

Electric Control Valves Types 3213/5857, 3213/5824, 3213/5757, 3213/5757-7, 3213/5724 and 3214/5824, 3214/3374, 3214/3274, 3214/5724



Pneumatic Control Valves Types 3213/2780 and 3214/2780

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



Special features

- Single-seated Type 3213 Globe Valve without pressure balancing or Type 3214 Globe Valve balanced by a corrosion-resistant metal bellows
- Type 3213 Valve available as version for steam
- Type 3214 in DN 65 and larger 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

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
Electric control valve/controller with electric actuator for domestic hot water heating		
Type 3213/5757	PN 25	DN 15 to 25
Type 3213/5724	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 3213/5757-7	PN 25	DN 15 to 25
Pneumatic control valves		
Type 3213/2780-1	PN 25	DN 15 to 25
	PN 16	DN 32 to 50
Type 3213/2780-2 ¹⁾	PN 25	DN 15 to 25
	PN 16	DN 32 to 50

– With **Type 3214 Globe Valve** · Balanced

Electric control valves		
Type 3214/5824	PN 16 to 40	DN 15 to 50
Type 3214/3374	PN 16 to 40	DN 65 to 250
Type 3214/3274	PN 16 to 40	DN 125 to 250
Electric control valve/controller with electric actuator for domestic hot water heating		
Type 3214/5724	PN 16 to 40	DN 15 to 50
Pneumatic control valves		
Type 3214/2780-2 ¹⁾	PN 16 to 40	DN 65 to 100

¹⁾ Pneumatic actuator suitable for integral positioner attachment



Fig. 1 · Type 3213/2780-2 with Type 3760 Positioner
Version for steam

Fig. 2 · Type 3214/5824

Fig. 3 · Type 3214/3374

Fig. 4 · Type 3214/3274

Typetested electric control valves:

Type 3213 and Type 3214 Globe Valves with electric actuators with fail-safe action, see Data Sheet T 5869 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 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 5857, 5824 and 3374 Electric Actuators as well the 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 5857 EN:** Type 5857 Electric Actuator
- **T 5824 EN:** Type 5824 Electric Actuator
- **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. Types 5757 and 5724 are suitable for domestic hot water heating, whereas Type 5757-7 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 5757 EN:** Type 5757 Controller with Electric Actuator for domestic hot water heating
- **T 5757-7 EN:** Type 5757-7 Controller with Electric Actuator for heating and cooling applications
- **T 5724 EN:** Types 5724 and 5725 Controller with Electric Actuator for domestic hot water heating

Pneumatic actuators

The Type 2780-1 Pneumatic Actuator uses a control signal from 0.4 to 1 bar and Type 2780-2 uses a control signal from 0.4 to 2 bar which is applied to the loading pressure connection. The pneumatic actuators require a supply pressure of at least 0.2 bar above the maximum bench range. They are available for fail-safe action "Actuator stem extends (FA)" or "Actuator stem retracts (FE)".

The Type 2780-2 Pneumatic Actuator is suitable for integral positioner attachment.

Refer to the data sheet for more details on the pneumatic actuators:

- **T 5840 EN:** Types 2780-1 and 2780-2 Pneumatic Actuator

Installation of the control valve

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

Ordering text

Unbalanced Control Valve Type:

- 3213/5857, 3213/5824,
- 3213/5757, 3213/5757-7, 3213/5724,
- 3213/2780-1, 3213/2780-2

Version for steam: yes, no

Balanced Control Valve Type:

- 3214/5824, 3214/3374, 3214/3274,
- 3214/5724,
- 3214/2780-2

Version up to 220 °C: yes, no

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

Further specifications for electric actuator

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

Further specifications for pneumatic actuator

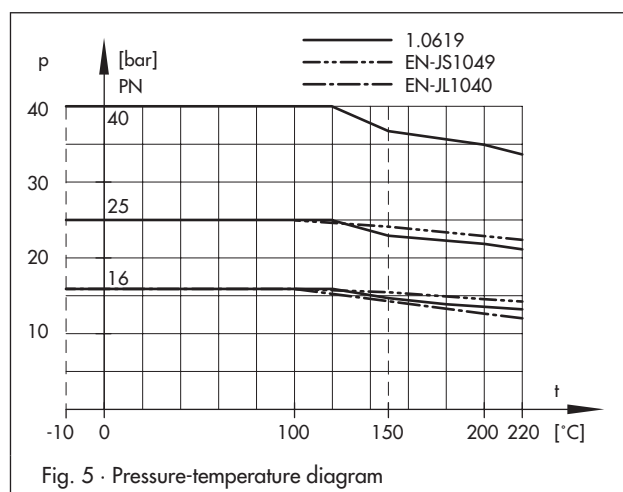
- Loading pressure connection for Type 2780-1: G $\frac{1}{8}$,
 $\frac{1}{8}$ NPT
- Fail-safe position: stem extends (FA), stem retracts (FE)

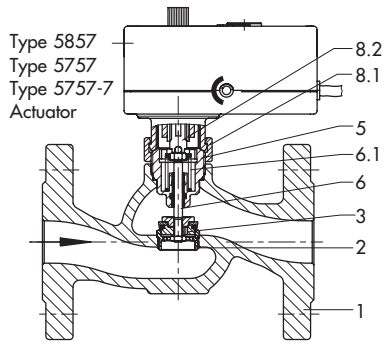
Terms for control valve sizing

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

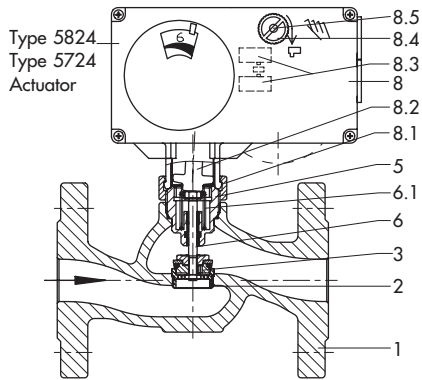
Selection and sizing of the control valve

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, from the technical data of the actuator and the pressure-temperature diagram (Fig. 5).

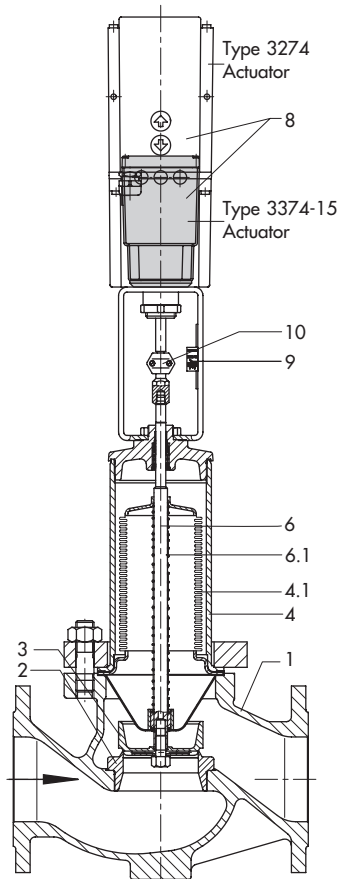




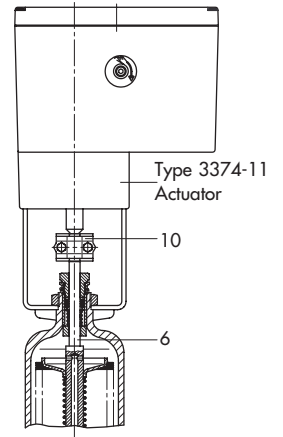
Type 3213/5857
Type 3213/5757
Type 3213/5757-7



Typ 3213/5824
Typ 3213/5724

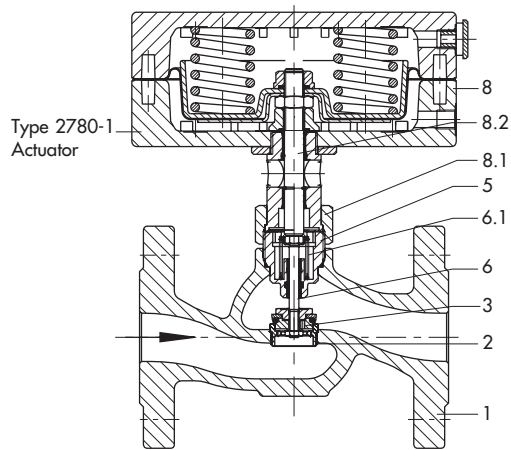


Type 3214/3274
Type 3214/3374-15



Partial view of
Type 3214/3374-11

- 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 · 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			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)												
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												
Max. 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 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)

Type 3213 Globe Valve							
Nominal pressure	PN	16		25		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				-	
Type 3214 Globe Valve							
Nominal pressure	PN	16		25		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	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					
Extension bonnet for version up to 220 °C		1.4305 with EPDM seal or FPM (FKM) seal					

Table 3 · 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	6	6	12	12	12							
K_{VS} coefficient		4	6.3	8	16	20	32							
Maximum differential pressure in bar														
Types 5824/5724/2780		10	10	10	2.9	2.9	1.6							
Types 5857/5757/5757-7		5	5	5	–	–	–							
Special version														
K_{VS} coefficient		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 5824/5724/2780		20	10	10	–	–	–	1						
Types 5857/5757/5757-7		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	6	6	12	12	12	15	15	15	30	30	30	30
K_{VS} 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_{VS} coefficient		2.5	2.5 · 4	2.5 · 4 · 6.3	8	8 · 16	8 · 16 · 20	–	–	–	–	–	–	–
Max. diff. pressure	bar	25	25	25	25	25	25	20 ¹⁾	20 ¹⁾	16	16	12 ²⁾	10 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 4 · Possible combinations

Type 3213 Globe Valve/actuator		Nominal size DN														
Type	Refer to Data Sheet	15	20	25	32	40	50	65	80	100	125	150	200	250		
Electric actuators																
5857	T 5857 EN	•	•	•	–											
5824-10	T 5824 EN	•	•	•	–											
5824-13 ¹⁾		•	•	•	–											
5824-20		–			•	•	•	–								
5824-23 ¹⁾		–			•	•	•	–								
Controller with electric actuator for domestic hot water heating																
5757	T 5757 EN	•	•	•	–											
5724-10	T 5724 EN	•	•	•	–											
5724-13 ¹⁾		•	•	•	–											
5724-20		–			•	•	•	–								
5724-23 ¹⁾		–			•	•	•	–								
Controller with electric actuator for heating and cooling applications																
5757-7	T 5757-7 EN	•	•	•	–											
Pneumatic actuators																
2780-1	T 5840 EN	•	•	•	•	•	•	–								
2780-2		•	•	•	•	•	•	–								
Type 3214 Globe Valve/actuator		Nominal size DN														
Type	Refer to Data Sheet	15	20	25	32	40	50	65	80	100	125	150	200	250		
Electric actuators																
5824-10	T 5824 EN	•	•	•	–											
5824-13		•	•	•	–											
5824-20		–			•	•	•	–								
5824-23		–			•	•	•	–								
3374-11	T 8331 EN	–						•	•	•	–					
3374-15		–						–				•	•	•	•	
3274-12 ²⁾	T 8340 EN	–						–				•	•	•	•	
3274-16 ²⁾		–						–				•	•	•	•	
Controller with electric actuator for domestic hot water heating																
5724-10	T 5724 EN	•	•	•	–											
5724-13 ¹⁾		•	•	•	–											
5724-20		–			•	•	•	–								
5724-23 ¹⁾		–			•	•	•	–								
Pneumatic actuators																
2780-2 ³⁾	T 5840 EN	–						•	•	•	–					

1) Version with half transit time

2) Other actuators on request

3) Type 3214 Valves in combination with this actuator with rod-type yoke: Order no. 1400-7414

Table 5 · Dimensions and weights with actuator

Table 5.1 · Control valves with Type 3213 Globe Valve							
Nominal size	DN	15	20	25	32	40	50
Length L	mm	130	150	160	180	200	230
Height H1	mm	60	60	60	125	125	125
Height H	mm						
Types 3213/5857, 3213/5757, 3213/5757-7		150	150	150	-		
Types 3213/5824, 3213/5724		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						
Types 3213/5857, 3213/5757, 3213/5757-7		3.0	3.6	4.0	-		
Type 3213/5824		3.1	3.7	4.1	12.3	14.3	16.3
Type 3213/5724		3.4	4.0	4.4	12.6	14.6	16.6
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: +0.3 kg

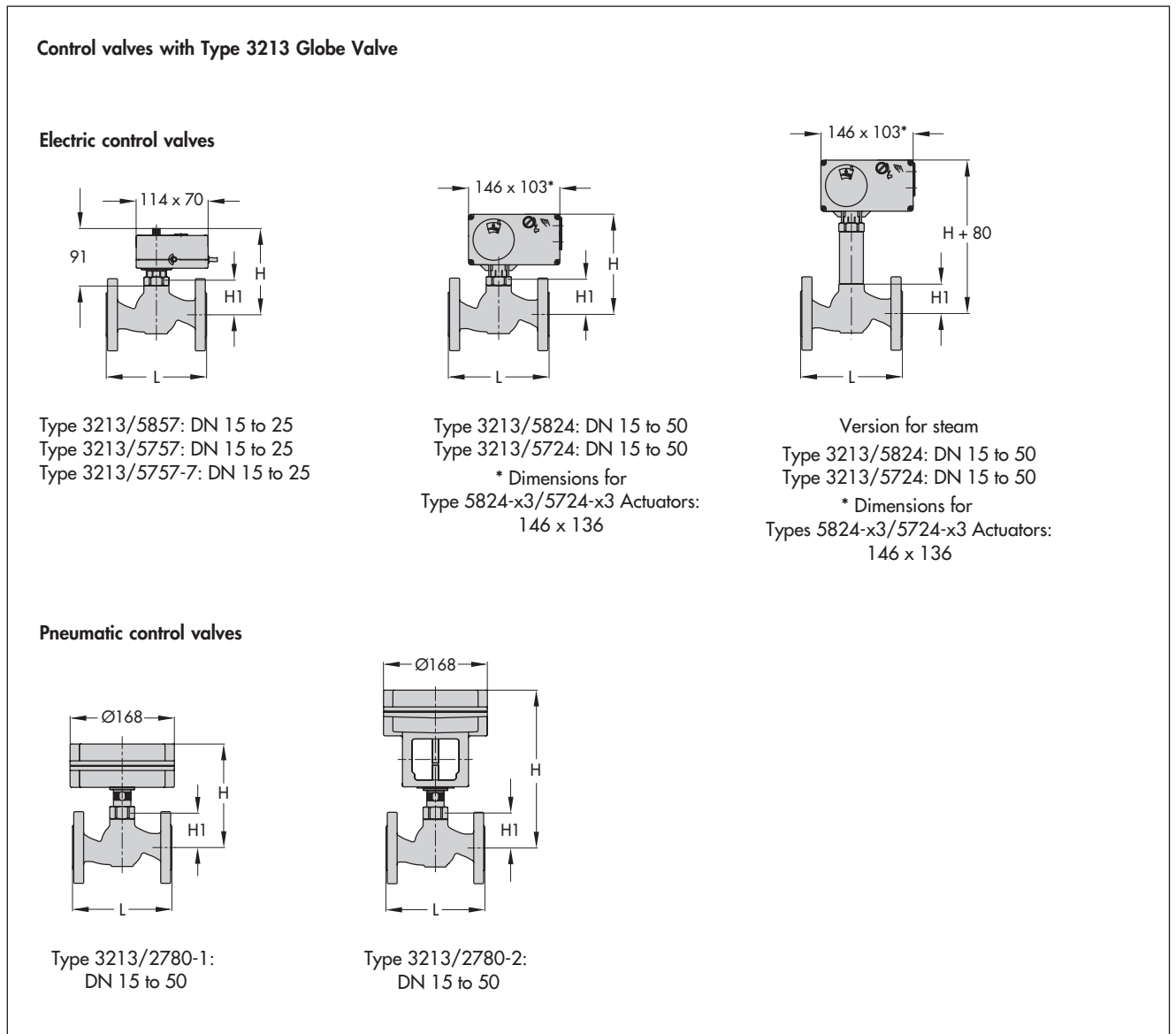


Table 5.2 · Control valves with Type 3214 Globe Valve

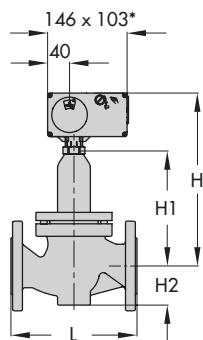
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
Length L	mm	130	150	160	180	200	230	290	310	350	400	480	600	730	
Height H1	mm	235	235	235	235	235	235	305	305	355	580	710	860	860	
Height H	mm														
Types 3214/5824, 3214/5724		350	350	350	350	350	350	-							
Type 3214/3374		-						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 3214/5724		7.6	7.8	8.8	15.3	15.8	18.3	-							
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: +0.3 kg · Version for PN 25 and 40: +15 %

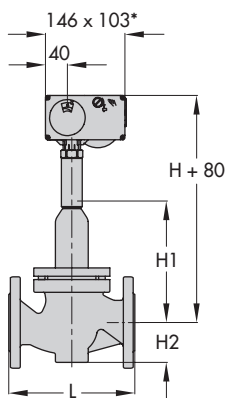
2) The heights H und H3 increase by 95 mm with Type 3274-12 and Type 3214-16 Actuators.

Control valves with Type 3214 Globe Valve

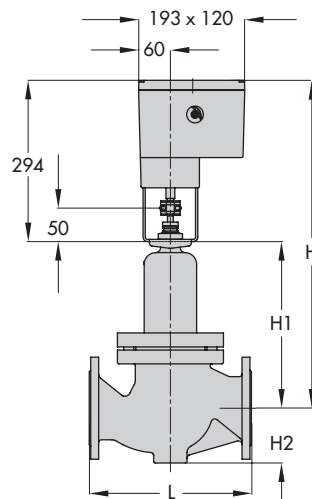
Electric control valves



Type 3214/5824: DN 15 to 50
 Type 3214/5724: DN 15 to 50
 * Dimensions for
 Types 5824-x3/5724-x3 Actuators:
 146 x 136



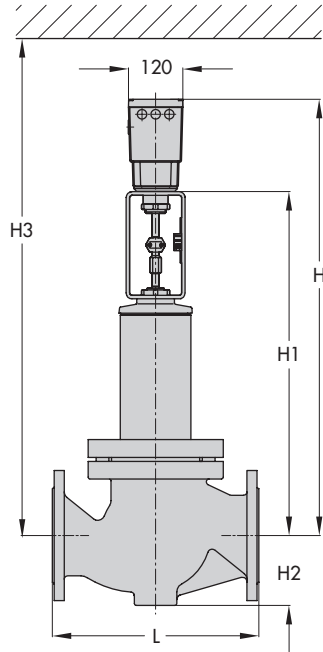
Version up to 220 °C
 Type 3214/5824: DN 15 to 50
 Type 3214/5724: DN 15 to 50



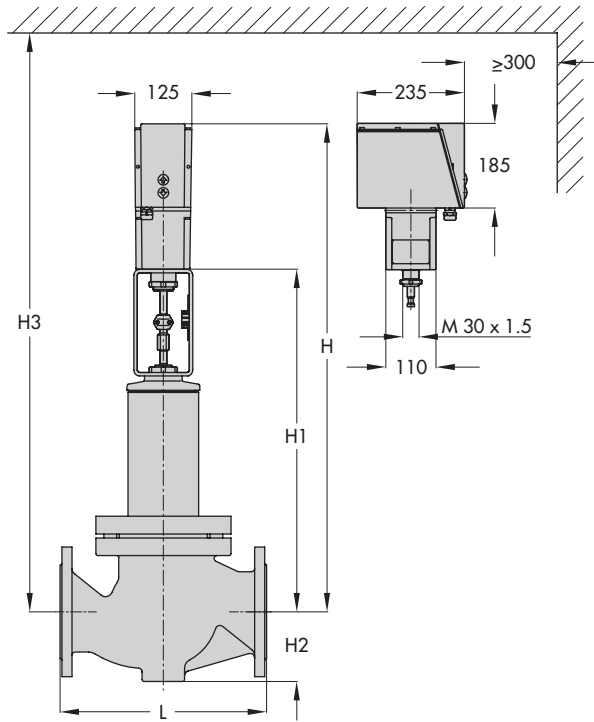
Type 3214/3374-11: DN 65 to 100

Control valves with Type 3214 Globe Valve

Electric control valves

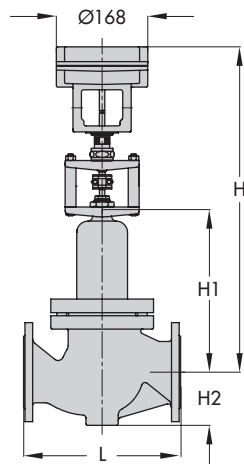


Type 3214/3374: DN 125 to 250



Type 3214/3274: DN 125 to 250

Pneumatic control valves



Type 3214/2780-2: DN 65 to 100

Specification subject to change without notice.



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