

Electric Control Valves with safety function, typetested Type 3241/3274, Type 3241/3374

Globe Valve Type 3241

Application

Control valves with safety function to protect heating systems against excess temperatures or pressures. Suitable for water and steam

DN 15 to 150 · PN 16 to 40 · Version up to 220 °C (version with extension bonnet up to 350 °C)

Conversion of valve sizing coefficients:

C_v (in US gallons/min) = 1.17 · K_{vs} (in m³/h)

K_{vs} (in m³/h) = 0.86 · C_v (in US gallons/min)



The typetested Type 3241/3274 or Type 3241/3374 Control Valves consist of a Type 3241 Globe Valve and either a Type 3274 Electrohydraulic Actuator or a Type 3374 Electric Actuator with fail-safe action (DN 15 to 80). Refer to Data Sheets T 8331 EN and T 8340 EN for details.

The control valves regulate the temperature downstream of an electric controller. In safety interlock circuits, they also serve as a shut-off device that is triggered upon a power failure or by the signal of a temperature or pressure limiting device.

The control valves were typetested according to DIN EN 14597 by the German technical inspectorate TÜV, defining them as shut-off and control devices. They are suitable for water and steam. The standard version can be used for temperatures up to 220 °C, the version with extension bonnet up to 350 °C at a max. ambient temperature of 60 °C.

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

Valve body made of cast iron, spheroidal graphite iron, cast steel, cast stainless steel, forged steel 1.0460 (C22.8) or 1.4571. Undivided valve bonnet.

Standard low-noise plug with metal sealing. Special version with flow divider for further noise reduction; sizes DN 65 to 150 also with balanced plug and PTFE sealing ring (max. temperature 220 °C).

Versions

Type 3241/3274, typetested · Standard version up to 220 °C (Fig. 1) DN 15 to 150, PN 16 to 40. Type 3241 Globe Valve with Type 3274-23 Electric Actuator with safety function and electric override

Type 3241/3374, typetested (Fig. 2) · DN 15 to 80, PN 16 to 40. Type 3241 Globe Valve with Type 3374-26 Electric Actuator with safety function and manual override

Version with unbalanced plug · Metal-seated plug, PTFE carbon compound packing

Version with balanced plug · PTFE sealing ring for temperatures up to max. 220 °C, DN 65 to 150, PN 40 · With Type 3274-21 Actuator

Version with flow divider, DN 32 to 150, also for special version with extension bonnet (refer to T 8081 EN for details)

Special version with extension bonnet for temperatures up to 350 °C including unbalanced plug with metal sealing



Fig. 1 · Type 3241/3274,
standard version (typetested)



Fig. 2 · Type 3241/3374-26 (typetested)

Register number

The Type 3241 Globe Valves were typetested in combination with the Type 3374 Electric Actuator and Type 3274 Electrohydraulic Actuator according to DIN EN 14597 by the German technical inspectorate TÜV (register number available on request).

Principle of operation Type 3274 (Figs. 3 and 4a)

In control mode, the actuator receives its input signal from an electric temperature controller (ER). A safety solenoid valve is opened inside the actuator in case of a power failure or if the safety limiter (c) interrupts the safety interlock circuit because an adjusted temperature or pressure limit is exceeded. As a result, the compression springs in the actuator cause the valve to close.

Principle of operation Type 3374 (Fig. 4b)

The actuator consists of a reversible synchronous motor and a maintenance-free planetary gear with ball screw. The motor is switched off by torque-dependent limit switches when the final positions are reached or in case of an overload. The gear is disengaged inside the actuator in case of a power failure or if the safety limiter interrupts the safety interlock circuit because an adjusted temperature or pressure limit is exceeded. As a result, the compression springs in the actuator cause the valve to close.

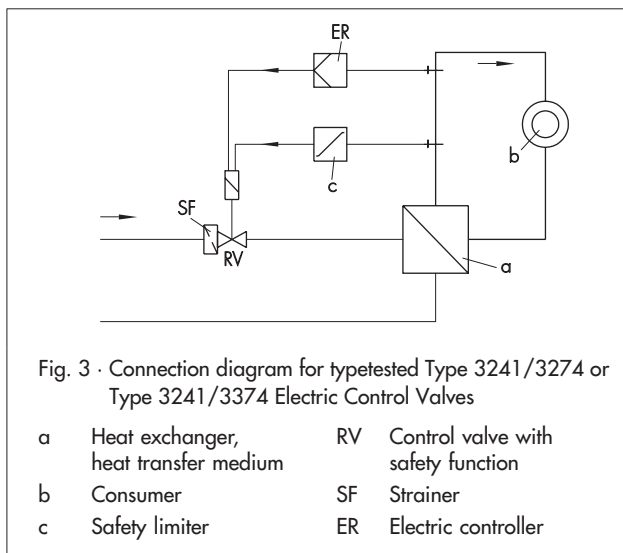


Fig. 3 · Connection diagram for typetested Type 3241/3274 or Type 3241/3374 Electric Control Valves

a	Heat exchanger, heat transfer medium	RV	Control valve with safety function
b	Consumer	SF	Strainer
c	Safety limiter	ER	Electric controller

Ordering text

- Electric Control Valve with safety function · Type 3241/3274 or Type 3241/3374, typetested
- DN ..., PN ..., body material ...,
- Max. operating temperature ... °C, max. Δp ... bar,
- Without/with extension bonnet, balanced/unbalanced plug
- Kvs coefficient ...,
- Characteristic equal percentage/linear/quick opening
- Power supply ... V, ... Hz
- Additional electrical equipment, optionally, special version

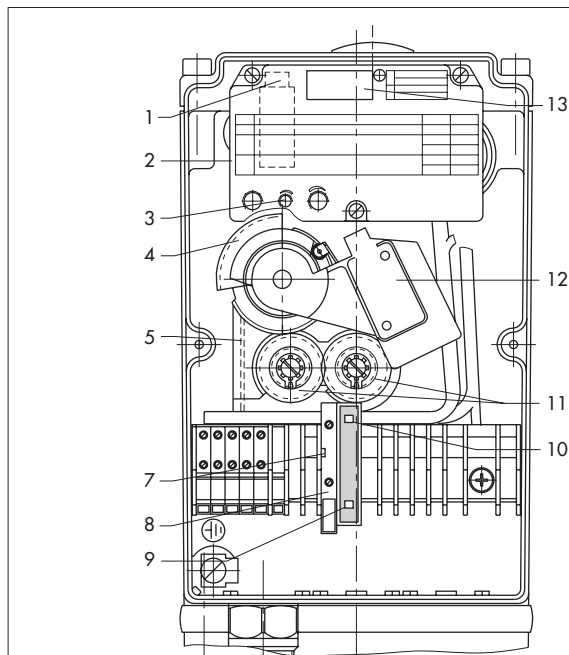


Fig. 4a · Terminal box of Type 3274-23 Actuator

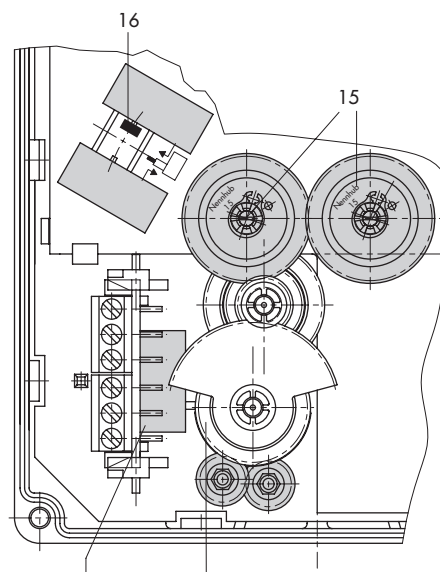


Fig. 4b · Additional electrical equipment for Type 3374-26 Actuator

1	Fuse	7	Marking pin	13	Switch block (version with positioner)
2	Motor electronics	8	Isolating terminal	14	Switching cam for limit switch
3	Adjuster for version with positioner	9	Pushbutton switch stem retracts	15	Potentiometer gears
4	Gear segment	10	Pushbutton switch stem extends	16	Limit switch (final positions)
5	Push rod	11	Potentiometer		
		12	Limit switch (microswitch)		

Table 1.1 · Technical data

Nominal size	DN	15 · 20 · 25 · 32 · 40 · 50 · 65 · 80 · 100 · 125 · 150
Nominal pressure		PN 16 to 40
Permissible temperatures		
Without extension bonnet	°C	Max. 220
With extension bonnet	°C	Max. 350
Valves with balanced plugs	°C	Max. 220
Seat/plug sealing		Metal sealing
Type of end connections		All flange types according to DIN
Characteristic		Equal percentage · Linear · Quick opening
Leakage rate acc. to DIN EN 1349		≤ Class IV (≤ 0.01 % of K _{VS})

Table 1.2 · Materials

Nominal pressure	PN 16	PN 16/25	PN 16/40		PN 40	
Valve body	EN-JL1040 (GG-25) ¹⁾	EN-JS1049 (GGG-40.3)	1.0619 (GS-C25)	1.0460 (C22.8)	1.4408	1.4571
Valve bonnet	1.4060 (C22.8)				1.4408/1.4401	
Seat (seat and plug also with Plug) (seat and plug also with Stellite facing)	1.4006		1.0460			
Guide bushings	1.4104		1.4104			
Packing	V-ring packing, PTFE with carbon (other packings on request) · Spring 1.4310					
Body gaskets	Metal/graphite					
Extension bonnet	1.0460 (C22.8)				1.4408/1.4401	
Metal bellows seal						
Intermediate piece	1.0460 (C22.8)				1.4408/1.4401	
Metal bellows	1.4571					
Heating jacket	1.4404					

¹⁾ In plants according to the German technical rules for steam boilers (TRD) only up to DN 50 and max. perm. operating pressure of 10 bar

Table 1.3 · Permissible operating pressure (in bar) in relation to body material, nominal pressure and medium temperature

	120 °C	150 °C	200 °C	220 °C	250 °C	300 °C	350 °C
PN 16							
EN-JL1040	16	14.1	11.6	11.6	11	10	–
EN-JS1049	16	14.9	13	12.2	11	10	9
1.0619	16	15	14.3	13.8	13	11	10
1.0460	16	15	14.3	13.8	13	11	10
PN 25							
EN-JS1049	25	23.1	20	19.2	18	16	15
PN 40							
1.0619	40	37.9	34.8	33.4	32	28	24
1.0460	40	37.9	34.8	33.4	32	28	24
1.4408	40	37.9	34.8	33.4	32.7	31.5	30
1.4571	40	37.9	34.8	33.4	32.7	31.5	30

Table 2 · Overview: Nominal sizes, K_{VS} coefficients, seat diameters and permissible differential pressures Δp when $p_2 = 0$ bar
 All pressures in bar (gauge). Direction of flow: FTO. The permissible operating and differential pressures (p and Δp) are limited by the values specified in Table 1.3. In closed position, the leakage rates stated in Table 1.3 are not exceeded.

Table 2.1 · Type 3241/3274 and Type 3241/3374 without flow divider																					
K_{VS}	0.1	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10	16	25	40	60	63	80	100	160	200	260
Seat \varnothing	3			6			12			24		31	38	48	63		80	80	100	110	130
Rated travel [mm]	15												15	30	15	30					
DN																					
15	•	•	•	•	•	•	•	•	•												
20	•	•	•	•	•	•	•	•	•	•											
25	•	•	•	•	•	•	•	•	•	•	•										
32				•	•	•	•	•	•	•	•	•									
40				•	•	•	•	•	•	•	•	•	•								
50				•	•	•	•	•	•	•	•	•	•	•							
65													•	•	•						
80																	• 1)				
100																		• 1)	• 1)		
125																		• 1)	•	• 1)	
150																•			• 1)		• 1)
Permissible operating pressure p and permissible differential pressure Δp [bar] · Refer to T 8340 EN and T 8331 EN for nominal thrusts																					
Balancing $\frac{W_{w/o}}{W_o}$	Type 3274-23	40	40	40	40	40	40	40	40	40	40	37.7	24.7	15.1	8.5	7.2	5.0	4.3	2.6	2.1	1.4
	Type 3374-26	40	40	40	40	40	40	40	40	23.7	23.7	13.9	9.1	5.5	3.1	-	1.8	-	-	-	-
	Type 3274-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	40	40	40

1) Version also available with pressure balancing

Table 2.2 · Type 3241/3274 and Type 3241/3374 with St I and St III Flow Divider																					
K_{VS}	St I Flow Divider												St III Flow Divider								
	5.7	9	14.5	22	36	54	57	72	90	144	180	234	7.5	20	30	47	75	120			
Seat \varnothing	24		31	38	48	63		80		100	110	130	24	38	48	63	80	100			
Rated travel [mm]	15				15	30	15	30					15			30					
DN																					
32	•	•																			
40	•	•	•	•																	
50	•	•	•	•	•																
65				•	•	•											•	•			
80				•	•	•			• 1)								•	•	•		
100									•		• 1)	• 1)							•		
125									• 1)	•	• 1)								•		
150									•	• 1)		• 1)							• 1)	•	
Permissible operating pressure p and permissible differential pressure Δp [bar] · Refer to T 8340 EN and T 8331 EN for nominal thrusts																					
Balancing $\frac{W_{w/o}}{W_o}$	Type 3274-23	40	40	37.7	24.7	15.1	8.5	7.2	5.0	4.3	2.6	2.1	1.4	40	24.7	15.1	7.2	4.3	2.6		
	Type 3374-26	23.7	23.7	13.9	9.1	5.5	3.1	-	1.8	-	-	-	-	23.7	9.1	5.5	-	-	-		
	Type 3274-21	-	-	-	-	-	-	-	40	40	40	40	25	-	-	-	-	40	40		

1) Version also available with pressure balancing

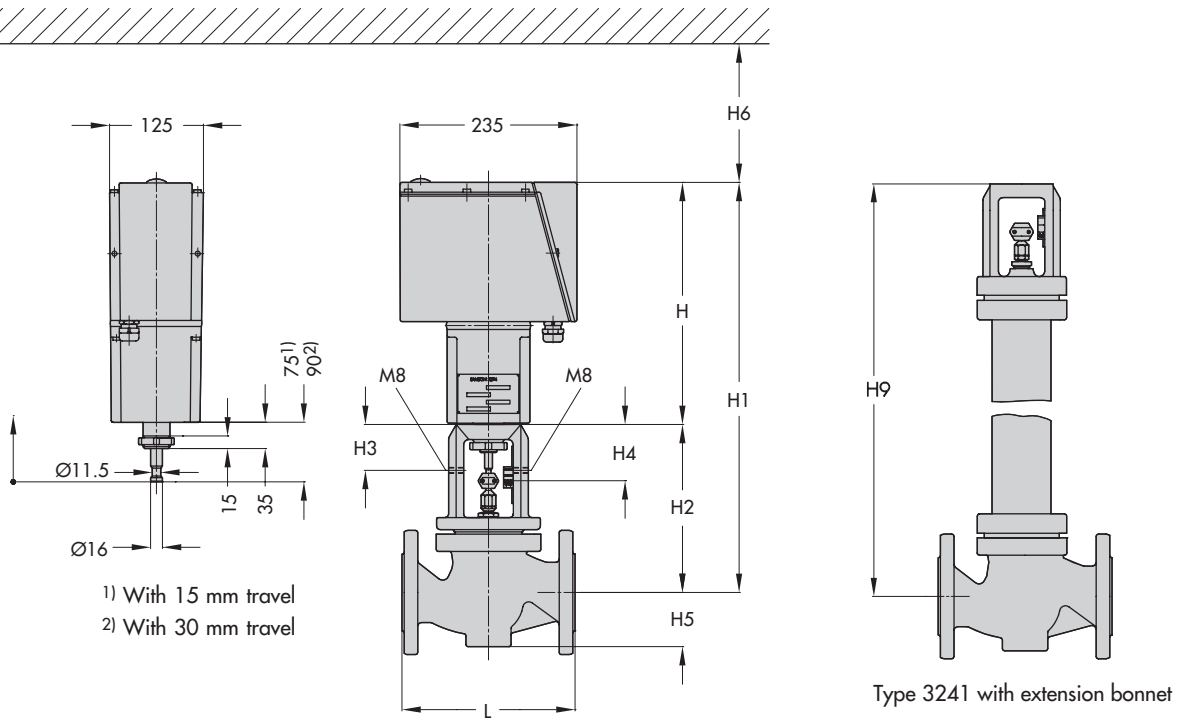
Table 3 · Possible combinations for Type 3241 Globe Valve/actuators (typetested version)

Type 3241 Globe Valve												
Type	Refer to Data Sheet for details	Nominal size DN										
		15	20	25	32	40	50	65	80	100	125	150
3274-23	T 8340 EN	•	•	•	•	•	•	•	•	•	•	•
3274-21		–	–	–	–	–	–	•	•	•	•	•
3374-26	T 8331 EN	•	•	•	•	•	•	•	•	•	–	–

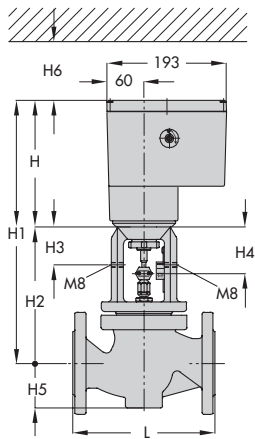
Table 4 · Dimensions and weights

Nominal size	DN	15	20	25	32	40	50	65	80	100	125	150
Length L	mm	130	150	160	180	200	230	290	310	350	400	480
Height H1	mm	H2 + H										
Height H2	mm	220	220	220	220	220	220	260	260	350	363	390
Height H3	mm	61	61	61	61	61	61	61	61	75	75	75
Height H4, valve closed	mm	75	75	75	75	75	75	75	75	90	90	90
Height H5	approx. mm	44	44	44	72	72	72	98	98	118	144	175
Height H												
Type 3241/3274	mm	320										
Type 3241/3374	mm	204								–	–	–
Height H6												
Type 3241/3274	mm	150										
Type 3241/3374	mm	300								–	–	–
Height w. extension bonnet H9	mm	408	408	408	408	408	408	450	450	635	644	671
Weight												
Type 3241/3274 without extension bonnet	approx. kg	16	17	18	22	23	26	35	41	43	91	131
Type 3241/3274 with extension bonnet	approx. kg	19	20	21	28	29	32	43	49	71	116	161
Type 3241/3374 without extension bonnet	approx. kg	9	10	11	15	16	19	28	34	–	–	–
Type 3241/3374 with extension bonnet	approx. kg	12	13	14	21	22	25	36	42	–	–	–

Type 3241/3274



Type 3241/3374



Specifications subject to change without notice.

