

## Three-way Control Valve Type 3244

### Pneumatic Control Valves Type 3244/3271 and 3244/3277

#### Application

Control valves for proportional mixing and diverting of liquids and gases in chemical processes and heating/cooling installations with industrial requirements.

**Nominal sizes** ½" to 6" (15 to 150 mm)

**Pressure ratings** ANSI Class 150 to 300

**Temperatures from** -325 °F to 840 °F (-200 °C to 450 °C)

The control valves consist of a body with stainless steel trim for either mixing or diverting service and a pneumatic actuator with optional control accessories. Alternatively, the valves may be combined with electric, electrohydraulic or hand-operated actuators.

#### Features

- Rugged, heavy-duty construction, one-piece integral 4-flanged body – resistant to high pipeline stresses
- Mixing or diverting asymmetric V-port heavy-duty plugs
- Linear characteristic for proportional mixing/diverting
- Self-locking, exchangeable seats, reduced sizes
- One-piece rigid bonnet and yoke with IEC 534-6 (NAMUR) standard accessory mounting system
- Self-adjusting, live-loaded PTFE V-ring stuffing box
- Compact modular design concept – parts interchangeability with 2-way control valves Series 3240
- Field retro-fittable insulating extensions and metal bellows seals
- Complete selection of actuators, positioners and accessories

#### Standard version

- Body ASTM A 216 WCB or A 351 CF8M
- Nominal sizes ½" to 6" (15 mm to 150 mm)
- Temperature range 15 °F to 430 °F (-10 °C to 220 °C)
- Pressure rating ANSI Class 150 and 300
- End connections ANSI (raised-face) RF flange

#### Options

- **Extension bonnet modules** · For extreme temperatures -325 °F to 800 °F (-200 °C to 427 °C) with optional bellows seal
- **Metal bellows seal module** · For complete seal between process and atmosphere
- **Adjustable packings** · Braided PTFE, HT-graphite or other stuffing box versions for high purity or process compatibility
- **Double stuffing box** · For reduced stem seal emission with leak detection port
- **End connections** · Other flange types available on request
- **Jacket** · For crystallizing or high viscosity process fluids
- **Soft seal plugs** · For Class VI ("bubble-tight") shutoff
- **Trim hardening** · With Stellite facing for wear resistance
- **NACE** · Verification of hardnesses for sour gas applications to meet National Association of Corrosion Engineers recommendations for prevention of sulphide stress-corrosion cracking



Fig. 1 · Type 3244/3271 Pneumatic 3-Way Control Valve with Type 3244 Valve and Type 3271 Pneumatic Actuator

#### Actuator combinations

**Type 3244/3271** (Fig. 1) · With Type 3271 Pneumatic Actuator  
· For operation with or without yoke-mounted positioner

**Type 3244/3277** · With Type 3277 Pneumatic Actuator  
· For integral positioner/accessory mounting according to SAMSON "Valve Management" System

**Type 3244/5802** · With Type 5802 SAM Electric Actuator  
· For details see Technical Data Sheet T 8043 E, T 5870

**Type 3244/3273** · With Type 3273 Hand-operated Actuator  
· For details see Technical Data Sheet T 8312

**Type 3244/3274** · With Type 3274 Electrohydraulic Actuator  
· For details see Technical Data Sheet T 5874

For DIN versions see Technical Data Sheet T 8026 EN

Associated Information Sheets	Valves	T 8000
	Actuators	T 8300
	Accessories	T 8350

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ANSI Version

Technical Data Sheet

T 8026

### Principle of operation (Figs. 2 and 3)

Depending on the plug version, the valves are applied for either mixing or diverting service.

With **mixing valves**, the process medium flows through the valve ports A and B. The combined stream leaves at common port AB (see Fig. 2). The rate of flow from valve port A or B to common port AB depends on the cross-sectional area of flow between the seats and the valve plugs.

With **diverting valves**, the process medium flows through the common port AB and the partial streams leave through ports A and B respectively (see Fig. 3).

The flow coefficient of each port is proportional to its relative opening, dependent on the plug position. The plug stem is connected to the actuator stem and is moved by the force as determined by the actuator spring rate and control signal pressure. The plug stem is sealed by means of a spring-loaded PTFE V-ring packing.

### Fail-safe action

Depending on how the springs are arranged in the actuator (see Technical Data Sheet T 8310 or T 8311 for details), the valve moves in a pre-determined direction with the absence of air supply.

### Actuator stem "extends"

When the forces acting on the actuator diaphragm are reduced or the air supply fails, the spring force moves the actuator stem to the lower extreme position (stem "extends"), causing the valve to fail port "B" closed with mixing valves, or port "A" closed with diverting valves.

### Actuator stem "retracts"

When the forces acting on the actuator diaphragm are reduced or the air supply fails, the spring force moves the actuator stem to the upper extreme position (stem "retracts"), causing the valve to fail port "B" closed with diverting valves, or port "A" closed with mixing valves.

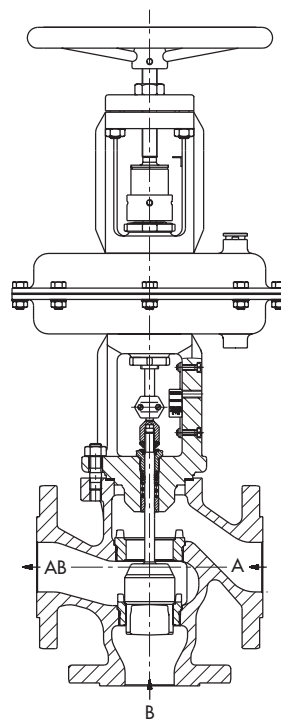


Fig. 2 · Type 3244/3271 Pneumatic Control Valve consisting of Type 3244 Three-way Valve (plug arrangement for mixing service and Type 3271 Pneumatic Actuator (with top mounted hand-wheel)

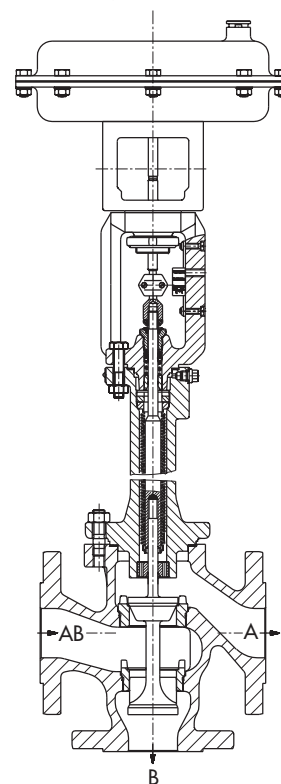


Fig. 3 · Type 3244/3277 Pneumatic Control Valve with: Type 3244 Three-way Valve (plug arrangement for flow-diverting operation), with additional metal bellows seal and Type 3277 Pneumatic actuator

**Table 1 · Technical data**

<b>Nominal valve size</b>		½" to 6"	
Pressure-temperature ratings		ANSI Class 150 and 300	
Maximum working pressures		According to ASME/ANSI B16.34-1988 (Standard class)	
Temperature range	Valve plug and long extension bonnet		-325 to 800 °F (-198 to 427 °C)
	Standard bonnet	Carbon or stainless steel	15 to 430 °F (-10 to 220 °C)
	Short extension bonnet <sup>1)</sup>	Carbon steel	-20 to 800 °F (-29 to 427 °C)
		Stainless steel	-58 to 800 °F (-50 to 427 °C)
	Short extension with bellows seal <sup>1)</sup>	Carbon steel	-20 to 750 °F (-29 to 400 °C)
Stainless steel		-58 to 750 °F (-50 to 400 °C)	
End connections		Integral flange ½" Raised Face (RF) per ASME/ANSI B16.5 - 1988 <sup>2)</sup>	
Face-to-Face and Face-to-Centerline dimension		According to ISA S75.03-1992 and ISA S75.22-1992	
Flange face finish (Ra)		Ra = 130 to 250 microinch (3.2 to 6.3 µm) <sup>3)</sup>	
Packing design		V-ring, spring-loaded, self-adjusting	
Flow direction (normal)		Mixing: A/B → AB      Diverting: AB → A/B	
Terms for control valve sizing according to ISA-S75.02 and IEC 534, parts 2-1 and 2-2		F <sub>L</sub> = 0.95, X <sub>T</sub> = 0.75	
Seat bore diameter, rated travel, C <sub>v</sub> value		See Table 3a and 3b	
Seat/plug sealing		Metal-to-metal <sup>4)</sup>	
Leakage rate according to ANSI/FCI 70-2 and IEC 534-6		≤ 0.05% of rated C <sub>v</sub> value <sup>4)</sup>	
Characteristic of plugs		Linear	
Rangeability		Sizes ½" to 2"; 50 : 1      Sizes 2½" to 6"; 30 : 1	
Weights and dimensions		See Table 4, 5 and 6	

<sup>1)</sup> Long extension bonnet (insulating section) also available

<sup>2)</sup> Other flange versions available on request

<sup>3)</sup> Ra = arithmetic average roughness or centerline average (CLA)

<sup>4)</sup> Special version with PTFE soft seal on request

**Table 2 · Materials**

<b>Valve body</b>		Cast carbon steel ASTM A 216 WCB		Cast stainless steel ASTM A 351 CF8M	
Bonnet with integral yoke		Forged A 105		Forged A 182 F 316	
Seat and plug <sup>1)</sup>	Seat	AISI 410	WN 1.4006	AISI 316 Ti	WN 1.4571
	Plug and stem	AISI 410	WN 1.4006	AISI 316 Ti	WN 1.4571
Guide bushings (nitrided)		AISI 430F	WN 1.4104	AISI 316 Ti	WN 1.4571
Stuffing box packing <sup>2)</sup>	Packing	PTFE with carbon composite			
	Spring	AISI 301		WN 1.4310	
	Washer	AISI 316 Ti		WN 1.4571	
	Retaining nut	AISI 316 Ti with carbon insert		WN 1.4571 with carbon insert	
Body/bonnet gaskets		Graphite laminate with AISI 316 Ti (WN 1.4571) core			
Bolting	Studs	A 193 B7		A 193 8M Cl. 2	
	Nuts	A 194 2H		A 194 8M	
Exterior hardware, nameplates, travel indicator, couplings		Stainless steel AISI 304, AISI 316 and AISI 430F WN 1.4301, WN 1.4571 and WN 1.4104			
<b>Version with extension bonnet (insulating section or metal bellows)</b>					
Extension housing		ASTM A 105		ASTM A 182 F 316	
Extended plug stem		AISI 316 Ti		WN 1.4571	
Bellows insert, test connection and nitrided guide bushing		AISI 316 Ti		WN 1.4571	
Version with heating or cooling jacket		On request			

<sup>1)</sup> All seats and valve plugs also available with Stellite facing

<sup>2)</sup> Other packing materials on request



**Table 3a · Permissible differential pressures · Pressures in psi**

Values specified in the **shadowed columns** correspond to the nominal spring range **without pre-loading**.

Values specified in the **white columns** apply to maximum bench settings **with pre-loading**.

Differential pressures enclosed in parentheses in the table refer to the values enclosed in parentheses in the row "bench range."

The table applies for both fail-safe actions.

Bench range, psi for actuator with effective area:		18.5 in <sup>2</sup> (120 cm <sup>2</sup> )	–	–	6...30 (18...30)	–	–	–	20...34	30...48								
		37 in <sup>2</sup> (240 cm <sup>2</sup> )	3...15	–	6...18	–	–	–	–	–								
		54 in <sup>2</sup> (350 cm <sup>2</sup> )	–	–	–	9...44 (26...44)	–	–	20...34 (26...34)	30...48 (39...48)								
		108 in <sup>2</sup> (700 cm <sup>2</sup> )	–	–	–	12...35 (26...44)	–	–	18...52	78 (87)								
Stem "extends"		•	•	•	•	•	•	•	•	•								
Stem "retracts" 1)		•	–	•	–	•	–	•	•	•								
Required supply pressure, psi		18	23	35 (47)	47	52 (70)	70	54 (61)	78 (87)									
Valve size		C <sub>v</sub>	K <sub>vs</sub>	Seat Ø		Travel		Actuator		Δp with p <sub>2</sub> = 0 psi								
in	mm			in.	mm.	in.	mm	in <sup>2</sup>	cm <sup>2</sup>									
1/2"	15	2.3; 5	2; 4	0.9	24	0.6	15	18.5	120	–	–	75	–	–	–	425	580	
3/4"	20	2.3; 5; 7.5	2; 4; 6.3					37	240	75	–	215	–	355	–	–	–	–
1"	25	2.3; 5; 7.5; 12	2; 4; 6.3; 10	54	350			139	344	344	580	548	580	580	580	580	580	
				108	700			344	–	–	–	–	–	–	–	–	–	
1 1/2" & 2"	40 & 50	7.5; 12; 20	6.3, 10; 16	1.2	31			18.5	120	–	–	–	–	–	–	–	247	393
								54	350	75	197	197	442	319	580	580	580	
1 1/2" & 2"	40 & 50	30	25	1.5	38			108	700	197	–	–	–	–	–	–	–	–
								18.5	120	–	–	–	–	–	–	–	–	158
2"	50	47	40	1.9	48			54	350	45	126	126	289	207	451	532	580	
								108	700	126	–	–	–	–	–	–	–	–
2 1/2" & 3"	65 & 80	30	25	1.9	48			18.5	120	–	–	–	–	–	–	–	94	155
								54	350	23	74	74	175	125	278	329	508	
2 1/2"	65	70/47 Div 70 Mix	60/40 Div 60 Mix	2.5/1.9 2.5	63/48 63	108	700	74	–	(580)	–	(580)	–	–	–	–		
						54	350	23	74	74	175	125	278	329	508			
2 1/2"	65	70/47 Div 70 Mix	60/40 Div 60 Mix	2.5/1.9 2.5	63/48 63	54	350	–	39	39	97	68	157	187	290			
						108	700	39	–	(335)	–	(512)	–	(526)	(580)			
3"	80	70	60	2.5	63	54	350	–	39	39	97	68	157	187	290			
						108	700	39	–	(335)	–	(512)	–	(526)	(580)			
3"	80	95/70 Div 70 Mix	80/60 Div 80 Mix	2.9/2.5 2.9	75/63 75	54	350	–	25	25	67	45	109	129	202			
						108	700	25	–	(233)	–	(358)	–	(370)	547			
4"	100	120 190/120 Div 190 Mix	100 160/100 Div 160 Mix	3.1 3.9/3.1 3.9	80 100/80 100	1.2	30	108	700	20	57	57	131	93	203	241	368	
										–	33	33	381	58	128	151	233	
6"	150	230 350/230 Div 350 Mix	200 300/200 Div 300 Mix	4.3 5/4.3 5.1	110 130/110 130	–	28	28	65	46	104	125	193					
						–	17	17	46	32	74	87	136					

1) Actuators employing "stem retracts" action cannot be pre-loaded (white columns do not apply)

NOTE: With some diverting valve versions, due to geometry assembly reasons, the upper seat diameter is larger than the lower. This is indicated by two C<sub>v</sub> (K<sub>vs</sub>) values and two seat bore diameters in the table. The upper value refers to the upper port and likewise the lower value refers to the lower port.

**Table 3b · Permissible differential pressures · Pressures in bar**

Values specified in the **shadowed columns** correspond to the nominal spring range **without pre-loading**.

Values specified in the **white columns** apply to maximum bench settings **with pre-loading**.

Differential pressures enclosed in parentheses in the table refer to the values enclosed in parentheses in the row "bench range."

The table applies for both fail-safe actions.

Valve size		C <sub>v</sub>	K <sub>vs</sub>	Seat Ø		Travel		Actuator		Δp with p <sub>2</sub> = 0 bar									
				in.	mm.	in.	mm	in <sup>2</sup>	cm <sup>2</sup>										
Bench range, bar for actuator with effective area:				18.5 in <sup>2</sup> (120 cm <sup>2</sup> )		-		-		-		-		-		1.4...2.3		2.1...3.3	
				37 in <sup>2</sup> (240 cm <sup>2</sup> )		-		-		0.4...2.0 (1.2...2.0)		-		-		-		-	
				54 in <sup>2</sup> (350 cm <sup>2</sup> )		0.2...1.0		0.4...1.2		-		0.6...3.0 (1.8...3.0)		-		-		-	
				108 in <sup>2</sup> (700 cm <sup>2</sup> )		-		-		0.8...2.4		-		1.2...3.6		-		-	
Stem "extends"				•		•		•		•		•		•		•		•	
Stem "retracts" 1)				•		-		•		-		•		-		•		•	
Required supply pressure, bar				1.2		1.6		2.4 (3.2)		3.2		3.6 (4.8)		4.8		3.7 (4.2)		5.4 (6.0)	
Valve size		C <sub>v</sub>	K <sub>vs</sub>	Seat Ø		Travel		Actuator		Δp with p <sub>2</sub> = 0 bar									
in	mm			in.	mm.	in.	mm	in <sup>2</sup>	cm <sup>2</sup>										
1/2"	15	2.3; 5	2; 4	0.9	24	0.6	15	18.5	120	-	-	5.2	-	-	-	29.3	40		
3/4"	20	2.3; 5 7.5	2; 4 6.3					37	240	5.2	-	14.8	-	24.5	-	-	-	-	-
1"	25	2.3; 5 7.5; 12	2; 4 6.3; 10					54	350	9.6	23.7	23.7	40	37.8	40	40	40	40	40
								108	700	23.7	-	-	-	-	-	-	-	-	-
1 1/2" & 2"	40 & 50	7.5; 12 20	6.3; 10 16	1.2	31			18.5	120	-	-	-	-	-	-	-	17	27.1	
								54	350	5.2	13.6	13.6	30.5	22.0	40	40	40	40	
								108	700	13.6	-	-	-	-	-	-	-	-	-
1 1/2" & 2"	40 & 50	30	25	1.5	38			18.5	120	-	-	-	-	-	-	-	10.9	17.7	
								54	350	3.1	8.7	8.7	19.9	14.3	31.1	36.7	40	40	
								108	700	8.7	-	-	-	-	-	-	-	-	-
2"	50	47	40	1.9	48			18.5	120	-	-	-	-	-	-	-	6.5	10.7	
								54	350	1.6	5.1	5.1	12.1	8.6	19.2	22.7	35	35	
						108	700	5.1	-	(40)	-	(40)	-	-	-	-			
2 1/2" & 3"	65 & 80	30	25	1.9	48	54	350	1.6	5.1	5.1	12.1	8.6	19.2	22.7	35	35			
						108	700	5.1	-	(40)	-	(40)	-	-	-	-			
						54	350	-	2.7	2.7	6.7	4.7	10.8	12.9	20	20			
2 1/2"	65	70/47 Div	60/40 Div	2.5/1.9	63/48	108	700	2.7	-	(23.1)	-	(35.3)	-	(36.3)	(40)	(40)			
		70 Mix	60 Mix	2.5	63	54	350	-	2.7	2.7	6.7	4.7	10.8	12.9	20	20			
		3"	80	70	60	2.5	63	108	700	2.7	-	(23.1)	-	(35.3)	-	(36.3)	(40)		
3"	80	95/70 Div	80/60 Div	2.9/2.5	75/63	54	350	-	1.7	1.7	4.6	3.1	7.5	8.9	13.9	13.9			
		95 Mix	80 Mix	2.9	75	108	700	1.7	-	(16.1)	-	(24.7)	-	(25.5)	(37.7)	(37.7)			
		4"	100	120	100	3.1	80	1.4	3.9	3.9	9.0	6.4	14	16.6	25.4	25.4			
4"	100	190/120 Div	160/100 Div	3.9/3.1	100/80	-	2.3	2.3	5.6	4.0	8.8	10.4	16.1	16.1					
		190 Mix	160 Mix	3.9	100	-	1.9	1.9	4.5	3.2	7.2	8.6	13.3	13.3					
		230	200	4.3	110	-	1.2	1.2	3.2	2.2	5.1	6.0	9.4	9.4					
6"	150	350/230 Div	300/200 Div	5.1/4.3	130/110	-	1.2	1.2	3.2	2.2	5.1	6.0	9.4	9.4					
		350 Mix	300 Mix	5.1	130	-	1.2	1.2	3.2	2.2	5.1	6.0	9.4	9.4					

1) Actuators employing "stem retracts" action cannot be pre-loaded (white columns do not apply)

NOTE: With some diverting valve versions, due to geometry assembly reasons, the upper seat diameter is larger than the lower. This is indicated by two C<sub>v</sub> (K<sub>vs</sub>) values and two seat bore diameters in the table. The upper value refers to the upper port and likewise the lower value refers to the lower port.

**Table 4 · Dimensions in inches (see Fig. 4)**

**Table 4a · Type 3244 Three-way valve**

Nominal size	in	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"
Length L	Class 150 in	7.25	7.25	7.25	8.75	10.00	10.87	11.75	13.87	17.75
	Class 300 in	7.50	7.62	7.75	9.25	10.50	11.50	12.50	14.50	18.62
H1	in	9.25					10.63		14.17	14.76
H2	Class 150 in	3.62	3.62	3.62	4.37	5	5.43	5.87	6.93	8.88
	Class 300 in	3.76	3.82	3.88	4.63	5.26	5.75	6.26	7.24	9.31

**Table 4b · Version with short or long extension bonnet (insulating section) or bellows seal**

Nominal size	in	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"
H4 with	Short extension bonnet or bellows seal in	16.54			16.14		17.52		25.39	25.19
	Long extension bonnet or bellows seal in	28.54			28.15		29.53		34.84	34.64

**Table 4c · Type 3271 and Type 3277 Pneumatic Actuators**

Effective diaphragm area	in <sup>2</sup>	18.5		37		54		108		
Diaphragm Ø D	in	6.6		9.4		11.0		15.4		
H	in	2.75		2.45		3.35		5.43		
H3 (for Type 3271 Actuator) <sup>1)</sup>	in	6.9		6.7		7.48		12.4		
Thread		M 30 mm x 1.5 mm								
α (for Type 2371 Actuator)		NPT 1/2"		NPT 1/4"		NPT 3/8"				
α2 (for Type 3277 Actuator)		-		NPT 3/8"						

<sup>1)</sup> Minimum clearance for actuator disassembly; with the Type 3277 Actuator, H3 = H3 + 4"

**Table 4d, 4e and 4f · Dimensions in mm (see Fig. 4)**

**Table 4d · Type 3244 Three-way valve**

Nominal size	mm	15	20	25	40	50	65	80	100	150
Length L	Class 150 mm	184	184	184	222	254	276	298	352	451
	Class 300 mm	191	194	197	235	267	292	318	368	473
H1	mm	235					270		360	375
H2	Class 150 mm	92	92	92	111	127	138	149	176	225.5
	Class 300 mm	95.5	97	98.5	117.5	133.5	146	159	184	236.5

**Table 4e · Version with short or long extension bonnet (insulating section) or bellows seal**

Nominal size	mm	15	20	25	40	50	65	80	100	150
H4 with	Short extension bonnet or bellows seal mm	420			410		445		645	640
	Long extension bonnet or bellows seal mm	725			715		750		885	880

**Table 4f · Type 3271 and Type 3277 Pneumatic Actuators**

Effective diaphragm area	cm <sup>2</sup>	120		240		350		700		
Diaphragm Ø D	mm	168		240		280		390		
H	mm	70		62		85		138		
H3 (for Type 3271 Actuator) <sup>1)</sup>	mm	175		170		190		315		
Thread		M 30 x 1.5								
α (for Type 3271 Actuator)		NPT 1/2"		NPT 1/4"		NPT 3/8"				
α2 (for Type 3277 Actuator)		-		NPT 3/8"						

<sup>1)</sup> Minimum clearance for actuator disassembly; with the Type 3277 Actuator, H3 = H3 + 100 mm

**Table 5 · Weights in lbs**

**Table 5a · Type 3244 Control Valve**

Nominal size		in	½"	¾"	1"	1½"	2"	2½"	3"	4"	6"
Approximate weight of valve without actuator	lbs		13	15.5	17.5	33	37.5	68	82	108	298
Approximate weight with extension bonnet or bellows seal	Short	lbs	20	22	24	46.3	50.7	88	99	150	364
	Long	lbs	28.7	30.9	33	55	59.5	97	108	168	382

**Table 5b · Type 3271 and Type 3277 Pneumatic Actuators**

Pneumatic actuator		in <sup>2</sup>	18.6 in <sup>2</sup>	37.2 in <sup>2</sup>	54.2 in <sup>2</sup>	108.5 in <sup>2</sup>
Weight of Type 3271 Pneumatic Actuator without/with handwheel	Without	lbs	4.4	11	18	48.5
	With	lbs	–	20	29	59.5
Weight of Type 3277 Pneumatic Actuator without/with handwheel	Without	lbs	7.05	20	26.5	57.5
	With	lbs	–	29	37.5	68

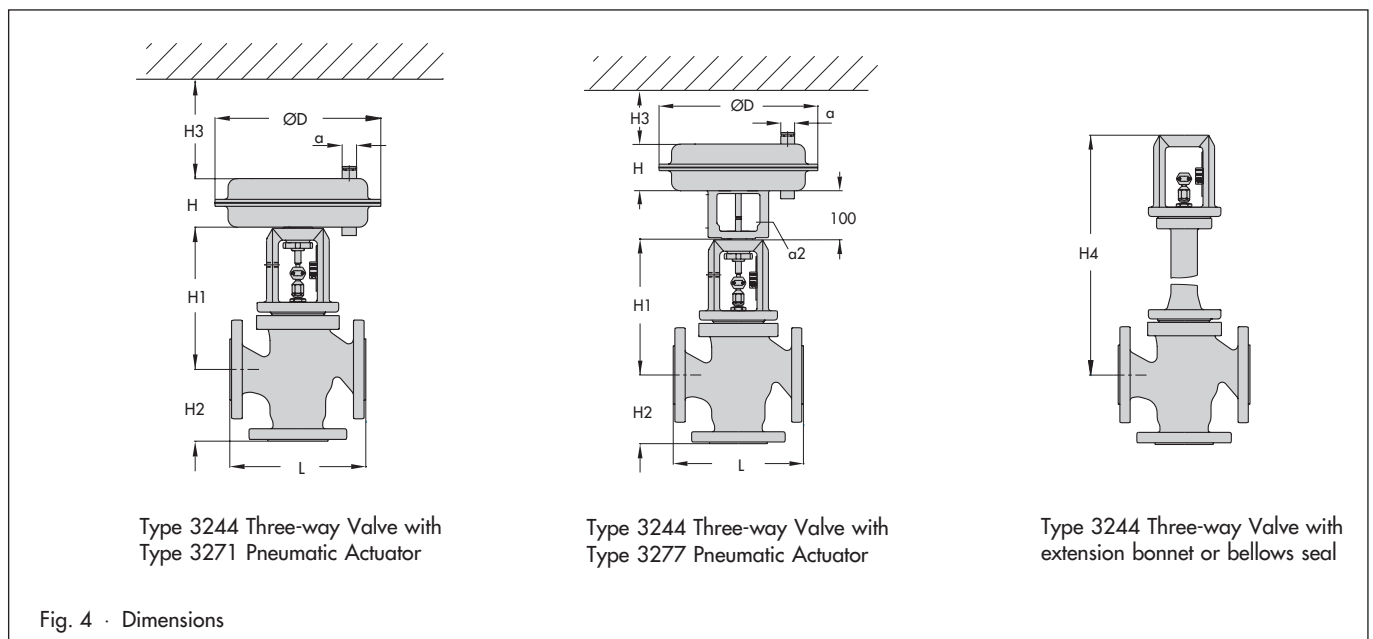
**Table 5c and 5d · Weights in kg**

**Table 5c · Type 3244 Control Valve**

Nominal size	mm	15	20	25	40	50	65	80	100	150
Approximate weight of valve without actuator	kg	6	7	8	15	17	31	37	49	135
Approximate weight with extension bonnet or bellows seal	Short	kg	9	10	11	21	23	40	45	165
	Long	kg	13	14	15	25	27	44	49	173

**Table 5d · Type 3271 and Type 3277 Pneumatic Actuators**

Pneumatic actuator		cm <sup>2</sup>	120 cm <sup>2</sup>	240 cm <sup>2</sup>	350 cm <sup>2</sup>	700 cm <sup>2</sup>
Weight of Type 3271 Pneumatic Actuator without/with handwheel	Without	kg	2	5	8	22
	With	kg	–	9	13	27
Weight of Type 3277 Pneumatic Actuator without/with handwheel	Without	kg	3.2	9	12	26
	With	kg	–	13	17	31





## Ordering information

### 3-Way Globe Control Valve Type 3244:

Nominal size <sup>1)</sup> ...	Body material ...
ANSI Class ...	End connection ...
Seat/plug material ...	Plug for mixing/diverting ...
C <sub>v</sub> -/K <sub>vs</sub> -value (upper) <sup>1)</sup> ...	C <sub>v</sub> -/K <sub>vs</sub> -value (lower) <sup>1)</sup> ...
Options ...	Special version ...
Special testing ...	Special preparation ...

#### Actuator:

Type ...	Specification ...
(with pneumatic actuator, specify)	
Size ...	Spring range ...
Spring action: Actuator ... [extends, retracts] stem (or specify)	
Fail-safe position: Port ... ["A", "B"] closed on loss of supply	
Air/Power supply available ...	
Options ...	Special version ...

#### Operating conditions:

Process fluid <sup>3)</sup> ...	Flow rate <sup>4)</sup> A/B ...
Inlet pressure A/B ...	Outlet pressure A/B <sup>4)</sup> ...
Temperature A/B ...	
Maximum shutoff $\Delta p$ for actuator sizing ...	
Air/power supply available for actuator, max./min. ...	

#### Accessories:

Positioner, Switches, Transmitter, Solenoid valve, Filter/regulator,  
Bypass, Volume/pressure amplifier, Lockup relay ...  
Type ... Specification ...  
Tubing and fittings type/material ...

#### Other instrumentation:

Controllers, Sensors, Transmitters, Transducers, Converters ...  
Type ... Specification ...

#### Notes:

- <sup>1)</sup> If Nominal size or C<sub>v</sub>-/K<sub>vs</sub>-value unknown, specify operating conditions
- <sup>2)</sup> Specify system of units, pressures: specify in terms of gauge or absolute  
Provide minimum, normal, and maximum values, where applicable  
Gases, vapors: specify flow rate under standard or operating conditions
- <sup>3)</sup> Nonstandard process fluids, specify additionally:  
Density, Specific gravity, or Molecular weight ...  
Liquids: Vapor pressure, Critical pressure, Viscosity ...  
Gases, Vapors: Ratio of specific heats, Compressibility factor
- <sup>4)</sup> Or, specify required valve flow coefficient C<sub>v</sub>, K<sub>vs</sub> ...

Specifications subject to change without notice.



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