

Installation guide / Operating instruction

Safety relief valves

SFA 10, SFA 10H, SFA 15

148R9527

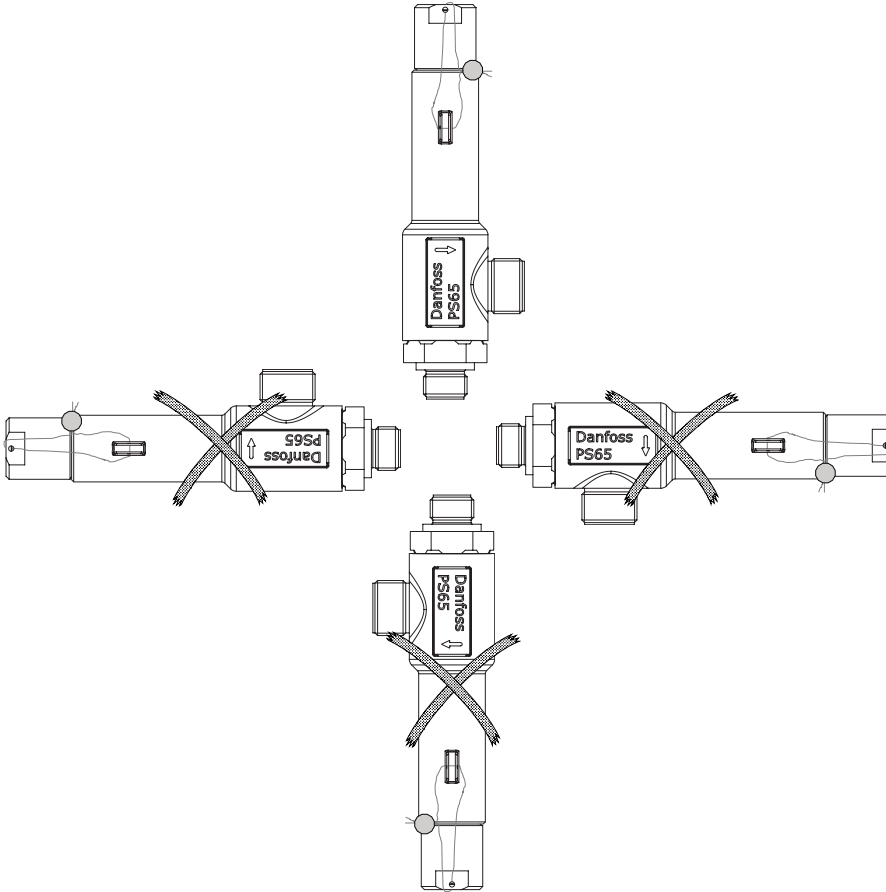


Fig. 1. Orientation

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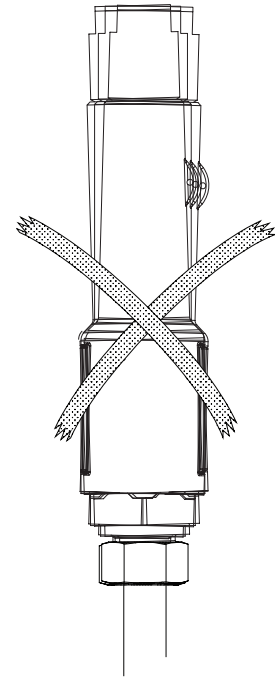


Fig. 2. Vibrations

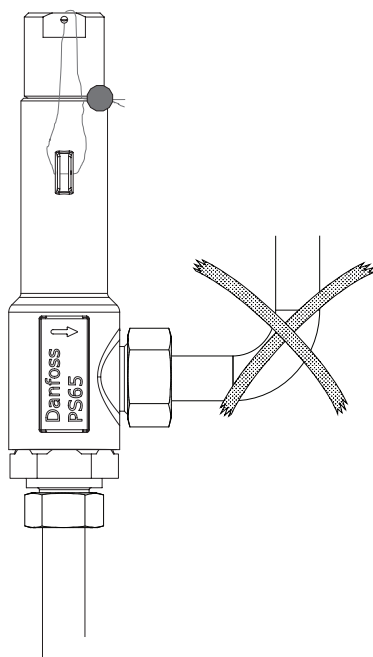


Fig. 3. Piping precautions

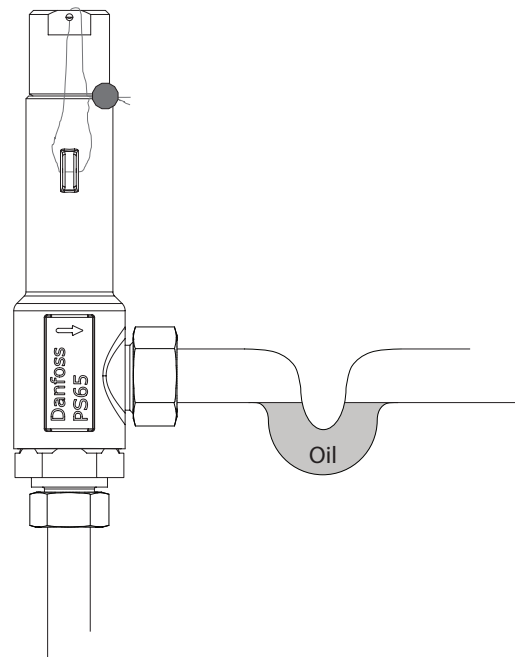


Fig. 4. Piping precautions

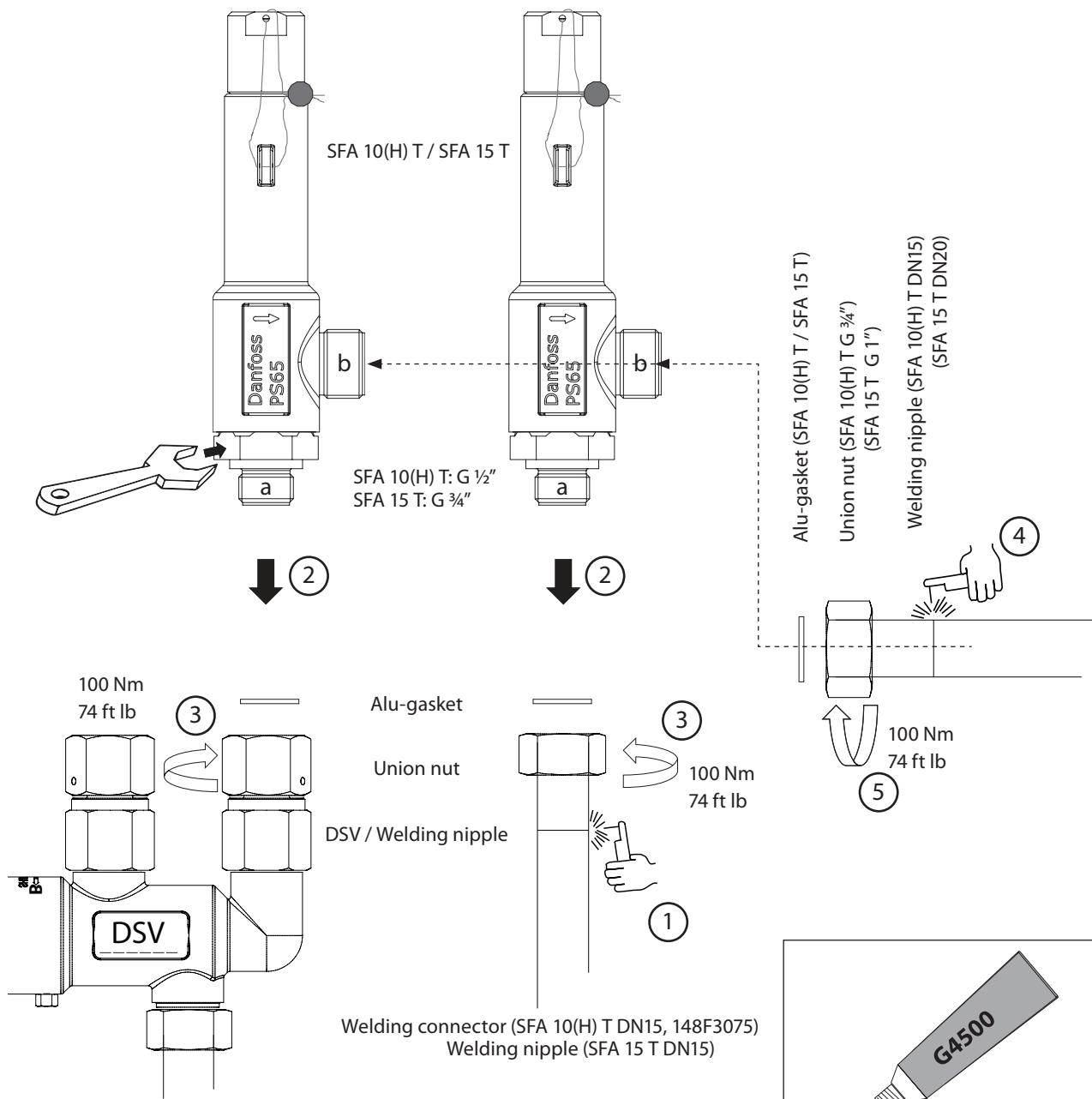


Fig. 5. SFA 10(H) T / SFA 15 T (G-thread) installation

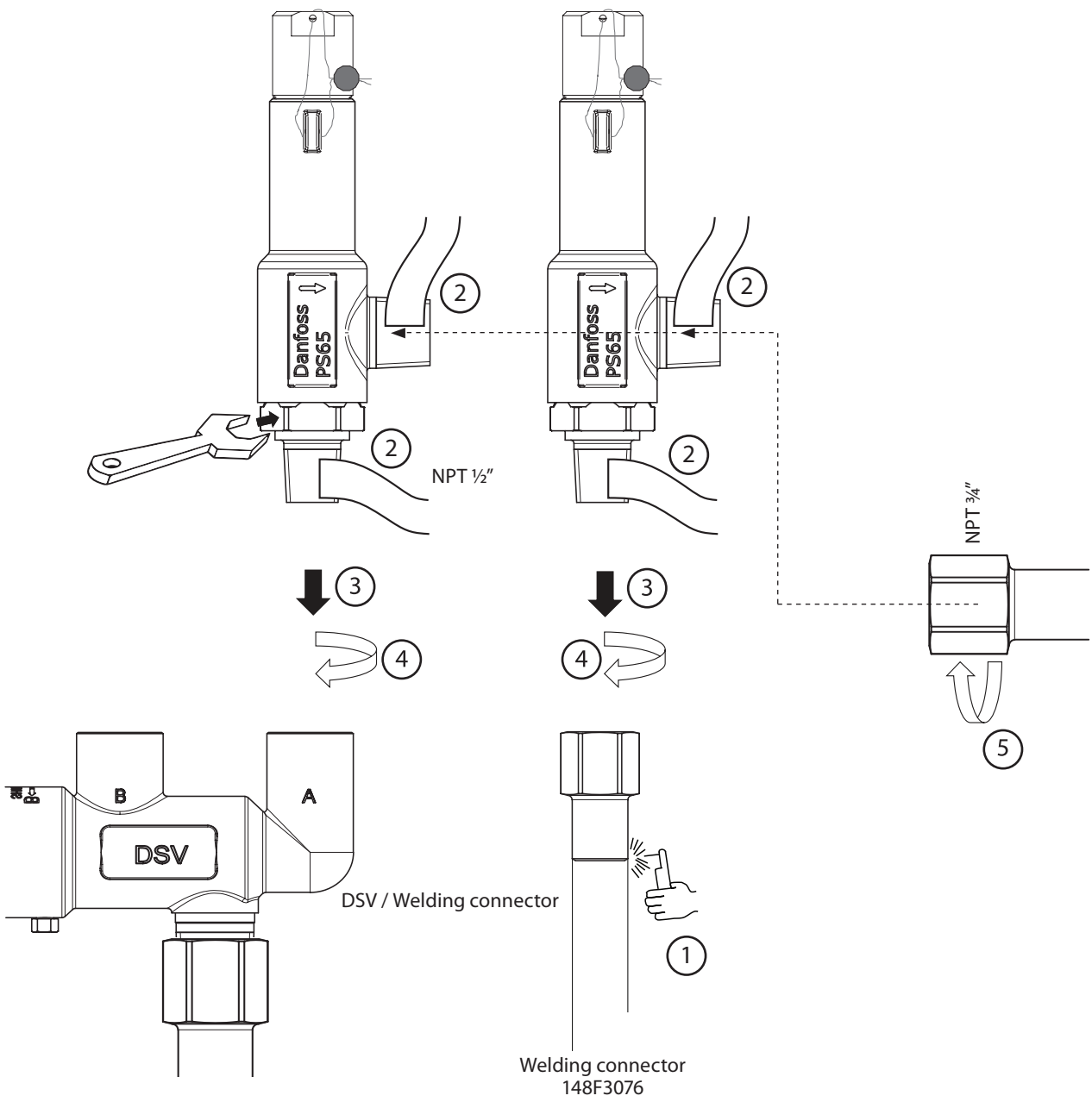


Fig. 6. SFA 10(H) NPT installation

Installation

Refrigerants

SFA 10 with CR O-ring is applicable to **R717, R744, HFC and HCFC**.

SFA 10H is with EPDM O-ring and applicable for CO₂ with POE and PAG oil only.

Temperature range

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

- Set pressure shall not be lower than -30 °C (-22°F) saturation temperature.
- At static temperatures below -30 °C (-22 °F) the CR O-ring becomes harder and full tightness of the valve cannot be guaranteed. Above -30 °C (-22 °F) the CR O-ring will become soft and fully functional again.
- Observe for R744 (CO₂)! Due to above the min. set pressure for correct functional valve in R744 (CO₂) is 27 bar (392 psig), to ensure proper function of the valve in case of a sudden relief.

Pressure range

The SFA valve is designed for a max. working pressure of
SFA 10: 65 bar (944 psig).
SFA 15: 40 bar (580 psig).

The safety valve is adjusted to a specific relief pressure stated on the ID plate. After setting the valve is sealed with wire and seal. To comply with EN13445-3, the SFA10(H)/15 is limited for operation up to 500 full pressure cycles or equivalent set pressure cycles.

Piping precautions

The valve is recommended for closed circuits only.

Refrigerant purity

Danfoss cannot guarantee correct opening and closing of the valve if the pressure relieved refrigerant is polluted with dirt and particles.

IMPORTANT:

THE INLET/OUTLET PIPE DIMENSIONS MUST NOT BE SMALLER THAN THOSE OF THE WELDING NIPPLES.

The valve is designed to withstand a high internal pressure. However, the piping system should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion. It must be ensured that the valve is protected from pressure transients like "liquid hammer" in the system.

During welding avoid welding debris and dirt in the threads of the connections and in the adjacent pipes. Before assembly clean all parts exposed to debris and dirt.

Valve orientation (see fig. 1)

The valve should be installed with the spring housing pointing upwards.

Vibrations (see fig. 2)

The SFA valve should never be exposed to thermic or dynamic stress from vibrations.

Outlet pipe orientation (see fig. 3)

To avoid dirt and condensate entering and accumulating at the valve outlet avoid piping lay out in upwards slope.

Oil trap (see fig. 4)

For SFA valves in applications with outlet to the ambient an oil filled U-pipe is an efficient protection against the entrance of water and dirt.

Installation of SFA T with G-thread (see fig. 5)

The SFA valve can be installed either in the dedicated DSV change-over valve (SFA 10(H) only) or directly in the system piping via a threaded weld connector 148F3075.

Follow these steps:

1. (Welding nipple/connector only). Assemble the union nut and welding nipple and place the assembly on the system piping. Fully weld the welding nipple to the system piping and cool down
2. Add G4500 grease (148F3064) to thread a. Place the alu gasket inside the the union nut and install the SFA by turning the union nut clockwise
3. Tighten to torque 100 Nm (74 ft lb)
4. Prepare and weld the outlet welding nipple like described in step 1
5. Add G4500 grease (148F3064) to thread b and tighten the outlet connection to torque 100 Nm (74 ft lb)

Installation of SFA 10(H) NPT (see fig. 6)

The SFA 10(H) NPT valve can be installed either in the dedicated DSV 10 NPT change-over valve or directly in the system piping via a threaded weld connector (148F3076).

Follow these steps:

1. (Welding nipple/connector only). Place the welding connector on the system piping. Fully weld the connector to the system piping and cool down
2. Add sufficient teflon tape or similar sealing material on the SFA 10(H) inlet and outlet
3. Insert the SFA 10(H) inlet to the DSV/weld connector thread
4. Align and tighten by applying a sufficient torque
5. Connect the SFA 10(H) outlet to the discharge piping system, e.g. by use of pipe union

Corrosion protection

The DSV valves are factory painted with a red oxide primer. The external surface of the SFA and DSV valve housing must be prevented against corrosion with a suitable protective coating after installation and assembly.