

Service Manual

Screw Compressor

SX SIGMA CONTROL BASIC

9_6919 04 E

Manufacturer:

KAESER KOMPRESSOREN GmbH

96410 Coburg • PO Box 2143 • GERMANY • Tel. +49-(0)9561-6400 • Fax +49-(0)9561-640130

<http://www.kaeser.com>

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1 Regarding this document

1.1 Using the Document

The service manual is part of the machine. It describes the machine as it was at the time of first delivery after manufacture.

- Keep the service manual in a safe place throughout the life of the machine.
- Pass the manual on to the next owner/user of the machine.
- Ensure that all amendments received are entered in the manual.
- Enter details from the machine nameplate and individual items of equipment in the table in chapter 2.

1.2 Further documents

Further documents included with this operating manual are:

- Certificate of acceptance / operating instructions for the pressure vessel
- One of the following declarations of compliance, according to the applicable directive:
 - Declaration of Conformity
 - Manufacturer's Declaration
 - Installation declaration

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 service 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 Identification

1.4.1 Warnings

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

- DANGER
- WARNING
- CAUTION



DANGER

These show the kind of danger and its source!

The possible consequences of ignoring a warning are shown here.

The word "Danger" indicates that death or severe injury can result from ignoring the instruction.

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

1 Regarding this document

1.4 Symbols and Identification

- Always read and comply with warning instructions.

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

Tab. 1 The levels of danger and their meaning

1.4.2 Other instructions and symbols



This symbol refers to particularly important information.

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

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

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



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



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

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

2 Technical Specification

2.1 Nameplate

The machine's nameplate provides the model designation and important technical information.

The nameplate is located on the outside of the machine:

- above the cooler,
or
- on the rear of the machine.

➤ Enter here the nameplate data as a reference:

Feature	Value
Rotary Screw Compressor	
Part No.	
Serial No.	
Year of manufacture	
Rated power	
Rated motor speed	
Maximum working pressure	
Ambient temperature	

Tab. 2 Nameplate

2.2 Options

The table contains a list of possible options.

➤ Enter options here as a reference.

Option	Option code	Exists?
Modulating control	C1	
Direct online starting	C17	
Adjustable machine feet	H1	
Air cooling	K1	
Transformer power supply for refrigeration dryer	T2	
Refrigeration dryer	T3	

Tab. 3 Options

2.3 Weight

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

	SX 3	SX 4	SX 6	SX 8
Weight [kg]	140	140	145	155

Tab. 4 Machine weight

2.4 Temperature

	SX 3	SX 4	SX 6	SX 8
Minimum cut-in temperature [°C]	3	3	3	3
Typical airend discharge temperature during operation [°C]	65–100	65–100	65–100	65–100
Maximum airend discharge temperature (automatic safety shut-down) [°C]	110	110	110	110

Tab. 5 Temperature

2.5 Ambient conditions

	SX 3	SX 4	SX 6	SX 8
Maximum altitude AMSL* [m]	1000	1000	1000	1000
Permissible ambient temperature [°C]	3–45	3–45	3–45	3–45
Cooling air temperature [°C]	3–45	3–45	3–45	3–45
Inlet air temperature [°C]	3–45	3–45	3–45	3–45
Maximum relative humidity of inlet air	see figure 1	see figure 1	see figure 1	see figure 1

* Higher altitudes are permissible only after consultation with the manufacturer.

Tab. 6 Ambient conditions

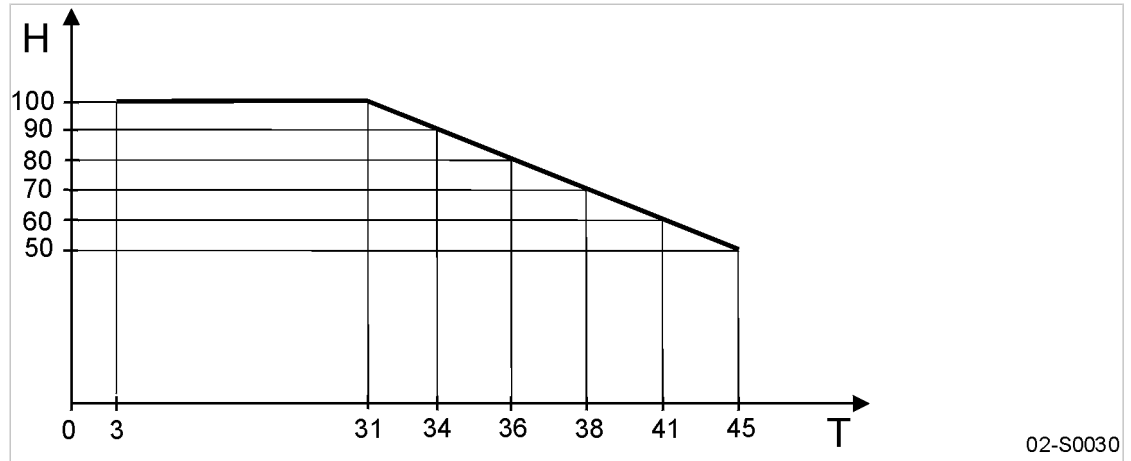


Fig. 1 Maximum relative humidity
 (T) Inlet air temperature [°C]
 (H) Maximum relative humidity of inlet air [%]

2.6 Ventilation

The values given are minimum guide values.

Mains frequency: 50 Hz

	SX 3	SX 4	SX 6	SX 8
Inlet aperture (Z) see figure 8 [m ²]	0.2	0.2	0.2	0.2
Exhaust fan for forced ventilation: Flow rate [m ³ /h] at 100 Pa.	1000	1200	1500	2000

Tab. 7 Ventilation (50Hz)

Mains frequency: 60 Hz

	SX 3	SX 4	SX 6	SX 8
Inlet aperture (Z) see figure 8 [m ²]	0.2	0.2	0.2	0.2
Extractor for forced ventilation: Flow rate [m ³ /h] at 100 Pa	1000	1200	1500	2000

Tab. 8 Ventilation (60Hz)

2.7 Pressure

Maximum working pressure: see nameplate

Pressure relief valve activating pressure at 50 Hz [bar]

Maximum working pressure [bar]	SX 3	SX 4	SX 6	SX 8
8	10	10	10	10
11	13	13	13	13
15	—	16	16	16

Tab. 9 Pressure relief valve activating pressure (50 Hz)

Pressure relief valve activating pressure at 60 Hz [bar]

Maximum working pressure [bar]	SX 3	SX 4	SX 6	SX 8
8.5	10	10	10	10
11	13	13	13	13
15	—	16	16	16

Tab. 10 Pressure relief valve activating pressure (60Hz)

2.8 Free air delivery

FAD [m³/min] at 50 Hz

Maximum working pressure [bar]	SX 3	SX 4	SX 6	SX 8
8	0.34	0.45	0.60	0.80
11	0.26	0.36	0.48	0.67
15	—	0.25	0.36	0.53

Tab. 11 FAD (50 Hz)

FAD [m³/min] at 60 Hz

Maximum working pressure [bar]	SX 3	SX 4	SX 6	SX 8
8.5	0.34	0.45	0.60	0.80
11	0.26	0.36	0.48	0.67
15	—	0.25	0.36	0.53

Tab. 12 FAD (60 Hz)

2.9 Cooling Oil Recommendation

A sticker showing the type of oil used is located near the oil separator tank filler. Information on ordering cooling oil is found in chapter 11.

	SIGMA FLUID		
	S-460	MOL	FG-460/FG-680
Description	Silicone-free synthetic oil	Mineral oil	Synthetic oil
Application	Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a high duty cycle.	Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a low duty cycle.	Specifically for applications where the compressed air comes into contact with foodstuffs.
Approval	—	—	USDA H-1, NSF Approved for the manufacture of foodstuff packaging, meat and poultry processing and other food processing.
Viscosity at 40 °C	45 mm ² /s (D 445; ASTM Test)	44 mm ² /s (DIN 51562-1)	50.7/70.0 mm ² /s (D 445; ASTM Test)
Viscosity at 100 °C	7.2 mm ² /s (D 445; ASTM Test)	6.8 mm ² /s (DIN 51562-1)	8.2/710.4 mm ² /s (D 445; ASTM Test)
Flash point	238 °C (D 92; ASTM Test)	220 °C (ISO 2592)	245 °C (D 92; ASTM Test)
Density at 15 °C	864 kg/m ³ (ISO 12185)	—	—
Pour point	-46 °C (D 97; ASTM Test)	-33 °C (ISO 3016)	—
Demulsibility at 54 °C	40/40/0/10 min (D 1401; ASTM Test)	—	—

Tab. 13 Cooling Oil Recommendation

2.10 Cooling oil charge

	SX 3	SX 4	SX 6	SX 8
Total charge [l]	2.8	2.8	2.8	2.8
Topping up volume [l] (minimum–maximum)	0.12	0.12	0.12	0.12

Tab. 14 Cooling oil charge

2.11 Motors and power

2.11.1 Drive motor

	SX 3	SX 4	SX 6	SX 8
Rated power [kW]	2.2	3.0	4.0	5.5

	SX 3	SX 4	SX 6	SX 8
Enclosure protection	IP 54	IP 54	IP 54	IP 54

Tab. 15 Drive motor

Rated speed at 50 Hz [rpm]

Maximum working pressure [bar]	SX 3	SX 4	SX 6	SX 8
8	2910	2910	2910	2930
11	2910	2910	2910	2930
15	—	2910	2910	2930

Tab. 16 Drive motor rated speed (50 Hz)

Rated speed at 60 Hz [rpm]

Maximum working pressure [bar]	SX 3	SX 4	SX 6	SX 8
8.5	3490	3520	3520	3540
11	3490	3520	3520	3540
15	—	3520	3520	3540

Tab. 17 Drive motor rated speed (60Hz)

2.12 Sound pressure level

Operational state

- Nominal volume flow
- Nominal pressure

Measurement conditions

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

Sound pressure level [dB(A)]	SX 3	SX 4	SX 6	SX 8
At 50 Hz	60	61	62	64
At 60 Hz	62	63	64	66

Tab. 18 Sound pressure level

2.13 Power supply

Basic requirements

The machine is designed for a power supply conforming to EN 60204–1 (IEC 60204–1), section 4.3. In the absence of other user-specified conditions, the limits laid down in this standard must be adhered to.

It is recommended that the supplier and user confer and agree on the basis of the EN 60240–1, Annex B.

The machine requires a symmetrical three-phase power supply.

In a symmetrical three-phase supply the phase angles and voltages are all the same.

The machine may only be operated from an earthed TN or TT three-phase supply.

Connection to an IT supply is not permitted without taking further measures (earth leak detection, etc.).

Further requirements

Demands on a three-phase supply for a machine with the following equipment:

- Variable frequency drive (SFC)
- Refrigeration dryer powered from a transformer

This machine may only be supplied from an earthed TN or TT three-phase supply in which the **neutral point** is earthed.

The machine may not be connected to a three-phase supply in which one of the phases is earthed, as this can lead to dangerous voltage surges.

Connection to an IT supply is not permitted without further measures being taken (earth leak detection, specially designed frequency converter, etc.).

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

2.14 Power supply specifications

The following supply cable conductor cross sections (copper multicore) and fusing (slow-blow class gL) are selected according to German DIN VDE 0100–430 (IEC 60364–4–43 and IEC 60364–4–473) and DIN VDE 0298-4 standards for 30 °C ambient temperature and wiring type C.



- The conductor cross-sections should be changed accordingly if other conditions prevail.

Other conditions would include, for example:

- higher temperature
- other cable laying method
- cable lengths >50 m

2.14.1 Mains frequency: 50 Hz

Rated power supply 200V±10%/3/50Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	20	16	20	35
Supply cable [mm ²]	4x2.5	4x2.5	4x2.5	4x6.0

	SX 3	SX 4	SX 6	SX 8
Current drawn [A]	10	13	16	22

Tab. 19 Mains supply 200V/3/50Hz

Rated power supply: 230V±10%/3/50Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	20	16	20	25
Supply cable [mm ²]	4x2.5	4x2.5	4x2.5	4x4.0
Current drawn [A]	9	13	16	24

Tab. 20 Mains supply 230V/3/50Hz

Rated power supply: 400V±10%/3/50Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	16	10	16	16
Supply cable [mm ²]	4x2.5	4x1.5	4x2.5	4x2.5
Current drawn [A]	5	6	8	11

Tab. 21 Mains supply 400V/3/50Hz

2.14.1.1 Network conditions

The network conditions apply to machines connected to public mains supplies with the following characteristics.

- Frequency: 50 Hz
- Voltage between exterior and neutral lines 220 V...250 V
- Voltage between the exterior lines 380 V...440 V

They do not apply to private power supplies within industrial areas isolated from the public mains. Machines with current consumption >16 A...≤75 A comply fully with IEC 61000–3–12.

The machines listed in table are intended for operation with a public power supply with a network impedance at the transfer point (house connection) of maximum Z_{max} [Ohm].

The operator must ensure that the machines are only connected to a network that meets these requirements. If necessary, ask the local electricity company for the value of the network impedance.

	SX 3	SX 4	SX 6	SX 8
Anticipated number of start-stop cycles per hour	15	15	15	15
Highest permissible system impedance* Z_{max} [Ohm]	0.16	0.39	0.23	0.18

*Specification related to the sum of impedances in exterior and neutral liner.

Tab. 22 Supply conditions at 400V/3/50Hz

2.14.2 Mains frequency: 60 Hz
Rated power supply: 230V±10%/3/60Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	20	16	20	25
Supply cable [mm ²]	4x2.5	4x2.5	4x2.5	4x4.0
Current drawn [A]	9	12	15	19

Tab. 23 Mains supply 230V/3/60Hz

Rated power supply: 380V±10%/3/60Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	16	10	16	16
Supply cable [mm ²]	4x2.5	4x1.5	4x2.5	4x2.5
Current drawn [A]	6	7	9	12

Tab. 24 Mains supply 380V/3/60Hz

Rated power supply: 440V±10%/3/60Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	10	10	16	16
Supply cable [mm ²]	4x1.5	4x1.5	4x2.5	4x2.5
Current drawn [A]	5	6	8	10

Tab. 25 Mains supply 440V/3/60Hz

Rated power supply: 460V±10%/3/60Hz

	SX 3	SX 4	SX 6	SX 8
Mains fusing [A]	10	10	16	16
Supply cable [mm ²]	4x1.5	4x1.5	4x2.5	4x2.5
Current drawn [A]	5	6	8	10

Tab. 26 Mains supply 460V/3/60Hz

3 Safety and Responsibility

3.1 Basic Information

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

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

**DANGER**

Disregard of these instructions can result in serious injury.

- Read the service manual carefully and take notice of the contents for safe machine operation.
- Use this machine only if it is in a technically perfect condition and only for the purpose for which it is intended; observe all safety measures and the instructions in the service manual.
- Immediately rectify (have rectified) any faults that could be detrimental to safety.

3.2 Specified Use

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

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

3.3 Improper Use

- Never direct compressed air at persons or animals.
- Cooling air, warmed after passing through the machine, may be used for heating purposes but only when it poses no health risk to humans or animals. If necessary, hot cooling air should be treated by suitable means.
- 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 applied.

3.4 User's Responsibilities

3.4.1 Observe statutory and universally accepted regulations

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

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

3.4.2 Qualified personnel

These are people who, by virtue of their training, knowledge and experience as well as their knowledge of relevant regulations can assess the work to be done and recognise 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 service manual relevant to operation,
- have received adequate training and authorisation to operate electrical and compressed air devices.
- Additional qualifications for compressors with refrigeration dryers:
 - Adequate training and authorisation on refrigeration devices.

Authorised installation and maintenance personnel have the following qualifications:

- are of legal age,
 - have read, are conversant with and adhere to the safety instructions and sections of the service manual applicable to installation and maintenance,
 - are fully conversant with the safety concepts and regulations of electrical 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 and authorisation for the safe installation and maintenance on this equipment.
 - Additional qualifications for compressors with refrigeration dryers:
 - fully conversant with the safety concepts and regulations concerning refrigeration devices,
 - must be able to recognise 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 authorised to carry out their tasks.

3.4.3 Adherence to inspection schedules and accident prevention regulations

The machine is subject to local inspection schedules.

Examples of German inspection schedules

- Recurring inspections according to BGR 500, chapter 2.11.
The user must ensure that the machine's safety devices are checked for function as required or at least annually.
- Oil changing according to BGR 500, chapter 2.11.
The user must ensure that the cooling oil is changed as required or at least annually and the oil change must be documented. This requirement may be waived if an oil analysis proves that the oil is still usable.

- Keep to inspection intervals in accordance with the Ordinance on Industrial Safety and Health with maximum intervals as laid down in §15.

Inspection	Inspection interval	Inspecting authority
Installation and equipment inspection	Before commissioning	Competent person (e. g. KAESER Service Technician)
Internal inspection	Every 5 years after installation or the last inspection	Competent person (e. g. KAESER Service Technician)
Strength test	Every 10 years after installation or the last inspection	Competent person (e. g. KAESER Service Technician)

Tab. 27 Inspection intervals according to Ordinance on Industrial Safety and Health

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

- 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 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 could be connections to floating contacts or electrical machine heating, for example.
- 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 air main 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.

Compressed air quality

- Never directly inhale compressed air.
- Use appropriate systems for air treatment before using the compressed air from this machine as breathing air and/or for the processing of foodstuffs.
- Use foodstuff-compatible cooling oil whenever compressed air is to come into contact with foodstuffs.

Spring tension

Springs under tension or compression represent contained energy. Uncontrolled release of this energy can cause serious injury or death.

Minimum pressure/check valves, pressure relief valves and inlet valves are powerfully spring-loaded.

- Do not open or dismantle any valves.

Rotating components

Touching the fan wheel, the coupling or the belt drive 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.
- Wear close-fitting clothes and a hair net if necessary.
- Make sure all covers and safety guards are in place and secured before starting.

Temperature

- Avoid contact with hot components.
These include, for example, compressor airends or blocks, oil and compressed air lines, coolers, oil separator tanks, motors and machine heaters.
- Wear protective clothing.
- If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting oil vapours or parts of the machine.

Noise

- Operate the machine only with full soundproofing.
- Wear hearing protection if necessary.
The pressure relief valve blowing off can be particularly loud.

Operating materials

- Strictly forbid fire, open flame and smoking.
- Follow safety regulations when dealing with lubricants and chemical substances.
- Avoid contact with skin and eyes.
- Do not inhale oil mist or vapour.
- Do not eat or drink while handling cooling and lubricating fluids.

- Keep suitable fire extinguishing agents ready for use.
- Use only KAESER approved operating materials.

Unsuitable spare parts

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

Conversion or modification of the machine

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

Extension or modification of the compressed air system

- Extension or modification of the compressor station:
Check the blow-off capacity of pressure relief valves on air receivers and compressed air lines before installing any new machines.
- If the blow-off capacity is insufficient:
Install pressure relief valves with larger blow-off capacity.

3.5.2 Safe Machine Operation

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

Transport

- Use suitable lifting gear that conforms to local safety regulations.
- Allow transport only by personnel trained in the safe movement of goods.
- Attach lifting gear only to suitable lifting points.
- Be aware of the centre of gravity to avoid tipping.
- Make sure the danger zone is clear of personnel.

Installation

- Install the machine in a suitable compressor room.
- If installed outdoors, the machine must be protected from frost, direct sunlight, dust, rain and splashing water.
- Do not operate in areas in which specific requirements with regard to explosion protection are in force.
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Ensure adequate ventilation.
- Ensure that required ambient conditions are maintained with regard to:
 - ambient temperature and humidity,
 - clean inlet air with no damaging contaminants,
 - inlet air free of explosive or chemically unstable gases or vapours,
 - inlet air free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.

- Do not position the machine in warm exhaust air from other machines.
- Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.

Decommissioning, storage, disposal

- Drain out fluids and dispose of according to environmental regulations. These include, for example, compressor oil and cooling water.
- Give refrigerant only to authorised bodies for disposal.
- Dispose of the machine in accordance with local environmental regulations.

3.5.3 Organisational Measures

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

3.5.4 Danger Areas

The table gives information on the areas dangerous to personnel.

Only authorised personnel may enter these areas.

Activity	Danger area	Authorised personnel
Transport	Within a 3 m radius of the machine.	Installation personnel for transport preparation. No personnel during transport.
	Beneath the lifted machine.	No personnel!
Installation	Within the machine. Within 1 m radius of the machine and its supply cables.	Installation personnel
Operation	Within a 1 m radius of the machine.	Operating personnel
Maintenance	Within the machine.	Maintenance personnel
	Within a 1 m radius of the machine.	

Tab. 28 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 4.7.

3.7 Safety Signs

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

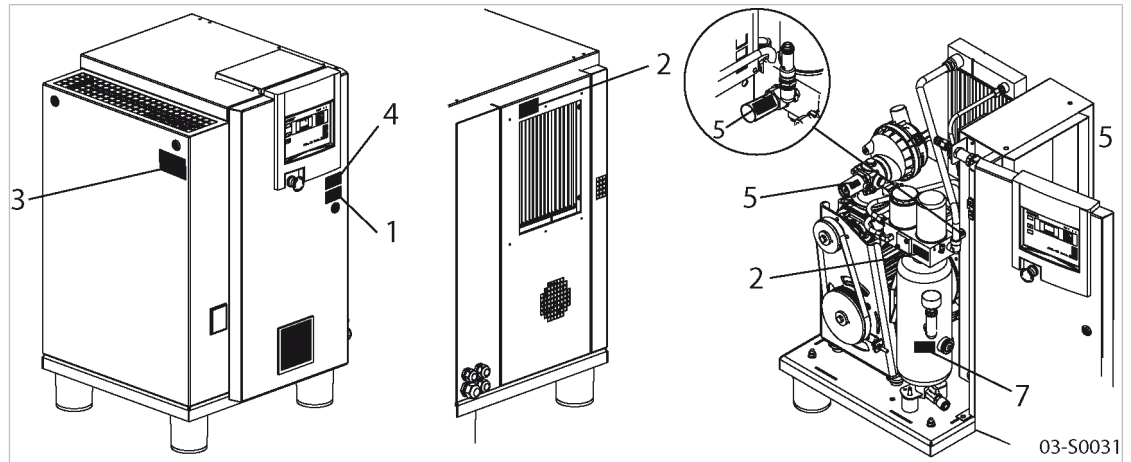


Fig. 2 Location of safety signs

Item	Sign	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 disconnecting device and check that no voltage is present.
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 (not synthetics such as polyester) and protective gloves.
3		<p>Risk of serious lacerations or even severing of extremities (fingers) from rotating components.</p> <ul style="list-style-type: none"> ➤ Operate the machine only with closed safety guards, access doors and panels. ➤ Switch off and lock out the power supply disconnecting device and check that no voltage is present before opening any machine enclosure or guard.
4		<p>Risk of injury caused by an automatic machine start!</p> <ul style="list-style-type: none"> ➤ Switch off and lock out the power supply disconnecting device and check that no voltage is present before opening any machine enclosure or guard.
5		<p>Risk of fatal injury caused by dismantling valves (spring-loaded or under pressure)!</p> <ul style="list-style-type: none"> ➤ Do not open or dismantle the valve. ➤ Call the authorized service representative if a fault occurs.
7		<p>Incorrect oil levels can cause damage to the machine or excessive oil content in the compressed air.</p> <ul style="list-style-type: none"> ➤ Check the oil level regularly and correct as necessary.

Tab. 29 Safety Signs

3.8 Emergencies

3.8.1 Correct fire fighting

Suitable extinguishing agents:

- Foam
- Carbon dioxide
- Sand or earth

Unsuitable extinguishing agents:

- Strong jet of water

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

3.8.2 Remove any cooling oil from your person

- Eye contact:
Rinse eyes thoroughly with lukewarm water and seek medical assistance.
- Skin contact:
Wash off immediately.

3.9 Warranty

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

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

Due to the multitude applications for which the machine is suitable the obligation lies with the user to determine its suitability for his specific application.

In addition, we accept no warranty obligation for:

- the use of unsuitable parts or operating materials,
- unauthorised 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 Environmental Protection

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



- Do not allow cooling oil to escape to the environment or into the sewage system.

4 Design and Function

4.1 Enclosure

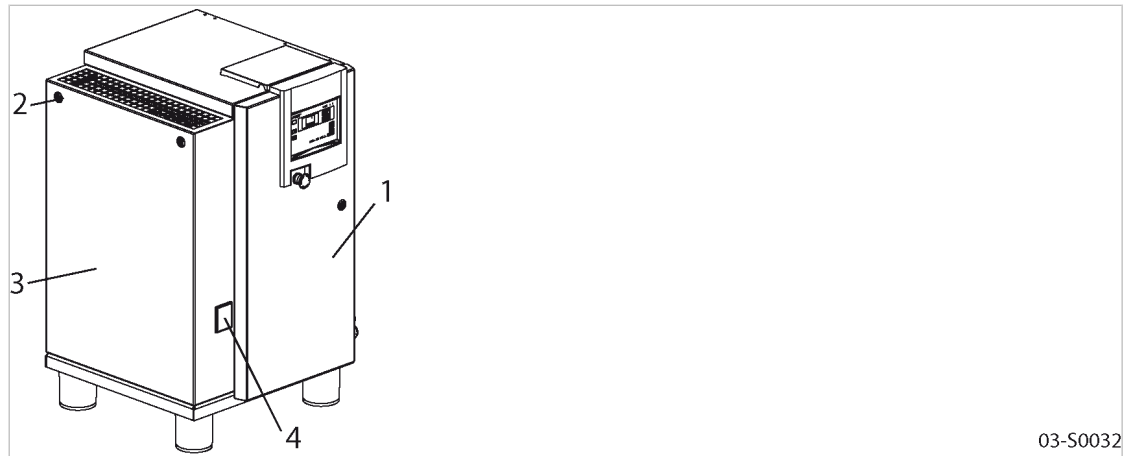


Fig. 3 Enclosure overview

- | | | | |
|---|----------------------|---|------------------------------------|
| ① | Control cabinet door | ③ | Panel (removable) |
| ② | Latch | ④ | Oil level indicator viewing window |

The enclosure, when closed, serves various functions:

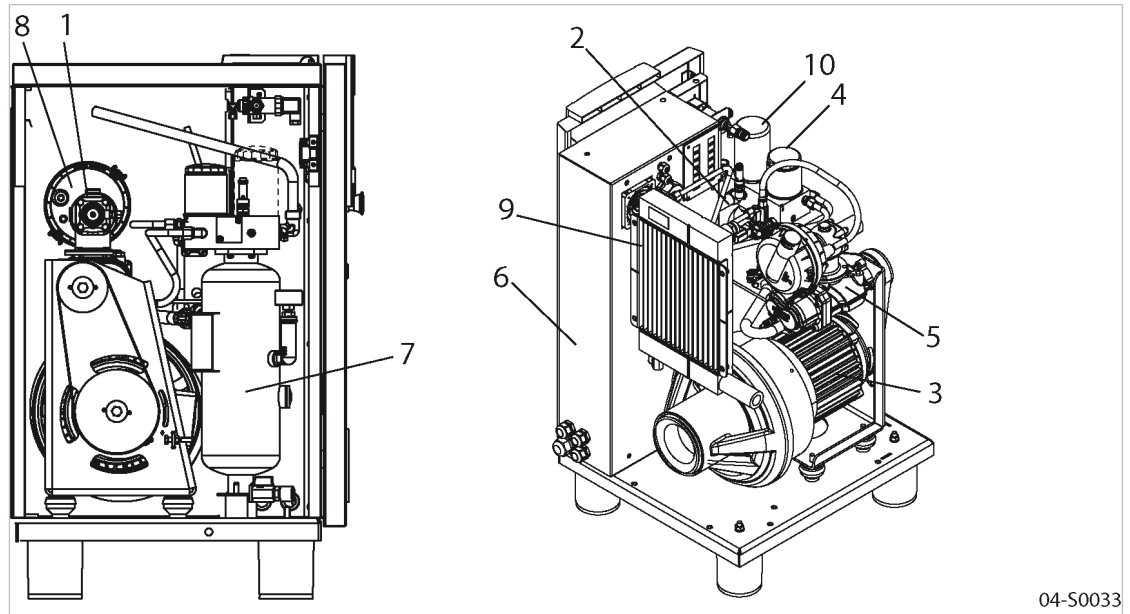
- Sound insulation
- Protection against contact with components
- Cooling air flow

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.

Access doors are hinged to swing open and removable panels can be lifted off.
Latches are released by a key supplied with the machine.

4.2 Function

Fig. 4 Machine layout

- | | | | |
|---|--------------------------------|---|-------------------------|
| ① | Inlet valve | ⑥ | Control cabinet |
| ② | Minimum pressure / check valve | ⑦ | Oil separator tank |
| ③ | Drive motor | ⑧ | Air filter |
| ④ | Oil filter | ⑨ | Oil/air cooler |
| ⑤ | Airend | ⑩ | Oil separator cartridge |

Ambient air is cleaned as it is drawn in through the filter ⑧.

The air is then compressed in the airend ⑤.

The airend is driven by an electric motor ③.

Cooling oil is injected into the airend. It lubricates moving parts and forms a seal between the rotors themselves and between them and the airend casing. This direct cooling in the compression chamber ensures a very low airend discharge temperature.

Cooling oil recovered from the compressed air in the oil separator tank ⑦ and separator cartridge ⑩ gives up its heat in the oil cooler ⑨. The oil then flows through the oil filter ④ and back to the point of injection. Pressure within the machine keeps the oil circulating. A separate pump is not necessary. A thermostatic valve maintains optimum cooling oil temperature.

Compressed air passes through the minimum pressure / check valve ② into the air cooler ⑨. The minimum pressure / check valve ensures that there is always a minimum internal air pressure sufficient to maintain cooling oil circulation in the machine.

The cooler brings down the compressed air temperature to only 5 K to 10 K above ambient. Most of the moisture carried in the air is removed during this cooling process.

4.3 Floating relay contacts

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

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



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

4.4 Remote LOAD-IDLE control

The controller enables remote control of the LOAD phase by an external floating relay contact.

Connections

Delivery condition

- The connections in the controller are wire bridged.
- With the bridge in place, the controller toggles the machine between LOAD and IDLE.



➤ Reinststate this delivery condition when the machine is not to be remotely controlled.

Function

- Contact closed: LOAD
- Contact open: IDLE

When the contact closes the machine switches to LOAD. When the contact opens the machine switches to IDLE.

At the end of the idling period, the machine switches to STANDSTILL and is in stand-by. The length of the idling period depends on the control mode being selected.

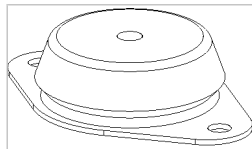
If the «ON» key is pressed while the remote contact is open, the machine remains in stand-by and starts as soon as the remote contact closes.

4.5 Options

The options available for your machine are described below.

4.5.1 Option H1 Machine mountings

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



04-S0034

Fig. 5 Machine mountings

4.6 Operating modes and control modes

4.6.1 Operating modes

The machine operates in the following modes:

- **LOAD:**
The inlet valve is open. The airend delivers compressed air to the system.
The drive motor runs under full load.
- **IDLE:**
The inlet valve is closed. The minimum pressure/check valve shuts off the oil separator from the air system. The oil separator tank is vented.
A small volume of air circulates through the bleed hole in the inlet valve, through the airend and back to the inlet valve via the venting valve.
The compressor motor runs without load and draws little current.
- **STANDSTILL:**
The inlet valve is closed. The minimum pressure/check valve shuts off the oil separator from the air system. The oil separator tank is vented.
The compressor motor is stopped.

Option C1

- **MODULATING:**
With the help of a control valve (modulating controller), the degree of opening of the inlet valve is continuously varied in relation to the actual air demand. The airend delivers compressed air to the system.
The load and power consumption of the drive motor rises and falls with the air demand.
The regulating valve is factory set. The setting should not be changed without consultation with KAESER Service.

4.6.2 Control modes

Using the selected control mode, the controller switches the compressor motor according to definite rules (the control mode) between the various operating modes in order to compensate for air being drawn off by consumers and maintain the machine's working pressure between the preset cut-in and cut-out pressures.

The SIGMA CONTROL BASIC can work with the following control modes:

- DUAL
- QUADRO
- MODULATING control

Option C1

Energy-efficient control modes for various applications:

Application	Recommended control mode
Compressed air station with one machine or several machines with comparable delivery	QUADRO
Machine for peak load in a compressed air station	DUAL
Machine for intermediate load in a compressed air station	QUADRO
Machine for basic load in a compressed air station	QUADRO

Tab. 30 Energy-efficient control modes

The SIGMA CONTROL BASIC control unit is factory set to QUADRO control mode unless specifically ordered otherwise.

DUAL

In the DUAL control mode, the machine is switched back and forth between LOAD and IDLE to maintain pressure between the preset minimum and maximum values. When maximum pressure is reached, the machine switches to IDLE. When the preset *idling time* has elapsed, the machine switches to STANDSTILL.

The *idling time* is fixed in SIGMA CONTROL BASIC.

QUADRO

In the QUADRO mode, the controller operates as in the DUAL mode during periods of high air demand by switching between LOAD and IDLE, but during periods of low air demand it switches directly to STANDSTILL.

This mode of control requires two pre-set time periods: the *running time* and the *idle/standstill time*. The *idling/standstill time* and the *running time* are set in SIGMA CONTROL BASIC.

Option C1 MODULATING control

MODULATING control is based on the DUAL control mode. The difference to DUAL is that the air delivery is continuously varied within the control range of the machine. This control mode is not available on variable speed machines with a frequency-controlled drive (SFC).

Compressed Air Demand	Operating modes
rises	MODULATING LOAD
falls	MODULATING IDLE STANDSTILL

Tab. 31 Operating modes under MODULATING control

4.7 Safety Devices

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

- EMERGENCY STOP button:
The EMERGENCY STOP button shuts down the machine immediately. The motor remains stopped. The pressure system is vented.
- Pressure relief valve:
The pressure relief valve protects the machine from excessive pressure. It is preset at the factory.
- Door interlock switches:
The machine will stop automatically if a door or panel fitted with these safety interlocks is opened or removed.
- Enclosures and guards for moving parts and electrical connections:
These protect against accidental contact.

4.8 SIGMA CONTROL BASIC Keys and Indicators

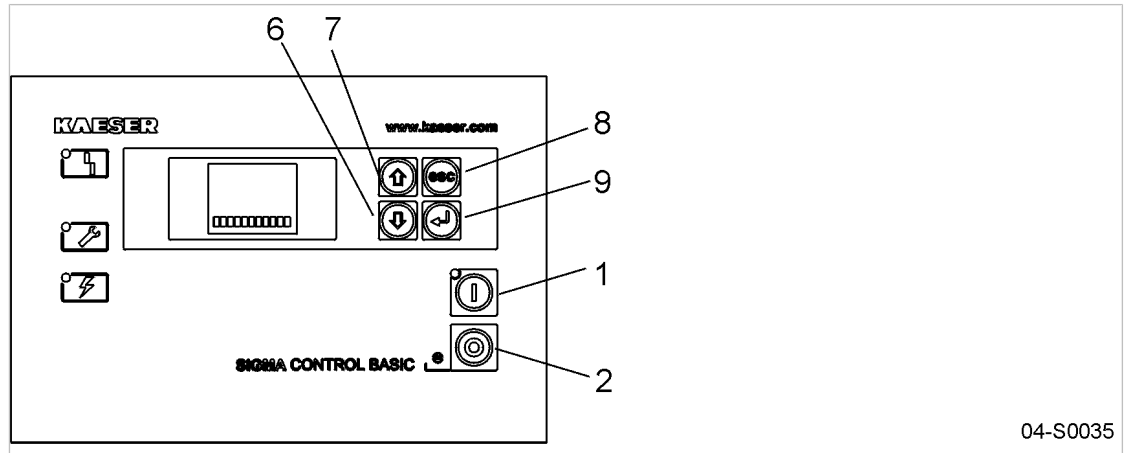


Fig. 6 Keys

Item	Description	Function
1	«ON»	Switches the machine on.
2	«OFF»	Switches the machine off. Resets alarms. Resets the maintenance interval counter.
6	«DOWN»	Scrolls down the parameter list. Reduces a parameter value.
7	«UP»	Scrolls up the parameter list. Increases a parameter value.
8	«escape»	Exits the edit mode without saving.
9	«enter»	Enters edit mode. Exits the edit mode and saves. Only affects the value in the third line of the display.

Tab. 32 Keys

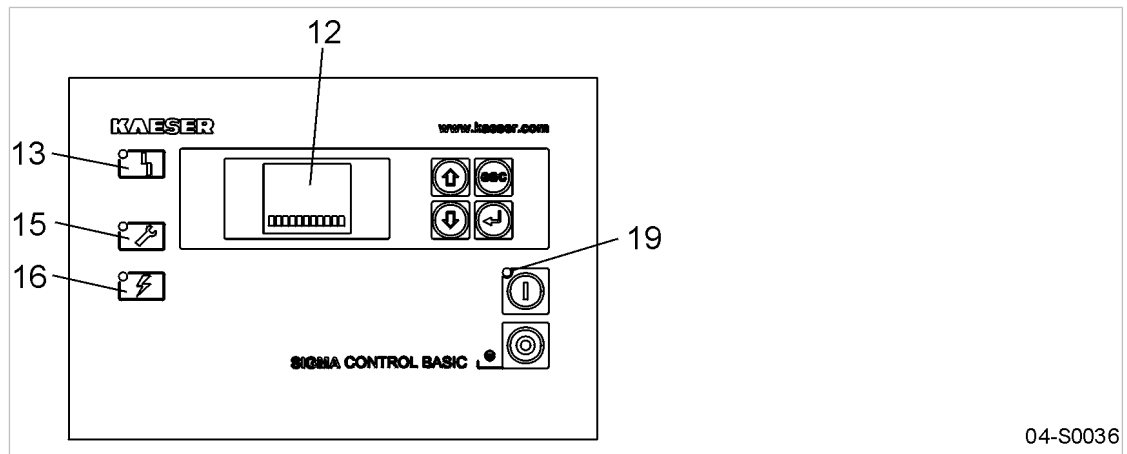


Fig. 7 Indicators



Item	Description	Function
12	Display field	Alphanumeric display with 4 lines.
13	<i>Alarm</i>	Flashes red when an alarm occurs. Lights continuously when acknowledged.
15	<i>Warning</i>	Lights yellow for: <ul style="list-style-type: none"> ■ maintenance work due, ■ warning messages
16	<i>Controller power</i>	Lights green when the power supply to the controller is switched on.
19	<i>Machine ON</i>	Lights green when the machine switched on.

Tab. 33 Indicators

4.9 SIGMA CONTROL BASIC function

4.9.1 Display layout

x x . x b a r	Line 1
y y ° C	Line 2
z 0 0 0 0 h	Line 3
1 2 3 4 5 6 7 8 S p T i	Line 4

Line	Display	Meaning
1	xx.x	Current system pressure in bar, psi or MPa.
2	yy	Current aircend discharge temperature (ADT) in °C or °F.
3	z	Display of parameters and their settings(see table 35)
4	1, 2, ...	Error code for alarm and warning messages (see table 39 and table 40).
		Operating state: LOAD:
		Operating state: IDLE:

Tab. 34 Display

4.9.2 Parameter

Parameter	Meaning
0	Operating hours counter Displays the total time the drive motor was switched on. Only KAESER Service has the right to change these parameters.
1	Load hours counter Shows the total time the drive motor has run under LOAD. Only KAESER Service has the right to change these parameters.

Parameter	Meaning
2	<p>Maintenance interval counter</p> <p>Displays the number of operating hours until the next scheduled maintenance is due. SIGMA CONTROL BASIC counts down the operating hours from a default value. The warning message <i>S</i> is displayed when the counter reaches zero. The maintenance interval counter is reset to its default value after the maintenance work has been carried out. The interval starts anew.</p> <p>A password is required to change these parameters.</p>
3	<p>Relief valve test mode</p> <p>This function switches the activating pressure check mode for the pressure relief valve on and off.</p> <p>The warning message <i>i</i> is displayed when the check mode is switched on.</p> <p>A password is required to change these parameters.</p> <p>See chapter for the password and carrying out the check. 10.10</p>
4	<p>Unit of measurement for display of temperature</p> <p>The airend discharge temperature can be displayed in either °C or °F.</p>
5	<p>Units used for display of pressure</p> <p>The current working pressure can be displayed in bar, psi or MPa.</p>
6	<p>Control modes</p> <p>Factory setting: OFF</p> <p>This parameter changes the control mode.</p> <ul style="list-style-type: none"> ■ OFF: QUADRO ■ ON: DUAL
7	<p>Refrigeration dryer control modes</p> <p>Factory setting: OFF</p> <p>This parameter changes the dryer control mode.</p> <ul style="list-style-type: none"> ■ OFF: TIMER ■ ON: CONTINUOUS
8	<p>Switching the refrigeration dryer on and off</p> <p>Factory setting: ON (option T3)</p> <p>This parameter switches the dryer permanently on or off.</p> <ul style="list-style-type: none"> ■ OFF: Dryer switched off ■ ON: Dryer switched on <p>A password is required to change these parameters. In machines without a refrigeration dryer, the parameter is factory set to OFF.</p>
C	<p>Setpoint pressure: switching differential</p> <p>The switching differential determines the difference between cut-in pressure and cut-out pressure (system pressure setpoint: switching point) and therefore the switching frequency from LOAD to IDLE.</p> <p>Range of adjustment [bar]: -0.1 ... -5.0</p>


Parameter	Meaning
D	Setpoint pressure: switching point The switching point corresponds to the working pressure of the air system and the cut-out pressure of the machine. Range of adjustment [bar]: 5.5 ... maximum working pressure
E	maximum possible setpoint pressure setting Only KAESER Service has the right to change these parameters.
F	Options The displayed value informs KAESER Service concerning the controller's internal machine configuration.

Tab. 35 Parameter


Further information Means of changing or adjusting parameters are given in chapter 8.4.

4.9.3 Messages

Alarm message

An alarm shuts the machine down automatically. The red LED  flashes (figure 7).

Warning message

The yellow LED lights  to indicate a warning (figure 7).

5 Installation and Operating Conditions

5.1 Safety

- Strictly forbid fire, open flame and smoking.
- If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting oil vapours or parts of the machine.
- The machine is not explosion protected!
Do not operate in areas in which specific requirements with regard to explosion protection are in force.
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Ensure that required ambient conditions are maintained with regard to:
 - Ambient temperature and humidity
 - clean inlet air with no damaging contaminants,
 - explosive or chemically unstable gases or vapours,
 - acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.
- 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.

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.

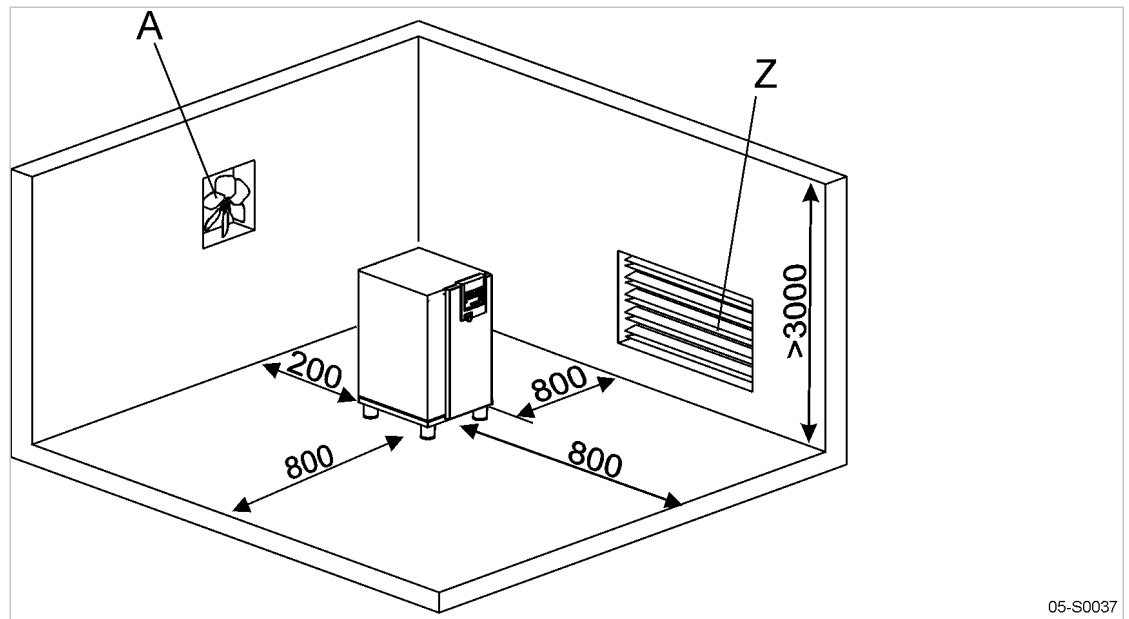


Fig. 8 Recommended machine placement and dimensions [mm]

- Exhaust fan
- Air inlet aperture



CAUTION

Ambient temperature too low!

Frozen condensate and highly viscous cooling oil can cause damage when starting the machine.

- Make sure that the temperature of the machine is at least +3 °C before starting.
- Heat the machine room adequately or install an auxiliary heater.

1. If installed outdoors, protect the machine against frost, direct sunlight, dust and rain.
2. Ensure adequate lighting so that all work on the machine can be carried out without danger or hindrance.

5.2.2 Ensure adequate ventilation.



If the ventilation is insufficient, a partial vacuum can be created in the room.

1. Ensure that the volume of air flowing into the machine room is at least equivalent to that being removed from it by the machine and exhaust fan.
2. Make sure that the machine and exhaust fan can only operate when the inlet aperture is actually open.
3. Keep the inlet and exhaust apertures free of obstructions so that the cooling air can flow freely through the room.

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:
 - the design of the exhaust air ducting
 - the intersection between the machine and the exhaust air duct
 - the length of the ducting
 - the number of duct bends
 - the design of flaps or shutters



Use only motorised ventilation flaps and louvers on variable frequency drive (SFC) only use flaps or shutters that are operated by a motor.
Flaps or shutters that are opened by the the action of airflow against the force of gravity do not open sufficiently at low cooling fan speeds.

Further information Further information on installation of exhaust air ducts can be found in chapter 13.3.

5.3 Operating the Machine in an Air System.

If the machine is supplying an air system, the system operating pressure may not exceed 16 bar.
When charging a fully vented air system there is generally a very high rate of airflow through the air treatment devices. These cannot function correctly under such conditions. Air quality suffers.
To ensure the desired air quality when charging a vented air network, we recommend the installation of an air main charging system.

- Consult KAESER for advice on this subject.

6 Installation

6.1 Safety

Follow the instructions below for safe installation.

Warning instructions are always given before a potentially dangerous action.

Basic safety instructions

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

Working on live components.

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

Working on pressure systems

1. Close shut-off valves or otherwise isolate the machine from the compressed air system to ensure that no compressed air can flow back into the machine.
2. Vent all pressurized components and chambers completely.
3. Check all hose couplings in the compressed air system with a hand-held pressure gauge to ensure that they all read 0 bar.
4. Do not open or dismantle any valves.

Working on the drive system

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

Further information Details of authorized personnel are found in chapter 3.4.2.
Details of dangers and their avoidance are found in chapter 3.5.

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

Precondition The compressed air system is vented completely.

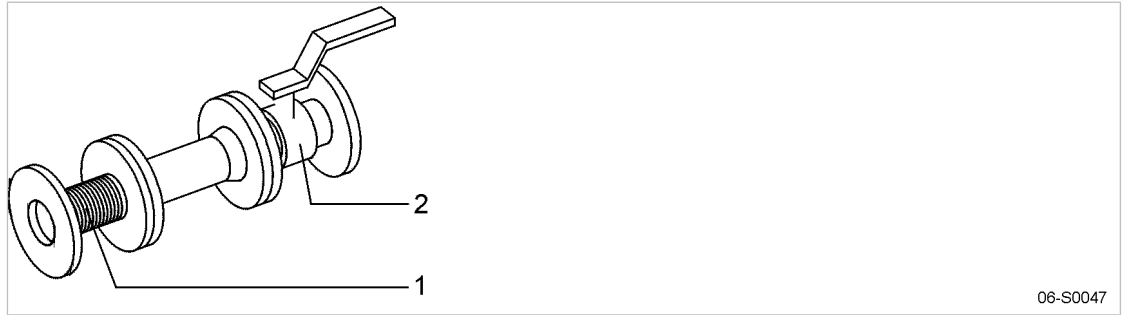


Fig. 9 Compressed air connection

- ① Axial compensator or hose
- ② Shut-off valve

**WARNING**

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

- Vent all pressurized components and chambers completely.

1. A shut off valve must be installed by the user in the connection line.
2. Make the compressed air connection with an axial compensator or hose.

6.4 Making the Power Supply Connection

Precondition All three phases of the power supply are isolated, the disconnect device is locked in the off position, a check has been made that no voltage is present.

1. Have the power supply connected by authorized installation personnel or an authorized electrician only.
2. Carry out safety measures as stipulated in relevant regulations (IEC 364, for example) and in national accident prevention regulations (BGV A3 in Germany). In addition, observe the regulations of the local electricity supplier.
3. Test the overload protection cut-out 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 tapplings on the control voltage transformer are connected according to the supply voltage.
If not, change the tapplings to suit the power supply voltage.

**DANGER**

Danger of fatal injury from electric shock!

- Switch off and lock out the power supply disconnecting device and check that no voltage is present.

7. Connect the machine to the power supply.

Further information The electrical diagram 13.4 contains further details of the power supply connection.

6.5 Connecting the remote contact LOAD-IDLE control

Material Screwdriver: DIN 5264 A – 0.4 x 2.5 mm
 Flexible cable: 0.5–1.5 mm² (maximum length 100 m; recommended is: NYSLYÖ 2 x 1.0 mm²)

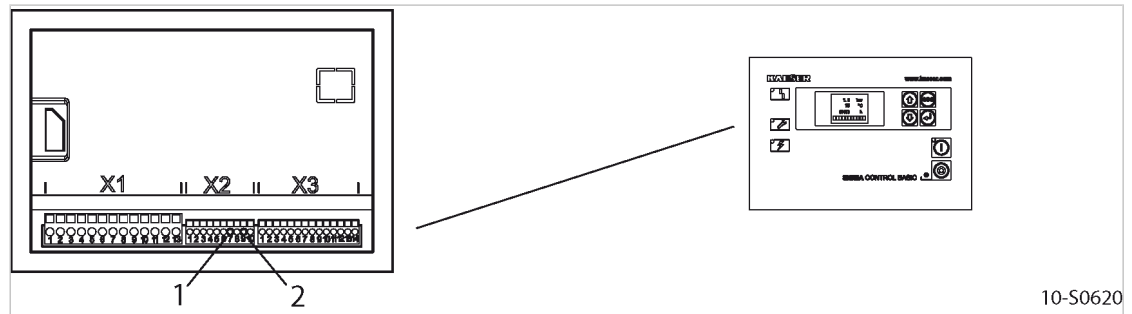


Fig. 10 Connections to SIGMA CONTROL BASIC

- ① Input I4: pin 7
- ② Supply 24 V DC: pin 9

1. Lay the cable so that it does not come under tension when the control cabinet door is opened.
2. Strip 8 mm of insulation from the ends of the conductors.
3. Use a screwdriver to open the spring-loaded terminals and insert the ends of the conductors in the square openings above the corresponding terminals.
4. Secure the cable so there is no tension on the X2 plug.
5. Seal the cable gland against ingress of dirt or moisture.

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 13.3.

7 Initial Start-up

7.1 Safety

Instructions for Safe Initial Start-up of the Machine.

Warning instructions are always given before a potentially dangerous action.

Basic safety instructions

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

Working on live components

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

Working on pressure systems

1. Close shut-off valves or otherwise isolate the machine from the compressed air system to ensure that no compressed air can flow back into the machine.
2. Vent all pressurized components and chambers completely.
3. Check all hose couplings in the compressed air system with a hand-held pressure gauge to ensure that they all read 0 bar.
4. Do not open or dismantle any valves.

Working on the drive system

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

Further information Details of authorized personnel are found in chapter 3.4.2.
Details of dangers and their avoidance are found in chapter 3.5.

7.2 Instructions to be Observed before before Every Start-Up

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

7 Initial Start-up

7.3 Checking installation and operating conditions

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

Special measures for initial start-up after storage

Storage period longer than	Measure
12 months	<ul style="list-style-type: none"> ➤ Change the oil filter. ➤ Change the oil separator cartridge. ➤ Change the cooling oil. ➤ Have the motor bearings checked by an authorized KAESER service representative.
36 months	<ul style="list-style-type: none"> ➤ Have the overall technical condition checked by an authorized KAESER Service representative.

Tab. 36 Initial start-up after storage

7.3 Checking installation and operating conditions

- Check and confirm all the items in the checklist before initially starting the machine.

To be checked	See chapter	Confirmed?
➤ Are the operators fully conversant with safety regulations?	–	
➤ Have all the positioning conditions been fulfilled?	5	
➤ Is a user's lockable power supply disconnecting device installed?	6.4	
➤ Does the power supply conform to the specifications on the name-plate?	2.1	
➤ Are the power supply cable conductor cross-sections and fuse ratings adequate?	2.14	
➤ Drive motor overload protection switch set according to the mains voltage?	7.4	
➤ Have all electrical connections been checked for tightness? (The check must be repeated after 50 operating hours)	–	
➤ Is a shut-off valve fitted to compressed air outlet?	6.3	
➤ Has the connection to the air system been made with a hose or axial compensator?	6.3	
➤ Is there sufficient cooling oil in the separator tank?	10.9	
➤ Is there sufficient cooling oil in the airend?	7.5	
➤ Is the machine firmly anchored to the floor? (option H1)	6.6.1	
➤ Are door interlock switches aligned and their function checked?	7.8	
➤ Are all access doors closed and latched and all removable panels in place and secured?	–	

Tab. 37 Installation conditions checklist

7.4 Setting the overload protection cut-out

Electrical diagram 13.4 gives the location of the overload protection cut-out.

Option C17 Direct online starting (SX3 only)

In the direct-starting configuration, the phase current is fed to the drive motor via the overload protection cut-out.

To prevent the overload protection cut-out from being triggered by voltage fluctuations, temperature influences or component tolerances, the setting can be higher than the rated motor current.

- Check the overload protection cut-out setting.



The overload protection cut-out shuts the machine down despite being correctly set?

- Contact the KAESER Service.

Star-delta starting

With star-delta starting, the phase current is fed via the overload protection cut-out. This phase current is 0.58-times the rated motor current.

To prevent the overload protection cut-out from being triggered by voltage fluctuations, temperature influences or component tolerances, the setting can be higher than the arithmetical phase current.

- Check the overload protection cut-out setting.



The overload protection cut-out shuts the machine down despite being correctly set?

- Contact the KAESER Service.

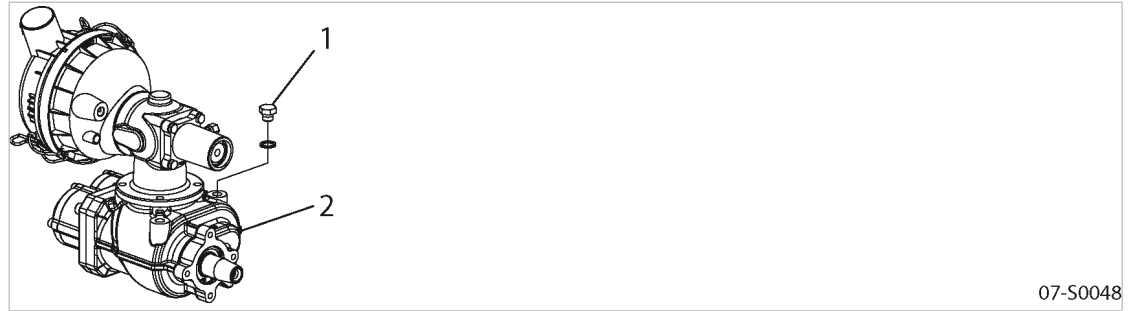
7.5 Filling cooling oil into the airend

Before starting the compressor for the very first time and before re-starting after a shutdown period of more than 3 months it is necessary to manually add a quantity of cooling oil into the airend. In order to avoid that the cooling oil exceeds the permissible level, drain the required quantity from the de-pressurised oil separator tank.

Chapter 10.14 provides detailed information on how to drain cooling oil from the oil separator tank.

Material 0.25l Cooling oil

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



07-S0048

Fig. 11 Inlet valve filling port

- ① Screw plug
- ② Compressor block

1. Remove the filler plug from the airend.
2. Pour the stipulated amount of cooling oil into the airend and replace the filler plug.
3. Turn the rotors manually by means of the belt pulley to distribute the oil.

7.6 Checking direction of rotation

The machine is designed for a clockwise phase sequence.

Ideally, the direction of phase rotation should be measured with a phase sequence meter. Alternatively, the machine can be started very briefly and the rotation direction of the motor cooling fans noted.

1. Check the direction of phase rotation with a phase sequence meter.
2. If the direction is incorrect, reverse supply phases L1 and L2.



You have no 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 motor with the arrows on the motor and the airend casing.
- If the direction is incorrect, reverse supply phases L1 and L2.

7.7 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. Open the shut-off valve to the air network.
2. Switch on the power supply disconnecting device.
 After the controller has carried out a self-test, the green *controller ON* LED lights continuously.
3. Press the «ON» key.
 The green *Machine ON* LED lights continuously.
 The drive motor runs up and after a short time the machine switches to LOAD and delivers compressed air.



- Keep an eye on the machine during the first few hours of operation to ensure that it is operating correctly.
- After the first 50 operating hours, check all electrical connections and tighten where necessary.

Recognising damaging condensate

Machines of this type are generally only lightly utilized. Condensate can build up in lightly utilized machines with detrimental effects to the cooling oil and the machine itself. You can determine if your machine falls into this category by regular sampling of the cooling oil during the first week of operation.



- Make sure you are familiar with the procedure before draining off any oil.
- A small quantity of cooling oil should be drained out to check for condensate at least once a week during the first 4 weeks of operation.



- Condensate in the cooling oil?
- Contact KAESER Service.

Further information Information on draining off cooling oil is given in chapter 10.14.

7.8 Checking the Door Interlock Switch

The interlock switch stops the machine as soon as the front access panel is opened. Check the interlock switch function before every start-up.



- The door interlock switch is an important safety device.
- The machine may only be operated with a correctly functioning interlock switch.

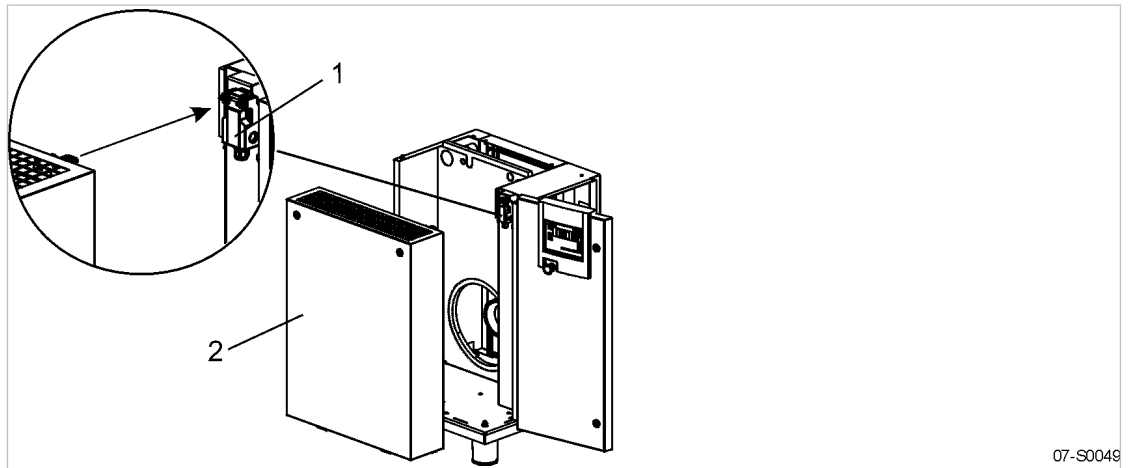


Fig. 12 Location of the interlock switch

- ① Door interlock switch
- ② Access panel

1. Open the access panel ② while the machine is running. The machine shuts down automatically. The controller displays an alarm message.
2. Close the panel and acknowledge the alarm.



The machine does not shut down?

- Have the interlock switch checked by an authorised KAESER Service representative.

7.9 Setting the setpoint pressure

The setpoint pressure (cut-out pressure) is factory set at the maximum permissible working pressure of the machine.

Adjustment is necessary for individual operating conditions.



Do not set the setpoint pressure of the machine higher than the maximum working pressure of the air system.

The machine may not toggle more than twice per minute between LOAD and IDLE.

To reduce the cycling (toggling) frequency:

- Increase the difference between cut-in and cut-out pressure.
- Add a larger air receiver downstream to increase buffer capacity.

Setpoint pressure: switching point

1. Scroll with the arrow keys until the parameter D "setpoint pressure: switch.point" is displayed in line 3.
2. Press and hold «enter» for at least 3 seconds until the cursor flashes.
3. Use the arrow keys to set the desired switching point and confirm with «enter».

Setpoint pressure: switching differential

This switching differential is factory set. Adjust this parameter if the motor starting frequency is too high.

1. Scroll with the arrow keys until the parameter C "setpoint pressure: switching differential" is displayed in line 3.
2. Press and hold «enter» for at least 3 seconds until the cursor flashes.
3. Use the arrow keys to set the desired differential and confirm with «enter».

8 Operation

8.1 Switching on and off

Always switch the machine on with the «ON» key and off with the «OFF» key.
A power supply disconnecting device has been installed by the user.

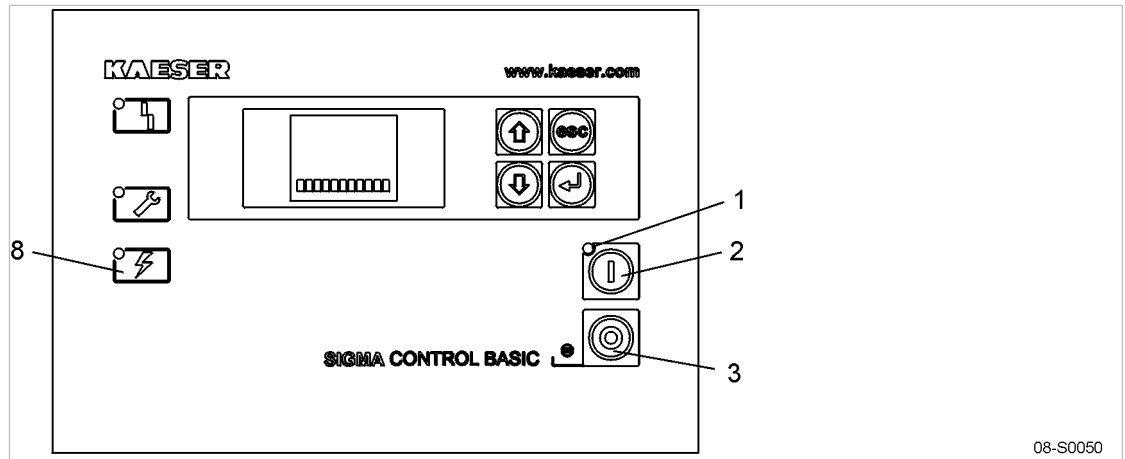


Fig. 13 Switching on and off

- | | |
|---------------------------------|------------------------------------|
| ① LED <i>Machine ON</i> (green) | ③ «OFF» key |
| ② «ON» key | ⑧ LED <i>Controller ON</i> (green) |

8.1.1 Switching on

Precondition No personnel are working on the machine
All access doors and panels are closed and secure.

1. Switch on the power supply disconnecting device.
After the controller has carried out a self-test, the green *controller ON* LED lights continuously.
2. Press the «ON» key.
The green *Machine ON* LED lights continuously.



If a power failure occurs, the machine 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 system pressure is lower than the setpoint pressure (cut-out pressure).

8.1.2 Switching off

Depending on current operating condition, the machine shuts down after a protective run-on period.

LOAD	IDLE
The machine switches to IDLE. The <i>Machine ON</i> LED flashes. The drive motor comes to a stop after about 15 seconds. The <i>Machine ON</i> LED extinguishes.	The motor stops immediately. The <i>Machine ON</i> LED extinguishes.

Tab. 38 Switching off with/without run-on time.

1. Press the «OFF» key.
 The machine is ready to operate as soon as the *Machine ON*LED is extinguished. The machine can be started again.
2. Switch off and lock out the power supply disconnecting device.
 The machine is switched off and disconnected from the mains supply. The *Controller ON*LED extinguishes.

8.2 Switching Off in an Emergency and Switching On again

The EMERGENCY STOP pushbutton is located below the control panel.

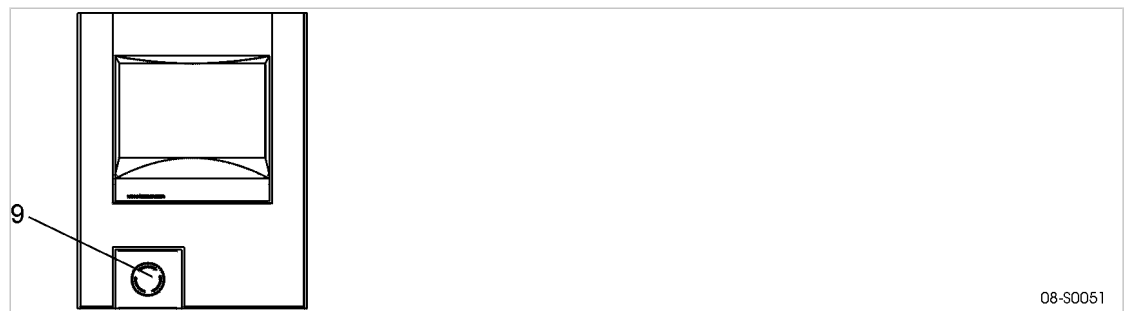


Fig. 14 Switching off in an emergency

- ⑨ EMERGENCY STOP pushbutton

Shutdown

- Press the EMERGENCY STOP pushbutton.
 The pushbutton remains latched in.
 The compressor's pressure system is vented and the machine is prevented from automatically re-starting.

Switching on

Precondition The fault has been rectified

1. Turn the EMERGENCY STOP pushbutton in the direction of the arrow to unlatch it.
2. Press the reset key to reset any alarm messages.
 The machine can now be started again.

8.3 Acknowledging alarm and warning messages

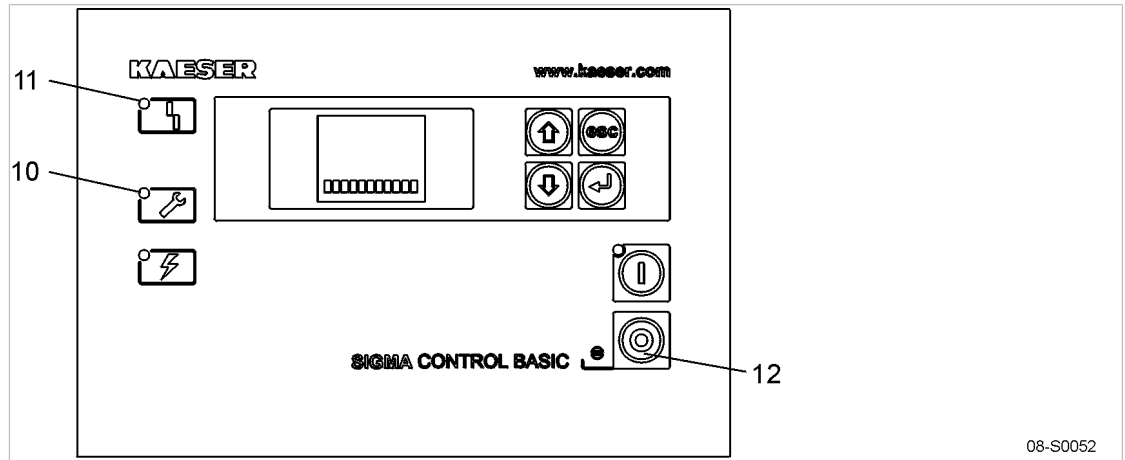


Fig. 15 Acknowledging messages

- 10 Warning LED (yellow)
- 11 Alarm LED (red)
- 12 «Acknowledge» key

Alarm message

Messages are displayed on the "new value" principle:

- Message received: LED flashes
- Message acknowledged: LED lights
- Message gone: LED extinguished

or

- Message received: LED flashes
- Message gone: LED flashes
- Message reset: LED extinguished

- Rectify the fault and acknowledge the message with the «acknowledge» key.
alarm LED extinguishes.

The machine is now ready to start again.

Warning message

- Message coming: LED flashes
- Message gone: LED extinguished

- Rectify fault or carry out maintenance.

The Warning LED extinguishes as soon as the cause of the warning is rectified.

8.4 Setting parameters

If a password is needed it is requested automatically.

Every action can be cancelled with the «escape» key.



If no key is pressed for ten seconds in the edit mode, the display automatically returns to the previous mode.
Restarting the controller is not necessary. Edited parameters are immediately effective.
Network pressure and airend discharge temperature are neither updated nor displayed whilst in the edit mode.

Entering the edit mode

1. Scroll with the «UP»/«DOWN» keys until the desired parameter appears in line 3.
2. Depress the «enter» key for at least 3 seconds.

Result Depending on the parameter, either the displayed value or the the first character of the required password flashes.

Changing a parameter that is not password protected

Precondition The current parameter setting flashes.

- Use the «UP»/«DOWN» keys to change the value of the parameter and confirm with «enter».

Changing a password protected parameter

Some parameters can only be edited after a password has been entered.

Password: BASIC



This password will be automatically reset if no key is pressed within 5 minutes.

Precondition The first character flashes.

1. Select the first character with the «UP»/«DOWN» key and confirm with «enter».
The next character flashes.
2. Repeat until all characters have been entered.
When the correct password is entered the parameters are displayed.
3. Use the «UP»/«DOWN» keys to change the value of the parameter and confirm with «enter».

9 Fault Recognition and Rectification

9.1 Basic Information

The following tables are intended to assist in locating faults.

There are three types of fault:

- Alarm: red LED flashes - see chapter 9.2.
- Warning: yellow LED flashes - see chapter 9.3.
- Other faults: no indication - see chapter 9.4.




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





1. Do not attempt fault removal measures other than those given in this manual.
2. In all other cases:
have the fault rectified by an authorised KAESER service representative.

9.2 Alarm messages (machine stop)

The fault code appears in the 4th line of the display field.

A sticker with symbols on the machine explains the fault code.

fault code	Sign	Meaning	Remedy
1		EMERGENCY STOP pushbutton pressed. Interlocked access door open or panel removed.	<ul style="list-style-type: none"> ➤ Unlatch the EMERGENCY STOP pushbutton ➤ Close the access door or fit the panel.
2		Motor alarm Overload protection of drive or fan motor (if fitted). Frequency-controlled machines Alarm in the frequency converter.	<ul style="list-style-type: none"> ➤ Check the setting of the overload protection cut-out / motor overload protection switch. ➤ Change the oil separator cartridge. ➤ Check minimum pressure/check valve. ➤ Have the frequency converter checked by an authorized KAESER service representative.
3		There is build-up of back pressure: <ul style="list-style-type: none"> ■ incorrect direction of motor rotation ■ drive belts parted ■ compressor not venting correctly at STANDSTILL. ■ Back-pressure switch defective Brief interruption of power supply.	<ul style="list-style-type: none"> ➤ Changeover phase lines L1 and L2. ➤ Replace drive belts. ➤ Have the frequency converter checked by an authorized KAESER Service Technician.





fault code	Sign	Meaning	Remedy
4		Maximum permissible airoend discharge temperature exceeded.	<ul style="list-style-type: none"> ➤ Clean the cooler. ➤ Maintain sufficient distance between the cooling air inlet and exhaust openings and any wall. Check the cooling oil level. ➤ Ensure that the permissible room temperature is not exceeded. ➤ Change the oil filter.
5		Fault in the refrigeration dryer.	<ul style="list-style-type: none"> ➤ Clean the refrigerant condenser. ➤ Ensure adequate ventilation. ➤ Install an extractor fan.
6		Defective analog input (pressure or temperature sensor).	<ul style="list-style-type: none"> ➤ Check lines and connections.
7		Maximum permissible temperature of the controller housing exceeded.	<ul style="list-style-type: none"> ➤ Ensure adequate ventilation. ➤ Ensure that the permissible room temperature is not exceeded.
8	–	Spare.	–

Tab. 39 Alarm indications

9.3 Warning messages

he error code appears in the 4th line of the display field.

A sticker with symbols on the machine explains the error code.

Fault code	Sign	Meaning	Action
S		Maintenance interval has elapsed.	<ul style="list-style-type: none"> ➤ Carry out maintenance.
p		Back pressure present.	<ul style="list-style-type: none"> ➤ Check direction of drive motor rotation.
T		Machine below minimum permissible starting temperature.	<ul style="list-style-type: none"> ➤ Increase room temperature.
i		Pressure relief valve check mode switched on.	<ul style="list-style-type: none"> ➤ Check pressure relief valve. ➤ Deactivate check mode.

Tab. 40 Warning messages

9.4 Other Faults

Fault	Possible cause	Remedy
Machine runs but produces no compressed air.	Inlet valve not opening or only opening partially.	Call KAESER service representative.
	Venting valve not closing.	Call KAESER service representative.
	Leaks in the pressure system.	Check pipework and connections for leaks and tighten any loose fittings.
	Air consumption is greater than the capacity of the compressor.	Check the air system for leaks. Shut down the consumer(s).
	Hose coupling or maintenance hose still plugged into the quick-release coupling on the oil separator tank.	Remove coupling or maintenance hose.
Cooling oil runs out of the air filter.	Oil level in the oil separator tank too high.	Drain off oil until the correct level is reached.
	Inlet valve defective.	Call KAESER service representative.
Compressor switches between LOAD and IDLE more than twice per minute.	Air receiver too small.	Increase size of air receiver.
	Airflow into the compressed air network restricted.	Increase air pipe diameters. Check filter elements.
	The differential between cut-in and cut-out pressure too is small.	Check switching differential.
Cooling oil leaking into the floor pan.	Hose coupling or maintenance hose still plugged into the quick-release coupling on the oil separator tank.	Remove coupling or maintenance hose.
	Oil cooler leaking.	Call KAESER service representative.
	Leaking joints.	Tighten joints. Replace seals.
Cooling oil consumption too high.	Unsuitable oil is being used.	Use SIGMA FLUID cooling oil.
	Oil separator cartridge split.	Change the oil separator cartridge.
	Oil level in the oil separator tank too high.	Drain off oil until the correct level is reached.
	Oil return line clogged.	Check dirt trap in the return line.

Tab. 41 Other faults and actions

10 Maintenance

10.1 Safety

Follow the instructions below to ensure safe machine maintenance.

Warning instructions are always given before a potentially dangerous task.

Basic safety instructions

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

Working on live components

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

Working on pressure systems

1. Close shut-off valves or otherwise isolate the machine from the compressed air system to ensure that no compressed air can flow back into the machine.
2. Vent all pressurized components and chambers completely.
3. Check all hose couplings in the compressed air system with a hand-held pressure gauge to ensure that they all read 0 bar.
4. Do not open or dismantle any valves.

Working on the drive system

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

Further information Details of authorized personnel are found in chapter 3.4.2.
 Details of dangers and their avoidance are found in chapter 3.5.

10.2 Maintenance Schedule

10.2.1 Logging Maintenance Work



The maintenance intervals given are those recommended for average operating conditions.

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

Adverse conditions are, e.g.:

- high temperatures
- much dust
- high number of load changes
- low load

- Adjust the maintenance intervals with regard to local installation and operating conditions.

- Keep a log of all service work.

This enables the frequency of individual maintenance tasks to be compared with Kaeser's recommendations.

Further information A list is given in chapter 10.17.

10.2.2 Resetting maintenance interval counters

SIGMA CONTROL BASIC is provided with a maintenance interval counter. The maintenance interval counter counts down the operating hours to the next maintenance task.

The counter reading shows the number of operating hours to the next periodic machine maintenance.

Reset the counter to the original value once the task has been carried out.

1. Select parameter 2 (maintenance interval counter) with the «UP»/«DOWN» keys.
2. Depress the «Enter» key for at least 3 seconds.
3. When the cursor flashes, confirm the offered value with the «Enter» key.

10.2.3 Regular maintenance tasks

The table below lists maintenance tasks required.

- Take note of the controller's service messages and carry out tasks punctually, taking ambient and operating conditions into account.

Interval	Maintenance task	see chapter
Weekly	Check the cooling oil level.	10.9
	Cooler: Check the filter mat.	10.3
	Control cabinet: Check the filter mat.	10.4

h = operating hours

Interval	Maintenance task	see chapter
Up to 1,000 h	Check the air filter.	10.6
	Clean the cooler.	10.5
	Cooler: Clean the filter mat.	10.3
	Control cabinet: Clean the filter mat.	10.4
Up to 3,000 h	Maintain the drive belt.	10.8
	Change the air filter element.	10.6
	Cooler: Change the filter mat.	10.3
	Control cabinet: Change the filter mat.	10.4
Up to 3,000 h	Change the oil filter.	10.15
At least annually	Change the oil separator cartridge.	10.16
Up to 6,000 h	Replace the drive belts.	10.8
Variable, see table 43	Change the cooling oil.	10.14
Annually	Check that all electrical connections are tight.	–
	Check the pressure relief valve.	10.10
	Check the overheating safety shutdown function.	10.11
	Check the cooler for leaks.	10.5

h = operating hours

Tab. 42 Regular maintenance tasks

10.2.4 Cooling Oil: Change Interval

Duty cycles and ambient conditions are important criteria for the number and length of the change intervals.



KAESER Service will support you in determining suitable intervals and provide information on the possibilities of oil analysis.

- Please observe national regulations regarding the use of cooling oil in oil-injected rotary screw compressors.
- Check operating conditions and adjust intervals as necessary; log the results in table 43 for future reference.

SIGMA FLUID	Maximum permissible oil change interval [operating hours/year]		
	Favourable operating conditions*	Unfavourable operating conditions	My operating conditions
S-460	6 000**/2	4 000/1	
MOL	3 000/1	2 000/1	

* Cool to moderate ambient temperatures, low humidity, high duty cycle

** Changing intervals of >6000 operating hours are not permissible without an oil analysis.

SIGMA FLUID	Maximum permissible oil change interval [operating hours/year]		
	Favourable operating conditions*	Unfavourable operating conditions	My operating conditions
FG-460	3 000/1	2 000/1	
FG-680	3 000/1	2 000/1	

* Cool to moderate ambient temperatures, low humidity, high duty cycle

** Changing intervals of >6000 operating hours are not permissible without an oil analysis.

Tab. 43 Cooling oil changing intervals

10.2.5 Regular service tasks

The table below lists necessary service tasks.

- Only an authorized KAESER Service Technician should carry out service work.
- Have service tasks carried out punctually taking ambient and operating conditions into account.

Interval	Service task
Up to 12,000 h	Have the valves checked.
Up to 12,000 h, at the latest every 3 years	Check the drive motor bearings
Up to 36,000 h, at the latest every 6 years	Have hose lines replaced.

h = operating hours

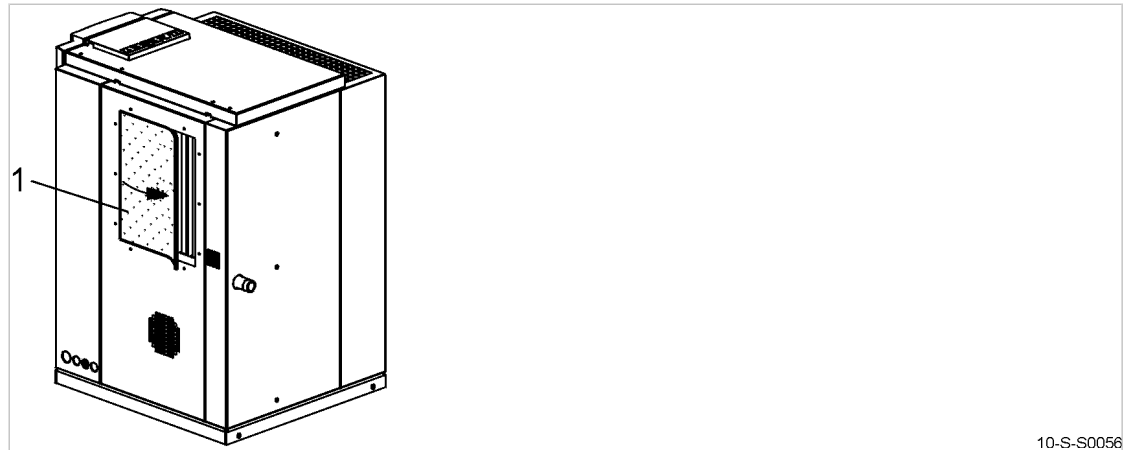
Tab. 44 Regular service tasks

10.3 Cooler: Cleaning or Renewing the Filter Mats

The filter mats help to keep the cooler clean. If the filter mats are clogged, adequate cooling of the components is no longer ensured.

Material Filter mats:
 Warm water and household detergent
 Spare parts (as required)

Precondition The machine is switched off.



10-S-S0056

Fig. 16 Filter mat for the air and oil cooler

- ① Filter mat

No tools are needed to remove the filter mat.

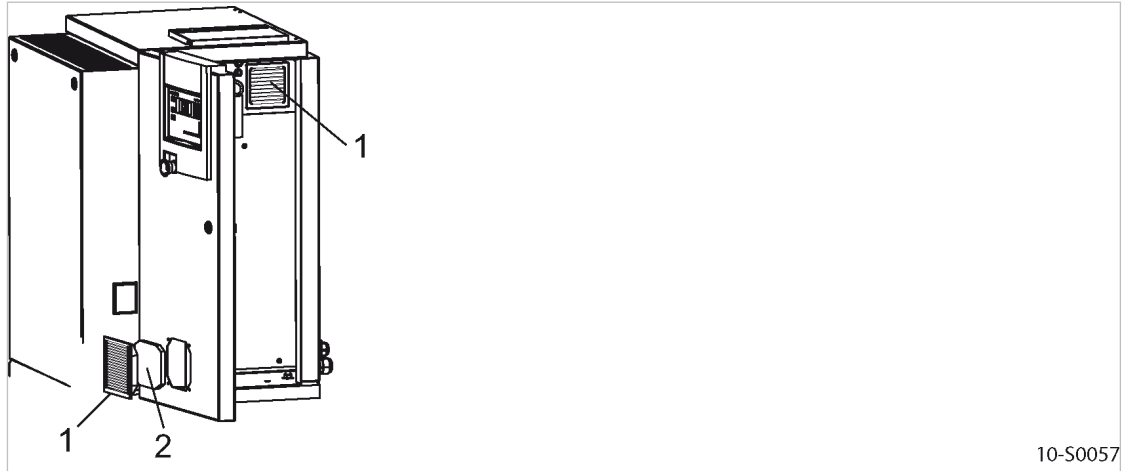
1. Carefully remove the filter mat from the retaining frame.
2. Beat the mat or use a vacuum cleaner to remove loose dirt. If necessary, wash with lukewarm water and household detergent.
3. Change the filter mat if cleaning is not possible or if the change interval has expired.
4. Carefully insert the filter mat in the retaining frame.

10.4 Cleaning or Replacing the Control Cabinet Filter Mats

Filter mats protect the control cabinet from ingress of dirt. If the filter mats are clogged, adequate cooling of the components is no longer ensured. In such a case, clean or replace the filter mats.

Material Warm water and household detergent
Spare parts (as required)

Precondition The power supply disconnecting (isolating) device is switched off, the disconnect device is locked in the off position, a check has been made that no voltage is present.
The machine has cooled down.



10-S0057

Fig. 17 Control cabinet ventilation grill

- ① Ventilation grill
- ② Filter mat

1. Carefully remove the ventilation grill ① and take out the filter mat ②.
2. Beat the mat or use a vacuum cleaner to remove loose dirt. If necessary, wash with lukewarm water and household detergent.
3. Change the filter mat if cleaning is not possible or if the change interval has expired.
4. Lay the filter mat in the frame and latch in the ventilation grill.

10.5 Cooler Maintenance

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

A leaking cooler results in loss of cooling oil and compressed air.

Material Brush and vacuum cleaner.
Breathing mask (if required)

Precondition The power supply disconnecting (isolating) device is switched off, the disconnect device is locked in the off position, a check has been made that no voltage is present.
The machine has cooled down.

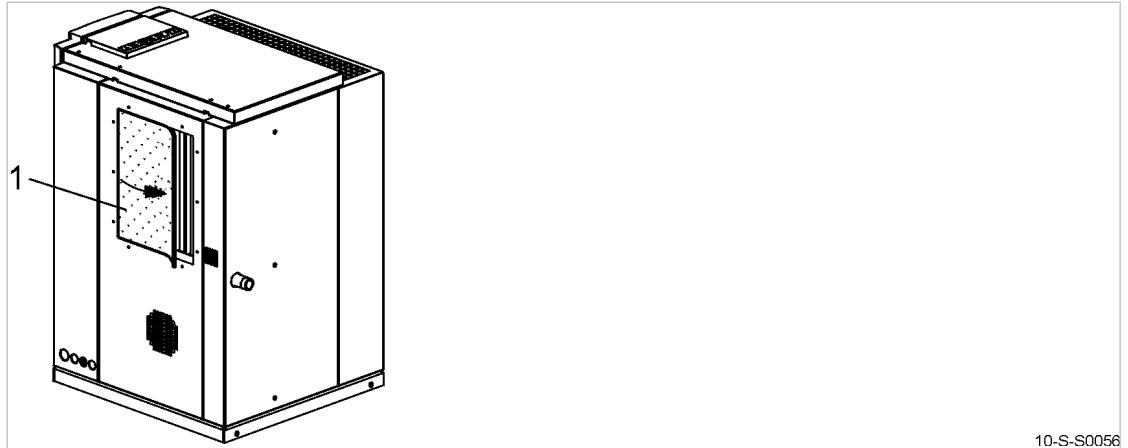


Fig. 18 Filter mat for the air and oil cooler

- ① Filter mat

Cleaning the cooler

A filter mat helps to keep the cooler clean. Despite this fact, the cooler will clog over a period of time. Do not use sharp objects to clean the cooler. It could be damaged.

Avoid creating clouds of dust.

1. Carefully remove the filter mat from the retaining frame.
2. Dry brush the oil and air coolers and use a vacuum cleaner to suck up the dirt.
3. Carefully insert the filter mat in the retaining frame.



The air and oil coolers can no longer be properly cleaned?

- Heavy and stubborn contamination should be removed by a KAESER service representative.

Checking the cooler for leaks

- Visual check: Is cooling oil evident?



Is a cooler leaking?

- Have the defective cooler repaired immediately by an authorized KAESER service representative.

10.6 Air Filter Maintenance



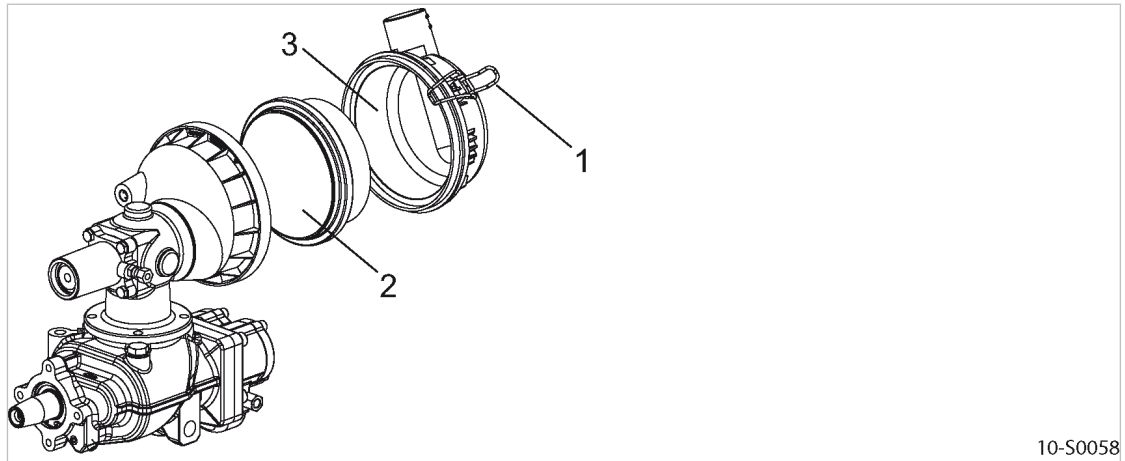
Check that all sealing surfaces match each other. The use of an unsuitable air filter element can permit dirt to ingress the pressure system and cause damage to the machine.

The air filter element cannot be cleaned.

Material Replacement part

Precondition The power supply disconnecting (isolating) device is switched off, the disconnect device is locked in the off position, a check has been made that no voltage is present.

The machine has cooled down.



10-S0058

Fig. 19 Air filter maintenance

- ① Snap fastener
- ② Air filter element
- ③ Air filter housing

1. Release the spring clips and remove the element.
2. Clean all parts and sealing surfaces.
3. Insert the new element in the housing.
4. Clip the air filter housing onto the inlet valve.

10.7 Drive Motor Maintenance

The drive motor bearings are permanently greased. Subsequent greasing is not necessary.

- Have the motor bearings checked by the KAESER service representative during servicing.

10.8 Maintaining the drive belts

Material Spare parts (if required)

Precondition The supply disconnecting device is switched off,
the device is locked off,
a check has been made that no voltage is present.
The machine has cooled down.



WARNING

Touching moving drive belt may result in severe bruising or even loss of limb or extremities.

- Switch off and lock out the power supply disconnecting (isolating) device and check that no voltage is present.

Make a visual check for damage.

1. Turn the pulley by hand so that all of the belt can be inspected for damage.
2. Change the belts immediately if any damage is found.

Replace the drive belts

The drive motor must be moved in its bracket to change the belts. Use the appropriate tool and support the motor during belt changing.

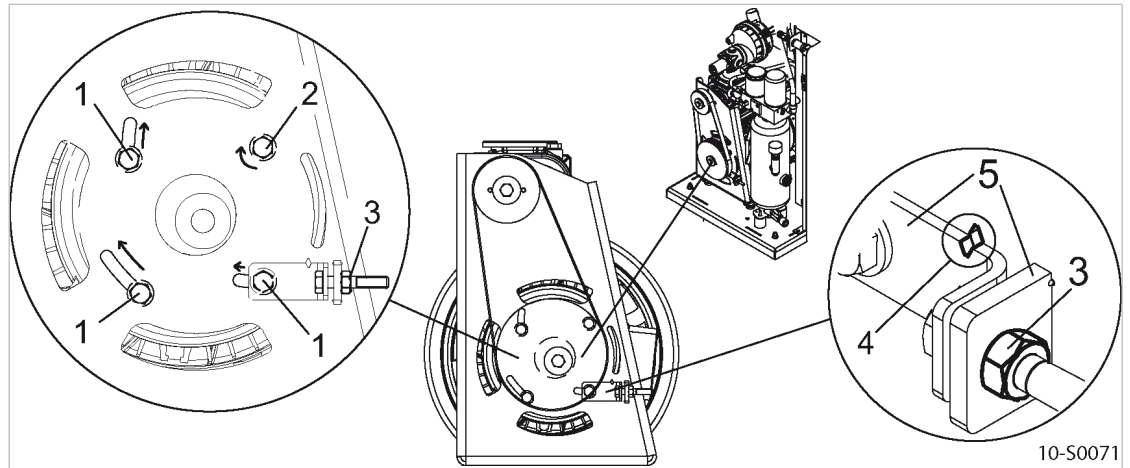


Fig. 20 Changing the belt

- | | | | |
|---|--------------------------|---|-------------------|
| ① | Fixing screw | ④ | Markings |
| ② | Pivot point fixing screw | ⑤ | Tensioning device |
| ③ | Tensioning nut | | |

1. Loosen the tensioning nut ③ by ca. 10 mm.
2. Remove the fixing screws ①.
3. Loosen the pivot point fixing screw ② only sufficiently to allow the motor to shift to the side.
4. Move the motor to the side and fix it in position with a screw ①.
5. Place the new belts over the pulleys.
6. Ensure that all fixing screws ① are loosened.
7. Tighten the belts by means of the tensioning nut ③ until the markings ④ coincide.
8. Tighten one fixing screw ① to hold the motor in place then tighten the rest ① and ②.

Result The drive belts are sufficiently tensioned.
 It is not necessary to retension the belts.

10.9 Checking the cooling oil level

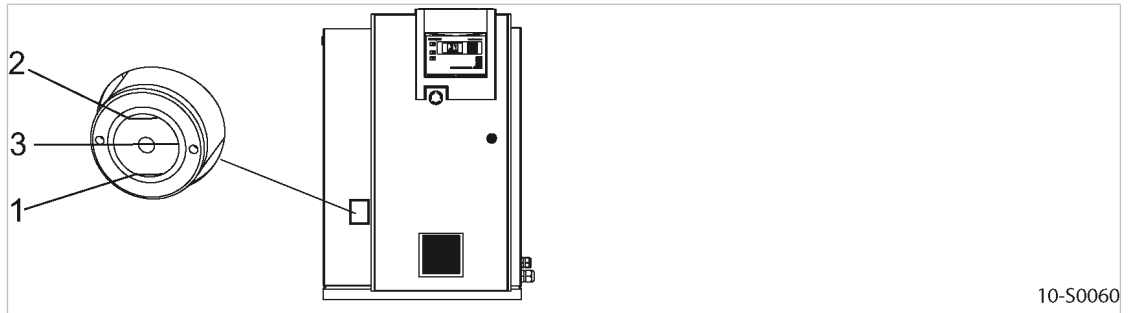
The oil level can be checked safely through the viewing window. The oil indicator should be fully filled with oil when the machine is at standstill. The correct oil level cannot be seen.

The ideal situation is with the oil level around the optimum mark when the machine is running.

Operating state	Minimum oil level	Maximum oil level
LOAD		

Tab. 45 Permissible cooling oil level under LOAD

Precondition The machine has been running at least 5 minutes under LOAD.



10-S0060

Fig. 21 Checking the cooling oil level

- ① Minimum oil level
- ② Maximum oil level
- ③ Optimum level

➤ Check the oil level with machine running under LOAD.

Result Top up when the indicator shows minimum level.

10.10 Pressure relief valve checking

In order to check the activating pressure of the pressure relief valve, the machine's working pressure is raised above the set activating pressure of the valve.

The controller is switched to the pressure relief valve checking mode to carry out this check. This checking mode is intended for machines with maximum permissible working pressure less than 15 bar. Pressure relief valves in machines with permissible working pressures higher than 15 bar must be removed from the machine and tested on a special rig.



- Relief valves on machines with maximum permissible working pressure of 15 bar should be tested only by KAESER Service.
- Blow off protection and air system pressure monitoring are switched off during the test.
- The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.
- Never operate the machine without correctly functioning pressure relief valves.

Preparation for the test

Precondition The machine is switched off.

1. Close the user's shut-off valve between the machine and the air distribution network.
2. Read off the activating pressure on the valve.
(the activating pressure is usually to be found at the end of the part identification)
3. Scroll to parameter 3 "Pressure relief valve check mode" with the arrow keys and confirm by depressing the «enter» key for at least three seconds.
4. Enter the password "BASIC" and confirm with the «enter» key.
5. Use the arrow keys to select parameter "on" and confirm.

Carrying out the check

The machine starts in IDLE as soon as it is switched on.

As long as the «ON» key is depressed and held, the machine switches to LOAD and pressure builds up in the oil separator tank. When the «ON» key is released, the machine switches back to IDLE and switches automatically to STANDSTILL when the idling period has elapsed.

Precondition The machine is switched off.

**WARNING**

The pressure relief valve may blow off at any time!

Excessive noise is caused when the pressure relief valve blows off!

There is danger of scalding from hot oil.

There is danger of injury from bursting components and compressed air!

- Close all access doors and replace and secure all removable panels.
- Wear ear and eye protection.
- Abort the test if the working pressure rises 10% above the activating pressure of the valve.

1. Press the «ON» key.
The machine starts in IDLE.
2. Observe the display of pressure on SIGMA CONTROL BASIC while depressing and holding the «ON» key.
3. Stop the test as soon as the pressure relief valve blows off or working pressure rises to 10% above the activating pressure of the pressure relief valve.
4. If necessary, vent the machine and replace the defective pressure relief valve.

Returning the machine to operational

1. Call up the edit mode again and enter the password "BASIC".
2. Use the arrow keys to set the parameter to "off" and confirm with the enter key.
3. Open the user's shut-off valve between the machine and the air distribution network.

10.11 Checking the Excess Temperature Safety Shutdown Function

The machine should shut down if the airoend discharge temperature reaches a maximum of 110 °C.

- Have the safety shutdown function checked by an authorized KAESER service representative.

10.12 Venting the Machine (depressurizing)

The machine must be isolated from the air system and completely vented before undertaking any work on the pressure system.

The oil circulation vents automatically as soon as the machine is stopped.

Venting takes place in three stages:

- Isolate the compressor from the air system.
- Vent the oil separator tank.
- Manually vent the air cooler.

Material The maintenance hose with hose coupling and shut-off valve needed for venting is stowed beneath the oil separator tank.

Precondition The power supply disconnecting (isolating) device is switched off, the disconnect device is locked in the off position, a check has been made that no voltage is present.



WARNING

Compressed air!

Compressed air and devices under pressure can injure or cause death if the contained energy is released suddenly or uncontrolled.

➤ Vent all pressurized components and chambers completely.

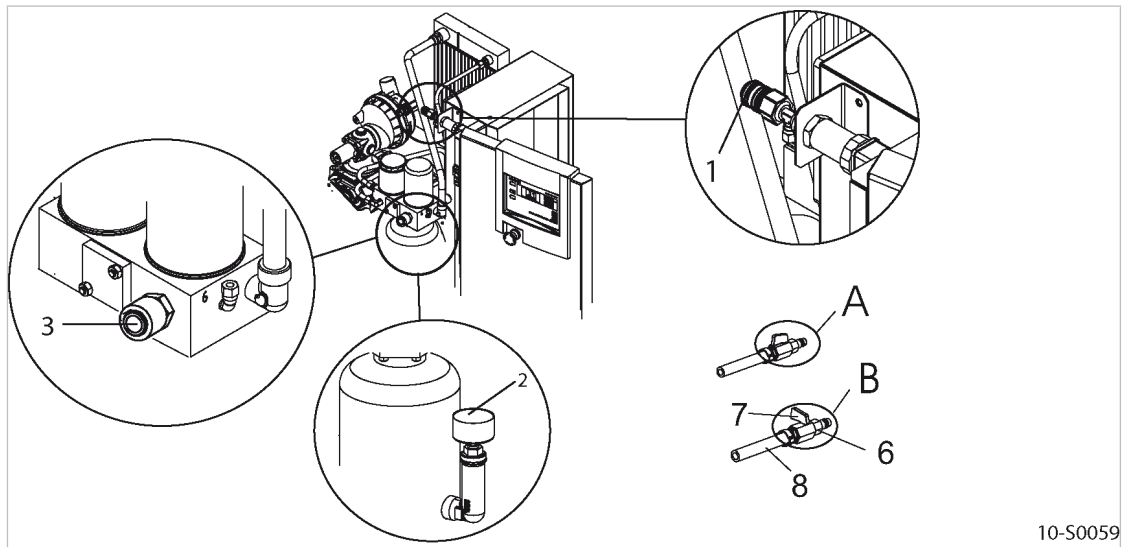


Fig. 22 Venting the machine

- | | | | |
|---|--|---|-----------------------|
| ① | Hose coupling (air cooler venting) | ⑦ | Shut-off valve |
| ② | Pressure gauge | Ⓐ | Shut-off valve open |
| ③ | Hose coupling (oil separator tank venting) | Ⓑ | Shut-off valve closed |
| ⑥ | Male hose coupling | ⑧ | Maintenance hose |

Isolate the machine from the air system.

➤ Close the user's shut-off valve between the machine and the air system.



If no shut-off valve is provided, the complete air system must be vented.

Venting the oil separator tank



WARNING

Escaping oil mist is damaging to health.

➤ Do not direct the maintenance hose at persons while venting.

➤ Do not inhale the oil mist.

➤ Check that the oil separator tank pressure gauge reads 0 bar.



After automatic venting the pressure gauge does not read zero?

- Make sure that the shut-off valve is closed or that the complete air system is vented.
- With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ③.
- Slowly open the shut-off valve ⑦ to release pressure.
- Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.
- If manual venting does **not** reduce the oil separator tank pressure gauge to 0 bar, call an authorized KAESER service representative.

Manually venting the air cooler



After shutting down the compressor and venting the oil separator tank, the machine is still under pressure from the air system or the section from the shut-off valve to the minimum pressure/check valve.

1. With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ①.
2. Slowly open the shut-off valve ⑦ to release pressure.
3. Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.

10.13 Topping up the Cooling Oil



The machine must be isolated from the air system and completely vented before undertaking any work on the pressure system.

Material The maintenance hose with hose coupling and shut-off valve needed for venting is stowed beneath the oil separator tank.

Precondition The power supply disconnecting (isolating) device is switched off, the disconnect device is locked in the off position, a check has been made that no voltage is present.

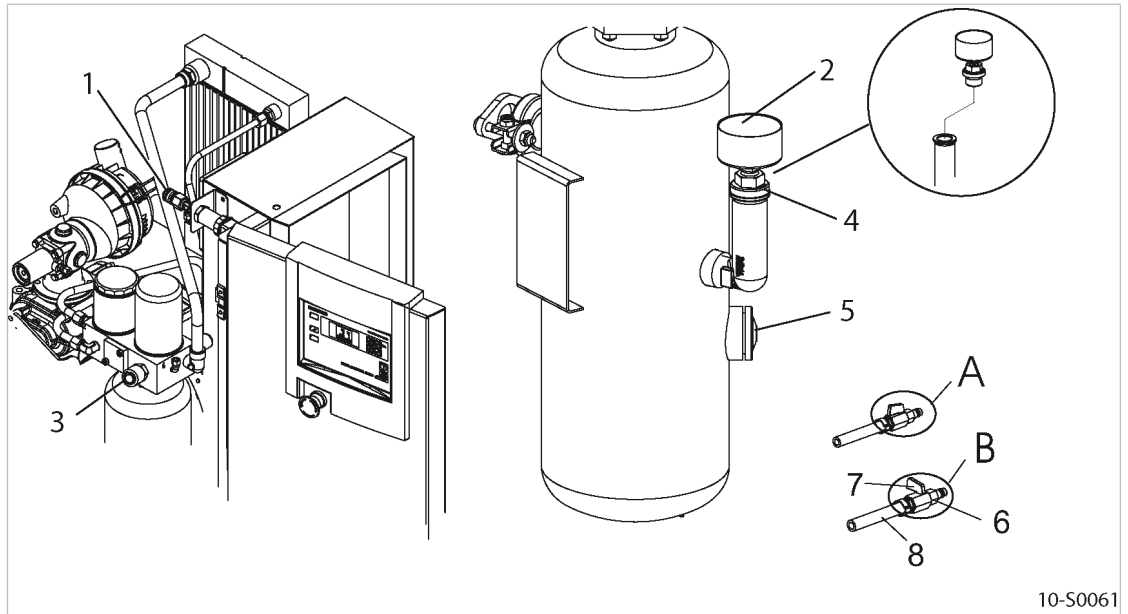


Fig. 23 Topping up the Cooling Oil

- | | |
|--|-------------------------|
| ① Hose coupling (air cooler venting) | ⑥ Male hose coupling |
| ② Pressure gauge | ⑦ Shut-off valve |
| ③ Hose coupling (oil separator tank venting) | A Shut-off valve open |
| ④ Oil filler with plug | B Shut-off valve closed |
| ⑤ Cooling oil level indicator | ⑧ Maintenance hose |

1. Vent the machine as described in section 10.13.1.
2. Fill with cooling oil and test run as described in section 10.13.2.

10.13.1 Venting the machine (depressurizing)

The oil circulation vents automatically as soon as the machine is stopped.

Venting takes place in three stages:

- Isolate the compressor from the air system.
- Vent the oil separator tank.
- Manually vent the air cooler.



WARNING

Compressed air!

Compressed air and devices under pressure can injure or cause death if the contained energy is released suddenly or uncontrolled.

- Vent all pressurized components and chambers completely.

Isolate the machine from the air system.

- Close the user's shut-off valve between the machine and the air system.



If no shut-off valve is provided, the complete air system must be vented.

Venting the oil separator tank**WARNING**

Escaping oil mist is damaging to health.

- Do not direct the maintenance hose at persons while venting.
- Do not inhale the oil mist.

- Check that the oil separator tank pressure gauge reads 0 bar.



After automatic venting the pressure gauge does not read zero?

- Make sure that the shut-off valve is closed or that the complete air system is vented.
- With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ③.
- Slowly open the shut-off valve ⑦ to release pressure.
- Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.
- If manual venting does **not** reduce the oil separator tank pressure gauge to 0 bar, call an authorized KAESER service representative.

Manually venting the air cooler

After shutting down the compressor and venting the oil separator tank, the machine is still under pressure from the air system or the section from the shut-off valve to the minimum pressure/ check valve.

1. With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ①.
2. Slowly open the shut-off valve ⑦ to release pressure.
3. Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.

10.13.2 Topping up with cooling oil and trial run**Topping up the cooling oil**

A sticker on the oil separator tank specifies the type of oil used.

**CAUTION**

The machine could be damaged by unsuitable oil.

- Never mix different types of oil.
- Never top up with a different type of oil to that already used in the machine.

1. Slowly unscrew the filler plug ④.
2. Top up to bring the oil to the correct level.
3. Replace the filler plug's sealing ring if necessary and screw the plug into the filler neck.

Starting the machine and carrying out a trial run

1. Close all access doors; replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the air system.
3. After about 10 minutes, check the oil level again and top up if necessary.
4. Switch off the machine and visually check for leaks.

10.14 Changing the cooling oil



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

Drain the oil completely from the oil separator tank and oil cooler. Always change the oil filter and oil separator cartridge when changing the oil.

Compressed air helps to expel the oil. This compressed air can be taken either from the compressor itself or from an external source.

An external source of compressed air is necessary in the following cases:

- The machine is not operational.
- The machine is to be restarted after a long period of standstill.

Material Cooling oil

Cooling oil receptacle

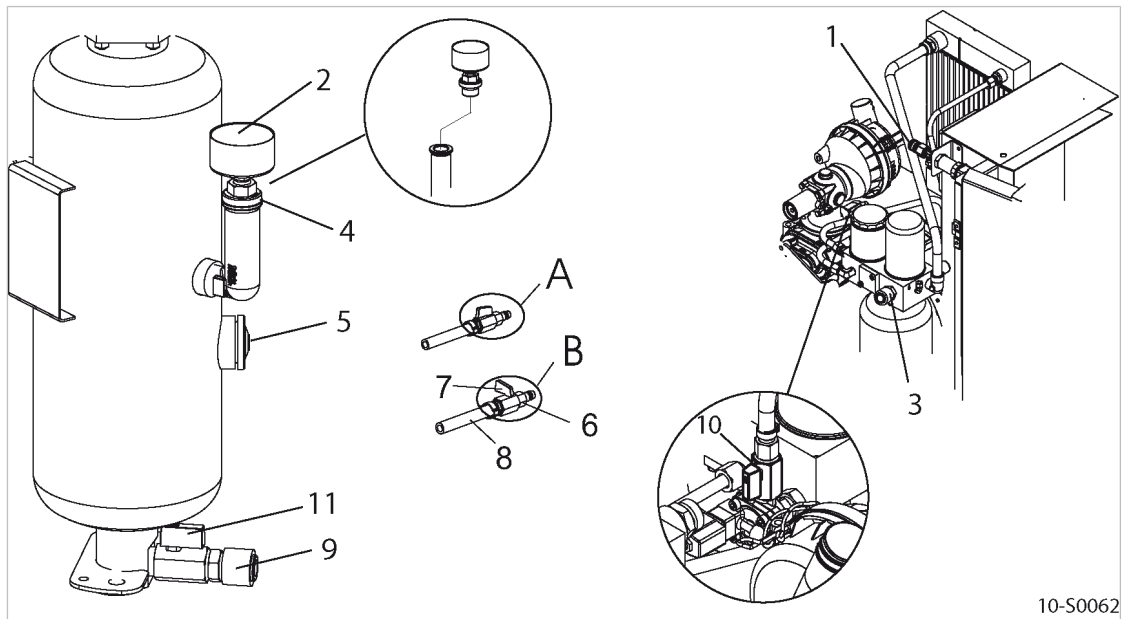
The maintenance hose with hose coupling and shut-off valve is stowed beneath the oil separator tank.



WARNING

There is risk of burns from hot components and oil.

- Wear long-sleeved clothing and gloves.



10-S0062

Fig. 24 Changing the cooling oil, oil separator tank

- | | | | |
|---|--|---|-------------------------------|
| ① | Hose coupling (air cooler venting) | Ⓐ | Shut-off valve open |
| ② | Pressure gauge | Ⓑ | Shut-off valve closed |
| ③ | Hose coupling (oil separator tank venting) | ⑧ | Maintenance hose |
| ④ | Oil filler port with plug | ⑨ | Hose coupling (oil drain) |
| ⑤ | Cooling oil level indicator | ⑩ | Shut-off valve (venting line) |
| ⑥ | Male hose fitting | ⑪ | Shut-off valve (oil drain) |
| ⑦ | Shut-off valve | | |

Changing the oil with internal pressure	Changing the oil using an external compressed air source
<p>The machine has been running for at least 5 minutes under LOAD.</p> <p>The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.</p> <ol style="list-style-type: none"> 1. Close the shut-off valve (10) in the venting line. 2. Start the machine and watch the oil separator tank pressure gauge (2) until it reads 3–5 bar. 3. Switch off and lock out the power supply disconnecting device and check that no voltage is present. 4. Wait at least 2 minutes to allow the oil to flow back to the separator tank. 	<p>The supply disconnecting device is switched off, the device is locked off, a check has been made that no voltage is present.</p> <p>The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.</p> <p>An external source of compressed air is available.</p> <ol style="list-style-type: none"> 1. Close the shut-off valve (10) in the venting line. 2. With the shut-off valve closed, insert the male hose fitting (6) into the hose coupling (3). 3. Connect the maintenance hose to the external air supply. 4. Open the shut-off valve (7) until the pressure gauge on the oil separator tank reads 3–5 bar. 5. Close the shut-off valve (7) and remove the male hose fitting from the coupling.

Draining the oil from the separator tank


Contact KAESER Service if condensate is detected in the cooling oil.
 It is necessary to adapt the airoend discharge temperature to individual ambient conditions.

1. Have an oil receptacle ready.
2. With the shut-off valve closed, insert the male hose fitting (6) into the hose coupling (9).
3. Place the end of the maintenance hose in the oil receptacle and secure it in place.
4. Open the shut-off valve (11).
5. Slowly open the shut off valve (7) in the maintenance hose to release oil and close immediately when air escapes.
6. Close the shut-off valve (11) and unplug the male hose fitting.



➤ Dispose of used oil in accordance with environmental protection regulations.

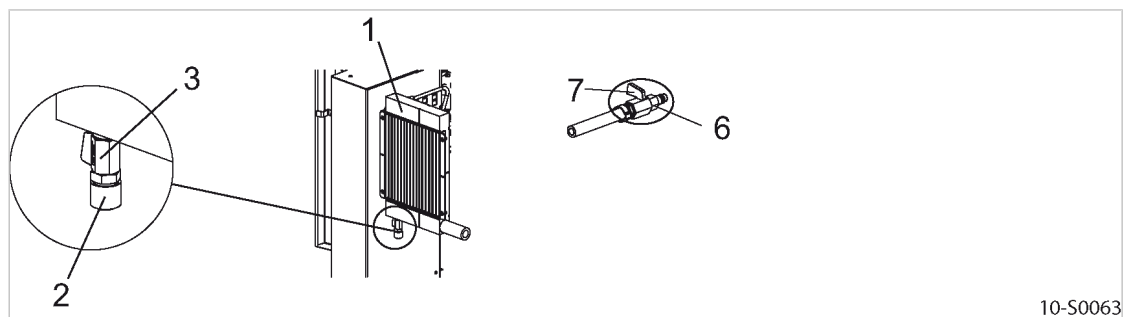
Draining the oil from the cooler


Fig. 25 Changing the cooling oil, oil cooler

- | | |
|--------------------------------|---------------------|
| ① Oil cooler | ⑥ Male hose fitting |
| ② Hose coupling (oil drainage) | ⑦ Shut-off valve |
| ③ Shut-off valve | |

1. Have an oil receptacle ready.
2. With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ②.
3. Place the end of the maintenance hose in the oil receptacle and secure it in place.
4. Open the shut-off valve ③.
5. Slowly open the shut-off valve ⑦ and allow cooling oil and air to escape completely until the pressure gauge reads 0 bar.
6. Close the shut-off valve ② and unplug the male hose fitting.



- Dispose of used oil in accordance with environmental protection regulations.

Filling with oil

1. Slowly unscrew the filler plug ④ (see illustration 24).
2. Fill with cooling oil.
3. Check the filler plug and ring seal for damage and screw the plug back in again.

Start the machine and carry out a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the compressed air network.
3. Switch on the power supply and reset the maintenance interval counter.
4. Start the machine and check the oil level again after about 10 minutes, topping up if necessary.
5. Switch off the machine and check visually for leaks.

10.15 Changing the oil filter

The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

All the cooling oil has run out of the filter 1–2 minutes after shutting down. A cooling oil receptacle is not needed.

Material Spares
Cleaning cloths

Precondition The supply disconnecting device is switched off,
the device is locked off,
a check has been made that no voltage is present.
The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.

**WARNING**

There is risk of burns from hot components and oil.

- Wear long-sleeved clothing and gloves.

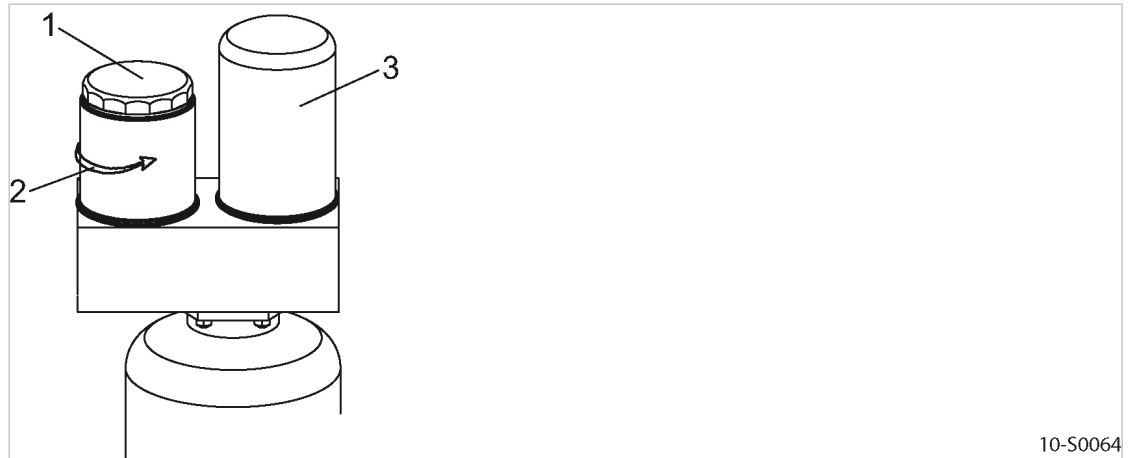


Fig. 26 Changing the oil filter

- ① Oil filter
- ② Direction to unscrew
- ③ Oil separator cartridge

Changing the oil filter

1. Unscrew the oil filter anticlockwise and wipe off any drops of oil.
2. Lightly oil the new filter's gasket.
3. Turn the oil filter clockwise by hand to tighten.



- Dispose of parts and materials contaminated with oil in accordance with environmental protection regulations.

Start the machine and carry out a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the compressed air network.
3. Switch on the power supply and reset the maintenance interval counter.
4. After about 10 minutes, check the oil level again and top up if necessary.
5. Switch off the machine and check visually for leaks.

10.16 Changing the oil separator cartridge



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

The life of the oil separator cartridge is influenced by:

- contamination in the air drawn into the compressor,
- Adherence to the changing intervals for:
 - Cooling oil
 - Oil filter
 - Air filter

All the cooling oil has run out of the separator cartridge 1–2 minutes after shutting down. A cooling oil receptacle is not needed.

Material Spares
Cleaning cloths

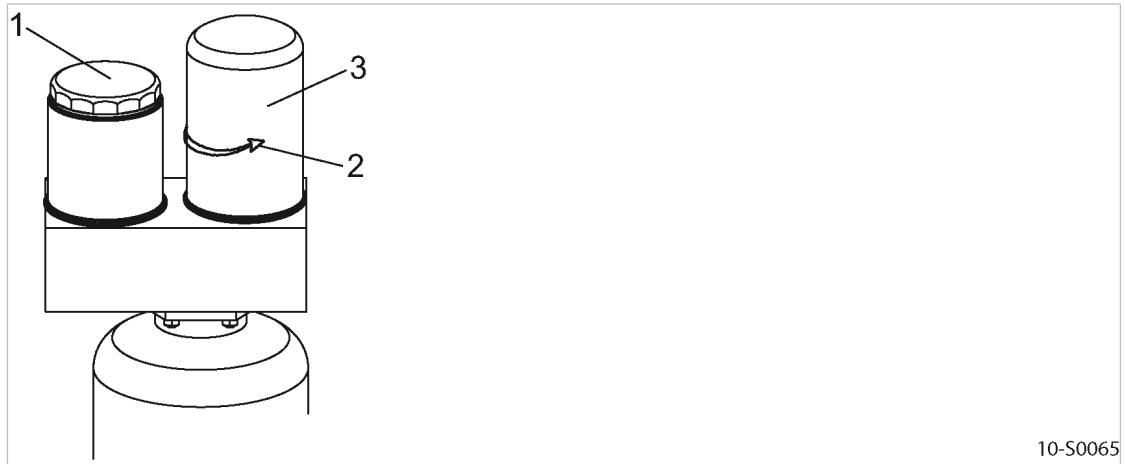
Precondition The supply disconnecting device is switched off,
the device is locked off,
a check has been made that no voltage is present.
The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.



WARNING

There is risk of burns from hot components and oil.

➤ Wear long-sleeved clothing and gloves.



10-S0065

Fig. 27 Changing the oil separator cartridge

- ① Oil filter
- ② Direction to unscrew
- ③ Oil separator cartridge

Changing the oil separator cartridge

1. Unscrew the oil separator cartridge anticlockwise and wipe off any drops of oil.
2. Lightly oil the new filter's gasket.
3. Turn the oil filter clockwise by hand to tighten.



➤ Dispose of parts and materials contaminated with oil in accordance with environmental protection regulations.

Start the machine and carry out a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the compressed air network.
3. Switch on the power supply and reset the maintenance interval counter.
4. Stop the machine after 10 minutes and visually check for leaks.

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 and operating materials

KAESER consumable parts and operating materials are original Kaeser products. They are selected for use in KAESER machines.



WARNING

There is risk of personal injury or damage to the machine resulting from the use of unsuitable spare parts or operating materials.

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

In the event of damage, personal injury may result.

- Use only genuine KAESER spares and operating materials.
- Have an authorized KAESER Service Technician carry out regular maintenance.

Machine

Name	Quantity	Number
Air filter element	1	1250
Filter mat (cooler)	1	1050
Filter mat (control cabinet)	2	1100
Oil filter	1	1200
Oil separator cartridge	1	1450
Cooling oil	1	1600
Drive belts	1	1800

Tab. 47 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 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 Service Addresses

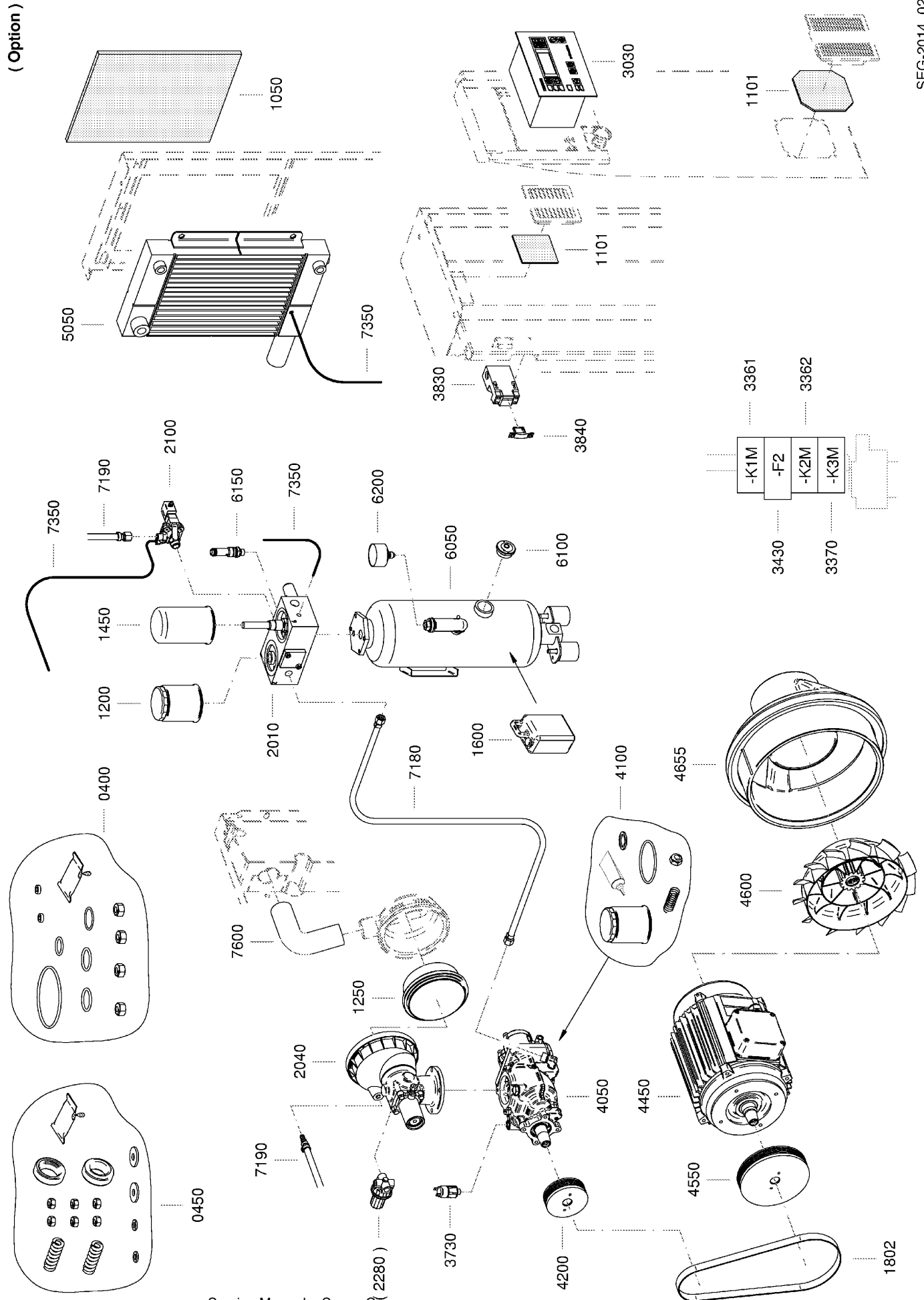
Addresses of KAESER agents are given at the end of this manual.

11.5 Spare Parts for Service and Repair

With the help of this parts list you can plan your material requirement according to operating conditions and order the spare parts you need.



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



SEG-2014_02

Legend	KAESER
SX.1	SEL-1848_02E

Item	Name	Option
0400	Sealing kit	
0450	Seal ring kit	
1050	Filter mat	
1101	Filtermatte (Set)	
1200	Oil filter	
1250	Air filter	
1450	Oil separator cartridge	
1600	Sigma Fluid *)	
1802	Drive belt	
2010	Valve block	
2022	Maintenance kit, MP/CV	
2024	Overhaul kit, MP/CV	
2062	Maintenance kit, thermostatic valve	
2064	Overhaul kit, thermostatic valve	
2040	Inlet valve	
2042	Maintenance kit, inlet valve	
2044	Overhaul kit, inlet valve	
2100	Venting control valve	
2102	Maintenance kit, VC valve	
2104	Overhaul kit, VC valve	
2280	Proportional controller	X
3030	SIGMA controller	
3361	Contactator	
3362	Contactator	
3370	Contactator	
3430	Overload protection cutout	
3730	Safety pressure switch	
3732	Protective cap	
3830	Safety interlock switch	
3840	Actuator (interlock switch)	
4050	SIGMA airend	
4100	Airend installation kit	
4200	Belt pulley	
4450	Motor	
4451	Motor bearing kit	
4550	Belt pulley	
4600	Fan wheel	
4655	Motor cooling air flow guide	
5050	Cooler	
6050	Oil separator tank	
6100	Oil level indicator	
6150	Pressure relief valve	
6200	Pressure gauge	
7180	Prepared hose	
7190	Prepared hose	
7350	Control line kit	
7600	Inlet hose	

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

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

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

Maintenance intervals may decrease due to ambient and operating conditions.

*) See cooling fluid recommendations

12 Decommissioning, Storage and Transport

12.1 Putting Out of Operation

This is necessary under the following circumstances:

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

Temporarily putting out of operation

Precondition The machine can be started at regular intervals.

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

Putting out of operation for a longer period

Precondition Before putting out of operation, the machine should be run under LOAD for at least 30 minutes.

Switch off the mains disconnecting device, the disconnect device is locked in the off position, check that no voltage is present.

Machine fully vented (no pressure).

1. Allow the machine to cool down completely.
2. Disconnect all air and electrical connections.

12.2 Packing

A wooden crate is required for overland transport to protect the machine from mechanical damage. Consult an authorized KAESER Service agent for advice on packing for sea or air transport.

Material Desiccant
Plastic sheeting
Wooden transport crate

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

1. Place sufficient desiccant (silica gel or similar) inside the machine cabinet.
2. Wrap the machine in plastic sheeting.

12.3 Storage

Moisture can lead to corrosion, particularly on the surfaces of the airend and in the oil separator tank. Frozen moisture can damage components, diaphragms, valves and gaskets.



Advice can be obtained from KAESER on storage and commissioning.

**CAUTION**

Moisture and frost can damage the machine.

- Prevent ingress of moisture and formation of condensation.
- Maintain a storage temperature of >0 °C.

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

12.4 Transporting

12.4.1 Safety

Weight and centre of gravity determine the most suitable method of transport. The centre of gravity is shown in the drawing in chapter 13.3.

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

- Make sure the danger zone is clear.

12.4.2 Transporting with a forklift truck

Precondition The forks are fully under the machine.

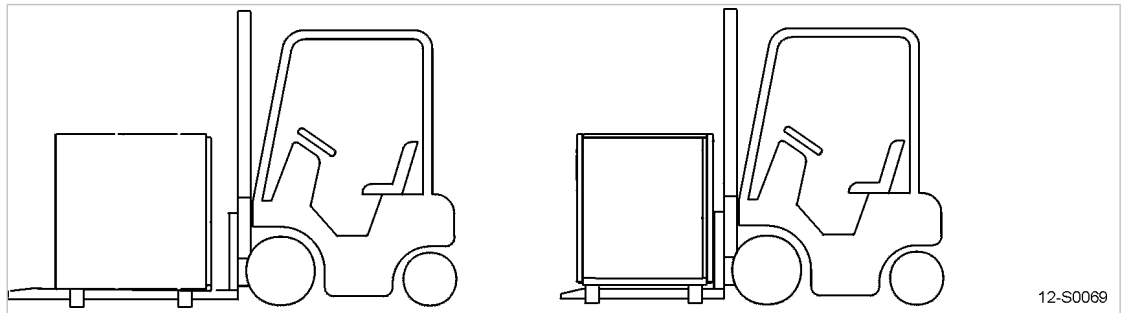


Fig. 28 Transporting with a forklift truck

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

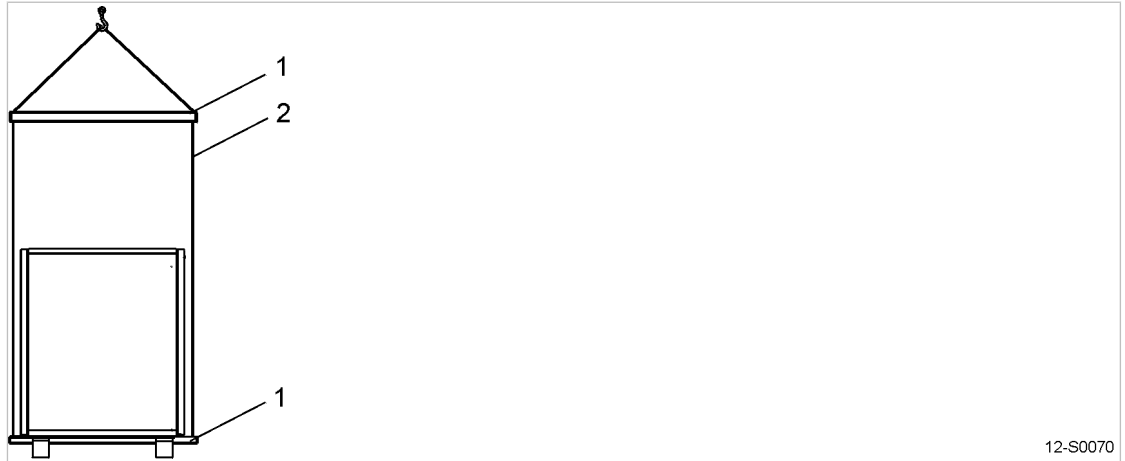
12.4.3 Transporting with a crane

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

Examples of unsuitable fixing points:

- Pipe sockets
- Flanges
- Attached components such as cyclone separators, condensate drains or filters
- Rain protection covers

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



12-S0070

Fig. 29 Transporting with a crane

- ① Lifting gear
- ② Slings



CAUTION

The machine can be damaged by incorrect attachment of the lifting gear.

- Do not attach the lifting gear to any of the machine components.
- The manufacturer can advise on the use of suitable lifting gear.

- Use the lifting gear correctly and lift the machine carefully.

12.5 Disposal

When disposing of a machine, drain out all liquids and remove dirty filters.

Precondition The machine is decommissioned.

1. Completely drain the cooling oil from the machine.
2. Remove used filters and the oil separator cartridge.
3. Hand the machine over to an authorized disposal expert.



- Components contaminated with cooling oil must be disposed of in accordance with local environment protection regulations.

Machines with refrigeration dryers

The sealed refrigerant circuit still contains both refrigerant and oil.

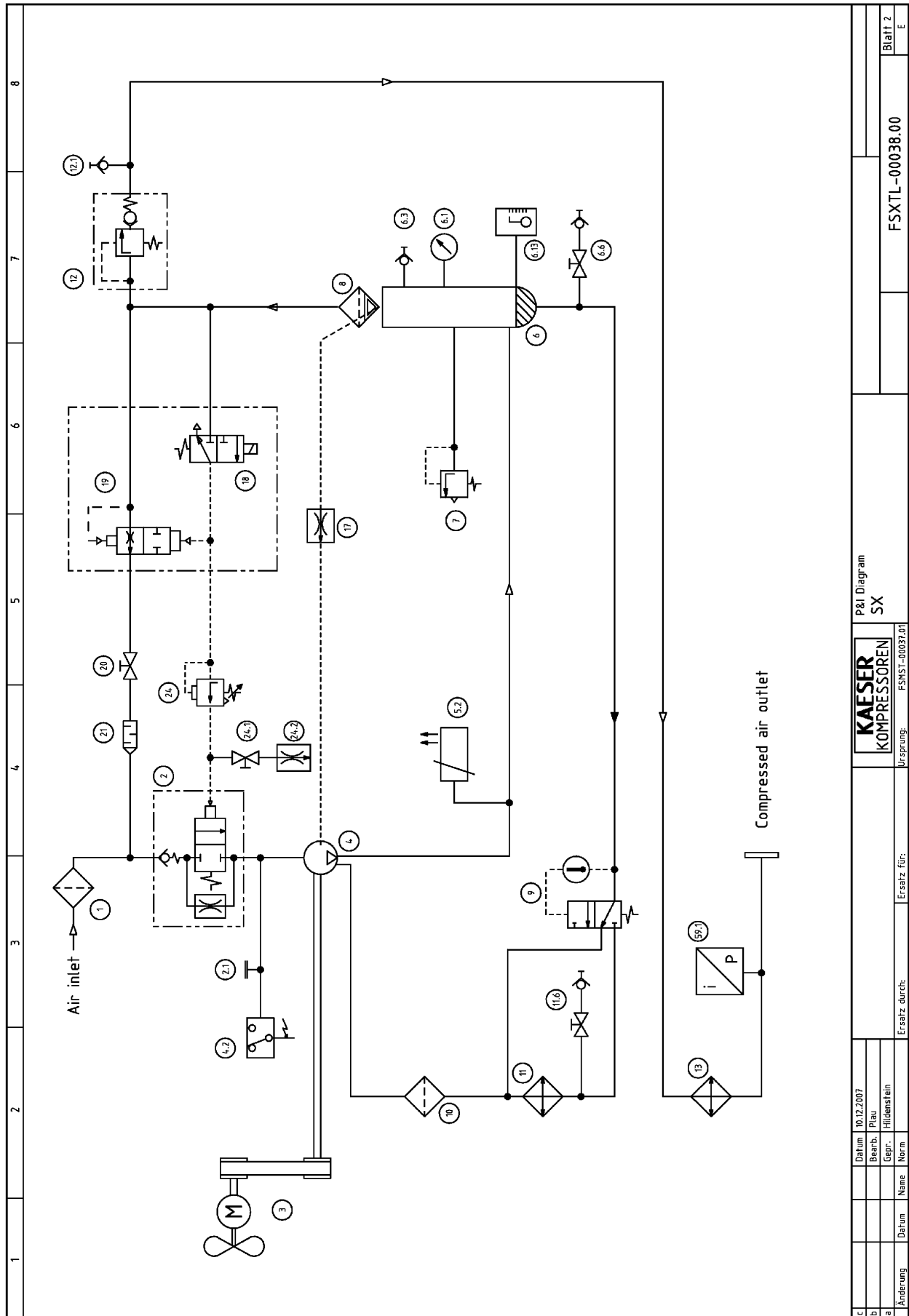
- Refrigerant and oil must be drained and disposed of by an authorized body.

13 Annex

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

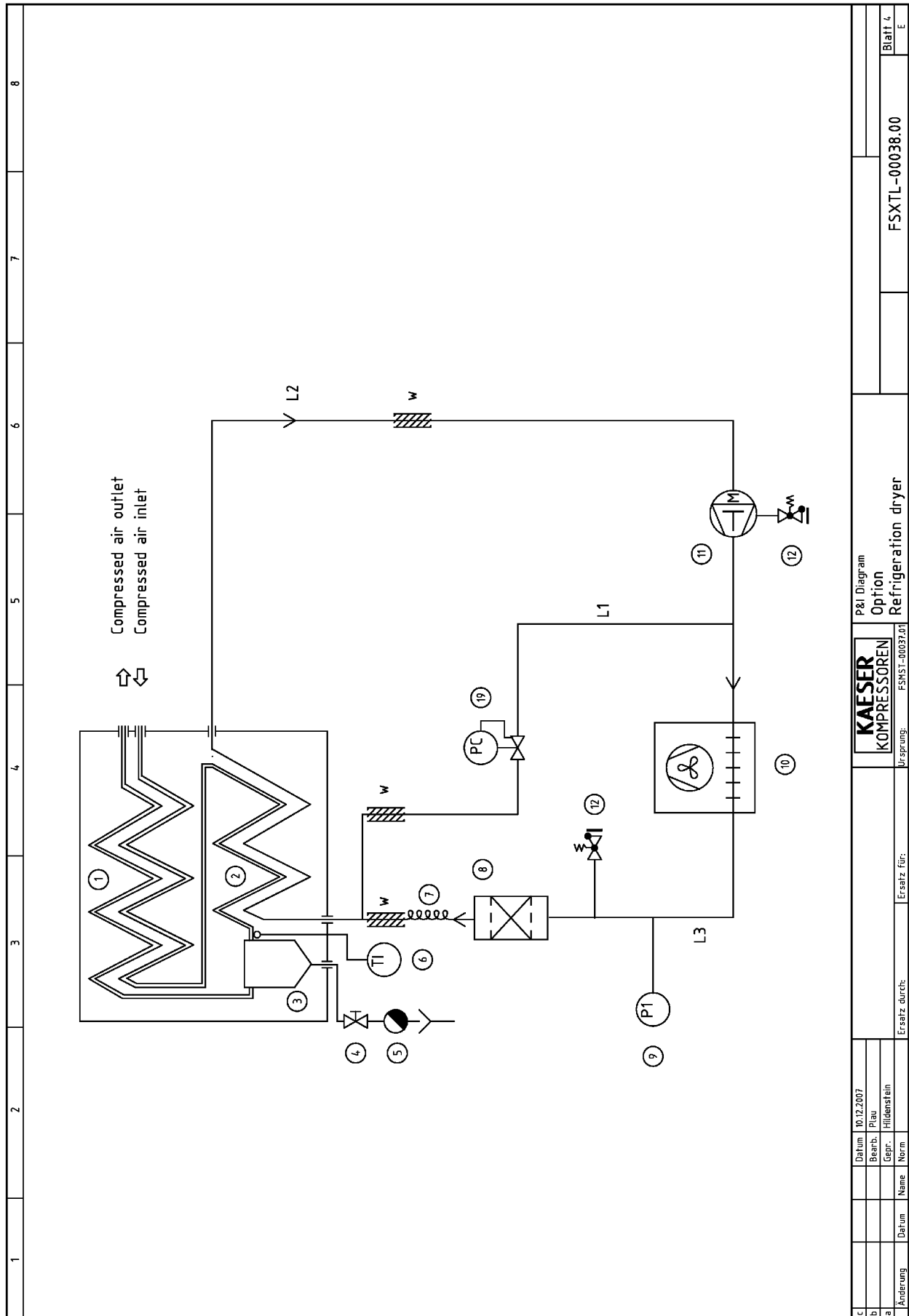
1	2	3	4	5	6	7	8																				
1	Air filter			10	Oil filter																						
2	Inlet valve			11	Oil cooler																						
2.1	Oil filter with screw plug			11.6	Shut-off valve with hose coupling - Oil drain																						
3	Drive motor			12	Minimum pressure check valve																						
4	Airend			12.1	Hose coupling																						
4.2	Pressure switch - Wrong direction of rotation			13	Air cooler																						
5.2	PT100-sensor			16	Dirt trap																						
6	Oil separator tank			17	Nozzle																						
6.1	Pressure gauge			18/19	Combined control/venting valve																						
6.3	Hose coupling			18	Control valve																						
6.6	Shut-off valve with hose coupling - Oil drain			19	Venting valve																						
6.13	Oil level indicator			20	Shut-off valve - Venting line																						
7	Pressure relief valve			21	Silencer																						
8	Oil separator cartridge			39	Check valve																						
9	Oil temperature controller			59.1	Pressure transducer - System pressure																						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">KAESER KOMPRESSOREN</td> <td colspan="2" style="text-align: center;">P&I Diagram legend</td> </tr> <tr> <td colspan="2" style="text-align: center;">Ursprung: FSXST-00037.01</td> <td colspan="2" style="text-align: center;">SX</td> </tr> <tr> <td colspan="2" style="text-align: center;">Ersatz durch:</td> <td colspan="2" style="text-align: center;">FSXST-00037.00</td> </tr> <tr> <td colspan="2" style="text-align: center;">Ersatz für:</td> <td colspan="2" style="text-align: center;">Blatt 3</td> </tr> <tr> <td colspan="2" style="text-align: center;">Ersatz durch:</td> <td colspan="2" style="text-align: center;">E</td> </tr> </table>								KAESER KOMPRESSOREN		P&I Diagram legend		Ursprung: FSXST-00037.01		SX		Ersatz durch:		FSXST-00037.00		Ersatz für:		Blatt 3		Ersatz durch:		E	
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Ersatz durch:		E																									
c	Datum	10.12.2007																									
b	Bereb.	Plan																									
a	Gepr.	Hildenstein																									

13.2 Option C1
Pipe and Instrument Flow Diagram (P&I diagram): MODULATING
control mode



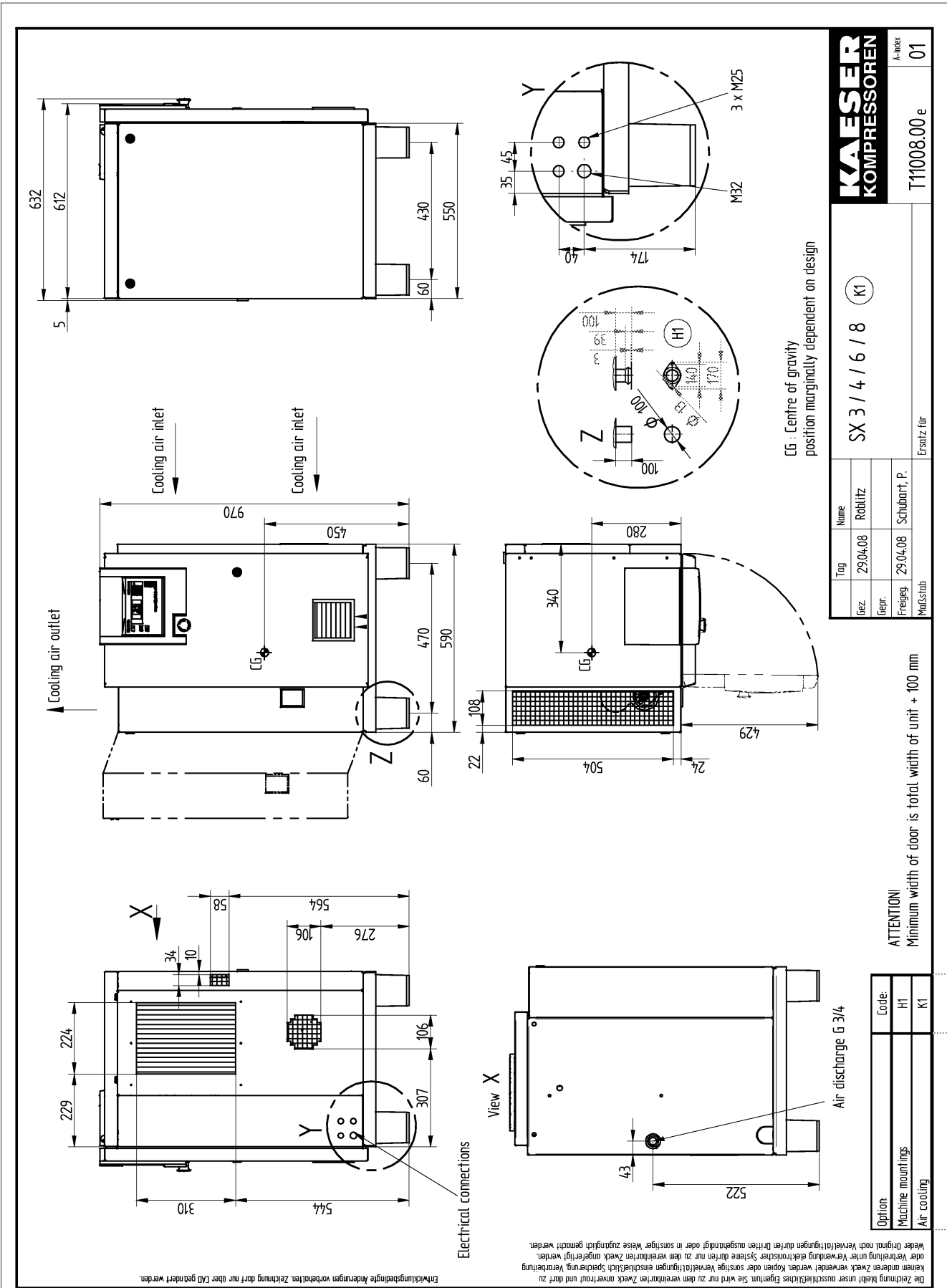
c	Datum	10.12.2007	Plan		P&I Diagram SX	FSXTL-00038.00	Blatt 2 E
b	Bearb. Gepr.	Hildenstein					
a	Änderung				Ursprung: FSXST-00037.01		
	Datum		Name	Norm	Ersatz durch:		

1	2	3	4	5	6	7	8
1	Air filter				11.6	Shut-off valve with hose coupling - Oil drain	
2	Inlet valve				12	Minimum pressure check valve	
2.1	Oil filter with screw plug				12.1	Hose coupling	
3	Drive motor				13	Air cooler	
4	Airend				17	Nozzle	
4.2	Pressure switch - Wrong direction of rotation				18/19	Combined control/venting valve	
5.2	PT100-sensor				18	Control valve	
6	Oil separator tank				19	Venting valve	
6.1	Pressure gauge				20	Shut-off valve - Venting line	
6.3	Hose coupling				21	Silencer	
6.6	Shut-off valve with hose coupling - Oil drain				24	Proportional controller	
6.13	Oil level indicator				24.1	Shut-off valve open: machine in modulating control	
7	Pressure relief valve					Shut-off valve closed: package running in DUAL-/QUADRO or VARIO mode	
8	Oil separator cartridge				24.2	Nozzle	
9	Oil temperature controller						
10	Oil filter				59.1	Pressure transducer - System pressure	
11	Oil cooler						
c		Datum		10.12.2007		P&I Diagram legend	
b		Bearb.		Plan		SX	
a		Gepr.		Hilfenstein		Blatt 3	
Änderung		Name		Norm		E	
Ersatz durch:				Ersatz für:			
FSMST-00037.01				FSXTL-00038.00			



Date: 10/12/2007		P&I Diagram	
Drawn: Plan		Option	
Checked: Hildenstein		Refrigeration dryer	
Date: / /		FSXTL-00038.00	
Name: /		Blatt 4	
Norm: /		E	
Ersatz durch: /		FSXTL-00037.01	
Ersatz durch: /		Urprung:	

13.3 Dimensional Drawing



KAESER
KOMPRESSOREN

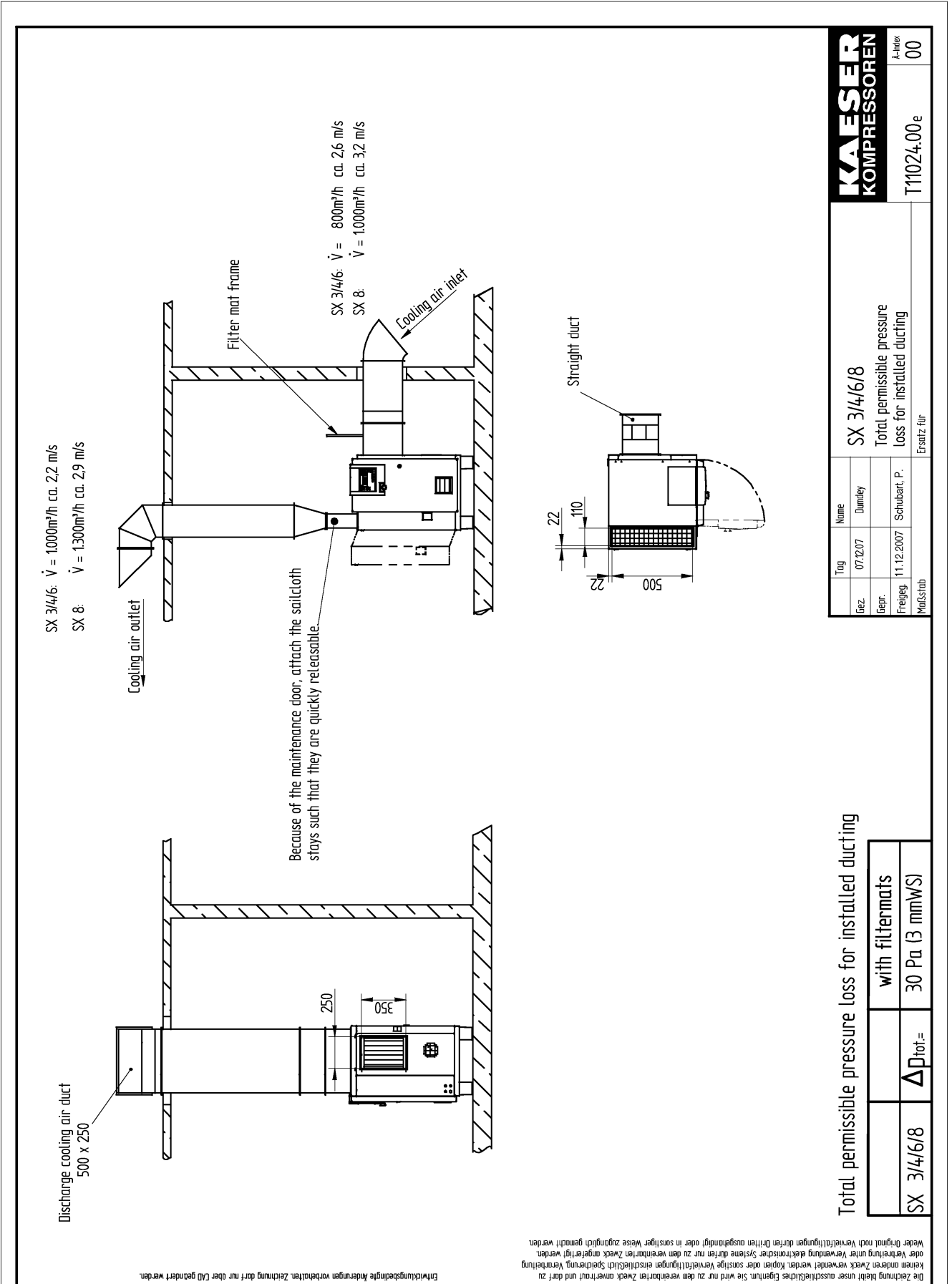
Tag	Name	
29.04.08	Roblitz	
Gepr.	29.04.08	Schubart, P.
Freigegeben		
Maßstab		Ersatz für

SX 3 / 4 / 6 / 8 (K1)

ATTENTION!
Minimum width of door is total width of unit + 100 mm

Option:	Code:
Machine mountings	H1
Air cooling	K1

T11008.00 e
A-nr.: 01



KAESER KOMPRESSOREN		A-line	00
SX 3/4/6/8		T11024.00e	
Total permissible pressure loss for installed ducting			
Ersatz für			
Tag	Name		
Frez.	07.12.07	Dumleley	
Gepr.		Schubart, P.	
Freigeig.	11.12.2007		
Maßstab			

Total permissible pressure loss for installed ducting	
SX 3/4/6/8	with filtermats $\Delta p_{tot} = 30 \text{ Pa (3 mmWS)}$

13.4 Electrical Diagram

1	2	3	4	5	6	7	8																																																																																																																
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;">Electrical diagrams Compressor series SX with SIGMA CONTROL BASIC</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">200V±10% 50/60Hz</td> <td style="width: 33%;">230V±10% 50/60Hz</td> <td style="width: 33%;"></td> </tr> <tr> <td>380V±10% 60Hz</td> <td>400V±10% 50Hz</td> <td></td> </tr> <tr> <td>440V±10% 60Hz</td> <td>460V±10% 60Hz</td> <td></td> </tr> </table> <p style="text-align: center;">TT/TN power supply with common point grounding</p> </div>								200V±10% 50/60Hz	230V±10% 50/60Hz		380V±10% 60Hz	400V±10% 50Hz		440V±10% 60Hz	460V±10% 60Hz																																																																																																								
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<p style="text-align: center;">Manufacturer: KAESER KOMPRESSOREN GmbH 96450 Coburg GERMANY</p>																																																																																																																							
<p style="text-align: center;">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>																																																																																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">c</td> <td colspan="2">Datum</td> <td colspan="2">03.09.2008</td> <td colspan="2">E</td> </tr> <tr> <td colspan="2">b</td> <td colspan="2">Bearb.</td> <td colspan="2">Siffer</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">a</td> <td colspan="2">Bu/Sl</td> <td colspan="2">Gepr.</td> <td colspan="2">Büchner</td> </tr> <tr> <td colspan="2">A</td> <td colspan="2">Änderung</td> <td colspan="2">Datum</td> <td colspan="2">Name</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Ersatz durch:</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Ersatz für:</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">KAESER KOMPRESSOREN</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Cover page</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Compressor series SX</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">=</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">+</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">DSX.B-02020.01</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Blatt 1</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Bl.</td> </tr> </table>								c		Datum		03.09.2008		E		b		Bearb.		Siffer				a		Bu/Sl		Gepr.		Büchner		A		Änderung		Datum		Name								Ersatz durch:								Ersatz für:								KAESER KOMPRESSOREN								Cover page								Compressor series SX								=								+								DSX.B-02020.01								Blatt 1								Bl.	
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Lfd. Nr. No.	Benennung Name	Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	Cover page		DSX.B-02020.01	1	
2	List of contents		ZSX.B-02020.01	1	
3	Block diagram		USX.B-02020.01	1	
4	Block diagram	Equipment parts list	USX.B-02020.01	2	
5	Block diagram	Equipment parts list	USX.B-02020.01	3	
6	Block diagram	Equipment parts list	USX.B-02020.01	4	
7	Block diagram	Equipment parts list	USX.B-02020.01	5	
8	Circuit diagram	Power switching	SSX.B-02020.01	1	
9	Circuit diagram	Power switching	SSX.B-02020.01	2	
10	Circuit diagram	Power switching Dryer	SSX.B-02020.01	3	
11	Circuit diagram	Control voltage tapping	SSX.B-02020.01	4	
12	Circuit diagram	supply/Relay-outputs	SSX.B-02020.01	5	
13	Circuit diagram	inputs internal	SSX.B-02020.01	6	
14	Circuit diagram	inputs/outputs external	SSX.B-02020.01	7	
15	Circuit diagram	control voltage supply	SSX.B-02020.01	8	
16	Circuit diagram	supply Dryer	SSX.B-02020.01	9	
17	Terminal schedule	Terminal strip -X0,-X1,-X11	KSX.B-02020.01	1	
18	Terminal schedule	option T3/-X31,1X31,2X31,3X31	KSX.B-02020.01	2	
19	Component layout	Mounting plate	ASX.B-02020.01	1	

c	Datum	03.09.2008	List of contents		=
b	Bearb.	Siffer	Compressor series SX		
a	Gepr.	Büchner	Kaeser KOMPRESSOREN		ZSX.B-02020.01
B	Änderung	Datum	List of contents		
			Compressor series SX		Bl.
			Kaeser KOMPRESSOREN		
			Ersatz durch:		
			Ersatz für:		
			Ursprung:		

1	2	3	4	5	6	7	8
<p>general instructions ATTENTION !!! Install supplies, grounding and shock protection to local safety regulations. Control circuits are single-end-earthed, if they are floating they may only be used together with insulation monitoring. 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 Control voltage AC 230V: red 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW Control voltage AC 15V: brown 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW Control voltage DC: blue 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW external voltage: orange 1,5mm² H07V-K, 16AWG UL-Style 1015, CSA-TEW measuring circuits: violet 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW earth conductor: green/yellow</p> <p>option F1 = microfilter AIR CENTER option T2 = transformer power supply for refrigeration dryer option T3 = option refrigeration dryer</p> <p>option C16 = LOAD - IDLE control by remote contact option C17 = Direct online start</p>							
<p>electrical equipment identification</p> <p>general components</p> <ul style="list-style-type: none"> -A10 SIGMA CONTROL BASIC -F0 Cut-out, Control transformer -F2 Overload relay Compressor motor -K1M Mains contactor -K2M Delta contactor -K3M Star contactor -M1 Compressor motor -O0 Overload protection switch, Control transformer -S3 EMERGENCY STOP pushbutton -S10 Door safety interlock switch -T1 Control transformer <p>option T3 - refrigeration dryer</p> <ul style="list-style-type: none"> -A04 Condensate drain -A05 Condensate drain, option F1 -K8M Motor contactor -M11 Compressor motor -M12 Fan motor -Q12 Overload protection switch -T2 Transformer 							
<p>terminal strips/plug-in connections</p> <ul style="list-style-type: none"> -X0 Terminal strip, Power supply -X1 Terminal strip Motor -X11 Terminal strip, Control -X31 Terminal strip refrigeration dryer, option T3 -1X31,-2X31 Connector plug refrigeration dryer, option T3 -3X31 cable joint refrigeration dryer, option T3 <p>sensors/actuators</p> <ul style="list-style-type: none"> -B1 Pressure transducer, Air main pressure -B2 Direction of rotation pressure switch -B11 Temperature probe, Airend discharge temperature -B30 Safety pressure switch, option T3 -Y1 Control valve 							
<p>Block diagram Compressor series SX</p>							
<p>KAESER KOMPRESSOREN</p>		<p>Ursprung:</p>		<p>Ersatz durch:</p>		<p>Ersatz für:</p>	
<p>Datum: 03.09.2008</p>		<p>Bearb.: Siffer</p>		<p>Gepr.: Büchner</p>		<p>=</p>	
<p>a</p>		<p>Norm:</p>		<p>USX.B-02020.01</p>		<p>Blatt 1</p>	
<p>c</p>		<p>Änderung</p>		<p>Datum</p>		<p>Bl.</p>	

Equipment parts list		SX 3/SX 3 T Direct online start				
model						
machine power supply	200 V ±10 %, 50 Hz 200 V ±10 %, 60 Hz	230 V ±10 %, 50 Hz 230 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	400 V ±10 %, 50 Hz	440 V ±10 %, 60 Hz 460 V ±10 %, 60 Hz	
Motor	-M1 2,2 kW diagram 3, Sht. 1	2,2 kW diagram 1, Sht. 1 (50 Hz) diagram 3, Sht. 1 (60 Hz)	2,2 kW diagram 2, Sht. 1	2,2 kW diagram 4, Sht. 1	2,2 kW diagram 4, Sht. 1	
terminal strips	-X0 7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	
without option T3	-X11 7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	
with option T3	-X11/-X31 7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	
Contactor	-K1M 7.6865.0 3RT1025-1AL20	7.6865.0 3RT1025-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	
Auxiliary switch	2x 7.314.0.01690 3RH1921-1CA10	2x 7.314.0.01690 3RH1921-1CA10	2x 7.314.0.01690 3RH1921-1CA10	2x 7.314.0.01690 3RH1921-1CA10	2x 7.314.0.01690 3RH1921-1CA10	
Interference suppressor	7.314.0.01400 Siemens 3RT1926-1CD00	7.314.0.01400 3RT1926-1CD00	7.314.0.01400 3RT1926-1CD00	7.314.0.01400 3RT1926-1CD00	7.314.0.01400 3RT1926-1CD00	
Contactor	-K8M 7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	
option T3	7.314.0.01760 Siemens 3RT1916-1CD00	7.314.0.01760 3RT1916-1CD00	7.314.0.01760 3RT1916-1CD00	7.314.0.01760 3RT1916-1CD00	7.314.0.01760 3RT1916-1CD00	
Interference suppressor	7.6873.00190 3RB2026-1QB0 (6-25 A) setting 50 Hz: 10,8 A setting 60 Hz: 11,7 A	7.6873.00190 3RB2026-1QB0 (6-25 A) setting 50 Hz: 10,3 A setting 60 Hz: 10,1 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 6,1 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 5,4 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 440 V: 5,3 A setting 460 V: 5,1 A	
Overload relay	-F2 7.6873.00160 Siemens 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	
Adapter	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	
Overload protection switch	-Q0 7.6860.00190 3RV1011-1JA10 (7-10 A) setting: 7,0 A	7.6860.00150 3RV1011-1EA10 (2,8-4 A) setting: 2,8 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,5 A	
Overload protection switch	-Q12 option T3 Siemens	Siemens	Siemens	Siemens	Siemens	
Cut-out	-F0 7.6862.0 Siemens 5SY4105-7 0,5 A	7.6862.0 5SY4105-7 0,5 A	---	---	---	
Transformer	-T1 7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 1, Sht. 8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 2, Sht. 8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 3, Sht. 8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 4, Sht. 8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 6+7, Sht. 8	
Fuse	7.6849.0 Siemens T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	
Transformer	-T2 7.3717.00260 B0406058 8,0 A Block diagram 3, Sht. 9	---	7.2238.10060 USTE630 2,6 A diagram 2, Sht. 9	7.3717.00270 B0706106 2,6 A diagram 1, Sht. 9	7.2238.10060 USTE630 2,6 A diagram 2, Sht. 9	
Transformer	option T3	Block	Block	Block	Block	
connection	-W11 1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	
connection	-W12 1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	
cables	-W19.1/2 BETATHERM 155 10x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ² (50 Hz) 10x1x2,5 mm ² (60 Hz)	BETATHERM 155 4x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	
Compressor control	-A10 7.7005.4 Siemens SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	
EMERGENCY STOP pushbutton	-S3 7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	
Switching element	Schlegel 7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	
Control cabinet	KAESER 221358.0	221358.0	221358.0	221358.0	221358.0	
Mounting plate	KAESER 221359.0	221359.0	221359.0	221359.0	221359.0	

Blatt 2
Bl.

USX.B-02020.01

Block diagram
Compressor series SX
Equipment parts list

KAESER
KOMPRESSOREN

Ursprung:
Ersatz für:

c	Datum	03.09.2008	Bearb.	Siffer
b	Bu/Si		Gepr.	Büchner
a	AN.22579	30.04.09	Norm	
c	Änderung	Datum	Name	

Equipment parts list		SX 4/SX 4 T Star-Delta-Start				
model						
machine power supply		200 V ±10 %, 50 Hz 200 V ±10 %, 60 Hz	230 V ±10 %, 50 Hz 230 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	400 V ±10 %, 50 Hz	440 V ±10 %, 60 Hz 460 V ±10 %, 60 Hz
Motor	-M1	3kW diagram 6, Sht.2	3kW diagram 6, Sht.2	3kW diagram 5, Sht.2	3kW diagram 5, Sht.2	3kW diagram 5, Sht.2
terminal strips	-X0	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland
without option T3	-X11	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland
with option T3	-X11/-X31	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland
Contactor	-K1M	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20
Auxiliary switch		7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3
Interference suppressor	Siemens	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00
Contactor	-K2M	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20
Auxiliary switch		7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01
Interference suppressor	Siemens	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00
Contactor	-K3M	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20
Auxiliary switch		7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10
Auxiliary switch		7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01
Interference suppressor	Siemens	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00
Contactor	-K8M	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01
option T3		7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00
Interference suppressor	Siemens	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00
Overload relay	-F2	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 50 Hz: 8,2 A setting 60 Hz: 8,6 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 50 Hz: 7,9 A setting 60 Hz: 7,4 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 4,4 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 4,1 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 440 V: 3,9 A setting 460 V: 3,7 A
Adapter	Siemens	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1
Overload protection switch	-Q0	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A
Overload protection switch	-Q12 option T3	7.6860.00190 3RV1011-1JA10 (7-10 A) setting: 7,0 A	7.6860.00150 3RV1011-1EA10 (2,8-4 A) setting: 2,8 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,5 A
Cut-out	-F0	7.6862.0 5SY4105-7 0,5 A	7.6862.0 5SY4105-7 0,5 A	---	---	---
Transformer	-T1	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 1, Sht.8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 2, Sht.8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 3, Sht.8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 4, Sht.8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 6+7, Sht.8
Fuse	Siemens	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V
Transformer	-T2 option T3	7.3717.00260 B0406058 8,0 A Block diagram 3, Sht.9	---	7.2238.10060 USTE630 2,6 A diagram 2, Sht.9	7.3717.00270 B0706106 2,6 A diagram 1, Sht.9	7.2238.10060 USTE630 2,6 A diagram 2, Sht.9
connection	-W11	1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C
connection	-W12	1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C
connection	-W13	1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C
connection	-W14	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D
cables	-W19.1./2	BETATHERM 155 13x1x2,5 mm ²	BETATHERM 155 13x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²
Compressor control	-A10 Siemens	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC
EMERGENCY STOP pushbutton	-S3	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV
Switching element	Schlegel	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00
Control cabinet	KAESER	221358.0	221358.0	221358.0	221358.0	221358.0
Mounting plate	KAESER	221359.0	221359.0	221359.0	221359.0	221359.0

Blatt 3
 USX.B-02020.01
 Block diagram
 Compressor series SX
 Equipment parts list
 KAESER KOMPRESSOREN
 Ursprung:
 Ersatz für:
 Ersatz durch:
 03.09.2008
 Bearb. Siffer
 Buchner
 BU/SI
 Gepr.
 Datum
 AN 22579
 Änderung

Equipment parts list		SX 6/SX 6 T Star-Delta-Start				
model						
machine power supply	200 V ±10 %, 50 Hz 200 V ±10 %, 60 Hz	230 V ±10 %, 50 Hz 230 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	400 V ±10 %, 50 Hz	440 V ±10 %, 60 Hz 460 V ±10 %, 60 Hz	
Motor	-M1 4 kW diagram 6, Sht. 2	4 kW diagram 6, Sht. 2	4 kW diagram 5, Sht. 2	4 kW diagram 5, Sht. 2	4 kW diagram 5, Sht. 2	
terminal strips	-X0 7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	
without option T3	-X11 7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	
with option T3	-X11/-X31 7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	
Contactor	-K1M 7.6865.0 3RT1025-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	
Auxiliary switch	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	
Interference suppressor	7.3140.01400 Siemens 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	
Contactor	-K2M 7.6865.0 3RT1025-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	
Auxiliary switch	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	
Interference suppressor	7.3140.01400 Siemens 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	
Contactor	-K3M 7.6864.0 3RT1024-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	
Auxiliary switch	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	
Auxiliary switch	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	
Interference suppressor	7.3140.01400 Siemens 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	
Contactor	-K8M 7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	
option T3	7.3140.01760 Siemens 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	
Interference suppressor	7.3140.01760 Siemens 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	
Overload relay	-F2 7.6873.00190 3RB2026-1QB0 (6-25 A) setting 50 Hz: 10,4 A setting 60 Hz: 11,1A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 50 Hz: 9,9 A setting 60 Hz: 9,8 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 5,7 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 5,2 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 440 V: 5,1A setting 460 V: 4,9 A	
Adapter	7.6873.00160 Siemens 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	
Overload protection switch	-Q0 7.6860.00100 3RV1011-0KA10 Siemens 0,9-1,25 A	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	
Overload protection switch	-Q12 option T3 7.6860.00190 3RV1011-1JA10 (7-10 A) Siemens setting: 7,0 A	7.6860.00150 3RV1011-1EA10 (2,8-4 A) setting: 2,8 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,5 A	
Cut-out	-F0 7.6862.0 Siemens 5SY4105-7 0,5 A	7.6862.0 5SY4105-7 0,5 A	---	---	---	
Transformer	-T1 7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 1, Sht. 8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 2, Sht. 8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 3, Sht. 8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 4, Sht. 8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 6+7, Sht. 8	
Fuse	7.6849.0 Siemens T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	
Transformer	-T2 7.3717.00260 B0406058 8,0 A Block diagram 3, Sht. 9	---	7.2238.10060 USTE630 2,6 A diagram 2, Sht. 9	7.3717.00270 B0706106 2,6 A diagram 1, Sht. 9	7.2238.10060 USTE630 2,6 A diagram 2, Sht. 9	
connection	-W11 1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	
connection	-W12 1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	
connection	-W13 1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	
connection	-W14 Siemens 7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	
cables	-W19.1./2 BETATHERM 155 13x1x4 mm ²	BETATHERM 155 13x1x4 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	
Compressor control	-A10 Siemens 7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	
EMERGENCY STOP pushbutton	-S3 7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	
Switching element	Schlegel 7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	
Control cabinet	KAESER 221358.0	221358.0	221358.0	221358.0	221358.0	
Mounting plate	KAESER 221359.0	221359.0	221359.0	221359.0	221359.0	

Blatt 4
BL.

USX.B-02020.01

Block diagram
Compressor series SX
Equipment parts list

KAESER
KOMPRESSOREN

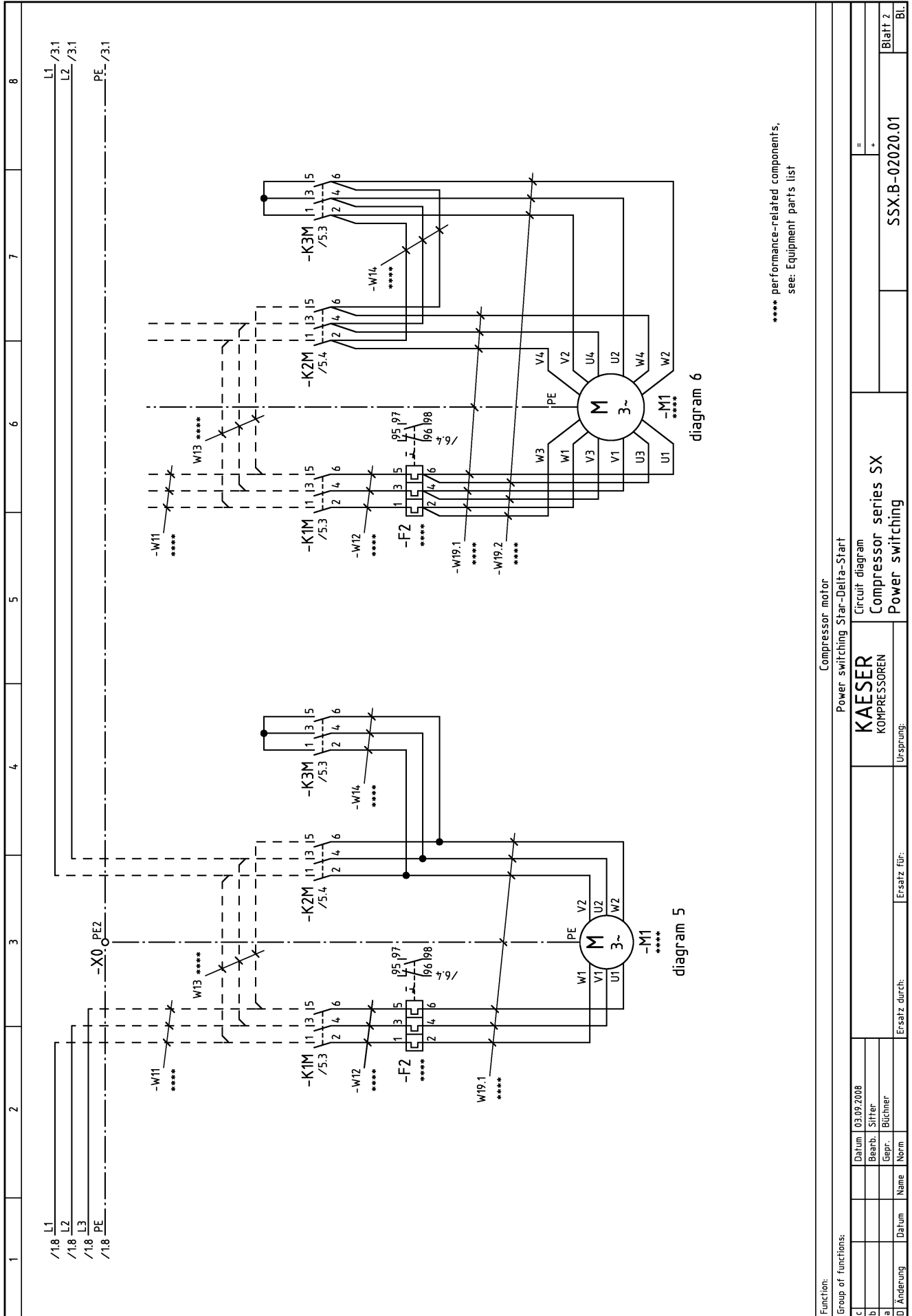
Ursprung:

Ersatz für:

Ersatz durch:

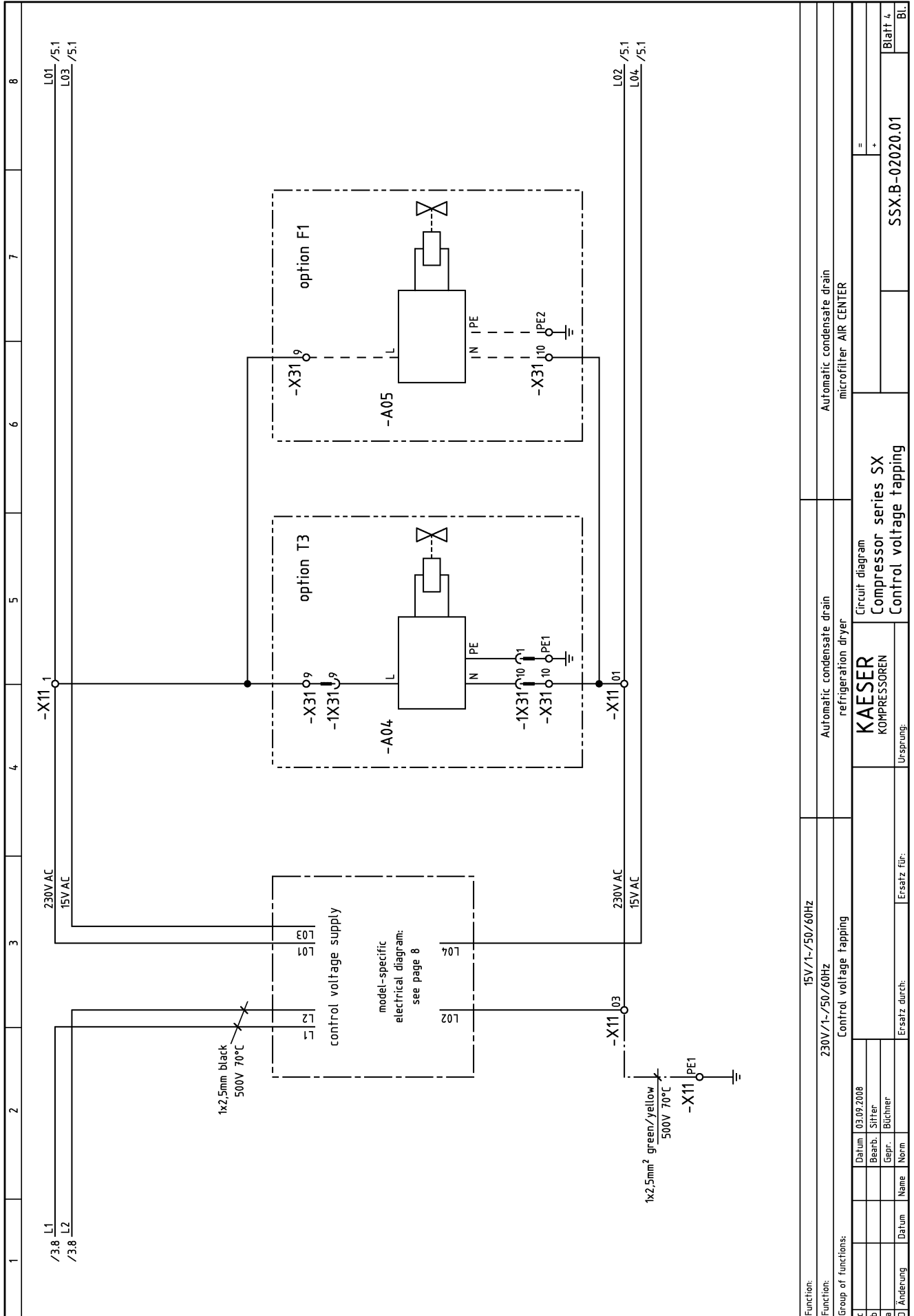
03.09.2008
Datum: Siffer
Beerb. Bührer
Bu/Si Buchner
30.04.09 Gepr. Bührer
AN.22579 Datum Norm
C Änderung

model		Equipment parts list SX 8/SX 8 T Star-Delta-Start					=	+	USX.B-02020.01	Blatt 5 BL
machine power supply		200 V ±10 %, 50 Hz 200 V ±10 %, 60 Hz	230 V ±10 %, 50 Hz 230 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	400 V ±10 %, 50 Hz	440 V ±10 %, 60 Hz 460 V ±10 %, 60 Hz				
Motor	-M1	5,5 kW diagram 6, Sht. 2	5,5 kW diagram 6, Sht. 2	5,5 kW diagram 5, Sht. 2	5,5 kW diagram 5, Sht. 2	5,5 kW diagram 5, Sht. 2				
terminal strips	-X0	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland	7.6836.00250 Wieland				
without option T3	-X11	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland	7.6836.00290 Wieland				
with option T3	-X11/-X31	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland	7.6836.00300 Wieland				
Contactor	-K1M	7.6865.0 3RT1025-1AL20	7.6865.0 3RT1025-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20				
Auxiliary switch		7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3	7.3140.04050 3RH1921-1XA31-0MA3				
Interference suppressor	Siemens	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00				
Contactor	-K2M	7.6865.0 3RT1025-1AL20	7.6865.0 3RT1025-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20				
Auxiliary switch		7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01				
Interference suppressor	Siemens	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00				
Contactor	-K3M	7.6864.0 3RT1024-1AL20	7.6864.0 3RT1024-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20	7.6863.0 3RT1023-1AL20				
Auxiliary switch		7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10	7.3140.01690 3RH1921-1CA10				
Auxiliary switch		7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01	7.3140.02030 3RH1921-1CA01				
Interference suppressor	Siemens	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00	7.3140.01400 3RT1926-1CD00				
Contactor	-K8M	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01	7.6874.0 3RT1016-1AP01				
option T3		7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00				
Interference suppressor	Siemens	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00	7.3140.01760 3RT1916-1CD00				
Overload relay	-F2	7.6873.00190 3RB2026-1QB0 (6-25 A) setting 50 Hz: 13,8 A setting 60 Hz: 14,4 A	7.6873.00190 3RB2026-1QB0 (6-25 A) setting 50 Hz: 13,3 A setting 60 Hz: 12,3 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 7,4 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting: 6,9 A	7.6873.00180 3RB2026-1SB0 (3-12 A) setting 440 V: 6,4 A setting 460 V: 6,1 A				
Adapter	Siemens	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1	7.6873.00160 3RB2923-0AA1				
Overload protection switch	-Q0	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00100 3RV1011-0KA10 0,9-1,25 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A	7.6860.00070 3RV1011-0GA10 0,45-0,63 A				
Overload protection switch	-Q12 option T3	7.6860.00190 3RV1011-1JA10 (7-10 A) setting: 7,0 A	7.6860.00150 3RV1011-1EA10 (2,8-4 A) setting: 2,8 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,7 A	7.6860.00120 3RV1011-1BA10 (1,4-2 A) setting: 1,5 A				
Cut-out	-F0 Siemens	7.6862.0 5SY4105-7 0,5 A	7.6862.0 5SY4105-7 0,5 A	---	---	---				
Transformer	-T1	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 1, Sht. 8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 2, Sht. 8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 3, Sht. 8	7.6843.0 4AM3496-0ES20-0CS1 120 VA diagram 4, Sht. 8	7.6852.0 4AM3896-0EP80-0FA1 120 VA diagram 6+7, Sht. 8				
Fuse	Siemens	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V	7.6849.0 T3,15H / 3,15 A, 250 V				
Transformer	-T2 option T3	7.3717.00260 B0406058 8,0 A Block diagram 3, Sht. 9	---	7.2238.10060 USTE630 2,6 A diagram 2, Sht. 9	7.3717.00270 B0706106 2,6 A diagram 1, Sht. 9	7.2238.10060 USTE630 2,6 A diagram 2, Sht. 9				
connection	-W11	1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C				
connection	-W12	1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C				
connection	-W13	1x6 mm ² black 500 V, 70°C	1x6 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C	1x2,5 mm ² black 500 V, 70°C				
connection	-W14 Siemens	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D	7.3140.02130 3RA1923-3D				
cables	-W19.1./2	BETATHERM 155 13x1x4 mm ²	BETATHERM 155 13x1x4 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²	BETATHERM 155 7x1x2,5 mm ²				
Compressor control	-A10 Siemens	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC	7.7005.4 SIGMA CONTROL BASIC				
EMERGENCY STOP pushbutton	-S3	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV				
Switching element	Schlegel	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00	7.3218.0 / MHT00				
Control cabinet	KAESER	221358.0	221358.0	221358.0	221358.0	221358.0				
Mounting plate	KAESER	221359.0	221359.0	221359.0	221359.0	221359.0				

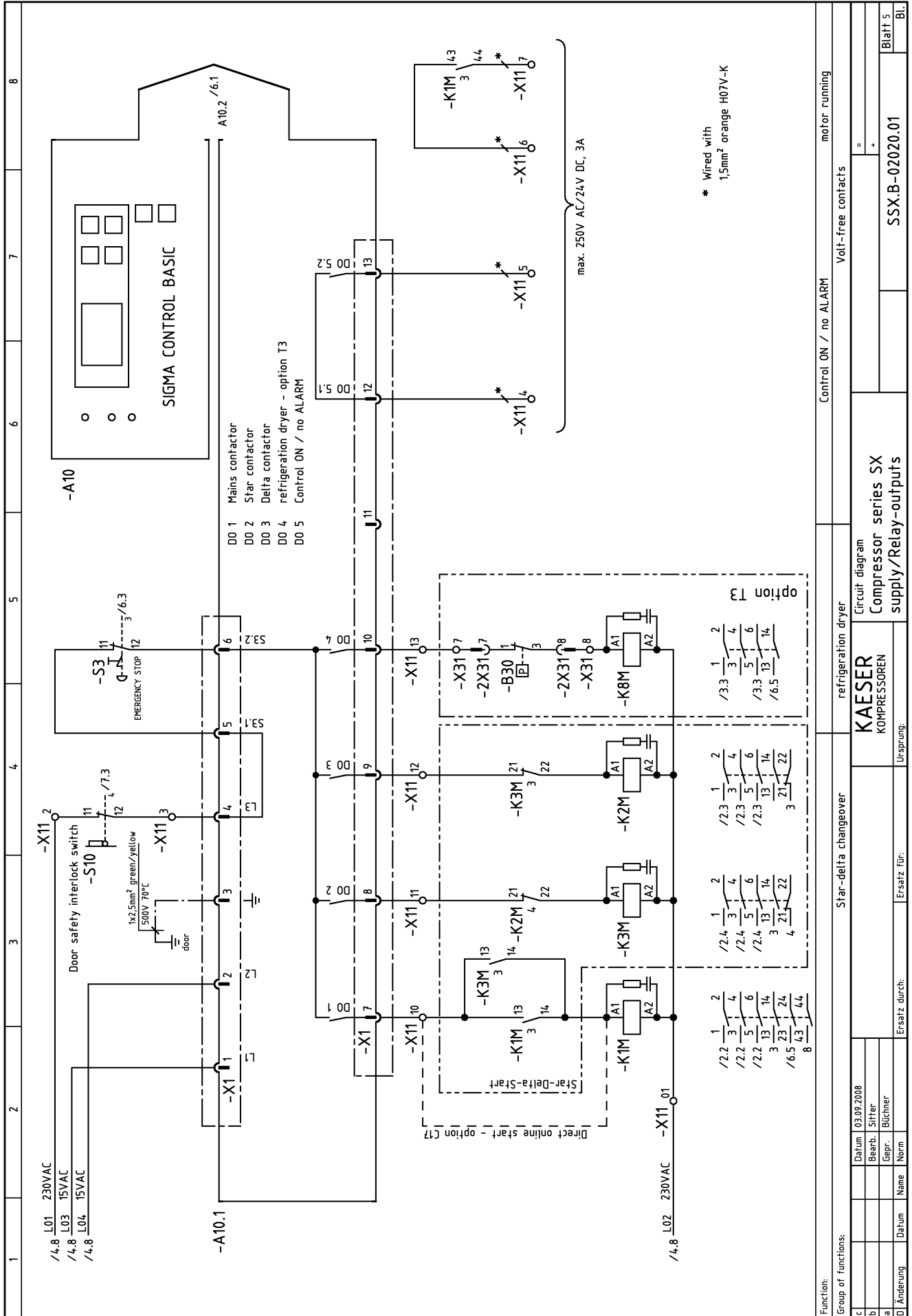


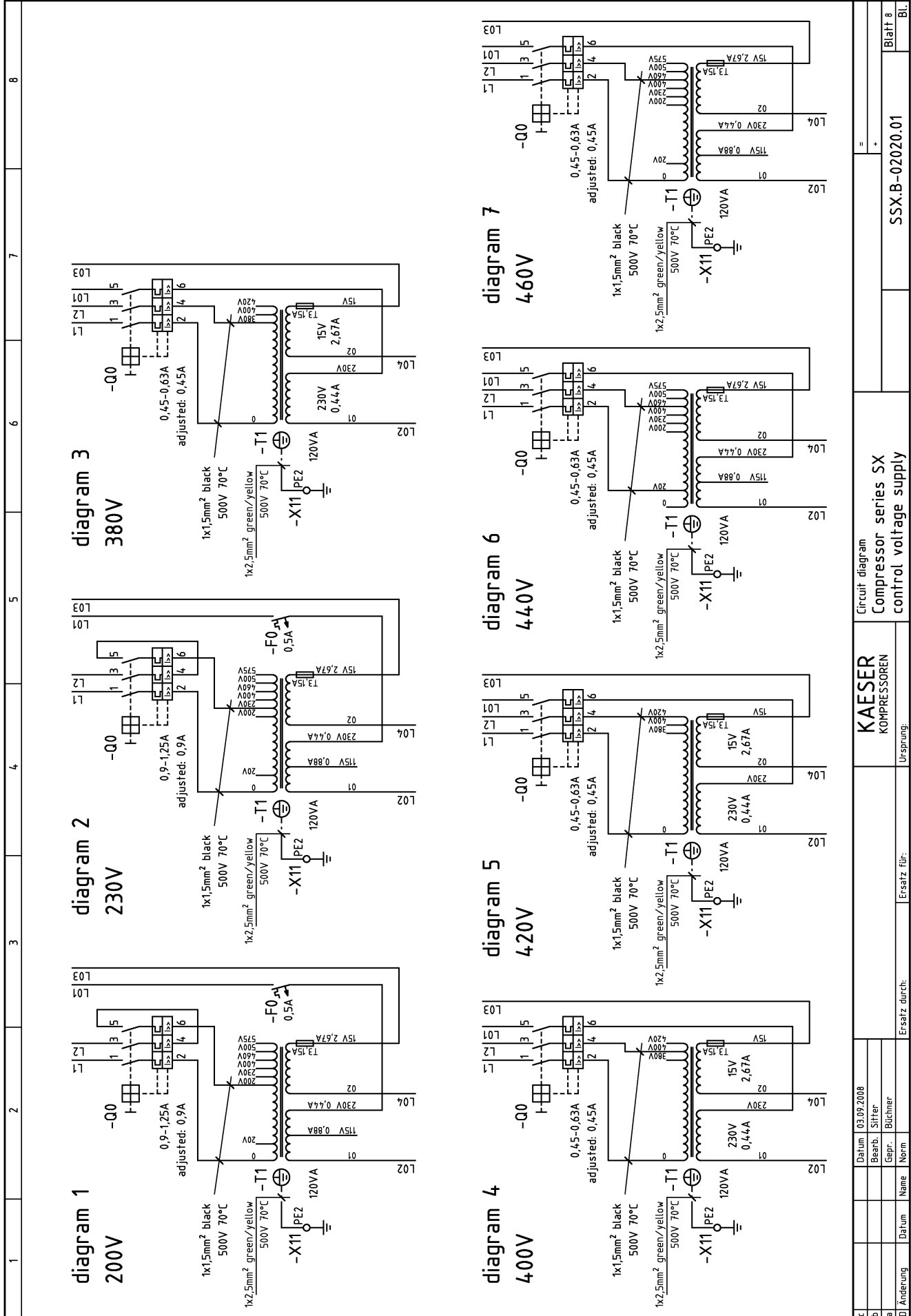
**** performance-related components,
see: Equipment parts list

Function:		Compressor motor	
Group of functions:		Power switching Star-Delta-Start	
c	Datum	03.09.2008	=
b	Bearb.	Siffer	+
a	Gepr.	Büchner	
D	Änderung	Datum	Name
Ersatz durch:		Ersatz für:	
KAESER KOMPRESSOREN		Compressor series SX	
Urprung:		Power switching	
SSX.B-02020.01		Blatt 2	
		Bl.	

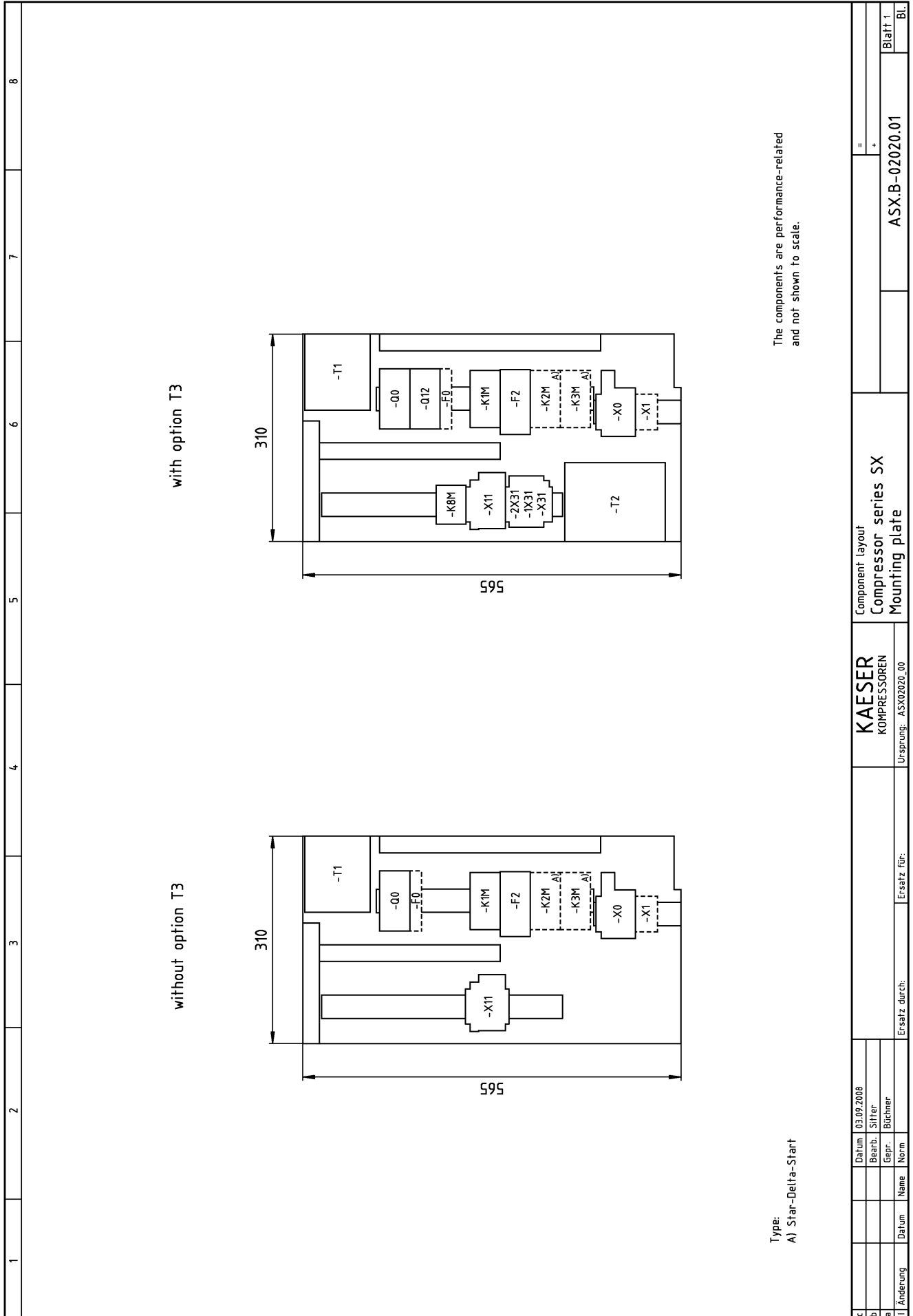


Function:		15V/1~/50/60Hz		Automatic condensate drain		Automatic condensate drain	
Function:		230V/1~/50/60Hz		refrigeration dryer		microfilter AIR CENTER	
Group of functions:		Control voltage tapping		Control voltage tapping		Control voltage tapping	
c	Datum	03.09.2008		Circuit diagram		=	
b	Bearb.	Siffer		Compressor series SX		+	
a	Gepr.	Büchner		Control voltage tapping		SSX.B-02020.01	
D	Änderung	Datum	Name	Ersatz durch:		Blatt 4	
				Ersatz für:		BL	





c	Datum	03.09.2008	Kaeser		Circuit diagram	SSX.B-02020.01		Blatt 8
b	Bearb.	Siffer	KOMPRESSOREN		Compressor series SX			Bl.
a	Gepr.	Büchner	URSPRUNG:		control voltage supply			
d	Änderung	Datum	Ersatz durch:					



The components are performance-related and not shown to scale.

Type:
A) Star-Delta-Start

c		Datum	03.09.2008	Component layout		=	
b		Bearb.	Siffer	Compressor series SX		+	
a		Gepr.	Büchner	Mounting plate		ASX.B-02020.01	
Änderung		Datum	Name	Ersatz durch:		Blatt 1	
				Ersatz für:		Bl.	

