

Operator manual

Reciprocating compressor

i.Comp 3

No.: 901731 24E

Manufacturer:

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1 Regarding this document

1.1 Using this document

This document, hereafter called the service manual, contains important information about all life phases of the machine.

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

Included with this operating manual are additional documents intended to assist in the safe operation of the machine:

- 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 give the data from the nameplate when ordering documents.

1.3 Copyright

This operating manual is protected by copyright. Any queries regarding the use or duplication of this 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

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

Warnings indicate three levels of danger identified by the corresponding signal word:

Signal word	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)

1 Regarding this document

1.4 Symbols and labels

Some warning notes may precede a chapter. They apply to the entire chapter including all sub-sections.

Example:



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 step 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 word:

Signal word	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.

- 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 referring to potential problems is identified by a question mark.

The cause is specified in the help text ...

- ... as is a solution.



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

Further information Further subjects are introduced here.

2 Technical Specifications

2.1 Nameplate

The machine's nameplate contains the model type and important technical information.

The nameplate is located on the outside of the machine:

- below the compressed air outlet.
- Enter the data from the nameplate here as a reference:

Feature	Value
Reciprocating compressor	i.Comp 3
Material No.	
Serial no.	
Ambient temperature	
Rated power	
Max. gauge working pressure PS	
Rated motor speed	
Flow rate	
Phase: 1	
Frequency	
Voltage	
Full load current	
Wiring diagram	

Tab. 3 Reciprocating compressor nameplate

2.2 Weight

The values shown are maximum values. The actual weight of the machine is dependent on the equipment fitted.

Compressor type	Weight [kg]
i.Comp 3	25/29 ¹⁾
—	—
—	—

¹⁾ Machine mobile

Tab. 4 Weight

2.3 Compressor block

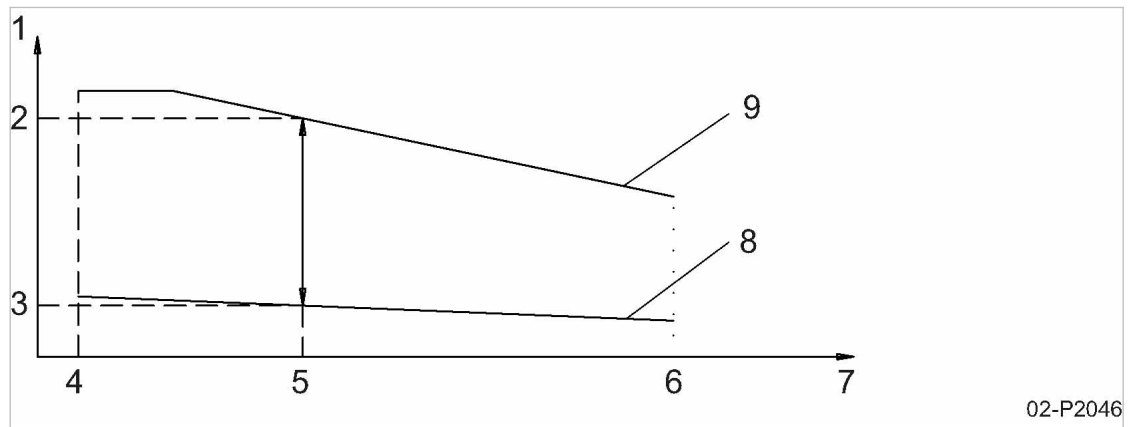
Compressor block	Flow rate [l/min]	Number of cylinders
i.Comp 3	265	1
—	—	—

Flow rate as per ISO 1217: 2009, Annex E

Tab. 5 Compressor block

2.4 Flow rate

Figure shows the flow rate ① control range in relation to the set required pressure ⑤.



02-P2046

Fig. 1 Flow rate and control range

- | | |
|---|--|
| ① Q
Flow rate | ⑥ rp_{max}
maximum selectable required pressure 11 bar |
| ② Q_{max}
maximum flow rate at required pressure rp | ⑦ p
required pressure |
| ③ Q_{min}
minimum flow rate at required pressure rp | ⑧ Q_{min} (rp)
minimum flow rate (dependent on rp) |
| ④ rp_{min}
minimum selectable required pressure 1 bar | ⑨ Q_{max} (rp)
maximum flow rate (dependent on rp) |
| ⑤ rp
set required pressure | |

2.4.1 Flow rate Q [l/min] at maximum required pressure of 11 bar:

Rated voltage 100 – 127V / 1 / 50/60Hz

rp [bar]	i.Comp 3		—		—	
	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}
rp _{min}	—	—	—	—	—	—
6.0	—	—	—	—	—	—

Flow rate in accordance with ISO 1217:2009, Annex E

rp [bar]	i.Comp 3		—		—	
	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}
11.0 (rp _{max})	—	—	—	—	—	—

Flow rate in accordance with ISO 1217:2009, Annex E

Tab. 6 Flow rate 100 – 127V / 11,0 bar

2.4.2 Flow rate Q [l/min] at maximum required pressure of 11 bar:

Rated voltage 200 – 240V / 1 / 50/60Hz

pA [bar]	i.Comp 3		—		—	
	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}
pA _{min}	100	170	—	—	—	—
6.0	85	160	—	—	—	—
11.0 (pA _{max})	65	117	—	—	—	—

Flow rate in accordance with ISO 1217:2009, Annex E

Tab. 7 Flow rate 200 – 240V / 11,0 bar

2.5 Ambient conditions

Installation

Maximum elevation AMSL ¹⁾ [m]	1000
Permissible ambient temperature [°C]	3–35

¹⁾ Higher altitudes are permissible only after consultation with the manufacturer.

Tab. 8 Ambient conditions

2.6 Ventilation

The values given are minimum guide values that must be maintained.

Compressor model	Inlet aperture (Z) [m ²]	Exhaust fan (A) ¹⁾ [m ³ /h]
i.Comp 3	0.4	720
—	—	—

¹⁾ Forced ventilation: required air volume for exhaust fan at static compression 1 mbar and max. duty cycle ($\Delta T \leq 10$ K)

Tab. 9 Ventilation

2.7 Pressure

Machine safety valve	
Characteristic	Value
Maximum gauge working pressure [bar]	11
Safety valve actuating pressure [bar]	12

Tab. 10 Safety valve actuating pressure

2.8 Noise emission

- Sound power level in accordance with 2000/14/EC and ISO 3744
- Emission sound pressure calculated from the measured average sound power level (Directive 2000/14/EC, Sound Measuring Standard ISO 3744) according to EN ISO 11203:1995 6.2.3d at distance $d = 1$ m, $Q_2 =$ Logarithmic surface ratio: dB.
- EC type approval certificate no. OR/000225/066

Compressor type	Sound power level [dB(A)]		Emission sound pressure level [dB(A)]	Logarithmic surface ratio [dB]
	Measured	Guaranteed		
i.Comp 3	93	97	79.5	13.5
—	—	—	—	—
—	—	—	—	—

Tab. 11 Sound emission

2.9 Motor power and speed

Compressor type	Compressor block	Rated power [kW]	Speed range [rpm]
i.Comp 3	i.Comp 3	1.5	1500 – 3200
—	—	—	—
—	—	—	—

Tab. 12 Motor power and speed

2.10 Electrical connection

The machine is designed in accordance with the conditions for electrical power supply specified in EN 60204-1 (IEC 60204-1) section 4.3.

If no other conditions are specified by the operator, the thresholds described in this standard must be adhered to.

It is recommended that the user and the supplier reach an agreement on the basis of EN 60204-1, Annex B.

The machine requires an alternating current power supply.

The machine may only be operated from an earthed alternating current supply network.



Compare information about the rated voltage on the nameplate to the rated voltage of the power supply network.



NOTICE

Rated voltage!

Incorrect rated voltage can lead to irreparable damage to the electrical components.

- Connect rated voltage in accordance with the nameplate.

Check and adjust for other deployment conditions before commissioning.

2.10.1 Electrical connection data

The supply cable cross sections, fusing and circuit breaker are as per DIN VDE 0100 Part 430 (IEC 60364-4-43) and DIN VDE 0298-4:2013-06 for the following conditions:

- Multicore copper conductors with an operating temperature up to 70 °C
- Cable length ≤30 m (fusing - consumer)
- For ambient temperature of 30 °C

In order to guarantee safety of personnel, cable lengths of over 30 m (up to a maximum of 150 m) may only be used in the event that the machine is also equipped with a 30 mA RESIDUAL CURRENT DEVICE (e.g. type A).



Fusing must be suitable for the current carrying capacity of the power cables provided (plug and cable) and must not exceed the values for the backup fuse and circuit breaker supplied in the table.

In the case of machines equipped with integrated fusing in the connector cable (e.g. inside the plug), the integrated fusing serves as the backup fuse.

Further information The circuit diagram in chapter 13.3 contains further details of the electrical connection data.

2.10.1.1 Mains frequency 50/60Hz

Rated voltage: 100 – 127V / 1 / 50/60Hz

	i.Comp 3	—
Current consumption [A]	—	—
Backup fuse, max. [A] ¹⁾	—	—
Circuit breaker, max. [A] ²⁾	—	—
Short-circuit current (I _{cc}) [kA]	—	—
Supply cable [mm ²]	—	—

¹⁾ Operating class gG

²⁾ Characteristic C

Tab. 13 Rated voltage 100 – 127V / 1 / 50/60Hz

Rated voltage: 200 – 240V / 1 / 50/60Hz

	i.Comp 3	—
Current consumption [A]	9.5 – 7.6	—
Max. backup fuse [A] ¹⁾	16	—
Max. circuit breaker [A] ²⁾	16	—
Short-circuit current (I _{cc}) [kA]	50	—
Supply line [mm ²]	3x1.5	—

¹⁾ Operating class gG²⁾ Characteristic C

Tab. 14 Rated voltage 200 – 240V / 1 / 50/60Hz

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 Intended use

The machine is intended solely for generating compressed air for industrial use. Any other use is considered improper. The manufacturer is not liable for any damages that may result from improper use. The user alone is liable for any risks incurred.

- Comply with the instructions in this operating manual.
- Ensure that installation conditions are being kept to.
- 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 foodstuffs unless it is specifically treated.

3.3 Improper use

- Never direct compressed air at persons or animals.
- Do not touch hot components during operation or after shutdown. Wait until they have cooled before touching!
These components include, for example, cylinder heads, compressed air lines, coolers and motors.
- Always switch off the compressor and disconnect it from the mains power supply when not in use.
- In order to prevent injury, keep children away from the compressor work area and its associated compressed air equipment.
- Children are not allowed to operate the compressor.
- Do not allow the machine to take in toxic, acidic, flammable or explosive gases or vapours.
- Do not operate the machine in areas in which specific requirements with regard to explosion protection are in force.
- Do not transport the compressor by crane or other hoists.
- Do not misuse handle or other components.

3.4 User's responsibilities

3.4.1 Observe statutory and universally accepted regulations

These are, 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 Determining personnel

Suitable personnel are experts 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.

Authorised operators possess the following qualifications:

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

Authorised installation and maintenance personnel have the following qualifications:

- are of legal age,
 - must have read, be conversant with and adhere to the safety instructions and sections of the operating manual applicable to installation and maintenance,
 - are fully conversant with the safety concepts and regulations of electrical and compressed air engineering,
 - are able to recognise the possible dangers of electrical and compressed air devices and take appropriate measures to safeguard persons and property,
 - have received adequate training in and authorisation for the safe installation and maintenance of this machine.
- Ensure that personnel entrusted with operation, installation and maintenance are qualified and authorised to carry out their tasks.

3.4.3 Complying with inspection schedules and accident prevention regulations

The machine is subject to local inspection schedules.

Examples of operation in Germany

- Carry out recurring inspections according to *DGUV Rule 100 – 500*, chapter 2.11:
The user must ensure that from a rated motor power greater than 0.5 kW the machine's safety devices are checked for function at least once annually.

3.5 Dangers

Basic instructions

The following describes the various forms of danger that can occur during machine operation.

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

The following describes the various forms of danger that can occur during machine operation.

Electricity

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

- Allow only qualified and authorised electricians or trained personnel under the supervision of a qualified and authorised electrician to carry out work on electrical equipment according to electrical engineering rules.
- Before commissioning or re-commissioning the machine, the user must ensure 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 isolating device and verify the absence of any voltage.
- Switch off any external power sources.
These may include devices connected to the floating contacts.
- Use fuses corresponding to machine power.

Compressive forces

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 distribution network to ensure that no compressed air can flow back into the machine.
- Fully de-pressurise all pressurised components and enclosures.
- Do not carry out welding, heat treatment or mechanical modifications to pressurised components (e.g. pipes and vessels) as this influences the components' resistance to pressure. The safety of the machine is then no longer ensured.

Compressed air quality

The composition of the compressed air must be suitable for the actual application in order to preclude health and life-threatening dangers.

- Use appropriate systems for compressed air treatment before using the compressed air from this machine for the processing of foodstuffs.

Spring forces

Check valve, venting and unloading valve are spring-loaded.

- Do not open or dismantle any valves.

Rotating components

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

- Do not open the housing while the machine is switched on.
- Switch off and lock out the power supply isolating device and check that no voltage is present.

- Wear close-fitting clothes and a hair net if necessary.
- Ensure that all covers and safety guards are in place and secured before re-starting.

Temperature

High temperatures are generated during compression. Touching hot components may cause injuries.

- Avoid contact with hot components.
These include, for example, compressor block, compressed air pipes, cooler and motor.
- 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 from sparks or heat.

Noise

The housing absorbs the machine noise to a tolerable level. This function will be effective only if the housing is closed.

- Operate the machine only with intact sound insulation.
- Wear ear protection if necessary.
Safety valve blow-off results in high noise emission.

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 original KAESER spare parts on pressure bearing parts.

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!
- Obtain written approval by the manufacturer prior to any technical modification or expansion of the machine.

Extending or modifying the compressed air station

If dimensioned appropriately, safety valves reliably prevent an impermissible pressure rise. New dangers may arise if you modify or extend the compressed air station.

- When extending or modifying the compressed air station:
Check the blow-off capacity of safety valves on air receivers and in compressed air lines before installing a new machine.
- If the blow-off capacity is insufficient:
Install safety valves with higher blow-off capacity.

3.5.2 Safe machine operation

The following information will provide you with the necessary code of conduct to ensure safe handling of the machine during individual product life phases.

Personal protective equipment

When working on the machine you may be exposed to dangers that can result in accidents with severe adverse health effects.

- Wear protective clothing as necessary.

Suitable protective clothing (examples):

- Safety work wear
- Protective gloves
- Safety boots
- Eye protection (protective glasses)
- Ear protection

Assembly

- Use only electrical cables that are suitable and approved for the surroundings and electrical loads applied.
- Never install/dismantle compressed air pipes until they are fully vented.
- Only use pressure lines that are suitable and approved for the maximum gauge working pressure and the intended medium.
- Do not step onto machine components or the enclosure to climb onto the machine.

Installation

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

- Install the machine in a suitable compressor room.
- Ensure sufficient and suitable lighting such that the display can be read without glare and that work can be 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.
For instance, the requirements of ATEX Directive 2014/34/EU "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- 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 temperatures and humidity.
- The intake air must not contain any damaging contaminants.
Damaging contaminants are for instance: explosive or chemically instable gases and vapours, acid or base forming substances such as ammonia, chlorine or hydrogen sulphide.
- Do not position the machine in the warm exhaust air flow from other machines.
- Keep suitable fire-extinguishing media 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.

- Work should be carried out by authorised personnel only.
- Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- Switch off and lock out the power supply isolating device and verify that no voltage is present.
- Check that there is no voltage on floating contacts (if available).
- 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.
- Fully vent all pressurised components and enclosures. Check for zero pressure.
- Allow the machine to cool down sufficiently.
- Do not open the housing 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.
- Carry out regular inspections:
 - to detect visible damage,
 - to inspect the safety components, and
 - to inspect the components requiring monitoring.
- Do **not** pour oil into the crankcase. The machine is oil-free.
- Pay particular attention to cleanliness during all maintenance and repair work. Cover components and exposed openings with clean cloths, paper or tape to keep them clean.
- Do not leave any loose components, tools or cleaning rags on or in the machine.
- Components removed from the machine can still be dangerous:
 - Do not attempt to open or destroy any components taken from the machine.

De-commissioning/storage/disposal

Improper handling of used parts may endanger the environment.

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

3.5.3 Organisational Measures

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

3.6 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 4.2.

3.7 Safety signs

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

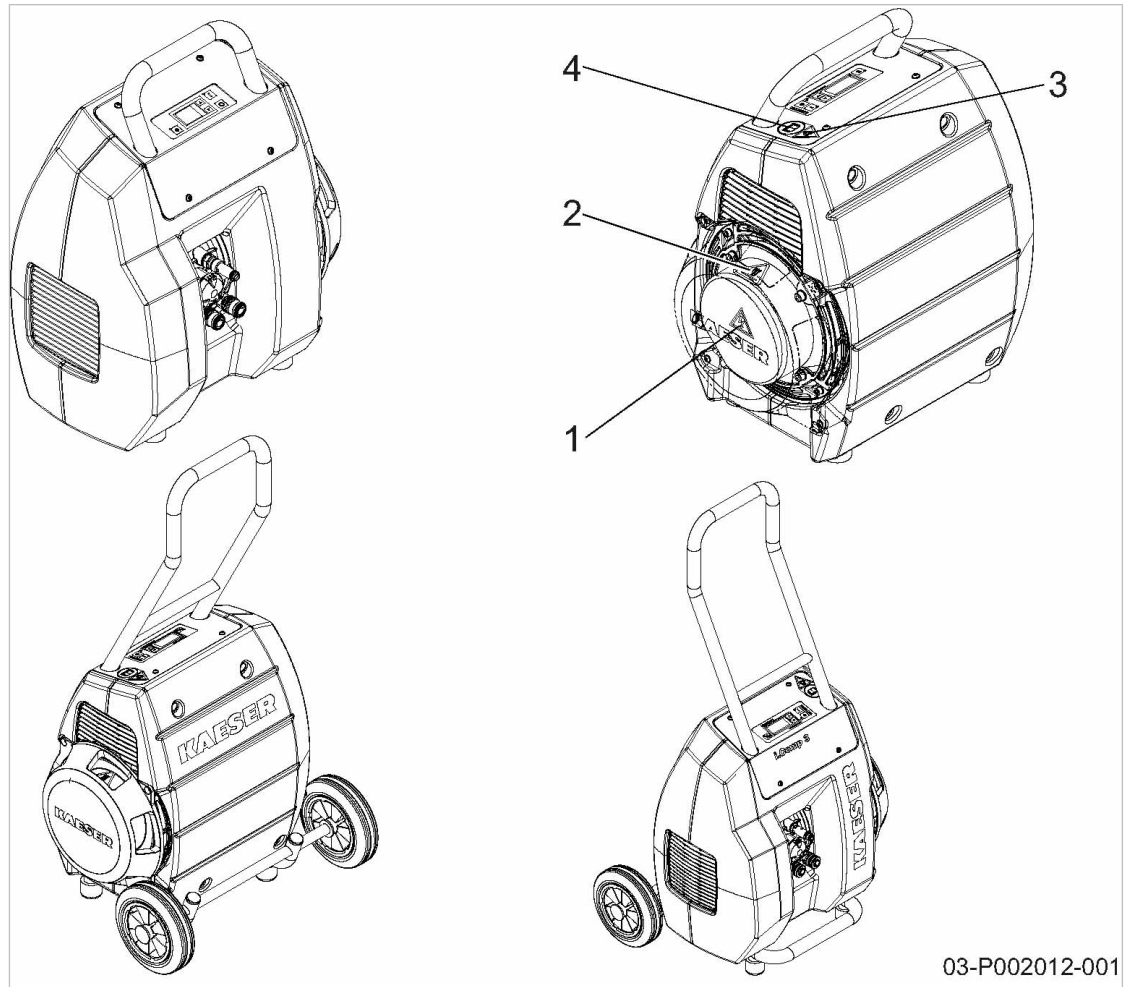






Fig. 2 Location of safety signs

Location	Symbol	Meaning
1		<p>Danger of fatal injury from electric shock!</p> <ul style="list-style-type: none"> ➤ Before starting any work on electrical equipment: Switch off and lock out the power supply isolating device and verify the absence of any voltage. ➤ Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.
2		<p>Hot surface!</p> <p>Risk of burns caused by contact with hot components.</p> <ul style="list-style-type: none"> ➤ Do not touch the surface. ➤ Wear long-sleeved garments (no synthetics such as polyester) and protective gloves.

Location	Symbol	Meaning
3		Risk of injury caused by an automatic machine start! ➤ Switch off and lock out the power supply isolating device and secure against unintentional reactivation.
4		Personal injury or damage to the machine due to incorrect operation! ➤ Read and understand the operating manual and all safety information before switching on this machine.

Tab. 15 Safety signs

3.8 In emergency

3.8.1 Correct 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 lines if possible.
Power supply disconnecting device (all phases)
Cooling water (if present)
- Warn and move endangered personnel to safety.
- Help incapacitated persons.
- Close the doors.
- When trained accordingly: Attempt to extinguish the fire.

Extinguishing substances

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

3.9 Warranty

This operating manual contains no independent warranty commitment. Our general terms and conditions relative to warranty apply.

A condition of our warranty is that the machine is used solely for the purpose for which it is intended and under the conditions specified.

Due to the multitude of applications for which the machine is suitable, the user is obliged to determine its suitability for his specific application.

Furthermore, we do not assume any warranty obligation for damages caused by:

- use of unsuitable parts,
- arbitrary modifications,

- incorrect maintenance,
- incorrect repair.

Correct maintenance and repair means the use of genuine Kaeser spare parts.

- Contact KAESER regarding the suitability of your specific operating conditions.

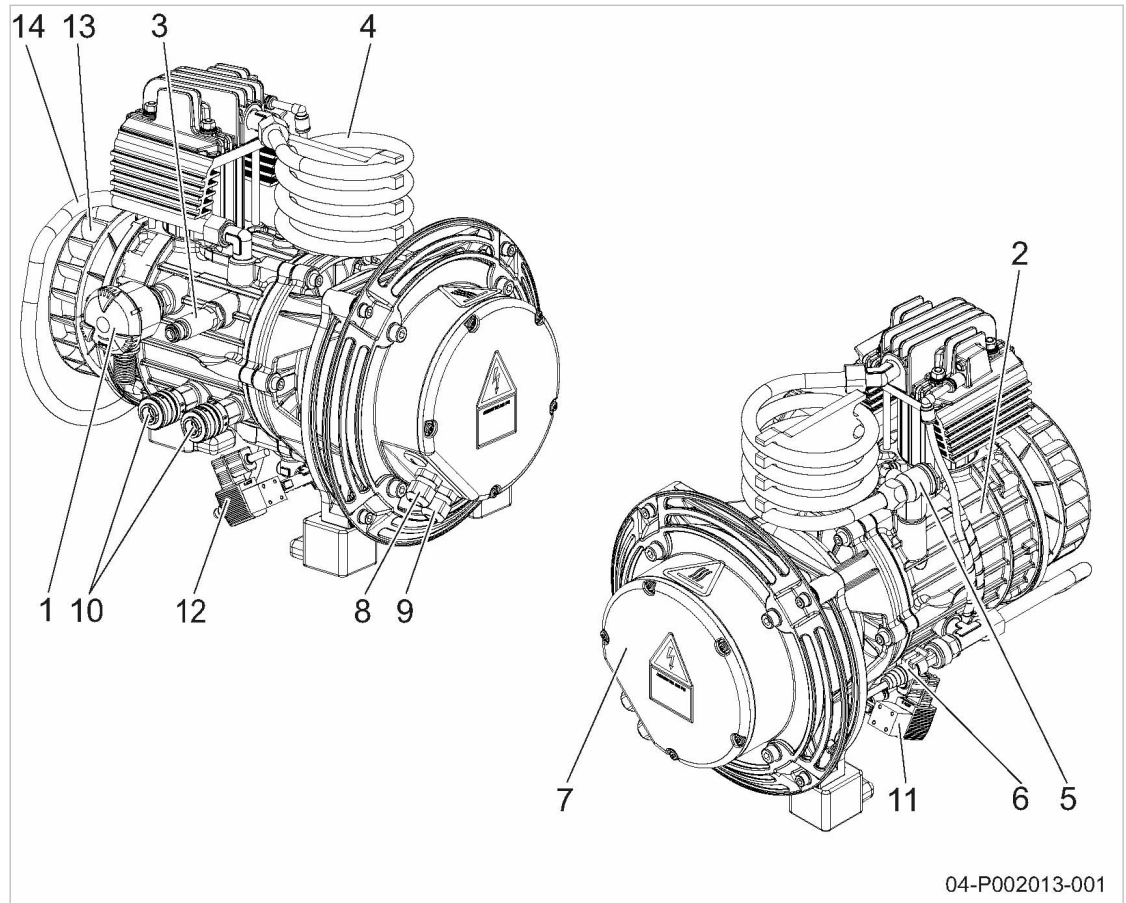
3.10 Environmental protection

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

- Store and dispose of replaced parts (electrical parts, electronic parts, PTFE pistons) in accordance with local environment protection regulations.
- Observe relevant national regulations.

4 Design and Function

4.1 Machine operation



04-P002013-001

Fig. 3 Machine operation

- | | | | |
|---|---|---|------------------------------|
| ① | Air filter | ⑧ | Electrical connection |
| ② | Compressor block | ⑨ | Control port |
| ③ | Safety valve | ⑩ | Compressed air outlet |
| ④ | Air pipe | ⑪ | Relief and load valve |
| ⑤ | Check valve | ⑫ | Venting and condensate valve |
| ⑥ | Pressure transducer | ⑬ | Fan wheel |
| ⑦ | Compressor motor, frequency converter,
intermediate circuit condensers | ⑭ | Air pipe |

When closed, the housing serves various functions:

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

The housing is **not** suitable for the following uses:

- Walking on, standing on or sitting on
- Loads of any kind should not be placed or stored on the machine

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

Atmospheric air is drawn through the air filter into the compression chamber of the compressor block and is compressed.

The compressed air passes into an air pipe where it is cooled. A check valve prevents the reverse flow of compressed air back into the air pipe. The pressure in the crankcase is measured with a pressure transducer and is controlled by means of the i.Comp CONTROL controller.

4.2 Safety devices

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

- **Safety valve:**
The safety valve protects the system against impermissible pressure rise. It is factory set.
- **Check valve:**
The check valve prevents the flow of compressed air back to the crankcase when the machine is stopped.
- **Housing and covers for moving parts and electrical connections:**
Protect against unintentional contact.

4.3 Operating points and control mode

4.3.1 Machine operating points

- **STOP**
The machine is connected to the power supply.
The machine is switched off. The *ON*LED does not illuminate.
- **READY**
The machine is connected to the power supply.
The *ON*LED is illuminated or flashes.
When pressure is required, the machine switches to **LOAD/PARTIAL LOAD**
- **LOAD/PARTIAL LOAD**
The compressor block delivers compressed air in one of the described control modes.
The compressor motor runs in the permissible speed range.



A pressure transducer that records the current network pressure is used to attempt, within flow rate limits, to keep the network pressure at the set required pressure.

4.3.2 Control mode



You can activate or deactivate the **LOAD/PARTIAL LOAD** control mode when the machine is running or ready.

- **LOAD/PARTIAL LOAD:**
 In the LOAD/PARTIAL LOAD control mode, the machine runs in PARTIAL LOAD once the cut-out pressure has been reached. If there is no demand for pressure within 30 seconds, the motor switches off and the machine switches to the READY operating point.
- **START/STOP**
 In the START/STOP control mode, the motor switches off once the cut-out pressure has been reached and the machine switches to the READY operating point.
 The relief and load valve opens and the machine relieves up to the check valve. When the compressed air consumption then rises and the network pressure falls, the motor restarts and the machine generates compressed air.

4.4 i.Comp CONTROLLER

If the machine is switched on and the network pressure is below the cut-in pressure, the compressor motor starts and the machine generates compressed air.

Depending on the compressed air consumption, the motor speed is adjusted, within the permissible speed limits, so that the network pressure corresponds with the set required pressure. When the consumption falls below the minimum flow rate of the machine, the pressure increases further. Once the cut-out pressure is reached, the compressor motor stops and the machine is relieved up to the check valve (START/STOP control mode).

When the compressed air consumption rises again and the pressure falls below the cut-in pressure, the compressor motor starts and the machine generates compressed air.

Controller switching points



Fig. 4 Controller switching points

- | | | | |
|---|------------------|---|--|
| Ⓟ | Network pressure | ③ | Set required pressure |
| Ⓣ | Time | ④ | Pressure differential (0.2 bar) cannot be set |
| ① | Cut-out pressure | ⑤ | Switching differential (0.8 bar) cannot be set |
| ② | Cut-in pressure | ⑥ | Pressure trend |

4.5 Control panel

Keys

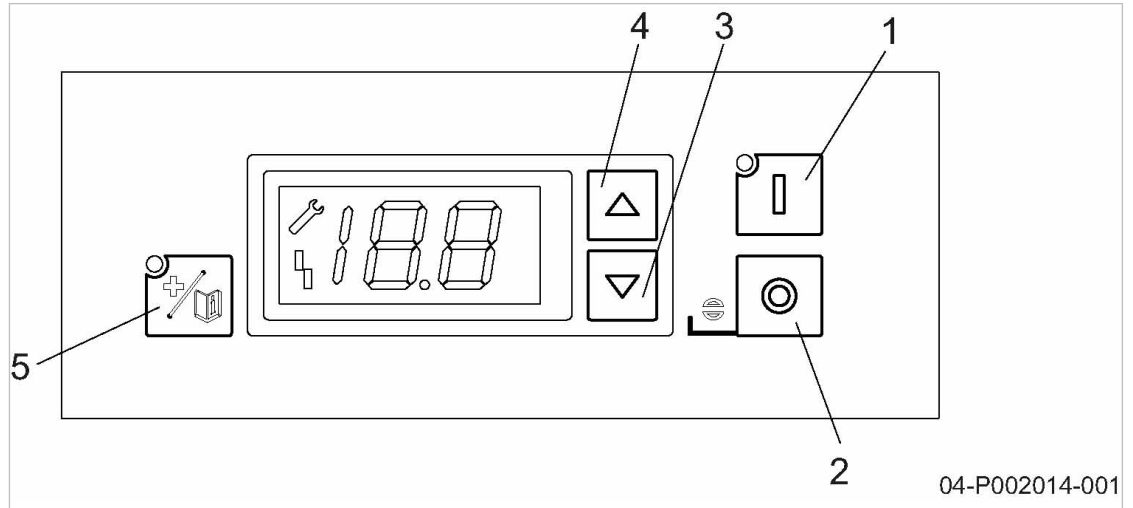


Fig. 5 Keys – overview

Item	Description	Function
1	«ON»	Switching on the machine
2	«OFF / Acknowledge»	Switch off the machine / Acknowledge (confirm alarms and warning messages)
3	«DOWN»	Reduce the required pressure. ¹⁾
4	«UP»	Increase the required pressure. ¹⁾
5	«FUNCTION»	Activating/deactivating LOAD/PARTIAL LOAD. ¹⁾

¹⁾See chapter 8 for further key functions

Tab. 16 Keys

Displays

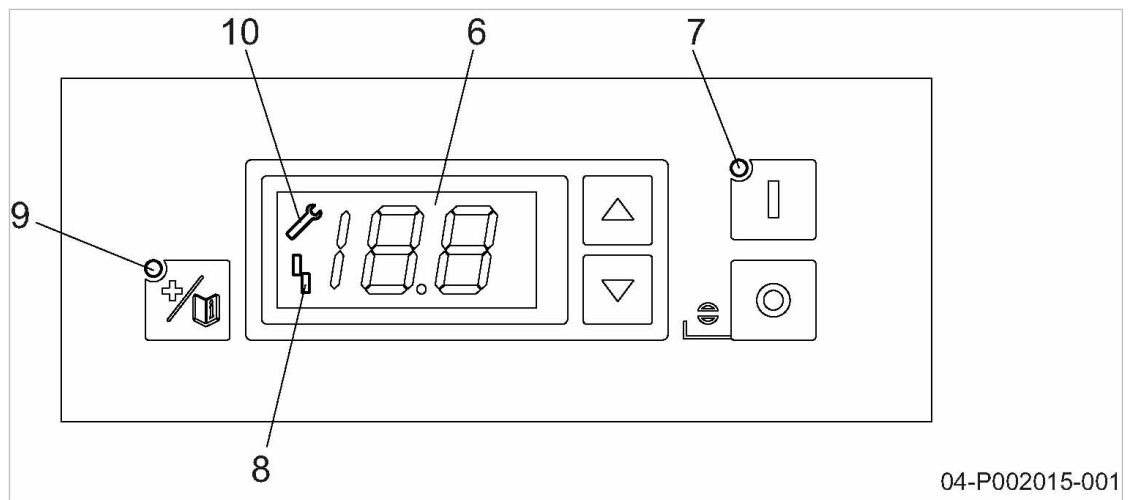


Fig. 6 Displays overview

Item	Description	Function
6	Display	Graphical display.
7	<i>ON</i>	Illuminates green when the machine is switched on. Flashes green when the machine automatically starts after power has returned. Illuminates yellow if the machine is run outside of permissible operating limits (<i>Warning</i>).
8	<i>Fault</i>	Continuous red light indicates a fault of the machine. Is off again after acknowledgement.
9	<i>Function</i>	Illuminates white in LOAD/PARTIAL LOAD operation.
10	<i>Maintenance</i>	Illuminates yellow for: ■ required maintenance work

Tab. 17 Displays

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 notes

Disregard of safety notes 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.
For instance, the requirements of ATEX directive 2014/34/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- 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, fibres, fine sand)
 - free of explosive or chemically unstable gases or vapours
 - free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.

5.2 Installation conditions



Securely fasten the machine in areas with risk of falling (e.g. scaffolding, banisters or open storey ceilings).

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

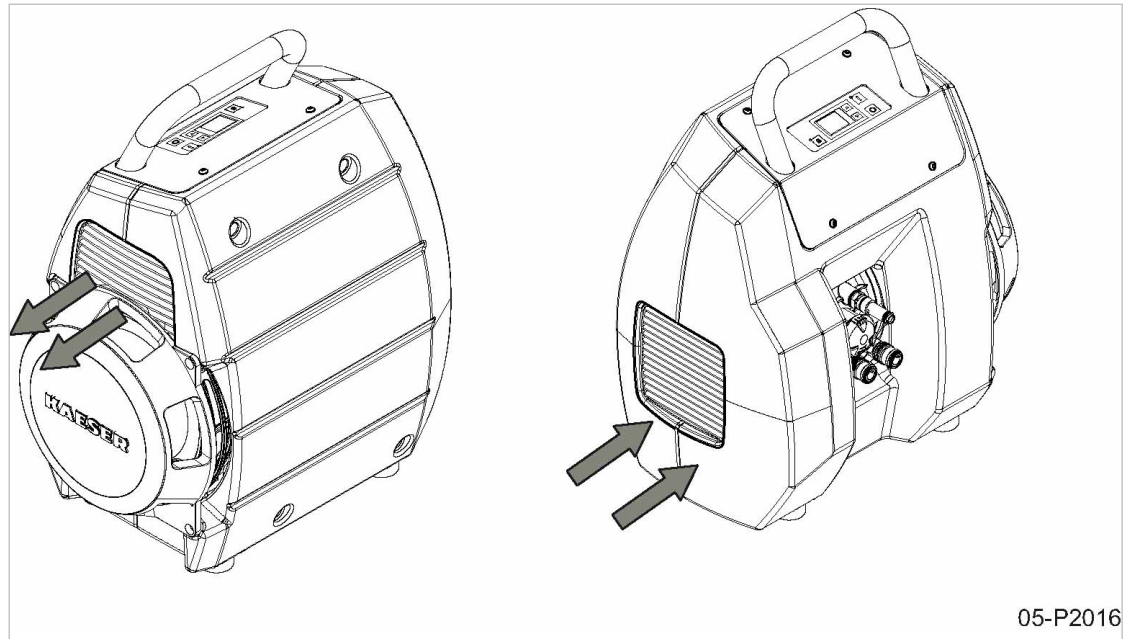


Fig. 7 Cooling air

5.2.1 Risk of falling due to vibrations or negligence

- Avoid machine vibrations on vibratory installation surfaces.
- Position the machine only on surfaces with sufficient load-bearing capacity.
- Lay power cables and compressed air hoses safely to protect personnel and machine against damage.
- Securely fasten the machine to reliably prevent it from falling.

5.2.2 Ensuring ventilation

Adequate ventilation fulfils the following requirement:

- The ventilation evacuates the exhaust heat of the machine and thus ensures the required operating conditions.
- Keep the inlet and exhaust apertures free of obstructions so that the cooling air can flow freely through the machine.
- Ensure clean air in order to support the proper functioning of the machine.

5.2.3 Operation in a compressed air network

When the machine is connected to a compressed air network, the network working pressure may not exceed the maximum working pressure of the machine.

- Consult KAESER for advice on this subject.

6 Installation

6.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are displayed prior to a potentially dangerous task.



Disregarding warning instructions can cause serious injuries!

Compliance with safety instructions

Ignoring safety instructions can cause unforeseeable dangers.

- Follow the instructions in chapter 3 "Safety and Responsibility".
- Installation work may only be carried out by authorised personnel.
- Make sure that no one is working on the machine.
- Ensure that the enclosure parts are screwed on.

When working on live components

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

Dangerous voltages persist on the intermediate circuit capacitors for some time after power is switched off.

When the motor cover is open, live parts are exposed.

- Work on electrical equipment may only be carried out by authorised electricians.
- Switch off and lock out the power supply isolating device (disconnect the plug/plug connection) and verify that no voltage is present.
- Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.

When 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 instructions relate to any work on components that could be under pressure.

- Isolate the machine from the air consumers.
- Fully de-pressurise all pressurised components and enclosures.
- Check for zero pressure.
- Do not open or dismantle any valves.

When working on the drive system

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

- Switch off and lock out the power supply isolating device (disconnect the plug/plug connection) and verify that no voltage is present.

- Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.
- Do not open the housing while the machine is switched on.

Further information Information about authorised personnel can be found in chapter 3.4.2.
Information about dangers and their avoidance can be 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 Creating the air connection

Precondition The machine is isolated from the connected compressed air consumers.

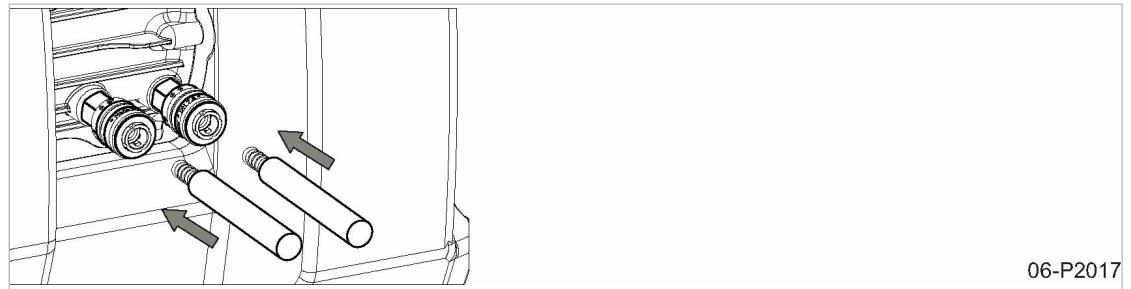


Fig. 8 Creating the air connection

- Creating the connection to the air main by a flexible pressure line.

6.4 Disconnect the compressed air connection

Precondition The machine is connected to the compressed air consumer.

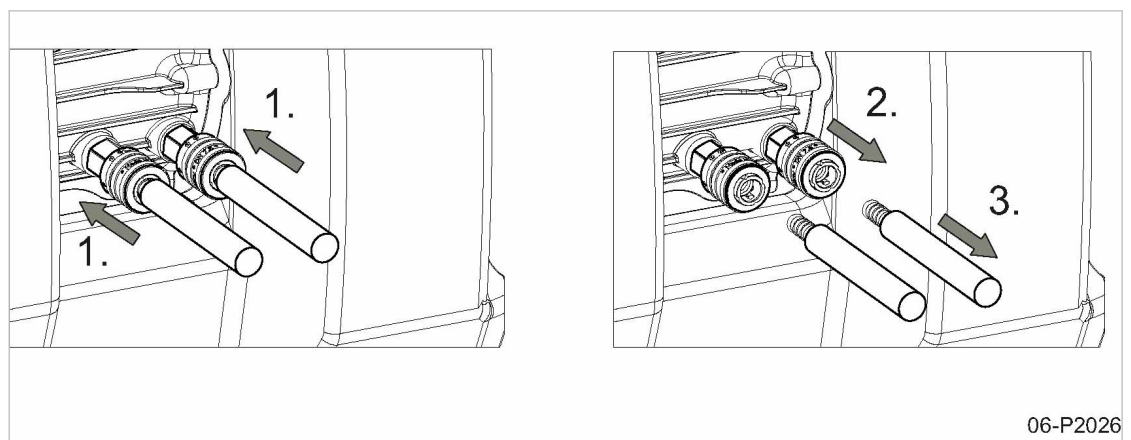


Fig. 9 Disconnect the compressed air connection

1. Press the hose coupling in the direction of the compressor.

2. Pull the hose coupling forward.
3. Pull out the pressure hose towards the front.

6.5 Connecting the machine to the power supply network

Precondition The machine is isolated from the power supply network by means of the power supply isolating device (plug/plug connection).

1. Carry out safety measures as stipulated in relevant regulations (e.g. IEC 364 or DIN VDE 0100) and in applicable national accident prevention regulations (BGV A3 in Germany). In addition, observe the regulations of the local electricity supplier.
2. Test the overcurrent protection device (backup fuse) to ensure that the time it takes to disconnect in response to a fault is within the permitted limit.
3. Select fuse ratings in accordance with local regulations.
4. The tolerance limits of the mains voltage (power supply network) are within the permissible tolerance limits of the rated voltage (machine).
5. **DANGER!**
Danger of fatal injury from electric shock!
➤ Secure against unintentional reactivation and verify the absence of voltage.
6. Connect the machine to the power supply network by means of the power supply isolating device (plug/plug connection).



If voltage is applied to the machine, a lamp test is carried out.
If the LED "ON" flashes in green after this test, the machine starts automatically when pressure is required.
You can switch off the machine during the flashing sequence by pressing the «OFF» key.
The network pressure is displayed.

7 Initial Start-up

7.1 Ensuring safety

Follow the instructions below for safe installation work.

Warning instructions are displayed prior to a potentially dangerous task.



Disregarding warning instructions can cause serious injuries!

Compliance with safety instructions

Ignoring safety instructions can cause unforeseeable dangers.

- Follow the instructions in chapter 3 "Safety and Responsibility".
- Installation work may only be carried out by authorised personnel.
- Make sure that no one is working on the machine.
- Ensure that the enclosure parts are screwed on.

When working on live components

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

Dangerous voltages persist on the intermediate circuit capacitors for some time after power is switched off.

When the motor cover is open, live parts are exposed.

- Work on electrical equipment may only be carried out by authorised electricians.
- Switch off and lock out the power supply isolating device (disconnect the plug/plug connection) and verify that no voltage is present.
- Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.

When 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 instructions relate to any work on components that could be under pressure.

- Isolate the machine from the air consumers.
- Fully de-pressurise all pressurised components and enclosures.
- Check for zero pressure.
- Do not open or dismantle any valves.

When working on the drive system

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

- Switch off and lock out the power supply isolating device (disconnect the plug/plug connection) and verify that no voltage is present.

7 Initial Start-up

7.2 Instructions to be observed before commissioning

- Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.
- Do not open the cabinet while the machine is switched on.

Further information Details of authorised 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

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

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

Special measures for re-commissioning after storage/standstill of machine

Storage period/ standstill longer than	Measure
36 months	➤ Have the overall technical condition checked by an authorised KAESER SERVICE technician.

Tab. 18 Re-commissioning after storage/standstill of machine

7.3 Checking installation and operating conditions

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

To be checked	See chapter	Confirmed?
➤ Are the operators fully conversant with the applicable safety regulations?	–	
➤ Have all installation conditions been fulfilled and is proper venting ensured?	5	
➤ Are the tolerance limits of the mains voltage (power supply network) within the permissible tolerance limits of the rated voltage (machine)? (see also the name plate)	2.1	
➤ Is the fuse rating sufficiently dimensioned?	2.10	
➤ Is the connection to the compressed air consumer made with a flexible hose?	6.3	

Tab. 19 Check list of installation conditions

7.4 Starting the machine for the first time



The machine may *only* be switched on by using the «ON» key.

Precondition No personnel are working on the machine.
All removable parts are screwed down.

1. Switch on the power supply isolating device (plug/plug connection).
The lamp test is carried out for 2 seconds. Subsequently, the network pressure is displayed.
2. Connect the machine to compressed air consumers.
3. Press the «ON» key
The green *ON*LED lights continuously.
If the network pressure is lower than the cut-in pressure, the compressor motor starts running and provides compressed air. The relief and load valve closes.

7.5 Adjusting the required pressure

The required pressure is preset at the factory.

It may be required to adjust the pressure to the individual operating conditions.

By pressing the «UP» or «DOWN» key for longer the required pressure can be adjusted in larger steps.



Do not set the machine's required pressure higher than the maximum gauge working pressure of the connected compressed air consumers.

Precondition The power supply isolating device (plug/plug connection) is switched on.

1. Press the «UP» or «DOWN» key.
The required pressure and the set pressure unit are displayed.
2. Adjust the required pressure using the «Up» or «Down» keys.
3. The new required pressure value is flashing on the display.



If one of the keys is no longer pressed, the new required pressure is applied after a short time and the network pressure is shown again.

8 Operation

8.1 Switching the machine on and off

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

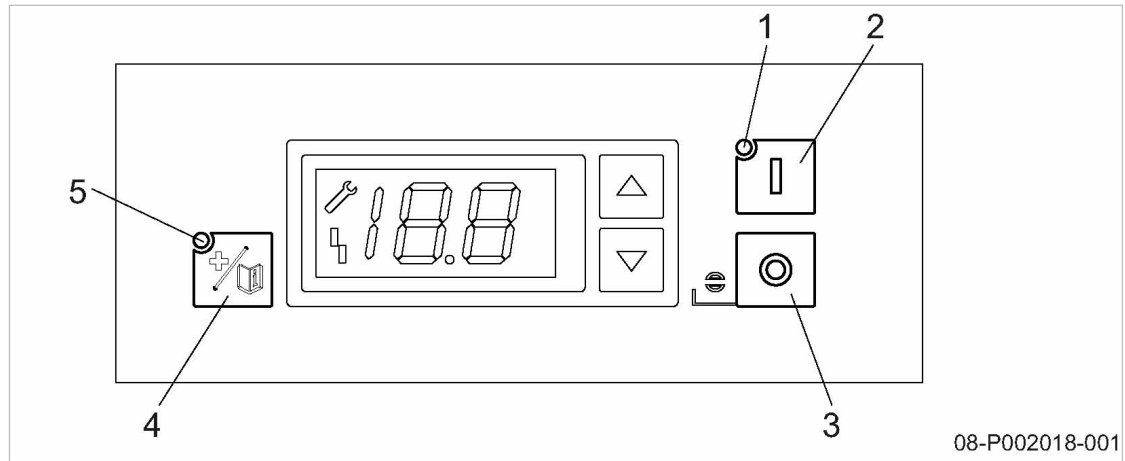


Fig. 10 Switching the machine on and off

- | | | | |
|---|---------------|---|---------------------|
| ① | ONLED (green) | ④ | «FUNCTION» key |
| ② | «ON» key | ⑤ | FUNCTIONLED (white) |
| ③ | «OFF» key | | |

8.1.1 Switching on

Precondition No personnel are working on the machine
All enclosure parts are screwed down.

1. Switch on the power supply isolating device (plug/plug connection).
A lamp test is carried out and the network pressure is displayed.
2. Press the «ON» key.
The green ONLED lights continuously.



If a power failure occurs, the compressor motor is **not** prevented from re-starting automatically when power is resumed.
It can re-start automatically as soon as power is restored.

Result The compressor motor starts as soon as network pressure has fallen below the cut-in pressure.

8.1.2 Switching off

The compressor motor switches off as soon as the cut-out pressure has been reached.

1. Press the «OFF» key.
2. Switch off the power supply isolating device (disconnect the plug/plug connection) (all poles) and secure against unintentional reactivation.
The machine is fully unloaded and disconnected from the power supply. Controller displays extinguish.

8.1.3 Activating/deactivating the LOAD/PARTIAL LOAD control mode


You can select the LOAD/PARTIAL LOAD control mode by pressing the «FUNCTION» key when the machine is running or ready.

- Press the «FUNCTION» key. Control mode activated.

Result The *FUNCTION*LED lights white.

In LOAD/PARTIAL LOAD mode, the machine runs at a reduced speed once the cut-out pressure has been reached.

- Press the «FUNCTION» key again to deactivate the control mode.

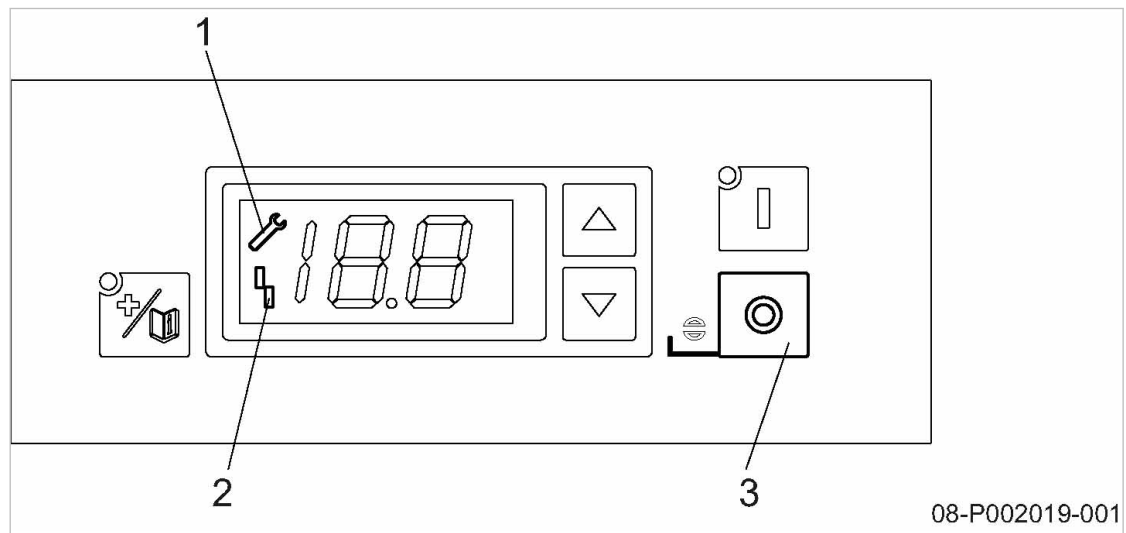
8.2 Acknowledging messages


Fig. 11 Acknowledging messages

- ① *Maintenance* symbol (yellow)
- ② *Fault* symbol (red)
- ③ «OFF/Acknowledge» key

Fault message

Messages are displayed based on the “most recent” principle.

In the event of a fault in one of the operating modes, the machine is switched off. At the same time, the fault symbol and message number is constantly displayed.

Acknowledging is only possible if the following prerequisites have been met:

- voltage applied,
- machine is switched off and
- the «OFF» key has been pressed for 2 seconds.

- Rectify the fault and acknowledge the message with the «Acknowledgement» key.
The *Fault* indication extinguishes as soon as the cause for the fault has been corrected and the *Fault* indication has been acknowledged on the controller, using the «Acknowledgement» key.
The last fault is only archived if it has been acknowledged. Any previously archived fault is overwritten.
The machine is now ready to start again.

Warning message

When maintenance is due in one of the operating modes, the network pressure and the maintenance symbol are constantly displayed simultaneously.

Maintenance:

Acknowledging is only possible if the following prerequisites have been met:

- voltage applied,
 - machine is switched off and
 - the «OFF» key and the «FUNCTION» key have been pressed for 2 seconds.
- Carry out maintenance and acknowledge the message with the «Acknowledgement» key.
The *Maintenance* indication extinguishes as soon as the warning message has been acknowledged by means of the «Acknowledgement» key.

Warning:

- Rectify fault or isolate machine from any voltage.

Result The *Maintenance* indication extinguishes.

8.3 Service menu

5 service functions can be selected:

- Service function 1: Condensate
- Service function 2: Leakage test
- Service function 3: Safety valve
- Service function 4: Maintenance number
- Service function 5: Fault message number

8.3.1 Activating the service menu

Precondition Shut down the machine using the «OFF» key.
The machine is depressurised.

- Isolate the machine from any compressed air consumers.
- Press the «FUNCTION» and «UP» key simultaneously.

Result The service menu is activated. The selected service function and the maintenance symbol are displayed.

Press «UP» or «DOWN» to open a different service function.

- Press the «ON» key to start the selected service function.



The service function is cancelled and the machine is stopped if the «OFF» key is pressed whilst a service function is still running. The *ON*LED on the display will be extinguished and the service function number displayed.

8.3.2 Deactivating the service menu

- After each service function has completed, the machine switches off.
- Press the «OFF» key.

Result The service menu is exited. The previous operating mode is activated again.

8.3.3 Service function 1: Condensate

Precondition Shut down the machine using the «OFF» key.
 Machine is isolated from any compressed air consumers.
 Vent the crankcase, see chapter 10.6.
 Service function 1 has been selected.

- Press the «ON» key to start service function 1.



The machine starts up, even if there is no demand for pressure. The relief and load valve is not actuated.
 The display shows the air main pressure.
 The symbol for maintenance/warning flashes.

The venting and condensate valve is functioning correctly if the indicated air main pressure does not exceed 6 bar during the discharge phase.

After the testing procedure has completed, the machine automatically switches off.

If the indicated air main pressure continues to rise during the discharge phase, maintenance is required for the venting and condensate valve.

After the tests have completed, the machine automatically switches off and the *ON*LED is extinguished.

After the test has completed, the maintenance symbol flashes on the display with the following result:

P 1 (service function) = Test passed.

or

F 1 (service function) = Test failed or cancelled using the «OFF»key).

The crankcase and add-on parts should be checked by KAESER SERVICE (e.g. check valve, venting and condensate valve and hose coupling).

- Press the «OFF» key.
Exit the service menu.
- Press the «ON» key to switch the machine back on.

8.3.4 Service function 2: Leakage test

Precondition Use the «OFF» key to switch off the machine.
 Machine is isolated from any compressed air consumers.
 Vent the crankcase, see chapter 10.6.
 Service function 2 has been selected.

- Press the «ON» key to start service function 2.



The machine starts up, even if there is no demand for pressure. The relief and load valve is actuated with a time delay.

The machine starts and stops once the set air main pressure for the leakage test has been reached.

After the machine has been switched off, the measured air main pressure is compared to the air main pressure measured with a time delay.

After the tests have completed, the machine automatically switches off and the *ON*LED is extinguished.

After the test has completed, the maintenance/warning symbol flashes on the display with the following result:

P 2 (service function) = Test passed.

or

F 2 (service function) = Test failed or cancelled using the «OFF» key).

The crankcase and add-on parts should be checked by KAESER SERVICE (e.g. check valve, relief and load valve and hose coupling).

- Press the «OFF» key.
Exit the service menu.
- Press the «ON» key to switch the machine back on.

8.3.5 Service function 3: Safety valve

Precondition Use the «OFF» key to switch off the machine.
Machine is isolated from any compressed air consumers.
Service function 3 has been selected.



1. **WARNING!**
Safety valve blows off!
Loud noise when the safety valve blows off.
Risk of injury from bursting components and compressed air.
 - Wear ear and eye protection.
2. **Press and hold down** the «ON» key to start service function 3.



The machine starts up, even if there is no demand for pressure.

The machine's air main pressure is increased above the actuating pressure of the safety valve until the safety valve blows off.

As soon as the safety valve blows off, the «ON» key must be released.

If, during the course of the test, the gauge working pressure reaches 13 bar, the controller will shut the machine down.



Safety valve does not blow off.

- Defective safety valve must be replaced by KAESER SERVICE.



After the test has completed, the maintenance symbol flashes on the display.

After the test has completed, the machine automatically switches off.

- Press the «OFF» key.
- Press the «OFF» key again.
Exit the service menu.



Only reconnect compressed air consumers to the machine once the machine's air main pressure drops below the consumer's working pressure.

- Press the «ON» key to switch on the machine.

8.3.6 Service function 4: Maintenance number

Precondition Use the «OFF» key to switch off the machine.
Machine is isolated from any compressed air consumers.
Service function 4 has been selected.

- Press the «ON» key to start service function 4. The machine does not start up during this function.
The currently applicable maintenance number is displayed for 5 seconds, see chapter 10.2.2.
- Press the «OFF» key.
Exit the service menu.
- Press the «ON» key to switch the machine back on.

8.3.7 Service function 5: Fault message number

Precondition Use the «OFF» key to switch off the machine.
Machine is isolated from any compressed air consumers.
Service function 5 has been selected.

- Press the «ON» key to start service function 5. The machine does not start up during this function.
The maintenance symbol and number of the last acknowledged fault is displayed for 5 seconds, see chapter 10.2.2.
- Press the «OFF» key.
Exit the service menu.
- Press the «ON» key to switch the machine back on.

9 Fault Recognition and Rectification

9.1 Basic instructions

The following tables are intended to assist in locating faults.

Fault messages are classified in these categories:

- **Fault:** The Fault symbol illuminates red, error code illuminates, see chapter 9.2.
- **Maintenance:** The Maintenance symbol illuminates yellow, see chapter 10.2.2.
- **Warning:** The Warning LED illuminates yellow, see chapter 9.2.

The messages valid for your machine are dependent on the controller and individual equipment.

1. Do not attempt fault rectification measures other than those given in this operating manual!
2. In all other cases,
have the fault rectified by an authorised KAESER SERVICE TECHNICIAN.

9.2 Fault messages (machine shut down)



The network pressure is constantly shown in the display.
When a fault occurs the machine switches off and the error code is constantly displayed.
The *ON*LED illuminates yellow (item 7, see chapter 4.5).

Fault code	Meaning	Action
1	Pressure transducer open circuit.	Call KAESER SERVICE.
2	Fault in communication with compressor motor.	Call KAESER SERVICE.
3	Compressor motor blocked.	Call KAESER SERVICE.
4	Fault in the power electronics.	Call KAESER SERVICE.
5	Earth fault.	Call KAESER SERVICE.
6	Overvoltage in the power electronics.	Check mains supply.
7	Undervoltage in the power electronics.	Check mains supply.
8	Phase drop-out only for 3-phase motor	Check mains supply. Call KAESER SERVICE.
9	Rotor location/rotor positioning malfunctions	Call KAESER SERVICE.
10	Mains voltage too low.	Check mains supply. Call KAESER SERVICE.
11	Peak current fault The machine shuts down when the motor current rises above a defined limit value (even if only temporarily).	Call KAESER SERVICE.
12	Motor start fault Shutdown because motor does not turn despite the command <i>ON</i> and the setpoint >0 rpm.	Call KAESER SERVICE.
13	Temperature fault, thermal overload.	Reduce the ambient temperature. Check cooling air supply. Shut down consumer.

Fault code	Meaning	Action
14	Fault in communication with motor.	Call KAESER SERVICE.
15	Permissible peak current exceeded.	Call KAESER SERVICE.
16	Below minimum speed.	Call KAESER SERVICE.
17	Fault - venting and condensate valve.	Call KAESER SERVICE.

Tab. 20 Fault messages

Warning display

Warnings are only displayed when the machine is switched on.

When a warning occurs, the LED *ON* in the display illuminates yellow (item 7, see chapter 4.5) as long as the warning is applicable.

Display the corresponding warning for 5 seconds by simultaneously pressing the «UP» and «DOWN» keys.

The warning code of the currently applicable or the last warning since the mains voltage has last been applied is displayed in the warning display.

If no warning is applicable two dashes are displayed.

Warning display	Meaning	Action
u	Mains voltage too low.	Check the mains supply.
p	Power demand too high.	Call KAESER SERVICE.
t	Temperature in the motor drive too high.	Reduce the ambient temperature. Check cooling air supply.
b	Speed target/actual deviation.	Call KAESER SERVICE.

Tab. 21 Warning display

10 Maintenance

10.1 Ensuring safety

Follow the instructions below to ensure safe machine maintenance.

Warning instructions are displayed prior to a potentially dangerous task.



Disregarding warning instructions can cause serious injuries!

Compliance with safety instructions

Ignoring safety instructions can cause unforeseeable dangers.

- Follow the instructions in chapter 3 "Safety and Responsibility".
- Allow maintenance work to be performed by authorised personnel only!
- Make sure that no one is working on the machine.
- Ensure that all enclosure parts are screwed on.

When working on live components

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

Dangerous voltages persist on the intermediate circuit capacitors for some time after power is switched off.

When the motor cover is open, live parts are exposed.

- Work on electrical equipment may only be carried out by authorised electricians.
- Switch off and lock out the power supply isolating device (disconnect the plug/plug connection) and verify that no voltage is present.
- Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.

When 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 instructions relate to any work on components that could be under pressure.

- Isolate the machine from the air consumers.
- Fully de-pressurise all pressurised components and enclosures.
- Check for zero pressure.
- Do not open or dismantle any valves.

When working on the drive system

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

- Switch off and lock out the power supply isolating device (disconnect the plug/plug connection) and verify that no voltage is present.

- Before starting work on the frequency converter or intermediate circuit capacitors, wait at least 5 minutes.
- Do not open the housing while the machine is switched on.

Further information Information about authorised personnel can be found in chapter 3.4.2.
Information about dangers and their avoidance can be found in chapter 3.5.

10.2 Following the maintenance plan

10.2.1 Document maintenance work



The maintenance intervals given are those recommended for KAESER original components with average operating conditions.

- In adverse conditions, perform maintenance work at shorter intervals.

Adverse conditions are, e.g.:

- high temperatures
- much dust
- low load

- Document all maintenance and service work.

This enables the frequency of individual maintenance tasks and deviations from our recommendations to be determined.

Further information A prepared list is available in chapter 10.7.

10.2.2 Regular maintenance and service work

- Carry out maintenance work when the corresponding maintenance message is indicated on the controller display.
Maintenance numbers can be displayed by using service function 4, see chapter 8.3.6



When operating conditions are unfavourable (e.g. due to dust or humidity), or during periods of heavy use, carry out inspections more frequently or have them performed by KAESER SERVICE.

Interval	Maintenance / service work	see Chapter	Responsibility
Display: i.Comp CONTROL 1	Check or replace air filter.	10.3	Operator
Display: i.Comp CONTROL 2	Replace air filter.	10.3	Operator
Display: i.Comp CONTROL 3	General machine overhaul.	—	KAESER SERVICE
Weekly	Activate service function "Condensate".	8.3.3	Operator
Annually	Inspect safety valve.	10.4	
	Activate service function "Safety valve".	8.3.5	
	Activate service function "Leakage test".	8.3.4	

Interval	Maintenance / service work	see Chapter	Responsibility
Every 5 years	Replace plastic piping.	—	KAESER SERVICE

Tab. 22 Maintenance and service work

10.3 Replacing the air filter

All sealing surfaces have been designed to match each other. The use of an unsuitable air filter can permit dirt to enter the pressure system, thus causing damage to the machine.

Material Spare part

Precondition The power supply isolating device (plug/plug connector) is switched off (all poles), the device is locked off, the absence of voltage has been verified.

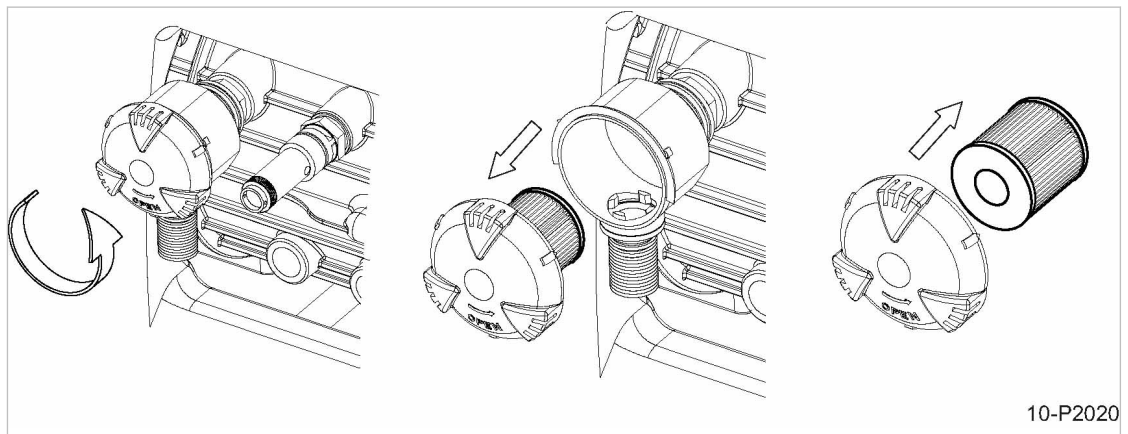


Fig. 12 Replace the air filter

- Shut down the machine using the «OFF» key.

Changing the air filter

1. Unscrew and remove the cover.
2. Remove the air filter and dispose of according to environmental protection regulations.
3. Clean the air filter housing and sealing faces.
4. Insert the new air filter.
5. Replace the cover and screw down tight.
6. Switch on the power supply isolating device (plug/plug connection).

10.4 Checking the safety valve

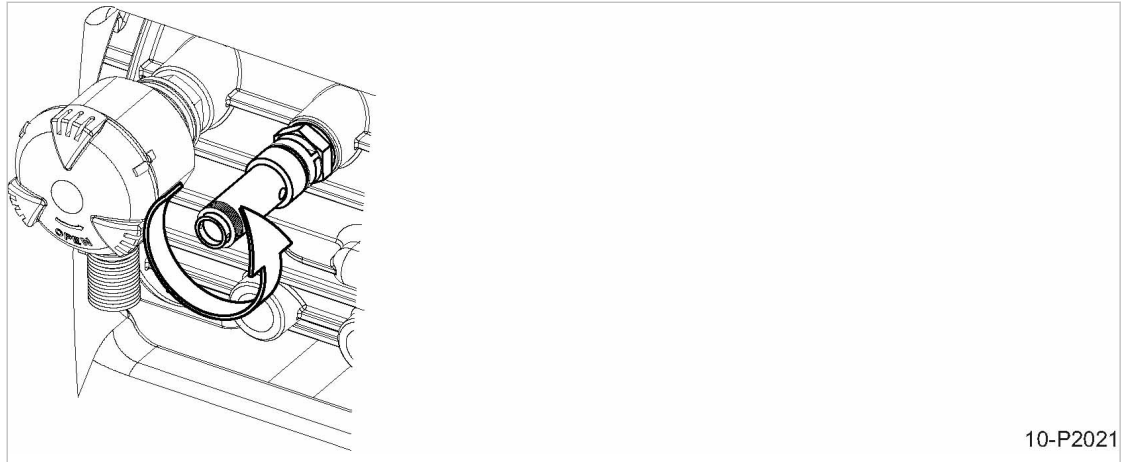
To prevent the safety valve seat from sticking it should be activated regularly, but at least once a year.



The relevant safety valve opens to protect the machine if the permissible maximum gauge working pressure is exceeded.

- Never operate the machine without a correctly functioning safety valve.
- Do **not** adjust the safety valve.

Precondition Machine is running in LOAD mode.



10-P2021

Fig. 13 Check the safety valve



1. **WARNING!**

The safety valve blows off!
 Excessive noise is caused when the safety valve blows off.
 Injury from flying particles.

- Wear ear and eye protection.
- Do not turn the knurled screw too far.

2. Turn the knurled screw on the safety valve anticlockwise until air blows off.

3. Then turn the knurled screw back to its original position.



You can check the safety valve in addition to checking it via the blow-off pressure by activating the Safety Valve service function, see chapter 8.3.5.



Safety valve does not blow off?

- Have the defective safety valve replaced by KAESER SERVICE.

10.5 Venting the machine (de-pressurising)

After being switched off by using the «OFF» key, the machine is still under pressure from the air consumer up to the check valve.



The machine must be isolated from the air consumer and mains supply (disconnect the plug/plug connection) prior to undertaking of any maintenance or service work on the pressure system.

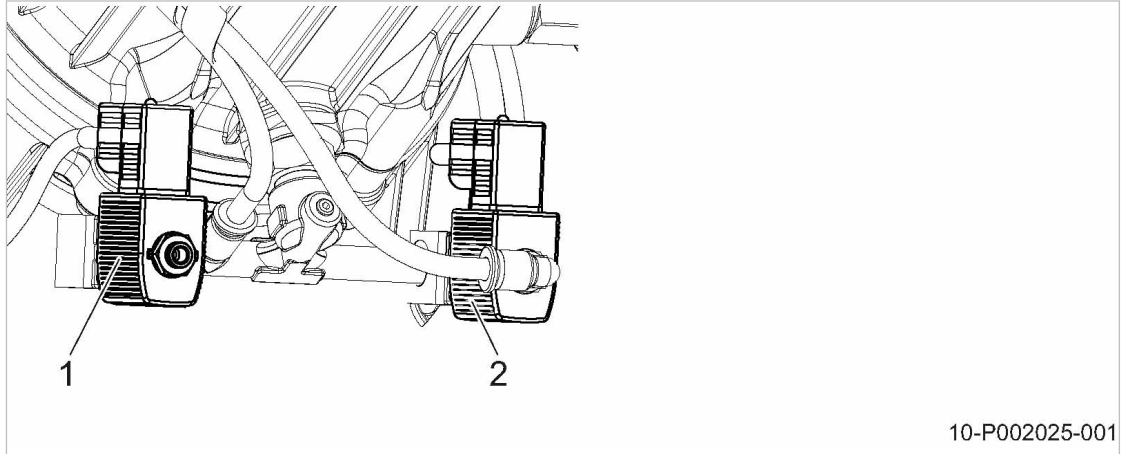
If **no** shut-off valve between the machine and the compressed air network is provided by the user, the entire compressed air network is vented.

Precondition The power supply isolating device (plug/plug connection) is switched off (all poles), the device is locked off, the absence of voltage has been verified.

**DANGER**

Compressed air!

- Compressed air and pressurised components can injure or cause death if the contained energy is released suddenly.



10-P002025-001

Fig. 14 Venting the machine

- ① Relief and load valve
- ② Venting and condensate valve

1. Shut down the machine using the «OFF» key.
2. Isolate the machine from the air consumers.
3. Switch off the power supply isolating device (disconnect the plug/plug connection) (all poles). Machine is venting completely (relief and load valve/venting and condensate valve).
4. Check for zero pressure.

10.6 Venting the crankcase (de-pressurising)

After being switched off, the machine is still under pressure from the air consumer up to the non-return valve.



De-pressurise the crankcase before carrying out any service functions.

The crankcase is de-pressurised by means of the safety valve.

Precondition The machine has cooled down.

**DANGER**

Compressed air!

- Compressed air and pressurised components can injure or cause death if the contained energy is released suddenly.

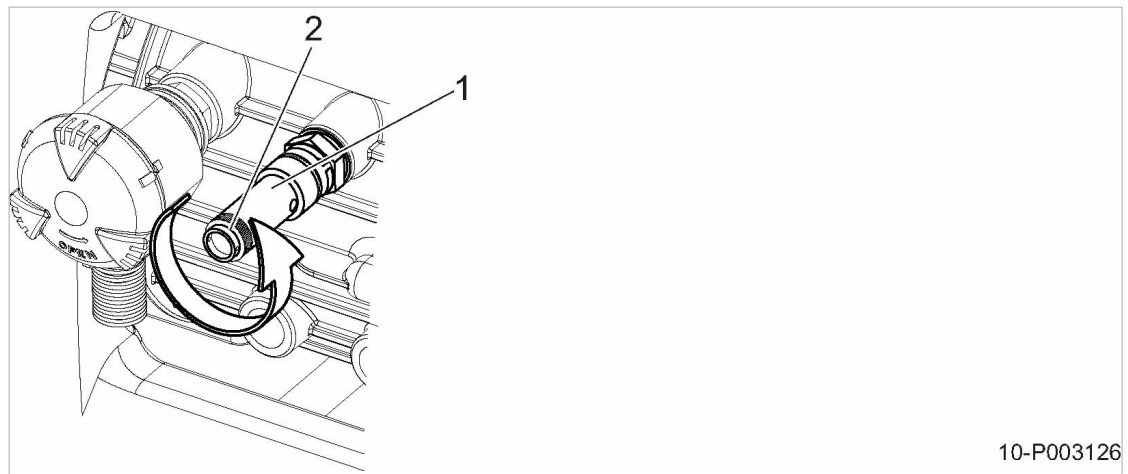


Fig. 15 Venting the crankcase

- ① Safety valve
- ② Knurled screw

1. Shut down the machine using the «OFF» key.
2. Isolate the machine from the air consumers.



Do not turn the knurled screw too far.

3. Turn the knurled screw on the safety valve anti-clockwise until air blows off and hold in this position until all air is exhausted. Then turn the knurled screw back to its original position.
4. Check for zero pressure.



The crankcase is not de-pressurised after having been vented?

Air consumer is still connected to the machine or the safety valve is defective.

- Disconnect machine from air consumer or have an authorized KAESER SERVICE technician check the safety valve.
- If manual venting does **not** attain de-pressurisation in the crankcase: contact the authorised KAESER SERVICE.

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 enquiry and order for spares.

11.2 Ordering consumable parts

KAESER replacement parts are original products. They are specifically designed for use in KAESER machines.



WARNING

There is a 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 maintenance parts may damage the machine or severely impair its function.

Personal injury may result from damage.

- Always use original parts.
- Have an authorized KAESER SERVICE technician carry out regular maintenance.

Machine

Name	Number/quantity	Number
Air filter	1	1250

Tab. 24 Consumable parts

11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- Authorised service technicians with KAESER factory training
 - Increased operational reliability ensured by preventive maintenance
 - Energy savings achieved by avoidance of pressure losses
 - optimum conditions for operation of the compressed air system,
 - The security of genuine KAESER spares.
 - Increased legal certainty as all regulations are kept to.
- It make sense to sign a KAESER AIR SERVICE maintenance agreement.
 Your advantage:
 lower costs and higher compressed air availability.

11.4 Replacement parts for service and repair

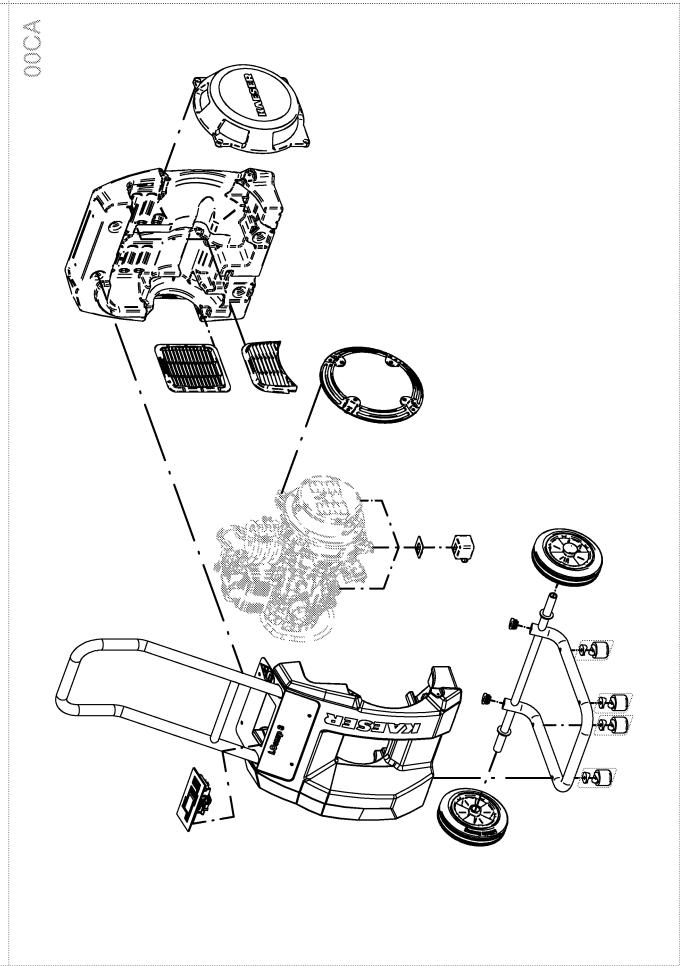
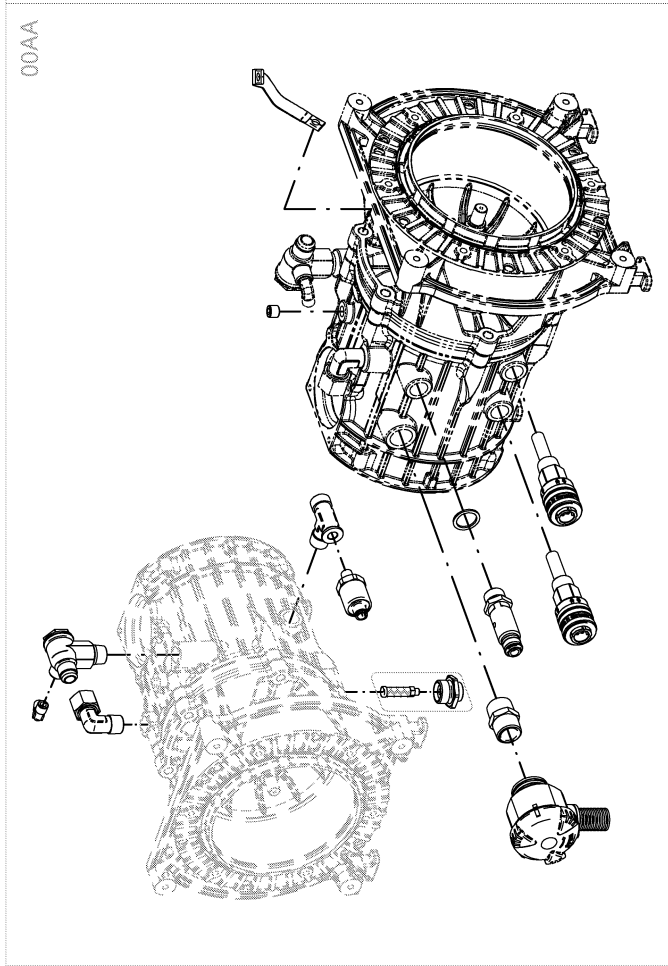
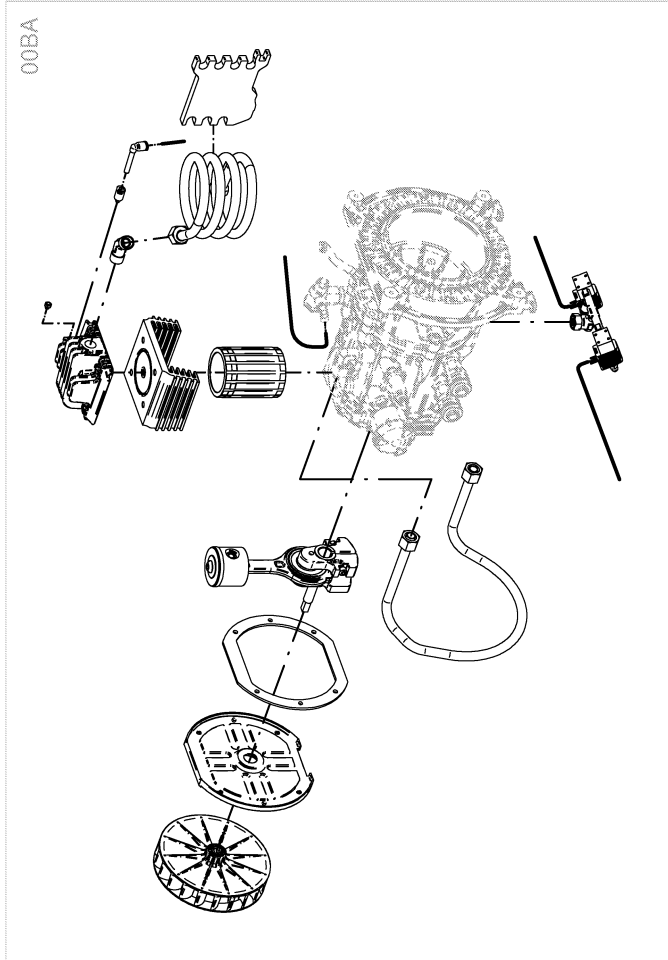
Use these parts lists to plan your material requirement according to operating conditions and to order the required spare parts.

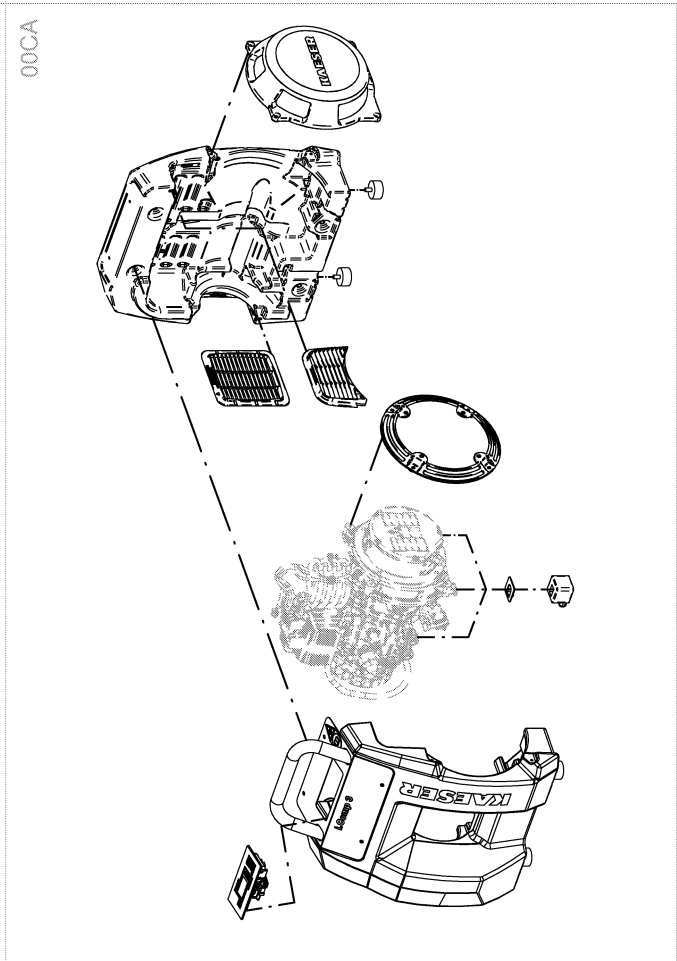
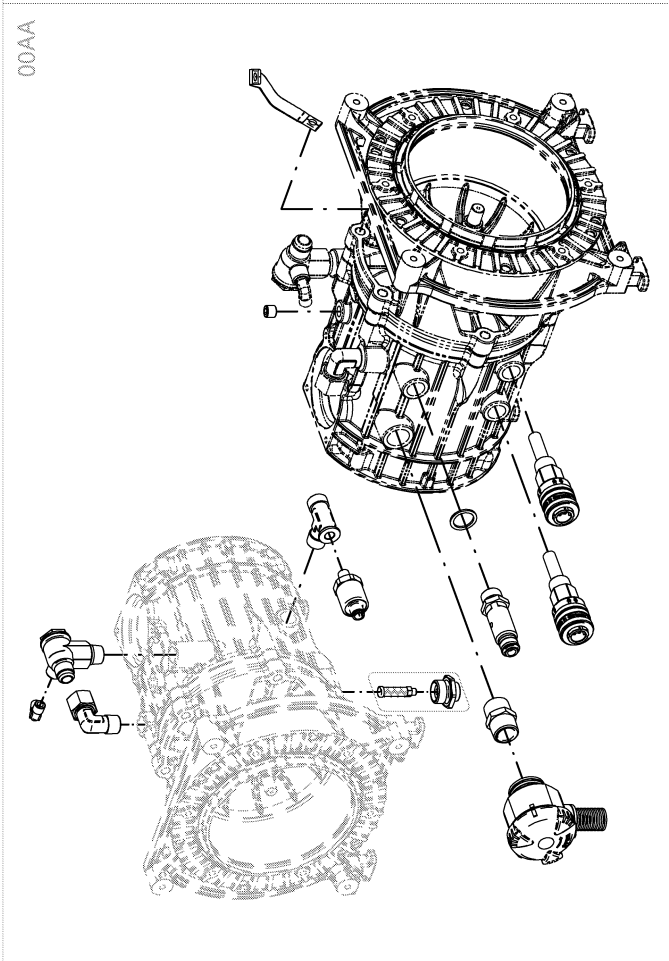
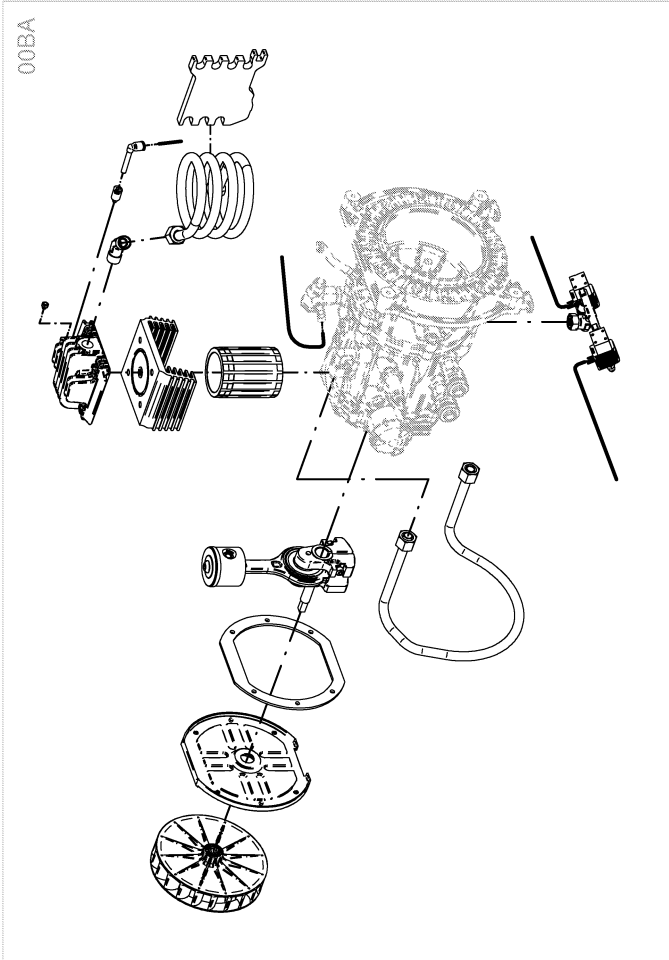


- Make sure that any service or repair tasks not described in this manual are carried out by an authorized KAESER SERVICE technician.

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SECC-08505_01	18.02.2013
(Service-Kit) (Option) (Subassembly) (Untergruppe)	Perf1
	19.02.2013
	Perf1
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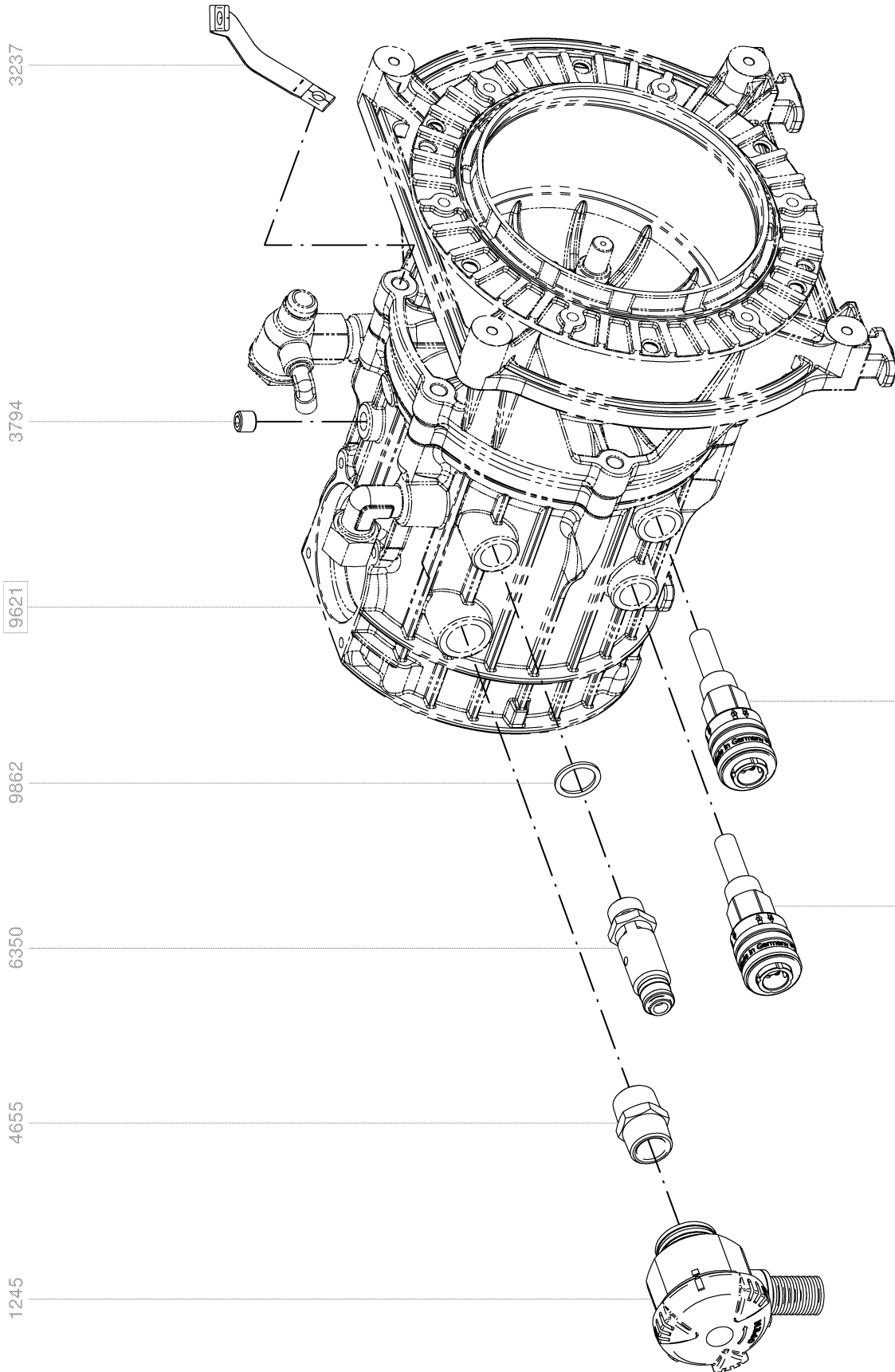
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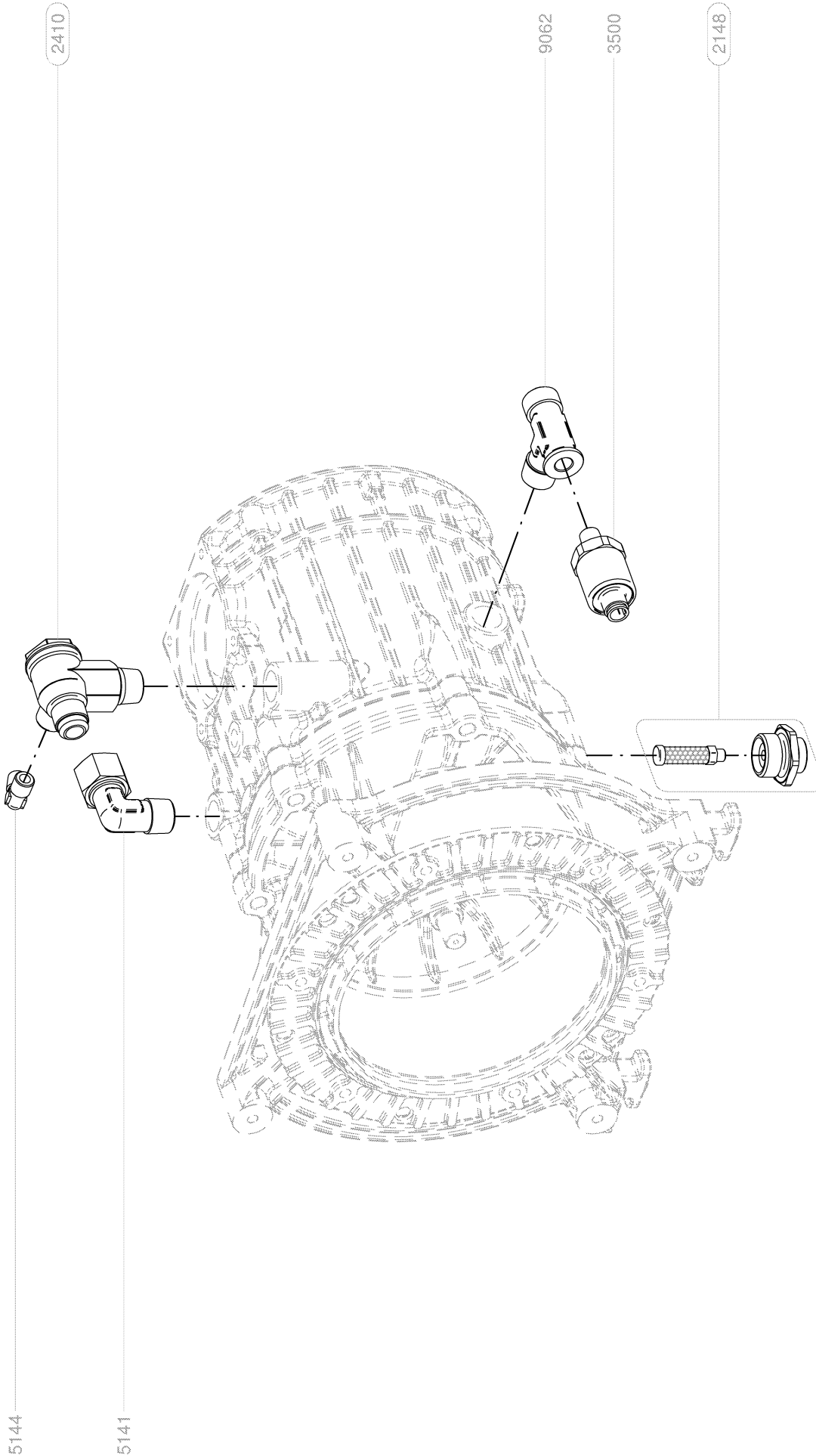
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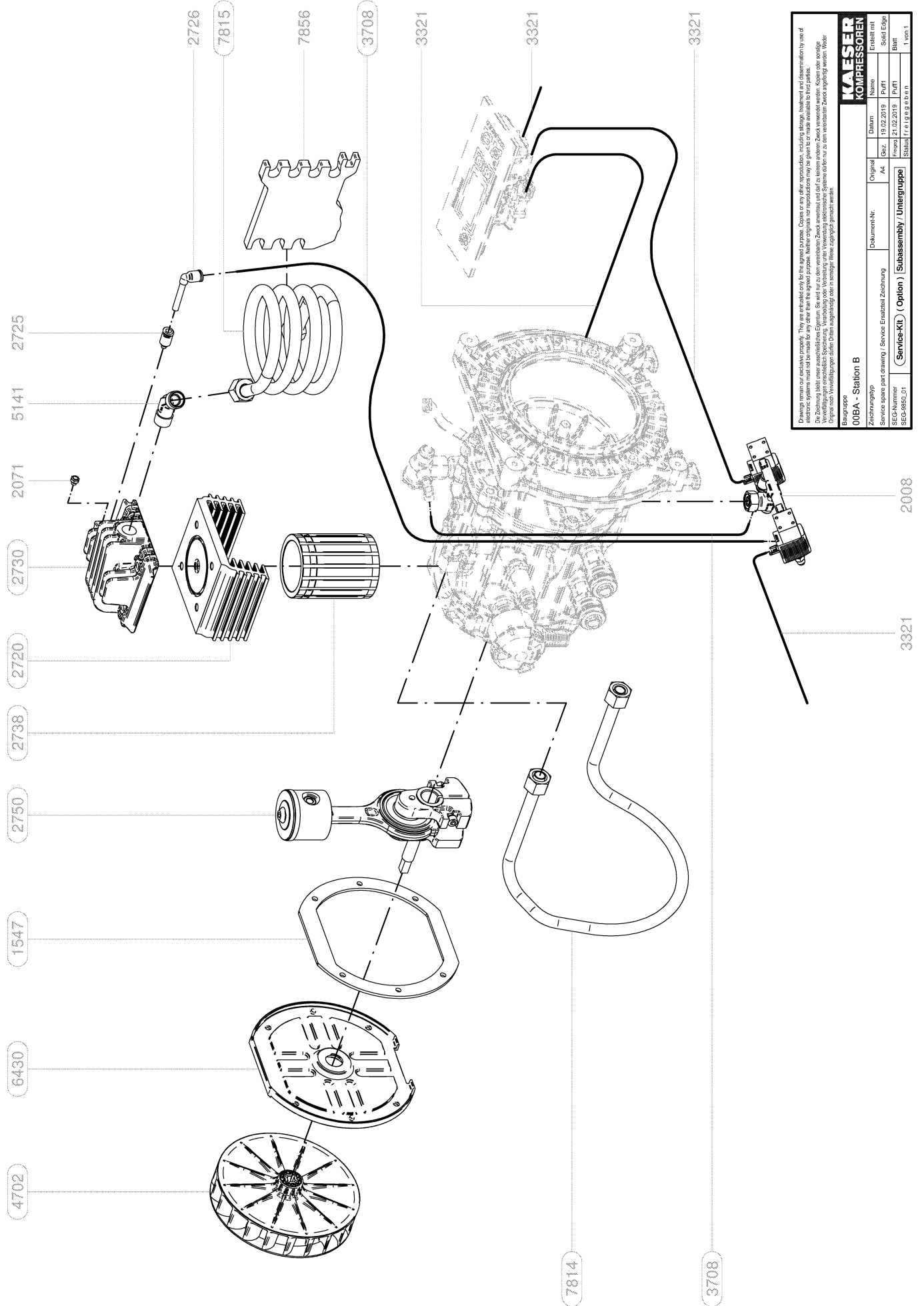


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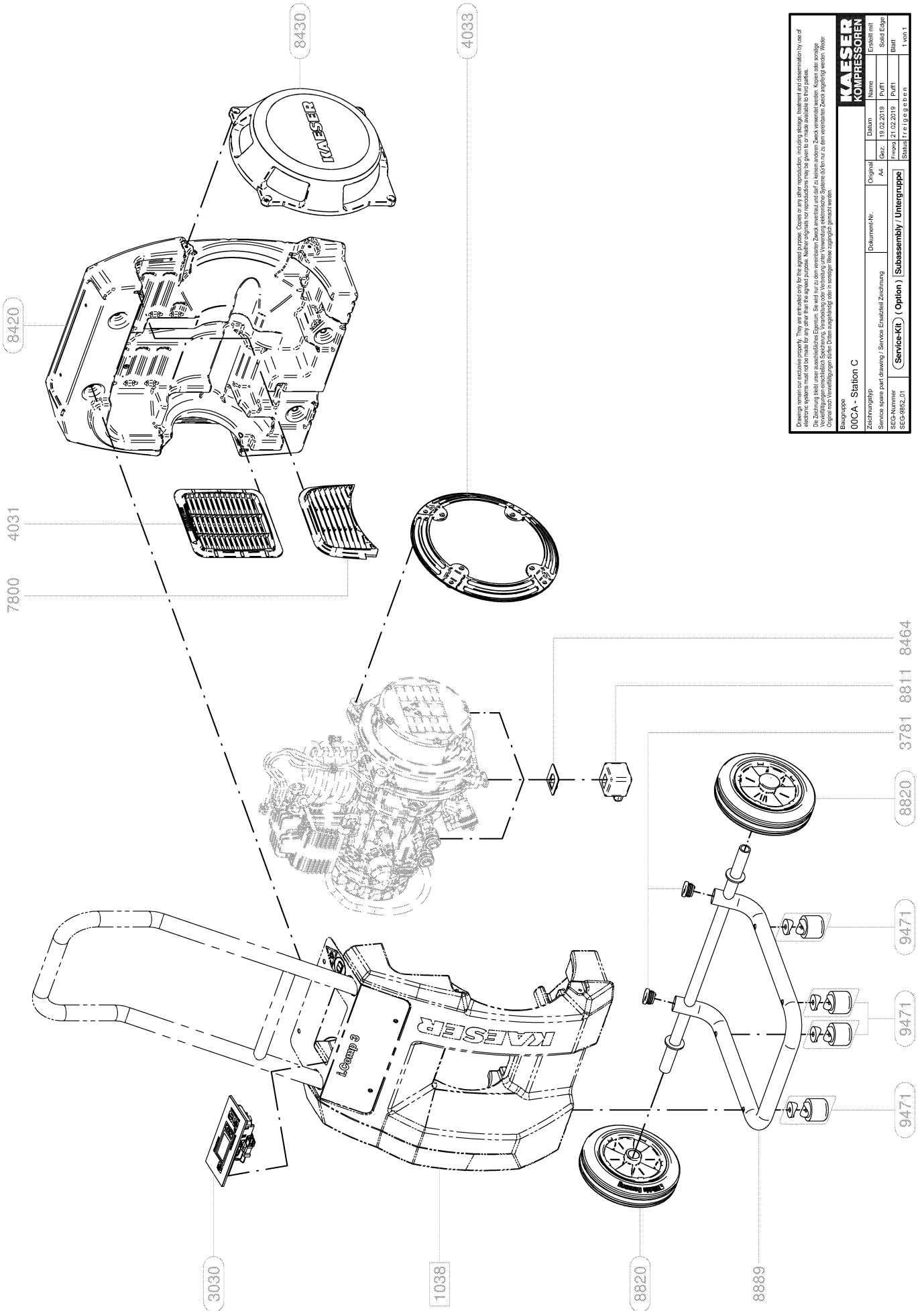
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00BA - Station B

Dokument-Nr.
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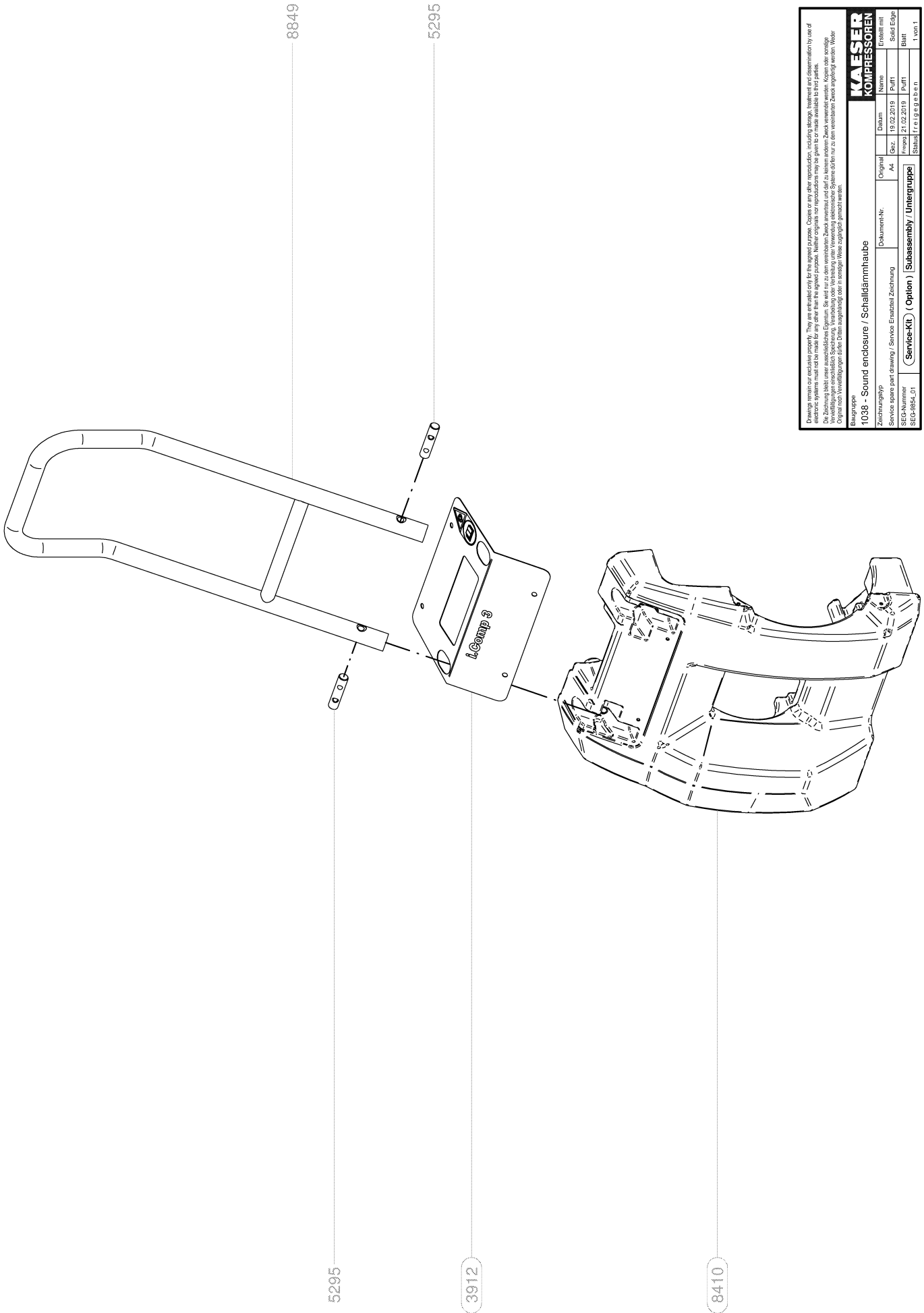
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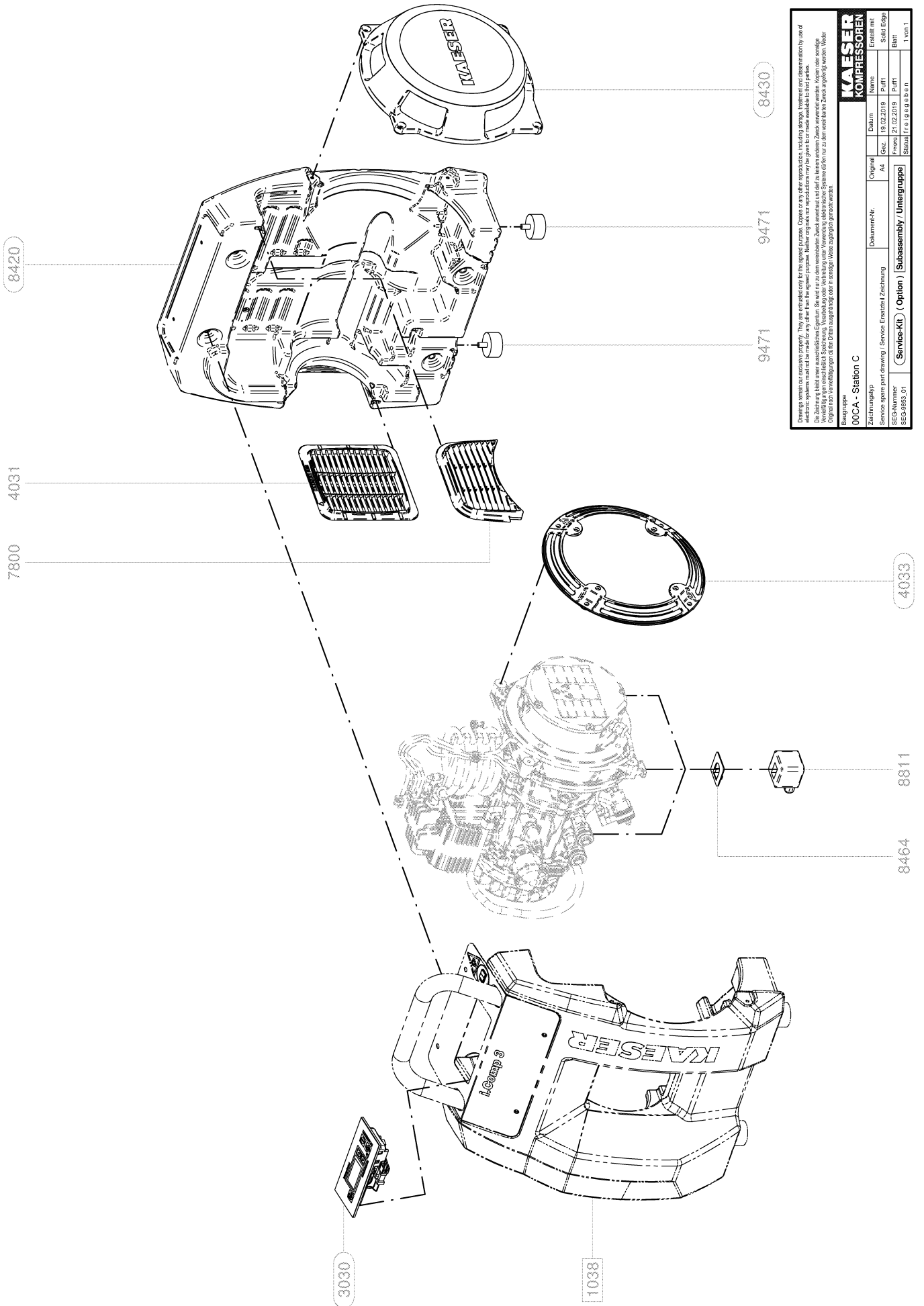


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11035 - Sound enclosure / Schalldämmhaube

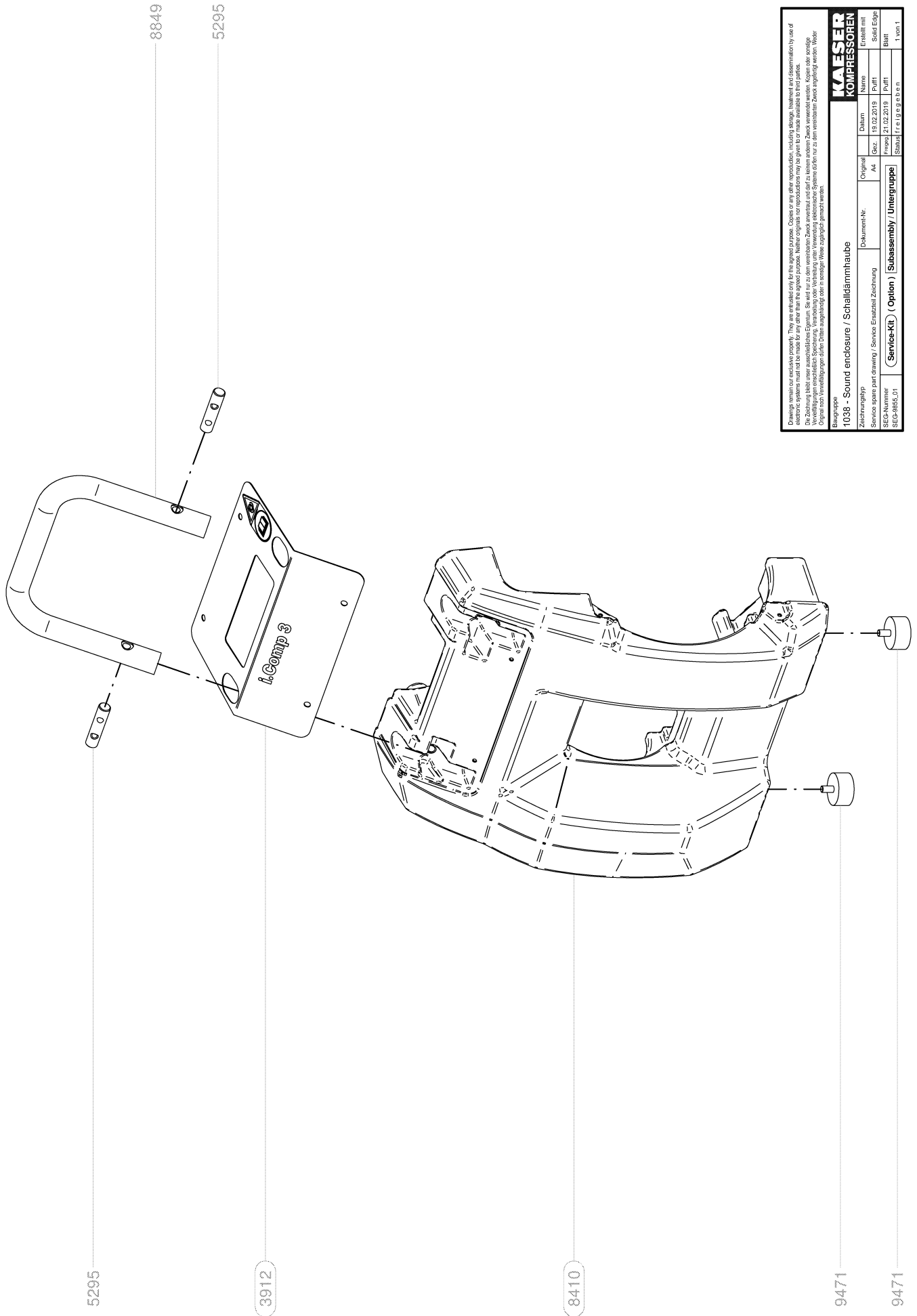
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 Rev.: 01
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BEZUGSGRUPPE: 00CA - Station C
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 Date: 21.02.2013
 Rev.: 01
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 Status: In Use In Use
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Basigruppe: 1038 - Sound enclosure / Schalldämmhaube

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SEG-Abkürzung			Standard	1.0	Perft
(Service-Kit) (Option) / Subassembly / Untergruppe					
1 von 1					

12 Decommissioning, Storage and Transport

12.1 De-commissioning

De-commissioning 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 de-commissioning

Precondition The machine can be started at regular intervals.

- Run the machine once a week under load for at least 30 minutes to ensure sufficient corrosion protection.

Long-term de-commissioning

Precondition The machine must have run for at least 30 minutes before long-term de-commissioning.

The power supply isolating device (plug/plug connector) is switched off (all poles), the device is locked off, the absence of voltage has been verified.

The machine is fully de-pressurised.

The absence of pressure has been verified.

Machine has been isolated from the air consumer.

1. Allow the machine to completely cool down.
2. Disconnect all connecting lines (plug/plug connection) from the power supply.

12.2 Packing

Suitable transport packaging (carton with styrofoam insert) is required for overland transport which protects the machine from mechanical damage.

Other measures must be taken for the transport of machines by sea or air. Please contact an authorized KAESER SERVICE technician for more information.

Material Desiccant
Plastic sheeting
Carton with styrofoam insert as transport packaging

Precondition The machine is decommissioned.
The machine is dry and cooled down.

1. Wrap the machine fully in plastic sheeting.
2. Place a sufficient quantity of desiccant (e.g. silica gel) inside the plastic sheeting.
3. Protect the machine in suitable transport packaging (carton with styrofoam insert) against mechanical damages.

12.3 Storage

Moisture can lead to corrosion, particularly on the surfaces of the compressor block.

Frozen moisture can damage components, valve diaphragms and gaskets.



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



1. **NOTICE!**
Moisture and frost can damage the machine!
 - > Prevent ingress of moisture and formation of condensation.
 - > Maintain a storage temperature of >0 °C.
2. Store the machine in a dry, frost-proof room.

12.4 Transport

12.4.1 Safety

Avoid damaging the machine.

- > Transport the machine in its normal vertical position.



1. **NOTICE!**
Moisture and frost can damage the machine!
 - > Prevent ingress of moisture and formation of condensation.
 - > Maintain a storage temperature of >0 °C.
2. Transport the machine with transport packaging only

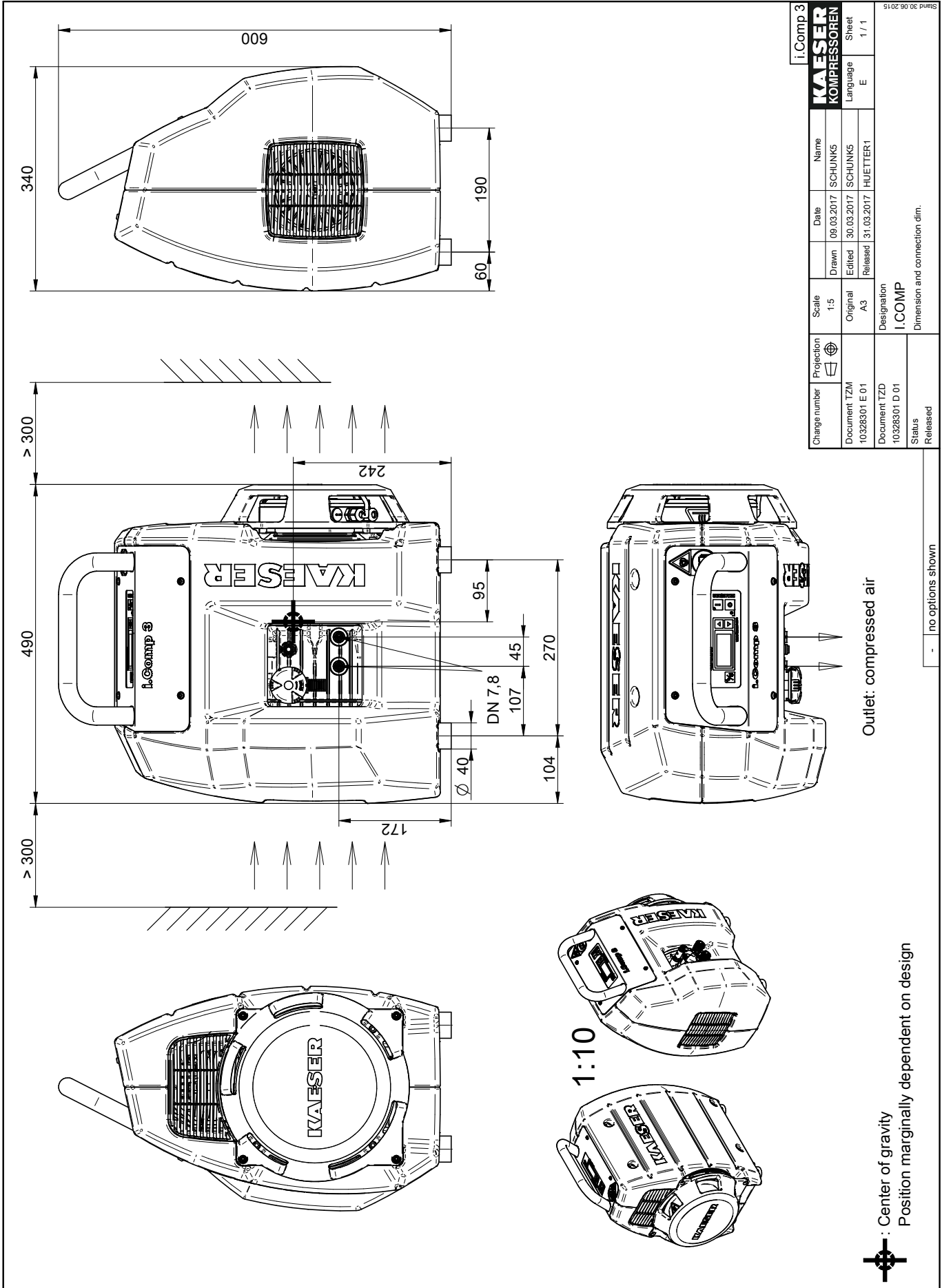
12.5 Disposal

Precondition The machine is decommissioned.

1. Remove old filters.
2. Hand the machine over to an authorized disposal expert.

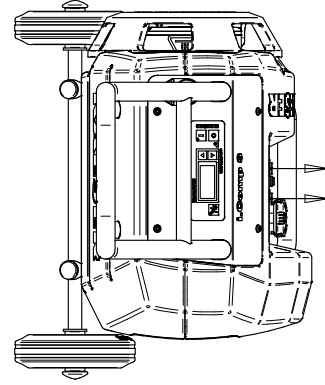
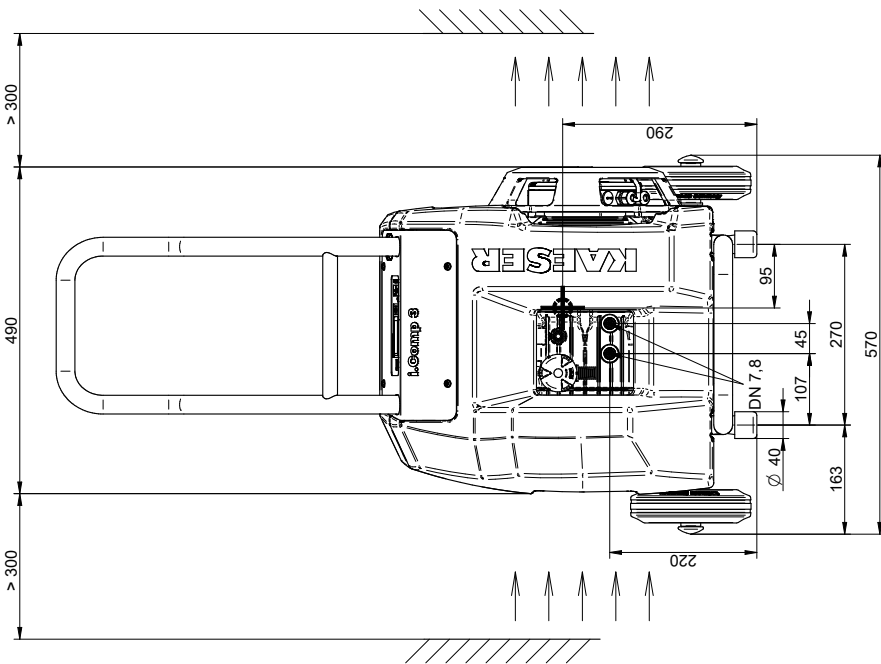
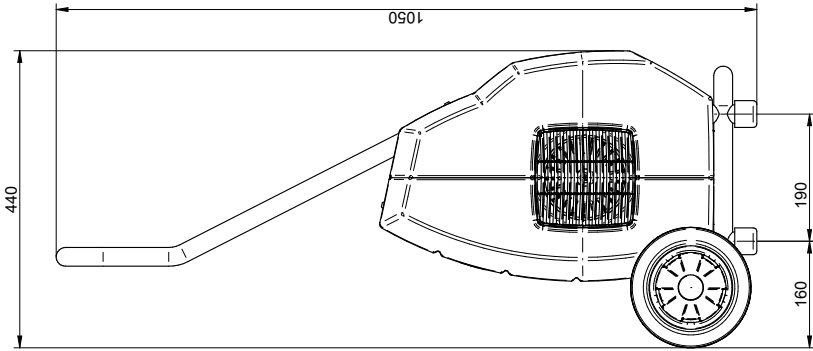
13 Annex

13.1 Dimensional Drawing

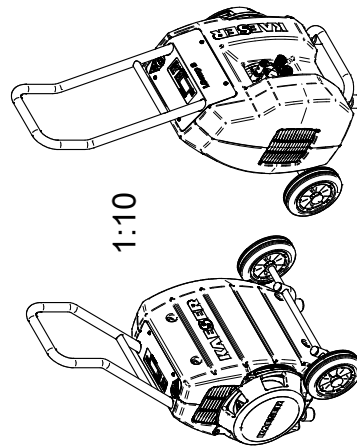
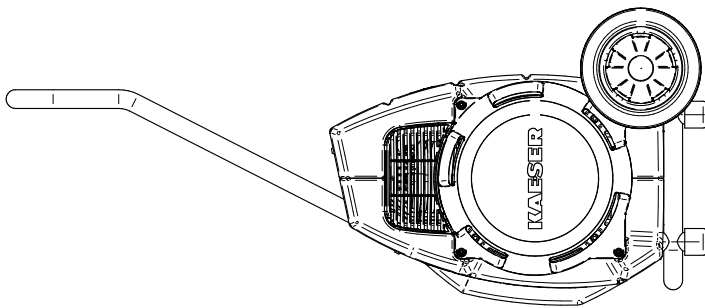


Subject to development-related changes.
Drawing may be altered only via CAD.

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Outlet: compressed air



1:10

Center of gravity
Position marginally dependent on design

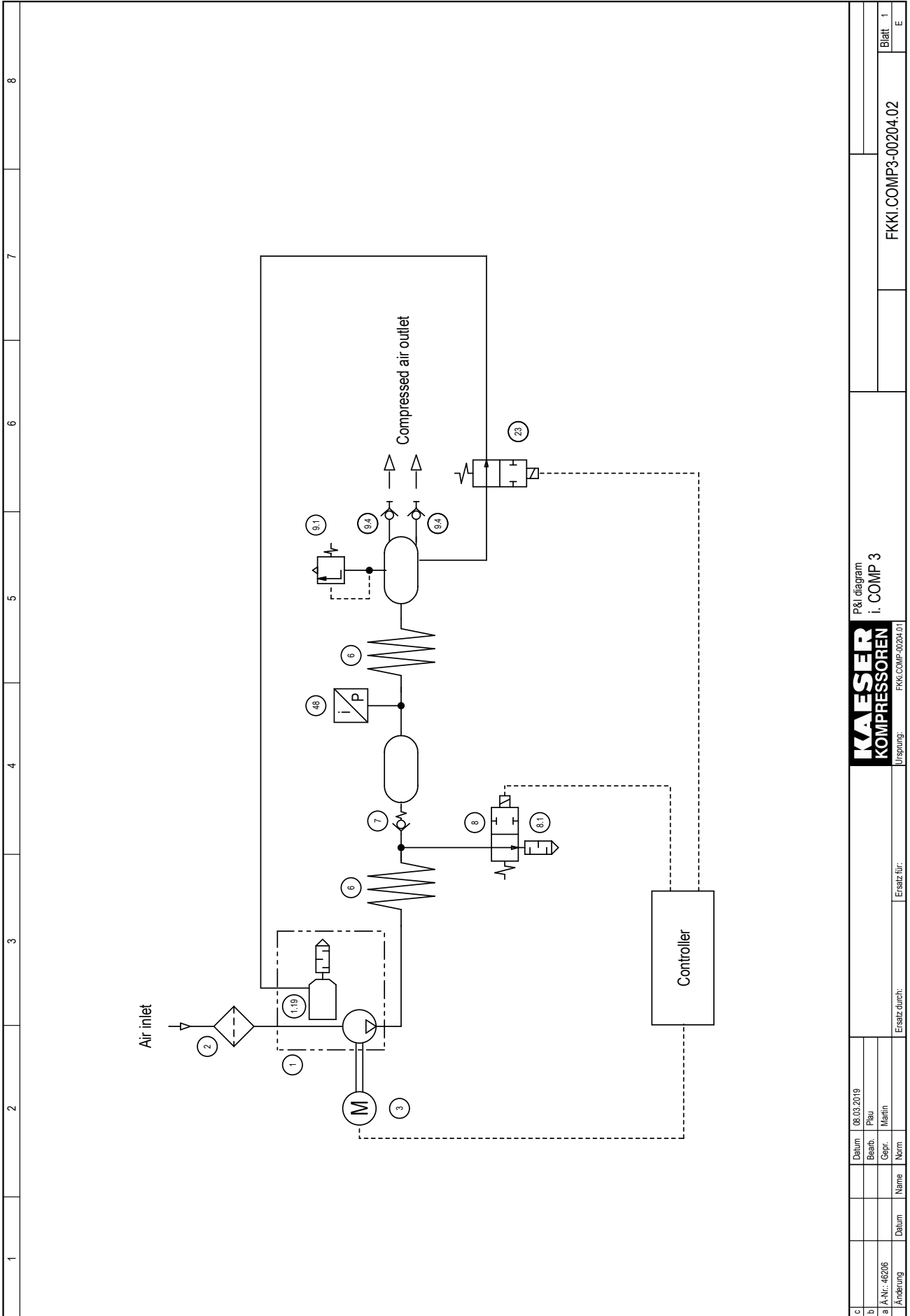
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10356004 D 00		1:1	08.03.2017	SCHUNKS	
10356004 E 00		Original	07.08.2016	SCHUNKS	
10356004 D 00		Released	07.08.2016	MUEITTEY	
10356004 D 00		Released	Designation iCOMP f		
10356004 D 00		Released	Dimension and connection dim.		

Pro options shown

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Notes are included only for the agreed upon parts.

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



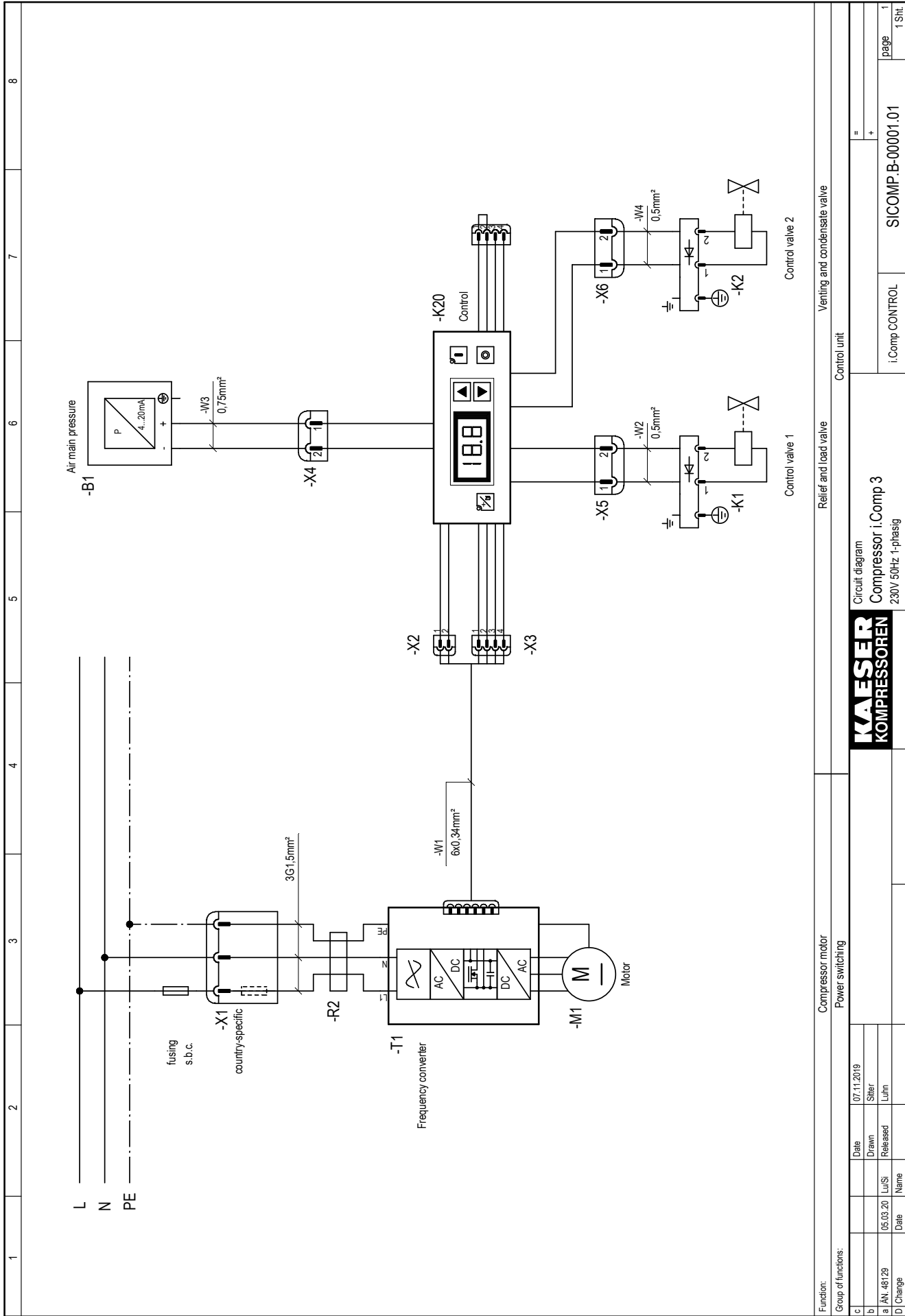
1		2		3		4		5		6		7		8	
c	Datum	06.05.2019													
b	Bearb.	Plau													
a	A.-Nr.	48206	Gepr.	Matlin											
Änderung	Datum	Name	Norm	Ersatz durch:	Ersatz für:										
						<p>P&I diagram i. COMP 3</p> <p>KAESER KOMPRESSOREN</p> <p>Ursprung: FKK/COMP-0204.01</p>						FKKI.COMP3-00204.02			
												Blatt 1			
												E			

1	2	3	4	5	6	7	8	
<p>1 Compressor block</p> <p>1.19 Evaporator - Condensate</p> <p>2 Air filter</p> <p>3 Drive motor</p> <p>6 Cooling pipe</p> <p>7 Check valve</p> <p>8 Relief and load valve (open when de-energised)</p> <p>8.1 Silencer</p> <p>9.1 Safety relief valve</p> <p>9.4 Hose coupling - Compressed air outlet</p> <p>23 Venting and condensate valve (open when de-energised)</p> <p>48 Pressure transducer - Network pressure</p>								
c		Datum	06.05.2019					P&I diagram legend i. COMP 3 FKKI.COMP3-00204.02
b		Bearb.	Plau					
a		Gepr.	Martin					
Änderung	Datum	Name	Norm	Ersatz durch:	Ersatz für:			
								Blatt 2 E

13.3 Electrical Diagram

1	2	3	4	5	6	7	8
<p>Electrical diagrams</p> <p>Compressor series i.Comp 3</p> <p>1AC 208-230V ±10% 50-60Hz</p>							
<p>Manufacturer: KAESER KOMPRESSOREN SE 96450 Coburg GERMANY</p>							
<p>ATTENTION !!! 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>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>KAESER KOMPRESSOREN</p>				<p>Cover page Compressor i.Comp 3</p>			
				i.Comp CONTROL		DICOMP.B-00001.01	
				=		page 1	
				+		1 SHL	
c		Date		07.11.2019		E	
b		Drawn		Siller			
a		AN. 48129		05.03.20		Lu/Si	
A		Change		Date		Name	

1	2	3	4	5	6	7	8
control cabinet wiring for non-designated conductors 0,34mm ²							
Equipment parts list i.Comp 3							
model							
machine power supply	1 AC 208-230 V ±10 %, 50-60 Hz						
Control voltage	24 V						
Motor	-M1	1,5 kW					
Frequency converter	-T1 Ziehl Abegg	7.8234.2 / 7.8234.3 703229					
Compressor control	-K20 BOPLA	7.8482.1 / 7.8482.0 i.Comp CONTROL					
Ferrit bead	-R2 Würth	7.4890.00090 7427021					
electrical equipment identification							
-B1	DMU Air main pressure						
-K20	i.Comp CONTROL Control						
-M1	Compressor motor						
-T1	Frequency converter						
-K1,-K2	Control valve						
-R2	Ferrit bead						
KAESER KOMPRESSOREN							
Equipment parts list / electrical equipment identification Compressor i.Comp 3							
						i.Comp Control	UICOMP.B-00001.01
						=	page 1
						+	1 SHL



Function:		Compressor motor	
Group of functions:		Power switching	
c	Date	07.11.2019	
b	Drawn	Siller	
a	Released	Luhn	
D	Date	05.03.20	
	Lu/Si		
	Name		
		Control unit	
		Relief and load valve	
		Venting and condensate valve	
		i-Comp CONTROL	
		SICOMP.B-00001.01	
		page 1	
		1 SHL	