

PSH-type horizontal pump separator

Installation, operation and maintenance manual

Design

The separators consist of a shell with a dished end cover welded on to each end. Various nozzles are welded in the shell and dished end cover as well as in inlet and outlet. All nozzles are welding connections. On delivery, the nozzles are blanked off with seal caps protecting against moisture and dirt during transport and storage.

The separator is delivered with:

- connections for oil drain
- connections for safety valve(s)
- connections for the suction side of the oil drain vessel
- separate stand pipe in individual lengths to be mounted on site
- refrigerant inlet and outlet connections

Description	Material
Shell	ST 45.8 DIN 17175
Nozzle	ST 45.8 DIN 17175
End cover	P265 GH

Product description

The PSH-type separator is used as a pump separator on the low pressure side of the refrigeration plant, operating with R717 and other refrigerants.

The PSH-type is designed for:

- low pressure drop on the gas side
- stable feed to the refrigerant pump(s)
- efficient oil drain
- dry refrigerant suction gas
- easy installation and insulation

Function

The PSH-type pump separator separates the excess liquid refrigerant which returns from the evaporators in a pump recirculation plant. The inlet from the evaporators is placed in both ends and directed against the domed ends, while the dry suction outlet to the compressors is placed in the middle of the separator.

The inlet to the stand pipe is equipped with an inlet cross to prevent vortex entrainment.

Shipping

The vessel must be blanked off and primed on delivery. The primer is not intended for outdoor storage. If the vessel is not put into immediate service, take precautions against corrosion or contamination.

Only lift the vessel when it is empty, and make sure it is not subjected to strokes or bumps during transport. When lifting the vessel before it is built into the unit, always use straps around the shell.

The weight is stated in the technical data.

A shipping description can be made when the vessel is built together with the unit.

Installation

The site and personal protection must be in accordance with EN 378-3 or national requirements.

Check the vessel immediately upon receipt for any damage occurred during transport. If the vessel is damaged, it must not be installed and started.

When placing the vessel, make sure there is enough space for inspection, maintenance, escape and emergency.

Foundations must be sufficiently robust, as their purpose is to provide permanent support without settling and to absorb any normal vibrations from outside causes.

The vessel is for vertical installation.

Blanked off branches must be cut off at the cutting groove depending on metal thickness on adjoining tubes. Make sure that no dirt or other unknown elements enter the vessel during installation.

Do not remove protective plugs and covers until immediately before installation.

The entire system must be clean before starting the operation. When fitting the tube connections, make sure that stress in the vessel during test, operation and standstill does not exceed the allowable values. Vibrations must be minimised, possibly by means of vibration dampers.

Apart from branch connections, welding must not be carried out on the vessel.

The vessel must be secured against exceeding the allowable pressures and temperatures.

All outer surfaces must have a corrosion resistant surface coating to allow the vessel to be installed in certain environments without it causing corrosion.

Safety equipment

Before the vessel is put into operation, it must be provided with safety equipment. The manufacturer of the refrigeration plant is responsible for the safety equipment as it is not included in the vessel delivery.

Start-up and operation

Before start-up, make sure that all connections are tight.

To avoid accidents or personal injury, the person responsible for the plant must make sure that the operating staff is duly trained and instructed before the refrigeration plant is started. The instruction should be based on the unit instruction manuals and should include instructions in construction, supervision, operation and maintenance of the system as well as the handling of used refrigerant.

Evacuation and charging with refrigerant must be carried out in accordance with the description in the unit instruction manual.

Before operation, the refrigeration plant must be leak tested and inspected by an authorised person.

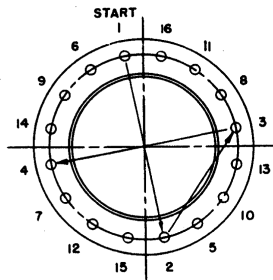
Local safety and health regulations must be observed.

The authorised person makes a certificate which must be kept by the user.

Bolted connections

Normal relaxing of the gasketed joints may occur in the interval between testing at the manufacturer's and installation on site. Therefore, all external bolted joints may require retightening after installation and, if necessary, after the vessel has reached operating temperature.

It is important that all bolted joints are tightened evenly and in a diametrically staggered pattern. All bolts must be tightened to the same torque using a torque wrench.



Maintenance

The vessel should be inspected at the inspection intervals stated in the compressor specification. Only qualified personnel must carry out inspection.

Operating experience will determine how often inspection of the vessel is needed. It depends on the operating conditions. Johnson Controls Denmark recommends inspection to be carried out in monthly intervals during the running-in period. After a running-in period of six months, a maintenance plan must be made. Johnson Controls Denmark recommends inspection to be carried out every third month as a minimum.

Do not disconnect or tighten connections when the equipment is under pressure.

Periodic inspection during the service life of the vessel must meet the requirements of national legislation or EN 378-2. Correspondingly, a visual inspection of connections, outer surfaces, bases, the vibration damper and safety equipment must be carried out.

If corrosion, erosion or other weaknesses in the vessel are found, the vessel must be inspected by a qualified authorised third party, who will provide the necessary permission to continue using it. If repair is requested, approved personnel together with a qualified third party and Johnson Controls Denmark will carry this out. If permission to continue using the vessel is not granted, it must be scrapped.

Gasket connections

Gasket and gasket surface should be thoroughly cleaned and free of scratches and other defects. The gasket should be properly positioned before attempting to retighten bolts. When a vessel is dismantled for any cause, it must be reassembled with new gaskets. This will prevent further leaks and/or damage to the gasket-seating surface of the vessel.

Spare parts and replacement parts

Spare parts and replacement parts can be ordered directly from Johnson Controls Denmark. When ordering parts, please provide the name of the needed part as well as the vessel serial number, type, size and other information from the name plate.

Environmentally correct removal

The vessel does not contain environmentally damaging material such as asbestos, mercury or heavy metals.



All parts of the vessel can be re-used after being scrapped.

- Refrigerant and oil must be drained off before destruction
- All steel materials can be used again after remelting
- During the re-melting process, coating will disappear without damaging the environment