

Pressure relief valve
SPV, SPVF



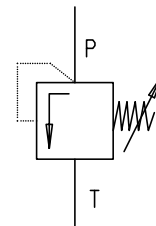
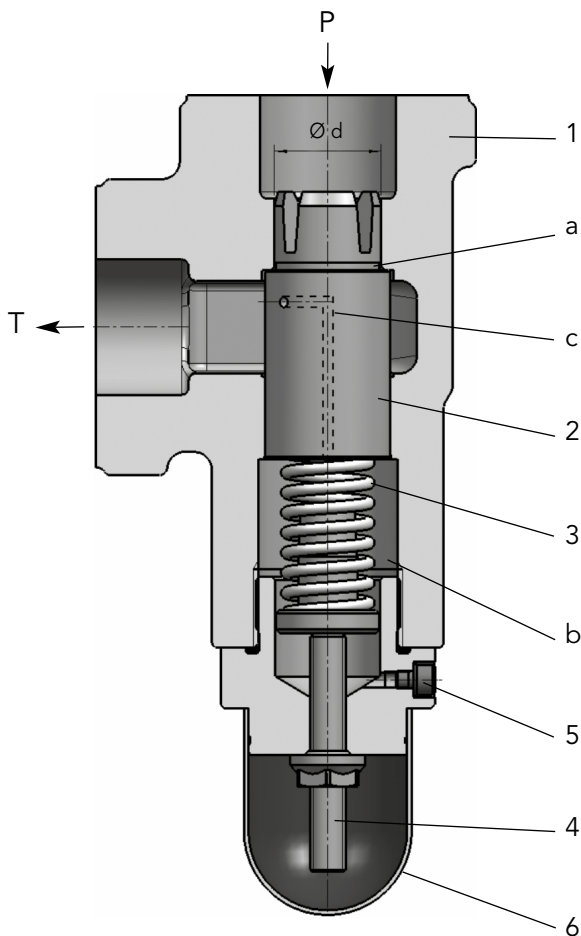
KRACHT®
FLUID TECHNOLOGY AND SYSTEMS

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Description

I Construction



- 1 Housing
- 2 Sliding piston
- 3 Compression spring
- 4 Set screw
- 5 Bleeding screw
- 6 Protective cap
- a Ring surface
- b Spring chamber
- c Balancing bore
- d Diameter
- P Pressure connection
- T Tank connection

I Description

The pressure relief valve SPV/SPVF is a direct spring sliding piston valve. It is intended for mounting in pipelines and is suitable to safeguard low pressure hydraulic circuits.

The pipe connection is to be effected either by SAE-mounting surfaces (3000 psi) or by Whitworth pipe threads "G".

Notes

- > When using strongly aerated media, the valve should preferably be mounted **vertical with the set screw facing down**.
- > The tank connection T of the valve must not be exposed to underpressure when subject to flow ($Q > 0$), as in this case the valve cannot be ventilated, possibly resulting in unwanted vibrations and noise. If this is unavoidable, the special solution (S33) provides an alternative.

I Valve construction

The sliding piston 2 is pressed against the annulated area a by the compression spring 3. Thus the pressure connection P is separated from the tank connection T by sealing the diameter d. As soon as the opening pressure p is achieved, adjusted by the set screw 4, the sliding piston 2 releases the fluid flow to the tank connection. The spring chamber b is pressure compensated by the bore c. When starting-up the valve the spring chamber b must be bled by the bleeding screw 5, (hex. socket width: 4).

The pressure relief valves are available in different pressure setting ranges because, due to their spring rates, each of the compression springs can only cover a limited pressure setting range.

Explosion protection version (ATEX / IECEx)

I Explosion protection – field of application for the pressure relief valves

The valve is used to secure low pressure hydraulic circuits with various flammable and non-flammable fluids.

They can be used:

- a** In zone 2 (Gas-Ex, Category 3G) in the explosion groups IIA, IIB and IIC
- b** In zone 22 (Dust-Ex, Category 3D), in the explosion groups III A and III B at non-conductive dusts with a minimum ignition energy >1mJ
- c** In zone 1 (Gas-Ex, Category 2G) in explosion groups IIA, IIB and IIC
- d** In zone 21 (Dust-Ex, Category 2D) in the explosion groups III A and III B at non-conductive dusts with a minimum ignition energy >1mJ

The qualification for the surface temperature is T4; for all gases, vapours, mists with an ignition temperature >135 °C, the operating materials are not an ignition source.

In the Dust-Ex area, 135 °C is the reference temperature for further considerations regarding the safety margin to the glow temperature, etc. (can only be decided by the operating company).

The permissible ambient temperature ranges from
 $-20\text{ °C} \leq T_a \leq 60\text{ °C}$ (NBR, CR)
 $-15\text{ °C} \leq T_a \leq 60\text{ °C}$ (FKM, HNBR)

Flashpoint, minimum ignition temperature and mediaspecific attributes must be complied with by the operating organisation.

No not allow any explosive mixture to be present inside the unit.

Marking according to the Machine Directive 2014/34/EU

Manufacturer	KRACHT GmbH D-58791 Werdohl
Type designation	SPV...
Consignment no.,	
Year of manufacture	xxxxxx/xx-xxx xx.xx
Tech. File Ref.	TRR: 04.02X
Protection type marking	Ⓜ II 2 GD EEx c IIC (T4) or Ⓜ II 2 GD EEx c (T4)

Description

I Characteristics

Product name / Nominal size	SPV = Nominal size 10 SPVF = Nominal sizes 20 ... 80
Construction	Slide valve / directly operated (Poppet valve on request)
Mounting	Pipe connection / panel mounting (only nominal sizes 10, 20 and 25)
Pipe connection	Flange connection ISO 6162-1 (SAE J518) Pipe thread ISO 228-1
Dimensions	Pages 10, 12, 13, 14
Weight	Pages 10 and 13
Fitting position	any, pressure setting screw below preferred (see page 4)
Housing material	EN-GJL-300 (EN-GJS-400-15)
Type setting	Mechanical Set screw Knob
Accessories	Welding flange SAE (3000 psi) Page 14
Δp -Q-Characteristics	Pages 7 and 8
Hydraulic fluids	Hydraulic oils acc. to DIN 51 524/25 (other fluids on request)

I Hydraulic characteristics

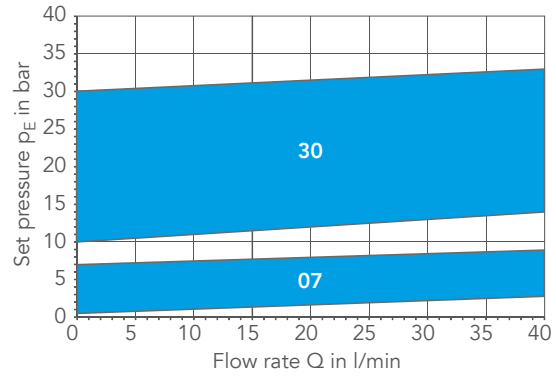
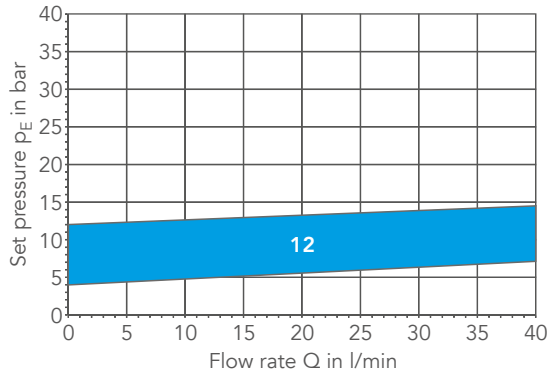
Nominal size		10	20/25	32/40	50	80
Max. flow rate Q	Q in l/min	40	90	450	550	800
Nom. working pressure	p_n in bar	30	30	25	25	20
Setting range response pressure	$p_{v \min}$ in bar	0.5	0.5	0.5	0.5	0.5
	$p_{v \max}$ in bar	30	40	25	25	20
Media temperature	NBR	-20 ... 90 °C		(Design A + E)		
	FKM	-15 ... 150 °C		(Design C + K)		
	Copper	-20 ... 220 °C		(Design B + F)		
	Soft iron	-40 ... 220 °C		(Design D)		
Ambient temperature		-20 ... 60 °C		(NBR, copper, soft iron)		
		-15 ... 60 °C		(FKM)		
Viscosity range	min	1.2 mm ² /s				
	max	1000 mm ² /s (standard) higher viscosities on request				

Note:
Metallic protective cap (cap nut) in ATEX version

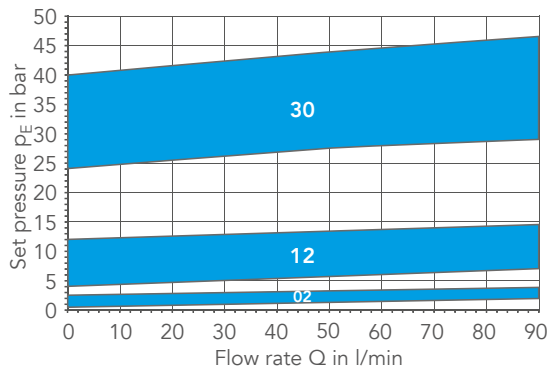
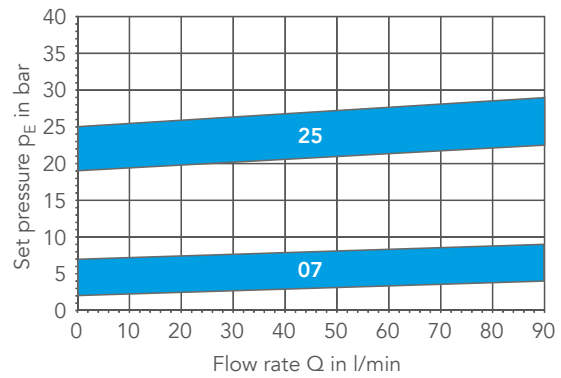
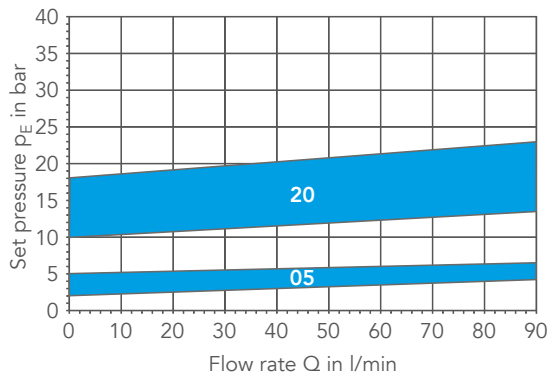
Characteristic curves p_E/Q

I Possible setting range of the pressure stage, viscosity = 34 mm²/s

SPV 10



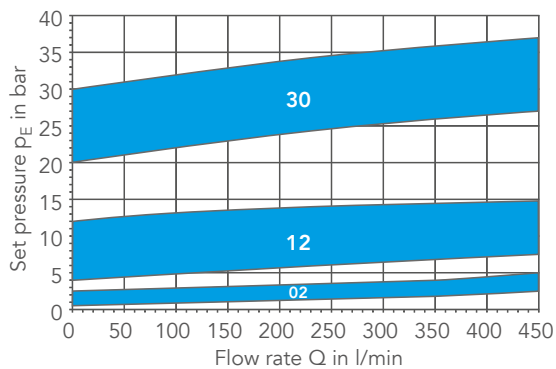
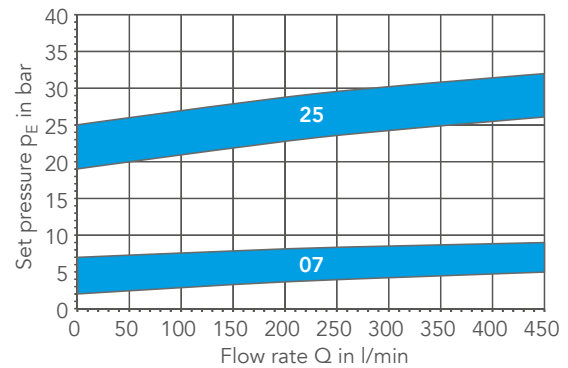
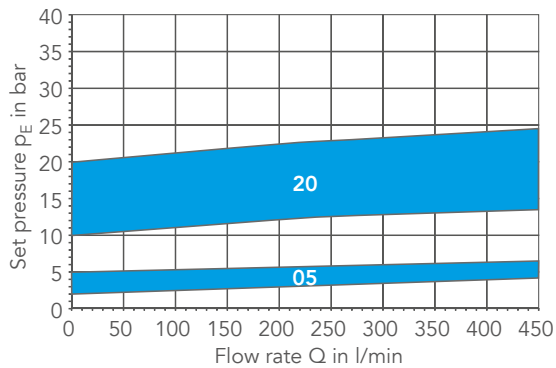
SPVF 20/25



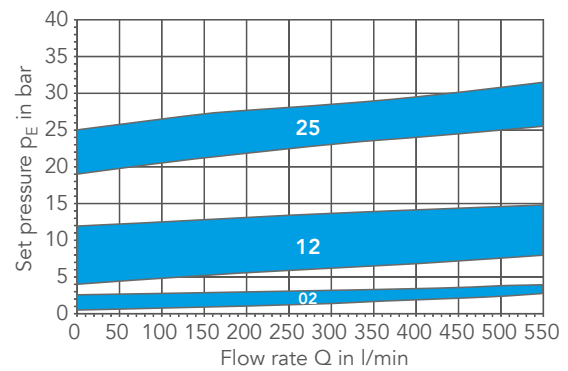
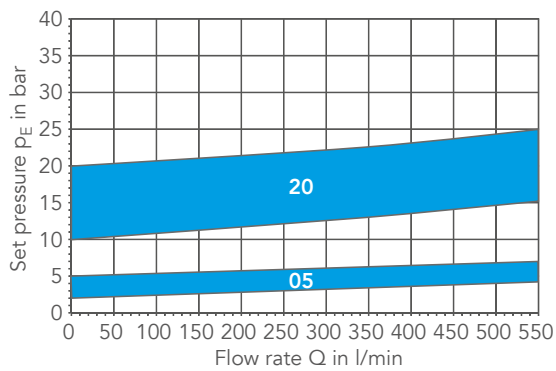
Characteristic curves p_E/Q

I Possible setting range of the pressure stage, viscosity = 34 mm²/s

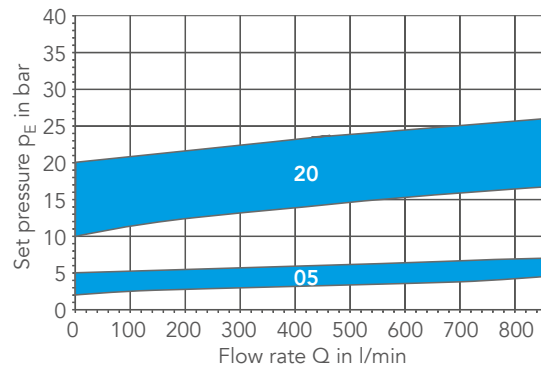
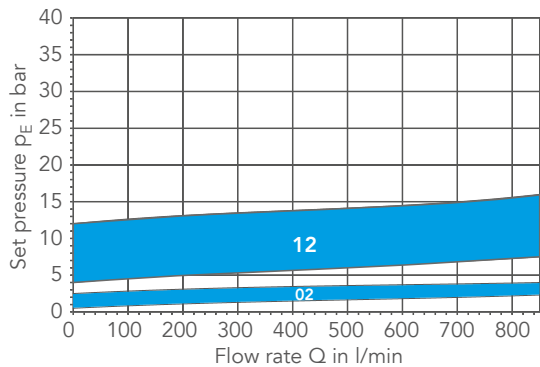
SPVF 32/40



SPVF 50



SPVF 80



Type key

SPV	M	10	A	1G	1	A	12	ATEX
1	2	3	4	5	6	7	8	9

1 Product

2 Mounting

	Pipeline installation
M	Panel mounting

3 Nominal size

10	Q _{max} 40 l/min
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4 Versions

A	Standard version NBR
B	High temperature version C22/Cu
C	FKM version
D	Soft iron seal
E	GJS housing NBR
F	GJS high temperature version C22/Cu
K	GJS housing with FKM seal
L	GJS housing with FKM seal, ball seat valve

5 Pipe connection

1G	Threaded connection G 1/2"
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6 Construction code

	(Specified by KRACHT)
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7 Type of setting

A	Set screw
B	Knob

8 Pressure stage

07	0.5 ... 7 bar
12	4 ... 12 bar
30	10 ... 30 bar

9 Explosion protection

ATEX	ATEX design
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Ordering example: SPV 10 B 1G 1 A 12

- > Pressure relief valve, directly spring operated
- > Nominal size 10 (Q_{max} 40 l/min)
- > High temperature version (... 220 °C)
- > Threaded connection G 1/2"
- > Pressure setting by set screw
- > Pressure setting range 4 ... 12 bar

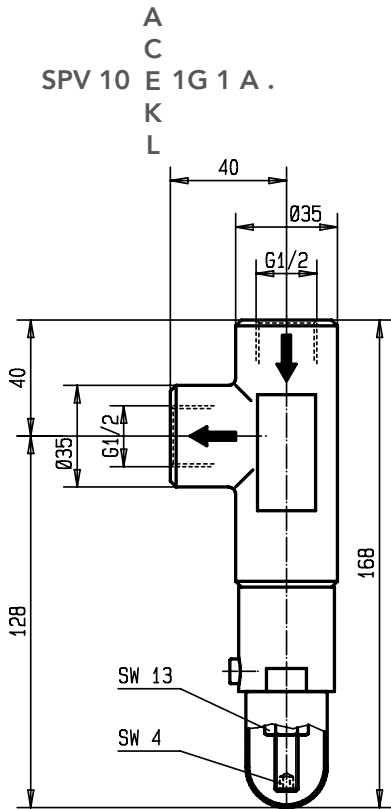
Ordering example: SPVM 10 A 1G 1 B 30

- > Pressure relief valve, directly spring operated
- > Panel mounting
- > Nominal size 10 (Q_{max} 40 l/min),
- > Standard version
- > Threaded connection G1/2"
- > Knob
- > Pressure setting range 10...30 bar

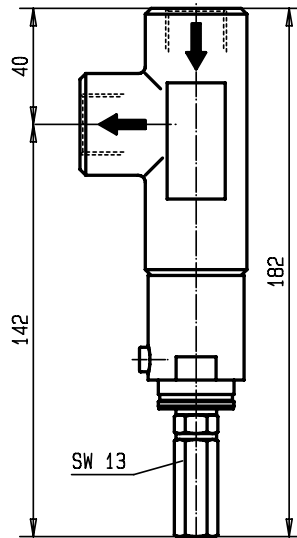
Dimensions

I SPV 10/SPVM 10

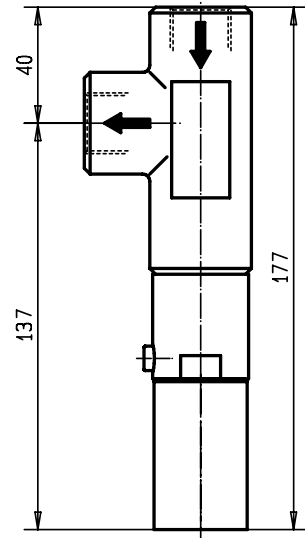
Ordering codes



B
SPV 10 D 1G 1 A.
F

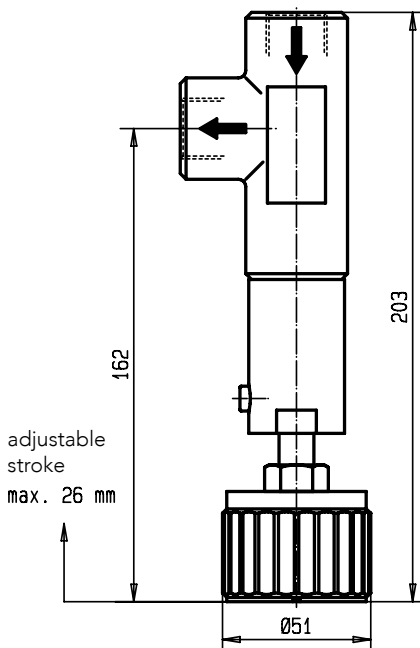


A
C
SPV 10 E 1G 1 A . ATEX
K
L

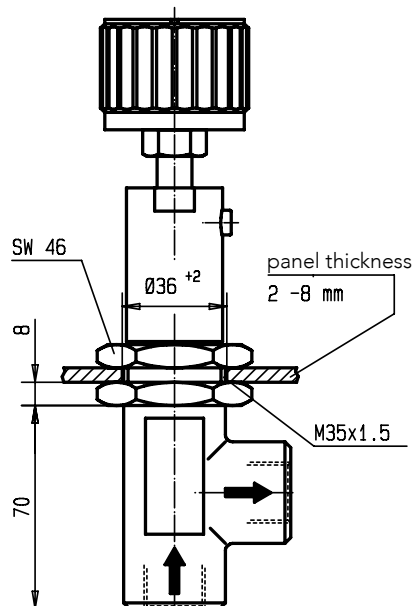


Ordering codes

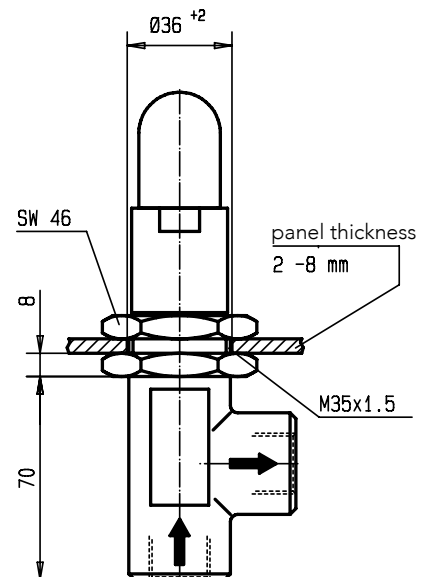
A
C
SPV 10 E 1G 1 B.
K
L



A
C
SPV M 10 E 1G 1 B.
K
L



A
C
SPV M 10 E 1G 1 A.
K
L



Dimensions in mm

Weight SPV: 0.9 kg

Type key

SPVF	M	25	A	2F	1	A	12	ATEX
1	2	3	4	5	6	7	8	9

1 Product

2 Mounting

	Pipeline installation
M	Panel mounting (only nominal sizes 20 and 25)

3 Nominal size

20	Q _{max} 90 l/min
25	Q _{max} 90 l/min
32	Q _{max} 450 l/min
40	Q _{max} 450 l/min
50	Q _{max} 550 l/min
80	Q _{max} 800 l/min

4 Versions

A	Standard version NBR
B	High temperature version up to +220 °C
C	FKM version up to +150 °C
D	Soft iron seal
E	GJS housing NBR
F	GJS high temperature version up to +220 °C
G	NBR version, lead seal possible
K	GJS housing with FKM seal

5 Pipe connection

2F	SAE-Flansch 3000 psi
1G	Threaded connection G ...

6 Construction code

	(Specified by KRACHT)
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7 Type of setting

A	Set screw
B	Knob (on request)

8 Pressure stage

02	0.5 ... 2.5 bar
05	2 ... 5 bar
07	2 ... 7 bar (only nominal sizes 20 ... 40)
12	4 ... 12 bar
20	10 ... 20 bar
25	19 ... 25 bar (only nominal sizes 20 ... 50)
30	20 ... 40 bar (only nominal sizes 20 and 25)
30	15 ... 30 bar (only nominal sizes 32 ... 40)

9 Explosion protection

ATEX	ATEX design
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Ordering example: SPVF 80 A1G 1 A 12

- > Pressure relief valve, directly spring operated
- > Flange version
- > Nominal size 80 (Q_{max} 800 l/min)
- > Threaded connection G3
- > Pressure setting by set screw
- > Pressure setting range 4...12 bar

Ordering example: SPVF 40 B2F 1 A 20

- > Pressure relief valve, directly spring operated
- > Flange version
- > Nominal size 40 (Q_{max} 450 l/min)
- > High temperature version (... +220 °C)
- > SAE-Flansch (3000 psi)
- > Pressure setting by set screw
- > Pressure setting range 10...20 bar

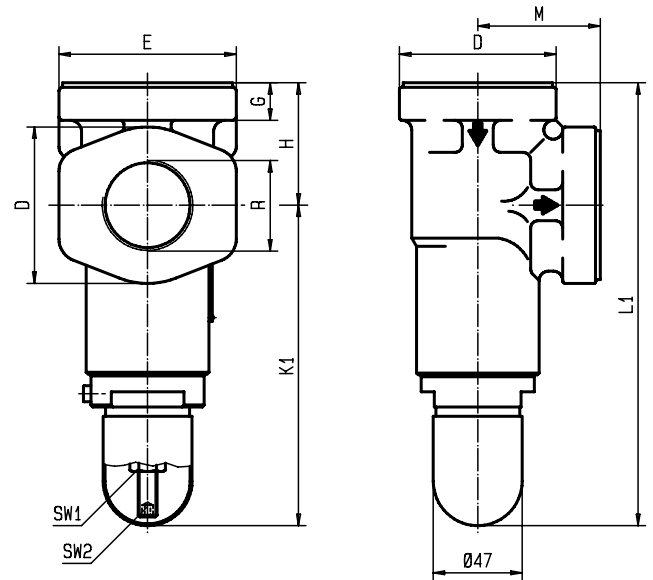
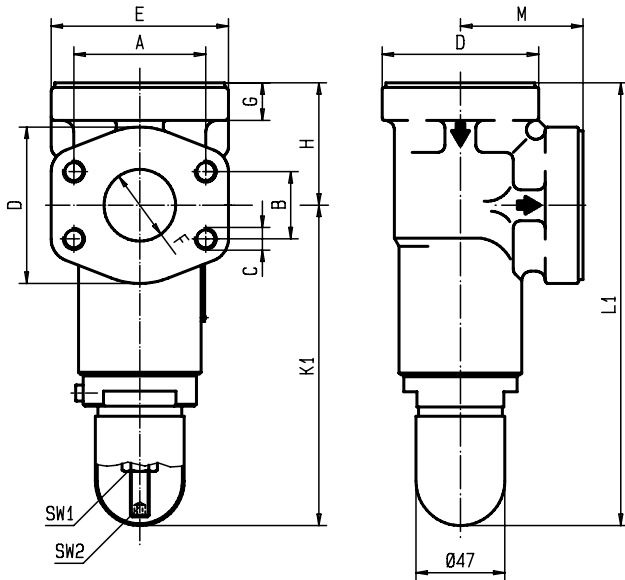
Dimensions

I SPVF

Ordering codes

SPVF . $\begin{matrix} A \\ C \\ E \\ K \end{matrix}$ 2F 1 A .

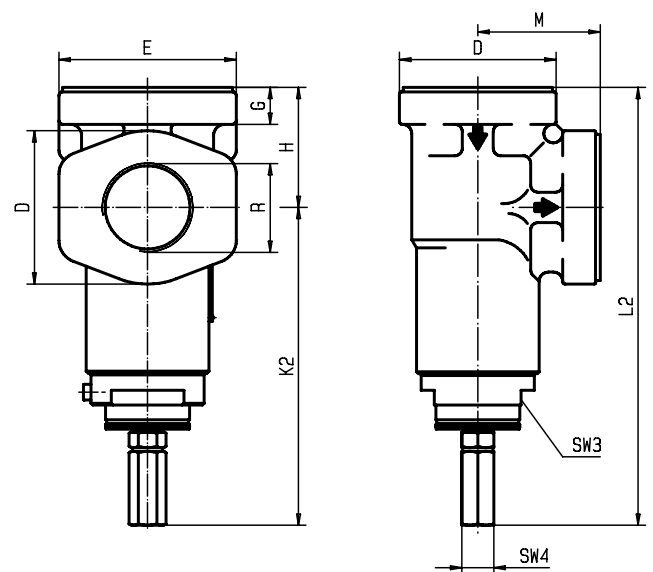
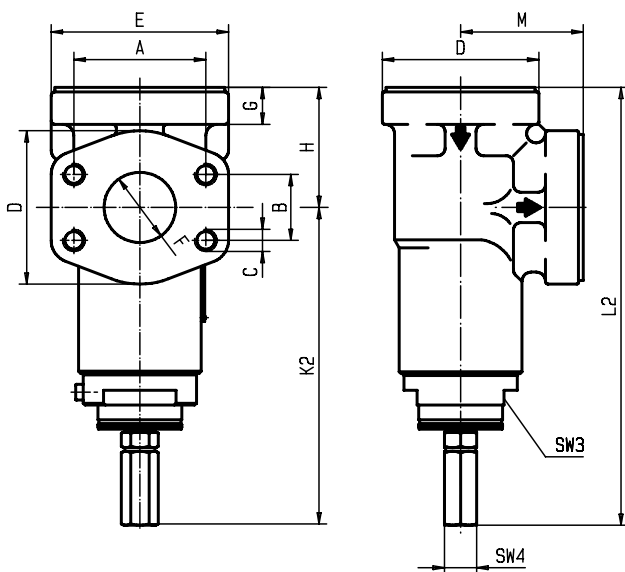
SPVF . $\begin{matrix} A \\ C \\ E \\ K \end{matrix}$ 1G 1 A .



Ordering codes

SPVF . $\begin{matrix} B \\ D \\ F \end{matrix}$ 2F 1 A .

SPVF . $\begin{matrix} B \\ D \\ F \end{matrix}$ 1G 1 A .



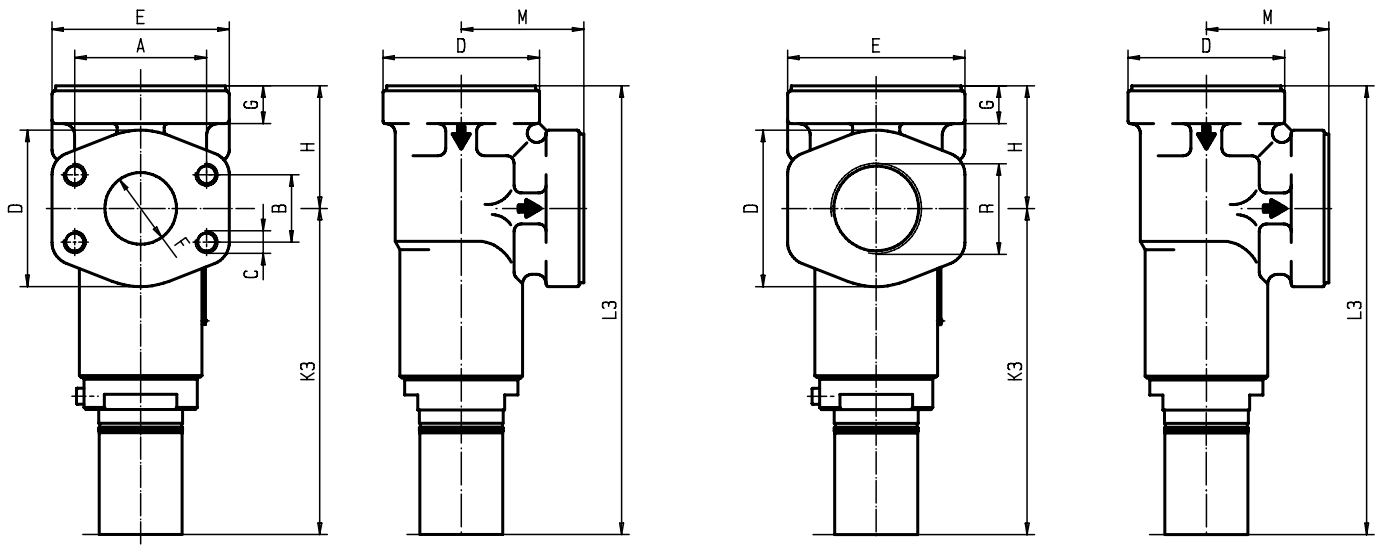
Dimensions

I SPVF ATEX versions

Ordering codes

A
C
E
K
 SPVF . 2F 1 A . ATEX

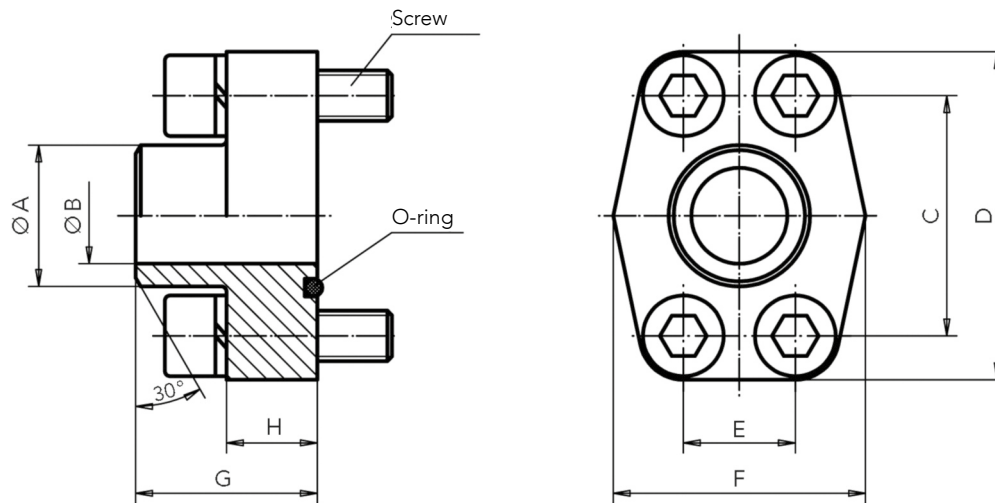
A
C
E
K
 SPVF . 1G 1 A . ATEX



Nom. size	SAE flange	Thread R	A	B	C	D	E	F	G	H	K1	K2	K3	L1	L2	L3	M	SW1	SW2	SW3	SW4	Weight in kg
20	¾"	G ¾	47.6	22.2	M10	59	70	24	20	50	160	167	169	210	217	227	50	17	5	46	17	3.0
25	1"	G 1	52.4	26.2	M10	59	70	24	20	50	160	167	169	210	217	227	55	17	5	46	17	3.0
32	1¼"	G 1¼	58.7	30.2	M10	72	79	32	20	65	170	172	174	235	237	247	65	17	5	46	17	5.5
40	1½"	G 1½	69.9	35.7	M12	83	94	38	20	65	170	172	174	235	237	247	65	17	5	46	17	6.0
50	2"	G 2	77.8	42.9	M12	97	102	50.5	20	75	192	209	212	267	284	284	75	19	6	46	19	8.2
80	3"	G 3	106.4	61.9	M16	131	135	79	25	110	190	207	208	300	317	315	110	19	6	-	19	18.5

Dimensions

I Accessoires welding flange SAE (3000 psi)



SAE flange	A	B	C	D	E	F	G	H	Screws 10.9	O-ring	max. working pressure in bar	Weight in kg
3/4"	28.0	19.0	47.63	65	22.23	50	36	18	M10 x 35	24.99 x 3.53	350	0.46
1"	34.0	25.0	52.37	70	26.19	55	38	18	M10 x 35	32.92 x 3.53	315	0.54
1 1/4"	42.8	32.0	58.72	79	30.18	68	41	21	M10 x 40	37.69 x 3.53	250	0.78
1 1/2"	48.6	38.0	69.85	93	35.71	78	44	25	M12 x 45	47.22 x 3.53	200	1.24
2"	61.0	51.0	77.77	102	42.88	90	45	25	M12 x 45	56.74 x 3.53	200	1.40
3"	92.0	73.0	106.38	134	61.93	124	50	27	M16 x 50	85.32 x 3.53	138	2.54

Notes

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