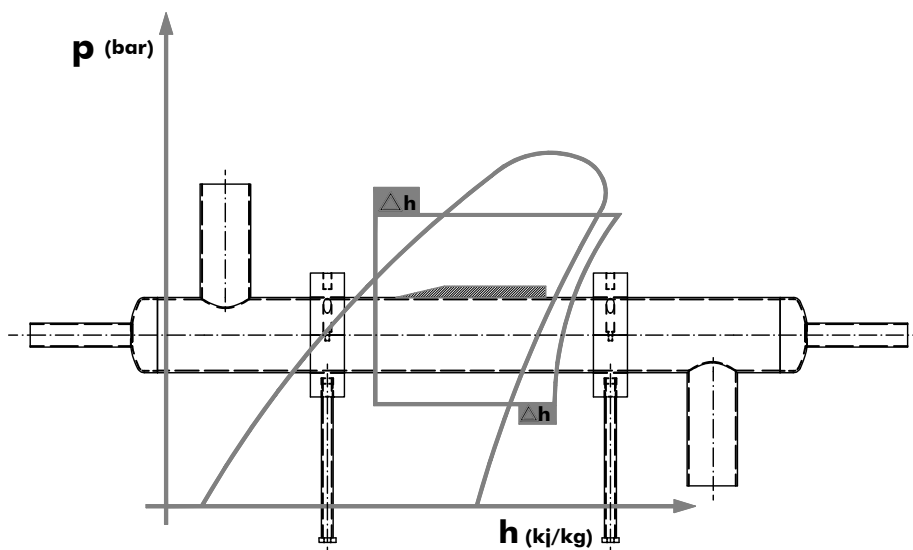




Cooling. Heating.
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Installation and Operating Instructions

-Suction Gas Heat Exchanger-



Issue: 08-2011

Preface

With this Heat Exchanger, you have purchased a DK quality product.

DK products are manufactured according to the relevant standards and recommendations.

Each unit is carefully inspected and all components undergo compression trial which allows us to supply you with a reliable system.

A long and trouble-free service life requires an expert installation and commissioning of the unit. For your own benefit, the following assembly notes should be closely observed.

The documentation in your hand complies with state-of-the-art technology available at the date of issue. The manufacturer reserves the right to perform technical alterations according to the further development of the product.

We wish you a successful application of your
DK – Heat Exchanger

DK-Kälteanlagen GmbH, D-48282 Emsdetten, Germany



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1. Table of Contents

1.	Table of Contents	1
2.	Safety Notes	2
3.	Service	3
4.	Fitting and installation	4
4.1	Refrigerant Connection	4
5.	Commissioning the system	7
6.	Operation	7
7.	Maintenance	7
8.	Dimensions	8
9.	Technical data	9

2. Safety Notes

Please observe the following for your personal safety as well as for the maintenance of your warranty:



- The assembly and starting of the refrigeration system may only be performed by trained licensed experts who hold the required permits. Such installation staff must observe the generally applicable regulations of the UVV/VBGA for „Electrical Plants and Equipment“ as well as all applicable regulations (VBG20). Repair work which exceeds the maintenance work stipulated in this technical documentation must only be carried out by qualified experts. For this, please refer to „your“ refrigeration expert.
- DK-Kälteanlagen GmbH is not liable for damage caused by improper use or independent interference, especially to functional refrigerant units.
- Only such persons are entitled to commission the unit who are familiar with the assembly instructions according to use. A prerequisite for this is knowledge of the relevant regulations for the prevention of accidents as well as generally recognised technical safety rules.
- When handling cleaning agents and disinfectants the manufacturer’s safety regulations must be strictly observed.

The texts used in this documentation graphically emphasise instructions and notes subject to particular caution.



... points out that non-observance may lead to personal injury or damage of the technical equipment.



... provides useful information concerning regulatory application or maintenance of the product's service value.

3. Service

In your own interest, please observe that any required repair work within the warranty period may exclusively be performed by a servicing facility authorized by DK-Kälteanlagen GmbH.

This ensures your warranty rights.

Repair and maintenance work on electrical and refrigeration equipment must only be carried out by licensed refrigeration companies. For this, please refer to “your” refrigeration specialist.



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4. *Fitting and Installation*

The DK Suction Gas Heat Exchanger is a pressure vessel made completely of copper (CU-DHP). The standard model of this exchanger is supplied with a steam-tight insulation. Upon request of the customer this insulation can be waived.



Please observe that the vessel is not exposed to any severe shocks (e.g. rough depositing on a single foot while unloading from the truck)!

No late welding or soldering must be performed to the shell of the exchanger!

The insulation is made of a closed-pore tight foam insulation against diffusion of vapour made of laminate (e.g. Armaflex or Aeroflex).

As a rule, the DK Suction Gas Heat Exchanger is mounted to the machine frame or any other horizontal surface and fastened at the intended points

Fastening material is not included in the delivery.

4.1 *Refrigerant Connection*



The fluid inlet is marked with a green-red stripe; the outlet is marked with a green stripe. The inlet to the suction line is marked in blue. A blue-red marking is attached to the outlet of the suction line (see pic. 1).

The suction line and fluid connection is made of metric copper pipe (CU-DHP).

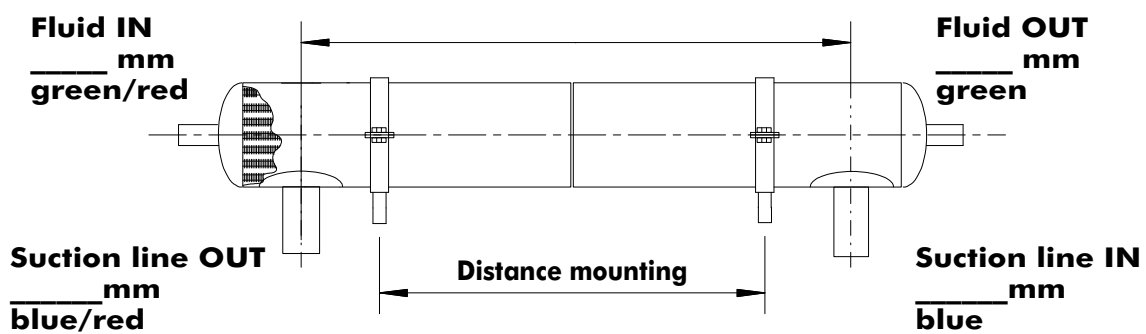
Alignment for the suction line connections see pic. 1 to 2.

Special designs are not considered.

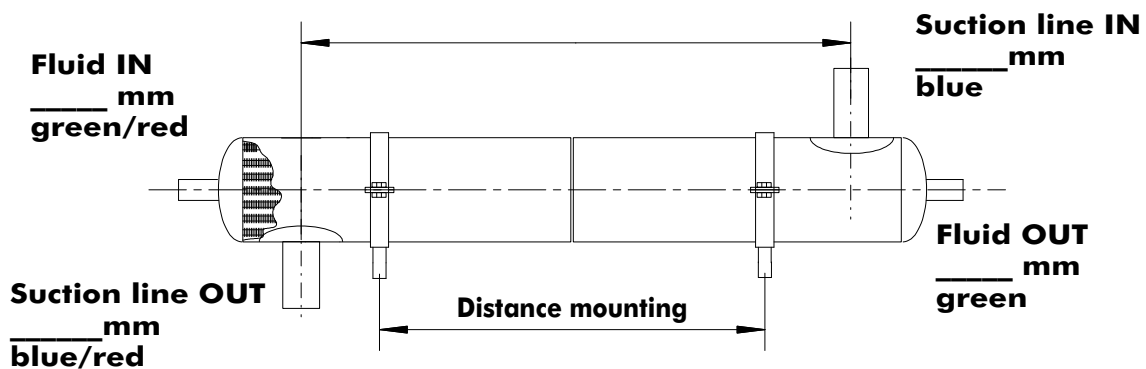


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- Bottom connections -



- Top/bottom connections -



All connecting lines must be sufficiently fastened. In the event of unfavourable operational circumstances of the refrigerant condenser (pulsation impact) appropriate measures must be taken to dampen vibration.

Connecting materials such as sleeves or reductions that may be required are not included in the delivery.

When leaving the lines unattached for a longer time the vibrations transfer to the connections of the exchanger. This can lead to fissures in the connecting sleeves.

Hits of the liquid refrigerant must be avoided in the whole range of capacity.



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For longer lines which are not attached the vibration translates via the lines to the connections of the exchanger. This can lead to cracks in the connection pieces.



When soldering the refrigerant lines to the heat exchanger inlet or exit it must be observed that the insulation is not damaged or burnt. The connections measure 200 mm and should not be shortened by more than 100mm (except for injection lines). Please ensure the sufficient cooling of the connection pieces.



When cutting the connection pieces maximum neatness is paramount. Sawdust must not enter the inside of the exchanger. When cutting with a pipe cutter the intersection must be burred. Burr must not enter the inside of the exchanger.

5. Commissioning the Unit

- The refrigeration unit, and therefore also the DK Suction Gas Heat Exchanger, must only be commissioned following the conscientious drying and evacuation.
- The DK Suction Gas Heat Exchanger is designed for the exclusive use of FC, CFC, H-FC, H-CFC and respective blends as well as for hydrocarbons such as propane, butane, isobutane or ethylene.

The DK Suction Gas Heat Exchanger is **not** suitable for the refrigerant R 717 (NH₃).

6. Operation

- The DK Suction Gas Heat Exchanger is design for fitting in the liquid and suction gas line of one - or more - refrigeration plant. It only works on this places.



The limit values stated on the model plate and in the documentation with regard to pressure and temperature must **not** be exceeded during operation or standstill of the unit.

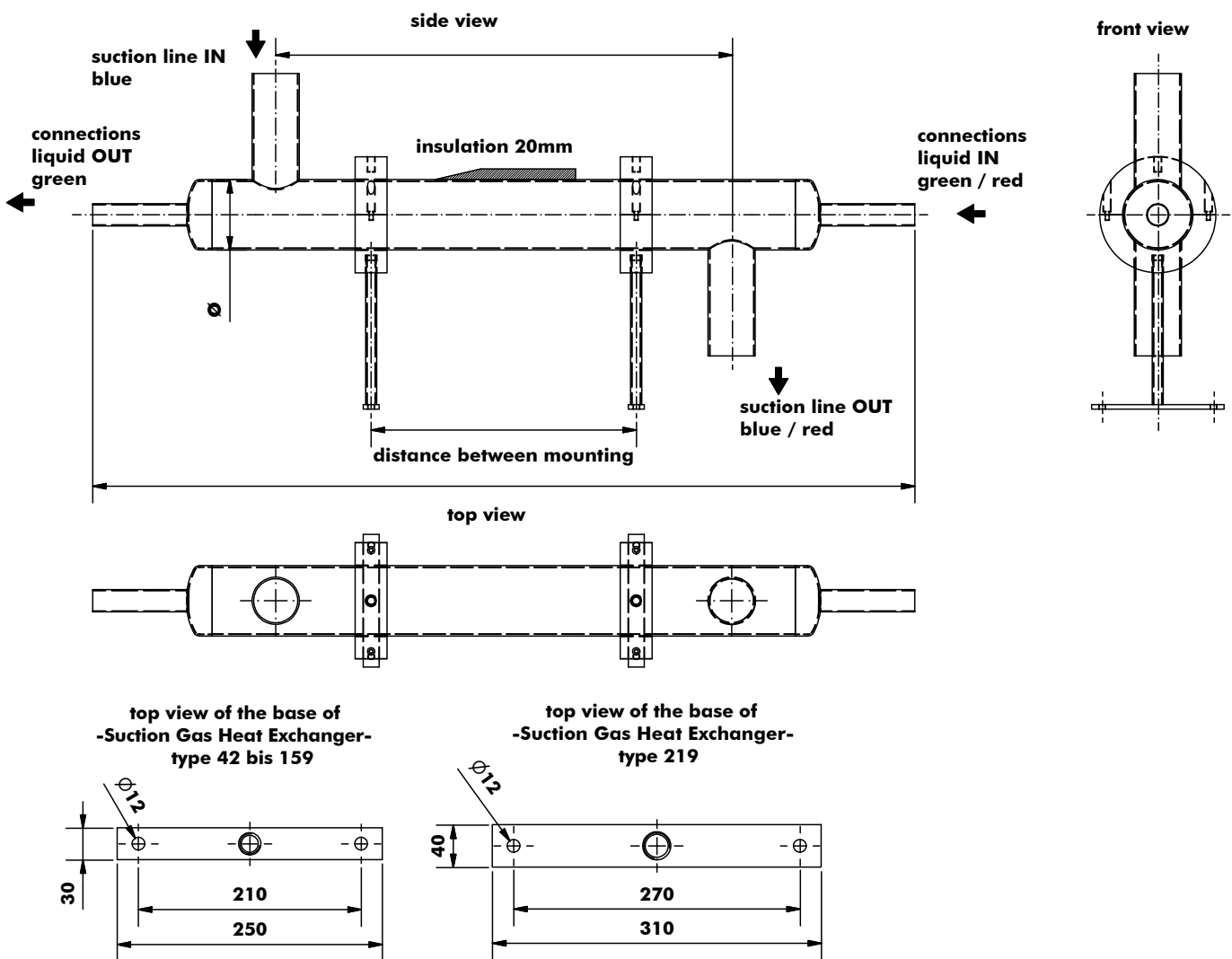
7. Maintenance

- The DK Suction Gas Heat Exchanger has no mobile parts that require maintenance.



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8. Dimensions





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9. Technical data

DK Suction Gas Heat Exchanger (1,0 m)

Copper laced pipe with finned tubes housed in copper piping, **single-walled**, complete with mounting supports, insulation and cold clamps

Type	42/ 3x13	54/ 5x13	64/ 7x13	76/ 9x13	89/ 12x13	108/ 20x13	133/ 30x13	159/ 40x13	219/ 64x13
External pipe (mm)	42	54	64	76	89	108	133	159	219
Internal tubes	3x13	5x13	7x13	9x13	12x13	20x13	30x13	40x13	64x13
Length of internal tubes (mm)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Distance mounting (mm)	500	500	500	500	500	500	500	500	500
Total length (mm)	1.500	1.500	1.500	1.500	1.500	1.550	1.550	1.550	1.600
Total height (mm)	360	370	380	400	420	450	480	500	560
Suction line (mm)	28	35	42	54	64	76	89	108	133
Liquid line (mm)	16	18	22	22	28	35	42	54	64
Surface LP side (m ²)	0,48	0,8	1,12	1,44	1,92	3,2	4,8	6,4	10,24
Weight (kg/m)	5	9	13	17	22	33	41	52	87
Weight (kg per 0,1 m)	0,5	0,5	1	1	2	3	4	5	6
Capacity of heat exchanger (W) ¹⁾	1.550	2.590	3.620	4.665	6.220	10.360	15.550	20.700	33.100
Content of outer pipe area (LP side) in dm ³	0,8	1,3	1,9	2,8	4,0	5,5	8,3	12,4	26,1
Content of tube area (HP side) in dm ³	0,26	0,35	0,5	0,6	0,8	1,3	2,0	2,8	4,8

Max. operating pressure: outer pipe area (OA) 16 bars - tube area (TA) 30 bars

1) capacity quoted for R404A installation conditions:

Normal cooling refrigeration units:

Subcooling of liquid from +40°C to +30°C - overheating of suction gas from ±0°C to +20°C

Deep freezing refrigeration units:

Subcooling of liquid from +40°C to +35°C - overheating of suction gas from -25°C to -15°C