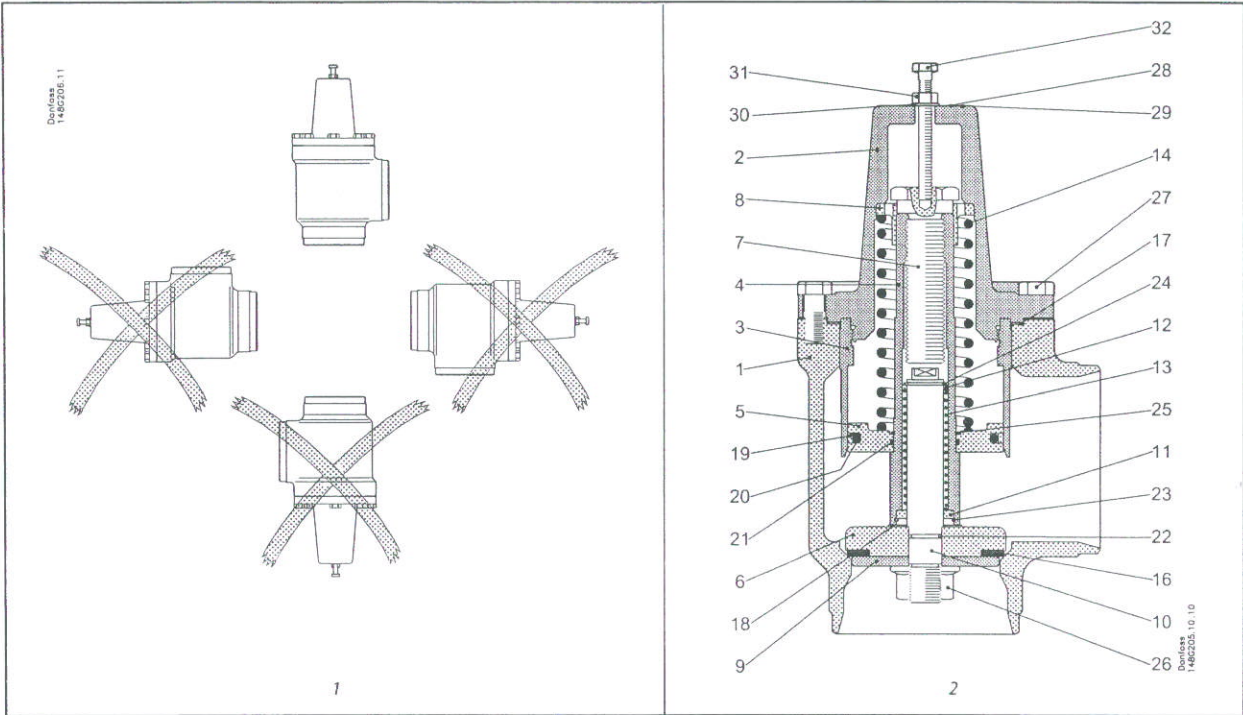
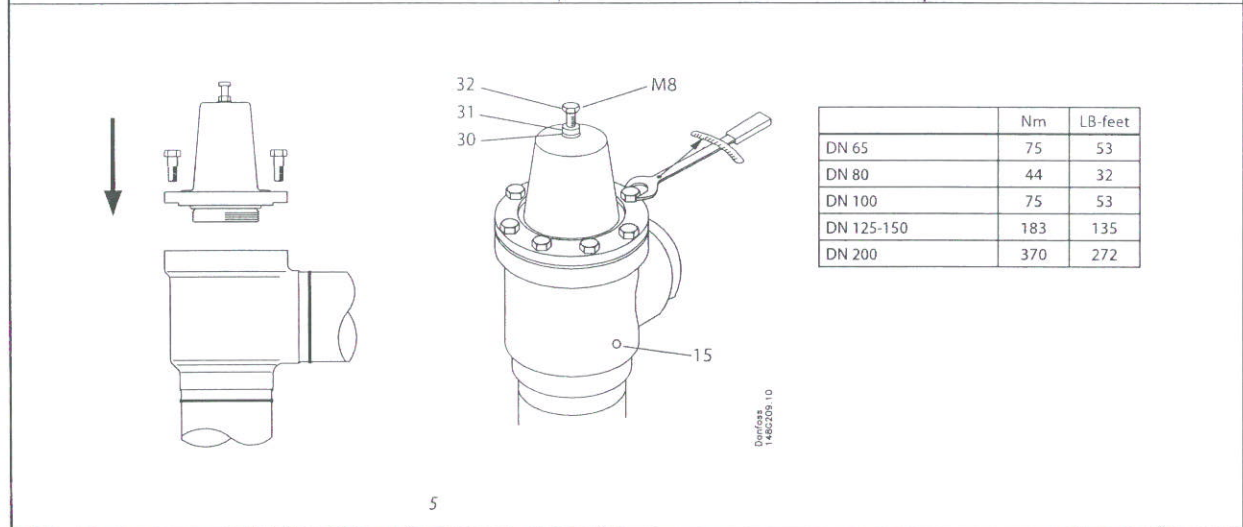
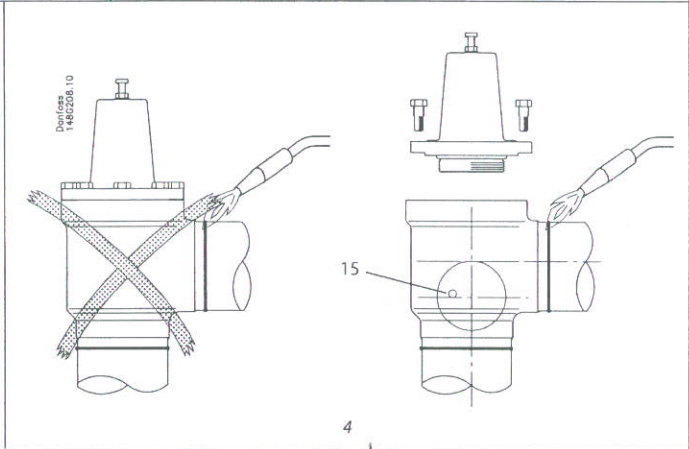
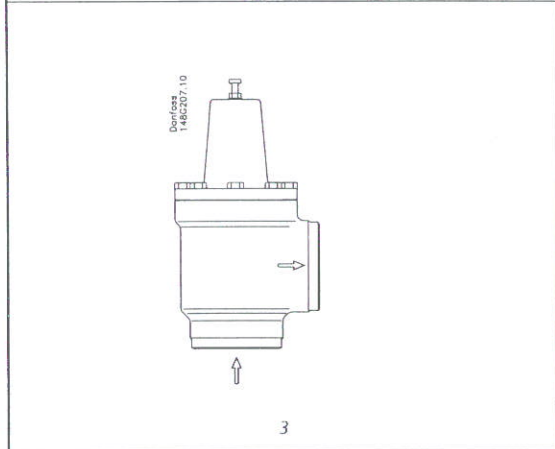


148R9532



148R9532



Refrigerants

Applicable to all common non-flammable refrigerants, including R717 and non-corrosive gases/liquids dependent on sealing material compatibility. Flammable hydrocarbons are not recommended. The valve is only recommended for use in closed circuits. For further information please contact Danfoss.

Temperature range

-50/+150°C (-58/+302°F).

Pressure range

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 (fig. 1).

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.

Flow direction (Fig. 3)

Important: The flow direction must be from the cone side towards the branch.

Welding (Fig. 4)

Remove the actuator before welding to prevent damage to the gasket 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.

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

GV 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. 5)

Remove welding debris and any dirt from pipes and valve body before assembly. Remove disassembly bolt (pos. 32) after mounting the bonnet and the bonnet bolts have been tightened. The purpose of the bolt is to secure insert from falling out during disassembly and avoid damage of the Teflon seat when bonnet is mounted.

Note! Always pull the valve seat back in open position before assembling the valve.

Use DN10 steel pipe for a pilot line. It could be either connected directly to the valve using NPT 1/4" thread or using adapter for cutting ring.

Tightening (Fig. 5)

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

Colours and identification

The **GV** 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**Dismantling the valve (Fig. 4 and fig. 5)**

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

Evacuate the pipe system in which the valve is installed. Remember to evacuate refrigerant from both sides of the valve (inlet and outlet). Use service port (pos. 15) on the valve to evacuate refrigerant from above the cone.

Mount the dismantling bolt (pos. 32), the hexagon flange nut (pos. 31) and the nylon ring (pos. 30) as shown on fig. 5, and tighten the nut (pos. 31) a few rounds in order to redraw the valve cone from the seat. Remove the bolts. Remove the valve top (actuator).

- Check that the O-ring has not been damaged.
- Check that the Teflon seat is free of scratches and impact marks.

Assembly (Fig. 5)

Remove welding debris and any dirt from pipes and valve body before assembly. Mount the hexagon screw (pos. 32), the hexagon flange nut (pos. 31) and the nylon ring (pos. 30) as shown on fig. 5, and tighten the nut (pos. 31) a few rounds in order to redraw the valve cone from the seat. Remove disassembly bolt after mounting the bonnet and the bonnet bolts have been tightened. The purpose of the bolt is to secure insert from falling out during disassembly and avoid damage of the Teflon seat when bonnet is mounted.

Note! Always pull the valve seat back in open position before assembling the valve.

Function

The *GVD* valve opens in a 3 step sequence. The sequence of steps depends on the start-up situation (see fig. 2).

Step 1

The valve is always closed by a minimum differential pressure of 1.5 to 2.0 bar (0.3 to 0.5 bar in a booster system). Step 1 will occur when the compressor is stopped and the discharge pressure has equalized to the top of the valve through the suction side of the compressor.

$$p_c - p_1 < 2 \text{ bar (0.5 bar for booster) and } p_c > p_2$$

Step 2

Step 2 will occur as soon as the condensing pressure becomes higher than the pressure in the oil separator, and when the differential pressure between suction side and condensing pressure is bigger than the spring force.

$$p_c - p_1 > 2 \text{ bar (0.5 bar for booster) and } p_c > p_2$$

When the compressor starts the valve will either be in step 1 or step 2 position, depending on the pressure difference between the oil separator and the condensing pressure.

Start up situation 1

Condensing pressure is lower than oil separator pressure.

Start up will occur from step 1 position and go to step 3 as soon as a differential pressure between suction side and oil separator that can overcome the spring force is present.

Start up situation 2

Condensing pressure is higher than oil separator pressure but the differential pressure is lower than the spring force.

Start up will occur from step 1 and go to step 2 when differential pressure between suction side and condensing pressure is bigger than the spring force. When oil separator pressure comes close to the condensing pressure the valve will start opening and the small spring will open the valve completely. The valve will then be in step 3 position.

Start up situation 3

Condensing pressure is higher than oil separator pressure + spring force pressure.

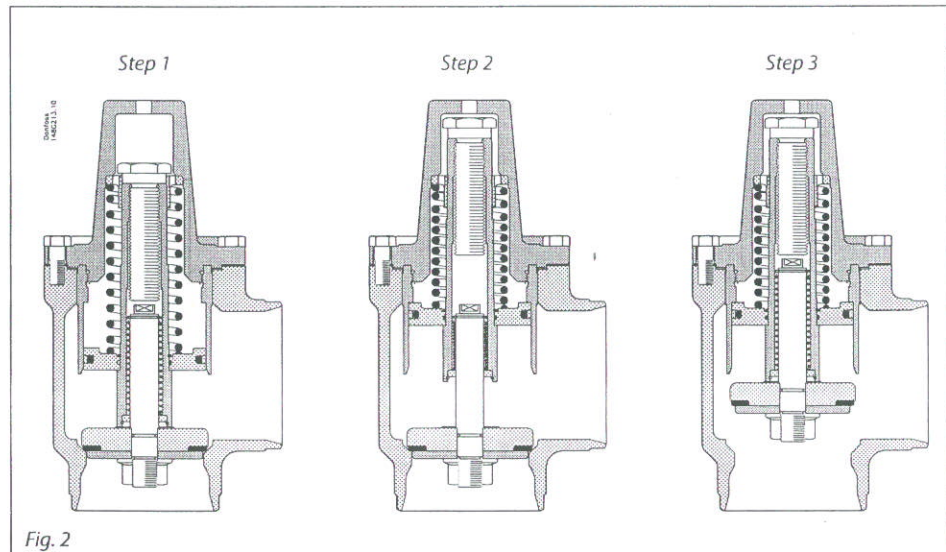
Start up will occur from step 2 position.

When oil separator pressure comes close to the condensing pressure the valve will start opening and the small spring will open the valve completely. The valve will then be in step 3 position.

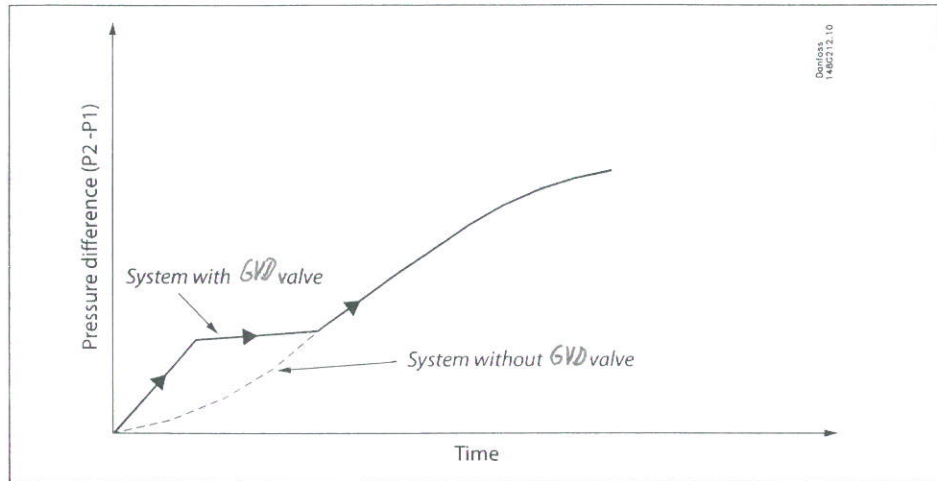
When the compressor stops, the valve will be in step 3 position and as soon as the condensing pressure has equalized to the suction side the spring force will close the valve. The valve will be in step 1 position until enough differential pressure between condensing pressure and oil separator/suction side pressure occurs for the valve to enter into step 2 position.

NOTE:

The *GVD* valve cannot be used on compressor units where the non-return valve is placed between compressor and oil separator instead of on the suction side of the compressor. The reason for this is that the *GVD* valve needs to have the $\varnothing 6 \times 1.5$ mm pipe connected to a point on the compressor unit, where the pressure is low during running and high during standstill.

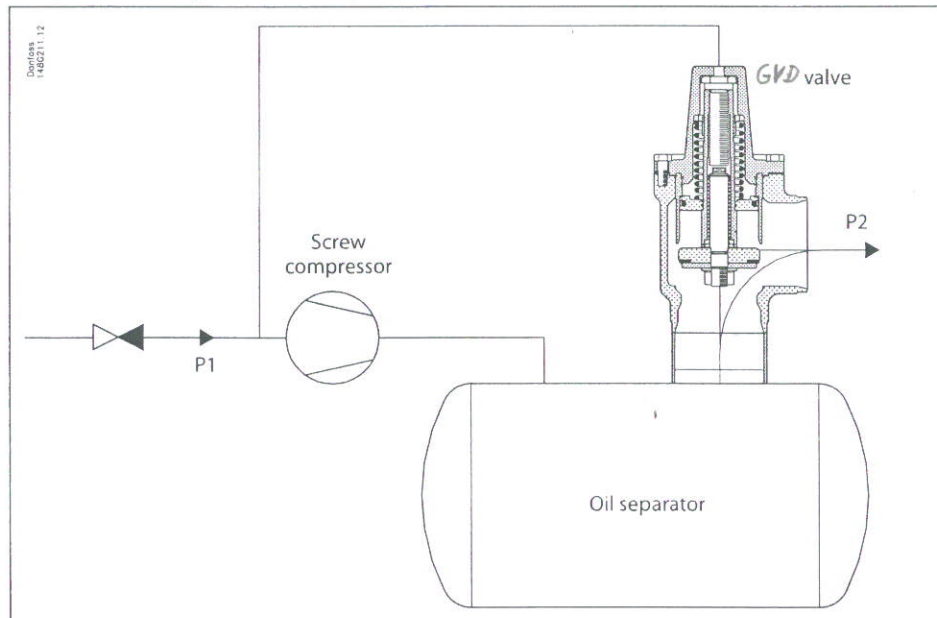


Function



Application example

Compressor discharge line after oil separator:



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