



# Installation Guide

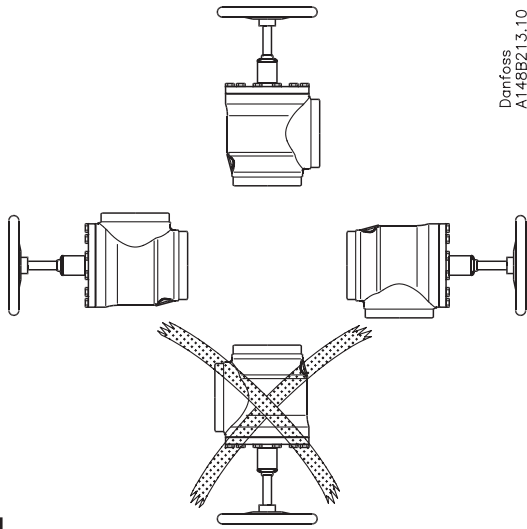
## Shut-off valves

### SVA-DH, SVA-DL 250-300

148R9510

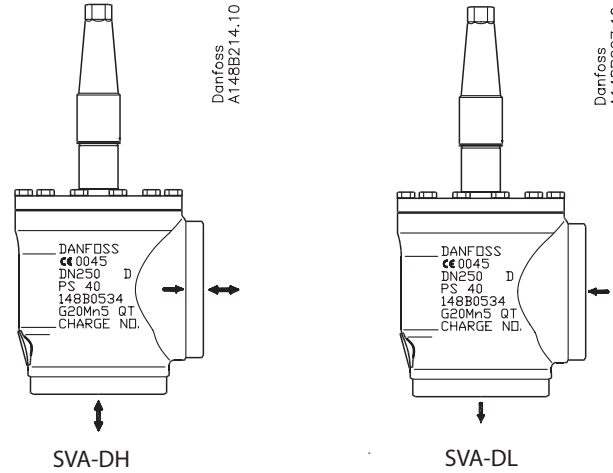
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#### Installation



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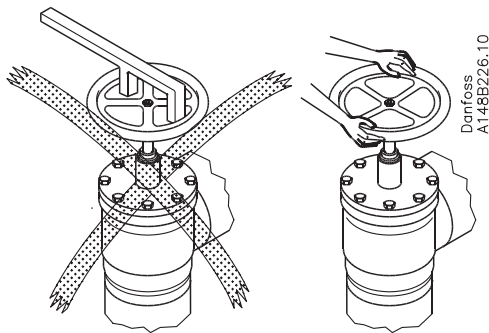
Fig. 1



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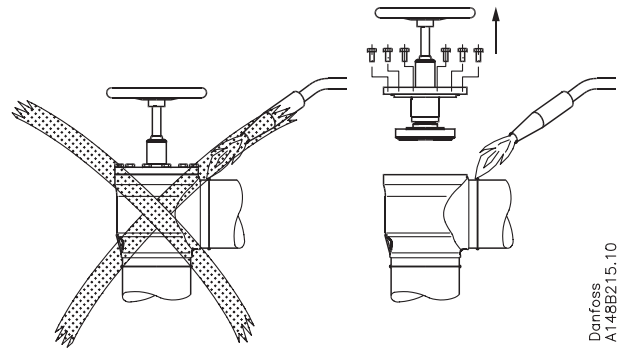
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Fig. 2



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A148B226.10

Fig. 3



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A148B215.10

Fig. 4

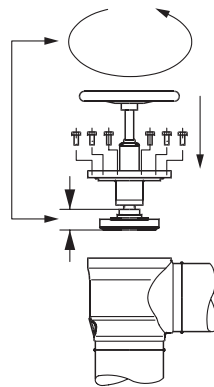


Fig. 5a

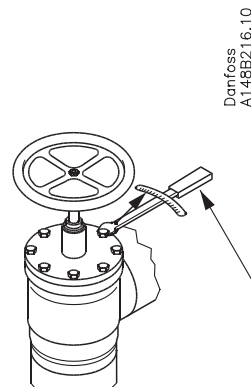


Fig. 5b

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	Nm	LB-feet
DN 250-300	370	272

Maintenance

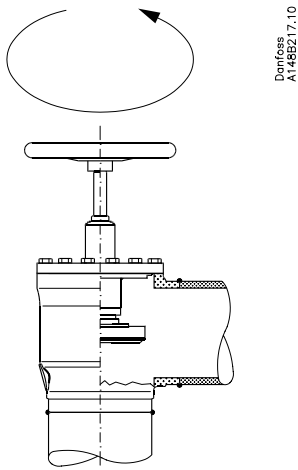


Fig. 6

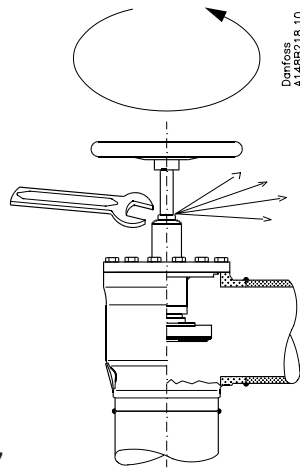


Fig. 7

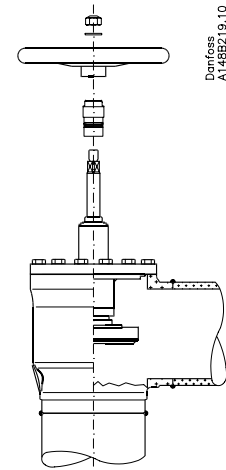
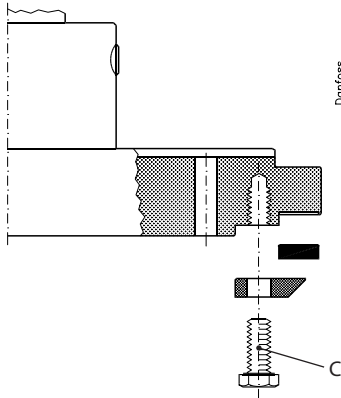


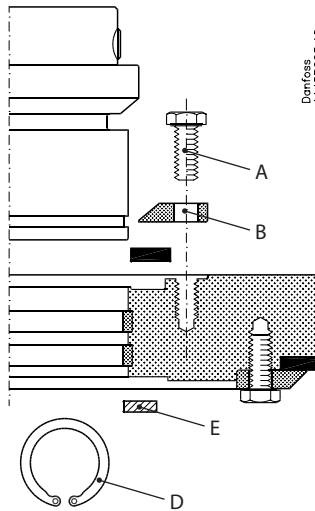
Fig. 8



SVA-DL, SVA-DH

Pos. C	Nm	LB-feet
DN 250-300	25	18

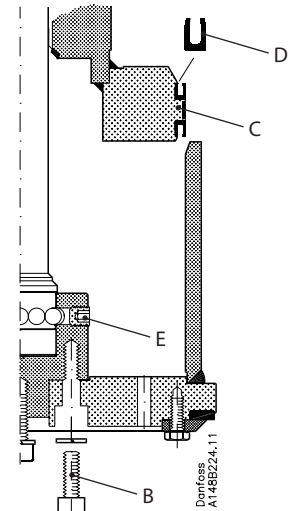
Fig. 9a



SVA-DL

Pos. A	Nm	LB-feet
DN 250-300	25	18

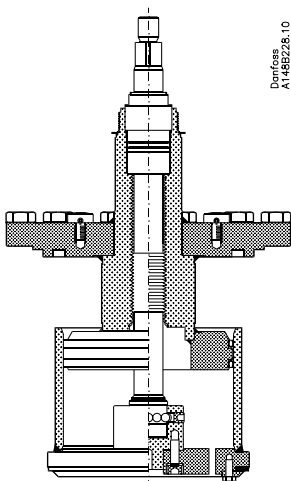
Fig. 9b



SVA-DH

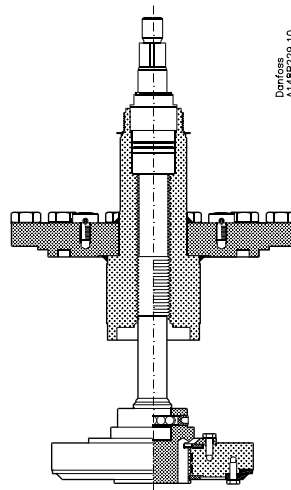
Pos. B	Nm	LB-feet
DN 250-300	49	36

Fig. 9c

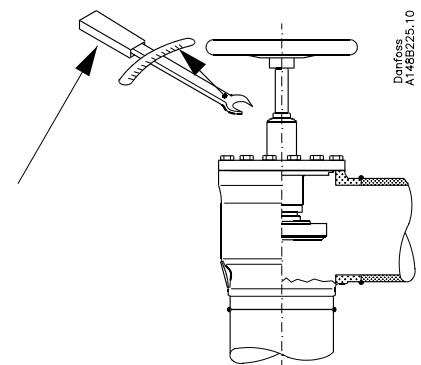


SVA-DH

Fig. 10



SVA-DL



	Nm	LB-feet
DN 250-300	80	60

Fig. 11

## ENGLISH

### Installation

#### Refrigerants

Applicable to HC, HCFC, HFC, R717 (Ammonia) and R744 (CO<sub>2</sub>). The valve is only recommended for use in closed circuits. For further information please contact Danfoss.

#### Temperature range

SVA-DL: -60/+150°C (-76/+302°F)  
SVA-DH: -60/+150°C (-76/+302°F)

#### Pressure range

SVA-DL, SVA-DH:  
40 bar (580 psi) at -60°C to +60°C (-76°F to +140°F)  
36 bar (522 psi) at +60°C to +80°C (+140°F to +176°F)  
32 bar (464 psi) at +80°C to +120°C (+176°F to +248°F)  
28 bar (406 psi) at +120°C to +150°C (+248°F to +302°F)

The valves are designed for a max. working pressure of 40 bar g (580 psi g).

#### Installation (fig. 1)

The valve must be installed with the spindle vertically upwards or in horizontal position (fig. 1). Valves should be opened by hand without the use of tools or other devices (fig. 3). 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.

#### Recommended flow direction (fig. 2)

To achieve optimum flow conditions, the valve should be installed with the flow as indicated by the arrow (fig. 2) for SVA-DH. Flow in the opposite direction is also acceptable, but slightly reduces the  $k_v$ - /  $C_v$  value.

For SVA-DL, flow direction can only be from the side in order for the pressure relief to function.

#### Welding (fig. 4)

The bonnet should be removed before welding (fig. 4) to prevent damage to the O-rings in the packing gland and between the valve body and bonnet, as well as the teflon gasket in the valve seat. Only materials and welding methods, compatible with the valve housing material, must be welded to the valve housing.

The valve should be cleaned internally to remove welding debris on completion of welding and before the valve is reassembled.

Avoid welding debris and dirt in the threads of the housing and the bonnet. Removing the bonnet can be omitted provided that:

The temperature in the area between the valve body and bonnet during welding does not exceed +150°C/+302°F. This temperature depends on the welding method as well as on any cooling of the valve body during the welding itself. (Cooling can be ensured by, for example, wrapping a wet cloth around the valve body.) Make sure that no dirt, welding debris etc. get into the valve during the welding procedure.

Be careful not to damage the teflon cone ring.

The valve housing must be free from stresses (external loads) after installation.

Stop valves must not be mounted in systems where the outlet side of the valve is open to atmosphere. The outlet side of the valve must always be connected to the system or properly capped off, for example with a welded-on end plate.

#### Assembly (fig. 5a)

Remove welding debris and any dirt from pipes and valve body before assembly. Check that the cone has been fully screwed back towards the bonnet before it is replaced in the valve body (fig. 5a).

#### Tightening (fig. 5b)

Tighten the bonnet with a torque wrench, to the values indicated in the table (fig. 5b).

Tightening of the bonnet should be performed according to sound mechanical practice.

#### Colours and identification

The SVA valves are painted with a red oxide primer in the factory. Precise identification of the valve is made via the ID ring at the top of the bonnet, as well as by the stamping on the valve body. The external surface of the valve housing must be prevented against corrosion with a suitable protective coating after installation and assembly.

Protection of the ID ring when repainting the valve is recommended.

### Maintenance

#### Packing gland

When performing service and maintenance, replace the complete packing gland only, which is available as a spare part. As a general rule, the packing gland must not be removed if there is internal pressure in the valve.

However, if the following precautionary measures are taken, the packing gland can be removed with the valve still under pressure:

#### Backseating (fig. 6)

To backseat the valve, turn the spindle counter-clockwise until the valve is fully open.

#### Pressure equalization (fig. 7)

In some cases, pressure forms behind the packing gland. Hence a handwheel or similar should be fastened on top of the spindle while the pressure is equalized. The pressure can be equalized by slowly screwing out the gland.

#### Removal of packing gland

Handwheel and packing gland can now be removed.

#### Dismantling the valve

Do not remove the bonnet while the valve is still under pressure.

- Check that the top gasket has not been damaged.
- Check that the spindle is free of scratches and impact marks.
- If the teflon cone ring has been damaged, the cone assembly must be disassembled and the teflon renewed.

Replacement of the teflon seat (fig. 9a)  
The Teflon seat can be renewed as shown in fig. 9a. The bolts, pos. C, are unscrewed and the tension ring can be removed. If the Teflon seat is moderately damaged, it can be turned around to use the fresh side (check).  
If the Teflon ring is deformed or has very deep marks (> 1mm) it must be replaced for strength. When remounting the bolts on the tension ring, please refer to the torque table.

#### Replacement of pressure relief seat on SVA-DL (fig. 9b)

If the the SVA-DL has a leak over the pressure relief seat, this can be changed:

- Remove the retaining ring (Seeger circlip ring), pos. D, by using suitable tool.
- Pull the seat assembly off the spindle
- Remove bolts, pos. A
- Remove tension ring, pos. B.

Again the Teflon ring can be turned around if damages are moderate (moderate deforming or pressure marks < 0.8 mm). Otherwise the Teflon ring must be replaced.

- Put tension ring and bolts back in place and tighten bolts (pos. A) to the torque indicated.
- Check that the wear rings, pos. E, are intact and oil the rings before slowly and lightly placing the seat assembly on the spindle again.

- Refit the retaining ring, pos. D, in the spindle groove and check that the cone assembly refits on the spindle.

Tighten the packing gland with a torque wrench, to the values indicated in the table (fig. 11).

#### **Replace U-sleeve seals or balls in SVA-DH (fig. 9c)**

If the two U-sleeve seals are damaged or access is needed for the balls in the valve spindle - valve seat bearing:

- Rotate the spindle clockwise all the way down as for fully closed.
- Unscrew all the bolts in pos. B.
- Carefully remove the seat with the welded on cylinder.

Use only original Danfoss parts, including packing glands, O-rings and gaskets for replacement. Materials of new parts are certified for the relevant refrigerant.

In cases of doubt, please contact Danfoss.

Now there is access to the two U-sleeve seals (pos. C), the wear ring (pos. D), and the balls behind the set screw (pos. E). The U-sleeve seals must be replaced by bending them slightly into an oval shape and carefully pull them off in an angle and pushing the new one from an angle. The wear ring, pos. D, must be undamaged, otherwise replace.

- Oil the U-sleeve seals, pos. C, and wear ring, pos. D
- Carefully refit the cone with cylinder and at the same time place one of the bolts in pos. B to control the position of the remaining six bolt holes.
- Rotate the cone to get the holes aligned
- Refit also the center bolt and tighten.
- Check that the U-sleeve seals are in place and the wear ring is positioned before slowly moving the spindle upwards checking that the seals move into place over the bevel.

#### **Replacement of backseat seal (fig. 10)**

The valve backseat is a special teflon ring. If this is damaged, it must be replaced. Screw the spindle out of the bonnet. Carefully remove the original backseat seal and mount a new one in the angled contact surface directly inside the opening in the bonnet. Avoid folding and damage to the teflon ring, or damage to the contact surface at the top of the valve during assembly.

#### **Assembly**

Remove any dirt from the body before the valve is assembled. Reposition the valve cone on the SVA-DH bonnet as described above with consideration to the U-sleeve seal. Check that the cone has been screwed back towards the bonnet before it is replaced in the valve body (fig. 5a).

#### **Tightening**

Tighten the bonnet with a torque wrench, to the values indicated in the table (fig. 5b). Tightening of the bonnet should be performed according to sound mechanical practice.



