

Valve Series V2001

Three-way Valve Type 3323 with Pneumatic or Electric Actuator



Application

Mixing and flow-diverting valve designed for use in industrial plants

Nominal size DN 15 to DN 100
Nominal pressure PN 16 and PN 40
Temperature range -10 to 220 °C



V2001 Three-way Valves can be equipped with either pneumatic or electric actuators:

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

Valve body materials

- Cast iron for PN 16 or
- Cast steel for PN 16 and 40
- Cast stainless steel for PN 16 and 40
- Valve plug with metal sealing
- Mixing valves in DN 15 to 25 sizes can also be used for flow-diverting service.

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

Versions

with Type 3323 Three-way Valve

Electropneumatic Mixing/Diverting Valve Type 3323-IP

(Fig. 1) with Type 3372 Electropneumatic Actuator, plug connector, tight-closing function for completely venting or filling the actuator with air, reference variable 4 to 20 mA, max. 4 bar supply air, fail-safe position for actuator stem extends or retracts, optionally with Type 4744-2 Limit Switch

Pneumatic Mixing/Diverting Valve Type 3323-PP (Fig. 2)

with Type 3371 Pneumatic Actuator, bench range 2.1 to 3.3 bar for version with fail-safe position actuator stem extends or 0.4 to 1.4 bar for version with fail-safe position actuator stem retracts, optionally with Type 4744-2 Limit Switch

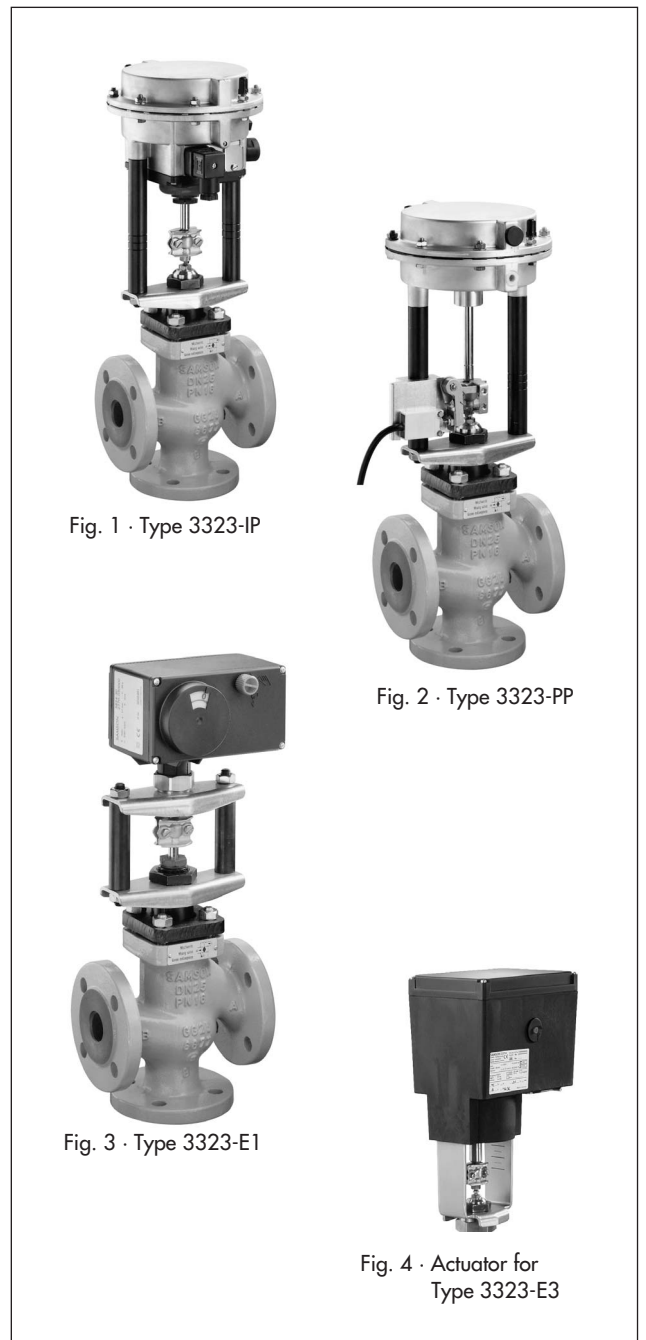
Electric Mixing/Diverting Valve Type 3323-E1 (Fig. 3)

with Type 5824-30 Electric Actuator 230 V/50 Hz or 24 V/50Hz, optionally with positioner, limit switches and potentiometers

Electric Mixing/Diverting Valve Type 3323-E3 (Fig. 4)

with Type 3374 Electric Actuator for 230 or 24 V/50 Hz or 110 V/60 Hz, optionally with fail-safe action (typetested), positioner, limit switches and potentiometers

Explosion-protected version with electric actuators on request
Type 3323 acc. to ANSI standards · See Data Sheet T 8114 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. 6). 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. 5).

Fail-safe action for pneumatic actuators

Depending on the arrangement of the compression springs in the electropneumatic or pneumatic actuator, the control valve has two fail-safe positions that become effective upon air supply failure:

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

The valve and actuator are not assembled together upon delivery. Instructions on how to mount the valve on the actuator can be found in the mounting and operating instructions delivered with the product:

EB 8113/4 EN	Type 3323 Three-way Valve
EB 8313 EN	Actuator for mixing/diverting valves Type 3323-IP and Type 3323-PP
EB 5824 EN	Electric actuator for Type 3323-E1
EB 8331-1 EN	Electric actuator for Type 3323-E3

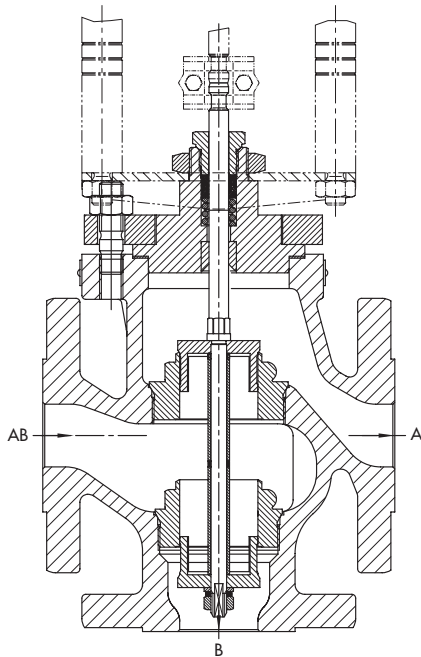


Fig. 5 · Type 3323-IP Valve in DN 32 to 50, with a flow-diverting valve

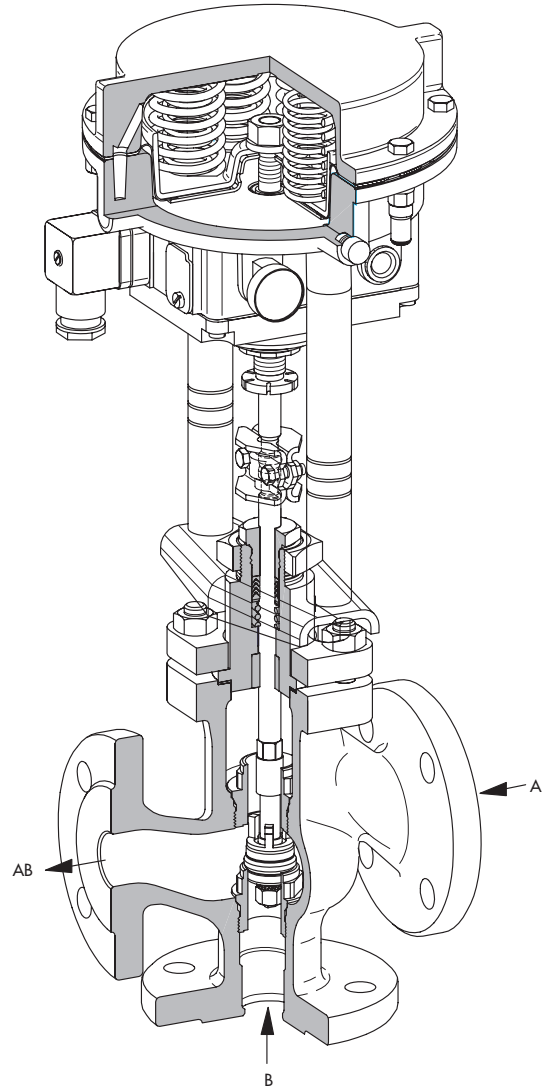


Fig. 6 · Type 3323-IP Electropneumatic Control Valve in nominal sizes DN 15 to 50, with a mixing valve, actuator with integrated i/p positioner

1. Type 3323 Three-way Valve

Table 1.1 · Technical data

Nominal size	DN	15 · 20 · 25 · 32 · 40 · 50 · 65 · 80 · 100		
Material		Cast iron · EN-JL1040	Cast steel · 1.0619	Stainless steel · 1.4408
Connection	Flanges	EN 1092-1 Form B1, Ra 3.2 to 12.5 μm		
Nominal pressure	PN	16	16 · 40	16 · 40
Seat/plug sealing		Metal sealing		
Characteristic		Linear		
Rangeability		30 : 1 up to DN 25 · 50 : 1 for DN 32 and larger		
Temperature range		-10 ... 220 °C		
Leakage rate acc. to IEC 60534-4		Metal sealing: I (0.05 % from K _{Vs})		

Table 1.2 · Materials · Material number according to DIN EN

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

Table 1.3 · Nominal sizes, K_{Vs} coefficients and seat diameters

Table 1.3a · 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 diameter	mm	24			40			63	75	100
Rated travel	mm	15								30

Table 1.3a · 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 diameter	mm	-			40			63/48	75/63	100/80
Rated travel	mm	-			15					30

2. Pneumatic actuators

Table 2.1 · Technical data

Actuator	Type 3323-IP with Type 3372 Actuator		Type 3323-PP with Type 3371 Actuator		
	120 cm ²	350 cm ²	120 cm ²	350 cm ²	
Attachment to Type 3323	DN	15 to 50	65 to 100	15 to 50	65 to 100
Fail-safe position	Valve CLOSED or OPEN				
Reference variable	4 to 20 mA			-	
Signal range/rated travel	Valve CLOSED	2.1 to 3.3 bar/15 mm	2.2 to 3.8 bar/30 mm	2.1 to 3.3 bar/15 mm	2.2 to 3.8 bar/30 mm
	Valve OPEN	0.4 to 1.4 bar/15 mm	1.5 to 2.7 bar/30 mm	0.4 to 1.4 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 3730-0/-1			-	
Permissible ambient temperature	Standard: -20 to +80 °C With metal cable gland: -30 to +80 °C			-35 to +90 °C	

Table 2.2 · Materials

Actuator	Type 3372		Type 3371	
	120 cm ²	350 cm ²	120 cm ²	350 cm ²
Effective actuator area	120 cm ²	350 cm ²	120 cm ²	350 cm ²
Actuator case	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 3730-0/-1	Die-cast aluminum EN AC-ALSi12(Fe)			-
Yoke				
Stem	9SMn28K	1.0715+C	9SMn28K	1.0715+C
Crossbeam	1.4301	-	1.4301	-
Bracket for Type 3730-/-1	Aluminum			-

Table 2.3 · Permissible differential pressures for plug with metal sealing, all pressures in bar

Fail-safe position	Actuator stem extends		Actuator stem retracts		
	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 2.7 (15 mm)
K _{V5} coefficients	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	

3. Electric actuators

Table 3.1 · Technical data

Actuator	for	Type 3323-E1	Type 3323-E3
Nominal thrust		0.7 kN	2.5 kN Type 3374-11
Transit time for rated travel		90 s	120 s · Other transit times on request
Power supply	230, 24 V/50 Hz	•	•
	100 V/60 Hz	–	•
Power consumption	Motor	3 VA	7.5 VA
	With positioner	–	9.5 VA
Manual override		•	•
Degree of protection		IP 54 when vertically mounted	IP 54 · IP 65 with cable gland
	Mounting position	Suspended mounting position not permitted (see EB 5824 EN and EB 8331-1 EN)	
Permissible ambient temperature		0 to 50 °C	5 to 60 °C
Additional electrical equipment			
Limit switch		2	2
Potentiometer (not for version with positioner)		1 0 to 1000 Ω	2 0 to 1000 Ω
Positioner		Digital	Digital
Control signal		4(0) to 20 mA · 0(2) to 10 V	

Table 3.2 · Permissible differential pressures for plug with metal sealing, all pressures in bar

Actuator	for	Type 3323-E1	Type 3323-E3
Nominal thrust		0.7 kN	2.5 kN
K_{VS} coefficients		Δp when $p_2 = 0$ bar	
4 to 8		10	25
16 to 32		3.5	10
60		–	5.5
80		–	3.2
160		–	3.1

4. Dimensions in mm and weights in kg · Type 3323 Three-way Valve

Table 4.1 · Valve with standard bonnet

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

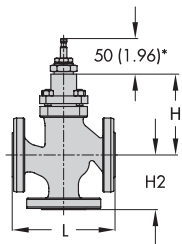
Table 4.2 · Valve with extension bonnet

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

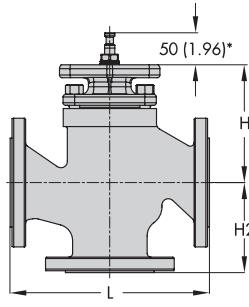
Table 4.3 · Weight of Type 3371, Type 3372, Type 5824/5825 and Type 3374 Actuators

Type of actuator	Pneumatic		Electropneumatic			Electric		
Type	3371/120	3371/350	3372/120	3372/120	3372/350	E1/5824/25	E3/3374	
Positioner	-		Integrated	Type 3730-0/-1		Optional, integrated		
Weight	ca. kg	4	13	6	7	16	1.25	Max. 4

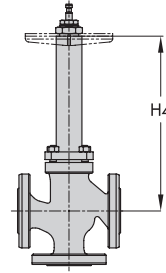
Dimensional diagrams and terminal connections for Type 3323 Three-way Valve



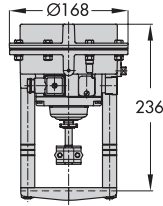
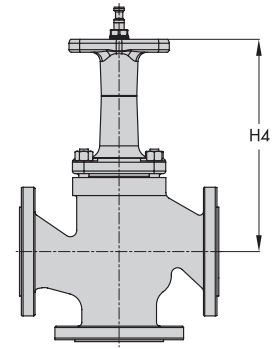
DN 15 to 50



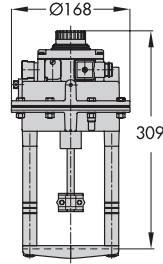
DN 65 to 100



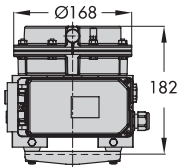
Valve with extension bonnet



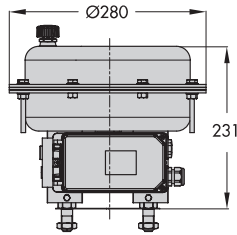
Type 3372/120 cm²
integrated, stem extends



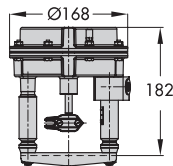
Type 3372/120 cm²
integrated, stem retracts



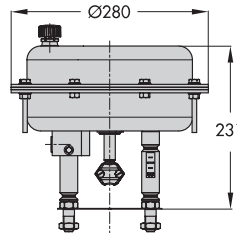
Type 3372/120 cm²
with Type 3730
Stem extends/retracts



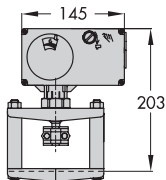
Type 3372/350 cm²
with Type 3730
Stem extends/retracts



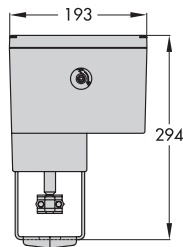
Type 3371/120 cm²



Type 3371/350 cm²



Actuator E1
Type 5824/5825



Actuator E3
Type 3374

5. Ordering text

When ordering, please indicate the following details:

Type 3323 Three-way Valve

	Mixing valve or flow-diverting valve
Nominal size and flow rate	DN Kvs
Nominal pressure	PN
Body material	Cast iron, cast steel or cast stainless steel
Seat/plug sealing	Metal sealing

Actuators

for **Type 3323-IP**: Electropneumatic actuator

with integrated positioner 4 to 20 mA

optionally

Intrinsically safe Ex II 2 G EEx ia IIC T6 acc. to ATEX

Accessories

Limit switches 1 or 2

for **Type 3323-PP**: Pneumatic actuator

Fail-safe action: Actuator stem extends or
retracts

Bench range 1.4 to 2.3 bar

Accessories

Limit switches 1 or 2

for **Type 3323-E1**: Electric actuator

Power supply 230 V/50 Hz or
24 V/50 Hz

Accessories

Limit switches 2
Potentiometer 0 to 1000 Ω
Positioner input 4(0) to 20 mA or
0(2) to 10 V

for **Type 3323-E3**: Electric actuator

Nominal thrust (w/o fail-safe action) 2.5 kN

Power supply 230 V/50 Hz
24 V/50 Hz
110 V/60 Hz

Accessories

Limit switches 2
Potentiometer 0 to 1000 Ω
Digital positioner
Input and output 4(0) to 20 mA or
0(2) to 10 V

Specifications subject to change without notice.

