

Types 3213/5857, 3213/5824, 3213/5757-3, 3213/5757-7, 3213/5724-3, 3213/5724-8 and 3214/5824, 3214/3374, 3214/3274, 3214/5724-3, 3214/5724-8 Electric Control Valves



Types 3213/2780 and 3214/2780 Pneumatic Control Valves

Single-seated Type 3213 Globe Valve, unbalanced

Single-seated Type 3214 Globe Valve, balanced

Application

Globe valves for heating, ventilation and air-conditioning systems

DN 15 to 250 · PN 16 to 40 · Temperatures 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 connection up to DN 50, form-fit connection for DN 65 to 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 valves with electric actuator with process controller for domestic hot water heating		
Type 3213/5757-3	PN 25	DN 15 to 25
Type 3213/5724-3	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 3213/5757-7	PN 25	DN 15 to 25
Type 3213/5724-8	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 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 valves with electric actuator with process controller for domestic hot water heating		
Type 3214/5724-3	PN 16 to 40	DN 15 to 50
Electric control valve with electric actuator with process controller for heating and cooling applications		
Type 3214/5724-8	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 integrated positioner attachment

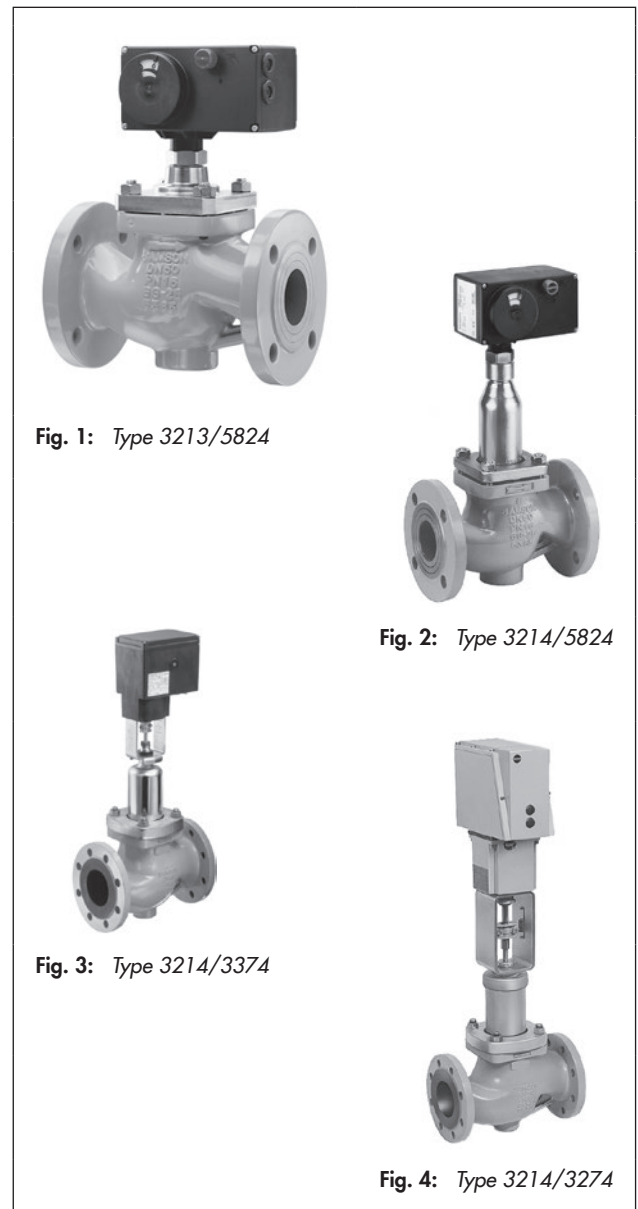


Fig. 1: Type 3213/5824

Fig. 2: Type 3214/5824

Fig. 3: Type 3214/3374

Fig. 4: Type 3214/3274

Electric control valves tested according to DIN EN 14597:

Type 3213 and Type 3214 Globe Valves with electric actuators with fail-safe action. Refer to Data Sheet ▶ T 5869

Principle of operation (Fig. 6)

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 balanced. The pressure upstream of the plug is transferred through a hole in the plug stem (6) 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 plug is moved by changing the control signal applied to 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. An intermediate insulating piece is available for insulated pipes.

Electric actuators

The Types 5857, 5824 and 3374 Electric Actuators as well as the Type 3274 Electrohydraulic Actuator can be controlled either using a three-step signal 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 5857:** Type 5857 Electric Actuator
- ▶ **T 5824:** Type 5824 Electric Actuator
- ▶ **T 8331:** Type 3374 Electric Actuator
- ▶ **T 8340:** Type 3274 Electrohydraulic Actuator

Electric actuators with process controllers

The electric actuator with process controller consists of a **linear actuator with an integrated digital controller**. The TROVIS 5757-3 and TROVIS 5724-3 are suitable for domestic hot water heating, whereas TROVIS 5757-7 is suited for heating and cooling applications. The TROVIS 5724-8 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 5757:** TROVIS 5757-3 Electric Actuator with Process Controller for domestic hot water heating
- ▶ **T 5757-7:** TROVIS 5757-7 Electric Actuator with Process Controller for heating and cooling applications
- ▶ **T 5724:** TROVIS 5724-3 Electric Actuator with Process Controller for domestic hot water heating
- ▶ **T 5724-8:** TROVIS 5724-8 Electric Actuator with Process Controller for heating and cooling applications

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 signal pressure connection. The pneumatic actuators require a supply pressure of at least 0.2 bar above the maximum bench range. The actuators 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 sheets for more details on the pneumatic actuators:

- ▶ **T 5840:** Types 2780-1 and 2780-2 Pneumatic Actuators

Installation of the control valve

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

Force-locking connection: If the control valve is to be insulated, the actuator and the coupling nut must not be insulated as well. Additionally, it must be ensured that the temperature does not exceed the maximum permissible ambient temperature. If necessary, an intermediate insulating piece must be used. Do not insulate it over 25 mm.

Ordering text

Unbalanced Control Valve Type:

- 3213/5857, 3213/5824, 3213/5757-3,
- 3213/5757-7, 3213/5724-3, 3213/5724-8,
- 3213/2780-1, 3213/2780-2

Version for steam: yes, no

Balanced Control Valve Type:

- 3214/5824, 3214/3374, 3214/3274,
- 3214/5724-3, 3214/5724-8, 3214/2780-2

Version up to 220 °C: yes, no

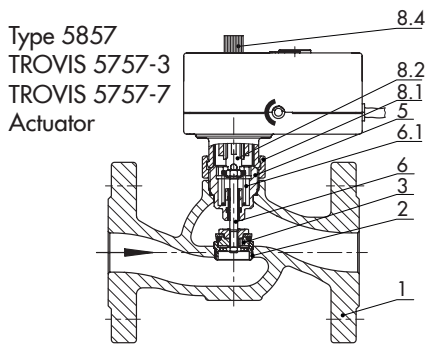
- Nominal size: DN ...
- Nominal pressure: PN ...
- Kvs coefficient: ...
- Max. permissible differential pressure Δp ...
- Max. temperature ...
- Body material ...

Further specifications on the electric actuator

- Control: three-step signal, positioner
- Power supply ...
- Electric additional equipment ...

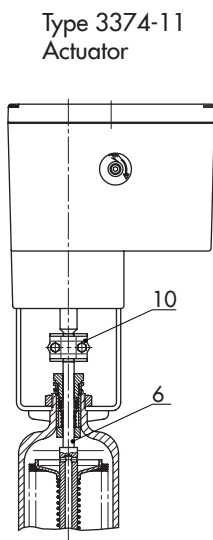
Further specifications on the pneumatic actuator

- Signal pressure connection for Type 2780-1:
 - G 1/8, 1/8 NPT
- Fail-safe action: stem extends (FA), stem retracts (FE)

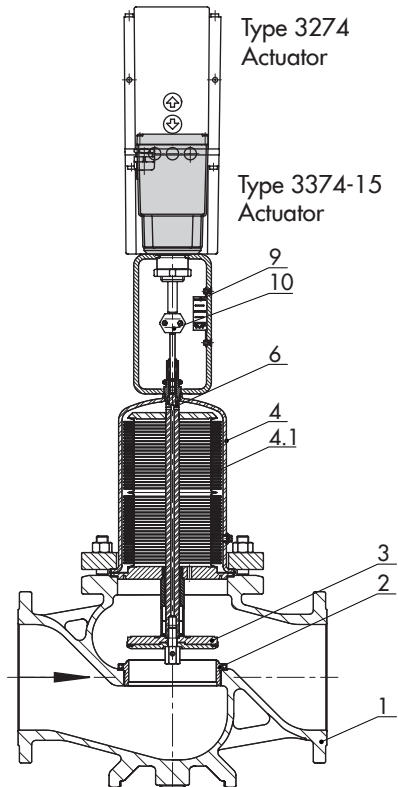


Type 5857
TROVIS 5757-3
TROVIS 5757-7
Actuator

Type 3213/5857
Type 3213/5757-3
Type 3213/5757-7



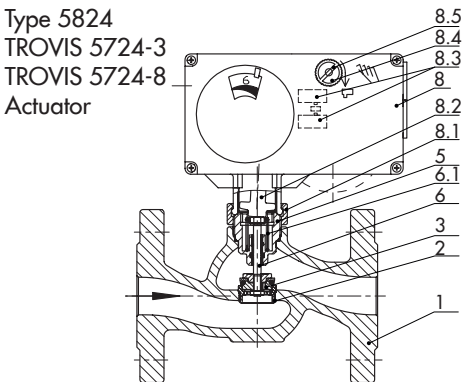
Type 3374-11
Actuator



Type 3274
Actuator

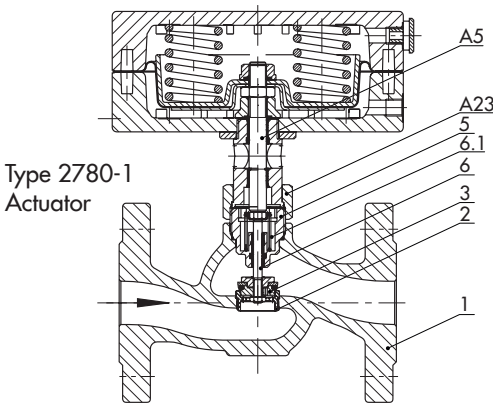
Type 3374-15
Actuator

Type 3214/3274
Type 3214/3374-15



Type 5824
TROVIS 5724-3
TROVIS 5724-8
Actuator

Type 3213/5824
Type 3213/5724-3
Type 3213/5724-8



Type 2780-1
Actuator

Type 3213/2780-1

- 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

Fig. 5: Principle of operation

Terms for control valve sizing

according to IEC 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 IEC 60534.
2. Select nominal size DN and K_{VS} coefficient from Table 3.
3. Check the 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 actuator.
6. Select materials, pressure and temperature from Tables 1 to 3, from the technical data of the actuator and from the pressure-temperature diagram (Fig. 6).

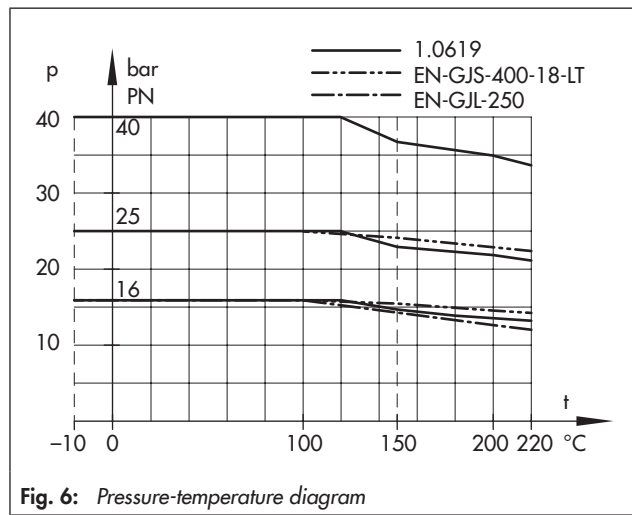


Fig. 6: Pressure-temperature diagram

Table 1: Technical data

Type 3213 Globe Valve														
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
Nominal pressure	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 according to IEC 60534-4		Class I (≤ 0.05 % of K_{VS} coefficient)												
Compliance		CE · EAC												
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. permissible temperature (upright position)	°C	150 ²⁾			220			220			150 ³⁾			
Version up to 220 °C	°C	220			-									
Rated travel	mm	6			12			15			30			
Rangeability		50 : 1			40 : 1			30 : 1						
Leakage class according to IEC 60534-4		Class I (≤ 0.05 % of K_{VS} coefficient)									Class IV (≤ 0.01 % of K_{VS} coefficient)			
Compliance		CE · EAC												

Use intermediate insulating piece (1990-1712)

- for medium temperatures between -10 and +5 °C (actuators according to Table 4)
- in networks with constant medium temperatures > 135 °C (TROVIS 5724-3, TROVIS 5724-8 and Type 5824 Actuators)
- for liquids > 120 °C (TROVIS 5757-3, TROVIS 5757-7 and Type 5857 Actuators)

Use intermediate insulating piece (1990-1712)

- for medium temperatures between -10 and +5 °C (TROVIS 5724-3, TROVIS 5724-8 and Type 5824 Actuators)
- in networks with constant medium temperatures > 135 °C (TROVIS 5724-3 and Type 5824 Actuators)

¹⁾ 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				
Nominal pressure	PN	16	25	40
Valve body		EN-GJL-250 (GG-25)	EN-GJS-400-18-LT (GGG-40.3)	-
Seat		1.4305	1.4305	-
Plug		1.4305 with metal seal	Brass with EPDM soft seal or FKM seal	-

Type 3213 Globe Valve				
Nominal pressure	PN	16	25	40
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 soft seal or FKM seal		–
Extension bonnet for version for steam		1.4571		–
Type 3214 Globe Valve				
Nominal pressure	PN	16	25	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 soft seal or 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 FKM 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} coefficient		4	6.3	8	16	20	32							
Max. diff. pressure	bar	10 ¹⁾	10 ¹⁾	10 ¹⁾	2.9	2.9	1.6							
Special version														
K_{VS} coefficient	0.1 · 0.16 0.25 · 0.4 0.63 · 1.0 1.6	2.5	2.5	–	–	–	40							
Max. diff. pressure	bar	20	10 ¹⁾	10 ¹⁾	–	–	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} 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	2.5	8	8 · 16	8 · 16	–	–	–	–	–	–	–
Max. diff. pressure	bar	25	25	25	25	25	25	20 ²⁾	20 ²⁾	16	16	12 ³⁾	10 ³⁾	10 ³⁾

¹⁾ Max. differential pressure for Type 5857, TROVIS 5757-3 and TROVIS 5757-7: 5 bar

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

³⁾ A special version must be used on using a Type 3274 Actuator in sizes DN 150 to 250 for applications with steam.

Table 4: Possible combinations

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														
5857	▶ T 5857	•	•	•										
5824-10	▶ T 5824	•	•	•										
5824-13 ¹⁾		•	•	•										
5824-20					•	•	•							
5824-23 ¹⁾					•	•	•							
Electric actuators with process controller for domestic hot water heating														
5757-3	▶ T 5757	•	•	•										
5724-310	▶ T 5724	•	•	•										
5724-313 ¹⁾		•	•	•										
5724-320					•	•	•							
5724-323 ¹⁾					•	•	•							
Electric actuators with process controller for heating and cooling applications														
5757-7	▶ T 5757-7	•	•	•										
5724-810	▶ T 5757-7	•	•	•										
5724-820	▶ T 5757-7				•	•	•							
Pneumatic actuators														
2780-1	▶ T 5840	•	•	•	•	•	•	•	•	•	•	•	•	•
2780-2		•	•	•	•	•	•	•	•	•	•	•	•	•
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														
5824-10	▶ T 5824	•	•	•										
5824-13		•	•	•										
5824-20					•	•	•							
5824-23					•	•	•							
3374-11	▶ T 8331							•	•	•				
3374-15											•	•	•	•
3274-12 ²⁾	▶ T 8340										•	•	•	•
3274-16 ²⁾												•	•	•
Electric actuators with process controller for domestic hot water heating														
5724-310	▶ T 5724	•	•	•										
5724-313 ¹⁾		•	•	•										
5724-320					•	•	•							
5724-323 ¹⁾					•	•	•							
Electric actuators with process controller for heating and cooling applications														
5724-810	▶ T 5757-7	•	•	•										
5724-820	▶ T 5757-7				•	•	•							
Pneumatic actuators														
2780-2 ³⁾	▶ T 5840							•	•	•				

¹⁾ Version with half transit time

²⁾ Other actuators on request

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

NOTE

Risk of valve damage due to excessively high forces.

When the valves are combined with pneumatic actuators, the maximum forces of the electric actuators listed in Table 4 must not be exceeded. If necessary, restrict the supply pressure.

Dimensions and weights with actuator

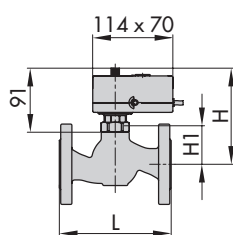
Table 4.1: Control valves with Type 3213 Globe Valve

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, 3213/5757-3, 3213/5757-7		150	150	150	-		
Types 3213/5824, 3213/5724-3, 3213/5724-8		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⁾	kg (approx.)						
Types 3213/5857, 3213/5757-3, 3213/5757-7		3.0	3.6	4.0	-		
Type 3213/5824		3.1	3.7	4.1	12.3	14.3	16.3
Types 3213/5724-3, 3213/5724-8		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

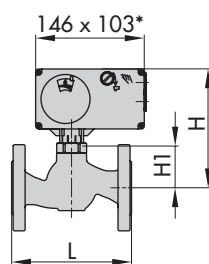
¹⁾ Version for steam: +0.3 kg

Control valves with Type 3213 Globe Valve

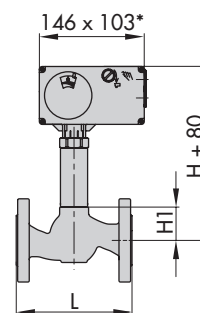
Electric control valves



Type 3213/5857: DN 15 to 25
 Type 3213/5757-3: DN 15 to 25
 Type 3213/5757-7: DN 15 to 25

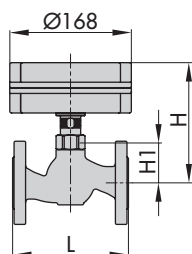


Type 3213/5824: DN 15 to 50
 Type 3213/5724-3: DN 15 to 50
 Type 3213/5724-8: DN 15 to 50
 * Dimensions for Type 5824-x3 and TROVIS 5724-3x3 Actuators: 146 x 136

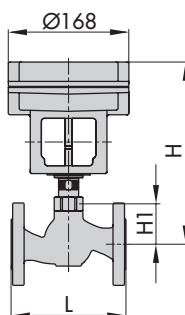


Version for steam
 Type 3213/5824: DN 15 to 50
 Type 3213/5724-3: DN 15 to 50
 Type 3213/5724-8: DN 15 to 50
 * Dimensions for Type 5824-x3 and TROVIS 5724-3x3 Actuators: 146 x 136

Pneumatic control valves



Type 3213/2780-1:
 DN 15 to 50



Type 3213/2780-2:
 DN 15 to 50

Table 4.2: Control valves with Type 3214 Globe Valve

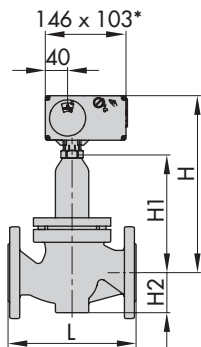
Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
Length L	mm	130	150	160	180	200	230	290	310	350	400	480	600	730	
Height H1	mm	235	235	235	235	235	235	305	305	355	580	710	860	860	
Height H	mm														
Types 3214/5824, 3214/5724-3, 3214/5724-8		350	350	350	350	350	350	-							
Type 3214/3374		-						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⁾	kg (approx.)														
Type 3214/5824		7.3	7.5	8.5	15.0	15.5	18.0	-							
Types 3214/5724-3, 3214/5724-8		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 %

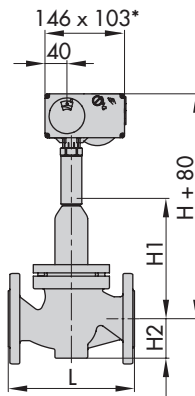
²⁾ The heights H and H3 increase by 95 mm when Type 3274-12 and Type 3214-16 Actuators are used.

Control valves with Type 3214 Globe Valve

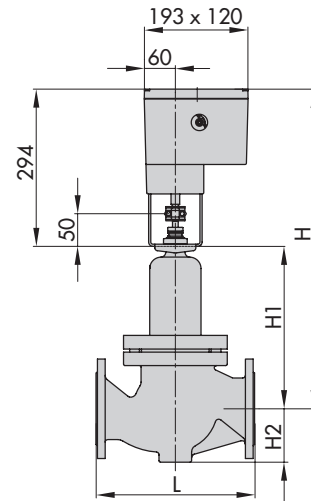
Electric control valves



Type 3214/5824: DN 15 to 50
 Type 3214/5724-3: DN 15 to 50
 Type 3214/5724-8: DN 15 to 50
 * Dimensions for Type 5824-x3 and TROVIS 5724-3x3 Actuators: 146 x 136



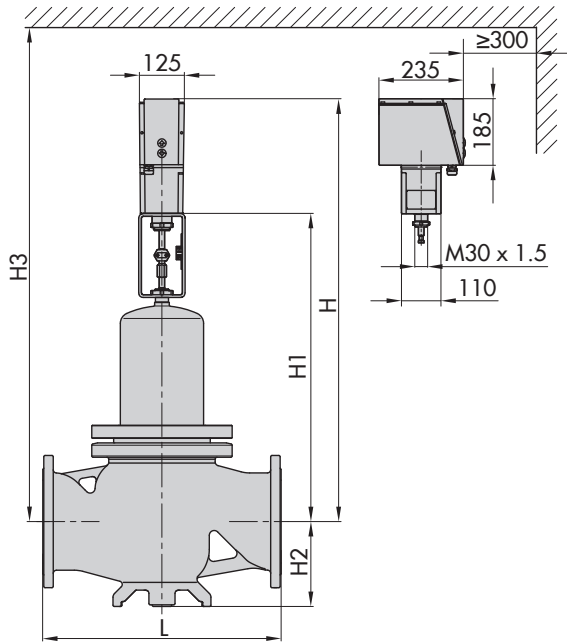
Version up to 220 °C
 Type 3214/5824: DN 15 to 50
 Type 3214/5724-3: DN 15 to 50
 Type 3214/5724-8: DN 15 to 50



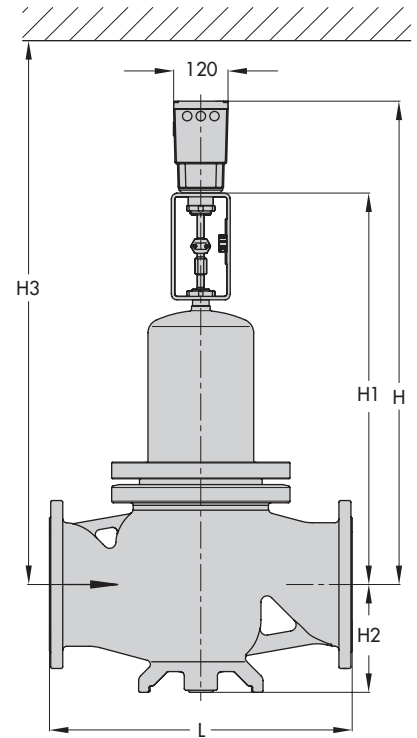
Type 3214/3374-11: DN 65 to 100

Control valves with Type 3214 Globe Valve

Electric control valves

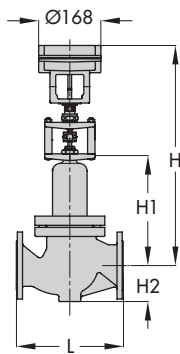


Type 3214/3274: DN 125 to 250



Type 3214/3374: DN 125 to 250

Pneumatic control valves



Type 3214/2780-2: DN 65 to 100

Specifications subject to change without notice



SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samson.de · www.samson.de

T 5868 EN

2017-09-14 · English