

Please read this manual carefully before installing, commissioning or operating the HDB.



1. Intended Use

The oil drain vessel HDB is solely designed to collect excess oil in refrigeration systems. The refrigerant/oil mixture can be heated in the vessel to drive off the refrigerant and provide sufficient pressure to drain, which is particularly important for low temperature applications.

2. Safety requirements

Any work with refrigeration systems must be carried out by trained personnel. All safety regulations concerning prevention of accidents or use of refrigerants

must be adhered to.

The valid guidelines for the installation and operation of refrigeration systems, e.g. EN 378, must be observed.

The legal regulations in force at the installation site of the respective country concerning the commissioning and operation of pressure equipment must be observed.

Under no circumstances are the indicated temperature- and pressure limitations on the data plate to be exceeded!

Rescue and escape ways shall be marked and their unrestricted use shall be ensured.



Pressure vessels that can be shut off by other parts of the refrigeration system must be equipped with a pressure relief device to prevent an unacceptable increase in pressure in accordance with EN 378.



Welding work must not be carried out on the pressure vessel (other than on the designated connections), otherwise this will render the certificates invalid.



When installing a heater element an electrician familiar with the relevant safety regulations must execute all connections. The formation of condensate on the vessel surface must be considered. (Execution of heater element and electrical connections must be at least IP 54). A safety thermostat must be connected.



In order to protect people from burns or frostbite, a form of protection must be provided depending on the temperature (below -10°C or above +60°C), e.g. insulation.

The corresponding fire safety precautions must be taken to prevent the pressure vessel from overheating.

The safety devices must be checked before commissioning the system. The safety devices must also be inspected after the system is disassembled or after a reaction.

3. Terms of warranty

To prevent accidents and for the safe operation of the refrigerant plant no modifications or alterations may be carried out to the oil drain vessel without written approval by TH. WITT Kältemaschinenfabrik GmbH.

Our liability or warranty is excluded, if:

- The instructions in this manual are not adhered to
- The oil drain vessel and its equipment was operated incorrectly or the handling was not in accordance with the mentioned procedures
- The vessel is used for purposes other than that for which it was intended to
- Safety devices were not used or disconnected
- There have been modifications made without written approval
- During installation or operation the safety requirements were not adhered to

4. Scope of delivery

The HDB can be delivered in two executions:

- E = with threaded connection G1/2" for installation of a 200 Watt heater element
- G = with two DN 20 for hot gas connections (minimum order of 5 pcs)

The standard scope of delivery includes:

- HDB oil drain vessel
- One quick acting valve SSV 6 (packed loose)
- Two support brackets including required fastening bolts (packed loose)

5. Technical Data

Dimensions, year of manufacture, volume, max. filling quantity, empty weight, pressure / temperature range, group of fluids to be used and materials used are noted in the drawings and certificates for the order.

The pressure vessel must be protected from higher temperatures by suitable measures (installation, insulation, etc.).

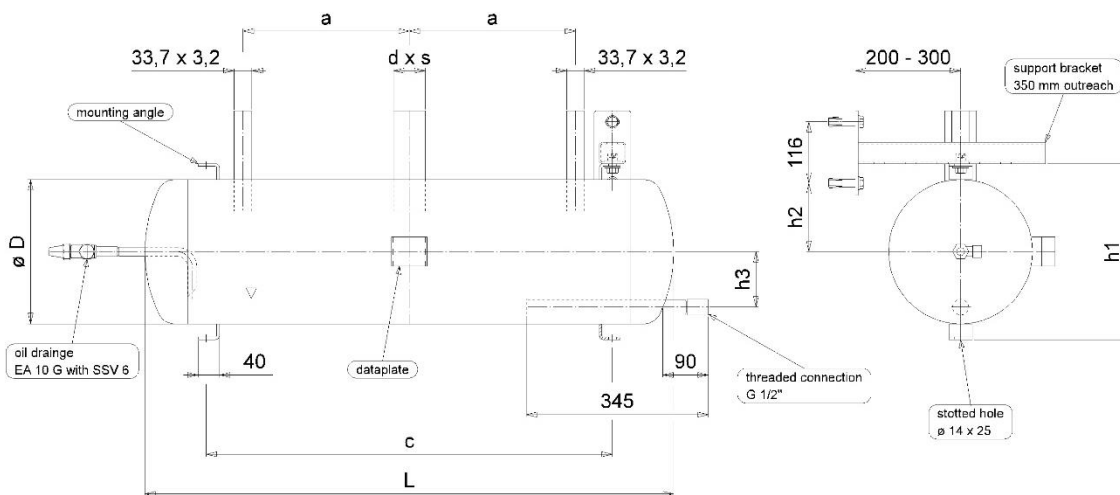


Figure 1

Type	D [mm]	L [mm]	Content [l]	D x s [mm]	a [mm]	c [mm]	h1 [mm]	h2 [mm]	h3 [mm]	Weight [kg]	Article number Execution E / G
HDB 2	219,1	750	24	48,3 x 3,2	200	520	280	105	80	32	3133.0000 03 / 10
HDB 4	273,0	1000	50	60,3 x 3,2	315	770	330	130	105	50	3133.0000 05 / 12
HDB 6	355,6	1200	100	60,3 x 3,2	385	950	415	170	145	110	3133.0000 07 / 14

Execution G for hot gas connection has a surface of the heat pipe of:

- HDB 2 to HDB 6 0,1 m²

Admissible pressure range

- 25 bar between +100°C and -10°C
- 18,75 bar between -10°C and -60°C

Test pressure: 38,5 bar

5.1 Approved mediums

The HDB is intended for operation with NH₃ and the usual non-soluble refrigerant oils and can be operated with this refrigerant in compliance with the maximum permissible pressures.

5.2 Used Materials

Housing	1.0345 / 1.0425
Nozzles	1.0345
Painting	320 µm 2k epoxy resin according to DIN ISO 12944/5, RAL 7001

6. Description of Operation

The HDB serves as a collector for refrigeration oil that settles in the surge drum.

(Please refer to the drawing on the right).

To drain the oil: Valve 1 (EA 40 or EA 50) and 3 (EA 20) must be closed.

The heat input of the surrounding area will increase the pressure in the HDB enabling the oil to be drained through oil drain valve 6 and quick acting valve 7.

To speed up the process a heater element or hot gas can be connected to the oil drain vessel.

After the oil has been drained the stop valves 1 and 3 must be opened.

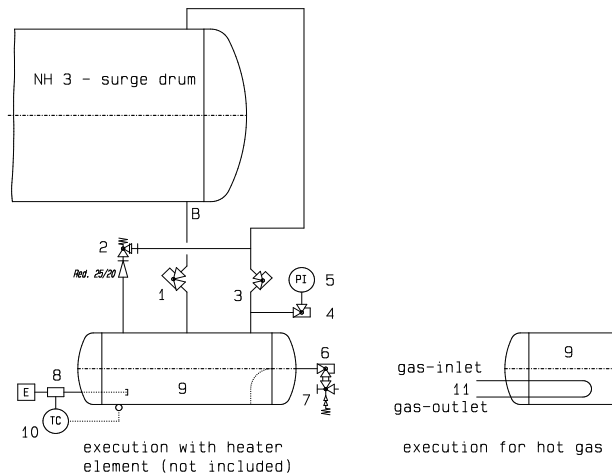


Figure 1: Typical HDB installation

7. Shipping and storage

All openings (connections, etc.) are covered with yellow protection caps to prevent the intake of moisture or dirt.

Storage shall be dry and protected from any dirt or debris.

If storage is required for more than two months or shipping overseas, the oil drain vessel shall be filled with an inert gas charge to prevent corrosion.

If the HDB oil collector has been filled with inert gas in the factory, the bleeder chokes must be removed immediately before the HDB is incorporated into the refrigeration circuit. It is important that no grinding chips or dirt get into the surface or into the HDB! If necessary, the pressure vessel should be thoroughly cleaned inside and outside.

Use only the mounting brackets to lift up the pressure vessel.

8. Installation

Packing material and the yellow plastic protective caps used to protect all openings (connections, etc.), must be removed immediately before assembly.

Please follow the instructions on the drawings relating to the order when assembling the system! The refrigeration engineer responsible for the planning has to ensure that the necessary equipment with safety devices and control elements is adapted to the individual requirements.

The HDB is designed to be installed in buildings. (Earthquakes, traffic, wind and snow loads are not included in the statics). It is only possible to install the system externally with the written permission of TH. WITT KÄLTEMASCHINENFABRIK GmbH.



All the exhaust lines must be routed in accordance with the recognised rules of engineering (e.g. EN 378) so that nobody is put at risk.

Ensure there is sufficient space for inspections, maintenance work and insulation. The discharge valves, safety valves and quick-release valves must be easily accessible.



It is important to ensure that the inlet of the separator is placed at the lowest point of the separator so that the oil can flow freely to the HDB.



When welding the piping to the connections (or valves) provided for this purpose, ensure that the installation is not under and strain or stress!



No additional forces may be applied to the connections or the HDB.



If a heating element is used, then thermal transfer paste should be used to improve the transfer of heat.

9. Before commissioning

After it has been assembled, the entire pipeline system must undergo a thorough visual inspection. All the screwed and flanged connections must be tightened. A leak and pressure test must then be carried out and documented. At this stage, particular attention should be paid to the welded seams created after the factory test and to any flanged or screwed connections.

Before commissioning it must be checked, in particular, that:

- all the piping has been connected according to the technical drawings
- the necessary safety devices have been installed and tested

10. Commissioning

Commissioning and start up of the HDB oil drain vessel is not permitted until a safety analysis of the entire refrigeration installation has been carried out.

10.1 Approved mediums

As described under "5.1 [Approved mediums](#)", the HDB is approved for NH₃ and its usual refrigerant oils.

11. Operation

The HDB may only be operated within the range of its design data.

The pressure relief device must be set up and adjusted according to the rules and standards / local regulations (this must never exceed the max. permissible pressure as specified on the nameplate!)

The pressure device is designed for predominantly static pressure loads with a maximum of 1000 full load changes. The range of the change in pressure must not exceed 10% of the maximum permissible pressure.

The frequency of oil draining depends on the kind of compressor and refrigerant plant and needs to be determined within the first month by the operating personal.



Please make sure before draining any oil that the safety valve/ overflow valve 2 is fully functional.

12. Maintenance and inspection

The inspection of the HDB, including the safety devices attached, must be carried out on a regular basis in accordance with the applicable legal provisions and/or regulations and technical rules and standards.



If maintenance work has to be carried out on the HDB, the pressure must be released from the system and the refrigerant must be completely sucked out before any screwed connections are loosened. Under no circumstances must you remove all the screws when any refrigerant or pressure is still in the system.



The HDB has to undergo, for example, a visual inspection on a regular basis, in accordance with DIN EN 378-2. (This includes, for example, an external visual inspection for corrosion.)

The corrosion allowance for pressure-bearing components made of carbon steel is 1 mm.

The corrosion allowance for pressure-bearing stainless steel components is 0 mm.

Damage to the corrosion protection must be repaired professionally without delay.

13. Address

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