SERVICE MANUAL

Refrigeration Dryer

Model TAH

No.: 9_5754_06USE

KAESER COMPRESSORS

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1 Regarding this Document

1.1 Handling the Document

The service manual is part of the machine.

☞ Keep the service manual in a safe place throughout the life of the machine.

☞ Pass the manual on to the next owner/user of the machine.

☞ Ensure that all amendments received are entered in the manual.

☞ Enter details from the machine nameplate and individual equipment in the table in chapter 2 ”Technical Specifications”.

1.2 Copyright

1.3 Symbols and Identification

1.3.1 Warning notices

DANGER

Here is a notice that warns you of danger.

Here are consequences of ignoring the warning notice.
The word ’DANGER’ means that death or severe injury can result if the warning notice is ignored.

☞ Always read and comply with warning notices.

Danger levels

Warning notices indicate three levels of danger signified by the word below the danger symbol.

Signal word	Meaning	Consequences of non–compliance
DANGER	Warns of imminent threatening danger	Death or severe injury or serious damage to the machine is possible
WARNING	Warns of a possible threat of danger	Death or severe injury or serious damage to the machine is possible
CAUTION	Warns of a possibly dangerous situation	Light injury or damage to property possible

1.3.2 Other notices and symbols

☞ This symbol indicates that a task is to be carried out.

This symbol identifies environmental protection measures.

This symbol refers to important information.

2 Technical Specification

Model designation and important technical information is found on the machine's name-plate. The nameplate is located on the outside of the machine.

Please enter the data from the nameplate here.

Model	
Material no.	
Year of manufacture	
Serial no.	
Refrigerant	
Refrigerant charge	
Maximum working pressure (refrigerant system)	
Maximum working pressure (air system)	
Checked for leaks	
Rated voltage	
Rated current	
Ambient temperature	

Tab. 1 Nameplate

2.1 Weight

The weight given is the maximum. Actual weights of individual machines are dependent on equipment fitted.

	TAH 4	TAH 6
Weight [lbs]	80	90

Tab. 2 Machine weight

2.2 Ambient Conditions

	TAH 4	TAH 6
Maximum elevation above sea level* [ft.]	3000	3000
Ambient temperature [˚F]	40 – 110	40 – 110
Inlet air / cooling air temperature [˚F]	40 – 110	40 – 110

* Higher elevation permissible only after consultation with the manufacturer

Tab. 3 Ambient Conditions

2.3 Compressed Air System

	TAH 4	TAH 6
Pressure drop [psi] *	0.75	0.75
Air flow [cfm] *	12	20

* at 100 ˚F air inlet, 100 psig, 100 ˚F ambient temperature and 60Hz power supply

	TAH 4	TAH 6
Maximum permitted working pressure [psig]	230	230
Pressure dew point [˚F] *	38	38

* at 100 ˚F air inlet, 100 psig, 100 ˚F ambient temperature and 60Hz power supply

Tab. 4 Compressed air system

2.4 Refrigerant System

	TAH 4	TAH 6
Refrigerant	R 134a	R 134a
Maximum charge [lbs]	0.60	0.68
Maximum permitted working pressure [psig]	260	260
Safety pressure switch Cut–out pressure [psig]	260	260

Tab. 5 Refrigerant system

2.5 Sound Pressure Level

Operational state:

- Nominal air flow and nominal pressure

Measurement conditions:

- Free–field measurement to CAGI/PNEUROP PN8 NTC 2.3 at 1 m distance

	TAH 4	TAH 6
Sound pressure level [dB(A)]	< 70	< 70

Tab. 6 Sound Pressure Level

2.6 Electrical Connection

See electrical diagrams in chapter 13.1.3 for further information.

2.6.1 Power supply

The machine is designed for an electrical supply according to National Electric Code (NEC) NEC–670, particulary NFPA 79, section 5.7. In the absence of any user–specified alternatives, the limits given in these standards must be adhered to. Consult manufacturer for any other specific power supply.

2.6.2 Power supply specifications

The following multi–strand copper core wires are given according to 2002 NEC 310–15, Table 310–16 for 40 ˚C ambient temperature.

If other local conditions prevail, like for example high temperature, the cross section should be checked and adjusted according to 2002 NEC 110–14©, 220–3,310–15, Table 310–16, 430–6, 430–22, 430–24 and other local codes.

Dual element time delay fuses are selected according to 2002 NEC 240–6,430–52 and tables 430–52, 430–148 and 430–150.

We strongly suggest using a separate copper conductor for the equipment GROUNDING. NEC Table 250.122 will point out the ”minimum size”, however, we recommend a ground conductor the same size as the power leads, if local codes allow.

Rated power supply 230V ±10%, 1 – ph, 50/60Hz

	TAH 4	TAH 6
Mains fuses [A]	3	4
Supply cable	AWG 14	AWG 14
Current drawn [A]	2.0	2.4

Tab. 7 Power supply details 230V/1/50Hz/60Hz

Rated power supply 115V ±10%, 1 – ph, 60Hz

	TAH 4	TAH 6
Mains fuses [A]	6	6
Supply cable	AWG 14	AWG 14
Current drawn [A]	4.1	4.8

Tab. 8 Power supply details 115V/1/60Hz

3 Safety and Responsibility

DANGER

Disregard of these instructions can result in serious injury.

☞ Read the service manual carefully and pay attention to its contents.

The machine is manufactured to the latest engineering standards and acknowledged safety regulations. Nevertheless, dangers can arise through its operation:

- Danger to life and limb of the operator or third parties
- Impairments to the machine and other material assets.

☞ Use this machine only if it is in a technically perfect condition and only for the purpose for which it is intended, observing all safety measures and the instructions in the service manual.

☞ In particular, immediately rectify (have rectified) any faults that could be detrimental to safety.

3.1 Specified Use

The machine is intended solely to dry compressed air for industrial use. Any other use is considered incorrect. The manufacturer is not liable for any damages resulting from unspecified use or application. The risk involved in such unspecified use is taken solely by the user.

Specified use also includes compliance with the instructions in this manual.

3.2 Unspecified Use

The compressed air generated:

☞ may not be directed at persons or animals,

☞ must not contain toxic, acidic, flammable or explosive gases or vapors,

☞ may not be used for breathing purposes without suitable treatment,

☞ may not be used without appropriate treatment for any application that will bring it into direct contact with foodstuffs.

3.3 User's Responsibilities

Observe statutory and accepted regulations.

Observe relevant statutory regulations during installation, operation and maintenance of the machine. For example: nationally applied directives and/or valid national legislation, safety and accident prevention regulations.

3.3.1 Qualified personnel

Ensure that operating, installation and maintenance personnel are qualified and authorized to carry out their tasks.

These are people who, by virtue of their training, knowledge and experience as well as their knowledge of relevant regulations can assess the work to be done and recognize the possible dangers involved.

Operating personnel

Authorized operating personnel:

- must be adult,
- must be conversant with and adhere to the safety instructions and sections of the service manual relevant to operation of the machine,
- must have received adequate training and authorization to operate electrical, compressed air and refrigeration devices.

Installation and maintenance personnel

Authorized installation and maintenance personnel:

- must be adult,
- must have read, be conversant with and adhere to the safety instructions and sections of the service manual applicable to installation and maintenance,
- must be fully conversant with the safety concepts and regulations of electrical, compressed air engineering and refrigeration techniques,
- must be able to recognize the possible dangers of electrical, compressed air and refrigeration techniques and take appropriate measures to safeguard persons and property,
- must have received adequate training and authorization for the safe installation and maintenance on these machines.

3.4 Safety Devices

Do not change, bypass or disable safety devices.

Do not remove or obliterate labels and notices.

Ensure that labels and notices are clearly legible.

More information on safety devices is contained in chapter 4 'Design and Function', section 4.4 'Safety Devices'.

3.5 Dangers

The general safety instructions in this chapter indicate the possible dangers and how to deal with them.

Special safety instructions are found in this service manual at the beginning of each chapter or directly before operative instructions.

3.5.1 Safely dealing with sources of danger

Here are to be found the various forms of danger that can arise in connection with machine operation.

Electricity

- ☞ Allow only qualified electricians or trained personnel under the supervision of a qualified electrician to carry out work according to electrical engineering regulations on electrical equipment.
- ☞ Before initial start–up, make sure that adequate protection against electric shock from direct or indirect contact with the machine is installed and checked.
- ☞ Isolate all phases of the main power supply.
- ☞ Check and ensure that no power is present.
- ☞ Switch off any external power sources.
  These can be, for example, power supplied through a volt–free (dry) contact or electrical machine heating.
- ☞ Use fuses corresponding to the machine power.
- ☞ Regularly check that all electrical connections are tight.

Pressure forces

Compressed air is a contained force. Uncontrolled release of this energy can cause serious injury or death.

Before all work on a pressure system:

☞ Close shut–off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine,

☞ Do not carry out welding, heat treatment or mechanical modifications to pressure components (e.g. pipes and vessels) as this influences the component's pressure resistance.
The safety of the machine is then no longer ensured.

Compressed air quality

☞ Ensure that the compressed air:
- is clean with no damaging contaminants
- contains no chemically unstable or explosive gas or vapor
- is free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.

☞ Use appropriate systems for air treatment before using the compressed air from this machine as breathing air or for the processing of foodstuffs.

☞ Never directly inhale compressed air.

Rotating components

Touching the fan while the machine is switched on can result in serious injury.

☞ Make sure all covers and safety guards are in place and secured before switching on.

Temperature

☞ Avoid contact with hot components.

☞ Wear protective clothing.

☞ If welding is carried out on or near the machine take adequate measures to ensure that no parts of the machine or any oil vapors can ignite because of sparks or heat.

Operating materials

☞ Strictly forbid fire, open flame and smoking.

☞ Follow safety regulations when dealing with refrigerants and chemical substances.

☞ Allow only qualified specialists to work on refrigerant circuits.

☞ Avoid contact with skin and eyes.

☞ Keep suitable fire extinguishing agents ready to use.

☞ Use only KAESER approved operating materials.

Unsuitable spare parts

☞ Use only spare parts approved by the manufacturer for use in this machine. Unsuitable spare parts compromise the safety of the machine.

☞ Use only genuine KAESER parts for pressure components.

Conversion or modification of the machine

☞ Do not permit conversion or modification of the machine as this can compromise function and safe working.

3.5.2 Safe machine operation

Here is found information to support safe conduct with the machine.

Transport

☞ Use suitable lifting gear that conforms to local safety regulations.

☞ Attach lifting gear only to the designated points on the machine.

☞ Note the centre of gravity to avoid the machine tipping.

☞ Make sure the danger zone is clear.

Installation

☞ Make sure no power is applied when electrical connections are made.

☞ Only use only electrical cables that are suitable and approved for the electrical loads applied.

☞ Install or remove pressure lines only when they are in the depressurized condition.

☞ Only use pressure lines that are suitable and approved for the maximum working pressure and medium used.

☞ Do not step onto machine components to climb up the machine.

Location

☞ Install the machine in a suitable room.
If installed outdoors, the machine must be protected from frost, direct sunlight, dust and rain.

☞ The machine is not explosion–proof.
Do not operate in areas in which specific requirements with regard to explosion prevention are applied.
For instance, the requirements of the ATEX directive 94/9/EC ”Equipment and Protective Systems for use in Explosive Atmospheres”.

☞ Ensure adequate ventilation.

☞ Observe the required ambient conditions:

- Ambient temperature and humidity.
- Clean inlet air with no damaging contaminants.
- Inlet air free of explosive or chemically unstable gases or vapors.
- Inlet air free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.

☞ Do not position the machine in the warm exhaust air from other machines.

☞ Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.

Operation

☞ Keep the machine enclosure closed for safety and correct cooling function.

☞ Carry out regular inspections:

- for damage,
- of the safety devices.

Maintenance

☞ Make sure the machine is disconnected from electrical power and vented before commencing any maintenance work.

☞ Wear close–fitting, flame–resistant clothing. Wear protective clothing as necessary.

☞ Do not leave any loose components, tools or cleaning rags on or in the machine.

Decommissioning / disposal

☞ Do not damage the refrigerant circuit.

☞ Give refrigerant only to authorised bodies for disposal.

☞ Dispose of the machine in accordance with local environmental regulations.

3.5.3 Organisational measures

- ☞ Designate personnel and their responsibilities.
- ☞ Give clear instructions on reporting faults and damage to the machine.
- ☞ Give instructions on fire reporting and fire–fighting measures.

3.6 Warning Symbols on the machine

⚠	**Electric Shock can result from components connected to an electrical power source.** Contact with energized components can cause serious injury or death. ☞ Switch off control switch and lock out / tag out. ☞ Check that no voltage is present.

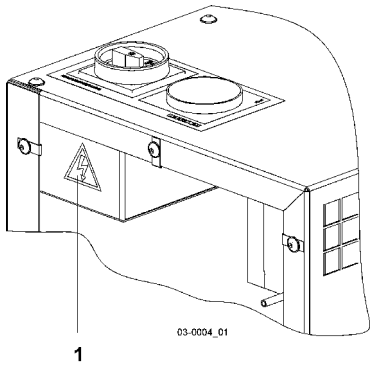


Fig. 1 Warning symbols on the machine

1 Warning symbol

3.7 In Emergency

3.7.1 Contact with refrigerant

Inhalation:

- ☞ Remove the affected person to fresh air and make him or her rest.
  If breathing stops, apply artificial respiration and call for medical assistance.

Skin contact:

- ☞ Rinse immediately with plenty of water.
  Treat burns and frostbite.

Eye contact:

- ☞ Rinse thoroughly with lukewarm water and seek medical assistance.

If required, request a copy of the safety data sheet dealing with the handling of refrigerants for KAESER dryers.

3.8 Environmental Protection

Do not allow refrigerant to escape to the atmosphere.

Give refrigerant only to authorized bodies for disposal.

Do not allow refrigerant compressor oil to escape to the environment or into the sewage system.

Store and dispose of operating materials and replaced parts in accordance with local environmental protection regulations. Observe national regulations. This applies particularly to parts contaminated by oil.

3.9 Warranty

This service manual contains no independent warranty committment.
Our general terms and conditions of business apply with regard to warranty.

A condition of our warranty is that the machine is used for the purpose for which it is intended under the conditions specified.
Due to the multitude applications for which the machine is suitable the obligation lies with the user to determine its suitability for his specific application.

☞ Obtain confirmation from the manufacturer that the machine is suitable for your specific application.

Furthermore, we accept no warranty obligation for:

- the use of unsuitable parts or operating materials,
- unauthorized modifications,
- incorrect maintenance,
- incorrect repair.

Correct maintenance and repair includes the use of genuine KAESER spare parts and operating materials.

4 Design and Function

4.1 Machine Overview

4.1.1 Cabinet

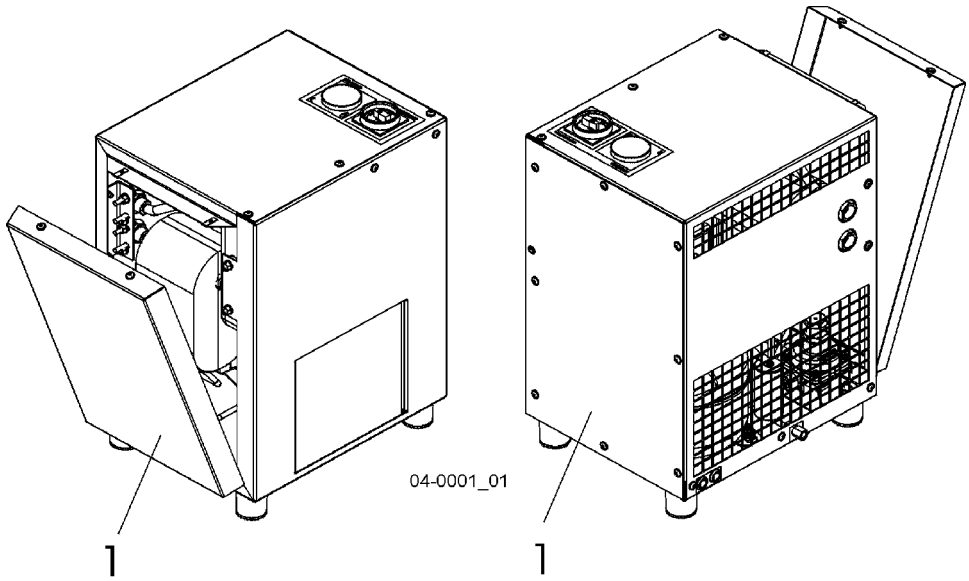


Fig. 2 Cabinet

1 Side panel

The cabinet, when closed, serves various functions:

- sound damping
- protection against contact
- cooling air flow control

Safe and reliable operation is only assured with the cabinet closed.

To open the cabinet, loosen the retaining screws in the side panels with a screwdriver and remove the panels.

4.2 General Design

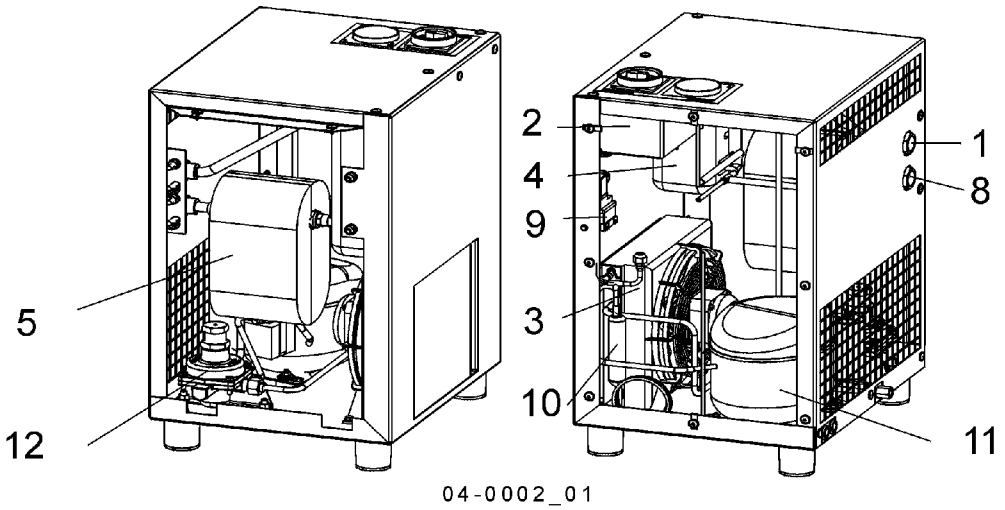


Fig. 3 Main components

1	*Compressed air inlet*	*8*	*Compressed air outlet*
2	*Control cabinet*	*9*	*Safety pressure switch*
3	*Refrigerant condenser*	*10*	*Filter dryer*
4	*Heat exchanger*	*11*	*Refrigerant compressor*
5	*Condensate separator*	*12*	*Hot gas bypass valve*

The main component in a refrigeration dryer is an air/refrigerant heat exchanger (4).

The refrigerant circulation is automatically regulated by a hot gas bypass valve (12).

A condensate separating system (5) is fitted downstream of the heat exchanger.

A safety pressure switch (9) is fitted in the refrigerant circulation system as a protection against excessive pressure.

A thermal overload switch protects the refrigerant compressor (11) against current overloads and high temperatures.

4.3 Function

The cooling action of the refrigeration dryer causes moisture to precipitate out of the compressed air.

In the air/refrigerant heat exchanger (4), the compressed air is cooled by gassing refrigerant. This cooling action causes the water vapor in the compressed air to condense when the temperature falls below the pressure dew point.

A condensate separator (5) downstream separates the condensed liquid from the air flow and drains them out of the system together with oil droplets and larger dirt particles with a condensate drain.

The hot gas bypass valve (12) regulates refrigerating capacity.

4.4 Safety Devices

The following safety devices are provided and may not be modified:

- EMERGENCY STOP
  The ON/OFF switch shuts down the machine immediately.
  It can be fitted with a padlock to prevent reapplication of power.
- Safety pressure switch
  The safety pressure switch protects the refrigerant circuit against excessive pressure.
  It is factory set.
  If the safety pressure switch has actuated, the refrigeration dryer cannot be put back into operation until the manual RESET on the safety pressure switch has been pressed.
- Housings and covers for moving parts and electrical connections
  They protect against accidental contact.

4.5 Pressure dew point indication

The pressure dew point indicator provides information on the operating state of the refrigeration dryer.

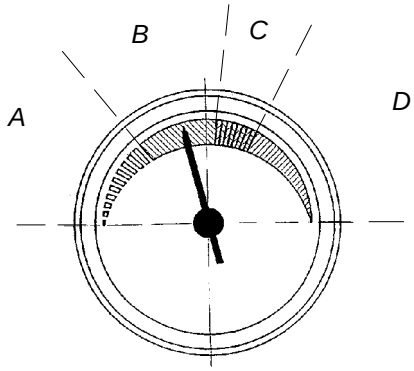


Fig. 4 Pressure dew point indication

A Pressure dew point too low
B Pressure dew point normal
C Pressure dew point too high
D Pressure dew point too high

Area	Colour	Meaning
A	blue/white	Danger of icing up Ambient temperature too low
B	green	Optimum operating conditions
C	green/red	Ambient and/or compressed air temperature too high
D	Red	Fault

Tab. 9 Indication

4.6 Accessories

4.6.1 Bypass line (see chapter 6.5)

The refrigeration dryer can be isolated from the compressed air network with the bypass line.
The air supply is maintained, however, no drying can take place.

5 Installation and Operating Conditions

5.1 Surroundings

☞ Strictly forbid fire, open flame and smoking.

☞ If welding is carried out on or near the machine take adequate measures to ensure that no parts of the machine or any oil vapors can ignite because of sparks or heat.

☞ The machine is not explosion–proof.
Do not operate in areas in which specific requirements with regard to explosion prevention are applied.
For instance, the requirements of ATEX directive 94/9/EC ”Equipment and protective systems intended for use in potentially explosive atmospheres”.

☞ Observe the required ambient conditions:

- Surrounding temperatures within recommended limits.
- Clean inlet air with no damaging contaminants.
- Inlet air free of explosive or chemically unstable gases or vapors.
- Inlet air free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.

☞ Keep suitable fire extinguishing agents ready to use.

5.2 Installation Conditions

5.2.1 Place of installation and space required

Pre–condition: The floor must be level, firm and capable of bearing the weight of the equipment.

The spacings given are recommended and ensure unhindered access to all machine parts.
Please consult KAESER if they cannot be achieved.

☞ Do not install the machine in the exhaust air flow from other machines.

☞ If installed outdoors, the equipment must be protected from frost, direct sunlight, dust and rain.

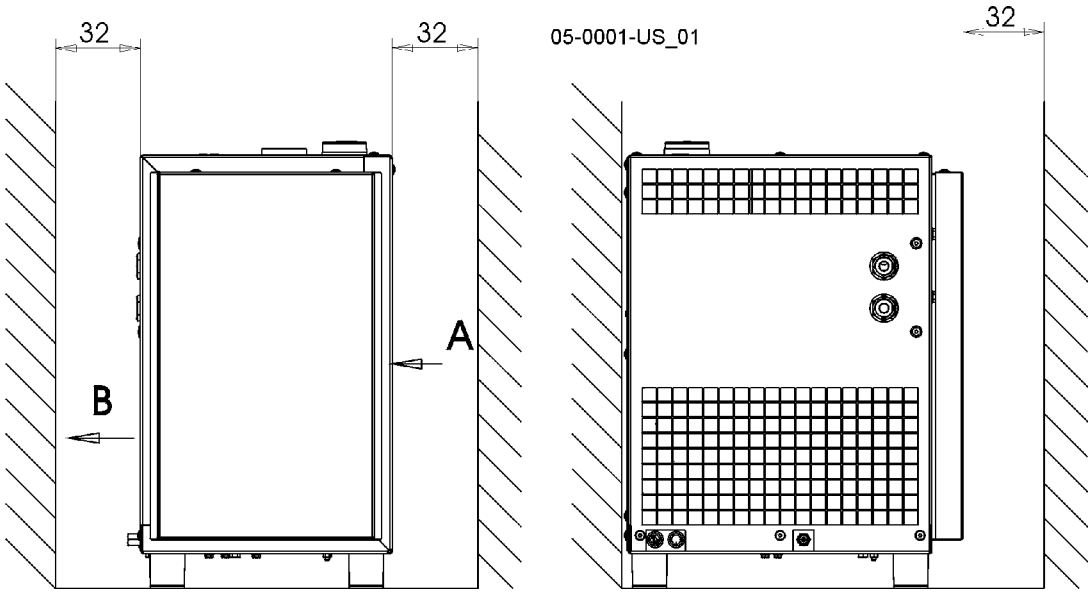


Fig. 5 Installation recommendation, dimensions [in]

A Cooling air inlet
B Cooling air outlet

5.2.2 Operating in a compressed air system

When the machine is connected to an air system, the operating pressure must not exceed 230 psig.

Initial filling of a fully vented air system generally creates a very high rate of flow through air treatment devices. These conditions are detrimental to correct air treatment. Air quality can be degraded.

To ensure maintenance of desired air quality when filling a vented air system we recommend the installation of an air main charging system.

Please contact KAESER for assistance in selecting and installing an air main charging system.

6 Installation

6.1 Safety

DANGER

Refrigerant

There is considerable risk of injury from released refrigerant if the refrigerant circuit is incorrectly opened.

☞ Do not open the refrigerant circuit.

All functional parts are factory set.
Do not change these settings without the permission of the manufacturer.

Have the machine installed by qualified and authorized personnel.

6.2 Reporting Transport Damage

☞ Check the machine for visible and hidden transport damage.

☞ Inform the carrier and the manufacturer in writing of any damage found.

6.3 Compressed Air Connection

Pre–condition: Machine switched off.
The compressed air network is at atmospheric pressure.

Install bypass pipework to allow the dryer to be isolated from the compressed air network without interrupting air flow.

☞ Connect the dryer with flexible hoses free of stress.

☞ Install the user's compressed air inlet and outlet shut–off valves or the bypass line (optional accessory).

6.4 Condensate Drainage Connection

Collect condensate in a suitable container and dispose of in accordance with environmental regulations.

A hose connection is provided for condensate drainage.

Larger cross–sections should be used on condensate lines of 16 ft. or longer.

☞ Connect the drain hose.

6.5 Installing the bypass line (optional accessory)

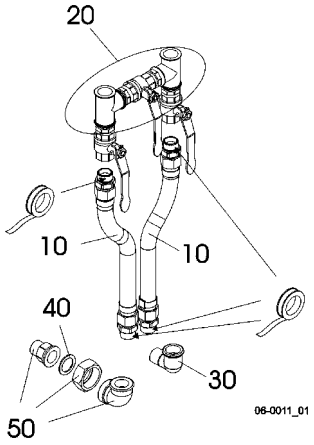


Fig. 6 Install the bypass line

10	*Hose line*	*40*	*Seal*
20	*Bypass line, assembled*	*50*	*Elbow assembly*
30	*Elbow*		

- ☞ Screw the elbow (30) into the compressed air inlet.
- ☞ Fit the elbow assembly, with seal, to the compressed air outlet.
- ☞ Fit the hose lines (10) with the bypass line (20) to the elbow (30) and the elbow assembly (50) using sealing tape.
- ☞ Check for leaks when commissioning.

6.6 Electrical Connection

Have the electrical connection made only by a qualified and authorized electrician.

Main power supply and overcurrent protection must be installed by a qualified electrician in accordance with NEC, OSHA, and any applicable local codes.

Use wire conductor dimensions and fuse ratings in accordance with local regulations. Guide values are given in chapter 2.6.

The machine is supplied with a 6 ft. connecting cable with plug.

- ☞ Have an authorized electrician fit a plug or make a fixed connection.
- ☞ Use an external isolating or autotransformer for an alternative mains voltage if necessary.

7 Initial Start–up

7.1 Safety

DANGER

Voltage!

Contact with live electric components can cause serious injury or death.

☞ Isolate all phases of the main power supply.
(switch off the mains supply disconnecting device)

☞ Ensure that the power supply cannot be switched on again (locked off).

☞ Check that no voltage is present.

WARNING

Uncontrolled discharge of compressed air!

Serious injury or death can result from loosening or opening components under pressure.

☞ Close shut–off valves or otherwise isolate the machine from the compressed air system to ensure that no compressed air can flow back into the machine.

7.2 To be Observed Before Every Initial Start–up

Initial start–up of the machine may only be carried out by trained and authorized installation or maintenance personnel.

Incorrect or improper initial start–up can cause injury to persons or damage to the machine.

Special measures:

Do not start up the refrigeration dryer before its temperature corresponds to the ambient temperature.

7.3 Checking Installation and Operating Conditions

Carry out all the items in the checklist before starting the machine.

	To be checked	Chapter	Done?
1	☞ Are all the conditions for installation fulfilled?	5	
2	☞ User's lockable supply disconnecting device installed?	6.6	
3	☞ Is the power supply as specified on the nameplate?	2	
4	☞ Supply cable section and fuse rating adequate?	2.6.2	
5	☞ All electrical connections checked for tightness?		
6	☞ Shut–off valve fitted to the compressed air connections?	6.3	
7	☞ Condensate drainage checked for correct function?	10.2.3	
8	☞ Are the operators fully conversant with safety regulations?		
9	☞ Are all access doors closed and all removable panels in place and secured?	4.1.1	

Tab. 10 Installation conditions checklist

7.4 Starting the Machine for the First Time

☞ Open the shut–off valve to the compressed air system.

☞ Switch on the machine.

The refrigeration compressor starts and after a short period the machine cools the compressed air.

Watch for any faults occurring during the first few hours of operation.

8 Operation

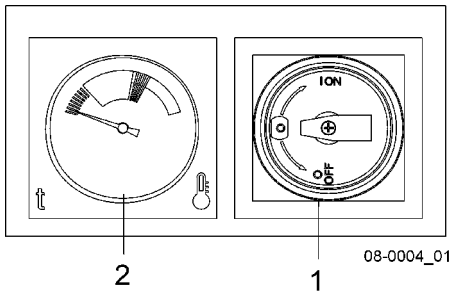


Fig. 7 Switching on and off

1 On/off switch
2 Pressure dew point indicator

8.1 Switching On and Off

Compressed air!

WARNING Serious injury is possible.

☞ Never direct compressed air at persons or animals.

8.1.1 Switching on

☞ Ensure that:
- no one is working on the machine,
- all panels are in place.
- all access doors are closed.

☞ Switch on the supply disconnecting device.

☞ Turn the switch (1) to ON.

The refrigerant compressor starts.

8.1.2 Starting the machine after a fault

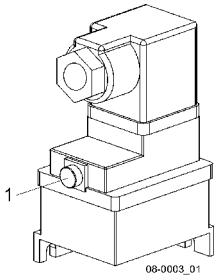


Fig. 8 RESET

1 RESET

☞ Press RESET if the dryer has been shut down by the safety pressure switch.

☞ Turn the switch (1) to ON position.

8.1.3 Switching off

☞ Turn the switch (1) to the OFF position and lock off.

8.1.4 Bypassing the dryer (optional accessory)

Pre–condition: Bypass assembly to hand

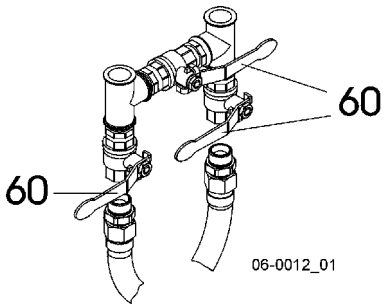


Fig. 9 Bypassing the dryer

60 Ball valve

☞ Turn the ball valves (60), as illustrated in Fig. 9 to isolate the dryer from the compressed air network.

9 Fault Finding and Removal

Inform KAESER Service if the fault cannot be removed by the measures suggested.

Do not attempt fault removal measures other than those given in this manual.

9.1 Faults

Fault	Possible cause	Remedy
Water in the compressed air system	Compressed air inlet and outlet reversed.	Check the compressed air inlet.
	The condensate is not draining out of the system.	Check and clean the condensate drain.
High pressure drop	Refrigeration dryer iced up at the air end.	Shut down the dryer until the air system has thawed out.
	Continuous air loss from the condensate drain.	Clean the condensate drain.
Pressure dew point too high	Surrounding and/or compressed air inlet temperature too high.	Ensure that installation conditions are being kept to.
	Low refrigerant level.	Contact KAESER service.
	Dirt collecting in the compressed air system.	Contact KAESER service.
The safety pressure switch shuts down the dryer	Surrounding and/or compressed air inlet temperature too high.	Ensure that installation conditions are being kept to.
	Refrigerant condenser dirty.	Clean the refrigerant condenser.

Tab. 11 Faults and Remedies

10 Maintenance

10.1 Safety

Any disregard of these instructions and/or incorrect handling may result in serious injuries.

DANGER

Voltage!

There is danger of fatal injury caused by touching electrically live components.

☞ Isolate all phases of the main power supply.
(switch off the mains supply disconnecting device)

☞ Ensure that the power supply cannot be switched on again (locked off).

☞ Check that no voltage is present.

WARNING

Refrigerant

Danger of injury from refrigerant.

☞ Do not open or dismantle the refrigerant circuit.

Maintenance intervals are recommendations only and should be adjusted to suit installation and operating conditions.

Before switching on again ensure that:

- no maintenance personnel are working on the machine,
- all panels are in place and secured,
- all access doors are closed.

10.2 Regular maintenance tasks

Interval	Maintenance tasks
Every week	Check condensate drainage
Every month	Clean the refrigerant condenser.
Every 3 months	General checks.
	Clean the condensate drain.

10.2.1 General checks.

☞ Check the refrigeration dryer's electrical equipment. Immediately repair any defects, such as loose connections and/or overheated cables.

☞ Check all pipes, hoses and fittings for leaks and any visible damage. Immediately repair any faults.

10.2.2 Cleaning the refrigerant condenser

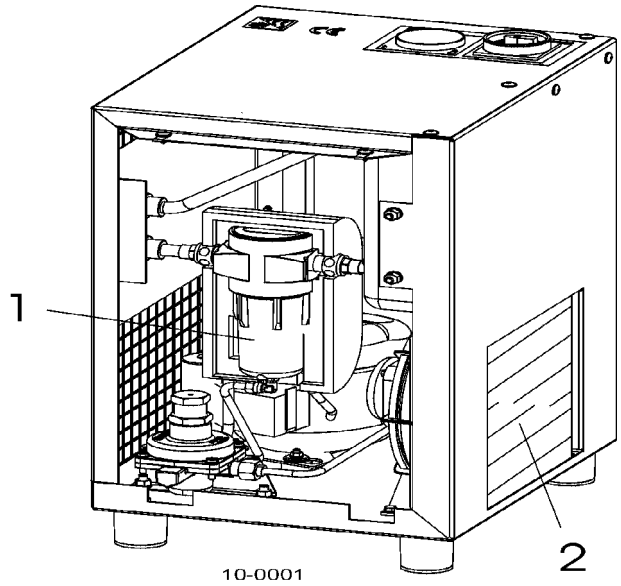


Fig. 10 Cleaning the refrigerant condenser/condensate drain

1 Condensate drain
2 Refrigerant condenser

Equipment: Compressed air for blowing out
Cleaning rags
Water with cleaning agent additive

Pre–condition: Machine switched off.
Supply disconnecting device switched off and locked out.
Machine cooled down.

☞ Blow out the refrigerant condenser (2) with compressed air (< 70 psig), clean off heavy fouling with water.

10.2.3 Check condensate drainage

☞ Check visually that condensate flows from the drain hose.

Condensate does not drain out?

The condensate drain hose is clogged.

☞ Switch off the machine and clean or replace the drain hose.

Condensate does not drain out?

Condensate drain blocked.

☞ Clean the condensate drain.

10.2.4 Cleaning the condensate drain

Equipment: Compressed air for blowing out
Cleaning rags
Spare parts (as required)

Pre–condition: Machine switched off.
Supply disconnecting device switched off and locked out.
Machine cooled down.

Dismantling the condensate drain

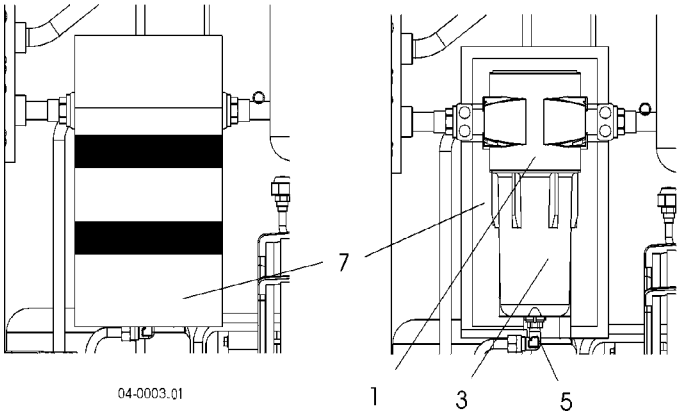


Fig. 11 Removing the condensate drain

1	*Condensate drain*	*5*	*Male stud fitting*
3	*Lower part of housing*	*7*	*Insulation*

☞ Close the shut–off valves at the compressed air inlet and outlet.

☞ Undo the insulation (7) and remove.

☞ Remove the condensate drain hose by unscrewing the union nut on the fitting (5).

☞ Operate the venting valve (6, *Fig.12*), allowing compressed air to escape.

Cleaning the condensate drain

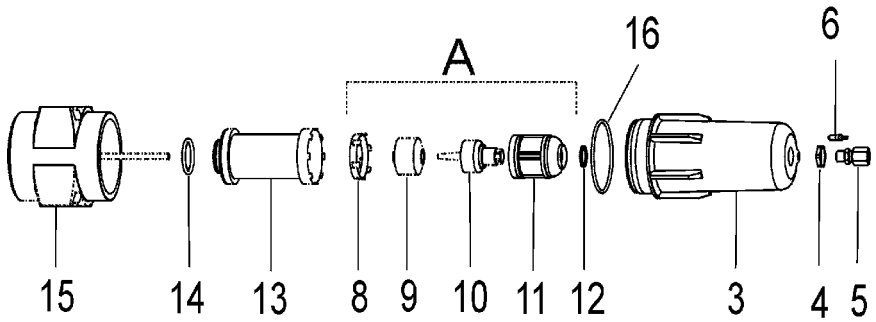


Fig. 12 Cleaning the condensate drain

3	*Lower part of housing*	*11*	*Float protection*
4	*Knurled ring*	*12*	*Flat ring seal*
5	*Male stud fitting*	*13*	*Separator element*
6	*Venting valve*	*14*	*O–ring*
8	*Float protection cover*	*15*	*Upper housing*
9	*Float*	*16*	*O–ring housing seal*
10	*Float valve*		

- ☞ Unscrew and remove the lower housing.
- ☞ Remove the male stud fitting (5) from the lower housing (3).
- ☞ Dismantle and remove assembly (A) by unscrewing the knurled ring (4) from the lower housing.
- ☞ If there is heavy fouling screw out the separator element (13).
- ☞ Pull off the float protection cover (8) from the float protection (11) and take out the float (9).
- ☞ Taking care that the flat ring seal (12) is not damaged, push out the float valve (10) from the float protection (11).
- ☞ Blow out all parts with compressed air (< 70 psig) and clean with a rag if there is heavy fouling.

Replacing the condensate drain

- ☞ Push the float (9) onto the float valve (10) and push the valve into the float protection (11). Replace the float protection cover (8).
- ☞ Check the flat ring seal (12) for damage (replace if necessary) and push onto the thread of the float valve (10) up to the float protection (11).
- ☞ Push the assembly (A) into the lower housing (3).
  Screw in the knurled ring (4). Hold the float valve against the hexagon on the male stud fitting (5) and tighten up the knurled ring.
- ☞ Check the O–ring (16) for damage and correct seating on the lower housing (3) (replace, if necessary).
- ☞ Screw the male stud fitting (5) into the lower housing and tighten.
- ☞ Check for correct seating of the O–ring (14) and then screw in the separator element (13).

- ☞ Screw the lower housing (3) into the upper housing (15) and tighten.
- ☞ Connect the condensate drain hose to the male stud fitting (5).
- ☞ Affix the insulation (7, *Fig. 11*) to the condensate drain.
- ☞ Replace and secure all cover panels, close all access doors.

10.3 Logging Maintenance Work

Machine number:

Date	Maintenance task carried out	Operating hours	Signature

Tab. 12 Maintenance log

11 Spares, Operating Materials, Service

11.1 Note the nameplate

Please quote the data on the nameplate for all enquiries and spare parts orders.

11.2 Ordering Consumable Parts and Operating Materials

CAUTION

Personal injury or damage to the machine may result from the use of unsuitable spare parts or operating materials.

Unsuitable or poor quality consumable parts and operating materials may damage the machine or impair its proper function.

Damage to the machine can also result in personal injury.

☞ Use only genuine spare parts and operating materials quoted.

☞ Have an authorized KAESER service agent carry out regular maintenance.

KAESER consumable parts and operating materials are genuine spares. They are designed for use in our machines.

11.3 Maintenance Agreement

☞ Concluding a SIGMA AIR SERVICE maintenance agreement.

Benefits to you:
lower costs and assured availability of compressed air.

SIGMA AIR SERVICE offers you:

- authorized service technicians with KAESER factory training,
- increased operational security by preventive maintenance,
- energy savings by elimination of pressure losses,
- optimum conditions for operation of the compressed air supply system,
- the security of genuine KAESER spare parts.
- increased legal security as all regulations are observed,

11.4 Service Addresses

Addresses of KAESER distributors are given at the end of this manual.

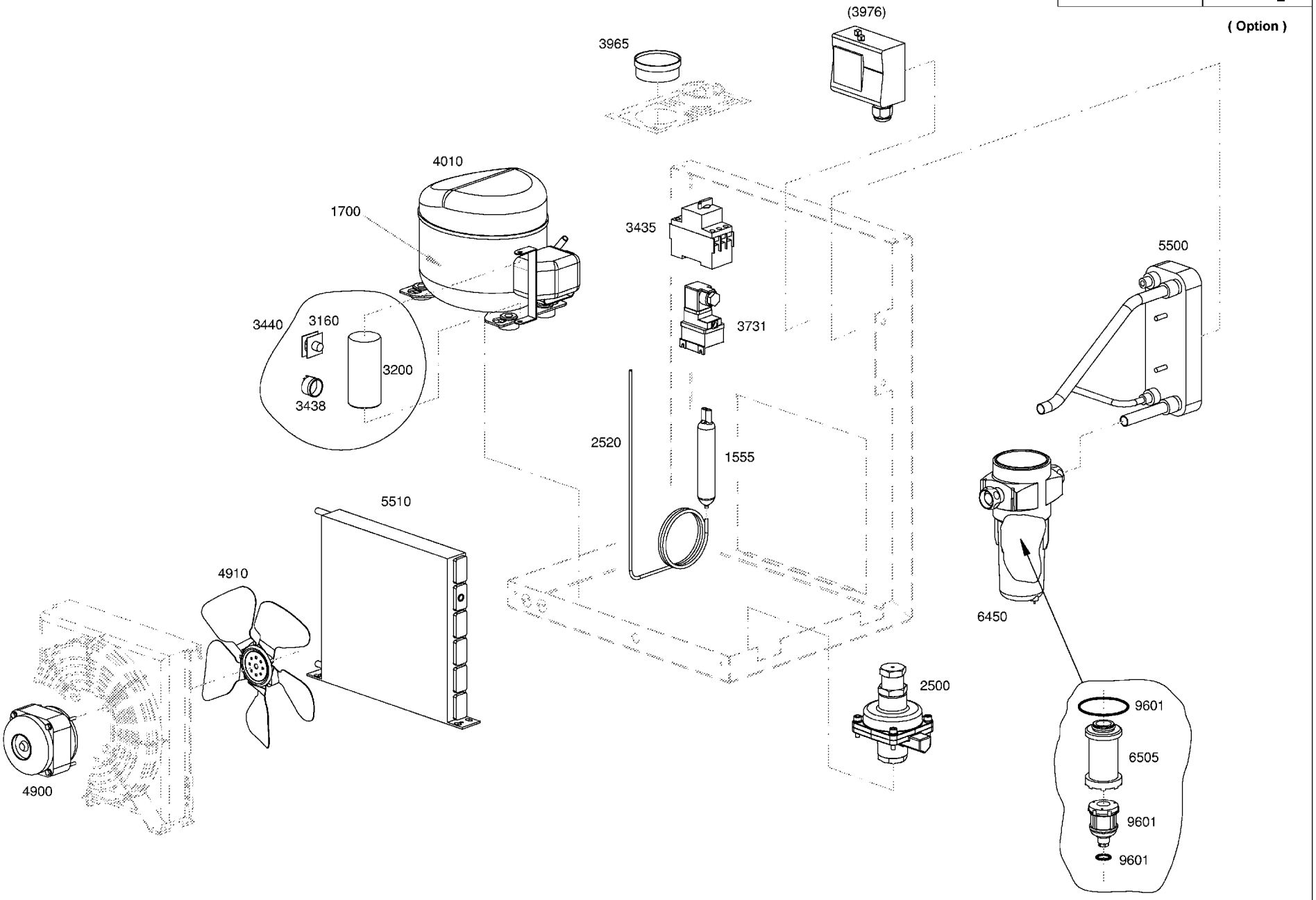
11.5 Spare Parts for Service and Repair

Any inspection, maintenance or repair tasks not described in this manual should be carried out only by an authorized KAESER distirbutor.

With the help of this parts list you can obtain in advance the spares you need in accordance with your operating conditions.

TAH 4/6	KAESER
	SEG-1356_01

(Option)



Item	Quantity	Description	Option	Maintenance interval
1555	1	Refrigerant dryer		
1700	1	Refrigerant		
2500	1	Hot gas bypass regulator		
2520	1	Capillary tube		
3160	1	Starter relay		
3200	1	Condenser		
3435	1	Motor Protection Switch		
3438	1	Motor Protection Switch		
3440	1	Switch set		
3731	1	Safety pressure switch		
3965	1	Temperature gauge		
3976	1	Thermostat	x	
4010	1	Refrigerant compressor		
4900	1	Fan		36000 h
4910	1	Fan blade		
5500	1	Compressed air heat exchanger		
5510	1	Refrigerant condenser		
6450	1	Condensate separator		
6505	1	Separator element		6000 h
9601	1	Maintenance kit, condensate drain		9000 h

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.

Maintenance intervals under good ambient and operating conditions, such as low to moderate ambient temperature and dry, clean inlet air.

Maintenance intervals may decrease due to ambient and operating conditions.

h = Operating hours

12 Decommissioning, Storage and Transport

12.1 Decommissioning

Decommissioning is necessary when the machine:

- will not be needed for some time,
- is to be moved to another location,
- is no longer needed,
- is to be scrapped.

Temporary decommissioning

Pre–condition: All accumulating condensate has been drained at the condensate drainage point.

Long–term decommissioning

Pre–condition: The machine is switched off and fully vented.
The supply disconnecting device is switched off and locked out.

☞ The machine is cooled down completely.

☞ All air and electrical connections are disconnected.

☞ All accumulating condensate is drained at the condensate drainage point.

12.2 Packaging

Equipment: Desiccant
Plastic sheeting
Wooden transport crate

Pre–condition: Machine is decommissioned.
Machine is dry and cooled down.

☞ Place desiccant inside the machine cabinet.

☞ Wrap the machine in plastic sheeting.

Transport packaging

A wooden crate is required for overland transport to protect the machine from mechanical damage.

Consult an authorized KAESER service agent for advice on packaging for sea or air transport.

12.3 Storage

Pre–condition: The machine must be adequately packed.

☞ Store the machine in a dry, frost–free room.

☞ Prevent ingress of moisture and condensation.

12.4 Transportation

Pre–condition: The machine must stand completely on a pallet or wooden base.

CAUTION

Machine damage by unsuitable transport.

☞ Do not lift by the compressed air inlet or outlet.

☞ Do not lay the machine on its side.

Transport only by fork truck operated only by personnel trained and authorized in the safe use of the transport equipment.

Make sure to empty the condensate drain in frosty conditions.

☞ Make sure the danger zone is clear of personnel during transporting.

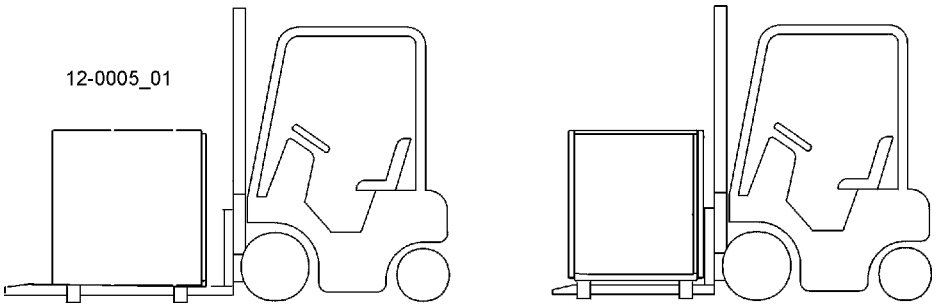


Fig. 13 Transport by fork truck

12.5 Disposal

Pre–condition: The machine is decommissioned.

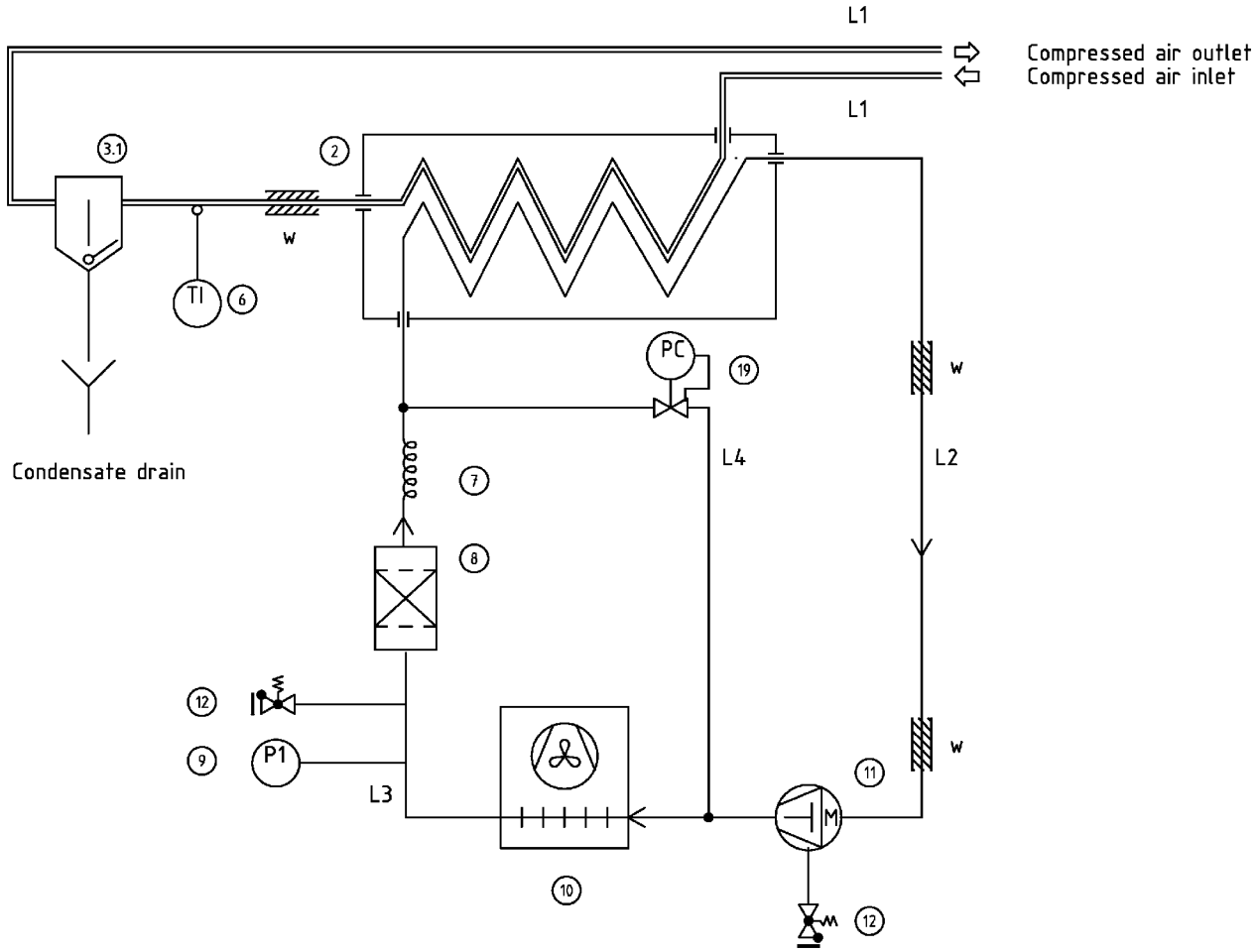
The sealed refrigerant circuit still contains both refrigerant and oil.

☞ Have refrigerant and oil drained and disposed by an authorized body.

13 Annex

13.1 Diagrams and Drawings

13.1.1 Pipeline and instrument flow diagram (P&I diagrams)



c				Datum	18.05.2005		KAESER KOMPRESSOREN	P&I Diagram	
b				Bearb.	Plau			Refrigeration dryer	
a				Gepr.	Müller			TAH	
	Änderung	Datum	Name	Norm		Ersatz durch: / Ersatz für:	Ursprung: FKTTAHST-00053.00		FKTTAHST-00053.01 Blatt 1 E

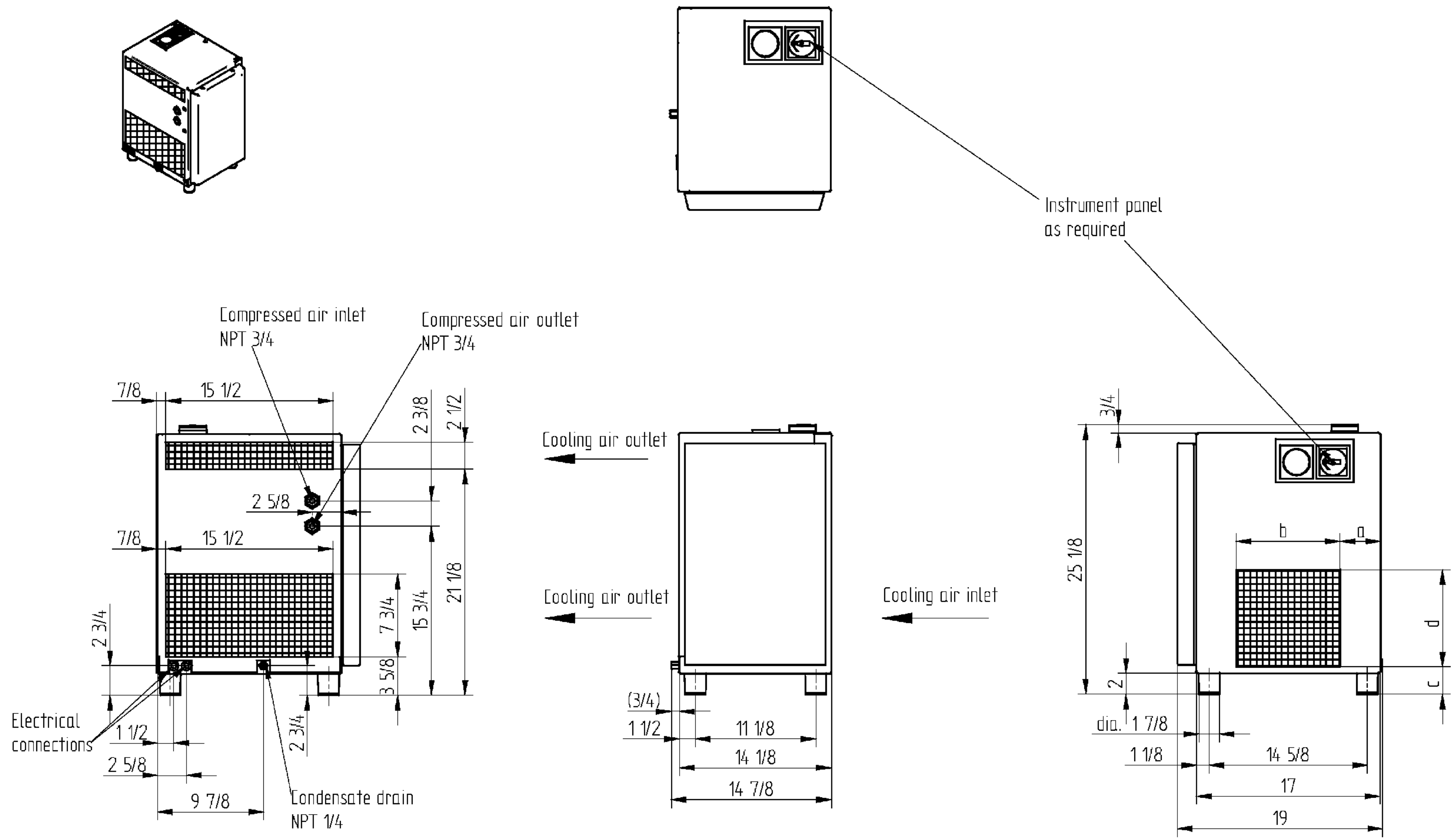
2	Air to refrigerant heat exchanger (Vapouriser) - heat insulated
3.1	Condensate separator with float-controlled drain
6	Pressure dew point indicator TI
7	Capillary tube (Refrigerant injection)
8	Filter dryer
9	Safety pressure switch
10	Refrigerant condenser (air cooled condenser)
11	Refrigerant compressor (hermetic)
12	Service connection (Schrader valve)
19	Hot gas bypass valve

Piping:

L1	Pipe (Cu) 15 x 1 DIN 1754
L2	Pipe (Cu) 8 x 1 DIN 1754
L3	Pipe (Cu) 6 x 1 DIN 1754
L4	Pipe (Cu) 10 x 1 DIN 1754
w	heat insulated

c				Datum	18.05.2005		KAESER KOMPRESSOREN	P&I Diagram legend	
b				Bearb.	Plau			Refrigeration dryer	
a				Gepr.	Müller			TAH	
	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung: FKTTAHST-00053.00	FKTTAHST-00053.01	Blatt 2
										E

13.1.2 Dimensional Drawing



	a	b	c	d
TAH 4	3 3/4	9 5/8	2 1/2	9
TAH 6	3 1/2	10 7/8	2 1/2	10

	Tag	Name		
Gez.	17.01.05	Hundey	TAH 4 - 6	KAESER KOMPRESSOREN
Gepr.				
Freigeg.	19.01.2005	Dering		A-Index 01
Maßstab			Ersatz für	T10527.00 use

13.1.3 Electrical diagram

Wiring Diagram

refrigeration dryer series TAH

230V 50/60Hz (CY)

115V 60Hz (CY)

TT/TN power supply with common point grounding

manufacturer: KAESER KOMPRESSOREN GmbH
96450 Coburg
GERMANY

c				Datum	24.10.2005 USE		KAESER KOMPRESSOREN	cover page refrigeration dryer TAH	=
b				Bearb.	Zeeh				+
a				Gepr.	Zeeh				
A	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:	DTAH-00950.01	Blatt 1 Bl.

performance-related components

model	TAH4	TAH4	TAH6	TAH6
machine power supply	115 V±10 %, 60 Hz (CY)	230 V±10 %, 50/60 Hz (CY)	115 V±10 %, 60 Hz (CY)	230 V±10 %, 50/60 Hz (CY)
compressor motor –M1	9.3774.00010 GL45TE ELECTROLUX	9.3774.0 GL45TG ELECTROLUX	9.3743.00010 GL60TE ELECTROLUX	9.3743.00020 GL60TG ELECTROLUX
vent motor –M2	9.3930.0 7W/S LUVE	9.3663.0 7W/S LUVE	9.4417.0 11W/S LUVE	9.4194.0 11W/S LUVE
circuit breaker –Q1 Siemens	7.6860.01160 3RV1021-1FA10 3,5-5,0 A setting: 4,5 A	7.3140.01950 3RV1021-1CA10 1,8-2,5 A setting: 2,0 A	7.6860.01160 3RV1021-1FA10 3,5-5,0 A setting: 4,8 A	7.6860.01140 3RV1021-1DA10 2,2-3,2 A setting: 2,7 A
safety air pressure switch –B2	9.4282.2 PS3-BP5 HNUS 11,5 bar/18,2 bar Emerson	9.4282.2 PS3-BP5 HNUS 11,5 bar/18,2 bar Emerson	9.4282.2 PS3-BP5 HNUS 11,5 bar/18,2 bar Emerson	9.4282.2 PS3-BP5 HNUS 11,5 bar/18,2 bar Emerson

Common parts

GRD terminal	7.3149.01570 WKFN 2,5 D2/2/SL/35	
Cover plate Wieland	7.3149.01580 APFN 2,5 D2/2/GN	
EMERGENCY STOP actuator –Q1 Siemens	7.6860.02000 3RV1923-7C	
screwed cable gland	7.5289.0 M20x1,5	7.5290.0 M25x1,5
Counter-nut (CuZn)	7.5812.0 M20x1,5	7.5813.0 M25x1,5

block diagram
refrigeration dryer TAH

UTAH-00950.01

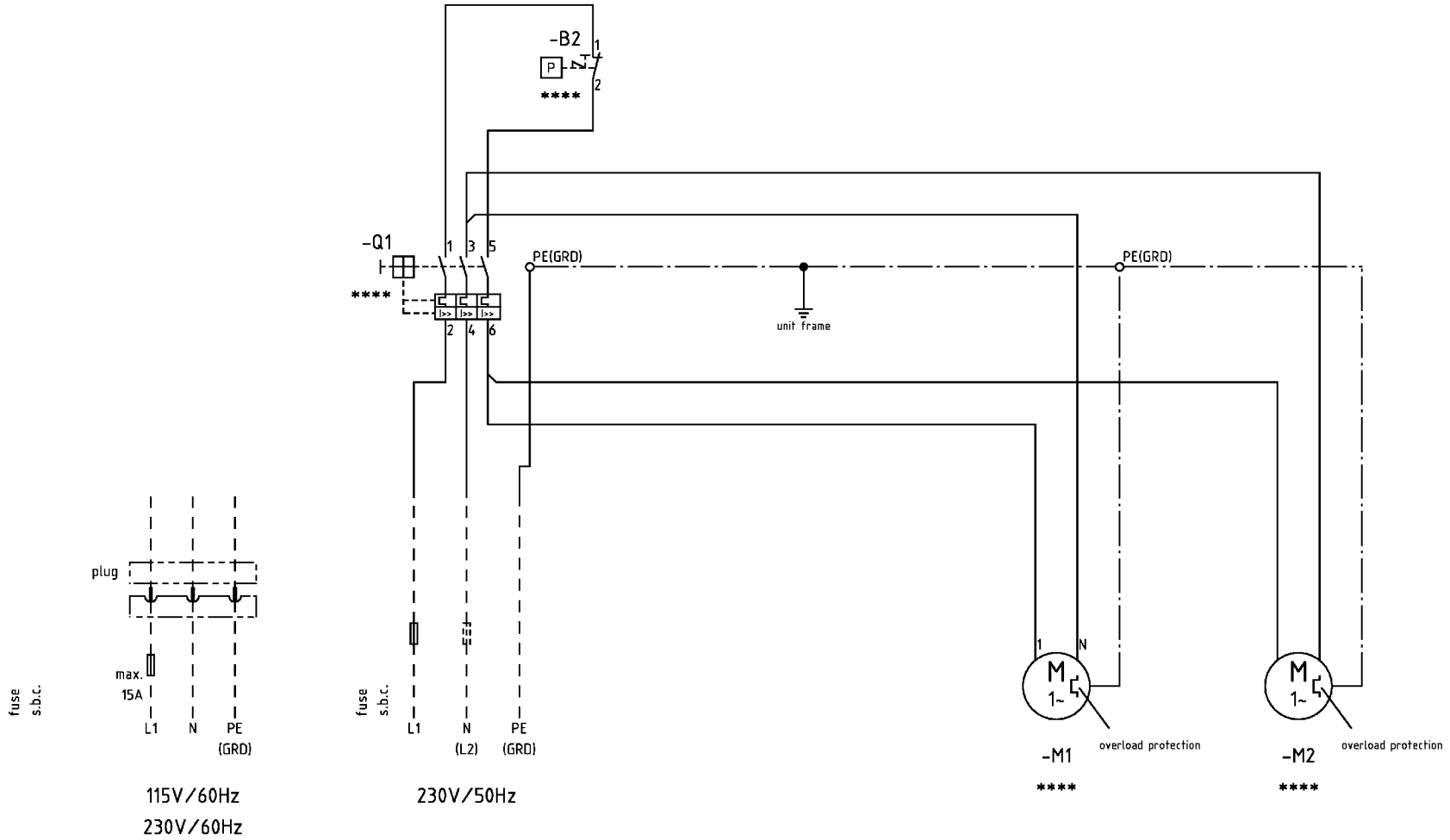
Blatt 1 Bl.

KAESER KOMPRESSOREN

Ursprung:
Ersatz für:
Ersatz durch:

	Datum	Name
Datum	24.10.2005	
Bearb.	Zeeh	
Gepr.	Zeeh	
Norm		

C	Änderung	Datum	Name
c			
b			
a			



supply line cross-section and fusing see service manual

**** performance-related components, see: UTAH-00950... page 1

Function:								compressor motor	vent motor	
Group of function:				input voltage				power unit		
c				Datum	24.10.2005		KAESER KOMPRESSOREN	wiring diagram refrigeration dryer TAH		=
b				Bearb.	Zeeh					+
a				Gepr.	Zeeh					
D	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:	STAH-00950.01	Blatt 1 Bl.