



TOTAL INGENIEROS S.A.C
VENTAS. PROYECTOS. SERVICIOS EN INGENIERIA Y SISTEMAS DE REFRIGERACION

Danfoss



Data Sheet

Solenoid valve Type EVRA and EVRAT

Capable of accommodating the higher pressures of refrigerants and a broader range of applications



EVRA is a direct or servo operated solenoid valve for liquid, suction and hot gas lines with ammonia or fluorinated refrigerants.

EVRA valves are supplied complete or as separate components, i.e. valve body, coil and angles can be ordered separately.

EVRAT is an assisted lift, servo operated solenoid valve for liquid, suction and hot gas lines with ammonia and fluorinated refrigerants.

EVRAT is specially designed to open - and stay open - at a pressure drop of 0 bar. The EVRAT solenoid valve is thus suitable for use in all plant where the required opening differential pressure is 0 bar.

EVRAT is available as components, i.e. valve body, angles and coil must be ordered separately.

EVRAT 10, 15 and 20 all have spindle for manual operation.

Features:

- Refrigerants: Applicable to HCFC, HFC and R717 (Ammonia)
- Temperature of medium -40 °C – +105 °C and Max. 130 °C during defrosting
- Classification: DNV, CRN, BV, EAC etc. To get an updated list of certification on the products please contact your local Danfoss Sales Company

Functions

EVRA solenoid valves are designed on two different principles:

1. Direct operation
2. Servo operation

Table 1: Design Function - EVRA 3, EVRA 32 and EVRA 40

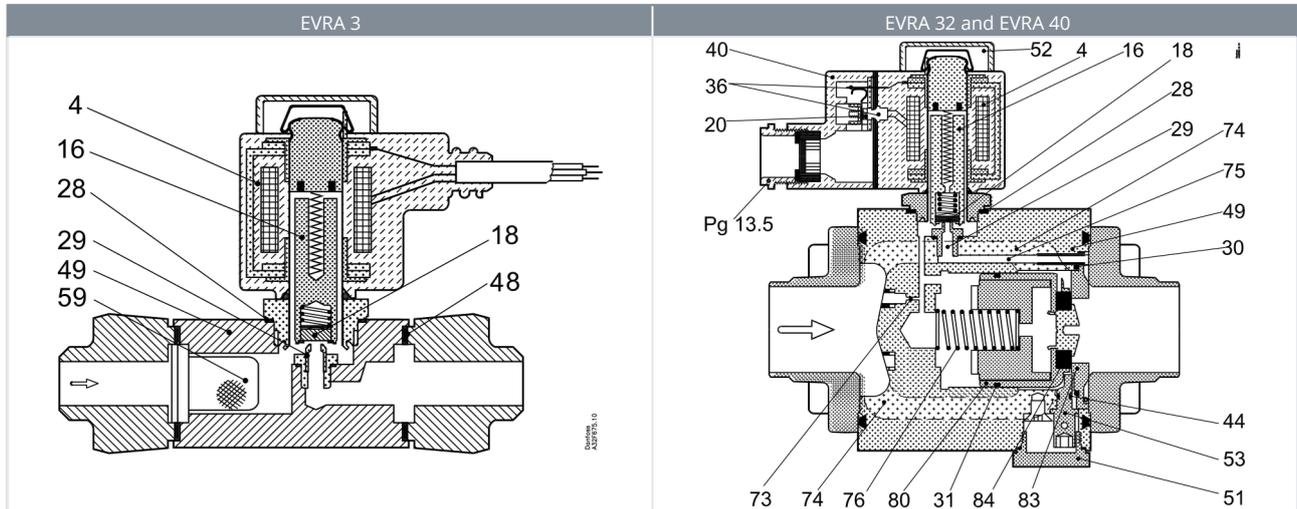
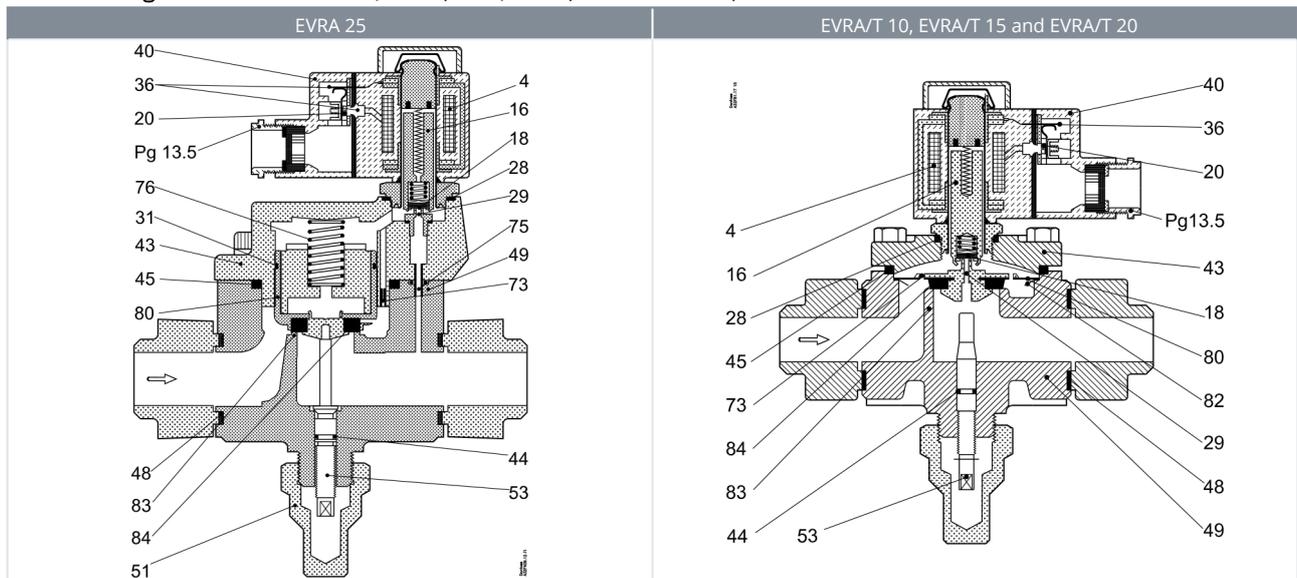


Table 2: Design Function - EVRA 25, EVRA/T 10, EVRA/T 15 and EVRA/T 20



4	Coil	3	DIN plug	5	Strainer
1	Armature	6	Terminal box	9	Equalization hole
6	Valve plate / Pilot valve plate	4	Valve cover	7	Main channel
1	Earth terminal	0	O-ring	3	Pilot channel
8	Connection for flexible steel hose	4	Valve cover gasket	7	Compression spring
2	Gasket	3	Flange gasket	4	Diaphragm/Servo piston
Ø	Pilot orifice	4	Valve body	7	Support washer
Ø	O-ring	4	Cover / Threaded plug	5	Valve seat
Ø	Piston ring	4	Manual operation spindle	7	Main valve plate

Direct operation

EVRA 3 is direct operated. The valve opens direct for full flow when the armature (16) moves up into the magnetic field of the coil. This means that the valve operates with a minimum differential pressure of 0 bar. The tee on valve plate (18) is fitted direct on the armature (16).

Inlet pressure acts from above on the armature and the valve plate. Thus, inlet pressure, spring force and the weight of the armature act to close the valve when the coil is currentless.

Servo operation

EVRA/T 10→ 20 are servo operated with a “floating” diaphragm (80). The pilot orifice (29) of stainless steel is placed in the centre of the diaphragm. The tee on pilot valve plate (18) is fitted direct to the armature (16).

When the coil is currentless, the main orifice and pilot orifice are closed. The pilot orifice and main orifice are held closed by the weight of the armature, the armature spring force and the differential pressure between inlet and outlet sides.

When current is applied to the coil the armature is drawn up into the magnetic field and opens the pilot orifice. This relieves the pressure above the diaphragm, i.e. the space above the diaphragm becomes connected to the outlet side of the valve. The differential pressure between inlet and outlet sides then presses the diaphragm away from the main orifice and opens it for full flow. Therefore a certain minimum differential pressure is necessary to open the EVRA valve and keep it open. For differential pressure 0 bar use EVRAT valves. For EVRA 10→ 20 valves this differential pressure is 0.05 bar.

When current is switched off, the pilot orifice closes. Via the equalization holes (73) in the diaphragm, the pressure above the diaphragm then rises to the same value as the inlet pressure and the diaphragm closes the main orifice. EVRA 25, 32 and 40 are servo operated piston valves. The valves are closed with currentless coil. The servo piston (80) with main valve plate (84) closes against the valve seat (83) by means of the differential pressure between inlet and outlet side of the valve, the force of the compression spring (76) and possibly the piston weight.

When current to the coil is switched on, the pilot orifice (29) opens. This relieves the pressure on the piston spring side of the valve. The differential pressure will then open the valve. The minimum differential pressure needed for full opening of the valves is 0.2 bar.

NOTE:

The manual opener of EVRA/EVRAT 10, 15, 20 and 25 is intended to be activated only during initial pressure testing of the refrigeration system. After pressure testing or service-related manual forced opening of the manual opener the spindle must be turned fully back to back-seated position to avoid any packing gland leakage. Furthermore it is essential that the sealing cap is properly reinstalled. This will eliminate any risk of leakage from the manual opener.

Media

Refrigerants

Applicable to HCFC, HFC and R717 (Ammonia).

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.