DATA SHEET

T 8132 EN

Series V2001 Valves · Type 3531 Globe Valve for Heat Transfer Oil

With electropneumatic, pneumatic or electric actuator

ANSI version

CE Ex certified

Application

Control valves for heat transfer applications using organic media according to DIN 4754

Nominal size	**NPS ½ to 3**
Pressure rating	**Class 150**
Temperatures	**14 to 660 °F (-10 to +350 °C)**

Fig. 1: *Type 3531-IP*

Fig. 2: *Type 3531-PP*

Fig. 3: *Type 3531-E1*

Fig. 4: *Electric actuator for Type 3531-E3*

Special features

The Type 3531 Globe Valve for Heat Transfer Oil can be equipped with either pneumatic or electric actuators:

- Electropneumatic actuator for Type 3531-IP
- Pneumatic actuators for Type 3531-PP
- Electric actuators for Type 3531-E1 or Type 3531-E3

Valve body

- Material: Cast steel or stainless steel for Class 150
- Nominal sizes NPS ½ to 3

Other special features

- Stem sealed by metal bellows and additional packing
- Metal-seated valve plug

The control valves can optionally be equipped with positioners, limit switches and resistance transmitters.

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · samson@samsongroup.com · www.samsongroup.com

Edition April 2026

Versions

- **Type 3531-IP Electropneumatic Globe Valve for Heat Transfer Oil** (Fig. 1) · With Type 3372 Pneumatic Actuator, with Type 3725 Positioner · Tight-closing function for completely venting or filling the actuator with air · 4 to 20 mA set point · Max. 90 psi (6 bar) supply air · Fail-safe position actuator stem extends or retracts · Optionally with Type 4744-2 Limit Switch
- **Type 3531-PP Pneumatic Globe Valve for Heat Transfer Oil** (Fig. 2) · With Type 3371 Pneumatic Actuator · Bench range 30 to 48 psi (2.1 to 3.3 bar) for fail-close version or 6 to 20 psi (0.4 to 1.4 bar) for fail-open version · Optionally with Type 4744-2 Limit Switch
- **Type 3531-E1 Electric Globe Valve for Heat Transfer Oil** (Fig. 3) · Nominal size NPS ½ to 2 with Type 5827-N3 Electric Actuator for 230 V/50 Hz or 24 V/50 Hz · Optionally with limit contacts, resistance transmitters, positioner
- **Type 3531-E3 Electric Globe Valve for Heat Transfer Oil** (Fig. 4) · With Type 3374 Electric Actuator for 230 V/50 Hz, 230 V/60 Hz, 120 V/60 Hz or 24 V/50 Hz or 24 V/60 Hz · Optionally with fail-safe action (typetested), limit contacts, resistance transmitters, positioner

Further versions

- **Type 3531** · Temperature range down to -94 °F (-70 °C) · On request
- **Explosion-protected version** with electric actuators · On request
- **DIN version of Type 3531** · See Data Sheet ▶ T 8131

Principle of operation

The process medium flows through the valve in the direction indicated by the arrow in the flow-to-open direction (see Fig. 5 and Fig. 6). The plug is moved by changing the control signal applied to the actuator. The valve plug position determines the cross-sectional area between the seat and plug.

The plug stem is connected to the actuator stem by a stem connector. The plug stem is sealed by a metal bellows and an additional packing.

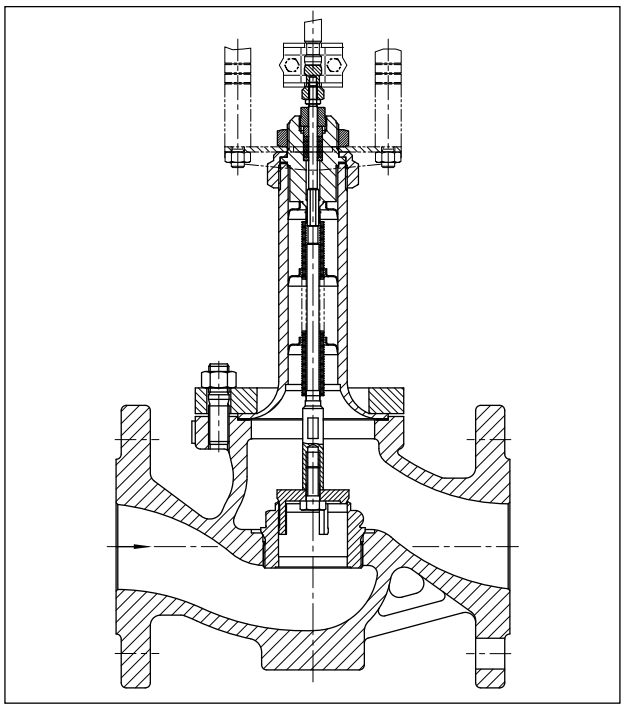

Fig. 5: *Type 3531-IP Globe Valve for Heat Transfer Oil in DN 15 to 50/NPS ½ to 2*

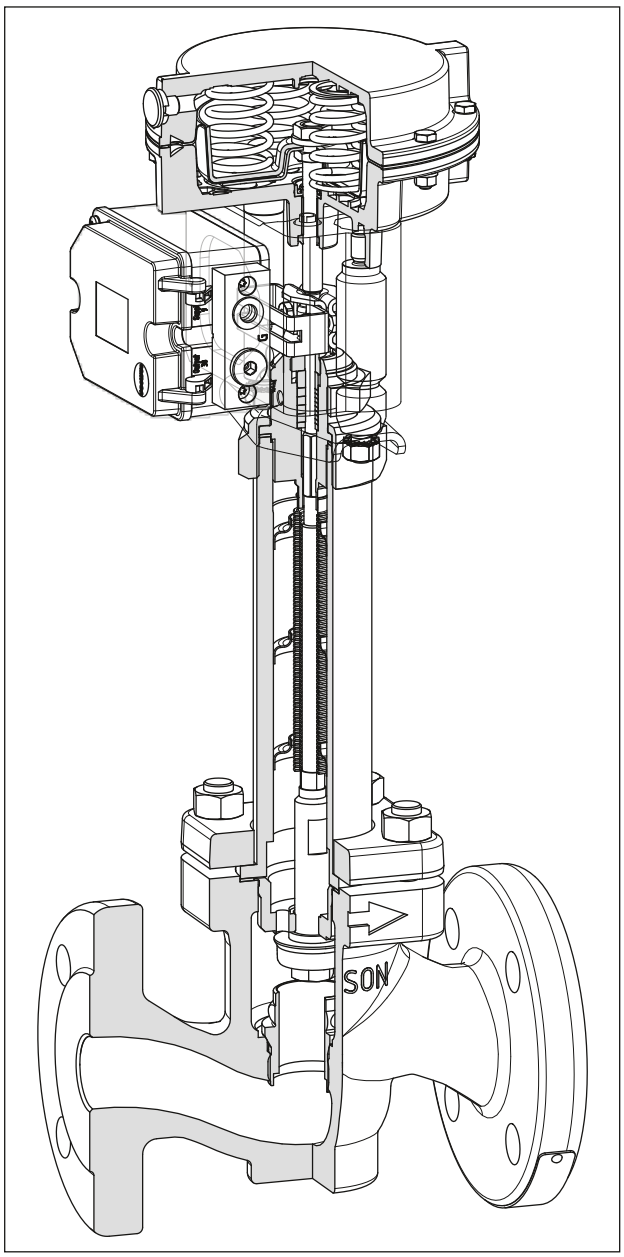

Fig. 6: *Type 3531-IP Globe Valve for Heat Transfer Oil · Actuator with Type 3725 Positioner*

Fail-safe positions

When the valve is combined with a pneumatic actuator with integrated springs or an electric actuator with fail-safe action, the control valve has two different fail-safe positions that become effective when the supply air or control signal fails:

- **Actuator stem extends (fail-close):**
  When the signal pressure is reduced or the air supply fails, the springs move the actuator stem downward. The valve closes upon fail-safe action.
- **Actuator stem retracts (fail-open):**
  When the signal pressure is reduced or the air supply fails, the springs move the actuator stem upward. The valve opens upon fail-safe action.

Associated documentation

Instructions on how to mount the valve on the actuator can be found in the mounting and operating instructions:

- EB 8131/8132 Type 3531 Globe Valve for Heat Transfer Oil
- EB 8313-3 Pneumatic actuator for Type 3531-IP
- EB 5827-1 Electric actuator (three-step version) for Type 3531-E1
- EB 5827-2 Electric actuator (with positioner) for Type 3531-E1
- EB 8331-3 Electric actuator (three-step version) for Type 3531-E3
- EB 8331-4 Electric actuator (with positioner) for Type 3531-E3

Table 1: *Technical data for Type 3531 · ANSI version*

Nominal size	**NPS**	**½ · ¾ · 1 · 1½ · 2 · 2½ · 3**	
Material		**Cast steel A216 WCC**	**Stainless steel A351 CF8M**
Connection	Flanges	RF	
Pressure rating	Class	150	
Seat-plug seal		Metal seal	
Characteristic		Equal percentage	
Rangeability		50:1	
Conformity		CE	
Temperature range		14 to 660 °F (-10 to +350 °C) · Extended temperature range down to -94 °F (-70 °C) on request	
Leakage class according to DIN EN 1349		Metal seal: IV	

Table 2: *Materials for Type 3531 · ANSI version*

Valve body	**Cast steel A216 WCC**	**Stainless steel A351 CF8M**
Valve bonnet	A105	A351 CF8M
Seat	NPS 1½ to 2: A479 316/A479 316L NPS 2½ and larger: A276 410T	A479 316/A479 316L
Plug	Up to NPS 2: 1.4305 NPS 2½ and larger: A582 430F	
Bellows seal	A479 316Ti	
Packing	PTFE	
Body gasket	Graphite on metal core	

Flow coefficients and seat diameters

Table 3: *Overview of Type 3531*

Nominal size	**DN**	**15**		**20**		**25**		**40**	**50**	**65**	**80**
	NPS	**½**		**¾**		**1**		**1½**	**2**	**2½**	**3**
Flow coefficients	K_{VS}	1.6	4	2.5	6.3	4	10	25	35	50	80
	C_V	2	5	3	7.5	5	12	30	40	60	94
Seat Ø	mm	9.5	19	14	22	19	24	40	40	65	65
	in	0.37	0.75	0.55	0.86	0.75	0.94	1.57	1.57	2.56	2.56
Rated travel	mm	15	15	15	15	15	15	15	15	15	15
	in	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59

Table 4: *C_V and K_{VS} coefficients with associated nominal sizes*

	K_{VS}	**1.6**	**2.5**	**4**	**6.3**	**10**	**25**	**35**	**50**	**80**
	C_V	**2**	**3**	**5**	**7.5**	**12**	**30**	**40**	**60**	**94**
DN	NPS									
15	½	•		•						
20	¾		•		•					
25	1			•		•				
40	1½						•			
50	2							•		
65	2½								•	
80	3									•

Pneumatic actuators with Type 3531

Table 5: *Technical data for pneumatic actuators*

Valve/actuator		Type 3531-IP with Type 3372 Actuator	Type 3531-PP with Type 3371 Actuator
Actuator area		120 cm²	120 cm²
Fail-safe action		Actuator stem extends (FA) or actuator stem retracts (FE)	
Set point		4 to 20 mA	–
Set point/bench range with fail-safe action	Stem extends (FA)	4 to 20 mA · Minimum current 3.6 mA Load impedance <6 V (300 Ω/20 mA) Direction of action >>, fixed	2.1 to 3.3 bar 30 to 48 psi
	Stem retracts (FE)		0.4 to 1.4 bar 6 to 20 psi
Characteristic		Linear · Deviation from terminal-based conformity: ≤2 %	–
Hysteresis		≤1 %	–
Variable position		≤7 %	–
Transit time for rated travel	p_{perm} = 60 psi (4 bar)	Approx. 3 s	
Air consumption in steady state		≤160 l_n/h when p_{perm} = 60 psi (4 bar) ≤200 l_n/h when p_{perm} = 90 psi (6 bar)	–
Degree of protection		IP66 with Type 3725	–
Permissible ambient temperature		-30 to +70 °C -22 to +160 °F	-35 to +90 °C -31 to +194 °F
Additional electrical equipment		1 or 2 changeover contacts (IP65, Ex d, 3 m cable) Nominal voltage/current: 250 V/5 A or 250 V/0.4 A	

Table 6: *Materials for pneumatic actuators*

Actuator		Type 3372	Type 3371
Actuator area		120 cm²	120 cm²
Actuator housing		GD-AlSi12	GD-AlSi12
Diaphragm		NBR	NBR
Actuator stem		1.4305	1.4305
Positioner housing		Type 3725: Polyphthalamide (PPA)	Polyamide
Yoke	Stem	9SMn28K zinc-plated, matt black finish	–
	Crossbeam	1.4301	–

Table 7: *Permissible differential pressures for metal-seated plug*

Fail-safe action		Actuator stem extends		Actuator stem retracts	
Bench range		**20 to 34 psi 1.4 to 2.3 bar**	**30 to 48 psi 2.1 to 3.3 bar**	**20 to 34 psi 1.4 to 2.3 bar**	**6 to 20 psi 0.4 to 1.4 bar**
Min./max. supply pressure		**40 to 60 psi 2.8 to 4.0 bar**	**55 to 90 psi 3.7 to 6.0 bar**	**55 to 60 psi 3.7 to 4.0 bar**	**50 to 90 psi 3.5 to 6.0 bar**
C_V coefficients	K_{VS} coefficients	Δp when p_2 = 0 psi (bar)		Δp when p_2 = 0 psi (bar)	
2 to 12	1.6 to 10	230 (16)	–	230 (16)	–
30 to 40	25 to 35	145 (10)	–	145 (10)	–
60 to 94	50 to 80	50 (3.5)	72 (5)	50 (3.5)	72 (5)

Electric actuators with Type 3531

Table 8: *Technical data for electric actuators*

Control valve		**Type 3531-E1**	**Type 3531-E3**	
Type … Actuator		**5827-N3**	**3374-11**	**3374-21/31**[1]
Thrust		**0.7 kN**	**2.5 kN**	**2.0 kN**
Transit time for rated travel		90 s	120 s · Other transit times on request	
Supply voltage	230 V/50 Hz	•	•	
	230 V/60 Hz	•[2]	•	
	120 V/60 Hz	•	•	
	24 V/50 Hz	•	•	
	24 V/60 Hz	–	•	
Power consumption	Motor	3 VA	7.5 VA	10.5 VA
	With positioner	–	9.5 VA	12.5 VA
Manual override		•	•	
Degree of protection		IP54 when installed upright	IP54 · IP65 with cable gland	
	Mounting position	Suspended mounting not permitted (▶ EB 5827-1, ▶ EB 5827-2, ▶ EB 8331-3 and ▶ EB 8331-4)		
Permissible ambient temperature		0 to 50 °C 32 to 122 °F	5 to 60 °C 41 to 140 °F	
Additional electrical equipment				
Limit contacts		2	2	
Resistance transmitter (not for version with positioner)		1 0 to 1000 Ω	2 0 to 1000 Ω	
Positioner		Digital[3]	Digital	
Input signal		0/4 to 20 mA · 0/2 to 10 V		
Output signal		0/2 to 10 V		

1) Actuators with fail-safe action: Type 3374-21 with stem extends, Type 3374-31 with stem retracts

2) Special version

3) Power supply for version with positioner: 24 V DC, 24 V/50 and 60 Hz as well as 85 to 264 V/50 and 60 Hz

Table 9: *Permissible differential pressures for metal-seated plug*

Control valve		**Type 3531-E1**	**Type 3531-E3**
Type … Actuator		**5827-N3**	**3374-11**
Thrust		**0.7 kN**	**2.5 kN**
C_V coefficients	K_{VS} coefficients	Δp when p_2 = 0 psi (bar)	Δp when p_2 = 0 psi (bar)
2 to 12	1.6 to 10	145 (10)	230 (16)
30 to 40	25 to 35	50 (3.5)	175 (12)
60 to 94	50 to 80	–	58 (4)

Dimensions

Table 10: *Dimensions for Type 3531 Valve · ANSI version*

Valve	NPS	½	¾	1	1½	2	2½	3
	DN	15	20	25	40	50	65	80
Height H[1)]	in	10.63			11.02		15.35	
	mm	270			280		390	
Class 150								
Length L	in	7.25	7.25	7.25	8.75	10	10.87	11.73
	mm	184	184	184	222	254	276	298
Height H2	in	3.62	3.62	3.62	4.37	5	5.43	5.87
	mm	92	92	92	111	127	138	149

1) Plug in the closed position

Table 11: *Type 3531-IP Electropneumatic Control Valve*

Valve	DN	15	20	25	40	50	65	80
	NPS	½	¾	1	1½	2	2½	3
H1	mm	402	402	402	412	412	522	522
	in	15.83	15.83	15.83	16.22	16.22	20.55	20.55
H3 (minimum distance)	mm	110	110	110	110	110	110	110
	in	4.33	4.33	4.33	4.33	4.33	4.33	4.33

Table 12: *Type 3531-PP Pneumatic Control Valve*

Valve	DN	15	20	25	40	50	65	80
	NPS	½	¾	1	1½	2	2½	3
H1	mm	471	471	471	481	481	586	586
	in	18.54	18.54	18.54	18.94	18.94	23.07	23.07
H3 (minimum distance)	mm	110	110	110	110	110	110	110
	in	4.33	4.33	4.33	4.33	4.33	4.33	4.33

Table 13: *Type 3531-E1 Electric Control Valve*

Valve	DN	15	20	25	40	50	65	80
	NPS	½	¾	1	1½	2	2½	3
H1 (Type 5827 Actuator)	mm	432	432	432	442	442	–	–
	in	17.01	17.01	17.01	17.40	17.40	–	–
H3 (minimum distance)	mm	110	110	110	110	110	–	–
	in	4.33	4.33	4.33	4.33	4.33	–	–

Table 14: *Type 3531-E3 Electric Control Valve*

Valve	DN	15	20	25	40	50	65	80
	NPS	½	¾	1	1½	2	2½	3
H1	mm	529	529	529	539	539	644	644
	in	20.83	20.83	20.83	21.22	21.22	25.35	25.35
H3[1)] (minimum distance)	mm	110	110	110	110	110	110	110
	in	4.33	4.33	4.33	4.33	4.33	4.33	4.33

1) Cover screws are mounted from the top.

Dimensional drawing of valve

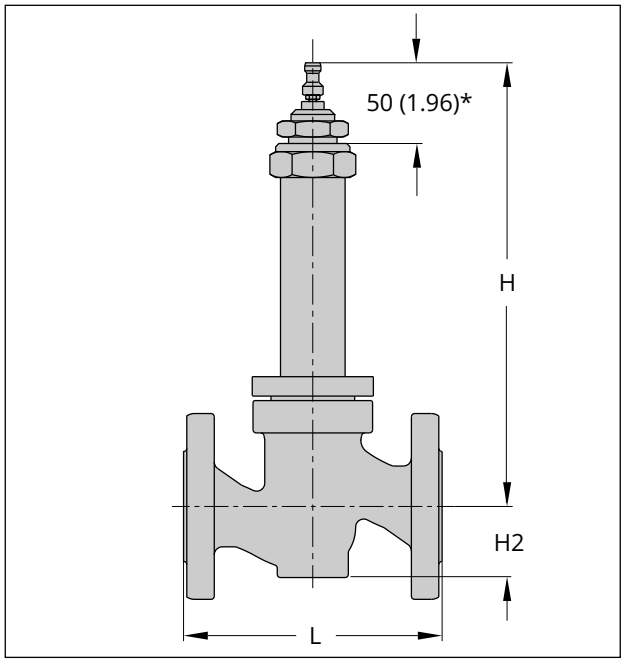

Fig. 7: *Dimensional drawing of Type 3531*

* Dimension applies to plug stem pushed into the valve body

Dimensional drawings for electropneumatic control valves

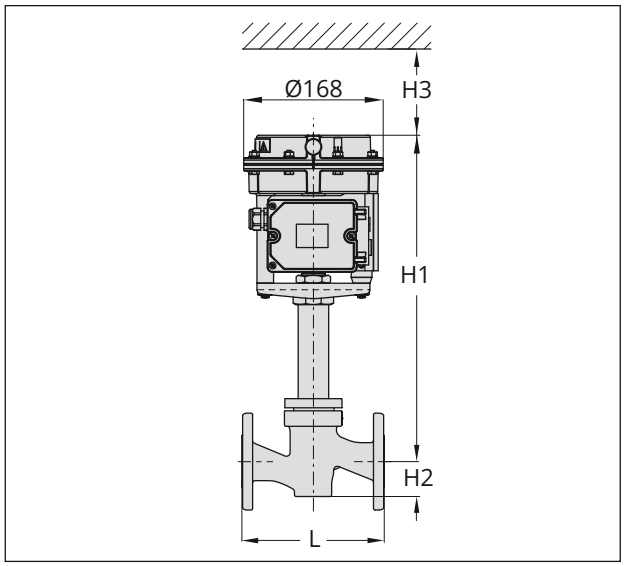

Fig. 8: *Type 3531-IP Electropneumatic Control Valve with Type 3725 Positioner*

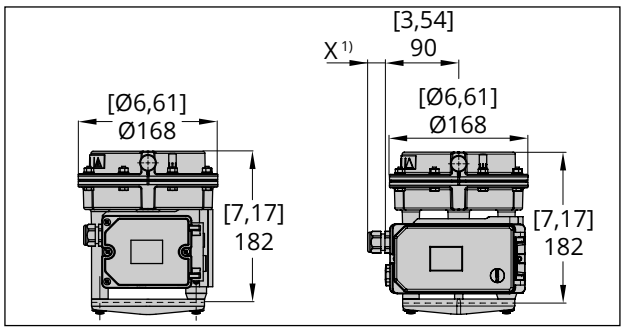

Fig. 9: *Specifications in mm [inches]*
Left: Type 3372/120 cm² with Type 3725 Positioner
Right: Type 3372/120 cm² with Series 3730 Positioner

1) The dimension X depends on the cable gland used.

Dimensional drawing for pneumatic control valve

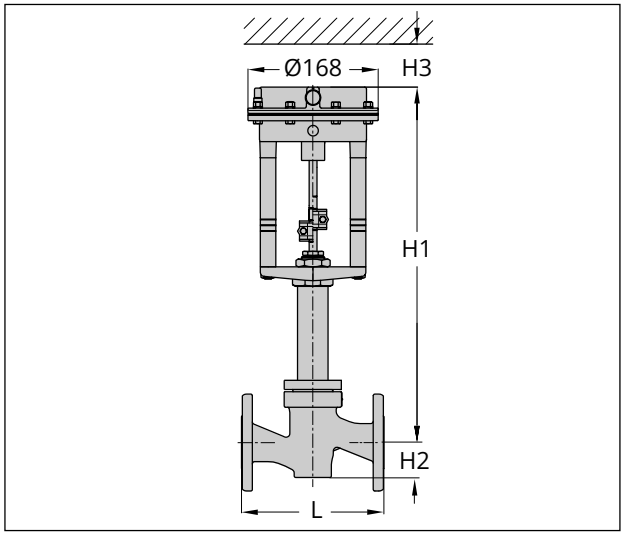

Fig. 10: *Type 3531-PP Pneumatic Control Valve*

Dimensional drawings · Actuators for electric control valves

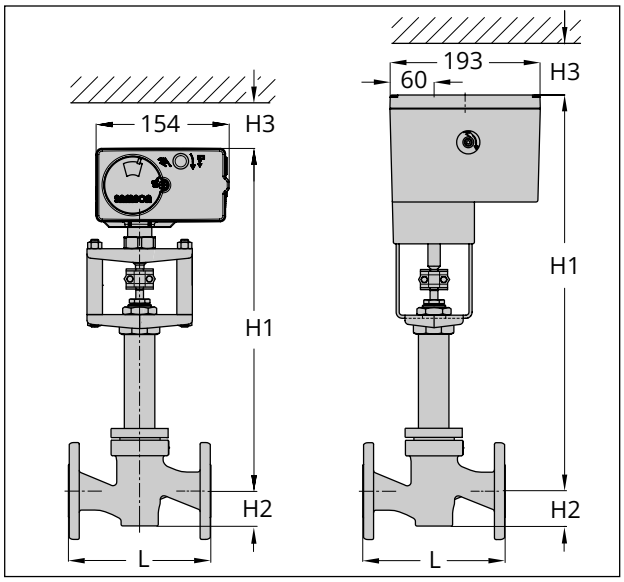

Fig. 11: *Left: Type 3531-E1 Electric Control Valve (Type 5827 Actuator)*
Right: Type 3531-E3 Electric Control Valve (Type 3374 Actuator)

Weights

Table 15: *Weights[1] for Type 3531 Valve*

Nominal size	**DN**	**15**	**20**	**25**	**40**	**50**	**65**	**80**
	NPS	**½**	**¾**	**1**	**1½**	**2**	**2½**	**3**
Type 3531-IP Control Valve	kg	7.7	8.7	10	15.3	18.2	25.7	34.5
	lbs	17	19.2	22	33.7	40.1	56.7	76.1
Type 3531-PP Control Valve	kg	7.3	8.3	9.6	14.9	17.8	25.3	31.1
	lbs	16.1	18.3	21.2	32.8	39.2	55.8	68.6
Type 3531-E1 Control Valve	kg	5.8	6.8	8.1	13.4	16.3	–	–
	lbs	12.8	15	17.9	29.5	35.9	–	–
Type 3531-E3 Control Valve	kg	9.5	10.5	11.8	17.1	20	27.5	36.3
	lbs	20.9	23.1	26	37.7	44.1	60.6	80

1) The weights specified apply to a specific standard device configuration. Weights of other valve configurations may differ depending on the version (material, trim etc.).

Ordering text

The following specifications are required on ordering:

Valve	
Type 3531 Globe Valve for Heat Transfer Oil	
Nominal size	NPS ...
Pressure rating	Class ...
Flow coefficients	C_V ...
Body material	See Table 2
Seat-plug seal	Metal seal
Actuators	
for **Type 3531-IP:** Type 3372 Electropneumatic Actuator	
With positioner	Type 3725/Series 3730
Optional	Intrinsically safe Ex ia
Additional equipment	1 or 2 limit switches
for **Type 3531-PP:** Type 3371 Pneumatic Actuator	
Fail-safe action	Actuator stem extends (FA) or stem retracts (FE)
Bench range	FA: 30 to 48 psi (2.1 to 3.3 bar) FE: 6 to 20 psi (0.4 to 1.4 bar)
Additional equipment	1 or 2 limit switches
for **Type 3531-E1:** Type 5827-N3 Electric Actuator	
Supply voltage	Three-step version – 230 V/50 Hz – 24 V/50 Hz Version with positioner – 24 V DC – 24 V/50 and 60 Hz – 85 to 264 V/50 and 60 Hz
Additional equipment	– 2 limit contacts – Resistance transmitter 0 to 1000 Ω – Digital positioner – Input: 0/4 to 20 mA or 0/2 to 10 V
for **Type 3531-E3:** Type 3374 Electric Actuator	
Fail-safe action	Actuator stem extends (FA) or stem retracts (FE)
Thrust	With fail-safe action: 2 kN Without fail-safe action: 2.5 kN
Supply voltage	– 230 V/50 Hz – 230 V/60 Hz – 120 V/60 Hz – 24 V/50 Hz – 24 V/60 Hz
Additional equipment	– 2 limit contacts – Resistance transmitter 0 to 1000 Ω – Digital positioner with input and output: 0/4 to 20 mA or 0/2 to 10 V

2026-05-06 | English | 4000301063 | 1.0