-20		-	-	-	•	•	•	-						
	5824-23		-	-	-	•	•	•							
Pneumatic	2780-1	T 5840 EN	•	•	•	•	•	•							
	2780-2		•	•	•	•	•	•							
Type 3214 Globe Valve															
Actuator	Type	Refer to Data Sheet for details	Nominal size DN												
			15	20	25	32	40	50	65	80	100	125	150	200	250
Electric	5824-10	T 5824 EN	•	•	•	-	-	-	-	-	-	-	-	-	-
	5824-13		•	•	•	-	-	-	-	-	-	-	-	-	
	5824-20		-	-	-	•	•	•	-	-	-	-	-	-	
	5824-23		-	-	-	•	•	•	-	-	-	-	-	-	
	3374-11	T 8331 EN	-	-	-	-	-	-	•	•	•	-	-	-	
	3374-15		-	-	-	-	-	-	-	-	-	•	•	•	
Electro-hydraulic	3274-12 ¹⁾	T 8340 EN	-	-	-	-	-	-	-	-	-	•	•	•	
	3274-16 ¹⁾		-	-	-	-	-	-	-	-	-	•	•	•	
Pneumatic	2780-2	T 5840 EN	-	-	-	-	-	-	•	•	•	-	-	-	

1) Other actuators on request

Table 4 · Dimensions and weights with actuator

Table 4.1 · Type 3213 Globe Valves														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Length L	mm	130	150	160	180	200	230							
Height H1	mm	60	60	60	125	125	125							
Height H	mm													
Type 3213/5857		150	150	150	–	–	–							
Type 3213/5824		190	190	190	255	255	255							
Type 3213/2780-1		190	190	190	255	255	255							
Type 3213/2780-2		290	290	290	355	355	355							
Weight ¹⁾	approx. kg													
Type 3213/5857		3.0	3.6	4.0	–	–	–							
Type 3213/5824		3.1	3.7	4.1	12.3	14.3	16.3							
Type 3213/2780-1		4.3	4.9	5.3	13.5	15.5	17.5							
Type 3213/2780-2		5.5	6.1	6.5	14.7	16.7	18.7							

¹⁾ Version for steam: add 0.3 kg

Table 4.2 · Type 3214 Globe Valves														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Length L	mm	130	150	160	180	200	230	290	310	350	400	480	600	730
Height H1	mm	235	235	235	235	235	235	305	305	355	580	710	860	860
Height H	mm													
Type 3214/5824		350	350	350	350	350	350	–	–	–	–	–	–	–
Type 3214/3374		–	–	–	–	–	–	599	599	649	784	914	1064	1064
Type 3214/3274 ²⁾		–	–	–	–	–	–	–	–	–	900	1030	1180	1180
Type 3214/2780-2		–	–	–	–	–	–	583	583	633	–	–	–	–
Height H2	mm	55	55	55	72	72	72	100	100	120	145	175	270	270
Height H3	mm													
Type 3214/3374		–	–	–	–	–	–	–	–	–	1034	1164	1314	1314
Type 3214/3274 ²⁾		–	–	–	–	–	–	–	–	–	1050	1180	1330	1330
Weight ¹⁾	approx. kg													
Type 3214/5824		7.3	7.5	8.5	15.0	15.5	18.0	–	–	–	–	–	–	–
Type 3214/3374		–	–	–	–	–	–	35	40	47	77	118	261	305
Type 3214/3274		–	–	–	–	–	–	–	–	–	87	128	271	315
Type 3214/2780-2		–	–	–	–	–	–	50.7	55.7	62.7	–	–	–	–

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

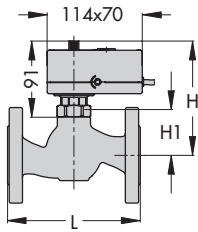
²⁾ The heights H und H3 increase by 95 mm with Type 3274-12 and Type 3214-16 Actuators

Specification subject to change without notice.

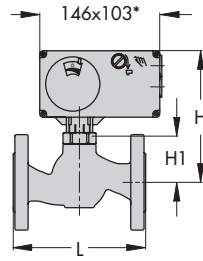
Dimensions in mm

Type 3213 Globe Valve

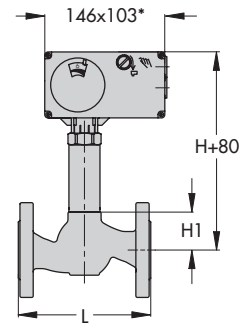
Electric control valves



Type 3213/5857: DN 15 to 25



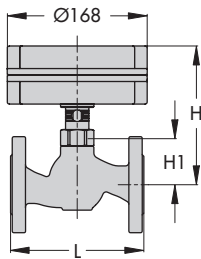
Type 3213/5824-xx: DN 15 to 50



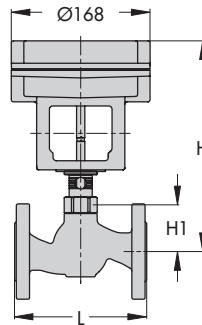
Version for steam
Type 3213/5824-xx: DN 15 to 50

* Dimensions for Type 5824-x3:
146 x 136

Pneumatic control valves



Type 3213/2780-1: DN 15 to 50

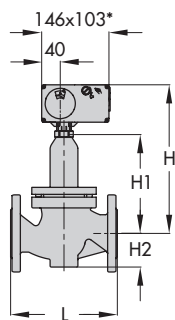


Type 3213/2780-2: DN 15 to 50

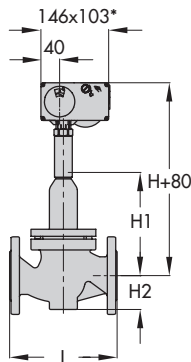
Dimensions in mm

Type 3214 Globe Valve

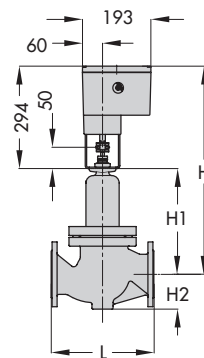
Electric control valves



Type 3214/5824-xx: DN 15 to 50



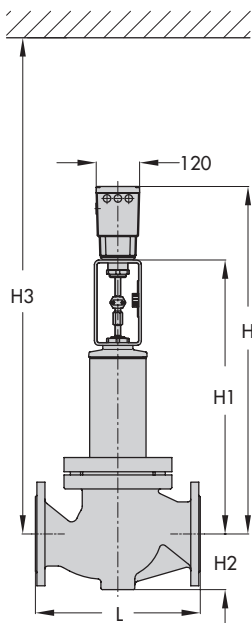
Version up to 220 °C
Type 3214/5824-xx: DN 15 to 50



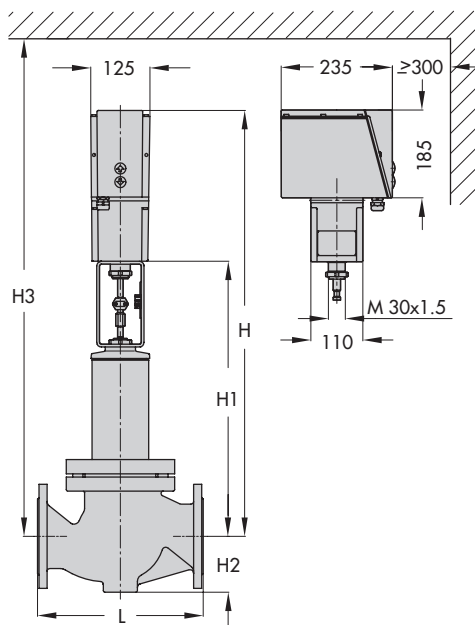
Type 3214/3374-11: DN 65 to 100

* Dimensions for Type 5824-x3:

146 x 136

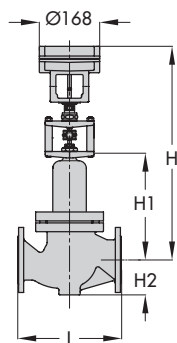


Type 3214/3374-15: DN 125 to 250



Type 3214/3274: DN 125 to 250

Pneumatic control valves



Type 3214/2780-2: DN 65 to 100 (rod-type yoke 1400-7414 required in this case)

