

Series V2001 Valves

Type 3323 Three-way Valve with pneumatic or electric actuator

SAMSON

Application

Mixing and diverting valve designed for use in industrial plants

Nominal sizes	DN 15 to 100
Nominal pressure	PN 16 and PN 40
Temperature range	-10 to +300 °C



The Type 3323 Three-way Valve (mixing or diverting valve) can be combined with either electric or pneumatic actuators:

- Electropneumatic actuator with integrated i/p positioner for Type 3323-IP
- Pneumatic actuator for Type 3323-PP
- Electric actuators for Type 3323-E1 or Type 3323-E3

Valve body materials

- Cast iron for PN 16
- Cast steel for PN 16 and 40
- Stainless steel for PN 40 (up to DN 50) and PN 16 (DN 65 and higher)

Metal-seated valve plug

Mixing valves in DN 15 to 25 can also be used for diverting service

Versions

- **Type 3323-IP Electropneumatic Mixing/Diverting Valve** (Fig. 1) with Type 3372 Electropneumatic Actuator, optionally with integrated positioner (120 cm² only, with plug connector) or Type 3725 Positioner (Fig. 3), tight-closing function for completely venting or filling the actuator with air, reference variable 4 to 20 mA, max. 6 bar supply air, fail-safe position stem extends or retracts, optionally with Type 4744-2 Limit Switch (Fig. 4) and Type 3730 Positioner
- **Type 3323-PP Pneumatic Mixing/Diverting Valve** (Fig. 2) with Type 3371 Pneumatic Actuator, 120 cm² (DN 15 to 100, 15 mm travel) or Type 3371 Pneumatic Actuator, 350 cm² (DN 65 to 100), fail-safe position actuator stem extends or retracts, optionally with Type 4744-2 Limit Switch
- **Type 3323-E1 Electric Mixing/Diverting Valve** (Fig. 5) with Type 5824-30 Electric Actuator for 230 V/50 Hz or 24 V/50 Hz, optionally with limit contacts, resistance transmitters, positioner
- **Type 3323-E3 Electric Mixing/Diverting Valve** (Fig. 6) with Type 3374 Electric Actuator for 230 V or 24 V/50 Hz, 110 V/60 Hz, optionally with fail-safe action (typetested), limit contacts, resistance transmitters, positioner



Fig. 1: Type 3323-IP



Fig. 2: Type 3323-PP



Fig. 3: Type 3323-IP with Type 3725 Positioner, 120 cm²



Fig. 4: Type 3323-IP with limit switch



Fig. 5: Type 3323-E1



Fig. 6: Type 3323-E3

- Explosion-protected version with electric actuators
- Type 3323 according to ANSI standards · ▶ T 8114

Edition October 2012

Data Sheet

T 8113 EN

Principle of operation

Depending on the version, the three-way valve can be used for either mixing or flow-diverting service.

In mixing valves, the process media to be mixed enter at valve ports A and B. The combined media exit the valve at port AB (Fig. 7). The flow rate from valve port A or B to the common port AB depends on the cross-sectional area of flow between the seats and plugs.

In flow-diverting valves, in contrast, the process medium enters at the valve port AB and the partial flows exit at valve ports A and B (Fig. 8).

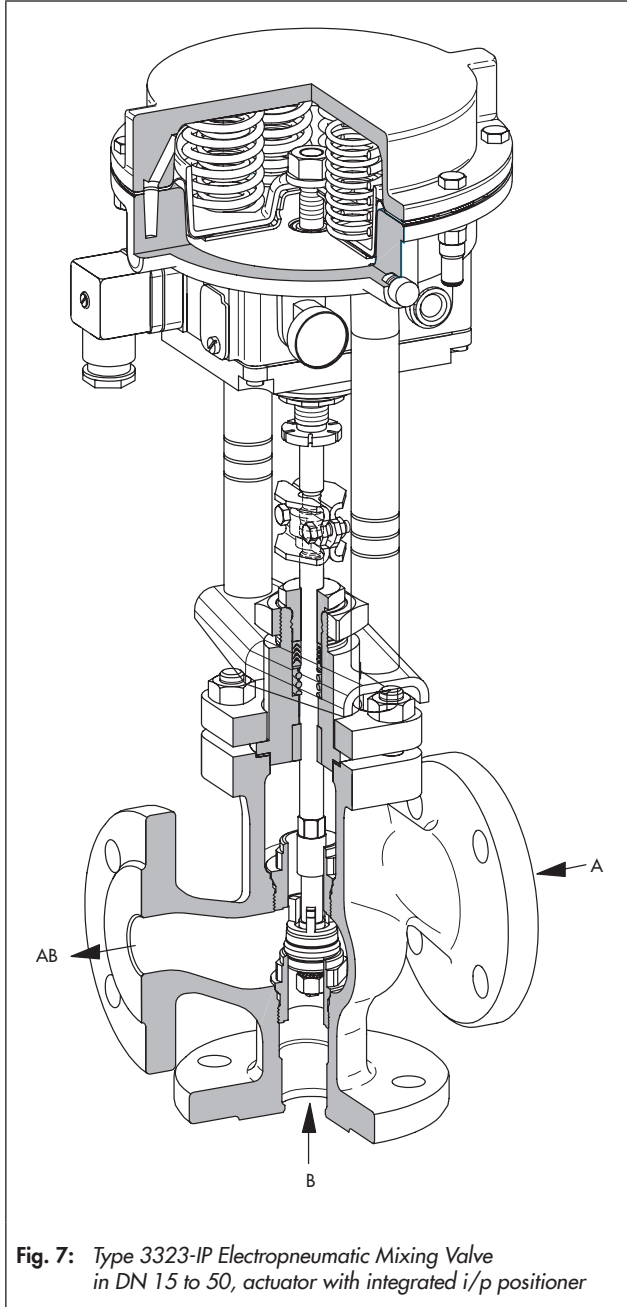


Fig. 7: Type 3323-IP Electropneumatic Mixing Valve in DN 15 to 50, actuator with integrated i/p positioner

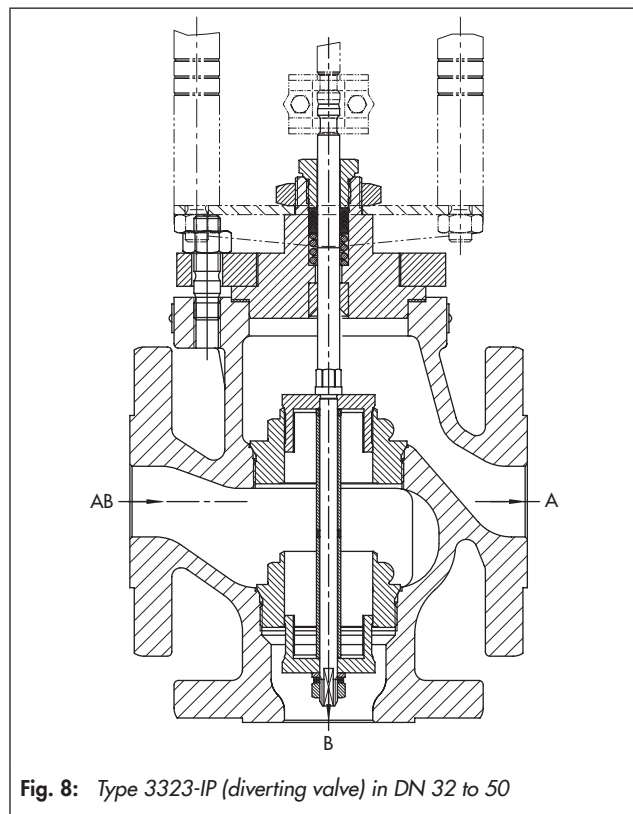


Fig. 8: Type 3323-IP (diverting valve) in DN 32 to 50

Fail-safe position

The control valve has two different fail-safe positions that become effective when the supply air fails:

- **Actuator stem extends (FA)**
In mixing valves, port B is closed when the supply air fails. In diverting valves, port A is closed.
- **Actuator stem retracts (FE)**
In mixing valves, port A is closed when the supply air fails. In diverting valves, port B is closed.

Associated documentation

Valve and actuator are delivered separately. Instructions on how to mount the valve on the actuator can be found in the mounting and operating instructions delivered with the product:

- | | |
|-------------|---------------------------|
| ▶ EB 8113 | Type 3323 Three-way Valve |
| ▶ EB 8313-1 | Actuator for Type 3323-IP |
| ▶ EB 5824 | Actuator for Type 3323-E1 |
| ▶ EB 8331-1 | Actuator for Type 3323-E3 |
| ▶ EB 8313-3 | Actuator for Type 3323-IP |
| ▶ EB 8317 | Actuator for Type 3323-PP |

Table 1: Type 3323 Three-way Valve**Table 1.1: Technical data**

Nominal size	DN	15 · 20 · 25 · 40 · 50 · 65 · 80 · 100		
Material		Cast iron EN-JL1040	Cast steel 1.0619	Stainless steel 1.4408
Nominal pressure	PN	16	16 · 40	
Seat/plug sealing		Metal seal		
Characteristic		Linear		
Rangeability		30:1 up to DN 25 · 50:1 for DN 40 and larger		
Temperature range		-10 to +220 °C		
With insulating section ¹⁾		-10 to +300 °C		
Leakage class according to IEC 60534-4		Metal seal: I (0.05 % of K _{VS})		

¹⁾ Not for stainless steel with DN 65 to 100

Table 1.2: Materials

Nominal size	DN	15 · 20 · 25 · 40 · 50 · 65 · 80 · 100		
Valve body		Cast iron EN-JL1040	Cast steel 1.0619	Stainless steel 1.4408
Valve bonnet		Up to DN 50: 1.0460 DN 65 and larger: 1.0619		Up to DN 50: 1.4404 DN 65 and larger: 1.4408
Valve flange ¹⁾		1.0460		
Seat and plug	Seat	Up to DN 25: 1.4305 · DN 32-50: 1.4104 DN 65 and larger: 1.4104		Up to DN 50: 1.4305/1.4104 DN 65 and larger: 1.4404
	Plug	Up to DN 50: 1.4305 DN 65 and larger: 1.4404		
Guide bushing		1.4104		
Packing		PTFE		
Body gasket		Graphite on metal core		

¹⁾ No contact with process medium; only up to DN 50. For DN 65 and larger: one-pieced (see valve bonnet for material)

Table 2: Nominal sizes, K_{VS} coefficients and seat diameters**Table 2.1: Type 3323 as mixing valve**

Nominal size	DN	15	20	25	32	40	50	65	80	100
K _{VS} coefficient		4	6.3	8	16	20	32	60	80	160
Seat Ø	mm	24	24	24	40	40	40	63	75	100
Rated travel	mm	15	15	15	15	15	15	15	15	30

Table 2.2: Type 3323 as diverting valve

Nominal size	DN	15	20	25	32	40	50	65	80	100
K _{VS} coefficient		–	–	–	16	20	32	60/40	80/60	160/100
Seat Ø	mm	–	–	–	40	40	40	63/48	75/63	100/80
Rated travel	mm	–	–	–	15	15	15	15	15	30

Table 3: Pneumatic actuators**Table 3.1: Technical data**

Valve/actuator	Type 3323-IP with Type 3372 Actuator		Type 3323-PP with Type 3371 Actuator		
Actuator area	120 cm ²	350 cm ²	120 cm ²	350 cm ²	
Mounting on Type 3323	DN 15 to 50	DN 65 to 100	DN 15 to 50	DN 65 to 100	
Fail-safe action	Actuator stem extends or retracts				
Reference variable	4 to 20 mA		-		
Bench range/ rated travel	Stem extends	1.4 to 2.3 bar/15 mm	2.2 to 3.8 bar/30 mm	1.4 to 2.3 bar/15 mm	2.2 to 3.8 bar/30 mm
	Stem retracts	1.4 to 2.3 bar/15 mm	1.5 to 2.7 bar/30 mm	1.4 to 2.3 bar/15 mm	1.5 to 2.7 bar/30 mm
Characteristic	Linear, deviation from terminal-based conformity ≤ 2 %		-		
Hysteresis	≤ 1 %		-		
Variable position	≤ 7 %		-		
Degree of protection	IP 54 with integrated positioner (only for 120 cm ²) IP 66 with Type 3725		-		
Permissible ambient temperature	Standard: -20 to 80 °C With metal cable gland: -30 to 80 °C		-35 to 90 °C		

Table 3.2: Materials

Actuator	Type 3372		Type 3371	
Actuator area	120 cm ²	350 cm ²	120 cm ²	350 cm ²
Actuator casing	GD-ALSi12	1.0330	GD-ALSi12	1.0330
Diaphragm	NBR		NBR	
Actuator stem	1.4305	1.4571	1.4305	1.4571
Positioner housing				
Integrated version	POM-GF	-	-	
Type 3725	Polyphthalamide (PPA)		-	
Yoke				
Rod	9SMn28K	1.0715+C	9SMn28K	1.0715+C
Bracket	1.4301	-	1.4301	-
Mounting bracket for Type 3725	Aluminum		-	

Table 3.3: Permissible differential pressures for metal-seated plug · All pressures in bar

Fail-safe position	Actuator stem extends		Actuator stem retracts		
Actuator size	120 cm ²	350 cm ²	120 cm ²	350 cm ²	
Bench range and (travel) in mm	bar	1.4 to 2.3	2.2 to 3.8 (30 mm) 2.1 to 2.7 (15 mm)	1.4 to 2.3	1.5 to 2.7 (30 mm) 1.5 to 2.1 (15 mm)
K_{VS} coefficients	Δp when $p_2 = 0$ bar		Δp when $p_2 = 0$ bar		
4.0 to 8	16	-	16	-	
16 to 32	10	-	10	-	
60	-	10	-	10	
80	-	10	-	10	
160	-	10	-	10	

Table 4: *Electric actuators***Table 4.1:** *Permissible differential pressures for metal-seated plug · All pressures in bar*

Three-way valve		Type	Type 3323-E1	Type 3323-E3	
Actuator	Type		5824-30	3374-21/-31	3374-10/-11
Thrust	Stem retracts		0.7 kN	0.5 kN	2.5 kN
	Stem extends		0.7 kN	2.0 kN	2.5 kN
K _{V5} coefficients			Δp when p ₂ = 0 bar		
4 to 8			10	18	25
16 to 32			3.5	6	10
60			–	2	5.5
80			–	–	3.2
160			–	–	3.1
Actuator data	Refer to data sheet		▶ T 5824	▶ T 8331	

Table 5: *Type of attachment and required adapter*

Type 3323 Valve			DN 15 to 50	DN 65 to 100
Type 3372 Actuator with plug connector	Version:	IP	Attachment with crossbeam (form B)	–
Type 3372 Actuator with Type 3725 Positioner		IP	Attachment with crossbeam (form B)	Attachment without crossbeam (form C)
Type 5824-30 Actuator		E1	With adapter (1400-7414)	–
Type 3374-11/-21/-31 Actuator		E3	Attachment with crossbeam (form B)	With adapter (1400-9515)
Type 3374-10 Actuator		E3	–	With adapter (1400-9515)
Type 3371 Actuator		PP	Attachment with crossbeam (form B)	Attachment without crossbeam (form C)

Table 6: 5. Dimensions in mm and weights in kg · Type 3323 Three-way Valve**Table 6.1:** Valve with standard bonnet

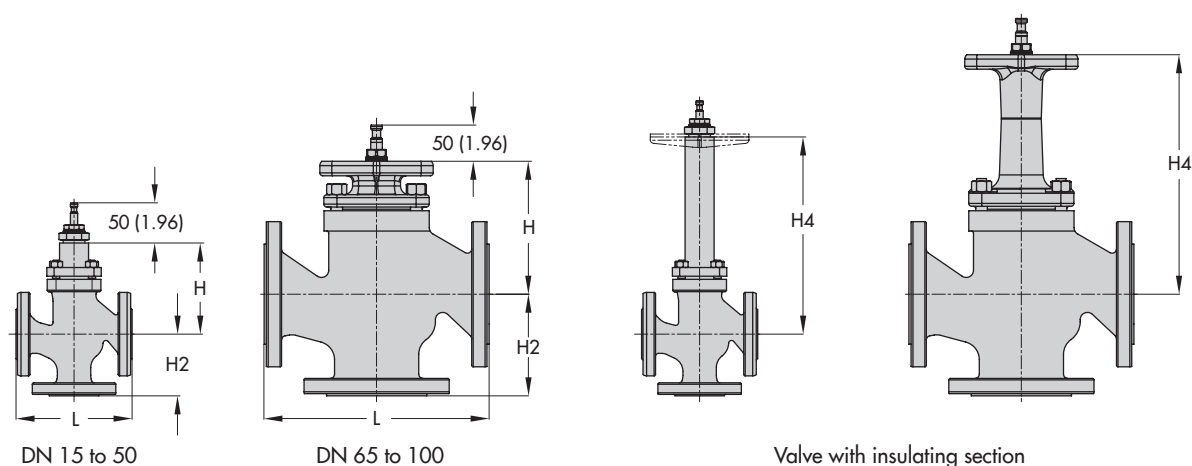
Nominal size	DN	15	20	25	32	40	50	65	80	100
Face-to-face dimension L	mm	130	150	160	180	200	230	290	310	350
Height H	mm	110			115			135		157
Height H2	mm	70	80	85	100	105	120	130	140	150
Weight	kg (approx.)	5	6	7	11	12	15	31	37	49

Table 6.2: Valve with insulating section

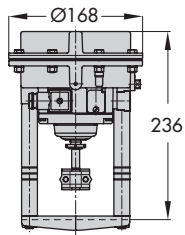
Nominal size	DN	15	20	25	32	40	50	65	80	100
Face-to-face dimension L	mm	130	150	160	180	200	230	290	310	350
Height H4	mm	369			374			402		408
Weight	kg (approx.)	8	9	10	17	18	21	40	45	68

Table 6.3: Weight of Type 3371, Type 3372, Type 5824 and Type 3374 Actuators

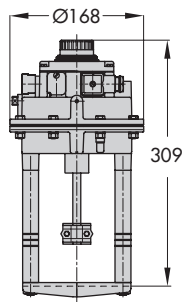
Actuator	Pneumatic		Electropneumatic			Electric		
Type	3371/120	3371/350	3372/120	3372/120	3372/350	E1/5824/5825	E3/3374	
Positioner	-		Integrated	Type 3725		Optional, integrated		
Weight	kg (approx.)	4	13	6	7	16	1.25	Max. 4

Dimensional drawings for Type 3323 Valve

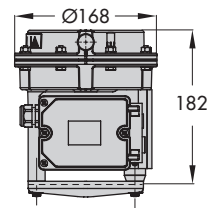
Dimensional drawings for actuators



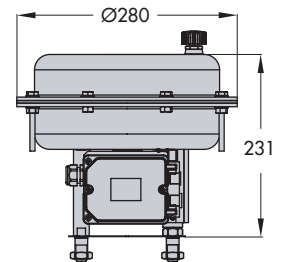
Type 3372/120 cm²
integrated, stem extends



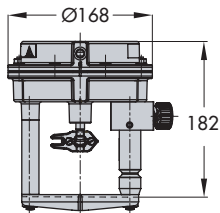
Type 3372/120 cm²
integrated, stem retracts



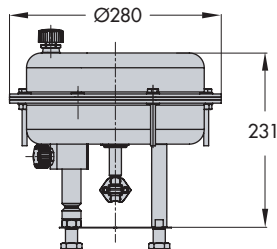
Type 3372/120 cm²
with Type 3725
stem extends or retracts



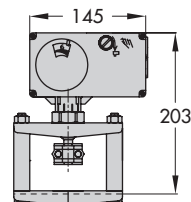
Type 3372/350 cm²
with Type 3725
stem extends or retracts



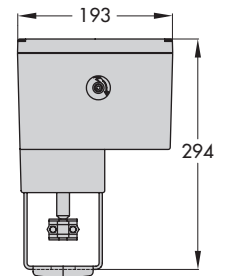
Type 3371/120 cm²



Type 3371/350 cm²



Actuator E1
Type 5824/5825



Actuator E3
Type 3374

Ordering text

The following specifications are required on ordering:

Type 3323 Three-way Valve

Version	Mixing or diverting valve
Nominal size	DN ...
Nominal pressure	PN ...
Flow coefficient	K_{VS} ...
Body material	Cast iron, cast steel or stainless steel
Seat/plug seal	Metal seal

Actuators

for **Type 3323-IP:** Type 3372 Electropneumatic Actuator

Integrated positioner	4 to 20 mA
Positioner	Type 3725 or Type 3730-x
Optional	Intrinsically safe Ex ia
Additional equipment	1 or 2 limit switches

for **Type 3323-PP:** Type 3371 Pneumatic Actuator

Fail-safe position	Actuator stem extends or retracts
Bench range	1.4 to 2.3 bar
Additional equipment	1 or 2 limit switches

for **Type 3323-E1:** Type 5824-30 Electric Actuator

Power supply	– 230 V/50 Hz – 24 V/50 Hz
Additional equipment	– Two limit contacts – Resistance transmitter 0 to 1000 Ω – Positioner input 0/4 to 20 mA or 0/2 to 10 V

for **Type 3323-E3:** Type 3374 Electric Actuator

Thrust (without fail-safe action)	1.25 kN, 2.5 kN
Power supply	– 230 V/50 Hz – 24 V/50 Hz – 110 V/60 Hz
Additional equipment	– Two limit contacts – Resistance transmitter 0 to 1000 Ω – Digital positioner input and output 0/4 to 20 mA or 0/2 to 10 V

Specifications subject to change without notice

