

# Operator Manual

Refrigerated Dryer

TF

No.: 901737 16 USE

Manufacturer:

**KAESER KOMPRESSOREN SE**

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Original instructions  
/KKW/DTF 2.16 en Z1 SBA-TF.2

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# 1 Regarding this Document

## 1.1 Using this document

The operating manual is a component of the product. It describes the machine as it was at the time of first delivery after manufacture.

- Keep the operating manual in a safe place throughout the life of the machine.
- Supply any successive owner or user with this operating manual.
- Please insert any amendment or revision of the operating manual sent to you.
- Enter details from the machine nameplate and individual items of equipment in the table in chapter 2.

## 1.2 Further documents

Further documents included with this operating manual are:

- Declaration of Conformity in accordance with applicable directives.

Missing documents can be requested from KAESER.

- Make sure all documents are complete and observe the instructions contained in them.
- Make sure you provide the data from the nameplate when ordering documents.

## 1.3 Copyright

This operator manual is copyright protected. Queries regarding use or duplication of the documentation should be referred to KAESER. Correct use of information will be fully supported.

## 1.4 Symbols and labels

- Please note the symbols and labels used in this document.

### 1.4.1 Warnings

Warning notices indicate danger potentially resulting in personal injury, if the measures specified are not taken.

Warning notices indicate three levels of danger identified by the corresponding signal term:

Signal term	Meaning	Consequences of non-compliance
DANGER	Warns of imminent danger	Will very likely result in death or severe injury
WARNING	Warns of potentially imminent danger	May result in death or severe injury
CAUTION	Warns of a potentially dangerous situation	May result in moderate physical injury

Tab. 1 Danger levels and their definition (personal injury)

Warning notices preceding a chapter apply to the entire chapter including all sub-sections.

Example:

# 1 Regarding this Document

## 1.4 Symbols and labels

### **⚠ DANGER**

*The type and source of the imminent danger is shown here!*

*The possible consequences of ignoring a warning are shown here.*

*The word "DANGER" indicates that death or severe injury can very likely result from ignoring the warning.*

➤ *The measures required to protect yourself from danger are shown here.*

Warning notes referring to a sub-section or the subsequent action are integrated into the procedure and numbered as a step.

Example:

1. **⚠ WARNING** *The type and source of the imminent danger is shown here!*  
*The possible consequences of ignoring a warning are shown here.*  
*The word "WARNING" indicates that death or severe injury may result from ignoring the warning.*  
➤ *The measures required to protect yourself from danger are shown here.*
2. Always read and comply with warning instructions.

### 1.4.2 Potential damage warnings

Contrary to the warnings shown above, damage warnings do not indicate potential personal injury.

Damage warnings have only one danger level, identified by this signal term:

Signal term	Meaning	Consequences of non-compliance
NOTE	Warns of a potentially dangerous situation	Damage to property is possible

Tab. 2 Danger levels and their definition (damage to property)

Example:

### **NOTICE**

*The type and source of the imminent danger is shown here!*

*Potential effects when ignoring the warning are indicated here.*



➤ *The protective measures against the damages are shown here.*

➤ Carefully read and fully comply with warnings against damages.

### 1.4.3 Other alert notes and their symbols



This symbol indicates particular 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.  
The conditional requirements relevant to safety shown here will help you to avoid dangerous situations.
- Option H1** ➤ This symbol is placed by lists of actions comprising one stage of a task.  
Operating instructions with several steps are numbered in the sequence of the operating steps.  
Information relating to one option only are marked with an option code (e.g., H1 indicates that this section applies only to machines with bolt-down machine feet). Option codes used in this operating manual are explained in chapter 2.2.
-  Information referring to potential problems is identified by a question mark.  
The cause is specified in the help text ...  
➤ ... as is a solution.
-  This symbol identifies important information or measures regarding the protection of the environment.
- Further information** Further subjects are introduced here.

## 2 Technical Data

### 2.1 Nameplate

#### Machine nameplate

The model designation and important technical information are provided on the machine's nameplate.

The nameplate is located on the outside of the machine.



Nameplates in various languages are provided with the machine.

➤ If required, attach a nameplate in the applicable language.

➤ Enter the data from the nameplate here for reference.

Feature	Value
Refrigerated dryer	
Part No.	
Serial No.	
Year of manufacture	
Max. gauge working pressure	
Compressed air inlet temperature	
Ambient temperature	
Rated current	
Largest motor FLA	
Short circuit current	
Supply fuse (field provided)	
Power supply	
Wiring diagram	
Option	
<b>Refrigerant system</b>	
(Contains fluoridated global warming gas)	
Refrigerant	
Refrigerant charge	
Global warming potential (GWP)	
CO <sub>2</sub> equivalent	
Max. working pressure (refrigeration system), HP*	
Max. working pressure (refrigeration system), LP**	
Tightness checked	
* High pressure	
** Low pressure	

Tab. 3 Machine nameplate

**Heat exchanger nameplate**

For important technical data, please see the nameplate of the heat exchanger.

The heat exchanger nameplate is attached directly at the heat exchanger within the machine.

TF 340: An additional nameplate with limited information is provided on the insulation.

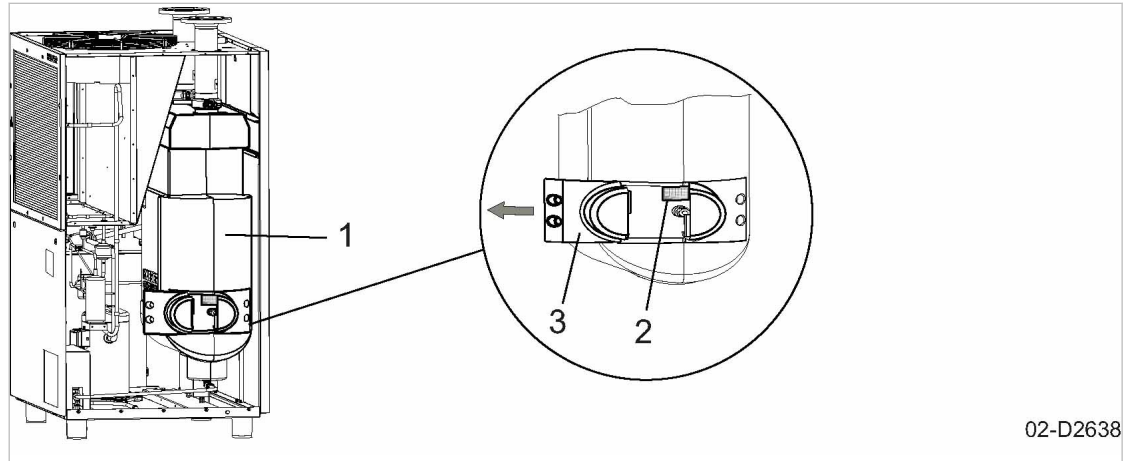


Fig. 1 Heat exchanger nameplate

- ① Heat exchanger
- ② Nameplate
- ③ Insulation

1. Carefully pull out and remove the insulation ③.
2. Read the data on the nameplate ②.
3. Replace the insulation ③ and close carefully.

**2.2 Options**

The table contains a list of possible options.

➤ Enter options here as a reference:

Option	Option code	Available?
Floating contact: "Pressure dew point warning"	C36	✓
Floating contact: "Refrigerant compressor runs"	C37	✓
Communication module: Modbus TCP	C44	✓
Bolt-down machine feet	H1	
Air-cooling	K1	
Water cooling: Plate-type heat exchanger	K2	
Electronic condensate drain, floating contact	K6	✓
High ambient temperature.	K15	
Transformer power supply	T2	

available: ✓

Not available: —

Option	Option code	Available?
Compressed air connection: left	T8	
Compressed air connection: compatible with TF 173/203/251	T9	
available: ✓ Not available: —		

Tab. 4 Options

## 2.3 Weight

The values shown are maximum values. Actual weight of individual machines are dependent on equipment fitted.

	TF 174	TF 230	TF 280	TF 340
Weight [lb]	765 / 775 <sup>1)</sup>	830 / 840 <sup>1)</sup>	865 / 875 <sup>1)</sup>	925 / 935 <sup>1)</sup>

<sup>1)</sup> Option K2

Tab. 5 Weight

## 2.4 Ambient conditions

	TF 174	TF 230	TF 280	TF 340
Maximum elevation AMSL <sup>1)</sup> [ft]	3000	3000	3000	3000
Permissible ambient temperature [°F]	38 – 110 38 – 120 <sup>2)</sup>	38 – 110 38 – 120 <sup>2)</sup>	38 – 110 38 – 120 <sup>2)</sup>	38 – 110 38 – 120 <sup>2)</sup>

<sup>1)</sup> Higher elevations are permissible only after consultation with the manufacturer.

<sup>2)</sup> Option K2, Option K15

Tab. 6 Ambient conditions

## 2.5 Compressed air system

	TF 174	TF 230	TF 280	TF 340
Pressure drop <sup>1)</sup> [psi]	1.59	1.89	2.32	2.18
Flow rate <sup>1)</sup> [cfm]	550	740	900	1130

\* Not applicable for Option K2

<sup>1)</sup> According to ISO 7183 Option A2:

- Reference point: 14.5 psia, 68°F, 0% relative humidity:
- Operating point: Gauge working pressure 100 psig, compressed air inlet temperature 100°F, 100% relative humidity, cooling air inlet temperature 100°F, cooling water inlet temperature 84°F

<sup>2)</sup> Option K15



	TF 174	TF 230	TF 280	TF 340
Pressure drop <sup>1)</sup> [psi] (Option K2)	1.74	2.47	2.76	2.47
Flow rate <sup>1)</sup> [cfm] (Op- tion K2)	570	850	990	1200
Cooling air flow rate* [cfm]	3100 / 4600 <sup>2)</sup>	3100 / 4600 <sup>2)</sup>	4600	4600
Heat exchanger volume [gal]	10.7	13.3	15.4	20.2
Pressure dew point <sup>1)</sup> [°F]	44	44	44	44
Max. working pres- sure [psig]	230	230	230	230
Min. compressed air inlet temperature [°F]	38	38	38	38
Max. compressed air inlet temperature [°F]	140	140	140	140

\* Not applicable for Option K2

<sup>1)</sup> According to ISO 7183 Option A2:

- Reference point: 14.5 psia, 68°F, 0% relative humidity:
- Operating point: Gauge working pressure 100 psig, compressed air inlet temperature 100°F, 100% relative humidity, cooling air inlet temperature 100°F, cooling water inlet temperature 84°F

<sup>2)</sup> Option K15

Tab. 7 Compressed air system

## 2.6 Refrigerant circuit

The refrigerated dryer contains a refrigerant that is classified as a fluoridized global warming gas. This refrigerant is required for the functioning of the machine.

	TF 174	TF 230	TF 280	TF 340
Refrigerant	R-513A	R-513A	R-513A	R-513A
Global warming potential (GWP)	631	631	631	631
Charge quantity <sup>1)</sup> [lb]	6.17 / 6.61 <sup>2)</sup>	6.39 / 6.17 <sup>2)</sup>	7.50 / 7.72 <sup>2)</sup>	9.92 / 9.70 <sup>2)</sup>
Charge quantity as CO <sub>2</sub> equivalent [t]	1.77 / 1.89 <sup>2)</sup>	1.83 / 1.77 <sup>2)</sup>	2.15 / 2.21 <sup>2)</sup>	2.84 / 2.78 <sup>2)</sup>
Maximum working pres- sure [psig] (high pressure end)	335	335	335	335

<sup>1)</sup> Volume of fluoridized global warming gases for which the refrigerant system was designed.

<sup>2)</sup> Option K2

	TF 174	TF 230	TF 280	TF 340
Maximum working pressure [psig] (low pressure end)	290	290	290	290
Pressure monitor: Cut-out pressure [psig]	335	335	335	335

<sup>1)</sup> Volume of fluoridized global warming gases for which the refrigerant system was designed.

<sup>2)</sup> Option K2

Tab. 8 Refrigerant circuit

## 2.7 Option C44 MODBUS TCP communication module

### Communication interface

Feature	Value
Communication bus	SIGMA NETWORK / MODBUS TCP server (slave)
SIGMA NETWORK cable CAT5, 2x2x0.64, grey color (metre goods)	Material number: 7.9679.0
RJ45 plug bus connection (RJ45 plug, 4 insulation displacement/clamping contacts, tool-free installation (fast connect))	Material number: 7.7628.1
Modbus TCP cable CAT5 shielded, copper, green color (meter goods)	Material number: 7.7629.0
Transfer rate [MBit/s]	10/100
Properties 1	Auto crossing (Auto-MDI(X),
Properties 2	Auto negotiation
Connections	1x socket RJ45 CAT5 shielded, 10/100 Base-TX
Max. conduit length between two components [m]	100
Input data [byte]	1
Output data [byte]	89
Data content	"SIGMA CONTROL SMART Technical Description - Process Image", Document number: 7_9200_PCM_PA
Max. conduit length between two components [m]	100
Max. conduit length between two components [m]	100
Max. conduit length between two components [m]	100

Tab. 9 Communication interface

**Additional data, communication interface**

Feature	Value
Power supply [V DC]	24

Tab. 10 Additional data, communication interface

## 2.8 Option K2 Water Cooling



Refrigeration may contaminate the cooling water if a leak occurs.

- A special heat exchanger must be used for heating drinking water.

The specific heat capacity and required volume flow rate of the cooling water changes if anti-freeze is added.

- Consult an authorized KAESER service representative to ensure optimum cooling-system performance.
- Comply with the specified minimum requirements for the cooling water in order to avoid downtimes due to corrosion, calcification and contamination.

It is imperative that measures for cooling water treatment and filtration are implemented and performed.

KAESER can provide the names of companies specializing in cooling water analysis and the supply of suitable treatment devices.

The following design types are available:

- Option K2: Water cooling with plate heat exchanger: Chapter 2.8.1

### Open cooling system

An open cooling system may be a cooling circuit with open cooling towers for cooling via evaporation. As a portion of the cooling water evaporates, it must be replenished regularly. During evaporation, the material content of the cooling water concentrates and the contact with ambient air can contaminate the cooling water. When replenishing cooling water, you must ensure the minimum requirements for the cooling water.

### Closed cooling system

In a closed cooling system, the cooling water has not contact with the atmosphere. Thus, it cannot be contaminated by the atmosphere or enriched with oxygen, for example.

### Continuous-flow cooling system

A continuous-flow cooling system is an open cooling system. Ground, surface or drinking water circulate once through the cooling system.

Further information The dimensional drawing in chapter 13.1 gives the flow direction, size and position of the connection ports.

**2.8.1 Option K2**  
**Water-cooling**


The primary side of the heat exchanger is connected to the machine. The specifications refer to the secondary side of the heat exchanger.

**2.8.1.1 Design data for the cooling system**

	TF 174	TF 230	TF 280	TF 340
Inlet temperature <sup>1)</sup> [°F]	85	85	85	85
Cooling water temperature rise <sup>1)</sup> [°F]	20	18	14	17
Flow rate <sup>1)</sup> [gpm]	2.42	3.34	5.55	5.59
Pressure drop <sup>1)</sup> [psi]	0.6	1.3	3.1	3.2

<sup>1)</sup> According to ISO 7183 Option A2

- Reference point: 1.45 psia, 68°F, 0% relative humidity:
- Operating point: Working pressure 100 psig, compressed air inlet temperature 100°F, 100% relative humidity

Tab. 11 Design data for the cooling system

**2.8.1.2 Component specifications:**

Feature	Value
Material (Heat exchanger)	1.4401
Solder (Heat exchanger)	Copper (Cu)
Max. working pressure [psig]	145
Max. permissible pressure differential with closed valves [psi]	51
Minimum permissible inlet temperature [°F]	40
Max. permissible inlet temperature* [°F]	105
Unsuitable cooling media	Seawater Consult an authorized KAESER service representative on the suitability of cooling water solutions

\* Consult an authorized KAESER service representative regarding higher values.

Tab. 12 Component specifications (Option K2)

**2.8.1.3 Cooling water quality**

Characteristics/content	Closed cooling system	Open cooling system
pH value	7.5 – 9.0	7.5 – 9.0
General hardness [°dH]	0 – 20	0 – 20
Carbonate hardness* [°dH]	<20	<4
Chlorides (Cl) [mg/l]	<100	<100
Iron (Fe), dissolved [mg/l]	<0.5	<0.2
Sulfate (SO <sub>4</sub> ) [mg/l]	<300	<300
HCO <sub>3</sub> /SO <sub>4</sub> ratio	>1	>1
Electrical conductivity [µS/cm]	10 – 800	10 – 1500
Ammonia (NH <sub>4</sub> <sup>+</sup> ) [mg/l]	<1	<1
Manganese (Mn), dissolved [mg/l]	<0.1	<0.1
Glycol [%]	20 – 40	—
Solids (particle size) [mm]	<0.1	<0.1
Bacterial count [CFU*/ml]	10,000	10,000
Suspended solids [ppm] (concentration of undissolved matter)	<20	<20

\* CFU: colony-forming units

Tab. 13 Cooling water quality

**2.9 Sound pressure level**

	TF 174	TF 230	TF 280	TF 340
Sound pressure level [dB(A)]	<70 / 72 <sup>2)</sup>	<70 / 72 <sup>2)</sup>	72 / <70 <sup>3)</sup>	72 / <70 <sup>3)</sup>

Sound pressure level as per EN ISO 11203 and basic standard ISO 9614-2 with d=1 m and Q2=16.4 dB(A), uncertainty: ±3 dB(A)

<sup>2)</sup> Option K15 (only for air-cooled machines)

<sup>3)</sup> Option K2

Tab. 14 Sound pressure level [dB(A)]

**2.10 Power Supply**
**Basic requirements**

The machine is designed for an electrical supply according to National Electric Code (NEC) NEC-670, particularly NFPA 79, edition 2021, section 4.3. 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.

The incoming line within the control panel should be as short as possible.

If external sensors or communication lines are to be connected to the machine, use shielded cables and insert the same through EMC fittings into the control panel.

**Three-phase**

Do **NOT** operate a package on any unsymmetrical power supply. Also do **NOT** operate a package on power supplies, for example, a three-phase (open) delta or three-phase star with non-grounded neutral.

The machine requires a symmetrical three-phase power supply transformer with a WYE configuration output as shown in Figure 2 and Figure 3. In a symmetrical three-phase supply the phase angles and voltages are all the same.

Other power supplies are not suitable.



Fig. 2 Three-phase (wye system); 4 wire; center point solidly grounded



Fig. 3 Three-phase (wye system); 3 wire; center point solidly grounded

Further information Please contact an authorized KAESER service representative for power supply options. The electrical diagram 13.4 contains further specifications for electrical connection.

**2.11 Power supply specifications**

The following multi-strand copper core wires are given according to 2020 NEC 310.14, 310.15, 310.16 and table 310.16 adjusted 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 2020 NEC 110.14(C), 220.3, 310.14, 310.15, 310.16, table 310.15(B)(1), table 310.15(C)(1), 430.6, 430.22, 430.24, 670.4(A) and other local codes.

Dual element time delay fuses should be selected according to 2020 NEC 240.6, 430.52 and tables 430.52, 430.248 and 430.250.

It is recommended to use a ground conductor the same size as the current carrying conductors, if local codes allow. Neither the minimum ground wire size as pointed out in 2020 NEC table 250.122 nor using conduit as the sole ground connection is recommended.

**Option K1 Performance data**

	TF 174	TF 230	TF 280	TF 340
Power consumption <sup>1)</sup> [hp]	3.3 / 3.7 <sup>3)</sup>	4.4 / 4.8 <sup>3)</sup>	5.2	6.0

<sup>1)</sup> According to ISO 7183 Option A2

Reference point: 14.5 psia, 68°F, 0% relative humidity

Operating point: Gauge working pressure 100 psig, compressed air inlet temperature 100°F, 100% relative humidity, cooling air inlet temperature 100°F

<sup>3)</sup> Option K15

Tab. 15 Performance data (Option K1)

**Option K2 Performance data**

	TF 174	TF 230	TF 280	TF 340
Power consumption <sup>1)</sup> [hp]	2.2	3.1	3.6	4.5

<sup>1)</sup> According to ISO 7183 Option A2

Reference point: 14.5 psia, 68°F, 0% relative humidity

Operating point: Gauge working pressure 100 psig, compressed air inlet temperature 100°F, 100% relative humidity, cooling air inlet temperature 100°F

Tab. 16 Performance data (Option K2)

**Rated power supply: 208V / 3ph / 60Hz**

	TF 174	TF 230	TF 280	TF 340
Pre-fuse [A]	25	30	30	40
Supply per phase and ground (75°C)	AWG12	AWG10	AWG10	AWG10
Consumption [A]	13.5 / 10.7 <sup>2)</sup>	18.3 / 13.2 <sup>2)</sup>	18.3 / 15.3 <sup>2)</sup>	23.0 / 20.0 <sup>2)</sup>

<sup>2)</sup> Option K2

Tab. 17 Power supply details 208V / 3ph / 60Hz

**Rated power supply: 230V / 3ph / 60Hz**

	TF 174	TF 230	TF 280	TF 340
Pre-fuse [A]	20	25	30	35
Supply per phase and ground (75°C)	AWG14	AWG12	AWG10	AWG10
Consumption [A]	12.2 / 9.7 <sup>2)</sup>	16.6 / 12.0 <sup>2)</sup>	16.6 / 13.9 <sup>2)</sup>	20.8 / 18.1 <sup>2)</sup>

<sup>2)</sup> Option K2

Tab. 18 Power supply details 230V / 3ph / 60Hz

**Rated power supply: 380V / 3ph / 60Hz**

	<b>TF 174</b>	<b>TF 230</b>	<b>TF 280</b>	<b>TF 340</b>
Pre-fuse [A]	15	20	20	20
Supply per phase and ground (75°C)	AWG14	AWG14	AWG14	AWG14
Consumption [A]	7.4 / 5.8 <sup>2)</sup>	10.0 / 7.2 <sup>2)</sup>	10.0 / 8.4 <sup>2)</sup>	12.6 / 10.9 <sup>2)</sup>

<sup>2)</sup> Option K2

Tab. 19 Power supply details 380V / 3ph / 60Hz

**Rated power supply: 460V / 3ph / 60Hz**

	<b>TF 174</b>	<b>TF 230</b>	<b>TF 280</b>	<b>TF 340</b>
Pre-fuse [A]	10	15	15	20
Supply per phase and ground (75°C)	AWG14	AWG14	AWG14	AWG14
Consumption [A]	5.8 / 4.6 <sup>2)</sup>	7.9 / 5.7 <sup>2)</sup>	7.9 / 6.6 <sup>2)</sup>	9.9 / 8.6 <sup>2)</sup>

<sup>2)</sup> Option K2

Tab. 20 Power supply details 460V / 3ph / 60Hz

**Rated power supply: 575V / 3ph / 60Hz**

	<b>TF 174</b>	<b>TF 230</b>	<b>TF 280</b>	<b>TF 340</b>
Pre-fuse [A]	10	10	15	15
Supply per phase and ground (75°C)	AWG14	AWG14	AWG14	AWG14
Consumption [A]	4.9 / 3.9 <sup>2)</sup>	6.6 / 4.8 <sup>2)</sup>	6.6 / 5.5 <sup>2)</sup>	8.3 / 7.2 <sup>2)</sup>

<sup>2)</sup> Option K2

Tab. 21 Power supply details 575V / 3ph / 60Hz



## 3 Safety and Responsibility

### 3.1 Basic instructions

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.



Disregard of warning or safety instructions can cause serious injuries!

- 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 considered incorrect. The manufacturer is not liable for any damages that may result from incorrect use. The user alone is liable for any risks incurred.

- Comply with the specifications shown in this service manual.
- Operate the machine only within its performance limits and under the permitted ambient conditions.
- Do not use compressed air for breathing purposes unless it is specifically treated.
- Do not use compressed air for any application that will bring it into direct contact with food products unless it is specifically treated.

### 3.3 Improper use

Improper usage can cause damage to property and/or (severe) injuries.

- Only use the machine as intended.
- Never direct compressed air at persons or animals.
- Do not use untreated compressed air for breathing purposes.
- Do not allow the machine to take in toxic, acidic, flammable or explosive gases or vapors.
- Do not operate the machine in areas in which specific requirements with regard to explosion protection are in force.

### 3.4 User's responsibilities

#### 3.4.1 Observe statutory and universally accepted regulations

This includes, for example, nationally implemented European directives and/or applicable 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 familiar 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.
- Additional qualifications for compressors with refrigerated dryers:
  - Adequate training and authorization on refrigeration devices.

Authorized installation and maintenance personnel have the following qualifications:

- are of legal age,
  - must have read, are familiar with, and adhere to the safety instructions and sections of the service manual applicable to installation and maintenance,
  - are completely familiar 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 in and authorization for the safe installation and maintenance of this machine.
  - completely familiar with the safety concepts and regulations concerning refrigeration devices,
  - must be able to recognize the possible dangers of refrigeration devices and take appropriate measures to safeguard persons and property.
- 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.

### 3.5.1 Safely dealing with sources of danger

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

#### Electricity

Touching voltage carrying components can result in electric shocks, burns or death.

- 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.

- Do not open the enclosure while the machine is switched on.
- Switch off and lock out the power supply disconnecting device and check that no voltage is present.
- Ensure that all covers and safety guards are in place and secured before starting.

#### **Temperature**

Touching hot components may cause injuries.

- Avoid contact with hot components.  
These include, for example, the refrigerant condenser.
- 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 fluids/materials**

The used operating fluids and materials can cause adverse health effects. Suitable safety measures must be taken in order to prevent injuries.

- 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.
- Allow only qualified specialists to work on refrigerant circuits.
- Use only KAESER approved operating materials.

**Unsuitable spare parts**

Unsuitable spare parts compromise the safety of the machine.

- Use only spare parts approved by the manufacturer for use in this machine.
- Use only genuine KAESER pressure components.

**Conversion or modification of the machine**

Modifications, additions or conversions to or of the machine can result in unpredictable hazards.

- Do not convert or modify the machine!
- Prior to any technical modification and expansions of the machine, obtain the written approval of the manufacturer.

**3.5.2 Safe machine operation**

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

**Transport**

The weight and size of the machine require safety measures during its transport to prevent accidents.

- Use suitable lifting gear that conforms to local safety regulations.
- Allow transportation 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.
- Do not step onto machine components to climb up the machine.

**Installation**

A suitable installation location for the machine prevents accidents and faults.

- Install the machine in a suitable compressor room.
- Ensure sufficient and suitable lighting so that the display can be read and work carried out comfortably and safely.
- Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
- 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.
- Ensure adequate ventilation.
- Place the machine in such a manner that the working conditions in its environment are not impaired.
- Comply with limit values for ambient temperature and humidity.

- Ensure clean compressed air without damaging components.  
Damaging contaminants are for instance: explosive or chemically instable gases and vapors, acid or base forming substances such as ammonia, chlorine or hydrogen sulfide.
- Do not position the machine in the warm exhaust air flow from other machines.
- Keep suitable fire extinguishing agents ready for use.

#### Commissioning, operation and maintenance

During commissioning, operation and maintenance you may be exposed to dangers resulting from, e.g., electricity, pressure and temperature. Careless actions can cause accidents with severe adverse effects for your health.

- Allow maintenance work to be carried out only by authorized personnel.
- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- Check that there is no voltage on floating relay contacts.
- 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.
- Depressurize all pressurized components and enclosures.
- Allow the machine to cool down.
- Do not open the cabinet while the machine is switched on.
- Do not open or dismantle any valves.
- Use only spare parts approved by KAESER for use in this machine.

#### De-commissioning, storage and disposal

Improper handling of old operating fluids and components represent a danger for the environment.

- Drain off fluids and dispose of them according to environmental regulations.  
These include, for example, refrigerant.
- Do not damage the refrigerant circuit.
- Give refrigerant only to authorized bodies for disposal.
- Dispose of the machine in accordance with local environmental regulations.

### 3.5.3 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.

### 3.5.4 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. 22 Danger Areas

### 3.6 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 chapter 4, section 4.6.

### 3.7 Safety signs

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

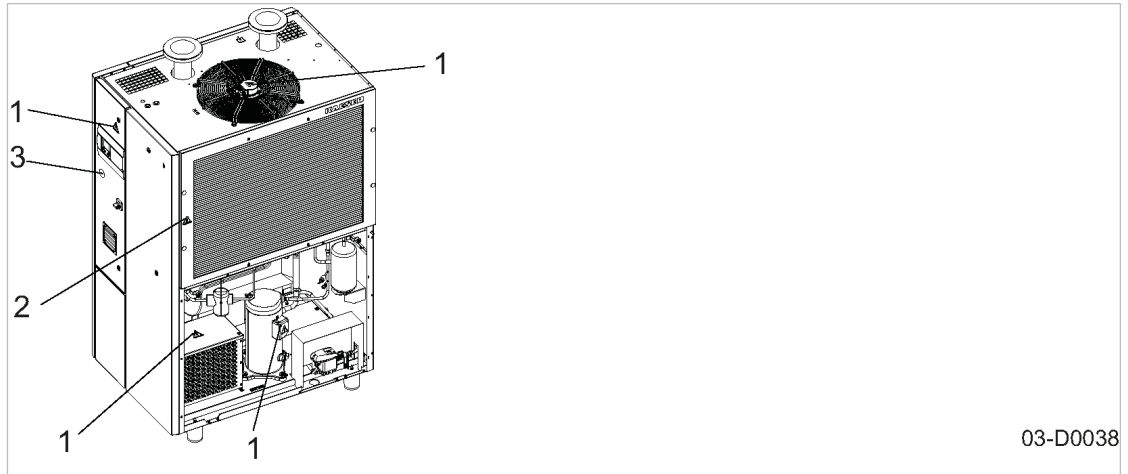





Fig. 4 Positions of safety signs

Item	Sign	Meaning
1		<p>Danger of fatal injury from electric shock!</p> <ul style="list-style-type: none"> <li>➤ Before starting any work on electrical equipment: Switch off and lock out the power supply disconnecting device and verify the absence of voltage.</li> </ul>

Item	Sign	Meaning
2		<p>Hot surface!</p> <p>Risk of burns caused by contact with hot components!</p> <ul style="list-style-type: none"> <li>➤ Do not touch the surface.</li> <li>➤ Wear long-sleeved garments (no synthetics such as polyester) and protective gloves.</li> </ul>
3		<p>Injury and/or machine defects caused by improper use!</p> <ul style="list-style-type: none"> <li>➤ Maintenance should be performed by properly trained personnel only.</li> <li>➤ Read and understand manual and all safety labels before switching the machine on.</li> <li>➤ Never remove or cover safety labels.</li> </ul>

Tab. 23 Safety signs

## 3.8 In emergency

### 3.8.1 Fire fighting

#### Suitable measures

Calm and prudent action can save lives in the event of a fire.

- Keep calm.
- Give the alarm.
- Shut off supply disconnecting device, if possible.  
Power supply (all poles)  
Cooling water (if available)
- Warn persons in danger.
- Help incapacitated persons.
- Close the doors.
- Try to extinguish the fire if you have the skill to do so.

#### Suitable extinguishing agents

- Suitable extinguishing agents:  
Foam  
Carbon dioxide  
Sand or soil
- Unsuitable or unsafe extinguishing agents:  
Strong jet of water

### 3.8.2 Injury from handling refrigerant

#### Eye contact

Severe eye irritation, watering, reddening and swelling of the eyelids.  
Risk of caustic burns and frostbite.

- Rinse thoroughly with lukewarm water and seek medical assistance.

**Skin contact**

Initially a sensation of chill, skin may redden subsequently.

Risk of frostbite.

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

**Inhalation**

At high concentrations, risk of cardiac irregularity (arrhythmia).

At very high concentration, risk of asphyxia caused by oxygen deficiency.

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

**3.9 Warranty**

This operator 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.

**3.10 Environment protection**

The operation of this machine may cause dangers for the environment.

- Do not allow refrigerants to escape into the environment or the sewage system.
- Store and dispose of operating materials and replaced parts in accordance with local environmental protection regulations.
- Observe national regulations.  
This applies in particular to parts contaminated with refrigerant.



## 4 Design and Function

### 4.1 Enclosure

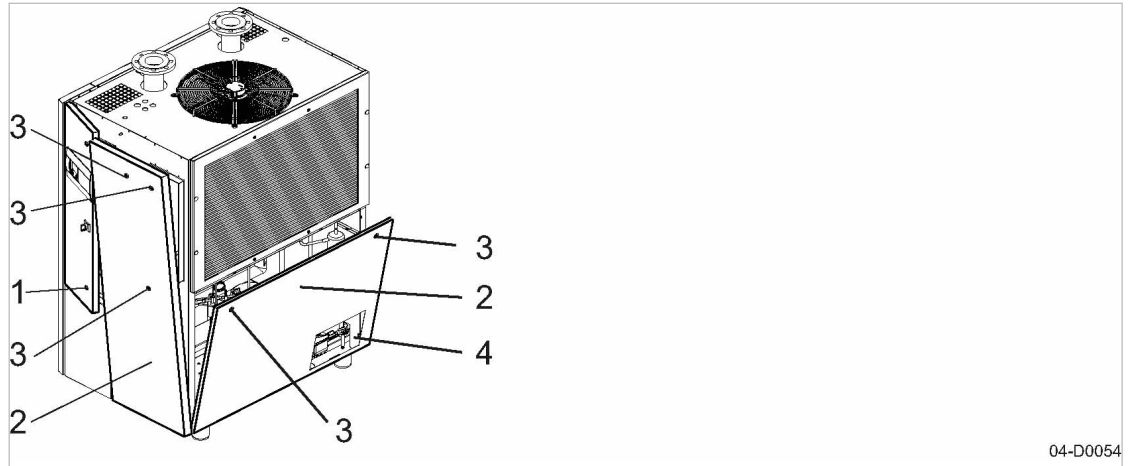


Fig. 5 Enclosure overview

- |   |                      |   |                     |
|---|----------------------|---|---------------------|
| ① | Control cabinet door | ③ | Latch               |
| ② | Access panel         | ④ | Maintenance opening |

The enclosure, when closed, 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.

Latches are released by a key supplied with the machine.

Panels may then be lifted off.

### 4.2 Machine function

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

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

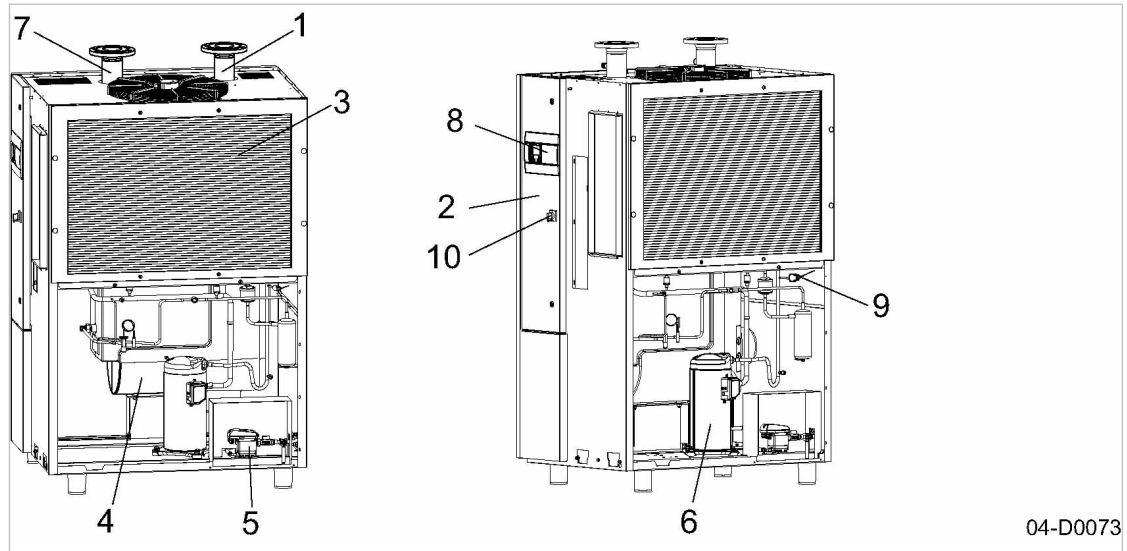


Fig. 6 Machine overview

- |   |  |   |   |
|---|--|---|---|
| ① | Compressed air inlet                     | ⑥ | Refrigerant compressor                          |
| ② | Control cabinet                          | ⑦ | Compressed air outlet                           |
| ③ | Refrigerant condenser                    | ⑧ | Controller operator panel                       |
| ④ | Heat exchanger with condensate separator | ⑨ | Pressure monitor                                |
| ⑤ | Condensate drain                         | ⑩ | Power supply disconnecting device (main switch) |

#### First stage

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

#### Second stage

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

#### Third stage

A separation system integrated in the heat exchanger removes the condensate precipitated out of the compressed air as it is chilled. The condensate drain ejects the condensate from the separator.

#### Fourth stage

The dry, cold air takes in some heat from the inflowing warm compressed air in the first part of the heat exchanger. The relative humidity of the compressed air drops.

## 4.3 Operating modes and control modes

### 4.3.1 Machine operating modes

#### STOP

The machine is connected to the power supply:

- The *Controller Voltage* indicator lights green.
- The machine is switched off.
- The *ON* indicator is extinguished.

#### READY

The machine has been activated with «ON»:

- The *ON* indicator lights green.
- The refrigerant compressor is switched off.

The refrigerant compressor starts as soon as the start conditions are met.

#### LOAD

The start conditions are met:

- The refrigerant compressor is running.
- The thermal mass is cooled.

## 4.4 SECOTEC CONTROL

The basic requirement for this type of control is a high capacity thermal mass: SECOPACK LS.

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:

Low power consumption.

## 4.5 Electronic condensate drain

Condensate flows into the collecting tank.

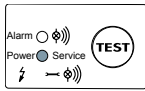
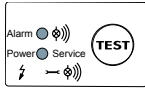
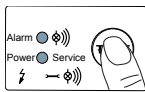
A sensor registers the level and signals this to the electronic control.

When the collecting tank is full, a valve opens automatically and drains the condensate.

The valve immediately closes when the condensate drain is empty. No compressed air is lost unnecessarily.

### 4.5.1 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
	<i>Ready to operate</i>	Power on
	<i>Fault/alarm</i>	Fault occurred Valve opens and closes repeatedly in an attempt to clear the fault.
	Test of the valve function	For manual draining, press and hold the button for about 2 seconds.
	Test the alarm function	To test the alarm function, press and hold the button for at least 1 minute.

Tab. 24 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 a power supply disconnecting device. In the "0" position, the machine stops immediately.
- **Safety pressure switch:**  
The switch shuts down the machine if the pressure of the refrigerant exceeds the permitted maximum. It is factory set.
- **Enclosures and guards for moving parts and electrical connections:**  
These protect against accidental contact.

## 4.7 SIGMA CONTROL SMART

### 4.7.1 Operating panel

Keys (mechanical)

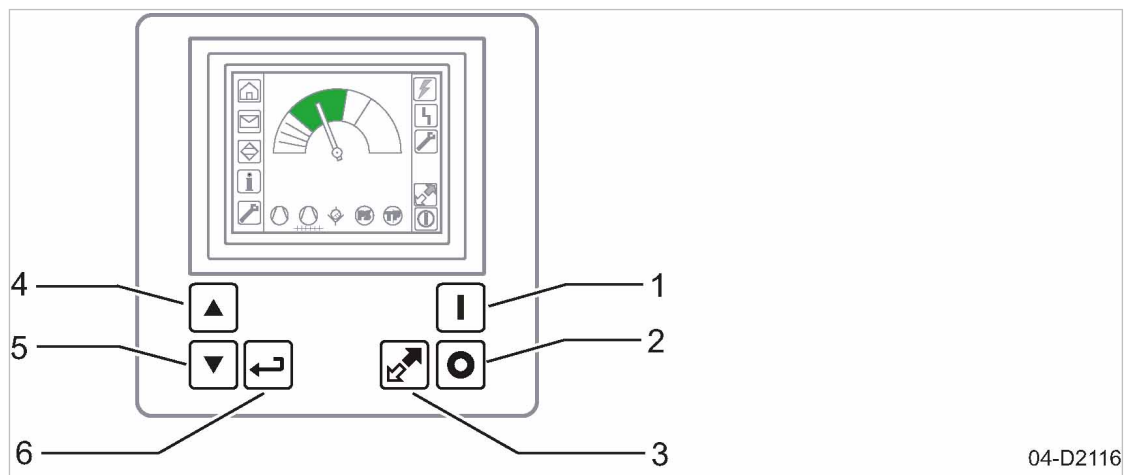


Fig. 7 Keys – overview

04-D2116

Item	Description	Function
1	«ON»	Switches the machine on.
2	«OFF»	Switches the machine off.
3	«Remote control»	Switches the remote control on and off.
4	«Up»	Scrolls up the menu options. Increases a parameter value.
5	«Down»	Scrolls down the menu options. Reduces a parameter value.
6	«Enter»	Jumps to the selected menu option. Switches to Edit mode. Exits the edit mode and saves. Acknowledge the message.

Tab. 25 Keys (mechanical)

**Keys (soft key)**

The menu displays further keys which can be controlled with the arrow keys.

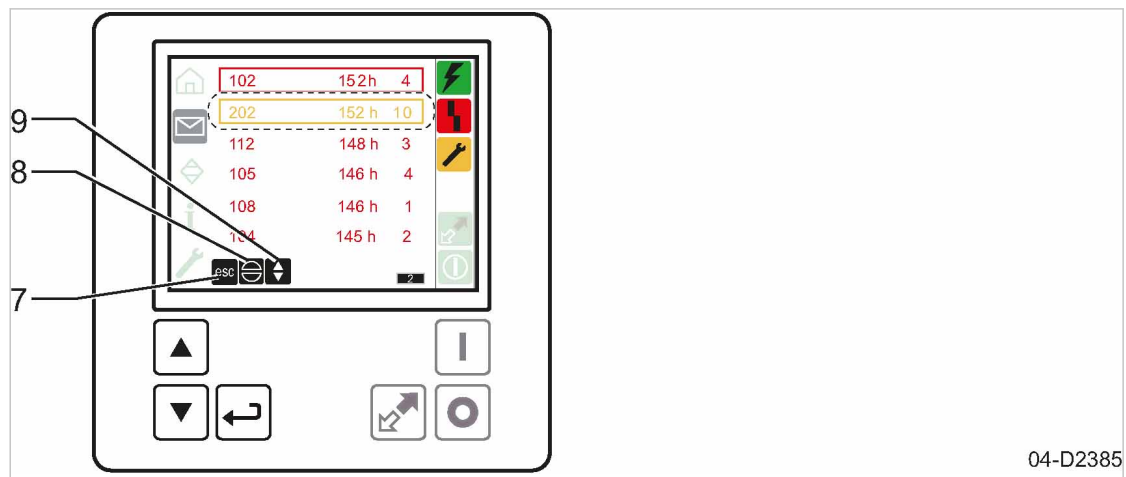


Fig. 8 Keys (soft key)

Item	Description	Function
7	Escape	Returns to the next higher menu option level.
8	Acknowledgement	Acknowledges alarms and warning messages.
9		White: Use the «UP» and «DOWN» keys to navigate: <ul style="list-style-type: none"> <li>■ Press Escape and Acknowledge</li> <li>■ Changing images in sub-menus</li> </ul> Gray: The «up» and «down» keys are inactive.

Tab. 26 Keys (soft key)

Indicators

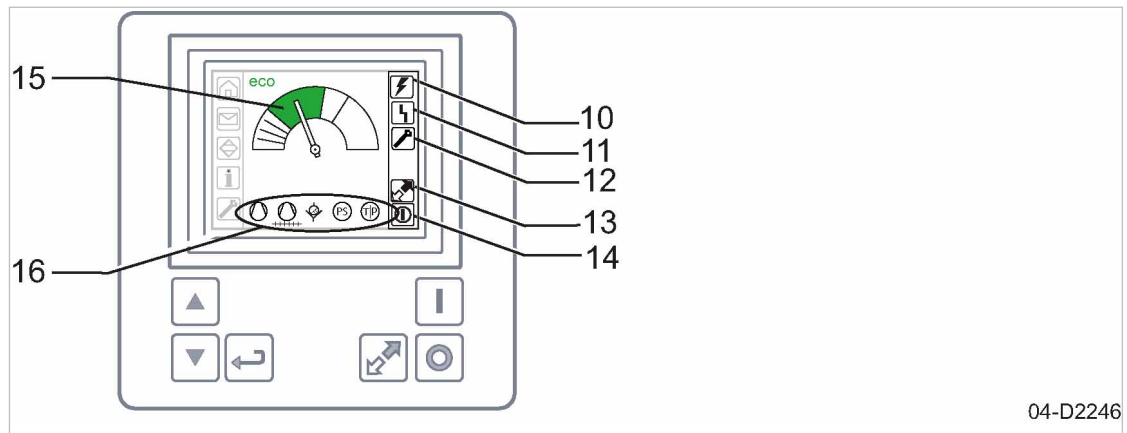


Fig. 9 Indicators

Item	Description	Function
10	<i>Controller Voltage</i>	Lights green when the power supply is switched on.
11	<i>Fault</i>	Flashes red when an alarm occurs. Lights continuously when acknowledged.
12	<i>Warning</i>	Flashes yellow for the following events: <ul style="list-style-type: none"> <li>■ Maintenance work due</li> <li>■ Warning message</li> </ul>
13	<i>Remote control</i>	The LED lights when the machine is in remote control.
14	<i>ON</i>	Lights green when the machine switched on.
15	<i>Dew point</i>	Indicates the dew point progress (trend display): <ul style="list-style-type: none"> <li>■ Blue: Pressure dew point too low</li> <li>■ Green: Optimal pressure dew point</li> <li>■ Yellow: Pressure dew point rising</li> <li>■ Red: High pressure dew point (message contact switches)</li> </ul>
	<i>eco</i>	Energy-saving operation
16	Indicates messages concerning individual components	From left to right: <ul style="list-style-type: none"> <li>■ Refrigerant compressor</li> <li>■ Refrigerant condenser</li> <li>■ Condensate drain</li> <li>■ Safety pressure monitor</li> <li>■ Analog sensors <ul style="list-style-type: none"> <li>– Temperature transducer</li> <li>– Pressure transducer</li> </ul> </li> </ul>

Tab. 27 Indicators

### 4.7.2 User operation SIGMA CONTROL SMART

#### Handling concept

Task	Procedure
Navigating the menu	<p>For navigating the menus, a cursor is provided to move the «UP» and «DOWN» keys. The current cursor position is indicated by inverse coloring.</p> <p>Use the «Enter» key to switch, for example, from the main menu into a sub-menu. If a single menu is too large, the information is provided in several numbered screens (images). The corresponding symbol in the Main menu appears somewhat darker in this case.</p>
Changing parameters	<p>To change parameters, navigate to an entry and confirm with «Enter».</p> <p>This enables you to use the «UP» and «DOWN» keys to change values or activate/deactivate check boxes:</p> <ul style="list-style-type: none"> <li>■ Check box activated: ✓</li> <li>■ Check box deactivated: □</li> </ul> <p>Confirm your selection with «Enter». The change is now active.</p>

Tab. 28 Handling concept

#### Main menu

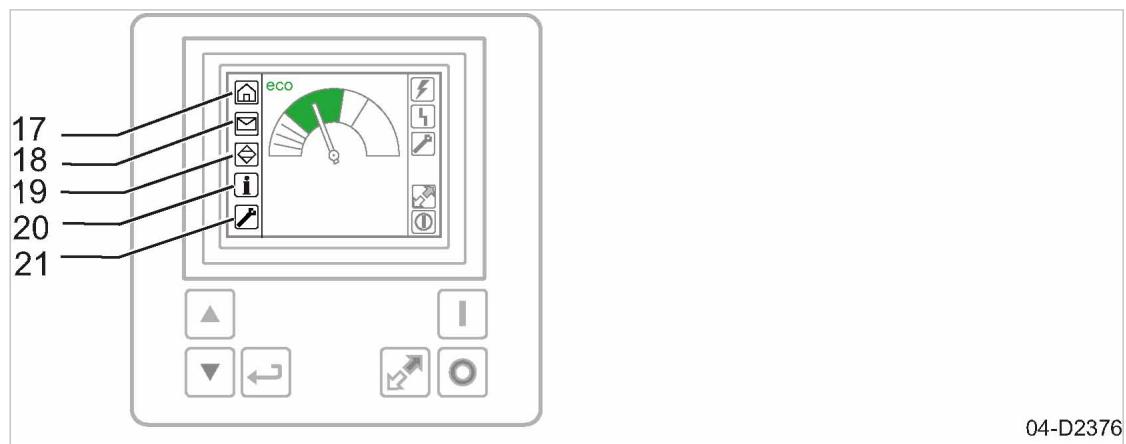


Fig. 10 Main menu

Item	Designation	Description
17	Opening page	Display: Pressure dew point
18	<Messages>	<p>The following events (messages) are saved:</p> <ul style="list-style-type: none"> <li>■ Faults</li> <li>■ Warnings</li> </ul> <p>The machine shuts down when an alarm message is triggered.</p>
19	<Flow diagram>	Displays all control-relevant sensors and actuators.
20	<Information>	<p>Display: Operating hours</p> <p>Setting option for temperature limits and units.</p>

Item	Designation	Description
21	<Service>	Displays maintenance tasks to be performed and the maintenance timer.

Tab. 29 Main menu

**Color concept**

Different colors indicate the various operating states.

Color	Meaning
White	Component is shut down. For sensors: The activation criteria is not met
Green	Component is switched on. For sensors: The activation criteria is met Measured value in normal range.
Yellow	Warning or maintenance message for a component Measured value in critical range.
Red	Fault in a component. Measured value in impermissible range. The machine will be shut down

Tab. 30 Color concept

**4.7.3 Start screen**

The start screen is displayed during normal operation. The controller automatically switches to this screen if you don't activate a key for three minutes.

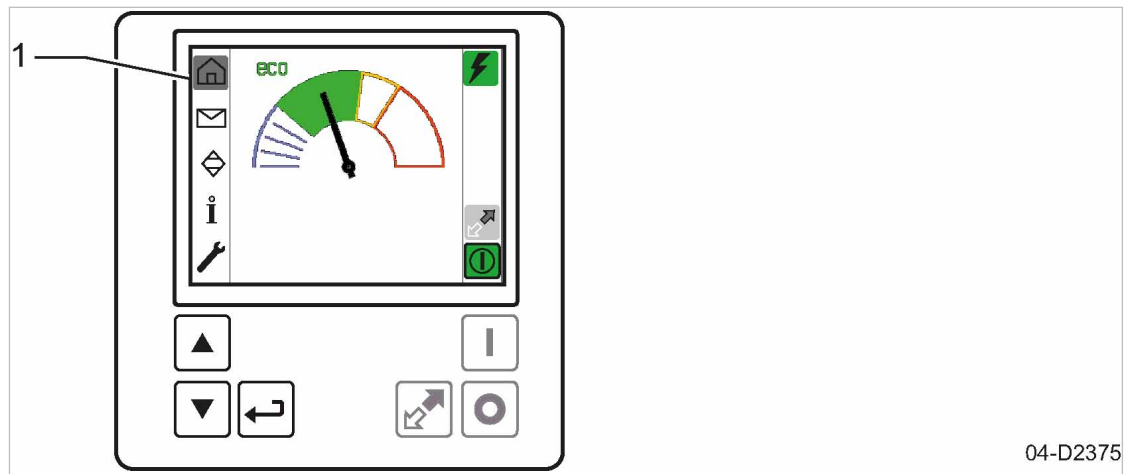


Fig. 11 Start screen

① Active start screen

04-D2375



### 4.7.4 Messages menu

All messages reported in the past are listed and displayed in the color of their classification:

- Warning/maintenance message: Yellow
- Alarm message: Red

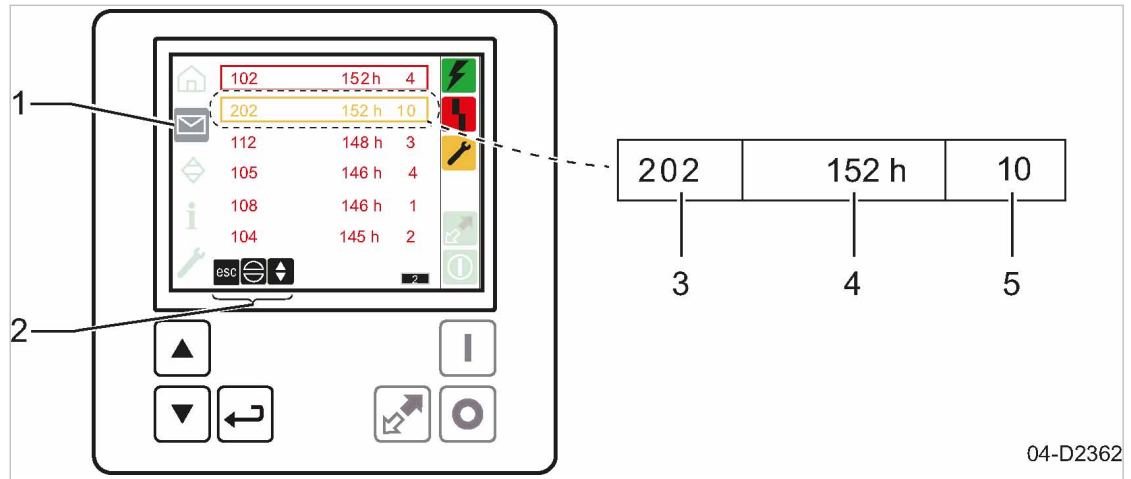


Fig. 12 Event history

- |   |  |
|---|--|
| <p>① &lt;Messages&gt;</p> <p>② Additional navigation options:<br/>Escape<br/>Acknowledgement</p> <p>③ Message number (example: 202)</p> | <p>④ Operating hour during which the message had been issued the last time (example: 152 h)</p> <p>⑤ Frequency of occurrence (example: 10)</p> |
|---|--|

Use the «UP» or «DOWN» keys to select the <Message> menu.

Press «Enter» to open the corresponding screen.

Active faults or warnings which have not yet been acknowledged are indicated by a flashing frame.

Acknowledged messages are framed as long as the cause for the message is not resolved.

This frame disappears as soon as the message cause has been resolved. This is also the case if it is a message which does not require acknowledgement.

Further information See chapter 9.2 for a list of all message codes.

4.7.5 Flow diagram menu

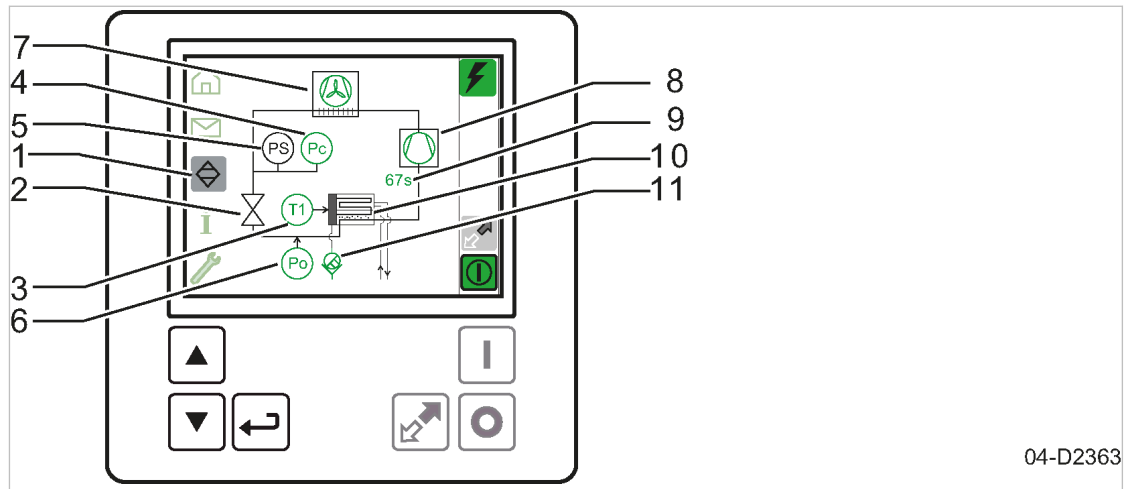


Fig. 13 Flow diagram

- |   |  |
|---|--|
| ① <Flow diagram>                              | ⑦ Refrigerant condenser  |
| ② Expansion valve: thermostatic               | ⑧ Refrigerant compressor   |
| ③ Temperature transducer (pressure dew point) | ⑨ Run time of the refrigerant compressor in the current cycle (here: 67 s) |
| ④ Pressure transducer (condensation pressure) | ⑩ Heat exchanger   |
| ⑤ Pressure monitor                            | ⑪ Condensate drain   |
| ⑥ Pressure transducer (evaporation pressure)  |  |

Use the «UP» or «DOWN» keys to select the <Flow diagram> menu.

The <Flow diagram> menu provides a simplified overview of the components with supplementary information.

For a complete <Flow diagram>, see chapter 13.3

The operating states are identified by the colors used to represent components.

4.7.6 "Information" menu

Use the «UP» or «DOWN» keys to select the <Information> menu. This menu comprises several screens.

Press «Enter» to open the first screen.

4.7.6.1 Screen 1

The system displays the operating hours of the individual machine components. You cannot modify the settings in this screen.

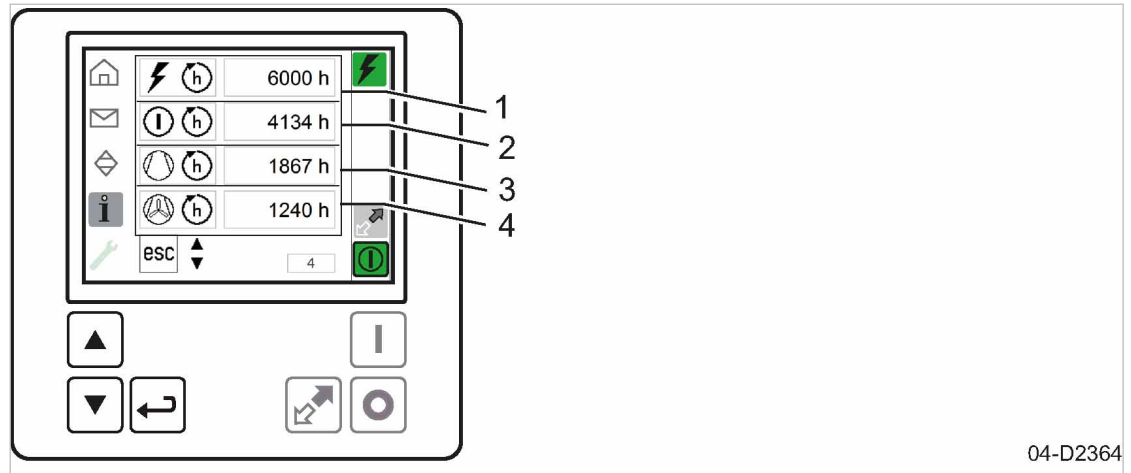


Fig. 14 Information: Screen 1

- |   |  |
|---|--|
| <p>① Number of operating hours during which the controller is under power (here: 6000 h)</p> <p>② Number of operating hours during which the machine was switched on (here: 4134 h)</p> | <p>③ Number of operating hours of the refrigerant compressor (here: 1867 h)</p> <p>④ Number of operating hours of the fan motor (here: 1240 h)</p> |
|---|--|

4.7.6.2 Screen 2

Use «DOWN» to open the next screen.

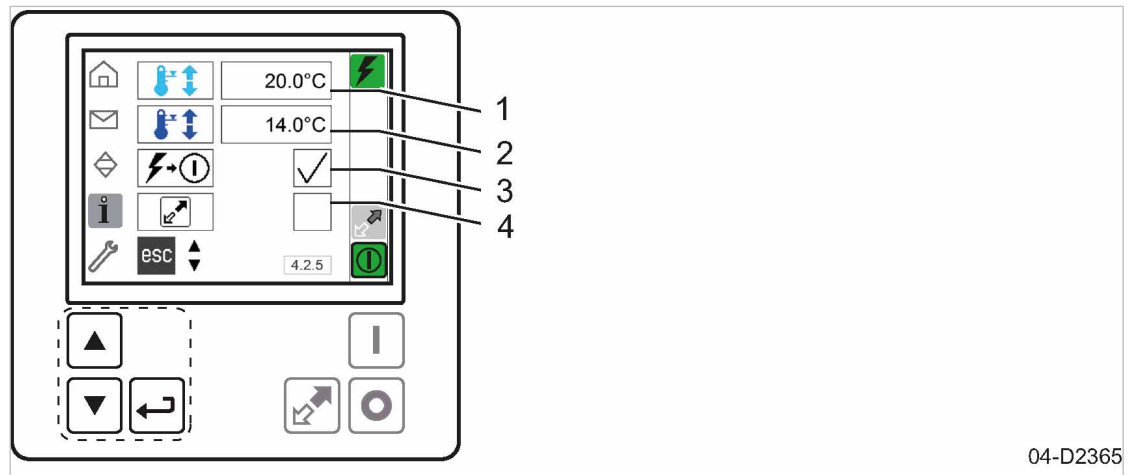


Fig. 15 Information: Screen 2

- |  |  |
|--|--|
| <p>① Red warning range (here: 20.0 °C)</p> <p>② Yellow warning range (here: 14.0 °C)</p> | <p>③ Automatic restart (here: active)</p> <p>④ Remote control (here: inactive)</p> |
|--|--|

You can modify the following settings in this screen.

- Pressure dew point: Pressure dew point: Specify the lower temperature limit for the red warning range.
- Pressure dew point: Pressure dew point: Specify the lower temperature limit for the yellow warning range.
- Activate/deactivate automatic restart after a power failure:
- Activate/deactivate the «Remote control» key

**4.7.6.3 Screen 3**

Use «DOWN» to open the next screen.

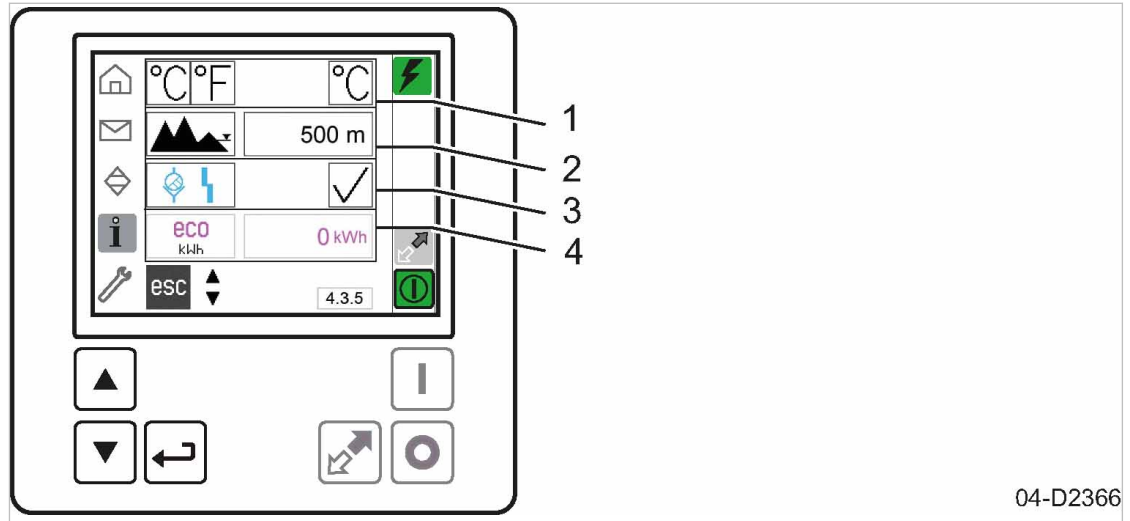


Fig. 16 Information: Screen 3

- |   |                                     |   |  |
|---|-------------------------------------|---|--|
| ① | Units of measure used (here: °C)    | ③ | Condensate drain: Activate fault message (here: Fault message activated) |
| ② | Installation altitude (here: 500 m) | ④ | Electric energy saved with "eco" operation                               |

You can change the following settings in this screen:

- Setting the unit of measurement:
  - Parameter °C: Temperature in “°C”, pressure in “bar” and length in “m”
  - Parameter °F: Temperature in “°F”, pressure in “psi” and length in “feet”
- Adjust installation altitude:
  - Adjustment range: 0 m to 4000 m (default setting 500 m)
  - Above 1000 m the altitude setting must always be adjusted.

- Activate or deactivate fault message:  
 In the delivery condition a fault message is output at the condensate drain in the event of a fault. The refrigerated dryer continues running.  
 If you activate the fault message, the control additionally reports a fault. This is only output if the condensate drain was malfunctioning for the duration of 10 min without interruption. The refrigerated dryer switches off.

**4.7.7 Service menu**

Use the «UP» or «DOWN» keys to select the <Service> menu. This menu may consist of several screens.

Press «Enter» to open the first screen.

**Screen 1: Condensate drain**

It is not possible to change the start value.

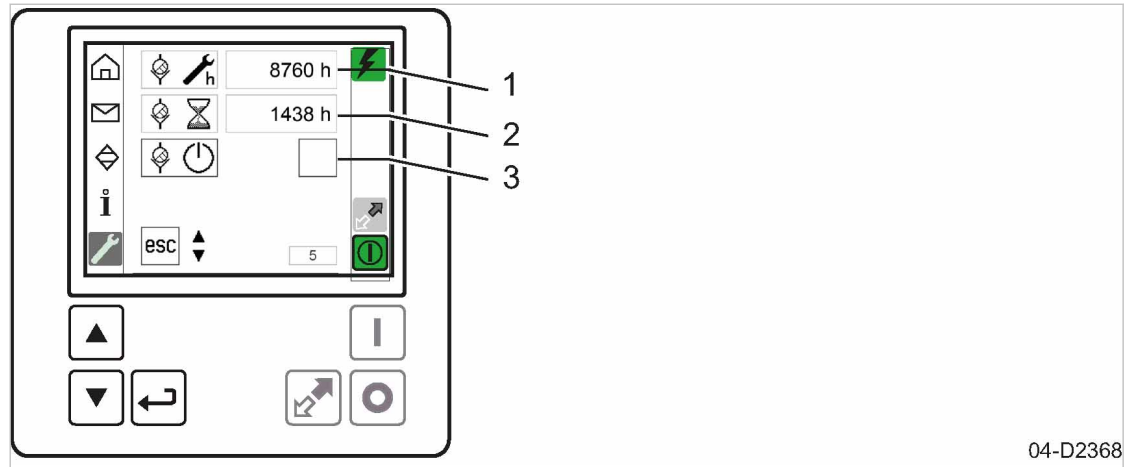


Fig. 17 Screen 1: Condensate drain

- ① Start value of the maintenance counter (example: 8760 h)
- ② Remaining operating hours to the next due maintenance (example: 1438 h)
- ③ Resetting the maintenance interval counters:  
activate/deactivate

To reset the maintenance hours counter to its start value, activate the check box and confirm with «Enter».

**Option K1 Screen 2: Refrigerant condenser**

It is possible to change the start value and adjust the maintenance interval for your individual operating conditions.

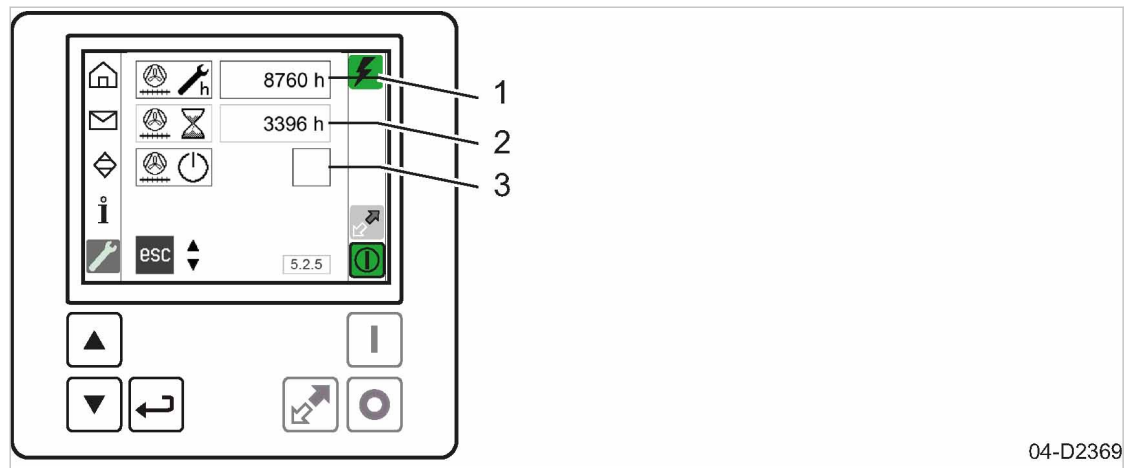


Fig. 18 Screen 2: Refrigerant condenser

- ① Start value of the maintenance counter (example: 8760 h)
- ② Remaining operating hours to the next due maintenance (example: 3396 h)
- ③ Resetting the maintenance interval counters:  
activate/deactivate

To reset the maintenance hours counter to its start value, activate the check box and confirm with «Enter».

## 4.8 Options

The options available for your machine are described below.

### 4.8.1 Option C37

#### Floating relay contact "Refrigerated compressor runs"

The "Refrigerated compressor runs" floating relay contact indicates that the refrigerated compressor is in operation.

### 4.8.2 Option C36

#### Pressure dew point warning

This floating relay contact switches as soon as the pressure dew point exceeds the permissible range. It is automatically reset when the pressure dew point drops back to an acceptable range.

### 4.8.3 Option C44

#### MODBUS TCP communication module

The MODBUS TCP communication module is designed for the communication between SIGMA CONTROL SMART and SIGMA AIR MANAGER 4.0.

As an alternative to SIGMA AIR MANAGER 4.0, you can use MODBUS TCP to connect third-party controllers.

In this case, please contact an authorized KAESER service representative.

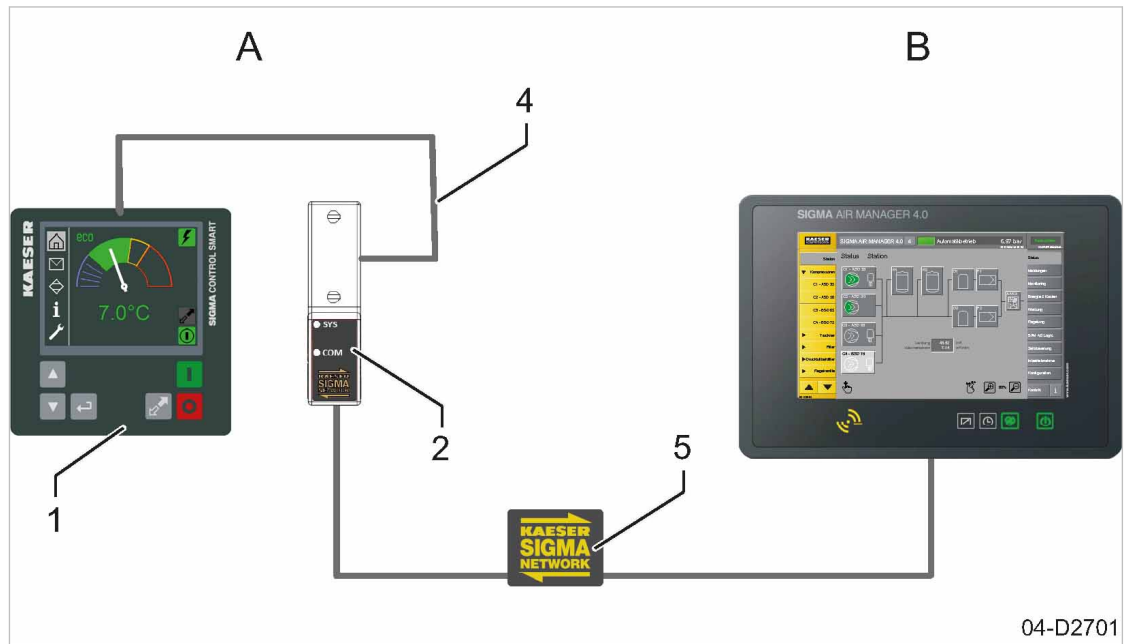


Fig. 19 Installation variant with SIGMA AIR MANAGER 4.0

- |     |                                 |     |                       |
|-----|---------------------------------|-----|-----------------------|
| (A) | Refrigerated dryer              | (B) | SIGMA AIR MANAGER 4.0 |
| (1) | SIGMA CONTROL SMART             | (4) | CAN bus cable         |
| (2) | MODBUS TCP communication module | (5) | SIGMA NETWORK cable   |

**4.8.3.1 Display and operating elements of the communications module**



The plug-in communications module communicates with SIGMA CONTROL SMART (SCS) via CAN bus (X2).

The plug-in communications module is equipped with these operating elements, displays and connections:

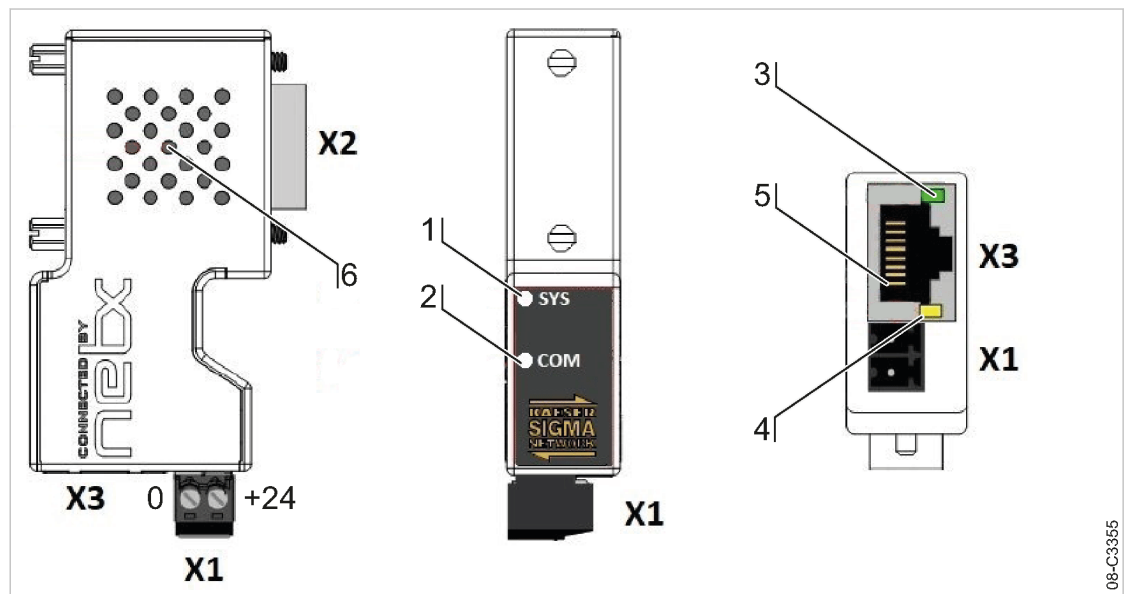


Fig. 20 Operating elements, displays and connections of the communications module

Item	Designation	Color	Status	Description
	X1	–	–	Supply voltage: 24 VDC
	X2	–	–	CAN, 9-pole sub D plug
	X3	–	–	Ethernet, RJ45 socket
1	SYS LED system status	Green	on	Standard operation, firmware started
		Yellow	on	Transition state
		Yellow/ green	flashes	Activating the communications module is in progress
		–	off	No supply voltage
2	COM LED communication	Green	on	Standard operation, CAN and Ethernet communication running
		–	off	RESET button pressed
		Red	flashes 1x/s	CAN communication malfunction / Ethernet communication running
		Red	flashes 2x/s	Ethernet communication malfunction / CAN communication running
3	Ethernet LINK LED	Green	off	No connection
			on	Connection established
4	Ethernet ACT LED	Yellow	off	No Ethernet communication
			flashes	Ethernet communication running

Item	Designation	Color	Status	Description
5	–	–	–	Pin 1
6	RESET key in housing underneath opening	–	–	Pressing the key with a suitable object for more than 3 s will reset the IP settings (IP address, SubNetMask, Gateway) to the factory setting

Tab. 31 Plug-in communications module – operating elements, displays and connections

These displays illuminate during operation:

- The SYS LED illuminates green during standard operation of the communications module
- The COM LED illuminates green during communication between SIGMA CONTROL SMART and the bus master (SAM 4.0 or Modbus TCP control system)
- The Ethernet LINK LED illuminates green if connection to the Ethernet network is established
- The Ethernet ACT LED flashes yellow during running Ethernet communication

#### 4.8.4 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. 21 Machine Mountings

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

#### 4.8.5 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 13.4 contains further details of the power supply connection.

#### 4.8.6 Option K15 High ambient temperature.

The machine is designed for ambient temperatures up to +122°F.

#### 4.8.7 Option K2 Water-cooling

Water-cooled machines are equipped with a plate-type heat exchanger in stainless steel as a refrigerant condenser.

A cooling water regulating valve controls the flow depending on the condensation pressure.

The cooling water regulating valve closes fully when the refrigerant compressor is shut down.



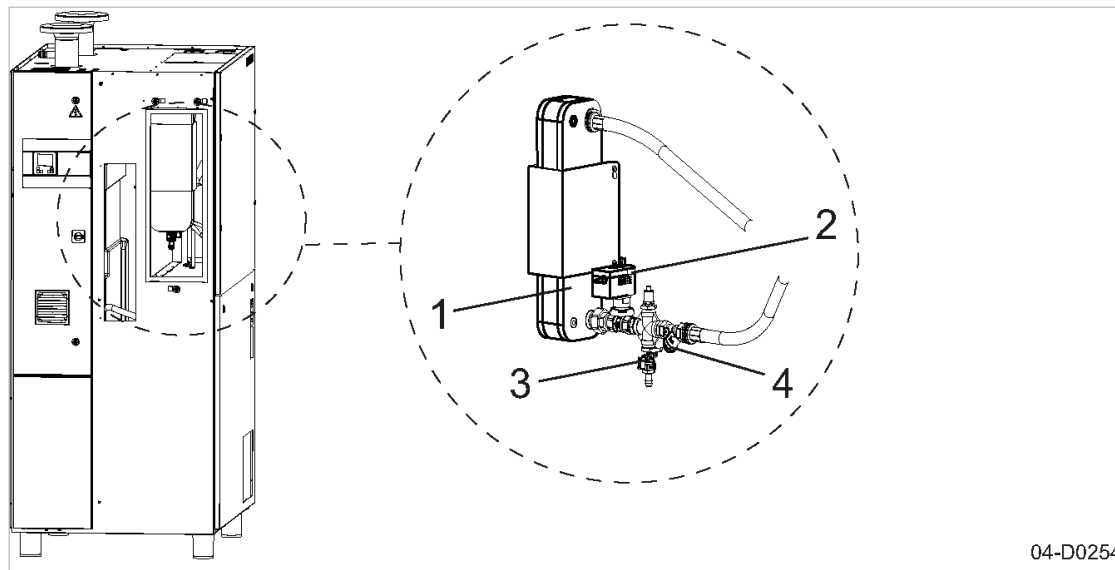


Fig. 22 Water-cooling

- |                                  |                  |
|----------------------------------|------------------|
| ① Refrigerant condenser          | ③ Shut-off valve |
| ② Cooling water regulating valve | ④ Dirt trap      |

#### 4.8.8 Option T8

##### Compressed air connection: left

Compressed air inlet and outlet are integrated in the left enclosure side.

#### 4.8.9 Option T9

##### Compressed air connection: compatible with TF 173/203/251

The position of the compressed air connections matches those of the predecessor types TF173, TF203 and TF251.

It is possible to integrate the refrigerant dryer into your air network without having to modify the pipe system.

## 5 Installation and Operating Conditions

### 5.1 Ensuring safety

The conditions in which the machine is installed and operated have a decisive effect on safety. Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

#### Complying with safety warnings

Disregard of safety warnings can cause unforeseeable dangers!

- 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.
- Do not store inflammable material in the vicinity of the machine.
- The machine is not explosion-proof!  
Do not operate in areas in which specific requirements with regard to explosion protection are in force.
- Ensure sufficient and suitable lighting such that the display can be read and work carried out comfortably and safely.
- Keep suitable fire extinguishing agents ready for use.
- Ensure that required ambient conditions are maintained.

Required ambient conditions may be:

- Maintain ambient temperature and humidity.
- Ensure the appropriate composition of the air within the machine room:
  - clean with no damaging contaminants (e.g., dust, fibers, fine sand)
  - free of explosive or chemically unstable gases or vapors
  - free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulfide.

### 5.2 Installation conditions

#### 5.2.1 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 they cannot be kept to.

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

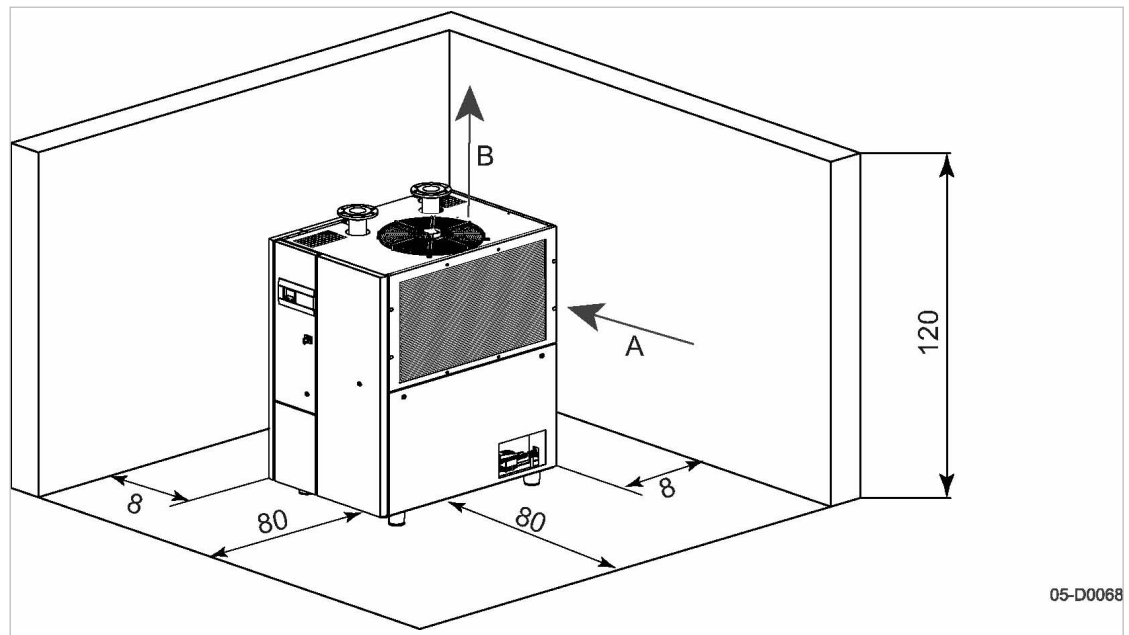


Fig. 23 Recommended machine placement and dimensions [in.]

- (A) Cooling air inlet
- (B) Cooling air outlet

1. **NOTICE** *Ambient temperature too low!  
Frozen condensate can damage the machine.*
  - *Switch the machine on only when the switch-on temperature is reached.*
2. Consult KAESER for measures where there is danger of frost.
3. Ensure that all intake and exhaust apertures of the enclosure remain opened.
4. Ensure adequate lighting so that all work on the machine can be carried out without danger or hindrance.
5. Ensure that the indicators can be read without glare and that the controller display cannot be damaged by direct sunlight (UV radiation).
6. If installed outdoors, protect the machine against frost, direct sunlight, dust and rain.

### 5.2.2 Ensuring the machine room ventilation

Adequate ventilation of the machine room has several tasks:

- It prevents subatmospheric pressure in the machine room.
- It evacuates the exhaust heat of the machine and thus ensures the required operating conditions.



- Consult with KAESER if you cannot ensure the conditions for an adequate ventilation of the machine room.

1. Ensure that the flow volume of fresh air is at least the same as the volume taken by the machine and exhaust fan from the machine space.
2. Keep the inlet and exhaust apertures free of obstructions so that the cooling air can flow freely through the room.
3. Do not install the machine in the exhaust air flow from other machines.
4. Ensure clean air in order to support the proper functioning of the machine.

### 5.2.3 Exhaust duct design

The machine can only overcome the air resistance at the cooling air inlet and exhaust determined by 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 a compressed air network

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

Initial charging of a fully vented air system creates a very high rate of airflow through the air treatment devices. These conditions are detrimental to correct air treatment. 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 KAESER for advice on this subject.

## 6 Installation

### 6.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

#### Complying with safety warnings

Disregard of safety warnings can cause unforeseeable dangers!

- Follow the instructions in chapter 3 “Safety and Responsibility”.
- Have the installation carried out only by personnel trained in refrigeration engineering.
- Make sure that no personnel are working on the machine.
- Ensure that all service doors and panels are locked.

#### Working on live components

Touching voltage carrying components can result in electric shocks, burns or death.

- Work on electrical equipment may only be carried out by authorized electricians.
- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- Check that there is no voltage on floating relay contacts.

#### Working on the compressed air system

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following safety concerns relate to any work on components that could be under pressure.

- 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.
- Depressurize all pressurized components and enclosures.
- Do not open or dismantle any valves.

#### Working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.

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

- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- 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.

## 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 Making the compressed air connection



Condensate in the compressed air network can damage the pipework:

- Install only corrosion-resistant piping.
- Use fluoroelastomers as sealing material for seals.
- Observe the electro-chemical voltage sequence.
- Consult with KAESER for suitable materials for the compressed air network.

Precondition The compressed air system is vented completely to atmospheric pressure.

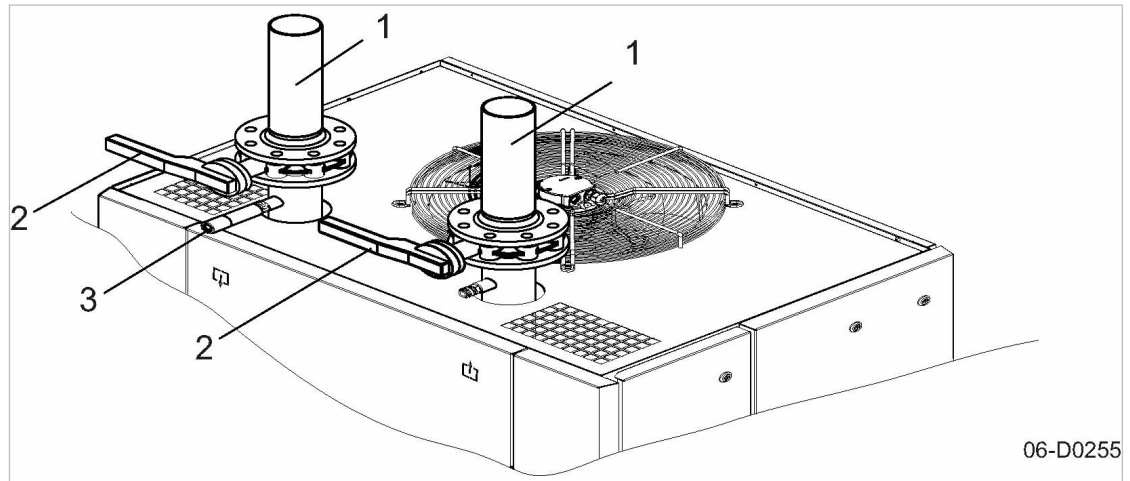


Fig. 24 Compressed air connection

- ① Compressed air line
- ② Shut-off valve
- ③ Safety relief valve (user)

1. **⚠ WARNING** *Serious injury or death can result from loosening or opening components under pressure!*
  - Fully vent all pressurized components and enclosures.
2. **📌 NOTICE** *The machine's compressed air system is not protected against air pressure exceeding 232 psi.*
  - The user must install a safety relief valve.
3. **📌 NOTICE** *An excessive tightening torque may cause damage to the connections.*
  - Use a torque wrench to connect the machine to the compressed air network. Do not tighten the screw connections excessively.
4. Fit shut-off valves in the compressed air inlet and outlet.

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

## 6.4 Connecting the condensate drain

A threaded hose connection is provided to attach a condensate drain hose.



The condensate must be able to drain freely.

- Only machines with 232 psig maximum permissible working pressure may be connected to the condensate collecting line.

Fig. 25 illustrates the recommended installation.

Condensate flows downward into the condensate collecting line. This prevents condensate flowing back to the machine.



During summer operation and increased ambient temperatures, this can lead to dew formation and the formation of condensate on the condensate lines.

- The condensate lines must be insulated accordingly.

If condensate flows at several points into the condensate collecting line, you must install shut-off valves in the condensate lines to shut the condensate line off before commencing maintenance work.

### Condensate line

Feature	Value
Max. length <sup>1)</sup> [ft]	50
Max. delivery head [ft]	16
Material (pressure-resistant, corrosion-proof)	Copper Stainless steel Plastics Hose line

<sup>1)</sup> For longer lengths, please contact an authorized KAESER service representative before installation.

Tab. 32 Condensate line

### Condensate collecting line

Feature	Value
Gradient [%]	≥3
Max. length <sup>1)</sup> [ft]	65
Material (pressure-resistant, corrosion-proof)	Copper Stainless steel Plastic Hose line

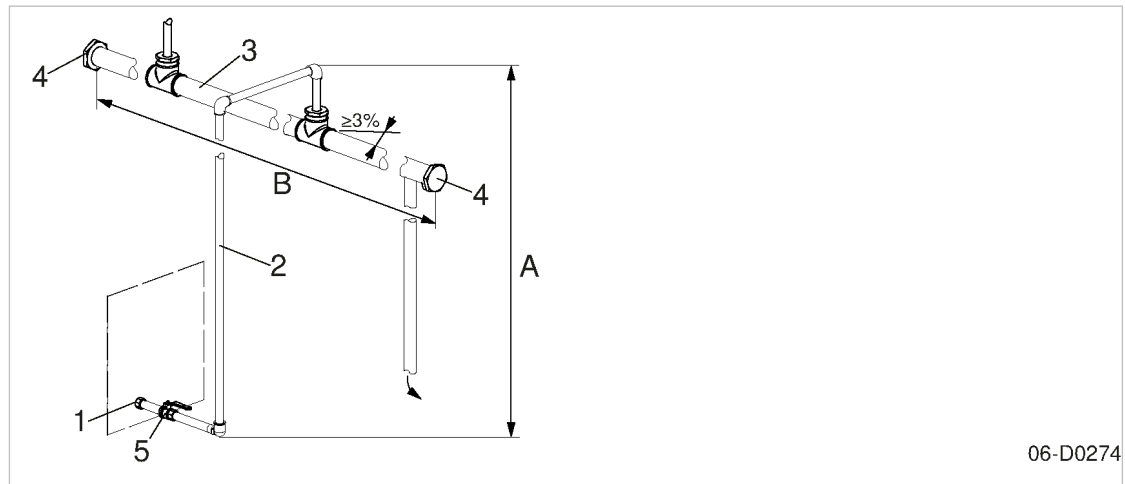
<sup>1)</sup> For longer lengths, please contact an authorized KAESER service representative before installation.

Tab. 33 Condensate collecting line

Compressed air flow rate <sup>1)</sup> [cfm]	Line cross-section ["]
< 350	3/4
350 – 705	1
706 – 1410	1 1/2
> 1410	2

<sup>1)</sup> Compressed air flow rate as guide for the condensate volume to be expected

Tab. 34 Condensate collecting line: Line diameter



06-D0274

Fig. 25 Connecting the condensate drain

- |                              |  |
|------------------------------|--|
| ① Threaded connection        | ⑤ Shut-off valve                           |
| ② Condensate line            | ⑥ Delivery head                            |
| ③ Condensate collecting line | ⑦ Length of the condensate collecting line |
| ④ Screw plug                 |  |

➤ Directly connect every condensate drain to the condensate collecting line.



➤ Collect the condensate in a suitable container and dispose of it in accordance with applicable environmental regulations.

Further information The dimensional drawing in chapter 13.1 provides the size and position of the connection port.

## 6.5 Connecting the machine with the power supply

**Precondition** The power supply disconnecting device is switched off,  
the device is locked off,  
the absence of any voltage has been verified.

The tolerance limits of the main voltage (power supply) must be within the permissible tolerance limits of the rated voltage (machine).

1. The power supply must only be connected by authorized installation personnel or an authorized electrician.
2. Carry out safety measures as stipulated in relevant regulations and in national accident prevention regulations. In addition, observe the regulations of the local electricity supplier.



3. Test the overcurrent protection cut-out (backup fuse) to ensure that the time it takes to disconnect in response to a fault is within the permitted limit.
4. Select supply cable conductor cross-sections and fusing in accordance with local regulations.
5. The user must provide the machine with a lockable power supply disconnecting device. This could be, for example, a load disconnect switch with fused input. If a circuit breaker is used it must be suitable for the motor starting characteristics.
6. Check that the tapings on the control voltage transformer are connected according to the supply voltage.  
If not, change the tapings to suit the power supply voltage.
7. **⚠ DANGER** *Danger of fatal injury from electric shock!*
  - *Switch off and lock out the power supply disconnecting device and check the absence of any voltage.*
8. Connect the machine to the power supply.
9. Ensure that the cabinet again complies with the requirements of degree of protection IP54.

Further information The electrical diagram in chapter 13.4 contains further details for the power supply connection.

## **6.6 Options**

### **6.6.1 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.

### **6.6.2 Option C44**

#### **Connecting the MODBUS TCP communications module with SIGMA AIR MANAGER 4.0**

The MODBUS TCP communications module is installed at the factory.

#### **6.6.2.1 Communication with SIGMA AIR MANAGER 4.0**

- Use the KAESER SIGMA NETWORK to connect the communications module with SIGMA AIR MANAGER 4.0.  
See the SIGMA AIR MANAGER 4.0 operating manual for more information about the connection options.

#### **6.6.2.2 Communication with the user's (central) control system.**

- Connect the communications module via MODBUS TCP with the user's (central) control system.  
Contact an authorized KAESER service representative for more information regarding the connection options.

6.6.3 Option K2  
Connecting the cooling water



- Take the electrochemical series into consideration and choose suitable materials for water connections.
- Keep the effect of pressure surge on the cooler as low as possible.
- Install an expansion tank to act as a damper if pressure surges cannot be avoided.
- Avoid a low inlet temperature for the cooling water as it can cause condensation. If required, contact an authorized KAESER service representative for suitable insulation measures.

Temperature-controlled cooling water supply systems, to which numerous machines are connected, regulate water flow rate according to the difference in temperature between the supply and the return water. Individual machines may not receive an adequate flow under this system. This can result in a breakdown.



- KAESER can advise on how to ensure the cooling water supply via suitable control valves.

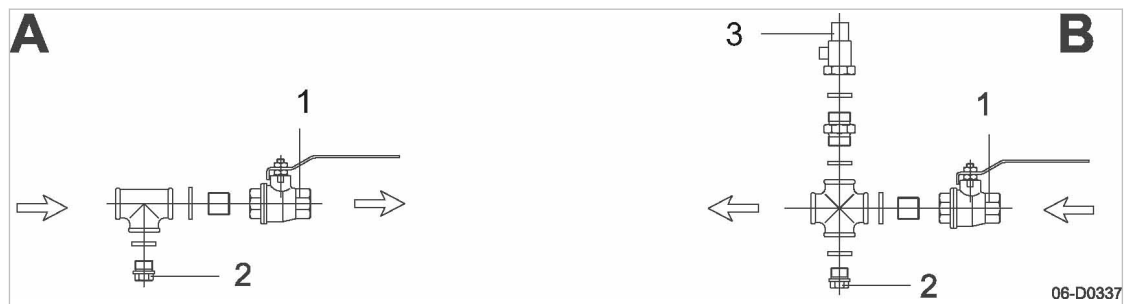


Fig. 26 Connecting the water cooling

- |                          |                               |
|--------------------------|-------------------------------|
| (A) Cooling water outlet | (2) Connection port with plug |
| (B) Cooling water inlet  | (3) Safety relief valve       |
| (1) Shut-off valve       |                               |

1. The user is to provide the following fittings:
  - Dirt trap with max. 0.004 in. strainer mesh.
  - Shut-off valve (1) and connection port (2) for maintenance and venting.
  - Safety relief valve (3) to prevent build-up of excessive pressure.  
Actuating pressure and blow-off capacity of the safety valve are governed by the user's installation design. The technical specification of the cooler must be taken into consideration.
2. Connect the cooling water lines to the fittings.
3. Open the shut-off valve on the cooling water outlet (A).
4. Slowly open the cooling water inlet shut-off valve (B) to gradually fill the cooler with water.
5. Bleed air from the water lines.

Further information The dimensional drawing in chapter 13.1 gives the flow direction, size and position of the connection ports.

## 7 Initial Start-up

### 7.1 Ensuring safety

Instructions for Safe Initial Start-up of the Machine.

Warning instructions are found before a potentially dangerous task.



Disregarding warning instructions can cause serious injuries!

#### Basic safety instructions

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Have installation work carried out by authorized installation personnel only.
- Make sure that no personnel is working on the machine.
- Ensure that all access doors and panels are closed and secure.

#### Working on live components

Touching voltage carrying components can result in electric shocks, burns or death.

- Work on electrical equipment may only be carried out by authorized electricians.
- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- Check that there is no voltage on potential-free contacts.

#### Working on pressure system

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following safety instructions relate to any 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 immediately.
- Do not open or dismantle any valves.

#### Working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.

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

- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- 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.

### 7.2 Instructions to be observed before commissioning or re-commissioning

Incorrect or improper commissioning can cause injury to persons and damage to the machine.

## 7 Initial Start-up

### 7.3 Checking installation and operating conditions

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

#### Special measures for re-commissioning after storage

Storage period or standstill longer than:	Remedy
12 months	<ul style="list-style-type: none"> <li>➤ Check condensate drainage.</li> <li>➤ Check the refrigerant condenser.</li> <li>➤ Check the electrical equipment.</li> <li>➤ Check all pipes, hoses and fittings for leaks and any visible damage. Correct any defects immediately.</li> </ul>
36 months	<ul style="list-style-type: none"> <li>➤ Have the overall technical condition checked by an authorized KAESER service representative.</li> </ul>

Tab. 35 Re-commissioning after storage

### 7.3 Checking installation and operating conditions

- Check and confirm all the items on the checklist before commissioning the machine:

To be checked:	See chapter	Confirmed?
➤ Are the operators completely familiar with the safety regulations?	–	
➤ Have all of the installation conditions been fulfilled?	5	
➤ Are the tolerance limits of the power supply within the permissible tolerance limits of the rated machine voltage? (see electrical diagrams)	2.1	
➤ Are the cable cross-sections and fuse ratings adequate?	2.11	
➤ Have all electrical connections been checked for tightness?	–	
➤ Has a safety relief valve been installed by the user?	6.3	
➤ Are shut-off valves fitted to the compressed air connections?	6.3	
➤ Is the supply of cooling water ensured? (Option K2)	6.6.3	
➤ Is the condensate drain connected?	6.4	
➤ Option H1: Is the machine firmly anchored to the floor without stress?	6.6.1	
➤ Installation altitude >3000 ft: Has the manufacturer been consulted? Have the controller parameters been adjusted?	4.7.6.3	
➤ Are all access doors closed and latched and removable panels in place and secured?	–	

Tab. 36 Installation conditions checklist

## 7.4 Checking the direction of rotation

The machine is designed for a clockwise phase sequence.

The direction of phase rotation should be measured with a phase sequence meter.

Alternatively, start the machine very briefly and observe the direction of rotation of the motor cooling fan.

1. Check the direction of phase rotation with a phase sequence meter at the inlet lines of the fan motor.
2. If the direction is incorrect, reverse the machine supply phases L1 and L2.



You do not have a phase sequence meter?

- Switch the machine on and off again the moment the drive motor begins to turn.
- Compare the direction of rotation of the fan with the arrow on the motor casing.

## 7.5 Starting the machine for the first time

**Precondition** No personnel are working on the machine.  
All access doors are closed.  
All removable panels in place and secured.

1. Switch on the power supply disconnecting device.
2. Press the «ON» key.
3. Open the shut-off valve to the compressed air system.
4. Watch for any faults occurring in the first hour of operation.

### 7.5.1 Registering the machine at the bus

**Precondition** The bus cabling has been completed and the RJ45 connectors are inserted at both ends of the network cable (see chapter 4.8.3).

The other network device (SIGMA AIR MANAGER 4.0, SBU, component on site) is running.

For connection to the user's Modbus TCP network: "SIGMA CONTROL SMART Technical Description - Process Image", document number: 7\_9200\_PCM\_PA is provided.



The bus address of the communication module depends on its IP address.

During registration, only one machine with SIGMA CONTROL SMART (SCS) can be simultaneously registered at SIGMA AIR MANAGER 4.0 or the Modbus TCP bus master. If you want to register multiple machines with SCS, you have to do this in sequence. Any machine not yet registered must remain deactivated.

1. Stick the adhesive label with the communications module's bus address (e.g. 11) onto the module front. Adhesive labels for the last digit of the IP address are included with the SIGMA AIR MANAGER 4.0.

Connection to a SIGMA NETWORK	Connection to the user's Modbus TCP network
<p>1. Register the machine with SCS at SIGMA AIR MANAGER 4.0. The IP address is transmitted to SCS. For details, see chapter "Commissioning" in the SIGMA AIR MANAGER 4.0 Operating Manual.</p> <p>SCS communicates with the bus master using the network</p>	<p>1. Register the machine as a Modbus TCP device at the user's Modbus TCP bus master and set the parameters. The IP address set at the factory is 169.254.100.95. Use Modbus TCP to adjust the IP settings. For details, see ID x10 to x22 in "SIGMA CONTROL SMART Technical Description - Process Image", document number: 7_9200_PCM_PA.</p> <p>SCS communicates with the bus master using the network</p>



If the attempt to connect to the communication module fails, the IP address may have been set to an unknown address. Reset the IP address to the factory setting (169.254.100.95 ) as described below:

- Press the RESET key on the communications module (Fig. 2030 item 6) for more than 3 s.

## 8 Operation

### 8.1 Switching the machine on and off

Always switch the machine on via the «ON» key and off via the «OFF» key.

The machine is connected to or disconnected from the power supply via the power supply disconnecting device.

The power supply disconnecting device is equipped with a protective function that switches off the machine in the event of a high current. In this case, the switch jumps to the TRIP position, indicating that the protective function has been triggered. To switch on again, first set the switch to position OFF to make the protective function ready again.

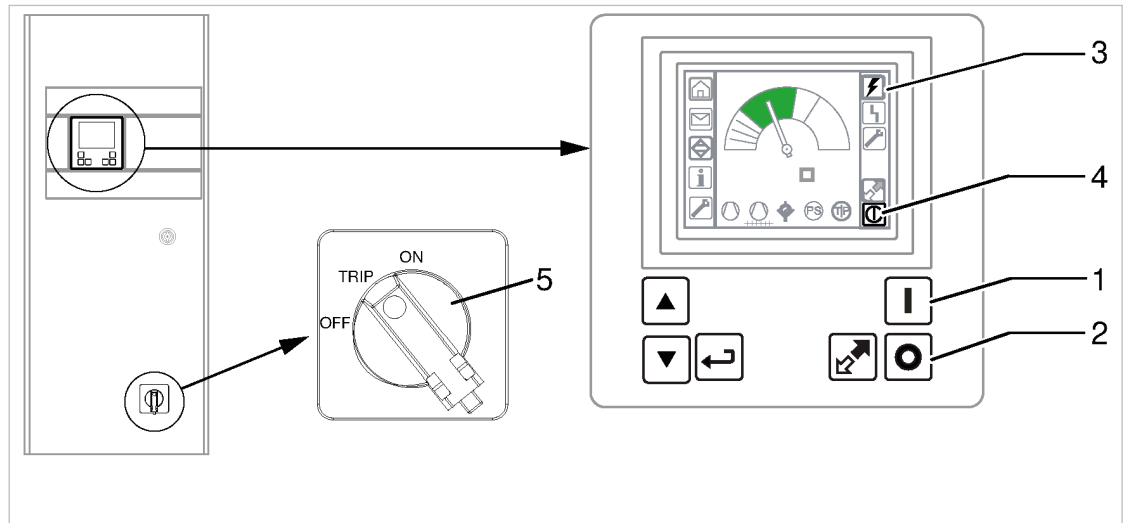


Fig. 27 Switching the machine on and off

- |   |   |
|---|---|
| ① «ON» key                                | ④ ON indicator                                    |
| ② «OFF» key                               | ⑤ Power supply disconnecting device (main switch) |
| ③ Voltage applied to controller indicator |   |

#### 8.1.1 Switching on

**Precondition** No personnel are working on the machine  
All access doors and panels are closed and secured

1. Switch on the power supply disconnecting device.  
The *Voltage applied to controller* indicator lights green.
2. Press the «ON» key.  
The green *ON* indicator lights continuously.
3. Wait 10–15 minutes, then open the shut-off valves to the air network.



In the event of a power failure, the machine is **not** locked off against automatic restart when power returns.  
The machine can automatically restart when the power supply is resumed and when the cut-in temperature is reached in the thermal mass.

**8.1.2 Switching off**

1. Press the «OFF» key.  
The machine gently shuts down. The *ON* indicator flashes.
2. Press the «OFF» key again to immediately shut the machine down.
3. Switch off and lock out / tag out the power supply disconnecting device.
4. Close the shut-off valves to the air network.

Result The *Voltage applied to controller* indicator extinguishes.

**8.2 Using the remote control**

The machine can be remotely controlled via SIGMA AIR MANAGER 4.0 or a control center.



When connecting to SIGMA AIR MANAGER 4.0, data are read out of the machine. There is no remote control via bus.

Various options are provided for creating a connection:

Connection via digital input

- Contact closed: READY
- Contact open: STOP

Connection via MODBUS TCP communication module (Option C44)

- This connection has a higher priority than the digital input.

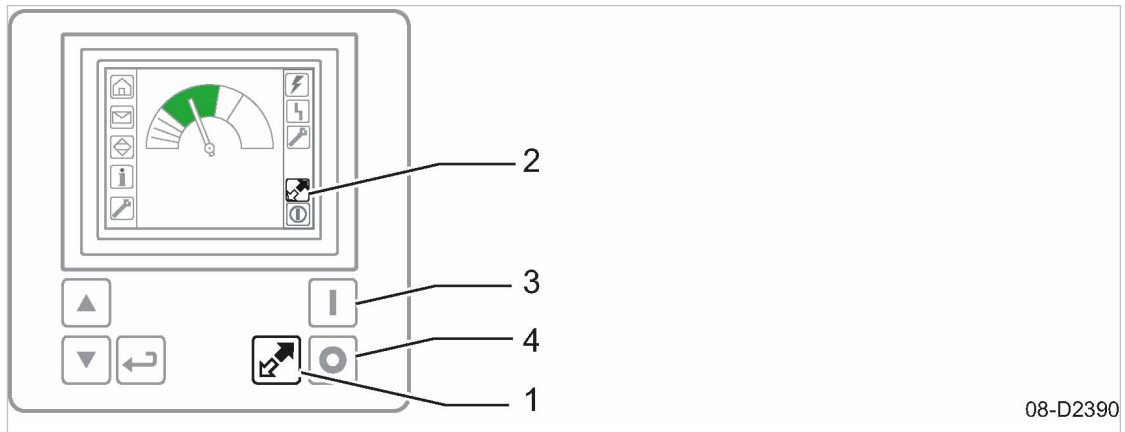


Fig. 28 Switching the remote control on and off

- |  |             |
|--|-------------|
| ① «Remote control» key                 | ③ «ON» key  |
| ② Display <i>Remote control On/Off</i> | ④ «OFF» key |

**8.2.1 Switching the remote control on and off**

Precondition The connection to a remote control center is established.  
The «Remote» key is activated (see chapter 4.7.6.2).

1. Press «ON» key [3] to switch on the machine.



2. Press the «Remote» key [1].

The remote control is switched on, the *Remote control* display [2] illuminates yellow. You can switch the machine in the remote control center between the READY and STOP operating points.

3. Press the «Remote» key [1] again to switch the remote control off.



You want to prevent that the remote control is maladjusted?

- Deactivate the «Remote» key, (see chapter 4.7.6.2).

## 8.3 Acknowledging and Resetting Warning and Alarm Messages

The **Acknowledge** key affects only the top line on the display.

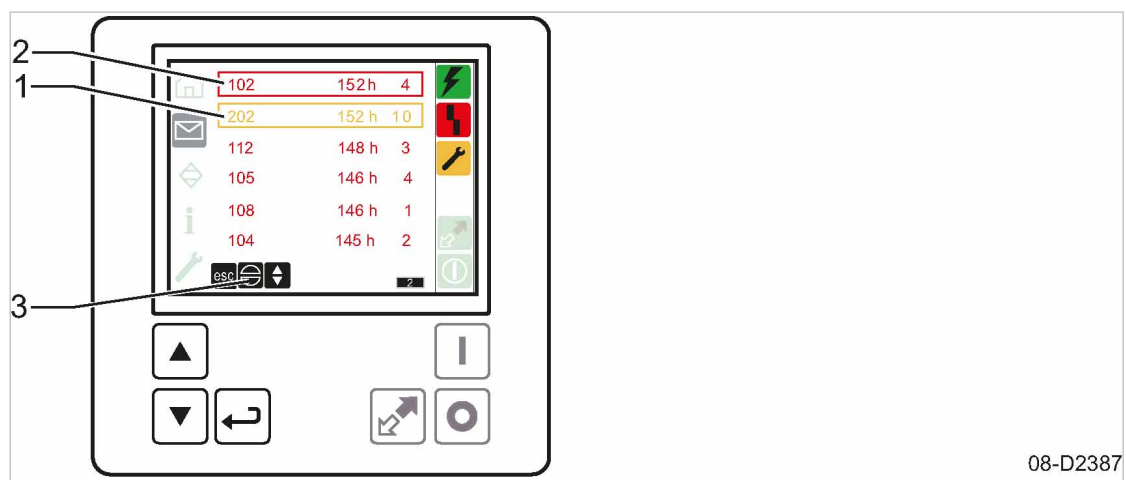


Fig. 29 Acknowledging messages

- ① Warning (yellow)
- ② Alarm (red)
- ③ **Acknowledge** key

1. In the *<Message>* menu, use «UP» or «DOWN» to activate **Acknowledge**.

**Acknowledge** is displayed inversely.

2. Press «Enter».

The message in the top line is acknowledged and disappears and the next message is displayed in the top line.

3. Press **esc** to return to the start screen after all messages have been acknowledged.

## 9 Fault Recognition and Rectification

### 9.1 Basic instructions

The alarm indications valid for your machine are dependent on the individual equipment.

1. Do not attempt fault rectification measures other than those given in this manual!
2. In all other cases:  
Have the fault rectified by an authorized KAESER service representative.

### 9.2 Messages at the controller

There are three types of messages:

- Alarms (red)  
An alarm message causes the machine to shut down.
- Warning messages (yellow)
- Maintenance messages (yellow)



You must acknowledge the alarm message upon correction of the fault before you can re-start the machine.

#### Alarm messages

Number	Meaning
101	The pressure monitor has triggered.
102	Motor protective switch for refrigerant compressor has triggered.
103	Switching frequency of refrigerant compressor is very high.
104	Motor protective switch for fan motor has triggered.
105	The temperature switch of the fan motor has triggered.
106	Open circuit in pressure transducer (vaporization pressure).
107	Short-circuit in pressure transducer (vaporization pressure).
108	Open circuit in pressure transducer (condensation pressure).
109	Short-circuit in pressure transducer (condensation pressure).
110	Open circuit in temperature transducer (pressure dew point).
111	Short-circuit in temperature transducer (pressure dew point).
112	The phase sequence of the power supply line is incorrect.
113	CAN bus communication fault of the display unit.
114	CAN bus communication fault of the controller module.
115	Internal temperature of the display unit too high.
116	Internal temperature of the controller module too high.
117	Refrigerant pressure on the low-pressure end is too low.
119	Fault in the condensate drain.
120	Open circuit in temperature transducer (cooling water inlet temperature).

Number	Meaning
121	Short-circuit in temperature transducer (cooling water inlet temperature).

Tab. 37 Alarm messages

**Warning messages**

Number	Meaning
201	Switching frequency of refrigerant compressor is high.
202	Fault in the condensate drain.
203	Pressure dew point is high. <ul style="list-style-type: none"> <li>■ This message is output when the yellow warning range has been reached.</li> <li>■ An acknowledgement is not necessary.</li> </ul>
204	Pressure dew point is very high. <ul style="list-style-type: none"> <li>■ This message is output when the red warning range has been reached.</li> <li>■ An acknowledgement is not necessary.</li> <li>■ The "Pressure dew point high" message relay contact switches.</li> </ul>
207	The dryer is controlled by means of the refrigerant pressure.
208	<ul style="list-style-type: none"> <li>■ Contact an authorized KAESER service representative.</li> </ul>

Tab. 38 Warning messages

**Maintenance messages**

Number	Meaning
301	Maintain the refrigerant condenser.
302	Maintain the condensate drain.

Tab. 39 Maintenance messages

## 9.3 Communications module – Troubleshooting

Faults in the communications module or errors in the communication via interfaces are indicated by LEDs on the communications module.

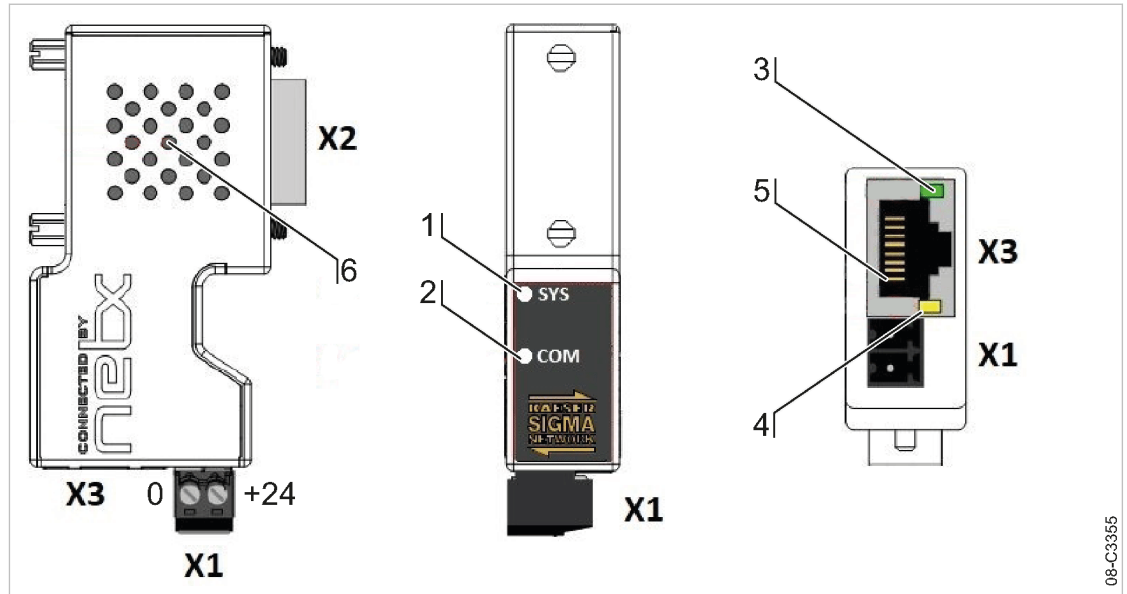


Fig. 30 Displays and connections of the communications module

Item	Display	Fault	Possible cause	Measure	
2	COM LED	flash-es red 1x/s	CAN communication faulty	SCS without voltage Communications module loose	Check the power supply Plug in the communications module and tighten the fastening screws
		flash-es red 2x/s	Ethernet communication faulty	See the following faults	
3	ETH LINK	off	No Ethernet connection	Network connection is interrupted	Check network cable and plug
4	ETH ACT	off		Communications module at the bus master incorrectly parametrized or not at all Incorrect IP address or communication settings	Parametrize the module at the master, see chapter 7.5.1 Reset to factory setting and re-register at the bus, see chapter 7.5.1
3	ETH LINK	on, green	No Ethernet communication	SIGMA AIR MANAGER 4.0 out of operation	Switch on SIGMA AIR MANAGER 4.0
4	ETH ACT	off	Ethernet network out of operation		Contact IT personnel

Tab. 40 Fault messages on the communications module

**9.4 Other faults**

Fault	Possible cause	Action
Water in the compressed pressure system	Compressed air inlet and outlet reversed.	Check the compressed air connection.
	The condensate is not draining out of the system.	Check and clean the condensate drain and line. Replace the condensate drain service unit.
	The pressure limiter has shut down the machine.	Check operating conditions. Check the machine.
High pressure drop	Compressed air system frozen.	Switch off the machine and increase the ambient temperature.
	Continuous air loss from the condensate drain.	Maintain the condensate drain.
Pressure dew point too high	Ambient or compressed air inlet temperature too high.	Check that installation conditions are OK.
	Low refrigerant level.	Contact an authorized KAESER service representative.
	Dirt collecting in the compressed air system.	Contact an authorized KAESER service representative.
The pressure monitor switches the machine off	Ambient or compressed air inlet temperature too high.	Check that installation conditions are OK.
	Refrigerant condenser dirty.	Clean the refrigerant condenser.
	Dirt trap clogged.	Clean the dirt trap.
The motor protective switch responds	Phase loss.	Reset the motor protective switch.
The machine cannot be switched on remotely via bus	Jumper between X2:VBB and X2:IN11 missing.	Install jumper.
	The «Remote control» key is not activated.	Activate the «Remote control» key, see chapter 8.2.

Tab. 41 Faults and troubleshooting

## 10 Maintenance

### 10.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

#### **Complying with safety instructions**

Disregard of safety warnings can cause unforeseeable dangers!

- Follow the instructions in chapter 3 “Safety and Responsibility”.
- Allow maintenance work to be performed by authorized personnel only.
- Make sure that no personnel are working on the machine.
- Ensure that all service doors and panels are locked.

#### **Working on live components**

Touching voltage carrying components can result in electric shocks, burns or death.

- Work on electrical equipment may only be carried out by authorized electricians.
- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- Check that there is no voltage on floating relay contacts.

#### **Working on the compressed air system**

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following safety concerns relate to any work on components that could be under pressure.

- 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.
- Depressurize all pressurized components and enclosures.
- Do not open or dismantle any valves.

#### **Working on the drive system**

Touching voltage carrying components can result in electric shocks, burns or death.

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

- Switch off and lock out the power supply disconnecting device and verify the absence of voltage.
- 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 maintenance-free and a closed circuit. 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 the condensate drain.	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 representative.	–
	Have the pressure monitor checked by an authorized KAESER service representative.	–
Display: SIGMA CONTROL SMART	Condensate drain:	10.4.2
	Change the service unit.	
	Clean the refrigerant condenser.	10.3

Tab. 42 Regular maintenance tasks

## 10.3 Clean the refrigerant condenser

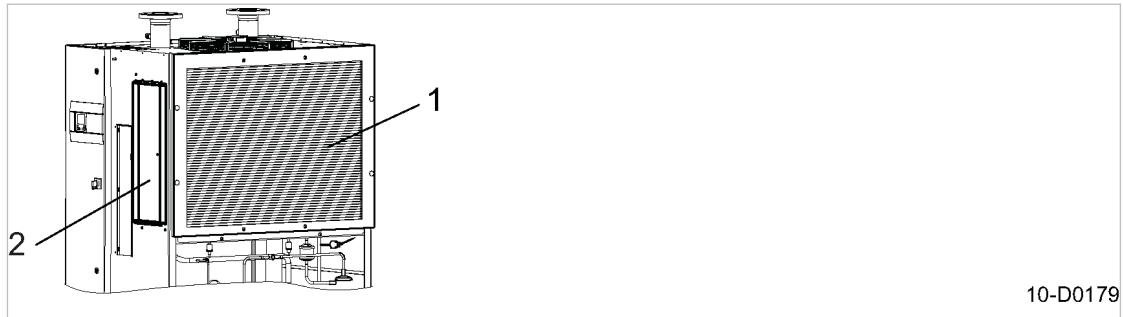
Regular cleaning of the refrigerant condenser ensures reliable cooling of the machine and the compressed air. The frequency is mainly dependent on local ambient conditions.

- Depending on the machine model, clean the refrigerant condenser as described below.

### 10.3.1 Option K1 Air-cooling maintenance

**Material** Compressed air for blowing out  
 Cleaning cloths  
 Vacuum cleaner  
 Spare parts as required

**Precondition** The power supply disconnecting device is switched off, lock out and tag out the device, the absence of voltage has been verified.



10-D0179

Fig. 31 Clean the refrigerant condenser

- ① Refrigerant condenser
- ② Maintenance opening

1. Use compressed air to blow the refrigerant condenser clean at regular intervals.
2. Have stubborn clogging removed by an authorized KAESER service representative.

### 10.3.2 Option K2 Water-cooling maintenance



- Clogged refrigerant condensers and dirt traps cause the condensation temperature to rise.
- Monitor the condensation temperature to detect any tendency to rise.

Check the refrigerant condenser and dirt trap regularly for leaks and contamination. Frequency of checking is dependent on the characteristics of the cooling water.

**Precondition** The power supply disconnecting device is switched off, lock out and tag out the device, the absence of any voltage has been verified.

#### Checking for leaks

1. Check the condenser for visible leaks.
2. Have an authorized KAESER service representative check the condenser for internal leaks at least once a year.

#### Cleaning

1. If necessary, have the refrigerant condenser cleaned by an authorized KAESER service representative.
2. Remove and clean the strainer of the dirt trap.

## 10.4 Condensate drain maintenance

### 10.4.1 Condensate drain check

**Precondition** The user's power supply disconnecting device is switched on.  
The machine is pressurized.  
The *Power* LED lights.



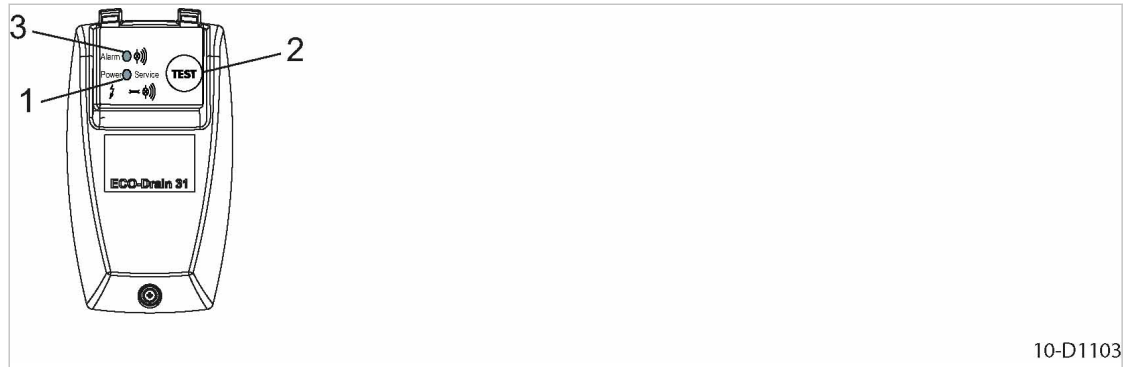


Fig. 32 Condensate drain check

- ① *Power LED*
- ② «TEST» key
- ③ *Alarm LED*

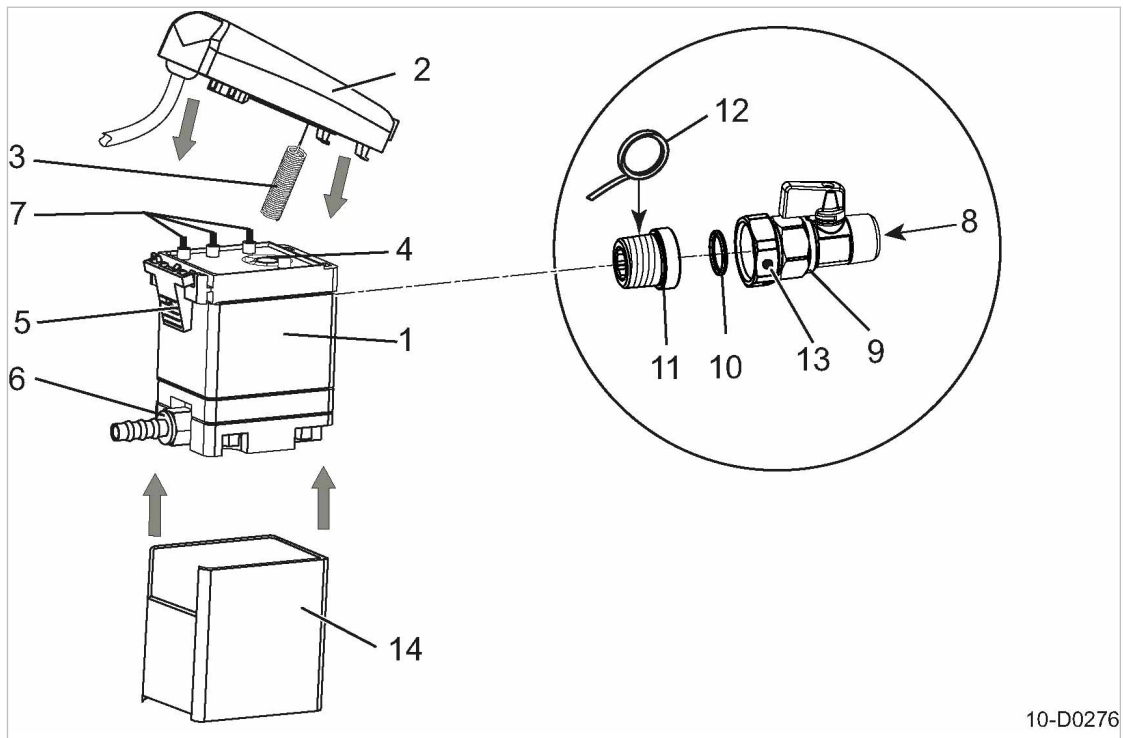
1. With one hand, lightly touch the condensate drain hose at the condensate drain.
2. With your other hand, push and hold the «TEST» key at the condensate drain for at least 2 seconds.

**Result** As soon as the condensate drain opens, you will feel a short burst at the condensate drain hose. Replace the service unit if you do **not** experience a burst during manual test.

### 10.4.2 Replacing the service unit

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

**Material** Sealing tape for sealing the screw-in part  
O-ring 16x2 (5.1519.0), if required



10-D0276

Fig. 33 Replacing the service unit

- |   |                               |   |                           |
|---|-------------------------------|---|---------------------------|
| ① | Service unit                  | ⑧ | Condensate inlet          |
| ② | Control module                | ⑨ | Shut-off valve            |
| ③ | Sensor                        | ⑩ | O-ring                    |
| ④ | Sensor opening                | ⑪ | Screw-in part             |
| ⑤ | Snap fastener                 | ⑫ | Sealing tape              |
| ⑥ | Condensate drain hose fitting | ⑬ | Union nut with vent holes |
| ⑦ | Contact springs               | ⑭ | Insulation                |

#### Removing the service unit

- ⚠ WARNING** *Serious injury or death can result from loosening or opening components under pressure!*  
➤ *Vent all pressurized components and enclosures.*
- Close the shut-off valve ⑨ upstream of the condensate drain.
- Unscrew the condensate hose fitting ⑥.
- Press the snap fastener and carefully remove the control module ② from the service unit ①.
- Carefully loosen the union nut with vent holes ⑬ at the shut-off valve ⑨ until remaining residual air has escaped through the venting holes.
- Unscrew the screw-in part ⑪ from the service unit ① and place aside.
- Remove the insulation ⑭ from the service unit ①.

#### Installing the service unit

Use only KAESER service units to ensure the correct function of the condensate drain.

Precondition Ensure that the top of the service unit ① and the contact springs are clean and dry.

- Fit the insulation ⑭ to the service unit ①.

2. Carefully insert the control module sensor (3) in the opening (4) of the service unit (1).
3. Place the snap fastener (5) of the control module (1) into the service unit eyes.
4. Press the control module (2) to the service unit until the snap fastener can be heard to click into place.
5. At the screw-in part (11), replace old sealing material with new sealing tape.
6. Install the screw-in part (11) in the service unit (1).
7. If necessary, insert a new O-ring (10).
8. Tighten the union nut with vent holes (13) at the shut-off valve (9).
9. Install the condensate hose.
10. Open the shut-off valve (9) upstream of the condensate drain.
11. Close all access doors, replace and secure all removable panels.

# 11 Spares, Operating Materials, Service

## 11.1 Note the nameplate

The nameplate contains all information to identify your machine. This information is essential to us in order to provide you with optimal service.

- Please give the information from the nameplate with every inquiry and order for spares.

## 11.2 Consumable Parts and Operating Materials

KAESER consumable parts and operating fluids/materials are all genuine KAESER parts. They are specifically 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 fluids/materials.*

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

*Damage to the machine can also result in personal injury.*

- *Use only original parts and operating fluids/materials.*
- *Have an authorized KAESER service representative carry out regular maintenance.*

Name	Number
Condensate drain: Service-Unit	9602

Tab. 43 Consumable parts

## 11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- authorized KAESER service representatives 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!

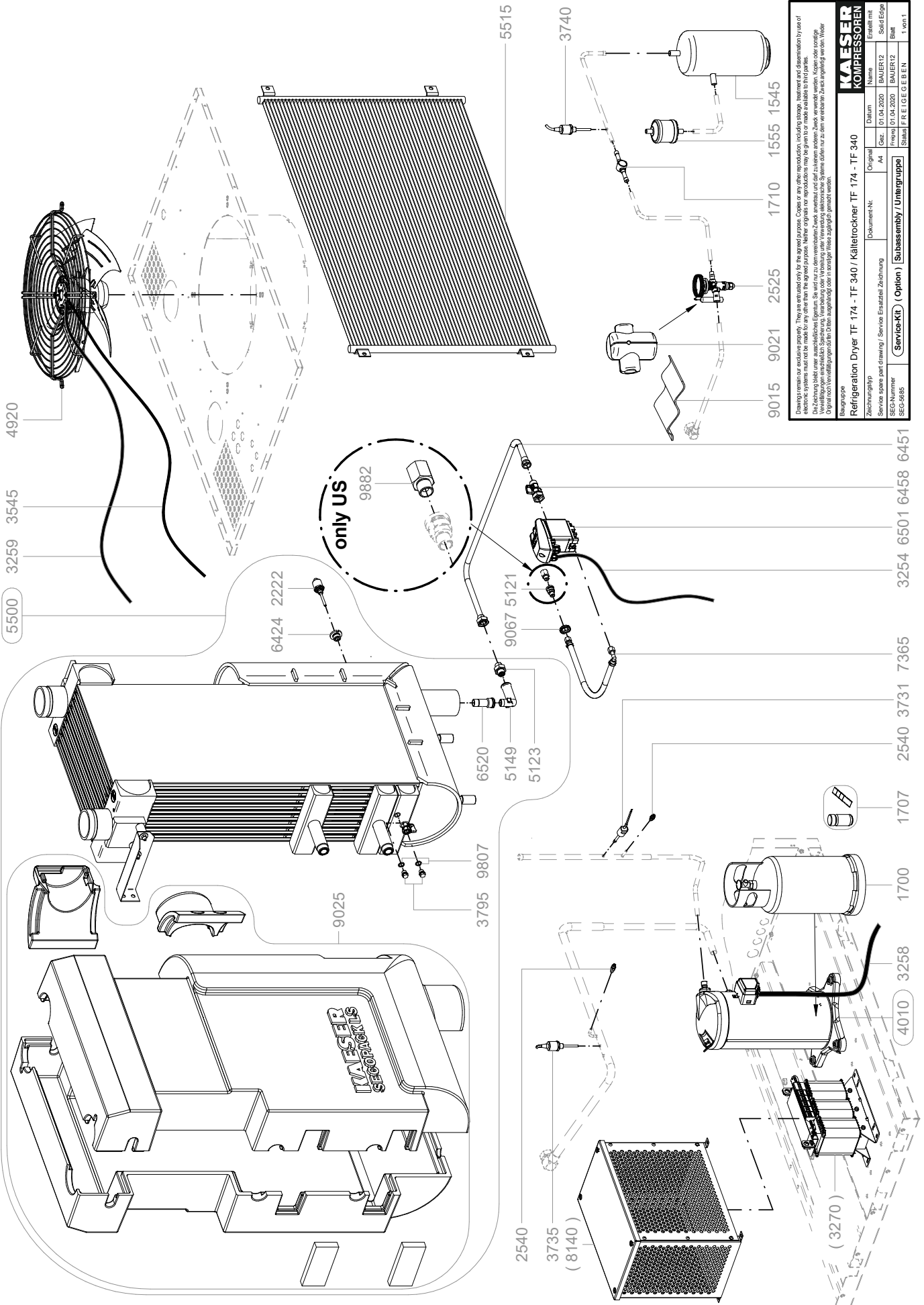
Result Your advantage:  
lower costs and higher compressed air availability.

## 11.4 Replacement parts for service and repair

Use these parts lists to plan your material requirement according to operating conditions and to order the required spare parts.



- Make sure that any service or repair tasks not described in this manual are carried out by an authorized KAESER service representative.



Bitte lesen Sie die folgenden Hinweise für den Einsatz dieses Ersatzteils. Dieses Ersatzteil ist ausschließlich für den Einsatz in den originalen KAESER-Systemen vorgesehen. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig. Dieses Ersatzteil ist nicht für den Einsatz in anderen Systemen geeignet. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig. Dieses Ersatzteil ist nicht für den Einsatz in anderen Systemen geeignet. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig.

Das Ersatzteil ist nicht für den Einsatz in anderen Systemen geeignet. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig. Dieses Ersatzteil ist nicht für den Einsatz in anderen Systemen geeignet. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig.

Das Ersatzteil ist nicht für den Einsatz in anderen Systemen geeignet. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig. Dieses Ersatzteil ist nicht für den Einsatz in anderen Systemen geeignet. Die Verwendung dieses Ersatzteils in anderen Systemen ist nicht zulässig.

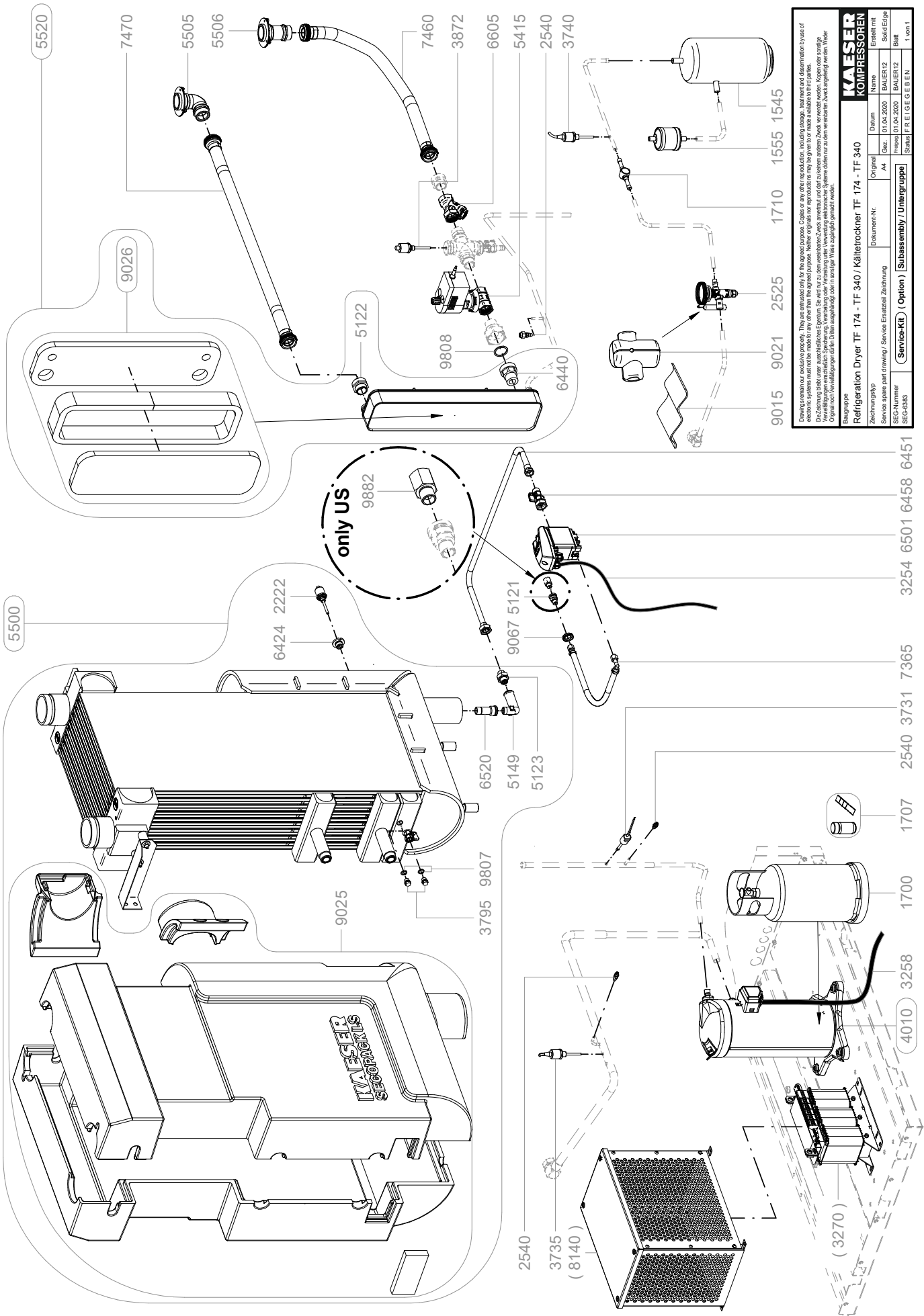
Baugruppe		Refrigeration Dryer TF 174 - TF 340 / Kälterockner TF 174 - TF 340	
Zachnungspap.	Dokument-Nr.	Original	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung			
SEK-Nummer	SEK-Gruppe	Original	Original
SEG-9885	(Option) Subassembly / Untereinheit	BAUER12	BAUER12
		Reviz. 01.04.2020	Reviz. 01.04.2020
		Skizze / F.L.E.G.E.B.E.N.	Skizze / F.L.E.G.E.B.E.N.
			1 von 1

<b>Legend</b>		<b>KAESER</b> KOMPRESSOREN
Refrigeration dryer TF		SEL-3950_04 E
Item	Description	Option
1555 *)	Filter dryer	
1545 *)	Refrigerant collector	
1700 *)	Refrigerant	
1707 *)	Acid test, refrigerant	
1710 *)	Refrigerant indicator	
2222	Temperature sensor	
2525 *)	Injection valve	
2540 *)	Refrigerant filling port	
3254	Condens. drain, connect. cable	
3258	Refr.compress.connecting cable	
3259	Fan motor connecting cable	
3270	Control transformer	
3545	Control cable	
3731 *)	Pressure limiter	
3735 *)	Leakage protection switch	
3740 *)	Fan pressure switch	
3795	Screw plug	
4010 *)	Refrigerant compressor	
4920	Exhauster, dryer	
5121	Double nipple	
5123	Double nipple	
5149	Elbow fitting	
5500 *)	Heat exchanger	
5515 *)	Refrigerant condenser	
6424	Reduction piece	
6451	Condensate drain pipe	
6458	Stop valve	
6501	Condensate drain, dryer	
9602	Condensate drain service-unit	
6520	Extension	
7365	Condensate drain line	
8140	Enclosure	
9015	Insulating tape	
9021	Insulating jacket	
9025	Heat exchanger insulation	
9067	Counternut	
9807	Gasket	
9882	Adapter	

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!

\*) The replacement of the spare parts described requires an authorized and certified refrigerant technician



**KAESER KOMPRESSOREN**

Refrigeration Dryer TF 174 - TF 340 / Kälterockner TF 174 - TF 340

Original / Original  
 Baujahr / Year of Manufacture: 01.04.2020  
 Baujahr / Year of Manufacture: 01.04.2020  
 Baujahr / Year of Manufacture: 01.04.2020

Service spare part drawing / Service Ersatzteil Zeichnung  
 Dokument-Nr. / Document No.: 9015 9021 2525 1710 1555 1545

SEG-Nummer / SEG-Number: 9015 9021 2525 1710 1555 1545  
 Subassembli / Untereinheit: 9015 9021 2525 1710 1555 1545

Erstellt mit / Created with: Solid Edge  
 Rev. / Revision: 01.04.2020  
 Blatt / Sheet: 1 von 1

**KAESER KOMPRESSOREN**

Refrigeration Dryer TF 174 - TF 340 / Kälterockner TF 174 - TF 340

Original / Original  
 Baujahr / Year of Manufacture: 01.04.2020  
 Baujahr / Year of Manufacture: 01.04.2020  
 Baujahr / Year of Manufacture: 01.04.2020

Service spare part drawing / Service Ersatzteil Zeichnung  
 Dokument-Nr. / Document No.: 9015 9021 2525 1710 1555 1545

SEG-Nummer / SEG-Number: 9015 9021 2525 1710 1555 1545  
 Subassembli / Untereinheit: 9015 9021 2525 1710 1555 1545

Erstellt mit / Created with: Solid Edge  
 Rev. / Revision: 01.04.2020  
 Blatt / Sheet: 1 von 1

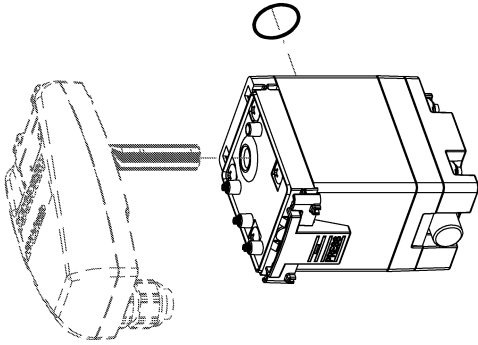


<b>Legend</b>		<b>KAESER</b> KOMPRESSOREN
Refrigeration dryer TF		SEL-4075_04 E
Item	Description	Option
1555 *)	Filter dryer	
1545 *)	Refrigerant collector	
1700 *)	Refrigerant	
1707 *)	Acid test, refrigerant	
1710 *)	Refrigerant indicator	
2222	Temperature sensor	
2525 *)	Injection valve	
2540 *)	Refrigerant filling port	
3254	Condens. drain, connect. cable	
3258	Refr.compress.connecting cable	
3270	Control transformer	
3731 *)	Pressure limiter	
3735 *)	Leakage protection switch	
3740 *)	Fan pressure switch	
3795	Screw plug	
3872	Temperature sensor	
4010 *)	Refrigerant compressor	
5121	Double nipple	
5122	Double nipple	
5123	Double nipple	
5149	Elbow fitting	
5415	Actuator	
5500 *)	Heat exchanger	
5505	Fitting	
5506	Fitting	
5520 *)	Refrigerant condenser waterc.	
6424	Reduction piece	
6440	Pipe fitting	
6451	Condensate drain pipe	
6458	Stop valve	
6501	Condensate drain, dryer	
9602	Condensate drain service-unit	
6520	Extension	
6605	Dirt trap	
7365	Condensate drain line	
7460	Hose line	
7470	Hose line	
8140	Enclosure	
9015	Insulating tape	
9021	Insulating jacket	
9025	Heat exchanger insulation	
9026	Heat exchanger insulation	
9067	Counternut	
9807	Gasket	
9808	Gasket	
9882	Adapter	

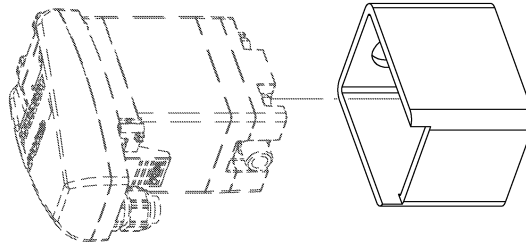
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

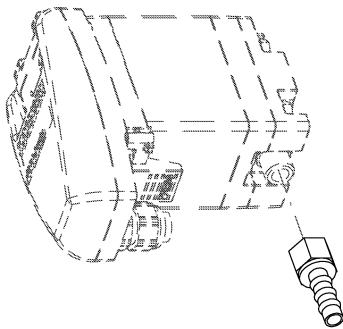
\*) The replacement of the spare parts described requires an authorized and certified refrigerant technician



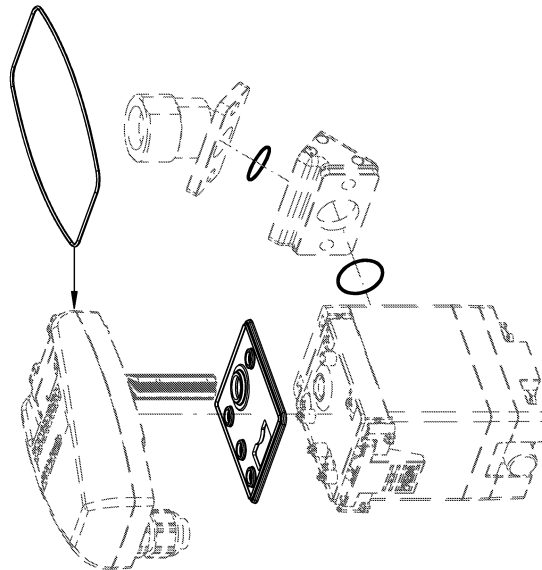
9602



9020



6307



9603

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Baugruppe		Original		Erstellt mit	
Zeilengruppe		Datei		Solid Edge	
Service spare part drawing / Service Ersatzteil-Zeichnung		Av		Baueit 12	
SEGA-Nummer		Version		Baueit 12	
SEG-6384_01		Stand		1 von 1	
Service-Kil (Option) / Untergruppe		Baueit 12		Baueit 12	
Baueit 12		Baueit 12		Baueit 12	

Condensate drain / Kondensatableiter

<b>Legend</b>		<b>KAESER</b>															
<b>Condensate drain</b>		SEL-4076_01 E															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"><b>Item</b></th> <th style="width: 65%;"><b>Description</b></th> <th style="width: 20%;"><b>Option</b></th> </tr> </thead> <tbody> <tr> <td>6307</td> <td>Hose connection</td> <td></td> </tr> <tr> <td>9020</td> <td>Insulating jacket</td> <td></td> </tr> <tr> <td>9602</td> <td>Condensate drain service-unit</td> <td></td> </tr> <tr> <td>9603</td> <td>Condensate drain gasket kit</td> <td></td> </tr> </tbody> </table>			<b>Item</b>	<b>Description</b>	<b>Option</b>	6307	Hose connection		9020	Insulating jacket		9602	Condensate drain service-unit		9603	Condensate drain gasket kit	
<b>Item</b>	<b>Description</b>	<b>Option</b>															
6307	Hose connection																
9020	Insulating jacket																
9602	Condensate drain service-unit																
9603	Condensate drain gasket kit																
<p>Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.</p> <p>Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!</p>																	

## 12 Decommissioning, Storage and Transport

### 12.1 Decommissioning

Decommissioning is necessary, for example, 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.

#### Temporary decommissioning

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

#### Permanent decommissioning

Precondition The power supply disconnecting device is switched off, the device is locked off, the absence of any voltage has been verified. The machine is fully vented (depressurized).

1. Drain condensate from the condensate drain.
2. Allow the machine to completely cool down.
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.



Please consult with KAESER if you have questions about appropriate storage and commissioning.

Precondition Condensate drain and condensate lines are completely empty.

1. **NOTICE** *Moisture and frost can damage the machine!*
  - *Prevent ingress of moisture and formation of condensation.*
  - *Maintain a storage temperature of >32°F.*
2. Store the machine in a dry, frost-proof room.

### 12.3 Transport

#### 12.3.1 Safety

Weight and center of gravity determine the most suitable method of transportation. The center of gravity is shown in the drawing in chapter 13.1.



- Please consult with KAESER if you intend to transport the machine in freezing temperatures.

**Precondition** Transport only by forklift truck or suitable lifting gear and only by personnel trained in the safe transportation of loads.

- Ensure the danger area is clear of personnel.

### 12.3.2 Transport with a forklift truck

**Precondition** The forks are fully under the machine.

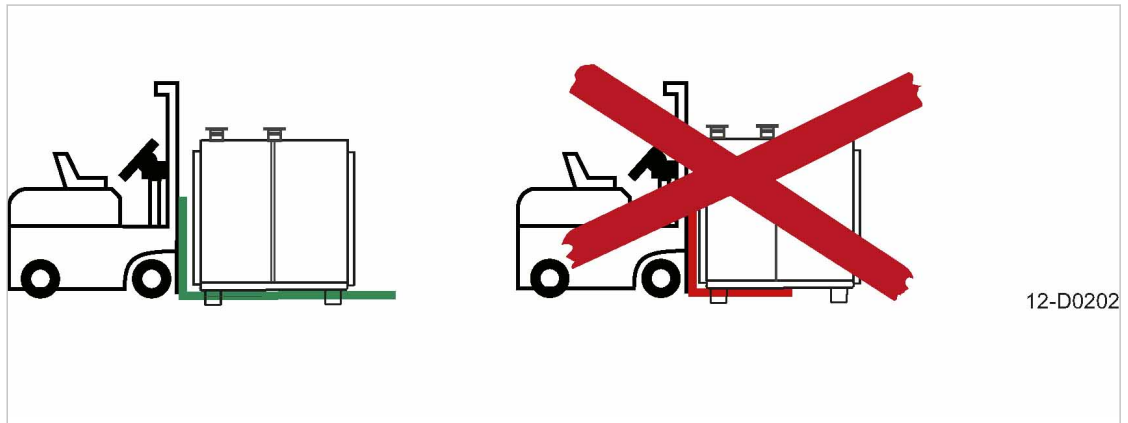


Fig. 34 Transporting with a forklift truck

1. Take note of the center of gravity.
2. Drive the forks completely under the machine or pallet and lift carefully.

### 12.3.3 Transport with a crane

Only suitable and approved load-carrying and attachment devices ensure proper transport of the machine with a crane. Suitable crossbeams ensure sufficient distance of the attachment resources from the machine housing to prevent damage.

The machine is not equipped with fixing points.

Examples of unsuitable fixing points:

- Pipe sockets
- Flanges
- Attached components such as condensate drains.



- Consult KAESER if you require suitable load-carrying and attachment devices or have questions regarding the correct use.

**Precondition** Load-carrying and attachment devices meet the local safety regulations.  
The crane, load-carrying and attachment devices or the lifted machine do not endanger personnel.

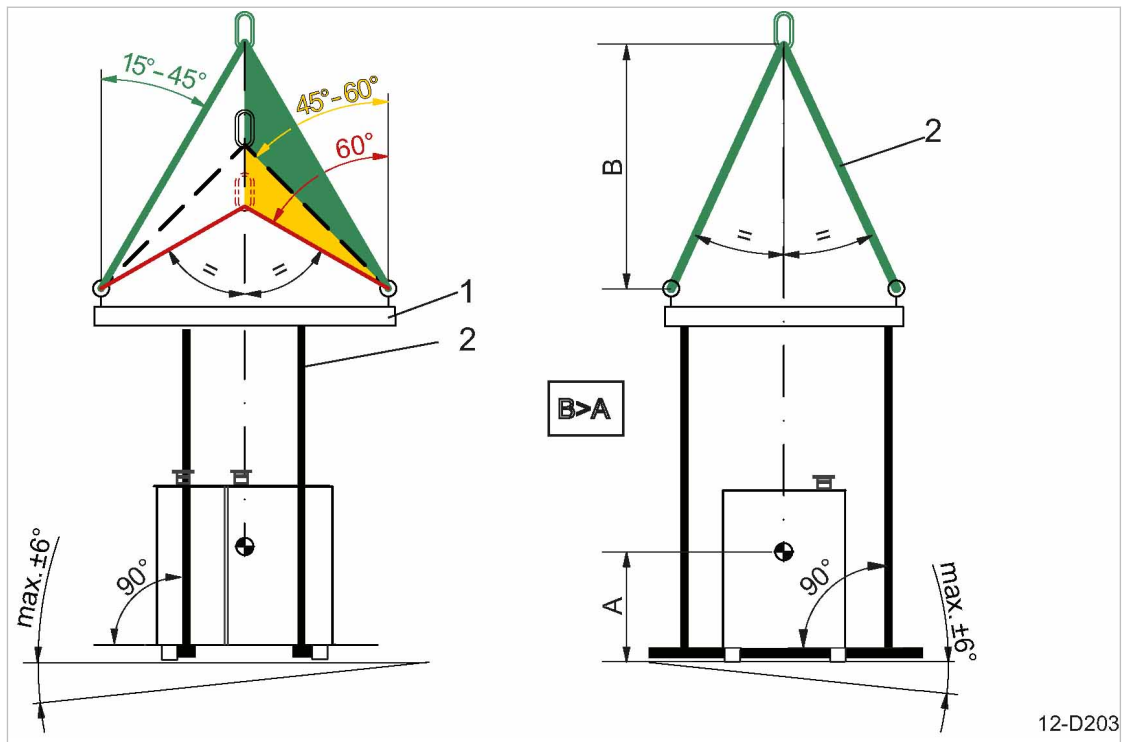


Fig. 35 Transport with a crane

- ① Load carrying devices
- ② Attachment resources

1. **⚠ WARNING** Risk of accident caused by incorrect use of lifting gear and attachment devices!
  - Comply with permissible load limits.
  - Comply with specific safety information of used load-carrying and attachment devices.
2. Properly use load-carrying and attachment devices:
  - Ensure proper distribution of the fastening points relative to the centre of gravity position (symmetrical load distribution).
  - Ensure equal slope angles of 15° to 45° for attachment devices with multiple strands.
    - Slope angles between 45° and 60° may be unsuitable.
    - Slope angles larger than 60° are prohibited.
  - Ensure the maximum incline of 6° of the machine to the horizontal.
  - Ensure sufficient distance of the attachment devices to the machine.
  - Ensure a positive stability height: Dimension B > Dimension A
  - Do not attach the attachment devices to any machine component.
3. Carry out a lifting test:  
Slightly lift the machine to check whether machine remains in horizontal position and does not teeter.
4. Transport the machine only after a successful lifting test.

## 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.

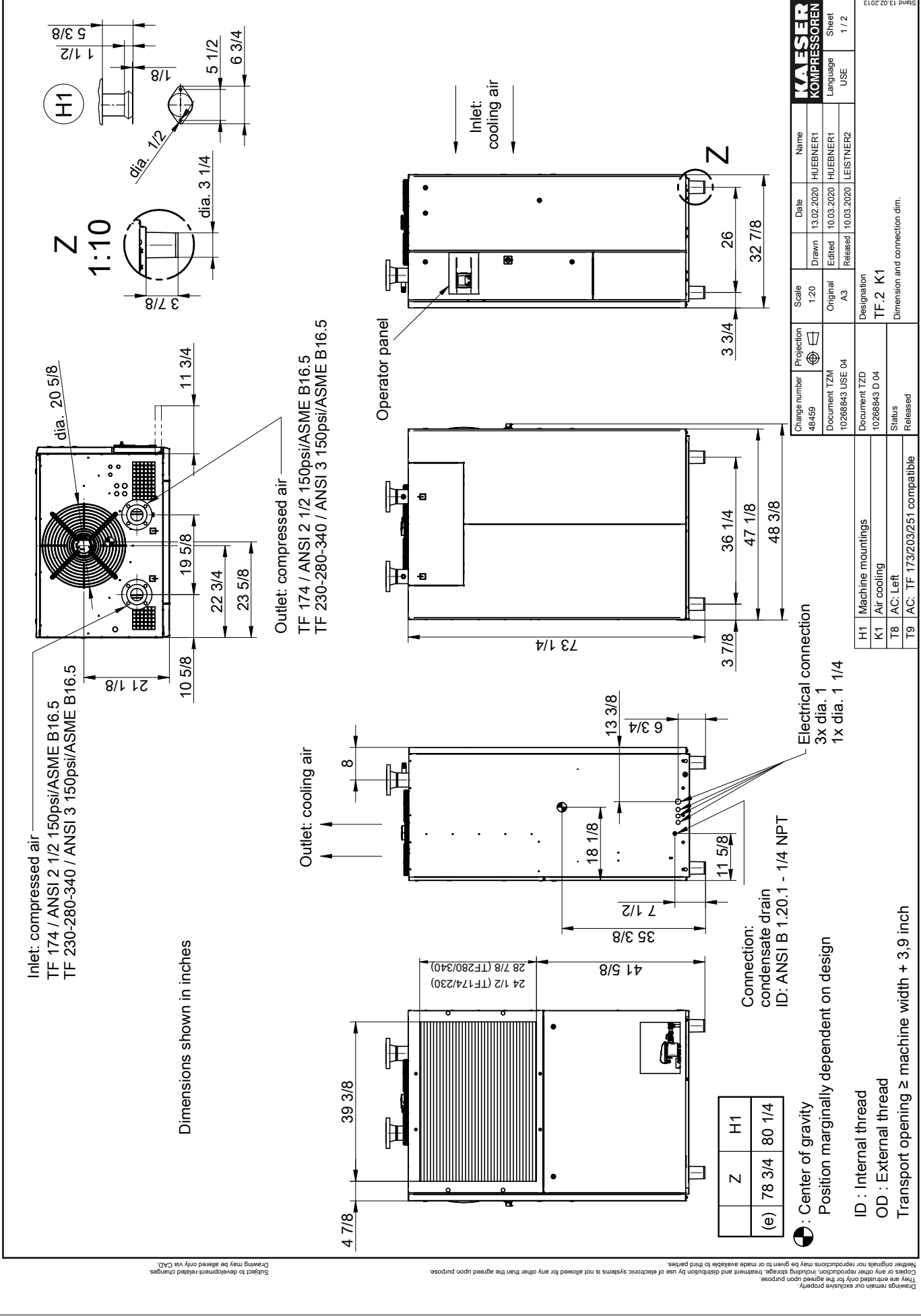


- Refrigerant and oil must be drained and disposed of by an authorized body.

## 13 Annex

### 13.1 Dimensional drawing





Change number		Projection	Scale	Date	Name
48-459			1:20	13.02.2020	HUEBNER1
Document TZM			Original	10.03.2020	HUEBNER1
10268843 USE 04			A3	10.03.2020	LEISTNER2
Document TZO			Designation	TF.2 K1	
10268843 D 04			Status	Dimension and connection dim.	
Released					

Machine mountings		Language		Sheet	
H1	Machine mountings	USE	USE	1/2	1/2
K1	Air cooling				
T8	AC: Left				
T9	AC: TF 173/203/251 compatible				

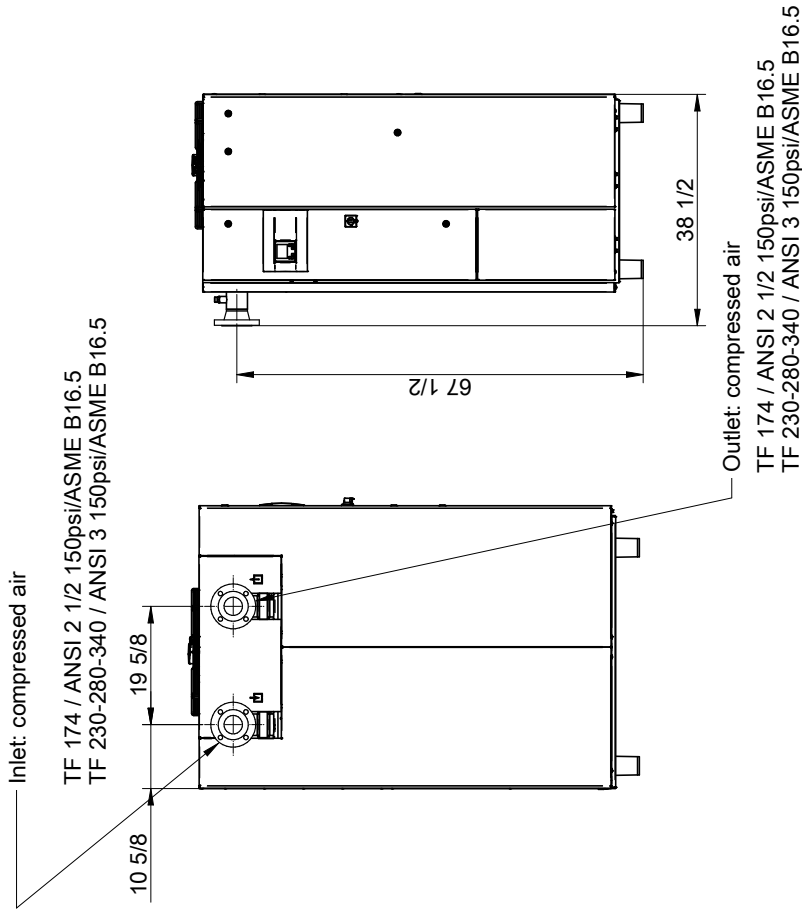
**Center of gravity**  
Position marginally dependent on design

Z	H1
(e) 78 3/4	80 1/4

ID : Internal thread  
OD : External thread  
Transport opening ≥ machine width + 3,9 inch

Drawings remain our exclusive property. Neither originals nor reproductions may be given to or made available to third parties. Copies of any other reproductions, including storage, treatment and distribution by use of electronic systems is not allowed for any other than the agreed upon purpose. This is limited only for the agreed upon purpose.

T8

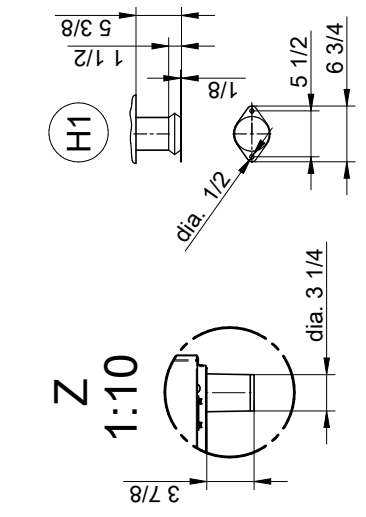


Dimensions shown in inches

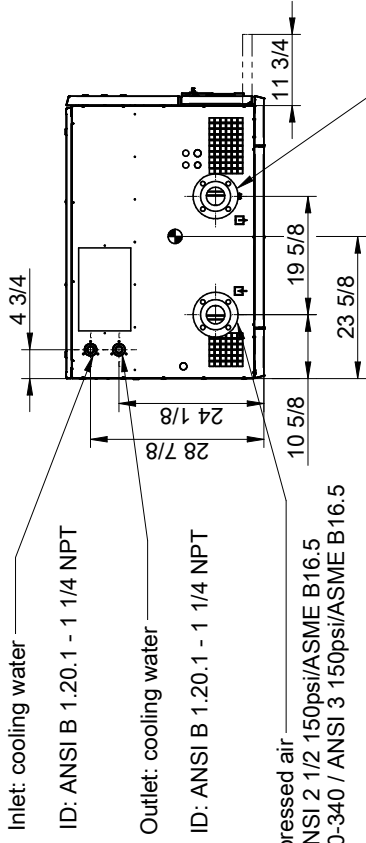
Change number		Projection	Scale	Date	Name
48459			1:20	13.02.2020	HUEBNER1
Document TZM			Original	Drawn	HUEBNER1
10268843 USE 04			A3	Edited	HUEBNER1
				Released	LEISTNER2
Document TZD		Designation		Sheet	
10268843 D 04		TF.2 K1		2 / 2	
Status		Dimension and connection dim.			
Released					

Machine mountings	
H1	Machine mountings
K1	Air cooling
T8	AC: Left
T9	AC: TF 173/203/251 compatible

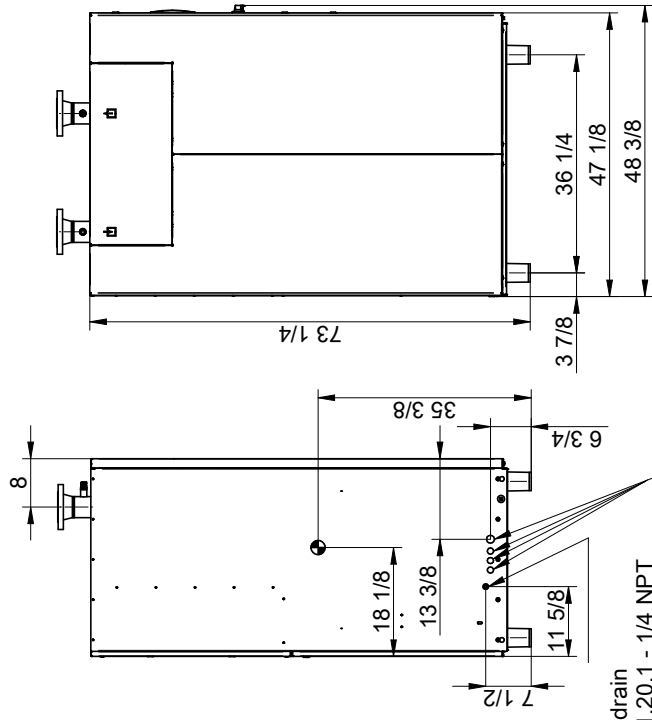
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Z	H1
(e)	78 3/4 80 1/4



Dimensions shown in inches



Position marginally dependent on design

Center of gravity  
ID : Internal thread  
OD : External thread  
Transport opening ≥ machine width + 3,9 inch

Change number		Projection	Scale	Name	Date
48459	1:20		Original	HUEBNER1	14.02.2020
Document TZM	A3		Released	HUEBNER1	10.03.2020
Document TZD	TF.2 K2			LEISTNER2	10.03.2020

Designation		Language		Sheet
10268846 D 02	TF.2 K2	USE	USE	1 / 2
Status	Released			

Designation	
K2	Water cooling plate heat exch.
H1	Machine mountings
T8	AC: Left
T9	AC: TF 173/203/251 compatible

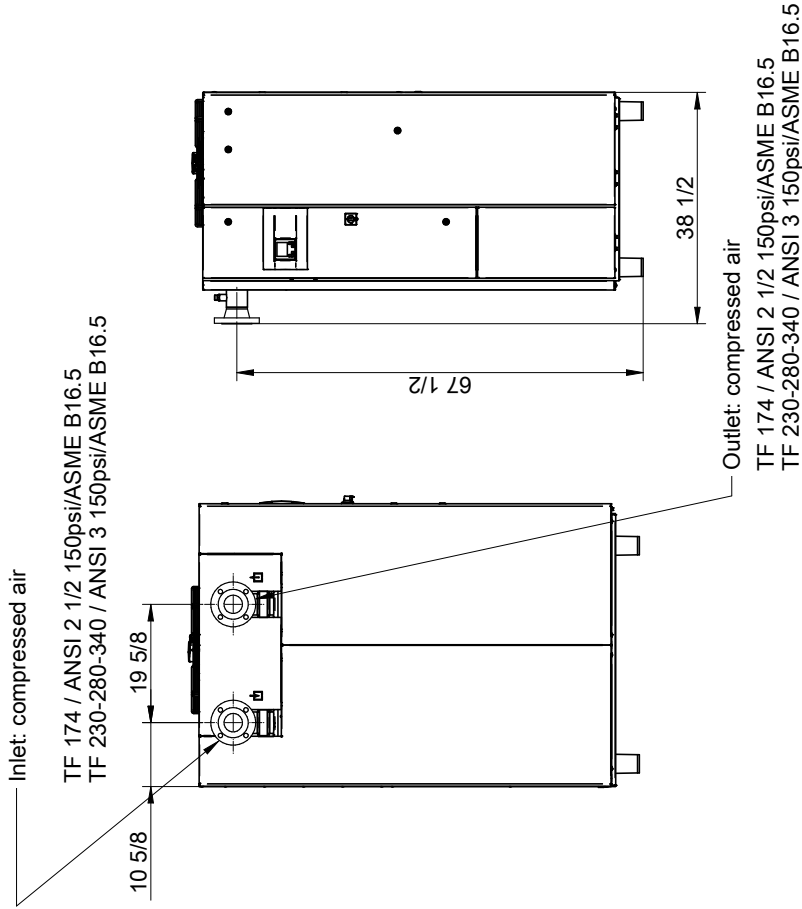
Position marginally dependent on design

Center of gravity  
ID : Internal thread  
OD : External thread  
Transport opening ≥ machine width + 3,9 inch

Subject to development-related changes. Drawing may be altered only via CAD.

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T8



Dimensions shown in inches

Change number		Projection	Scale	Date	Name
48459			1:20	14.02.2020	HUEBNER1
Document TZM			Original	Drawn	HUEBNER1
10268846 USE 02			A3	Edited	HUEBNER1
Document TZD			Designation	Released	LEISTNER2
10268846 D 02			TF.2 K2	Dimension and connection dim.	
Status					
Released					

Change number	Projection	Scale	Date	Name
48459		1:20	14.02.2020	HUEBNER1
Document TZM		Original	10.03.2020	HUEBNER1
10268846 USE 02		A3	10.03.2020	LEISTNER2
Document TZD		Designation		
10268846 D 02		TF.2 K2		
Status				
Released				

Stand 13.02.2013

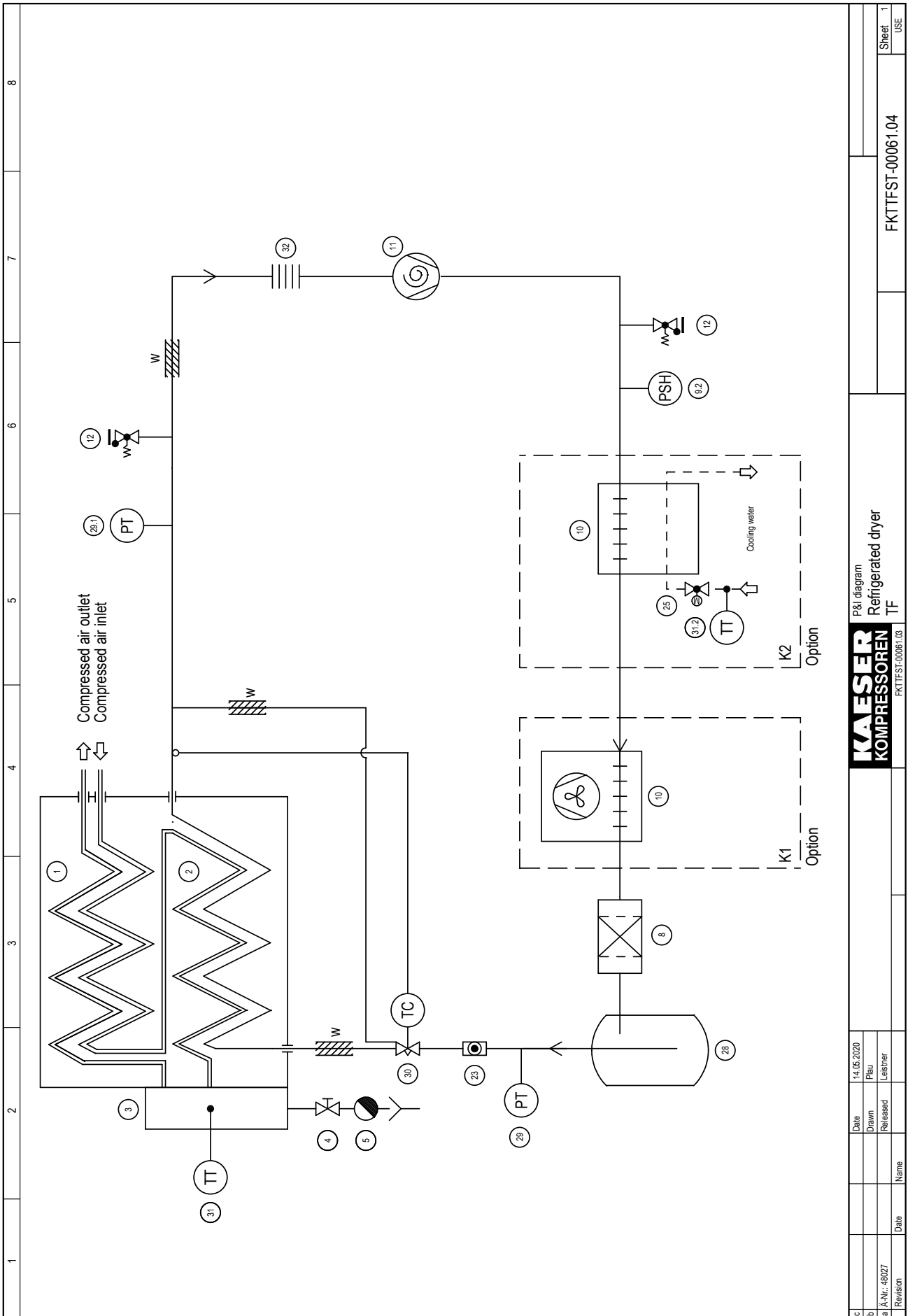
Drawings remain our exclusive property. They are intended only for the agreed upon purpose. Neither originals nor reproductions may be given to or made available to third parties. Copies or any other reproductions, including storage, treatment and distribution by use of electronic systems is not allowed for any other than the agreed upon purpose. Subject to development-related changes. Drawing may be altered only via CAD.

**13.2 Installation accessories**

Designation	Part number	Remarks
Conduit SIGMA NETWORK	7.9679.0	CAT5 2x2x0.64 gr, shielded, 2x2x0.64/1.5 for indoor installation, PVC coating, grey, Ø 6.5 mm, by the meter
Industrial Ethernet conductor	7.7629.0	CAT 5, shielded, 2x2x0.64/1.5, for interior use, PVC jacket, green, Ø 6.5 mm, yard ware
RJ45 Ethernet bus connector	7.7628.1	RJ45 plug, 4 insulation displacement/clamping contacts, tool-free installation (fast connect)
Stripping tool for Ethernet conductor	8.8294.0	Fast connect stripping tool for industrial Ethernet FC conductors
LAN RJ45 retrofit kit SCS	7.5250.02180	Angled RJ45 plug, screw connections, small parts
SNW & Modbus TCP retrofit kit for SCS	7.5250.12030	Protocol converter SNW/CAN Master, installation material

Tab. 44 Installation accessories

**13.3 Pipeline and instrument flow diagram (P+I diagram)**





c	Date	14.06.2020
b	Drawn	Plau
a	Released	Leisner
Revision	Date	Name

**KAESER**  
KOMPRESSOREN

P&I diagram  
Refrigerated dryer  
TF

FKTTFST-00061.04

Sheet 1  
USE

1	2	3	4	5	6	7	8
1	Air to air heat exchanger (heat insulated)			25	Cooling water regulating valve (motor-controlled)		
2	Air to refrigerant heat exchanger (Evaporator) (heat insulated)			28	Refrigerant collector		
3	Condensate separator (heat insulated)			29	Pressure transducer - Condensation pressure		
4	Shut-off valve			29.1	Pressure transducer - Evaporation pressure		
5	Condensate drain			30	Thermostatic expansion valve		
8	Filter dryer			31	Temperature transducer - Pressure dew point		
9.2	Pressure limiter			31.2	Temperature transducer - Cooling water temperature		
10	Refrigerant condenser			w	heat insulated		
11	Refrigerant compressor			Option			
12	Service connection (Schrader valve)			K1	Air cooling		
23	Inspection glass with humidity indicator			K2	Water cooling		
							
							
P&I Diagram legend Refrigerated dryer TF FKTFST-00061.04							
							Sheet 2
							USE

## 13.4 Electrical Diagram



1	2	3	4	5	6	7	8
<p><b>Wiring Diagram</b> <b>refrigeration dryer series TF</b></p> <p>208V±10% 3Ph 60Hz      230V±10% 3Ph 60Hz          380V±10% 3Ph 60Hz      460V±10% 3Ph 60Hz          575V±10% 3Ph 60Hz</p> <p>Power supply:          WYE system with center point solidly grounded</p>							
<p><b>ATTENTION !!!</b>          The document gives collective information on power supply voltages and frequencies for all machines. The voltage and frequency and local conditions under which any particular machine may be used are given on the nameplate of the machine and in the accompanying service manual.</p>							
<p><b>manufacturer:</b>      <b>KAESER COMPRESSORS</b>          96450 Coburg          GERMANY</p>							
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>							
<p>c</p>		<p>Date</p>		<p>25.02.2020</p>		<p>USE</p>	
<p>b</p>		<p>Drawn</p>		<p>Sittler</p>			
<p>a</p>		<p>Released</p>		<p>Büchner</p>			
<p>A/Change</p>		<p>Date</p>		<p>Name</p>			
				<p>cover page</p>			
				<p>refrigeration dryer series TF</p>			
				<p>=</p>		<p>+</p>	
				<p>DTF-U3012.03</p>		<p>page 1</p>	
						<p>1 Str.</p>	

Lfd. Nr. No.	Benennung Name	Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	cover page		DTF-U3012.03	1	
2	list of contents		ZTF-U3012.03	1	
3	general instructions		UTF-U3012.03	1	
4	electrical component parts list		UTF-U3012.03	2	
5	wiring diagram power supply/power unit		STF-U3012.03	1	
6	wiring diagram		STF-U3012.03	2	
7	wiring diagram		STF-U3012.03	3	
8	wiring diagram		STF-U3012.03	4	
9	wiring diagram option K1		STF-U3012.03	5	
10	wiring diagram option K2		STF-U3012.03	6	
11	wiring diagram		STF-U3012.03	7	
12	wiring diagram		STF-U3012.03	8	
13	wiring diagram Handling: Terminals		STF-U3012.03	9	
14	wiring diagram Feed line connection		STF-U3012.03	10	
15	terminal connection terminal strip -X1		KTF-U3012.03	1	
16	terminal connection terminal strip -X2		KTF-U3012.03	2	
17	terminal connection terminal strip -X21		KTF-U3012.03	3	
18	lay-out control cabinet door / Switchboard		ATF-U3012.03	1	

list of contents		=	
refrigeration dryer series TF		+	ZTF-U3012.03
KAESER KOMPRESSOREN			
Date			
25.02.2020	Sitter		
Released	Büchner		
Date	Name		
B. Change			
			page 1
			1 Stk.

1	2	3	4	5	6	7	8																																																
<p><b>general instructions</b></p> <p><b>ATTENTION !!!</b> Install supplies, grounding and shock protection to local safety regulations. Do not make or break live plug-in connectors.</p> <p>control cabinet wiring for non-designated conductors with multi-standard stranded conductors primary circuits: black H07V-K, UL-Style 1015, CSA-TEW control voltage DC ungrounded: blue 1mm<sup>2</sup> H05V-K, 18AWG UL-Style 1015, CSA-TEW control voltage DC grounded: white/blue 1mm<sup>2</sup> H05V-K, 18AWG UL-Style 1015, CSA-TEW CAN-Bus: brown 1mm<sup>2</sup> H05V-K, 18AWG UL-Style 1015, CSA-TEW ground conductor: green/yellow H07V-K, UL-Style 1015, CSA-TEW</p> <hr/> <p>option T2 = transformer power supply for refrigeration dryer option K1 = air cooled option K2 = water cooled option K15 = Ambient temperature 50°C option C36 = warning pressure dew point option C37 = Refrigerant compressor running</p> <hr/> <p><b>electrical equipment identification</b></p> <table border="0"> <tr> <td>-B30</td> <td>safety air pressure switch ( Pressure limiter)</td> <td>-M7</td> <td>controller ventilator (option K15)</td> </tr> <tr> <td>-B32</td> <td>pressure transducer (Liquefaction pressure)</td> <td>-M20</td> <td>control valve water cooling - option K2</td> </tr> <tr> <td>-B33</td> <td>pressure transducer (Gassing pressure)</td> <td>-M30</td> <td>Refrigerant compressor with overload protection</td> </tr> <tr> <td>-B34</td> <td>Temperature measuring transducer (pressure dew point)</td> <td>-M31</td> <td>vent motor (option K1)</td> </tr> <tr> <td>-B41</td> <td>Temperature measuring transducer (Cooling water temperature inlet) - option K2</td> <td>-Q0</td> <td>circuit breaker</td> </tr> <tr> <td>-F30</td> <td>circuit breaker</td> <td>-Q30</td> <td>motor starter Refrigerant compressor</td> </tr> <tr> <td>-F31</td> <td>circuit breaker (option K1)</td> <td>-Q31</td> <td>motor starter vent motor (option K1)</td> </tr> <tr> <td>-K1</td> <td>communication module</td> <td>-T21</td> <td>power supply</td> </tr> <tr> <td>-K20</td> <td>Display</td> <td>-T30</td> <td>transformer (option T2)</td> </tr> <tr> <td>-K21</td> <td>control</td> <td>-X1</td> <td>terminal strip</td> </tr> <tr> <td>-K33</td> <td>condensate drain</td> <td>-X2,-X21,-X22</td> <td>transfer module</td> </tr> <tr> <td>-K50...-K53</td> <td>coupling relay</td> <td></td> <td></td> </tr> </table>								-B30	safety air pressure switch ( Pressure limiter)	-M7	controller ventilator (option K15)	-B32	pressure transducer (Liquefaction pressure)	-M20	control valve water cooling - option K2	-B33	pressure transducer (Gassing pressure)	-M30	Refrigerant compressor with overload protection	-B34	Temperature measuring transducer (pressure dew point)	-M31	vent motor (option K1)	-B41	Temperature measuring transducer (Cooling water temperature inlet) - option K2	-Q0	circuit breaker	-F30	circuit breaker	-Q30	motor starter Refrigerant compressor	-F31	circuit breaker (option K1)	-Q31	motor starter vent motor (option K1)	-K1	communication module	-T21	power supply	-K20	Display	-T30	transformer (option T2)	-K21	control	-X1	terminal strip	-K33	condensate drain	-X2,-X21,-X22	transfer module	-K50...-K53	coupling relay		
-B30	safety air pressure switch ( Pressure limiter)	-M7	controller ventilator (option K15)																																																				
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<p>c Date 25.02.2020</p> <p>b Drawn Siller</p> <p>a Released Blüchner</p> <p>c Change Date Name</p>		<p>general instructions refrigeration dryer series TF</p>		<p>=</p> <p>+</p> <p>UTF-U3012.03</p>		<p>page 1</p> <p>2 Str.</p>																																																	

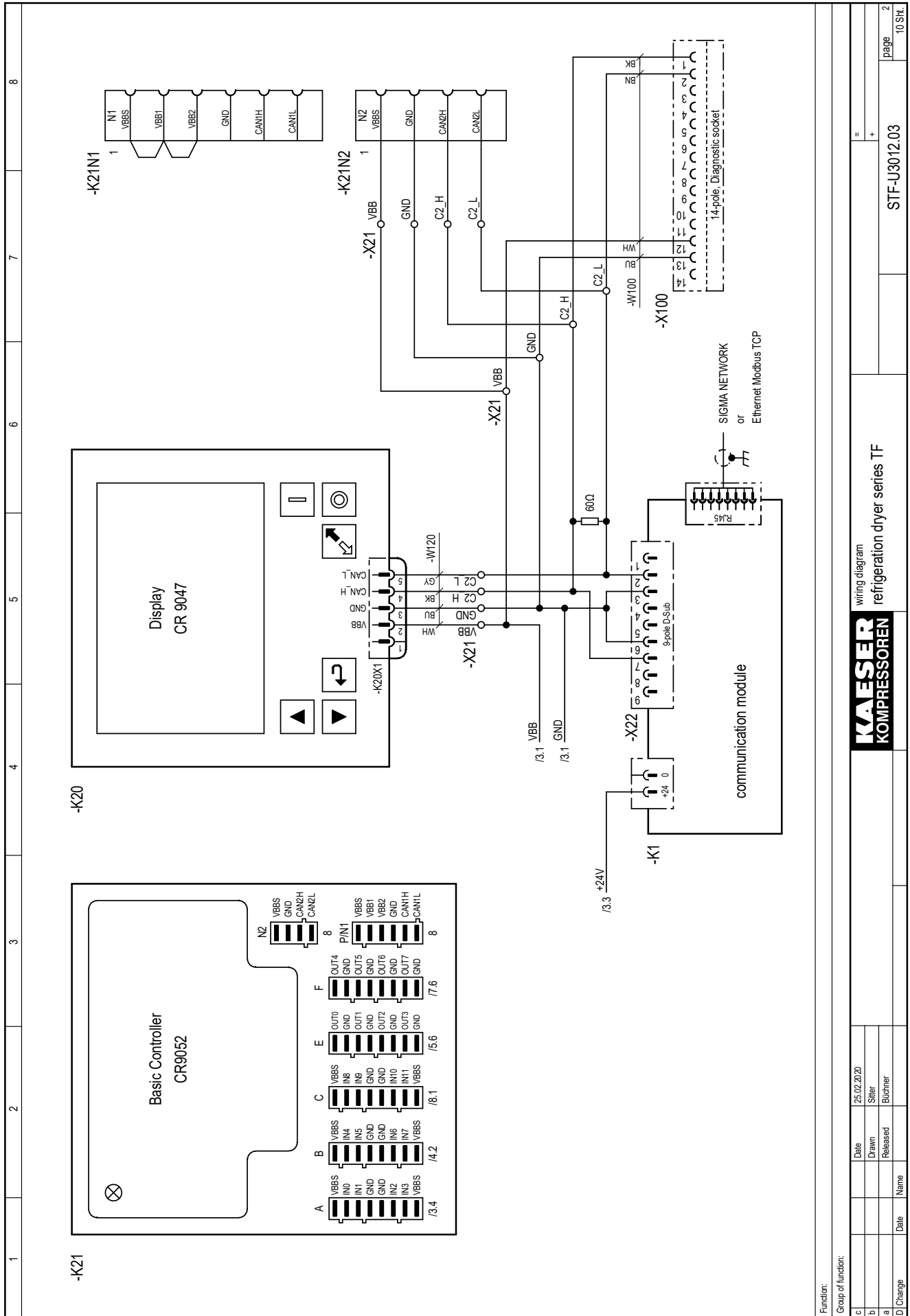
model	electrical component parts list				page 2	2 Sht.
	TF 174	TF 230	TF 280	TF 340		
machine power supply (option T2) 1) (option T2) 2) (option T2) 3) (option T2) 4)	460 V ±10 %, 60 Hz 208 V ±10 %, 60 Hz 230 V ±10 %, 60 Hz 380 V ±10 %, 60 Hz 575 V ±10 %, 60 Hz	460 V ±10 %, 60 Hz 208 V ±10 %, 60 Hz 230 V ±10 %, 60 Hz 380 V ±10 %, 60 Hz 575 V ±10 %, 60 Hz	460 V ±10 %, 60 Hz 208 V ±10 %, 60 Hz 230 V ±10 %, 60 Hz 380 V ±10 %, 60 Hz 575 V ±10 %, 60 Hz	460 V ±10 %, 60 Hz 208 V ±10 %, 60 Hz 230 V ±10 %, 60 Hz 380 V ±10 %, 60 Hz 575 V ±10 %, 60 Hz		
supply connection	fig. 10 + 11, Sht. 9	fig. 10 + 11, Sht. 9	fig. 10 + 11, Sht. 9	fig. 10 + 11, Sht. 9		
GRD terminal  Stripped length Handling  Wieland	-X1 7.3149.01980 WKFN 10D1/2/SL/35 10 mm fig. 2, Sht. 8 2x 7.3149.01830 WKFN 4/SL/35	7.3149.01980 WKFN 10D1/2/SL/35 10 mm fig. 2, Sht. 8 2x 7.3149.01830 WKFN 4/SL/35	7.3149.01980 WKFN 10D1/2/SL/35 10 mm fig. 2, Sht. 8 2x 7.3149.01830 WKFN 4/SL/35	7.3149.01980 WKFN 10D1/2/SL/35 10 mm fig. 2, Sht. 8 2x 7.3149.01830 WKFN 4/SL/35		
Rail system  Siemens	-X10 7.8237.00010 3RV2917-1E	7.8237.00010 3RV2917-1E	7.8237.00010 3RV2917-1E	7.8237.00010 3RV2917-1E		
contactor  Siemens	-Q30 7.8237.00320 3RT2017-2BB41 24 VDC	7.8237.00320 3RT2017-2BB41 24 VDC	7.8237.00320 3RT2017-2BB41 24 VDC	7.8237.00330 3RT2018-2BB41 24 VDC		
contactor (option K1)  Siemens	-Q31 7.8237.00300 3RT2015-2BB41 24 VDC	7.8237.00300 3RT2015-2BB41 24 VDC	7.8237.00300 3RT2015-2BB41 24 VDC	7.8237.00300 3RT2015-2BB41 24 VDC		
circuit breaker  Siemens	-F30 7.8237.00130 3RV2011-1GA20 4.5-6.3 A setting: 5.0 A	7.8237.00140 3RV2011-1HA20 5.5-8 A setting: 7.0 A	7.8237.00150 3RV2011-1JA20 7-10 A setting: 7.0 A	7.8237.00170 3RV2011-1KA20 9-12.5 A setting: 9.5 A		
auxiliary switch  Siemens	7.8237.00250 3RV2901-2E	7.8237.00250 3RV2901-2E	7.8237.00250 3RV2901-2E	7.8237.00250 3RV2901-2E		
circuit breaker (option K1)  Siemens	-F31 7.8237.00110 3RV2011-0GA20 0.45-0.63 A setting: 0.57 A	7.8237.00110 3RV2011-0GA20 0.45-0.63 A setting: 0.57 A	7.8237.03000 3RV2011-1AA20 1.1-1.6 A setting: 1.1 A	7.8237.03000 3RV2011-1AA20 1.1-1.6 A setting: 1.1 A		
(option K15)  Siemens	7.8237.03000 3RV2011-1AA20 1.1-1.6 A setting: 1.1 A	7.8237.03000 3RV2011-1AA20 1.1-1.6 A setting: 1.1 A	7.8237.03000 3RV2011-1AA20 1.1-1.6 A setting: 1.1 A	7.8237.03000 3RV2011-1AA20 1.1-1.6 A setting: 1.1 A		
auxiliary switch  Siemens	7.8237.00250 3RV2901-2E	7.8237.00250 3RV2901-2E	7.8237.00250 3RV2901-2E	7.8237.00250 3RV2901-2E		
power supply  Block	-T21 7.8726.0 PM-0224-038-0 200-500 VAC//24 VDC 3.8 A	7.8726.0 PM-0224-038-0 200-500 VAC//24 VDC 3.8 A	7.8726.0 PM-0224-038-0 200-500 VAC//24 VDC 3.8 A	7.8726.0 PM-0224-038-0 200-500 VAC//24 VDC 3.8 A		
coupling relay  Phönix Handling	-K50/-K51/-K52/-K53 7.3172.00310 RIF-0-RPT-24DC/21 fig. 3, Sht. 8	7.3172.00310 RIF-0-RPT-24DC/21 fig. 3, Sht. 8	7.3172.00310 RIF-0-RPT-24DC/21 fig. 3, Sht. 8	7.3172.00310 RIF-0-RPT-24DC/21 fig. 3, Sht. 8		
transfer module  Wieland Handling	-X2/-X21/-X22 7.8283.0 99.808.5333.8 fig. 1, Sht. 8	7.8283.0 99.808.5333.8 fig. 1, Sht. 8	7.8283.0 99.808.5333.8 fig. 1, Sht. 8	7.8283.0 99.808.5333.8 fig. 1, Sht. 8		
connection  Siemens	-W17/-W27 7.8237.00030 3RV2917-5A	7.8237.00030 3RV2917-5A	7.8237.00030 3RV2917-5A	7.8237.00030 3RV2917-5A		
connection  Siemens	-W18/-W28 7.8237.00040 3RA2911-2A	7.8237.00040 3RA2911-2A	7.8237.00040 3RA2911-2A	7.8237.00040 3RA2911-2A		
circuit breaker  Stripped length Torque	-Q0 7.8237.00160 3RV2711-1JD10 10 A/460 V, 65kA 10 mm 22 lb-in	7.8237.00160 3RV2711-1JD10 10 A/460 V, 65kA 10 mm 22 lb-in	7.8237.00160 3RV2711-1JD10 10 A/460 V, 65kA 10 mm 22 lb-in	7.8237.00160 3RV2711-1JD10 10 A/460 V, 65kA 10 mm 22 lb-in		
rotary actuator  Siemens	7.8237.00270 3RV2926-2BA00	7.8237.00270 3RV2926-2BA00	7.8237.00270 3RV2926-2BA00	7.8237.00270 3RV2926-2BA00		
control  ifm	-K21 7.9200.11000 CR 9052	7.9200.11000 CR 9052	7.9200.11000 CR 9052	7.9200.11000 CR 9052		
Operating panel and display  ifm	-K20 7.9200.11010 CR 9047	7.9200.11010 CR 9047	7.9200.11010 CR 9047	7.9200.11010 CR 9047		
transformer (option T2)  Block	-T30 1) 2) 3) 7.5452.00221 B 1311034 200-440/400/460 V	7.5452.00221 B 1311034 200-440/400/460 V	7.5452.00221 B 1311034 200-440/400/460 V	7.5452.00221 B 1311034 200-440/400/460 V		
transformer (option T2)  Block	-T30 4) 7.5452.00330 B 1311007 575/460 V	7.5452.00330 B 1311007 575/460 V	7.5452.00330 B 1311007 575/460 V	7.5452.00330 B 1311007 575/460 V		
series terminal (option T2)  Wieland Handling	-X1 3x 7.3149.01940 WKFN 10/35 fig. 2, Sht. 8	3x 7.3149.01940 WKFN 10/35 fig. 2, Sht. 8	3x 7.3149.01940 WKFN 10/35 fig. 2, Sht. 8	3x 7.3149.01940 WKFN 10/35 fig. 2, Sht. 8		
controller ventilator (option K15)  Rübsamen&Herr	-M7 7.2751.00530 LV200	7.2751.00530 LV200	7.2751.00530 LV200	7.2751.00530 LV200		
communication module Modbus TCP	-K1 7.9602.0 SNW/CAN-Master	7.9602.0 SNW/CAN-Master	7.9602.0 SNW/CAN-Master	7.9602.0 SNW/CAN-Master		

electrical component parts list  
refrigeration dryer series TF

**KAESER**  
KOMPRESSOREN

Date	25.02.2020
Drawn	Sittler
Released	Büchner
Name	
C-Change	





Function:  
Group of function:

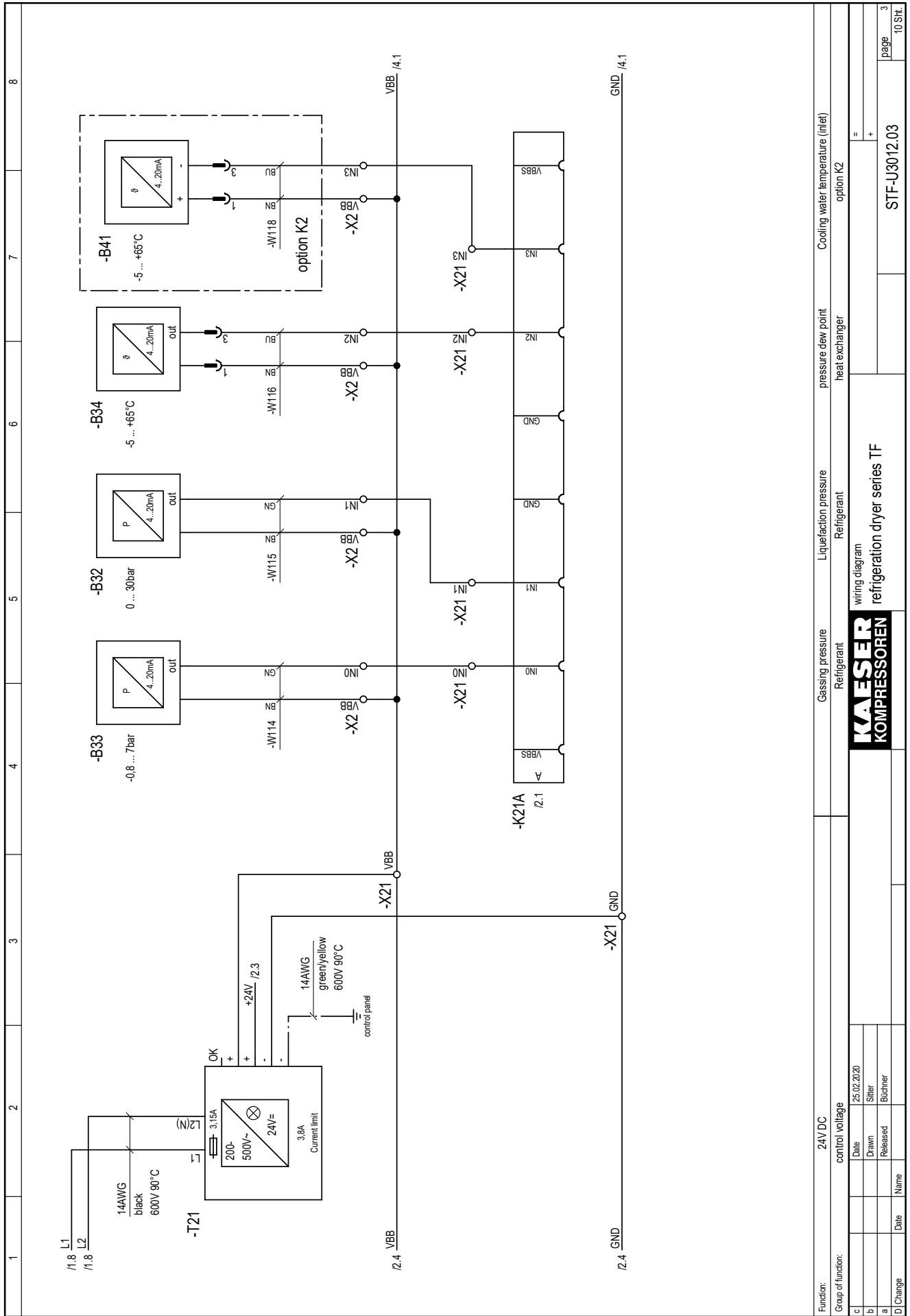
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b	Drawn	Sittler
a	Released	Büchner
D	Change	Date Name

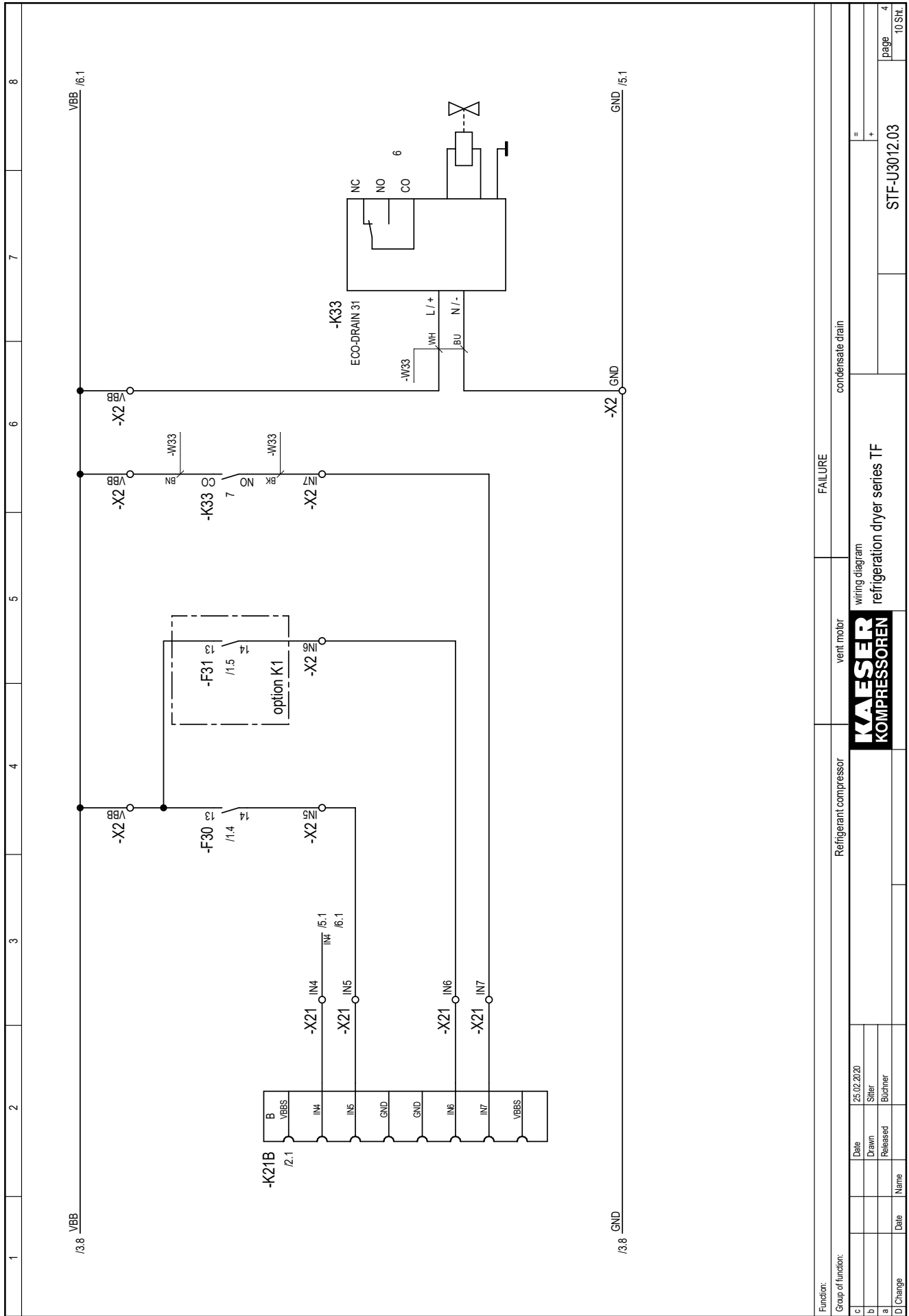
wiring diagram  
refrigeration dryer series TF

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KOMPRESSOREN

STF-U3012.03

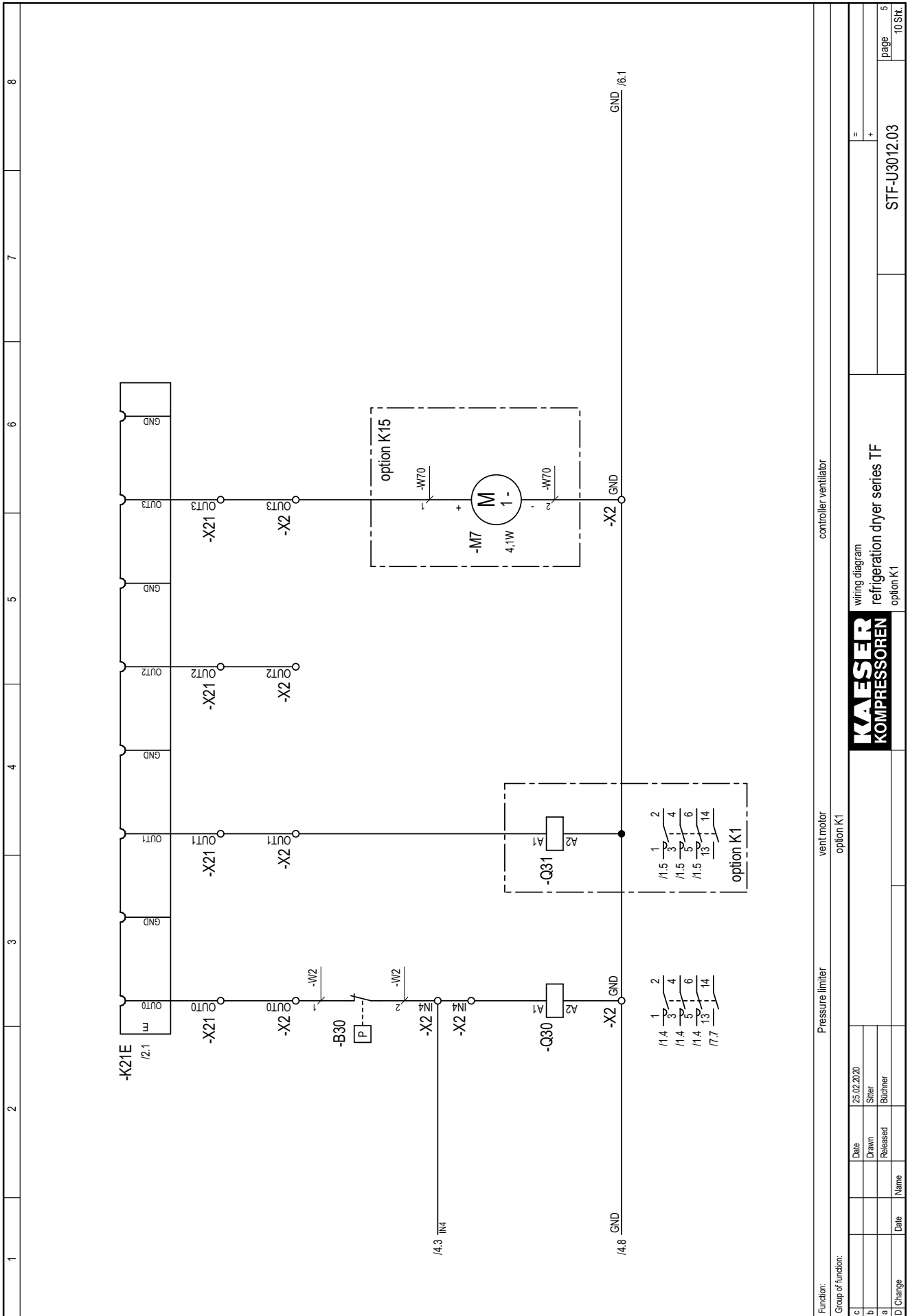
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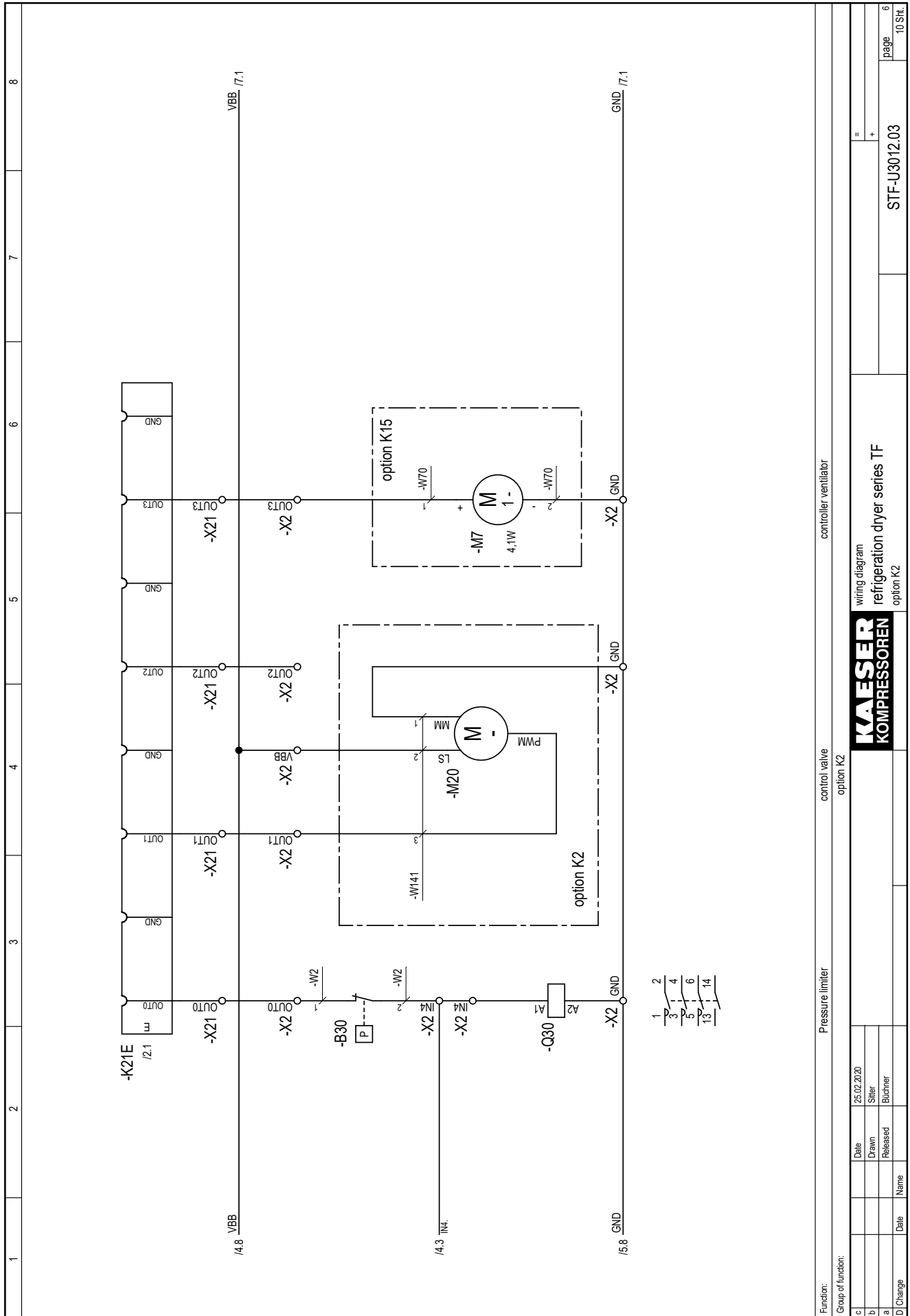


Function:		FAILURE		condensate drain	
Group of function:		Refrigerant compressor		vent motor	
		KAESER KOMPRESSOREN		writing diagram	
				refrigeration dryer series TF	
c	Date	25.02.2020			
b	Drawn	Sittler			
a	Released	Büchner			
D	Change	Date	Name		
				STF-U3012.03	page 4
					10 Stk.

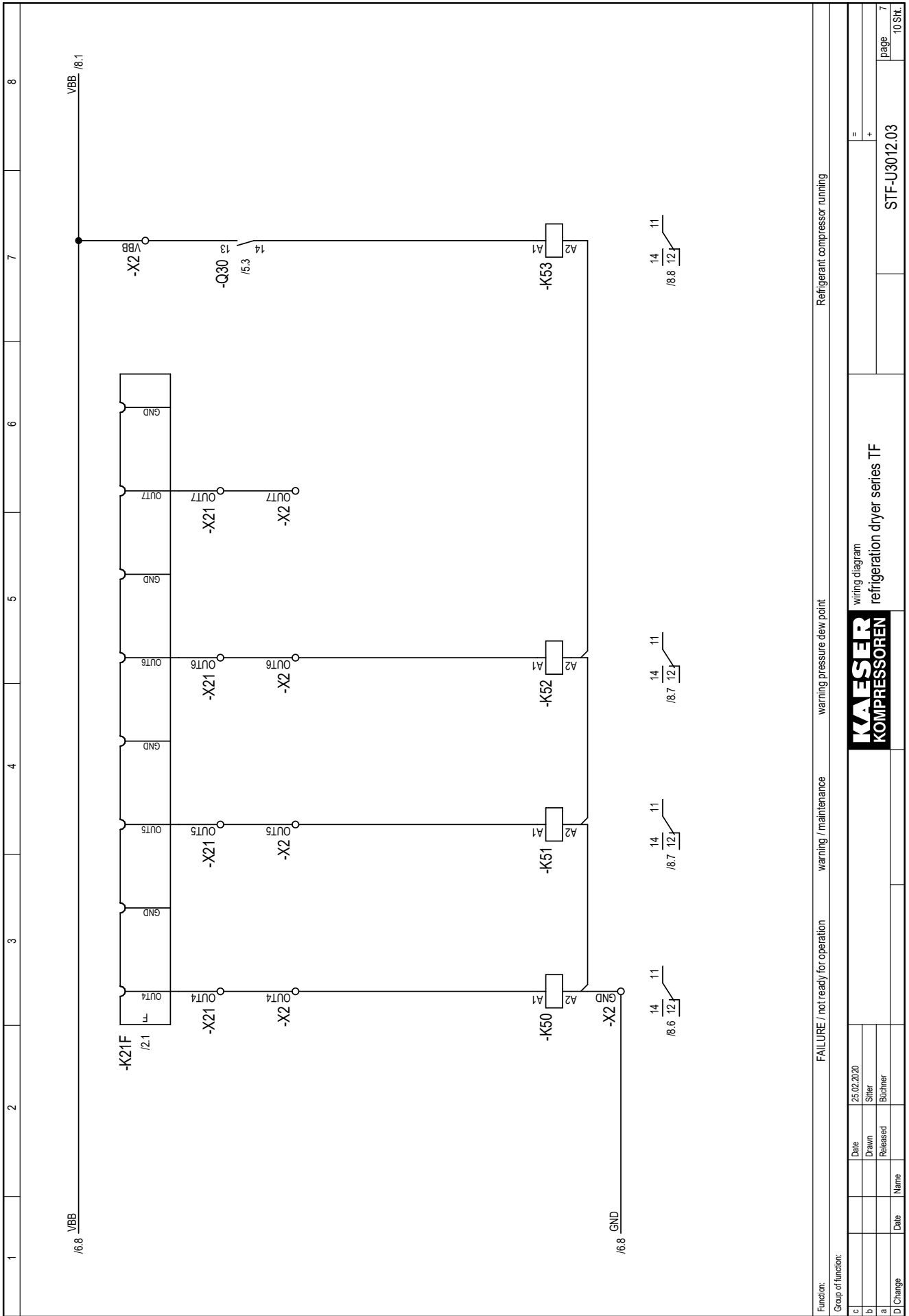




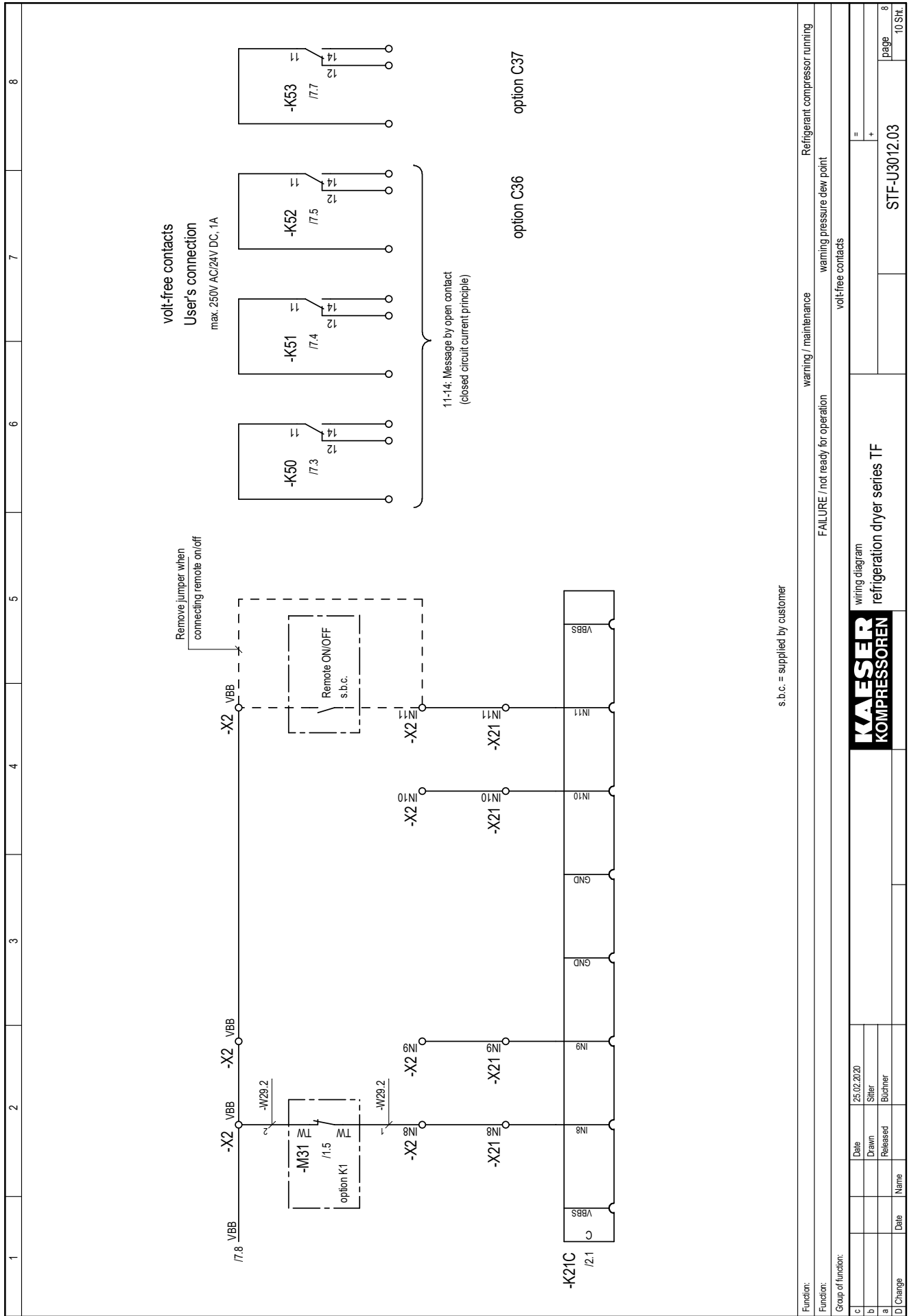
Function:		controller ventilator	
Group of function:		vent motor option K1	
Date		25.02.2020	
Drawn		Siller	
Released		Büchner	
Date		Name	
D/Change		Date	
wiring diagram		refrigeration dryer series TF	
option K1		option K15	
STF-U3012.03		=	
page		5	
10 Str.		10 Str.	



Function:		control valve		controller ventilator	
Group of function:		option K2		option K15	
c	Date	25.02.2020			
b	Drawn	Sittler			
a	Released	Büchner			
D	Change	Date	Name		
			wiring diagram		=
			refrigeration dryer series TF		+
			option K2		STF-U3012.03
					page 6
					10 Stk.



Function:		FAILURE / not ready for operation		warning / maintenance		warning pressure dew point		Refrigerant compressor running	
Group of function:									
c	Date	25.02.2020							
b	Drawn	Sittler							
a	Released	Büchner							
D	Change	Date	Name						
			<b>KAESER</b> KOMPRESSOREN				wiring diagram refrigeration dryer series TF		
			STF-U3012.03				page 7 10 Stk.		



Function:		warning / maintenance		Refrigerant compressor running	
Group of function:		FAILURE / not ready for operation		warning pressure dew point	
		volt-free contacts			
		writing diagram			
		refrigeration dryer series TF			
		<b>KAESER</b> KOMPRESSOREN			
		STF-U3012.03			
		page 8		10 Stk.	

1	2	3	4	5	6	7	8
<p>fig. 1: Handling: Control line terminal</p>		<p>fig. 2: Handling: Supply terminal</p>		<p>fig. 3: Handling: relay terminal</p>		<p>wiring diagram refrigeration dryer series TF Handling: Terminals</p>	
Date		Date		Date		Date	
Drawn		Drawn		Drawn		Drawn	
Released		Released		Released		Released	
Name		Name		Name		Name	
Date		Date		Date		Date	
Change		Change		Change		Change	
a		a		a		a	
b		b		b		b	
c		c		c		c	
D		D		D		D	
Date		Date		Date		Date	
Name		Name		Name		Name	
Released		Released		Released		Released	
Drawn		Drawn		Drawn		Drawn	
Date		Date		Date		Date	
25.02.2020		Siller		Siller		Siller	
Büchner		Büchner		Büchner		Büchner	
STF-U3012.03		STF-U3012.03		STF-U3012.03		STF-U3012.03	
page		page		page		page	
9		9		9		9	
10 Stk.		10 Stk.		10 Stk.		10 Stk.	

1 2 3 4 5 6 7 8

fig. 10: Feed line connection

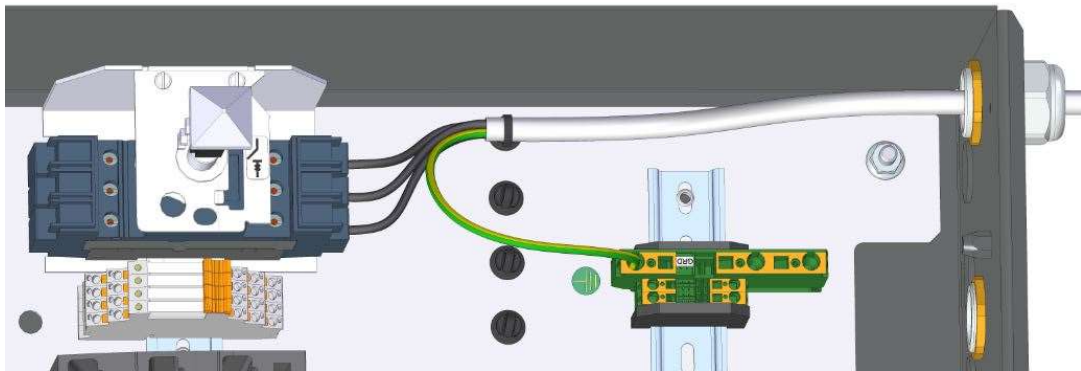
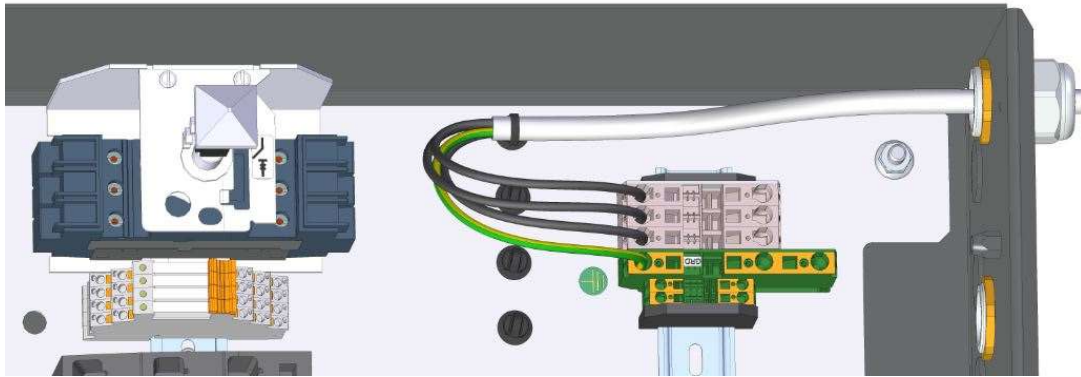


fig. 11: Feed line connection



c	Date	25.02.2020			STF-U3012.03		=
b	Drawn	Siller					+
a	Released	Büchner					10
D	Change	Date	Name			page 10 10 Str.	
			<b>KAESER</b> KOMPRESSOREN		wiring diagram refrigeration dryer series TF Feed line connection		

cable-no.	-W220 7G10AWG 600V 90°C	terminal strip	connection	1, 2, 3	2, 2, 2	in	in	in
			name of device	-T30	-T30	-T30	-T30	-T30
destination inside								
terminal strip	location	terminal strip: -X1	jumper wire					
	terminal legend							
	link							
	terminal-no.							
	connection							
destination external								
cable-no.	-W19 4G14AWG 600V 90°C	terminal strip: -X1	connection	1, 2, 2, 2, 2, 2, 2, 2, 2, 2	2, 2, 2, 2, 2, 2, 2, 2, 2, 2	in	in	in
	-W29.1 4G16AWG 600V 90°C							
	-W220 7G10AWG 600V 90°C							
	-s.b.c. **							

\*\* supply line cross-section see operating manual  
s.b.c. = supplied by customer

1) option K1  
2) option T2

terminal connection  
refrigeration dryer series TF  
terminal strip -X1

**KAESER**  
**KOMPRESSOREN**

Date 25.02.2020  
Drawn Siller  
Released Büchner

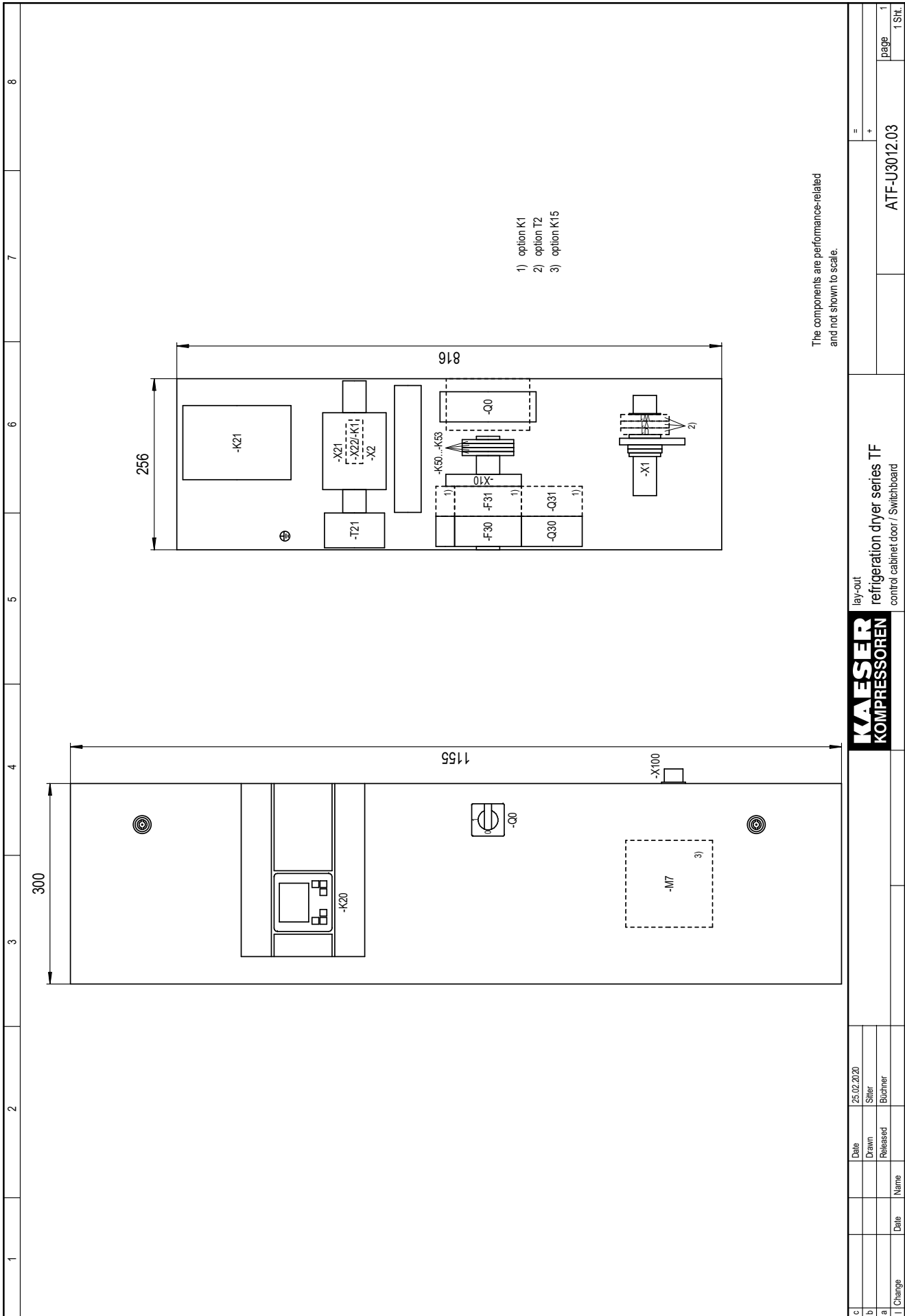
Date Name

KTF-U3012.03  
= +  
page 1  
3 Sht









c	Date	25.02.2020	lay-out	ATF-U30/12.03	1
b	Drawn	Siller	refrigeration dryer series TF		1
a	Released	Büchner	control cabinet door / Switchboard		1
l	Change				1