Service Manual

Refrigeration Dryer

TC

No.: 9_5777 02 USE

Original instructions
/KKW/DTC 1.02 en 01 SBA-TROCKNER

20110118 153935

KAESER COMPRESSORS

Contents

Contents

List of Illustrations

List of Illustrations

List of Tables

1 Regarding this Document

1.1 Using 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 items of equipment in the table in chapter 2.

1.2 Copyright

1.3 Symbols and Identification

1.3.1 Warnings

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

- DANGER
- WARNING
- CAUTION

1. **⚠ DANGER** *These show the kind of danger and its source!*
   The possible consequences of ignoring a warning are shown here.
   The word "Danger" indicates that death or severe injury can result from ignoring the instruction.
   - ➢ *The measures required to protect yourself from danger are shown here.*
2. Always read and comply with warning instructions.

Signal word	Meaning	Consequences of non-observance
DANGER	Warns of an imminent threat of danger	Death or serious injury may result
WARNING	Warns of possible danger	Death or serious injury are possible
CAUTION	Warns of a possibly dangerous situation	Light injuries or material damage are possible

Tab. 1 The levels of danger and their meaning

1.3.2 Other instructions and symbols

This symbol refers to particularly important information.

Material — Here you will find details on special tools, operating materials or spare parts.

Precondition — Here you will find conditional requirements necessary to carry out the task.
Here conditions relevant to safety are named that will help you to avoid dangerous situations.

Option H1 — ➢ This bullet is is placed by lists of actions comprising one stage of a task.
In lists of actions with several stages the sequence of actions is numbered.
Information that refers to only one option is marked with an indicator (e.g.: H1 means that this section is only valid for machines with adjustable machine mountings). Option indicators used in this service manual are explained in chapter 2.2 .

Information referring to potential problems are identified by a question mark.
The cause is named in the help text ...
➢ ... and a remedy given.

This symbol refers to important information or measures concerning environmental protection.

Further information — Here, your attention is drawn to further topics.

2 Technical Data

2.1 Nameplate

The model designation and important technical information are given on the machine's nameplate.
The nameplate is located on the outside of the machine.

➢ Enter the data from the nameplate here as a reference:

Attribute	Value
Model	
Material no.	
Serial no.	
Year of manufacture	
Refrigerant	
Refrigerant charge	
Max. refrigerant working pressure, HP* side	
Max. refrigerant working pressure, LP** side	
Checked for leaks	
Max. compressed air working pressure	
Power supply	
Rated current	
Ambient temperature	
* High pressure ** Low pressure	

Tab. 2 Nameplate

2.2 Options

The table contains a list of possible options.

➢ Enter options here as a reference.

Option	Option code	Available?
Floating contacts	C6	Yes
Adjustable machine mountings	H1	
Transformer power supply	T2	

Tab. 3 Options

2.3 Weight

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

	TC 31	TC 36	TC 44
Weight [lb.]	342	375	441

Tab. 4 Machine weight

2.4 Ambient Conditions

	TC 31	TC 36	TC 44
Maximum altitude AMSL* [ft]	3000	3000	3000
Permissible ambient temperature [°F]	40–110	40–110	40–110
Cooling air temperature [°F]	40–110	40–110	40–110
* Higher altitudes are permissible only after consultation with the manufacturer.			

Tab. 5 Ambient Conditions

2.5 Pressure

Maximum working pressure: see nameplate

2.5.1 Compressed air system

	TC 31	TC 36	TC 44
Pressure drop [psi]	2.2	2.3	2.2
Flow rate [cfm]	113	138	166
Maximum working pressure [psig]	232	232	232
Pressure dew point [°F]	35	35	35
Performance data at 100 °F air inlet, 100 psig and 100 °F ambient temperature.			

Tab. 6 Compressed air system

2.6 Refrigerant circuit

The refrigeration dryer contains a refrigerant that is classified by the Kyoto Protocol as a fluoridated global warming gas.

	TC 31	TC 36	TC 44
Refrigerant	R 134a	R 134a	R 134a
Global warming potential (GWP)	1300	1300	1300
* High-pressure ** Low-pressure *** Read off the charge quantity from the dryer nameplate and enter it in the table.			

	TC 31	TC 36	TC 44
Refrigerant charge*** [lbs]			
Max. working pressure HP side* [psig]	261	261	261
Max. working pressure LP side* [psig]	232	232	232
Safety pressure switch: cut-out pressure [psig]	261	261	261

* High-pressure
** Low-pressure
*** Read off the charge quantity from the dryer nameplate and enter it in the table.

Tab. 7 Refrigerant circuit

2.7 Sound Pressure Level

Operational state:

- Nominal volume flow
- Nominal pressure

Measurement conditions:

- Free-field measurement to CAGI/PNEUROP PN8 NTC 2.3
- Measurement distance: 1 m

	TC 31	TC 36	TC 44
Sound pressure level [dB (A)]	< 70	< 70	< 70

Tab. 8 Sound Pressure Level

2.8 Power Supply

The machine is designed for a power supply conforming to National Electric Code (NEC) NEC-670, in particular NFPA 79, Section 5.7. The limit values defined in this standard must be complied when user-specific alternatives are not feasible. Consult with the manufacturer for all other applications.

Other electrical supplies are not permitted.

Further information See electrical diagrams in chapter 13.3 for further information.

2.9 Power supply specifications

The following multi-strand copper core wires are given according to 2008 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 2008 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 2008 NEC 240.6,430.52 and tables 430.52, 430.248 and 430.250.

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

Performance Data

	TC 31	TC 36	TC 44
Power consumption [hp]*	1.42	1.64	1.94
Maximum power consumption [hp]	1.74	1.98	2.36
* Performance data for reference conditions;, option A2: ambient temperature 100° F, compressed air inlet temperature 100° F, working pressure 100 psig.			

Tab. 9 Performance Data

Rated power supply 115V±10%/1/60Hz

	TC 31	TC 36	TC 44
Mains fusing [A]	15	15	—
Supply cable	AWG14	AWG14	—
Current drawn [A]	12.0	13.6	—

Tab. 10 Mains supply 115V/1/60Hz

Rated power supply: 230V±10%/1/60Hz

	TC 31	TC 36	TC 44
Mains fusing [A]	10	10	10
Supply cable	AWG14	AWG14	AWG14
Current drawn [A]	5.9	7.5	7.6

Tab. 11 Mains supply 230V/1/60Hz

3 Safety and Responsibility

3.1 Basic Information

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.

⚠ DANGER

Disregard of these instructions can result in serious injury.

➢ *Read the service manual carefully and take notice of the contents for safe machine operation.*

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

➢ Immediately rectify (have rectified) any faults that could be detrimental to safety.

3.2 Specified Use

The machine is intended solely to dry compressed air for industrial use. Any other use is incorrect and does not comply with requirements. The manufacturer is not liable for any resulting damages. The risk involved in such incorrect use is taken solely by the user.

➢ Keep to the specifications listed in this service manual.

➢ Operate the machine only within its performance limits and under the permitted ambient conditions.

3.3 Improper Use

The compressed air to be dried

➢ 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,

➢ must not be directed at persons or animals.

3.4 User's Responsibilities

3.4.1 Observe statutory and universally accepted regulations

This is, for example, nationally applied European directives and/or valid national legislation, safety and accident prevention regulations.

➢ Observe relevant statutory and accepted regulations during installation, operation and maintenance of the machine.

3.4.2 Qualified personnel

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.

Authorized operators possess the following qualifications:

- are of legal age,
- are conversant with and adhere to the safety instructions and sections of the service manual relevant to operation,
- have received adequate training and authorization to operate electrical and compressed air devices.

Authorized installation and maintenance personnel have the following qualifications:

- are of legal age,
- have read, are conversant with and adhere to the safety instructions and sections of the service manual applicable to installation and maintenance,
- are fully conversant with the safety concepts and regulations of electrical, refrigeration and compressed air engineering,
- are able to recognize the possible dangers of electrical, refrigeration and compressed air devices and take appropriate measures to safeguard persons and property,
- have received adequate training and authorization for the safe installation and maintenance on this equipment.

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

3.5 Dangers

Basic Information

Information concerning the various forms of danger that can arise during machine operation are found here.

Basic safety instructions are found in this service manual at the beginning of each chapter in the section entitled 'Safety'.

Warning instructions are found before a potentially dangerous task.

3.6 Danger Areas

The table gives information on the areas dangerous to personnel.

Only authorized personnel may enter these areas.

Activity	Danger area	Authorised personnel
Transport	Within a 10 ft. radius of the machine.	Installation personnel for transport preparation. No personnel during transport.
	Beneath the lifted machine.	No personnel!

Activity	Danger area	Authorised personnel
Installation	Within the machine. Within 3 ft. radius of the machine and its supply cables.	Installation personnel
Operation	Within a 3 ft. radius of the machine.	Operating personnel
Maintenance	Within the machine. Within a 3 ft. radius of the machine.	Maintenance personnel

Tab. 12 Danger Areas

3.7 Safety Devices

Various safety devices ensure safe working with the machine.

- ➢ Do not change, bypass or disable safety devices.
- ➢ Check safety devices for correct function regularly.
- ➢ Do not remove or obliterate labels and notices.
- ➢ Ensure that labels and notices are clearly legible.

Further information More information on safety devices is contained in chapter4, section 4.6.

3.8 Safety Signs

The diagram shows the positions of safety signs on the machine. The table lists the various safety signs used and their meanings.

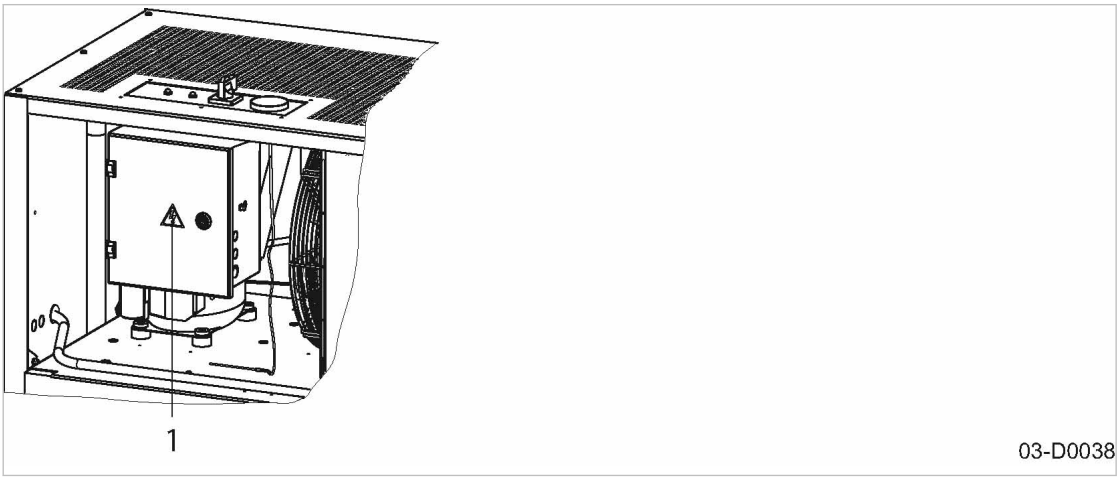


Fig. 1 Location of Safety Labels

Item	Sign	Meaning
1		Danger of fatal injury from electric shock! ➢ Before starting any work on electrical equipment: Switch off and lock out the power supply disconnecting device and check that no voltage is present.

Tab. 13 Safety Signs

3.9 In Emergency

3.9.1 Fire fighting

Suitable extinguishing agents

- Foam
- Carbon dioxide
- Sand or earth

Unsuitable or unsafe extinguishing agents

- Strong jet of water

1. Keep calm.
2. Give the alarm.
3. Switch off the power supply disconnecting device, if possible.
4. Move to safety:
   - warn persons in danger
   - help incapacitated persons
   - close the doors
5. Try to extinguish the fire if you have the skill to do so.

3.9.2 Injury from Handling Refrigerant

Eye contact:

➢ Rinse thoroughly with lukewarm water and seek medical assistance.

Skin contact:

➢ Wash off immediately.
➢ Treat burns and frostbite appropriately.

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.

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

3.10 Safe Machine Operation

Information on safe conduct when handling the machine is found here.

Transport

➢ Use suitable lifting gear that conforms to local safety regulations.
➢ Allow transport only by personnel trained in the safe movement of goods.
➢ Attach lifting gear only to suitable lifting points.

➢ Note the center of gravity to avoid danger of the machine tipping over.
➢ Make sure the danger zone is clear of personnel.

Installation

➢ Install the machine in a suitable compressor room.
➢ If installed outdoors, the machine must be protected from frost, direct sunlight, dust, rain and splashing water.
➢ Do not operate in areas in which specific requirements with regard to explosion protection are in force.
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
➢ Ensure adequate ventilation.
➢ Ensure that required ambient conditions are maintained with regard to:
  - 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 sulfide.
➢ Do not position the machine in warm exhaust air from other machines.
➢ Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.

Decommissioning, storage, disposal

➢ Do not damage the refrigerant circuit.
➢ Give refrigerant only to authorized bodies for disposal.
➢ Dispose of the machine in accordance with local environmental regulations.

3.11 Safely Dealing with Sources of Danger

Information concerning the various forms of danger that can arise during machine operation are found here.

Electricity

➢ Allow only qualified and authorized electricians or trained personnel under the supervision of a qualified and authorized electrician to carry out work on electrical equipment according to electrical engineering regulations .
➢ Before every start-up, the user must make sure there is adequate protection against electric shock from direct or indirect contact.
➢ Before starting any work on electrical equipment:
Switch off and lock out the power supply disconnecting device and check that no voltage is present.
➢ Switch off any external power sources.
These may include devices connected to the floating relay contact.
➢ Use fuses corresponding to machine power.
➢ Check regularly that all electrical connections are tight and in order.

Forces of compression

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following information concerns work on components that could be 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.
- ➢ Vent all pressurized components and chambers completely.
- ➢ Do not carry out welding, heat treatment or mechanical modifications to pressurized components (e.g. pipes and vessels) as this influences the component's resistance to pressure. The safety of the machine is then no longer ensured.

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 starting.

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 can ignite because of sparks or heat.

Operating materials

- ➢ Strictly forbid fire, open flame and smoking.
- ➢ Follow safety regulations when dealing with refrigerant and chemical substances.
- ➢ Avoid contact with skin and eyes.
- ➢ Do not inhale refrigerant mist and vapors.
- ➢ Do not eat or drink while handling refrigerant.
- ➢ Keep suitable fire extinguishing agents ready for use.
- ➢ Use only KAESER approved operating materials.
- ➢ Allow only qualified specialists to work on refrigerant circuits.

Unsuitable spare parts

- ➢ Use only spare parts approved by the manufacturer for use in this machine. Unsuitable spare parts compromise the safety of the device.
- ➢ Use only genuine KAESER 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.

3.12 Organizational 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.

3.13 Warranty

This service manual contains no independent warranty commitment. 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.

In addition, 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 original spare parts and operating materials.

➢ Obtain confirmation from KAESER that your specific operating conditions are suitable.

3.14 Environmental Protection

➢ Store and dispose of operating materials and replaced parts in accordance with local environmental protection regulations.
➢ Observe relevant national regulations.
This applies particularly to parts contaminated with cooling oil.
➢ Give refrigerant only to authorized bodies for disposal.

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

4 Design and Function

4.1 Enclosure

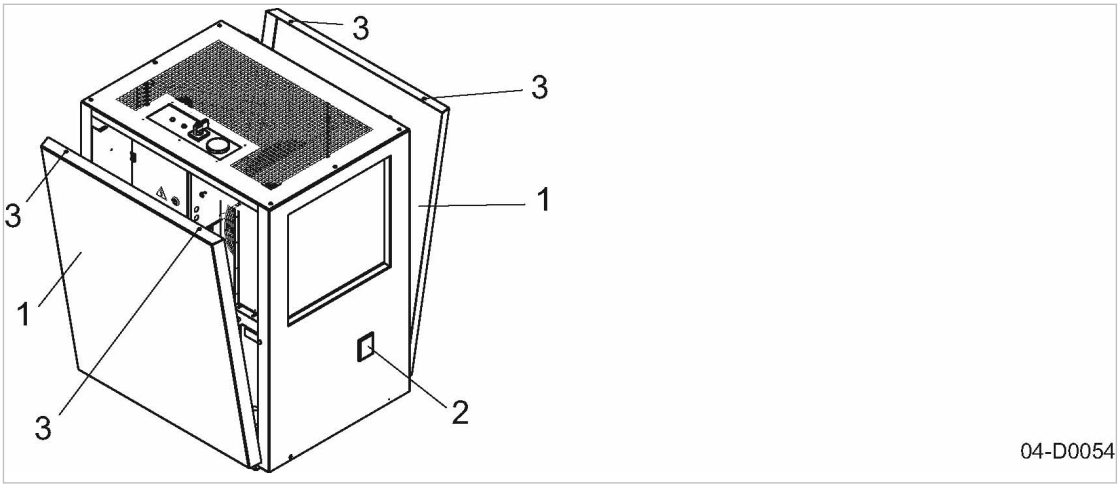


Fig. 2 Enclosure overview

1 Panel
2 Window
3 Screw

When closed, the enclosure serves various functions:

- Sound insulation
- Protection against contact with components
- Cooling air flow

The enclosure is not suitable for the following uses:

- Walking on, standing or sitting on.
- As resting place or storage of any kind of load.

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

To open, undo the securing screws and take off panels.

4.2 Machine function

The description uses an air-cooled machine as an example.

The dryer chills the compressed air. As the compressed air cools its capacity to retain moisture reduces and surplus is precipitated out as condensate. This condensate is separated and drained off.

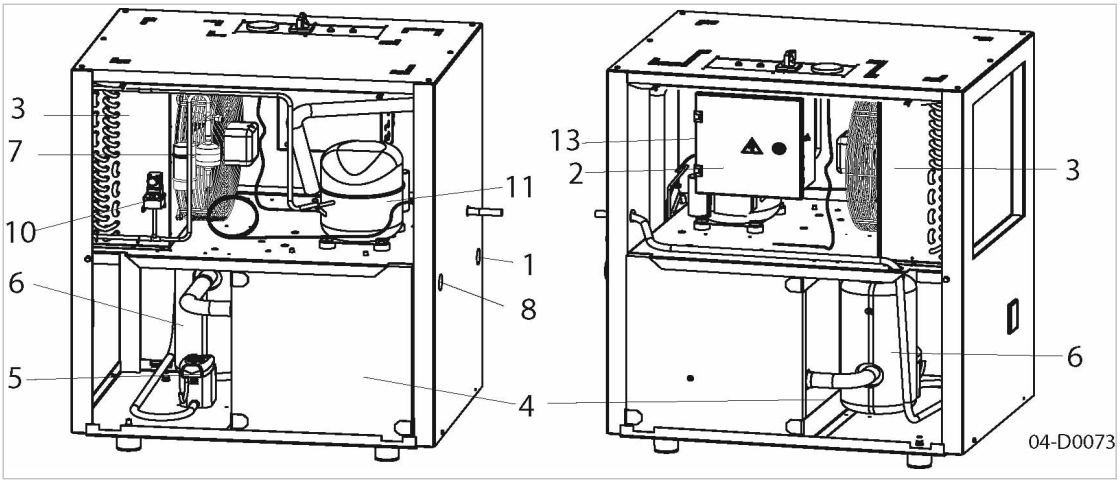


Fig. 3 Machine layout

1	Compressed air inlet	7	Filter/dryer
2	Control cabinet	8	Compressed air outlet
3	Refrigerant condenser	10	Safety pressure switch
4	Heat exchanger	11	Refrigerant compressor
5	Condensate drain	13	Thermostat
6	Condensate separator		

Stage 1

Warm compressed air entering the first section of the heat exchanger 4 gives up some of its heat to the chilled compressed air leaving the dryer.

Stage 2

Further air cooling takes place in the second part of the heat exchanger 4 through which refrigerant flows. The refrigerant gives up its heat to the surroundings in the condenser 3.

Stage 3

A multistage, maintenance-free separation system 6 removes the condensate from the compressed air. One or more condensate drains 5, depending on dryer model, eject the condensate from the separator.

Stage 4

The dry, cold air takes in some heat in the first part of the heat exchanger 4 through which it passes on the way out of the dryer. The relative humidity of the compressed air has been reduced to about 21%.

4.3 SECOTEC CONTROL switches and indicators

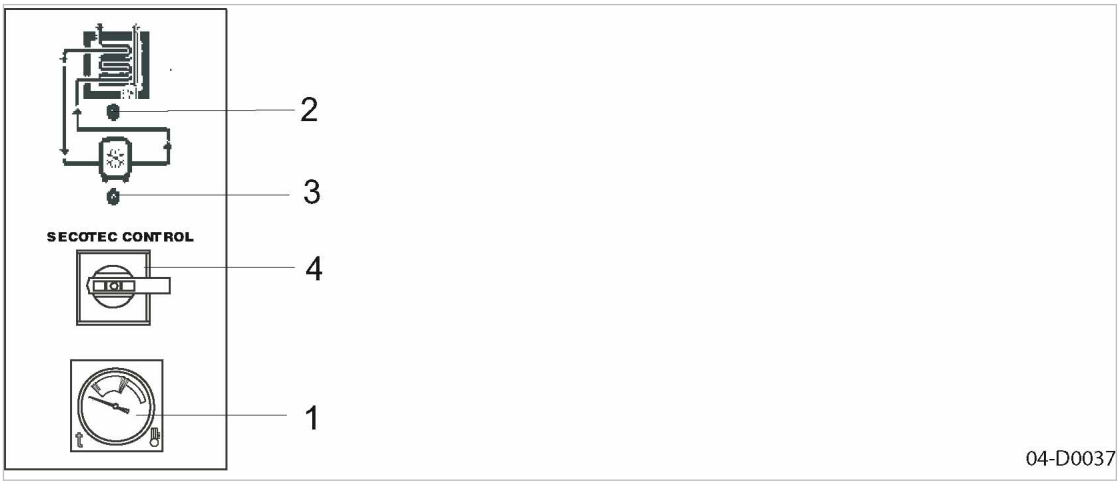


Fig. 4 SECOTEC CONTROL switches and indicators

Item	Name	Function
1	*Dew point*	Indicates the dryer's operational state.
2	*Controller power ON*	Illuminates green when the dryer is provided with power and switched on.
3	*Refrigerant compressor ON*	Illuminates green as soon as the refrigerant compressor starts.
4	«Main switch»	The machine is switched on and off with the «main switch».

Tab. 14 Switches and indicators

4.3.1 SECOTEC CONTROL

SECOTEC CONTROL with cycling control switches the dryer on only when it is needed.

At the heart of the machine is a thermal mass with high specific heat capacity. It is cooled down to cut-out temperature by the refrigerant circuit and extracts the heat from the compressed air flowing through the dryer. When heat extraction raises its temperature to the cut-in point, the refrigerant compressors starts and reduces its temperature once more. The specific heat capacity of the thermal mass ensures that the pressure dew point remains stable long after the refrigerant compressor has stopped on reaching the cut-out temperature.

Consequence:
lower power consumption.

4.3.2 Pressure Dew Point Indicator

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

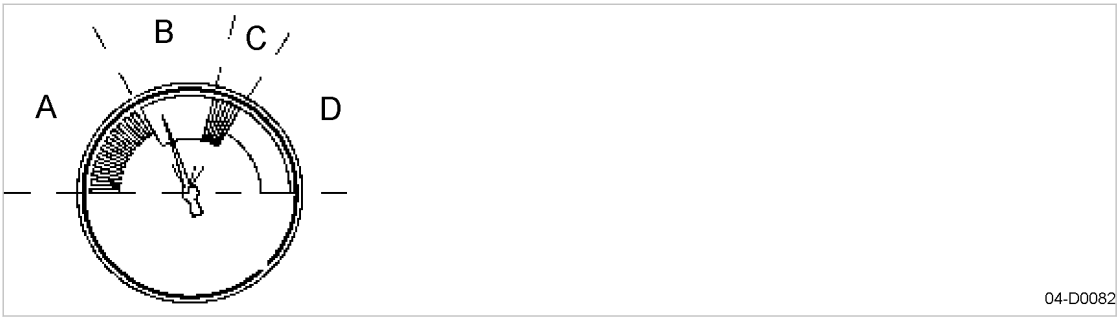


Fig. 5 Pressure dew point indicator

Zone	Colour	Meaning
A	Blue	Pressure dew point too low
B	Green	Optimum operating conditions
C	Green/red	Pressure dew point rising
D	Red	Pressure dew point too high (alarm)

Tab. 15 Pressure dew point indicator

Pressure dew point	Consequence
too low	Condensate can freeze in the heat exchanger.
normal	Optimum operating conditions reached.
rising	Optimum air drying no longer achieved.
too high	Air no longer or insufficiently dried. Downstream pipelines and consumers no longer protected from condensate occurring.

Tab. 16 Pressure dew point and consequences

4.4 ECO-DRAIN Condensate Drain

Condensate flows into the collecting tank.

A sensor continuously registers the liquid level and passes a signal to the electronic control as soon as the tank is full.

A preset delay period begins, during which condensate continues to flow, filling the feed line.

When the delay period has expired, the complete condensate is ejected into the drain line.

When the ECO-DRAIN is empty, the drain line closes and no compressed air is lost.

4.5 Condensate drain operational state

The operational state of the ECO-DRAIN condensate drain is indicated by three light-emitting diodes on the housing.

Indication	Operational state	Function
	*Ready to operate*	Power on

Indication	Operational state	Function
	Test	Valve function test: Condensate should begin to drain when the button is pressed for about 2 seconds.

Tab. 17 Indication of the operational state of the condensate drain.

4.6 Safety Devices

The following safety devices are provided and may not be modified in any way.

- Main switch
  The main switch also functions as an EMERGENCY STOP switch. On activating, the machine stops immediately.
- Safety pressure switch
  The switch shuts the machine down if the pressure moves out of the preset operating range. The switch is factory set.
- Temperature regulator
  The regulator is equipped with two sensors that detect a short circuit or broken circuit and cause an LED to flash. The LED will also flash if the temperature difference between the 2 sensors is too great. The machine will continue to operate, however.
  The LED illuminates continuously if the dew point rises too high.
- Enclosures and guards for moving parts and electrical connections
  These protect against accidental contact.

4.7 Options

The options available for your machine are described below.

4.7.1 Option H1 Machine Mountings

These mountings allow the machine to be anchored firmly to the floor.

Details of the fixing holes are contained in the dimensional drawing in chapter 13.1.

Fig. 6 Machine Mountings

[1] Machine mounting
[2] Holes for anchor bolts to fix the mounting to the floor.

4.7.2 Option C6 Floating relay contacts

Floating relay contacts are provided for the transfer of signals/messages.

Information on location, loading capacity and type of message or signal is found in the electrical diagram.

If the floating relay contacts are connected to an external power source, they may be under power even when the machine is isolated from the supply.

4.7.3 Option T2 Transformer power supply

A transformer is provided to allow the machine to be connected to a variety of power supplies.

Further information The electrical diagram in chapter 13.3 contains further details of the power supply connection.

4.8 Accessories

4.8.1 Bypass line.

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

Further information Further information on installation of a bypass line can be found in chapter 6.8.

5 Installation and Operating Conditions

5.1 Safety

- ➢ 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 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 protection are in force.
  For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- ➢ Ensure that required ambient conditions are maintained with regard to:
  - ■ 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 sulfide.
- ➢ Keep suitable fire extinguishing agents ready for use.

5.2 Determining location and clearances

The machine is intended for installation in an appropriate machine room. Information on distances from walls and ventilation is given below.

The distances quoted are recommended distances and ensure unhindered access to all machine parts.

➢ Please consult KAESER if you cannot comply with these recommendations.

Precondition The floor must be level, firm and capable of bearing the weight of the machine.

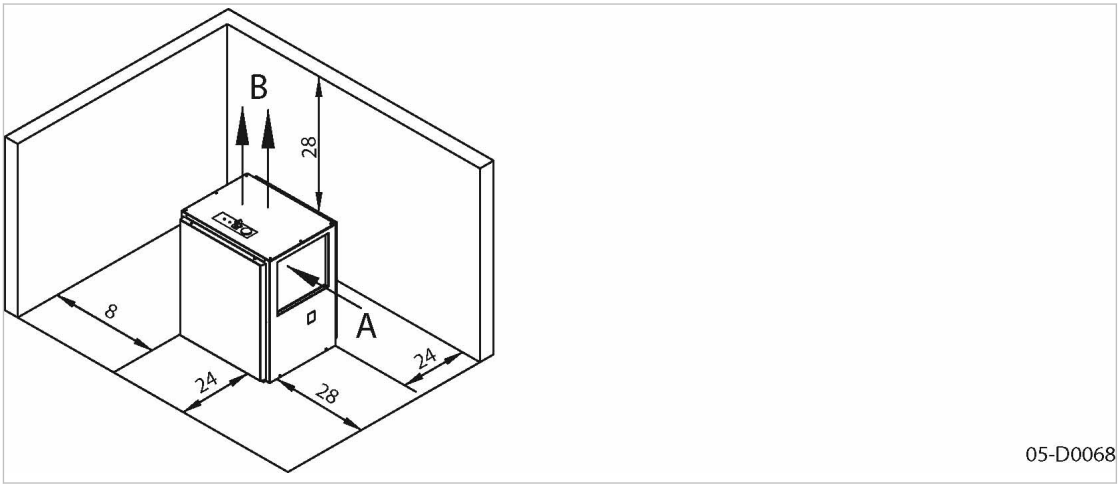


Fig. 7 Recommended machine placement and dimensions [mm]

[A] Cooling air inlet
[B] Cooling air outlet

1. **⚠ CAUTION** *Ambient temperature too low.*
   Frozen condensate can damage the machine when starting.
   ➢ *Switch the machine on only when the switch-on temperature is reached.*
2. If installed outdoors, protect the machine against frost, direct sunlight, dust and rain.
3. Consult KAESER for measures where there is danger of frost.
4. Ensure adequate lighting and access so that all work on the machine can be carried out without danger or hindrance.

5.2.1 Ensuring adequate ventilation

At the cooling air inlet and exhaust, the machine can only overcome the air resistance resulting from the duct design. Any additional air resistance will reduce airflow and deteriorate machine cooling.

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

➢ Keep the inlet and exhaust apertures free of obstructions so that the cooling air can flow freely through the room.

5.2.2 Exhaust duct design

At the cooling air inlet and exhaust, the machine can only overcome the air resistance resulting from the duct design. Any additional air resistance will reduce airflow and deteriorate machine cooling.

➢ Consult the KAESER service representative before deciding on:
- Design of the exhaust air ducting
- Transition between the machine and the exhaust air duct
- Length of the ducting
- Number of duct bends
- Design of flaps or shutters

5.3 Operating the Machine in an Compressed Air System.

If the machine is supplying an air system, the system operating pressure may not exceed 232 psig.

When charging a fully vented air system there is generally a very high rate of airflow through the air treatment devices. These cannot function correctly under such conditions. Air quality suffers.
To ensure the desired air quality when charging a vented air network, we recommend the installation of an air main charging system.

➢ Consult authorized KAESER Service representative for advice on this subject.

6 Installation

6.1 Safety

Follow the instructions below for safe installation.

Warning instructions are found before a potentially dangerous task.

Basic safety instructions

1. Follow the instructions in chapter 'Safety and Responsibility'.
2. Have the installation carried out only by personnel trained in refrigeration engineering.
3. Before switching on, make sure that:
   - no personnel are working on the machine,
   - all access doors and panels are closed and secure.

Working on live components

1. Work on electrical equipment may only be carried out by authorized electricians.
2. Switch off and lock out the power supply disconnecting device and check that no voltage is present.

Check there is no voltage on floating relay contacts (option 6).

Working on pressure systems

1. 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.
2. Vent all pressurized components and chambers completely.
3. Do not open or dismantle any valves.

Working on the drive system

1. Switch off and lock out the power supply disconnecting device and check that no voltage is present.
2. Do not open the cabinet while the machine is switched on.

Further information

Information on authorized personnel are found in chapter 3.4.2.

Information on dangers and their avoidance are found in chapter 3.5.

6.2 Reporting Transport Damage

1. Check the machine for visible and hidden transport damage.
2. Inform the carrier and the manufacturer in writing of any damage without delay.

6.3 Remove Transport Securing Device

A suitable securing device protects the filter/dryer and capillary tubes from transport damage. This securing device cannot withstand heat and must be removed before the dryer is commissioned.

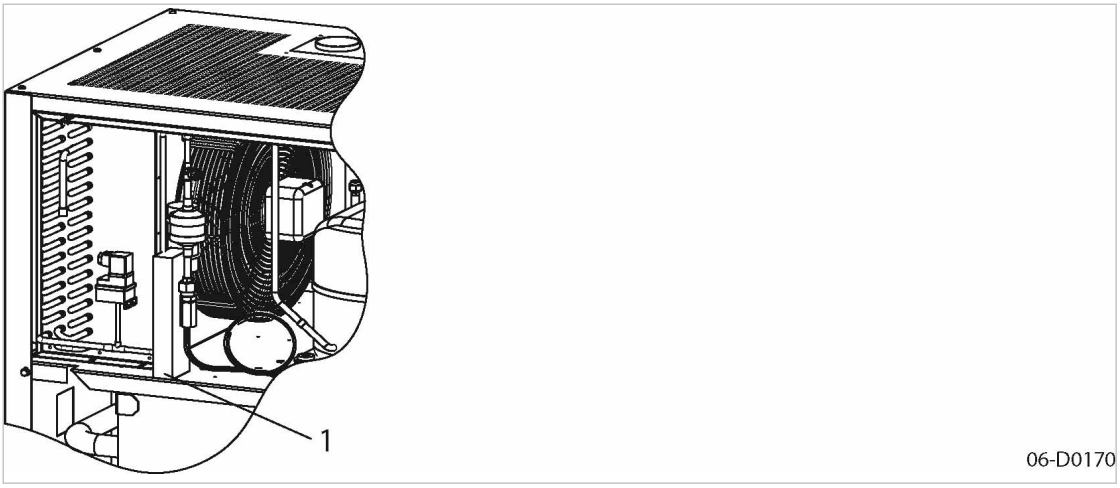


Fig. 8 Remove Transport Securing Device

[1] Transport securing device

➢ Remove and retain the transport securing device.

Result The securing device may be needed for future machine transportation.

6.4 Make the Compressed Air Connection

KAESER recommends installing a bypass line so that the supply of compressed air can be diverted elsewhere while the dryer is undergoing maintenance or repair. A bypass line is available as an accessory if required.

Precondition The compressed air system is vented completely.

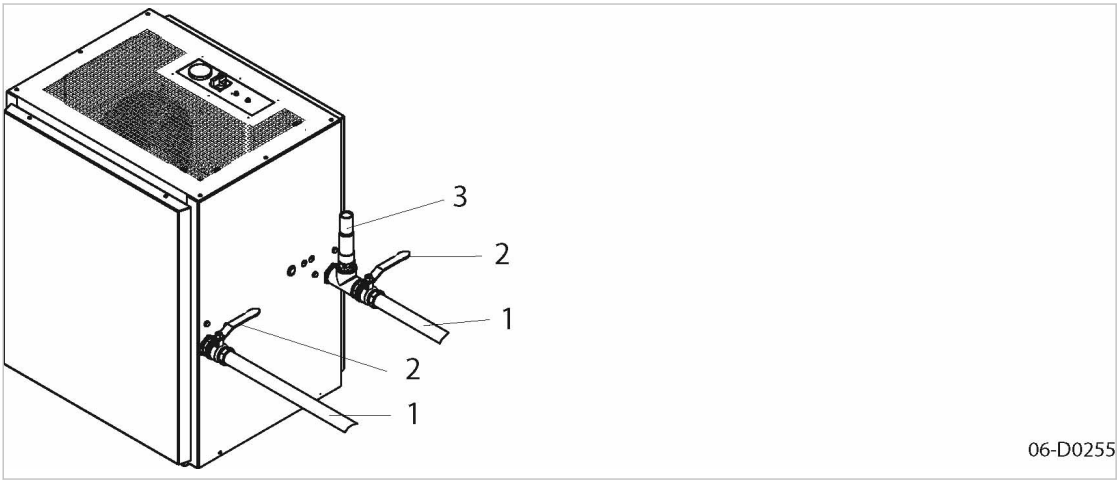


Fig. 9 Compressed air connection

[1] Compressed air line
[2] Shut-off valve
[3] Safety relief valve

1. **⚠ WARNING** *Serious injury can result from loosening or opening components under pressure.*

   ➢ *Vent all pressurized components and chambers completely.*

2. Fit a safety relief valve [3] between the refrigeration dryer and a shut-off valve.
3. Fit shut-off valves [2] in the compressed air inlet and outlet lines [1].
4. Install a bypass line if required.
5. Make the compressed air connection.

6.5 Connecting the Condensate Drain

A threaded hose connection is provided to connect the drain hose to the condensate drain outlet.

Condensate must drain freely.

The illustration shows typical installations.
Condensate flows downward in the collecting line. This prevents condensate flowing back to the compressor.

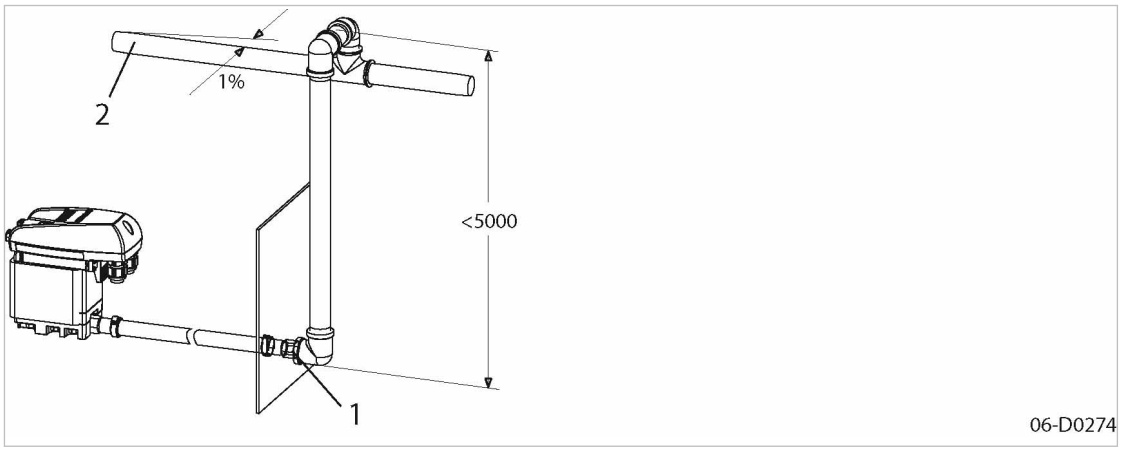


Fig. 10 Condensate drain dimensions [inches]

[1] Threaded connection
[2] Condensate collecting line

➢ Connecting the condensate drain line.

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

Further information The dimensional drawing in chapter 13.1 gives the size and position of the condensate drainage connection ports.

6.6 Connecting the Power Supply

The machine is delivered completely wired, ready for connection to the power supply. Models with transformer (option T2) must be provided with a lockable supply disconnecting device.

Precondition All 3 phases are switched off
The power supply is locked in the off position
A check has been made to ensure no voltage is present

All models

1. Have the power supply connected by authorized installation personnel or an authorized electrician only.
2. Carry out protection measures as stipulated in relevant regulations (IEC 364 for example) and in national accident prevention regulations. In addition, the regulations of the local electricity supplier must be observed.
3. Check the permitted disconnect time for the overload protection cutout if a fault arises.
4. Select supply cable conductor cross-sections and fusing in accordance with local regulations.

Option T2 **Models with transformer**

1. If necessary, change the connections to the transformer tappings to suit the power supply.
2. Provide the machine with a lockable supply disconnecting device.
   This could be, for example, a switch-disconnector with fuses. If a circuit breaker is used it must be suitable for the refrigeration dryer starting characteristics.

Electrical connection

1. **⚠ DANGER** *Danger of fatal injury from electric shock!*
   - ➢ *Switch off and lock out the power supply disconnecting device and check that no voltage is present.*
2. Connect the machine to the power supply.

Further information The electrical diagram in chapter 13.3 contains further details of the power supply connection.

6.7 Options

6.7.1 Option H1 Anchoring the machine

- ➢ Use appropriate fixing bolts to anchor the machine.

Further information Details of the fixing holes are contained in the dimensional drawing in chapter 13.1.

6.8 Installing the bypass line (accessory)

The bypass line is delivered pre-assembled.

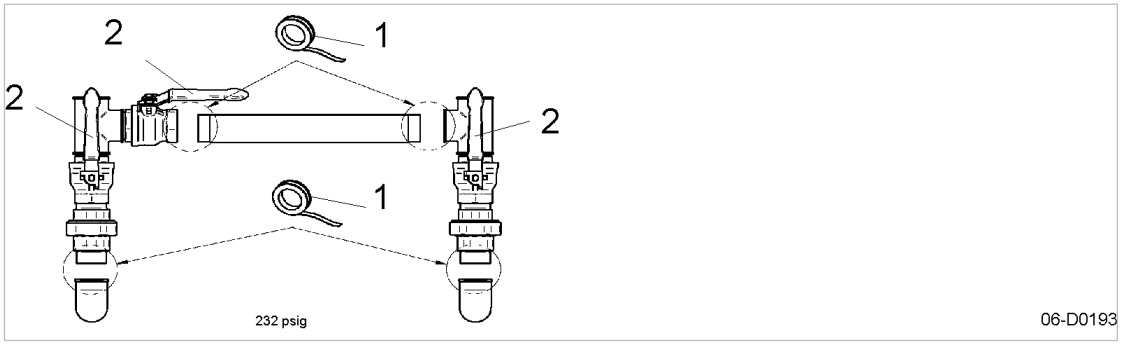


Fig. 11 Bypass line

[1] Sealing strip
[2] Shut-off valve

1. Close the user's shut-off valves.
2. Use sealing tape to install the bypass line fittings [1].
3. Check bypass line for leaks.

6.8.1 Commissioning the machine

1. Close all access doors.
2. Open the user's shut-off valve.
3. Start the machine and check the bypass line fittings for leaks.

7 Initial Start-up

7.1 Safety

Instructions for Safe Initial Start-up of the Machine.

Warning instructions are found before a potentially dangerous task.

Basic safety instructions

1. Follow the instructions in chapter 3 'Safety and Responsibility'.
2. Have installation work carried out by authorized installation personnel only.
3. Before switching on, make sure that:
   - no personnel are working on the machine,
   - all access doors and panels are closed and secure.

Working on live components

1. Work on electrical equipment may only be carried out by authorized electricians.
2. Switch off and lock out the power supply disconnecting (isolating) device and check that no voltage is present.
3. Check that there is no voltage on floating relay contacts (option C6).

Working on pressure systems

1. 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.
2. Vent all pressurized components and chambers completely.
3. Do not open or dismantle any valves.

7.2 Instructions to be Observed before Every Commissioning

Incorrect or improper start-up can cause injury to persons and damage to the machine.

➢ Start-up may only be carried out by authorized installation and service personnel who have been trained on this machine.

Special measures for initial start-up after storage

Storage period longer than	Remedy
12 months	➢ Check condensate drainage. ➢ Check the refrigerant condenser. ➢ Check the electrical equipment. ➢ Check all pipes, hoses and fittings for leaks and any visible damage. Correct any defects immediately.
36 months	➢ Have the overall technical condition checked by an authorized KAESER Service representative.

Tab. 18 Initial start-up after storage

7.3 Checking Installation and Operating Conditions

➢ Check and confirm all the items in the checklist before initial start-up of the machine:

To be checked	See chapter	Confirmed?
➢ Are the operators fully conversant with safety regulations?	–	
➢ Have all the installation conditions been fulfilled?	5	
➢ Is a user's lockable power supply disconnecting device installed?	6.6	
➢ Does the power supply conform to the specifications on the name-plate?	2.1	
➢ Are the power supply cable conductor cross-sections and fuse ratings adequate?	2.9	
➢ Have all electrical connections been checked for tightness? ➢ (The check must be repeated after 50 operating hours).	–	
➢ Shut-off valve fitted to the compressed air connections?	6.4	
➢ Function of condensate drain checked?	6.4	
➢ Is the connection to the compressed air system made with a flexible hose?	6.4	
➢ Is the machine firmly anchored to the floor? (option H1)	6.7.1	
➢ Are all access doors closed and latched and all removable panels in place and secured?	–	

Tab. 19 Installation conditions checklist

7.4 Starting the Machine for the First Time

1. Open the shut-off valve to the compressed air system.
2. Switch on the machine.

   The refrigerant compressor starts. Compressed air will be cooled as soon as the thermal mass is sufficiently cooled.
3. Keep an eye on the machine during the first few hours of operation to ensure that it is operating correctly.

8 Operation

8.1 Switching On and Off

Always use the «Main switch» to switch the machine on and off.

A power supply disconnecting device has been installed by the user.

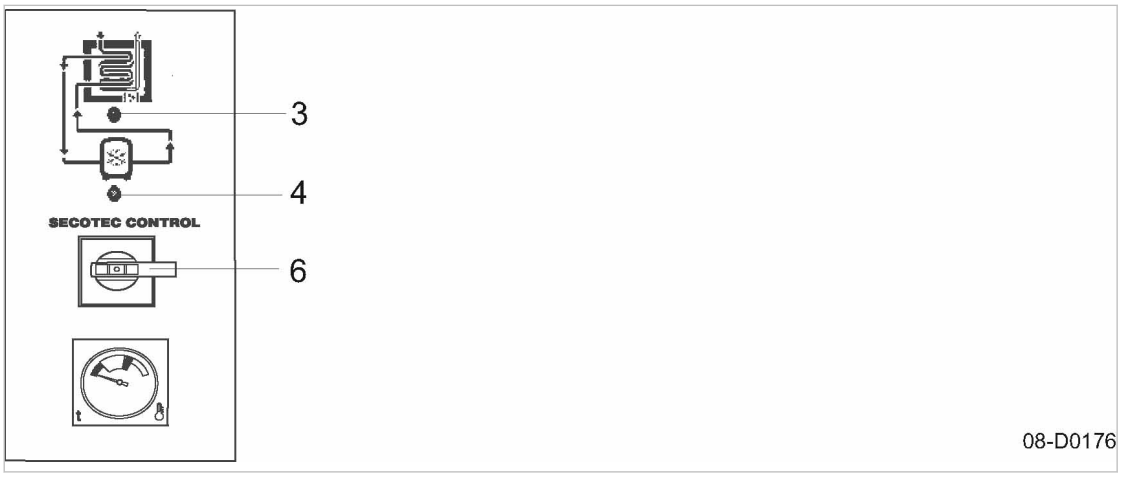


Fig. 12 Switching On and Off

3 LED *control power ON* (green)
4 LED *refrigerant compressor ON* (green)
6 «Main switch»

8.1.1 Switching on

Precondition No personnel are working on the machine,

All access doors and panels are closed and secure.

1. Switch on the user's main disconnect.
2. Switch on the machine at the «Main switch».

   The green LED *control power ON* is illuminated.

   The LED *refrigerant compressor ON* lights as soon as the refrigerant compressor starts.

If a power failure occurs, the machine is **not** prevented from automatic re-starting. The machine can automatically restart when power is resumed and when the cut-in temperature is reached in the thermal mass.

8.1.2 Switching off

➢ Switch off the machine at the «Main switch».

Result The LED *controller power ON* extinguishes.

8.2 Resetting the Machine

If the safety pressure switch has shut down the machine, it can only be restarted when the « RESET» key is pressed.

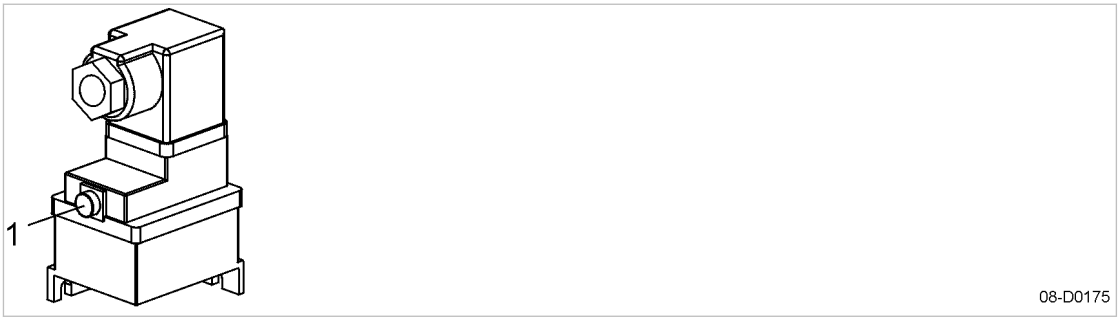


Fig. 13 Safety pressure switch
[1] «RESET»

➢ Press the «RESET» key.

Result The machine is ready for operation again and will start as soon as pressure has equalized or operating pressure is reached.

9 Fault Recognition and Rectification

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.
	The safety pressure switch has shut down the machine.	Check operating conditions. Check the machine. Resetting
High pressure drop	Dryer iced up on the air side.	Call authorized KAESER Service representative.
	Continuous air loss from the condensate drain.	Clean the condensate drain.
Pressure dew point too high	Ambient or compressed air inlet temperature too high.	Check installation conditions are OK.
	Low refrigerant level.	Call authorized KAESER Service representative.
	Dirt collecting in the compressed air system.	Call authorized KAESER Service representative.
The safety pressure switch shuts down the machine.	Ambient or compressed air inlet temperature too high.	Check installation conditions are OK.
	Refrigerant condenser dirty.	Clean the refrigerant condenser.

Tab. 20 Faults and Remedies

10 Maintenance

10.1 Safety

Follow the instructions below to ensure safe machine maintenance.

Warning instructions are found before a potentially dangerous task.

Basic safety instructions

1. Follow the instructions in chapter 3 'Safety and Responsibility'.
2. Maintenance work may only be carried out by authorized personnel.
3. Before switching on, make sure that:
   - no personnel are working on the machine,
   - all access doors and panels are closed and secure.

Working on live components

1. Work on electrical equipment may only be carried out by authorized electricians.
2. Switch off and lock out the power supply disconnecting (isolating) device and check that no voltage is present.
3. Check that there is no voltage on floating relay contacts.

Working on pressure systems

1. 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.
2. Vent all pressurized components and chambers completely.
3. Do not open or dismantle any valves.

Working on the drive system

1. Switch off and lock out the power supply disconnecting (isolating) device and check that no voltage is present.
2. Do not open the cabinet while the machine is switched on.

Further information

Details of authorized personnel are found in chapter 3.4.2.

Details of dangers and their avoidance are found in chapter 3.5.

10.2 Regular maintenance tasks

The refrigeration circuit is permanently sealed and needs no maintenance. Repairs may only be carried out by certified personnel.

The table below lists maintenance tasks required.

➢ Carry out maintenance tasks, or have them carried out, punctually as determined by ambient and operating conditions.

Interval	Maintenance task	See chapter
Weekly	Check condensate drainage	CROSS_REFERENCE_FAILED

Interval	Maintenance task	See chapter
Monthly	Clean the refrigerant condenser.	10.4
Quarterly	Check that all electrical connections are tight.	–
	Check lines, hoses and fittings for leaks.	–
Annually	have the refrigerant circuit checked and documented by an authorized KAESER Service Technician.	–
	Have the safety pressure switch checked by an authorized KAESER Service Technician.	–
	Condensate drain maintenance	CROSS_REFERENCE_FAILED

Tab. 21 Regular maintenance tasks

10.3 Checking condensate drainage

The condensate drain opens when enough condensate has collected. The condensate is automaticlly removed through the drain. If there is a fault in condensate drainage the valve opens at intervals (about every 3 seconds) to rectify the fault. Manually check the functioning once a week.

Precondition Panel is removed.

The *Power* LED lights.

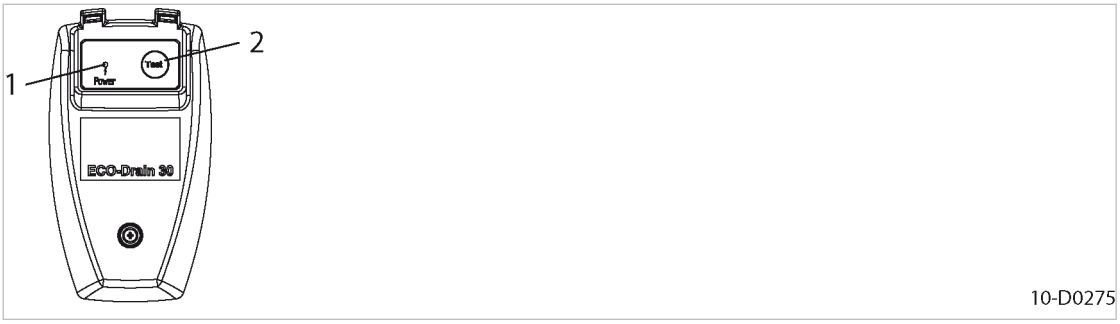


Fig. 14 Checking condensate drainage

1 *Power* LED
2 «TEST» button

1. Grip the condensate drain hose at the condensate drain.
2. With your other hand, push and hold the «TEST» key at the condensate drain for at least 2 seconds.

Result As soon as the condensate drain opens, you will feel a short burst at the condensate drain hose.

Service the condensate drain if you do **not** experience a burst.

10.3.1 Condensate drain maintenance

The condensate drain cannot be cleaned. The service unit must be changed if condensate does not drain.

Precondition The supply disconnecting device is switched off,
the device is locked off,
a check has been made that no voltage is present.
The machine is fully vented (de-pressurized).

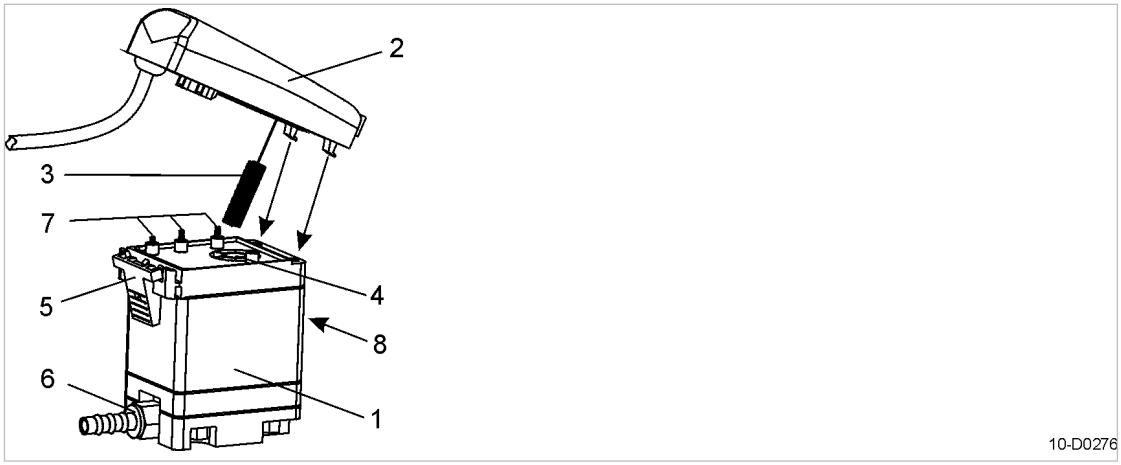


Fig. 15 Condensate drain maintenance

[1] Service module
[2] Control module
[3] Sensor
[4] Sensor opening
[5] Snap fastener
[6] Condensate drain hose fitting
[7] Contact spring
[8] Inlet

Removing the service module

1. Close the shut-off valve upstream of the condensate drain.
2. Unscrew the drain hose fitting.
3. Unscrew the service module carefully from the inlet pipe.
4. Press the snap fastener [5] and remove the control module carefully from the service module.
5. Carefully remove the insulation.

Fitting the service module

Precondition Use only genuine KAESER service modules.
Make sure the top of the service module and the contact spring are clean and dry.

1. Fit the insulation to the service module.
2. Carefully insert the control module sensor [3] in the opening [4] of the new service module.
3. Place the hook of the control module into the service module eye and press until the snap fastener can be heard to click into place.
4. Screw the service module to the inlet pipe using sealing tape.
5. Fit the drain hose and open the shut-off valve upstream of the condensate drain.
6. Close all access doors; replace and secure all removable panels.

10.4 Cleaning the Refrigerant Condenser

Regular cleaning of the condenser ensures reliable cooling of the machine and the compressed air. The frequency is mainly dependent on local operating conditions.

Material
Compressed air for blowing out
Brush and cleaning cloths
Water with cleaning agent additive

Precondition
Machine is switched off,
the switch is locked in the off position,
a check has been made that no voltage is present.

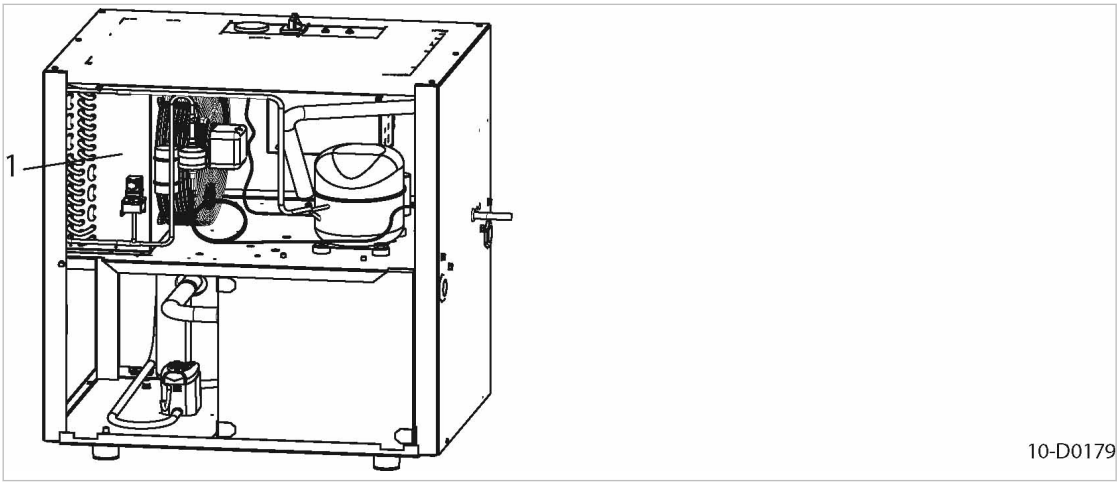


Fig. 16 Cleaning the Refrigerant Condenser
[1] Refrigerant condenser

1. Use compressed air to blow the condenser clean at regular intervals.
2. Use a grease solvent detergent on heavy contamination.

The refrigerant condenser can no longer be cleaned?
➢ Heavy and stubborn contamination should be removed by a KAESER Service representative.

11 Spares, Operating Materials, Service

11.1 Consumable Parts and Operating Materials

KAESER consumable parts and operating materials are all genuine KAESER parts. They are selected for use in KAESER machines.

⚠ WARNING

There is risk of personal injury or damage to the machine resulting 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.
In the event of damage, personal injury may result.

- ➢ *Use only genuine KAESER parts and operating materials.*
- ➢ *Have an authorized KAESER Service representative carry out regular maintenance.*

11.2 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- authorized service technicians with KAESER factory training,
- increased operational reliability ensured by preventive maintenance,
- energy savings achieved by avoidance of pressure losses,
- optimum conditions for operation of the compressed air system,
- the security of genuine KAESER spare parts,
- increased legal certainty as all regulations are kept to.

➢ Why not sign a KAESER AIR SERVICE maintenance agreement!

Result Your advantage:
lower costs and higher compressed air availability.

11.3 Service Addresses

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

12 Decommissioning, Storage and Transport

12.1 Decommissioning

This is necessary under the following circumstances:

- The machine is temporarily not needed.
- The machine is to be moved to another location.
- The machine is to be scrapped.

Temporarily decommissioning

1. Switch the machine off and is shut-off all connecting lines.
2. Drain condensate from the condensate drain.

Permanent decommissioning

Precondition the main disconnecting device is switched off,
the switch is locked in the off position,
a check has been made that no voltage is present.
Machine fully vented (no pressure).

1. Drain condensate from the condensate drain.
2. Allow the machine to cool down completely.
3. Drain cooling water from water-cooled machines (option K2).
4. Disconnect all supply lines.

12.2 Storage

Moisture can lead to corrosion, particularly on the surfaces of the machine.
Frozen moisture can damage components such as diaphragms, valves and gaskets.

Precondition Condensate drain and condensate lines completely empty.

⚠ CAUTION

Moisture and frost can damage the machine.

- ➢ *Prevent ingress of moisture and formation of condensation.*
- ➢ *Store the machine in a room that is dry and frost-proof if possible.*
- ➢ *Empty all condensate lines and drains.*

➢ Store the machine in a dry, frost-proof room.

12.3 Transporting

12.3.1 Safety

Weight and center of gravity determine the most suitable method of transport. The center of gravity is shown in the dimensioned drawing.

Precondition Transport only by fork truck or lifting gear with personnel trained in the safe transport of goods.

➢ Make sure the danger zone is clear.

12.3.2 Transporting with a forklift truck

Precondition The forks are fully under the machine

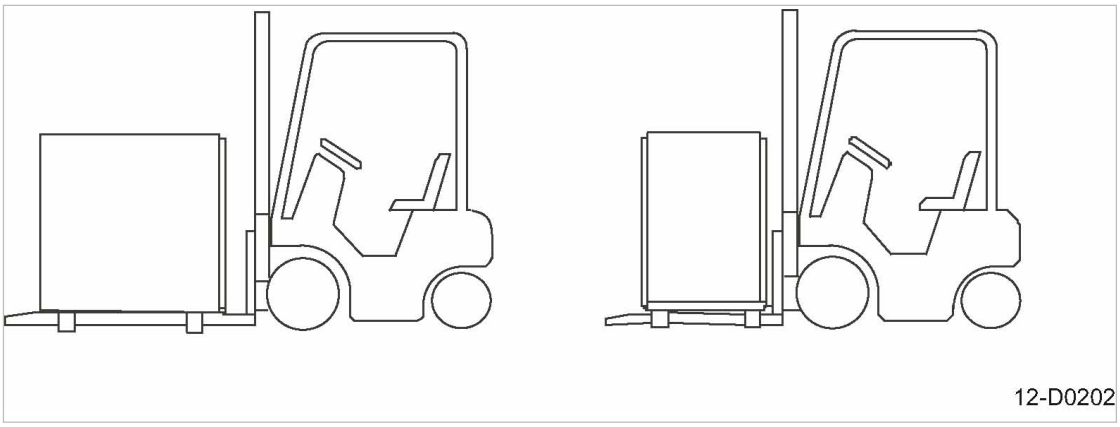


Fig. 17 Transporting with a forklift truck

➢ Drive the forks completely under the machine or palette and lift carefully.

12.3.3 Transporting with a crane

A suitable lifting frame ensures correct transportation.
The lifting slings must be fully under the machine.
The slings may not bear on the side of the machine cabinet.

Examples of unsuitable fixing points:

- pipe supports
- flanges
- attached components such as cyclone separators, condensate drains or filters
- Bypass pipe

Precondition The lifting frame complies with local safety regulations.
No pressure should bear on the sides of the machine cabinet.

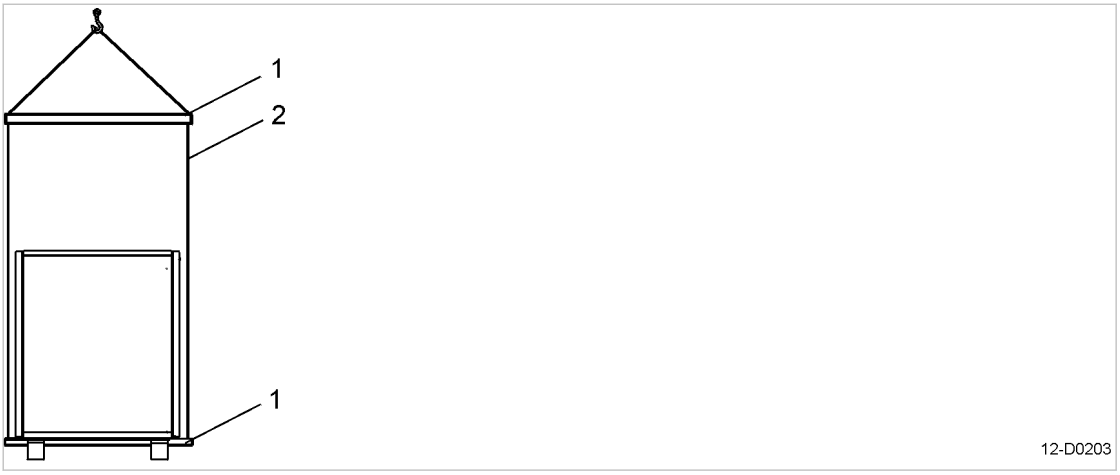


Fig. 18 Transporting with a crane

[1] Lifting frame
[2] Slings

1. **⚠ CAUTION** *The machine can be damaged by incorrect attachment of the lifting gear.*
   - ➢ *Do not attach the lifting gear to any of the machine components.*
   - ➢ *The manufacturer can advise on the use of suitable lifting gear.*
2. Use the lifting gear correctly and lift the machine carefully.

12.4 Disposal

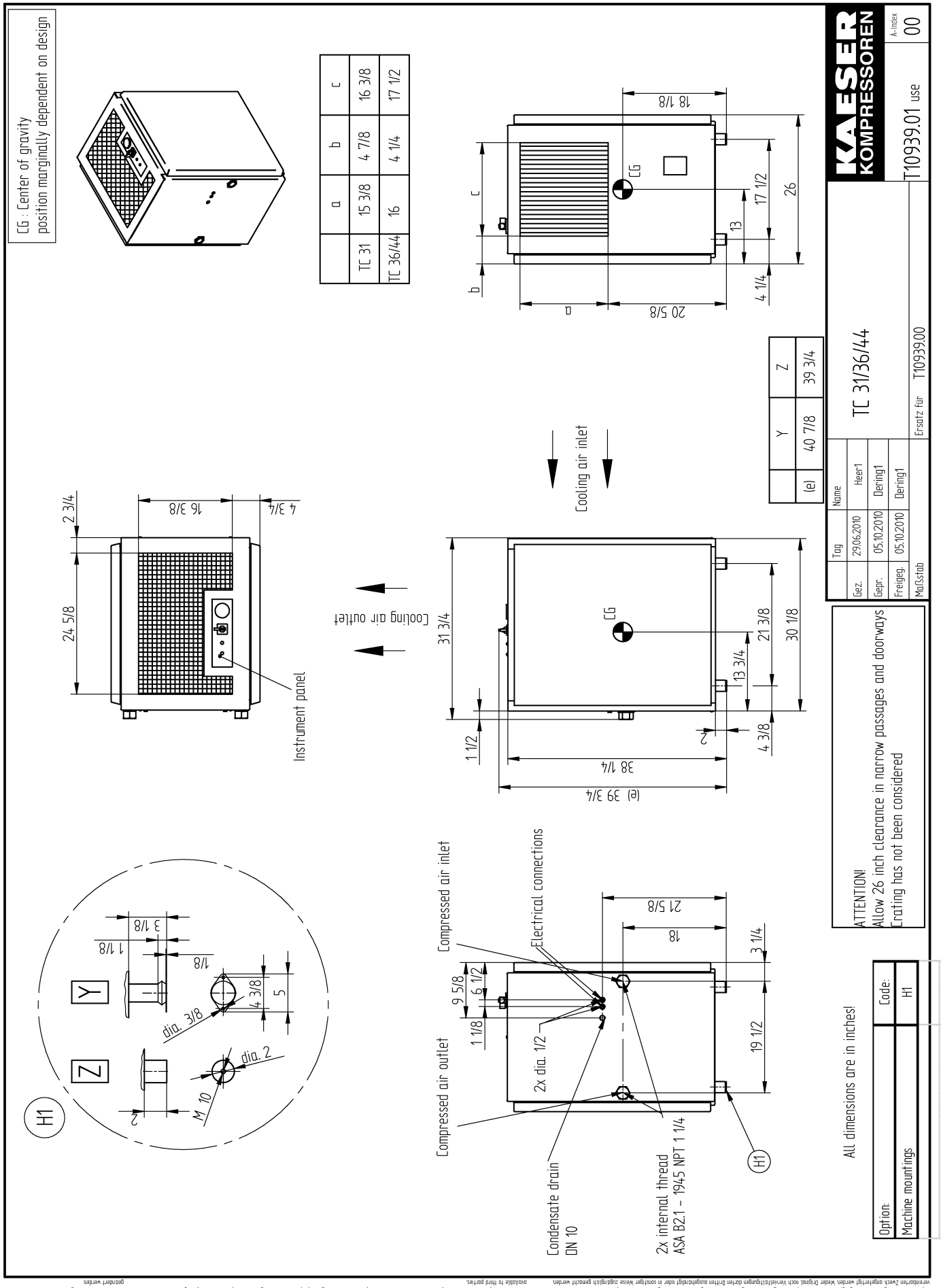
The sealed refrigerant circuit still contains both refrigerant and oil.

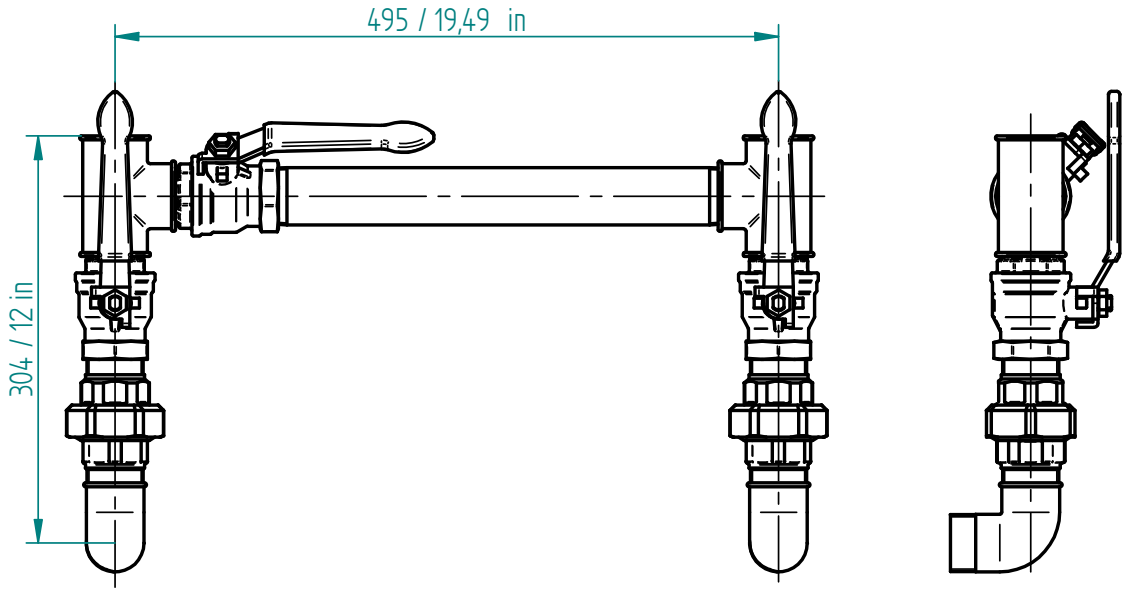
1. De-commission the machine.
2. Hand the machine over to an authorized disposal expert.

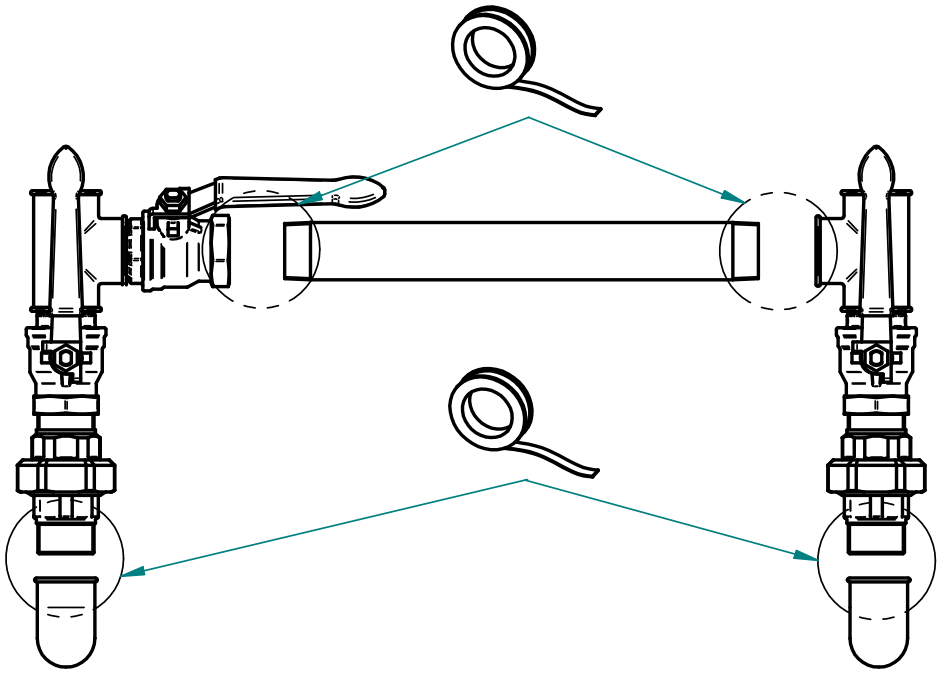
➢ Refrigerant and oil must be drained and disposed of by an authorized body.

13 Annex

13.1 Dimensional drawing





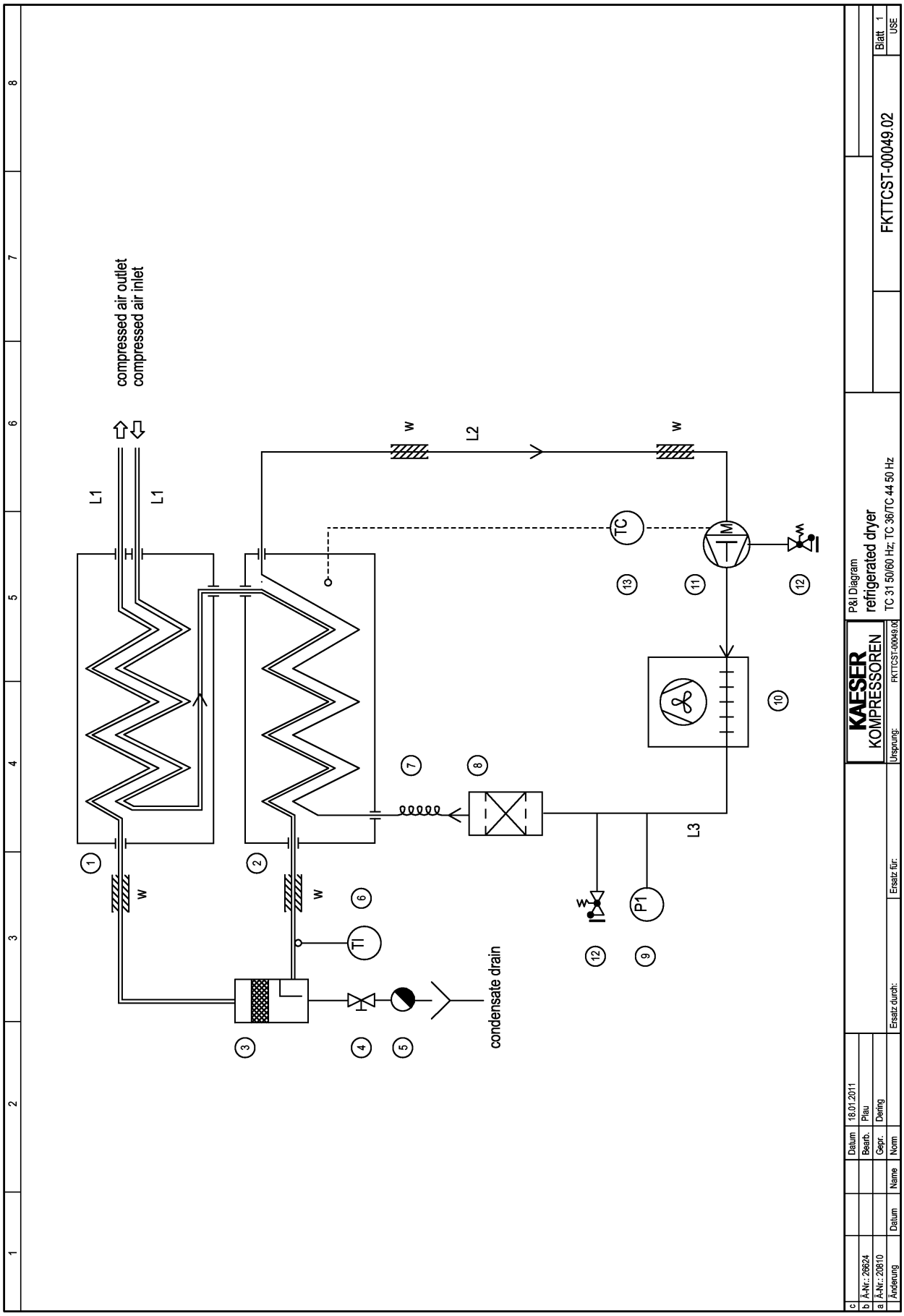


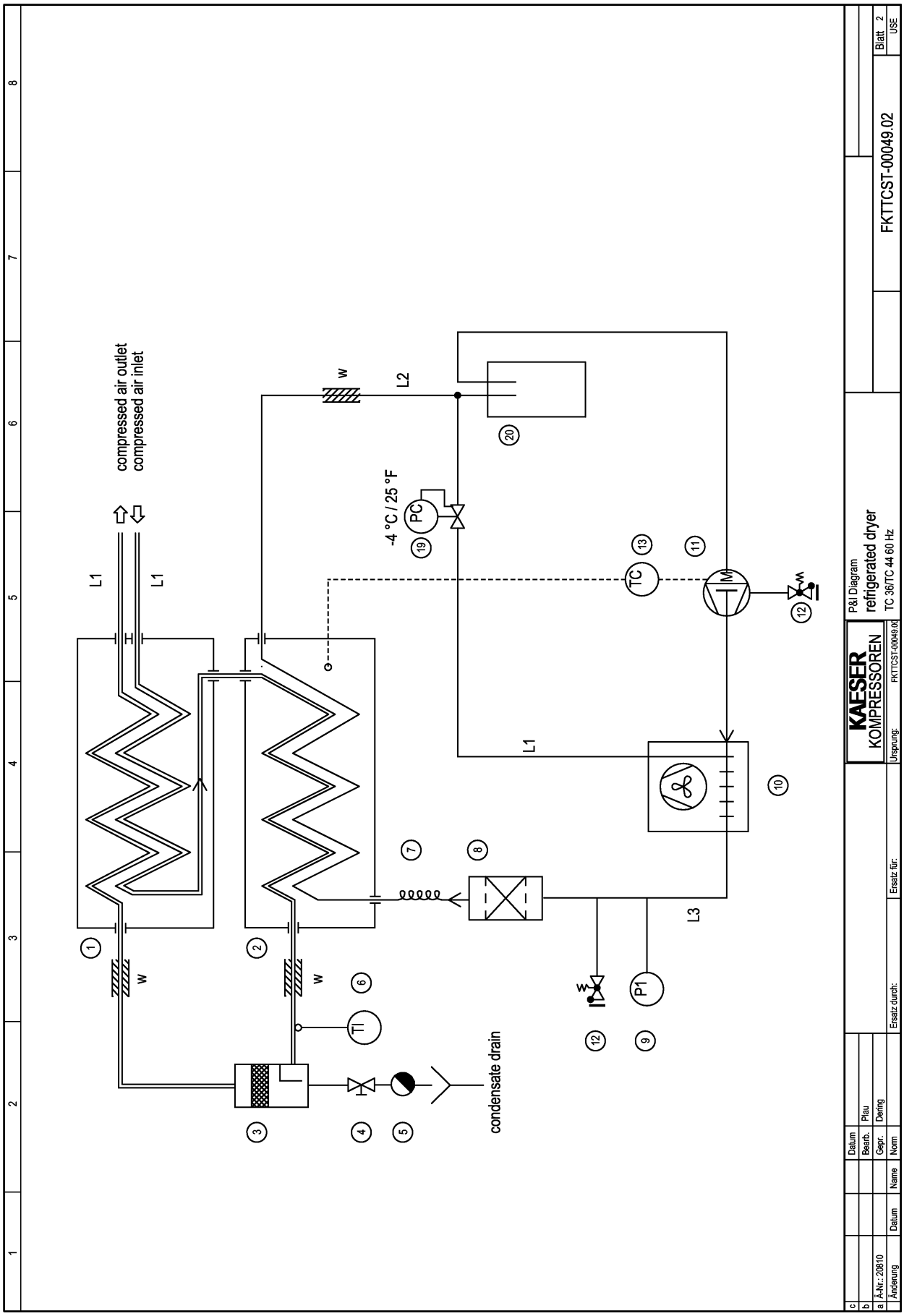
PS=16 bar – 232 psig
TS=–5°C/+65°C – 23°F/149°F

Bypass line R 1 1/4 TC 896439.1			
Blatt von	Datum: 19.10.05	Name: Großer	CAD-Datei: ...\896439-1 Umgehungsleitung R 1 1/4.dft-A4

KAESER KOMPRESSOREN – Werk Gera –

13.2 Pipeline and instrument flow diagram (P+I diagram)


compressed air outlet
compressed air inlet
L1
L1
L2
L3
W
W
W
W
TC
M
TI
P1
condensate drain
1
2
3
4
5
6
7
8
9
10
11
12
13
KAESER KOMPRESSOREN
P&I Diagram
refrigerated dryer
TC 31 50/60 Hz; TC 36/TC 44 50 Hz
FKTTCST-00049.02
Blatt 1
USE
Ursprung:
FKTTCST-00049.00
Ersatz für:
Ersatz durch:
Datum 18.01.2011
Bearb. Plau
Gepr. Dering
Norm
Name
Datum
Änderung
Å-Nr.: 20810
Å-Nr.: 28624


compressed air outlet
compressed air inlet
L1
L1
L2
L3
W
W
W
-4 °C / 25 °F
PC
TC
TI
P1
condensate drain
KAESER KOMPRESSOREN
P&I Diagram
refrigerated dryer
TC 36/TC 44 60 Hz
FKTTCST-00049.02
Blatt 2
USE

1	2	3	4	5	6	7	8

1 air to air heat exchanger
2 air to refrigerant heat exchanger (vapouriser)

} heat insulated

3 condensate separator
4 shut-off valve
5 condensate 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)
13 thermostat
19* hot gas bypass regulator
20* refrigerant separator

piping:

L1, L2, L3 - pipe (Cu)

w - heat insulated

* TC 36/TC 44 60 Hz

c				Datum			KAESER KOMPRESSOREN	P&I Diagram legend refrigerated dryer TC	
b				Bearb.	Plau				
a	Ä-Nr.: 20810			Gepr.	Dering				
	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung: FKTTCST-00049.00	FKTTCST-00049.02	Blatt 3 USE

13.3 Electrical diagram

Wiring Diagram

refrigeration dryer TA5-TC44

115V ±10% 60Hz
230V ±10% 60Hz

manufacturer: KAESER KOMPRESSOREN GmbH
96450 Coburg
GERMANY

c				Datum	27.02.2008 USE		KAESER KOMPRESSOREN	cover page refrigeration dryer TA5-TC44		=
b				Bearb.	Zeeh					+
a				Gepr.	Zeeh				DTR-U0001.02	Blatt 1
A	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:		Bl.

Lfd. Nr. No.	Benennung Name		Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	lay-out	control panel		ATR-U0001.02	1	
2	cover page			DTR-U0001.02	1	
3	terminal connection	terminal strip -X1		KTR-U0001.02	1	
4	wiring diagram	power unit		STR-U0001.02	1	
5	wiring diagram	control unit		STR-U0001.02	2	
6	wiring diagram	volt-free contacts		STR-U0001.02	3	
7	block diagram			UTR-U0001.02	1	
8	block diagram	model-dependent components		UTR-U0001.02	2	
9	block diagram	model-dependent components		UTR-U0001.02	3	
10	list of contents			ZTR-U0001.02	1	

c				Datum	27.02.2008		KAESER KOMPRESSOREN	list of contents		=
b				Bearb.	Zeeh					+
a				Gepr.	Zeeh				ZTR-U0001.02	Blatt 1
B	Änderung	Datum	Name	Norm		Ersatz durch: / Ersatz für:	Ursprung:			Bl.

general instructions

ATTENTION !!!
Install supplies, grounding and shock protection
to local safety regulations.
Control circuits are single-end-grounded, if they are floating
they may only be used together with insulation monitoring.

control cabinet wiring for non-designated conductors
with multi-standard stranded conductors

primary circuits:	black 2,5mm² H07V-K, 14AWG UL-Style 1015, CSA-TEW
control voltage AC:	red 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW
control voltage AC grounded:	white 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW
external voltage:	orange 1,5mm² H07V-K, 16AWG UL-Style 1015, CSA-TEW
ground conductor:	green/yellow H07V-K, UL-Style 1015, CSA-TEW

-A01	automatic condensate drain
-B2	safety air pressure switch
-B11	NTC-temperature probe
-1FU/-2FU	primary control fuse
-3FU/-4FU	fuses vent motor
-5FU	secondary control fuse
-F11	NTC-thermostat
-H1,-H2	LED indicator
-K1M	motor starter
-M1	compressor motor with overload protection
-M2	vent motor with overload protection
-Q1	main disconnect
-T1	control transformer
-X1	terminal strip

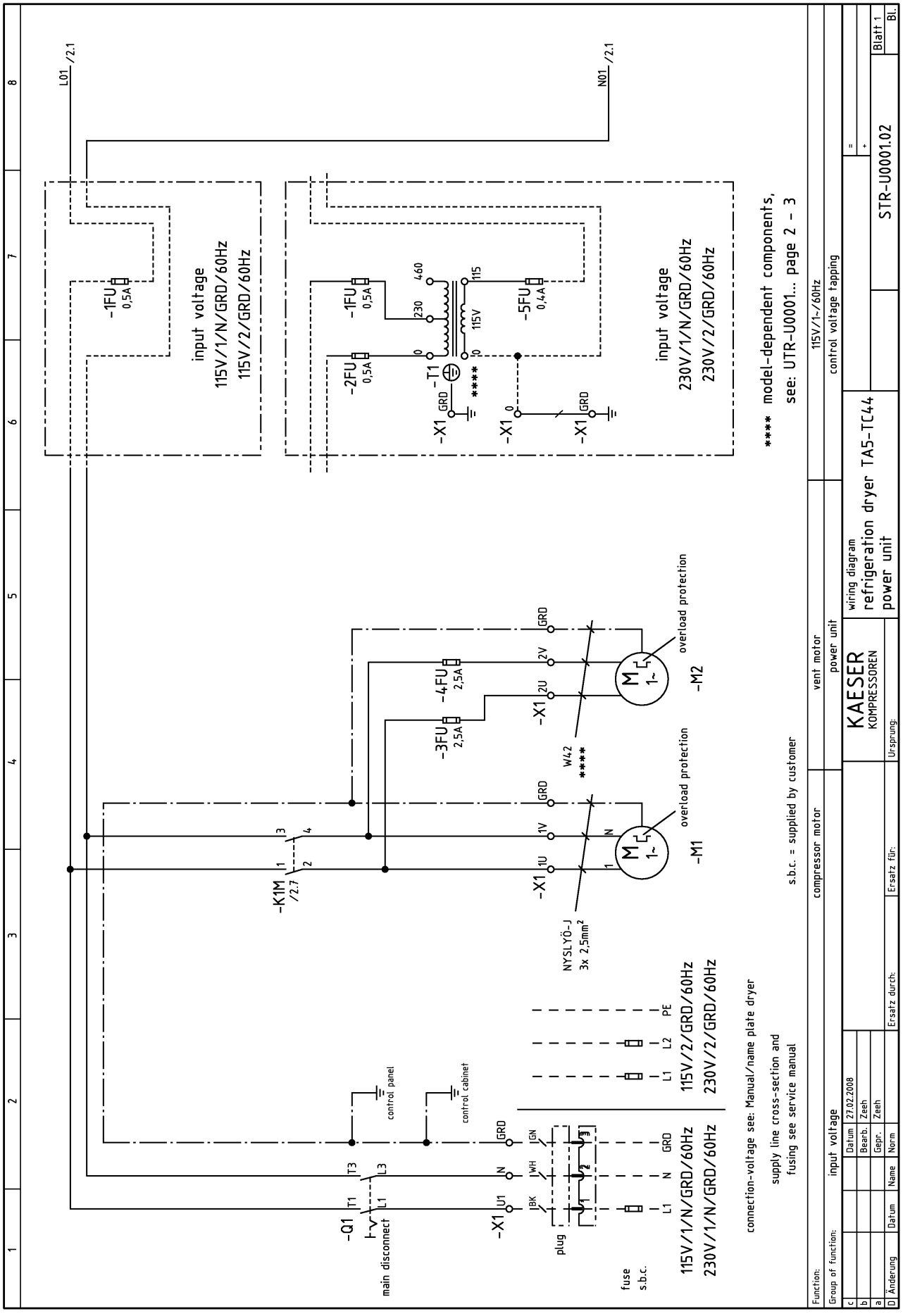
c				Datum	27.02.2008		KAESER KOMPRESSOREN	block diagram refrigeration dryer TA5-TC44	=
b				Bearb.	Zeeh				+
a				Gepr.	Zeeh				
C	Änderung	Datum	Name	Norm		Ersatz durch: / Ersatz für:	Ursprung:	UTR-U0001.02	Blatt 1 Bl.

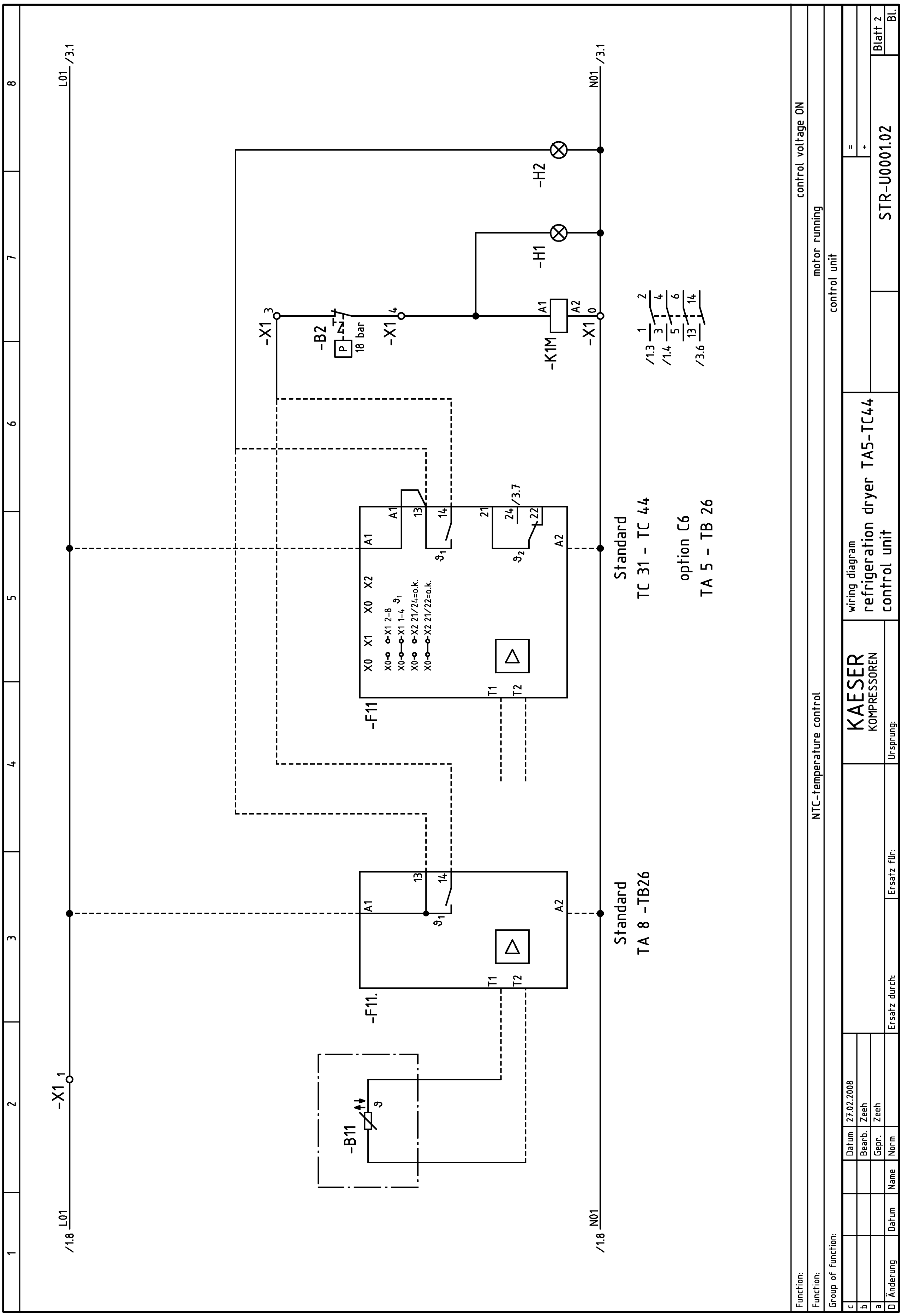
model	model-dependent components TA5	TA8 - TA11	TB19	TB26	TC31 - TC36
machine power supply	115 V ±10 %, 60 CY	115 V ±10 %, 60 CY	115 V ±10 %, 60 CY	115 V ±10 %, 60 CY	115 V ±10 %, 60 CY
Hauptstromkreis **black**	UL-Style 1015, CSA-TEW 14 AWG	UL-Style 1015, CSA-TEW 14 AWG	UL-Style 1015, CSA-TEW 14 AWG	UL-Style 1015, CSA-TEW 14 AWG	UL-Style 1015, CSA-TEW 14 AWG
contactor **-K1M**	7.6874.00010 3RT1016-1AK61	7.6874.00010 3RT1016-1AK61	7.6874.00010 3RT1016-1AK61	7.3140.02690 3RT1017-1AK61	7.3140.02690 3RT1017-1AK61
auxiliary switch **Siemens**	---	---	---	---	7.3140.02200 3RH1921-1DA11
NTC-thermostat **-F11** **Ziehl**	7.4722.1 TRN 111K 2-8	7.4722.1 TRN 111K 2-8	7.4722.1 TRN 111K 2-8	7.4722.1 TRN 111K 2-8	7.6238.00010 TRN 122K 1-4/2-8
terminal strip **-X1** **Wieland**	7.3165.30070 99.500.7511.7	7.3165.30070 99.500.7511.7	7.3165.30070 99.500.7511.7	7.3165.30070 99.500.7511.7	7.3165.30040 99.501.7511.7
motor cable -M2 **-W42**	500 V / 70°C 3x0,5 mm²	500 V / 70°C 3x0,5 mm²	500 V / 70°C 3x0,5 mm²	500 V / 70°C 3x2,5 mm²	500 V / 70°C 3x2,5 mm²
cables condensate drain **-W34**	---	500 V / 70°C 3x1,5 mm²	500 V / 70°C 3x1,5 mm²	500 V / 70°C 3x1,5 mm²	500 V / 70°C 3x1,5 mm²
option C6					
NTC-thermostat **-F11** **Ziehl**	7.6238.00010 TRN 122K 1-4/2-8	7.6238.00010 TRN 122K 1-4/2-8	7.6238.00010 TRN 122K 1-4/2-8	7.6238.00010 TRN 122K 1-4/2-8	7.6238.00010 TRN 122K 1-4/2-8
terminal strip **-X1** **Wieland**	7.3165.30040 99.501.7511.7	7.3165.30040 99.501.7511.7	7.3165.30040 99.501.7511.7	7.3165.30040 99.501.7511.7	7.3165.30040 99.501.7511.7
series terminal **-X1** **Wieland**	---	2x 896081.3 WKFN 2,5/35	2x 896081.3 WKFN 2,5/35	2x 896081.3 WKFN 2,5/35	2x 896081.3 WKFN 2,5/35
cables condensate drain **-W34**	---	500 V / 70°C 5x1mm²	500 V / 70°C 5x1mm²	500 V / 70°C 5x1mm²	500 V / 70°C 5x1mm²
	Common parts				
control cabinet	7.4696.3				
control panel	201441.20010				
main disconnect **-Q1** **Sontheimer**	896595.0 NLT40 / 3ZM / Z20				
fuse socket **-1FU** **Wöhner**	7.3320.00050 Class CC 1-pol.				
fuse **-1FU** **Pump/Gould Shawmut**	7.3310.1 ATQR 0,5 A				
fuse socket **-3FU/-4FU** **Wöhner**	7.3320.00070 Class CC 2-pol.				
fuse **-3FU/-4FU** **Pump/Gould Shawmut**	7.3305.00010 ATDR 2,5 A				
LED indicator **-H1, -H2** **CML**	7.5720.0 19511331 green				

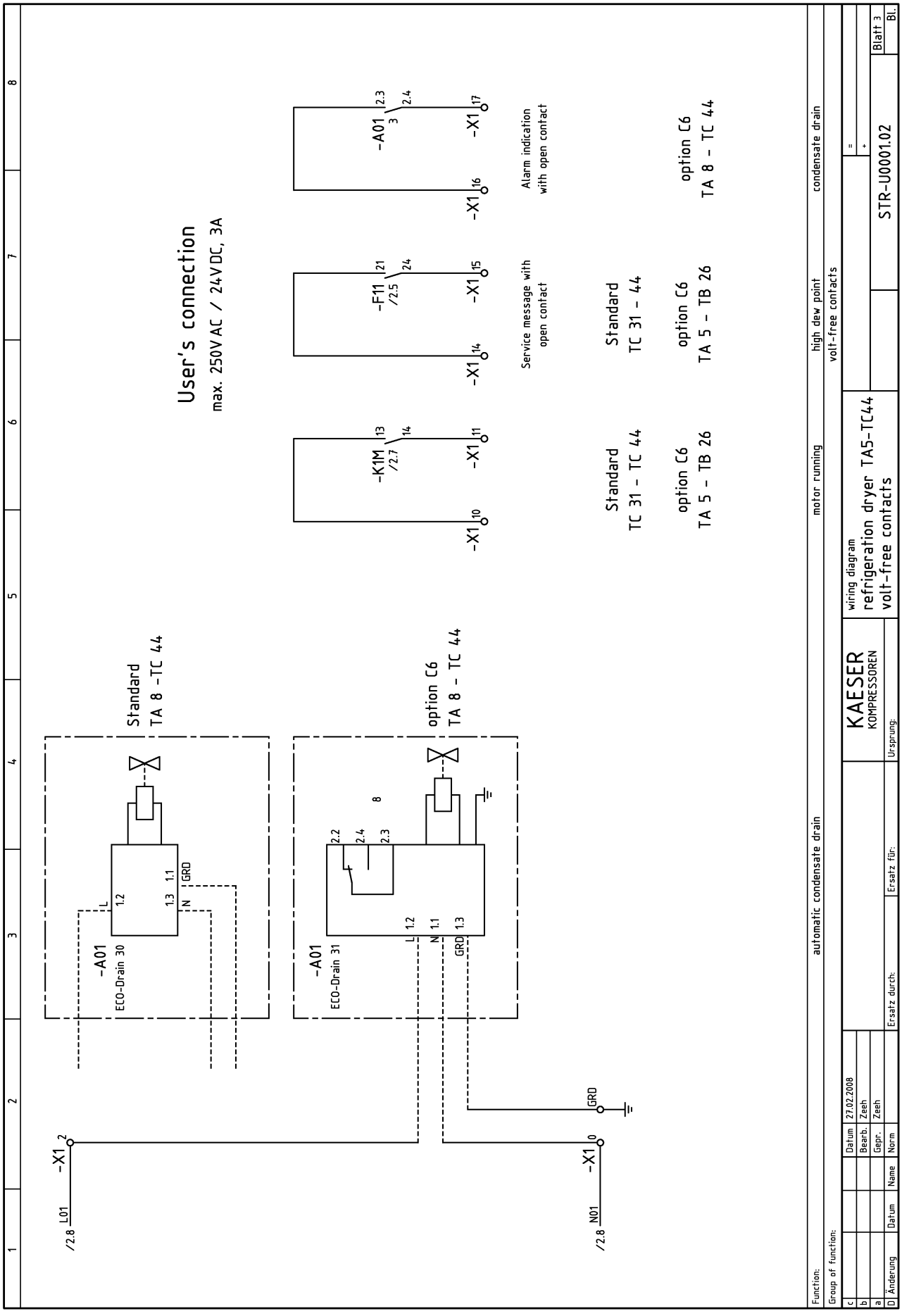
UTR-U0001.02
Blatt 2 Bl.
performance-related components
block diagram
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:
Datum 27.02.2008
Bearb. Zeeh
Gepr. Zeeh
Norm
Name
Datum
c Änderung Datum Name

model	model-dependent components TB19 - TB26	TC31	TC36 - TC44	
machine power supply	230 V ±10 %, 60 CY	230 V ±10 %, 60 CY	230 V ±10 %, 60 CY	
Hauptstromkreis **black**	UL-Style 1015, CSA-TEW 14 AWG	UL-Style 1015, CSA-TEW 14 AWG	UL-Style 1015, CSA-TEW 14 AWG	
contactor **-K1M** **Siemens**	7.6874.00010 3RT1016-1AK61	7.6874.00010 3RT1016-1AK61	7.6874.00010 3RT1016-1AK61	
NTC-thermostat **-F11** **Ziehl**	7.4722.1 TRN 111K 2-8	7.4722.1 TRN 111K 2-8	7.6238.00010 TRN 122K 1-4/2-8	
terminal strip **-X1** **Wieland**	7.3165.30070 99.500.7511.7	7.3165.30070 99.500.7511.7	7.3165.30040 99.501.7511.7	
motor cable -M2 **-W42**	500 V / 70°C 3x0,5 mm²	500 V / 70°C 3x0,5 mm²	500 V / 70°C 3x2,5 mm²	
cables condensate drain **-W34**	---	500 V / 70°C 3x1,5 mm²	500 V / 70°C 3x1,5 mm²	
option C6				
NTC-thermostat **-F11** **Ziehl**	7.6238.00010 TRN 122K 1-4/2-8	7.6238.00010 TRN 122K 1-4/2-8	7.6238.00010 TRN 122K 1-4/2-8	
terminal strip **-X1** **Wieland**	7.3165.30040 99.501.7511.7	7.3165.30040 99.501.7511.7	7.3165.30040 99.501.7511.7	
series terminal **-X1** **Wieland**	2x 896081.3 WKFN 2,5/35	2x 896081.3 WKFN 2,5/35	2x 896081.3 WKFN 2,5/35	
cables condensate drain **-W34**	500 V / 70°C 5x1 mm²	500 V / 70°C 5x1 mm²	500 V / 70°C 5x1 mm²	
	Common parts			
control cabinet	7.4696.3			
control panel	201441.20010			
main disconnect **-Q1** **Sontheimer**	896595.0 NLT40 / 3ZM / Z20			
control transformer **-T1** **Block**	7.3902.10020 50VA 230/460 V//115 V			
fuse socket **-1FU/-2FU** **Wöhner**	7.3320.00070 Class CC 2-pol.			
fuse **-1FU/-2FU** **Pump/Gould Shawmut**	2x 7.3310.1 ATQR 0,5 A			
fuse socket **-3FU/-4FU** **Wöhner**	7.3320.00070 Class CC 2-pol.			
fuse **-3FU/-4FU** **Pump/Gould Shawmut**	7.3305.00010 ATDR 2,5 A			
fuse **-5FU** **5x 20**	893937.0 0,4A			
LED indicator **-H1, -H2** **CML**	7.5720.0 19511331 green			

UTR-U0001.02
Blatt 3
Bl.
performance-related components
block diagram
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:
Datum 27.02.2008
Bearb. Zeeh
Gepr. Zeeh
Norm
Name
Datum
Änderung


L01 /2.1
N01 /2.1
input voltage
115V/1/N/GRD/60Hz
115V/2/GRD/60Hz
input voltage
230V/1/N/GRD/60Hz
230V/2/GRD/60Hz
-1FU 0,5A
-2FU 0,5A
-4FU 2,5A
-3FU 2,5A
-5FU 0,4A
-T1
-K1M /2.7
-Q1
-X1
-M1
-M2
W42
NYSLYÖ-J 3x 2,5mm²
overload protection
control panel
control cabinet
main disconnect
plug
fuse s.b.c.
**** model-dependent components, see: UTR-U0001... page 2 - 3
s.b.c. = supplied by customer
connection-voltage see: Manual/name plate dryer
supply line cross-section and fusing see service manual
compressor motor
vent motor
power unit
115V/1~/60Hz
control voltage tapping
KAESER KOMPRESSOREN
wiring diagram
refrigeration dryer TA5-TC44
power unit
STR-U0001.02
Blatt 1
Function:
Group of function:
input voltage
Datum 27.02.2008
Bearb. Zeeh
Gepr. Zeeh
Name Norm
Ersatz durch:
Ersatz für:
Ursprung:
Änderung


control voltage ON
motor running
control unit
NTC-temperature control
-H2
-H1
-K1M
-X1
-B2
18 bar
-F11
-F11.
-B11
Standard
TC 31 - TC 44
option C6
TA 5 - TB 26
Standard
TA 8 -TB26
L01
N01
wiring diagram
refrigeration dryer TA5-TC44
control unit
KAESER
KOMPRESSOREN
STR-U0001.02
Blatt 2
Datum 27.02.2008
Bearb. Zeeh
Gepr. Zeeh


User's connection
max. 250V AC / 24VDC, 3A
Standard
TA 8 -TC 44
option C6
TA 8 - TC 44
-A01
ECO-Drain 30
-A01
ECO-Drain 31
-K1M
/2.7
-F11
/2.5
-A01
-X1
Service message with
open contact
Alarm indication
with open contact
Standard
TC 31 - TC 44
option C6
TA 5 - TB 26
option C6
TA 8 - TC 44
Standard
TC 31 - 44
option C6
TA 5 - TB 26
/2.8 L01
/2.8 N01
GRD
automatic condensate drain
motor running
high dew point
condensate drain
volt-free contacts
wiring diagram
refrigeration dryer TA5-TC44
volt-free contacts
KAESER
KOMPRESSOREN
STR-U0001.02
Blatt 3
Bl.
Datum 27.02.2008
Bearb. Zeeh
Gepr. Zeeh
Name
Norm
Ersatz durch:
Ersatz für:
Ursprung:
Änderung
Function:
Group of function:

terminal strip: -X1 (total 24 terminals)

Group	destination inside: name of device	destination inside: connection	location	jumper wire	terminal-no.	link	destination external: connection	destination external: name of device	cable -W2 500V/70°C 2x0,75mm²	cable -W34 ****	cable -W40 500V/70°C 3x2,5mm²	cable -W42 ****	cable -s.b.c. **	note
	-Q1	L1	/1.1		U1			supply					X	
	-Q1	L3	/1.2		N			supply					X	
	control cabinet		/1.2		GRD			supply					X	
	control panel		/1.4		GRD		GRD	-M1			X			
	-K1M	2	/1.3		1U		1	-M1			X			
	-3FU		/1.4		2U			-M2				X		
	-K1M	4	/1.4		1V		N	-M1			X			
	-4FU		/1.5		2V			-M2				X		
115V/60CY			/1.5		GRD		GRD	-M2				X		
115V/60CY	-1FU		/2.2		1	●								
115V/60CY	-F11	A1	/3.2		2	●	L	-A01		X				
115V/60CY	-F11	14	/2.7		3			-B2	X					
115V/60CY	-K1M	A1	/2.7		4			-B2	X					
115V/60CY	-K1M	3	/3.2		0	●	N	-A01		X				
115V/60CY	-K1M	A2	/2.7		0	●		-H1						
115V/60CY			/1.6		0	●		-H2						
115V/60CY			/1.6		GRD		GRD	-A01		X				
230V/60CY	-T1	GRD	/1.5		GRD		GRD	-M2				X		
230V/60CY	-5FU		/2.2		1	●								
230V/60CY	-F11	A1	/3.2		2	●	L	-A01		X				
230V/60CY	-F11	14	/2.7		3			-B2	X					
230V/60CY	-K1M	A1	/2.7		4			-B2	X					
230V/60CY	-T1	0	/3.2		0	●	N	-A01		X				
230V/60CY	-K1M	A2	/2.7		0	●		-H1						
230V/60CY			/1.6	⊓	0	●		-H2						
230V/60CY			/1.6		GRD		GRD	-A01		X				
option C6	-K1M	13	/3.5		10									1)
option C6	-K1M	14	/3.6		11									1)
option C6	-F11	21	/3.6		14									2)
option C6	-F11	24	/3.7		15									2)
option C6	-A01	2.3	/3.7		16					X (-W34 ****, inside)				3)
option C6	-A01	2.4	/3.8		17					X (-W34 ****, inside)				3)
option C6					GRD									

** supply line cross-section see service manual

s.b.c. = supplied by customer

**** model-dependent components, see: UTR... page 2 - 3

volt-free contacts, User's connection
1) motor running
2) high dew point
(1–2: TC31 - TC 44 Standard)
3) condensate drain (TA8 - TC44)

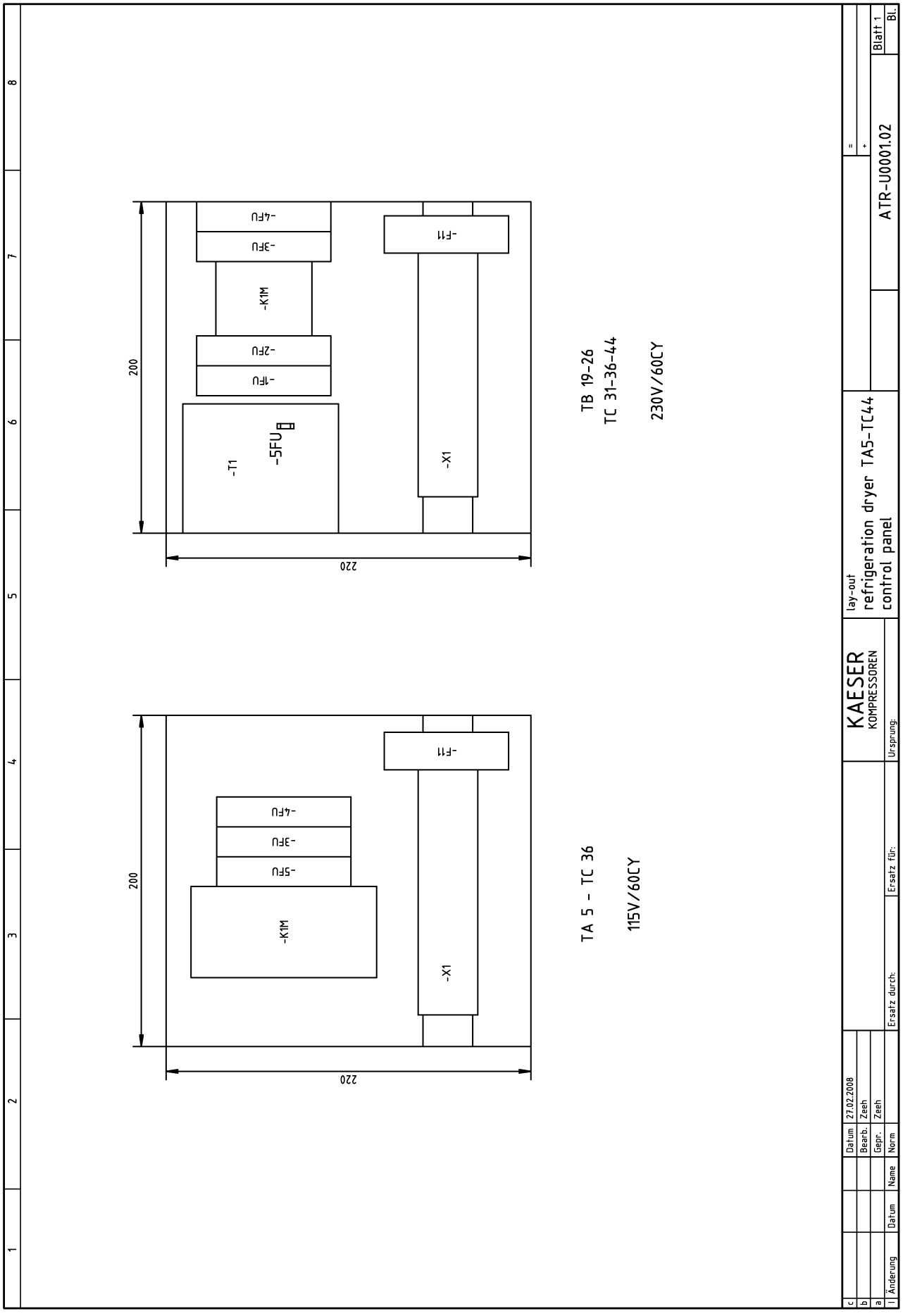
c				Datum	27.02.2008
b				Bearb.	Zeeh
a				Gepr.	Zeeh
H	Änderung	Datum	Name	Norm	

Ersatz durch: | Ersatz für: | Ursprung:

KAESER KOMPRESSOREN

terminal connection
refrigeration dryer TA5-TC44
terminal strip -X1

=
+
KTR-U0001.02
Blatt 1
Bl.


-4FU
-3FU
-K1M
-2FU
-1FU
-T1
-5FU
-F11
-X1
200
220
TB 19-26
TC 31-36-44
230V/60CY
-4FU
-3FU
-5FU
-K1M
-F11
-X1
200
220
TA 5 - TC 36
115V/60CY
KAESER
KOMPRESSOREN
lay-out
refrigeration dryer TA5-TC44
control panel
ATR-U0001.02
Blatt 1
Bl.
Datum 27.02.2008
Bearb. Zeeh
Gepr. Zeeh
Norm
Name
Datum
Änderung
Ersatz durch:
Ersatz für:
Ursprung: