DATA SHEET

T 8075 EN

Type 3591 Globe Valve

ANSI version

CE

Application

Maintenance-friendly cage valve for process engineering applications with high industrial requirements

Valve size	**NPS 10 to 32**
Pressure rating	**Class 150 to 900**
Temperatures	**–46 to +500 °C · –50 to +932 °F**

Type 3591 Globe Valve operated with
- Type 3271 Pneumatic Actuator (Type 3591-1 Control Valve)
- Hydraulic piston actuator
- Pneumatic piston actuator

Special features
- Flanged seat or clamped-in seat for quick service
- Balanced to handle high differential pressures
- Anti-rotation fixture at the piston rod

Valve body made of
- Cast steel
- Cast stainless steel
- High-temperature cast steel
- Cold-resisting cast steel

Low-noise valve piston
- Metal seal
- High-performance metal seal (on request)

The control valves with their modular design can be equipped with various accessories:
Positioners, limit switches, solenoid valves and other accessories according to IEC 60534-6-1 and NAMUR recommendation (see Information Sheet ▶ T 8350 for more details).

Versions

Standard version · Globe valve for temperatures from –10 to +220 °C (14 to 428 °F) · NPS 10 to 28 (Class 150 to 900) and NPS 32 (Class 150)

– **Type 3591-1** (Fig. 1) · Type 3591 Valve and Type 3271 Pneumatic Actuator (see Data Sheets ▶ T 8310-2 and ▶ T 8310-3)

– Type 3591 Valve and hydraulic piston actuator (Fig. 2)

– Type 3591 Valve and pneumatic piston actuator

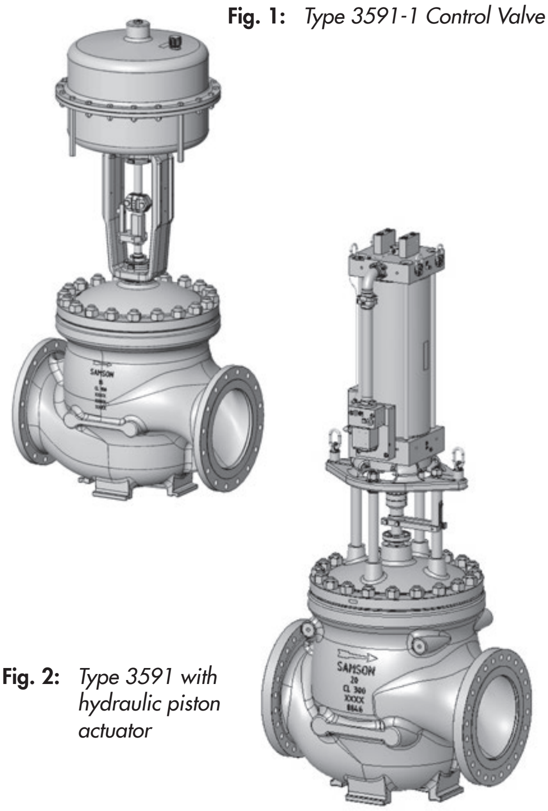


Fig. 1: *Type 3591-1 Control Valve*

Fig. 2: *Type 3591 with hydraulic piston actuator*

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

Edition December 2018

Further versions

- **Welding ends or welding-neck ends**
- **Multi-hole cage** and **Combi Cage** for noise reduction
- **Insulating section or bellows seal** · Details on request
- **Type 3273 Side-mounted Handwheel** · See Data Sheet ▶ T 8312
- **Other materials** · On request
- **Version in NPS 32, Class 300 to 900** · On request

Other versions (on request)

- Type 3591-3 Valve with Hand-operated Actuator
- Control valve with Type 3591-4 Electric Actuator

Principle of operation

The Type 3591 Valve uses a piston (5), which moves within a cage (124), as the closure member. The piston is pressure-balanced as standard. The piston rod (36) connected to the actuator stem by a stem connector. The piston rod is sealed by either a PTFE or graphite packing (15), which is either self adjusting or can be adjusted manually.

The medium flows through the valve as indicated by the arrow on the body. A change in the signal acting on the actuator causes the piston to move. The piston position and cage shape determine the released cross-section and the flow rate with it.

Versions

The seat (4) of the Type 3591 version with flanged seat is bolted into the seat bridge. The cage (124) is suspended in the valve body (1) (see Fig. 3). In pressure ratings ≥Class 300, a pin (223) is used on the cage to prevent it from rotating (see Fig. 4). Table 1 lists the different versions together with their special construction features.

Actuator connection and anti-rotation fixture

The actuator is connected using a special assembly (60), which varies depending on the mounted actuator. These assemblies are fitted with an external anti-rotation fixture for the piston rod.

Lifting eyelets

The valves in valve sizes NPS 16 (Class 300 to 900) and NPS 20 (Class 150 to 900) to 32 (Class 150) can be equipped with additional lifting eyelets (148) to facilitate lifting and transporting.

Fail-safe action

Depending on how the compression springs are arranged in the pneumatic actuator, the valve has two fail-safe positions that become effective when the supply air fails:

- **Actuator stem extends (fail-close):** The valve closes when the supply air fails.
- **Actuator stem retracts (fail-open):** The valve opens when the supply air fails.

Table 1: *Available versions* 1)

Valve size	Pressure rating	Seat	Gaskets (17, 126)	Pin (223) functioning as anti-rotation fixture	Fig.
NPS 10 to 12	Class 150	Flanged	Side by side	–	Fig. 3
NPS 10 to 12	Class 300 to 900	Flanged	Side by side	Yes	–
NPS 16	Class 150	Flanged	Side by side	–	Fig. 3
NPS 16	Class 300 to 900	Flanged	Side by side	Yes	Fig. 4
NPS 20 to 32	Class 150	Flanged	Side by side	–	–
NPS 20 to 28	Class 300 to 900	Flanged	Side by side	Yes	Fig. 4

1) NPS 10 and 12 pending

Table 2: *Technical data · Type 3591*

Material		Cast steel			Cast stainless steel
		A352 LCC	A216 WCC	A217 WC6	A351 CF8M
Valve size	NPS	10 to 32 1)	10 to 32 1)	10 to 32 1)	10 to 32 1)
Pressure rating		Class 150 to 900			
Type of connection	Flange	All ANSI versions			
	Welding end	According to ASME B16.25			
Seat-piston seal		Metal seal or high-performance metal seal			
Characteristic		Equal percentage (eq. %) · Linear (lin) · Modified linear (mod. lin) 2)			
Temperature ranges in °C (°F) · Permissible operating pressures acc. to pressure-temperature diagram (see Information Sheet ▶ T 8000-2)					
Body without insulating section		−10 to +220 (14 to 428) 4)	−10 to +220 (14 to 428) 4)	−10 to +220 (14 to 428) 4)	−10 to +220 (14 to 428) 4)
Body with	Insulating section	−46 to +345 (–50 to +653)	−29 to +425 (–20 to +797)	−29 to +500 (–20 to +932)	−46 to +500 (–50 to +932)
Valve piston, balanced	PTFE	−46 to +220 (–50 to +428)			
	Graphite	−46 to +500 (–50 to +932)			
Leakage class according to ANSI/FCI 70-2 (1991)					
Valve piston, balanced		Standard: IV (with PTFE or graphite ring) 3)			
Compliance					
		CE · EAC			

1) NPS 10 and 12 pending
2) Equivalent to quick opening
3) High-performance metal seal: leakage class V (only with PTFE ring) on request
4) Up to +350 (662) with high-temperature packing

Table 3: *Materials*

Standard version Body and flanges 1)		Cast steel			Cast stainless steel
		A352 LCC	A216 WCC	A217 WC6	A351 CF8M
Seat and piston 2)	Metal seal	410-2/1.4006 · CA6NM-B/1.4317			316L/1.4404 · CF8M/1.4408
Gasket	Pressure balancing	PTFE with carbon · Graphite			
Packing 3)		≤NPS 16, Class 150: packing PTFE with carbon, spring 1.4310 or adjustable high-temperature packing ≥NPS 16, Class 300: packing PTFE with carbon, adjustable or adjustable high-temperature packing			
Body gasket		Graphite gasket on metal core			

1) Pressure-temperature diagrams and additional materials can be found in the Information Sheet ▶ T 8000-2.
2) Stellite® facing on request
3) Other packings on request (▶ T 8000-1)

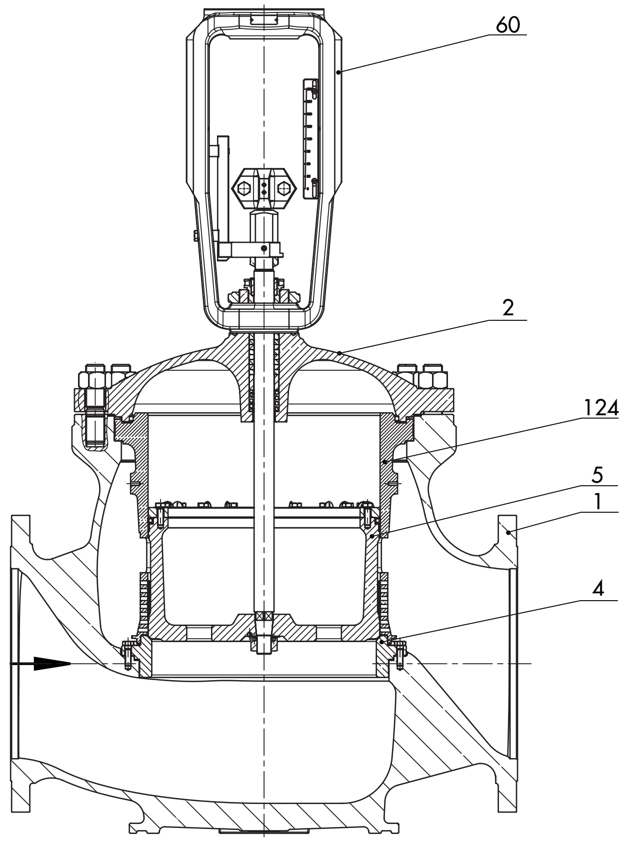


Fig. 3: *Type 3591 with flanged seat · NPS 10 to 12 (Class 150 to 900) and NPS 16 (Class 150)*

1 Valve body
2 Bonnet
4 Seat
5 Piston
14 Body nut
15 Packing
17 Body gasket
36 Piston rod
60 Yoke assembly with anti-rotation fixture
124 Cage
126 Gasket between cage and bonnet
148 Lifting eyelet (available for NPS 16 and larger, Class 300)
160 Screw
223 Pin functioning as anti-rotation fixture on top of the cage (only for valves in ≥NPS 10 and ≥Class 300)

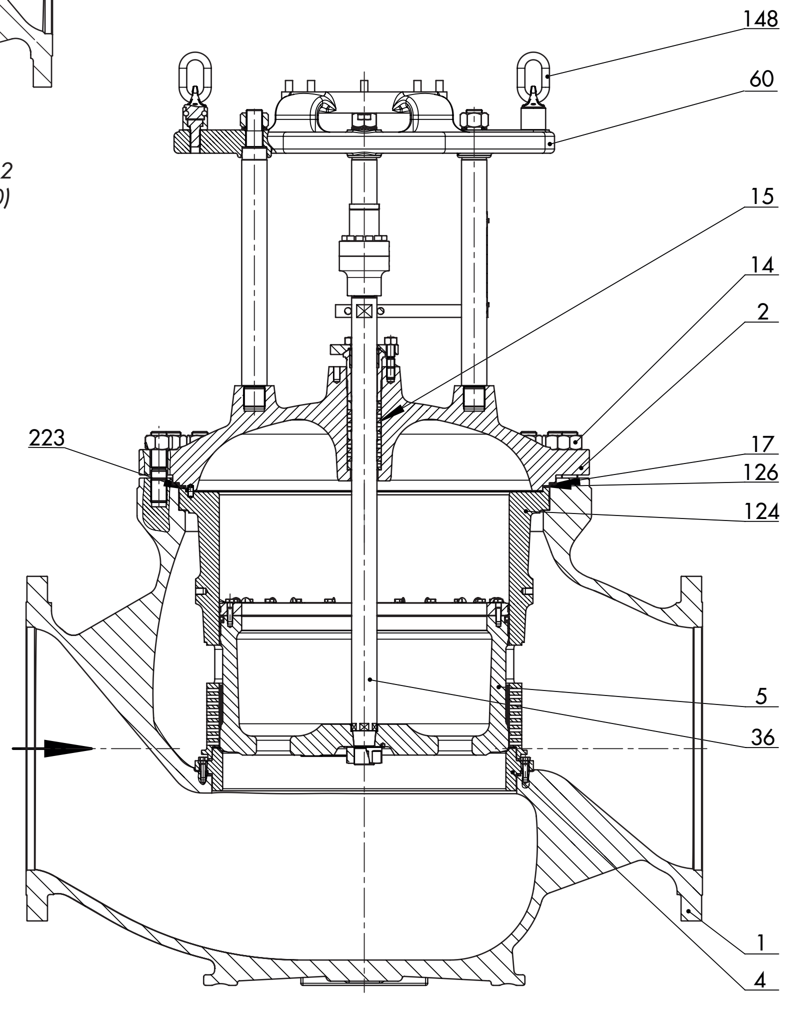


Fig. 4: *Type 3591 with flanged seat · NPS 16 to 28 (Class 300 to 900)*

Table 4: *Overview of available K_{VS}/C_{Vmax} coefficients*

SB: seat bore · KØ: piston rod diameter · mod. lin: modified linear · lin: linear · eq. %: equal percentage

Table 4.1: *Flanged seat, NPS 10 to 32, Class 150 to 600 · 60 to 150 mm travel*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characteristic	Travel in mm					
					60		90	120		150
					K_{VS}/C_{Vmax}					
10 [1]	280	40	14	mod. lin	1040/1200		1100/1270	1120/1300		–
				lin	325/375	655/755	980/1130	1080/1250		
				eq. %	300/350	655/755	860/1000	1040/1200		
12 [1]	340	40	20	mod. lin	1340/1550		–	1470/1700		1500/1730
				lin	425/490	830/960		1340/1550		1400/1600
				eq. %	345/400	830/960		1200/1400		1340/1550
16	450	60 [2]	42	mod. lin	2150/2500		–	2700/3150		–
				lin	640/740	1300/1500		2500/2900		
				eq. %	605/700	1300/1500		2300/2650		
20	560	60	66	mod. lin	–	–	–	4000/4650		–
				lin				1300/1500	2600/3000	
				eq. %				1080/1250	2600/3000	
24	670	80 [3]	96	mod. lin	–	–	–	5700/6600		–
				lin				1700/2000	3450/4000	
				eq. %				1470/1700	3450/4000	
28	780	80	132	mod. lin	–	–	–	7200/8300		–
				lin				2150/2500	4300/5000	
				eq. %				1850/2100	4300/5000	

1) In preparation
2) With Class 150: KØ 40 mm
3) With Class 150: KØ 60 mm

Table 4.2: *Flanged seat, NPS 10 to 32, Class 150 to 600 · 200 to 400 mm travel*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characteristic	Travel in mm 200	250	300	350	400
					K_{VS}/C_{Vmax}				
16	450	60[2]	42	mod. lin	2850/3300	–	–	–	–
				lin	2800/3250				
				eq. %	2700/3150				
20	560	60	66	mod. lin	4400/5100	4500/5200	–	–	–
				lin	4050/4700	4300/5000			
				eq. %	3750/4350	4150/4800			
24	670	80[3]	96	mod. lin	6550/7550	6700/7750	–	–	–
				lin	5900/6850	6450/7450			
				eq. %	5200/6000	6000/6900			
28	780	80	132	mod. lin	–	8800/10200	–	9200/10600	–
				lin		8400/9700		8900/10300	
				eq. %		7900/9100		8600/10000	
32[4]	890	80	On request	mod. lin	10500/12000	–	11600/13400	–	12000/13900
				lin	6700/7750		10500/12000		11400/13200
				eq. %	4000/4650		9200/10600		10800/12500

1) In preparation
2) With Class 150: KØ 40 mm
3) With Class 150: KØ 60 mm
4) Class 150 only

Table 4.3: *Flanged seat, NPS 10 to 32, Class 900 · 60 to 150 mm travel*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characteristic	Travel in mm 60		90	120	150
					K_{VS}/C_{Vmax}				
10[1]	280	40	14	mod. lin	1150/1350		1200/1400	1250/1450	–
				lin	325/375	655/755	1080/1250	1200/1400	
				eq. %	300/350	655/755	900/1040	1100/1270	
12[1]	340	40	20	mod. lin	1500/1730		–	1750/2020	1800/2080
				lin	425/490	830/960		1500/1730	1650/1900
				eq. %	345/400	830/960		1340/1550	1600/1850

1) In preparation

Table 5: *Overview of available K_{VS}/C_{Vmax} coefficients for version with multi-hole cage I (noise-reducing measure)*
SB: seat bore · KØ: piston rod diameter · mod. lin: modified linear · lin: linear · eq. %: equal percentage

Table 5.1: *Flanged seat, NPS 10 to 32, Class 150 to 600 · 60 to 150 mm travel*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characte-ristic	Travel in mm: 60		90	120		150
					K_{VS}/C_{Vmax}					
10 [1]	280	40	14	mod. lin	800/925		950/1100	1040/1200		–
				lin	300/350	625/725	900/1040	1000/1150		
				eq. %	300/350	625/725	700/810	900/1040		
12 [1]	340	40	20	mod. lin	950/1100		–	1300/1500		1400/1600
				lin	370/430	725/840		1250/1450		1340/1550
				eq. %	370/430	725/840		1150/1350		1300/1500
16	450	60 [2]	42	mod. lin	1400/1600		–	2250/2600		–
				lin	555/640	1150/1350		2200/2550		
				eq. %	475/550	1150/1350		1850/2100		
20	560	60	66	mod. lin	–	–	–	3150/3650		–
				lin				1200/1400	2400/2800	
				eq. %				1200/1400	2400/2800	
24	670	80 [3]	96	mod. lin	–	–	–	4000/4650		–
				lin				1400/1600	3250/3750	
				eq. %				1400/1600	3250/3750	
28	780	80	132	mod. lin	–	–	–	5000/5800		–
				lin				1850/2100	3900/4500	
				eq. %				1700/2000	3900/4500	

[1] In preparation
[2] With Class 150: KØ 40 mm
[3] With Class 150: KØ 60 mm

Table 5.2: *Flanged seat, NPS 10 to 32, Class 150 to 600 · 200 to 400 mm travel*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characte-ristic	Travel in mm 200	250	300	350	400
					K_{VS}/C_{Vmax}				
16	450	60 [1]	42	mod. lin	2680/3100	–	–	–	–
				lin	2650/3050				
				eq. %	2500/2900				
20	560	60	66	mod. lin	3900/4500	4200/4850	–	–	–
				lin	3650/4250	4000/4650			
				eq. %	3150/3650	3750/4350			
24	670	80 [2]	96	mod. lin	5500/6350	5900/6850	–	–	–
				lin	5100/5900	5700/6600			
				eq. %	4150/4800	5100/5900			
28	780	80	132	mod. lin	–	7700/8900	–	8400/9700	–
				lin		7300/8400		8200/9500	
				eq. %		6400/7400		7900/9100	
32 [3]	890	80	On re-quest	mod. lin	8700/10050	–	10000/11500	–	10700/12300
				lin	6700/7750		9300/10700		10500/12000
				eq. %	3100/3600		7300/8400		9500/11000

1) With Class 150: KØ 40 mm
2) With Class 150: KØ 60 mm
3) Class 150 only

Table 5.3: *Flanged seat, NPS 10 to 32, Class 900 · 60 to 150 mm travel*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characte-ristic	Travel in mm 60		90	120	150
					K_{VS}/C_{Vmax}				
10 [1]	280	40	14	mod. lin	800/925		1000/1150	1100/1270	–
				lin	300/350	625/725	950/1100	1080/1250	
				eq. %	300/350	625/725	700/810	950/1100	
12 [1]	340	40	20	mod. lin	950/1100		–	1470/1700	1600/1850
				lin	370/430	725/840		1340/1550	1550/1800
				eq. %	370/430	725/840		1200/1400	1470/1700

1) In preparation

Table 6: *Overview of available K_{VS}/C_{Vmax} coefficients for version with Combi Cage I (noise-reducing measure)*

Table 6.1: *Flanged seat, NPS 10 to 32, Class 150 to 600*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characteristic	Travel in mm: 60	90	120	150	200	250	300	350	400
					K_{VS}/C_{Vmax}								
10 [1]	280	40	14	mod. lin	–	1000/ 1150	1080/ 1250	–	–	–	–	–	–
				lin		–	–						
				eq. %		–	–						
12 [1]	340	40	20	mod. lin	–	–	1340/ 1550	1400/ 1600	–	–	–	–	–
				lin			–	–					
				eq. %			–	–					
16	450	60 [2]	42	mod. lin	–	–	2300/ 2650	–	2750/ 3200	–	–	–	–
				lin			–		–				
				eq. %			–		–				
20	560	60	66	mod. lin	–	–	–	–	4000/ 4650	4300/ 5000	–	–	–
				lin					–	–			
				eq. %					–	–			
24	670	80 [3]	96	mod. lin	–	–	–	–	5700/ 6600	6300/ 7300	–	–	–
				lin					–	–			
				eq. %					–	–			
28	780	80	132	mod. lin	–	–	–	–	–	7900/ 9100	–	8800/ 10200	–
				lin						–		–	
				eq. %						–		–	
32 [4]	890	80	On request	mod. lin	–	–	–	–	–	–	10500/ 12000	–	11000/ 12700
				lin							–		–
				eq. %							–		–

1) In preparation
2) With Class 150: KØ 40 mm
3) With Class 150: KØ 60 mm
4) Class 150 only

Table 6.2: *Flanged seat, NPS 10 to 32, Class 900*

NPS	SB in mm	KØ in mm	C_{Vmin} lin/ eq. %	Characteristic	Travel in mm: 60	90	120	150
					K_{VS}/C_{Vmax}			
10 [1]	280	40	14	mod. lin	–	1040/1200	1150/1350	–
				lin		–	–	
				eq. %		–	–	
12 [1]	340	40	20	mod. lin	–	–	1550/1800	1650/1900
				lin			–	–
				eq. %			–	–

1) In preparation

Table 7: *Dimensions for Type 3591-1 and Type 3591-5 Control Valves · Dimensions in mm and inch*

Table 7.1: *Type 3591 Valve · NPS 10 to 12 and NPS 16 (Class 150)* [1)]

Valve		NPS	10	12	16
H2	Class 150	mm	241	281	341
		in	9.49	11.06	13.43
	Class 300	mm	241	281	–
		in	9.49	11.06	
	Class 600	mm	271	301	–
		in	10.67	11.85	
	Class 900	mm	291	331	–
		in	11.46	13.03	
H5	Class 150	mm	203	243	298
		in	7.99	9.57	11.73
	Class 300	mm	223	260	325
		in	8.78	10.24	12.80
	Class 600	mm	255	280	342
		in	10.04	11.02	13.46
	Class 900	mm	273	305	353
		in	10.75	12.01	13.90
H4	Class 150	mm	485	492	665
		in	19.09	19.37	26.18
	Class 300	mm	485	492	–
		in	19.09	19.37	
	Class 600	mm	485	492	–
		in	19.09	19.37	
	Class 900	mm	485	479	–
		in	19.09	18.86	
H8 for actuator	1000 to 1400-60 cm²	mm	419	419	–
		in	16.50	16.50	
	1400-120 to 2800 cm², travel: 30 to 75 (FA)/30 to 38 (FE)	mm	504	504	–
		in	19.84	19.84	
	1400-120 to 2800 cm², travel: 90 to 120 (FA)/60 to 120 (FE)	mm	651	651	651
		in	25.63	25.63	25.63
H9 for actuator	1000 to 1400-60 cm²	mm	128	128	–
		in	5.04	5.04	
	1400-120 to 2800 cm², travel: 30 to 75 (FA)/30 to 38 (FE)	mm	195	195	–
		in	7.68	7.68	
	1400-120 to 2800 cm², travel: 90 to 120 (FA)/60 to 120 (FE)	mm	240	240	240
		in	9.45	9.45	9.45
G for actuator (FA/FE)	1000 to 1400-60 cm²	mm	165/150		–
		in	6.50/5.91		
	1400-120 cm²	mm	285/315		–
		in	11.22/12.40		
	2800 to 2 x 2800 cm²	mm	315/315	315/345	
		in	12.40/12.40	12.40/13.58	
H7 for actuator (FA/FE)	1000 to 1400-60 cm²	mm	215/200		–
		in	8.46/7.87		
	1400-120 cm²	mm	335/365		–
		in	13.19/14.37		
	2800 to 2 x 2800 cm²	mm	365/365	365/395	
		in	14.37/14.37	14.37/15.55	

Valve			NPS	10	12	16
Length L raised face 2)	Class 150	mm		673	737	1016
		in		26.50	29.00	40.00
	Class 300	mm		708	775	–
		in		27.88	30.50	
	Class 600	mm		752	819	–
		in		29.62	32.25	
	Class 900	mm		991	1130	–
		in		39.00	44.50	
Length L ring type joint 2)	Class 150	mm		686	750	1029
		in		27.00	29.50	40.50
	Class 300	mm		724	791	–
		in		28.50	31.12	
	Class 600	mm		755	822	–
		in		29.74	32.37	
	Class 900	mm		994	1133	–
		in		39.12	44.62	
Length L welding ends 3)	Class 150	mm		752	819	1108
		in		29.62	32.35	43.62
	Class 300	mm		752	819	–
		in		29.62	32.35	
	Class 600	mm		752	819	–
		in		29.62	32.35	
	Class 900	mm		991	1130	–
		in		39.00	44.50	

1) In preparation
2) Face-to-face dimensions for Class 150 to 600 according to ANSI/ISA 75.08.01 and for Class 900 according to ANSI/ISA 75.08.06
3) Face-to-face dimensions for Class 150 to 900 according to ANSI/ISA 75.08.05

Table 7.2: *Type 3591 Valve · NPS 16 (Class 300 and higher) to 32*

Valve		NPS	16	20	24	28	32
H2	Class 150	mm	–	500	560	620	685
		in		19.69	22.05	24.41	26.97
	Class 300	mm	340	500	565	640	–
		in	13.39	19.69	22.24	25.20	
	Class 600	mm	360	515	595	670	–
		in	14.17	20.28	23.43	26.38	
	Class 900	mm	380	535	615	700	–
		in	14.96	21.06	24.21	27.56	
H5	Class 150	mm	–	350	407.5	Form A: 462.5 Form B: 417.5	Form A: 530 Form B: 470
		in		13.78	16.04	Form A: 18.21 Form B: 16.44	Form A: 20.87 Form B: 18.50
	Class 300	mm	325	387.5	457.5	Form A: 517.5 Form B: 460	–
		in	12.80	15.26	18.01	Form A: 20.37 Form B: 18.11	
	Class 600	mm	342.5	407.5	470	Form A: 537.5 Form B: 475	–
		in	13.48	16.04	18.50	Form A: 21.16 Form B: 18.70	
	Class 900	mm	705	427.5	520	Form A: 585 Form B: 552.5	–
		in	27.76	16.83	20.47	Form A: 23.03 Form B: 21.75	
H4	Class 150	mm	–	877	857	1117	1215
		in		34.53	33.74	43.98	47.83
	Class 300 to 900	mm	724	877	917	1117	–
		in	28.50	34.53	36.10	43.98	
H8 for actuator	Type 3271, 1400-120 cm², 2800 cm², 2 x 2800 cm²	mm	695	695	695[1]/785[2]	785	On request
		in	27.36	27.36	27.36[1]/30.91[2]	30.91	
G for Type 3271 Actuator (FA/FE)	1400-120 cm², 2800 cm², 2 x 2800 cm² 60 mm travel	mm	225/255	–	–	–	–
		in	8.86/10.04				
	1400-120 cm², 2800 cm², 2 x 2800 cm² 120 mm travel,	mm	285/315	285/315	285/315	285/315	On request
		in	11.22/12.40	11.22/12.40	11.22/12.40	11.22/12.40	
H7 for Type 3271 Actuator (FA/FE)	1400-120 cm², 2800 cm², 2 x 2800 cm² 60 mm travel	mm	275/305	–	–	–	–
		in	10.83/12.01				
	1400-120 cm², 2800 cm², 2 x 2800 cm² 120 mm travel	mm	335/365	335/365	335/365	335/365	On request
		in	13.19/14.37	13.19/14.37	13.19/14.37	13.19/14.37	
Length L raised face[3]	Class 150	mm	–	1267[5]	1600[5]	1854[5]	2100[5]
		in		49.88[5]	62.99[5]	72.99[5]	82.68[5]
	Class 300	mm	1057	1308[5]	1600[5]	1854[5]	–
		in	41.62	51.50[5]	62.99[5]	72.99[5]	
	Class 600	mm	1108	1372[5]	1676[5]	2100[5]	–
		in	43.62	54.02[5]	65.98[5]	82.68[5]	
	Class 900	mm	1422	1600[5]	1854[5]	2250[5]	–
		in	56.00	62.99[5]	72.99[5]	88.58[5]	

Valve		NPS	16	20	24	28	32
Length L ring type joint [3]	Class 150	mm	–	1280	1613	–	–
		in		50.38	63.49		
	Class 300	mm	1073	1327	1622	1875 [6]	–
		in	42.24	52.25	63.87	73.87 [6]	
	Class 600	mm	1111	1378	1686	2111 [6]	–
		in	43.74	54.27	66.36	83.18 [6]	
	Class 900	mm	1432	1613	1873	2271 [6]	–
		in	56.38	63.49	73.74	89.46 [6]	
Length L welding ends [4]	Class 150	mm	–	1267 [5]	1600 [5]	1854 [5]	2100 [5]
		in		49.88 [5]	62.99 [5]	72.99 [5]	82.68 [5]
	Class 300	mm	1108	1308 [5]	1600 [5]	1854 [5]	–
		in	43.62	51.50 [5]	62.99 [5]	72.99 [5]	
	Class 600	mm	1108	1372 [5]	1676 [5]	2100 [5]	–
		in	43.62	54.02 [5]	65.98 [5]	82.68 [5]	
	Class 900	mm	1422	1600 [5]	1854 [5]	2250 [5]	–
		in	56.00	62.99 [5]	72.99 [5]	88.58 [5]	

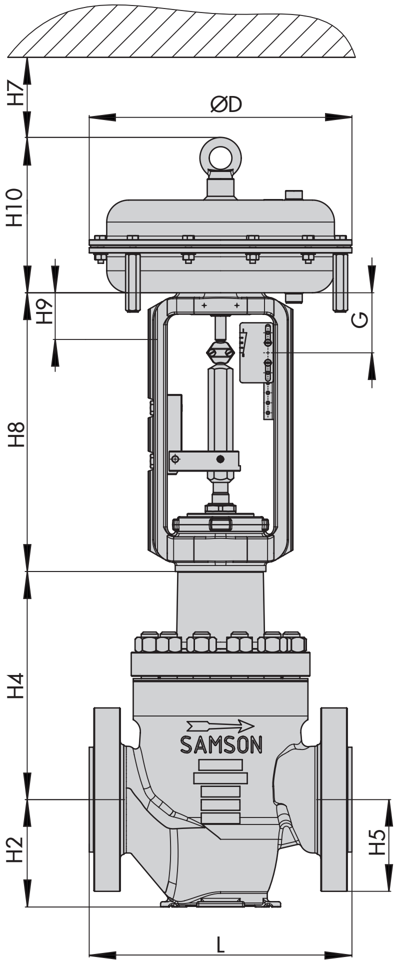
1) Class 150
2) Class 300 to 900
3) Face-to-face dimensions for Class 150 to 600 according to ANSI/ISA 75.08.01 and for Class 900 to 2500 according to ANSI/ISA 75.08.06
4) Face-to-face dimensions for Class 150 to 900 according to ANSI/ISA 75.08.05
5) Not standardized, SAMSON face-to-face dimensions
6) Face-to-face dimensions for flanges form A according to ASME B16.47

Table 7.3: *Type 3271 Pneumatic Actuator*

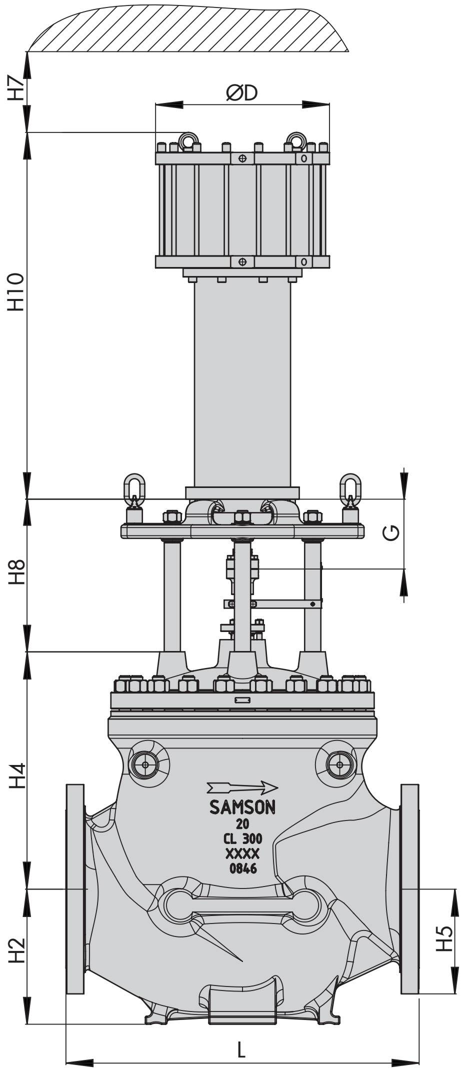
Actuator area	cm^2	1000	1400-60	1400-120	2800	2 x 2800
Diaphragm ØD	in	18.19	20.87	21.02	30.32	30.32
	mm	462	530	534	770	770
H10 [1]	in	15.87	13.27	23.54	28.07	47.76
	mm	403	337	598	713	1213
H7 [2]	in	24.02	24.02	25.59	25.59	25.59
	mm	610	610	650	650	650
Thread		M60x1.5		M100x2		
a		G ¾ (¾ NPT)	G ¾ (¾ NPT)	G 1 (1 NPT)	G 1 (1 NPT)	G 1 (1 NPT)

1) Height including lifting eyelet or female thread and eyebolt according to DIN 580. Height of the swivel lifting hook may differ. Actuators up to 355v2 cm^2 without lifting eyelet or female thread
2) Minimum clearance required to remove the actuator

Dimensional drawings



Type 3591 Valve · NPS 10 to 12 and NPS 16 (Class 150)



Type 3591 Valve · NPS 16 (Class 300 and higher) to 32

Table 8: *Weights (approx.) in kg/lbs · Travel in mm*

Note:
The shape and weight of the yoke (60, see H8 in dimension diagrams) vary depending on the intended actuator. The weights specified in Table 8.1 and Table 8.2 are based on the weight of the valve and yoke depending on the actuator area.

Table 8.1: *Type 3591 Valve · NPS 10 to 12 and NPS 16 (Class 150)* 1)

NPS	Actuator		Class 150	Class 300	Class 600	Class 900
10	1000 to 1400-60 cm²	kg	450	490	680	1000
		lbs	992	1080	1499	2205
	1400-120 to 2800 cm² Travel: FA 30 to 75/FE 30 to 38	kg	500	540	720	1040
		lbs	1102	1190	1587	2293
	1400-120 to 2800 cm² Travel: FA 90 to 120/FE 60 to 120	kg	500	540	720	1040
		lbs	1102	1190	1587	2293
12	1000 to 1400-60 cm²	kg	610	660	890	1340
		lbs	1345	1455	1962	2954
	1400-120 to 2800 cm² Travel: FA 90 to 120/FE 60 to 120	kg	660	710	940	1390
		lbs	1455	1565	2072	3064
	2800/2 x 2800 cm² Travel: FA/FE 150	kg	660	710	940	1390
		lbs	1455	1565	2072	3064
16	1000 to 1400-60 cm²	kg	1120	–		
		lbs	2469			
	1400-120 to 2800 cm² Travel: FA 90 to 120/FE 60 to 120	kg	1170			
		lbs	2579			
	Piston actuator Travel: FA/FE 200	kg	1170			
		lbs	2579			

1) NPS 10 and 12 pending

Table 8.2: *Type 3591 Valve · NPS 16 (Class 300 and higher) to 32*

NPS			Class 150	Class 300	Class 600	Class 900
16	–	kg	–	1800	2430	3250
		lbs		3968	5357	7165
20	–	kg	2470	3000	3960	5820
		lbs	5445	6614	8730	12831
24	–	kg	3180	4420	6050	8580
		lbs	7011	9744	13338	18916
28	ASME B16.47 Flange Form A	kg	4890	6280	8740	12440
		lbs	10781	13845	19268	27426
	ASME B16.47 Flange Form B	kg	4700	6030	8380	12230
		lbs	10362	13294	18475	26963
32	ASME B16.47 Flange Form A	kg	6500	–		
		lbs	14330			
	ASME B16.47 Flange Form B	kg	6190			
		lbs	13647			

Table 8.3: *Type 3271 Pneumatic Actuator*

Actuator area in cm²		1000	1400-60	1400-120	2800	2x2800
Weight (without handwheel)	kg	80	70	175	450	950
	lbs	176	154	386	992	2094

Selection and sizing of the control valve

1. Calculate the C_V (K_V) coefficient according to IEC 60534.
2. Select the valve size and C_{Vmax} (K_{VS}) coefficient from Table 4 and Table 5.
3. Select actuator.
4. Select the valve body material from Table 2 and Table 3 as well as from the pressure-temperature diagrams (see Information Sheet ▶ T 8000-2).

Ordering text

Valve size	NPS …
Pressure rating	Class …
Body material	According to Table 3
Bonnet	Bonnet
Type of connection	Flanges/welding ends
Piston facing	Metal seal or high-performance metal seal (on request)
Characteristic	Equal percentage, linear or modified linear
Type ... Actuator	Type 3271 (▶ T 8310-2 or ▶ T 8310-3), pneumatic or hydraulic piston actuators as well as other actuators on request
Fail-safe position	Fail-close or fail-open
Process medium	Density and temperature (other medium data, if required)
Flow rate	Under normal or operating condition for various cases
Pressure	Upstream pressure p_1 and downstream pressure p_2 or differential pressure Δp each with minimum, normal and maximum flow rate
Valve accessories	Positioners, limit switch, solenoid valve etc. (details in Information Sheet ▶ T 8350)