

Operating Manual

2-circuit cooling radiator

Material number: 11.60004-1142

Type TMDH.1-160-14-C-N(D5)-CD-CC

Thermofin motor cooler horizontal

According to technical specification

MOD 048 2-circuit cooling radiator HT/LT

PDS: 030 050 010

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Ident. number: 44D

Project: Government of Gabon

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1. Preliminary Notes

The purpose of assembly and operating manuals is to prevent possible dangers to persons and to the environment, which may be caused by a machine and by the work performed in connection with the machine, particularly during transport, assembly, commissioning and operation of the machine.

Therefore, all points of this manual must be carefully read and observed.

1.1 Fundamentals

The present assembly and operating manual refers to the following machine type:

→ **TMDH.1-160-14-C-N(D5)-CD-CC: motor cooler horizontal (vertical direction of air flow)**

The technical data are based on the machine data sheet and on the data from the type plate.

The data given on their identification plates primarily apply to the fan motors.

1.2 Range of application

Heat exchangers serve to release heat to the environment in cooling circuits. Typical cases of application are to be found in the refrigeration, air-conditioning technology as well as technology for cooling of condensing refrigerants, cooling circuits in technological lines or facilities in terms of building technology.

thermofin[®] heat exchangers with copper or stainless steel piping are suited for use with water or water/glycol mixtures as well as brines as refrigerants. Furthermore, thermal oils can also be used.

thermofin[®] motor coolers of the TMDH type are suited for installation in the open.

1.3 Applied standards and directives

- EU directive 97 / 23 / EG for pressure equipment (Pressure Equipment Directive)
- EU directive 2006 / 42 / EG for machinery (Machinery Directive)
- EN 378; parts 1 to 4; " Refrigeration systems and heat pumps, safety and environmental requirements"; state: June 2008
- German Equipment and Product Safety Act (GPSG); including the regulations (GPSGV) applicable in the Federal Republic of Germany
- BGR 500 "Operation of Work Equipment"; chapter 2.35: "Operation of refrigeration systems, heat pumps and cooling equipment"; applicable in the Federal Republic of Germany
- The present operating manual „thermofin[®] motor cooler“
- The labels attached to the machine, which contain instructions and information of the manufacturer

The operator is obliged to observe – in addition to the regulations stated in this operating manual – all possible local particularities and / or applicable regulations.

2. Technical Data

2.1 Method of operation

A fan ventilated heat exchanger is part of the complete system and is intended for cooling of a single-phase heat transfer medium according to the definition of heat transfer media as specified in DIN EN 378-1 para. 3.7.2.

A circulating heat transfer medium (single-phase working fluid) reaches the heat exchanger, where it is cooled down on releasing sensible heat via the tube and fin system to the environment and is introduced into the process again.

2.2 Application and intended use

The motor cooler is intended for application in cooling circuits. Despite meeting the requirements of intended use and handling the machine properly, residual risks cannot be completely avoided.

In general the machine is suitable for outdoor installation.

The machine may only be used in places where the materials applied are not affected by the surrounding atmosphere or the medium flowing inside.

Any cases of application differing from the one described above require consultation with the manufacturer.

The manufacturer does not assume liability for any damages resulting from the non-compliance with these provisions.



The machine may only be put into operation, after the conformity of the complete system has been established!

2.3 Material data

Pipes: made of copper, smooth inside and cleaned, hard soldered

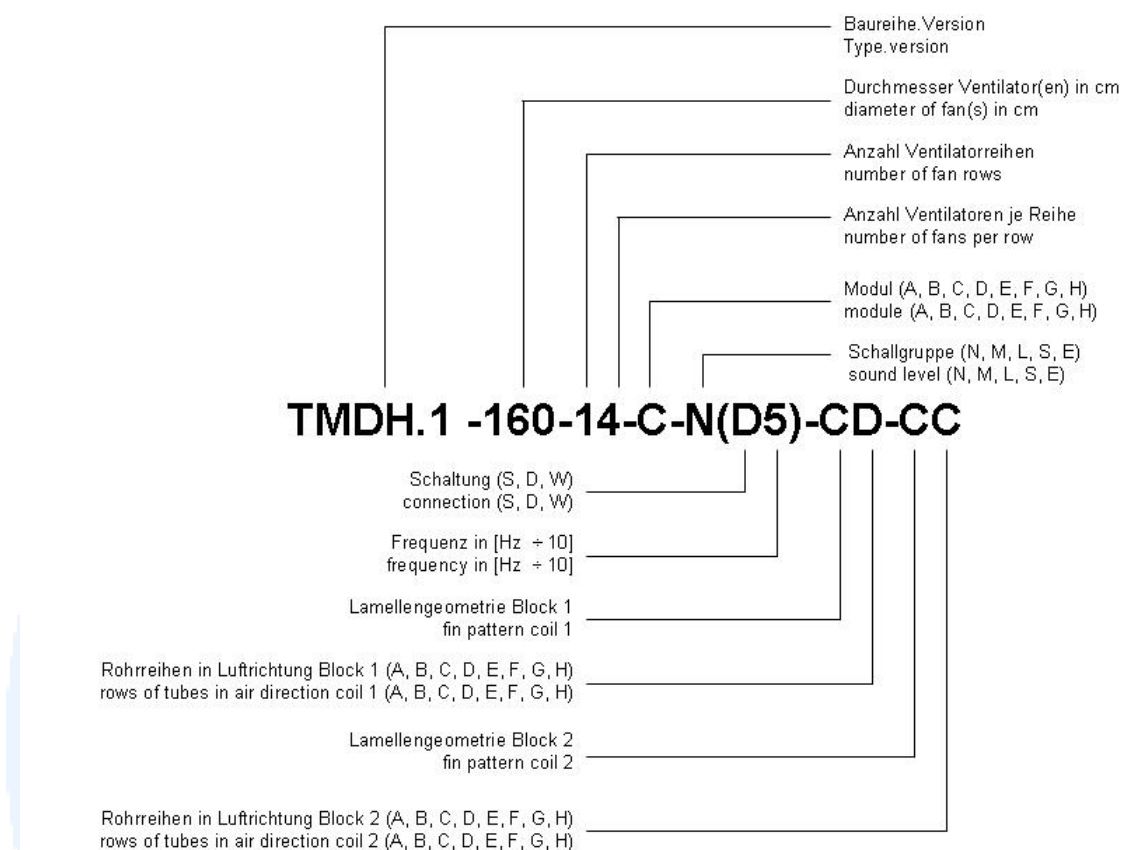
Fins: aluminium coated with epoxy resin, UV resistant

Housing: galvanized steel, corrosion resistant

2.4 Noise information

The sound pressure stated was determined by calculation on the basis of the enveloping surface method according to DIN EN13487 at a defined distance of 1m.

2.5 Unit key



2.6 Data on the type plate

thermofin GmbH [®] Am Windrad 1 D - 08468 Heinsdorfergrund		  thermofin[®] heat exchangers - GERMANY	
Bezeichnung model TMDH.1-160-14-C-N(D5)-CD-CC			
Artikel-Nr. article-n° 11.60004-1142		Zeichnung-Nr. drawing-n° HP0 000 025	
Projekt-Nr. project-n° 707234 - 010		Geräte-Nr. unit-n° 001	
Fertigungsjahr production year 06/2010		Betriebsdruck max. working pressure max. PS 6 bar	
Rohrvolumen HT / LT tube volume HT / LT 466 / 582 L		Mediumtemp. zul. medium temp. all. TS +3/+120 °C	
Leergewicht empty weight 4800 kg		Ventilatortemp. fan temp. -40/+80 °C	
Prüfüberdruck test pressure PT 11 bar		Prüfmedium test medium Luft / air	
el. Anschlusswerte / connected load			
Ventilator(en) fan(s) 400 V		el. Stillstandsheizung el. downtime heater 230 V	
44,0 kW		0,20 kW	

erstellt: 01.06.2010 13:41

The type plate contains the following data:

- Model description according to the unit key (see 2.5 Unit key)
- Article number of the manufacturer
- Drawing number of the manufacturer
- Project or serial number
- Month / year of manufacture
- Tube volume of the heat exchanger
- Empty weight of the machine
- Test overpressure PT
- Maximum working pressure PS
- Allowed temperature range of the medium TS
- Allowed temperature range of the fan
- Pressure test medium of the heat exchanger
- Connected loads of the fans
- Connected loads of the downtime heaters

3. Safety

3.1 General safety instructions

The machine is built according to the state-of-the-art technology and is reliable in operation. The machine may only be used in accordance with the data given on the machine data sheet and the type plate. The machine may only be installed, commissioned and maintained by competent personnel. For installing the system, the installation conditions according to standard DIN EN 378 are to be observed. Furthermore, the applicable national rules and regulations, such as the water resources law, accident prevention regulations etc. are to be complied with. The company installing the system has to ensure the observance of all pressure and temperature limit values given on the type plate.



Compliance with the instructions of this operating manual does not release the plant operator from the obligation to install an appropriate warning system indicating each kind of malfunction immediately. Emergency measures must be planned and prepared in order to prevent consequential damages in case of malfunctions.

3.2 Safety instructions for the installation site



The erection and installation conditions according to DIN EN 378 are to be observed. Pipes and fittings must be protected against misuse. Emergency facilities, such as lighting, venting, escape routes and the marking of which according to DIN EN 378 must be provided.



The machine must be lockable in case of leakage.



No smoking at the installation site. Open fire is prohibited.



The fire extinguishing equipment must meet the requirements of DIN EN 378-3.



There must be sufficient free space around the machine in order to prevent dangers to the machine and its connections and to ensure smooth execution of maintenance and repair work on the machine as well as on all fittings and components.

3.3 Safety instructions for the machine



Before performing installation, repair and maintenance works, the power supply must be interrupted at all circuits. An unauthorized and / or unintentional (automatic) restart must be prevented. Check for de-energised state and protect via earthing or short circuit if necessary. Cover adjacent energised parts.



Do not touch the fin edges – risk of cuts!



Any unauthorized reconstructions or modifications affecting the functions or the safety of the drycooler are prohibited!



Any external forces acting on the equipment are to be avoided. In particular, equipment connections and manifolds may not be stressed (e.g. walked on).



Walking on the machine is only permitted with an appropriate antifall guard!



It is not allowed to push objects through the safety guard of the fan or to put them in the circle of rotation of the fan blades.



Under certain conditions, drycoolers cannot be completely drained. During operation, after leak tests or after flushing the system with water for cleaning purposes, there is a risk of bursting in case of frost.



Before performing welding and soldering work the machine must be depressurized!



Be careful when using removable safety guards of the fan!

Before removing the safety guard, the fans must be turned off and restart must be prevented!



Do not climb on the pipelines and connections. Do not walk on the fans!

3.4 Safety instructions for the operating supplies

The applied operating supply item – water – is characterised by a very good specific heat emission as well as high cost-saving availability. Following instructions have to be observed when operating with water:



The operating supplies must be prevented from escaping.



Cooling water is not drinking water!



Cooling water may contain toxic or harmful additives (anti-corrosive agents) as well as residues or fractions of motor oil and may not contaminate soil or the sewage system.



During repair works avoid eye and skin contact as well as contact with clothes. Risk of irritations. Scald risk from coolant temperatures of 60°C and more. Release overpressure before opening the circuit.

3.5 Safety instructions for the fans



Before performing any work on the fans and the motors including cleaning work between the fans and the heat exchanger block (inspection covers!), cut off power supply and prevent restarting!



According to DIN EN 60204-1, the machines must have a switch-off device in order to prevent unintentional restarting. It must be possible to secure this switch-off device while the system is de-energized (turned off)!



Observe the data given on the motor type plates!



After the completion of repair and maintenance work, all objects must be removed from the area around the fans, since such objects may cause malfunctions or damages of the fan or the heat exchanger after switching-on the system.



It is indispensable to perform a check for free running after dismantling and reinstallation of fans.

4. Assembly, Installation, Commissioning and Maintenance

4.1 General

The machine may only be installed, integrated in the cooling circuit, operated, maintained and repaired by qualified personnel of specialist companies according to the expertise defined in DIN EN 378.



During production and before delivery, each machine is subjected to comprehensive quality testing. The machine is provided in good order and condition. Before assembly, the good order and condition of the machine (damages in transit) must be verified.

4.2 Transport and positioning



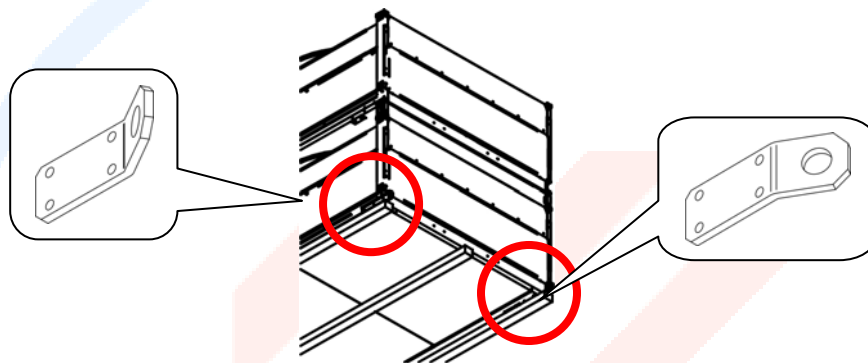
During transport, the machine must be handled with special care. In particular, always place the machine very carefully on the ground!

During transport the lifting instructions that might be attached to the machine are to be observed. The appropriate lifting accessories must be used. The sheet metal components of the housings may not be deformed by the belts. If it is not possible to ensure a sufficient rope length (angle to the perpendicular of max. 30°), a traverse must be used. The lifting accessories may only be attached to the suspension points intended for this purpose. Never use pipes or attachment parts for lifting.

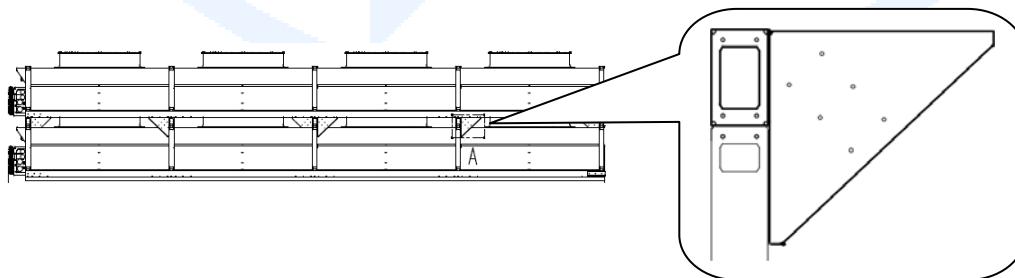
4.2.1 Unpacking

The devices are screwed together in pairs and are packed seaworthy in containers. For unloading and unpacking proceed as follows:

1. Open containers on the vehicle only
2. Remove wooden crate between the door and the devices
3. By means of both frontal shackles pull the devices out so far that they do not tilt



4. Lift the devices from underneath by means of a forklift and support them. The forklift has to be positioned on the side of the devices and has to take them up in the middle.
5. Move containers forward until the devices stand freely on the fork lift
6. Deposit the devices
7. Remove other wooden crates in the area of device connections
8. Dismount corner angles between supporting feet for transport and base frame of the upper device



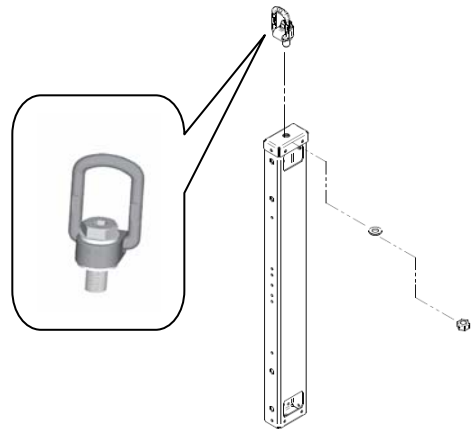
9. Loosen connection of supporting feet for transport upper device (10 x) as well as connections between the transport rails and the upper device



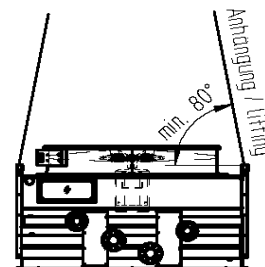
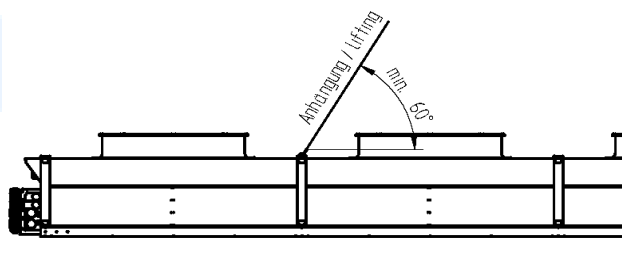
10. Screw lifting shackles (4 pieces) to the upper device (see „7. Annex: lifting shackles“)



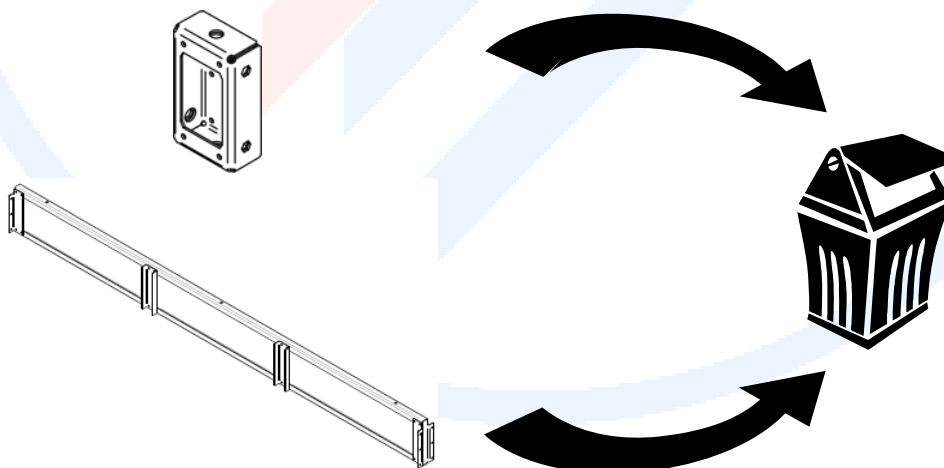
Locked torque $M_a = 150 \text{ Nm}$ to be observed!



11. Lift the upper device away



12. Unscrew closure rails and supporting feet for transport from the lower device. They are no longer needed and can be disposed of.



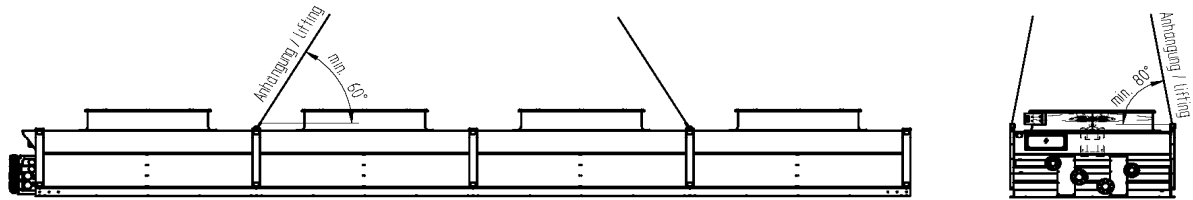
13. The lower device is provided with lifting shackles.

14. Lift the device and remove square timber frame and frontal shackles

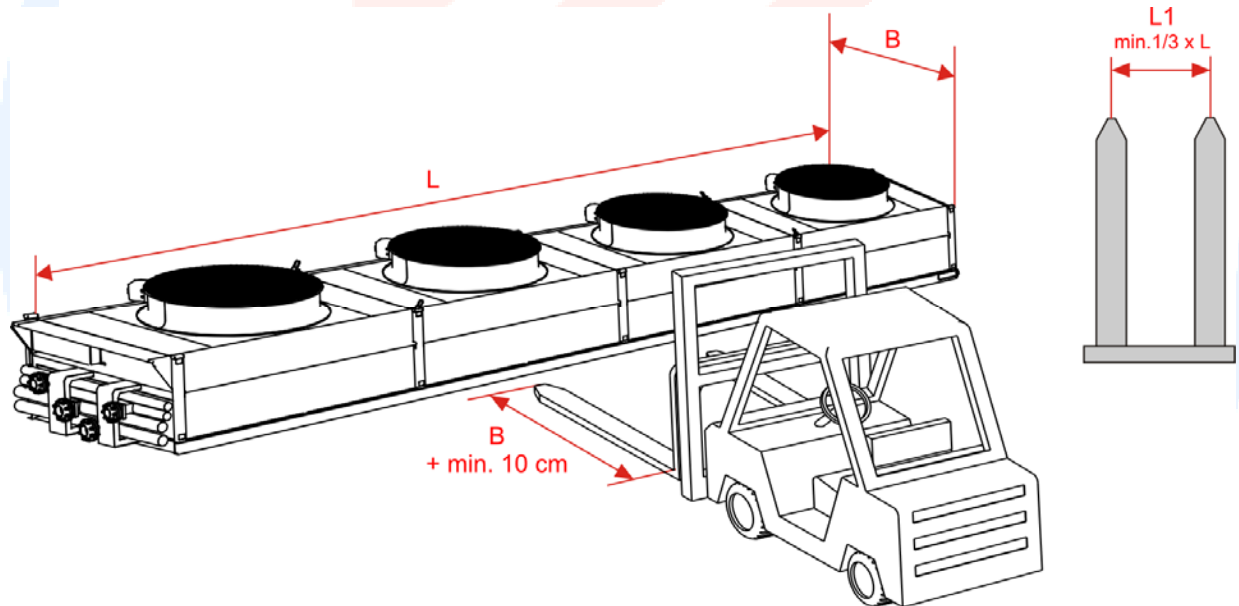
4.2.1 Transport



Transportation by crane: attachment only at the provided points according to the drawing. Observe the rope angle!



Please pay attention to the sufficient fork length during transport with forklifts. Observe a position of centre of gravity and the information sign!



4.2.2 Packing

The container package is the property of the company thermofin® at the time of transporting and is intended for the resale. The containers may be used only for transporting our machines. A person who caused a loss in value due to improper use shall be charged for such loss.

4.3 Assembly Instructions

4.3.1 Assembly

The suitability and the load bearing capacity of the foundations, brackets, frames etc. – provided by the customer – are not the responsibility of the equipment manufacturer.

The machine must rest evenly on all supporting points and must be fixed on the supporting structure by using the provided screws (M16, 8.8) and taper washers. For this purpose mounting holes provided on the stand are to be used.

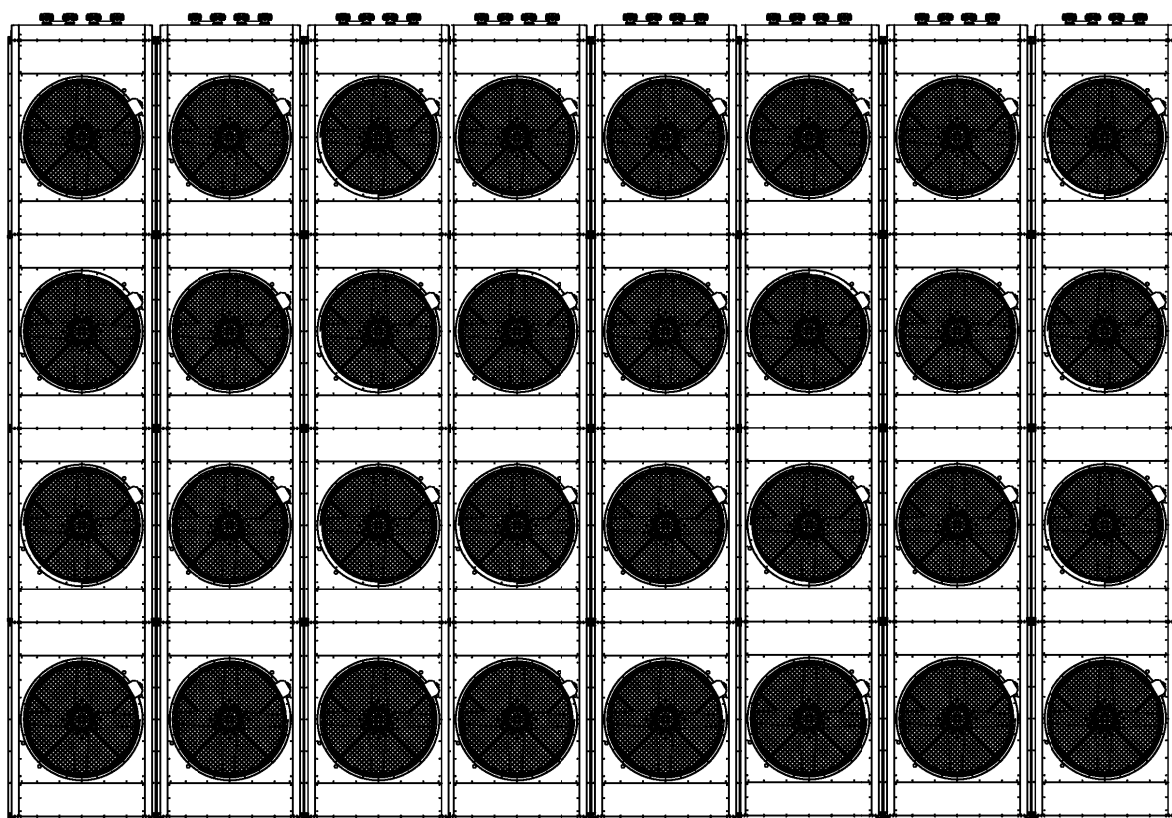


The fastening screws must be tightened with a tightening torque of $M_A = 150 \text{ Nm}$. For this purpose, use an applicable torque wrench (not included in the delivery).

After installation and before commissioning all package parts as well as existing transport protection devices must be removed.



Pay attention to sufficient distances to walls, linings and the like. The airflow may not be hindered in any way.



The machine performance is calculated for the indicated case of installation. Deviant installation conditions, which could have a negative influence on the machine performance, are to be clarified with the manufacturer.

4.3.2 Pipe connections



Devices, which are soldered or sealed with counter flanges, are delivered with an overpressure of approx. 1 bar (cleaned and dried air) (according to the regulation for the transportation of hazardous material ADR 1.1.3.2 c).



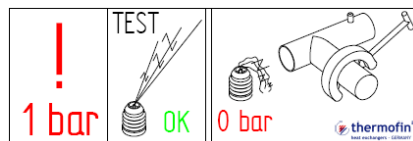
Before removing the counter flange it must be checked whether the overpressure is present.

A depressurized device indicates a leakage (Damage in transit! Leak test!).

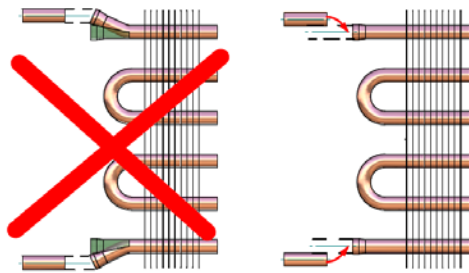


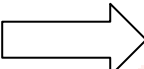
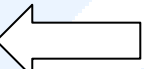
In case of depressurized devices, the manufacturer must be consulted immediately.

Before the assembly, the transport pressure must be released and the closing caps must be removed.



Pipe connections are to be designed in such a way that any force, stress and vibration effects on the machine are prevented.



The inlet  and outlet  must be observed according to the marking.

4.3.3 Electrical connections



The electrical connection of the fans and the electrical equipment, as far as available, must be performed in accordance with the applicable regulations of DIN VDE 0100, DIN EN 60204 part 1, DIN EN 378-3 paragraph 6 as well as in accordance with the provisions of the local energy supply company.



The electrical installation may only be carried out by qualified personnel.
The local regulations must be observed.



Only the data given on the respective identification labels are binding.



Wiring may only be performed in accordance with the circuit and terminal diagrams provided.



The existing strain-relief devices must always be used.



The direction of rotation of the fans must be observed!



The provided thermal motor protection is either already integrated in the electrical feed line of the fans or has to be integrated in the electrical control system by the company installing the machine (see wiring diagram of the fans).



A suitable all-pole circuit breaker must be installed in the system.



In case of connection of the device or additional installations please pay attention to the compliance with the degree of protection.

4.3.4 Commissioning

Before the commissioning the system's readiness for operation must be verified according to the following points:

1. Has the machine been properly installed and fixed in accordance with the instructions of the present manual?
2. Have all fluid-carrying lines been connected and checked for tightness? Are the shut-off devices open?
3. Are all cables properly installed and completely connected? Has cabling been done according to the wiring diagrams provided?
4. Has the fuse protection been checked for proper functioning?
5. Have all bolted connections (e.g. fans, cable entries), fastenings, electrical connections etc. been checked for tight fit?
6. Do the fans rotate freely?
7. Are all terminal boxes and cable entries firmly closed and tight?

During commissioning the following measures have to be taken:

1. Check and, if necessary, adjust the direction of rotation of the fans.
2. Measure the current consumption of the fans and check for compliance with the type plate data.
3. Adjust the electrical switching and control devices and check for correct functioning (see the specific operating instructions of the respective control device).
4. Check the switch point settings of the safety equipment.

4.3.4.1 Return to service after a longer period of standstill

If the machine is intended to be put into operation again after being shutdown and standing still for a longer period of time, the following points must be checked in addition to those mentioned under „4.3.4 Commissioning“:

1. Visual inspection of the heat exchanger block; check for fouling and damages.
2. Leak test of the heat exchanger block.
3. Visual inspection and functional test of the fans; check for free running, check the terminal boxes for tightness, check for corrosion as well as noise (bearings).
4. Check all pipe connections (including pipe clips), electrical components, housings and attachment parts for tight fit

4.4 Maintenance

The manufacturer recommends performing the following maintenance work at regular intervals. Type and frequency of these works strongly depends on the respective operation site of the heat exchanger.

4.4.1 Cleaning of the fins

Depending on the operation site, the mode of operation and time of the year, the heat exchanger fins are subject to variably strong fouling. As this directly affects the performance and thus the power consumption of the complete system, the cleanliness of the fin block must always be ensured.

Dry cleaning: with a vacuum cleaner, a broom or a soft brush from the outside towards the fins or from the inside towards the outside by using compressed air – opposite to the direction of the air flow of the fans.



Switch off the refrigeration system and the electrical power supply of the machine!

Wet cleaning: with a water jet from the inside towards the outside and opposite to the direction of the air flow of the fans; and from top to bottom. The jet of the cleaning device must be vertical to the heat exchanger block (max. deviation $\pm 5^\circ$), in order to prevent fin deformations.



Switch off the refrigeration system and the electrical power supply of the machine!



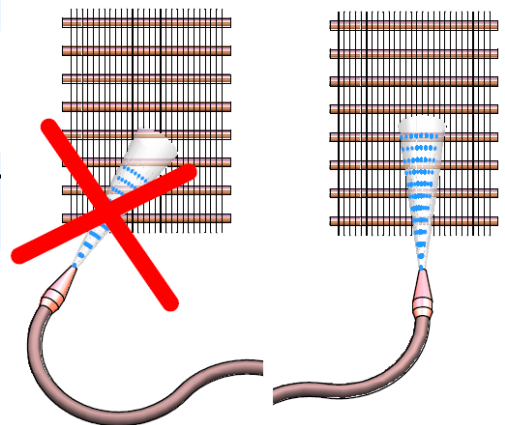
Electrical components may not be exposed to the water jet!



When using cleaning agents, the compatibility of materials must be ensured. Never use aggressive or corrosive cleaning agents. Consult the manufacturer if necessary.



Mechanical cleaning with hard objects, such as steel brushes or screwdrivers may destroy the heat exchanger and is not permitted, therefore.



4.4.2 Cleaning of the housings

The housing consists of galvanised steel plate without further surface treatment. Should cleaning be required, it can take place by means of water or/ and according to the applicable cleaning agents.



Never use sharp tools or scrapers!

4.4.3 Testing of the fans

All serial devices provided by thermofin® are equipped with maintenance-free and power-saving fans made by well-known manufacturers. Nevertheless, the fans should be regularly checked for proper functioning, bearing noises, free running and / or unbalances. Furthermore, the clamping lids must be checked for tight fit and leaks. As the bearings are maintenance-free and lifetime lubricated by the manufacturer, special inspection is not required. In case of longer standstill periods of the system, it is recommended to operate the fans for approx. 3 to 4 hours per month.



All components that were removed, loosened or disassembled for cleaning or inspection purposes must be properly reinstalled after work completion. They must also be checked for correct functioning!

Further preventive measures are in the discretion of the plant operator or the company installing the plant.

5. Operation and Shutdown

5.1 Normal operation

For operating the machine, the complete system including the electrical system must be operating. The machine is integrated in the cooling circuit by opening the corresponding shut-off valves. It is turned on by activating the electrical system.

After reaching the machine-specific operating point the machine is ready for operation.

In case of operating conditions which differ from those stated in the offer, the manufacturer must be consulted.

5.2 Shutdown

The machines are part of a cooling system. Machine shutdown and return to service must meet the system-dependent requirements as well as the requirements of the operating manual of the equipment manufacturer and of the applicable standards and accident prevention regulations (see also chapter „1.3 Applied standards and directives“). Shutdown is performed via shutting off the fluid-carrying lines and shutdown of the electrical system.



Under the circumstances there is a risk of freeze for drycoolers. The machine should be drained in this case.



This applies for all devices: precautions against exceeding of the maximum pressure must be taken!



In case of longer standstill periods of the system, it is recommended to operate the fans for approx. 3 to 4 hours per month.

6. Spare Parts

Spare parts are stated in the spare parts list enclosed in the annex or in the manufacturing drawing. They can also be requested from the manufacturer by indicating the device name and the project number on the type plate.

Only use original spare parts for the replacement of equipment parts.

7. Annex: Lifting Shackles



Load Ring **VLBG** - for bolting -

Safety instructions

This safety instruction/declaration of the manufacturer has to be kept on file for the whole lifetime of the product.
Translation of the Original instructions



EMI OFB
075131



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RUD-Art.-Nr.: 8508972-EN/12.009



Load ring **VLBG**
- for bolting -

RUD

EG-Konformitätsklärung

entsprechend der EG-Maschinenrichtlinie 2006/42/EG, Anhang II A und ihren Änderungen

Hersteller: **RUD Ketten
Rieger & Dietz GmbH u. Co. KG**
Friedenstempel
73432 Aalen

Hiermit erklären wir, dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konzeption und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Maschinenrichtlinie 2006/42/EG sowie den unten aufgeführten weiteren EG-Richtlinien entspricht. Bei einer nicht mit uns abgestimmten Änderung der Maschine verfällt diese Erklärung ihre Gültigkeit.

Produktbezeichnung: Lastbock VLBG

Folgende harmonisierten Normen wurden angewandt:

EN 12100-1	EN 12100-2
EN 14121-1	EN 1677-1

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:

BGR 500, KAP 2.3

Für die Zusammenstellung der Konformitätsdokumentation bevollmächtigte Person:
Daniel Klose, RUD Ketten, 73432 Aalen

Aalen, den 14.12.2009 Dr. Ing. Rolf Sinn, (Prokurist/QMB)
Name, Funktion und Unterschrift Verantwortlicher

RUD

EG-Declaration of the manufacturer

According to the EG-Machinery Directive 2006/42/EG, annex II B and amendments

Manufacturer: **RUD Ketten
Rieger & Dietz GmbH u. Co. KG**
Friedenstempel
73432 Aalen

We hereby declare that the equipment, as mentioned below, corresponds to the appropriate, basic requirements of safety and health of the corresponding EG-Machinery Directive 2006/42/EG as well as to the below mentioned EG-Directive in the design as it is sold by us because of its design and construction. In case of any modification of the equipment, not being agreed upon with us, this declaration becomes invalid.

Product name: Load ring VLBG

The following harmonized norms were applied:

EN 12100-1	EN 12100-2
EN 14121-1	EN 1677-1

The following national norms and technical specifications were applied:

BGR 500, KAP 2.3

Authorized person for the configuration of the declaration documents:
Daniel Klose, RUD Ketten, 73432 Aalen

Aalen, 14.12.2009 Dr. Ing. Rolf Sinn, (Prokurist/QMB)
Name, function and signature of the responsible person

User Instructions

- Reference should be made to German Standards accord. BGR 500 or other country specific statutory regulations and inspections are to be carried out by competent persons only.
- Before installing and every use, visually inspect RUD lifting points, paying particular attention to any evidence of corrosion, wear and weld cracks and deformations. Please ensure compatibility of bolt thread and tapped hole.
- The material construction to which the lifting point will be attached should be of adequate strength to withstand forces during lifting without deformation. The German testing authority BG, recommends the following minimum for bolt lengths:

1	x	M in steel (minimum quality S235JR [1.0037])
1,25	x	M in cast iron (for example GG 25)
2	x	M in aluminium alloys
2,5	x	M in aluminium-magnesium alloys

 (M = diameter of RUD lifting point bolt, for ex. M 20)

When lifting light metals, nonferrous heavy metals and gray cast iron the thread has to be chosen in such a way that the working load limit of the thread corresponds to the requirements of the respective base material.

RUD lifting points are delivered with a 100 % crack tested bolt (length up to l_{max} , please see chart 2). **When using your own bolts, the bolts have to be 100 % crack tested.** The min quality of the hexagon bolt had to be 10.9 accord. EN 24014 (DIN 931) with the nominal diameter. For replacement the bolt can be easily hammered out (M8 - M30). The type VLBG 7t M36 is only delivered with a special bolt, therefore it is not possible to use a EN/DIN-bolt.

RUD supplies the Vario length complete with a washer and crack-detected nut corresponding to DIN 980.

- The lifting points must be positioned on the load in such a way that movement is avoided during lifting.
 - For single leg lifts, the lifting point should be vertically above the centre of gravity of the load.
 - For two leg lifts, the lifting points must be equidistant to/or above the centre of gravity of the load.
 - For three and four leg lifts, the lifting points should be arranged symmetrically around the centre of gravity in the same plane if possible.

5. Load Symmetry:

The working load limit of individual RUD lifting points are calculated using the following formula and are based on symmetrical loading:

$$W_{LL} = \frac{G}{n \times \cos \beta}$$

W_{LL} = working load limit
 G = load weight (kg)
 n = number of load bearing legs
 β = angle of inclination of the chain to the vertical

The calculation of load bearing legs is as follows:

	symmetrical	asymmetrical
two leg	2	1
three / four leg	3	2

(see table 1 and 3)

- A Plane bolting surface ($\varnothing DB$) must be guaranteed. The holes must be drilled with a sufficient depth in order to guarantee compatibility with the supporting surface.
- The VLBG has to be adjustable through 360° when fitted. *For single use just tighten with spanner. For long term application the VLBG should be tightened with torque according to table 2 (+/- 10 %).*

In case of turning movements (continuous operation) the recommended torques have to be checked regularly (For turning movements we recommend to use the RUD lifting point PowerPoint, WBG-V or WBG).

Adjust to the direction of pull, before attaching to the lifting means. The load ring should be free moving and should not be touching edges.

- All fittings connected to the VLBG should be free moving. When connecting and disconnecting the lifting means (sling chain) pinches and impacts should be avoided. Damage of the lifting means caused by sharp edges should be avoided as well.



- To prevent unintended dismounting through shock loading, rotation or vibration thread locking fluid such as Loctite (depending on the application, please pay attention to the manufacturer's instruction) could be used to secure the bolt, or use form-closed devices.

10. Effects of temperature:

Due to the DIN/EN bolts that are used with the VLBG the working load limit should be reduced accordingly:

-40° to 100°C	no reduction	-40°F to 212°F
100° to 200°C	minus 15 %	212°F to 392°F
200° to 250°C	minus 20 %	392°F to 482°F
250° to 350°C	minus 25 %	482°F to 662°F

Temperatures above 350°C (662°F) are not permitted.

- RUD-Lifting points must not be used under chemical influences such as acids, alkaline solutions and vapours e.g. in pickling baths or hot dip galvanising plants. If this cannot be avoided, please contact the manufacturer indicating the concentration, period of penetration and temperature of use.

- The places where the lifting points are fixed should be marked with colour.

- If the lifting points are used **exclusively** for lashing, the value of the working load limit can be doubled. $LC = 2 \times WLL$

- After fitting, an annual inspection or sooner if conditions dictate should be undertaken by a competent person examining the continued suitability. Also after damage and special occurrences.

Inspection criteria concerning paragraphs 2 and 14:

- Ensure correct bolt and nut size, quality and length.
- Ensure compatibility of bolt thread and tapped hole - control of the torque
- The lifting point should be complete.
- The working load limit and manufacturers stamp should be clearly visible.
- Deformation of the component parts such as body, load ring and bolt.
- Mechanical damage, such as notches, particularly in high stress areas.
- Wear should be no more than 10 % of cross sectional diameter.
- Evidence of corrosion.
- Evidence of cracks.
- Damage to the bolt, nut and/or thread.
- The body of the VLBG must be free to rotate.

A non-adherence to this advice may result damages of persons and materials!

Method of lift											
Number of legs	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angle of inclination <β	0°	90°	0°	90°	0-45°	45-60°	unsymm.	0-45°	45-60°	unsymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
WLL in metric tons, bolted and adjusted to the direction of pull											
Type	Thread										
VLBG 0,3 t	M 8	0,3 t	0,3 t	0,6 t	0,6 t	0,42 t	0,3 t	0,3 t	0,63 t	0,45 t	0,3 t
VLBG 0,63 t	M 10	0,63 t	0,63 t	1,26 t	1,26 t	0,88 t	0,63 t	0,63 t	1,32 t	0,95 t	0,63 t
VLBG 1 t	M 12 / 1/2"	1,0 t	1,0 t	2,0 t	2,0 t	1,4 t	1,0 t	1,0 t	2,1 t	1,5 t	1,0 t
VLBG 1,2 t	M 14	1,2 t	1,2 t	2,4 t	2,4 t	1,68 t	1,2 t	1,2 t	2,52 t	1,8 t	1,2 t
VLBG 1,5 t	M 16 / 5/8"	1,5 t	1,5 t	3,0 t	3,0 t	2,1 t	1,5 t	1,5 t	3,15 t	2,25 t	1,5 t
VLBG 2 t	M 18	2,0 t	2,0 t	4,0 t	4,0 t	2,8 t	2,0 t	2,0 t	4,2 t	3,0 t	2,0 t
VLBG 2,5 t	M 20 / 3/4" / 7/8"	2,5 t	2,5 t	5,0 t	5,0 t	3,5 t	2,5 t	2,5 t	5,25 t	3,75 t	2,5 t
VLBG 4 t	M 24 / M 27 / 1"	4,0 t	4,0 t	8,0 t	8,0 t	5,6 t	4,0 t	4,0 t	8,4 t	6,0 t	4,0 t
VLBG 5 t	M 30 / 1 1/4"	5,0 t	5,0 t	10,0 t	10,0 t	7,0 t	5,0 t	5,0 t	10,5 t	7,5 t	5,0 t
VLBG 7 t	M 36	7,0 t	7,0 t	14,0 t	14,0 t	9,8 t	7,0 t	7,0 t	14,7 t	10,5 t	7,0 t
VLBG 8 t	M 36	8,0 t	8,0 t	16,0 t	16,0 t	11,2 t	8,0 t	8,0 t	16,8 t	12,0 t	8,0 t
VLBG 10 t	M 42	10,0 t	10,0 t	20,0 t	20,0 t	14,0 t	10,0 t	10,0 t	21,0 t	15,0 t	10,0 t
VLBG 15 t	M 42	15,0 t	15,0 t	30,0 t	30,0 t	21,0 t	15,0 t	15,0 t	31,5 t	22,5 t	15,0 t
VLBG 20 t	M 48	20,0 t	20,0 t	40,0 t	40,0 t	28,0 t	20,0 t	20,0 t	42,0 t	30,0 t	20,0 t

Table 1

Type	WLL (t)	weight kg	A	B max.	C	D	E	F	G	H	H Stand. max.	J	K	L	L Stand. max.	M	N	SW	R	T	DB	torque	reference Standard Vario		
VLBG 0,3t M8	0,3	0,3	30	54	34	35	40	10	29	11	76	75	45	40	105	8	5	13	32	75	24	30 Nm	8500791*	8600280	
VLBG 0,63t M10	0,63	0,32	30	54	34	36	39	10	29	16	96	75	45	45	125	10	6	17	32	75	24	60 Nm	8500793*	8600281	
VLBG 1t M12	1	0,33	32	54	34	37	38	10	29	21	116	75	45	50	145	12	8	19	32	75	26	100 Nm	8500795*	8600282	
VLBG 1,2t M14	1,2	0,55	33	56	36	46	39	13,5	36		34	86	47		70	16	10	24	38	85	30	120 Nm	-	8600399	
VLBG 1,5t M16	1,5	0,55	33	56	36	46	39	13,5	36	24	149	86	47	60	185	16	10	24	38	85	30	150 Nm	8500806*	8600283	
VLBG 2,0t M18	2	1,3	50	82	54	55	55	16,5	43		47	113	64		90	18	12	30	48	110	45	200 Nm	-	8600384	
VLBG 2,5t M20	2,5	1,3	50	82	54	55	55	16,5	43	32	187	113	64	75	230	20	12	30	48	110	45	250 Nm	8500802*	8600285	
VLBG 4t M24	4	1,5	50	82	54	58	67	18	43	37	222	130	78	80	265	24	14	36	48	125	45	400 Nm	8500804*	8600286	
VLBG 4t M27	4	3,1	60	103	65	78	69	22,5	61	39	-	151	80	100	-	27	-	41	67	147	60	400 Nm	7983658	-	
VLBG 5t M30	5	3,3	60	103	65	80	67	22,5	61	49	279	151	80	110	340	30	17	46	67	147	60	500 Nm	8500813**	8600288	
VLBG 7t M36	7	3,4	60	103	65	72	74	22,5	55	52	-	151	80	107	-	36	-	55	67	146	60	700 Nm	8500817**	-	
VLBG 8t M36	8	6,2	77	122	82	100	97	26,5	77	63	223	205	110	140	300	36	22	55	87	197	70	800 Nm	7983553	8600289	
VLBG 10t M42	10	6,7	77	122	82	103	94	26,5	77	73	273	205	110	150	350	42	24	65	87	197	70	1000 Nm	7983554	8600290	
VLBG 15t M42	15	11,2	95	156	100	113	109	36	87	63	263	230	130	150	350	42	24	65	100	222	85	1500 Nm	7982966	8600291	
VLBG 20t M48	20	11,6	95	156	100	117	105	36	87	73	303	230	130	160	390	48	27	75	100	222	95	2000 Nm	7982967	8600292	
LBG (3) M16 RS 1t	1	1	50	85	50	45	43	16,5	38	25	-	95	45	63	-	16	-	24	46	88	40	100 Nm	62086		
LBG (3) M20 RS 2t	2	1,1	50	85	50	46	42	16,5	38	27	-	95	45	65	-	20	-	30	46	88	40	200 Nm	62813		
Attention: the stainless load ring is not suitable for use in chloride media (e.g. indoor swimming-pools)																									
VLBG-Z 1t 1/2"-13UNC	1	0,33	32	54	34	38	37	10	29	22	-	75	45	50	-	1/2"	-	3/4"	32	75	26	100 Nm	8502349	-	
VLBG-Z 1,5t 5/8"-11UNC	1,5	0,55	33	56	36	46	38	13,5	36	24	-	87	47	60	-	5/8"	-	15/16"	38	85	30	150 Nm	8502350	-	
VLBG-Z 2,5t 3/4"-10UNC	2,5	1,3	50	82	54	56	54	16,5	43	28	-	113	64	71	-	3/4"	-	1 1/8"	48	110	45	250 Nm	8502351	-	
VLBG-Z 2,5t 7/8"-9UNC	2,5	1,3	50	82	54	58	52	16,5	43	27	-	113	64	70	-	7/8"	-	1 5/16"	48	110	45	300 Nm	8502352	-	
VLBG-Z 4t 1"-8UNC	4	1,5	50	82	54	61	64	18	43	41	-	130	78	84	-	1"	-	1 1/2"	48	125	45	400 Nm	8502353	-	
VLBG-Z 5t 1 1/4"-7UNC	5	3,3	60	103	65	80	64	22,5	91	41	-	151	80	102	-	1 1/4"	-	1 7/8"	67	147	60	500 Nm	8503187	-	

Table 2

* = package unit 10 pieces

** = package unit 4 pieces

Method of lift											
Number of legs		1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4
Angle of inclination α		0°	90°	0°	90°	0-45°	45-60°	unsymm.	0-45°	45-60°	unsymm.
Factor		1	1	2	2	1,4	1	1	2,1	1,5	1
Type	Thread	WLL in lbs, bolted and adjusted to the direction of pull									
VLBG 0,3 t	M 8	660 lbs	660 lbs	1320 lbs	1320 lbs	925 lbs	660 lbs	660 lbs	1400 lbs	990 lbs	660 lbs
VLBG 0,63 t	M 10	1400 lbs	1400 lbs	2800 lbs	2800 lbs	1940 lbs	1400 lbs	1400 lbs	2910 lbs	2080 lbs	1400 lbs
VLBG 1 t	M 12 / 1/2"	2200 lbs	2200 lbs	4400 lbs	4400 lbs	3080 lbs	2200 lbs	2200 lbs	4620 lbs	3300 lbs	2200 lbs
VLBG 1,2 t	M14	2640 lbs	2640 lbs	5280 lbs	5280 lbs	3700 lbs	2640 lbs	2640 lbs	5545 lbs	3960 lbs	2640 lbs
VLBG 1,5 t	M 16 / 5/8"	3300 lbs	3300 lbs	6600 lbs	6600 lbs	4620 lbs	3300 lbs	3300 lbs	6930 lbs	4950 lbs	3300 lbs
VLBG 2 t	M 18	4400 lbs	4400 lbs	8800 lbs	8800 lbs	6160 lbs	4400 lbs	4400 lbs	9250 lbs	6600 lbs	4400 lbs
VLBG 2,5 t	M 20 / 3/4" / 7/8"	5500 lbs	5500 lbs	11000 lbs	11000 lbs	7700 lbs	5500 lbs	5500 lbs	11550 lbs	8250 lbs	5500 lbs
VLBG 4 t	M 24 / M 27 / 1"	8800 lbs	8800 lbs	17600 lbs	17600 lbs	12320 lbs	8800 lbs	8800 lbs	18480 lbs	13200 lbs	8800 lbs
VLBG 5 t	M 30 / 1 1/4"	11000 lbs	11000 lbs	22000 lbs	22000 lbs	15400 lbs	11000 lbs	11000 lbs	23100 lbs	16500 lbs	11000 lbs
VLBG 7 t	M 36	15400 lbs	15400 lbs	30800 lbs	30800 lbs	21500 lbs	15400 lbs	15400 lbs	32350 lbs	23100 lbs	15400 lbs
VLBG 8 t	M 36	17600 lbs	17600 lbs	35200 lbs	35200 lbs	24640 lbs	17600 lbs	17600 lbs	36960 lbs	26400 lbs	17600 lbs
VLBG 10 t	M 42	22000 lbs	22000 lbs	44000 lbs	44000 lbs	30800 lbs	22000 lbs	22000 lbs	46200 lbs	33000 lbs	22000 lbs
VLBG 15 t	M 42	33000 lbs	33000 lbs	66000 lbs	66000 lbs	46200 lbs	33000 lbs	33000 lbs	69300 lbs	49500 lbs	33000 lbs
VLBG 20 t	M 48	44000 lbs	44000 lbs	88000 lbs	88000 lbs	61600 lbs	44000 lbs	44000 lbs	92400 lbs	66000 lbs	44000 lbs

Tabelle 3

8. Spare Parts List

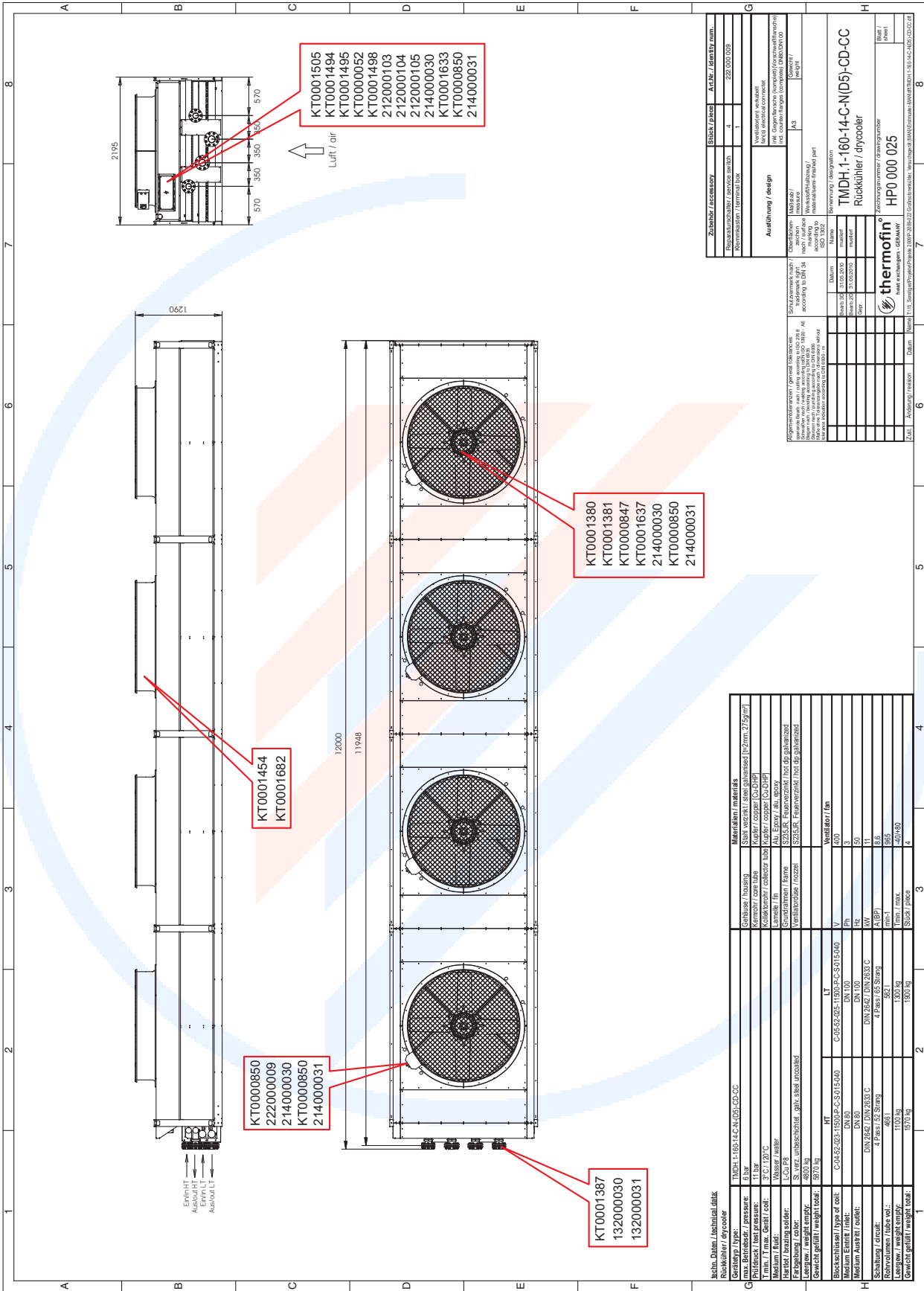
Pos.	Item number	Designation 1	Designation 2	Selection	Quantity/ Device
10	KT0001380	Motor	AT 160 L / 6F-12 (11 kW)	11 kW	4
20	KT0001381	Wheel Multi Wing	1585/4-8/24°/PAG/9WL/TP 7.5mm	1585	4
30	KT0001454	Nozzle ring with motor mount	3.0x1816mm	1600	4
40	KT0001682	Safety guard of the fan	Protection against contact	1600	4
50	222000009	Main switch	T5B-4-8344/I4/SVB	T5B	4
60	KT0001387	Pipe clip	DIN 3015	D=88,9	4
70	KT0001505	Top hat rail	35 x 7.5 mm		1
80	KT0001494	Terminal box	KL 1542.510	800x200x120	1
90	KT0001495	Cable 4 G 10	SIHF- JB	U=300/500V	1
100	KT0000052	Cable 3 G 1.5	Kaweflex 08071543 PVC-JZ	U=300/500V	1
110	KT0001498	Cable protection conduit	Helukond PP / NW23	M25	1
120	212000103	Terminal	ST-16-TWIN	I=90A, U=800V	12
130	212000104	Terminal	ST-16-TWIN-PE	I=90A, U=800V	4
140	212000105	Cover	D-ST 16-TWIN	I=90A, U=800V	4
150	214000030	Cable gland M32	black, UV resistant	M32	16
160	KT0001633	Cable gland M50	black, UV resistant	M50	4
170	KT0000847	Reduction cable gland	EPN550/ M40 --> M32	M40	4
180	KT0001637	Reduction cable gland	EPN550/ M40 --> M20	M40	4
190	KT0000850	Seal ring M32	black, perbunan	M32	16
200	214000031	Counter nut M32	light grey	M32	16
210	KT0001634	Counter nut M50	light grey	M50	4
220	132000030	Flange seal	DIN EN1514-1	142x90x2	2
230	132000031	Flange seal	DIN EN1514-1	162x115x2	2

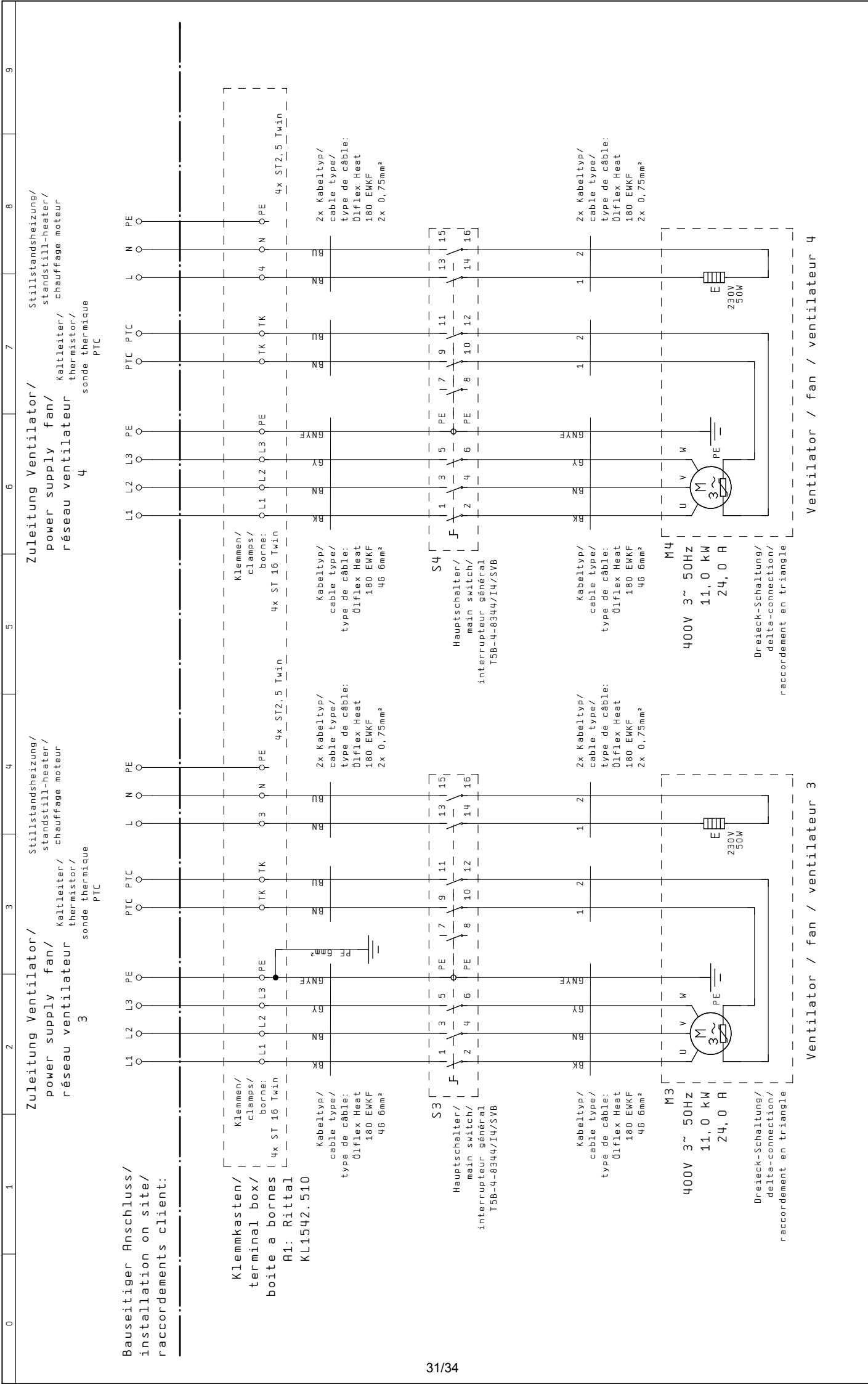
9. Data Sheet and Thermodynamic Design

TMDH -160-14-C-N(D5)-CD –CC per Genset 4 drycoolers
Diesel motors drycooler

LT - circuit - thermotechnical design -							
Power	901.0	kW			Medium	Water	
Air:	Inlet		Outlet		Inlet temperature:	54.6	°C
Temperature:	35.0	°C	47.0	°C	Outlet temperature:	42.0	°C
					Pressure drop:	0.67	bar
Volume flow rate:	244500	m³/h			Mass flow rate:	61598.8	kg/h
Installation height:	30	m			Volume flow rate:	62.40	m³/h
HT – circuit - thermotechnical design -							
Power	1810.0	kW			Medium	Water	
Air:	Inlet		Outlet		Inlet temperature:	90.0	°C
Temperature:	47.0	°C	71.0	°C	Outlet temperature:	61.0	°C
					Pressure drop:	0.72	bar
Volume flow rate:	260900	m³/h			Mass flow rate:	53548.2	kg/h
Installation height:	30	m			Volume flow rate:	55.1	m³/h
Fans:					Noise data for 1 piece, drycooler:		
4x3~400V 50Hz							
Data on each motor							
Speed:	965	1/min					
Nominal power:	11	kW			Sound pressure level:	81	dB(A)
Electr. power in	8.59	kW			Distance:	1	m
operating point:							
Max. temperature	80	°C			Sound pressure level:	98	dB(A)
LT – circuit -heat exchanger geometry -							
Fin pitch:	2.5	mm					
Surface:	2950.4	m²					
Core tube:	16.0x0.4	mm					
Pipe capacity:	582.0	l					
Pipe material:	Copper				Inlet nozzle:	1x108.0mm	
Fin material:	Aluminium with epoxy resin (UV)				Outlet nozzle:	1x108.0mm	
Fin thickness:	0.15	mm					
Housing material:	galvanized steel				Passes:	4	
HT – circuit -heat exchanger geometry -							
Fin pitch:	2.3	mm					
Surface:	2554.8	m²					
Core tube:	16.0x0.4	mm					
Pipe capacity:	465.6	l					
Pipe material:	Copper				Inlet nozzle:	1x88.9mm	
Fin material:	Aluminium with epoxy resin (UV)				Outlet nozzle:	1x88.9mm	
Fin thickness:	0.15	mm					
Housing material:	galvanized steel				Passes:	4	

10. Manufacturing Drawing





Troubleshooting

Incident	Cause	Action
Drop of cooling capacity, outlet temperature too high	Fins soiled	Clean the block
	Tube inner soiled	Clean system (circuit)
	Initial temperature too high	Check machine and circuit
	Increase of fluid flow rate	Ccheck circuit
		Check valves and pump control
	Fan out of work	Check power supply
		Measure power consumption
		Check appropriating terminal box
	Fan air flow rate too low	Check fans
		Check fan wings for damage
		Check and compare fan wings
Vibrations	Fan out of balance	Check impellers for unbalance, possibly rebalance or exchange
Leakage	Leaking flange	Retighten screws, possibly exchange binding
	Leaking and damaged tube	Locate and repair tube, possibly giving up
Noise	Flügelräder oder Motoren drehen nicht frei oder schleifen	Remove any existing obstacle
	Bearing damage on motor	Change motor

REACH - Erklärung

Erklärung zur Verordnung EG Nr. 1907/2006 zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (REACH)

Hiermit erklären wir, die Firma thermofin GmbH, dass die von uns gelieferten Geräte als Erzeugnisse im Sinne des Artikels 3 Begriffsbestimmungen zu definieren und weder als Stoff noch als Zubereitung zu bewerten sind.

Stoffe werden aus unseren Geräten nicht freigesetzt. Artikel 7 der Verordnung hat daher ebenfalls keine Relevanz für uns.

Pflichten aufgrund der Herstellung und des Inverkehrbringens von Substanzen oder Chemikalien zur Vorregistrierung oder Registrierung bestehen für uns nicht.

Pflichten aus Artikel 33 zur Weitergabe von Informationen über Stoffe in Erzeugnissen entstehen uns ebenfalls nicht.

REACH - Declaration

Declaration of Regulation no. 1907/2006 for Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Herewith we, the company thermofin GmbH, declare that the equipment delivered by us is defined as "Articles" in sense of article 3 (Definitions) and is neither evaluated as "Substances" nor as "Preparation".

Substances are not released from our equipment. Therefore, article 7 (Registration and notification of substances in articles) of the Regulation is also not relevant for us.

There are no pre-registration or registration obligations for us due to the production and marketing of substances or chemicals.

Furthermore, there is no duty for us concerning the communication of information on substances in articles resulting from article 33 (Duty to communicate information on substances in articles).

Mit freundlichen Grüßen

With best regards



Bernd Löffler, GF, 06.02.2012

	thermofin GmbH		Seite 1 / 1	
	EG – Konformitätserklärung / Einbauerklärung EC – Declaration of Conformity / Declaration of Incorporation		Stand: F	FB.09.29

Konformitätserklärung / Declaration of Conformity

Hiermit erklären wir		Herewith we	
thermofin GmbH, Am Windrad 1, DE - 08468 Heinsdorfergrund			
in alleiniger Verantwortung, dass das gelieferte Modell		declare under sole responsibility that the supplied model of	
Verflüssiger	(X-)TC., (X-)TAC., (X-)AC., (X-)TO..	Condenser	(X-)TC., (X-)TAC., (X-)AC., (X-)TO..
Verdampfer	(X-)TE., (X-)TA., (X-)TF., (X-)TO..	Evaporator	(X-)TE., (X-)TA., (X-)TF., (X-)TO..
Luftkühler (Sole)	(X-)TG..	Aircooler	(X-)TG..
Rückkühler	(X-)TD., (X-)TM., (X-)ADW..	Drycooler	(X-)TD., (X-)TM., (X-)ADW..
Unterkühler, Enthitzer	(X-)TU	Subcooler, Desuperheater	(X-)TU
Wärmeübertrager (Rohrsysteme)	TB..	Heat exchanger coil (tube systems)	TB..
Isolierkühler	(X-)TL., (X-)TP..	Insulated cooler	(X-)TL., (X-)TP..
Wärmepumpenverdampfer	(X-)TW., (X-)TO..	Heat pump evaporator	(X-)TW., (X-)TO..
Projektnummer:			
Project No:			
allen grundlegenden Anforderungen folgender EG-Richtlinien entspricht:		complies with all the general provisions of the following EC-directives:	
Druckgeräterichtlinie DGRL 97/23/EG Modul A, A1 Benannte Stelle: TÜV Süd Gruppe CE 0036 EMV-Richtlinie 2004/108/EG		Pressure Equipment Directive PED 97/23/EC Module A, A1 Named authority: TÜV Süd Gruppe CE 0036 EMC-Directive 2004/108/EC	
Hierfür wurden die folgenden harmonisierten Standards angewendet. Störaussendungen für Wohn- Geschäfts- und Gewerbebereiche sowie Kleinbetriebe EN 61000-6-3:2007, EN 61000-6-2:2005		For this purpose, the following harmonized standards were applied. Emission standard for residential, commercial and light- industrial environments EN 61000-6-3:2007, EN 61000-6-2:2005	

Einbauerklärung / Declaration of Incorporation

Hiermit erklären wir, dass alle o. g. Geräte, soweit zutreffend, allen grundlegenden Anforderungen der folg. EG-Richtlinien entsprechen:		Herewith we declare that all models mentioned above, if applicable, comply with all the following provisions applying to it:	
Maschinenrichtlinie 2006/42/EG* Niederspannungsrichtlinie 2006/95/EG		Machinery Directive 2006/42/EC* Low Voltage Directive 2006/95/EC	
*Erklärung zu den angewendeten und eingehaltenen Sicherheits- und Gesundheitsschutzanforderungen einer unvollständigen Maschine der Maschinenrichtlinie 2006/42/EG, Anhang I Allgemeine Grundsätze Nr. 1.1.2, Nr. 1.1.3, Nr. 1.1.4, Nr. 1.1.5, Nr. 1.2.1, Nr. 1.3, Nr. 1.4, Nr.1.5, Nr. 1.6, Nr. 1.7		*Declaration concerning partly completed machinery with respect to the applied health and safety requirements of and in compliance with Machinery Directive 2006/42/EC, Annex I General principles No. 1.1.2, No. 1.1.3, No. 1.1.4, No. 1.1.5, No. 1.2.1, No. 1.3, No. 1.4, No.1.5, No. 1.6, No. 1.7	
Hierfür wurden die folgenden harmonisierten Standards angewendet. Sicherheit von Maschinen - Grundbegriffe, allg. Gestaltungsleitsätze EN ISO 12100-1:2003/A1:2009, EN ISO 12100-2:2003/A1:2009 Sicherheit von Maschinen - Sicherheitsabstände gegen das Erreichen von Gefahrenstellen mit den oberen Gliedmaßen EN ISO 13857:2008 Sicherheit von Maschinen - Mindestabstände zur Vermeidung des Quetschens von Körperteilen EN 349+ A1:2008 Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umwelt-relevante Anforderungen EN 378-1:2008, EN 378-2:2008+A1:2009 Sicherheit von Maschinen - Risikobeurteilung EN ISO 14121-1:2007		For this purpose, the following harmonized standards were applied. Safety of machinery - Guiding principles for design and technology EN ISO 12100-1:2003/A1:2009, EN ISO 12100-2:2003/A1:2009 Safety of machinery - Safety margin against reaching danger areas with the upper limbs EN ISO 13857:2008 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body EN 349:1993 + A1:2008 Refrigerating systems and heat pumps - Safety and environmental requirements EN 378-1:2008, EN 378-2:2008+A1:2009 Safety of machinery - Risk assessment EN ISO 14121-1:2007	
Die Erstellung der technischen Unterlagen ist nach der Maschinenrichtlinie 2006/42/EG, Anhang VII, Teil B erfolgt. / The compilation of the technical files is carried out according to Machinery Directive 2006/42/EC, Annex VII, Part B.			
Auf begründetes Verlangen von staatlichen Stellen werden wir die speziellen Unterlagen zu der unvollständigen Maschine als Datei im pdf Format übermitteln. / On justified request the specific documentation concerning the partly completed machinery will be transmitted to the official authorities as a pdf-file.			
Die Inbetriebnahme ist so lange untersagt, bis festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht. / The product must not be put into service until the machinery in which the product will be incorporated is declared to comply with the provisions of Machinery Directive 2006/42/EC.			
Bevollmächtigte Person für technische Unterlagen:		Authorized person for compiling the technical files:	
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Heinsdorfergrund, 27.06.2011			
Ort und Datum der Ausstellung Place and date of issue		Bernd Löffler, Geschäftsführer Bernd Löffler, General Manager	