



Pressure relief valve
SPV, SPVF





KRACHT[®]

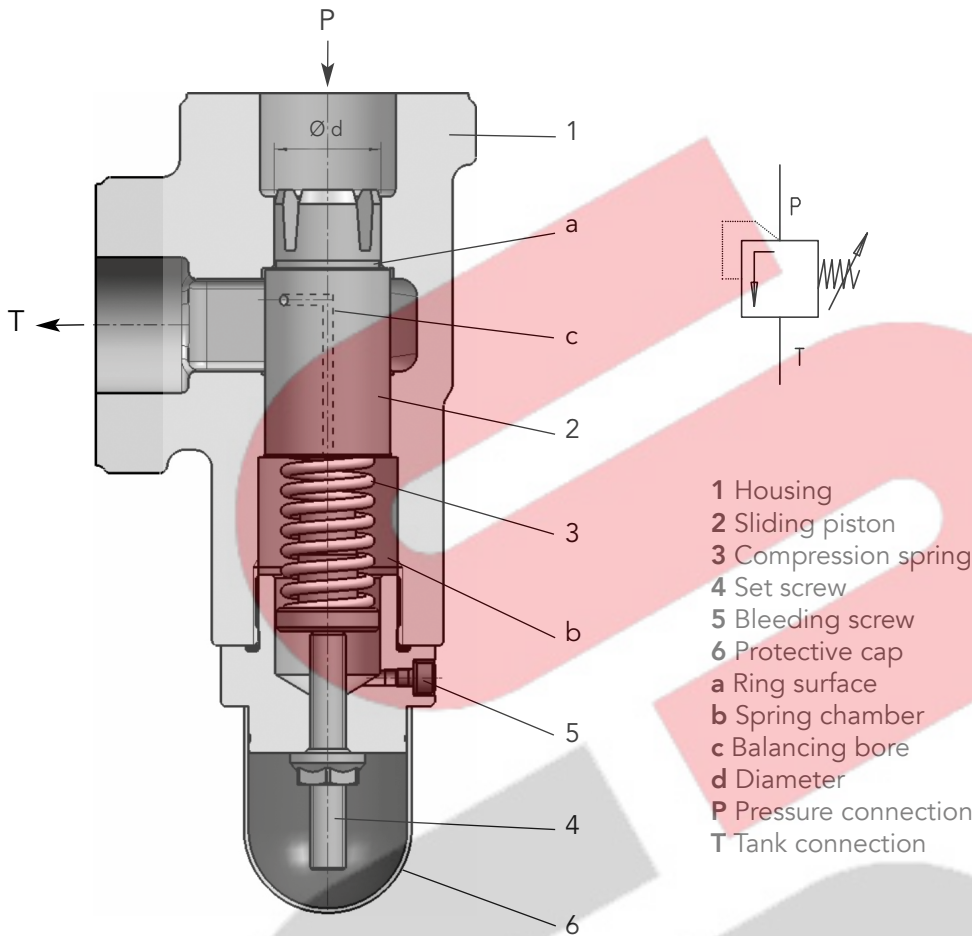
FLUID TECHNOLOGY AND SYSTEMS

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Description

I Construction



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 media-specific 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

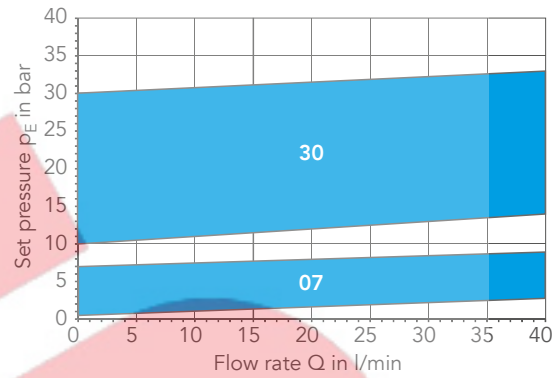
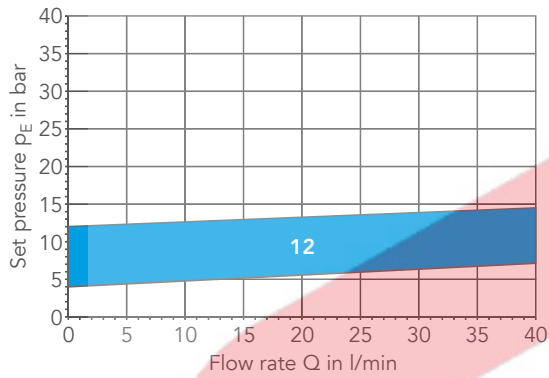
| Nominal size | | 10 | 20/25 | 32/40 | 50 | 80 |
|------------------------------------|---------------------|---|-------|--------------------------|-----|-----|
| Max. flow rate Q | Q in l/min | 40 | 90 | 450 | 550 | 800 |
| Nom. working pressure | p_n in bar | 30 | 30 | 25 | 25 | 20 |
| Setting range 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

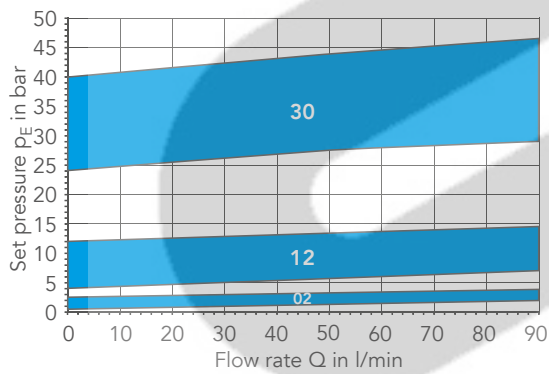
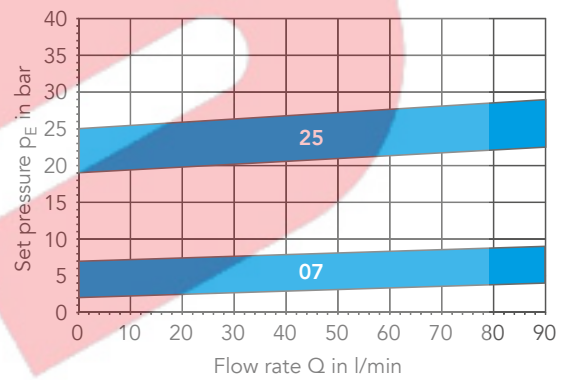
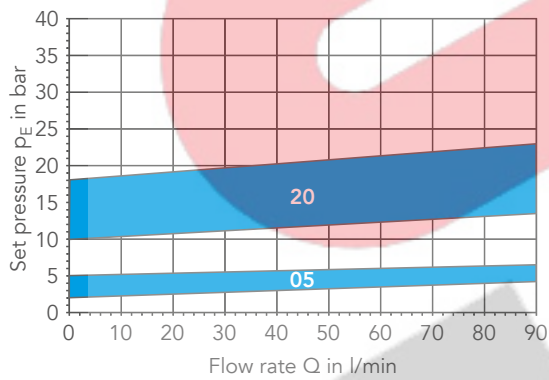
Characteristic curves p_E/Q

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

SPV 10



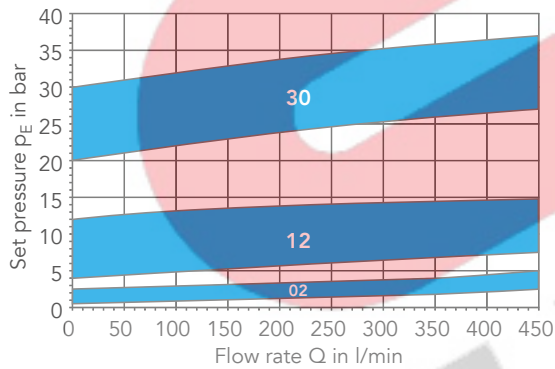
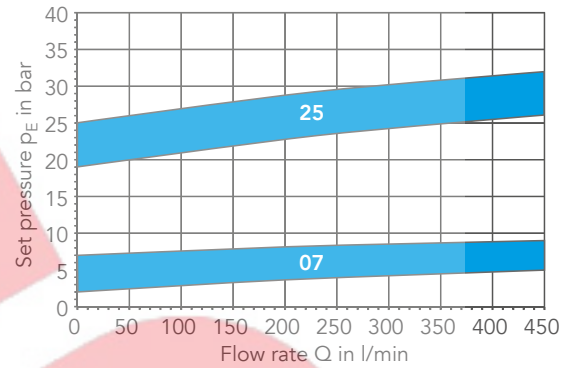
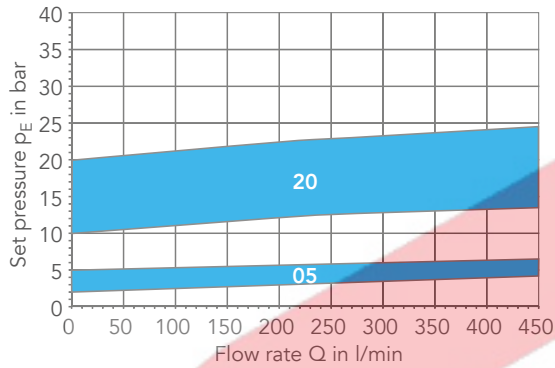
SPVF 20/25



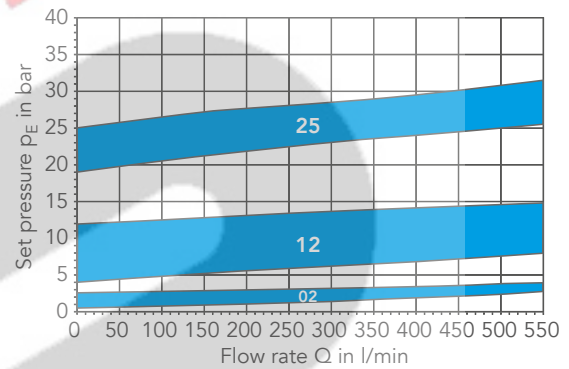
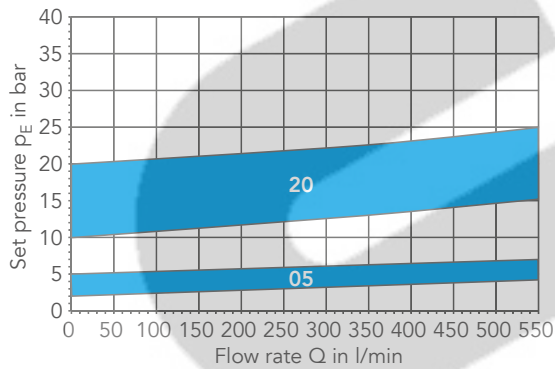
Characteristic curves p_E/Q

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

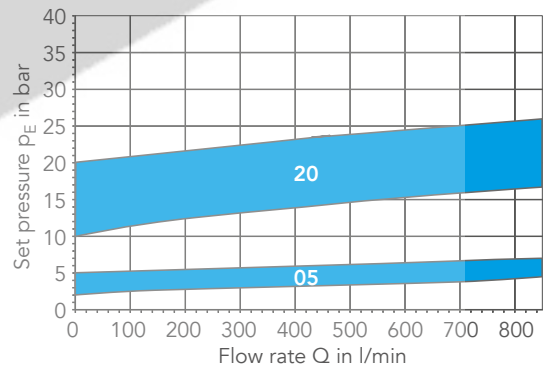
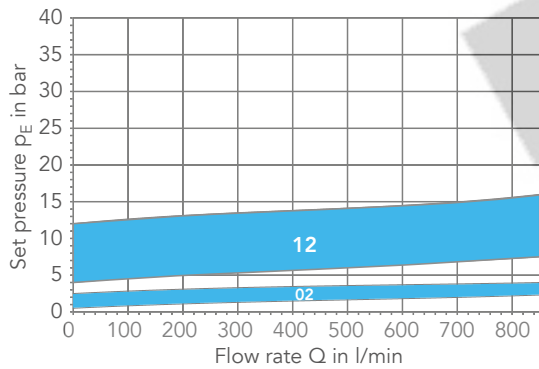
SPVF 32/40



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 |
| 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" |
| 6 Construction code | |
| | (Specified by KRACHT) |
| 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 |

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

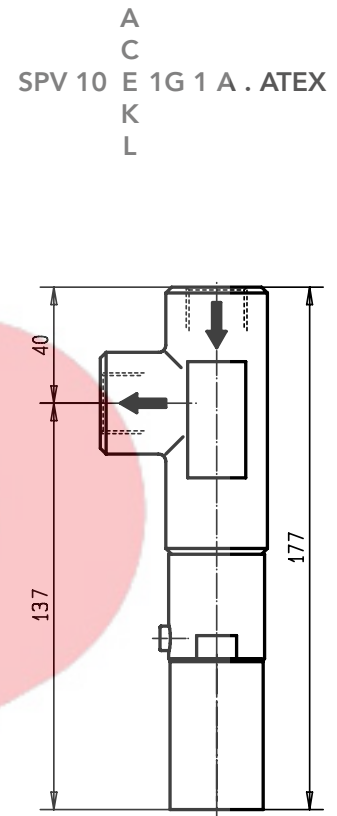
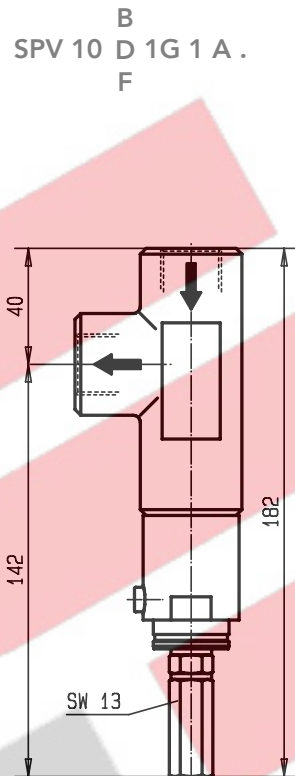
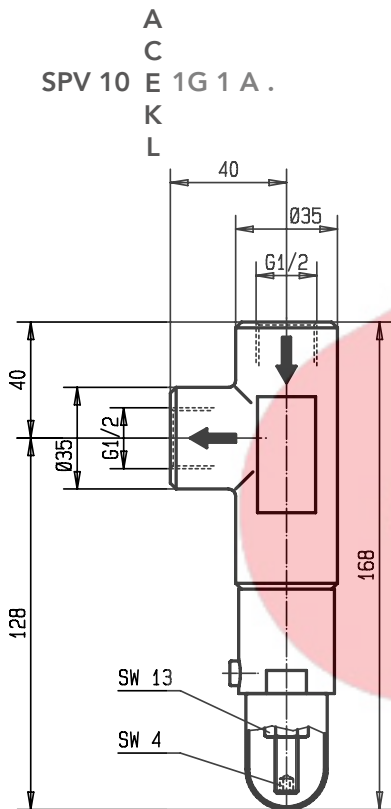
Ordering example: SPVM 10 A 1G 1 B 30

- > 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

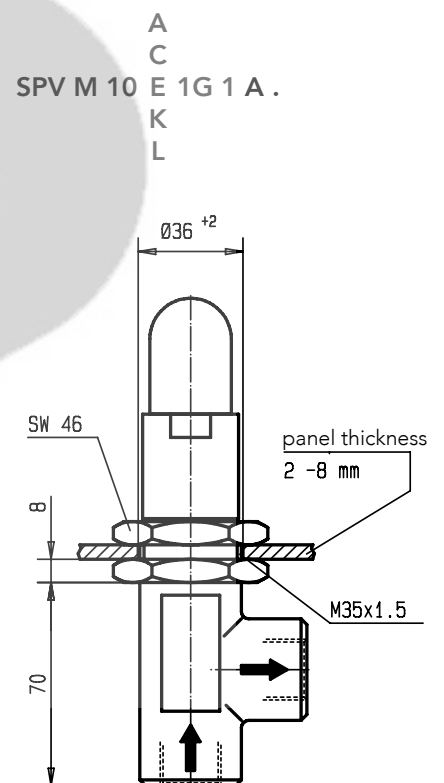
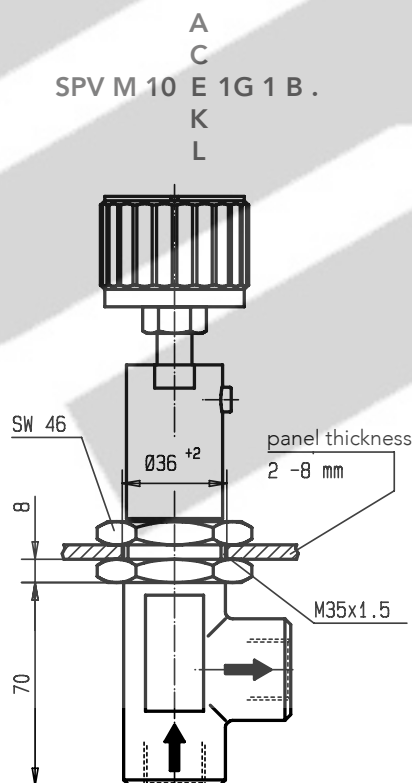
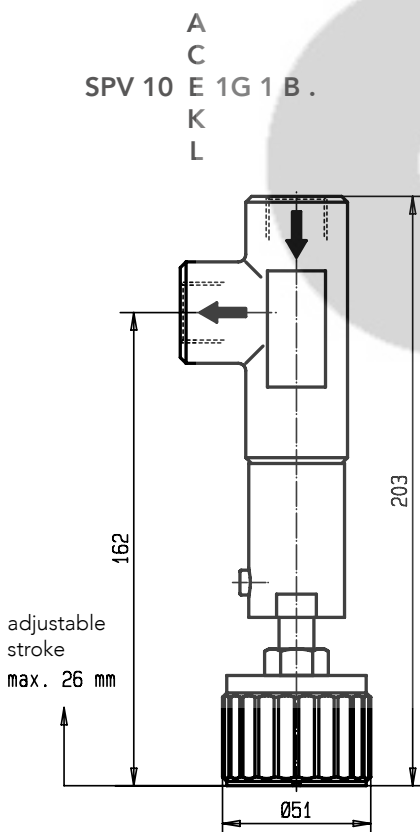
Dimensions

I SPV 10/SPVM 10

Ordering codes



Ordering codes



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) |
| 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 |

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

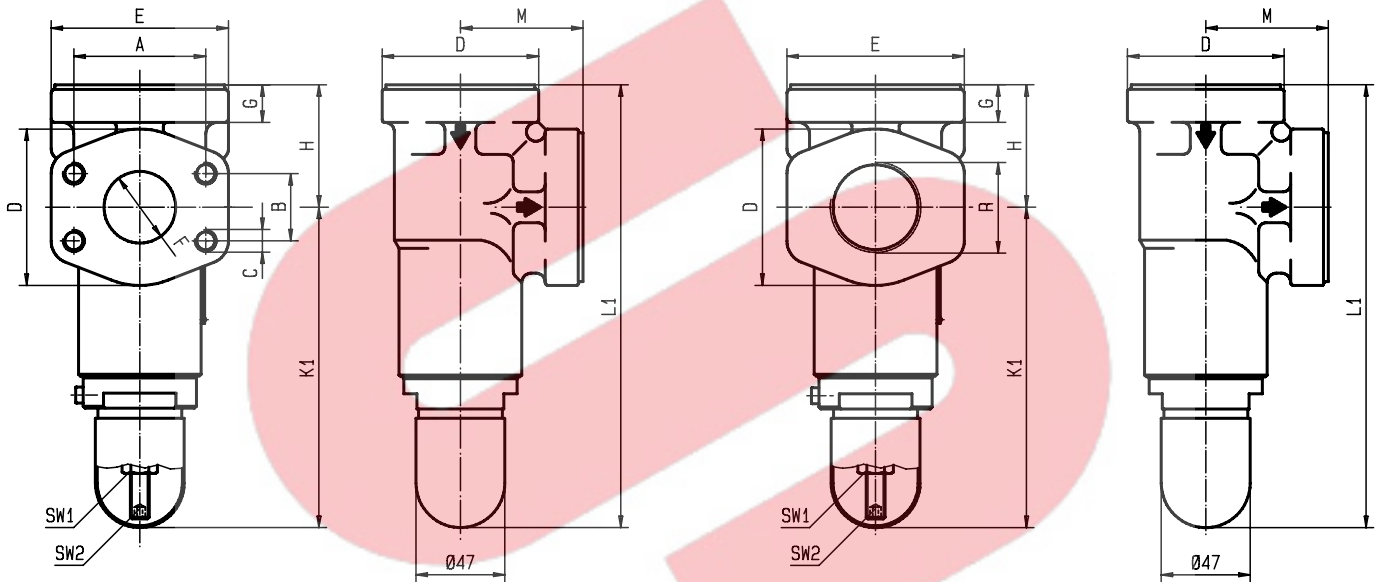
Dimensions

I SPVF

Ordering codes

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

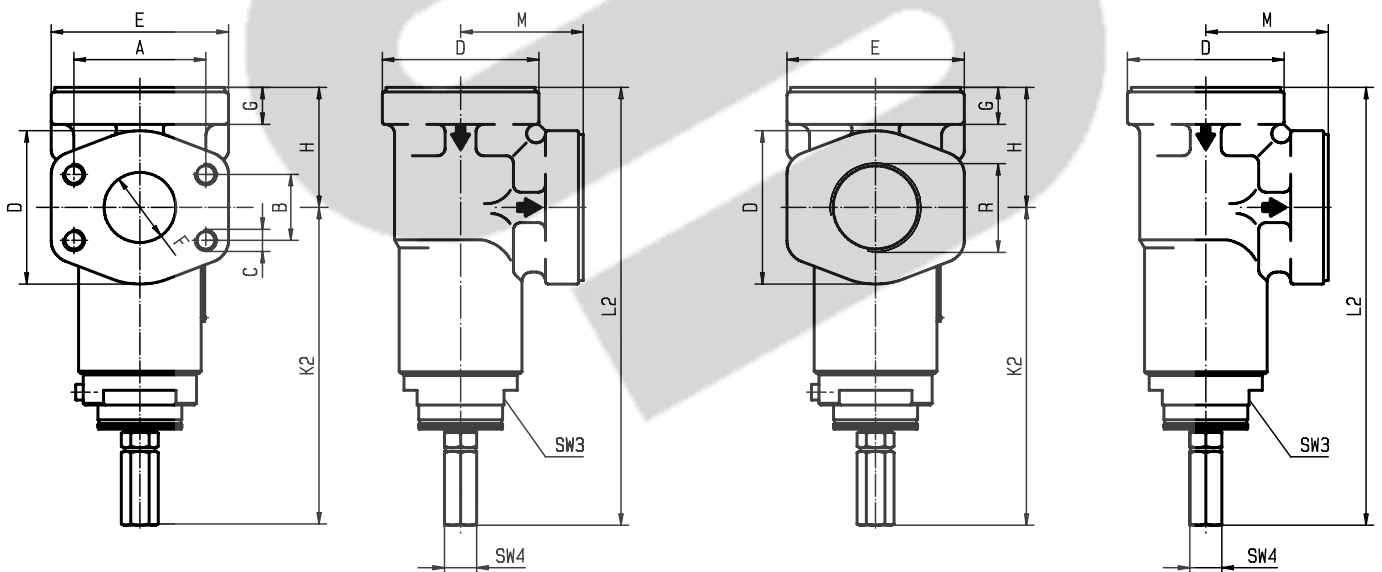
SPVF . $\begin{matrix} A \\ C \\ E \\ K \end{matrix}$ 1G 1 A .



Ordering codes

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

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



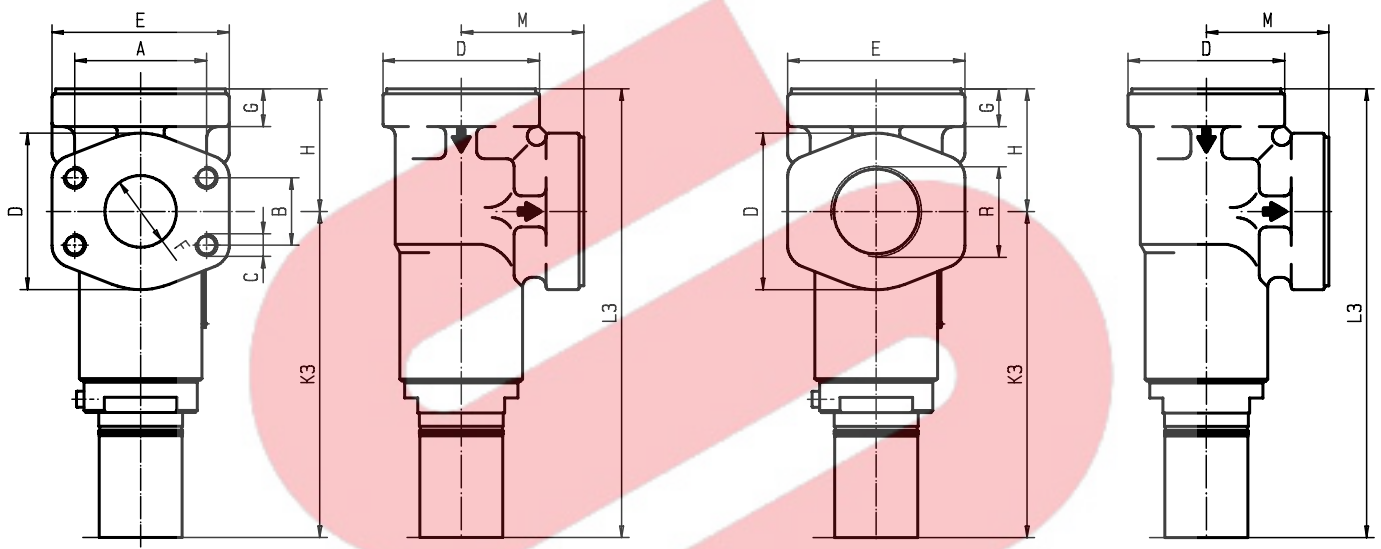
Dimensions

I SPVF ATEX versions

Ordering codes

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

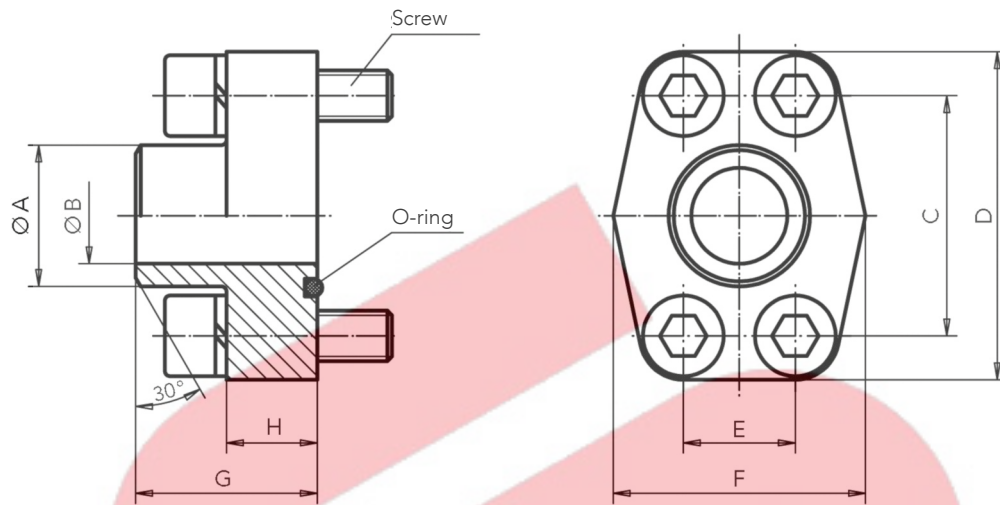
SPVF .
A
C
E
K
1G 1 A . ATEX



| 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 |