

Special cross-over combinations for Safety (Relief) valves

DIN: 25E – 500E / PN 10 – 40

ASME: NPS 1"E – 20"E / class 150 300

PT range: $-30 < T < 230/280^{\circ}\text{C}$, vacuum 10-8 mbar

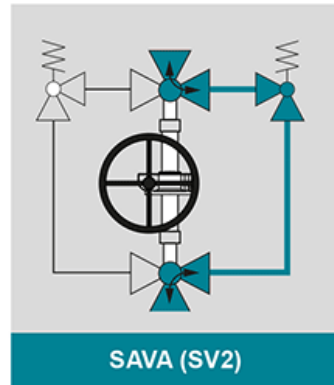
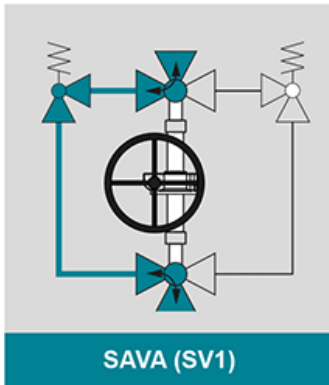


Design Features

Design Characteristics

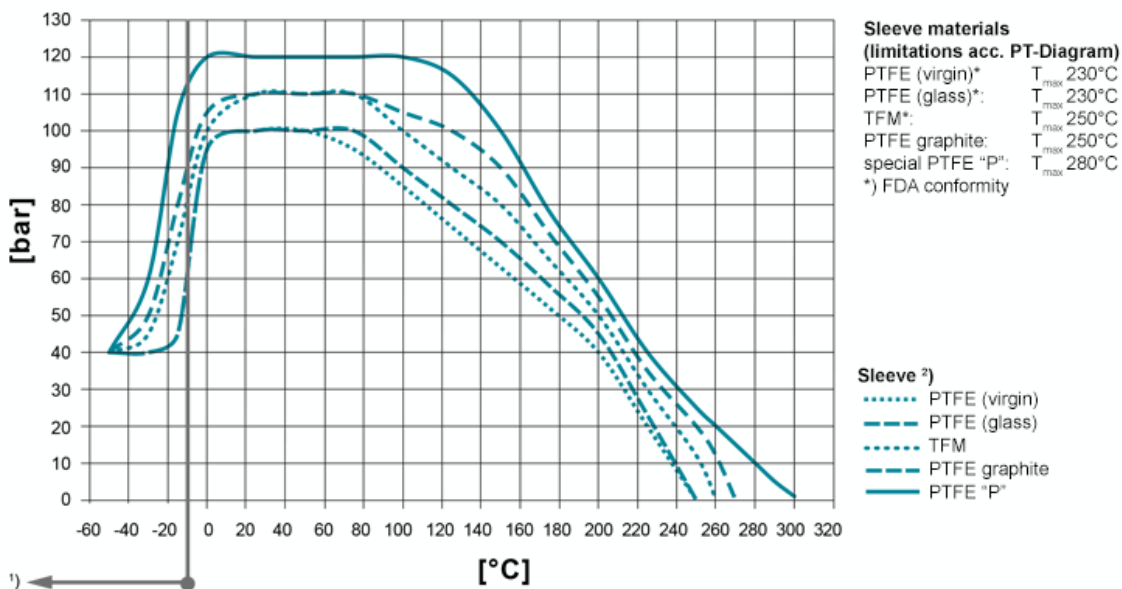
- full-flow, round bore
- cavity free (no medium contact of sealing surfaces)
- tight for years (DIN EN 12266-1)
- safe exchange of safety valves
- transflow during cross-over action
- operation errors impossible design-wise
- safe backflow of blow off capacity
- economic combination of different valve sizes
- TÜV approved

The basic principle of the safety valve exists therein, that dependent on the construction, a least cross section (A_{min}) is guaranteed during the cross-over phase from safety valve I to safety valve II. Therefore a minimal flow (protection of the vessel) is always given.



PT-Diagram

General Pressure-Temperature-Diagram



Operating temperatures $< -30^{\circ}\text{C}$ and $> 220^{\circ}\text{C}$ have to be checked and approved by AZ according to the operating conditions.

Besides the P/T value of the sleeve the limitations of the valve bodies also have to be considered. Please refer to the EN 12516-1 resp. ASME B16.34 in order to choose a proper pressure rating (PN/class). The shown values refer to austenitic stainless steel 1.4408 (A351 Gr. CF8M).

- 1) For operating temperatures below -10°C low temperature / austenitic steels are required.
- 2) Sleeve: There are different sleeve materials / compounds available.

Materials

Standard body materials

- Carbon Steel 1.0619, ASTM A216 WCB
- Stainless Steel 1.4408, ASTM A351 CF8M
- Stainless Steel 1.4308, ASTM A351 CF8
- Unalloyed stainless steel casting (low Temp.) 1.1138, LCC/LCB/A352

Standard plug materials

- Stainless Steel 1.4408, ASTM A351 CF8M
- Stainless Steel 1.4308, ASTM A351 CF8

Special materials

- Alloy
- Monel
- Nickel
- Zirconium
- Titan
- Tantal
- other materials on request

Sealing Systems

Standard sealing for all major applications;
Tmax 230°C

Type STD

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Firesafe sealing (API 607) with graphite
packing for additional
stem sealing; Tmax 230°C

Type FS

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Firesafe safety sealing (API 607) for fluctuating
temperatures
with 3x graphite packing (adjustable) for additional
stem sealing; Tmax 280°C

Type FSN

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Firesafe safety sealing (API 607) for fluctuating
temperatures
with 3x graphite packing (live loaded disc springs) for
additional
stem sealing; Tmax 280°C

Type FSN-SL

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Chemical sealing to prevent fugitive emission of aggressive and toxic media with PTFE packing for additional stem sealing;

T_{max} 230°C

Type CA

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Chemical safety sealing for fluctuating temperatures with 3x PTFE packing (adjustment) for additional stem sealing;

Tmax 230°C

Type CASN

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Chemical safety sealing for fluctuation temperatures with 3x PTFE packing (live loaded disc springs) for additional stem sealing; Tmax 230°C

Type CASN-SL

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Port Forms

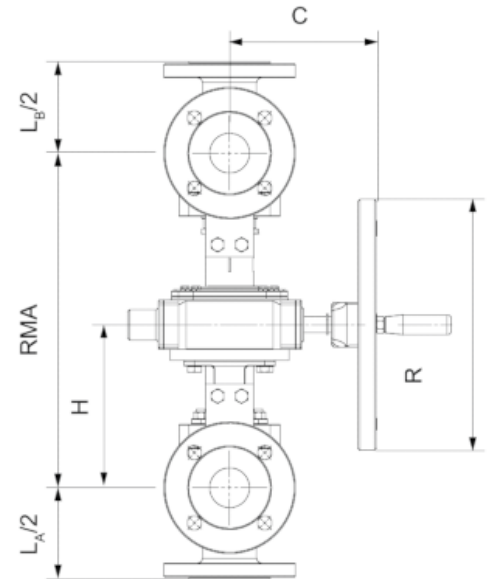
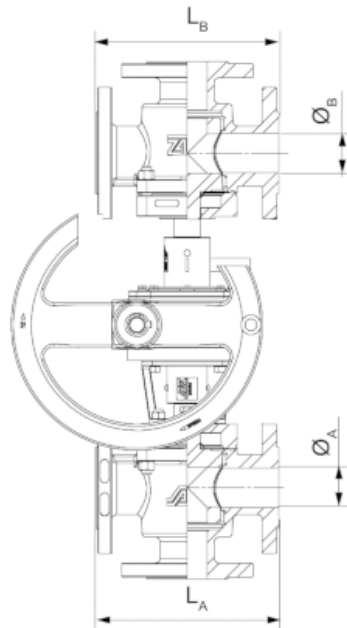
on request

Dimensions

F-3-E-W: $\zeta = 1,14$
F-3-E-S: $\zeta = 1,29$

F-3-E-S: $\zeta = 1,29$

(measured ζ -values,
valid for all nominal sizes)



Class 150 ³⁾	PN10 - PN 40 ³⁾		A _{min} [mm ²]	RMA _{min} ¹⁾ [mm]		C [mm]	H [mm]	L _A ³⁾ [mm]	L _A /2 [mm]	L _B ⁵⁾ [mm]	L _B /2 [mm]	R [mm]
	Ø _A [NPS]	Ø _B [NPS]	Ø _A [DN]	Ø _B [DN]	ISO-EXTRA	EXTRA						
1E	1E	1E	25 ⁴⁾	25E ⁴⁾	320		132	180	160	80	160	160
		1½E		40E	330		165	188	200	100	200	160
		2E		50E	340		170	205	160	80	230	315
1½E	1½E	1½E	40E	40E	360		165	188	200	100	200	160
		2E		50E	360		170	205	200	100	230	315
		3E		65E	390		170	215	200	100	310	315
2E	2E	2E	50E	50E	400		170	205	230	115	230	315
		2½E		65E	410		170	215	230	115	290	315
		3E		80E	430		170	235	230	115	310	400
3E	3E	3E	80E	80E	460		170	235	310	155	310	400
		4E		100E	530		299	290	310	155	350	400
		6E		150E	480		324	342	350	175	480	500
4E	4E	4E	100E	100E		590	299	290	310	155	350	400
		6E		150E	5184	640 (F25)	324	342	350	175	480	500
		8E		200E		680 (F30)	380	381	480	240	600	300
6E	6E	6E	150E	150E		720 (F30)	324	342	480	240	480	500
		8E		200E	14386	730 (F30)	380	381	480	240	600	300
		8E		200E		760 (F30)	380	381	600	300	600	300
8E	8E	10E	200E	250E	25833	830 (F35)	510	434	600	300	730	365
		10E		250E	42102	850 (F35)	510	434	730	365	730	365
		12E		300E ²⁾					730	365	850	425
12E	12E	300E ²⁾	300E ²⁾	300E ²⁾					850	425	850	425

¹⁾ larger pipe centre line (RMA) on request

²⁾ All details for PN10 - PN 40 and Class 150, higher sizes or ratings on request

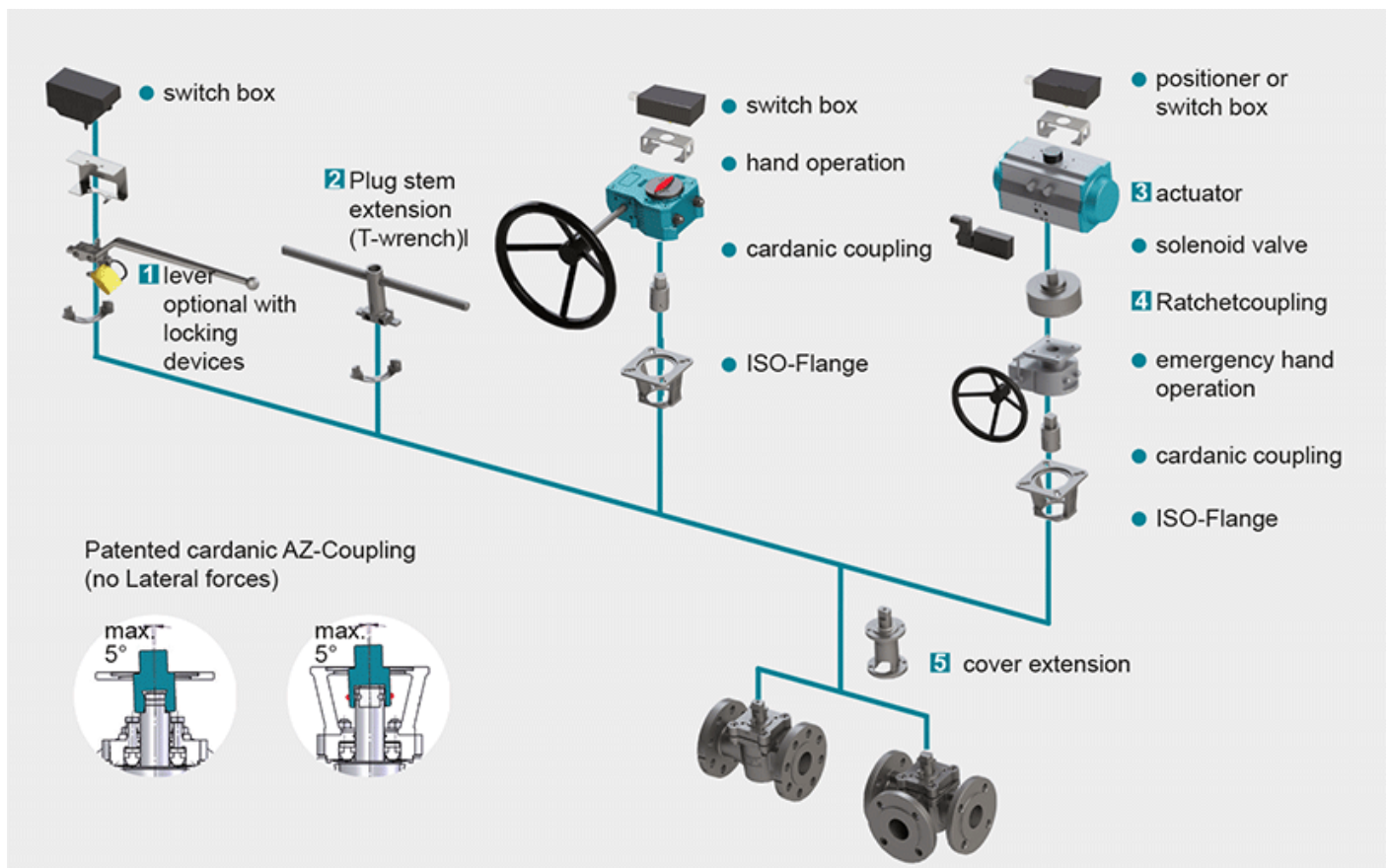
³⁾ Flanges acc. to ASME, Class 300/600 or others on request

⁴⁾ also available with T-wrench

⁵⁾ F/F dimension acc. to DIN 3202 / EN 558-1

For geometric reasons, threads are used in the flange bores in a few cases

Actuation



1 Locking Devices

Pilot valve combinations, pad lock eyelets, linear key conception, indexing plunger arrestor.
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2 Plug stem extension

Solid construction in stainless steel with T-wrench, Standard extension 100 mm or 150 mm, non standard lengths are available on request
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3 Actuators

Actuators for mounting-flange acc. to DIN ISO 5211
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NEW: Pneumatic actuator AIR GEAR for plug valves with high torque =150.000 Nm
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4 Ratched coupling

To usw on multiport valves with standard 90° actuator for bigger switchpositions than 90°
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5 Cover extension

Solid construction in stainless steel, Standard extension 100 mm or 150 mm high, non standard lengths are available on request . Hexagonal bolts on adjustment ring freely accessible. Note: Don't use with sealing

FSN/FSN-SL and CASN/CASN-SL
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