

# SAVA

## 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

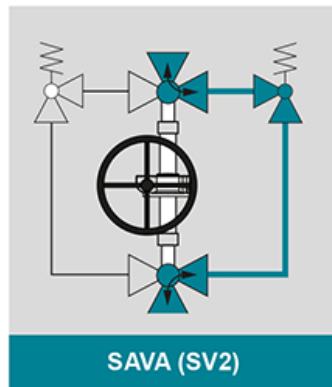
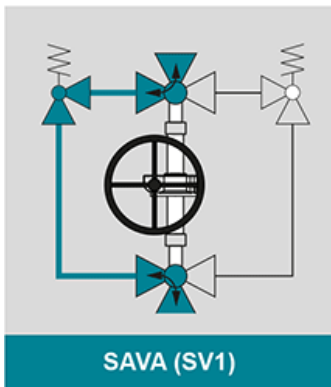


## Design Features

### Design Characteristics

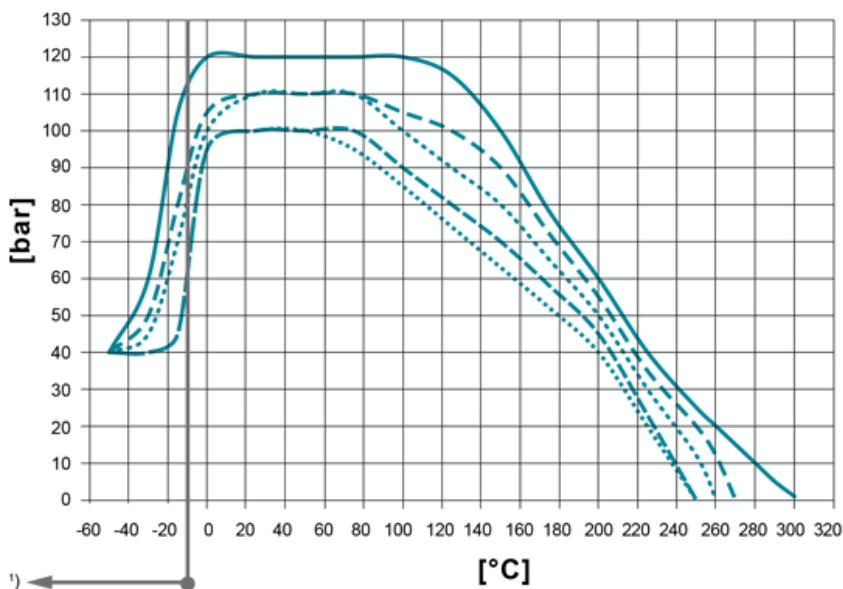
- full-flow, round bore
- cavity free (no medium contact of sealing surfaces)
- tight for years (DIN EN 12266-1)
- safe exchange of safety valves
- transflow during cross-over action
- operation errors impossible design-wise
- safe backflow of blow off capacity
- economic combination of different valve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



**Sleeve materials**  
(limitations acc. PT-Diagram)

PTFE (virgin)*	T <sub>max</sub> 230°C
PTFE (glass)*:	T <sub>max</sub> 230°C
TFM*:	T <sub>max</sub> 250°C
PTFE graphite:	T <sub>max</sub> 250°C
special PTFE "P":	T <sub>max</sub> 280°C

\*) FDA conformity

**Sleeve \*)**

- ..... PTFE (virgin)
- PTFE (glass)
- ..... TFM
- PTFE graphite
- PTFE "P"

**Operating temperatures < -30°C and > 220 °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<sub>max</sub> 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**

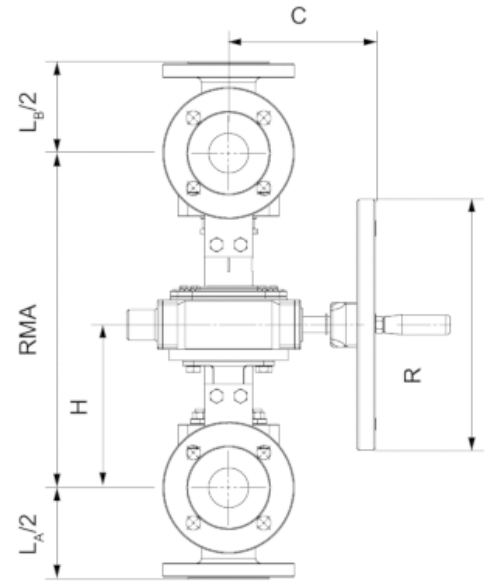
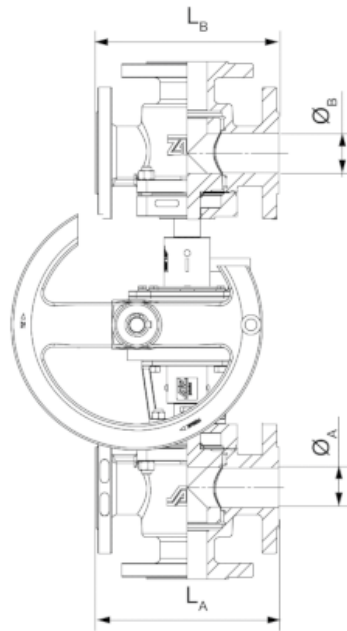
on request

## **Dimensions**

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

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

(measured  $\zeta$ -values,  
 valid for all nominal sizes)



Class 150 <sup>3)</sup>	PN10 - PN 40 <sup>3)</sup>		$A_{min}$ [mm <sup>2</sup> ]	$RMA_{min}$ <sup>1)</sup> [mm]		C [mm]	H [mm]	$L_A$ <sup>3)</sup> [mm]	$L_A/2$ [mm]	$L_B$ <sup>5)</sup> [mm]	$L_B/2$ [mm]	R [mm]
	$\varnothing_A$ [NPS]	$\varnothing_B$ [NPS]		$\varnothing_A$ [DN]	$\varnothing_B$ [DN]							
	1E	1E	25E <sup>4)</sup>		320	132	180	160	80	160	80	160
1E	1½E	2E	40E	225	330	165	188	200	100	200	100	160
	2E	1½E	50E		340	170	205	160	80	230	115	315
1½E	2E	2E	40E	708	360	165	188	200	100	200	100	160
	3E	2E	50E		360	170	205	200	100	230	115	315
	3E	2½E	65E		390	170	215	200	100	310	155	315
2E	2E	3E	50E	1296	400	170	205	230	115	230	115	315
	3E	3E	80E		430	170	235	230	115	310	155	400
	3E	3E	80E		460	170	235	310	155	310	155	400
3E	4E	4E	80E	3754	530	299	290	310	155	350	175	400
	6E	4E	100E		480	324	342	350	175	480	240	500
4E	6E	6E	100E	5184		299	290	310	155	350	175	400
	8E	6E	150E		590	299	290	310	155	350	175	400
	8E	8E	200E		640 (F25)	324	342	350	175	480	240	500
6E	6E	8E	150E	14386	680 (F30)	380	381	480	240	600	300	400
	8E	8E	200E		720 (F30)	324	342	480	240	480	240	500
	8E	10E	200E		730 (F30)	380	381	480	240	600	300	400
8E	8E	10E	200E	25833	760 (F30)	380	381	600	300	600	300	400
	10E	10E	250E		830 (F35)	510	434	600	300	730	365	800
10E	10E	12E	250E	42102	850 (F35)	510	434	730	365	730	365	800
	12E	12E	300E <sup>2)</sup>					730	365	850	425	
12E	12E	12E	300E <sup>2)</sup>					850	425	850	425	

<sup>1)</sup> larger pipe centre line (RMA) on request

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

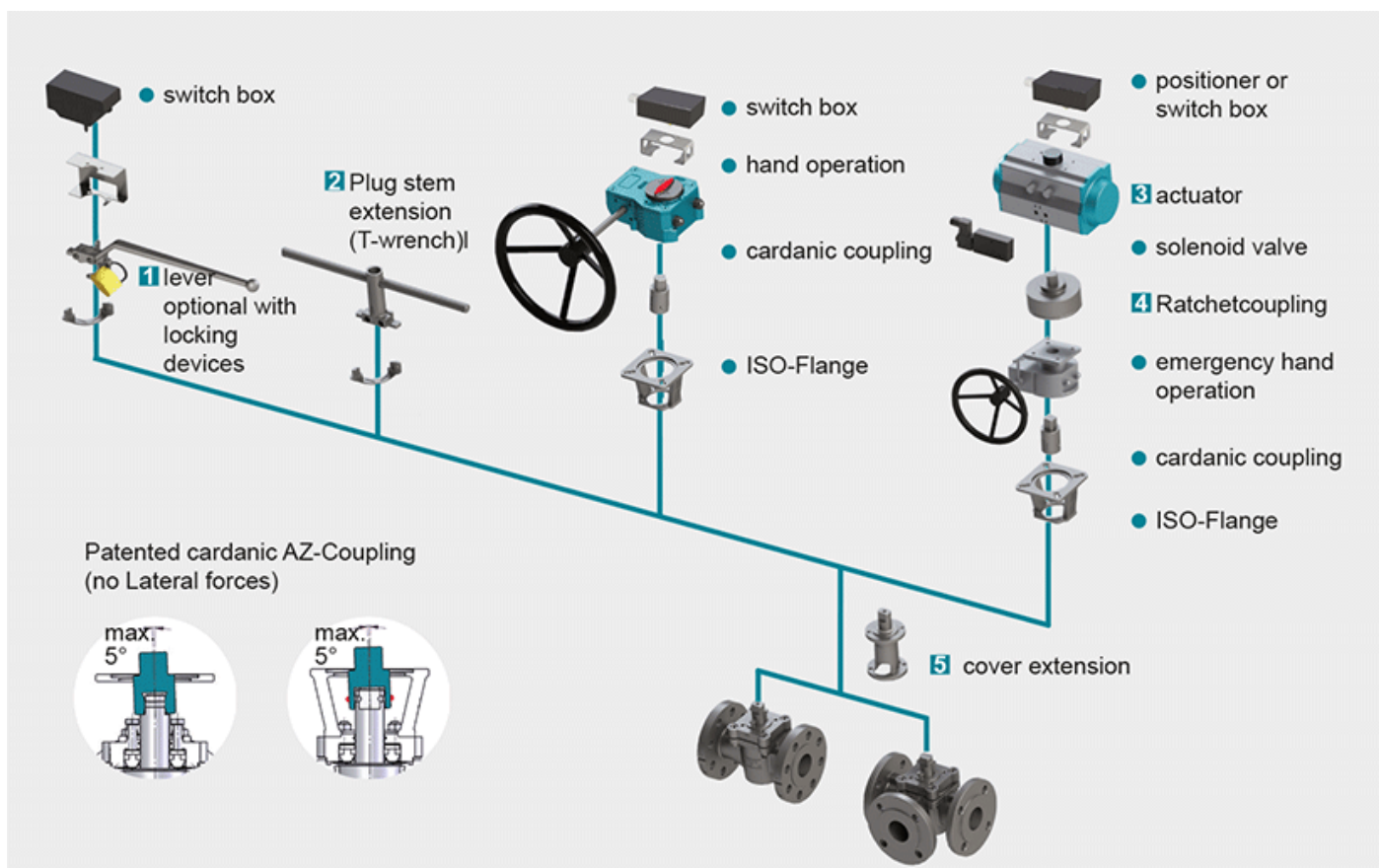
<sup>3)</sup> Flanges acc. to ASME, Class 300/600 or others on request

<sup>4)</sup> also available with T-wrench

<sup>5)</sup> 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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