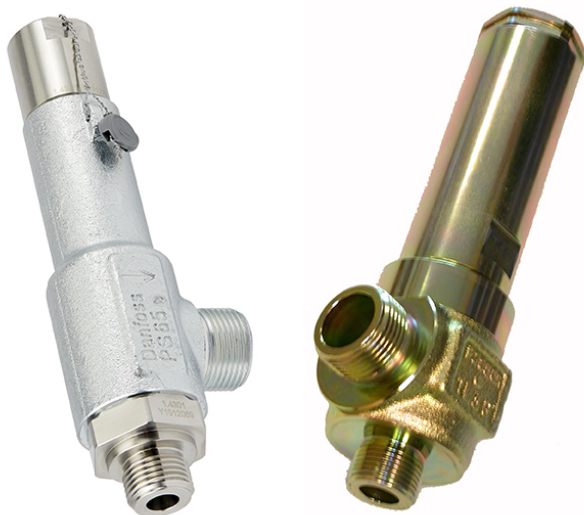


Data Sheet

Safety relief valve
Type **SFA 10**, **SFA 10H** and **SFA 15**

Reliable vessel overpressure protection



The SFA 10 and SFA 15 are standard, **back pressure dependent** safety relief valves in angle-way execution, specially designed for protection of vessels and other components against excessive pressure.

The valve is designed to meet the strict quality demands and safety requirements for refrigeration installations, specified by the international classification societies.

The spring housing is closed tightly to avoid refrigerant leakage.

The inlet flow diameters of the valves are:

- 6.8 mm (¼ in.) for SFA 10
- 13 mm (½ in.) for SFA 15

The valves can be ordered with set pressure:

- between 10 and 27 bar (145 and 392 psig) for SFA 10
- between 28 and 65 bar (406 and 943 psig) for SFA 10H
- between 10 and 40 bar (145 and 580 psig) for SFA 15

Standard pressure setting valves having "TÜV Pressure Setting Certificate" with each valve, are also available.

Features

- SFA 10 and SFA 15 applicable for the refrigerants HCFC, HFC, R717 (Ammonia), R744 (CO₂)
- SFA 10H applicable for CO₂ with POE and PAG oil
- Easy installation by threaded connections and Union fitted welding nipples
- Wide capacity range
- Stable set-point and reliable resetting
- Leak proof internal and external
- Easy selection by use of Cool selector
- Available with or without TÜV pressure setting certificate

Media

Refrigerants

SFA 10 and SFA 15 are with CR O-ring and applicable for the refrigerants HCFC, HFC, R717 (Ammonia), R744 (CO₂) within a temperature range of -50 °C to 100 °C (-58 °F to 212 °F) and a set pressure not lower than -30 °C (-22 °F) saturation temperature.

SFA 10H is with EPDM O-ring and applicable for CO₂ with POE and PAG oil only within a temperature range of -50 °C to 100 °C (-58 °F to 212 °F).

Flammable hydrocarbons are not recommended. For further information please contact your local Danfoss Sales Company.

New refrigerants

Danfoss products are continually evaluated for use with new refrigerants depending on market requirements.

When a refrigerant is approved for use by Danfoss, it is added to the relevant portfolio, and the R number of the refrigerant (e.g. R513A) will be added to the technical data of the code number. Therefore, products for specific refrigerants are best checked at store.danfoss.com/en/, or by contacting your local Danfoss representative.

Product specification

Technical data

For SFA 10 and SFA 15 with CR O-ring:

- At static temperatures below $-30\text{ }^{\circ}\text{C}$ ($-22\text{ }^{\circ}\text{F}$) the O-ring becomes harder and full tightness of the valve cannot be guaranteed. Above $-30\text{ }^{\circ}\text{C}$ ($-22\text{ }^{\circ}\text{F}$) the O-ring will become soft and fully functional again.
- Observe for R744 (CO_2)! Due to above the min. set pressure for correct functional valve in R744 (CO_2) is 27 bar (392 psig), to ensure proper function of the valve in case of a sudden relief.
- At static temperatures above $60\text{ }^{\circ}\text{C}$ ($140\text{ }^{\circ}\text{F}$) the lifetime of the CR O-ring will be gradually reduced, and the valve should be serviced more frequently.

In case the valve has relieved please refer to the SFA 10 installation guide.

Pressure

- Pressure setting range:
 - SFA 10: 10 – 27 bar (145 – 392 psig)
 - SFA 10H: 28 – 65 bar (406 – 943 psig)
 - SFA 15: 10 – 40 bar (145 – 580 psig)

❗ IMPORTANT:

The SFA safety relief valve is dependent on the back pressure (if the back pressure is higher than the atmospheric pressure, the opening pressure will be higher than stated set pressure).

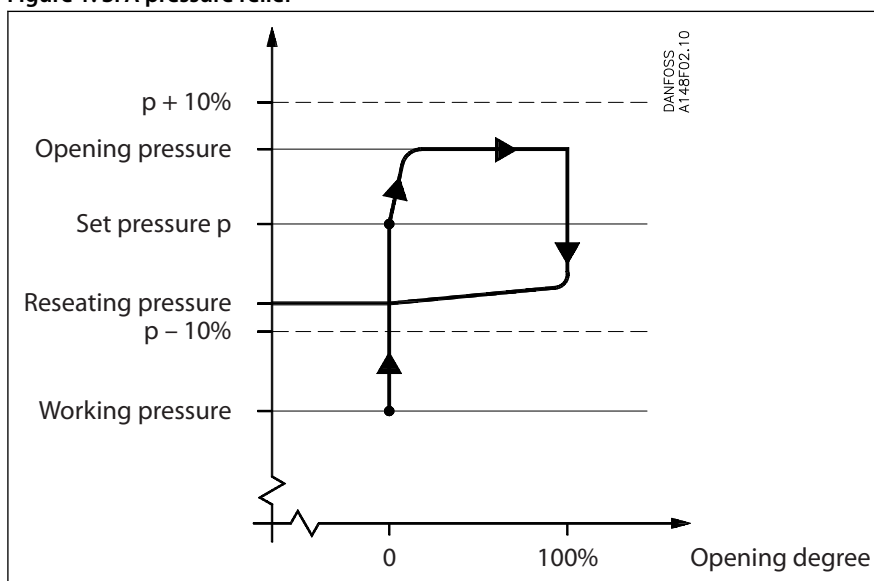
Pressure setting

The operating pressure of the plant should be at least 15% below the set pressure and the upstream pressure loss <3% of the valve set pressure. This allows a perfect re-seating of the safety relief valve after having been activated.

Special circumstances such as vibrations (which should be avoided) and oscillating pressure may require an increased difference between the operational pressure and the closing pressure.

Design

Figure 1: SFA pressure relief



SFA is designed as a direct loaded safety valve recommended particularly for refrigeration applications. On a rise in pressure above the set pressure, the safety relief valve will initially start opening slightly, to minimize the outlet of refrigerant.

If the pressure continues to increase, the valve will open fully. The safety relief valve will be fully open before the pressure is 10% higher than set pressure, and fully closed before the pressure is 10% below set pressure.

Housing

Made of special steel approved for low temperature operation. Spindle, cone, and seat are made of stainless steel, to ensure precise operation even during extraordinary conditions.

Installation

To ensure exact operation of the safety relief valve it should be installed with the spring housing upwards. When the valve is mounted, it is important to avoid the influence of static, dynamic and thermal stress.

A very precise technique has been applied for the production of the seal. However, this seal can still be damaged, if dirt is blown from the pipe system into the valve.

It is recommended that safety relief valves exhaust into the open air with a U-pipe filled with oil on the discharge branch, to prevent dirt from penetrating into the valve.

In extreme environments it is recommended to use a valve with bellow instead, to protect the valve from refrigerant contaminated with dirt and particles.

It is also recommended that the valves be installed in pairs in conjunction with the double stop valve type DSV10, DSV1 or DSV2. For further information please see the data sheet for DSV.

Re-calibration/servicing

In certain countries the authorities demand that the valves are checked at least once a year (see local rules).

Control/Identification

After adjustment of the set pressure at Danfoss, the valves are sealed. For that reason Danfoss can only guarantee correct operation, if the seal remains unbroken.

All valves are provided with a metal plate with the following information:

- Flow diameter
- Set pressure
- Date of production
- Production number
- Type approved code.

Transport/Handling

The valves are fitted with special protection covers and packed into purpose made transportation cartons.

It is important that the cover remains fitted around the valve until it is installed.

To ensure the exact and precise operation of the valve it must be handled with care.

Capacity

The design and construction of the safety relief valve has been tested and approved by TÜV. This test comprises control of the function of the valve as well as measuring of the capacity, which is the basis of the curves and tables on the following pages. The values in the table are based on saturated gas.

If e.g. back pressure or superheated gas have to be taken into consideration, the formulas or the Danfoss computation program (Coolselector2™) can be used.

Table 1: SFA valve characteristics

| Valve | Nominal size | | Flow diameter d_o | Flow area A_o | De-rated, certified coefficient of discharge K_{dr} | Effective discharge area $A_o \times K_{dr}$ |
|--------------------|--------------|---------|---------------------|-----------------------|---|--|
| | Inlet | Outlet | | | | |
| SFA 10 and SFA 10H | 10 mm | 15 mm | 6.8 mm | 36.3 mm ² | 0.85 | 30.9 mm ² |
| | 3/8 in. | 1/2 in. | 0.268 in. | 0.056 in ² | | 0.048 in ² |
| SFA 15 | 15 mm | 20 mm | 13 mm | 133 mm ² | 0.73 | 97 mm ² |
| | 1/2 in. | 3/4 in. | 0.512 in. | 0.206 in ² | | 0.150 in ² |

The discharge capacity of the safety relief valve is based on (ISO 4126-1 / EN 1313 6).

$$q_m = 0.2883 \times C \times A_o \times K_{dr} \times K_b \sqrt{\frac{p}{v}}$$

Safety relief valve, type SFA 10, SFA 10H and SFA 15

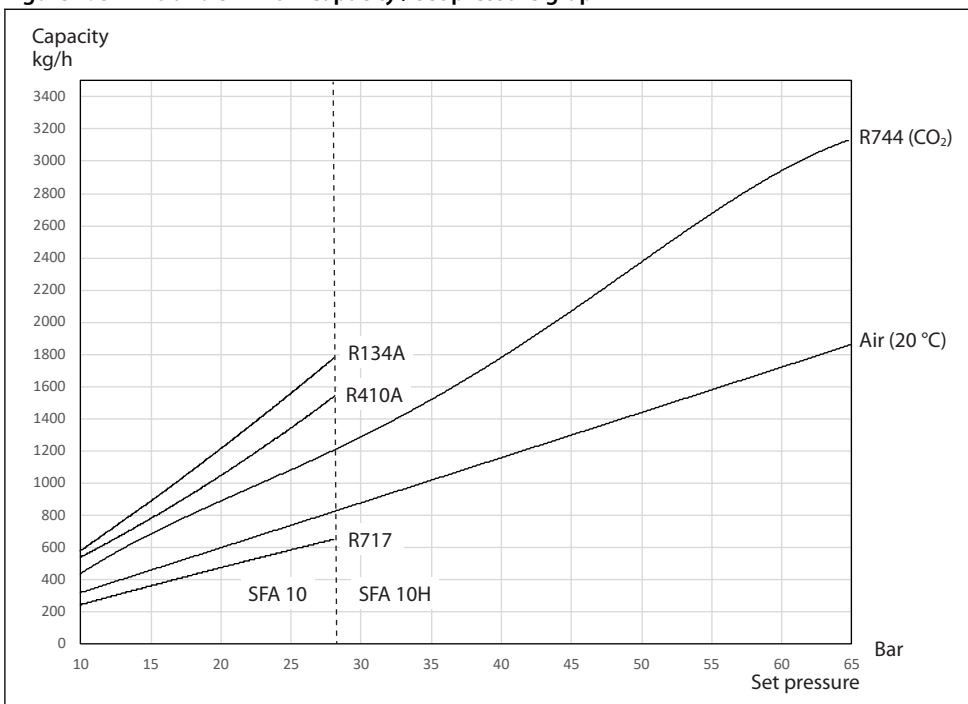
| | |
|-----------|---|
| q_m | Discharge capacity (kg/h). |
| C | Discharge function depending of the actual refrigerant (κ) see Table 2: Properties of refrigerants . |
| A_0 | Flow area of the safety relief valve (mm ²). |
| K_{dr} | De-rated coefficient of discharge ($K_{dr} = K_d \times 0.9$), (the K_{dr} is certified by TÜV) see Table 1: SFA valve characteristics . |
| K_b | Correction factor for sub-critical flow (-). $K_b = 1.0$ when the back pressure is lower than approx. $0.5 \times$ relieving pressure ($P_b < 0.5 \times p$). For all SFV safety valves $K_b = 1.0$ |
| v | Specific volume of the vapour at the relieving pressure p . (m ³ /kg). |
| p_{set} | Set pressure, the predetermined pressure at which a pressure relief valve under operation starts to open (pset is indicated on the metal plate on the safety relief valve). |
| p_{atm} | Atmospheric pressure (1 bar). |
| p | Relieving pressure, $p = p_{set} \times 1.1 + P_{atm}$ (bar absolute). |

For further details see the above-mentioned ISO or EN standards.

Table 2: Properties of refrigerants

| Refrigerant | Isentropic exponent κ | Discharge function C |
|-------------------------|------------------------------|----------------------|
| R22 | 1.17 | 2.54 |
| R134a | 1.12 | 2.50 |
| R404A | 1.12 | 2.49 |
| R410A | 1.17 | 2.54 |
| R717 (Ammonia) | 1.31 | 2.64 |
| R744 (CO ₂) | 1.30 | 2.63 |
| Air | 1.40 | 2.70 |

Figure 2: SFA 10 and SFA 10H Capacity / set pressure graph



Safety relief valve, type SFA 10, SFA 10H and SFA 15

Table 3: SFA 10 and SFA 10H Capacity / set pressure

| Set pressure | qm | R134a | R410A | R717 | R744 (CO ₂) | Air (20 °C) |
|--------------------|----------------|---------------|---------------|---------------|-------------------------|---------------|
| 10 bar 145 psig | kg/h lb/min | 595.1 22.0 | 533.4 19.7 | 248.3 9.2 | 453.2 16.8 | 315.3 11.7 |
| 15 bar 218 psig | kg/h lb/min | 889.0 32.9 | 791.2 29.3 | 361.7 13.4 | 662.7 24.5 | 460.5 17.0 |
| 20 bar 290 psig | kg/h lb/min | 1208 44.7 | 1064 39.4 | 476.8 17.6 | 877.6 32.5 | 605.8 22.4 |
| 25 bar 363 psig | kg/h lb/min | 1567 58.0 | 1359 50.3 | 593.9 22.0 | 1099 40.7 | 751.0 27.8 |
| 30 bar 392 psig | kg/h lb/min | | | | 1299 48.1 | 875.1 32.4 |
| 35 bar 145 psig | kg/h lb/min | | | | 1535 56.9 | 1017 37.7 |
| 40 bar 218 psig | kg/h lb/min | | | | 1784 66.1 | 1159 42.9 |
| 45 bar 290 psig | kg/h lb/min | | | | 2050 75.9 | 1301 48.2 |
| 50 bar 363 psig | kg/h lb/min | | | | 2341 86.7 | 1442 53.4 |
| 55 bar 392 psig | kg/h lb/min | | | | 2668 98.8 | 1584 58.7 |
| 60 bar 363 psig | kg/h lb/min | | | | 2994 110.9 | 1756 65.0 |
| 65 bar 392 psig | kg/h lb/min | | | | 3115 115.4 | 1868 69.2 |

Figure 3: SFA 15 Capacity / set pressure graph

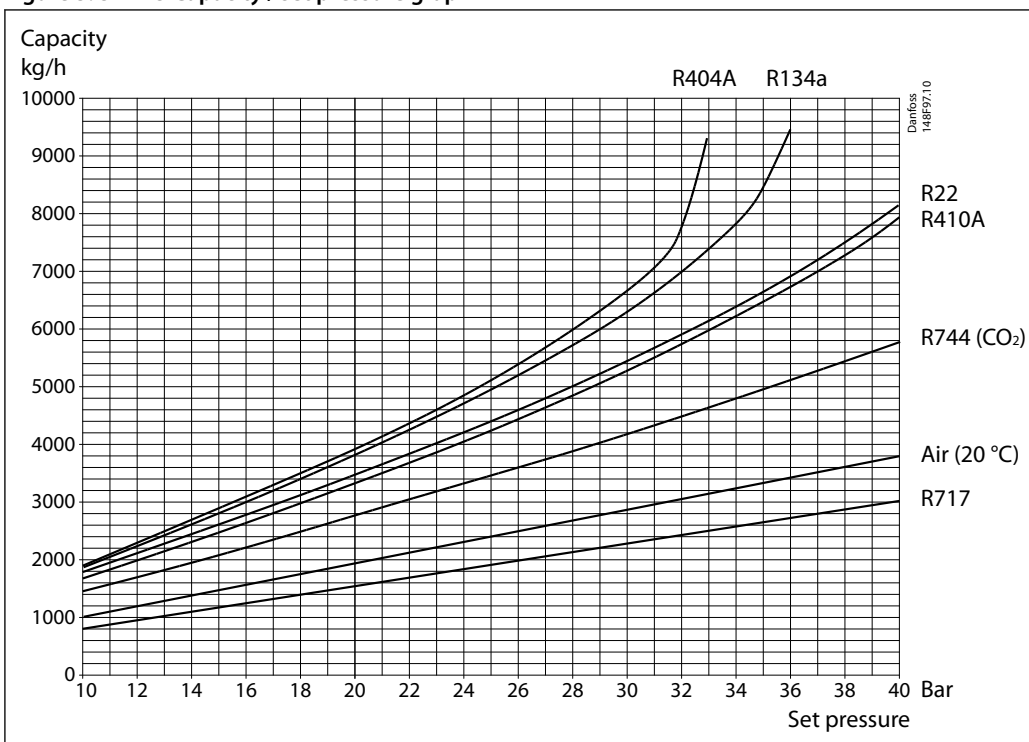


Table 4: SFA 15 Capacity / set pressure

| Set pressure | qm | R22 | R134a | R404A | R410A | R717 | R744 (CO ₂) | Air (20 °C) |
|--------------------|----------------|-------------|-------------|-------------|-------------|------------|-------------------------|-------------|
| 10 bar 145 psig | kg/h lb/min | 1749 64 | 1881 69 | 1888 69 | 1652 61 | 779 29 | 1424 52 | 1003 37 |
| 15 bar 218 psig | kg/h lb/min | 2592 95 | 2793 103 | 2842 104 | 2459 90 | 1135 42 | 2072 76 | 1462 54 |
| 20 bar 290 psig | kg/h lb/min | 3471 128 | 3804 140 | 3883 143 | 3305 121 | 1492 55 | 2747 101 | 1922 71 |
| 25 bar 363 psig | kg/h lb/min | 4409 162 | 4921 181 | 5101 187 | 4248 156 | 1853 68 | 3441 126 | 2381 87 |

Safety relief valve, type SFA 10, SFA 10H and SFA 15

| Set pressure | qm | R22 | R134a | R404A | R410A | R717 | R744 (CO ₂) | Air (20 °C) |
|--------------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------------------|-------------|
| 30 bar 435 psig | kg/h lb/min | 5437 200 | 6269 230 | 6659 245 | 5250 193 | 2227 82 | 4163 153 | 2841 104 |
| 35 bar 508 psig | kg/h lb/min | 6633 244 | 8370 308 | | 6450 237 | 2608 96 | 4936 181 | 3301 121 |
| 40 bar 580 psig | kg/h lb/min | 8104 298 | | | 7911 291 | 2989 110 | 5718 210 | 3760 138 |

Material specification SFA 10 and SFA 10H

Figure 4: SFA 10 and SFA 10H

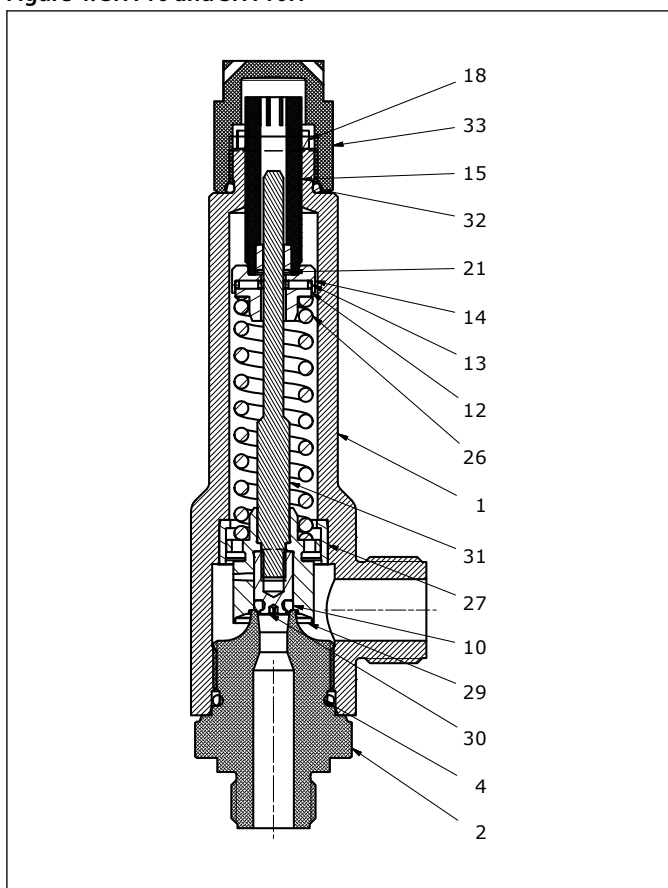


Table 5: Material and parts list

| No. | Part | Material | DIN | ISO | ASTM |
|-----|-------------------------------|------------------------------------|---|-----|-----------|
| 1 | Bonnet long version | Steel, Carbon | P285QH | - | - |
| 2 | Inlet body, SFA 10 | Stainless Steel, Austenitic | X5CrNi 18-10 | - | AISI 304 |
| 4 | O-ring 25.07 x 2.62 CR | Chloroprene | - | - | - |
| 10 | O-ring 6.02 x 2.62 CR | SFA 10 Chloroprene SFA 10H EPDM | - | - | - |
| 12 | Lower bearing retainer | Stainless Steel, Austenitic | X8CrNiS18-9 | - | AISI 303 |
| 13 | Needle roller thrust bearings | Stainless Steel | SUS304-JIS G4305 G102Cr18Mo-GB/T3086 | - | AISI 304 |
| 14 | Top bearing retainer | Stainless Steel, Austenitic | X8CrNiS18-9 | - | AISI 303 |
| 15 | Adjusting screw | Stainless Steel | X5CrNi 18-10 | - | AISI 304 |
| 18 | Locknut SFA 10 | Steel | 115Mn30 | - | - |
| 21 | Bushing PTFE | Polystyrene, High Impact | - | - | - |
| 26 | Spring | Steel | - | - | - |
| 27 | Bushing SFA 10 | Stainless Steel | X2CrNiMo17 | - | AISI 316L |
| 29 | Cone for SFA 10 | Stainless Steel | X5CrNi 18-10 | - | AISI 304 |
| 30 | O-ring Lock screw | Stainless Steel | X5CrNi 18-10 | - | AISI 304 |

Safety relief valve, type SFA 10, SFA 10H and SFA 15

| No. | Part | Material | DIN | ISO | ASTM |
|-----|---------------------|-----------------|--------------|-----|----------|
| 31 | Spindle SFA 10 | Stainless Steel | X5CrNi 18-10 | - | AISI 304 |
| 32 | O-ring 19.30 x 2.40 | Chloroprene | - | - | - |
| 33 | Cap on SFA 10 | Stainless Steel | X5CrNi 18-10 | - | AISI 304 |

Material specification SFA 15

Figure 5: SFA 15

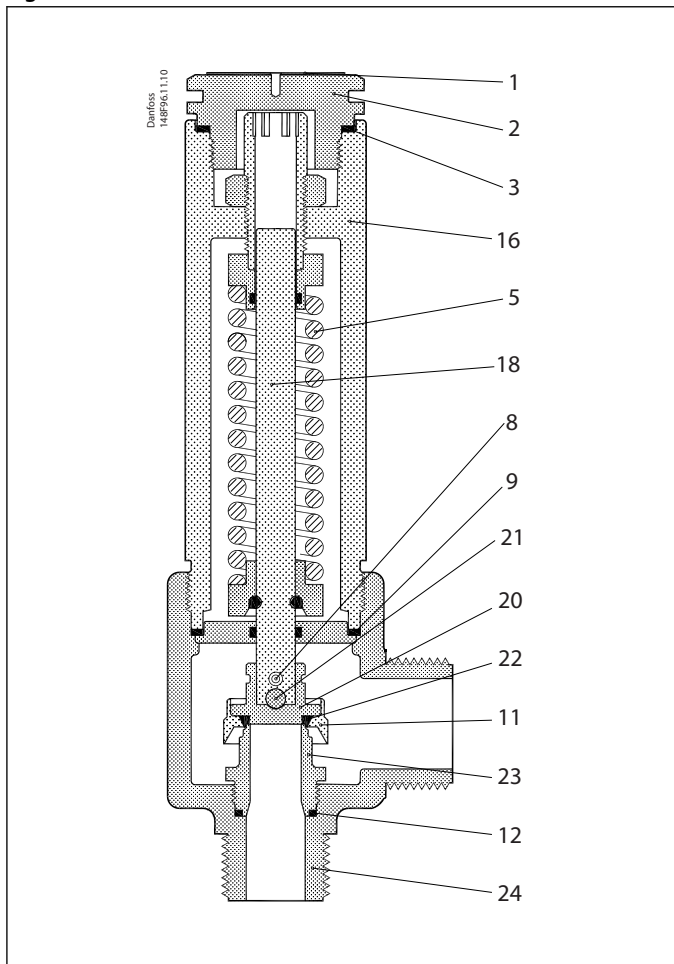


Table 6: Material and parts list

| No. | Part | Material | DIN | ISO | ASTM |
|-----|-----------------|---------------------------------|--|---------------------|-------------------------------|
| 1 | Marking label | Stainless steel | - | - | - |
| 2 | Threaded plug | Steel | - | - | - |
| 3 | Packing washer | Aluminium (Non-asbestos gasket) | - | - | - |
| 5 | Spring | Steel | Class C, DIN17223 | - | - |
| 8 | Split | Steel | 94 ELFORZ | - | - |
| 9 | Packing washer | Aluminium (Non-asbestos gasket) | - | - | - |
| 11 | Retainer | Stainless steel | X8CrNiS 18-9 | - | AISI 303, A276 |
| 12 | Packing washer | Aluminium (Non-asbestos gasket) | - | - | - |
| 16 | Valve top | Steel | G20Mn5QT Alt. S235JRG2 Alt. S355J2G3 | Fe360BFN Fe510D1 | LCC, A352 A284C A572-50 |
| 18 | Valve spindle | Stainless steel | X5CrNi 18-10 | - | AISI 304, A276 |
| 20 | Valve cone | Stainless steel | X8CrNiS 18-9 | - | AISI 303, A276 |
| 21 | Steel ball | Steel | - | - | - |
| 22 | Valve cone seal | Chloroprene (Neoprene) | - | - | - |
| 23 | Valve seat | Stainless steel | X8CrNiS 18-9 | - | AISI 303, A276 |
| 24 | Valve housing | Steel | G20Mn5QT Alt. P285QH | - | LCC, A352 LF2, A350 |

Connections

Available with the following connections:

- Outside pipe thread T (ISO 228/1)
- Welding fittings, outlet (EN 10220)
- NPT male (ANSI/ASME B1.20.1) SFA 10(H) only

Figure 6: T outside pipe thread

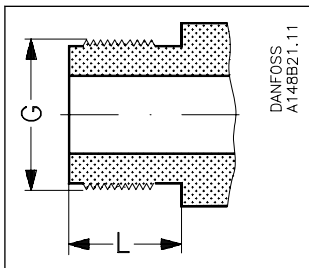


Table 7: T outside pipe thread, (ISO 228/1)

| Type | Size mm | Size in. | Inlet | Outlet | L mm | L in. |
|--------------------|---------|----------|-------|--------|------|-------|
| SFA 10 and SFA 10H | 10 | 3/8 | G 1/2 | G 3/4 | 18 | 0.71 |
| SFA 15 | 15 | 1/2 | G 3/4 | G 1 | 15 | 0.59 |

Figure 7: NPT outside pipe thread

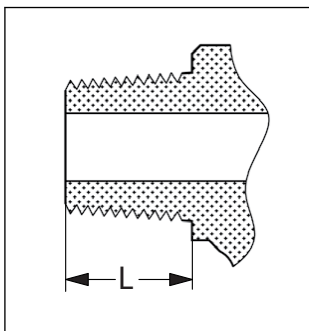
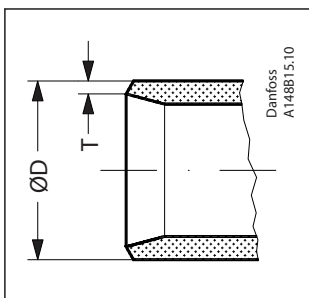


Table 8: NPT outside pipe thread, (ANSI/ASME B 1.20.1)

| Type | Size mm | Size in. | Inlet | Outlet | L mm | L in. |
|--------------------|---------|----------|---------|---------|------|-------|
| SFA 10 and SFA 10H | 10 | 3/8 | NPT 1/2 | NPT 3/4 | 24 | 0.94 |

Figure 8: Welding fittings, DIN



Safety relief valve, type SFA 10, SFA 10H and SFA 15

Table 9: Welding fittings, DIN (2448)

| Type | Size | | Inlet (mm) | | Inlet (in.) | | Outlet (mm) | | Outlet (in.) | |
|--------------------|------|-----|------------|-----|-------------|-------|-------------|-----|--------------|-------|
| | mm | in. | OD | T | OD | T | OD | T | OD | T |
| SFA 10 and SFA 10H | 10 | 3/8 | - | - | - | - | 21.1 | 2.2 | 0.83 | 0.087 |
| SFA 15 | 15 | 1/2 | 21.3 | 2.3 | 0.839 | 0.091 | 26.9 | 2.3 | 1.059 | 0.091 |

Dimensions and weights

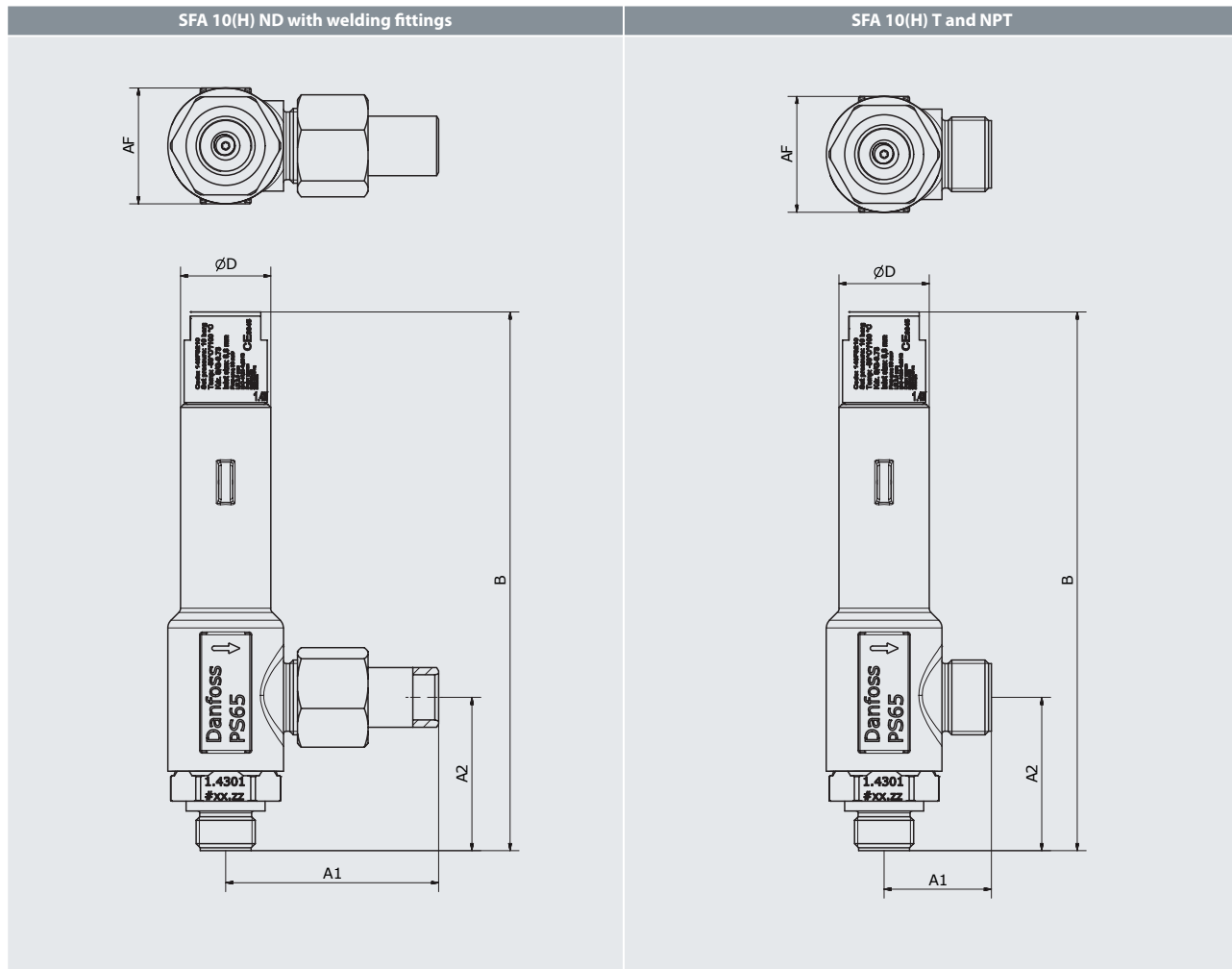


Table 10: Valve size's and weight

| Valve size | | A1 | A2 | B | ØD | AF | Weight |
|-------------|-----|------|------|------|------|------|----------|
| SFA 10 T | mm | 38 | 54 | 175 | 32 | 41 | 0.95 kg |
| | in. | 1.5 | 2.13 | 6.89 | 1.26 | 1.61 | 2.1 lbs |
| SFA 10 ND | mm | 76 | 54 | 175 | 32 | 41 | 1.25 kg |
| | in. | 2.99 | 2.13 | 6.89 | 1.26 | 1.61 | 2.75 lbs |
| SFA 10 NPT | mm | 44 | 64 | 185 | 32 | 41 | 0.95 kg |
| | in. | 1.73 | 2.52 | 7.28 | 1.26 | 1.61 | 2.1 lbs |
| SFA 10H T | mm | 38 | 54 | 191 | 32 | 41 | 1.1 kg |
| | in. | 1.5 | 2.13 | 7.52 | 1.26 | 1.61 | 2.42 lbs |
| SFA 10H ND | mm | 76 | 54 | 191 | 32 | 41 | 1.4 kg |
| | in. | 2.99 | 2.13 | 7.52 | 1.26 | 1.61 | 3.1 lbs |
| SFA 10H NPT | mm | 44 | 64 | 201 | 32 | 41 | 1.1 kg |
| | in. | 1.73 | 2.52 | 7.91 | 1.26 | 1.61 | 2.42 lbs |

NOTE:

Specified weights are approximate values only.

Safety relief valve, type SFA 10, SFA 10H and SFA 15

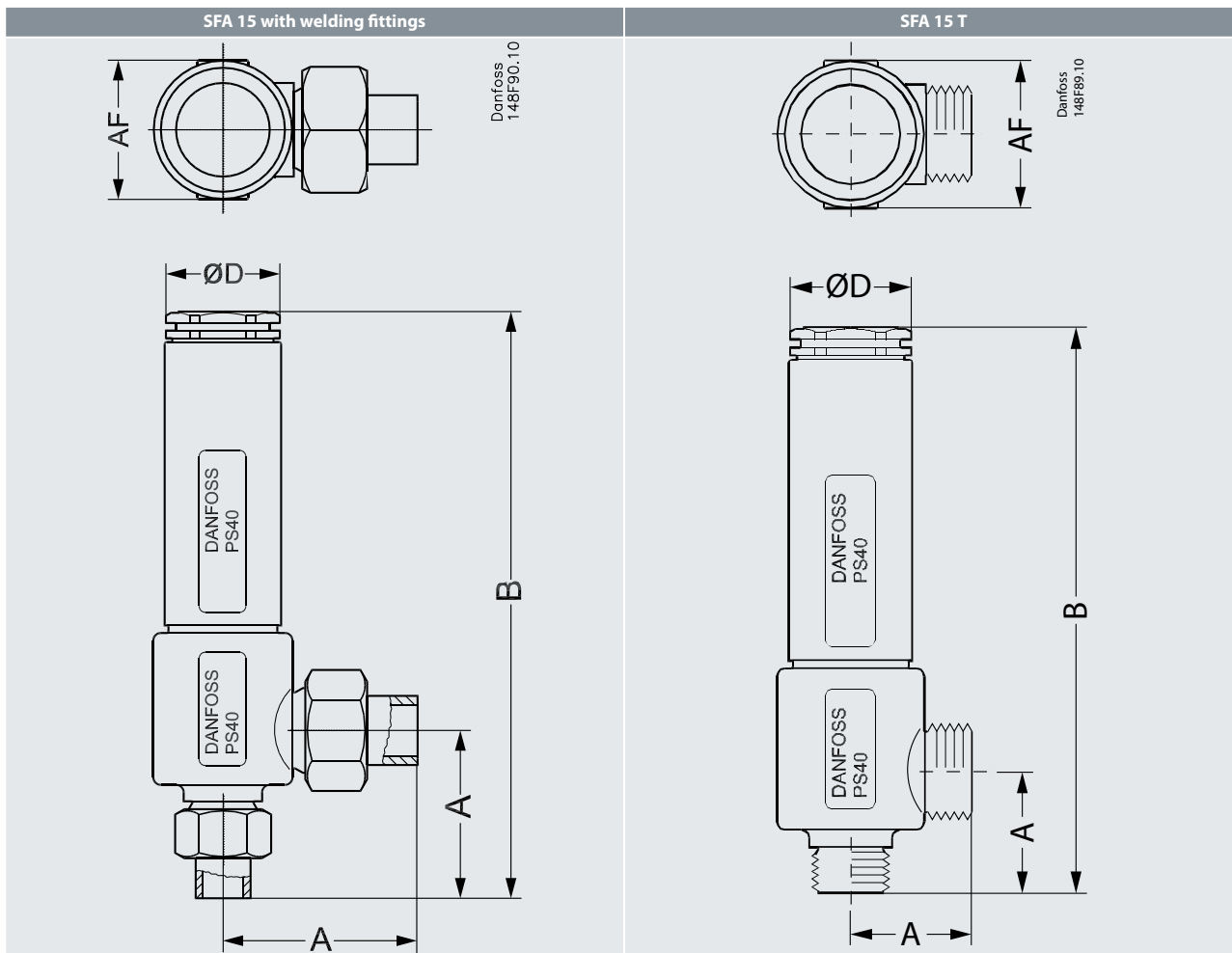


Table 11: Valve size's and weight

| Valve size | | A | B | ØD | AF | Weight |
|---|-----|------|------|------|------|---------|
| <i>SFA 15 T, with threaded connections ISO 228/1 pipe threads</i> | | | | | | |
| SFA 15 T (½ in.) | mm | 45 | 210 | 45 | 55 | 2.2 kg |
| | in. | 1.77 | 8.27 | 1.81 | 2.17 | 4.9 lbs |
| <i>SFA 15 with welding fittings, DIN 2448</i> | | | | | | |
| SFA 15 (½ in.) | mm | 83 | 248 | 45 | 55 | 2.5 kg |
| | in. | 3.27 | 9.76 | 1.81 | 2.17 | 5.5 lbs |

NOTE:

Specified weights are approximate values only.

Ordering

Table 12: Certified SFA 10 G thread valves with standard set pressure

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|--------------|-------------------------|-------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10 T 210 | 10 (145) | 148F4210 |
| 10 | 3/8 | SFA 10 T 211 | 11 (160) | 148F4211 |
| 10 | 3/8 | SFA 10 T 212 | 12 (174) | 148F4212 |
| 10 | 3/8 | SFA 10 T 213 | 13 (189) | 148F4213 |
| 10 | 3/8 | SFA 10 T 214 | 14 (203) | 148F4214 |
| 10 | 3/8 | SFA 10 T 215 | 15 (218) | 148F4215 |
| 10 | 3/8 | SFA 10 T 216 | 16 (232) | 148F4216 |
| 10 | 3/8 | SFA 10 T 217 | 17 (247) | 148F4217 |
| 10 | 3/8 | SFA 10 T 218 | 18 (261) | 148F4218 |
| 10 | 3/8 | SFA 10 T 219 | 19 (276) | 148F4219 |
| 10 | 3/8 | SFA 10 T 220 | 20 (290) | 148F4220 |
| 10 | 3/8 | SFA 10 T 221 | 21 (305) | 148F4221 |
| 10 | 3/8 | SFA 10 T 222 | 22 (319) | 148F4222 |
| 10 | 3/8 | SFA 10 T 223 | 23 (334) | 148F4223 |
| 10 | 3/8 | SFA 10 T 224 | 24 (348) | 148F4224 |
| 10 | 3/8 | SFA 10 T 225 | 25 (363) | 148F4225 |
| 10 | 3/8 | SFA 10 T 226 | 26 (377) | 148F4226 |
| 10 | 3/8 | SFA 10 T 227 | 27 (392) | 148F4227 |

Table 13: Certified SFA 10 G-thread valves with standard set pressure and TÜV pressure setting certificate with each valve

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|--------------|-------------------------|-------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10 T 310 | 10 (145) | 148F4310 |
| 10 | 3/8 | SFA 10 T 311 | 11 (160) | 148F4311 |
| 10 | 3/8 | SFA 10 T 312 | 12 (174) | 148F4312 |
| 10 | 3/8 | SFA 10 T 313 | 13 (189) | 148F4313 |
| 10 | 3/8 | SFA 10 T 314 | 14 (203) | 148F4314 |
| 10 | 3/8 | SFA 10 T 315 | 15 (218) | 148F4315 |
| 10 | 3/8 | SFA 10 T 316 | 16 (232) | 148F4316 |
| 10 | 3/8 | SFA 10 T 317 | 17 (247) | 148F4317 |
| 10 | 3/8 | SFA 10 T 318 | 18 (261) | 148F4318 |
| 10 | 3/8 | SFA 10 T 319 | 19 (276) | 148F4319 |
| 10 | 3/8 | SFA 10 T 320 | 20 (290) | 148F4320 |
| 10 | 3/8 | SFA 10 T 321 | 21 (305) | 148F4321 |
| 10 | 3/8 | SFA 10 T 322 | 22 (319) | 148F4322 |
| 10 | 3/8 | SFA 10 T 323 | 23 (334) | 148F4323 |
| 10 | 3/8 | SFA 10 T 324 | 24 (348) | 148F4324 |
| 10 | 3/8 | SFA 10 T 325 | 25 (363) | 148F4325 |
| 10 | 3/8 | SFA 10 T 326 | 26 (377) | 148F4326 |
| 10 | 3/8 | SFA 10 T 327 | 27 (392) | 148F4327 |

Table 14: Certified SFA 10H G-thread valves with standard set pressure

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|---------------|-------------------------|-------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10H T 228 | 28 (406) | 148F4228 |
| 10 | 3/8 | SFA 10H T 229 | 29 (421) | 148F4229 |
| 10 | 3/8 | SFA 10H T 230 | 30 (435) | 148F4230 |
| 10 | 3/8 | SFA 10H T 231 | 31 (450) | 148F4231 |
| 10 | 3/8 | SFA 10H T 232 | 32 (464) | 148F4232 |
| 10 | 3/8 | SFA 10H T 233 | 33 (479) | 148F4233 |
| 10 | 3/8 | SFA 10H T 234 | 34 (493) | 148F4234 |
| 10 | 3/8 | SFA 10H T 235 | 35 (508) | 148F4235 |
| 10 | 3/8 | SFA 10H T 236 | 36 (522) | 148F4236 |

Safety relief valve, type SFA 10, SFA 10H and SFA 15

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|---------------|-------------------------|-------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10H T 237 | 37 (537) | 148F4237 |
| 10 | 3/8 | SFA 10H T 238 | 38 (551) | 148F4238 |
| 10 | 3/8 | SFA 10H T 239 | 39 (566) | 148F4239 |
| 10 | 3/8 | SFA 10H T 240 | 40 (580) | 148F4240 |
| 10 | 3/8 | SFA 10H T 241 | 41 (595) | 148F4241 |
| 10 | 3/8 | SFA 10H T 242 | 42 (609) | 148F4242 |
| 10 | 3/8 | SFA 10H T 243 | 43 (624) | 148F4243 |
| 10 | 3/8 | SFA 10H T 244 | 44 (638) | 148F4244 |
| 10 | 3/8 | SFA 10H T 245 | 45 (653) | 148F4245 |
| 10 | 3/8 | SFA 10H T 246 | 46 (667) | 148F4246 |
| 10 | 3/8 | SFA 10H T 247 | 47 (682) | 148F4247 |
| 10 | 3/8 | SFA 10H T 248 | 48 (696) | 148F4248 |
| 10 | 3/8 | SFA 10H T 249 | 49 (711) | 148F4249 |
| 10 | 3/8 | SFA 10H T 250 | 50 (725) | 148F4250 |
| 10 | 3/8 | SFA 10H T 251 | 51 (740) | 148F4251 |
| 10 | 3/8 | SFA 10H T 252 | 52 (754) | 148F4252 |
| 10 | 3/8 | SFA 10H T 253 | 53 (769) | 148F4253 |
| 10 | 3/8 | SFA 10H T 254 | 54 (783) | 148F4254 |
| 10 | 3/8 | SFA 10H T 255 | 55 (798) | 148F4255 |
| 10 | 3/8 | SFA 10H T 256 | 56 (812) | 148F4256 |
| 10 | 3/8 | SFA 10H T 257 | 57 (827) | 148F4257 |
| 10 | 3/8 | SFA 10H T 258 | 58 (841) | 148F4258 |
| 10 | 3/8 | SFA 10H T 259 | 59 (856) | 148F4259 |
| 10 | 3/8 | SFA 10H T 260 | 60 (870) | 148F4260 |
| 10 | 3/8 | SFA 10H T 261 | 61 (885) | 148F4261 |
| 10 | 3/8 | SFA 10H T 262 | 62 (899) | 148F4262 |
| 10 | 3/8 | SFA 10H T 263 | 63 (914) | 148F4263 |
| 10 | 3/8 | SFA 10H T 264 | 64 (928) | 148F4264 |
| 10 | 3/8 | SFA 10H T 265 | 65 (943) | 148F4265 |

Table 15: Certified SFA 10H G-thread valves with standard set pressure and TÜV pressure setting certificate with each valve

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|---------------|-------------------------|-------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10H T 328 | 28 (406) | 148F4328 |
| 10 | 3/8 | SFA 10H T 329 | 29 (421) | 148F4329 |
| 10 | 3/8 | SFA 10H T 330 | 30 (435) | 148F4330 |
| 10 | 3/8 | SFA 10H T 331 | 31 (450) | 148F4331 |
| 10 | 3/8 | SFA 10H T 332 | 32 (464) | 148F4332 |
| 10 | 3/8 | SFA 10H T 333 | 33 (479) | 148F4333 |
| 10 | 3/8 | SFA 10H T 334 | 34 (493) | 148F4334 |
| 10 | 3/8 | SFA 10H T 335 | 35 (508) | 148F4335 |
| 10 | 3/8 | SFA 10H T 336 | 36 (522) | 148F4336 |
| 10 | 3/8 | SFA 10H T 337 | 37 (537) | 148F4337 |
| 10 | 3/8 | SFA 10H T 338 | 38 (551) | 148F4338 |
| 10 | 3/8 | SFA 10H T 339 | 39 (566) | 148F4339 |
| 10 | 3/8 | SFA 10H T 340 | 40 (580) | 148F4340 |
| 10 | 3/8 | SFA 10H T 341 | 41 (595) | 148F4341 |
| 10 | 3/8 | SFA 10H T 342 | 42 (609) | 148F4342 |
| 10 | 3/8 | SFA 10H T 343 | 43 (624) | 148F4343 |
| 10 | 3/8 | SFA 10H T 344 | 44 (638) | 148F4344 |
| 10 | 3/8 | SFA 10H T 345 | 45 (653) | 148F4345 |
| 10 | 3/8 | SFA 10H T 346 | 46 (667) | 148F4346 |
| 10 | 3/8 | SFA 10H T 347 | 47 (682) | 148F4347 |
| 10 | 3/8 | SFA 10H T 348 | 48 (696) | 148F4348 |
| 10 | 3/8 | SFA 10H T 349 | 49 (711) | 148F4349 |
| 10 | 3/8 | SFA 10H T 350 | 50 (725) | 148F4350 |
| 10 | 3/8 | SFA 10H T 351 | 51 (740) | 148F4351 |

Safety relief valve, type SFA 10, SFA 10H and SFA 15

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|---------------|-------------------------|-----------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10H T 352 | 52 (754) | 148F4352 |
| 10 | 3/8 | SFA 10H T 353 | 53 (769) | 148F4353 |
| 10 | 3/8 | SFA 10H T 354 | 54 (783) | 148F4354 |
| 10 | 3/8 | SFA 10H T 355 | 55 (798) | 148F4355 |
| 10 | 3/8 | SFA 10H T 356 | 56 (812) | 148F4356 |
| 10 | 3/8 | SFA 10H T 357 | 57 (827) | 148F4357 |
| 10 | 3/8 | SFA 10H T 358 | 58 (841) | 148F4358 |
| 10 | 3/8 | SFA 10H T 359 | 59 (856) | 148F4359 |
| 10 | 3/8 | SFA 10H T 360 | 60 (870) | 148F4360 |
| 10 | 3/8 | SFA 10H T 361 | 61 (885) | 148F4361 |
| 10 | 3/8 | SFA 10H T 362 | 62 (899) | 148F4362 |
| 10 | 3/8 | SFA 10H T 363 | 63 (914) | 148F4363 |
| 10 | 3/8 | SFA 10H T 364 | 64 (928) | 148F4364 |
| 10 | 3/8 | SFA 10H T 365 | 65 (943) | 148F4365 |

Table 16: Certified SFA 10 NPT valves with standard set pressure

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|----------------|-------------------------|-----------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10 NPT 213 | 13 (189) | 148F5213 |
| 10 | 3/8 | SFA 10 NPT 216 | 16 (232) | 148F5216 |
| 10 | 3/8 | SFA 10 NPT 217 | 17 (247) | 148F5217 |
| 10 | 3/8 | SFA 10 NPT 218 | 18 (261) | 148F5218 |
| 10 | 3/8 | SFA 10 NPT 220 | 20 (290) | 148F5220 |
| 10 | 3/8 | SFA 10 NPT 221 | 21 (305) | 148F5221 |
| 10 | 3/8 | SFA 10 NPT 222 | 22 (319) | 148F5222 |
| 10 | 3/8 | SFA 10 NPT 224 | 24 (348) | 148F5224 |
| 10 | 3/8 | SFA 10 NPT 225 | 25 (363) | 148F5225 |

Table 17: Certified SFA 10 NPT valves with standard set pressure + DSV 10 NPT

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|-----------------------|-------------------------|-----------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10/DSV 10 NPT 213 | 13 (189) | 148F6313 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 216 | 16 (232) | 148F6316 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 217 | 17 (247) | 148F6317 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 218 | 18 (261) | 148F6318 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 220 | 20 (290) | 148F6320 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 221 | 21 (305) | 148F6321 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 222 | 22 (319) | 148F6322 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 224 | 24 (348) | 148F6324 |
| 10 | 3/8 | SFA 10/DSV 10 NPT 225 | 25 (363) | 148F6325 |

Table 18: Certified SFA 10H NPT valves with standard set pressure

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|-----------------|-------------------------|-----------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10H NPT 228 | 28 (406) | 148F5228 |
| 10 | 3/8 | SFA 10H NPT 232 | 32 (464) | 148F5232 |
| 10 | 3/8 | SFA 10H NPT 235 | 35 (508) | 148F5235 |
| 10 | 3/8 | SFA 10H NPT 238 | 38 (551) | 148F5238 |
| 10 | 3/8 | SFA 10H NPT 240 | 40 (580) | 148F5240 |
| 10 | 3/8 | SFA 10H NPT 250 | 50 (725) | 148F5250 |
| 10 | 3/8 | SFA 10H NPT 252 | 52 (754) | 148F5252 |
| 10 | 3/8 | SFA 10H NPT 260 | 60 (870) | 148F5260 |
| 10 | 3/8 | SFA 10H NPT 265 | 65 (943) | 148F5265 |

Safety relief valve, type SFA 10, SFA 10H and SFA 15

Table 19: Certified SFA 10H NPT valves with standard set pressure + DSV 10 NPT

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|------------------------|-------------------------|-----------------|
| mm. | in. | | | |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 228 | 28 (406) | 148F6328 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 232 | 32 (464) | 148F6332 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 235 | 35 (508) | 148F6335 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 238 | 38 (551) | 148F6338 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 240 | 40 (580) | 148F6340 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 250 | 50 (725) | 148F6350 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 252 | 52 (754) | 148F6352 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 260 | 60 (870) | 148F6360 |
| 10 | 3/8 | SFA 10H/DSV 10 NPT 265 | 65 (943) | 148F6365 |

Table 20: Certified SFA 15 T valves with standard set pressure

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|--------------|-------------------------|-----------------|
| mm. | in. | | | |
| 15 | 1/2 | SFA 15 T 210 | 10 (145) | 148F3210 |
| 15 | 1/2 | SFA 15 T 211 | 11 (160) | 148F3211 |
| 15 | 1/2 | SFA 15 T 212 | 12 (174) | 148F3212 |
| 15 | 1/2 | SFA 15 T 213 | 13 (189) | 148F3213 |
| 15 | 1/2 | SFA 15 T 214 | 14 (203) | 148F3214 |
| 15 | 1/2 | SFA 15 T 215 | 15 (218) | 148F3215 |
| 15 | 1/2 | SFA 15 T 216 | 16 (232) | 148F3216 |
| 15 | 1/2 | SFA 15 T 217 | 17 (247) | 148F3217 |
| 15 | 1/2 | SFA 15 T 218 | 18 (261) | 148F3218 |
| 15 | 1/2 | SFA 15 T 219 | 19 (276) | 148F3219 |
| 15 | 1/2 | SFA 15 T 220 | 20 (290) | 148F3220 |
| 15 | 1/2 | SFA 15 T 221 | 21 (305) | 148F3221 |
| 15 | 1/2 | SFA 15 T 222 | 22 (319) | 148F3222 |
| 15 | 1/2 | SFA 15 T 223 | 23 (334) | 148F3223 |
| 15 | 1/2 | SFA 15 T 224 | 24 (348) | 148F3224 |
| 15 | 1/2 | SFA 15 T 225 | 25 (363) | 148F3225 |
| 15 | 1/2 | SFA 15 T 226 | 26 (377) | 148F3226 |
| 15 | 1/2 | SFA 15 T 227 | 27 (392) | 148F3227 |
| 15 | 1/2 | SFA 15 T 228 | 28 (406) | 148F3228 |
| 15 | 1/2 | SFA 15 T 229 | 29 (421) | 148F3229 |
| 15 | 1/2 | SFA 15 T 230 | 30 (435) | 148F3230 |
| 15 | 1/2 | SFA 15 T 231 | 31 (450) | 148F3231 |
| 15 | 1/2 | SFA 15 T 232 | 32 (464) | 148F3232 |
| 15 | 1/2 | SFA 15 T 233 | 33 (479) | 148F3233 |
| 15 | 1/2 | SFA 15 T 234 | 34 (493) | 148F3234 |
| 15 | 1/2 | SFA 15 T 235 | 35 (508) | 148F3235 |
| 15 | 1/2 | SFA 15 T 236 | 36 (522) | 148F3236 |
| 15 | 1/2 | SFA 15 T 237 | 37 (537) | 148F3237 |
| 15 | 1/2 | SFA 15 T 238 | 38 (551) | 148F3238 |
| 15 | 1/2 | SFA 15 T 239 | 39 (566) | 148F3239 |
| 15 | 1/2 | SFA 15 T 240 | 40 (580) | 148F3240 |

Table 21: Certified SFA 15 T valves with standard set pressure and TÜV pressure setting certificate with each valve

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|--------------|-------------------------|-----------------|
| mm. | in. | | | |
| 15 | 1/2 | SFA 15 T 310 | 10 (145) | 148F3310 |
| 15 | 1/2 | SFA 15 T 311 | 11 (160) | 148F3311 |
| 15 | 1/2 | SFA 15 T 312 | 12 (174) | 148F3312 |
| 15 | 1/2 | SFA 15 T 313 | 13 (189) | 148F3313 |
| 15 | 1/2 | SFA 15 T 314 | 14 (203) | 148F3314 |
| 15 | 1/2 | SFA 15 T 315 | 15 (218) | 148F3315 |
| 15 | 1/2 | SFA 15 T 316 | 16 (232) | 148F3316 |
| 15 | 1/2 | SFA 15 T 317 | 17 (247) | 148F3317 |

Safety relief valve, type SFA 10, SFA 10H and SFA 15

| Size | | Type | Set pressure bar (psig) | Code number |
|------|-----|--------------|-------------------------|-----------------|
| mm. | in. | | | |
| 15 | ½ | SFA 15 T 318 | 18 (261) | 148F3318 |
| 15 | ½ | SFA 15 T 319 | 19 (276) | 148F3319 |
| 15 | ½ | SFA 15 T 320 | 20 (290) | 148F3320 |
| 15 | ½ | SFA 15 T 321 | 21 (305) | 148F3321 |
| 15 | ½ | SFA 15 T 322 | 22 (319) | 148F3322 |
| 15 | ½ | SFA 15 T 323 | 23 (334) | 148F3323 |
| 15 | ½ | SFA 15 T 324 | 24 (348) | 148F3324 |
| 15 | ½ | SFA 15 T 325 | 25 (363) | 148F3325 |
| 15 | ½ | SFA 15 T 326 | 26 (377) | 148F3326 |
| 15 | ½ | SFA 15 T 327 | 27 (392) | 148F3327 |
| 15 | ½ | SFA 15 T 328 | 28 (406) | 148F3328 |
| 15 | ½ | SFA 15 T 329 | 29 (421) | 148F3329 |
| 15 | ½ | SFA 15 T 330 | 30 (435) | 148F3330 |
| 15 | ½ | SFA 15 T 331 | 31 (450) | 148F3331 |
| 15 | ½ | SFA 15 T 332 | 32 (464) | 148F3332 |
| 15 | ½ | SFA 15 T 333 | 33 (479) | 148F3333 |
| 15 | ½ | SFA 15 T 334 | 34 (493) | 148F3334 |
| 15 | ½ | SFA 15 T 335 | 35 (508) | 148F3335 |
| 15 | ½ | SFA 15 T 336 | 36 (522) | 148F3336 |
| 15 | ½ | SFA 15 T 337 | 37 (537) | 148F3337 |
| 15 | ½ | SFA 15 T 338 | 38 (551) | 148F3338 |
| 15 | ½ | SFA 15 T 339 | 39 (566) | 148F3339 |
| 15 | ½ | SFA 15 T 340 | 40 (580) | 148F3340 |

Spare parts

Table 22: Spare part kits

| Type | Code number |
|---|-----------------|
| SFA 10 (H)/DSV 10 Inspection kit | 148F3068 |
| SFA 10 Repair Kit 10 – 27 bar ⁽¹⁾ | 148F3069 |
| SFA 10H Repair Kit 28 – 65 bar ⁽¹⁾ | 148F3070 |
| SFA 15/DSV 1 inspection kit | 148F3029 |
| Repair kit SFA 15 | 148F3036 |

⁽¹⁾ Inspection kit should be ordered with any repair kit

Accessories

Table 23: Accessories

| Type | Code number |
|---|-----------------|
| DSV/SFA/SFV Non-stick grease | 148F3064 |
| DSV 10 Cap and alu gasket for testing (1 set) | 148F3063 |
| DSV 10 T Plug ½" NPT (1 set) | 148F3072 |
| SFA 10(H) G Inlet weld connector | 148F3075 |
| SFA 10(H) NPT Inlet weld connector | 148F3076 |
| Nipples + gaskets set for SFA 10(H), SFV 15/SFA 15 ⁽¹⁾ | 148F3019 |


⁽¹⁾ Weld nipple for SFA 10(H) inlet (G ½") not included in **148F3019**. Order **148F3075** in addition to.

Certificates and declarations

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 24: Pressure Equipment Directive (PED)

| | |
|---|---|
|  | The SFA valves are approved in accordance with the European standard specified in the Pressure Equipment Directive and are CE marked. |
|---|---|

For further details / restrictions - see Installation guide.

Table 25: SFA 10, SFA 10H and SFA 15

| | SFA 10 / SFA 10H | SFA 15 |
|----------------|------------------|-------------------|
| Nominal bore | 6.8 mm (¼ in.) | 13 mm (0.512 in.) |
| Classified for | Fluid group I | |
| Category | IV | |

Table 26: Certificates and declarations

| File name | Document type | Document topic | Approval authority |
|-------------------------------------|-------------------------------|-----------------------|--------------------|
| Д-DK.БЛ08.В.03706 | EAC Declaration | Machinery & Equipment | RU |
| 0045 202 1204 Z 00354 19 D 001(00) | Pressure - Safety Certificate | - | TÜV |
| C-DK.БЛ08.В.01096_20 | Pressure - Safety Certificate | PED | EAC |
| 033F0691.AE | Manufacturers Declaration | RoHS | Danfoss |
| 033F0473.AD | Manufacturers Declaration | ATEX | Danfoss |
| 0045 202 1201 Z 00662 19 D 001 (01) | Pressure - Safety Certificate | - | TÜV |
| 033F0685.AK | EU Declaration | EMCD/PED | Danfoss |
| 39409-B0 BV | Marine - Safety Certificate | - | BV |
| 07 202 1423 Z 0080-14-D-0120 | Pressure - Safety Certificate | PED | TÜV |
| SV 19-1104 | Pressure - Safety Certificate | - | TÜV |
| TSF700E49-2023 | Manufacturing Permission | TSG | AQSIQ |
| TAP000000M | Marine - Safety Certificate | - | DNV GL |
| 033F0685.AK | EU Declaration | EMCD/PED | Danfoss |
| 19.10327.266 | Marine - Safety Certificate | - | RMRS |

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