

T 5866 EN

Types 3222/5857, 3222/5824, 3222/5825, 3222/5757-3, 3222/5757-7, 3222/5724-3, 3222/5724-8, 3222/5725-3 3222/5725-7, 3222/5725-8 Electric Control Valves

Type 3222/2780 Pneumatic Control Valve · Single-seated Type 3222 Globe Valve



Application

Globe valves for heating, ventilation and air-conditioning systems

DN 15 to 50, G ½ to 1 · PN 25

Version **up to 150 °C** (for water, oil and liquids)

Version **up to 200 °C** (for water above 150 °C and steam)

Special features

- Single-seated globe valves partly available with balanced plugs
- Single-seated globe valves optionally available with male thread connection and welding ends, threaded ends, flanges or with female thread connection as well as with flanged valve body
- Force-locking connection between valve and actuator

Versions

Electric control valves			
Type 3222/5857	PN 25	DN 15 to 25	G ½ to 1
Type 3222/5824	PN 25	DN 15 to 50	G ½ to 1
Type 3222/5825 ¹⁾	PN 25	DN 15 to 50	G ½ to 1
Electric control valves/electric actuators with process controllers for domestic hot water heating			
Type 3222/5757-3	PN 25	DN 15 to 25	G ½ to 1
Type 3222/5724-3	PN 25	DN 15 to 50	G ½ to 1
Type 3222/5725-3 ¹⁾	PN 25	DN 15 to 50	G ½ to 1
Electric control valves/electric actuators with process controllers for heating and cooling applications			
Type 3222/5757-7	PN 25	DN 15 to 25	G ½ to 1
Type 3222/5724-8	PN 25	DN 15 to 50	G ½ to 1
Type 3222/5725-7 ¹⁾	PN 25	DN 15 to 50	G ½ to 1
Type 3222/5725-8 ¹⁾	PN 25	DN 15 to 50	G ½ to 1
Pneumatic control valves			
Type 3222/2780-1	PN 25	DN 15 to 50	G ½ to 1
Type 3222/2780-2 ²⁾	PN 25	DN 15 to 50	G ½ to 1

¹⁾ Electric actuators with fail-safe action

²⁾ Pneumatic actuator suitable for integrated positioner attachment

Register number

The valves mounted on Type 5825, TROVIS 5725-3, TROVIS 5725-7 and TROVIS 5725-8 Actuators for fail-safe action "actuator stem extends" are tested by the German Technical Inspectorate (TÜV) according to DIN EN 14597. The register number is available on request.



Fig. 1: Type 3222/5857 Type 3222/5757-3
Type 3222 with male thread connection and welding ends



Fig. 2: Type 3222/5825 Type 3222/5725-3
Type 3222/5725-8
Type 3222 (flanged body version)



Fig. 3: Type 3222/2780-1
Type 3222 (flanged body version)

Also available:

Type 3222 N Valve suitable for local heat supply and large heating networks. Refer to Data Sheet ▶ T 5867.

Principle of operation (Fig. 4)

The medium flows through the single-seated globe valve in the direction indicated by the arrow. The position of the plug determines the flow rate across the area released between plug (1) and valve seat (5). The valve is opened by the valve spring when the actuator stem retracts. A special version is required for water with temperatures above 150 °C and for steam. The plug is moved by changing the control signal applied to the actuator.

The valve and actuator have a force-locking connection. An intermediate insulating piece is available for insulated pipes.

Fail-safe position

For globe valves mounted to an actuator with fail-safe action, the control valve has two different positions which become effective upon power supply failure:

Actuator stem extends

- The globe valve closes upon power supply failure

Actuator stem retracts

- The globe valve opens upon power supply failure

Electric actuators

The electric actuators can be controlled either using a three-stepping point signal or, in the version with positioner, with signals adjustable in the range from 0/4 to 20 mA or from 0/2 to 10 V. Various electrical accessories can be optionally installed.

Type 5825 Actuator is able to perform a fail-safe action. Refer to Table 4.

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

- ▶ **T 5857:** Type 5857 Electric Actuator
- ▶ **T 5824:** Types 5824 and 5825 Electric Actuators

Electric actuators with process controllers

The actuators consist of a digital controller which is integrated into the electric actuator housing. The TROVIS 5757-3, TROVIS 5724-3 and TROVIS 5725-3 are suitable for domestic hot water heating, whereas TROVIS 5757-7 and TROVIS 5725-7 are suited for heating and cooling applications. The TROVIS 5724-8 and TROVIS 5725-8 have two PID control modules and are ready-wired for heating and cooling applications.

TROVIS 5725-3, TROVIS 5725-7 and TROVIS 5725-8 Actuators are able to perform a fail-safe action. Refer to Table 4.

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

- ▶ **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 and TROVIS 5725-3 Electric Actuators with Process Controllers for domestic hot water heating
- ▶ **T 5725-7:** TROVIS 5725-7 Electric Actuator with Process Controller for heating and cooling applications

- ▶ **T 5724-8:** TROVIS 5724-8 and TROVIS 5725-8 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 loading 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

- Version for water, oil and other liquids: the valve can be mounted in any desired position, however, the actuator must not be suspended downwards.
- Version for water above 150 °C and steam: the valve must be installed with the valve in the upright position.

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

Control Valve Type:

- 3222/5857, 3222/5824-..., 3222/5825-...,
- 3222/5757-3, 3222/5757-7, 3222/5724-3...,
- 3222/5724-8...,
- 3222/5725-3..., 3222/5725-7...,
- 3222/5725-8..., 3222/2780-1, 3222/2780-2

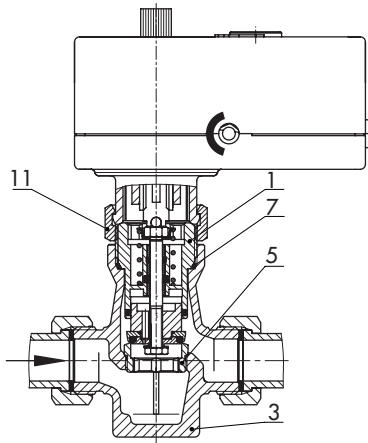
- End connections:
 - male thread connection and welding ends DN ...
 - male thread connection and threaded ends DN ...
 - male thread connection and flanges DN ...
 - flanged body DN ...
 - female thread G ...
- Kvs coefficient: ...
- Max. temperature: ...
- Version:
 - for water, oil and other liquids
 - for water above 150 °C and steam
- Intermediate insulating piece (1990-1712) yes, no

Further specifications on the electric actuator

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

Further specifications on the pneumatic actuator

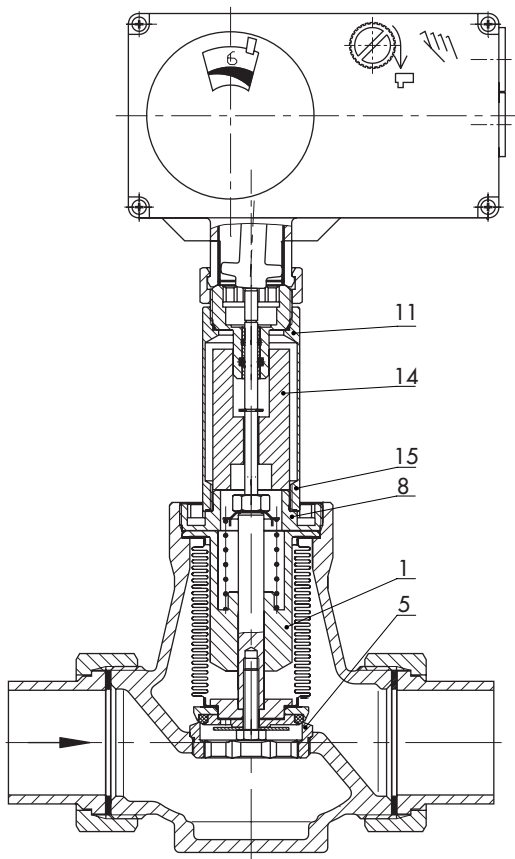
- Actuator type: Type 2780-1, Type 2780-2
- Pressure connection for Type 2780-1: G 1/8, 1/8 NPT
- Fail-safe action: stem extends (FA), stem retracts (FE)



- 1 Plug
- 3 Valve body
- 5 Seat
- 7 O-ring
- 8 Connecting piece
- 11 Guide nipple
- 14 Insulating piece
- 15 Insulating pipe

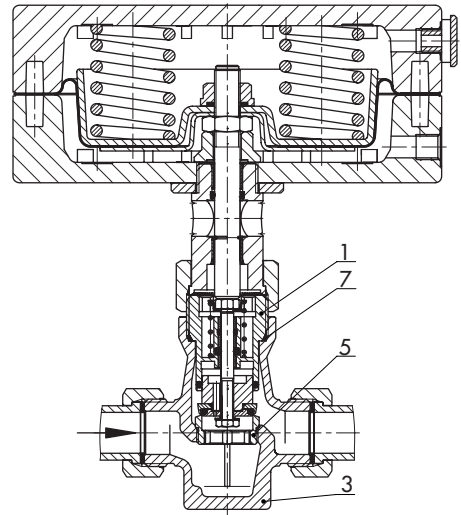
Type 3222/5857
 Type 3222/5757-3
 Type 3222/5757-7

Version for water, oil and liquids



Type 3222/5824
 Type 3222/5724-3
 Type 3222/5724-8

Versions for water above 150 °C and steam



Type 3222/2780-1

Fig. 4: Functional diagrams

Table 1: Technical data

Type 3222 Globe Valve								
Nominal size	Globe valve with male thread connection or with flanged body	DN	15	20	25	32	40	50
Thread size	Globe valve with female thread	G	½	¾	1	–	–	–
Nominal pressure		PN	25					
Seat/plug sealing			Metal seal for $K_{VS} \leq 2.5$ · Soft seal for $K_{VS} \geq 3.6$					
Rated travel		mm	6			12		
Rangeability			50 : 1					
Leakage class according to IEC 60534-4			Class I (≤ 0.05 % of K_{VS} coefficient)					
Version for water, oil and other liquids								
Max. permissible temperature			150 °C ¹⁾					
Max. permissible differential pressure Δp								
	Type 5824, Type 5825, TROVIS 5724-3, TROVIS 5724-8, TROVIS 5725-3, TROVIS 5725-7, TROVIS 5725-8, Type 2780	bar	20	20	20	12/16 ⁴⁾	12	12
	Types 5857, TROVIS 5757-3, TROVIS 5757-7	bar	20	20	20	–	–	–
Version for water above 150 °C and steam								
Max. permissible temperature			200 °C					
Max. permissible differential pressure Δp								
	Type 5824, Type 5825, TROVIS 5724-3, TROVIS 5724-8, TROVIS 5725-3, TROVIS 5725-7, TROVIS 5725-8, Type 2780	bar	20 when $0.1 \leq K_{VS} \leq 2.5$ 10 when $3.6 \leq K_{VS} \leq 8$			8	8	8
	Types 5857, TROVIS 5757-3, TROVIS 5757-7	bar	20 ²⁾ · 5 ³⁾	5	5	–	–	–

- ¹⁾ Use intermediate insulating piece (1990-1712)
– for medium temperatures between –15 °C (red brass) or –10 °C (EN-JS 1049) and +5 °C (actuators according to Table 4)
– in networks with constant medium temperatures > 135 °C (TROVIS 5724-3, TROVIS 5724-8, TROVIS 5725-3, TROVIS 5725-7, TROVIS 5725-8, Type 5824 and Type 5825 Actuators)
– for DN 15 to 25 with TROVIS 5757-3, TROVIS 5757-7 and Type 5857 Actuators for liquids > 120 °C

²⁾ Differential pressure with $K_{VS} = 1$ and 1.6

³⁾ Differential pressure with $K_{VS} = 2.5$ and 4

⁴⁾ Applies to $K_{VS} = 10$

Table 2: Materials · Material numbers according to DIN EN

Type 3222 Globe Valve		
Valve body	Version with male/female thread	Red brass CC499K (CuSn5Zn5Pb2-C)
	Version with flanged body	EN-GJS-400-18-LT (GGG-40.3)
Seat	Stainless steel 1.4305	
Plug	1.4305/CW602N with soft seal · 1.4305 when $0.1 \leq K_{VS} \leq 2.5$	
Valve spring	Stainless steel 1.4310 K	
Packing gland	EPDM/FPM (FKM) · Oil-resistant version: FPM	
Welding ends	St 37	
Threaded ends	CC491K (red brass)	
Screwed-on flanges	St 37.2	

Table 3: Nominal sizes and K_{VS} coefficients

Type 3222 Globe Valve		DN	15	20	25	32	40	50
Nominal size	Globe valve with male thread connection or with flanged body	DN	15	20	25	32	40	50
Thread size	Globe valve with female thread	G	½	¾	1	–	–	–
K_{VS} coefficients			4 ¹⁾ · 3.6 ²⁾	6.3 ¹⁾ 5.7 ²⁾	8 ¹⁾ · 7.2 ²⁾	16 ¹⁾	20 ¹⁾	25 ¹⁾
Reduced K_{VS} coefficients			0.1 · 0.16 · 0.25 0.4 · 0.63 · 1.0 1.6 · 2.5	1.0 · 1.6 · 2.5 · 4 ¹⁾ · 3.6 ²⁾		10 ³⁾	–	–
Rated travel	mm		6	6	6	12	12	12

1) Version with male thread connection or with flanged body

2) Version with female thread

3) 6 mm rated travel

Table 4: Possible combinations

Type 3222 Globe Valve/actuator		Fail-safe action: Actuator stem		Refer to Data Sheet	Nominal size DN					Thread size G			
Type/ TROVIS		extends	retracts		15	20	25	32	40	50	½	¾	1
Electric actuators													
5857	–	–	–	▶ T 5857	•	•	•	–	–	–	•	•	•
5824-10	–	–	–	▶ T 5824	•	•	•	–	–	–	•	•	•
5824-13 ¹⁾	–	–	–		•	•	•	–	–	–	•	•	•
5825-10	•	–	–		•	•	•	–	–	–	•	•	•
5825-13 ¹⁾	•	–	–		•	•	•	–	–	–	•	•	•
5825-15	–	•	–		•	•	•	–	–	–	•	•	•
5824-20	–	–	–		–	–	–	•	•	•	–	–	–
5824-23	–	–	–		–	–	–	•	•	•	–	–	–
5825-20	•	–	–		–	–	–	•	•	•	–	–	–
5825-23	•	–	–		–	–	–	•	•	•	–	–	–
5825-25	–	•	–		–	–	–	•	•	•	–	–	–
Electric actuators with process controllers for domestic hot water heating													
5757-3	–	–	–		▶ T 5757	•	•	•	–	–	–	•	•
5724-310	–	–	–	▶ T 5724	•	•	•	–	–	–	•	•	•
5725-310	•	–	–		•	•	•	–	–	–	•	•	•
5724-320	–	–	–		–	–	–	•	•	•	–	–	–
5725-320	•	–	–		–	–	–	•	•	•	–	–	–
Electric actuators with process controllers for heating and cooling applications													
5757-7	–	–	–	▶ T 5757-7	•	•	•	–	–	–	•	•	•
5724-810	–	–	–	▶ T 5724-8	•	•	•	–	–	–	•	•	•
5724-820	–	–	–		–	–	–	•	•	•	–	–	–
5725-710	•	–	–	▶ T 5725-7	•	•	•	–	–	–	•	•	•
5725-715	–	•	–		•	•	•	–	–	–	•	•	•
5725-720	•	–	–		–	–	–	•	•	•	–	–	–
5725-725	–	•	–		–	–	–	•	•	•	–	–	–
5725-810	•	–	–		▶ T 5724-8	•	•	•	–	–	–	•	•
5725-820	•	–	–	–		–	–	•	•	•	–	–	–

Type 3222 Globe Valve/actuator												
Type	Fail-safe action: Actuator stem		Refer to Data Sheet	Nominal size DN						Thread size G		
	extends	retracts		15	20	25	32	40	50	½	¾	1
Pneumatic actuators												
2780-1	•	•	▶ T 5840	•	•	•	•	•	•	•	•	•
2780-2	•	•		•	•	•	•	•	•	•	•	•

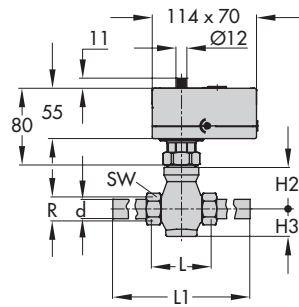
1) Version with half transit time

Table 5: Dimensions and weights

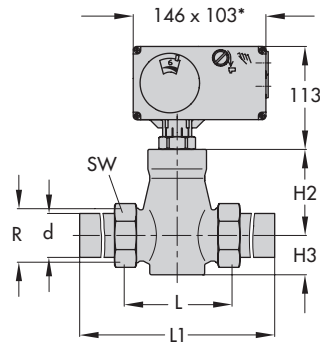
Valves with male thread connection							
Nominal size	DN	15	20	25	32	40	50
Length L	mm	65	70	75	100	110	130
Height H2	mm	45.5	45.5	45.5	94	94	94
Version for water above 150 °C and steam or intermediate insulating piece (1990-1712)		140	140	140	185	185	185
Height H3	mm	30	30	30	55	55	55
... with welding ends							
Thread size R	G	¾	1	1¼	1¾	2	2½
Pipe Ød	mm	21.3	26.8	33.7	42	48	60
Width across flats SW		30	36	46	59	65	82
Length L1	mm	210	234	244	268	294	330
Weight without actuator	kg (approx.)	1.4	1.8	2.3	4.0	4.4	6.8
Version for water above 150 °C and steam or intermediate insulating piece (1990-1712)		1.9	2.3	2.8	4.5	4.9	7.3
... with threaded ends							
Length L2	mm	129	144	159	180	196	228
Male thread A	G	½	¾	1	1¼	1½	2
Width across flats SW		30	36	46	59	65	82
Weight without actuator	kg (approx.)	1.4	1.8	2.3	4.0	4.4	6.8
Version for water above 150 °C and steam or intermediate insulating piece (1990-1712)		1.9	2.3	2.8	4.5	4.9	7.3
... with flanges							
Width across flats SW		30	36	46	59	65	82
Length L3	mm	130	150	160	180	200	230
Weight without actuator	kg (approx.)	2.5	3.4	4.1	6.9	7.7	10.7
Version for water above 150 °C and steam or intermediate insulating piece (1990-1712)		3.0	3.9	4.6	7.4	8.2	11.2
Valves with female thread							
Thread size	G	½	¾	1	–		
Width across flats SW		30	36	46	–		
Length L4	mm	65	75	90	–		
Female thread	G	½	¾	1	–		
Weight without actuator	kg (approx.)	1.2	1.4	1.5	–		
Version for water above 150 °C and steam or intermediate insulating piece (1990-1712)		1.7	1.9	2.0	–		

Electric control valves

Type 3222 Globe Valve with male thread connection and welding ends

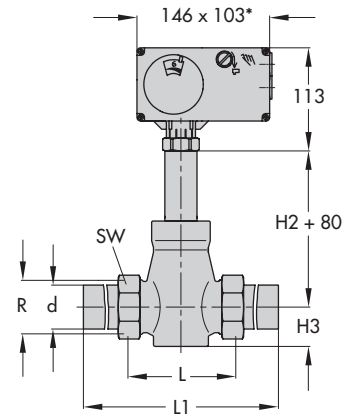


Type 3222/5857: DN 15 to 25
 Type 3222/5757-3: DN 15 to 25
 Type 3222/5757-7: DN 15 to 25



Type 3222/5824: DN 15 to 50
 Type 3222/5825: DN 15 to 50
 Type 3222/5724-3: DN 15 to 50
 Type 3222/5724-8: DN 15 to 50
 Type 3222/5725-3: DN 15 to 50
 Type 3222/5725-7: DN 15 to 50
 Type 3222/5725-8: DN 15 to 50

* Dimensions for Types 5824-x3 and 5825-x3 Actuators: 146 x 136



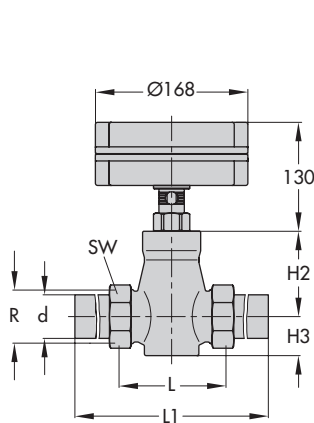
Version for water above 150 °C and steam

Type 3222/5824: DN 15 to 50
 Type 3222/5825: DN 15 to 50
 Type 3222/5724-3: DN 15 to 50
 Type 3222/5724-8: DN 15 to 50
 Type 3222/5725-3: DN 15 to 50
 Type 3222/5725-7: DN 15 to 50
 Type 3222/5725-8: DN 15 to 50

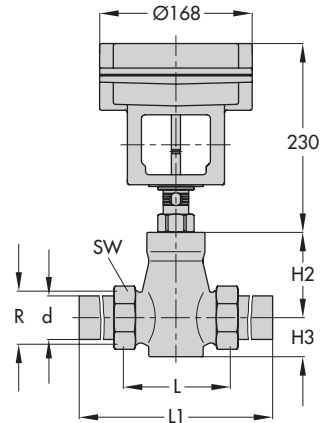
* Dimensions for Types 5824-x3 and 5825-x3 Actuators: 146 x 136

Pneumatic control valves

Type 3222 Globe Valve with male thread connection and welding ends



Type 3222/2780-1: DN 15 to 50

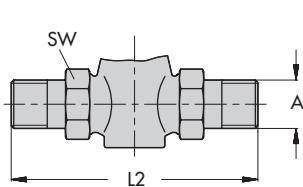


Type 3222/2780-2: DN 15 to 50

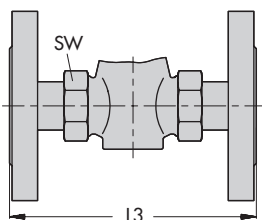


Intermediate insulating piece (1990-1712)

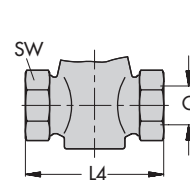
End connections for Type 3222 Globe Valve



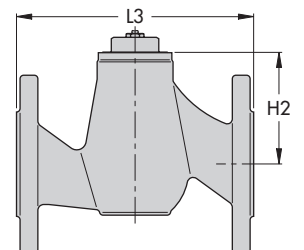
Version with threaded ends



Version with flanges



Version with female thread



Version with flanged body

Valves with flanged body							
Nominal size	DN	15	20	25	32	40	50
Height H2	mm	45.5	45.5	45.5	94	94	92
Length L3	mm	130	150	160	180	200	230
Weight without actuator	kg (approx.)	2.5	3.4	4.1	6.9	8.4	11.6
Version for water above 150 °C and steam or intermediate insulating piece (1990-1712)		3.0	3.9	4.6	7.4	8.9	12.1

Table 5.1: *Electric actuators*

Type	5857	5824	5825
Weight kg (approx.)	0.7	1.0	1.25

Table 5.2: *Electric actuators with process controllers*

TROVIS	5757-3, 5757-7	5724-3, 5724-8	5725-3, 5725-7, 5725-8
Weight kg (approx.)	0.7	1.1	1.3

Table 5.3: *Pneumatic actuators*

Type	2780-1	2780-2
Effective area cm ²	120	
Loading pressure connection a	G 1/8	
Weight kg (approx.)	2	3.2