DAS HERZ DER FRISCHE

WATER COOLED

# SHELL AND TUBE CONDENSERS

DP-200-6 EN



NEW MODELS

HFO READY

R290 PROPANE

MARINE

## Water cooled shell and tube condensers and discharge gas desuperheaters

### Two related product series, many applications

The water cooled shell and tube condensers from BITZER have been a standard in refrigeration and air conditioning technology for years due to their well-known reliability and performance. The K series consists of two designs and thus meets the requirements of a wide variety of applications. The unique brazing process between tubes and tube sheets ensures excellent vibration stability and high safety in terms of tightness.

### New models

The new models K6703.(B) and K8503.(B) in standard and seawater design extend the condenser capacity to the range above 1000 kW.

### Standard design for normal water

The heat exchanger tubes are characterised by high material thickness; the tube sheets are plastic-coated. This series is suitable for all types of coolants that do not attack copper.

### Seawater resistant design

The K..B models are proven over decades in all maritime applications. They are extremely corrosion-resistant to seawater. The low-fouling profile tubes and the plastic coating of tube sheets and coolant reversing covers make them the first choice. On models up to K813HB, liquid refrigerant is drained through an dip tube and, from K1053HB on, through two refrigerant outlets.

### Discharge gas desuperheaters

Construction sizes K1053H to K4803T are also available in the standard design for normal water as discharge gas desuperheaters. All that is required is to order the optional second refrigerant outlet.

MARINE

Contents Page



### Explanation of model designation

Example

**K** 1053 H B – 4

K = Shell and tube condenser

K **1053** H B – 4

Code

K 1053 **H** B – 4

Fixing brackets

N = bottom

H = bottom and top for single compressor assembly (semi-hermetic)

T = bottom and top for single and tandem compressor assembly

K 1053 H **B** – 4

Seawater resistant design

K 1053 H B – **4**

Number of coolant passes

## Construction features

// For all common refrigerants and coolants

### Refrigerant side

// Finned high performance tubes

// Refrigerant connections: pipe thread or flange

- inlet:
  up to K813H(B) Rotalock adaptor
  from K1053H(B) brazing bush with flange
- outlet: Shut-off valve
- various adaptor and valve combinations optional
- Discharge gas desuperheater special version:
  Connection for second refrigerant outlet from K1053H to K4803T

// Connection for pressure relief valve:

- internal thread: 3/8-18 NPTF
- external thread 1 1/4-12 UNF
- various adaptors optional

// Sight glass with reflective grooves as standard

### Coolant side

// Tubes with low-fouling profile inside

// Coolant connections: pipe thread or flange

// Coolant drain from K573H(B)

// Additional vent plug from K3803T(B)

### Protective charge

// 0,2 .. 0,5 bar nitrogen

### Strong construction for easy maintenance

// High safety in terms of tightness:
Heat exchanger tubes are brazed into tube sheets.

// Easy to clean:
Both coolant reversing covers can be removed.

// Flexible:
Coolant reversing covers of connection and reversing end are exchangeable.

// Fixing brackets

- fixing brackets at the bottom for stable installation
- models H and T: additional fixing brackets on top for space-saving compressor installation
- fitting fixing plates and fixing rails optionally available

### Materials

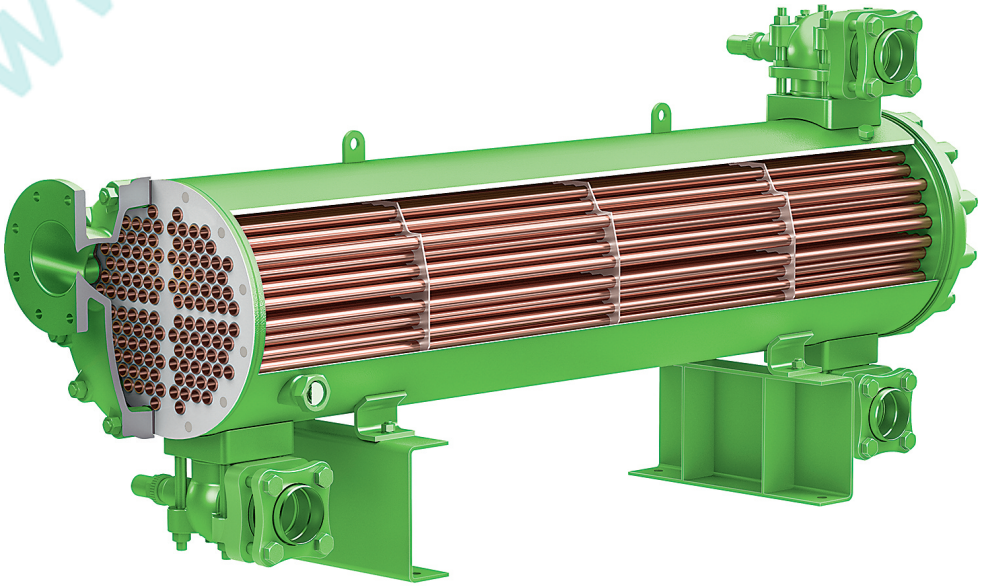
// Heat exchanger tubes

- standard design: Copper (ISO code Cu-DHP; UNS code C12200)
- seawater resistant design: copper-nickel 90/10 (ISO code CuNi10Fe1Mn; UNS code C70600)

// Shells: carbon steel P265GH

// Tube sheets: carbon steel P265GH, plastic-coated

// Coolant reversing covers: cast iron EN-GJL-250 or carbon steel P265GH, plastic-coated in the seawater resistant design



## Performance Data/Technical Data

| Model | Performance data for 2-pass design | | | | | Vessel volume | | Maximum refrigerant charge③ | | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Condenser capacity① | Nominal coolant flow rate | Pressure drop | Maximum coolant flow② | Minimum coolant flow | Refrigerant side | Coolant side | R448A R449A | R404A | R290 | |
| | kW | m³/h | kPa | m³/h | m³/h | dm³ | dm³ | kg | kg | kg | kg |
| **Standard design** | | | | | | | | | | | |
| **K033.** | 4.0 | 0.58 | 2 | 1.38 | 0.43 | 3.8 | 0.4 | 3.8 | 3.6 | 1.7 | 10 |
| **K073H** | 7.3 | 1.08 | 2 | 2.75 | 0.85 | 3.4 | 0.7 | 3.4 | 3.3 | 1.5 | 11 |
| **K123H** | 14.8 | 2.14 | 10 | 2.75 | 0.85 | 5.1 | 0.9 | 5.1 | 4.9 | 2,3 | 14 |
| **K203H** | 20.6 | 2.97 | 8 | 6.42 | 1.28 | 11.8 | 1.8 | 11.9 | 11.3 | 5.3 | 25 |
| **K283H** | 30.3 | 4.37 | 10 | 8.56 | 1.71 | 11.3 | 2.1 | 11.4 | 10.9 | 5.1 | 27 |
| **K373H** | 52.3 | 7.55 | 23 | 10.71 | 2.14 | 14.5 | 3.1 | 14.6 | 13.9 | 6.5 | 35 |
| **K573H** | 72.0 | 10.39 | 12 | 17.83 | 3.57 | 29.4 | 5.8 | 29.7 | 28.3 | 13.2 | 59 |
| **K813H** | 91.7 | 13.23 | 12 | 22.7 | 4.54 | 27.7 | 7.0 | 27.9 | 26.6 | 12.5 | 62 |
| **K1053H** | 146.7 | 21.2 | 36 | 22.7 | 4.54 | 40.0 | 9.3 | 40.4 | 38.4 | 18.0 | 85 |
| **K1353T** | 187.8 | 27.1 | 36 | 29.2 | 5.84 | 37.0 | 11.5 | 37.3 | 35.6 | 16.7 | 9 |
| **K1973T** | 269 | 38.9 | 35 | 42.2 | 8.43 | 76.0 | 18.8 | 76.7 | 73.0 | 34.2 | 195 |
| **K2923T** | 387 | 55.9 | 34 | 61.5 | 12.65 | 67.0 | 25.0 | 67.6 | 64.3 | 30.2 | 230 |
| **K3803T** | 511 | 73.7 | 34 | 81.1 | 16.23 | 108.0 | 37.4 | 109.0 | 103.7 | 48.6 | 335 |
| **K4803T** | 657 | 94.9 | 35 | 103.9 | 20.8 | 98.0 | 45.0 | 98.9 | 94.1 | 44.1 | 360 |
| **K6703.** | 811 | 117 | 26 | 146 | 29.0 | 201 | 74.2 | 202.8 | 193.0 | 90.5 | 600 |
| **K8503.** | 1025 | 148 | 26 | 185 | 37.0 | 181 | 88.1 | 182.6 | 173.8 | 81.5 | 650 |
| **Seawater resistant design** | | | | | | | | | | | |
| **K033.B** | 3.9 | 1.20 | 9 | 1.38 | 0.43 | 3.8 | 0.4 | 3.8 | 3.6 | 1.7 | 11 |
| **K073HB** | 7.8 | 2.60 | 11 | 2.75 | 0.85 | 3.4 | 0.7 | 3.4 | 3.3 | 1.5 | 12 |
| **K123HB** | 11.1 | 2.60 | 14 | 2.75 | 0.85 | 5.1 | 0.9 | 5.1 | 4.9 | 2.3 | 18 |
| **K203HB** | 16.7 | 4.63 | 20 | 5.14 | 1.28 | 11.8 | 1.8 | 11.9 | 11.3 | 5.3 | 29 |
| **K283HB** | 23.3 | 6.15 | 19 | 6.85 | 1.71 | 11.3 | 2.1 | 11.4 | 10.9 | 5.1 | 30 |
| **K373HB** | 36.0 | 7.70 | 24 | 8.55 | 2.14 | 14.5 | 3.1 | 14.6 | 13.9 | 6.5 | 38 |
| **K573HB** | 58.2 | 13.16 | 18 | 14.65 | 3.57 | 29.4 | 5.8 | 29,.7 | 28.3 | 13.2 | 66 |
| **K813HB** | 74.4 | 16.82 | 18 | 18.70 | 4.54 | 27.7 | 7.0 | 27.9 | 26.6 | 12.5 | 68 |
| **K1053HB** | 98.5 | 16,82 | 24 | 18.70 | 4.54 | 40.0 | 9.3 | 40.4 | 38.4 | 18.0 | 94 |
| **K1353TB** | 125.9 | 21.6 | 23 | 23.95 | 5.84 | 37.0 | 11.5 | 37.3 | 35.6 | 16.7 | 98 |
| **K1973TB** | 182 | 31.2 | 24 | 34.6 | 8.43 | 76.0 | 18.8 | 76.7 | 73.0 | 34.2 | 200 |
| **K2923TB** | 263 | 45.5 | 23 | 50.6 | 12.65 | 67.0 | 25.0 | 67.6 | 64.3 | 30.2 | 235 |
| **K3803TB** | 347 | 59.9 | 23 | 66.7 | 16.23 | 108.0 | 37.4 | 109.0 | 103.7 | 48.6 | 340 |
| **K4803TB** | 444 | 76.8 | 23 | 85.4 | 20.8 | 98.0 | 45.0 | 98.9 | 94.1 | 44.1 | 365 |
| **K6703.B** | 591 | 108 | 23 | 120 | 29.0 | 201 | 74.4 | 202.4 | 193.0 | 90.5 | 620 |
| **K8503.B** | 751 | 137 | 23 | 152 | 37.0 | 181 | 91.3 | 182.6 | 173.8 | 81.5 | 670 |

① The performance data are based on:
Refrigerant: R134a
2-pass cooling
Refrigerant inlet temperature: 90°C
Fouling factor on the refrigerant side: 0.00004 m²K/W
**Standard design**
Condensing temperature: 40°C
Coolant inlet temperature: 29°C
**Seawater resistant design**
Condensing temperature: 35°C
Coolant inlet temperature: 25°C
The condenser capacity is strongly influenced by system operating conditions.
For performance data for other refrigerants and coolant, see BITZER SOFTWARE.

② These specifications take into account a maximum flow velocity of 2.0 m/s for the seawater resistant design.
This is necessary for this design to protect the tube profile from wear.

③ At 20°C liquid temperature and 90% vessel volume

Individual performance data see BITZER SOFTWARE.

## Maximum allowable pressure

// Refrigerant side: 33 bar / -10 to 120°C

// Coolant side: 10 bar / -10 to 95°C
Temperatures below 4°C only with anti-freeze agent

These data apply to CE approval in accordance with the EU Pressure Equipment Directive. They may deviate depending on the approval scheme.

## Approvals

### Stationary applications

// CE: EU Pressure Equipment Directive 2014/68/EU

// EAC with Declaration of Conformity

// SELO – China Manufacturing License

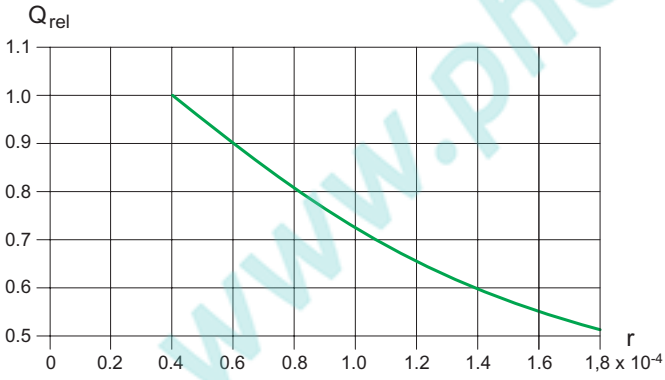
### Marine applications

// Bureau Veritas
(BV Rules for the Classification of Steel Ships)

// DNV-GL
(GL Rules – Ship Technology – Seagoing Ships)

// Russian Maritime Register of Shipping (RS Rules for the Classification and Construction of Sea-going Ships)

## Influence of the fouling factor




The calculation of condenser performance in the BITZER SOFTWARE does include a fouling factor. The default value is representing clean fresh water. For seawater cooling, please select an appropriate fouling factor or alternatively select the condenser with 10% to 20% spare capacity.

BITZER SOFTWARE

The BITZER SOFTWARE is available in many languages as a download for Windows as well as a web-based version. It is compatible with any browser and is always up to date. The program is also suitable for tablets and smartphones.

The BITZER SOFTWARE covers:

// Performance data for all common refrigerants under freely selectable operating conditions

// All relevant technical data

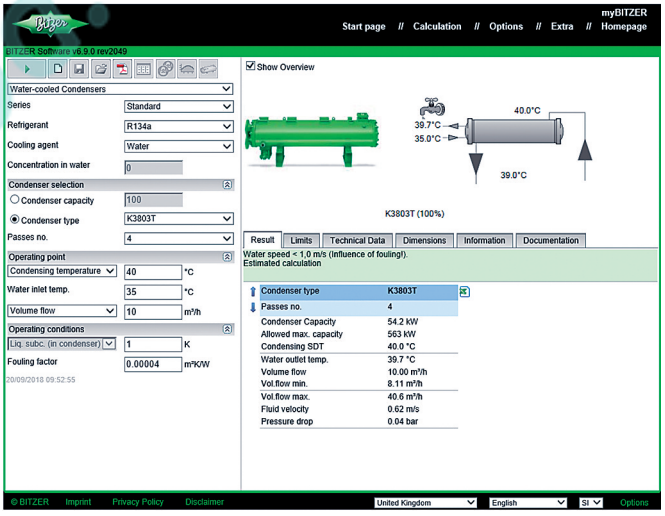
// Calculation results and individually designed performance tables for condensers

// Accessories for the design of compound systems

// All relevant technical documents

// More BITZER products

bitzer-software.com



## For all common refrigerants and coolants

### Permitted refrigerants

// R134a
// R22
// R290, R1270
// R1234yf
// R1234ze(E)
// R404A
// R507A
// R407C
// R448A
// R449A
// R450A
// R513A

Other refrigerants and refrigerant blends with temperature glide >2 K upon request.

### Permitted coolants

// Industrial water
// Fresh water
// Process water
// Seawater
// Ethylene glycol/water
// Propylene glycol/water
// $CaCl_2$ in water
// Tyxofit 1.15 in water

As a service, BITZER checks the suitability of the tube materials on presentation of a water analysis. The basis for the check is the current state of experience. However, due to the complex conditions, an absolute warranty of corrosion resistance cannot be given.

For corrosive coolants, select the seawater resistant design.

Overdosing the anti-freeze agent can lead to increased pressure drops and poorer heat transfer properties.

HFO READY

HFO BLEND READY

PROPANE

## New refrigerants with low warming potential

All shell and tube condensers can be used with new low greenhouse warming potential (GWP) refrigerants. These refrigerants are important tools to reach the emission reductions of the EU Regulation 517/2014 and similar scenarios clearly decided worldwide. Their use is in line with our innovation targets.

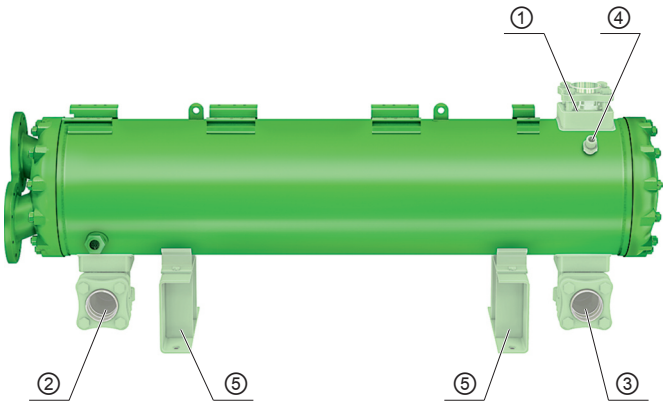
The unsaturated fluorinated hydrocarbons (HFO) R1234yf and R1234ze(E), two variants of tetrafluoropropene, play a central role in this. They can be used as pure substances or as components of blends.

The pure substances R1234yf and R1234ze(E) are classified as flammable in A2L according to ISO817. All shell and tube condensers can be used with the environmentally friendly refrigerants R290 propane and R1270 propene.

For flammable refrigerants, the risk assessment for the system has to be made reflecting the flammability and it must be constructed in accordance with national or local regulations. If the risk assessment classifies for the installation area as an explosion protection zone, the shell and tube condensers can not be used. Consultation with BITZER is absolutely necessary.

Further information on these refrigerants can be found in Refrigerant Report A-501.

## Customised versions




Individual components of each shell and tube condenser can be delivered in customised positions if necessary.

① Refrigerant inlet

② Refrigerant outlet

③ Additional refrigerant outlet according to model

④ Connection for the pressure relief valve

⑤ Lower fixing brackets

### Matching accessories

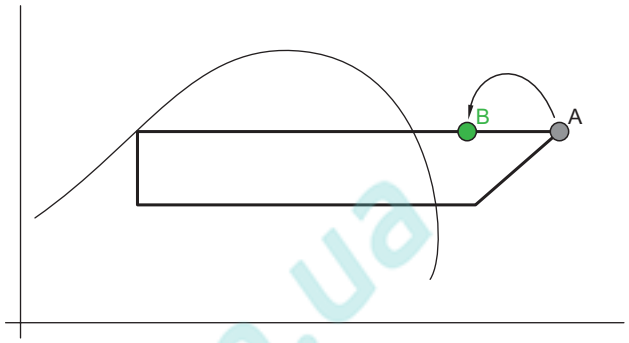
// Fixing plates for compressors

// Fixing rails

// Adaptor for connecting the pressure relief valve

## Discharge gas desuperheaters

Discharge gas desuperheaters increase system efficiency. They lower the temperature of the refrigerant discharged by the compressor, as shown in the figure from A to B.




The amount of heat extracted can be used advantageously in a heat recovery system, since it is present at a higher temperature.

Discharge gas desuperheaters are always useful if the discharge gas is too hot for the entire process. A discharge gas desuperheater reduces the discharge gas temperature.

In 2-stage refrigeration systems, for example, this makes sense if the discharge gas in the low temperature stage is too hot to be efficiently compressed further directly in the medium temperature stage.

Discharge gas desuperheaters increase the efficiency of the medium temperature stage and at the same time ensure sufficient motor cooling.

All BITZER shell and tube condensers with a second refrigerant outlet downwards: K123HB .. K8503TB and the special versions with 2nd refrigerant outlet of K1053H .. K4803T can be used as discharge gas desuperheater.

### Additional refrigerant outlet

| Model | **K033NB<br>K073HB** | **K123HB<br>K203HB<br>K283HB** | **K373HB<br>K573HB<br>K813HB<br>K1053H*<br>K1053HB<br>K1353T*<br>K1353TB** | **K1973T*<br>K1973TB** | **K2923T*<br>K2923TB** | **K3803T*<br>K3803TB<br>K4803T*<br>K4803TB** | **K6703TB<br>K8503TB** |
|---|---|---|---|---|---|---|---|
| Additional refrigerant outlet | – | $1^1/_4$-12 UNF | $1^3/_4$-12 UNF | $2^1/_4$-12 UNF | DN50 | DN80 | DN80 |

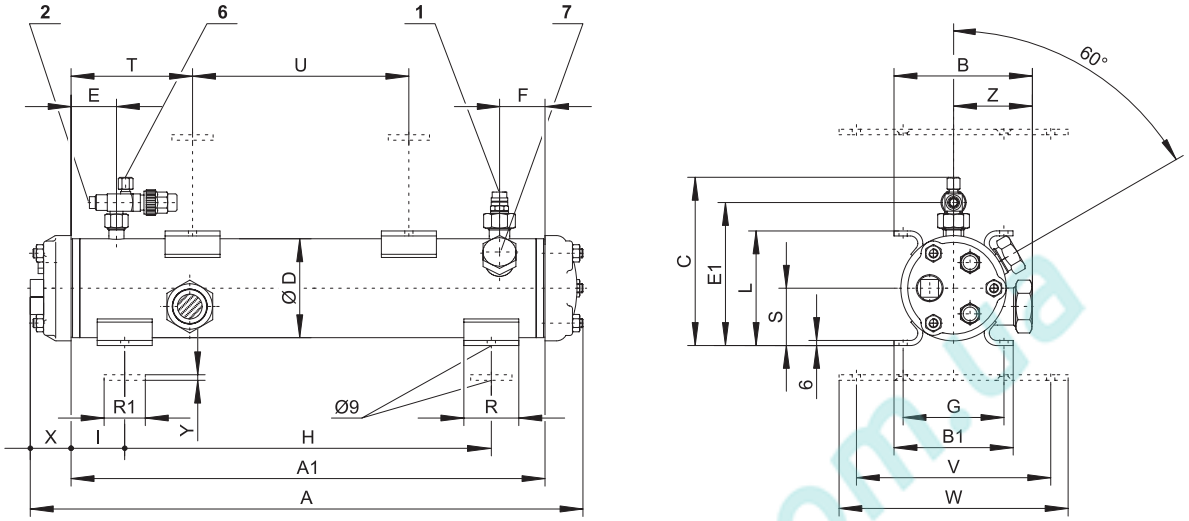
The additional refrigerant outlet is equipped with a sealing nut or blind flange. Valve available as accessory – see Price List.

* Special design

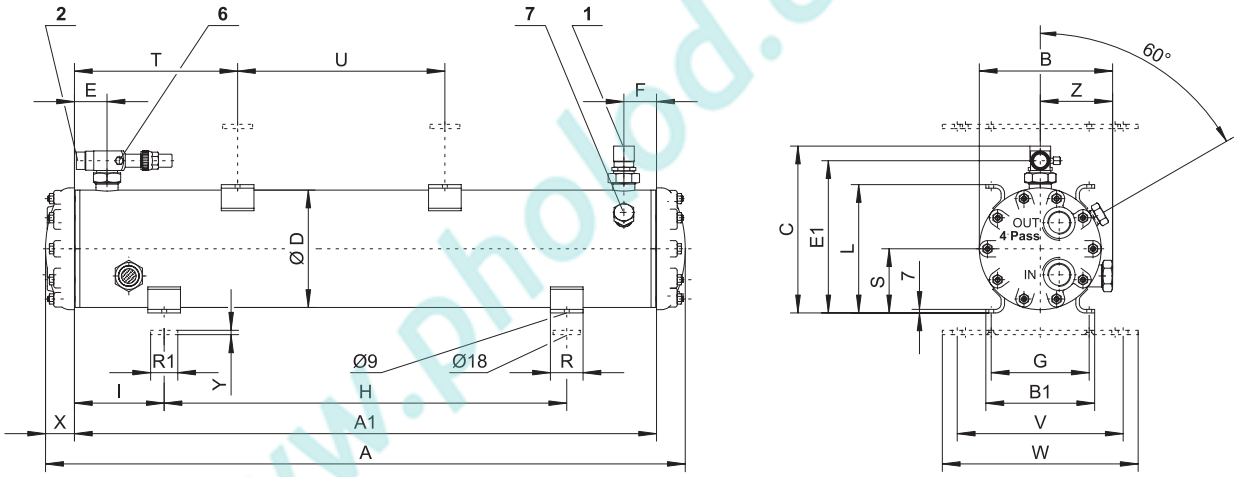
## Standard design

### Dimensional drawings

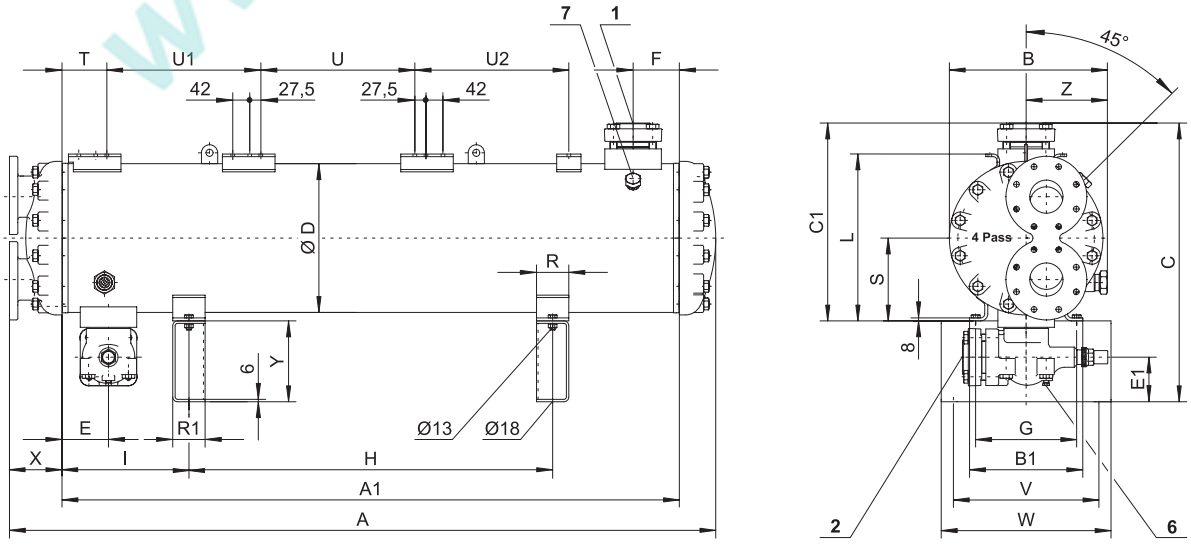
**K033N**
**K033H**
**K073H**
**K123H**




**K203H**
**K283H**
**K373H**
**K573H**
**K813H**
**K1053H**




**K1353T**
**K1973T**
**K2923T**
**K3803T**
**K4803T**
**K6703.**
**K8503.**



## Standard design

### Dimensions

| Model | Dimensions in mm | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| –Pass | A | A1 | B | B1 | C | C1 | ØD | E | E1 | F | G | H | I |
| **K033N** | 606 | 517 | 152 | 130 | 184 | – | 108 | 50 | 154 | 50 | 110 | 400 | 58 |
| **K033H** | 606 | 517 | 152 | 130 | 184 | – | 108 | 50 | 154 | 50 | 110 | 400 | 58 |
| **K073H** | 606 | 517 | 152 | 130 | 184 | – | 108 | 50 | 154 | 50 | 110 | 400 | 58 |
| **K123H** | 856 | 767 | 152 | 130 | 172 | – | 108 | 60 | 154 | 60 | 110 | 400 | 184 |
| **K203H** | 860 | 767 | 197 | 130 | 234 | – | 159 | 60 | 213 | 60 | 110 | 400 | 184 |
| **K283H** | 860 | 767 | 197 | 130 | 242 | – | 159 | 60 | 223 | 60 | 110 | 400 | 184 |
| **K373H** | 1110 | 1017 | 197 | 130 | 248 | – | 159 | 60 | 223 | 60 | 110 | 740 | 138 |
| **K573H** | 1176 | 1070 | 245 | 200 | 308 | – | 216 | 60 | 279 | 60 | 180 | 740 | 165 |
| **K813H** | 1176 | 1070 | 245 | 200 | 308 | – | 216 | 60 | 279 | 60 | 180 | 740 | 165 |
| **K1053H** | 1634 | 1528 | 245 | 200 | 324 | – | 216 | 70 | 279 | 70 | 180 | 900 | 314 |
| **K1353T** | 1634 | 1528 | 245 | 200 | 394 | 324 | 216 | 70 | 27 | 70 | 180 | 900 | 314 |
| **K1973T-4(2)** | 1661 (1694) | 1527 | 333 | 280 | 541 | 401 | 298 | 102 | 95 | 102 | 250 | 900 | 314 |
| **K2923T-4(2)** | 1661 (1694) | 1527 | 333 | 280 | 561 | 401 | 298 | 102 | 88 | 102 | 250 | 900 | 322 |
| **K3803T-4(2)** | 1739 (1749) | 1519 | 391 | 280 | 684 | 484 | 368 | 110 | 112 | 110 | 250 | 900 | 310 |
| **K4803T-4(2)** | 1739 (1749) | 1519 | 391 | 280 | 684 | 484 | 368 | 110 | 112 | 110 | 250 | 900 | 310 |
| **K6703N-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |
| **K6703T-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |
| **K8503N-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |
| **K8503T-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |

| Model | Dimensions in mm | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| –Pass | L | R | R1 | S | T | U | U1 | U2 | V | W | X | Y | Z |
| **K033N** | – | 60 | 45 | 62 | – | – | – | – | 212 | 250 | 47 | 6 | 87 |
| **K033H** | 125 | 60 | 45 | 62 | 132 | 236 | – | – | 212 | 250 | 47 | 6 | 87 |
| **K073H** | 125 | 60 | 45 | 62 | 132 | 236 | – | – | 212 | 250 | 47 | 6 | 87 |
| **K123H** | 125 | 60 | 50 | 62 | 262 | 295 | – | – | 275 | 320 | 47 | 6 | 87 |
| **K203H** | 190 | 60 | 50 | 95 | 218 | 335 | – | – | 275 | 320 | 52 | 8 | 113 |
| **K283H** | 190 | 60 | 50 | 95 | 218 | 335 | – | – | 275 | 320 | 52 | 8 | 113 |
| **K373H** | 190 | 60 | 50 | 95 | 344 | 335 | – | – | 275 | 320 | 52 | 8 | 113 |
| **K573H** | 236 | 60 | 50 | 118 | 300 | 381 | – | – | 305 | 360 | 53 | 8 | 133 |
| **K813H** | 236 | 60 | 50 | 118 | 300 | 381 | – | – | 305 | 360 | 53 | 8 | 133 |
| **K1053H** | 236 | 130 | 70 | 118 | 498 | 381 | – | – | 305 | 360 | 53 | 70 | 133 |
| **K1353T** | 236 | 130 | 70 | 118 | 117 | 381 | 381 | 381 | 305 | 360 | 53 | 70 | 133 |
| **K1973T-4(2)** | 337 | 80 | 70 | 169 | 108 | 381 | 381 | 381 | 305 | 360 | 67 (100) | 140 | 178 |
| **K2923T-4(2)** | 337 | 80 | 80 | 169 | 108 | 381 | 381 | 381 | 360 | 420 | 67 (100) | 160 | 178 |
| **K3803T-4(2)** | 413 | 80 | 80 | 205 | 106 | 381 | 381 | 381 | 360 | 420 | 130 (140) | 200 | 201 |
| **K4803T-4(2)** | 413 | 80 | 80 | 205 | 106 | 381 | 381 | 381 | 360 | 420 | 130 (140) | 200 | 201 |
| **K6703N-4(2)** | 545 | 80 | 80 | 374 | – | – | – | – | 360 | 420 | 406 | 200 | 244 |
| **K6703T-4(2)** | 545 | 80 | 80 | 374 | 111 | 381 | 381 | 381 | 360 | 420 | 406 | 200 | 244 |
| **K8503N-4(2)** | 545 | 80 | 80 | 374 | – | – | – | – | 360 | 420 | 406 | 200 | 244 |
| **K8503T-4(2)** | 545 | 80 | 80 | 374 | 111 | 381 | 381 | 381 | 360 | 420 | 406 | 200 | 244 |

For plastic-coated coolant reversing covers, the dimensions of the seawater design apply.

All dimensions can have tolerances according to EN ISO13920-B..

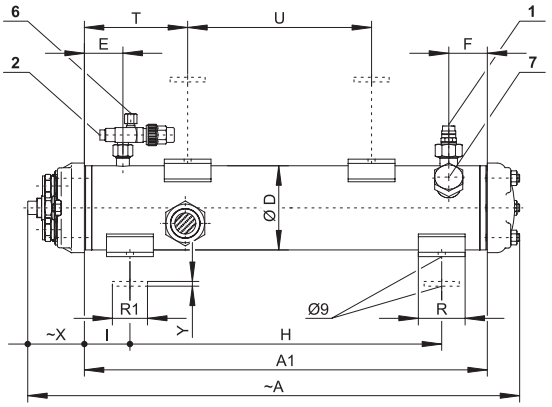
For refrigerant and coolant connections see page 13.

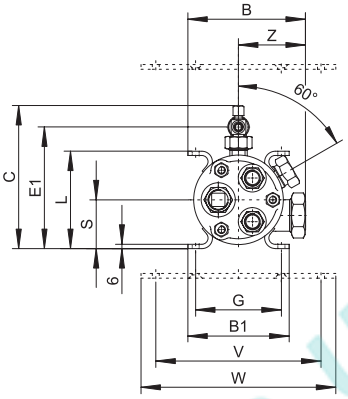
**1** Refrigerant inlet
**2** Refrigerant outlet
**6** Pressure gauge connection
until K1973TB $^{7}/_{16}$ -20 UNF
from K2923TB $^{1}/_{4}$ -18 NPTF
**7** Connection for pressure relief valve
Internal thread $^{3}/_{8}$ -18 NPTF
External thread 1 $^{1}/_{4}$ -12 UNF

## Seawater resistant design

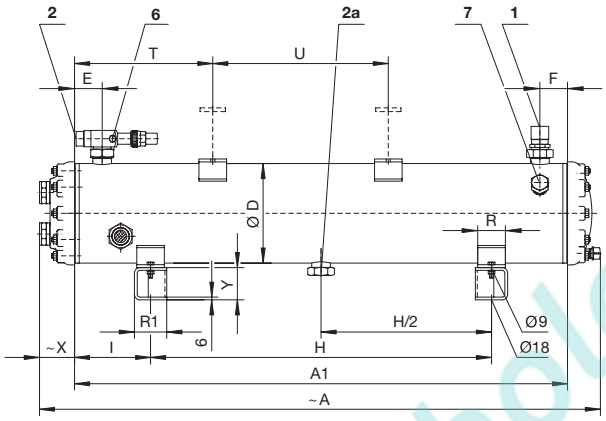
### Dimensional drawings

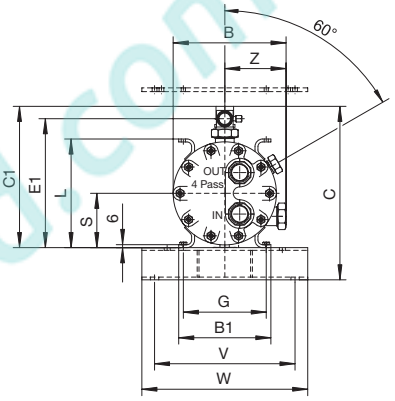
**K033NB**
**K033HB**
**K073HB**



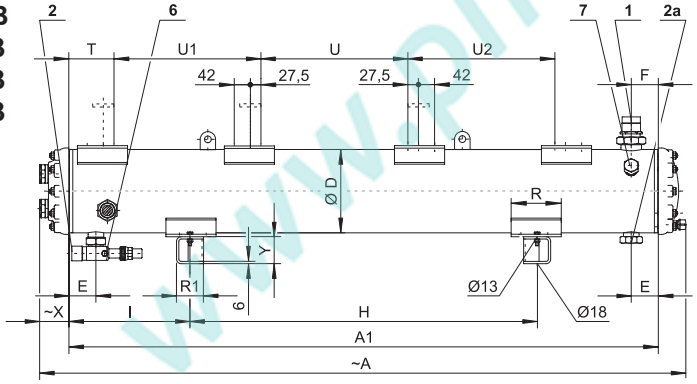



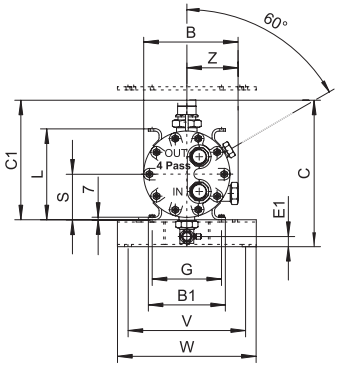

**K123HB**
**K203HB**
**K283HB**
**K373HB**
**K573HB**
**K813HB**



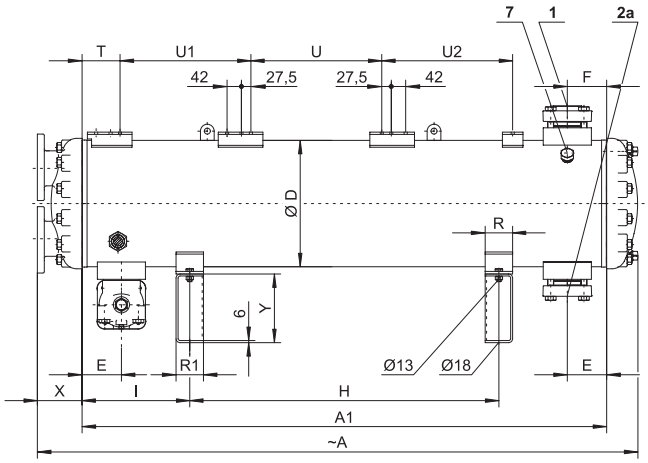



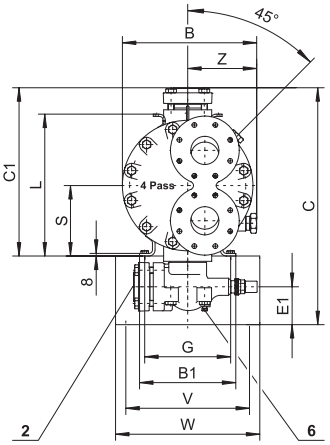

**K1053HB**
**K1353TB**
**K1973TB**
**K2923TB**




**K3803TB**
**K4803TB**
**K6703.B**
**K8503.B**



## Seawater resistant design

### Dimensions

| Model | Dimensions in mm | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| –Pass | A | A1 | B | B1 | C | C1 | ØD | E | E1 | F | G | H | I |
| **K033NB** | 626 | 517 | 152 | 130 | 184 | – | 108 | 50 | 156 | 50 | 110 | 400 | 58 |
| **K033HB** | 626 | 517 | 152 | 130 | 184 | – | 108 | 50 | 156 | 110 | 110 | 400 | 58 |
| **K073HB** | 626 | 517 | 152 | 130 | 184 | – | 108 | 50 | 155 | 50 | 110 | 400 | 58 |
| **K123HB** | 876 | 767 | 152 | 130 | 237 | 172 | 108 | 60 | 154 | 60 | 110 | 400 | 184 |
| **K203HB** | 882 | 767 | 197 | 130 | 299 | 234 | 159 | 60 | 213 | 60 | 110 | 400 | 184 |
| **K283HB** | 882 | 767 | 197 | 130 | 307 | 242 | 159 | 60 | 223 | 60 | 110 | 400 | 184 |
| **K373HB** | 1132 | 1017 | 197 | 130 | 313 | 248 | 159 | 60 | 223 | 60 | 110 | 740 | 138 |
| **K573HB** | 1210 | 1070 | 245 | 200 | 378 | 308 | 216 | 60 | 279 | 60 | 180 | 740 | 165 |
| **K813HB** | 1210 | 1070 | 245 | 200 | 378 | 308 | 216 | 60 | 279 | 60 | 180 | 740 | 165 |
| **K1053HB** | 1668 | 1528 | 245 | 200 | 394 | 324 | 216 | 70 | 27 | 70 | 180 | 900 | 314 |
| **K1353TB** | 1668 | 1528 | 245 | 200 | 394 | 324 | 216 | 70 | 27 | 70 | 180 | 900 | 314 |
| **K1973TB-4(2)** | 1687 (1690) | 1519 | 333 | 280 | 541 | 401 | 298 | 102 | 95 | 102 | 250 | 900 | 314 |
| **K2923TB-4(2)** | 1687 (1690) | 1519 | 333 | 280 | 561 | 401 | 298 | 102 | 88 | 102 | 250 | 900 | 322 |
| **K3803TB-4(2)** | 1739 (1745) | 1519 | 391 | 280 | 686 | 486 | 368 | 110 | 114 | 110 | 250 | 900 | 310 |
| **K4803TB-4(2)** | 1739 (1745) | 1519 | 391 | 280 | 686 | 486 | 368 | 110 | 114 | 110 | 250 | 900 | 310 |
| **K6703NB-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |
| **K6703TB-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |
| **K8503NB-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |
| **K8503TB-4(2)** | 2037 | 1528 | 494 | 335 | 834 | 642 | 500 | 125 | 111 | 125 | 305 | 900 | 314 |

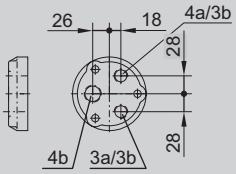
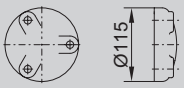
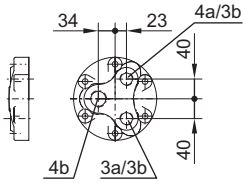
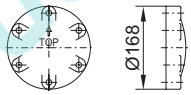
| Model | Dimensions in mm | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| –Pass | L | R | R1 | S | T | U | U1 | U2 | V | W | X | Y | Z |
| **K033NB** | – | 60 | 45 | 62,5 | – | – | – | – | 212 | 250 | 67 | 6 | 87 |
| **K033HB** | 125 | 60 | 45 | 62,5 | 132 | 236 | – | – | 212 | 250 | 67 | 6 | 87 |
| **K073HB** | 125 | 60 | 45 | 62,5 | 132 | 236 | – | – | 212 | 250 | 67 | 6 | 87 |
| **K123HB** | 125 | 60 | 50 | 62,5 | 262 | 295 | – | – | 275 | 320 | 67 | 65 | 87 |
| **K203HB** | 190 | 60 | 50 | 95 | 218 | 335 | – | – | 275 | 320 | 73 | 65 | 113 |
| **K283HB** | 190 | 60 | 50 | 95 | 218 | 335 | – | – | 275 | 320 | 73 | 65 | 113 |
| **K373HB** | 190 | 60 | 50 | 95 | 344 | 335 | – | – | 275 | 320 | 73 | 65 | 113 |
| **K573HB** | 236 | 60 | 70 | 118 | 300 | 381 | – | – | 305 | 360 | 76 | 70 | 133 |
| **K813HB** | 236 | 60 | 70 | 118 | 300 | 381 | – | – | 305 | 360 | 76 | 70 | 133 |
| **K1053HB** | 236 | 130 | 70 | 118 | 498 | 381 | – | – | 305 | 360 | 76 | 70 | 133 |
| **K1353TB** | 236 | 130 | 70 | 118 | 117 | 381 | 381 | 381 | 305 | 360 | 76 | 70 | 133 |
| **K1973TB-4(2)** | 337 | 80 | 70 | 169 | 108 | 381 | 381 | 381 | 305 | 360 | 100 | 140 | 178 |
| **K2923TB-4(2)** | 337 | 80 | 80 | 169 | 108 | 381 | 381 | 381 | 360 | 420 | 100 | 160 | 178 |
| **K3803TB-4(2)** | 413 | 80 | 80 | 205 | 106 | 381 | 381 | 381 | 360 | 420 | 130 (140) | 200 | 201 |
| **K4803TB-4(2)** | 413 | 80 | 80 | 205 | 106 | 381 | 381 | 381 | 360 | 420 | 130 (140) | 200 | 201 |
| **K6703NB-4(2)** | 545 | 80 | 80 | 374 | – | – | – | – | 360 | 420 | 406 | 200 | 244 |
| **K6703TB-4(2)** | 545 | 80 | 80 | 374 | 111 | 381 | 381 | 381 | 360 | 420 | 406 | 200 | 244 |
| **K8503NB-4(2)** | 545 | 80 | 80 | 374 | – | – | – | – | 360 | 420 | 406 | 200 | 244 |
| **K8503TB-4(2)** | 545 | 80 | 80 | 374 | 111 | 381 | 381 | 381 | 360 | 420 | 406 | 200 | 244 |

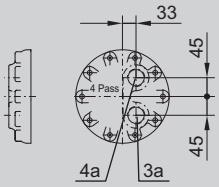
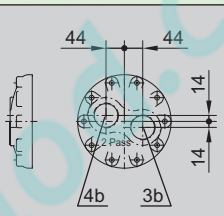
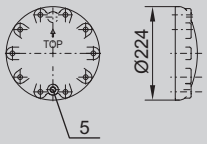
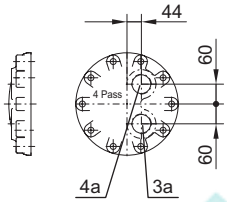
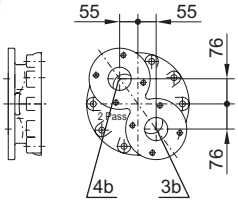
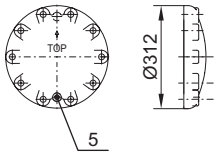
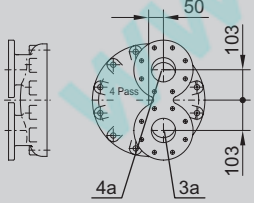
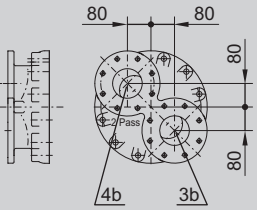
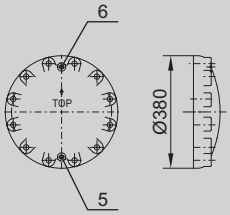
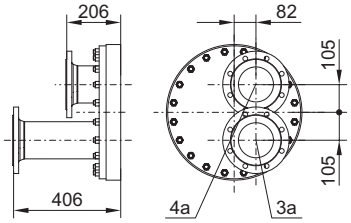
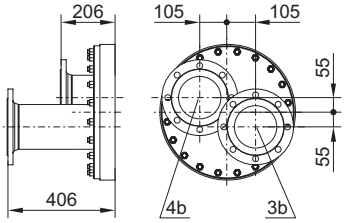
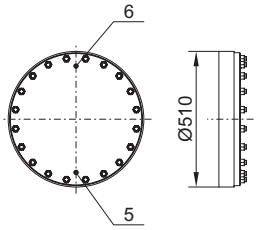
All dimensions can have tolerances according to EN ISO13920-B.

For refrigerant and coolant connections see page 13.

**1** Refrigerant inlet
**2** Refrigerant outlet
**2a** Additional refrigerant outlet
**6** Pressure gauge connection
until K1973TB $^{7}/_{16}$ -20 UNF
from K2923TB $^{1}/_{4}$ -18 NPTF
**7** Connection for pressure relief valve
Internal thread $^{3}/_{8}$ -18 NPTF
External thread 1 $^{1}/_{4}$ -12 UNF

## Coolant reversing covers

| Model | Connection end | Reversing end |
|---|---|---|
| **4-pass or 2-pass depending on connection** | | |
| **K033.(B)**<br>**K073H(B)**<br>**K123H(B)** |  |  |
| **K203H(B)**<br>**K283H(B)**<br>**K373H(B)** |  |  |

| 4-pass | 2-pass | Reversing end |
|---|---|---|
| **K573H(B)-4**<br>**K813H(B)-4**<br>**K1053H(B)-4**<br>**K1353T(B)-4**  | **K573H(B)-2**<br>**K813H(B)-2**<br>**K1053H(B)-2**<br>**K1353T(B)-2**  |  |
| **K1973T(B)-4**<br>**K2923T(B)-4**  | **K1973T(B)-2**<br>**K2923T(B)-2**  |  |
| **K3803T(B)-4**<br>**K4803T(B)-4**  | **K3803T(B)-2**<br>**K4803T(B)-2**  |  |
| **K6703.(B)-4**<br>**K8503.(B)-4**  | **K6703.(B)-2**<br>**K8503.(B)-2**  |  |

**3a** Coolant inlet 4-pass
**3b** Coolant inlet 2-pass
**4a** Coolant outlet 4-pass
**4b** Coolant outlet 2-pass

**5** Coolant drain
$G^1/_4$ standard design (internal thread)
$G^1/_2$ seawater resistant design (internal thread)
**6** Vent plug

## Refrigerant and coolant connections

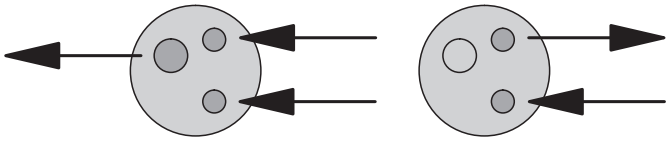
| Model | Refrigerant connections | | | | | | 2-pass coolant connections | | | 4-pass coolant connections | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bushing① | | | | Thread/Flange | | | | | | | |
| | Inlet ø | | Outlet ø② | | Inlet | Outlet | Passes | Inlet | Outlet | Passes | Inlet | Outlet |
| | mm | Zoll | mm | Zoll | | | | | | | | |
| **K033.(B)** | 12 | 1/2 | 10 | 3/8 | 1-14 UNS | 3/4-16 UNF | 2 | 2 x G 1/2 | G 3/4 | 4 | G 1/2 | G 1/2 |
| **K073H(B)** | 12 | 1/2 | 10 | 3/8 | 1-14 UNS | 3/4-16 UNF | 2 | 2 x G 1/2 | G 3/4 | 4 | G 1/2 | G 1/2 |
| **K123H(B)** | 16 | 5/8 | 12 | 1/2 | 1-14 UNS | 1-14 UNS | 2 | 2 x G 1/2 | G 3/4 | 4 | G 1/2 | G 1/2 |
| **K203H(B)** | 16 | 5/8 | 16 | 5/8 | 1 1/4-12 UNF | 1-14 UNS | 2 | 2 x G 3/4 | G 1 | 4 | G 3/4 | G 3/4 |
| **K283H(B)** | 22 | 7/8 | 22 | 7/8 | 1 1/4-12 UNF | 1 1/4-12 UNF | 2 | 2 x G 3/4 | G 1 | 4 | G 3/4 | G 3/4 |
| **K373H(B)** | 28 | 1 1/8 | 22 | 7/8 | 1 3/4-12 UN | 1 1/4-12 UNF | 2 | 2 x G 3/4 | G 1 | 4 | G 3/4 | G 3/4 |
| **K573H(B)** | 35 | 1 3/8 | 28 | 1 1/8 | 1 3/4-12 UN | 1 3/4-12 UN | 2 | G 2 | G 2 | 4 | G 1 1/4 | G 1 1/4 |
| **K813H(B)** | 35 | 1 3/8 | 28 | 1 1/8 | 1 3/4-12 UN | 1 3/4-12 UN | 2 | G 2 | G 2 | 4 | G 1 1/4 | G 1 1/4 |
| **K1053H(B)** | 42 | 1 5/8 | 35 | 1 3/8 | 2 1/4-12 UN | 1 3/4-12 UN | 2 | G 2 | G 2 | 4 | G 1 1/4 | G 1 1/4 |
| **K1353T(B)** | 42 | 1 5/8 | 35 | 1 3/8 | 2 1/4-12 UN | 1 3/4-12 UN | 2 | G 2 | G 2 | 4 | G 1 1/4 | G 1 1/4 |
| **K1973T(B)** | 54 | 2 1/8 | 42 | 1 5/8 | DN50 | 2 1/4-12 UN | 2 | DN65③ | DN65③ | 4 | G 2 | G 2 |
| **K2923T(B)** | 54 | 2 1/8 | 54 | 2 1/8 | DN50 | DN50 | 2 | DN65③ | DN65③ | 4 | G 2 | G 2 |
| **K3803T(B)** | 76 | 3 1/8 | 76 | 3 1/8 | DN80 | DN80 | 2 | DN100③ | DN100③ | 4 | DN80③ | DN80③ |
| **K4803T(B)** | 76 | 3 1/8 | 76 | 3 1/8 | DN80 | DN80 | 2 | DN100③ | DN100③ | 4 | DN80③ | DN80③ |
| **K6703.(B)** | 76 | 3 1/8 | 76 | 3 1/8 | DN100 | DN100 | 2 | DN150 | DN150 | 4 | DN125 | DN125 |
| **K8503.(B)** | 76 | 3 1/8 | 76 | 3 1/8 | DN100 | DN100 | 2 | DN150 | DN150 | 4 | DN125 | DN125 |

All threads of the coolant connections are internal threads

① For other connections see Price List
② Additional refrigerant outlet (bottom) for seawater resistant design from model K123H**B** – see table on page 7.
③ Welding neck flanges DIN2633, ND 10/16 or threaded flanges DIN2566, ND 10/16

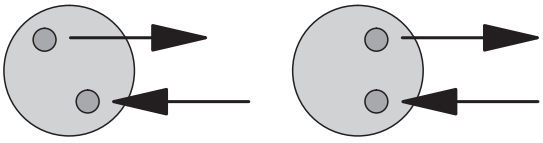
## Coolant connection positions on the coolant reversing cover

**K033N(B) .. K373H(B)**



2-pass 4-pass

**K573N(B) .. K8503.(B)**



2-pass 4-pass

K033N(B) .. K373H(B): 4 or 2-pass, depending on connection
K573N(B) .. K8503.(B): different covers for 4- or 2-pass

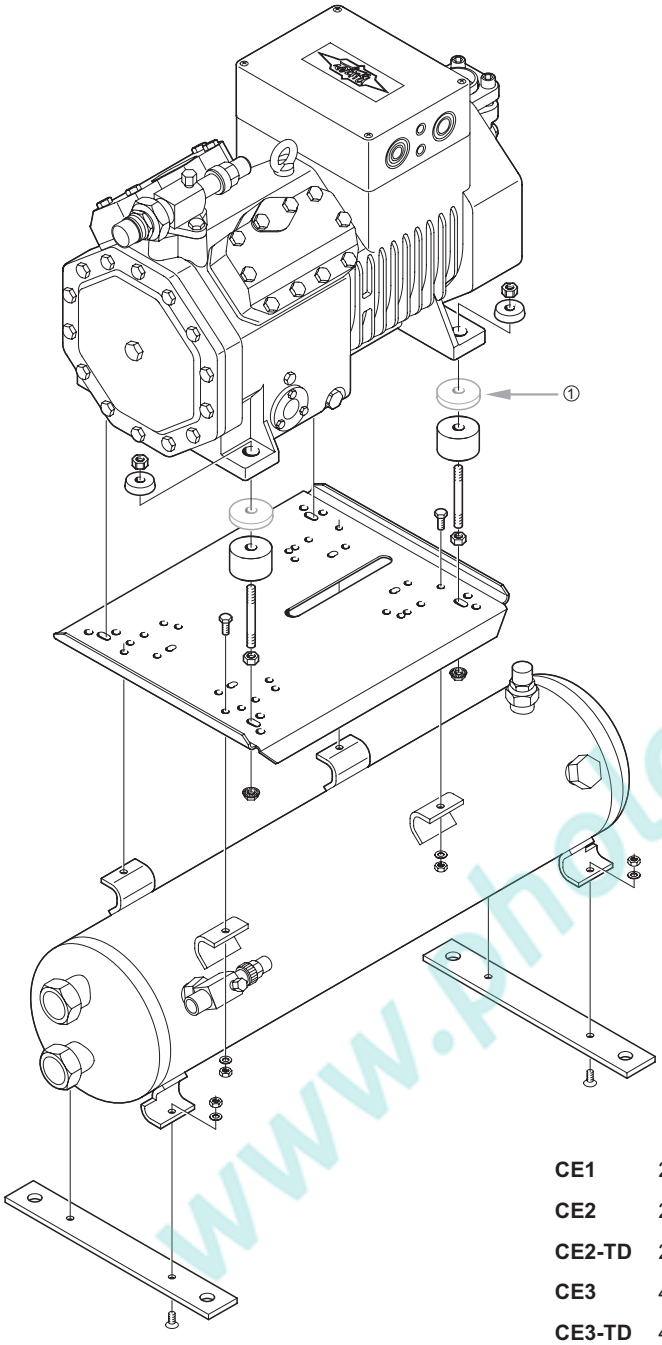
## Fixing rails

| Model | Rails | | |
|---|---|---|---|
| | Bottom | Top | For compressors |
| | Nr | Nr | Model |
| **K033N(B)** | 327 301 01 | – | – |
| **K073H(B)** | 327 301 01 | 327 301 12 | 2KES-05 .. 2FES-3<br>2KC-05.2 .. 2FC-3.2 |
| **K123H** | 327 301 04 | 327 301 20 | 2KES-05 .. 2FES-3<br>2KC-05.2 .. 2FC-3.2 |
| | | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| **K123HB** | S | 327 301 20 | 2KES-05 .. 2FES-3<br>2KC-05.2 .. 2FC-3.2 |
| | | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| **K203H** | 327 301 04 | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 22 | 4FES-3 .. 4BES-9<br>4FC-3.2 .. 4CC-9.2 |
| | | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| **K203HB** | S | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 22 | 4FES-3 .. 4BES-9<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| **K283H** | 327 301 04 | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 22 | 4FES-3 .. 4BES-9<br>4FC-3.2 .. 4CC-9.2 |
| | | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| **K283HB** | S | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 22 | 4FES-3 .. 4BES-9<br>4FC-3.2 .. 4CC-9.2 |
| | | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| **K373H** | 327 301 04 | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 22 | 4FES-3 .. 4BES-9<br>4FC-3.2 .. 4CC-9.2 |
| | | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| **K373HB** | S | 327 301 21 | 2EES-2 .. 2CES-4<br>2EC-2.2 .. 2CC-4.2 |
| | | 327 301 22 | 4FES-3 .. 4BES-9<br>4FC-3.2 .. 4CC-9.2 |
| | | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| **K573H** | 327 301 05 | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| **K573HB** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |

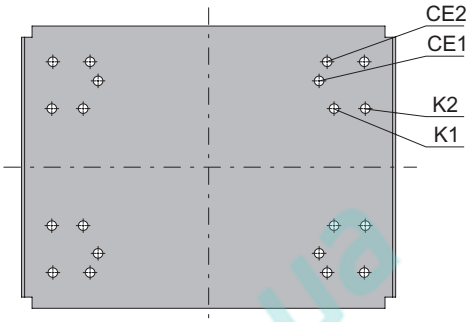
| Model | Rails | | |
|---|---|---|---|
| | Bottom | Top | For compressors |
| | Nr. | Nr. | Model |
| **K813H** | 327 301 05 | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| **K813HB** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| **K1053H** | 327 301 06 | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| **K1053HB** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| **K1353T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |
| **K1973T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |
| **K2923T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |
| **K3803T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |
| **K4803T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |
| **K6703N(B)** | S | – | – |
| **K6703T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |
| **K8503N(B)** | S | – | – |
| **K8503T(B)** | S | 327 301 24 | 4VES-6 .. 4NES-20<br>4VC(S)-6.2 .. 4NC(S)-20.2 |
| | | 327 301 10 | 4JE-13 .. 6FE-50<br>4J-13.2 .. 6F-50.2 |
| | | 326 057 01 | 44JE-26 .. 66FE-100<br>44J-26.2 .. 66F-100.2 |

S = Standard

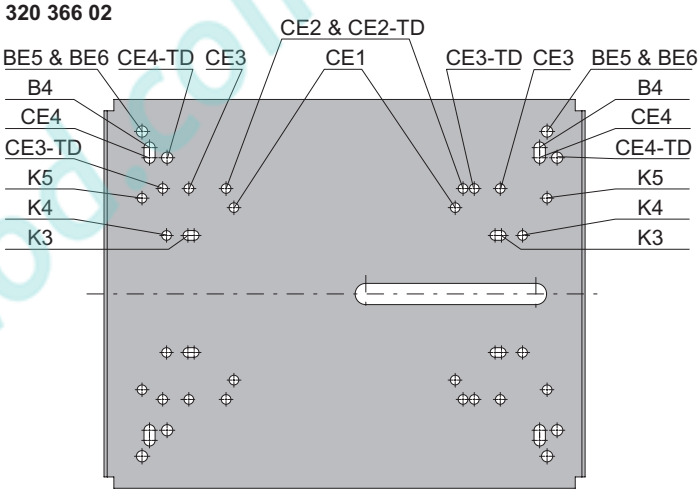
## Fixing plates




**320 366 01**




**320 366 02**




**K1** K033H(B), K073H(B)

**K2** K123H(B)

**K3** K123H(B)

**K4** K203H(B), K283H(B), K373H(B)

**K5** K573H(B), K813H(B), K1053H(B), K1353T(B), K1973T(B), K2923T(B)

| | |
|---|---|
| **CE1** | 2KES-05Y .. 2FES-3(Y) // 2KC-05.2(Y) .. 2FC-3.2(Y) |
| **CE2** | 2EES-2(Y) .. 2CES-2(Y) // 2EC-2.2(Y) ..2CC-4.2(Y) |
| **CE2-TD** | 22EES-4(Y) .. 22CES-8(Y) // 22EC-4.2(Y) .. 22CC-8.2(Y) |
| **CE3** | 4FES-3(Y) .. 4BES-9(Y) // 4FC-3.2(Y) .. 4CC-9.2(Y) |
| **CE3-TD** | 44FES-6(Y) .. 44BES-18(Y) // 44FC-6.2(Y) .. 44CC-18.2(Y) |
| **CE4** | 4VES-6Y .. 4NES-20(Y) // 4VC(S)-6.2(Y) .. 4NC(S)-20.2(Y) |
| **CE4-TD** | 44VES-12Y.. 44NES-40(Y) // 44VC(S)-12.2(Y) .. 44NC(S)-40.2(Y) |
| **B4** | 4Z-5.2(Y) .. 4N-20.2(Y) |
| **BE5** | 4JE-13Y .. 4FE-35(Y) // 4J-13.2(Y) .. 4G-30.2(Y) |
| **BE5-TD** | 44JE-26Y .. 44FE-70(Y) // 44J-26.2(Y) .. 44G-60.2(Y) |
| **BE6** | 6JE-22Y .. 6FE-50(Y) //6J-22.2(Y) .. 6F-50.2(Y) |
| **BE6-TD** | 66JE-44Y .. 66FE-100(Y) // 66J-44.2(Y) .. 66F-100.2(Y) |

① Only with CE1/C1

For possible compressor/condenser combinations see page 14.

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**Subject to change // 80192301 // 09.2018**