



TH. WITT

**High-quality
components
for industrial
refrigeration**

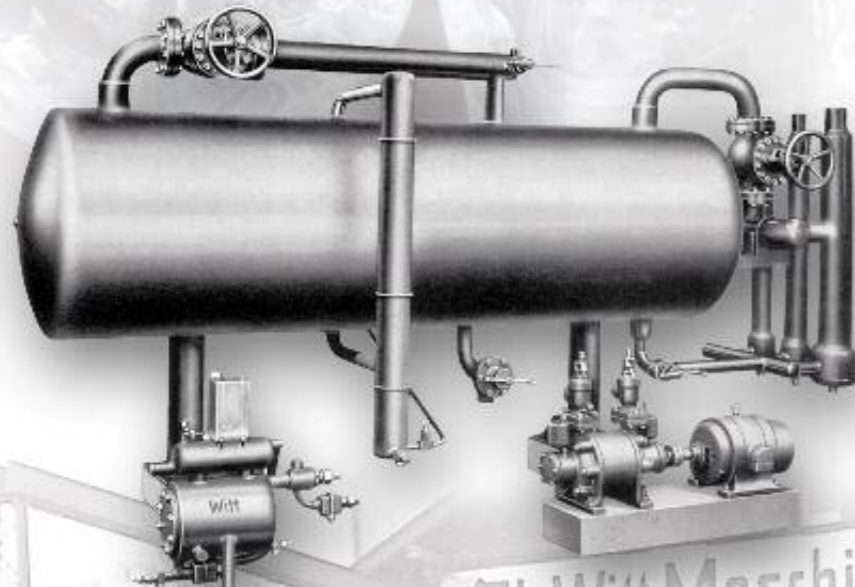


Since **1896**



Because experience counts

Over 120 years of refrigeration engineering experience applied to bring you customised technical solutions, from a family owned and managed business. Unlike our competitors TH. WITT is not just a manufacturer of one product group but can bring you practical equipment solutions suited to your needs. The experience is reflected in the state of our products, which guarantee our customers high quality and thus excellent reliability in operation. That quality is based on the principle of employee's qualification instead of quantitative growth. This is also reflected by the staffs company loyalty for decades.



Th. Witt, Maschinenfabrik GmbH.



Established supplier

TH. WITT is known as established and leading supplier of refrigerant pumps and high side float regulators as well as special solutions for the refrigeration industry. Together with this an excellent after sales and support service is offered for all our products.

Products for refrigeration contractors

Drawing on our field experience, we are able to offer you advanced package equipment in the form of pumping stations and plate in shell heat exchanger packages - suitable for natural refrigerants such as Ammonia (NH₃) and Carbon Dioxide (CO₂). These include suited solutions like NH₃/CO₂ cascade systems for deep temperature refrigeration, as well as packaged heat exchanger sets for process cooling and serial parts (e.g. pumps) from storage.

Reduce energy, time and costs

When designing refrigeration equipment, energy efficiency and the environmental health play a key role in our thinking. Components are selected and matched by using TH. WITT's selection tools it is ensured that the right components are chosen. We build compact units on a frame construction; completely ready for integration on the construction site. That increases your efficiency by shortened installation time and reduced construction site costs.

Global presence

TH. WITT is represented all over the World and we are always looking for experienced partners to expand our global sales network. With our experienced and motivated staff and agents, we maintain our prominent role designing and manufacturing equipment for industrial refrigeration in our German factory.



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HRP

Hermetic refrigerant pump

HRP refrigerant pumps with integrated canned motor are chosen whenever a maintenance-free execution is needed or high operating pressures are required. They are suitable for nearly all refrigerants.



| | max. delivery height* | max. capacity* | suction-/delivery connection | PN _{max} | material | weight** |
|----------|-----------------------|----------------|------------------------------|-------------------|----------|----------|
| | [m] | [m³/h] | [DN] | [bar] | | [kg] |
| HRP3232 | 28/45 | 5,2/5,6 | 32/32 | 25/40/65 | GGG | 43 |
| HRP5040 | 35/50 | 13,2/13,9 | 50/40 | 25/- | GGG | 55 |
| HRP5050 | 50/70 | 15/16,4 | 50/50 | 25/40 | GGG | 83 |
| HRP8050 | 50/70 | 30/35 | 80/50 | 25/40 | GGG | 83 |
| HRP10080 | 50/65 | 55/66 | 100/80 | 25/40 | GGG | 117 |

* 50/60 Hz at 2900/3600 1/min ** with EA + ERA

Easy handling

WITT refrigerant pumps are designed solely for use in refrigeration systems and content:

- a integrated vent line,
- top connections for escaping of gas proportions,
- opportunities for easy oil draining as well as
- a broad operating range.

There is no need for additional piping such as motor cooling lines or pipes for Q_{min}-or Q_{max}-orifices. Furthermore the HRP may be installed suspended, so that there is sufficient space for a condensate drip pan underneath the pump.

Reliable

The stator can withstand high design pressure of up to 40 bars and the stator oil filling provides additional protection for the stator windings. The good delivery properties of the HRP make sure the volume flow is not interrupted by varying pressures (which cannot be avoided during load changes at the compressor). The pump keeps delivering dependably.

Maintenance-free

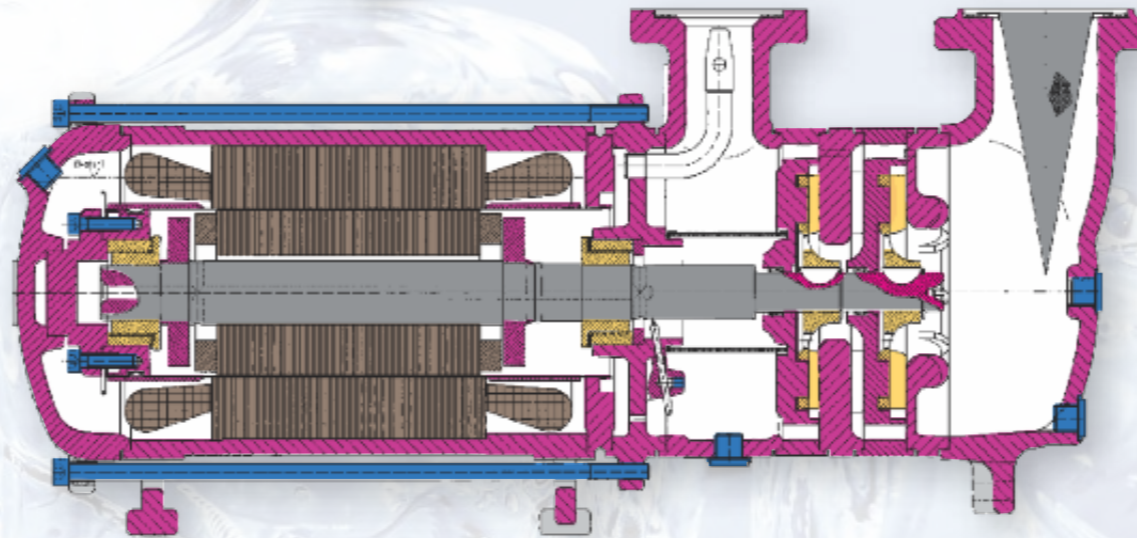
Hermetic refrigerant pumps do not require maintenance, but installation should be executed carefully to make sure there is always sufficient liquid refrigerant to lubricate the bearings and cool the motor. Too high gas intake, lack of refrigerant or operation against too high pressure will shorten a life time that is expected to be at least ten years.

Availability

WITT HRP refrigerant pumps are delivered from stock.

Easy selection

Volume flow and delivery head are sufficient to select your correct HRP, either with the selection program "WITTselect" or at a glance with our diagram. The broad operating range makes it easy to find a suitable pump. Additional equipment is not necessary, we have already thought of everything.

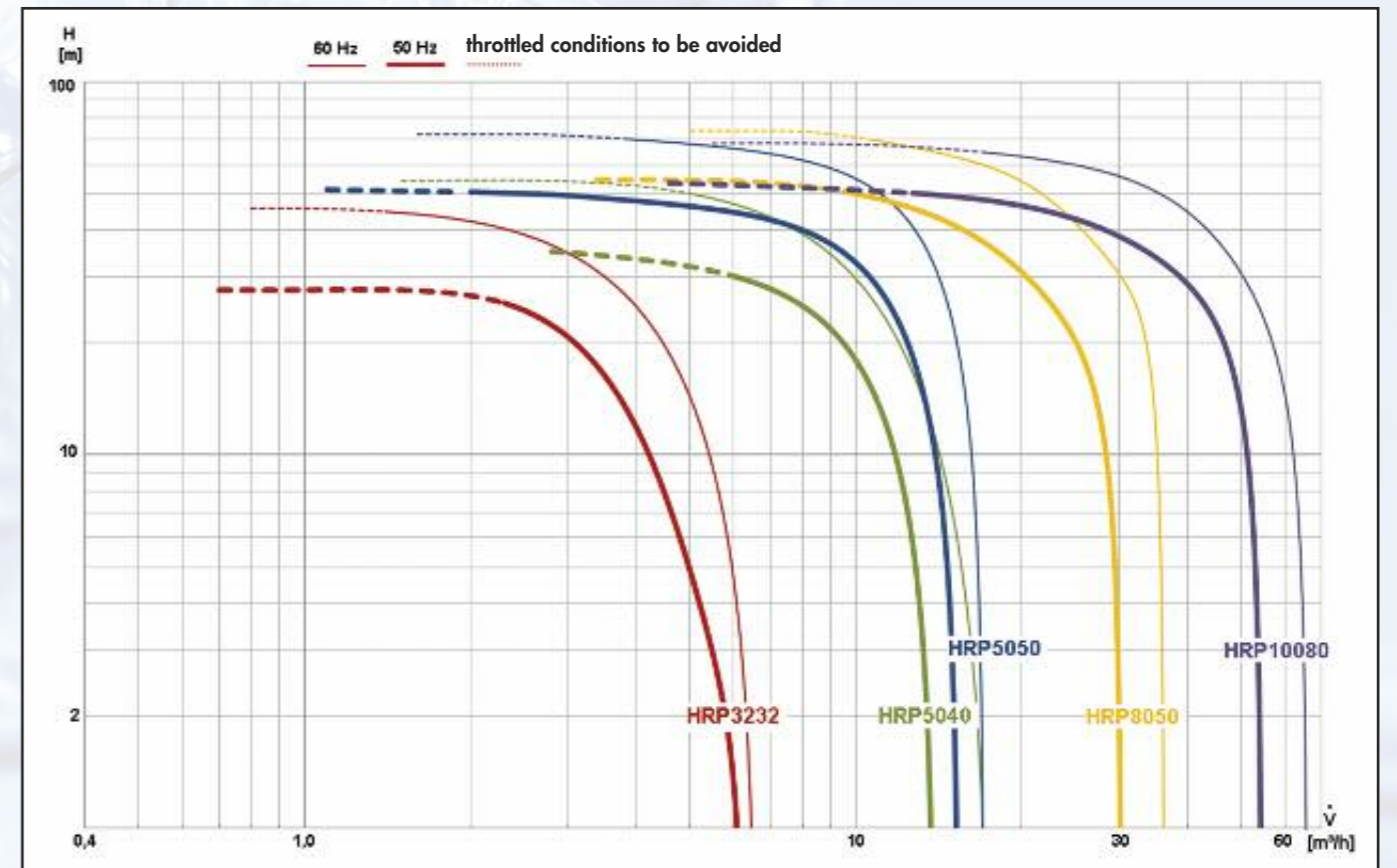
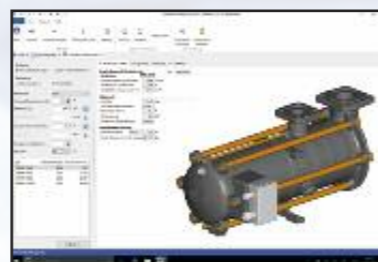


Accessories

- GF counter flanges
- EA stop valves suction and delivery side
- ERA stop/non-return valve on the delivery side
- Motor protection



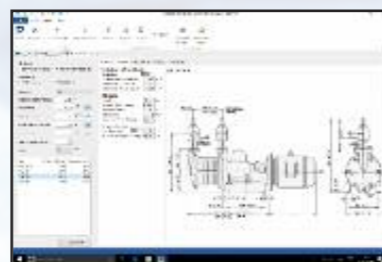
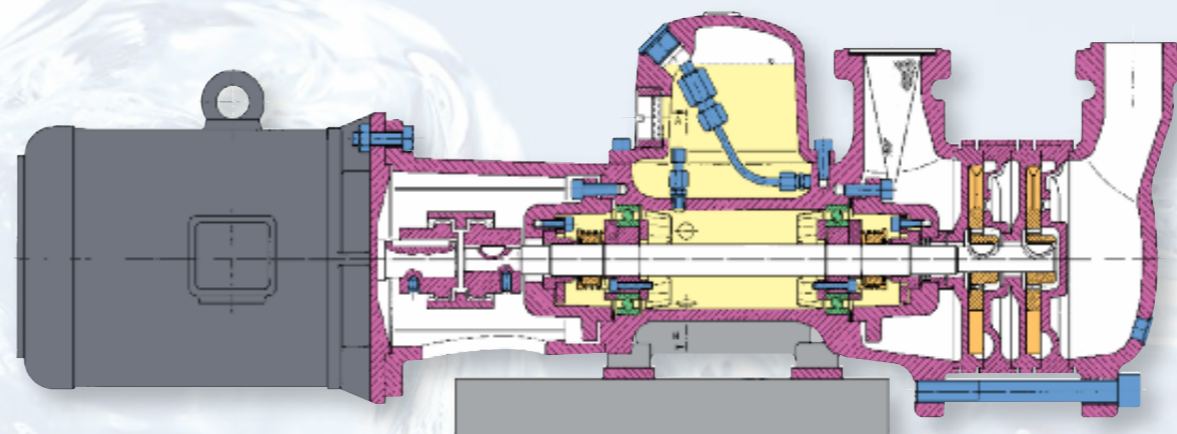
HRP 3232



GP

Refrigerant pump

GP refrigerant pumps are chosen whenever there is no need for hermetic pumps. They are suitable for a wide range of refrigerants.



| | max. Förderhöhe* | max. Förderleistung* | Saug-/Druckanschluss | PN _{max} | material | weight** |
|-------|------------------|----------------------|----------------------|-------------------|----------|----------|
| | [m] | [m³/h] | [DN] | [bar] | | [kg] |
| GP41 | 25/36 | 3,4/4,3 | 40/40 | 16 | GGG | 57 |
| GP42 | 48/70 | 3,6/4,4 | 40/40 | 16 | GGG | 64 |
| GP51A | 37/50 | 10,2/12,5 | 50/50 | 16 | GGG | 96 |
| GP51 | 31/47 | 16,8/20 | 50/50 | 16 | GGG | 96 |
| GP52 | 65/- | 16,8/- | 50/50 | 16 | GGG | 151 |
| GP82 | 56/85 | 24/28 | 80/50 | 16 | GGG | 174 |

* 50 Hz/60 Hz at 1450/1740 1/min ** with engine, KS + ERA

Easy handling

Ease of maintenance design and fast delivery of spare parts ensures highest satisfaction of our customers all over the world.

Reliable

The robust design ensures highest operational reliability, even during short periods of gas intake into the refrigerant. The double shaft seal and the large barrier oil reservoir incl. sight glass to check the oil level complies with highest safety standards, including EN378.

Technically mature

GP refrigerant pump with flanged motor has a proven track record of reliability and robustness earned over decades.

Availability

WITT GP refrigerant pumps are delivered from stock.

Easy selection

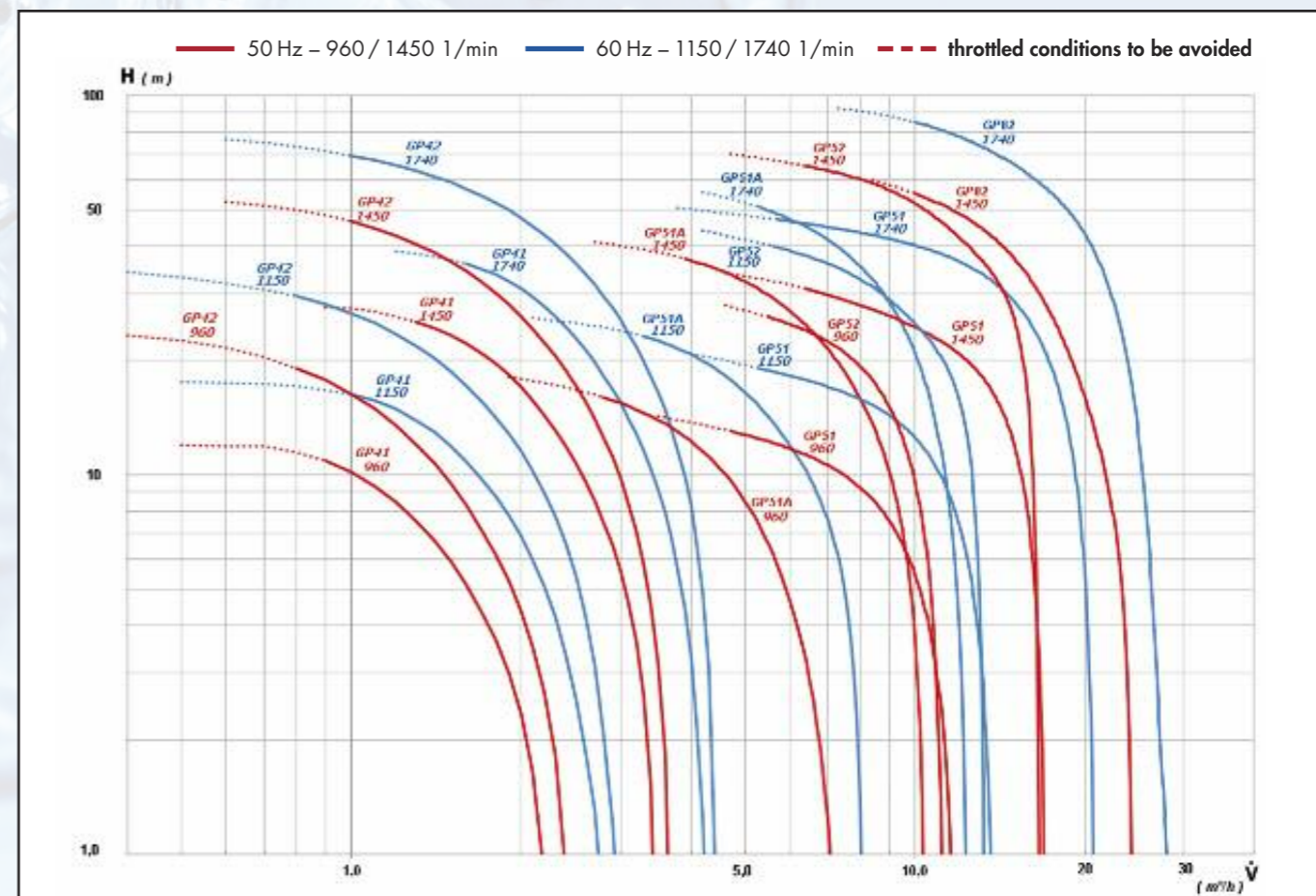
Volume flow and delivery head are sufficient to select your correct GP, either with the selection program "WITT select" or at a glance with our diagram. The broad operating range makes it easy to find a suitable pump.

Economical

The standard coupling of the GP pump enables the use of locally available standard motors. When used properly, the double shaft seal will provide a long service life and is easy to change. All parts are available on short-term and a refurbishment on site can be accomplished quick and simple. When it comes to longevity GP pumps are unrivalled.

Accessories

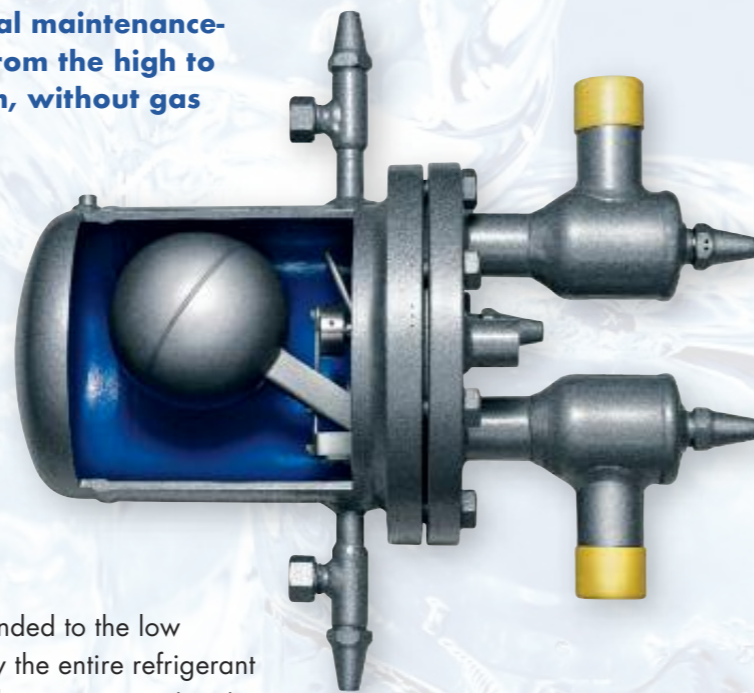
- GF counter flanges
- EA stop valves suction and delivery side
- ERA stop/non-return valve on the delivery side
- KS suction filter



HR & HS

High side float regulator

The high side control offers a simple mechanical maintenance-free solution to expanding liquid refrigerant from the high to the low pressure side of a refrigeration system, without gas passing. From technical and economical point of view this is the optimum and safest way of expanding refrigerant and handling condensate return.



Reduction of filling capacity

With the WITT HR & HS condensate is continuously expanded to the low pressure side. That means during normal operation nearly the entire refrigerant charge is stored on the low pressure side, whereby a high pressure receiver is unnecessary.

Safety

Due to the mechanical design no wiring or additional controls are required. In the event of a power failure condensate is drained safely to the low pressure side, ensuring highest operational safety.

Energy-efficient

Since refrigerant is always drained by the float whenever condensate accumulates, lower condensing temperatures can be utilized without a need to consider other control criteria. Compared to a system operating with traditional expansion valves there is neither a need for sub-cooling liquid nor superheating the suction gas. (Remark: energy savings of up to 13% are quite possible, i.e. with 5 K lower condensation temperature).

Stable plant operation

Pressure fluctuations are avoided by continuous condensate drainage, guaranteeing stable operation of the whole system.

Reduction in maintenance cost

During downtimes of the refrigeration system there will be slow pressure equalization when using float regulators with low pressure nozzles. Systems with only one compressor can be started from an unloaded condition without need for additional controls.



| | capacity | total high incl. valves | diameter | depth | connections | weight |
|-----------------|----------|-------------------------|----------|-------|-------------|--------|
| | [kW] | [mm] | [mm] | [mm] | [DN] | [kg] |
| HR1BW | 40* | 310 | 200 | 365 | 25 | 10 |
| HR1 | 95* | 440 | 200 | 425 | 25 | 13 |
| HR2 | 390* | 480 | 250 | 445 | 32 | 23 |
| HR3 | 1160* | 640 | 345 | 555 | 50 | 54 |
| HR4 | 3345* | 910 | 406 | 765 | 80 | 135 |
| HS30 | 1045* | 510 | 290 | 655 | 100/50 | 49 |
| HS40 | 2815* | 685 | 400 | 775 | 150/80 | 107 |
| HS50 | 4745* | 855 | 406 | 765 | 200/80 | 135 |
| WP2HR | 260** | 460 | 250 | 475 | 32 | 26 |
| WP3HR-65 | 860** | 545 | 355 | 650 | 50 | 68 |

* Refrigerant: NH₃, T₀ = -10°C, T_c = +35°C ** Refrigerant: NH₃, T₀ = +35°C, T_c = +75°C

Technical data

HR1- HR4, HS50 and HR1BW

Max. allowable pressure PS:
25 bar between +75/-10°C
18,75 bar between -10/-60°C
Test pressure PT:
37 bar oil pressure

HS30 - HS40

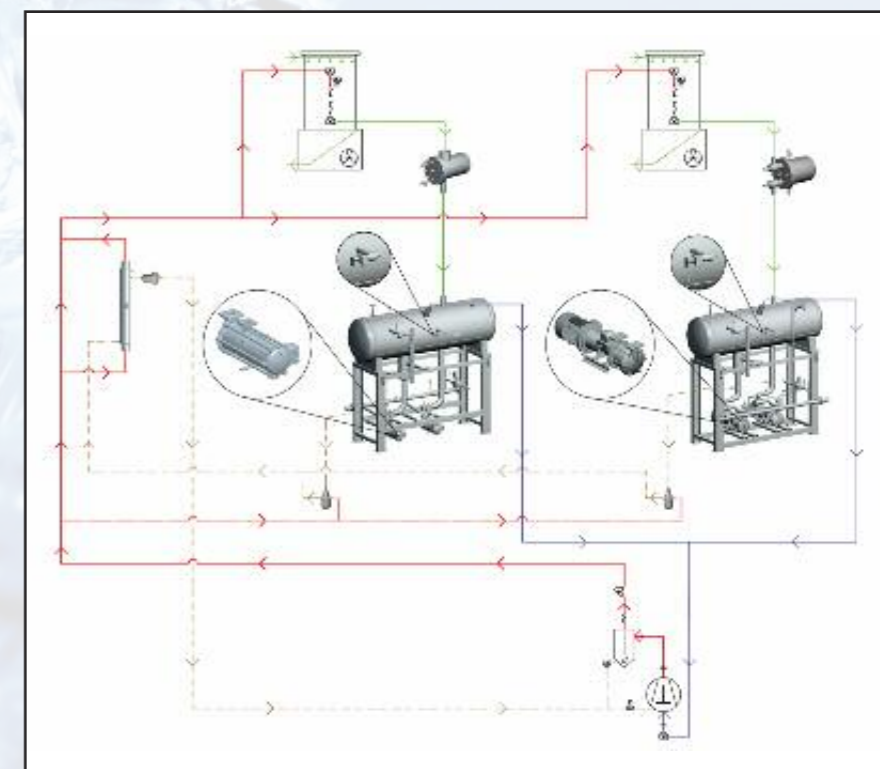
Max. allowable pressure PS:
40 bar between +75/-10°C
30 bar between -10/-60°C
Test pressure PT:
59 bar oil pressure

WP2HR

Max. allowable pressure PS:
40 bar between +90/-10°C
30 bar between -10/-60°C
Test pressure PT:
59 bar oil pressure

WP3HR

Max. allowable pressure PS:
65 bar between +100/-10°C
48,75 bar between -10/-60°C
Test pressure PT:
100 bar oil pressure



ECO

WITT Economizer (open flash)

In screw compressor refrigerant plants the ECO is used to increase the efficiency and reduce the sizing of the required components. Any refrigerant that is formed in the condenser flows to the float regulator, which then expands the liquid refrigerant into the ECO housing to intermediate pressure. The liquid refrigerant is expanded by the float regulation within the ECO housing, to the separator at the low-pressure side of the system. Due to the Economizer connection on the screw compressor, the throttle gas at the medium pressure level separated in the ECO is reintroduced into the compressor process.



Reduction of capacity

Due to a top mounted flash gas suction line, the screw compressor size and low-pressure separator size may be reduced or their performance may be increased.

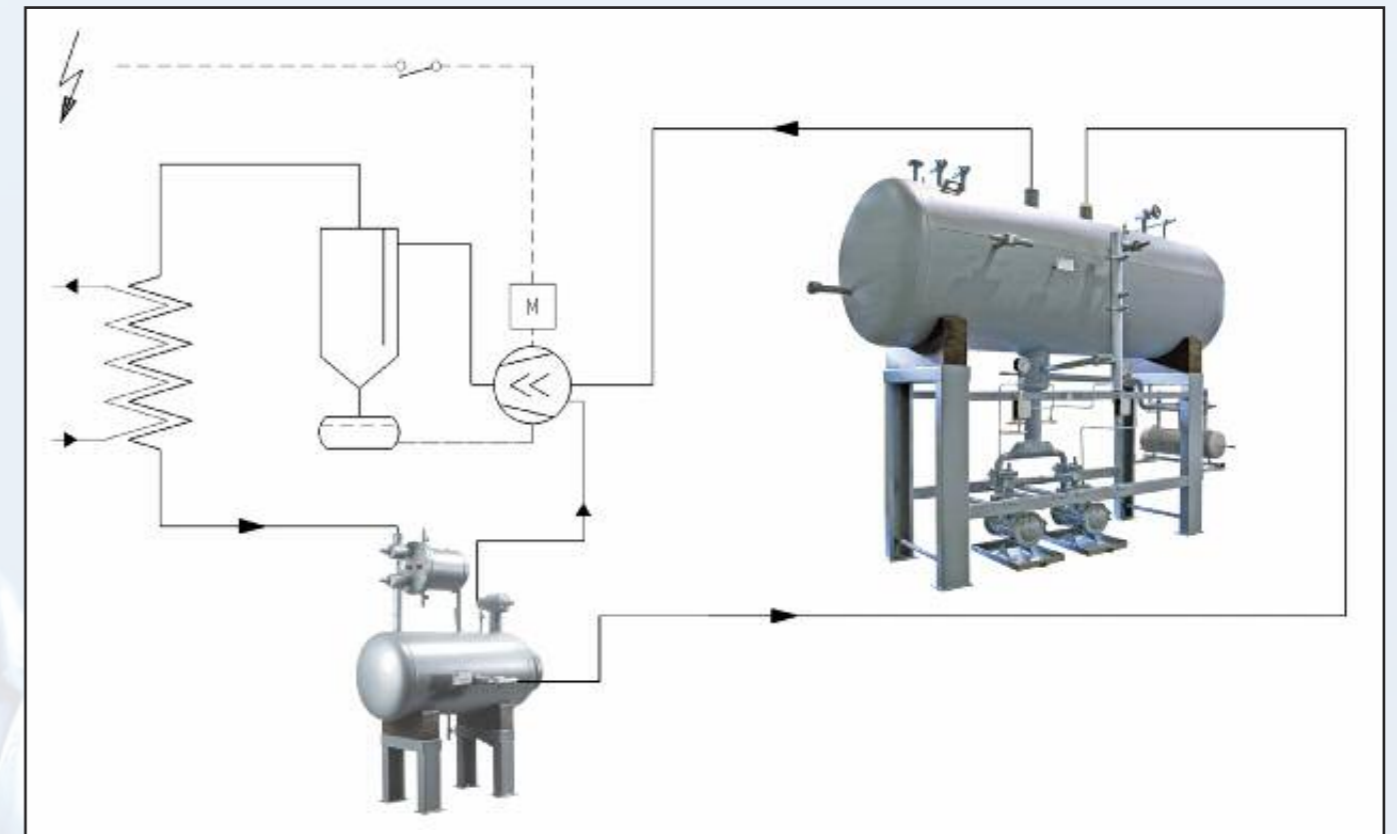
Safety

Due to the almost mechanical design the wiring or additional controls will be reduced. In the event of a power failure condensate is drained safely to the low pressure side, ensuring highest operational safety.

A WITT maximum high-level switch model NGX is fitted to the ECO housing. To ensure that in the event of the liquid level rising to high it will protect the compressor from liquid carry over and possible liquid hammer.

Energy-efficient

Beside the relief/performance increase of the compressor and the separator the refrigerant is always drained by the float whenever condensate accumulates. Thus, lower condensing temperatures can be utilized each season without a need to consider other control criteria. Compared to a system operating with traditional expansion valves there is neither a need for sub-cooling liquid nor superheating the suction gas. (Remark: energy savings of up to 13% are quite possible, i.e. with 5 K lower condensation temperature).



Scope of supply

- Built-on high-pressure float regulator HR with valves
- WITT stop valves fitted to inlet and outlet connections or gas and liquid refrigerant
- Drainage valve EA 10 GB L
- Purge valve EE 6 L, before EA 10 GB L
- combined G 1/2" / G 1/4" threaded connection for safety valve
- Maximum liquid level switch NGX (attached)
- steel frame including wooden supports and mounting brackets

Accessories

- Inlet and outlet connection without WITT standard stop valves
- individual inspections of TÜV or other institutions
- special non standard executions upon request

BDP

Automatic oil return

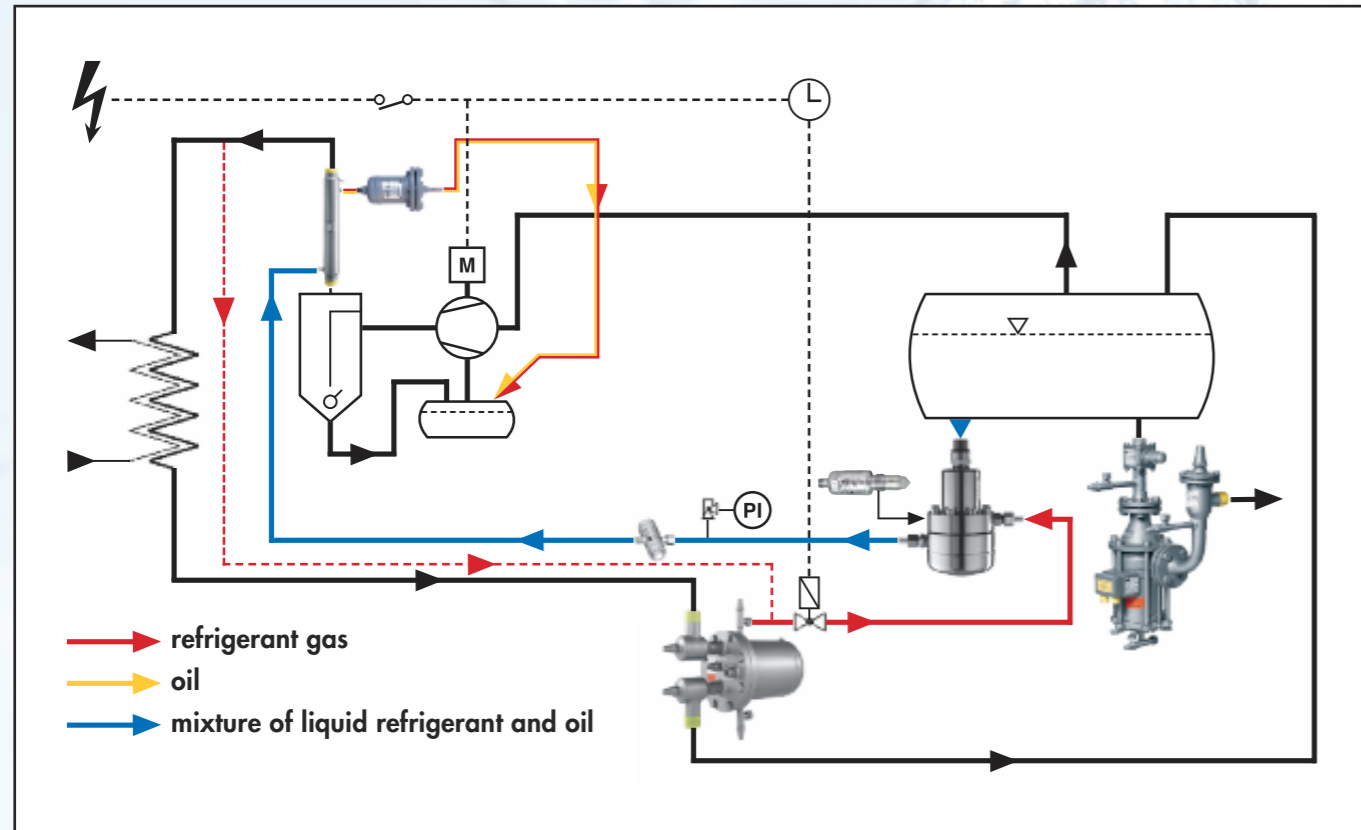
A refrigerant-oil-mixture is collected in the BDP and is dispensed from the low pressure side to the high pressure side of the compressor by means of hotgas. Any remaining liquid refrigerant is evaporating in a heat exchanger (WITT DWR) before being returned to the compressor.

Economical

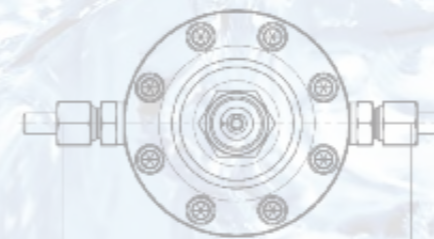
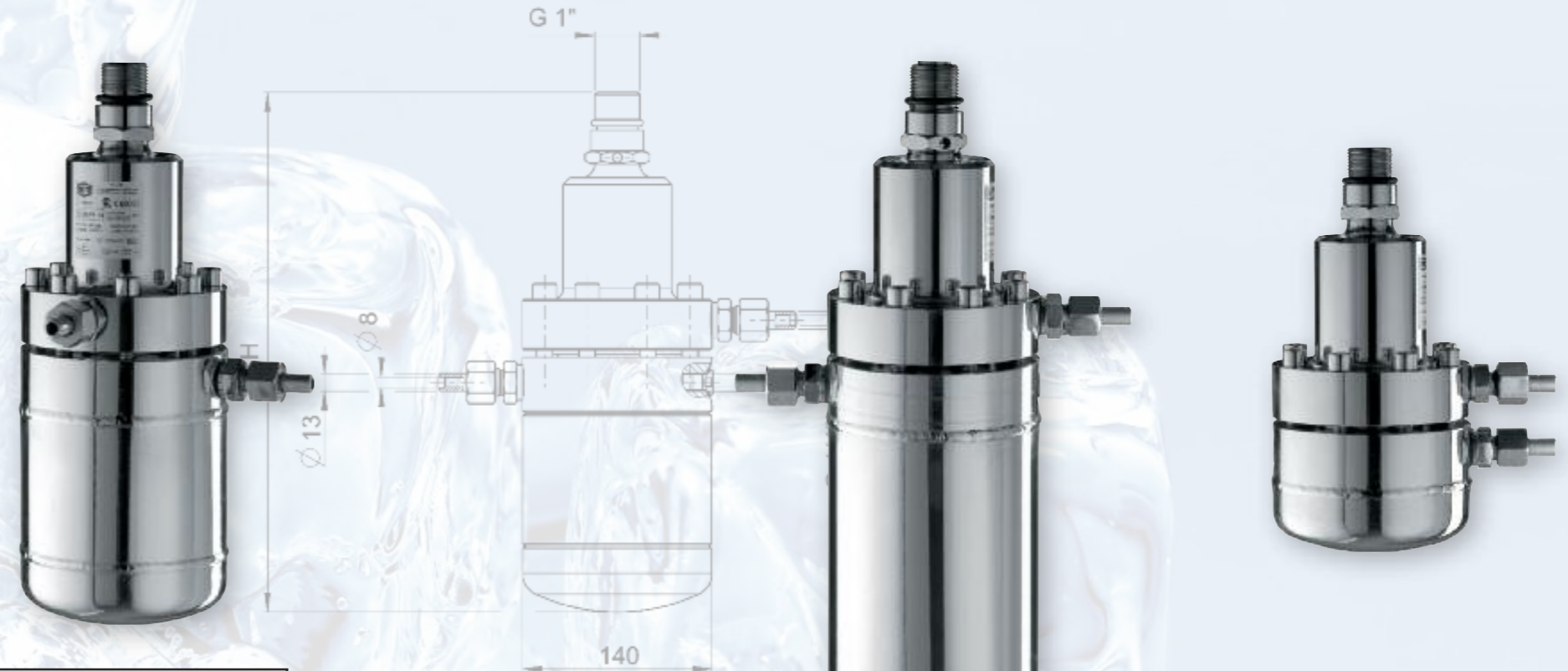
Expensive compressor oil is recycled and returned to the system instead of being wasted by manual drainage and disposal, which is costly in terms of labour, environmental health and safety considerations. Frequent automatic oil draining will keep the surface of heat exchangers free of oil and as such increase heat transfer and overall system efficiency.

Easy handling

Our standardised solution is an enhancement of the well established BDP, bringing a housing that can be opened and a higher design pressure of 40 bars, which makes it suitable for a broader range of applications. Moreover, several control options can be realised.



| | diameter | high | volume | connection | PN _{max} | material | approved refrigerants |
|----------------|----------|------|--------|------------|-------------------|-----------------|-----------------------|
| | [mm] | [mm] | [l] | [DN] | [bar] | | |
| BDP2-03 | 140 | 286 | 0,3 | G1" | 40 | stainless steel | all |
| BDP2-14 | 140 | 384 | 1,4 | G1" | 40 | stainless steel | all |
| BDP2-38 | 140 | 562 | 3,8 | G1" | 40 | stainless steel | all |



Scope of supply

- Threaded connection G1" for refrigerant/oil supply
- Connection with internal thread 1/2" for connection of an oil sensor
- Weld connection Ø 13 mm for hotgas
- Connection Ø 13 mm for refrigerant/oil discharge with integrated check valve for a differential pressure of 3 bar

Accessories

- Stop valve EA32/G1"- I resp. II (steel) or EA40/G1"- I resp. II (SS)
- Threaded cam G1" (steel) or G1" VAI (SS) (for connection of other valve brands)
- Check valve for a differential pressure of 1 bar (for replacement of the standard check valve 3 bar)
- Adapter with gas equalization line (SS, 1.4541) (i.e. for connecting to standpipes)
- WITT regulating valve EE3 or EE6
- WITT flow heat exchanger DWR
- WITT oil filter OF-G1/4"
- Level switch
- Flow sight glass (SS)

Part of your team!

- Design and advice for economically viable solutions
- Over 120 years of experience with refrigeration engineering and natural refrigerants
- Support from start to finish of your projects



High side float regulators
HR & HS



Economizer
ECO



Refrigerant pump
GP



Hermetic refrigerant pump
HRP



Maximum level switch
NGX



Manual oil drainage with
HDB3



Pressure vessel unit
DB



Level switch



Automatic oil return with
BDP and BDP2



Flow heat exchanger
DWR



Oil filter
OF

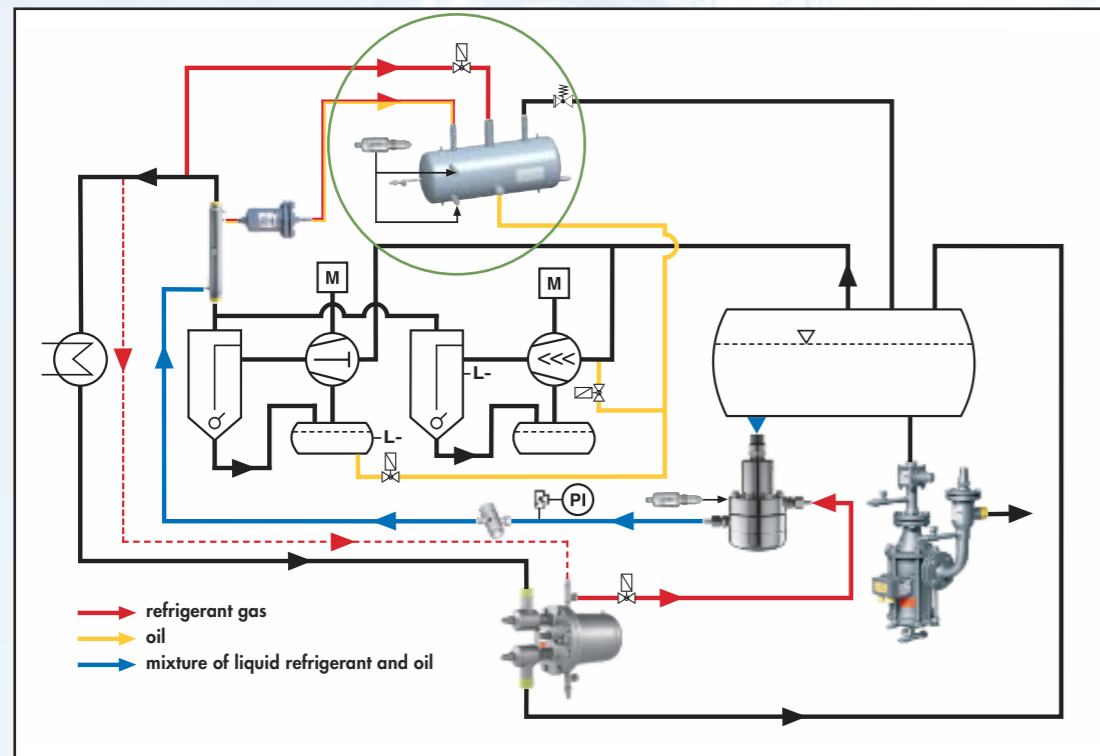


HDB3

Stainless steel oil drain vessel

The WITT HDB can be used as

- an oil drain vessel,
- oil distribution vessel to provide multiple compressors with oil or
- as supplement/additional oil dome for installation of an automatic oil return system.



Easy handling

Our stainless steel HDB does not require maintenance or insulation. It is normally sufficient to use ambient heat to evaporate any liquid refrigerant that accumulates. If this is found to be insufficient, an electrical heater element can be fitted to the thermowell if necessary.

Reduce your planning effort

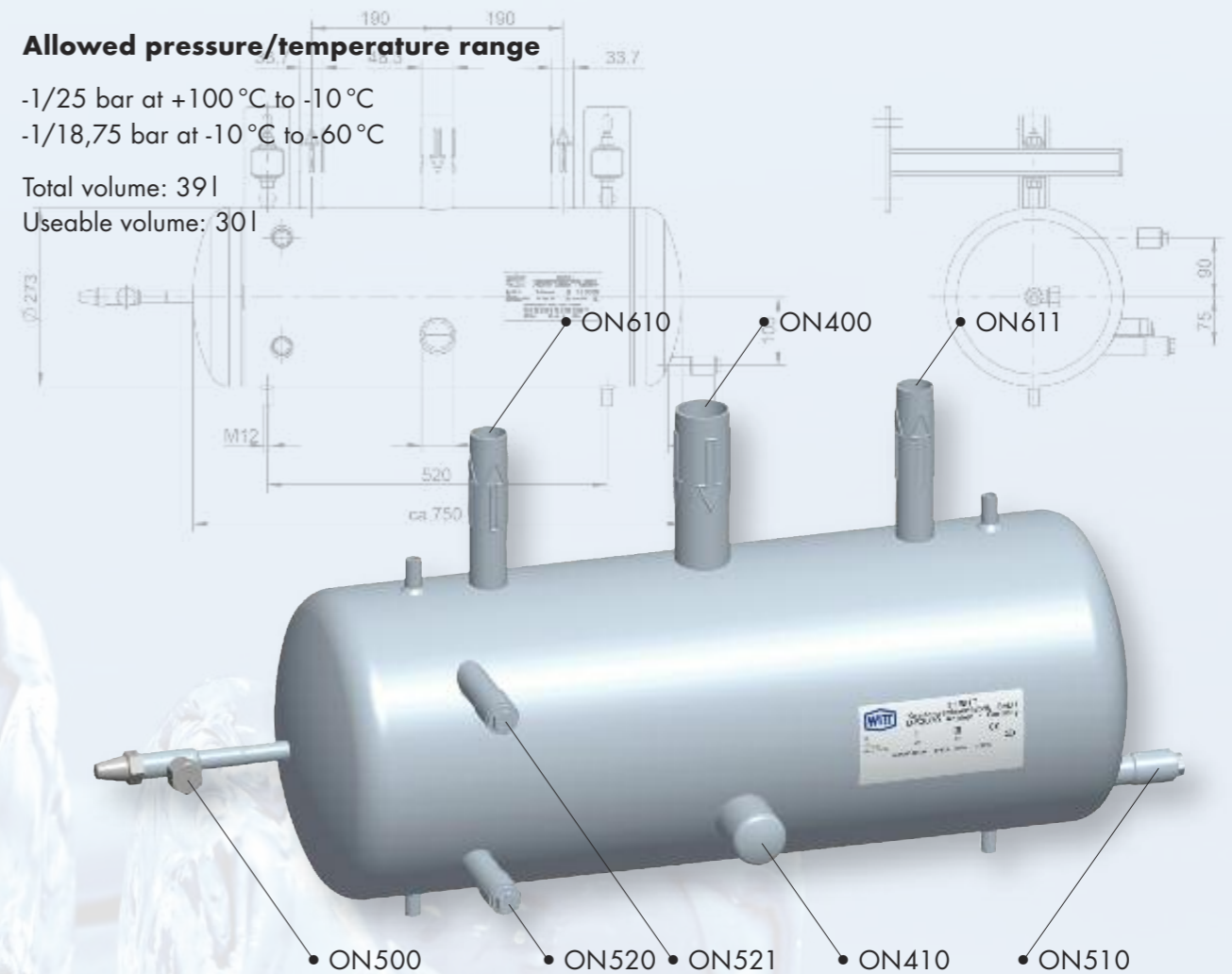
Because of our comprehensive design philosophy the stainless steel HDB has all required nozzles. Connections are provided for min/max-control; with the optional oil sensor a demand-actuated control can be activated. The HDB can be installed suspended from above or supported from below by means of built in threaded mounting pads top & bottom, using standard mounting brackets. The settlement of any dirt or sludge has been taken into account and its subsequent carry-over is mitigated by our design. You can mount the HDB on feet or suspended with standard brackets.



Allowed pressure/temperature range

-1/25 bar at +100 °C to -10 °C
-1/18,75 bar at -10 °C to -60 °C

Total volume: 39 l
Useable volume: 30 l



Scope of supply

- HDB-vessel in stainless steel, according to AD2000 and PED
- Connection DN40 for supply of refrigerant/oil mixture (ON400)
- Connection DN25 for safety valve (ON610)
- Connection DN40 for for installation of an optional BDP or distribution (ON410)
- Connection DN25 for equalisation line/reserve (ON611)
- Connection with thread G $\frac{1}{2}$ "/IG min/max-level + screw plugs G $\frac{1}{2}$ " (ON520/21)
- Oil drain connection with EA10GB/VA
- SSV6 quick acting valve for connection to EA10 (supplied loose)
- Thermowell with G $\frac{1}{2}$ " connection for optional electrical heater element (ON510)
- Mounting sockets M12 top and bottom
- Bracket incl. required fastening material

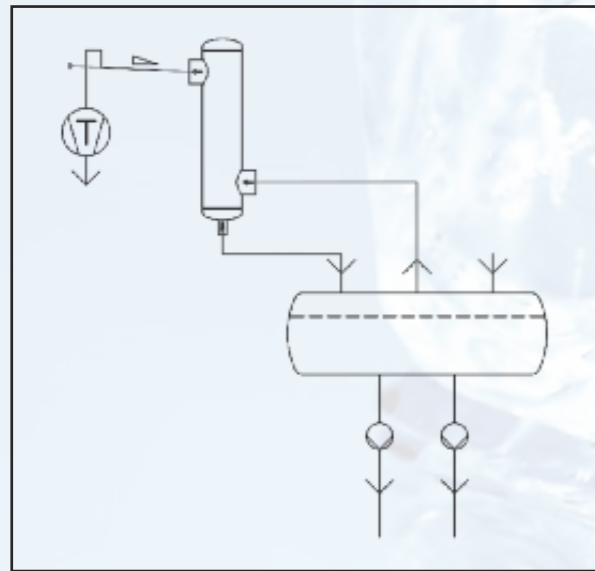
Accessories

- Electrical heater 200 W element
- Oil sensor G $\frac{1}{2}$ " with encased gasket for installation into min/max-connections
- Overflow valve
- BDP for automatic oil return incl. Connection-Valve
- EA10GBL/VA for pressure gauge
- Pressure gauge with stand

HAD

High efficient separator

Our WITT HAD is a unique, high efficiency separator, that allows you increase the refrigerant charge in the existing separator to a maximum. The HAD is ideally suited to the expansion of existing systems or wherever an absolutely dry return line is required (also at dry expansion systems). The installation can usually be integrated in the existing piping layout without great effort.



Easy handling

Positioning the HAD is flexible and offers a compact, space-saving solution that is easily installed and good to insulate.

Economical

No need for expensive expansion of the machinery room size, when using conventional surge drum systems. The increased compressor efficiency leads to an improved (minimised) operational expenditure.

Technically mature

Take advantage of our long-term experience. We guarantee a complete and reliable separation.

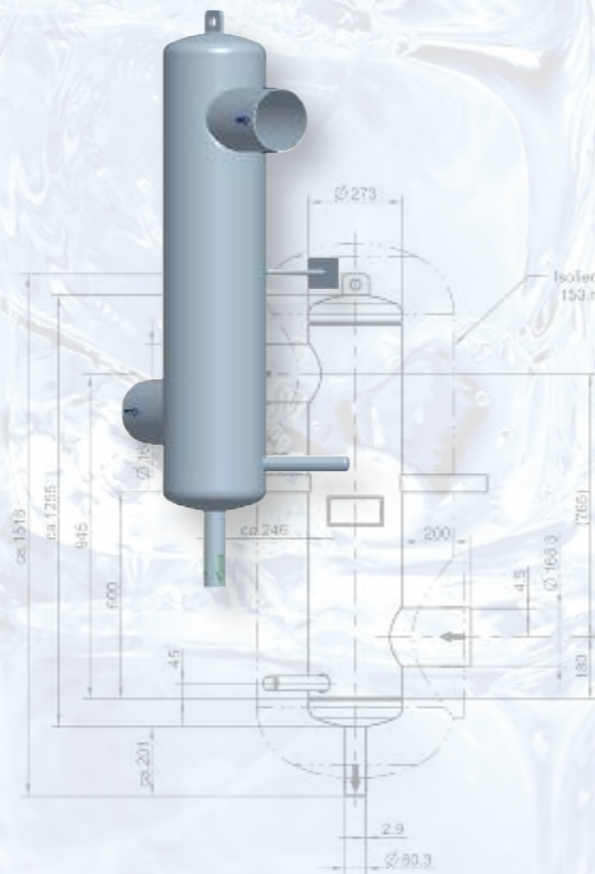
Compact

Retrofitting additional capacity into existing systems is mostly not possible due to space restrictions. The HAD fits in restricted rooms and takes care of reliable refrigerant separation, keeping the suction line absolutely dry. A dry suction line is essential to avoid liquid hammer. Furthermore an optimum performance of the dry suction line will increase the efficiency and lifetime of compressors.

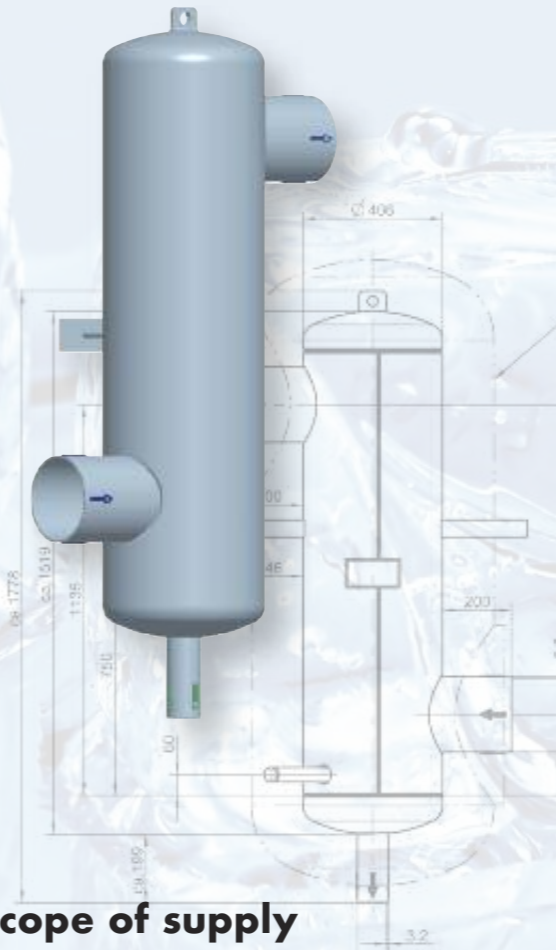
| | capacity* | capacity** | diameter | height | connection | PN _{max} | weight |
|----------------|-----------|------------|----------|--------|------------|-------------------|--------|
| | [kW] | [kW] | [mm] | [mm] | [DN] | [bar] | [kg] |
| HAD 250 | 650 | 320 | 250 | 1520 | 150 | 25 | 90 |
| HAD 400 | 1400 | 690 | 400 | 1780 | 200 | 25 | 200 |
| HAD 550 | 3000 | 1460 | 550 | 2140 | 250 | 25 | 320 |

* Refrigerant: NH₃, T₀ = -10°C, T_c = +35°C ** Refrigerant: NH₃, T₀ = -40°C, T_c = +35°C

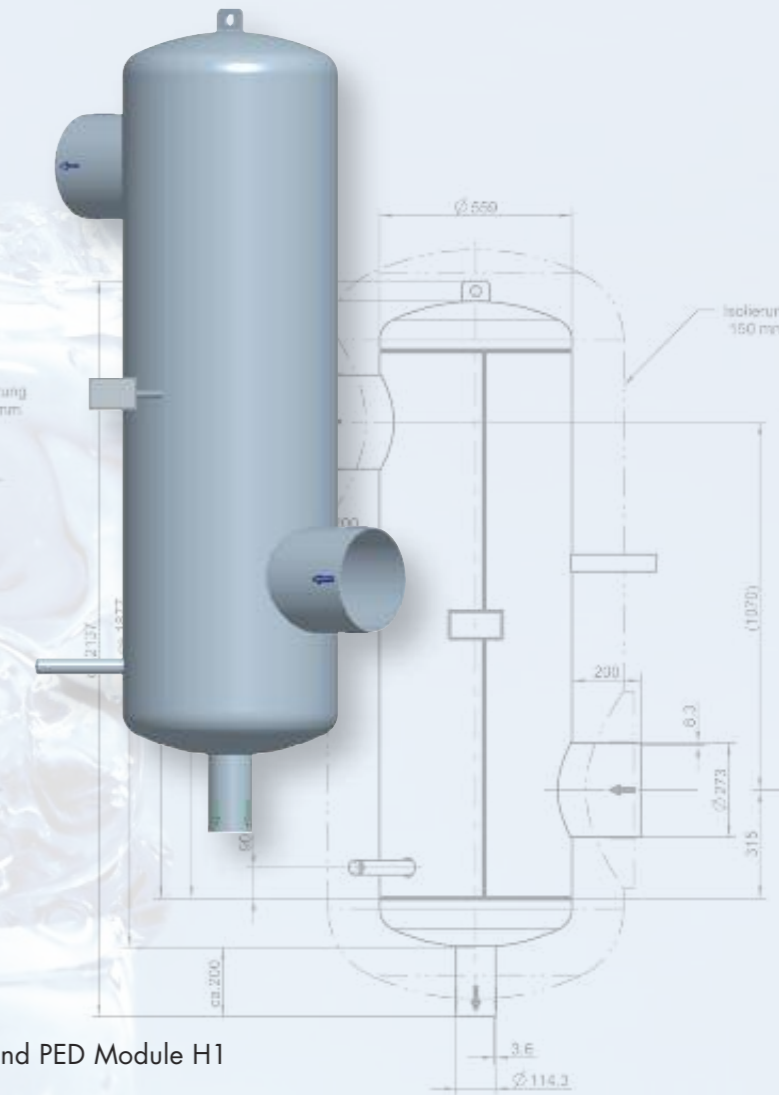
HAD 250



HAD 400

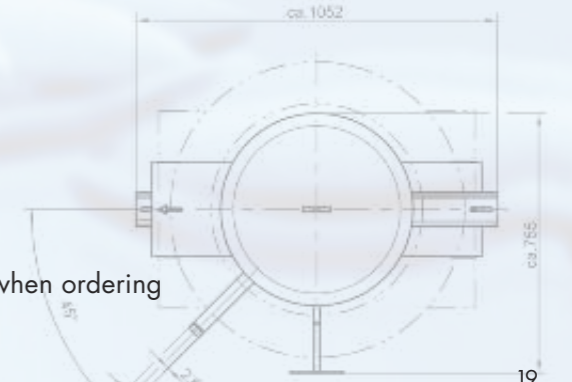
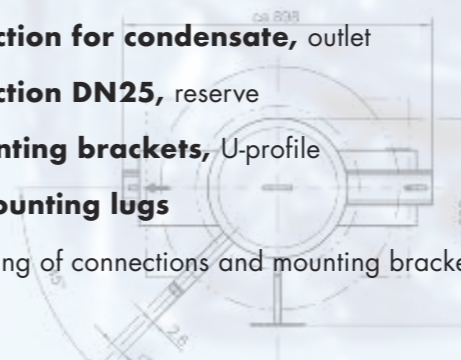
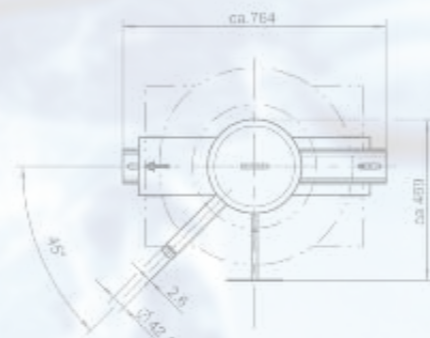


HAD 550



Scope of supply

- **HAD-vessel in steel**, manufactured per AD2000 and PED Module H1
- **Connection for pump return line**, inlet
- **Connection for suction gas**, outlet
- **Connection for condensate**, outlet
- **Connection DN25**, reserve
- **2 mounting brackets**, U-profile
- **Top mounting lugs**
- Positioning of connections and mounting brackets can be selected when ordering



SAV

Standard-separator-evaporator-unit

The SAV is a high-performance unit, build from a semi-welded Alfa-Laval plate evaporator in combination with a WITT high efficiency separator type HAM and necessary accessories.



Reduce your planning effort

With our SAV-units all required dimensions, connections and weights are available in 2D- and 3D-files before you start your design. You receive a ready-made equipment that you do not need to invest any design time in.

Fast delivery time

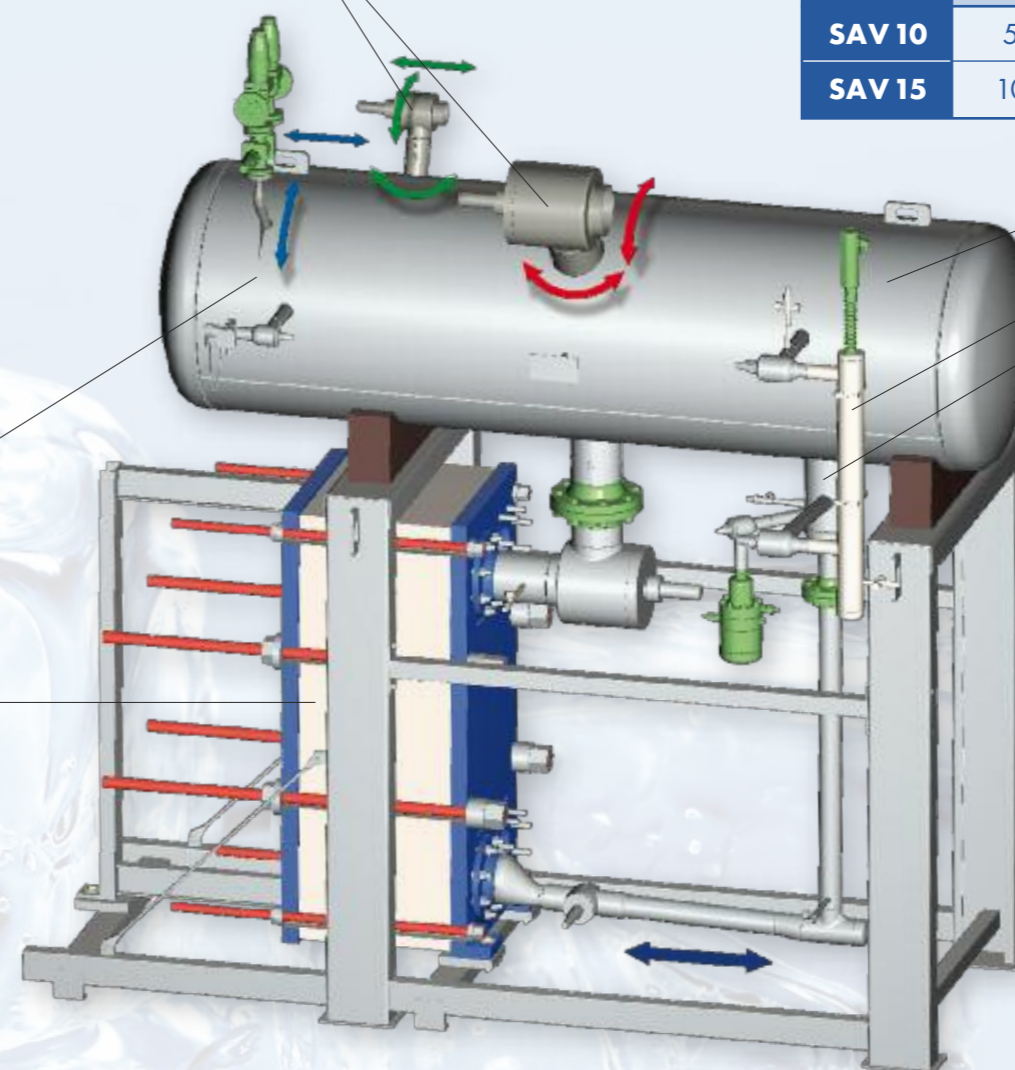
Our fast delivery times of five to six weeks make it possible for you to concentrate on other critical lead items.



WITT overfill-protection

Alfa Laval semi-welded heat exchanger

AWP valves already installed



- WITT integrated high efficiency separator
- WITT stainless steel standpipe
- WITT oil trap

Design options

- flexibel valve position on top of the surge drum
- right execution (plate evaporator to the right, secondary connection at the front)
- left execution (plate evaporator to the left, secondary connection at the back)
- divided execution with flanges (only SAV 15)

Accessories

- PARKER safety valve unit
- RTK level probe
- WITT automatic oil return BDP

Specification

Complete surge drum-evaporator unit in very compact design according to AD200 and pressure vessel directive, module H1

- **Supporting frame in painted steel**
incl. set-up and piping with stop valves before the plate heatexchanger on the refrigerant side
- **High-efficiency separator (WITT)**
type: HAM 660X2330 (SAV 10)
type: HAM 813X2890 (SAV 15)
- **semi-welded plate heatexchanger (Alfa Laval)**
type: M10 RefTight (SAV 10)
type: MK15 RefTight (SAV 15)
- **Standpipe in stainless steel with G1" connection and stop valves**
for optional level sensor, i.e. RTK
- **liquid-carry-over protection type: NGX (WITT)**
with stop valve DN32

- **Compressor surge valve type: AVR-angle (AWP)**
DN125 (SAV 10), DN150 (SAV 15)
- **Liquid injection valve type: AVR-angle (AWP)**
DN50 (SAV 10), DN65 (SAV 15)
- **Connecting flange type: F DN15**
for optional dual safety valve unit
- **Pressure gauge-/pressure sensor-/service-connection**
2x as dual service valves at the standpipe
- **Oil-dome with valve DN 32**
for optional automatic oil return, i.e. BDP
- **2 valves for manual oil draining EA10**
At inlet of the plate heat exchanger and oil trap
- **1 service valve EA10**
Evaporator return line

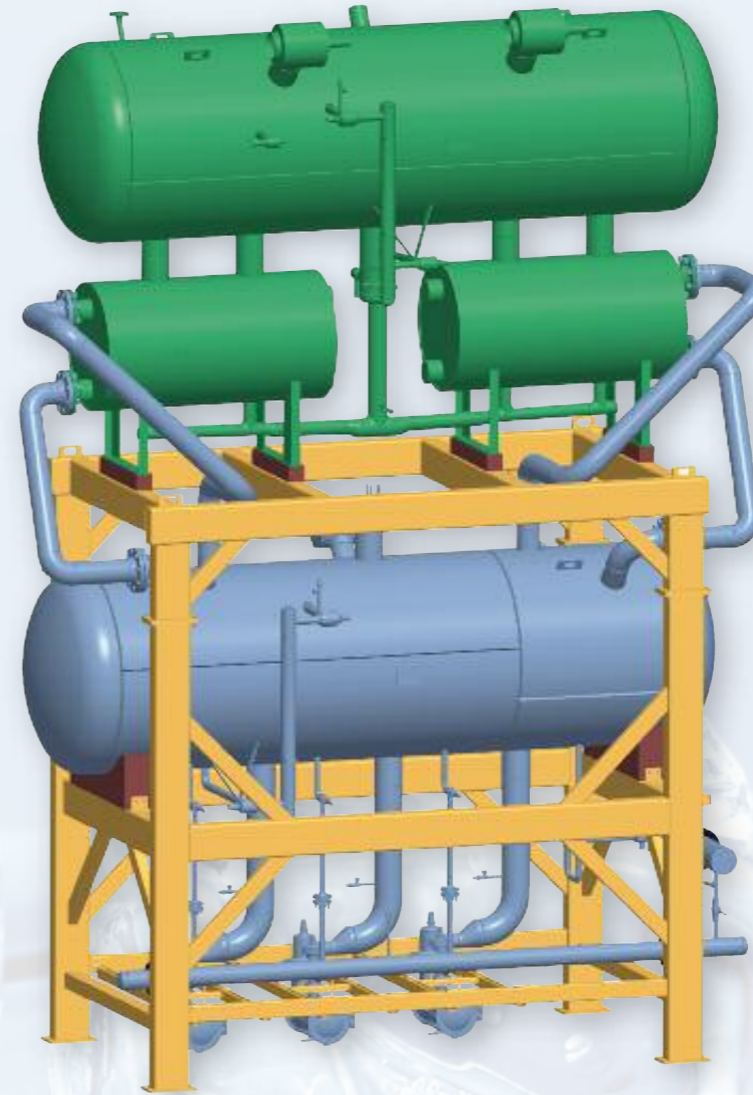
*Performance data: ammonia/ethylenglycol T₀ = -10°C, -7°C/-3°C, delta Tm=3K

| | capacity * | length | diameter | height |
|--------|------------|--------|----------|--------|
| | [kW] | [mm] | [mm] | [mm] |
| SAV 10 | 500 | 2562 | 1297 | 2379 |
| SAV 15 | 1000 | 3245 | 1529 | 2985 |

DB

Pressure vessel units

According to your individual requirements, practical designs engineered and built using our decades of experience.



Function and performance guarantee

We offer you a full thermodynamic performance guarantee by taking your refrigeration data and applying our expertise.

Easy projecting

We manufacture the entire pressure vessel unit using prefabricated components to European legal requirements. Each pressure vessel unit passes an acceptance test according to PED and is delivered with the necessary CE documentation: this includes required x-ray testing, pressure-testing and final acceptance check before delivery. You just need to connect your pipework and electrical services on site.

All common refrigerants possible

With our selection program we are not only taking care of ammonia and carbon dioxide, we can offer our well-designed pressure vessel units for any common refrigerant.



Scope of supply

We can install nearly all components required for a pressure vessel unit and directly integrate further components:

- gasketed plate heat exchangers from Alfa Laval, or as well Thermowave
- fully welded plate heat exchangers, i.e. Vahterus
- Standard WITT stainless steel standpipes
- WITT oil recovery system
- WITT maximum level limitation NGX
- Stop or safety valves, i.e. AWP or Parker Herl
- electronic level indicators, i.e. RTK
- sophisticated pumping stations
- complete cascade systems
- pre-piped components
- complete insulation
- and much more!





Accessories

TH. WITT Kältemaschinenfabrik offers a range of high quality service components for easy and safe installation on site. These components have been designed as a result of our extensive contracting experience, facilitate installation, reduce cost and increase work safety.

Valves

1. 4111.AA2K7F-EA 10 GB/D-VA
2. 4111.AA2K1F-EA 10 GB-VA
3. 4111.AA2KAF-EA 10 GN-VA
4. 4111.AA2K3F-EA 10 GB/L-VA
5. 4111.AA2BQF-EA 10 GÜ/GB*
6. 4111.AA2A0F-EA 10 S*
7. 4111.AA2ANF-EA 10 S/L*
8. 4111.AA2B1F-EA 10 GB*
9. 4111.AA2B3F-EA 10 GB/L*
10. 4111.AA2BAF-EA 10 GN*

Accessories for valves

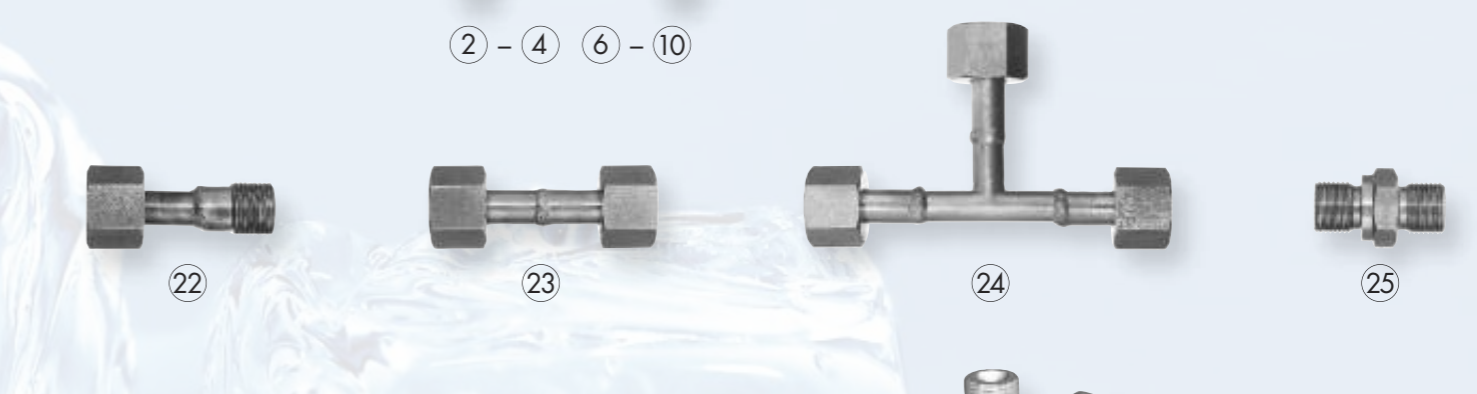
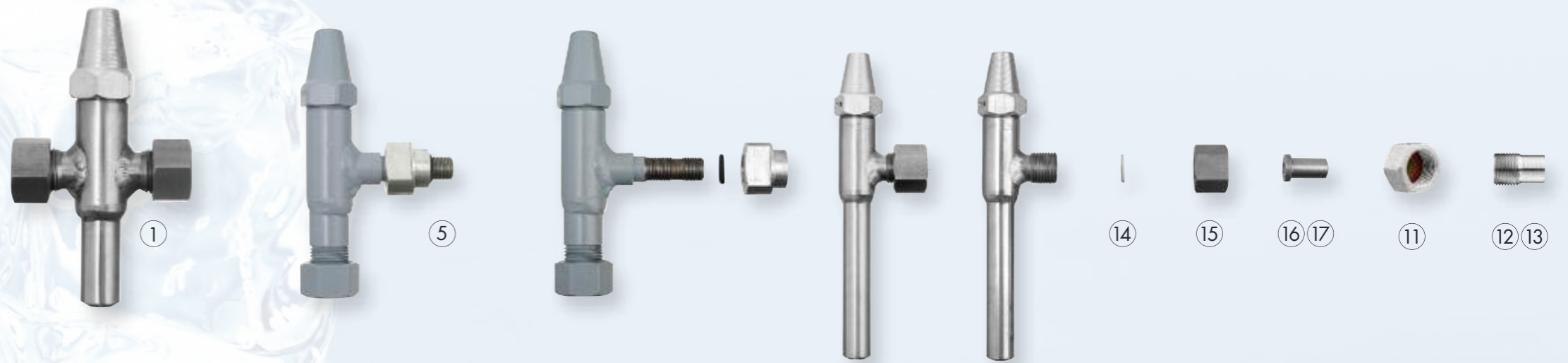
11. 6436.ABOD00-blank nut end G $\frac{1}{2}$ "-VA
12. 6434.AHD000-connection nipple G $\frac{1}{2}$ "-steel
13. 6434.AFD000-connection nipple G $\frac{1}{2}$ "-VA
14. 5632.1A9AHK-flat joint 10/18x2
15. 6436.ACOD00-swivel nut G $\frac{1}{2}$ "-VA
16. 6424.AH0001-welding nipple 6/13-steel
17. 6424.AF0001-welding nipple 8/13-VA

Pressure gauge device holder

18. 4591.000007-Typ A-G $\frac{1}{2}$ "**
19. 4591.000008-Typ B-G $\frac{1}{2}$ "**
20. 4591.000009-Typ C-G $\frac{1}{2}$ "/W21,8x1/14**
21. 4591.000010-Typ D-G $\frac{1}{2}$ "**
22. 4591.000014-Typ E-G $\frac{1}{2}$ "/W21,8x1/14
23. 4591.000011-Typ A-G $\frac{1}{2}$ "-VA
24. 4419.000001-Typ T-G $\frac{1}{2}$ "-VA
25. 4591.000100-Typ GEV-G $\frac{1}{2}$ "-VA

Sight glasses

26. 4551.AA3100-plain sight glass-VA
27. 4551.AA3200-grooved sight glass-VA
28. 4551.AA3101-plain sight glass-VA - extended
29. 4551.AA3201-grooved sight glass-VA - extended
30. 4551.AG3001-conversion kit for extended sight glass-VA
31. 4551.AH3100-flow sight glass-VA



Suction manometer

32. NH $_3$ -4541.000001-12,5 bar
33. NH $_3$ -4541.000003-25,0 bar

Difference pressure manometer

34. 4541.000000/1-25 bar-NH $_3$
35. 4541.000401/1-40 bar-CO $_2$

Maximum level switch NGX

36. 4651.000013-25,0 bar
37. 4651.000113-40,0 bar

Oil recovery system

38. 4441.000001- oil filter
39. 3341.000001-11- heat exchanger DWR 25,0 bar
40. 3341.000106 - heat exchanger DWR 40,0 bar
41. 4651.165102 - oil sensor

Type names

- S: 17,2x2,3 welding connection
- E: 10 x 1 welding connection ermeto
- G: G $\frac{1}{2}$ " ext. thread
- B: blank nut end
- N: nut & nipple end
- G1": stud with int. thread G 1"
- GÜ: stud with ext. thread G $\frac{1}{4}$ " and swivel nut
- GB: with ext. thread G $\frac{1}{2}$ " and blank nut end
- GB/D: with 2 x ext. thread G $\frac{1}{2}$ " and blank nut end
- VA: stainless steel

* painted; ** incl. flat joint 10/18x2



High-quality refrigeration components

- **HRP** Hermetic refrigerant pumps
- **GP** Open refrigerant pumps
- **HR & HS** High side float regulators
- **WP3HR** High side float regulators for heat pumps up to 65 bar
- **ECO** Economizer
- **BDP** Automatic oil recovery
- **NGX** Maximum level switch
- **HDB 3** Stainless steel oil drain vessel
- **HAD** High efficient separator
- Pumping stations
- **SAV** Standard-separator-evaporator-unit
- **DB** Pressure vessel units
- **NH₃/CO₂** Cascades



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