Operating manual

Booster (silicone-free)

DN C SIGMA CONTROL 2

No.: 901768–L 23 USE

Manufacturer:

KAESER KOMPRESSOREN SE

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Original instructions
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1 Regarding this Document

1.1 Using this document

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

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

1.2 Further documents

Further documents included with this operating manual are:

- Certificate of acceptance / operating instructions for the pressure vessel.
- Operating manual for SIGMA CONTROL 2.

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

1.4 Symbols and labels

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

1.4.1 Warnings

Warning notices indicate dangers that may result in injury when disregarded.

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

Signal term	Meaning	Consequences of disregard
DANGER	Warns of an imminent danger	Will result in death or severe injury
WARNING	Warns of a potentially imminent danger	May result in death or severe injury
CAUTION	Warns of a potentially dangerous situation	May result in a moderate physical injury

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

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

⚠ DANGER

The type and source of the imminent danger is shown here!
The possible consequences of ignoring a warning are shown here.
If you ignore the warning notice, the "DANGER" signal word indicates a lethal or severe injury will occur.

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

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

Example:

1. **⚠ WARNING** *The type and source of the imminent danger is shown here!*
   The possible consequences of ignoring a warning are shown here.
   If you ignore the warning notice, the "WARNING" signal word indicates that a lethal or severe injury may occur.
   ➢ *The measures required to protect yourself from danger are shown here.*
2. Always read and comply with warning instructions.

1.4.2 Potential damage warnings

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

Warning notices for damages are identified by their signal term.

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

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

Example:

NOTICE

The type and source of the imminent danger is shown here!
Potential effects when ignoring the warning are indicated here.

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

➢ Carefully read and fully comply with warnings against damages.

1.4.3 Other alerts and their symbols

This symbol identifies 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 symbol denotes lists of actions comprising one stage of a task.
Operating instructions with several steps are numbered in the sequence of the operating steps.
Information relating to one option only are marked with an option code (e.g., H1 indicates that this section applies only to machines with screw-in machine feet). Option codes used in this operating 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 ...
➢ ... as is a solution.

This symbol identifies important information or measures regarding the protection of the environment.

Further information — Further subjects are introduced here.

2 Technical Data

2.1 Nameplate

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

The nameplate is located on the outside of the machine:

- at the rear of the machine.

➢ Enter here the nameplate data as a reference:

Characteristic	Value
Booster	
Part No.	
Serial No.	
Year	
Initial pressure*	
Max. working pressure	
Ambient temperature*	
Inlet temperature*	
Rated motor speed	
Rated power	
Full load current	
Electrical connection	
Electrical diagram	
*Deviating values are given in the operating manual.	

Tab. 3 Nameplate

Further information The *compressor rated speed* and the *installed type of compressor block* are shown in the (Operating data/figures) menu of the SIGMA CONTROL 2 controller.

2.2 Options

The table contains a list of possible options. The options for this machine are shown on the nameplate.

➢ Enter options here for reference.

Option	Option code	Available?
Bolt-down machine feet	H1	
Air-cooling	K1	
Water cooling: Bundled-tube heat exchanger	K9	

Tab. 4 Options

2.3 Weight

The values shown are maximum values. The actual weight depends on equipment fitted.

	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Weight [lb.]	2800	3020	3086	3109

Tab. 5 Weight

2.4 Temperature

	DN 22 C-DN 45 C
Maximum Air discharge temperature[1] [°F]	≥140
Maximum Block discharge temperature[1] [°F]	≥430
[1] Automatic shutdown	

Tab. 6 Temperature

2.5 Ambient conditions

	DN 22 C-DN 45 C
Maximum elevation AMSL [1] [ft.]	3000
Permissible ambient temperature [°F]	37–115
Permissible inlet temperature [°F]	37–115
[1] Higher altitudes are permissible only after consultation with the manufacturer.	

Tab. 7 Ambient conditions

2.6 Ventilation

The values given are minimum guide values.

	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Inlet aperture Ⓩ see figure 11 [ft²]	11.8 / 5.4[1]	14.0 / 5.4[1]	16.2 / 8.6[1]	21.5 / 11.8[1]
[1] Option K9				

	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Required volume of air for exhaust fan Ⓐ at static compression 0.01 psi [cfm] (machine in enclosed space without ducts)	7628 4121[1)]	10594 5297[1)]	12950 6473[1)]	15892 8239[1)]
Exhaust air (hot air) via duct [cfm]	8239 8239[1)]	8239 8239[1)]	8239 8239[1)]	8239 8239[1)]
Permissible pressure drop for cooling air ducting [inches of water]	1/4 1/4[1)]	1/4 1/4[1)]	1/4 1/4[1)]	1/4 1/4[1)]

[1)] Option K9

Tab. 8 Ventilation

2.7 Pressure

See nameplate for maximum working pressure

Maximum working pressure [psig]	Safety relief valve activating pressure [psig]
145	175
217	245
290	320
360	390
435	465
500	535
580	610
650	670

Tab. 9 Safety relief valve opening pressure

Further information See chapter 13.5 for safety relief valve data.

2.8 Calculating the volumetric flow rate

Rated speed compressor block

Type	Rated speed 60Hz [rpm]
N 735 / N1100	790
	843
	895
	948
	1001
	1054
	1117
	1180
	1243
	1317
	—
	—

Tab. 10 Rated speed compressor block

Volumetric flow parameters

	N 753	N 1100
KLa= Coefficient Volumetric flow: a	0.603187	0.0134438
KLb= Coefficient Volumetric flow: b	−0.0468106	−0.0476777
KLc= Coefficient Volumetric flow: c	0.0253737	0.0670051
KLd= Coefficient Volumetric flow: d	−2.116820	−0.9540620
KLe= Coefficient Volumetric flow: e	0.00077485	0.00104363
KLf= Coefficient Volumetric flow: f	−0.00000001138	0.03055930

Tab. 11 Volumetric flow parameters

Formula for calculating the volumetric flow rate (valid for the installed N753 compressor block type)

$$Q = a + b \times (p4-p1) + c \times p1 \times \left(\frac{p4}{p1}\right)^{d} + e \times p1 \times n + f \times n^2$$

where:

- Q= Volumetric flow (to ISO 1217:2009, Annex C)
- n= Rated speed compressor

- p1= Initial pressure [bar (g)]
- p4= Discharge pressure [bar (g)]
  Example:
  p1= 10 bar(g)
  p4= 40 bar(g)
  n= 1037 min^{-1}
  Q= 0.603187 − 0.0468106 x (40−10) + 0.0253737 x 10 x (40:10)$^{(-2.11682)}$ + 0.00077485 x 10 x 1037− 0.00000001138 x 1037^2
  Q= 7.21 m^3/min

Formula for calculating the volumetric flow rate (valid for the installed N1100 compressor block typ)

$$Q = a + b \times (p4-p1) + c \times p1 \times \left(\frac{p4}{p1}\right)^d + e \times p1 \times n + f \times n^{0,5}$$

where:

- Q= Volumetric flow (to ISO 1217:2009, Annex C)
- n= Rated speed compressor
- p1= Initial pressure [bar (g)]
- p4= Discharge pressure [bar (g)]
  Example:
  p1= 10 bar(g)
  p4= 40 bar(g)
  n= 1037 min^{-1}
  Q= 0.0134438 − 0.0476777 x (40−10) + 0.0670051 x 10 x (40:10)$^{(-0.954062)}$ + 0.00104363 x 10 x 1037− 0.0305593 x $1037^{0.5}$
  Q= 10.54 m^3/min

2.9 Example for determining the permissible initial pressure

For more diagrams to be used when calculating the permissible initial pressure, see chapter 13.4.

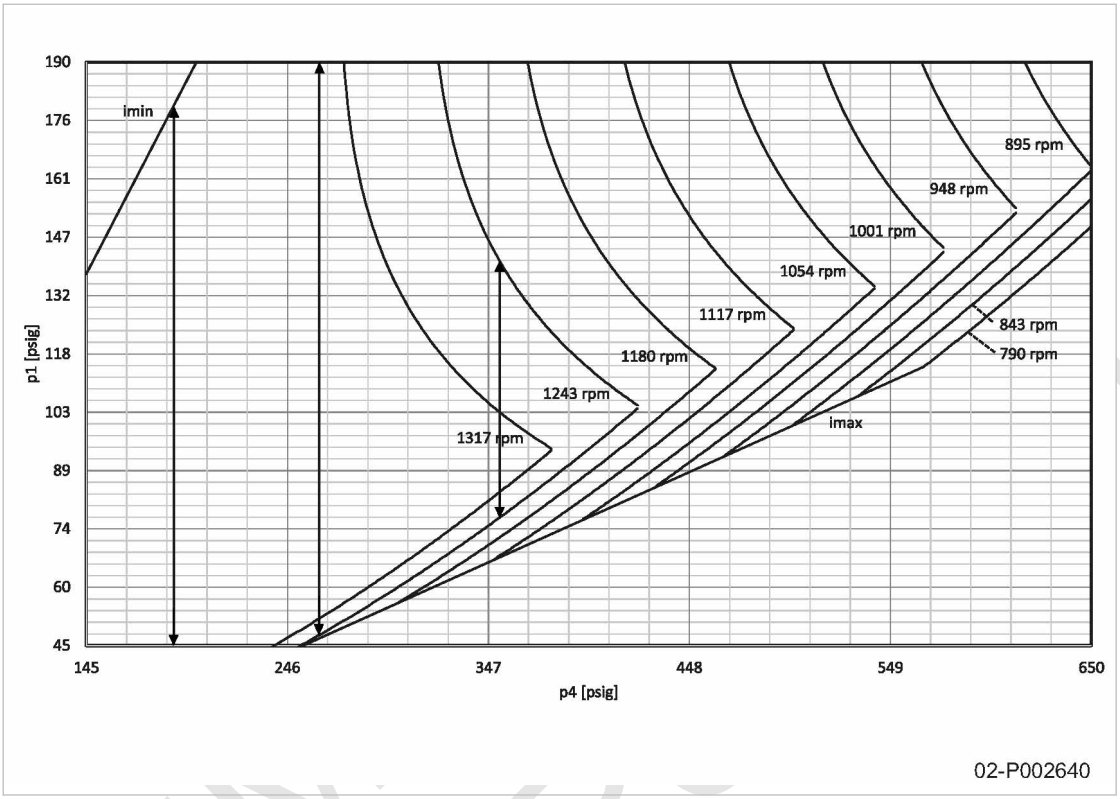


Fig. 1 Initial pressure diagram

Ⓐ p4=190 psi(g) 45 psi(g) ≤ p1 ≤ 178 psi(g) at all speeds
Ⓑ p4=260 psi(g) 50 psi(g) ≤ p1 ≤ 190 psi(g) at n= 1243 min^{-1}
Ⓒ p4=350 psi(g) 77 psi(g) ≤ p1 ≤ 140 psi(g) at n= 1243 min^{-1}

2.10 Noise emission [dB(A)]

Mains frequency	DN 22 C	DN 30 C	DN 37 C	DN 45 C
60 Hz	79 / 77[1)]	79 / 77[1)]	79 / 77[1)]	79 / 77[1)]

Noise pressure level in operation at maximum gauge working pressure and maximum attainable speed as per ISO 2151 and the basic standard ISO 9614-2, uncertainty: ±3 dB(A)

[1)] Option K9

Tab. 12 Noise emission [dB(A)]

2.11 Motors and power

2.11.1 Compressor motor

Mains frequency: 60 Hz

	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated power [hp]	30	40	50	60

h = operating hours

	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated speed [rpm]	3600	3600	3600	3600
Enclosure protection	TEFC	TEFC	TEFC	TEFC
Motor bearing re-greasing interval [h]	2000	2000	2000	2000
Grease requirement, each bearing [g]	10	10	10	10
h = operating hours				

Tab. 13 Compressor motor (60Hz)

2.11.2 Option K1/K9 Fan motor

Mains frequency: 60 Hz

	DN 22 C-DN 45 C
Rated power [hp]	2.0
Rated speed [rpm]	1800
Enclosure protection	TEFC
Motor bearing re-greasing interval [h]	2000
Grease requirement A-side bearing [g]	5
Grease requirement B-side bearing [g]	3
h = operating hours	

Tab. 14 Fan motor (60Hz)

2.12 Compressor oil recommendation

Compressor oil LSF 150 is filled for silicone-free applications.

Information regarding ordering of compressor oil is found in chapter 11.

Oil type	LSF 150
Description	Silicone-free mineral oil
Application	For silicone-free applications with the exception of foodstuff processing applications.
Maximum permissible oil change interval in operating hours/years	1000/1*
* Cool to moderate ambient temperatures, low humidity, low to mid duty cycle.	

Tab. 15 Compressor oil recommendation

2.12.1 Compressor oil charge quantity

Type	Total charge [quarts]	Topping off volume [qt.] (minimum–maximum)
N 735 / N1100	5.0	ca.0.5

Tab. 16 Compressor oil charge quantity

2.13 Electrical connection

The machine is designed for an electrical supply according to National Electric Code (NEC) NEC-670, particulary NFPA 79, edition 2017, section 4.3. In the absence of any user-specified alternatives, the limits given in these standards must be adhered to. Consult manufacturer for any other specific power supply.

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

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

This machine may only be supplied from a grounded TN or TT three-phase supply in which the **neutral point** is grounded.
The connection to an IT three-phase supply or a three-phase supply with one grounded phase is not permitted.

2.13.1 Power supply specifications

The following multi-strand copper core wires are given according to 2017 NEC 310.15 and table 310.15(B)(16) adjusted for 40 °C ambient temperature.

If other local conditions prevail, like for example high temperature, the cross section should be checked and adjusted according to 2017 NEC 110.14(C), 220.3, 310.15, table 310.15(B)(2)(a), table 310.15(B)(3)(a), 430.6, 430.22, 430.24, 670.4(A) and other local codes.

Dual element time delay fuses are selected according to 2017 NEC 240.6, 430.52 and tables 430.52, 430.248 and 430.250.

It is recommended to use a ground conductor the same size as the current carrying conductors, if local codes allow. Neither the minimum ground wire size as pointed out in 2017 NEC table 250.122 nor using conduit as the sole ground connection is recommended.

Further information The electrical diagram in chapter 13.3 contains further specifications for electrical connection.

Rated voltage: 208V / 3ph / 60Hz

Type	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated power [hp]	30	40	50	60
Pre-fuse [A]	125	175	200	250
Supply cable [AWG]	4xAWG1	4xAWG3/0	4xAWG3/0	4xMCM250
Consumption [A]	83.8	122.6	137.3	167.8

Tab. 17 Supply details 208V / 3ph / 60Hz

Rated voltage: 230V / 3ph / 60Hz

Type	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated power [hp]	30	40	50	60
Pre-fuse [A]	110	175	175	225
Supply cable [AWG]	4xAWG2	4xAWG3/0	4xAWG3/0	4xAWG4/0
Consumption [A]	78.2	124.4	125.5	153.8

Tab. 18 Supply details 230V / 3ph / 60Hz

Rated voltage: 380V / 3ph / 60Hz

Type	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated power [hp]	30	40	50	60
Pre-fuse [A]	70	125	110	125
Supply cable [AWG]	4xAWG4	4xAWG1/0	4xAWG2	4xAWG1/0
Consumption [A]	47.2	96.6	76.6	93.4

Tab. 19 Supply details 380V / 3ph / 60Hz

Rated voltage: 460V / 3ph / 60Hz

Type	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated power [hp]	30	40	50	60
Pre-fuse [A]	50	100	90	110
Supply cable [AWG]	4xAWG6	4xAWG3	4xAWG3	4xAWG2
Consumption [A]	38.5	69.5	63.2	76.9

Tab. 20 Supply details 460V / 3ph / 60Hz

Rated voltage: 575V / 3ph / 60Hz

Type	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Rated power [hp]	30	40	50	60
Pre-fuse [A]	45	80	70	90
Supply cable [AWG]	4xAWG8	4xAWG4	4xAWG4	4xAWG3
Consumption [A]	31.1	54.7	50.5	61.5

Tab. 21 Supply details 575V / 3ph / 60Hz

2.14 Option K9 Water-cooling

Cooling oil may contaminate the cooling water if a leak occurs.

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

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

➢ Consult an authorized KAESER service representative to ensure optimum cooling-system performance.

➢ Comply with the specified minimum requirements for the cooling water in order to avoid downtimes due to corrosion, calcification and contamination.

It is imperative that measures for cooling water treatment and filtration are implemented and performed.
KAESER can provide the names of companies specializing in cooling water analysis and the supply of suitable treatment devices.

The following design types are available:

- Option K9: Water cooling with bundled pipe heat exchanger: Chapter 2.15

Open cooling system

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

Closed cooling system

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

Continuous-flow cooling system

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

Further information The dimensional drawing in chapter 13.2 gives the flow direction, size and position of the connection ports.

2.15 Option K9 Water cooling (Bundled pipe heat exchanger)

There are typical layout examples. Conditions for each individual installation could vary from these guidelines.

➢ If required, enter your individual values in the prepared table.

➢ If the design data differ, request that the settings in SIGMA CONTROL 2 are checked by KAESER Service.

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

Individual design data

	My value
Cooling water temperature rise [°F]	—
Flow rate [gpm]	—
Pressure drop [psi]	—

Tab. 22 Water cooling K9: Individual design data

2.15.1 Component specifications

Feature	Value
Material (Heat exchanger)	CuNi10Fe
Maximum working pressure air side [psig]	725
Maximum working pressure water side [psig]	145
Minimum permissible inlet temperature [1] water side [°F]	14
Maximum permissible inlet temperature water side [°F]	203
Unsuitable cooling media	Seawater Consult KAESER about water types.

[1] Suitable antifreeze presumed.

Tab. 23 Component specification (Option K9)

2.15.2 Cooling water quality

Characteristics/content	Approximate concentration zone in [mg/l]	Appraisal
pH value	<6.0	0
	6.0 to 9.0	+
	>9.0	0
Chlorides (Cl) [mg/l]	up to 1000	+
	>1000	+ (<25000mg/l)
Sulphate (SO_4) [mg/l]	up to 70	+
	70 to 300	+
	>300	+ (<3000mg/l)

\+ ≙ Usually good resistance
0 ≙ Corrosion may occur, in particular when several factors are evaluated with 0
– ≙ height corrosion (use not recommended)

Characteristics/content	Approximate concentration zone in [mg/l]	Appraisal
Nitrate (HNO_3), dissolved [mg/l]	up to 100	+
	>100	0
Free (aggressive) carbon dioxide	up to 200	+
	20 to 50	0
	>50	–
Oxygen (O_2)	up to 2	+
	> 2	+
Ammonia (NH_4^+) [mg/l]	up to 2	+
	2 to 20	+
	> 20	0
Iron (Fe), dissolved [mg/l]	up to 10	0
	> 10	–
Manganese (Mn), dissolved [mg/l]	up to 1	0
	> 1	–
Free chlorine gas	up to 5	Permanent chlorination + <0,5mg/l
	> 5	Impact chlorination + 3mg/l
Sulphite (SO_4) [mg/l]		0
Ammonia		+ (<15mg/l)

+ ≙ Usually good resistance
0 ≙ Corrosion may occur, in particular when several factors are evaluated with 0
– ≙ height corrosion (use not recommended)

Tab. 24 Cooling water quality (Bundled-pipe heat exchanger)

2.15.3 Design data for the cooling system

Cooling water temperature rise 20°F

	DN 22 C	DN 30 C	DN 37 C	DN 45 C
Maximum permissible inlet temperature [°F]	104	104	104	104
Flow rate [gpm]	3.0	4.4	5.2	6.6
Pressure drop [psi]	3.0	3.0	4.3	5.8

Tab. 25 Cooling water temperature (ΔT=20°F)

2.16 Machine duty cycle

The machine control guarantees a 100% duty cycle.

3 Safety and Responsibility

3.1 Basic instructions

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

- danger to life and limb of the operator or third parties,
- impairments to the machine and other material assets.

⚠ Disregard of warning or safety instructions can cause serious injuries!

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

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

3.2 Specified use

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

➢ Keep to the specifications listed in this service manual.

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

3.3 Improper use

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

➢ Only use the machine as intended.

➢ Never direct compressed air at persons or animals.

➢ Use hot cooling air for heating purposes only if there is no risk to the health of humans or animals. If necessary, hot cooling air should be treated by suitable means.

➢ Do not operate the machine in areas in which specific requirements with regard to explosion protection are in force.

3.4 User's responsibilities

3.4.1 Observe statutory and universally accepted regulations

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

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

3.4.2 Qualified personnel

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

Authorized operators possess the following qualifications:

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

Authorized installation and maintenance personnel have the following qualifications:

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

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

3.4.3 Compliance with Inspection Schedules and Accident Prevention Regulations

The machine is subject to local inspection schedules.

➢ The user must ensure that, for compressors with motor power above 0.5 hp, safety devices are annually inspected for their proper function.

➢ Keep to inspection intervals in accordance with the Ordinance on Industrial Health and Safety with maximum intervals as laid down in §16:

The inspection intervals are laid down in the technical specification for the compressed air after-cooler. Inspection intervals are dependent on the pressure/volume product, i.e. max. permitted pressure (PS) in bar, times the aftercooler volume (V) in liters.

Example: Volume V = 90 l and max. permitted pressure PS = 160 psi, pressure/volume product = 990.

Inspection	Inspection interval	Inspection authority
Installation and equipment inspection	Before commissioning if PS x V ≤ 200	Competent person (e. g. KAESER SERVICE technician)
	Before commissioning on compressors with type approval (Ordinance on Industrial Safety and Health, annex 5 no. 25) PS x V ≤ 1000.	Competent person (e. g. KAESER SERVICE technician)
	Before commissioning if PS x V > 200.	Approved supervisory body
Internal inspection	Every 5 years after installation or the last inspection if pressure PS x volume V ≤ 1000	Competent person (e. g. KAESER SERVICE technician)
	Every 5 years* after installation or the last inspection if PS x V > 1000.	Approved supervisory body
Strength test	Every 10 years after installation or the last inspection if PS x V ≤ 1000	Competent person (e. g. KAESER SERVICE technician)
	Every 10 years* after installation or the last inspection if PS x V > 1000.	Approved supervisory body
* Inspection intervals are determined by the user in consultation with the approved supervisory body. The responsible authority is to be notified not later than 6 months after commissioning (if pressure (PS) x volume (V) > 1000). Intervals given are the maximum in each case.		

Tab. 26 Inspection intervals according to Ordinance on Industrial Health and Safety

3.5 Dangers

Basic instructions

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

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

Warning instructions are found before a potentially dangerous task.

3.5.1 Safely dealing with sources of danger

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

Electricity

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

- ➢ Allow only qualified and authorized electricians or trained personnel under the supervision of a qualified and authorized electrician to carry out work on electrical equipment according to electrical engineering regulations.
- ➢ Before commissioning or re-commissioning the machine, 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 relay contacts or electrical machine heating, for example.
- ➢ Use fuses corresponding to machine power.
- ➢ Check regularly that all electrical connections are tight and in proper condition.

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 distribution network to ensure that no compressed air can flow back into the machine.
- ➢ Depressurize all pressurized components and enclosures.
- ➢ 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

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

- ➢ Use appropriate systems for 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 forces

Springs under tension or compression store energy. Uncontrolled release of this energy can cause serious injury or death.
Pressure/check valves, solenoid valves and inlet valves are powerfully spring-loaded.

- ➢ Do not open or dismantle any valves.

Rotating components

Touching the fan while the machine is running 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 verify the absence of any voltage.

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

Temperature

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

➢ Avoid contact with hot components.
These include, for example, compressor blocks, compressed air pipes, coolers, 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 vapors or parts of the machine.

Noise

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

➢ Operate the machine only with intact sound insulation.
➢ Wear hearing protection if necessary.
The blowing-off of the safety relief valve can be particularly loud.

Operating fluids/materials

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

➢ Strictly forbid fire, open flame and smoking.
➢ Follow safety regulations when dealing with oils, lubricants and chemical substances.
➢ Avoid contact with skin and eyes.
➢ Do not inhale oil mist and vapors.
➢ 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

Unsuitable spare parts compromise the safety of the machine.

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

Conversion or modification of the machine

Modifications, additions to and conversions of the machine or the controller can result in unpredictable dangers.

➢ Do not convert or modify the machine!
➢ Obtain written approval by the manufacturer prior to any technical modification or expansion of the machine, the controller, or the control programs.

Extending or modifying the compressed air station

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

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

3.5.2 Safe machine operation

The following is information supporting you in the safe handling of the machine during individual product life phases.

Personal protective equipment

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

- ➢ Wear protective clothing as necessary.

Suitable protective clothing (examples):

- Safety work wear
- Protective gloves
- Safety boots
- Eye protection
- Ear protection

Transporting

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

- ➢ Use suitable lifting gear that conforms to local safety regulations.
- ➢ Allow transportation only by personnel trained in the safe movement of loads.
- ➢ Attach lifting gear only to suitable lifting points.
- ➢ Be aware of the center of gravity to avoid tipping.
- ➢ Make sure the danger zone is clear of personnel.
- ➢ Do not step onto machine components to climb up the machine.

Assembly

- ➢ Only use electrical cables that are suitable and approved for the surroundings and electrical loads applied.
- ➢ Never dismantle compressed air pipes until they are fully vented.
- ➢ Only use pressure lines that are suitable and approved for the maximum working pressure and the intended medium.
- ➢ Do not allow connection pipes to be placed under mechanical stress.
- ➢ Do not induce any forces into the machine via the connections, so that the compressive forces must be balanced by bracing.

Positioning

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

- ➢ Install the machine in a suitable compressor room.
- ➢ Ensure sufficient and suitable lighting such that the display can be read and work carried out comfortably and safely.
- ➢ Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
- ➢ If installed outdoors, the machine must be protected from frost, direct sunlight, dust, rain and splashing water.
- ➢ Do not operate in areas in which specific requirements with regard to explosion protection are in force.
- ➢ Ensure adequate ventilation.
- ➢ Place the machine in such a manner that the working conditions in its environment are not impaired.
- ➢ Comply with limit values for ambient temperature and humidity.
- ➢ The intake air must not contain any damaging contaminants,
  Damaging contaminants are for instance: explosive or chemically instable gases and vapors, acid or base forming substances such as ammonia, chlorine or hydrogen sulfide.
- ➢ Do not position the machine in the warm exhaust air flow from other machines.
- ➢ Keep suitable fire extinguishing agents ready for use.

Commissioning, operation and maintenance

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

- ➢ Allow maintenance work to be carried out only by authorized personnel.
- ➢ Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- ➢ Switch off and lock out the power supply disconnecting device and verify the absence of any voltage.
- ➢ Check that there is no voltage on floating relay contacts.
- ➢ Close shut-off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine.
- ➢ Depressurize all pressurized components and enclosures.
- ➢ Allow the machine to cool down.
- ➢ Do not open the cabinet while the machine is switched on.
- ➢ Do not open or dismantle any valves.
- ➢ Use only spare parts approved by KAESER for use in this machine.
- ➢ Carry out regular inspections:
  for visible damages,
  of safety installations,
  of the EMERGENCY STOP push button,
  of any components requiring monitoring.
- ➢ Pay particular attention to cleanliness during all maintenance and repair work. Cover components and openings with clean cloths, paper or tape to keep them clean.

- ➢ Do not leave any loose components, tools or cleaning rags on or in the machine.
- ➢ Components removed from the machine can still be dangerous.
  Do not attempt to open or destroy any components taken from the machine.

Decommissioning, storage and disposal

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

- ➢ Drain off fluids and dispose of them according to environmental regulations.
  These include, for example, compressor oil and cooling water.
- ➢ Have refrigerant disposed of by authorized bodies only.
- ➢ Dispose of the machine in accordance with local environmental regulations.

3.5.3 Organizational Measures

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

3.5.4 Danger areas

The table gives information on areas dangerous to personnel.
Only authorized personnel may enter these areas.

Function	Danger area	Authorized personnel
Transport	Within a 10 ft. radius around the machine	Installation personnel for transport preparation No personnel during transport
	Beneath the lifted machine	No personnel!
Installation	Within the machine Within a 3 ft. radius of the machine and its power supply cables	Installation personnel
Operation	Within a 3 ft. radius around the machine	Operating personnel
Maintenance	Within the machine Within a 3 ft. radius around the machine	Maintenance personnel

Tab. 27 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 damage labels and notices.
- ➢ Ensure that labels and notices are clearly legible.

Further information More information on safety devices is contained in chapter 4, section 4.3.

3.7 Working life of safety functions

Pursuant to ISO 13849-1:2008, Category and Performance Level (PL) of the machine's safety functions have been analyzed and assessed:

Safety function	Category	Performance Level
EMERGENCY STOP push button	1	c
Safety shutdown when opening the machine (door interlock switch)	1	c

Tab. 28 Category and Performance Level

The safety-relevant components of the safety functions are designed for a working life of 20 years. The working life starts with the commissioning, and is not extended by times during which the machine was not in use.

The following components are affected:

- EMERGENCY STOP push button
- Main contactor
- Door interlock switch

1. The components of the safety functions must be replaced by an authorized KAESER service representative after a working life of 20 years.
2. Have an authorized KAESER service representative check the reliability of the safety functions.

3.8 Safety signs

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

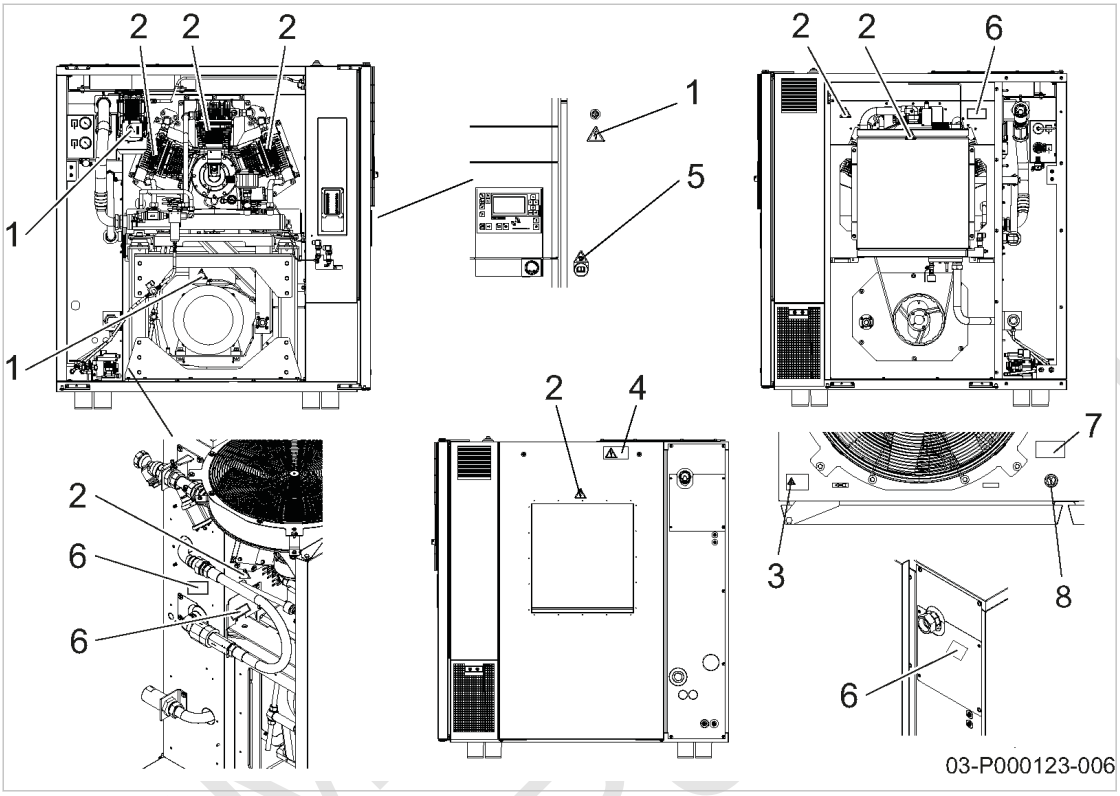


Fig. 2 Location of safety signs

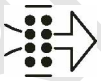
Location	Symbol	Meaning
1		Danger of fatal injury from electric shock! ➢ Before starting any work on electrical equipment: Switch off and lock out the power supply isolating device and verify the absence of any voltage.
2		Hot surface! Risk of burns caused by contact with hot components. ➢ Do not touch the surface. ➢ Wear long-sleeved garments (no synthetics such as polyester) and protective gloves.
3		Risk of serious injuries (to the hands, in particular) or even severing of extremities from rotating components! ➢ Operate the machine only with closed safety guards, access doors and panels. ➢ Switch off and lock out the power supply isolating device and secure against unintentional reactivation.
4		Risk of hand injuries caused by machine run-on! ➢ Wait for at least one minute after switching off before you open the housing. ➢ Switch off and lock out the power supply isolating device and secure against unintentional reactivation.

Location	Symbol	Meaning
5		Risk of personal injury or damage to the machine due to incorrect operation! ➢ Read and understand the operating manual and all safety information before switching on this machine.
		Risk of injury caused by automatic machine start! ➢ Switch off and lock out the power supply isolating device and secure against unintentional reactivation.
6		Risk of fatal injury caused by components under high pressure! ➢ Isolate the compressor from the compressed air network. ➢ Vent (depressurise) the machine completely. ➢ Check for zero pressure. ➢ Do not open or dismantle valves. ➢ Call an authorised service technician in the event of a fault.
7		Risk of serious injury, particularly to the eyes, from foreign objects ejected from rotating components! ➢ Do not allow foreign objects to fall through the ventilation grille. ➢ Do not work above the machine if it is switched on. ➢ Switch off and lock out the power supply isolating device and secure against unintentional reactivation.

Tab. 29 Safety signs

3.9 Information signs

The table lists the various information signs used and their meanings.

Sign	Meaning
	Maintain the air filter regularly.
	Condensate drainage Check the function of the condensate drainage at regular intervals.
	Check the oil level regularly and change the oil at the correct intervals.

Tab. 30 Information signs

3.10 Emergency situations

3.10.1 Correct fire fighting

Suitable measures

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

➢ Keep calm.

➢ Give the alarm.

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

Extinguishing substances

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

3.10.2 Treating injuries from handling cooling oil

Eye contact:

Compressor oil can cause irritation.

- ➢ Rinse open eyes thoroughly for a few minutes under running water.
- ➢ Seek medical help if irritation persists.

Skin contact:

Compressor oil may irritate after prolonged contact.

- ➢ Wash thoroughly with skin cleaner, then with soap and water.
- ➢ Contaminated clothing should be dry-cleaned before reuse.

Inhalation:

Oil mist may make breathing difficult.

- ➢ Clear air passages of oil mist.
- ➢ Seek medical help if difficulty with respiration continues.

Ingestion:

- ➢ Wash out the mouth immediately.
- ➢ Do not induce vomiting.
- ➢ Seek medical aid.

3.11 Warranty

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

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

In addition, we accept no warranty obligation for:

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

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

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

3.12 Environmental protection

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

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

➢ Store and dispose of operating materials and replaced parts in accordance with local environmental protection regulations.

➢ Observe national regulations.
This applies particularly to parts contaminated with compressor oil.

3.13 Silicone-free assurance

The following describes measures ensuring that the compressed air from the machine is free of silicone.

Silicones are amongst the substances that interfere with paint adhesion and are the main causes for sporadic, funnel-shaped indentations in the paint coat. In order to prevent such paint defects, at the very least, the surfaces that are exposed to compressed air flow have been manufactured to be silicone-free*.

Only correct and responsible machine operation will ensure that the components in contact with compressed air will be free from substances interfering with paint adhesion.
*according to VW Test Standard PV 3.10.7

⚠ CAUTION

This machine is silicone-free!
Incorrect treatment of the machine can lead to contamination of the compressed air.

➢ *Follow the instructions in the operating manual.*

Installation and commissioning

➢ Check the machine's identification marking:
- Installation, commissioning and service must be carried out only by an authorized KAESER service technician.
- For installation and connection to the compressed air distribution network, use only components that do not emit paint-adhesion-harming substances.
  This applies also for safety devices, e.g. safety valves.
- During installation and commissioning, wear only work clothing, protective gloves and shoes not emitting substances interfering with paint adhesion.
- The following materials must be free from paint-adhesion-harming substances:
  - Cleaning agents
  - Installation accessories (for example: adhesives, grease)
  - Tools
- Commission the machine only when expert installation is ensured and when the possibility for paint-adhesion-harming substances to come into contact with components that are exposed to compressed air flow has been excluded.

Operation

➢ Operate the machine only when substances interfering with paint adhesion are prevented from entering components containing compressed air.

➢ In the case of machines taking air or gas from a supply network, the operator must implement suitable measures to ensure that substances interfering with paint adhesion cannot enter components containing compressed air.

Maintenance

➢ Do not allow anyone but authorized KAESER service staff to install, maintain and repair your equipment.

➢ Perform cleaning tasks at the machine only in work clothing, protective gloves and shoes not emitting any substances interfering with paint adhesion.

➢ If necessary, clean any parts contaminated with substances that may interfere with paint wetting.
(for example.: Rivolta M.T.X. 60; 9.6808.00020)

➢ Cleaning agents, installation aids and tools must be free of substances interfering with paint adhesion.

Spare parts

➢ Maintenance and spare parts that come into contact with the airflow or oil flow:
- Use only genuine KAESER silicone-free parts.
- Always specify "silicone-free" when ordering parts.

Packaging, storage

➢ Use natural wood, plywood or plastic sheeting that does not contain any silicone additives of any kind.

➢ Store unpacked machines or components in an environment free of silicone.

➢ Use silicone-free plastic sheeting to protect against moisture.
➢ Comply with shelf life of less than three months.

4 Design and Function

4.1 Enclosure

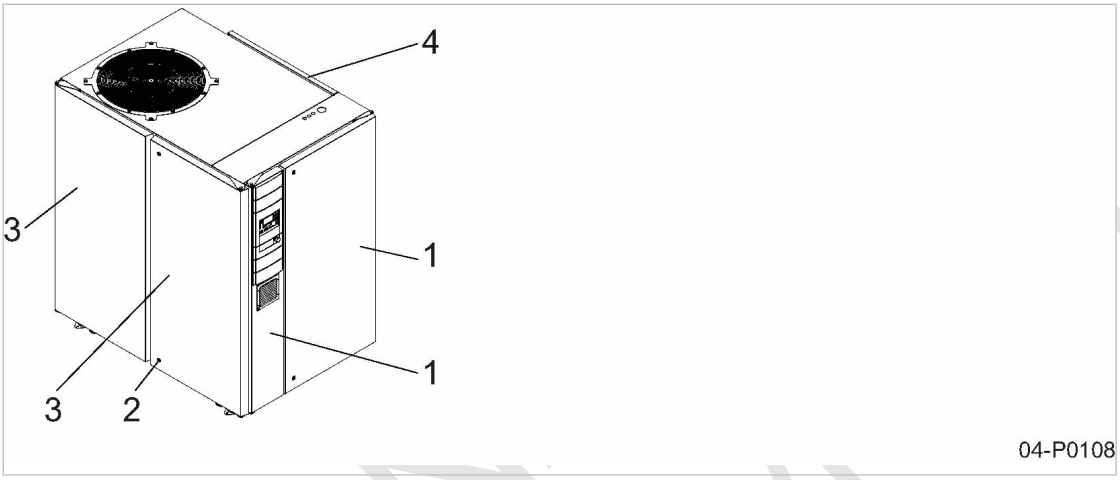


Fig. 3 Enclosure overview

1	Control cabinet door	3	Access door
2	Latch	4	Panel (removable)

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, removable panel must be lifted off.
Latches are released by a key supplied with the machine.

4.2 Machine function

Functional description using an air-cooled machine as an example.

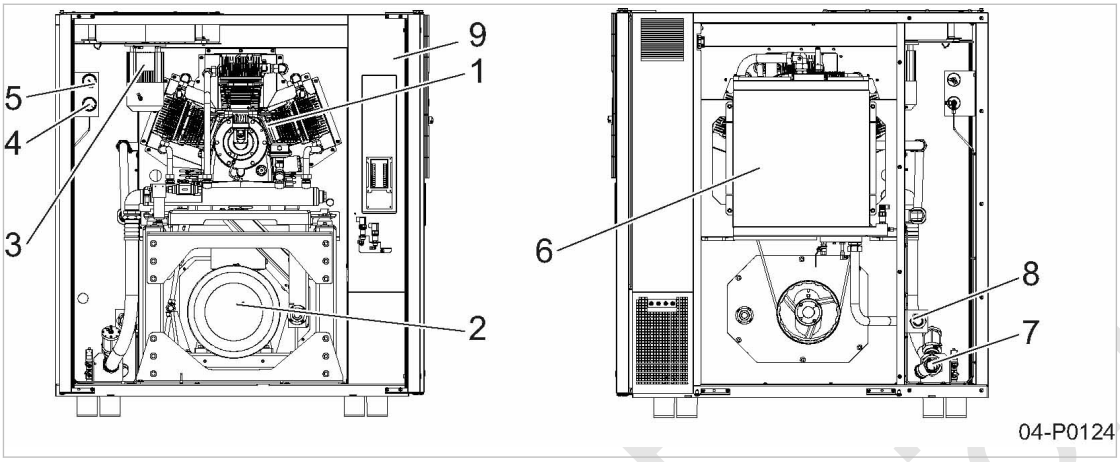


Fig. 4 Machine layout

1	Compressor block	6	Compressed air cooler
2	Compressor drive motor	7	Compressed air inlet
3	Fan motor	8	Compressed air outlet
4	Network pressure gauge (inlet pressure)	9	Control cabinet
5	Network pressure gauge (final pressure)		

4.2.1 Description

The compressor block is driven by an electric motor via V-belts.

The block has three cylinders.

The cooling fins at the cylinder and the cylinder head dissipate the heat which is driven by a fan out of the machine's interior.

Under LOAD, the inlet valve is opened and the safety relief valve is closed.
The pre-compressed air is sent through opened inlet valve into the compressor block and transported into the high-pressure system through the opened check valve and the cooler.
During this process, the cooler cools the compressed air.

4.3 Safety devices

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

- EMERGENCY STOP push button:
  Stops the machine immediately in an emergency situation. The motor is stopped. The pressure system is vented.
- Safety relief valve:
  The safety relief valve protects the system against excessive pressure. It is factory set.
- Door interlock switch:
  The machine will stop automatically if a safety interlocked door or panel is opened or removed.
- Enclosures and guards for moving parts and electrical connections:
  Protect against accidental contact.
- Temperature sensors:
  Trigger machine shut down if impermissible high temperatures occur.
- Pressure transducer:
  Monitors the pressure conditions at various locations in the machine.

4.4 Operating panel SIGMA CONTROL 2

Keys

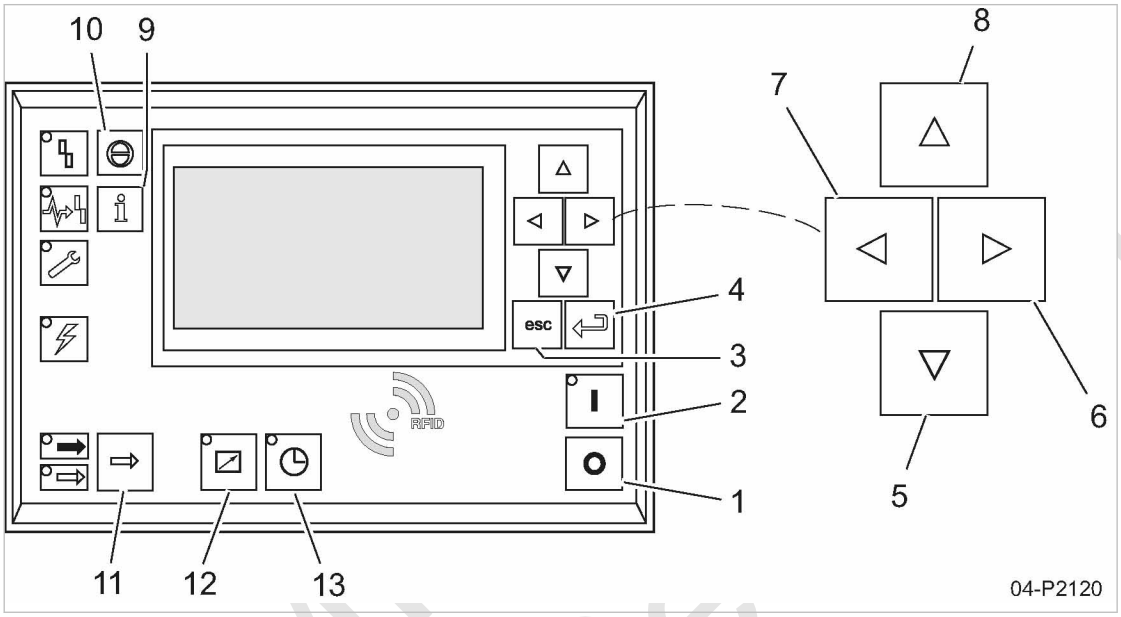


Fig. 5 Keys – overview

Item	Name	Function
1	«OFF»	Switches the machine off.
2	«ON»	Switches the machine on.
3	«Escape»	Returns to the next higher menu option level. Exits the edit mode without saving.
4	«Enter»	Jumps to the selected menu option. Exits the edit mode and saves.
5	«Down»	Scrolls down the menu options. Reduces a parameter value.
6	«Right»	Jumps to the right. Moves the cursor position to the next right field.
7	«Left»	Jumps to the left. Moves the cursor position to the next left field.
8	«Up»	Scrolls up the menu options. Increases a parameter value.
9	«Events & Information»	Operating mode: Displays the event memory.
10	«Acknowledgement»	Confirms/acknowledges alarms and warning messages. If permissible: Resets the fault counter (RESET).
11	«LOAD/IDLE»	Toggles between the LOAD and IDLE operating modes.
12	«Remote control»	Switches the remote control on and off.

Item	Name	Function
13	«Timer control»	Switches the timer control on and off.

Tab. 31 Keys

LEDs

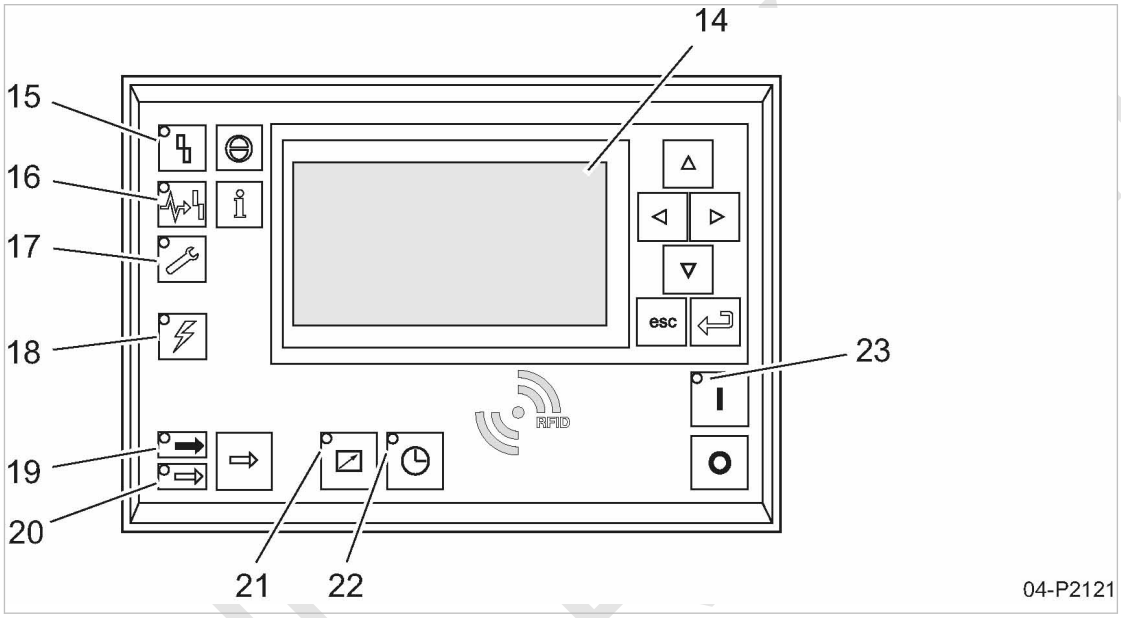


Fig. 6 Indicators – overview

Item	Name	Function
14	Indicator field or display	Graphic display with 8 lines and 30 characters per line.
15	*Fault*	Flashes red to indicate a machine fault. Continuous red light after acknowledgement.
16	*Communication*	Continuous red illumination if a communication connection (Ethernet, USS, COM modules) has a fault.
17	*Warning*	Flashes in yellow in the following events: ■ Maintenance work due ■ Warning message Lights yellow continuously when acknowledged.
18	*Control voltage*	Lights green when the power supply is switched on.
19	*LOAD*	Lights green when the compressor is running under LOAD.
20	*IDLE*	Lights green when the compressor is running in IDLE. Flashes when the «LOAD/IDLE» toggle key is pressed.
21	*Remote control*	The LED lights when the machine is in remote control.
22	*Timer control*	The LED lights when the machine is in clock control (timer).
23	*Machine ON*	Lights green when the machine switched on.

Tab. 32 Indicators

RFID sensor field

RFID is the abbreviation for "**R**adio **F**requency **I**dentification" and makes possible to identify persons and objects.
Placing a suitable transponder in front of the RFID sensor field of the controller will automatically activate the communication between transponder and SIGMA CONTROL 2.

A suitable transponder is the KAESER RFID Equipment Card. Two of them have been provided with the machine.

Typical application:

- Users log on to the machine.
  (no manual input of the password required.)

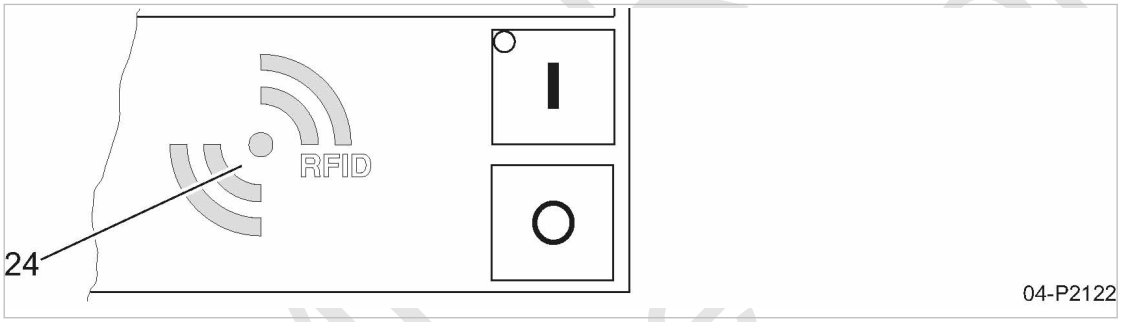


Fig. 7 RFID sensor field

Item	Name	Function
24	RFID	RFID sensor field for the communication with a suitable RFID transponder.

Tab. 33 RFID sensor field

Further information More information about the use of RFID technology is provided in the SIGMA CONTROL 2 operating manual.

4.5 Operating modes and control modes

4.5.1 Machine operating modes

STOP

The machine is connected to the power supply.
The *Controller voltage* LED lights green.
The machine is switched off. The *Machine ON* LED is extinguished.

READY

The machine has been activated with «ON»:

- The *ON* LED lights green.
- The drive motor is stopped.
- The inlet valve is closed.
- The relief valve is open.
- The check valve upstream of the cooler prevent the compressed air from flowing back from the high-pressure side into the compression stage.

The compressor motor starts as soon as system pressure is lower than the set point pressure (cut-off pressure).

In addition, timing and/or remote control may affect the start of the motor.

LOAD

The compressor motor runs under load.

- The inlet valve is open.
- The venting valve is closed.
- The compressor block delivers compressed air to the system.

IDLE

The compressor motor runs unloaded with low power consumption.

- The inlet valve is closed.
- The inlet control valve is closed.
- The relief valve is open.

Air is taken from the atmosphere and blown through the relief valve back to atmosphere.

4.5.2 Control modes

Using the selected control mode, the controller switches the machine between its various operational states in order to compensate for air being drawn by consumers, and to maintain the system pressure between the set minimum and maximum values. The control mode also rules the degree of energy efficiency of the machine.

The machine-dependant venting phase between the LOAD and READY operating modes ensures load changes at minimum material stresses.

The controller SIGMA CONTROL 2 can operate in the following modes:

- DUAL
- QUADRO
- DYNAMIC
- VARIO

Energy-efficient control modes for various applications:

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

* At exceedingly high pressure fluctuations and/or drive motor starts (current peaks), switch from DYNAMIC to VARIO.

Tab. 34 Energy-efficient control modes

The SIGMA CONTROL 2 controller is factory set to DYNAMIC 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 the machine working 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 READY.

The *idling time* is factory preset according to the maximum starting frequency of the compressor motor. The shorter the *idling time* setting, the sooner (and more frequently) the drive motor is stopped.

QUADRO

In contrast to the DUAL regulating mode, the machine will switch from LOAD to READY in QUADRO mode after periods with low compressed air consumption.

After periods with a high compressed air consumption, the machine will switch from LOAD to READY after passing through IDLE.

In this control mode, the controller requires two specified times: The *running time* and the *idle/ standstill time*.

The shorter these times are set, the sooner (and more frequently) the motor is stopped.

DYNAMIC

In contrast to the DUAL regulating mode, the machine will switch from LOAD to READY in DYNAMIC mode at low drive motor temperature.

And from LOAD via IDLE to READY at a high drive motor temperature.

The lower the drive motor temperature, the sooner (and, therefore, more often and longer) it is stopped.

VARIO

The VARIO mode is based on the DUAL control mode. The difference to DUAL is that the *idling time* is automatically lengthened or shortened to compensate for higher or lower machine starting frequencies.

4.6 Oil level monitoring

SIGMA CONTROL 2 will issue a warning when the oil level is too low.

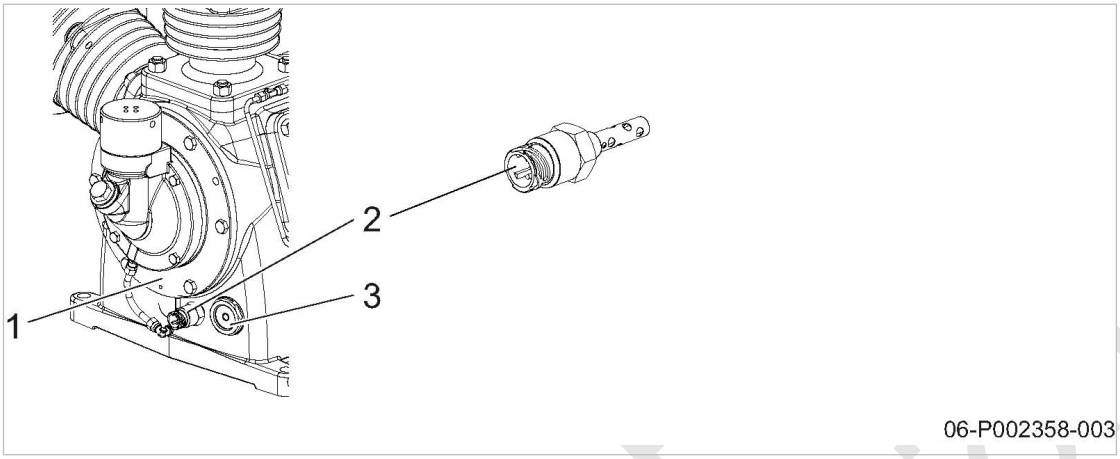


Fig. 8 Oil level monitoring

[1] Compressor block
[2] Oil level sensor
[3] Oil sight glass

➢ Regular visual check of the oil level is necessary despite oil level monitoring.

4.7 Machine tested for absence of silicone (LABS)

Silicones and/or substances harmful to paint structures (LABS – "LackBenetzungsStörende Substanzen") cause defects on painted surfaces. For example, funnel-shaped dimples (craters) may develop on painted surfaces.

Paint damping defects can be caused by extremely low concentrations of certain substances:

- Silicones or substances containing silicone
- Oil
- Greases
- Fluoric substances
- Tensides
- Waxes

Silicones are among the most powerful causes for structural paint defects.

The machine has has been tested to ensure that significant traces of substances harmful to paint structures (LABS) are unable to contaminate the compressed air. This paint test corresponds to a procedure used in the automotive sector.

Further information The instructions given for maintaining and assuring silicone-free status in chapter3.13 must be followed to ensure that the compressed air delivered is free of silicone.

4.8 Floating relay contacts

Floating relay contacts for the transmission of messages are provided.
Information on location, loading capacity, and message type is found in the electrical wiring diagram.

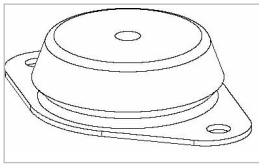
If the floating relay contacts are connected to an external power source, they may be under power even when the machine is isolated from the power supply.

4.9 Options

The options available for your machine are described below.

4.10 Option H1 Machine mountings

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



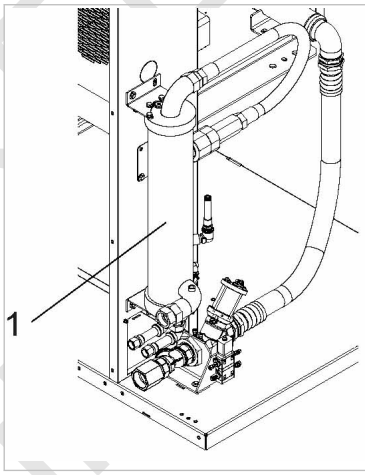
04-P0023

Fig. 9 Machine mountings

4.11 Option K9 Water cooling

Bundled-pipe heat exchangers are used in water-cooled machines.

Option K9



04-P2162

Fig. 10 Water cooling (Option K9)
[1] Air cooler (water-cooled)

5 Installation and Operating Conditions

5.1 Ensuring safety

The conditions in which the machine is installed and operated have a decisive effect on safety.

Warning instructions are located before a potentially dangerous task.

⚠ Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- ➢ Strictly forbid fire, open flame and smoking.
- ➢ If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting oil vapors or parts of the machine.
- ➢ Do not store inflammable material in the vicinity of the machine.
- ➢ The machine is not explosion-proof!
  Do not operate in areas in which specific requirements with regard to explosion protection are in force.
- ➢ Ensure sufficient and suitable lighting such that the display can be read and work carried out comfortably and safely.
- ➢ Use a duct to discharge the machine exhaust air to the outside. Exhaust air openings must not be closed.
- ➢ Keep suitable fire extinguishing agents ready for use.
- ➢ Ensure that required ambient conditions are maintained.

Required ambient conditions may be:

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

5.2 Installation conditions

5.2.1 Determining location and clearances

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

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

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

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

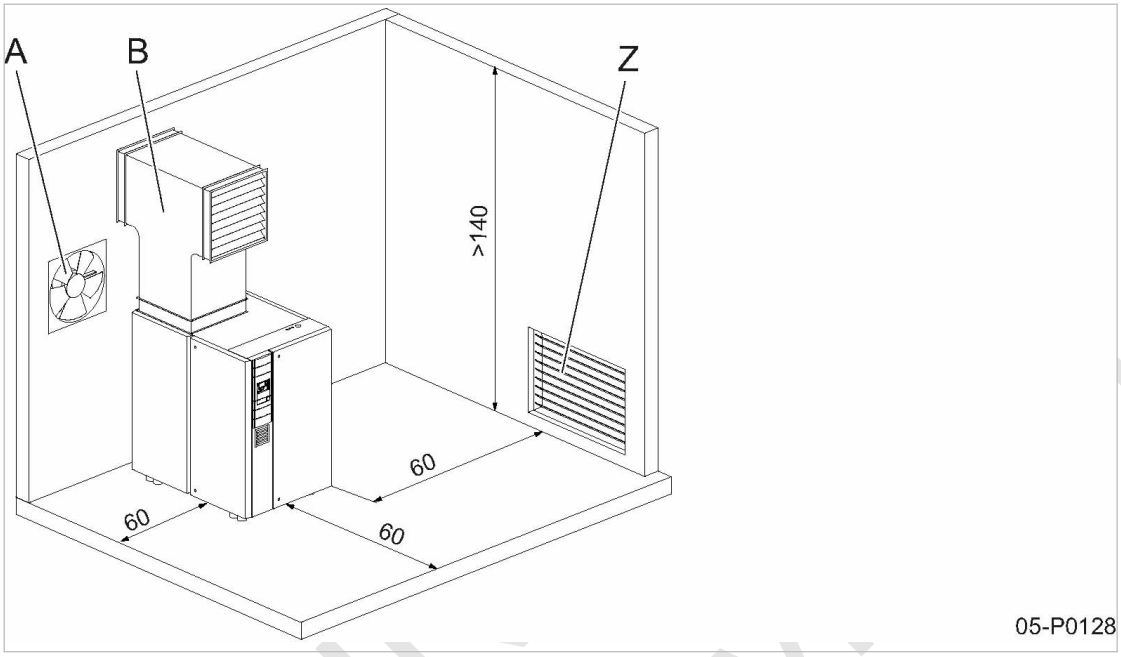


Fig. 11 Recommended machine placement and dimensions [in]

Ⓐ Exhaust fan
Ⓑ Exhaust air duct
Ⓩ Inlet air opening

1. **NOTICE** *Ambient temperature too low.*
   Frozen condensate and highly viscous compressor oil can cause damage when starting the machine.
   ➢ *Make sure that the temperature of the machine is at least 37°F before starting.*
   ➢ *Heat the machine room adequately or install an auxiliary heater.*
2. Ensure adequate lighting so that all work on the machine can be carried out without danger or hindrance.
3. Ensure that the indicators can be read without glare and that the controller display cannot be damaged by direct sunlight (UV radiation).
4. Ensure that all intake and exhaust apertures of the enclosure remain opened.

If the machine is installed together with other plant (compressors, refrigeration dryers, etc.), then **under no circumstances** may hot cooling air from other plant be directed to the cooling air inlet end of the compressor.
Hot air can cause damages to the machine.

5.2.2 Ensuring adequate ventilation

Without an exhaust duct, you need an exhaust fan with a higher air transport capacity (see chapter 2.6)

Adequate ventilation of the machine room has several tasks:

- It evacuates the exhaust heat of the machine and thus ensures the required operating conditions.

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

1. Ensure that the 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.
4. Ensure clean air in order to support the proper functioning of the machine.

Further information See chapter 13.2 for ventilation aperture dimensions.

5.2.3 Exhaust duct design

The exhaust duct provides the discharge of cooling air to ensure a lower heating of the room (less inlet air demand).

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

Consult an authorized KAESER service representative before deciding on:

- Design of the exhaust air ducting
- Transition between the machine and the exhaust air duct
- Length of the ducting
- Number of duct bends
- Design of flaps or shutters

➢ Consult KAESER for advice on this subject.

5.3 Using the machine in a compressed air system

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

When charging a fully vented air system there is generally a very high rate of airflow through the air treatment devices. These conditions are detrimental to correct air treatment. Air quality suffers. To ensure the desired air quality when charging a vented air network, we recommend the installation of an air main charging system.

➢ Consult KAESER for advice on this subject.

6 Installation

6.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.

⚠ Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- ➢ Follow the instructions in chapter 3 “Safety and Responsibility”.
- ➢ Installation work may only be carried out by authorized personnel.
- ➢ Make sure that no one is working on the machine.
- ➢ Ensure that all service doors and panels are locked.

When working on live components

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

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

When working on the compressed air system

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

- ➢ Close shut-off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine.
- ➢ Depressurize all pressurized components and enclosures (see chapter 10.11).
- ➢ Do not open or dismantle any valves.

When working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.
Touching the fan while the machine is running can result in serious injury.

- ➢ Switch off and lock out the power supply disconnecting device and check that no voltage is present.
- ➢ 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 Connecting the machine with the compressed air network

Install flexible pressure lines directly (if possible) at the low-pressure and high-pressure sides of the machine; 90° elbows may be required if the line is installed to the ceiling.

Use a swan neck pipe to connect to the low-pressure and high pressure networks.

Condensate in the compressed air network can damage the pipework:

- ➢ Install only corrosion-resistant pipes.
- ➢ Use fluoroelastomers as sealing material for seals.
- ➢ Note the electro-chemical voltage sequence.
- ➢ Consult with KAESER for suitable materials for the compressed air network.
- ➢ Neither induce forces into the machine nor release those from the machine for which the compressive forces must be balanced by bracing.

Precondition Completely vent the air network (see chapter 10.11).

⚠ WARNING

High pressure!
High, pulsating and rising pressures.

➢ *Avoid compressive forces in the machine or from the machine by using appropriate bracing (fixed point) of the pressure lines.*

6.3.1 Connecting the machine with the low-pressure network

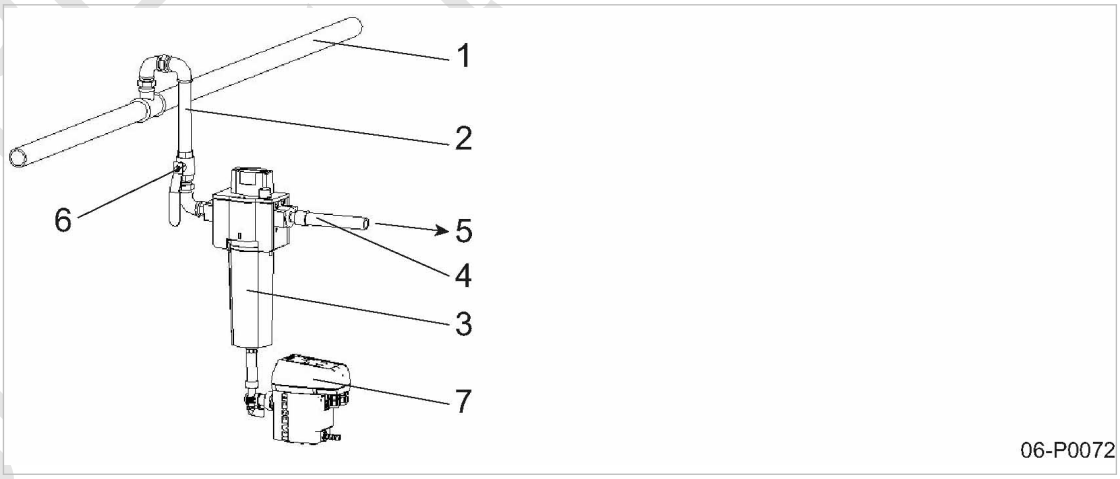


Fig. 12 Connection from the low pressure network

1. Compressed air line
2. Low pressure network
3. KAESER FILTER KB
4. Flexible pressure hose
5. Machine (compressed air inlet)
6. User's shut-off valve
7. Electronic condensate drain

➢ Install a KAESER FILTER KB to remove condensate and dirt from the air.

1. **⚠ WARNING** *Serious injury or death can result from loosening or opening components under pressure.*
   - ➢ *Depressurize all pressurized components and enclosures.*
   - ➢ *A shut-off valve must be installed by the user in the connection line.*
2. Connect the machine to the low-pressure network with a flexible pressure line.

6.3.2 Connecting the machine with the high-pressure network

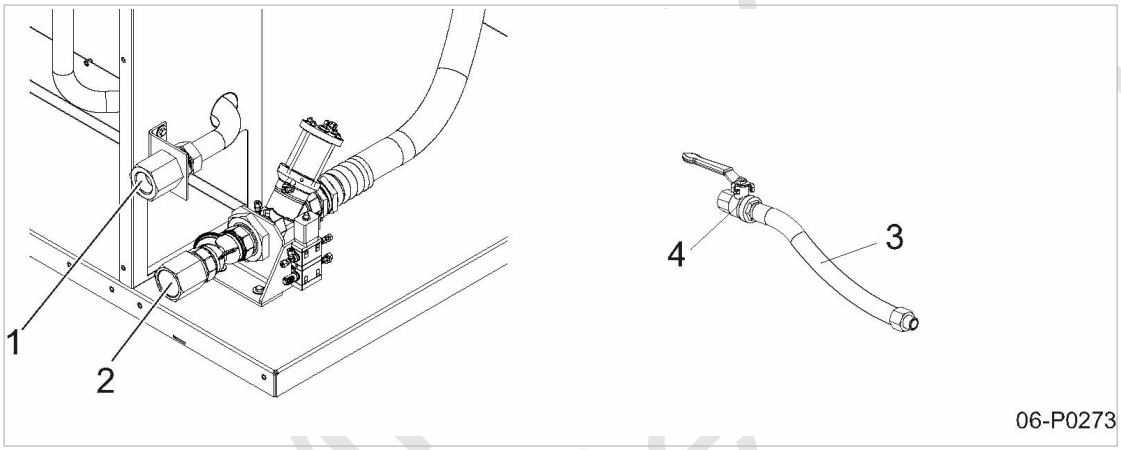


Fig. 13 Connection to the high pressure network

1	Machine (compressed air outlet)	3	Flexible pressure hose
2	Machine (compressed air inlet)	4	User's shut-off valve

➢

1. **⚠ WARNING** *Serious injury or death can result from loosening or opening components under pressure.*
   - ➢ *Depressurize all pressurized components and enclosures.*
2. A shut-off valve must be installed by the user in the connection line.

➢ Connect the machine to the high-pressure network with a flexible pressure line.

Further information The dimensional drawing in chapter 13.2 provides the size and position of the compressed air connections.

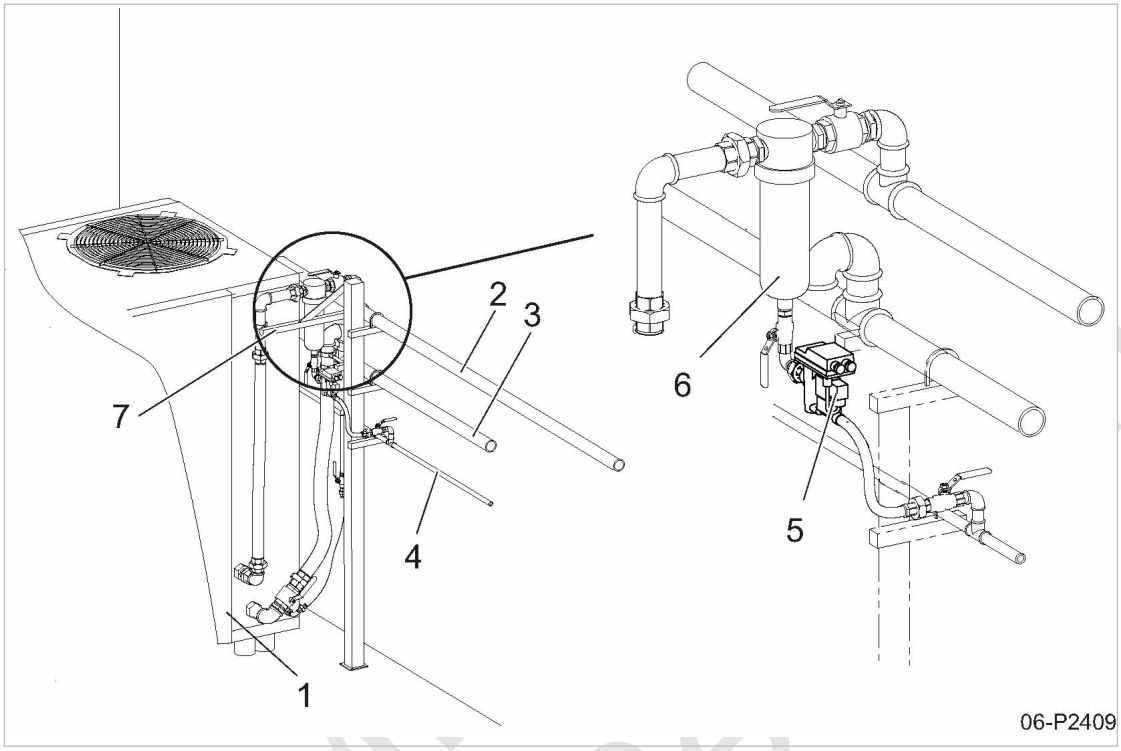


Fig. 14 Electronic condensate drain

[1] Booster
[2] High pressure air main
[3] Low pressure network
[4] Condensate line
[5] Electronic condensate drain
[6] High-pressure filter (fluid separator)
[7] Fixed point

➢ In the case of lines above the level of the discharge connection (high pressure) of the booster, you must install an electronic condensate drain to prevent the back-flow of any condensate into the machine.

6.4 Installation example

The following installation example is a suggestion only and does not refer to any specific application.

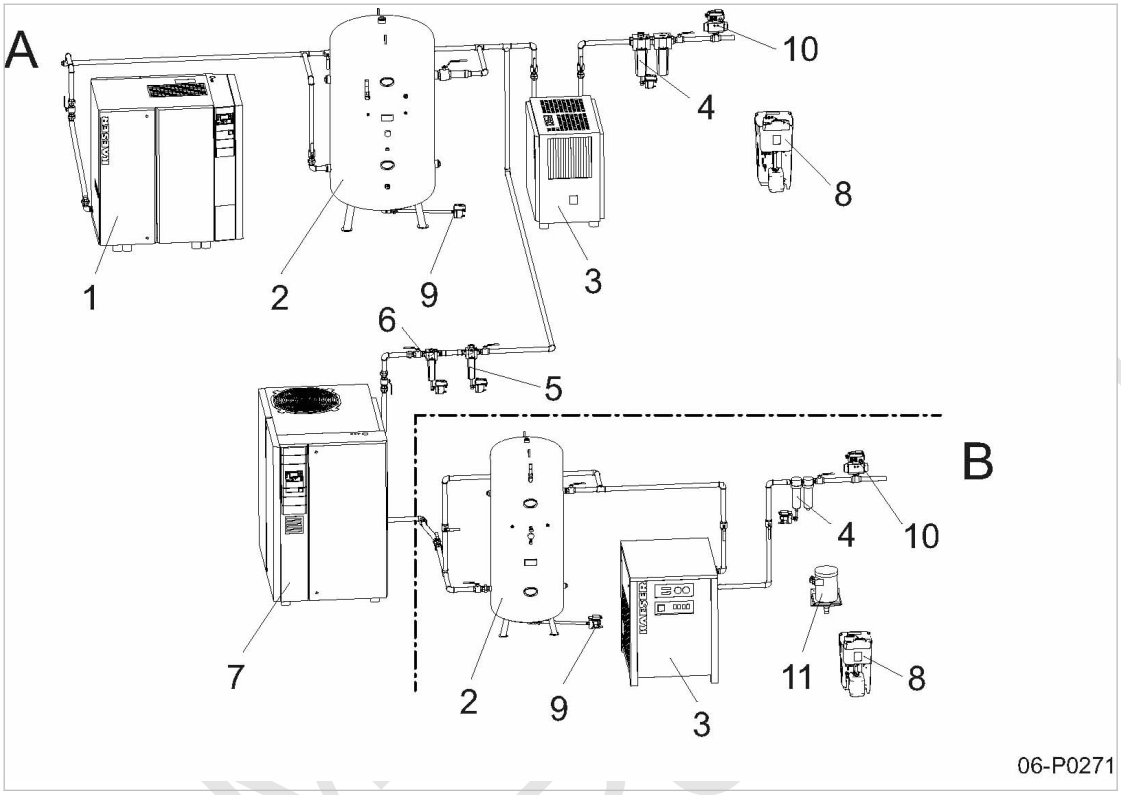


Fig. 15 Installation example (suggestion)

[A]	Low pressure network	[6]	KAESER FILTER KB
[B]	High pressure air main	[7]	Booster
[1]	Rotary screw compressor	[8]	Condensate treatment system
[2]	Air receiver	[9]	Condensate drain
[3]	Refrigeration dryer	[10]	Air main charging system
[4]	KAESER FILTER–combination	[11]	High-pressure relief chamber
[5]	Centrifugal separator (Option)		

➢ Higher positioned feed lines should generally be implemented with a gradient of at least 2 ‰.

6.5 Connecting the condensate drain

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

The condensate must be able to drain freely.

➢ Only a condensate collecting line with 910 psi minimum permissible working pressure may be connected to the machine.

Fig. 16 shows an installation recommendation.
Condensate flows downward in the collecting line. This prevents condensate flowing back to the compressor.

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

Condensate line

Feature	Value
Max. length[1] [ft.]	50
Max. delivery head [ft.]	16
Material [2] (pressure-resistant, corrosion-proof)	Copper Stainless steel Hose line

[1] For longer lengths, please contact the manufacturer before installation.

[2] Note the duty cycle of the machine!

Tab. 35 Condensate line

Condensate collection pipe

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

[1] For longer lengths, please contact KAESER before installation.

Tab. 36 Condensate collection pipe

Compressed air flow rate[1] [cfm]	Line cross-section ["]
<350	3/4
350 – 700	1
701 – 1400	1 1/2
>1400	2

[1] Compressed air flow rate as guide for the condensate volume to be expected

Tab. 37 Condensate collection pipe: Line cross-section

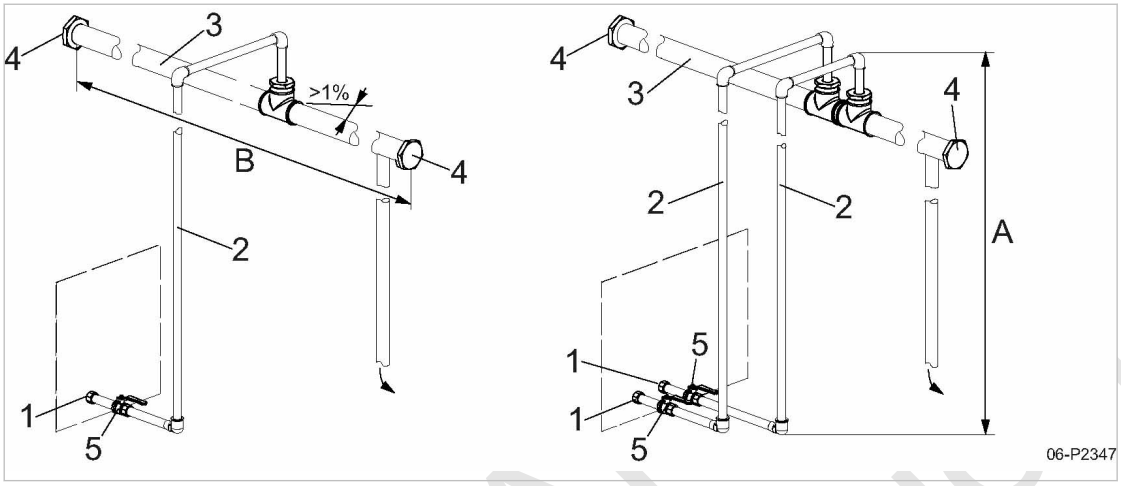


Fig. 16 Connecting the condensate drain

1	Threaded connection	5	Shut-off valve
2	Condensate line	A	Delivery head
3	Condensate collection pipe	B	Length of the condensate collecting line
4	Screw plug		

Depending on the machine model, you may have several condensate drains.

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

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

Further information The dimensional drawing in chapter 13.2 provides the size and position of the connection port.

6.6 Connecting the power supply

Precondition The power supply is switched off,
the device is locked off,
the absence of any voltage has been verified.
The tolerance limits of the power supply are within the permissible tolerance limits of the rated machine voltage?

1. The power supply must only be connected by authorized installation personnel or an authorized electrician.
2. Carry out safety measures as stipulated in relevant regulations and in national accident prevention regulations. In addition, observe the regulations of the local electricity supplier.
3. Test the overcurrent protection cut-out (backup fuse) to ensure that the time it takes to disconnect in response to a fault is within the permitted limit.
4. Select supply cable conductor cross-sections and fusing in accordance with local regulations.
5. The user must provide the machine with a lockable power supply disconnecting device.
   This could be, for example, a load disconnect switch with fused input. If a circuit breaker is used it must be suitable for the motor starting characteristics.
6. **⚠ DANGER** *Danger of fatal injury from electric shock!*
   ➢ *Switch off and lock out the power supply disconnecting device and check the absence of any voltage.*

7. Connect the machine to the power supply.
8. Ensure that the cabinet again complies with the requirements of degree of protection IP54.

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

6.7 Options

6.7.1 Option H1 Anchoring the Machine

Fig. 17 Machine mountings

➢ Use appropriate fixing bolts to anchor the machine.

Further information Details of the fixing holes are contained in the dimensional drawing in chapter 13.2.

6.7.2 Option K9 Connecting the cooling water

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

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

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

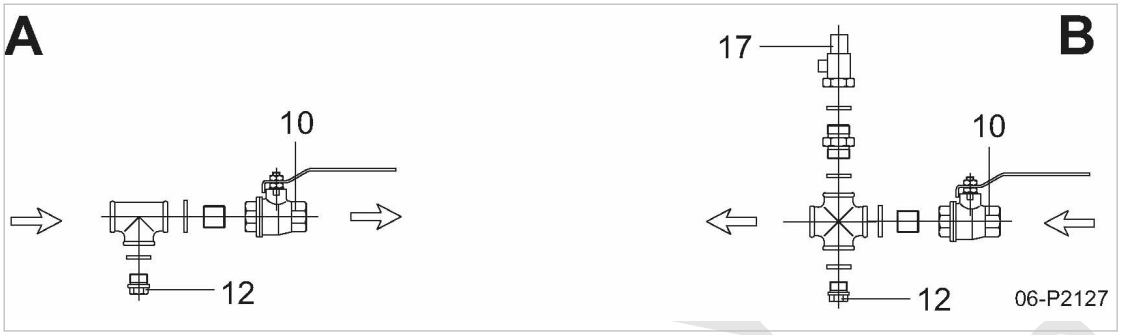


Fig. 18 Connecting the cooling water

A	Cooling water outlet	12	Connection port with plug
B	Cooling water inlet	17	Safety relief valve
10	Shut-off valve		

1. The user is to provide the following fittings:
   - Dirt traps (grid size according to permissible particle size.
   - Shut-off valves 10 and connection ports 12 for maintenance and venting.
   - Safety relief valve 17 to prevent build-up of excessive pressure.
     Actuating pressure and blow-off capacity of the safety valve are governed by the user's installation design. The technical specification of the cooler and the machine must be taken into consideration.
2. Connect the cooling water lines to the fittings.
3. Open the shut-off valve on the cooling water outlet A.
4. Slowly open the cooling water inlet shut-off valve B to gradually fill the cooler with water.
5. Bleed air from the water lines.

Further information The dimensional drawing in chapter 13.2 gives the flow direction, size and position of the connection ports.

7 Initial Start-up

7.1 Ensuring safety

Here you will find instructions for a safe commissioning of the machine.
Warning instructions are located before a potentially dangerous task.

⚠ Disregard of warning instructions can cause serious injuries!

Complying with safety warnings

Disregard of safety warnings can cause unforeseeable dangers!

- ➢ Follow the instructions in chapter 3 “Safety and responsibility”.
- ➢ Installation work may only be carried out by authorized personnel.
- ➢ Make sure that no one is working on the machine.
- ➢ Ensure that all service doors and panels are locked.

Working on live components

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

- ➢ Work on electrical equipment may only be carried out by authorized electricians.
- ➢ Switch off and lock out the power supply disconnecting device and check that no voltage is present.
- ➢ Check that the floating relay contacts are voltage-free.

Working on the compressed air system

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

- ➢ Isolate the machine from the air main by closing the user's compressed air inlet and outlet shut-off valves.
- ➢ Depressurize all pressurized components and enclosures (see chapter 10.11).
- ➢ Do not open or dismantle any valves.

Working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.
Touching the fan while the machine is running can result in serious injury.

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

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

7.2 Instructions to be observed before commissioning

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

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

Special measures for re-commissioning after storage/standstill

Storage period/ standstill longer than	Measure
12 months	➤ Change the compressor oil.
36 months	➤ Have the overall technical condition checked by an authorized KAESER service representative.

Tab. 38 Re-commissioning after storage/standstill

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 completely familiar with safety regulations?	–	
➤ Have all the positioning conditions been fulfilled?	5	
➤ Is a user's lockable power supply disconnecting device installed?	6.6	
➤ Does the power supply conform to the specifications on the name-plate?	2.1	
➤ Are the power supply cable conductor cross-sections and fuse ratings adequate?	2.13.1	
➤ Drive motor overload protection switch checked according to the power supply voltage?	7.4	
➤ Fan motor overload protection switch checked according to the power supply voltage?	7.4	
➤ Have all electrical connections been checked for tightness? ➤ Has the inspection been repeated after 50 operating hours following the initial commissioning?	–	
➤ Have the connections to the low-pressure network and high-pressure network been made with a shut-off valve and a flexible hose?	6.3	
➤ Has the belt tension been checked? ➤ Has the check been made again after 24 operating hours?	10.20	
➤ Is there sufficient oil in the compressor block crankcase? (When the machine is switched off, the oil level should be 0.2 – 0.3 in. above the sight glass red zone)	10.12	
➤ Is the condensate drain connected?	–	
➤ Has a check been made that no other compressed air components are located in the machine's hot exhaust air flow?	5.2.3	
➤ Is the machine firmly anchored to the floor without stress? (Option H1)	6.7.1	

To be checked	See chapter	Confirmed?
➢ Is the supply of cooling water ensured? (Option K9)	6.7.2	
➢ Door interlock switch aligned and function checked?	7.8	
➢ Are all access doors closed and latched and all removable panels in place and secured?	–	

Tab. 39 Checklist of installation conditions

7.4 Setting the overload protection relay

Electrical diagram 13.3 gives the location of the overload relay.

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

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

➢ Check the overload protection relay setting.

The overload protection relay shuts the machine down despite being correctly set?

➢ Contact an authorized KAESER service representative.

7.5 Checking the motor protection switch settings

Electrical diagram in chapter 13.3 gives the setting values for the motor overload protection switch.

In direct on-line starting, the current for the fan motor is fed via the motor overload protection switch.

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

➢ Check the motor overload protection switch setting.

The overload protection switch shuts the machine down despite being correctly set?

➢ Contact an authorized KAESER service representative.

7.6 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 *Control voltage* LED is lit continuously.
3. If required:
   Change the display language as described in chapter 7.9.

4. Press the «ON» key.

   The compressor motor runs up and after a short time the machine switches to LOAD and delivers compressed air.

- ➢ Watch for any faults occurring in the first hour of operation.
- ➢ After the first 50 operating hours, check all electrical connections and tighten where necessary.

Does the machine stop when the compressor motor rotates in the wrong direction?

- ➢ Switch off and lock out the power supply disconnecting device and check that no voltage is present.
- ➢ Changeover phase lines L1 and L2.
- ➢ Acknowledge any existing alarm messages and switches the machine on again.

7.7 Setting the set point pressure

The system pressure is factory set to the highest possible value.

Adjustment is necessary for individual operating conditions.

Do not set the set point pressure of the machine higher than the maximum working pressure of the compressed 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.

➢ Set the set point pressure as described in the SIGMA CONTROL 2 operating manual.

7.8 Checking the door interlock switch

The interlock switch stops the machine as soon as the panel is opened.
Check the interlock switch function when commissioning or re-commissioning the machine.

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

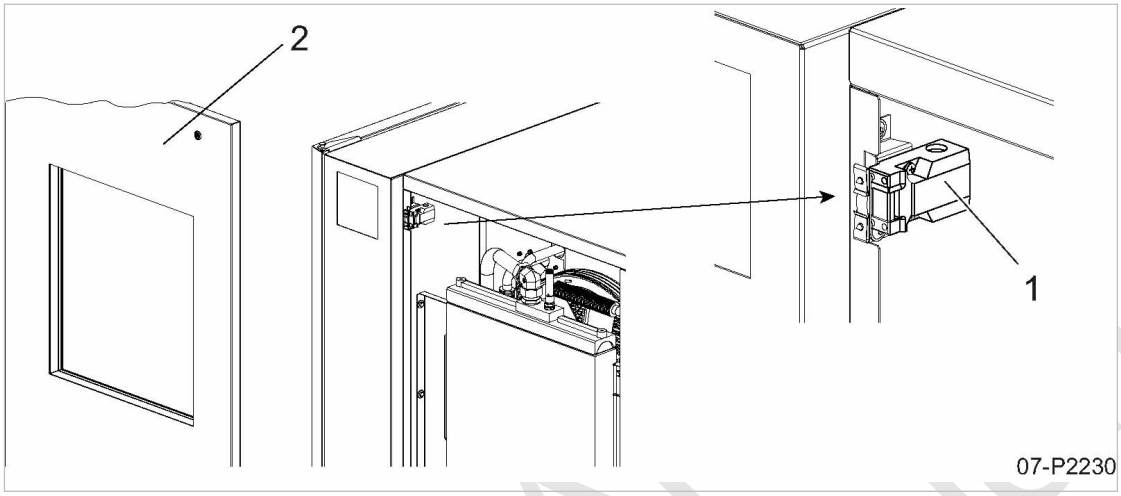


Fig. 19 Position of the door interlock switch

[1] Door interlock switch
[2] Removable panel

1. Open the access panel[2] after switching on the machine.
   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 authorized KAESER service representative.

7.9 Setting the display language

The controller can display text messages in several languages.

You can set the language for texts on the display. This setting will be retained even when the machine is switched off.

1. In operating mode, switch to the main menu with the «Return» key.
2. Press the «UP» or «DOWN» keys until the current language is shown as active line (inverse):

145 psig 176.0 °F 505 psig	
——— EN English ———	Current language (active line)
▸1 xxxxxxxxxx	Submenu
▸2 xxxxxxxxxx	Submenu
▸3 xxxxxxxxxx	Submenu
▸4 xxxxxxxxxx	Submenu
▸5 xxxxxxxxxx	Submenu
▸6 xxxxxxxxxx	Submenu

3. Use the «Return» key to switch to setting mode.
   The language display flashes.
4. Move to the required language with «UP »or «DOWN».
5. Confirm the setting with the «Enter» key.
6. Press «Escape» repeatedly to return to the main menu.

Result	The display texts are now in the selected language.
Further information	Detailed information can be found in the SIGMA CONTROL 2 service manual.

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.

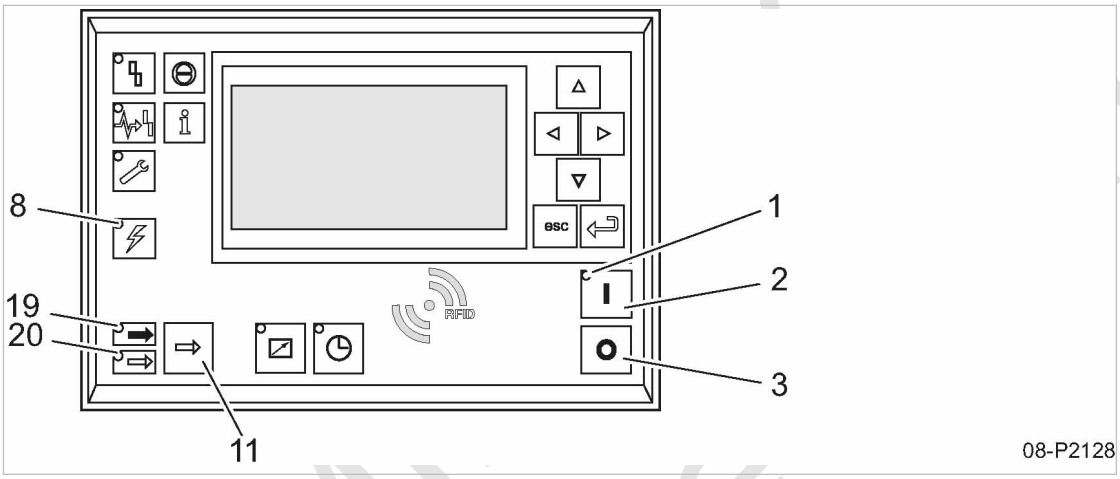


Fig. 20 Switching on and off

1 *Machine ON* LED
2 «ON» key
3 «OFF» key
8 *Controller voltage* LED
11 «LOAD/IDLE» toggle key
19 *LOAD* LED
20 *IDLE* LED

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.

   The *Controller voltage* LED lights green.
2. Press the «ON» key.

   The *ON* LED lights green.

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-off pressure).

8.1.2 Switching off

1. Press the «OFF» key.

   The machine switches to IDLE and the *IDLE* LED flashes. The SIGMA CONTROL 2 displays *Stopping*. The *ON* LED extinguishes as soon as the automatic shut-off action is completed.
2. Switch off and lock out the power supply disconnecting device.

Result The *Controller voltage* LED extinguishes. The machine is switched off and disconnected from the power supply.

In rare cases, you may want to shut down the machine immediately and cannot wait until the automatic shut-down process is finished.

➢ Press «OFF» once again.

8.2 Switching off in an emergency and switching on again

The EMERGENCY STOP push-button is located below the control panel.

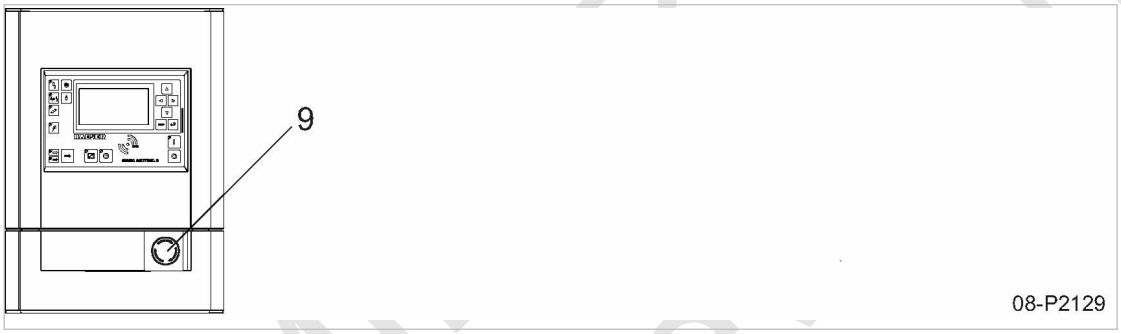


Fig. 21 Switching off in an emergency

9 EMERGENCY STOP push button

Switching off

➢ EMERGENCY STOP push button actuated.

Result The EMERGENCY STOP device remains latched after actuation.

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 push button in the direction of the arrow to unlatch it.
2. Acknowledge any existing alarm messages.

Result The machine can now be started again.

8.3 Using the remote control for switching on and off

Precondition A link to the remote control center exists.

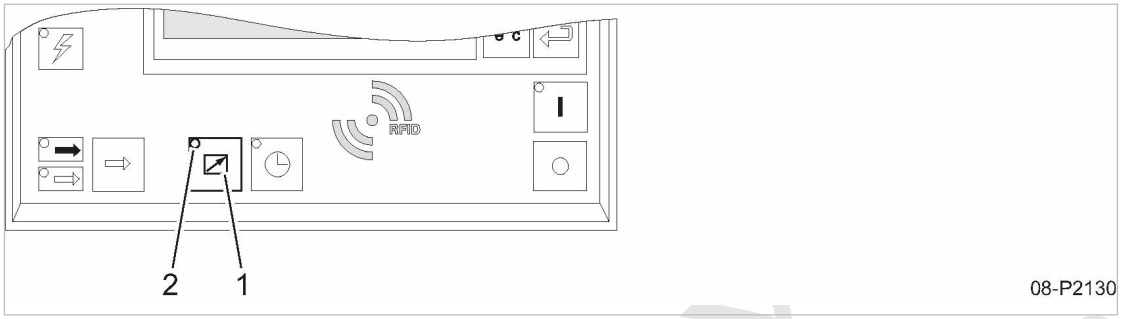


Fig. 22 Using the remote control for switching on and off

1 «Remote control» key
2 *Remote control* LED

1. Attach an easily seen notice to the machine that warns of remote operation.

⚠ WARNING

Remote control: Risk of injury caused by unexpected starting!

➢ Make sure that the power supply disconnecting device is switched off before commencing any work on the machine.

Tab. 40 Machine identification

2. Label the starting device in the remote control center as follows:

⚠ WARNING

Remote control: Risk of injury caused by unexpected starting!

➢ Before starting, make sure that no one is working on the machine and that it can be safely started.

Tab. 41 Remote control identification

3. Press the «Remote control» key.

   The *remote control* LED lights. The machine can be remotely controlled.

8.4 Switching on and off with the clock

Precondition The clock is programmed.

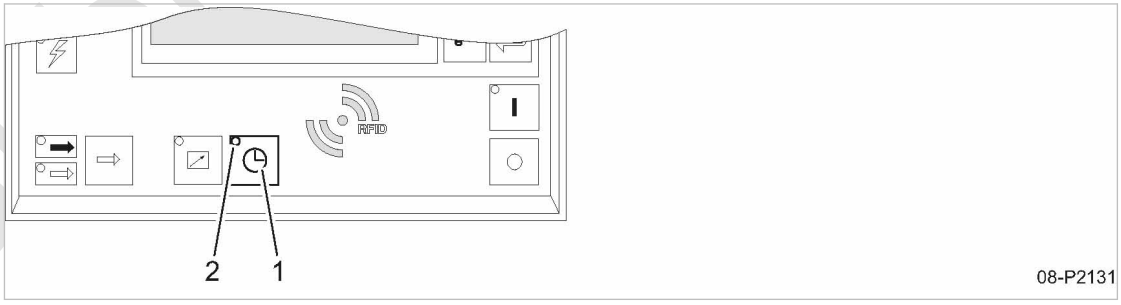


Fig. 23 Switching on and off with the clock

1 «Clock» key
2 *Clock* LED

1. Attach an easily seen notice warning of time-controlled operation:

⚠ WARNING

Clock control: danger of unexpected starting!

➢ Make sure that the power supply disconnecting device is switched off before commencing any work on the machine.

Tab. 42 Machine identification

2. Press the «clock» key.
   The *clock* LED lights. The machine is switched on and off by the clock.

8.5 Interpreting operation messages

The controller will automatically display operation messages informing you about the current operational state of the machine.

Operating messages are identified with the letter B.

Further information Detailed information can be found in the SIGMA CONTROL 2 operating manual.

8.6 Acknowledging alarm and warning messages

Messages are displayed on the "new value" principle:

- Message coming: LED flashes
- Message acknowledged: LED illuminates
- Message going: LED off

or

- Message coming: LED flashes
- Message going: LED flashes
- Message acknowledged: LED off

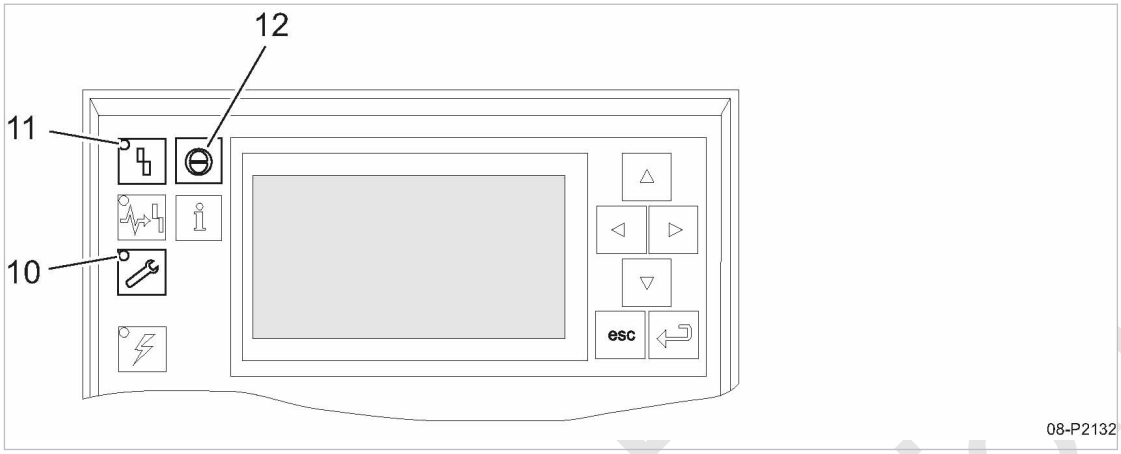


Fig. 24 Acknowledging messages

[10] *Warning* LED (yellow)
[11] *Alarm* LED (red)
[12] Key «Acknowledge»

Alarm message

An alarm shuts the machine down automatically. The red *alarm* LED flashes.

The system displays the appropriate message.

Precondition The fault has been rectified

➢ Acknowledge the message with the «acknowledge» key.

Alarm LED extinguishes.

The machine is again ready for operation.

If the machine was switched off with the EMERGENCY STOP push button:

➢ Unlatch the EMERGENCY STOP push button (turn in direction of the arrow) before acknowledging the alarm message.

Further information A list of possible alarm messages occurring during operation can be found in the service manual SIGMA CONTROL 2.

Warning message

If maintenance work is to be carried out or if the warning is displayed before an alarm, the yellow *warning* LED flashes.

The system displays the appropriate message.

Precondition The danger of an alarm is passed,
maintenance has been carried out.

➢ Acknowledge the message with the «Acknowledge» key.

The *warning* LED extinguishes.

Further information A list of possible alarm messages occurring during operation can be found in the service manual SIGMA CONTROL 2.

9 Fault Recognition and Rectification

9.1 Basic instructions

There are 3 types of fault:

- Warning:
  - Warning messages *W*
- Fault (with indication):
  - Alarm messages *S*
  - System messages *Y*
  - Diagnostic messages *D*
- Other faults (without indication): See chapter 9.2

The messages valid for your machine are dependent on how the individual machine is equipped.

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

Further information

Detailed information for the various messages can be found in the service manual SIGMA CONTROL 2.

9.2 Other faults

Fault	Possible cause	Remedy
Machine runs but produces no compressed air.	Inlet valve not opening or only opening partially.	Contact an authorized KAESER service representative.
	Venting valve not closing.	Contact an authorized KAESER service representative.
	Leaks in the pressure system.	Check pipework and connections for leaks and tighten any loose connections.
	Compressed air demand exceeds the volumetric flow rate from the compressor.	Check the air system for leaks. Shut down consumer(s).
Compressor switches between LOAD and IDLE more than twice per minute.	Air receiver too small.	Increase size of receiver.
	Airflow into the compressed air network restricted.	Increase air pipe diameters. Checking the filter elements.
	The differential between cut-in and cut-out pressure too is small.	Check switching differential.

Fault	Possible cause	Remedy
Cooling oil leaking into the machine.	Hose coupling or maintenance hose still plugged into the quick-release coupling on the compressor block. Ball valve at the compressor block is not closed.	Remove the hose coupling/ maintenance hose. Close the ball valve.
	Oil pump leaking.	Contact an authorized KAESER service representative.
	Leaking pipe joints.	Tighten pipe joints. Replace seals.
Compressor oil consumption too high.	Unsuitable compressor oil.	Use prescribed compressor oils.
	Piston rings worn or broken.	Contact an authorized KAESER service representative.
	Micro-filter element in the crankcase venting contaminated.	Renew the micro-filter element in the crankcase venting.

Tab. 43 Other faults and remedies

10 Maintenance

10.1 Ensuring safety

Follow the instructions below to ensure safe machine maintenance.
Warning instructions are located before a potentially dangerous task.

⚠ Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- ➢ Follow the instructions in chapter 3 “Safety and Responsibility”.
- ➢ Maintenance work may only be carried out by authorized personnel.
- ➢ Use one of the safety signs below to advise others that the machine is currently being serviced:

Sign	Meaning
	Don't activate the machine.
	Warning: The machine is being serviced.

Tab. 44 Warn others that the machine is being serviced.

- ➢ Before switching on, make sure that nobody is working on the machine and all access doors and panels are closed.

Working on live components

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

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

Working on the compressed air system

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

- ➢ Isolate the machine from the air main by closing the user's compressed air inlet and outlet shut-off valves.
- ➢ Depressurize all pressurized components and enclosures (see chapter 10.11).
- ➢ Do not open or dismantle any valves.

Working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.
Touching the fan wheel, the coupling or the belt drive while the machine is switched on can result in serious injury.

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

➢ 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 Following the maintenance plan

10.2.1 Logging maintenance work

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

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

Adverse conditions are, e.g.:

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

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

➢ Document all maintenance and service work.

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

Further information A list is given in chapter 10.22.

10.2.2 Resetting maintenance interval counters

According to the way a machine is equipped, sensors and/or maintenance interval counters monitor the operational state of important functional devices. Required maintenance work is shown on SIGMA CONTROL 2.

Precondition Maintenance performed and
maintenance message acknowledged.

➢ Reset the maintenance interval counter as described in the SIGMA CONTROL 2 operating manual.

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.	10.12
Every 500 hours	Check drive belt tension.	10.20
Indicator: SIGMA CONTROL 2	Maintain the dirt trap.	10.17
	Maintain the cooler and check for leaks.	10.4
	Crankcase: Change the crankcase oil filter.	10.16
	Crankcase venting: Change the microfilter element.	10.15
	Control cabinet: Clean or replace the control cabinet filter mat.	10.3
	Carry out air filter maintenance.	10.5
	Maintain the check valve (idle mode).	10.18.1
	Maintain the motor bearings.	10.7
	Changing the condensate drain solenoid valve.	10.19
	Replace the drive belt.	10.20
Annually	Checking the safety relief valve.	10.8
	Check the overheating safety shutdown function.	10.9
	Check drive belt tension.	10.20
	Check the EMERGENCY STOP push button.	10.10
	Check safety shut down when opening the machine.	7.8
	Check the cooler for leaks.	10.4
	Maintain the water-cooling system.	10.6
	Check that all electrical connections are tight.	–
Varies, see table 46	Change the compressor oil.	10.14
h = operating hours		

Tab. 45 Regular maintenance tasks

10.2.4 Compressor oil: Change interval

Duty cycles and ambient conditions are important factors influencing the number and length of the oil change intervals.

KAESER service will advise you in determining suitable change intervals.

➢ Check operating conditions and adjust intervals as necessary; log the results in table 46 for future reference.

	Maximum permissible oil change interval [operating hours/years]	
Compressor oil	Favorable operating conditions [1]	My operating conditions
LSF 150	1000/1	

[1] Cool to moderate ambient temperatures, low humidity, average to high duty cycle.

Tab. 46 Compressor oil: Change intervals

10.2.5 Regular service tasks

➢ Only an authorized KAESER service representative should carry out service work.

➢ Have service tasks carried out punctually, taking ambient and operating conditions into account.

Interval	Service task	Remedy
Display: SIGMA CONTROL 2	Have the machine generally overhauled (spare block).	Contact an authorized KAESER service representative.
	Maintain the control valve.	
	Maintain the inlet valve.	
	Maintain the pneumatic unloading valve.	
	Maintain the check valve (pressure side).	
	Replace the hydro damper.	
	Change the cooler.	
	Compressor drive motor: Replace the motor bearings.	
	Fan motor: Replace the motor bearings.	
Up to 36 000 h, at least every 6 years	Replace the hose lines: ■ Pressure lines ■ Control air lines ■ Intake line at intake valve	Contact an authorized KAESER service representative.
At least every 20 years	Replace safety-relevant components of the safety functions.	

h = operating hours

Tab. 47 Regular service tasks

10.3 Control cabinet: Clean or renew the filter mat

A filter mat is placed behind every ventilation grille. 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 device is switched off,
the device is locked off,
the absence of any voltage has been verified.

The machine has cooled down.

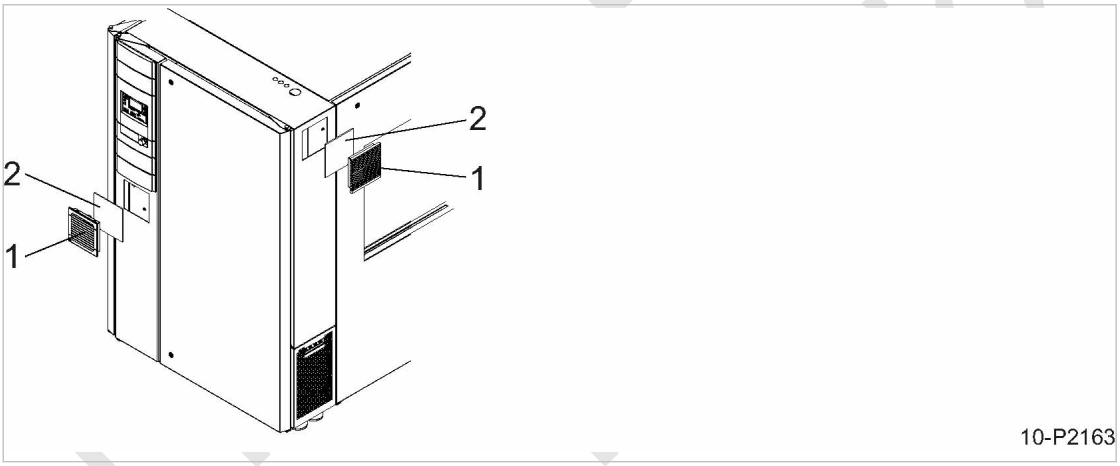


Fig. 25 Switching cabinet ventilation

[1] Ventilation grill
[2] Filter mat

1. Carefully remove the ventilation grill and take out the filter mat.
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.

10.4 Option K1 Cooler maintenance

Regularly clean the cooler. This 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.

A clogged cooler is indicative of unfavorable ambient conditions. Such ambient conditions clog the cooling air ducts in the machine's interior and the motors resulting in increased wear and tear.

➢ Have an authorized KAESER service representative clean the cooling air ducts.

Material Brush and vacuum cleaner
Face mask (as required)

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

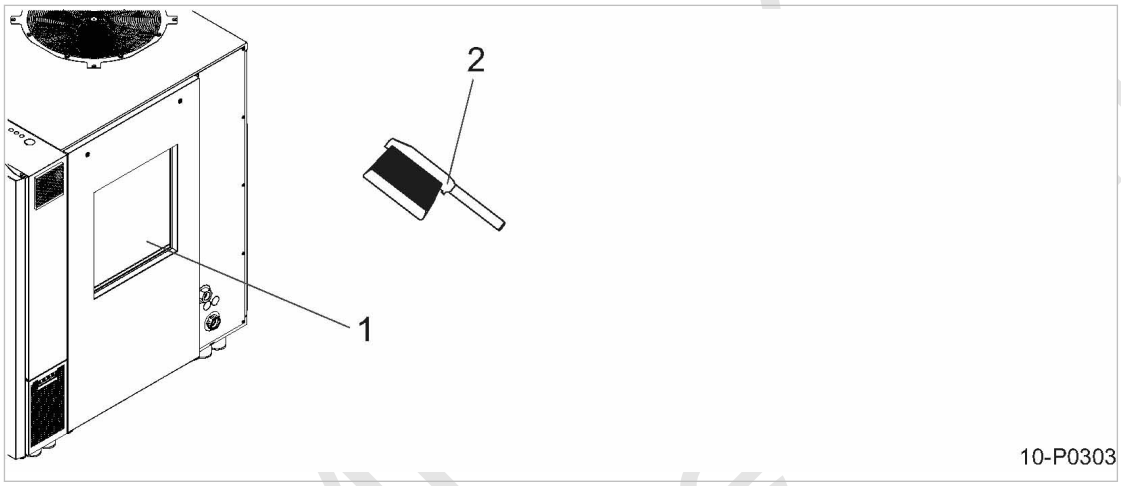


Fig. 26 Cleaning the cooler
[1] Cooler
[2] Brush

Cleaning the cooler

Do not use sharp objects to clean the cooler. It could be damaged.
Avoid creating clouds of dust.

➢ Dry brush the cooler and use a vacuum cleaner to suck up the dirt.

The cooler can't be cleaned thoroughly?

➢ Have stubborn clogging removed by an authorized KAESER service representative.

Checking the cooler for leaks

➢ Carry out visual inspection: Did condensate escape?

Is the cooler leaking?

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

10.5 Air filter maintenance

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

Material Air filter element

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

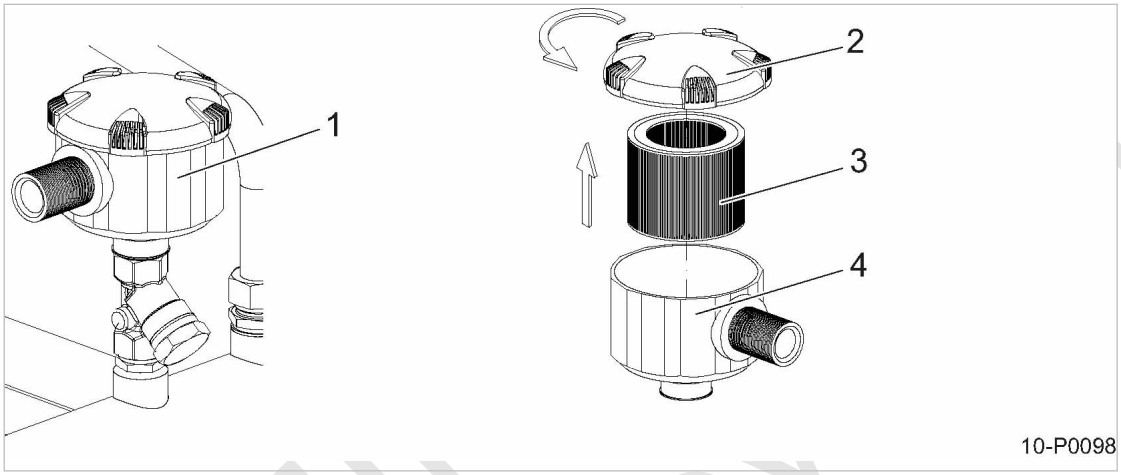


Fig. 27 Air filter maintenance

[1] Air filter
[2] Cover
[3] Air filter element
[4] Air filter housing

Changing the air filter element

1. Unscrew and remove the cover.
2. Remove the old air filter element and dispose of according to environmental protection regulations.
3. Clean the housing and sealing faces.
4. Insert the new air filter element.
5. Replace the cover and screw down tight.
6. Switch on the power supply and reset the maintenance interval counter.

10.6 Option K9 Water-cooling Maintenance

Cooler clogging causes overheating and machine damage.
➢ Observe the block discharge temperature to detect any tendency to rise.

Check the cooler regularly for leaks and contamination. Frequency of checking is dependant on the characteristics of the cooling water.

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

Checking for leaks

Special attention must be paid to aging and corrosion of the cooler materials under long term operating conditions. If a leak occurs, condensate will run into the cooling water.

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

Cleaning

➢ An authorized KAESER service representative should clean the cooler when the block discharge temperature is 50 °F above the annual average.

10.7 Motor maintenance

In motors with bearings with re-lubricating facility, the lubricating fittings are located at the outside of the machine. The grease lines are filled at the factory.

Use only the high temperature grease ESSO UNIREX N3 for the motor bearings. Bearing damages caused by the use of other brands of grease are excluded from the warranty.

Material Grease gun with ESSO UNIREX N3
Cleaning cloths

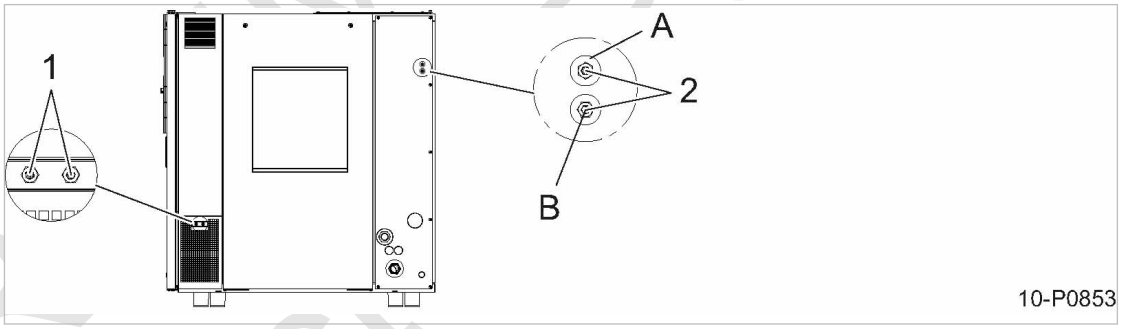


Fig. 28 Motor maintenance

[1] Grease fittings (compressor motor)
[2] Grease fittings (fan motor)
[A] A-side motor bearing
[B] B-side motor bearing

Compressor drive motor

The required quantity of grease is stated on the compressor drive motor nameplate or see chapter 2.11.1

Precondition Compressor motor running

1. Clean the fittings with a cloth before greasing.
2. Grease both motor bearings with a grease gun.
3. Reset the maintenance interval counter.

Fan motor

The required quantity of grease is stated on the fan motor nameplate or see chapter 2.11.2

Precondition Fan motor running

1. Clean the fittings with a cloth before greasing.
2. Grease both motor bearings with a grease gun.
3. Reset the maintenance interval counter.

10.8 Testing the safety relief valve

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

Blow off protection and air system pressure monitoring are switched off during the test. In normal operation, the blow-off protection will switch off the machine before the safety relief valve responds. During the inspection, the blow-off protection will switch off the machine only when the opening pressure differential of the safety relief valve has been exceeded by 14.7 psig.

- ➢ Follow the detailed description of this procedure in theSIGMA CONTROL 2 operating manual.
- ➢ Never operate the machine without a correctly functioning safety relief valve.
- ➢ Have a defective safety relief valve replaced immediately.

⚠ WARNING

Risk of hearing damage when safety relief valve blows off!

- ➢ *Close all access doors, replace and secure all removable panels.*
- ➢ *Always wear ear protection.*

Precondition The machine is switched off.

1. Close the site-provided shut-off valve at the air main.
2. Read the activating pressure on the valve.
   (the activating pressure is usually to be found at the end of the part identification)
3. Log on to SIGMA CONTROL 2 with access level 2.
4. Observe the display of pressure on SIGMA CONTROL 2 and call up the test function.
5. **⚠ WARNING** *Risk of burning from compressed air when safety relief valve blows off!*
   - ➢ *Close all access doors, replace and secure all removable panels.*
   - ➢ *Wear eye protection.*
6. End the test as soon as the safety relief valve blows off or working pressure exceeds the opening pressure differential of the safety relief valve by nearly 14.7 psig.
7. If necessary, vent the machine and replace the defective safety relief valve.
8. Deactivate the test function.
9. Open the user's shut-off valve between the machine and the air distribution network.

10.9 Checking the overheating safety shutdown function

The machine should shut down if the block discharge temperature (ADT) reaches a maximum of 425°F.

➢ Check the safety shutdown function as described in the SIGMA CONTROL 2 operating manual.

The machine does not shut down?

➢ Have the safety shut-down function checked by an authorized KAESER service representative.

10.10 Checking the EMERGENCY STOP push button

Fig. 29 Checking the EMERGENCY STOP push button

[9] EMERGENCY STOP push button

Precondition Compressor motor running

1. EMERGENCY STOP push button actuated.

   The compressor motor stops, the pressure system is vented, and the machine is prevented from automatically re-starting.

   The compressor motor does not stop?

   The safety function of the EMERGENCY STOP push button is no longer ensured.

   ➢ Shut down the machine immediately and call an authorized KAESER service representative.

2. Turn the EMERGENCY STOP push button in the direction of the arrow to unlatch it.
3. Acknowledge the alarm message.

10.11 Venting the machine (depressurizing)

Venting takes place in three stages:

- Isolate the compressor from the air system.
- Venting the cooler.
- Manually vent compressed air after the network pressure gauge (inlet pressure) (rear left access door).

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

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

⚠ CAUTION

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

➢ *Depressurize all pressurized components and enclosures.*

Isolating the machine from the air system

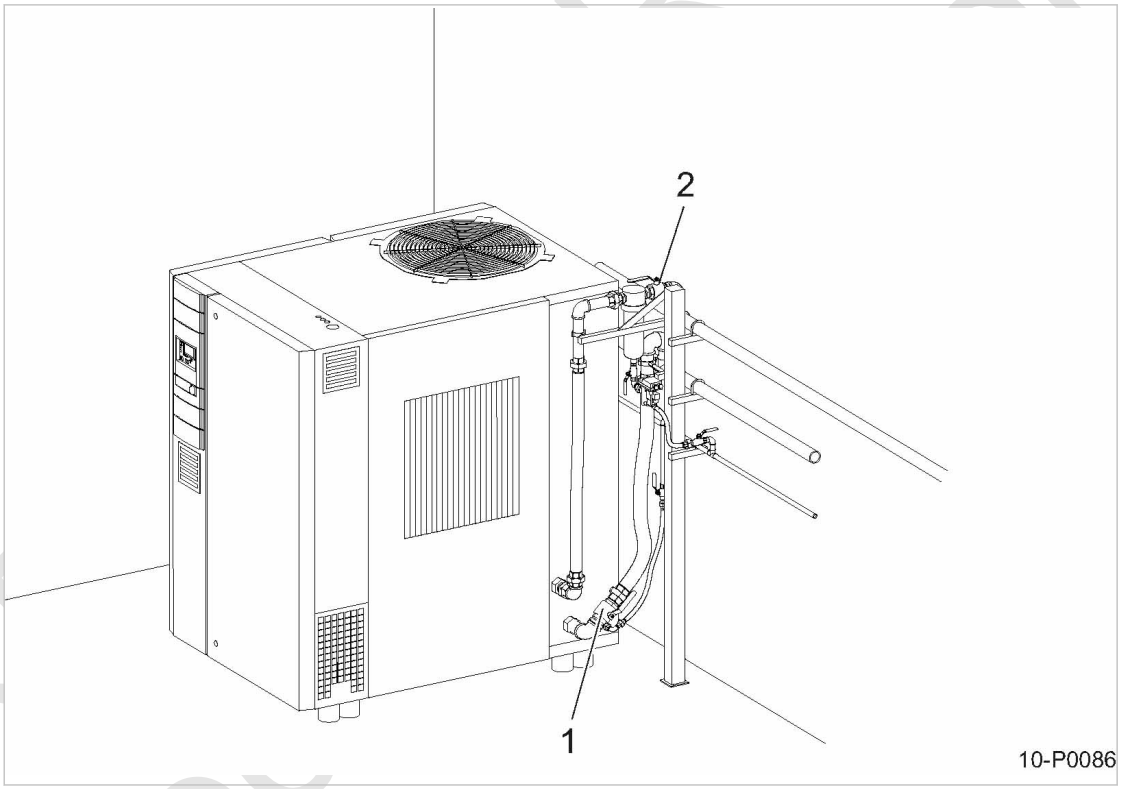


Fig. 30 Mount the user's shut-off valves

1 User's shut-off valve (inlet pressure)
2 User's shut-off valve (final pressure)

➢ Close the user's shut-off valves (inlet and final pressure).

If no shut-off valves are provided by the user, the complete air network must be vented.

Venting the cooler

Precondition Remove the panel.

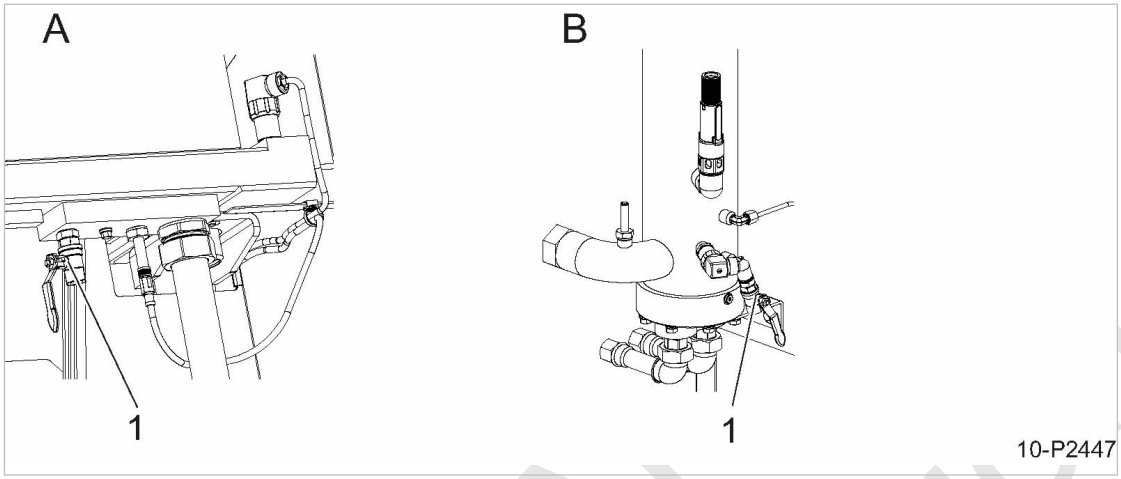


Fig. 31 Venting the cooler

[1] Shut-off valve
[A] Cooler option K1-air cooling
[B] Cooler option K9-water cooling

➢ Slowly open the shut-off valve [1] and check that the network pressure gauge (final pressure) reads 0 psig.

?

The network pressure gauge (final pressure) does not read 0 psig after automatic venting?

➢ Make sure that the shut-off valve [1] is opened or that the complete air system is vented.

➢ Slowly open the shut-off valve [1] to release pressure.

➢ If manual venting does **not** attain depressurization: Contact an authorized KAESER service representative.

Venting the inlet pressure side

Precondition Left-hand access door opened.

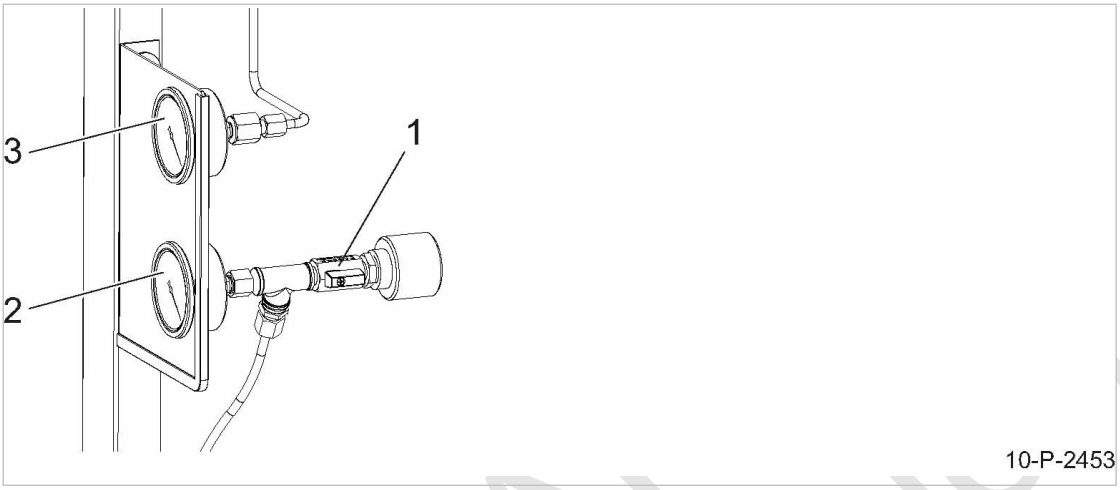


Fig. 32 Venting the inlet pressure side

1 Shut-off valve
2 Network pressure gauge (inlet pressure)
3 Network pressure gauge (final pressure)

➢ Slowly open the shut-off valve and check that the network pressure gauge (inlet pressure) reads 0 psig.

The network pressure gauge (inlet pressure) does not read 0 psig after automatic venting?

➢ Make sure that the shut-off valve is opened or that the complete air system is vented.
➢ Slowly open the shut-off valve 1 to release pressure.
➢ If manual venting does **not** attain depressurization: Contact an authorized KAESER service representative.

10.12 Checking the oil level

The oil level can be read off on the oil sight glass.

Precondition The machine is running under LOAD.

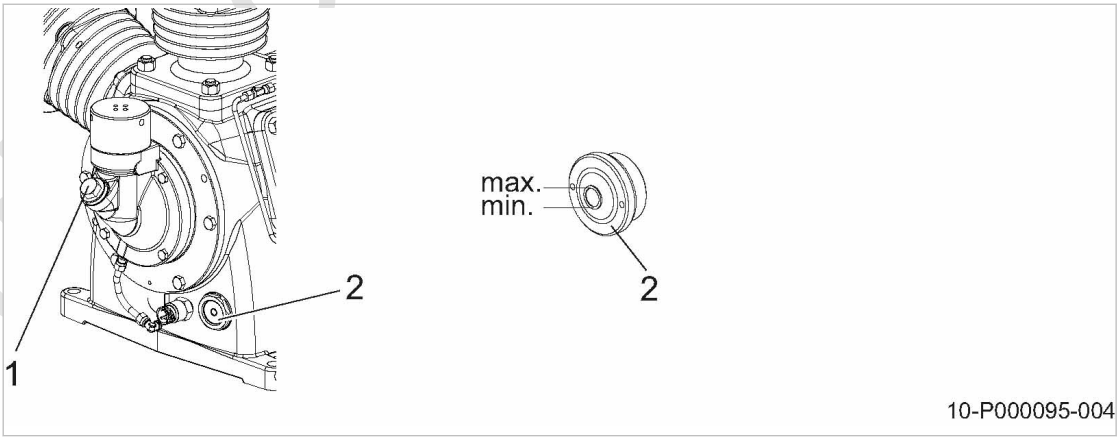


Fig. 33 Checking the oil level

1 Oil filler plug
2 Oil sight glass

1. **⚠ CAUTION**
   Danger of burning - hot surfaces!
   ➢ *Wear long-sleeved clothing and protective gloves.*
2. Check the compressor cooling oil level with machine running under LOAD.

Result Top off when the compressor oil level falls to the minimum mark. Top off the oil

10.13 Topping off the compressor oil

Material Compressor oil

Precondition The power supply disconnecting device is switched off,
lockout and tagout the device,
the absence of voltage has been verified.
Depressurize all pressurized components and enclosures (see chapter 10.11).

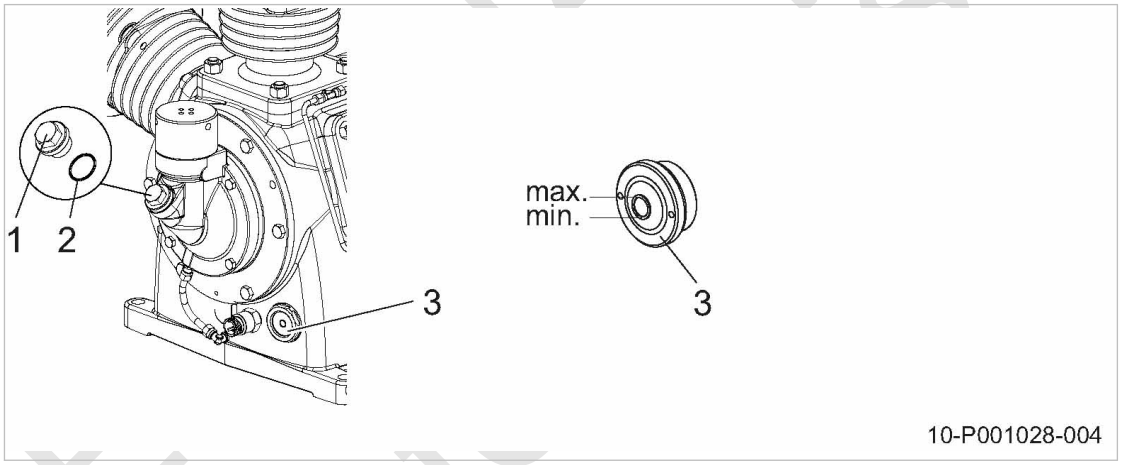


Fig. 34 Topping off the compressor oil
1 Screw plug
2 O-ring
3 Oil sight glass

1. **NOTICE** *The machine can be damaged by unsuitable oil.*
   ➢ *Never mix different types of oil.*
   ➢ *Never top off with a different type of oil to that already used in the machine.*
2. Slowly unscrew the filler plug.
3. Top off to bring the oil to the correct level.
4. Replace the filler plug's o-ring if necessary and screw the plug into the filler neck.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's inlet and discharge shut-off valves.
3. Close the shut-off valves at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply disconnecting device.

5. Switch on the machine, after approx. 2 minutes of operation: Check the cooling oil level and top off if necessary.
6. Switch off the machine and visually check for leaks.

10.14 Changing the compressor oil

The initial charge of oil should be changed as specified in the table 46.
Drain the oil completely from the compressor block.

Change the oil immediately if it becomes milky.
It is contaminated with condensate.

Contact an authorized KAESER service representative if condensate is detected in the compressor oil. It is necessary to adapt the block discharge temperature to individual ambient conditions.

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

Material: Compressor oil
Oil receptacle

The maintenance hose with hose coupling and shut-off valve is stowed behind the left access door.

Precondition: The machine must have been running in LOAD for at least 5 minutes.
The power supply disconnecting device is switched off,
lockout and tagout the devicef,
the absence of voltage has been verified.

Depressurize all pressurized components and enclosures (see chapter 10.11).

⚠ CAUTION

Danger of burning from hot components and scalding from escaping oil.

➢ *Wear long-sleeved clothing and gloves.*

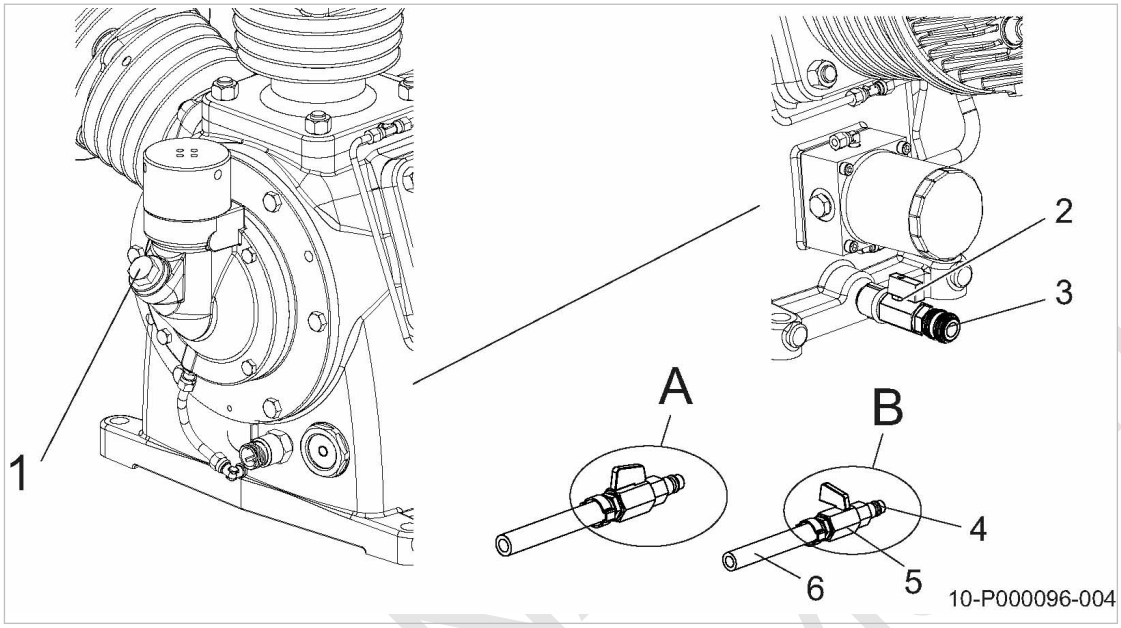


Fig. 35 Changing the compressor oil

1	Screw plug	5	Shut-off valve
2	Shut-off valve (oil drain)	A	Shut-off valve open
3	Hose coupling	B	Shut-off valve closed
4	Male plug-in hose fitting	6	Maintenance hose

1. Prepare an oil receptacle.
2. With the shut-off valve closed, insert the male plug-in hose fitting 4 into the hose coupling 3.
3. Place the end of the maintenance hose 6 in the oil receptacle and secure it in place.
4. Open shut-off valve 2.
5. Slowly open the shut-off valve 5 in the maintenance hose and allow the condensate to drain completely.
6. Close the shut-off valve 2 and remove the male plug-in hose fitting 4 from the coupling.

Result The cooling oil is drained from the compressor block.

Filling with compressor oil

1. Open the filler plug 1 (Fig. 35) slowly.
2. Filling with compressor oil
3. Check the filler plug and o-ring for damage and screw the plug back in again.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the electrical power supply via the power supply disconnecting device and reset the maintenance interval counter.
5. Start the machine and check the oil level again after about 2 minutes operation and topping off again, if necessary.
6. Switch off the machine and visually check for leaks.

➢ Dispose of the old oil in accordance with valid environmental protection regulations.

10.15 Changing the micro-filter element in the crankcase vent

Material Micro-filter element

Precondition The power supply disconnecting device is switched off,
lockout and tagout the device,
the absence of any voltage has been verified.

The machine has cooled down.

Depressurize all pressurized components and enclosures (see chapter 10.11).

⚠ CAUTION

Danger of burning from hot components and scalding from escaping oil.

➢ *Wear long-sleeved clothing and gloves.*

Do not use the machine without a vent cap.

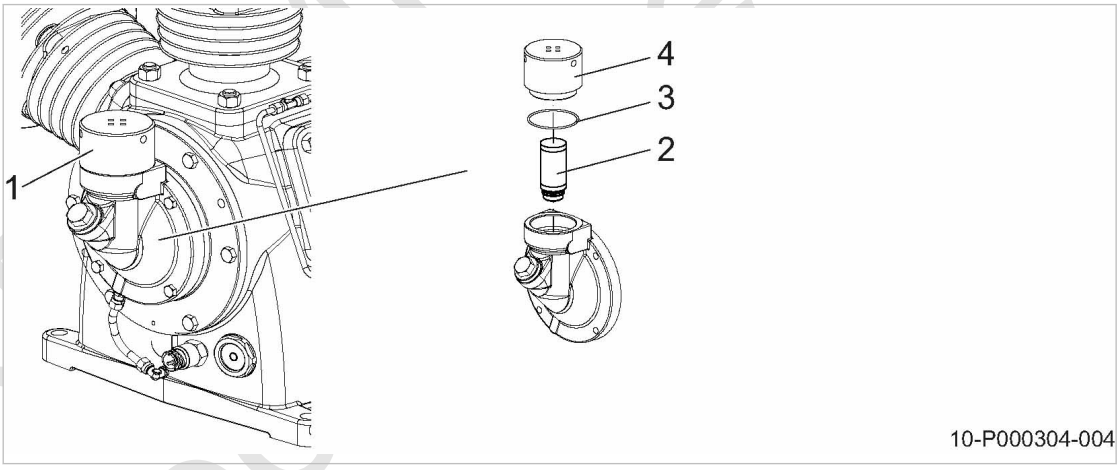


Fig. 36 Changing the micro-filter element in the crankcase vent

[1] Crankcase venting
[2] Micro-filter element
[3] O-ring
[4] Venting cap

1. Unscrew the vent cap from the crankcase vent.
2. **⚠ CAUTION** *Escaping oil mist is damaging to health.*
   ➢ *Do not inhale oil mist and vapors.*
   ➢ *Avoid contact with skin and eyes.*
3. Pull out the micro-filter element.

Dispose of micro-filter element in accordance with environment protection regulations.

4. Insert a new micro-filter element.
5. Replace the cap in the crankcase vent and check that the O-ring is properly seated.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the electrical power supply via the power supply disconnecting device and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.16 Changing the crankcase oil filter

Material
Oil filter
Oil receptacle
Cleaning cloth

Precondition
The power supply disconnecting device is switched off,
lockout and tagout the device,
the absence of any voltage has been verified.

The machine has cooled down.

Depressurize all pressurized components and enclosures (see chapter 10.11).

1. **⚠ CAUTION** *Danger of burning from hot components and scalding from escaping oil.*
   ➢ *Wear long-sleeved clothing and gloves.*
2. Change the oil filter after 2000 operating hours.

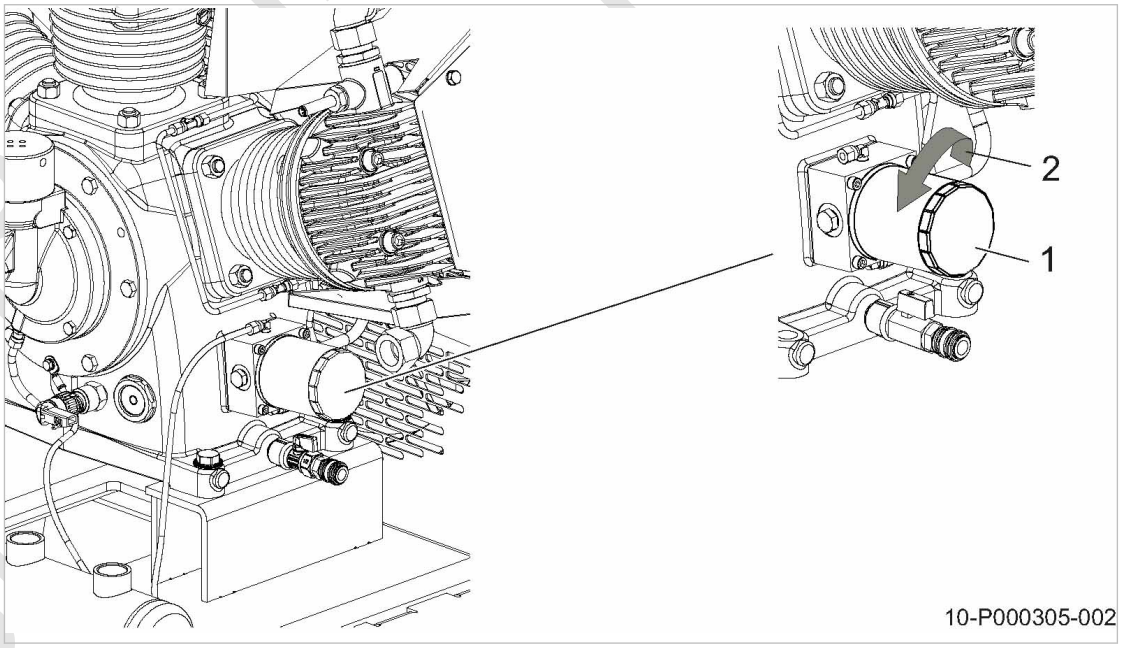


Fig. 37 Changing the crankcase oil filter
[1] Oil filter
[2] Direction of rotation to unscrew the filter

1. **⚠ CAUTION** *Escaping oil mist is damaging to health.*
   - ➢ *Do not inhale oil mist and vapors.*
   - ➢ *Avoid contact with skin and eyes.*
2. Unscrew the oil filter counter clockwise; catch oil spillage and dispose of correctly.
3. Clean sealing faces with a clean cloth.
4. Lightly oil the new filter's gasket.
5. Turn the oil filter clockwise by hand to tighten. Do not use any tool.
6. Check the oil level.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the electrical power supply via the power supply disconnecting device and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.17 Dirt trap maintenance

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

Material: Compressed air for blowing out
Cleaning agent

Precondition: The power supply disconnecting device is switched off,
the device is locked off,
the absence of any voltage has been verified.
The machine has cooled down.
Depressurize all pressurized components and enclosures (see chapter 10.11).

10.17.1 Dirt trap in the inlet line

When a fault occurs in IDLE.

➢ Clean the dirt trap strainer.

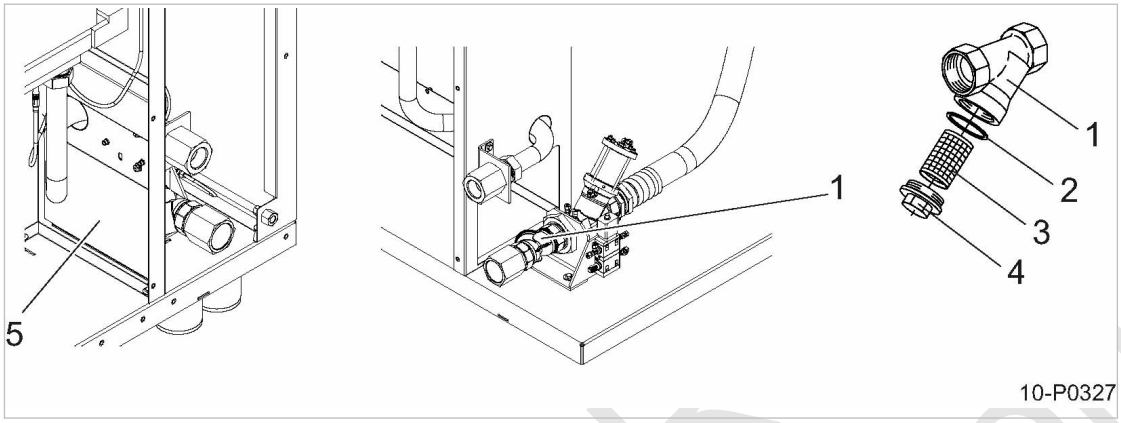


Fig. 38 Dirt trap in the inlet line

1 Dirt trap
2 Gasket or O-ring
3 Dirt trap strainer
4 Screw plug
5 Cover plate

1. **⚠ CAUTION** *Danger of fatal injury because of pressurized components.*
   - ➢ *Isolate the compressor from the air system.*
   - ➢ *Vent the machine completely to atmospheric.*
   - ➢ *Check for zero pressure.*
2. Remove the cover plate.
3. Remove the plug and clean the gasket or O-ring.
4. Remove the dirt trap strainer and blow clean.
5. Re-assemble all parts with gasket or O-ring.
6. Fit the cover plate.

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 inlet and discharge shut-off valves.
3. Close the shut-off valves at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.17.2 Dirt trap in the crankcase

If a fault occurs because of insufficient oil pressure.
- ➢ Clean the dirt trap strainer.

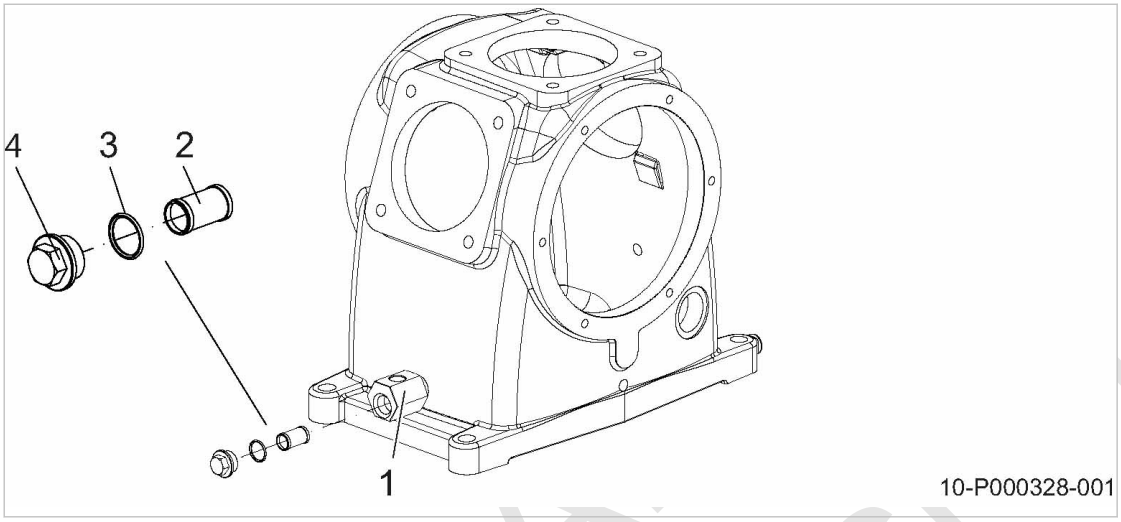


Fig. 39 Dirt trap in the crankcase

1	Dirt trap	3	O-ring
2	Dirt trap strainer	4	Screw plug

1. **⚠ CAUTION** *Danger of burns from hot components!*
   ➢ *Wear long-sleeved clothing and protective gloves.*
2. Remove the plug and clean the O-ring.
3. Remove the dirt trap strainer and blow clean.
4. Re-assemble the dirt trap and plug with the O-ring.

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 inlet and discharge shut-off valves.
3. Close the shut-off valves at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.17.3 Dirt trap in the filter

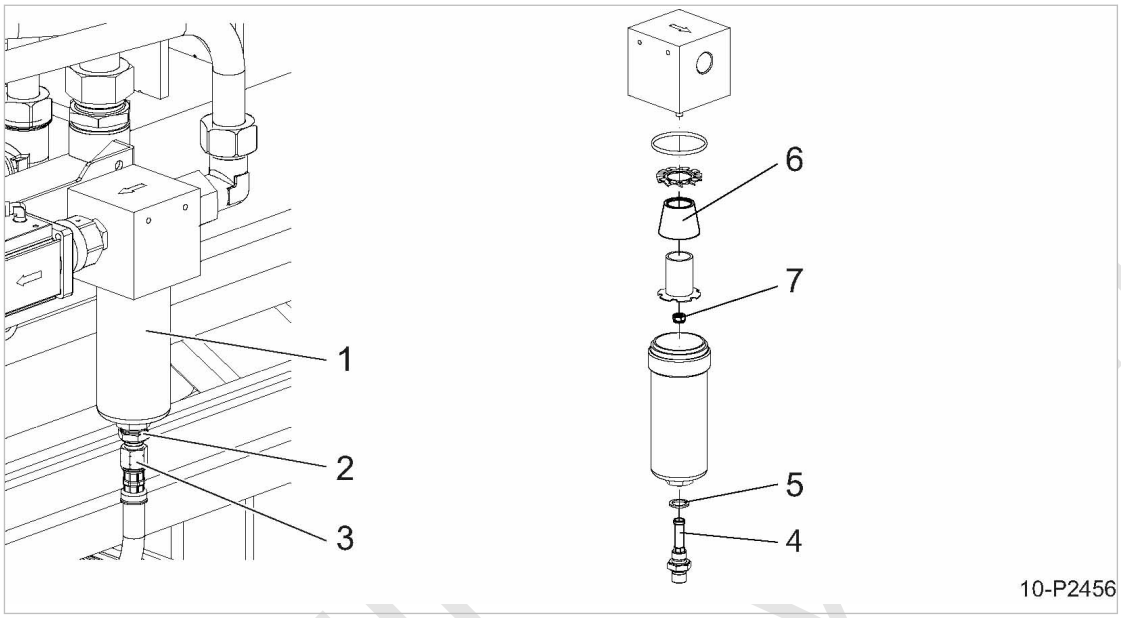


Fig. 40 Dirt trap in the filter

1 Filter housing
2 Double fitting
3 Condensate drain hose
4 Dirt trap with double fitting
5 Gasket
6 Silencer insert
7 Nut

1. **⚠ CAUTION** *Fatal injury caused by components under high pressure!*
   - ➢ *Isolate the compressor from the air system.*
   - ➢ *Vent the machine completely to atmospheric.*
   - ➢ *Check for zero pressure.*
2. Loosen the condensate hose
3. Unscrew the double fitting with dirt trap strainer from the filter housing.
4. Unscrew the filter housing and rinse with warm water.
5. Blow out the dirt trap strainer and filter housing to clean the units.
6. Remove the retaining nut and the silencer insert.
7. Blow the silencer insert clean from inside to outside.
8. Reassemble in reverse order.

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 inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.18 Maintaining the check valve

⚠ The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system. Network pressure gauge (initial and final pressure) read 0 psig.

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

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

The machine has cooled down.

Depressurize all pressurized components and enclosures (see chapter 10.11).

10.18.1 Check valve idle mode

The check valve is mounted on the collecting pipe. It prevents compressed air escaping to the atmosphere when the machine is running.

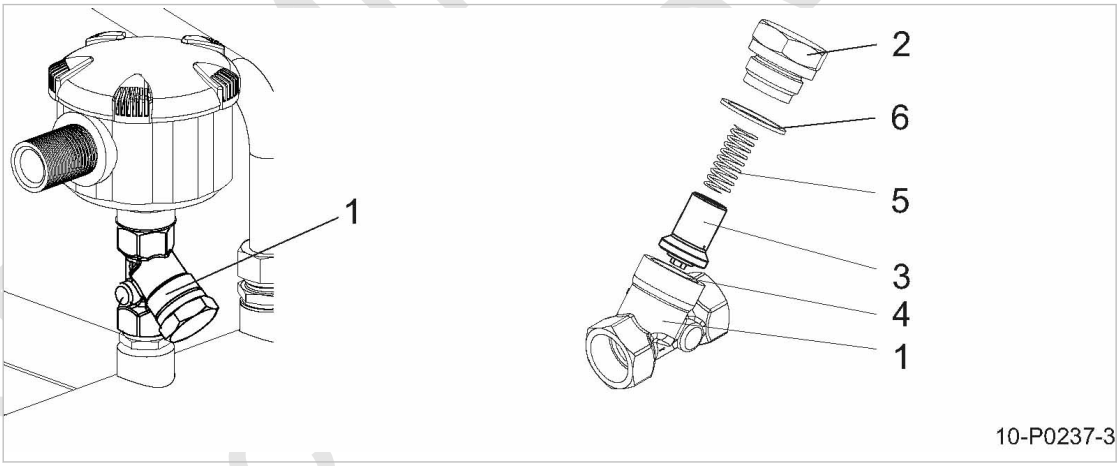


Fig. 41 Check valve idle mode

1 Check valve
2 Screw plug
3 Valve cone
4 Valve seat
5 Spring
6 O-ring

1. **⚠ WARNING** *Danger of fatal injury because of pressurized components.*
   - ➢ *Isolate the compressor from the air system.*
   - ➢ *Vent the machine completely to atmospheric.*
   - ➢ *Check for zero pressure.*
2. Remove the plug.
3. Clean the valve cone and seat.

ⓘ The complete valve must be replaced if the valve seat is badly worn or damaged.

4. Insert the valve cone, spring and O-ring in the valve seat.
5. Replace the plug.

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 inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply disconnecting device.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.19 Replacing the condensate drain solenoid valve

Ingress of dirt during operation can prevent the condensate drain solenoid valve from sealing. For reasons of operational safety, replace the condensate drain solenoid valve as soon as SIGMA CONTROL 2 displays a corresponding message.

Material Spare part

Precondition The machine is switched off.

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

Depressurize all pressurized components and enclosures (see chapter 10.11).

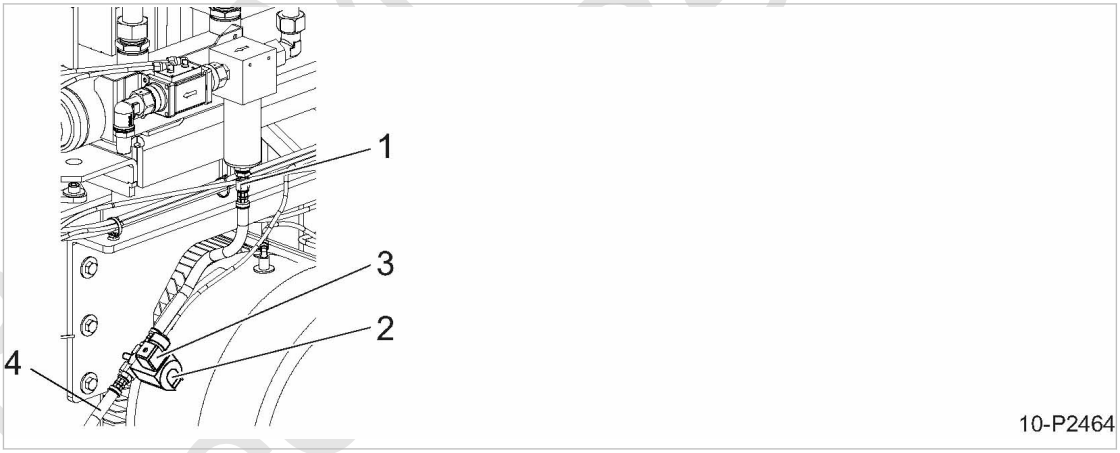


Fig. 42 Replacing the condensate drain solenoid valve

[1] Union fittings
[2] Condensate drain solenoid valve
[3] Connecting socket
[4] Pressure line condensate outlet

1. **⚠ WARNING** *Danger of fatal injury because of pressurized components.*
   - ➢ *Isolate the compressor from the air system.*
   - ➢ *Vent the machine completely to atmospheric.*
   - ➢ *Check for zero pressure.*
2. Remove the connecting socket from the solenoid valve.
3. Remove the union fittings from the filter.
4. Remove the hose from the condensate outlet.
5. Remove the pressure lines from the condensate drain solenoid valve.
6. Mount the new condensate drain solenoid valve and fix the pressure lines.
7. Fix the connecting socket.

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 inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.20 Drive belt maintenance

Use only KAESER V-belts. Each belt set is the same length and the belts are fully oil-resistant.

➢ V-belts must be changed as a set.

Material V-belt set

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

The machine has cooled down.

Depressurize all pressurized components and enclosures (see chapter 10.11).

⚠ WARNING

Hand injury due to the machine running on!

➢ *Wait for at least one minute after switching off before you open the panel.*

Visually checking for damage

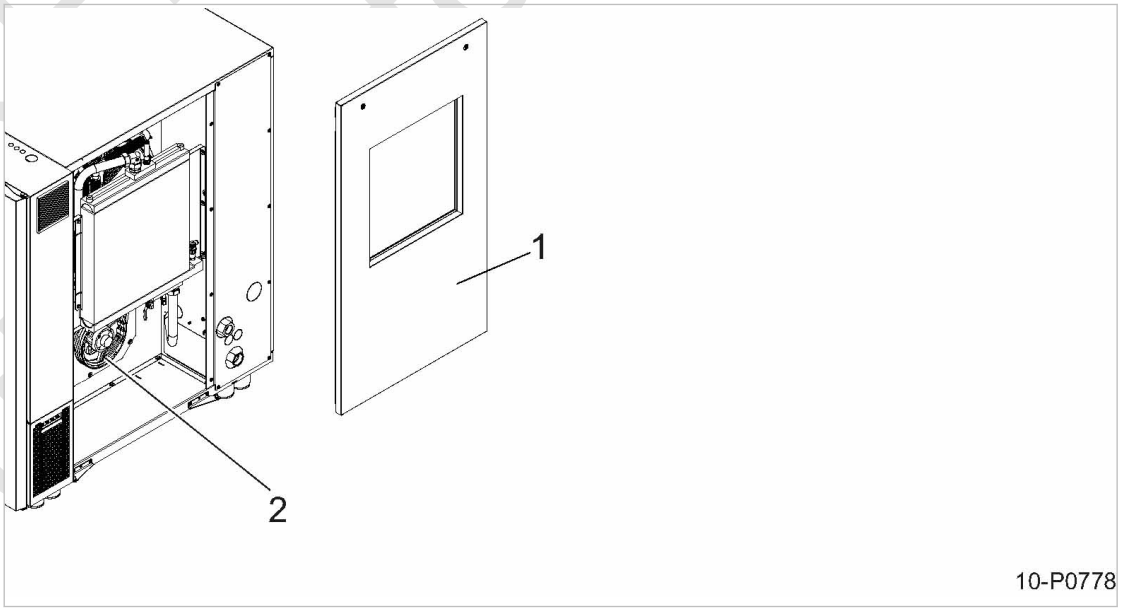


Fig. 43 Visually checking for damage

[1] Removable panel
[2] Motor pulley

1. Remove the panel.
2. Turn the drive belt by hand so that all of the belts can be inspected for damage.
3. In case of damage: Replace the drive belt immediately.

Checking and adjusting belt tension

➢ Check the position of the locking pin.

The drive belts need re-tensioning if the locking pin is at the lower end of the slot.

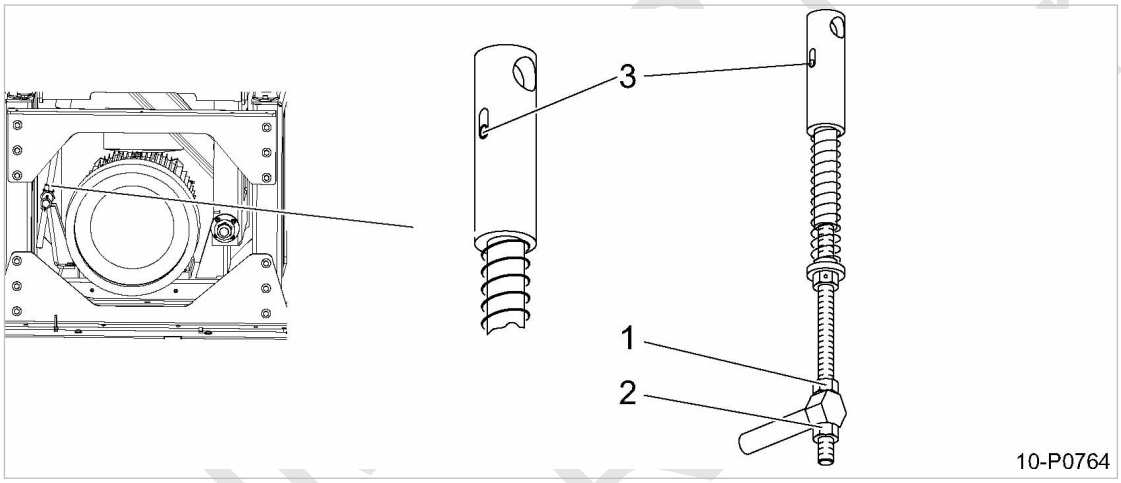


Fig. 44 Re-tighten the drive belt

[1] Hexagonal nut
[2] Hexagonal nut
[3] Locking pin

1. Loosen the hexagon nut [1].
2. Screw down the hexagonal nut [2] until the pin is located at the upper end of the slot.
3. Tighten the hexagonal locking nut [1].

Changing the belt

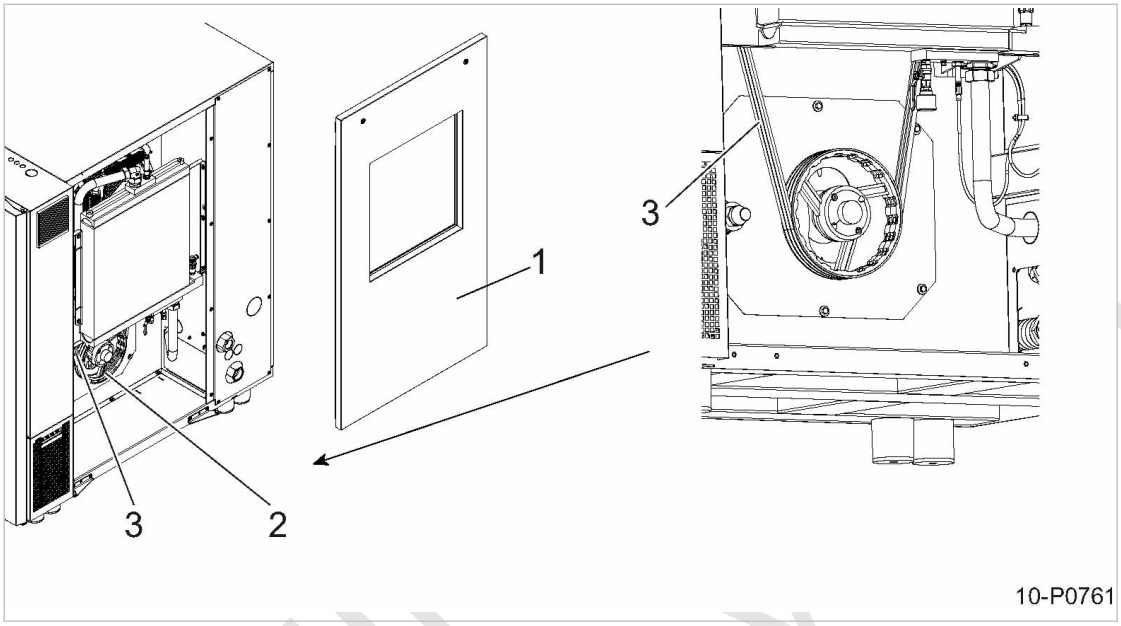


Fig. 45 Changing the belt

[1] Removable panel
[2] Motor pulley
[3] Drive belt

1. Open the front doors and remove the panel.
2. Turn the locking nut [2] of the swing frame adjuster downwards, see Fig. 44.
3. Turn the hexagonal nut [1] clockwise until the V-belts have slack, see Fig. 44
4. Remove the belt.
5. Lay the new V-belts loosely over the motor and compressor block pulleys.
6. Release the nut [1] until the V-belts are tensioned, see Fig. 44
7. Adjust the belt tension
8. Close the front doors and position the panel again.

Check the tension after the new V-belts have been in operation for 24 hours.

9. Open the user's inlet and outlet shut-off valves.

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 inlet and discharge shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (inlet pressure).
4. Switch on the power supply and reset the maintenance interval counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.21 Cylinder head and valves

➢ Maintenance and service work on the cylinder head and valves should be performed ***only*** by an authorized KAESER service representative.

10.22 Documenting maintenance and service work

Machine number:

➤ Enter maintenance and service work carried out in the list.

Date	Maintenance task carried out	Operating hours	Signature

Tab. 48 Logged maintenance tasks

11 Spares, Operating Materials, Service

11.1 Note the nameplate

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

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

11.2 Ordering consumable parts and operating fluids/materials

KAESER consumable parts and operating materials are original products. They are specifically selected for use in KAESER machines.
Unsuitable or poor quality consumable parts and operating fluids/materials may damage the machine or impair its proper function.
Damage to the machine can also result in personal injury.

⚠ WARNING

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

➢ *Use only original parts and operating fluids/materials.*

➢ *Have an authorized KAESER service representative carry out regular maintenance.*

Machine

Name	Number
Air filter element	1250
Oil filter	1200
Filter crankcase vent	1570
Drive belt	1800
Filter mat (control cabinet)	1100
Compressor oil	1600

Tab. 49 Consumable parts

11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

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

➢ Why not sign a KAESER AIR SERVICE maintenance agreement!

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

11.4 Spares for service and repair

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

12 Decommissioning, Storage and Transport

12.1 Decommissioning

This is necessary, for example, under the following circumstances:

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

Temporary decommissioning

Precondition The machine can be started at regular intervals.

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

Long-term decommissioning

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

Switch off the power supply disconnecting device,
the disconnect device is locked in the off position,
a check has been made that no voltage is present.

Depressurize all pressurized components and enclosures (see chapter 10.11).

The machine is completely depressurized (network pressure gauge (inlet and outlet pressure) read 0 psig).

1. Allow the machine to completely cool down.
2. Spray the valves and cylinder bore with Shell Ensis 20 preserving oil.

The oil does not need to be removed when re-commissioning.

3. Drain all condensate.
4. Drain the cooling water (only machines with water-cooling).
5. Disconnect all air and electrical connections.
6. Spray all contacts and terminals with a preservative.

12.2 Packing

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

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

Material Desiccant
Plastic sheeting
Wooden crate

Precondition The machine is decommissioned.

Machine is dry and cooled down.

1. Wrap the machine fully in plastic sheeting.

2. Place sufficient desiccant (e.g. silica gel) inside the plastic sheeting.
3. Protect the machine in a wooden crate against mechanical damages.

12.3 Storage

Moisture can lead to corrosion, particularly on the surfaces of the compressor block.
Frozen moisture can damage components, valve diaphragms, and gaskets.

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

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

12.4 Transport

12.4.1 Safety

Weight and center of gravity determine the most suitable method of transportation.

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

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

- ➢ Ensure the danger area is clear of personnel.

12.4.2 Transport with a forklift truck

Precondition The whole machine is over the forks.

Fig. 46 Transporting with a forklift truck

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

12.4.3 Transport with a hoist

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

The machine is not equipped with fastening points.

Examples of unsuitable fastening points:

- Pipe sockets
- Attached components such as cyclone separators, condensate drains or compressed air filters.

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

Precondition Load-carrying and attachment devices meet the local safety regulations.

The hoist, load-carrying and attachment devices or the lifted machine do not endanger personnel.

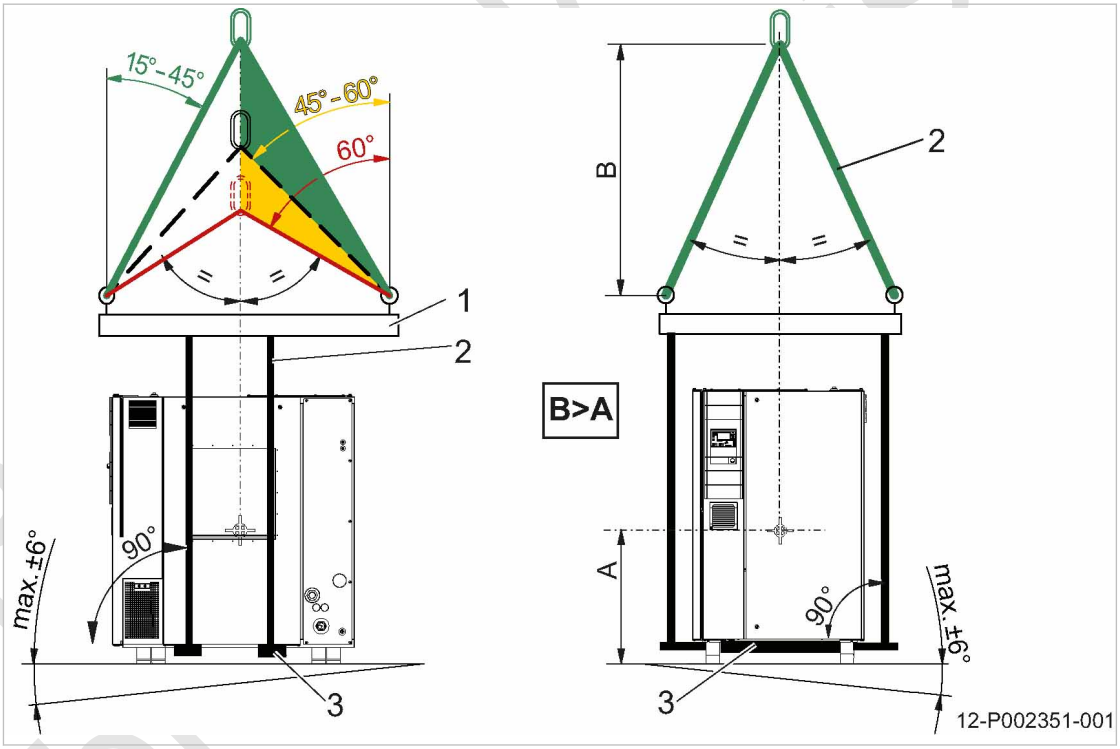


Fig. 47 Transport with a crane

1 Load carrying devices
2 Attachment resources
3 Crossbeam

1. **⚠ WARNING** *Risk of accident caused by incorrect use of load-carrying and attachment devices!*
   - ➤ *Comply with permissible load limits.*
   - ➤ *Comply with specific safety information of used load-carrying and attachment devices.*

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

12.5 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.
3. Hand the machine over to an authorized disposal expert.

➢ Components contaminated with oil must be disposed of in accordance with local environmental protection regulations.

12.5.1 Battery disposal

Batteries contain substances that are harmful to living beings and the environment. For this reason, batteries must not be disposed of with unsorted residential waste. They must be disposed of in accordance with local environmental regulations. This procedure facilitates the handling and recycling of batteries.

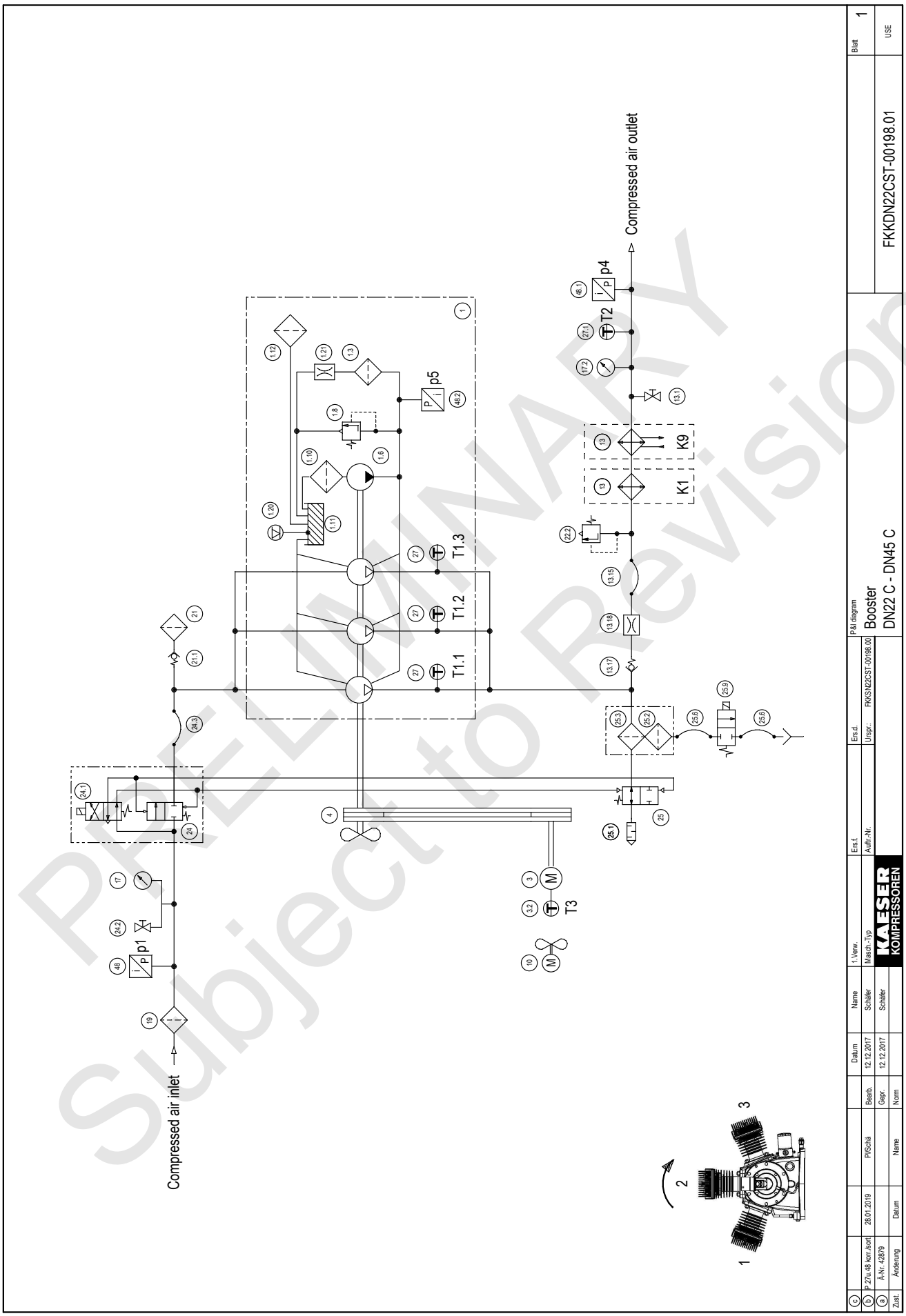
Fig. 48 Battery disposal

[1] Do not dispose of batteries with residential waste
[2] Battery contains lead (if applicable)

➢ Dispose of batteries in accordance with local environmental regulations.

13 Annex

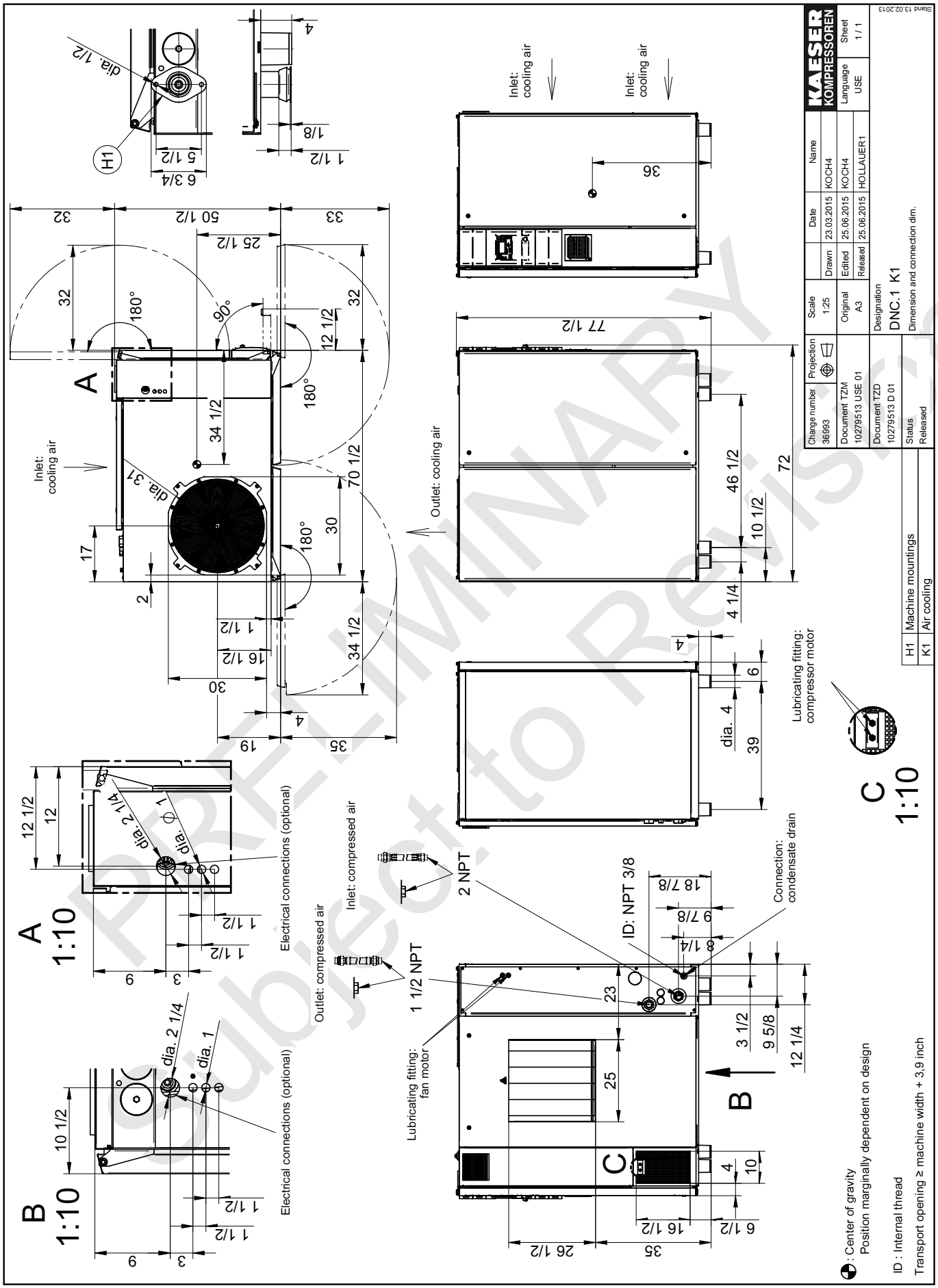
13.1 Pipeline and instrument flow diagram (P+I diagram)

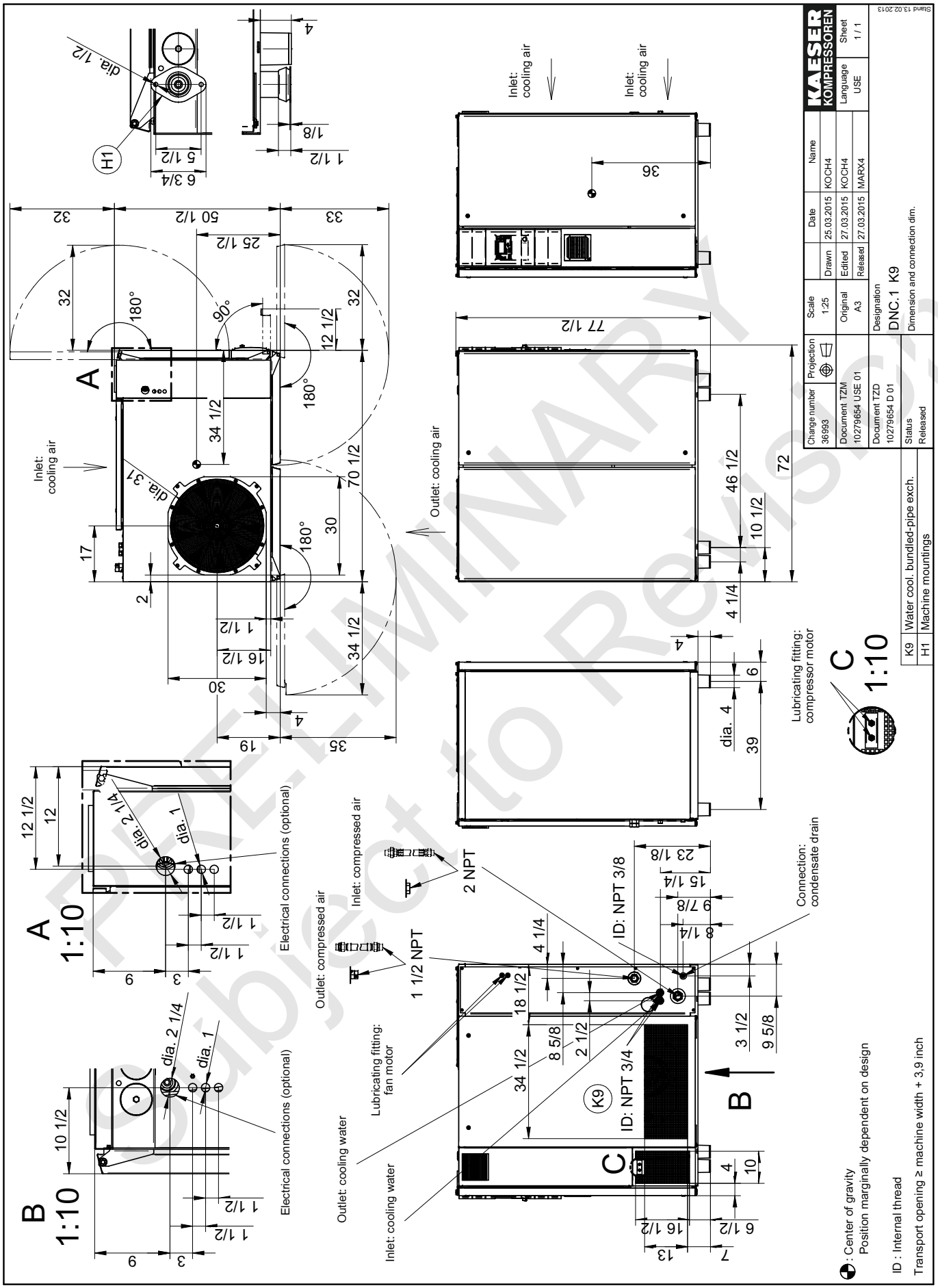

Compressed air outlet
Compressed air inlet
p1
p4
p5
T1.1
T1.2
T1.3
T2
T3
K1
K9
M
P&I diagram
Booster
DN22 C - DN45 C
FKKDN22CST-00198.01
FKKSN22CST-00198.00
KAESER KOMPRESSOREN
PRELIMINARY
Subject to Revision

1	Compressor block
1.3	Oil filter
1.6	Oil pump
1.8	Bypass valve
1.10	Dirt trap (Compressor block)
1.11	Crankcase
1.12	Filter (Crankcase venting)
1.20	Oil level sensor (switching)
1.21	Nozzle
3	Compressor motor
3.2	Temperature Compressor motor [T3]
4	V-belt pulley
10	Fan motor
13	Compressed air aftercooler
13.1	Shut-off valve (Condensate outlet Compressed air aftercooler)
13.15	Hose line (Discharge side)
13.17	Check valve (Discharge side)
13.18	Nozzle Pulsation dampening (Discharge side)
17	Pressure gauge Network pressure (Initial pressure)
17.2	Pressure gauge Network pressure (Final pressure)
19	Dirt trap (Suction side)
21	Air filter (Idle)
21.1	Check valve (Idle)
22.2	Safety relief valve (Compressed air outlet)
24	Inlet valve
24.1	Inlet control valve
24.2	Shut-off valve Ventilation (Suction side)
24.3	Hose line (Suction side)
25	Unloading valve
25.1	Silencer (Pressure relief)
25.2	Dirt trap
25.3	Filter (Pressure relief)
25.6	Hose line
25.9	Automatic condensate drain in the solenoid valve
27	Pt100 temperature sensor - Airend discharge temperature (Cylinder 1, 2, 3) [T1.1, T1.2, T1.3]
27.1	Pt100 temperature sensor - Compressed air outlet [T2]
48	Pressure transducer - Compressed air inlet [p1]
48.1	Pressure transducer - Compressed air outlet [p4]
48.2	Pressure transducer - Oil pressure [p5]
Option	
K1	Air cooling
K9	Water cooling: bundled-tube heat exchanger

c					Datum	Name	1.Verw.	Ers.f.	Ers.d.	P&I Diagram legend		Blatt 2
b	P.27u.48 korr./sort	28.01.2019	PI/Schä	Bearb.	12.12.2017	Plau	Masch.-Typ	Auftr.-Nr.	Urspr.: FKKSN22CST-00198.00	Booster DN22 C - DN45 C	FKKDN22CST-00198.01	
a				Gepr.	12.12.2017	Schäfer	KAESER KOMPRESSOREN					USE
Zust.	Änderung	Datum	Name	Norm								

13.2 Dimensional drawing




Inlet: cooling air
Outlet: cooling air
Lubricating fitting: compressor motor
Electrical connections (optional)
Outlet: compressed air
Inlet: compressed air
Lubricating fitting: fan motor
Outlet: cooling water
Inlet: cooling water
Connection: condensate drain
ID: NPT 3/8
ID: NPT 3/4
2 NPT
1 1/2 NPT
: Center of gravity
Position marginally dependent on design
ID : Internal thread
Transport opening ≥ machine width + 3.9 inch
Change number 36993
Projection
Scale 1:25
Original A3
Drawn 25.03.2015 KOCH4
Edited 27.03.2015 KOCH4
Released 27.03.2015 MARX4
Language USE
Sheet 1 / 1
Document TZM 10279654 USE 01
Document TZD 10279654 D 01
Designation DNC.1 K9
Status Released
Dimension and connection dim.
K9 Water cool. bundled-pipe exch.
H1 Machine mountings
Stand 13.02.2013
PRELIMINARY Subject to Revision
Drawings remain our exclusive property. They are entrusted only for the agreed upon purpose. Copies or any other reproduction, including storage, treatment and distribution by use of electronic systems is not allowed for any other than the agreed upon purpose. Neither originals nor reproductions may be given to or made available to third parties.
Subject to development-related changes. Drawing may be altered only via CAD.

13.3 Electrical Diagram

Wiring Diagram

booster compressor DN22C/DN30C/DN37C/DN45C

air cooled or water cooled

208V±10% 3ph 60Hz
230V±10% 3ph 60Hz
380V±10% 3ph 60Hz
460V±10% 3ph 60Hz
575V±10% 3ph 60Hz

Power supply:
WYE system with center point solidly grounded

manufacturer: KAESER COMPRESSORS
96450 Coburg
GERMANY

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.

c				Datum	18.12.2017 USE		KAESER KOMPRESSOREN	cover page		=	
b				Bearbeiter	Sitter			booster compressor		+	
a				Geprüft	Büchner						
A	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:	SC2 MCS	DKK-U3010.04	page 1 / 1 Bl.

Lfd. Nr. No.	Benennung Name		Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	cover page			DKK-U3010.04	1	
2	list of contents			ZKK-U3010.04	1	
3	general instructions			UKK-U3010.04	1	
4	electrical equipment identification			UKK-U3010.04	2	
5	electrical component parts list			UKK-U3010.04	3	
6	electrical component parts list			UKK-U3010.04	4	
7	electrical component parts list			UKK-U3010.04	5	
8	electrical component parts list			UKK-U3010.04	6	
9	electrical component parts list			UKK-U3010.04	7	
10	wiring diagram	power supply/power unit		SKK-U3010.04	1	
11	wiring diagram	compressor motor		SKK-U3010.04	2	
12	wiring diagram	vent motor		SKK-U3010.04	3	
13	wiring diagram	control voltage tapping		SKK-U3010.04	4	
14	wiring diagram	power supply unit		SKK-U3010.04	5	
15	wiring diagram	IO-module/configuration		SKK-U3010.04	6	
16	wiring diagram	sensors/actuators		SKK-U3010.04	7	
17	wiring diagram	sensors/actuators		SKK-U3010.04	8	
18	wiring diagram	volt-free contacts		SKK-U3010.04	9	
19	wiring diagram	inputs-/outputs IOM3		SKK-U3010.04	10	
20	wiring diagram	digital inputs - option C40		SKK-U3010.04	11	
21	wiring diagram	inputs/outputs - option C40		SKK-U3010.04	12	
22	wiring diagram	transformer diagrams		SKK-U3010.04	13	
23	wiring diagram	Handling: Terminals		SKK-U3010.04	14	
24	wiring diagram	Feed line connection		SKK-U3010.04	15	
25	wiring diagram	Feed line connection		SKK-U3010.04	16	
26	terminal connection	terminal strip -X0,-X11,-X12		KKK-U3010.04	1	
27	lay-out	control panel		AKK-U3010.04	1	
28	lay-out	control panel		AKK-U3010.04	2	

c				Datum	18.12.2017		KAESER KOMPRESSOREN	list of contents	=	
b				Bearbeiter	Sitter			booster compressor	+	
a				Geprüft	Büchner					
B	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:	SC2 MCS	ZKK-U3010.04	page 1 1 Bl.

general instructions

ATTENTION !!!
Install supplies, grounding and shock protection
to local safety regulations.
Do not make or break
live plug-in connectors.

control cabinet wiring for non-designated conductors

primary circuits ungrounded:	black, UL-Style 1015, CSA-TEW
primary circuits grounded:	grey, UL-Style 1015, CSA-TEW
control voltage AC 115V ungrounded:	red, 18AWG UL-Style 1015, CSA-TEW
control voltage AC 115V grounded:	white, 18AWG UL-Style 1015, CSA-TEW
control voltage DC ungrounded:	blue, 18AWG UL-Style 1015, CSA-TEW
control voltage DC grounded:	white/blue, 18AWG UL-Style 1015, CSA-TEW
external voltage:	orange, 16AWG UL-Style 1015, CSA-TEW
measuring circuits:	violet, 18AWG UL-Style 1015, CSA-TEW
ground conductor:	green/yellow, UL-Style 1015, CSA-TEW

option C40 = Nitrogen version

c				Datum	18.12.2017		KAESER KOMPRESSOREN	general instructions booster compressor		=
b				Bearbeiter	Sitter					+
a				Geprüft	Büchner					
C	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:	SC2 MCS	UKK-U3010.04	page 1 / 7 Bl.

electrical equipment identification

general components

-B25	overload relay, compressor motor
-F4	circuit breaker, vent motor
-1FU,-2FU	primary control fuse
-3FU	secondary control fuse
-M1	compressor motor
-M4	vent motor
-M7	controller ventilator
-Q1	main contactor
-Q2	delta contactor
-Q3	wye contactor
-Q4	starter vent motor
-S1	EMERGENCY STOP pushbutton
-S5	door safety interlock switch
-T11	control transformer
-T21,-T22	power unit

terminal strips

-X0	terminal strip, power supply
-X11	terminal strip, control
-X12	terminal strip, control 24VDC

control

-K20	*Main Control System SC2MCS*
-X1	Ethernet
-X2	IO-Bus
-X3	RS485-FC (USS)
-X4	communication module (Bus)
-X5	SD card slot
-X6	ground connection
-K21	*IO-module SC2IOM-3*
	inside
-X1	IO-Bus, input
-X2	IO-Bus, output
-X3	analog input, Pt100
-X4	power supply unit, digital outputs
-X5,-X9	Relay outputs
-X6	analog input, analog output 4-20mA
-X8	digital inputs
	external
-X11...-X14	analog inputs, 4-20mA
-X15	analog output
-X18,-X19	digital inputs
-X20,-X21	digital outputs
-X22...-X32	analog inputs, Pt100
-K22	*IO-module SC2IOM-1*
	inside
-X1	IO-Bus, input
-X2	IO-Bus, output
-X3,-X8	digital inputs
-X4	power supply unit, digital outputs
-X5,-X9	Relay outputs
-X6	analog input, 4-20mA
-X7	analog input, Pt100
	external
-X11...-X13	analog inputs, 4-20mA
-X14...-X17	analog inputs, Pt100
-X18...-X29	digital inputs
-X30...-X32	digital outputs

sensors/actuators

-B1	pressure transducer, Compressed air outlet
-B2	pressure transducer, Compressed air inlet
-B3	pressure transducer, oil pressure
-B4	pressure transducer, Pressure side return circuit
-B5	pressure transducer, Intake side return circuit
-B40.1	temperature probe, airend discharge temperature 1
-B40.2	temperature probe, airend discharge temperature 2
-B40.3	temperature probe, airend discharge temperature 3
-B42	temperature probe, compressed air outlet temperature
-B60	temperature probe, compressor motor
-B70	oil level switch
-K1	Inlet control valve
-K2	Return valve
-K3	Relief control valve
-K10	condensate drain filter

c				Datum	18.12.2017		KAESER KOMPRESSOREN	electrical equipment identification	=
b				Bearbeiter	Sitter			booster compressor	+
a				Geprüft	Büchner				
C	Änderung	Datum	Name	Norm		Ersatz durch:	Ersatz für:	Ursprung:	SC2 MCS	UKK-U3010.04	page 2 / 7 Bl.

model		electrical component parts list DN 22 C	DN 30 C	DN 37 C	DN 45 C
machine power supply		**208 V ±10 %, 60 Hz**	**208 V ±10 %, 60 Hz**	**208 V ±10 %, 60 Hz**	**208 V ±10 %, 60 Hz**
motor	**-M1**	30 hp	40 hp	50 hp	60 hp
motor	**-M4**	2 hp	2 hp	2 hp	2 hp
supply terminals	**-X0:U1/V1/W1**	3x 7.3140.05360	3x 7.3149.02340	3x 7.3149.02340	3x 7.3149.02340
		3RA2943-3L (Siemens)	WKN 150/U/V0 (Wieland)	WKN 150/U/V0 (Wieland)	WKN 150/U/V0 (Wieland)
	Torque	89 lb-in	89 lb-in	89 lb-in	89 lb-in
	Stripped length	25 mm	30 mm	30 mm	30 mm
GRD rail	**PE**	7.3605.00010	7.3605.0	7.3605.0	7.3605.0
		01287 (Wöhner)	01068 (Wöhner)	01068 (Wöhner)	01068 (Wöhner)
	Torque	89 lb-in	133 lb-in	133 lb-in	133 lb-in
	Stripped length	30 mm	30 mm	30 mm	30 mm
supply	**connection**	fig. 10+ 11, Sht. 15	fig. 12+ 13, Sht. 16	fig. 12+ 13, Sht. 16	fig. 12+ 13, Sht. 16
terminal strip	**-X11/-X12**	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland
	Handling	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14
contactor	**-Q1/-Q2**	7.8740.00440	7.3140.02140	7.3140.02140	7.3140.02140
		3RT2045-1AK60	3RT1054-1AF36	3RT1054-1AF36	3RT1054-1AF36
interference suppressor		7.8740.05170	7.3140.02020	7.3140.02020	7.3140.02020
	Siemens	3RT2946-1CC00	3RT1956-1CC00	3RT1956-1CC00	3RT1956-1CC00
auxiliary switch	**-Q1**	7.8740.05010	---	---	---
	Siemens	3RH2911-1HA11			
contactor	**-Q3**	7.8740.00400	7.8740.00440	7.8740.00420	7.8740.00440
		3RT2035-1AK60	3RT2045-1AK60	3RT2037-1AK60	3RT2045-1AK60
interference suppressor		7.8740.05150	7.8740.05170	7.8740.05150	7.8740.05170
	Siemens	3RT2936-1CC00	3RT2946-1CC00	3RT2936-1CC00	3RT2946-1CC00
contactor	**-Q4**	7.8740.00340	7.8740.00340	7.8740.00340	7.8740.00340
		3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60
interference suppressor		7.8740.05140	7.8740.05140	7.8740.05140	7.8740.05140
	Siemens	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00
overload relay	**-B25**	7.8741.00140	7.6873.00230	7.6873.00230	7.6873.00230
		3RB3046-1XB0 (32-115 A)	3RB2056-1FC2 (50-200 A)	3RB2056-1FC2 (50-200 A)	3RB2056-1FC2 (50-200 A)
		setting: 42 A	setting: 64 A	setting: 72 A	setting: 89 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
	Siemens	setting: 47 A	setting: 71 A	setting: 81 A	setting: 99 A
fuses	**-1FU/-2FU/-3FU**	7.3313.1	7.3313.1	7.3313.1	7.3313.1
	Gould	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)
fuse socket	**-1FU...-3FU**	7.3320.00060	7.3320.00060	7.3320.00060	7.3320.00060
	Wöhner	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH
circuit breaker	**-F4**	7.8742.01180	7.8742.01180	7.8742.01180	7.8742.01180
		3RV2021-1HA10 (5.5-8 A)	3RV2021-1HA10 (5.5-8 A)	3RV2021-1HA10 (5.5-8 A)	3RV2021-1HA10 (5.5-8 A)
		setting: 5.9 A	setting: 5.9 A	setting: 5.9 A	setting: 5.9 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
		setting: 6.6 A	setting: 6.6 A	setting: 6.6 A	setting: 6.6 A
terminal block		7.3140.05090	7.3140.05090	7.3140.05090	7.3140.05090
		3RV2928-1H	3RV2928-1H	3RV2928-1H	3RV2928-1H
auxiliary switch		7.8742.05000	7.8742.05000	7.8742.05000	7.8742.05000
	Siemens	3RV2901-1E	3RV2901-1E	3RV2901-1E	3RV2901-1E
transformer	**-T11**	7.7569.0	7.7569.0	7.7569.0	7.7569.0
		B0601024 (250 VA)	B0601024 (250 VA)	B0601024 (250 VA)	B0601024 (250 VA)
	Block	diagram 1, Sht. 13	diagram 1, Sht. 13	diagram 1, Sht. 13	diagram 1, Sht. 13
power supply	**-T21**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
	Prodrive	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
power supply	**-T22**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
option C40	**Prodrive**	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
connection	**-W11**	---	1 AWG black	1 AWG black	1 AWG black
			600 V, 90°C	600 V, 90°C	600 V, 90°C
connection	**-W13**	7.3140.05370	3/0 AWG black	2/0 AWG black	3/0 AWG black
		3RA2943-3FA00	600 V, 90°C	600 V, 90°C	600 V, 90°C
connection	**-W14**	6 AWG black	4 AWG black	4 AWG black	4 AWG black
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
cables	**-W19.1/.2**	4 AWG	1 AWG	1 AWG	1 AWG
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
compressor control	**-K20**	7.7601.0	7.7601.0	7.7601.0	7.7601.0
	Prodrive	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS
IO-module	**-K21**	7.7604.1	7.7604.1	7.7604.1	7.7604.1
	Prodrive	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3
IO-module	**-K22**	7.7602.1	7.7602.1	7.7602.1	7.7602.1
option C40	**Prodrive**	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1
EMERGENCY STOP pushbutton	**-S1**	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV
auxiliary contact	**Schlegel**	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO
controller ventilator	**-M7**	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300
outlet filter	**Rübsamen&Herr**	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300
control panel	**KAESER**	213819.00010	213819.00010	213819.00010	213819.00010

= +

page 3 Bl. 7

UKK-U3010.04

SC2 MCS

electrical component parts list

booster compressor

KAESER KOMPRESSOREN

Ursprung:

Ersatz für:

Ersatz durch:

	Datum	Name
c		
b	18.12.2017	Sitter
a	Bearbeiter	Büchner
C	Geprüft	Norm
Änderung		Datum

electrical component parts list

model		DN 22 C	DN 30 C	DN 37 C	DN 45 C
machine power supply		**230 V ±10 %, 60 Hz**	**230 V ±10 %, 60 Hz**	**230 V ±10 %, 60 Hz**	**230 V ±10 %, 60 Hz**
motor	**-M1**	30 hp	40 hp	50 hp	60 hp
motor	**-M4**	2 hp	2 hp	2 hp	2 hp
supply terminals	**-X0:U1/V1/W1**	3x 7.3140.05360	3x 7.3149.02340	3x 7.3149.02340	3x 7.3149.02340
		3RA2943-3L (Siemens)	WKN 150/U/V0 (Wieland)	WKN 150/U/V0 (Wieland)	WKN 150/U/V0 (Wieland)
	Torque	89 lb-in	89 lb-in	89 lb-in	89 lb-in
	Stripped length	25 mm	30 mm	30 mm	30 mm
GRD rail	**PE**	7.3605.00010	7.3605.0	7.3605.0	7.3605.0
		01287 (Wöhner)	01068 (Wöhner)	01068 (Wöhner)	01068 (Wöhner)
	Torque	89 lb-in	133 lb-in	133 lb-in	133 lb-in
	Stripped length	30 mm	30 mm	30 mm	30 mm
supply	**connection**	fig. 10+ 11, Sht. 15	fig. 12+ 13, Sht. 16	fig. 12+ 13, Sht. 16	fig. 12+ 13, Sht. 16
terminal strip	**-X11/-X12**	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland
	Handling	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14
contactor	**-Q1/-Q2**	7.8740.00440	7.3140.02140	7.3140.02140	7.3140.02140
		3RT2045-1AK60	3RT1054-1AF36	3RT1054-1AF36	3RT1054-1AF36
interference suppressor		7.8740.05170	7.3140.02020	7.3140.02020	7.3140.02020
	Siemens	3RT2946-1CC00	3RT1956-1CC00	3RT1956-1CC00	3RT1956-1CC00
auxiliary switch	**-Q1**	7.8740.05010	---	---	---
	Siemens	3RH2911-1HA11			
contactor	**-Q3**	7.8740.00400	7.8740.00440	7.8740.00420	7.8740.00440
		3RT2035-1AK60	3RT2045-1AK60	3RT2037-1AK60	3RT2045-1AK60
interference suppressor		7.8740.05150	7.8740.05170	7.8740.05150	7.8740.05170
	Siemens	3RT2936-1CC00	3RT2946-1CC00	3RT2936-1CC00	3RT2946-1CC00
contactor	**-Q4**	7.8740.00340	7.8740.00340	7.8740.00340	7.8740.00340
		3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60
interference suppressor		7.8740.05140	7.8740.05140	7.8740.05140	7.8740.05140
	Siemens	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00
overload relay	**-B25**	7.8741.00140	7.6873.00230	7.6873.00230	7.6873.00230
		3RB3046-1XB0 (32-115 A)	3RB2056-1FC2 (50-200 A)	3RB2056-1FC2 (50-200 A)	3RB2056-1FC2 (50-200 A)
		setting: 39 A	setting: 65 A	setting: 66 A	setting: 81 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
	Siemens	setting: 44 A	setting: 73 A	setting: 73 A	setting: 91 A
fuses	**-1FU/-2FU/-3FU**	7.3313.1	7.3313.1	7.3313.1	7.3313.1
	Gould	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)
fuse socket	**-1FU...-3FU**	7.3320.00060	7.3320.00060	7.3320.00060	7.3320.00060
	Wöhner	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH
circuit breaker	**-F4**	7.8742.01180	7.8742.01180	7.8742.01180	7.8742.01180
		3RV2021-1HA10 (5.5-8 A)	3RV2021-1HA10 (5.5-8 A)	3RV2021-1HA10 (5.5-8 A)	3RV2021-1HA10 (5.5-8 A)
		setting: 5.7 A	setting: 5.7 A	setting: 5.7 A	setting: 5.7 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
		setting: 6.4 A	setting: 6.4 A	setting: 6.4 A	setting: 6.4 A
terminal block		7.3140.05090	7.3140.05090	7.3140.05090	7.3140.05090
		3RV2928-1H	3RV2928-1H	3RV2928-1H	3RV2928-1H
auxiliary switch		7.8742.05000	7.8742.05000	7.8742.05000	7.8742.05000
	Siemens	3RV2901-1E	3RV2901-1E	3RV2901-1E	3RV2901-1E
transformer	**-T11**	7.7569.0	7.7569.0	7.7569.0	7.7569.0
		B0601024 (250 VA)	B0601024 (250 VA)	B0601024 (250 VA)	B0601024 (250 VA)
	Block	diagram 1, Sht. 13	diagram 1, Sht. 13	diagram 1, Sht. 13	diagram 1, Sht. 13
power supply	**-T21**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
	Prodrive	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
power supply	**-T22**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
option C40	**Prodrive**	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
connection	**-W11**	---	1 AWG black	1 AWG black	1 AWG black
			600 V, 90°C	600 V, 90°C	600 V, 90°C
connection	**-W13**	7.3140.05370	3/0 AWG black	2/0 AWG black	3/0 AWG black
		3RA2943-3FA00	600 V, 90°C	600 V, 90°C	600 V, 90°C
connection	**-W14**	6 AWG black	4 AWG black	4 AWG black	4 AWG black
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
cables	**-W19.1/.2**	6 AWG	2 AWG	2 AWG	1 AWG
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
compressor control	**-K20**	7.7601.0	7.7601.0	7.7601.0	7.7601.0
	Prodrive	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS
IO-module	**-K21**	7.7604.1	7.7604.1	7.7604.1	7.7604.1
	Prodrive	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3
IO-module	**-K22**	7.7602.1	7.7602.1	7.7602.1	7.7602.1
option C40	**Prodrive**	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1
EMERGENCY STOP pushbutton	**-S1**	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV
auxiliary contact	**Schlegel**	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO
controller ventilator	**-M7**	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300
outlet filter	**Rübsamen&Herr**	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300
control panel	**KAESER**	213819.00010	213819.00010	213819.00010	213819.00010

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UKK-U3010.04

SC2 MCS

electrical component parts list
booster compressor

KAESER KOMPRESSOREN

Ursprung:

Ersatz für:

Ersatz durch:

	Datum	Name
c	18.12.2017	
b	Sitter	
a	Büchner	
C Änderung	Geprüft	Norm

electrical component parts list

model		DN 22 C	DN 30 C	DN 37 C	DN 45 C
machine power supply		380 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz
motor	-M1	30 hp	40 hp	50 hp	60 hp
motor	-M4	2 hp	2 hp	2 hp	2 hp
supply terminals	-X0:U1/V1/W1	7.3140.05070	3x 7.3140.05360	7.3140.05070	3x 7.3140.05360
		3RV2935-5E (Siemens)	3RA2943-3L (Siemens)	3RV2935-5E (Siemens)	3RA2943-3L (Siemens)
	Torque	53 lb-in	89 lb-in	53 lb-in	89 lb-in
	Stripped length	25 mm	25 mm	25 mm	25 mm
GRD rail	PE	7.3605.00010	7.3605.00010	7.3605.00010	7.3605.00010
		01287 (Wöhner)	01287 (Wöhner)	01287 (Wöhner)	01287 (Wöhner)
	Torque	89 lb-in	89 lb-in	89 lb-in	89 lb-in
	Stripped length	30 mm	30 mm	30 mm	30 mm
supply	connection	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15
terminal strip	-X11/-X12	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland
	Handling	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14
contactor	-Q1/-Q2	7.8740.00410	7.8740.00440	7.8740.00420	7.8740.00440
		3RT2036-1AK60	3RT2045-1AK60	3RT2037-1AK60	3RT2045-1AK60
interference suppressor		7.8740.05150	7.8740.05170	7.8740.05150	7.8740.05170
	Siemens	3RT2936-1CC00	3RT2946-1CC00	3RT2936-1CC00	3RT2946-1CC00
auxiliary switch	-Q1	7.8740.05010	7.8740.05010	7.8740.05010	7.8740.05010
	Siemens	3RH2911-1HA11	3RH2911-1HA11	3RH2911-1HA11	3RH2911-1HA11
contactor	-Q3	7.8740.00400	7.8740.00400	7.8740.00400	7.8740.00400
		3RT2035-1AK60	3RT2035-1AK60	3RT2035-1AK60	3RT2035-1AK60
interference suppressor		7.8740.05150	7.8740.05150	7.8740.05150	7.8740.05150
	Siemens	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00
contactor	-Q4	7.8740.00340	7.8740.00340	7.8740.00340	7.8740.00340
		3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60
interference suppressor		7.8740.05140	7.8740.05140	7.8740.05140	7.8740.05140
	Siemens	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00
overload relay	-B25	7.8741.00090	7.8741.00140	7.8741.00100	7.8741.00140
		3RB3036-1UB0 (12-50 A)	3RB3046-1XB0 (32-115 A)	3RB3036-1WB0 (20-80 A)	3RB3046-1XB0 (32-115 A)
		setting: 24 A	setting: 51 A	setting: 40 A	setting: 49 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
	Siemens	setting: 27 A	setting: 57 A	setting: 45 A	setting: 55 A
fuses	-1FU/-2FU	7.3316.1	7.3316.1	7.3316.1	7.3316.1
	Gould	ATQR 1 1/2 (1.5 A, 600 V)	ATQR 1 1/2 (1.5 A, 600 V)	ATQR 1 1/2 (1.5 A, 600 V)	ATQR 1 1/2 (1.5 A, 600 V)
fuses	-3FU	7.3313.1	7.3313.1	7.3313.1	7.3313.1
	Gould	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)
fuse socket	-1FU...-3FU	7.3320.00060	7.3320.00060	7.3320.00060	7.3320.00060
	Wöhner	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH
circuit breaker	-F4	7.8742.01160	7.8742.01160	7.8742.01160	7.8742.01160
		3RV2021-1FA10 (3.5-5 A)	3RV2021-1FA10 (3.5-5 A)	3RV2021-1FA10 (3.5-5 A)	3RV2021-1FA10 (3.5-5 A)
		setting: 3.5 A	setting: 3.5 A	setting: 3.5 A	setting: 3.5 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
		setting: 3.9 A	setting: 3.9 A	setting: 3.9 A	setting: 3.9 A
terminal block		7.3140.05090	7.3140.05090	7.3140.05090	7.3140.05090
		3RV2928-1H	3RV2928-1H	3RV2928-1H	3RV2928-1H
auxiliary switch		7.8742.05000	7.8742.05000	7.8742.05000	7.8742.05000
	Siemens	3RV2901-1E	3RV2901-1E	3RV2901-1E	3RV2901-1E
transformer	-T11	7.2239.20080	7.2239.20080	7.2239.20080	7.2239.20080
		USTE250 (250 VA)	USTE250 (250 VA)	USTE250 (250 VA)	USTE250 (250 VA)
	Block	diagram 2, Sht. 13	diagram 2, Sht. 13	diagram 2, Sht. 13	diagram 2, Sht. 13
power supply	-T21	7.7605P0	7.7605P0	7.7605P0	7.7605P0
	Prodrive	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
power supply	-T22	7.7605P0	7.7605P0	7.7605P0	7.7605P0
option C40	Prodrive	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
connection	-W13	7.3140.05270	7.3140.05370	7.3140.05270	7.3140.05370
		3RA2933-3FA00	3RA2943-3FA00	3RA2933-3FA00	3RA2943-3FA00
connection	-W14	7.3140.05270	6 AWG black	7.3140.05270	6 AWG black
		3RA2933-3FA00	600 V, 90°C	3RA2933-3FA00	600 V, 90°C
cables	-W19.1/.2	8 AWG	6 AWG	4 AWG	2 AWG
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
compressor control	-K20	7.7601.0	7.7601.0	7.7601.0	7.7601.0
	Prodrive	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS
IO-module	-K21	7.7604.1	7.7604.1	7.7604.1	7.7604.1
	Prodrive	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3
IO-module	-K22	7.7602.1	7.7602.1	7.7602.1	7.7602.1
option C40	Prodrive	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1
EMERGENCY STOP pushbutton	-S1	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV
auxiliary contact	Schlegel	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO
controller ventilator	-M7	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300
outlet filter	Rübsamen&Herr	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300
control panel	KAESER	213819.00010	213819.00010	213819.00010	213819.00010

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UKK-U3010.04
SC2 MCS
electrical component parts list
booster compressor
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:
Datum 18.12.2017
Bearbeiter Sitter
Geprüft Büchner
Norm
Name
Datum
c b a C Änderung

model		electrical component parts list DN 22 C	DN 30 C	DN 37 C	DN 45 C
machine power supply		**460 V ±10 %, 60 Hz**	**460 V ±10 %, 60 Hz**	**460 V ±10 %, 60 Hz**	**460 V ±10 %, 60 Hz**
motor	**-M1**	30 hp	40 hp	50 hp	60 hp
motor	**-M4**	2 hp	2 hp	2 hp	2 hp
supply terminals	**-X0:U1/V1/W1**	7.3140.05070	7.3140.05070	7.3140.05070	7.3140.05070
		3RV2935-5E (Siemens)	3RV2935-5E (Siemens)	3RV2935-5E (Siemens)	3RV2935-5E (Siemens)
	Torque	53 lb-in	53 lb-in	53 lb-in	53 lb-in
	Stripped length	25 mm	25 mm	25 mm	25 mm
GRD rail	**PE**	7.3605.00020	7.3605.00010	7.3605.00010	7.3605.00010
		01284 (Wöhner)	01287 (Wöhner)	01287 (Wöhner)	01287 (Wöhner)
	Torque	36 lb-in	89 lb-in	89 lb-in	89 lb-in
	Stripped length	20 mm	30 mm	30 mm	30 mm
supply	**connection**	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15
terminal strip	**-X11/-X12**	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland
	Handling	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14
contactor	**-Q1/-Q2**	7.8740.00400	7.8740.00420	7.8740.00410	7.8740.00420
		3RT2035-1AK60	3RT2037-1AK60	3RT2036-1AK60	3RT2037-1AK60
interference suppressor		7.8740.05150	7.8740.05150	7.8740.05150	7.8740.05150
	Siemens	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00
auxiliary switch	**-Q1**	7.8740.05010	7.8740.05010	7.8740.05010	7.8740.05010
	Siemens	3RH2911-1HA11	3RH2911-1HA11	3RH2911-1HA11	3RH2911-1HA11
contactor	**-Q3**	7.8740.00380	7.8740.00400	7.8740.00400	7.8740.00400
		3RT2027-1AK60	3RT2035-1AK60	3RT2035-1AK60	3RT2035-1AK60
interference suppressor		7.8740.05140	7.8740.05150	7.8740.05150	7.8740.05150
	Siemens	3RT2926-1CC00	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00
contactor	**-Q4**	7.8740.00340	7.8740.00340	7.8740.00340	7.8740.00340
		3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60
interference suppressor		7.8740.05140	7.8740.05140	7.8740.05140	7.8740.05140
	Siemens	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00
overload relay	**-B25**	7.8741.00090	7.8741.00100	7.8741.00090	7.8741.00100
		3RB3036-1UB0 (12-50 A)	3RB3036-1WB0 (20-80 A)	3RB3036-1UB0 (12-50 A)	3RB3036-1WB0 (20-80 A)
		setting: 19 A	setting: 37 A	setting: 33 A	setting: 41 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
	Siemens	setting: 22 A	setting: 41 A	setting: 37 A	setting: 45 A
fuses	**-1FU/-2FU**	7.3313.1	7.3313.1	7.3313.1	7.3313.1
	Gould	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)
fuses	**-3FU**	7.3313.1	7.3313.1	7.3313.1	7.3313.1
	Gould	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)
fuse socket	**-1FU...-3FU**	7.3320.00060	7.3320.00060	7.3320.00060	7.3320.00060
	Wöhner	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH
circuit breaker	**-F4**	7.8742.01150	7.8742.01150	7.8742.01150	7.8742.01150
		3RV2021-1EA10 (2.8-4 A)	3RV2021-1EA10 (2.8-4 A)	3RV2021-1EA10 (2.8-4 A)	3RV2021-1EA10 (2.8-4 A)
		setting: 2.9 A	setting: 2.9 A	setting: 2.9 A	setting: 2.9 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
		setting: 3.2 A	setting: 3.2 A	setting: 3.2 A	setting: 3.2 A
terminal block		7.3140.05090	7.3140.05090	7.3140.05090	7.3140.05090
		3RV2928-1H	3RV2928-1H	3RV2928-1H	3RV2928-1H
auxiliary switch		7.8742.05000	7.8742.05000	7.8742.05000	7.8742.05000
	Siemens	3RV2901-1E	3RV2901-1E	3RV2901-1E	3RV2901-1E
transformer	**-T11**	7.7569.0	7.7569.0	7.7569.0	7.7569.0
		B0601024 (250 VA)	B0601024 (250 VA)	B0601024 (250 VA)	B0601024 (250 VA)
	Block	diagram 1, Sht. 13	diagram 1, Sht. 13	diagram 1, Sht. 13	diagram 1, Sht. 13
power supply	**-T21**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
	Prodrive	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
power supply	**-T22**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
option C40	**Prodrive**	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
connection	**-W13**	7.3140.05270	7.3140.05270	7.3140.05270	7.3140.05270
		3RA2933-3FA00	3RA2933-3FA00	3RA2933-3FA00	3RA2933-3FA00
connection	**-W14**	10 AWG black	7.3140.05270	7.3140.05270	7.3140.05270
		600 V, 90°C	3RA2933-3FA00	3RA2933-3FA00	3RA2933-3FA00
cables	**-W19.1/.2**	10 AWG	6 AWG	6 AWG	4 AWG
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
compressor control	**-K20**	7.7601.0	7.7601.0	7.7601.0	7.7601.0
	Prodrive	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS
IO-module	**-K21**	7.7604.1	7.7604.1	7.7604.1	7.7604.1
	Prodrive	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3
IO-module	**-K22**	7.7602.1	7.7602.1	7.7602.1	7.7602.1
option C40	**Prodrive**	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1
EMERGENCY STOP pushbutton	**-S1**	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV
auxiliary contact	**Schlegel**	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO
controller ventilator	**-M7**	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300
outlet filter	**Rübsamen&Herr**	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300
control panel	**KAESER**	213819.00010	213819.00010	213819.00010	213819.00010

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electrical component parts list
booster compressor
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:

	Datum	Bearbeiter	Geprüft	Norm
c				
b	18.12.2017	Sitter	Büchner	
a				

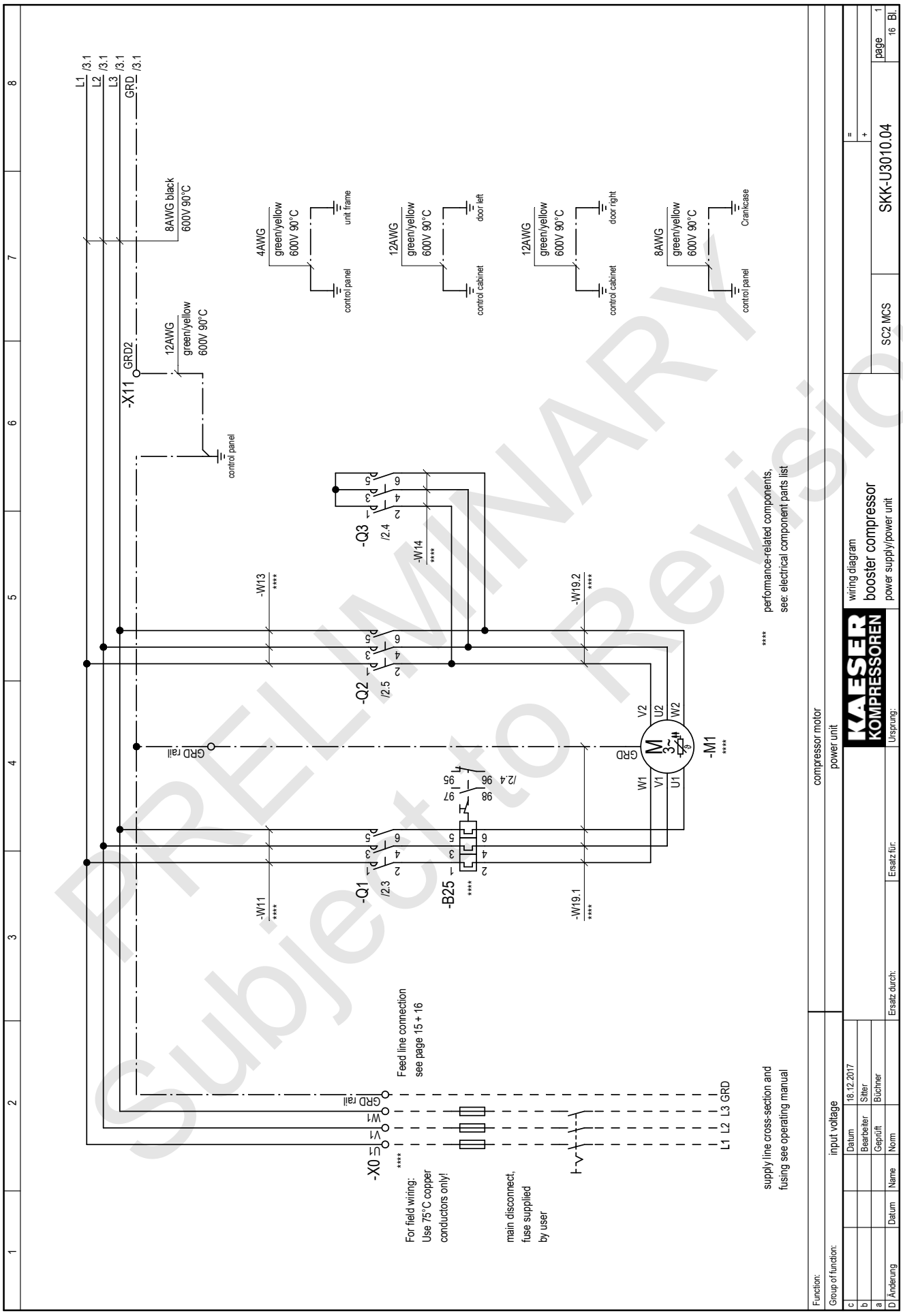
C	Änderung	Datum	Name

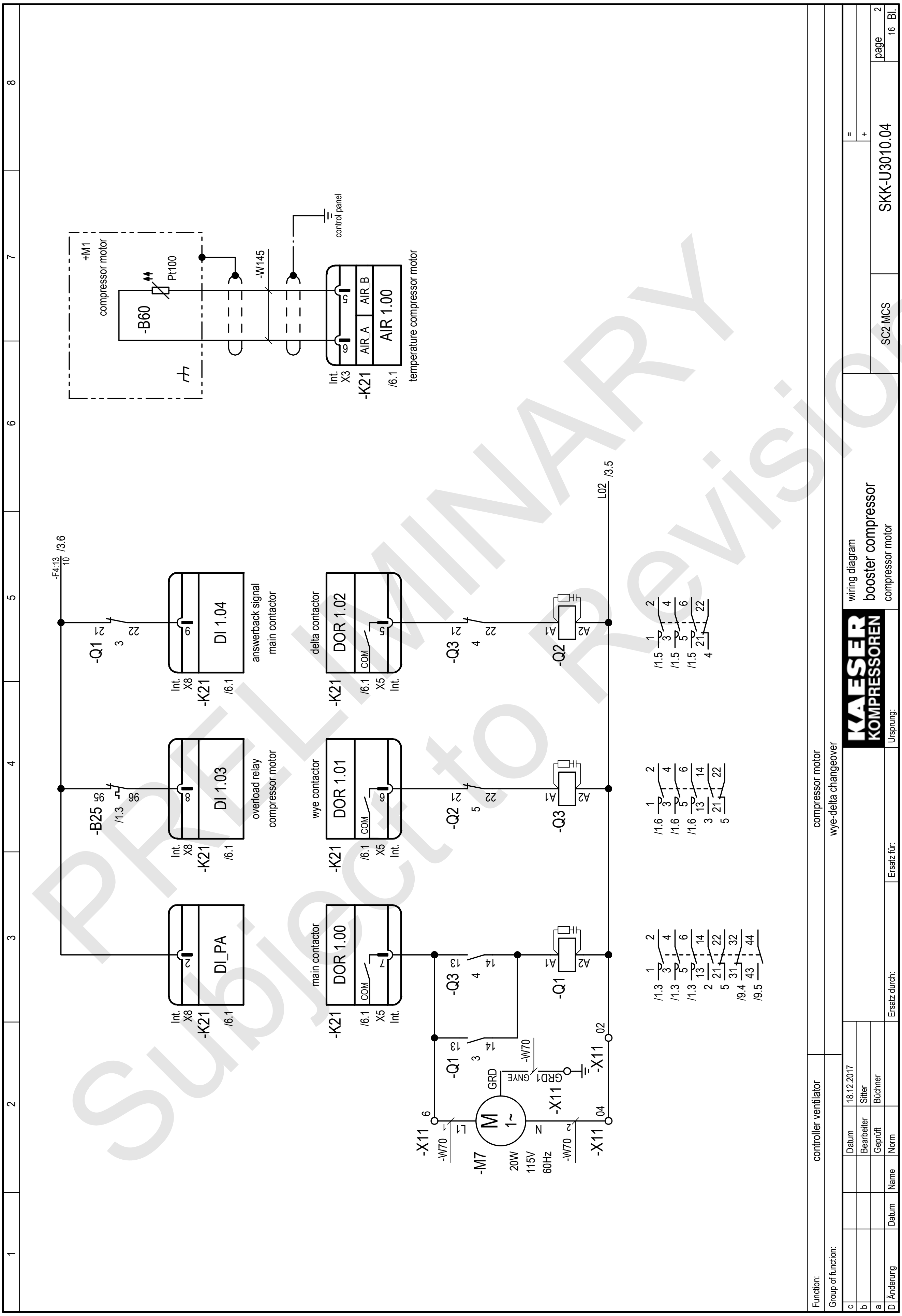
electrical component parts list

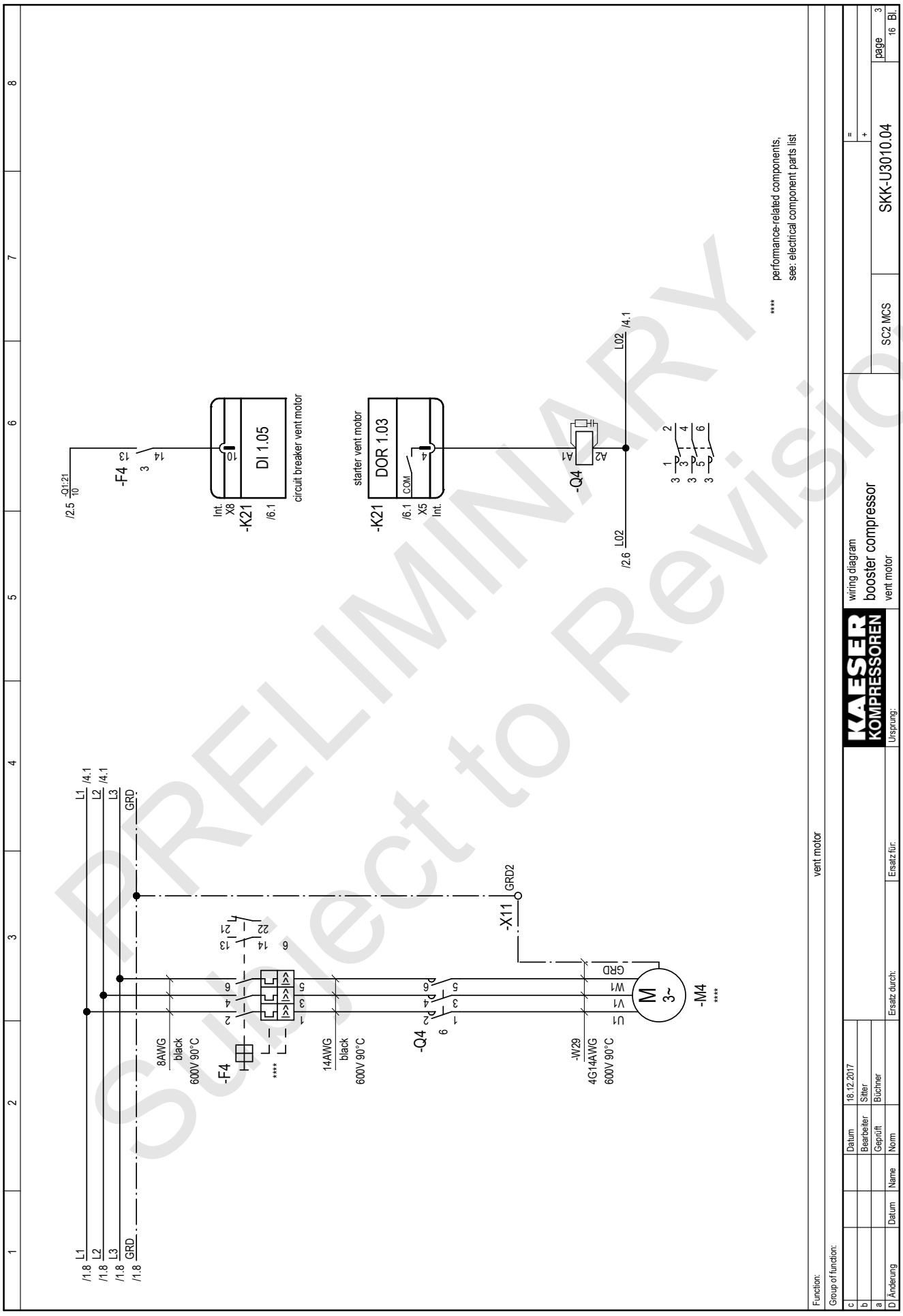
model		DN 22 C	DN 30 C	DN 37 C	DN 45 C
machine power supply		**575 V ±10 %, 60 Hz**	**575 V ±10 %, 60 Hz**	**575 V ±10 %, 60 Hz**	**575 V ±10 %, 60 Hz**
motor	**-M1**	30 hp	40 hp	50 hp	60 hp
motor	**-M4**	2 hp	2 hp	2 hp	2 hp
supply terminals	**-X0:U1/V1/W1**	7.3140.05070	7.3140.05070	7.3140.05070	7.3140.05070
		3RV2935-5E (Siemens)	3RV2935-5E (Siemens)	3RV2935-5E (Siemens)	3RV2935-5E (Siemens)
	Torque	53 lb-in	53 lb-in	53 lb-in	53 lb-in
	Stripped length	25 mm	25 mm	25 mm	25 mm
GRD rail	**PE**	7.3605.00020	7.3605.00010	7.3605.00010	7.3605.00010
		01284 (Wöhner)	01287 (Wöhner)	01287 (Wöhner)	01287 (Wöhner)
	Torque	36 lb-in	89 lb-in	89 lb-in	89 lb-in
	Stripped length	20 mm	30 mm	30 mm	30 mm
supply	**connection**	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15	fig. 10+ 11, Sht. 15
terminal strip	**-X11/-X12**	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland	7.7113.00100 Wieland
	Handling	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14	fig. 1, Sht. 14
contactor	**-Q1/-Q2**	7.8740.00400	7.8740.00410	7.8740.00410	7.8740.00410
		3RT2035-1AK60	3RT2036-1AK60	3RT2036-1AK60	3RT2036-1AK60
interference suppressor		7.8740.05150	7.8740.05150	7.8740.05150	7.8740.05150
	Siemens	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00
auxiliary switch	**-Q1**	7.8740.05010	7.8740.05010	7.8740.05010	7.8740.05010
	Siemens	3RH2911-1HA11	3RH2911-1HA11	3RH2911-1HA11	3RH2911-1HA11
contactor	**-Q3**	7.8740.00380	7.8740.00400	7.8740.00400	7.8740.00400
		3RT2027-1AK60	3RT2035-1AK60	3RT2035-1AK60	3RT2035-1AK60
interference suppressor		7.8740.05140	7.8740.05150	7.8740.05150	7.8740.05150
	Siemens	3RT2926-1CC00	3RT2936-1CC00	3RT2936-1CC00	3RT2936-1CC00
contactor	**-Q4**	7.8740.00340	7.8740.00340	7.8740.00340	7.8740.00340
		3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60	3RT2023-1AK60
interference suppressor		7.8740.05140	7.8740.05140	7.8740.05140	7.8740.05140
	Siemens	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00	3RT2926-1CC00
overload relay	**-B25**	7.8741.00090	7.8741.00090	7.8741.00090	7.8741.00090
		3RB3036-1UB0 (12-50 A)	3RB3036-1UB0 (12-50 A)	3RB3036-1UB0 (12-50 A)	3RB3036-1UB0 (12-50 A)
		setting: 16 A	setting: 29 A	setting: 26 A	setting: 32 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
	Siemens	setting: 18 A	setting: 32 A	setting: 30 A	setting: 36 A
fuses	**-1FU/-2FU**	7.3316.1	7.3316.1	7.3316.1	7.3316.1
	Gould	ATQR 1 1/2 (1.5 A, 600 V)	ATQR 1 1/2 (1.5 A, 600 V)	ATQR 1 1/2 (1.5 A, 600 V)	ATQR 1 1/2 (1.5 A, 600 V)
fuses	**-3FU**	7.3313.1	7.3313.1	7.3313.1	7.3313.1
	Gould	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)	ATQR 2 1/2 (2.5 A, 600 V)
fuse socket	**-1FU...-3FU**	7.3320.00060	7.3320.00060	7.3320.00060	7.3320.00060
	Wöhner	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH	AMBUS EASYSWITCH
circuit breaker	**-F4**	7.8742.01140	7.8742.01140	7.8742.01140	7.8742.01140
		3RV2021-1DA10 (2.2-3.2 A)	3RV2021-1DA10 (2.2-3.2 A)	3RV2021-1DA10 (2.2-3.2 A)	3RV2021-1DA10 (2.2-3.2 A)
		setting: 2.3 A	setting: 2.3 A	setting: 2.3 A	setting: 2.3 A
		NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental	NEC 430.32(C) incremental
		setting: 2.6 A	setting: 2.6 A	setting: 2.6 A	setting: 2.6 A
terminal block		7.3140.05090	7.3140.05090	7.3140.05090	7.3140.05090
		3RV2928-1H	3RV2928-1H	3RV2928-1H	3RV2928-1H
auxiliary switch		7.8742.05000	7.8742.05000	7.8742.05000	7.8742.05000
	Siemens	3RV2901-1E	3RV2901-1E	3RV2901-1E	3RV2901-1E
transformer	**-T11**	7.2239.20080	7.2239.20080	7.2239.20080	7.2239.20080
		USTE250 (250 VA)	USTE250 (250 VA)	USTE250 (250 VA)	USTE250 (250 VA)
	Block	diagram 2, Sht. 13	diagram 2, Sht. 13	diagram 2, Sht. 13	diagram 2, Sht. 13
power supply	**-T21**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
	Prodrive	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
power supply	**-T22**	7.7605P0	7.7605P0	7.7605P0	7.7605P0
option C40	**Prodrive**	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5	PSDC24/2.5
connection	**-W13**	7.3140.05270	7.3140.05270	7.3140.05270	7.3140.05270
		3RA2933-3FA00	3RA2933-3FA00	3RA2933-3FA00	3RA2933-3FA00
connection	**-W14**	10 AWG black	7.3140.05270	7.3140.05270	7.3140.05270
		600 V, 90°C	3RA2933-3FA00	3RA2933-3FA00	3RA2933-3FA00
cables	**-W19.1/.2**	10 AWG	6 AWG	6 AWG	6 AWG
		600 V, 90°C	600 V, 90°C	600 V, 90°C	600 V, 90°C
compressor control	**-K20**	7.7601.0	7.7601.0	7.7601.0	7.7601.0
	Prodrive	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS	SIGMA CONTROL 2 MCS
IO-module	**-K21**	7.7604.1	7.7604.1	7.7604.1	7.7604.1
	Prodrive	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3	SIGMA CONTROL 2 IOM-3
IO-module	**-K22**	7.7602.1	7.7602.1	7.7602.1	7.7602.1
option C40	**Prodrive**	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1	SIGMA CONTROL 2 IOM-1
EMERGENCY STOP pushbutton	**-S1**	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV
auxiliary contact	**Schlegel**	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO
controller ventilator	**-M7**	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300	7.3146.00660 / LV300
outlet filter	**Rübsamen&Herr**	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300	7.2752.00010 / GV300
control panel	**KAESER**	213819.00010	213819.00010	213819.00010	213819.00010

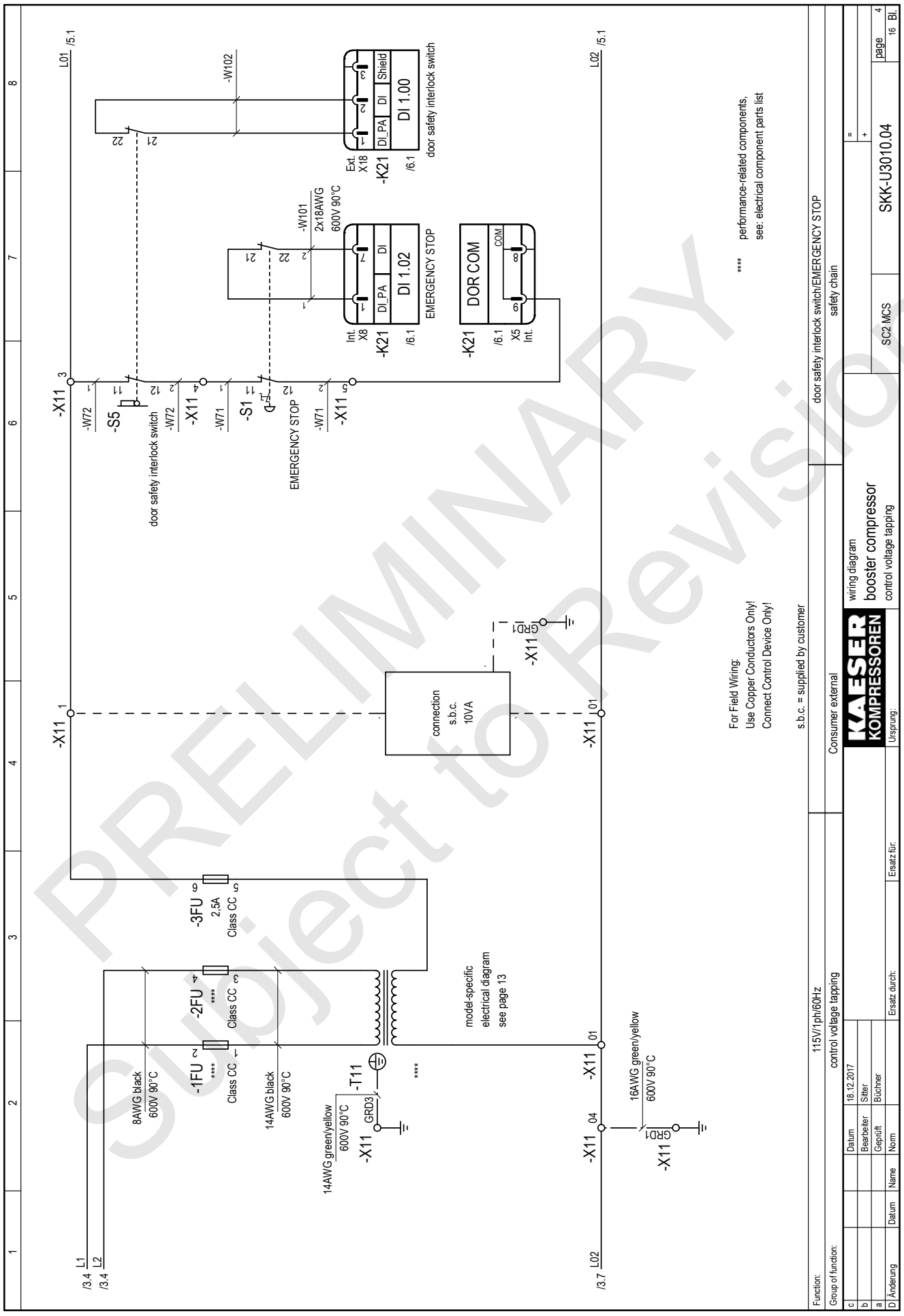
= + page 7 Bl. 7
UKK-U3010.04
SC2 MCS
electrical component parts list
booster compressor
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:

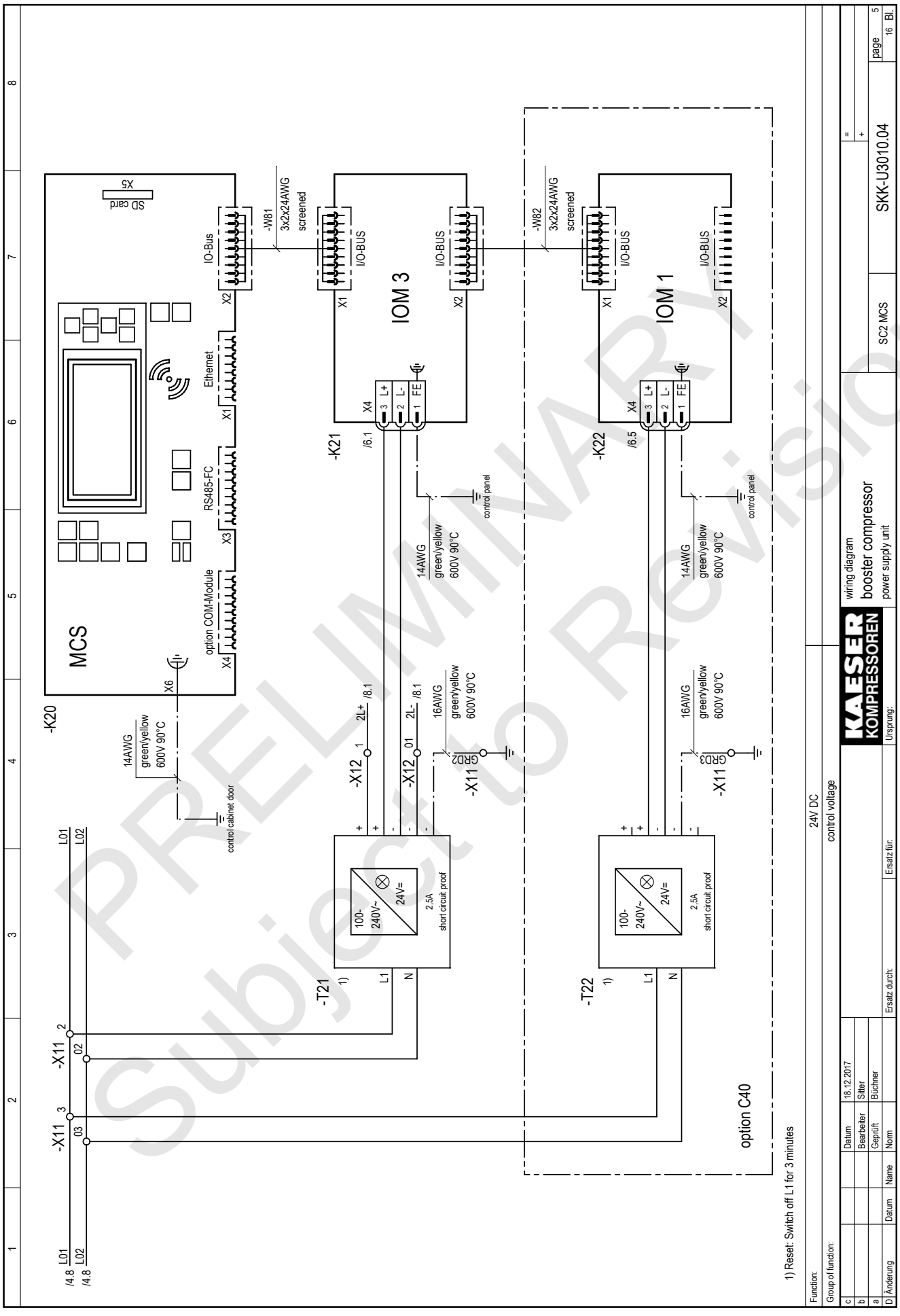
	Datum	Name
c		
b	18.12.2017	
a	Bearbeiter: Sitter	
C Änderung	Geprüft: Büchner	Datum
	Norm	

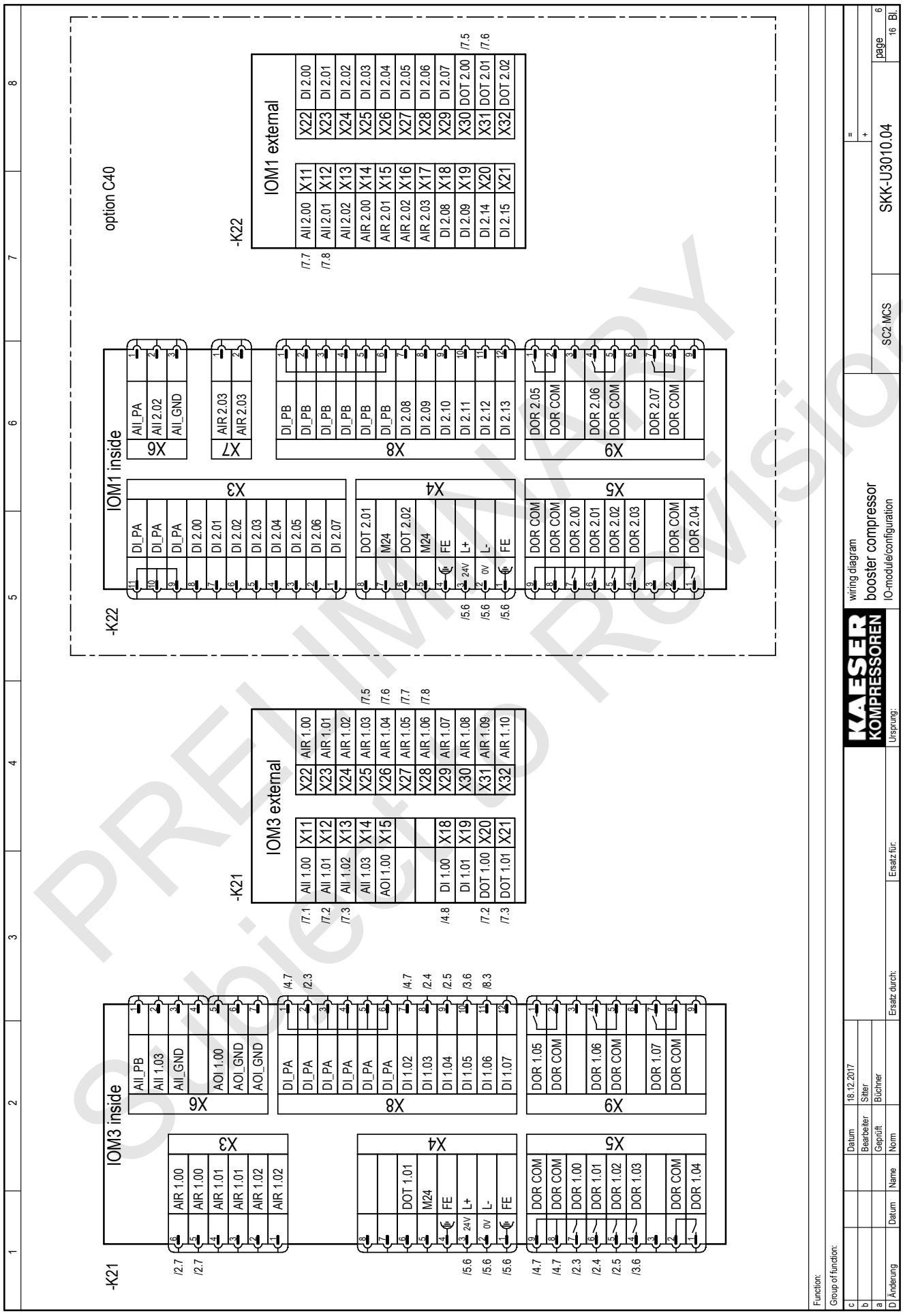


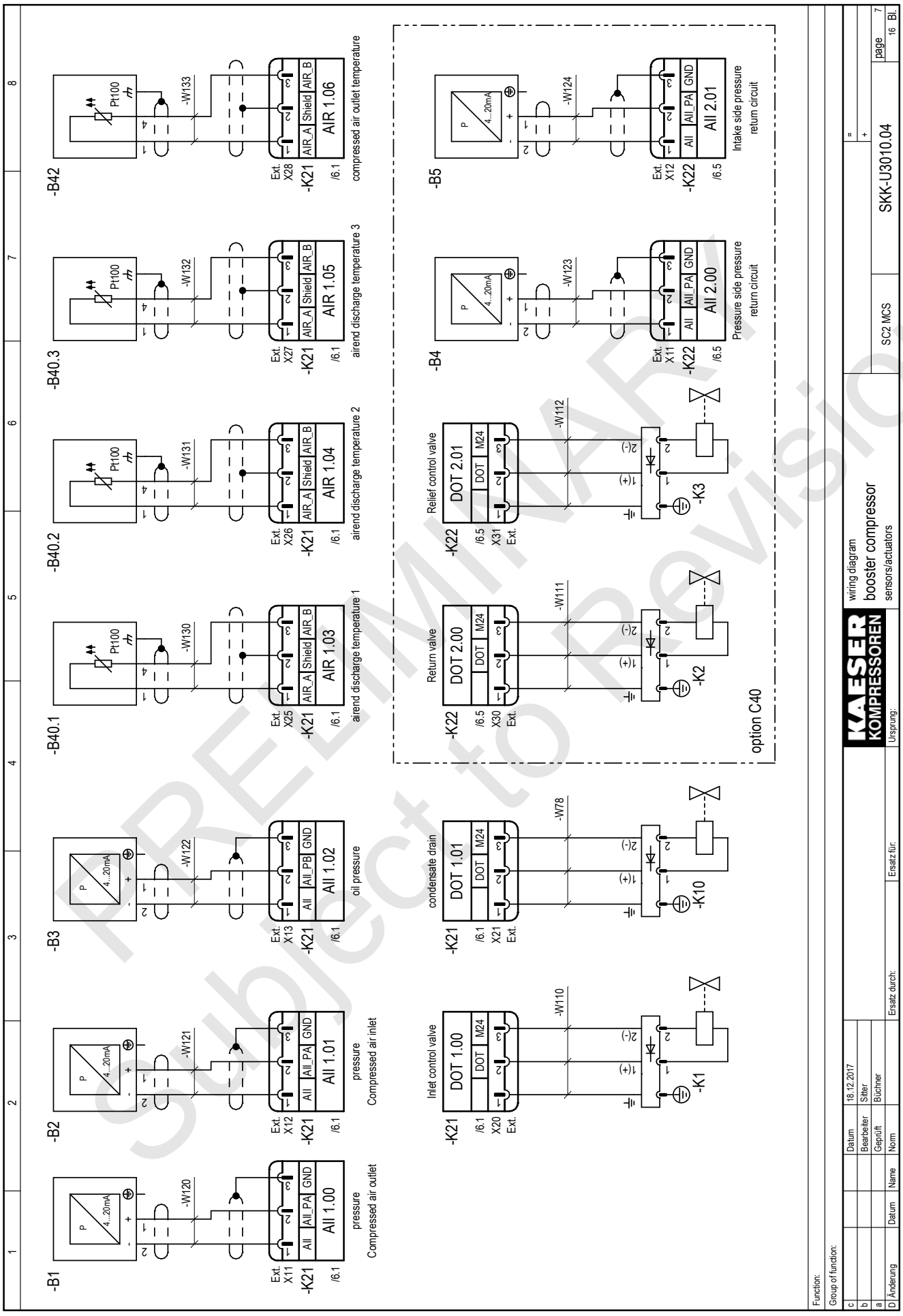

compressor motor
+M1
-B60
Pt100
-W145
control panel
-K21
AIR 1.00
temperature compressor motor
DI 1.04
answerback signal main contactor
DOR 1.02
delta contactor
DI 1.03
overload relay compressor motor
DOR 1.01
wye contactor
DI_PA
DOR 1.00
main contactor
-M7
20W
115V
60Hz
controller ventilator
compressor motor
wye-delta changeover
wiring diagram
booster compressor
compressor motor
SKK-U3010.04
SC2 MCS
18.12.2017
Sitter
Büchner

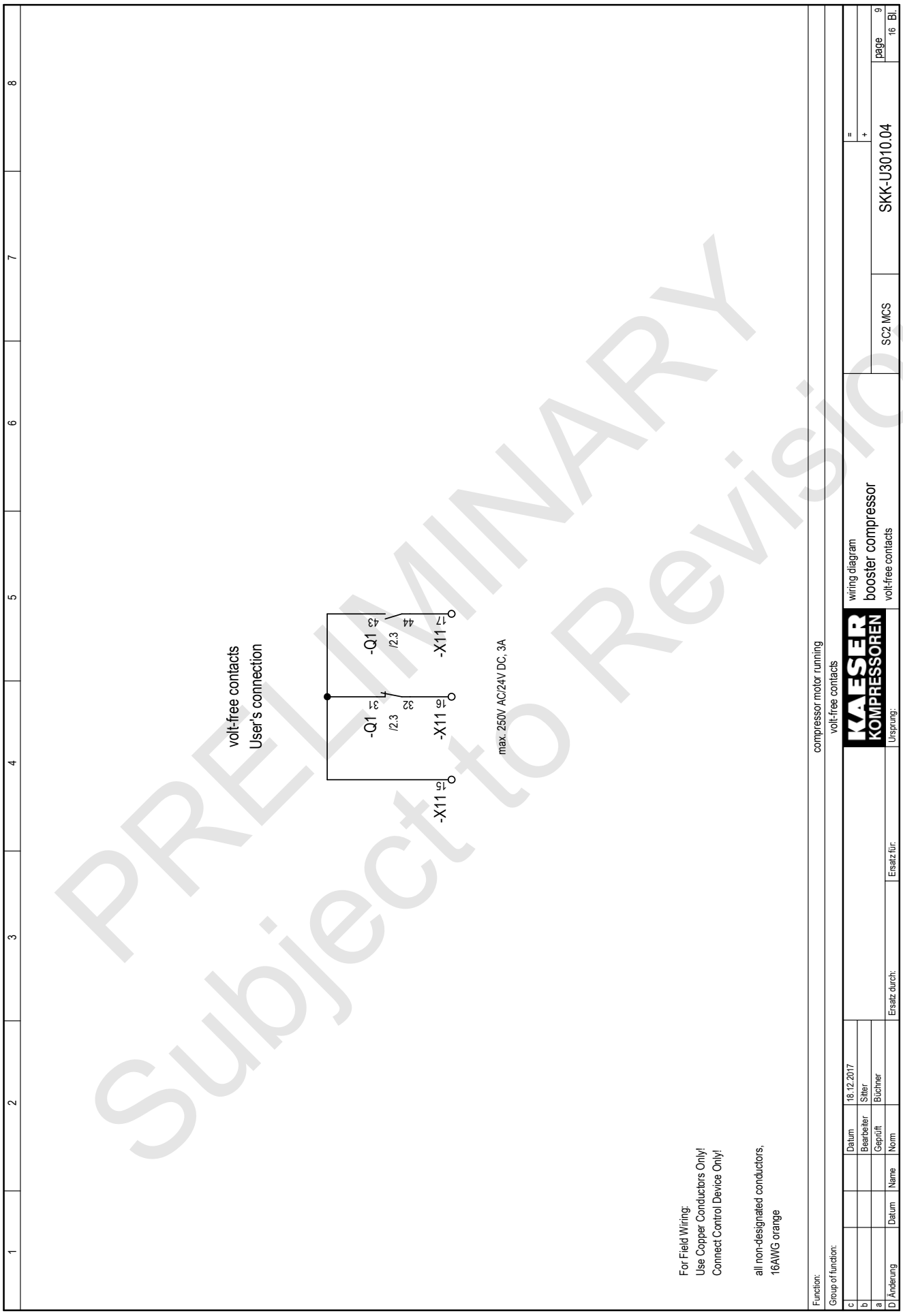

vent motor
wiring diagram
booster compressor
vent motor
SC2 MCS
SKK-U3010.04
page 3
16 Bl.
KAESER KOMPRESSOREN
Function:
Group of function:
Datum 18.12.2017
Bearbeiter Sitter
Geprüft Büchner
Norm
Name
Datum
Änderung
Ersatz durch:
Ersatz für:
Ursprung:
performance-related components,
see: electrical component parts list
-F4
-K21
DI 1.05
circuit breaker vent motor
starter vent motor
DOR 1.03
-Q4
-X11
GRD2
-M4
-W29
8AWG
14AWG
4G14AWG
black
600V 90°C
L1
L2
L3
GRD
PRELIMINARY
Subject to Revision

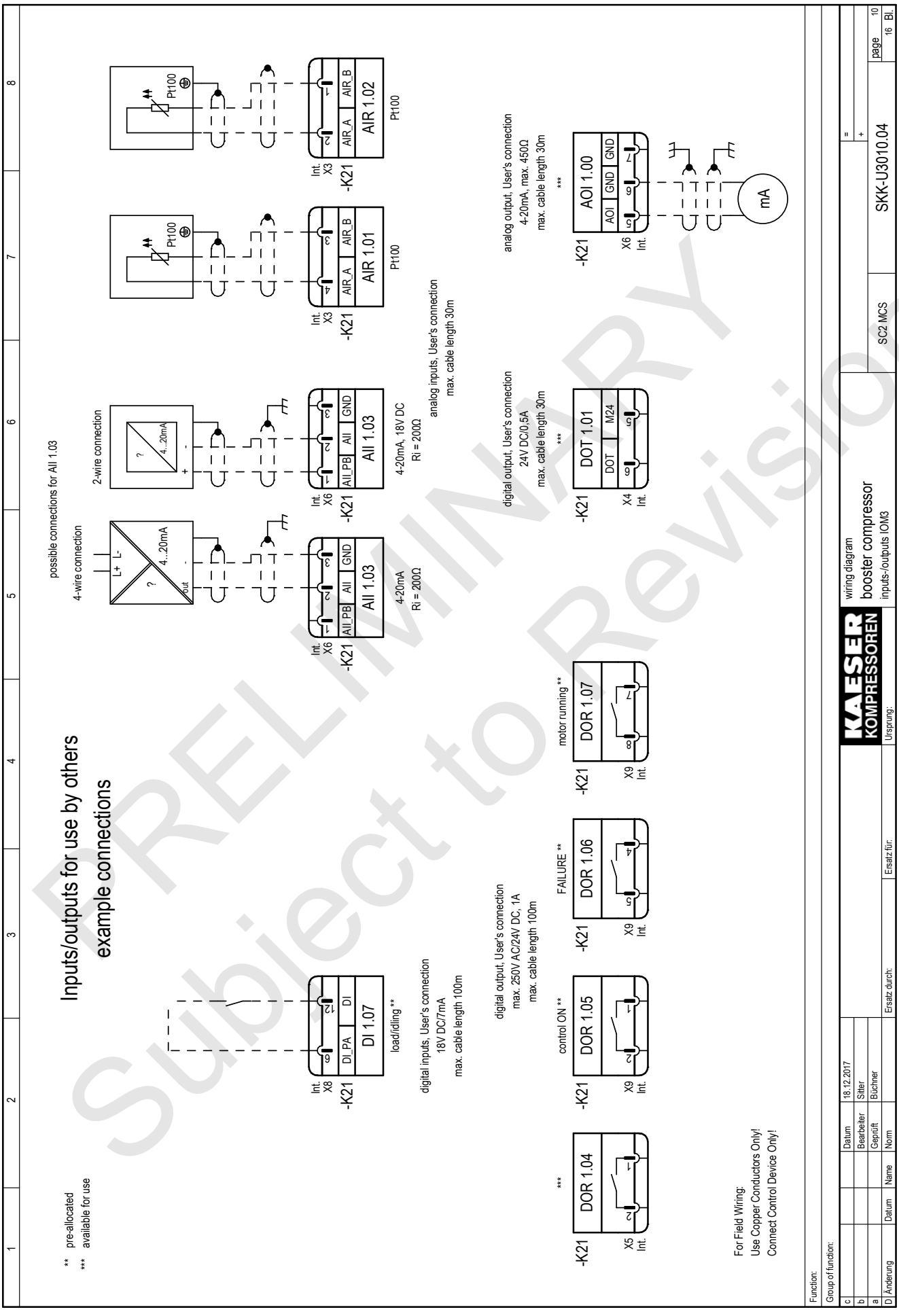


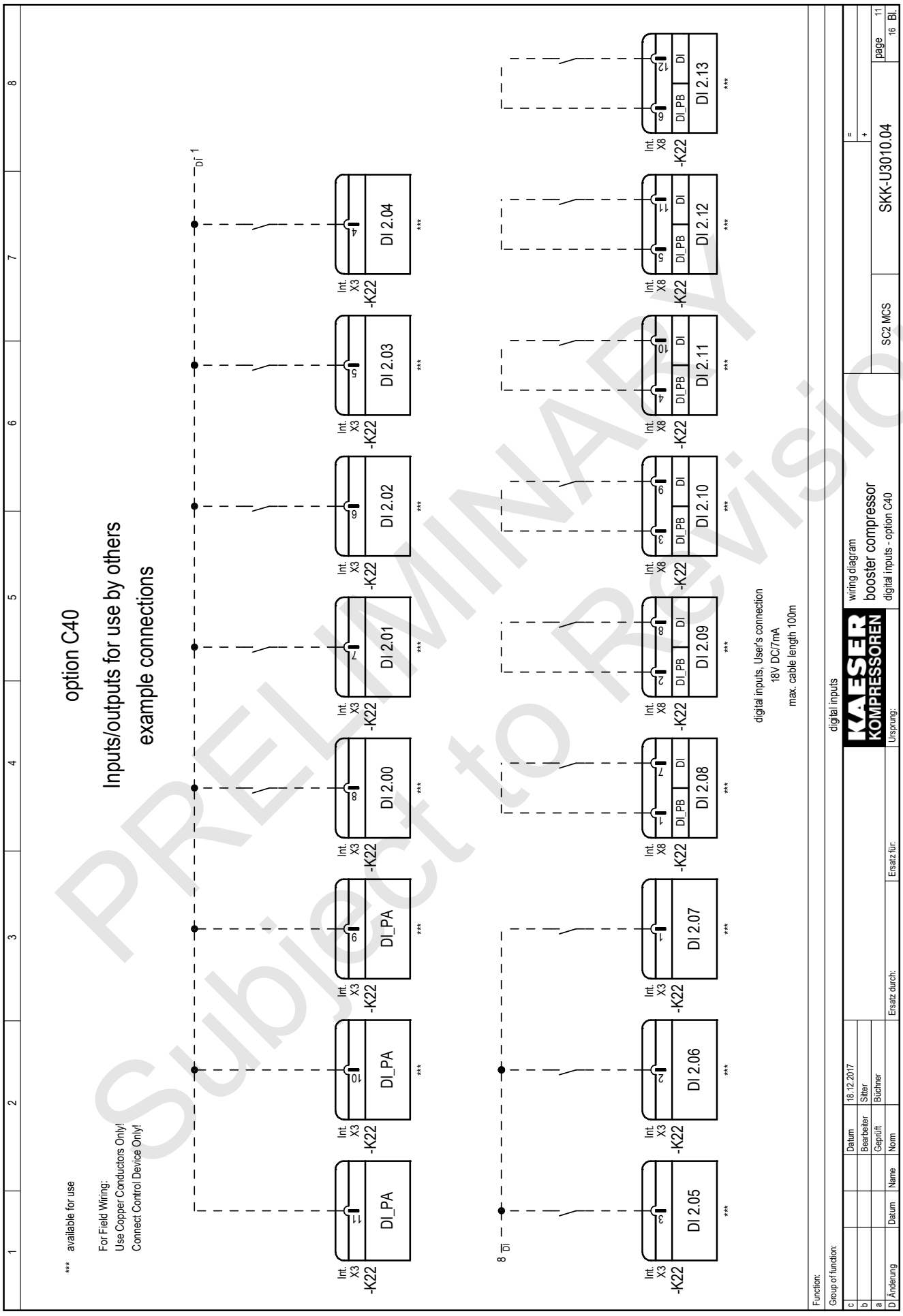


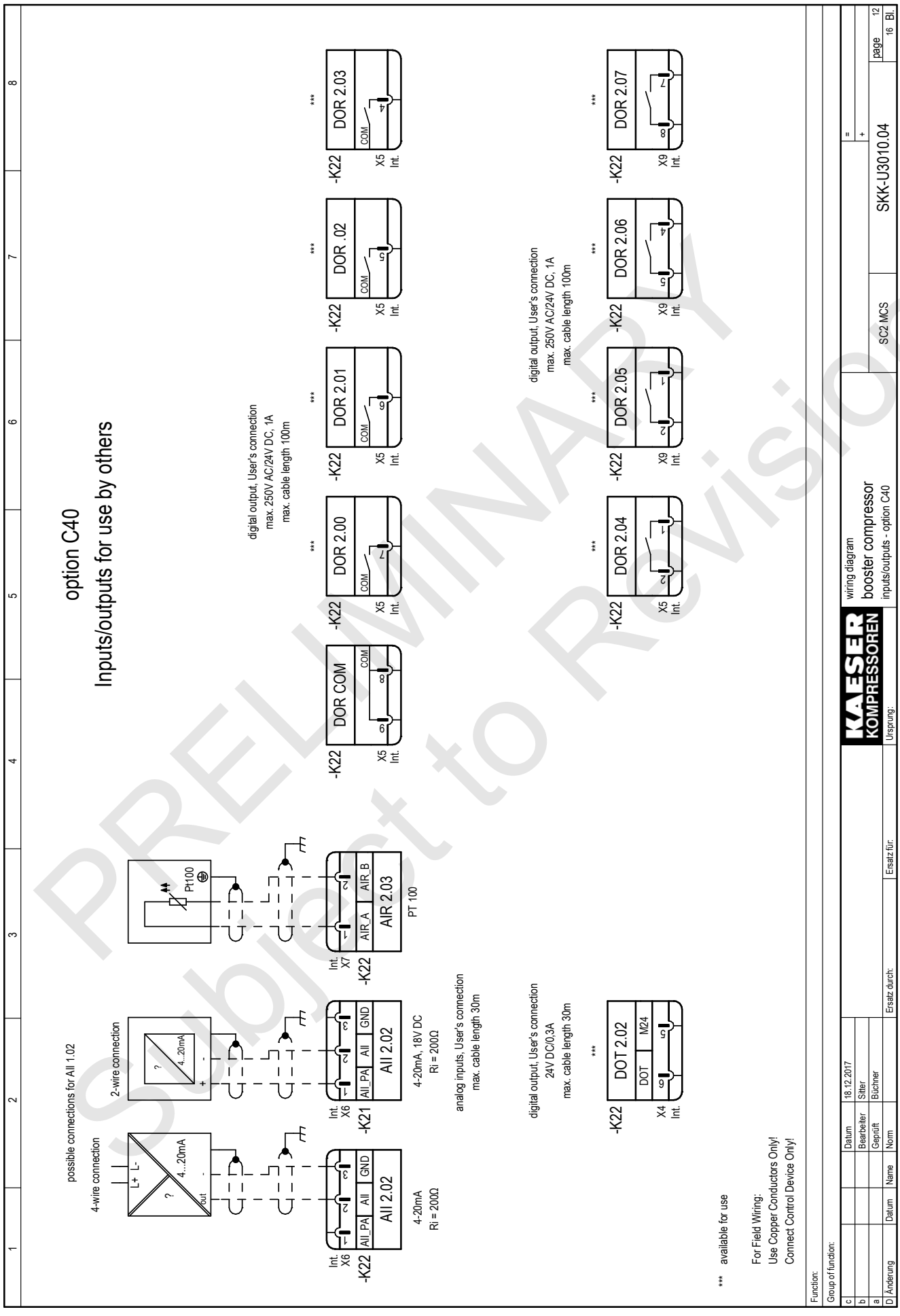


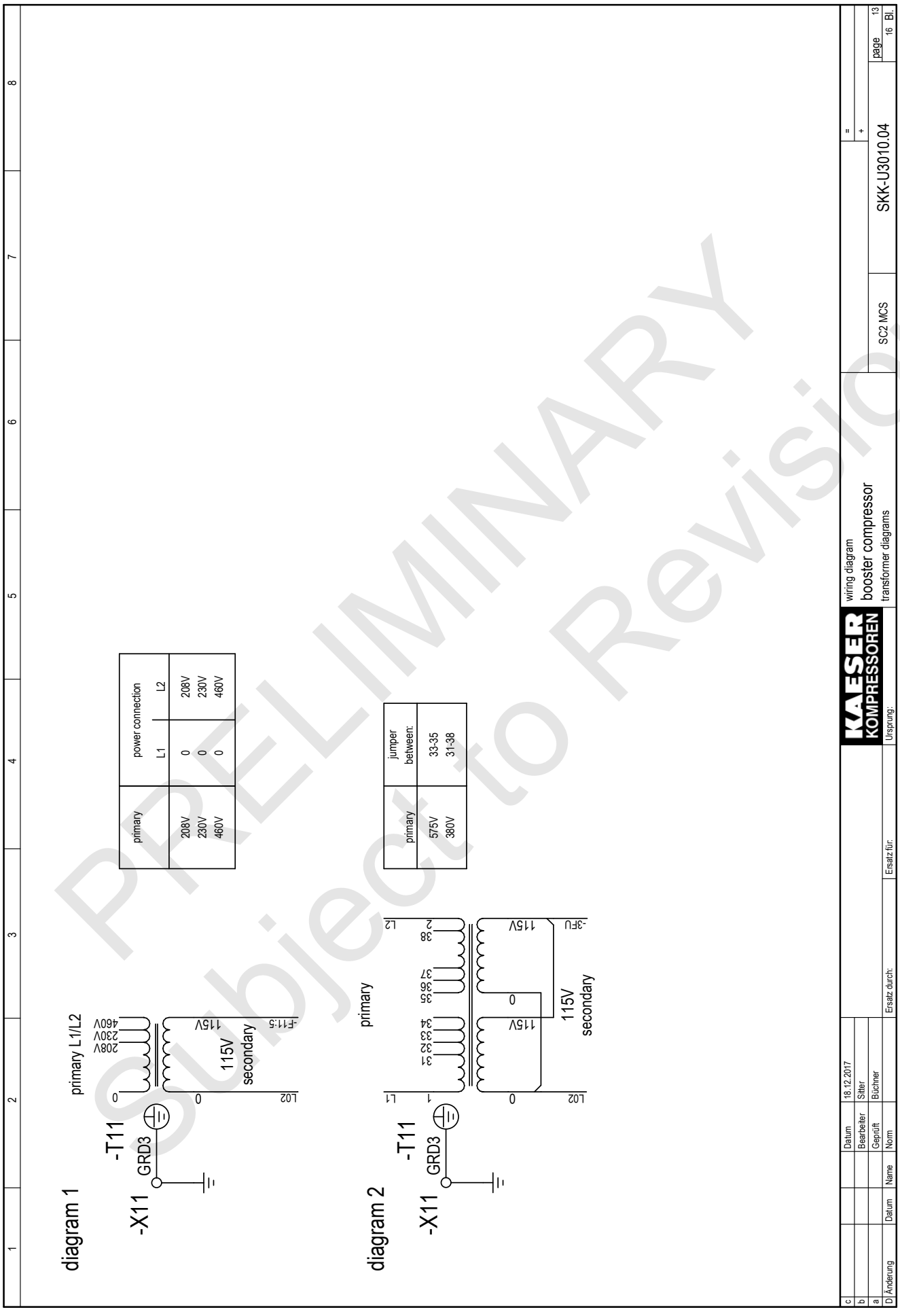









option C40
Inputs/outputs for use by others
possible connections for AII 1.02
4-wire connection
2-wire connection
4...20mA
Pt100
AII 2.02
AIR 2.03
DOT 2.02
DOR COM
DOR 2.00
DOR 2.01
DOR .02
DOR 2.03
DOR 2.04
DOR 2.05
DOR 2.06
DOR 2.07
digital output, User's connection
max. 250V AC/24V DC, 1A
max. cable length 100m
digital output, User's connection
24V DC/0,3A
max. cable length 30m
4-20mA, 18V DC
Ri = 200Ω
analog inputs, User's connection
max. cable length 30m
PT 100
*** available for use
For Field Wiring:
Use Copper Conductors Only!
Connect Control Device Only!
KAESER KOMPRESSOREN
wiring diagram
booster compressor
inputs/outputs - option C40
SC2 MCS
SKK-U3010.04
page 12
16 Bl.
PRELIMINARY
Subject to Revision



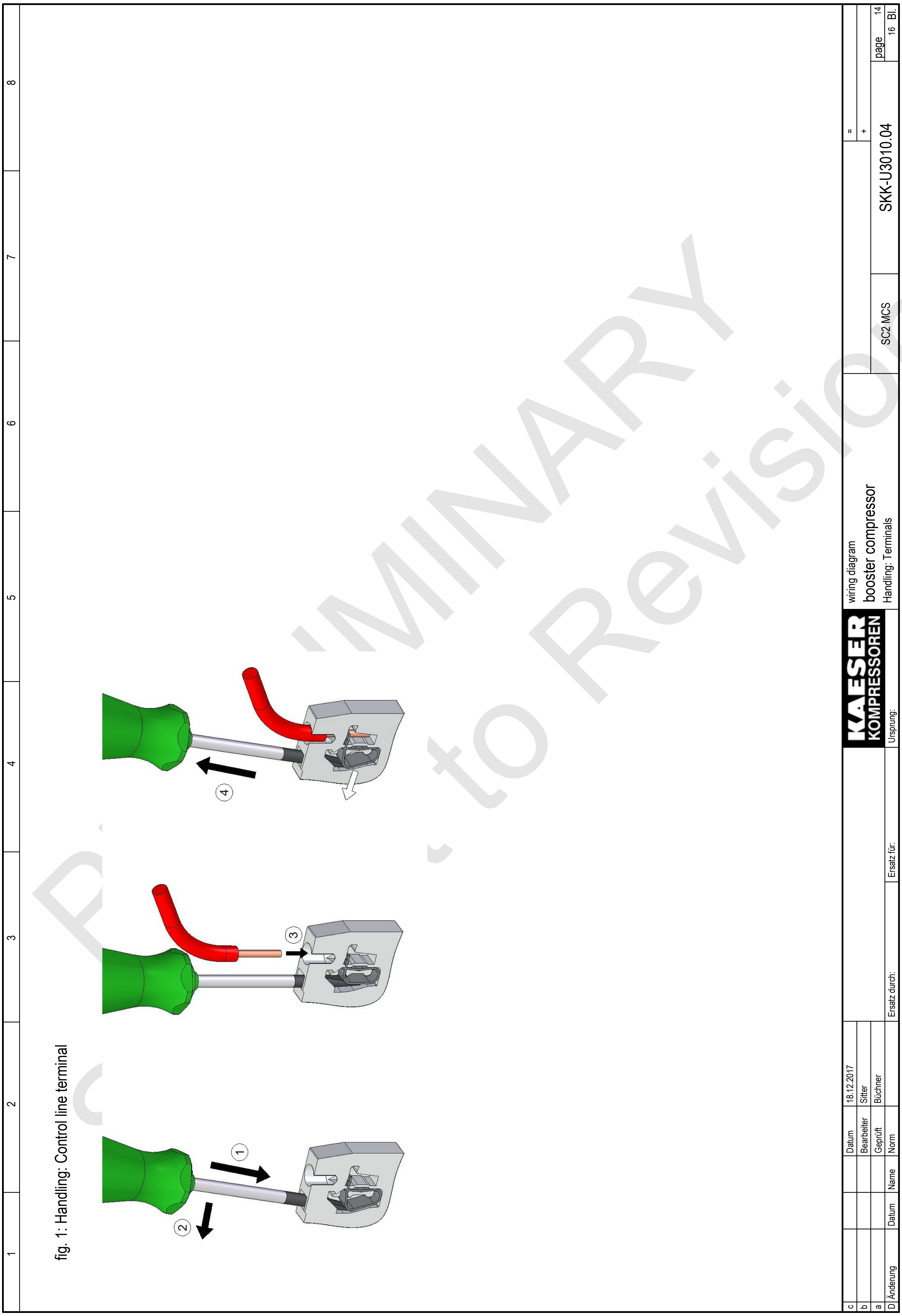


fig. 1: Handling: Control line terminal
1
2
3
4
wiring diagram
booster compressor
Handling: Terminals
KAESER KOMPRESSOREN
SC2 MCS
SKK-U3010.04
=
+
page 14
16 Bl.
Datum 18.12.2017
Bearbeiter Sitter
Geprüft Büchner
Norm
Ursprung:
Ersatz für:
Ersatz durch:
Änderung
Datum
Name

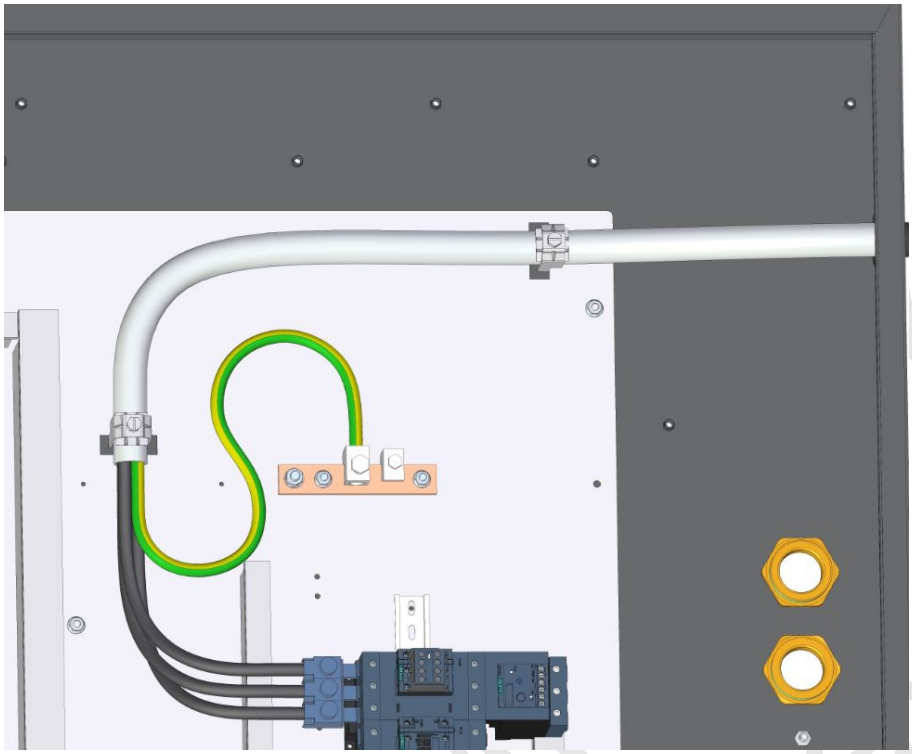


fig. 11: Feed line connection

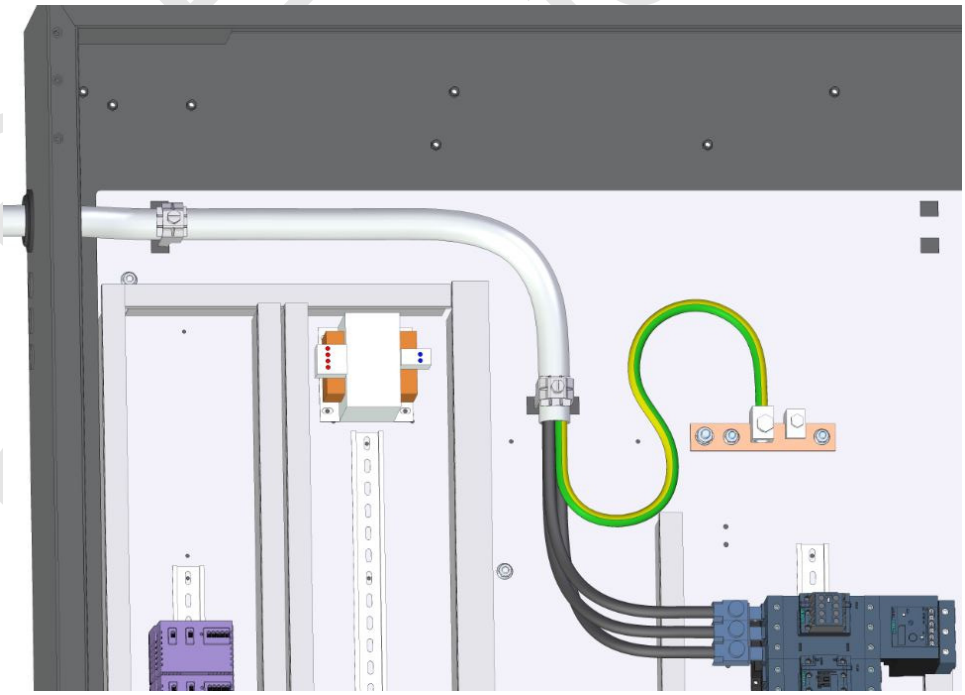


fig. 10: Feed line connection

wiring diagram
booster compressor
Feed line connection
SC2 MCS
SKK-U3010.04
page 15
16 Bl.

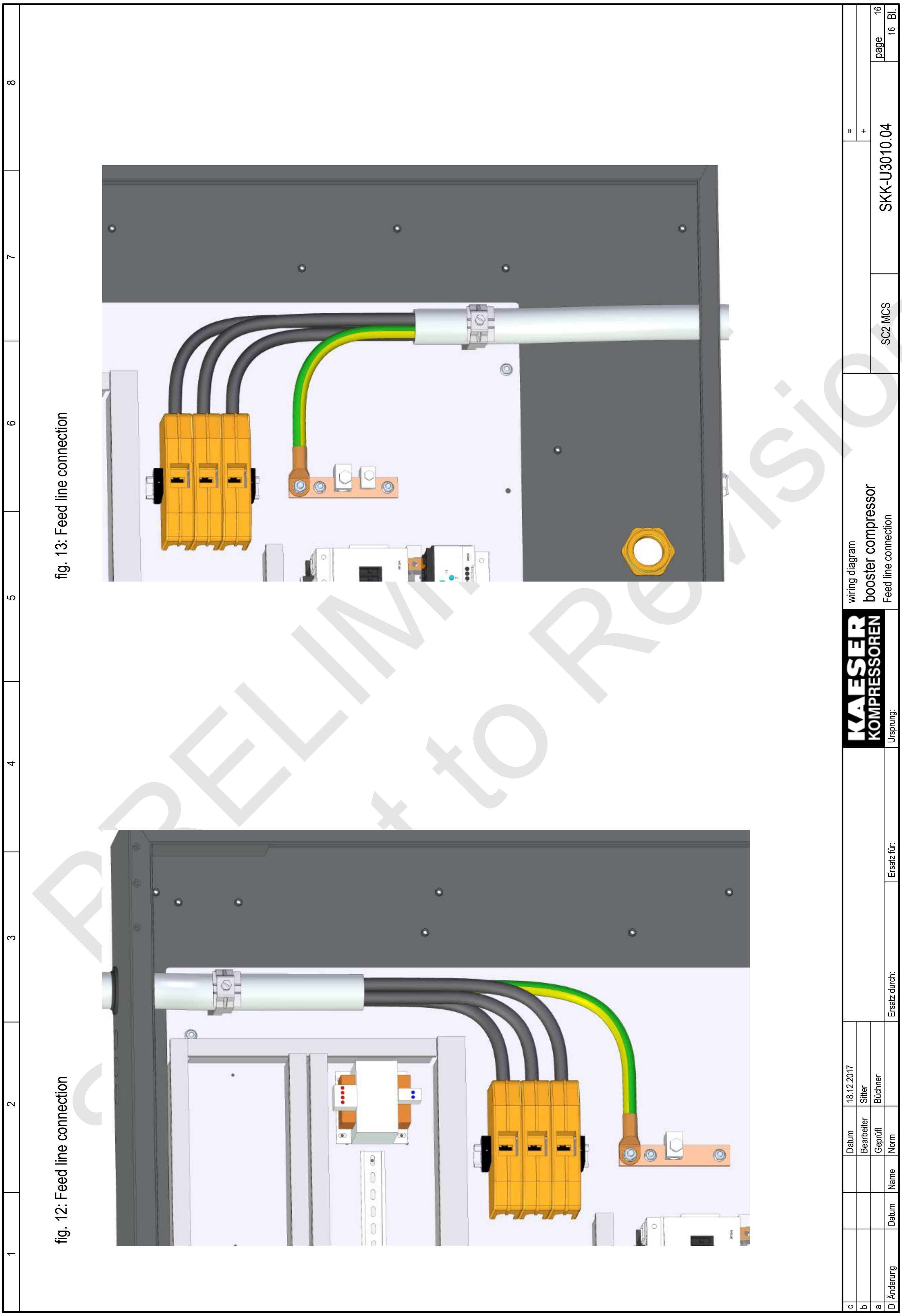
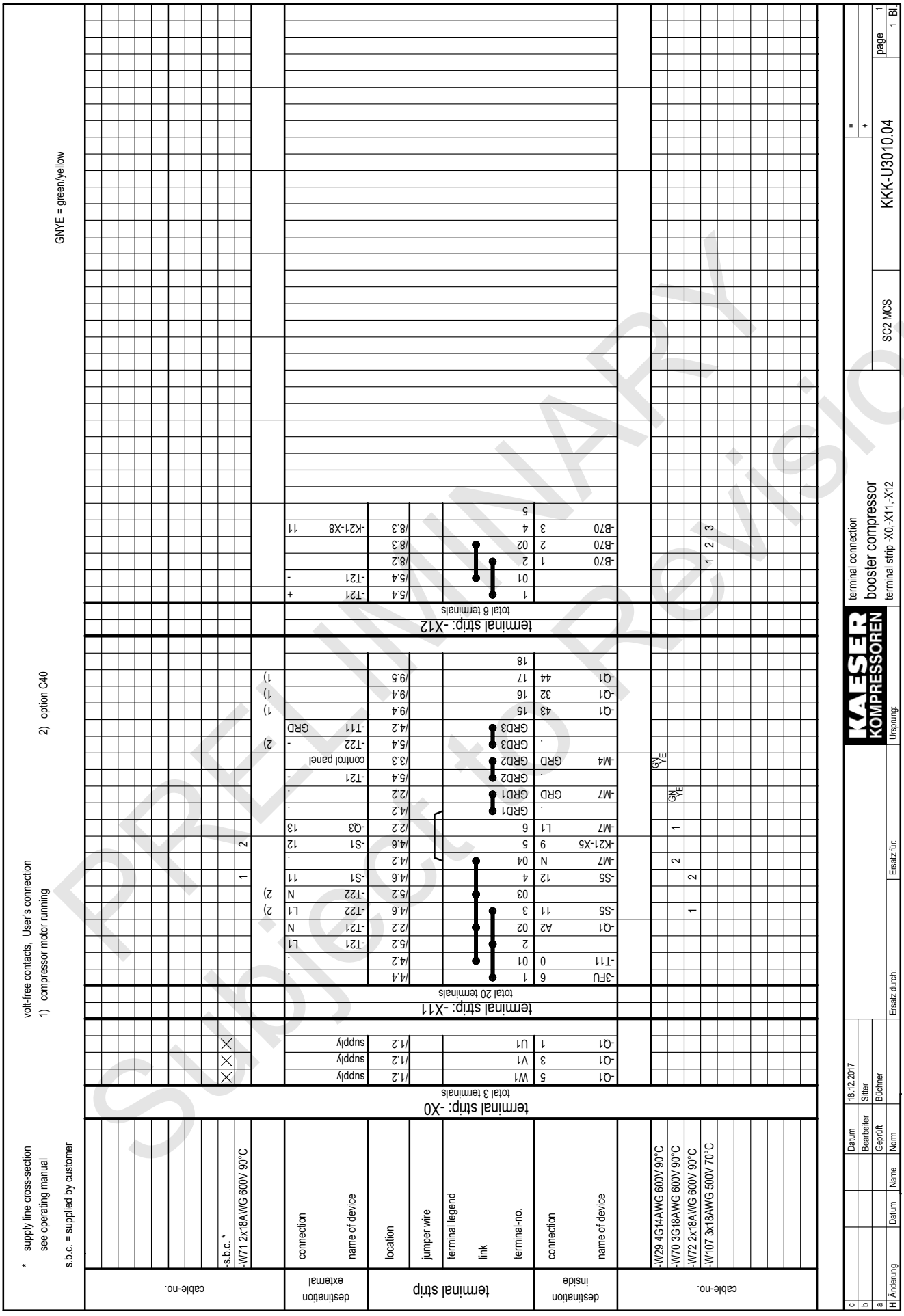
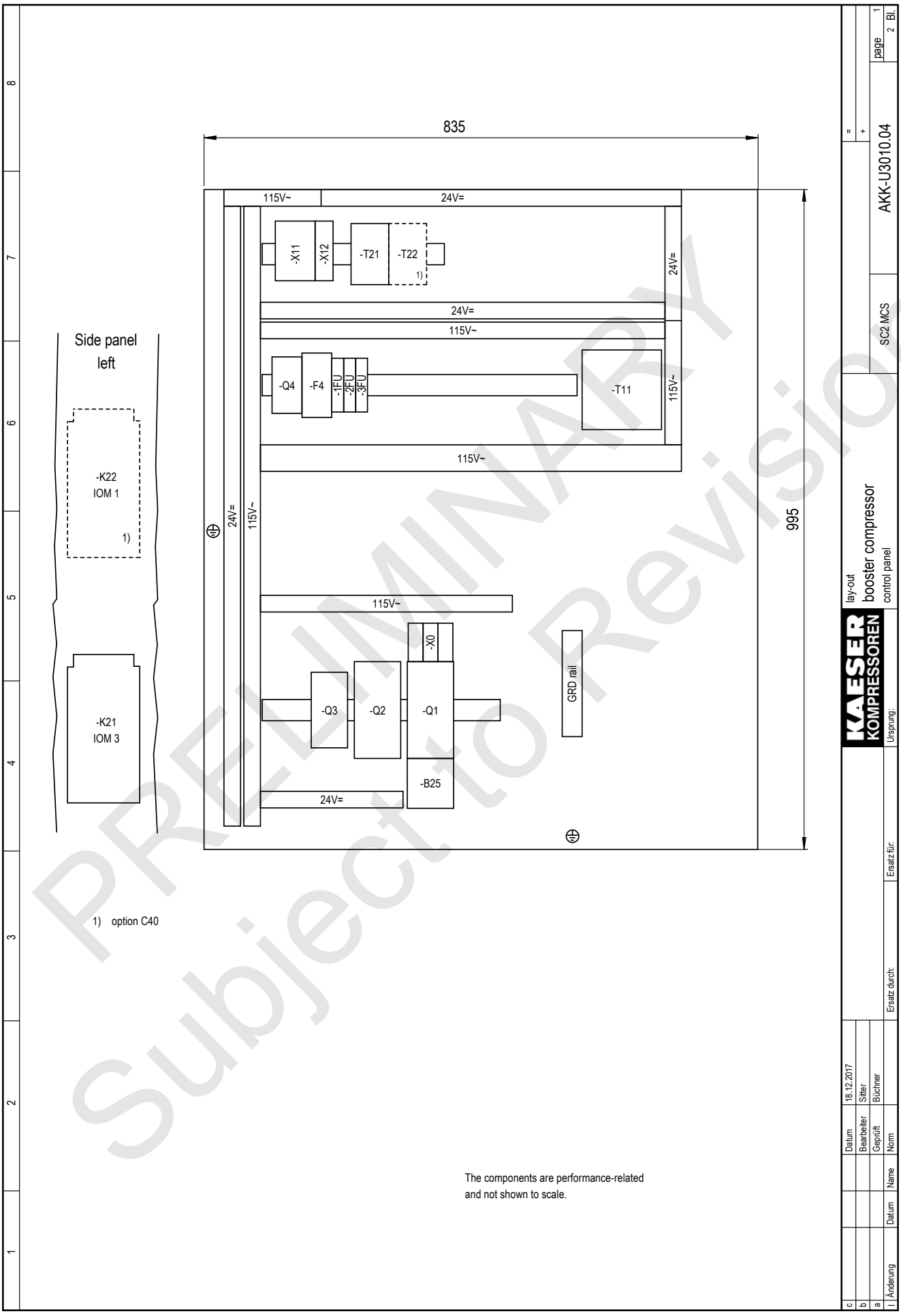
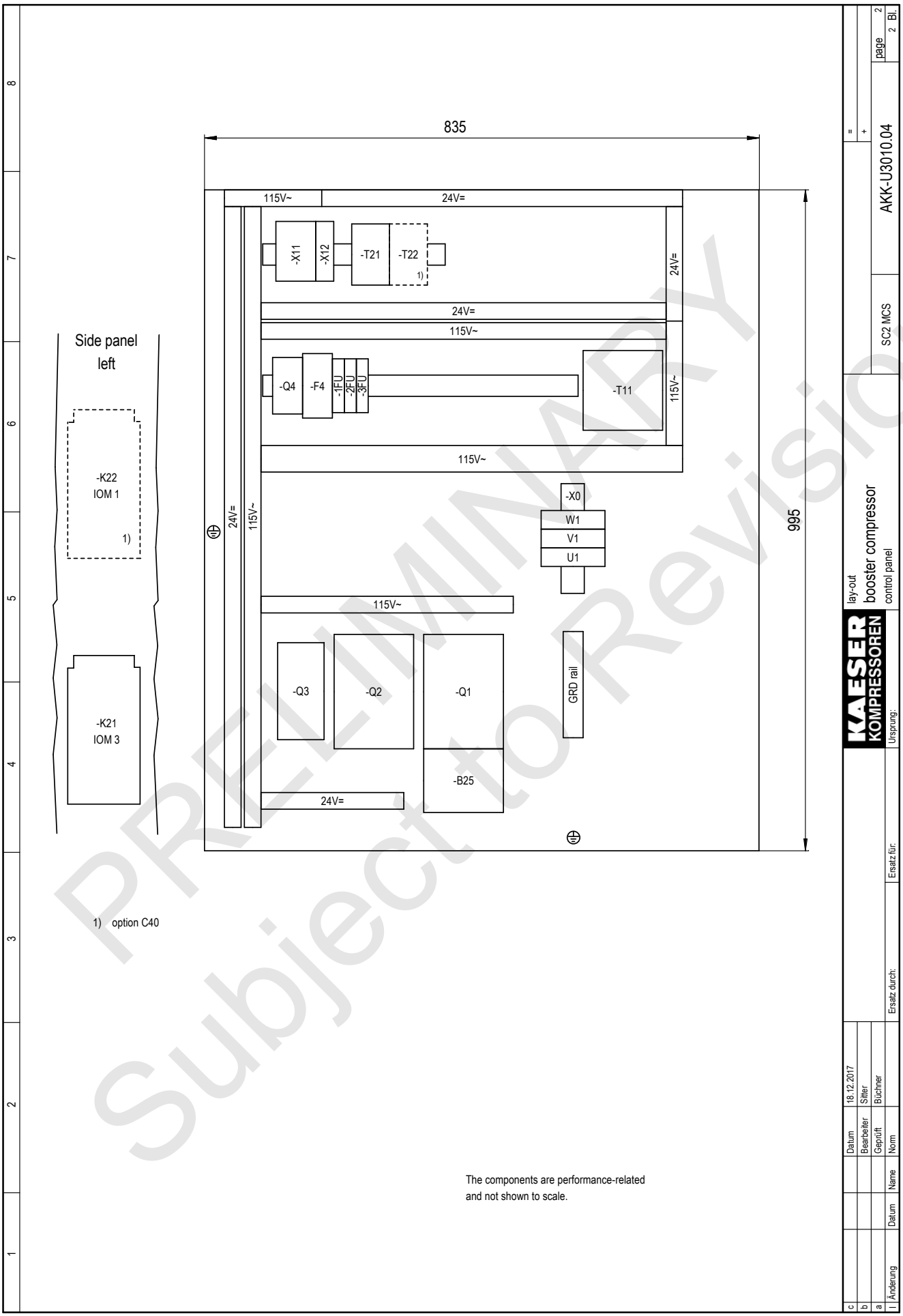


fig. 12: Feed line connection
fig. 13: Feed line connection
wiring diagram
booster compressor
Feed line connection
SC2 MCS
SKK-U3010.04
page 16
16 Bl.
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:
Datum 18.12.2017
Bearbeiter Sitter
Geprüft Büchner
Norm
Änderung
Datum
Name




835
995
115V~
24V=
-X11
-X12
-T21
-T22
1)
24V=
24V=
115V~
-Q4
-F4
-1FU
-2FU
-3FU
-T11
115V~
115V~
24V=
115V~
115V~
-X0
-Q3
-Q2
-Q1
GRD rail
-B25
24V=
Side panel
left
-K22
IOM 1
1)
-K21
IOM 3
1) option C40
The components are performance-related
and not shown to scale.
KAESER KOMPRESSOREN
lay-out
booster compressor
control panel
AKK-U3010.04
SC2 MCS
page 1
2 Bl.
Ursprung:
Ersatz für:
Ersatz durch:
Datum 18.12.2017
Bearbeiter Sitter
Geprüft Büchner
Norm
Name
Datum
Änderung
a
b
c
PRELIMINARY
Subject to Revision

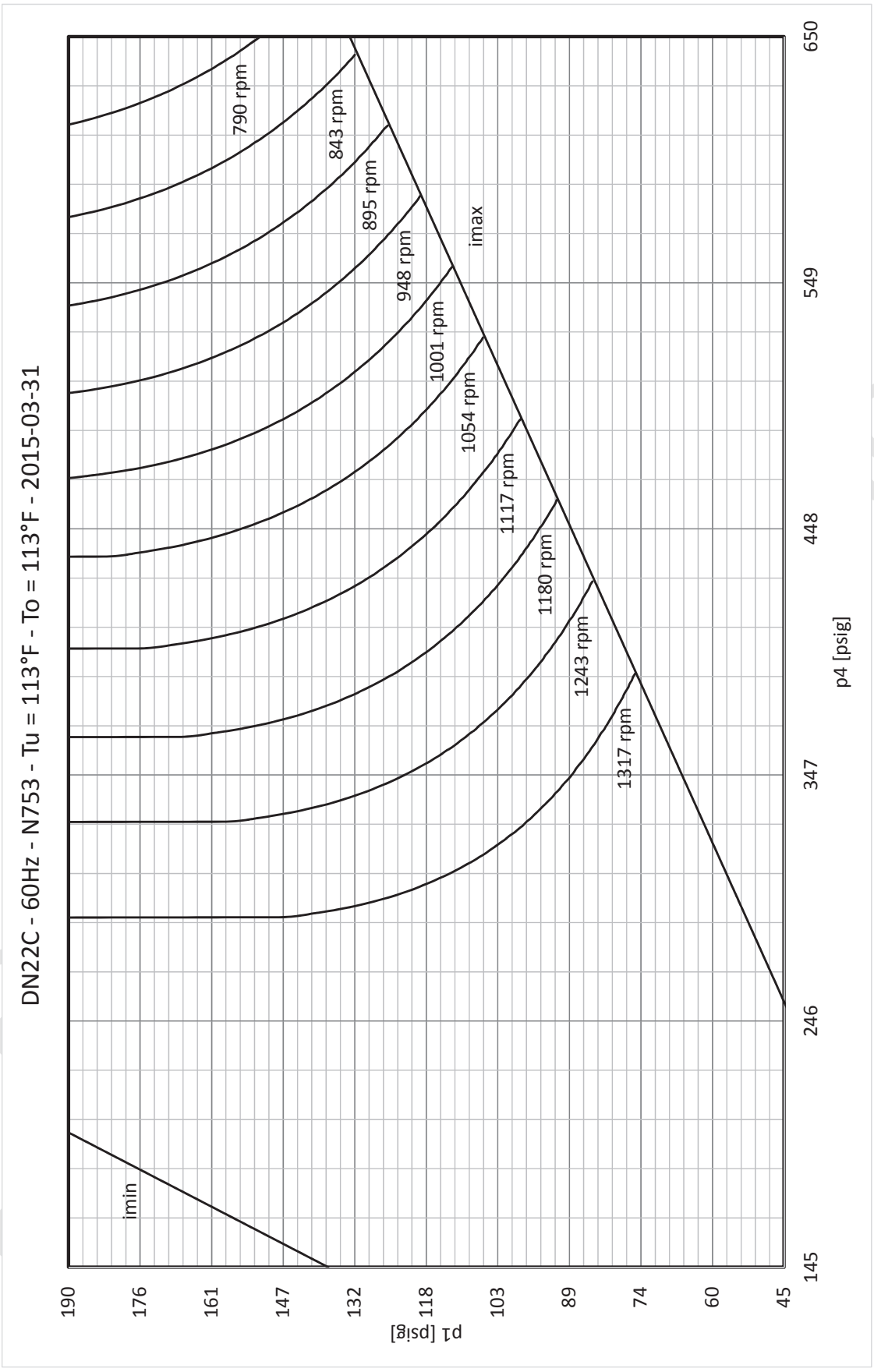

835
115V~
24V=
-X11
-X12
-T21
-T22
1)
24V=
24V=
115V~
-Q4
-F4
-1FU
-2FU
-3FU
-T11
115V~
115V~
-X0
W1
V1
U1
995
24V=
115V~
115V~
-Q3
-Q2
-Q1
GRD rail
-B25
24V=
Side panel
left
-K22
IOM 1
1)
-K21
IOM 3
1) option C40
The components are performance-related
and not shown to scale.
AKK-U3010.04
SC2 MCS
page 2 Bl. 2
lay-out
booster compressor
control panel
KAESER KOMPRESSOREN
Ursprung:
Ersatz für:
Ersatz durch:
Datum 18.12.2017
Bearbeiter Sitter
Geprüft Büchner
Norm
Name
Datum
Änderung
PRELIMINARY
Subject to Revision

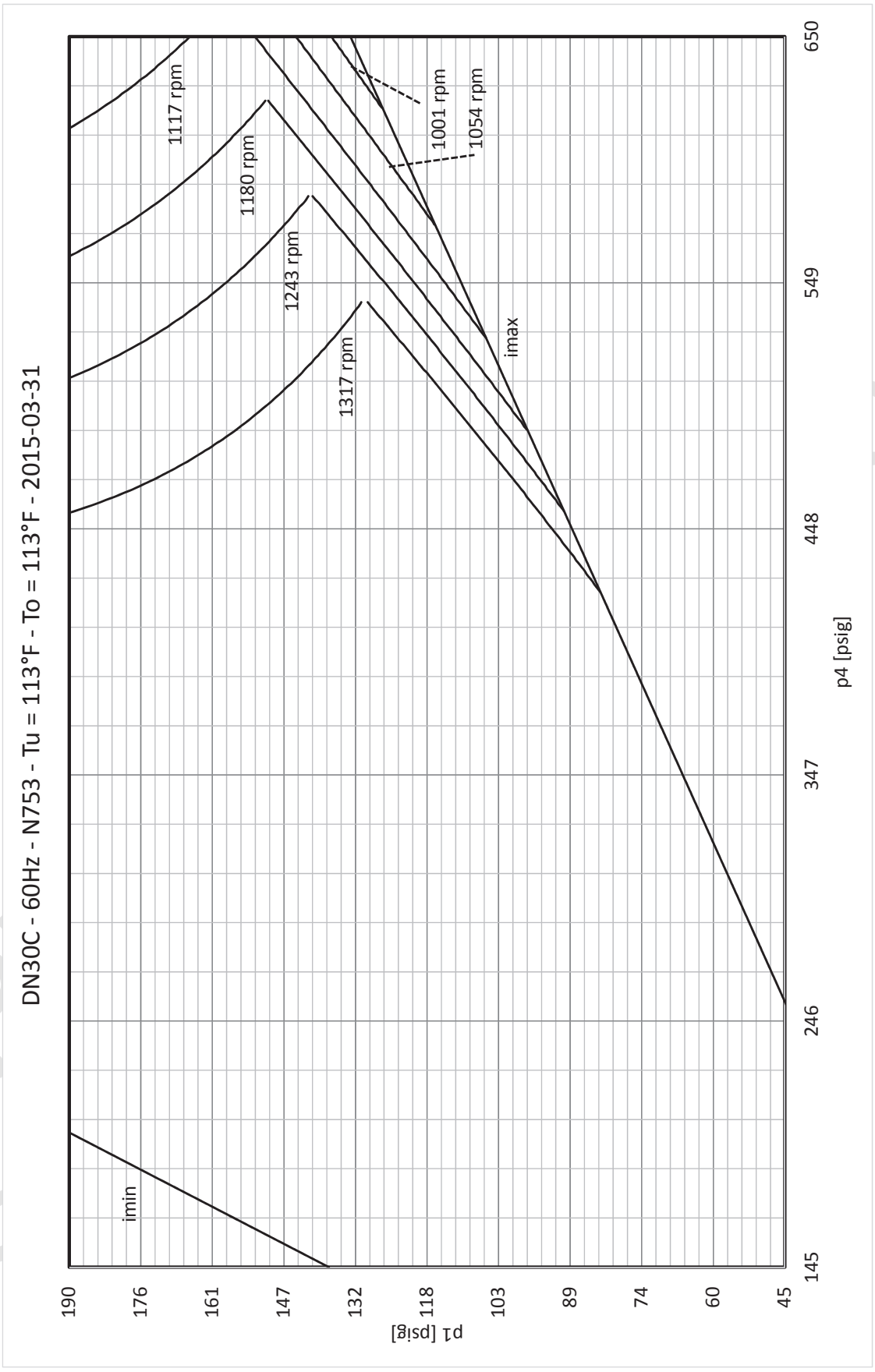
13.4 Determining the permissible initial pressure

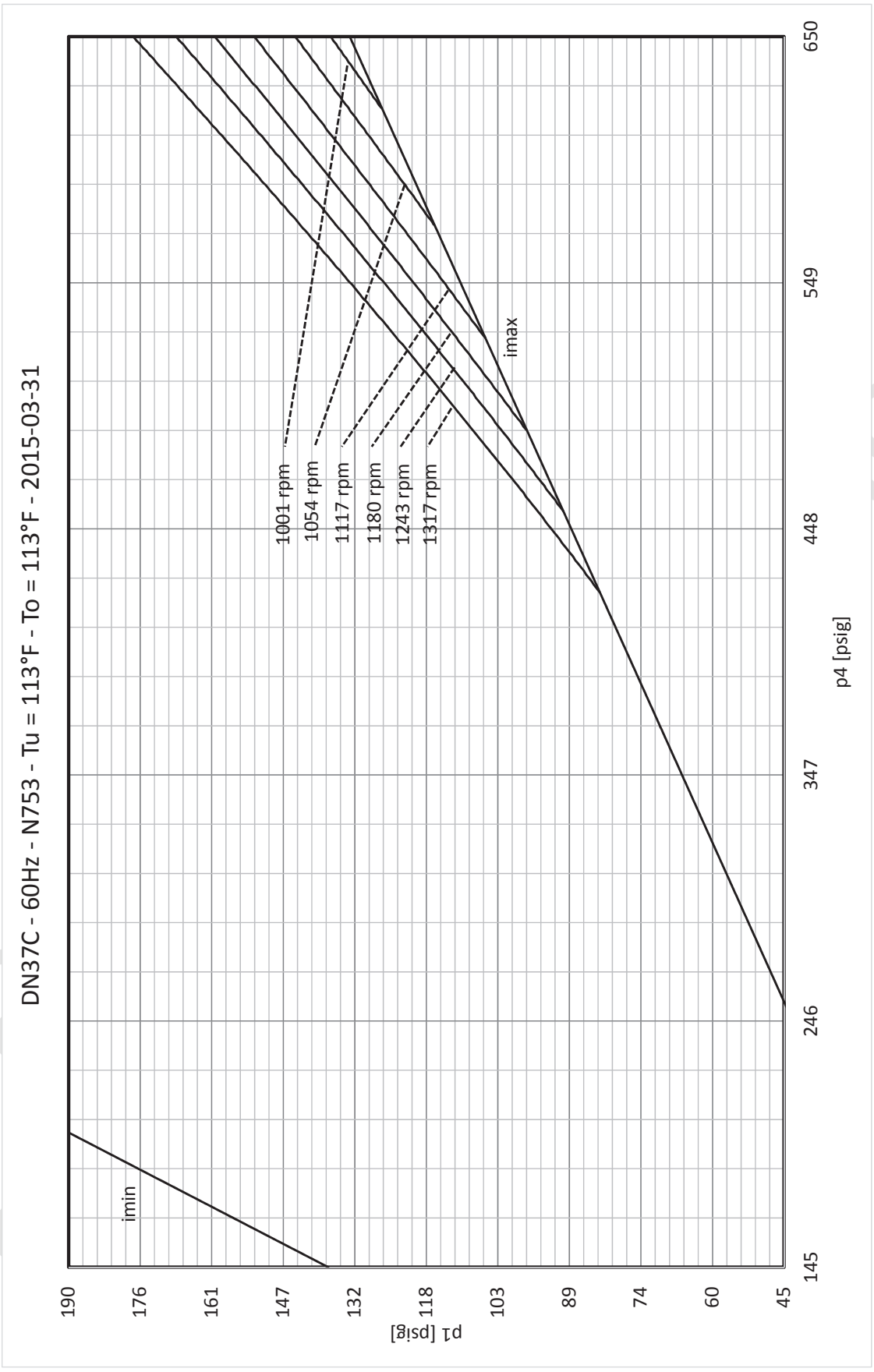
Use the following diagrams to determine the permissible initial pressure.

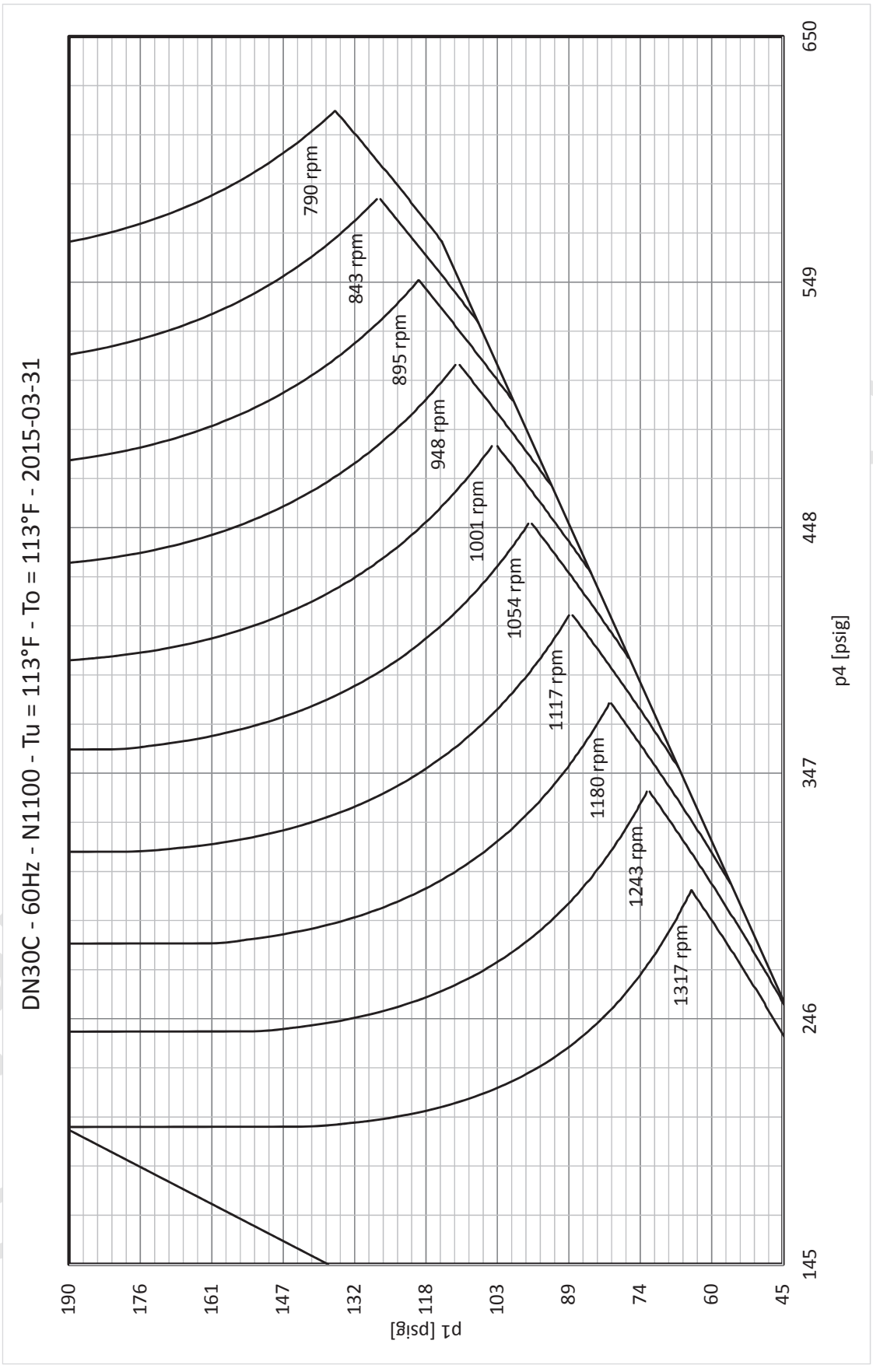
The following data can be found in the diagrams:

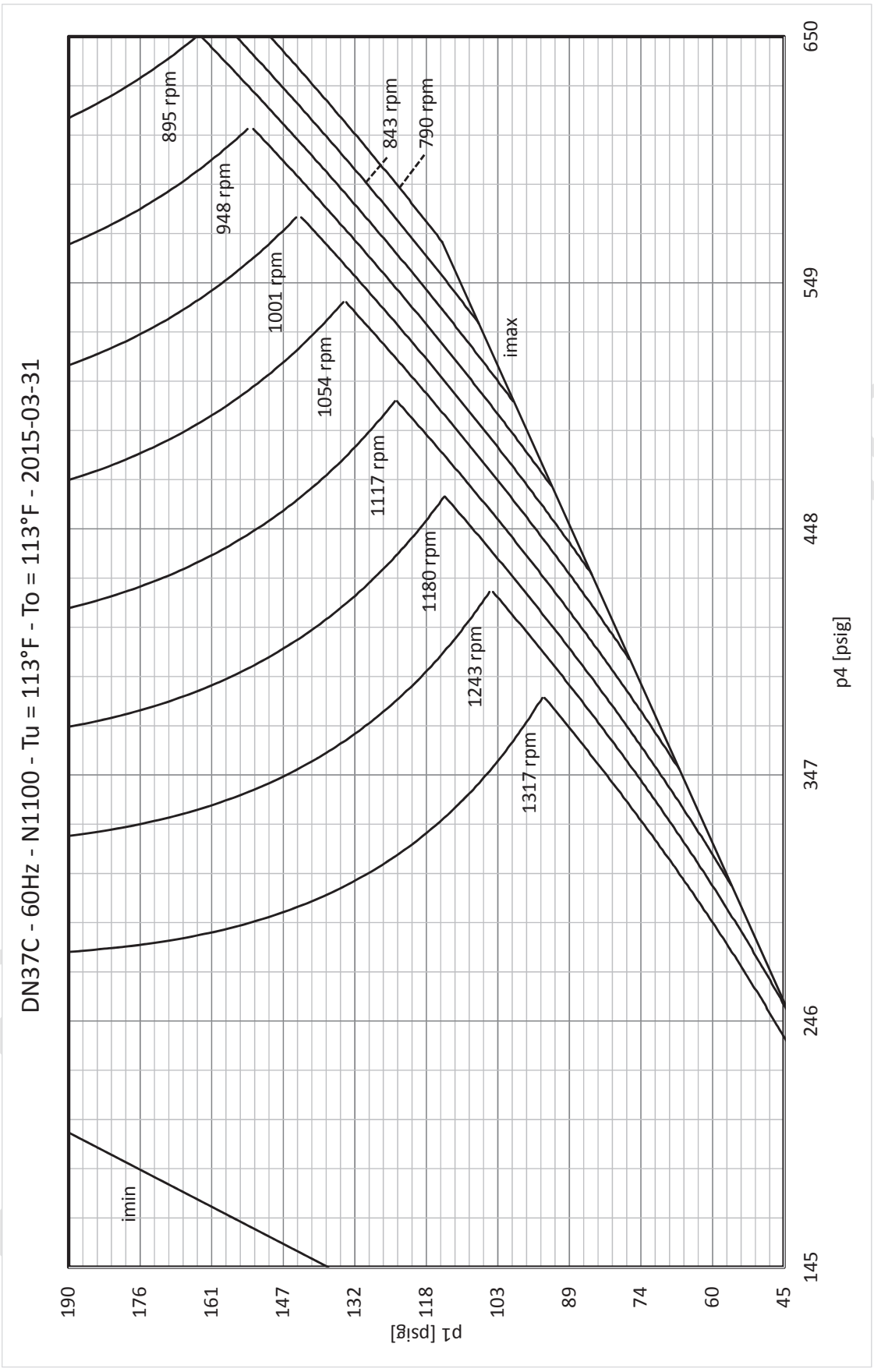
- Type
- Compressor block
- Main system frequency
- Unit of pressure
- Block speed
- imin = Minimal permissible compression ratio of the machine
- imax = Maximal permissible compression ratio of the machine
- To = Intake temperature
- Tu = Ambient temperature
- p1 = Initial pressure
- p4 = Discharge pressure

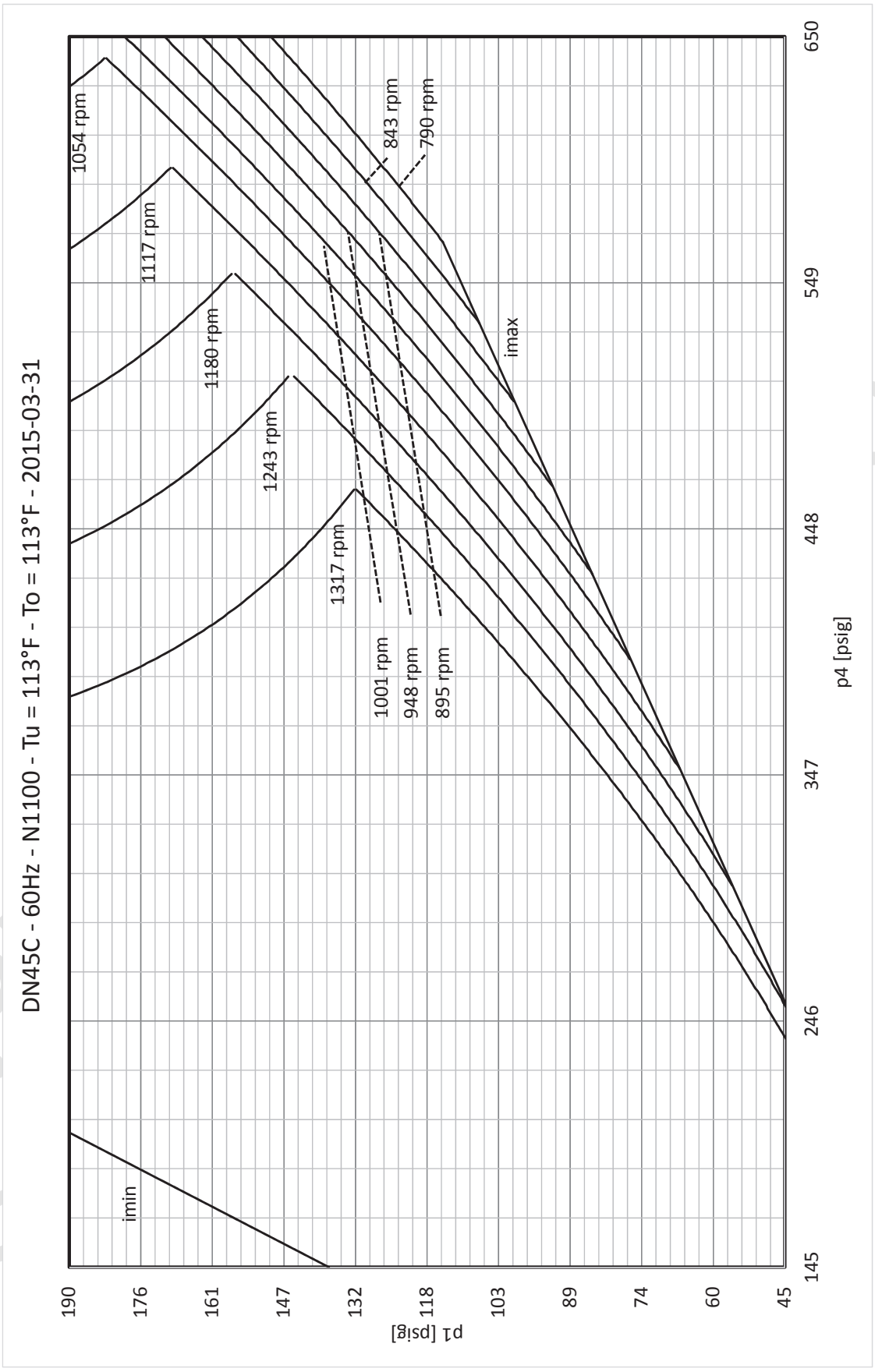

DN22C - 60Hz - N753 - Tu = 113°F - To = 113°F - 2015-03-31
790 rpm
843 rpm
895 rpm
948 rpm
1001 rpm
1054 rpm
1117 rpm
1180 rpm
1243 rpm
1317 rpm
imax
imin
p1 [psig]
190
176
161
147
132
118
103
89
74
60
45
p4 [psig]
650
549
448
347
246
145
Version 1
TB/Hollauer


DN30C - 60Hz - N753 - Tu = 113°F - To = 113°F - 2015-03-31
1117 rpm
1180 rpm
1243 rpm
1317 rpm
1001 rpm
1054 rpm
imax
imin
p1 [psig]
190
176
161
147
132
118
103
89
74
60
45
p4 [psig]
650
549
448
347
246
145
Version 1
TB/Hollauer


DN37C - 60Hz - N753 - Tu = 113°F - To = 113°F - 2015-03-31
Version 1
imin
imax
1001 rpm
1054 rpm
1117 rpm
1180 rpm
1243 rpm
1317 rpm
p1 [psig]
190
176
161
147
132
118
103
89
74
60
45
p4 [psig]
650
549
448
347
246
145
TB/Hollauer


DN30C - 60Hz - N1100 - Tu = 113°F - To = 113°F - 2015-03-31
790 rpm
843 rpm
895 rpm
948 rpm
1001 rpm
1054 rpm
1117 rpm
1180 rpm
1243 rpm
1317 rpm
p1 [psig]
190
176
161
147
132
118
103
89
74
60
45
p4 [psig]
650
549
448
347
246
145
Version 1
TB/Hollauer


DN37C - 60Hz - N1100 - Tu = 113°F - To = 113°F - 2015-03-31
Version 1
TB/Hollauer
p1 [psig]
190
176
161
147
132
118
103
89
74
60
45
p4 [psig]
650
549
448
347
246
145
imin
imax
895 rpm
948 rpm
1001 rpm
1054 rpm
1117 rpm
1180 rpm
1243 rpm
1317 rpm
843 rpm
790 rpm


DN45C - 60Hz - N1100 - Tu = 113°F - To = 113°F - 2015-03-31
Version 1
TB/Hollauer
1054 rpm
1117 rpm
1180 rpm
1243 rpm
1317 rpm
1001 rpm
948 rpm
895 rpm
843 rpm
790 rpm
imax
imin
p1 [psig]
p4 [psig]
190
176
161
147
132
118
103
89
74
60
45
650
549
448
347
246
145

13.5 Safety relief valve data sheets

Safety valves

Type SVW/SVWN/SVWC	DN 8	PN 50	-25 to 180 °C	type tested CE 0036

Use area:

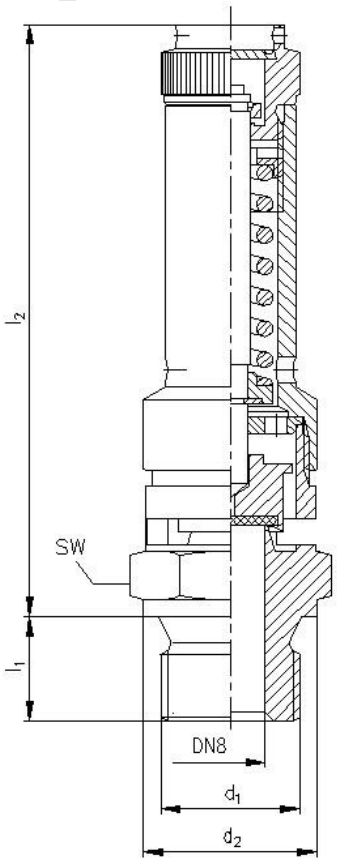
⇨ for compressed air and other gases of the fluid group 2;

⇨ blow-off freely, therefore not suitable for fluids and steam.

Models

SVW ⇨ 2.0401 (brass)
SVWC ⇨ 1.4104 (stainless steel)
SVWN ⇨ 1.4571 (stainless steel)

Characteristics:
open types +++ elastic valve seat seal (Viton) +++ compression spring stainless steel +++ ventilate with knurled thumb screw +++ connection with spigot +++ product-mark TÜV and GL +++ TÜV- and GL-individual inspection +++ certificates according to EN 10204 possible.



connection-tap (d_1)	area of differential test pressure [bar]	d_2 [mm]	l_1 [mm]	l_2 [mm]	SW SVW	SW SVWN SVWC
M16x1,5	0,2 – 14,20	20	12	63	20	22
	14,21 – 39,90			75		
	39,91 – 50,00			82		
G1/4 A	0,2 – 14,20	18	10	63		
	14,21 – 39,90			75		
	39,91 – 50,00			82		
G3/8 A	0,2 – 14,20	20	12	63		
	14,21 – 39,90			75		
	39,91 – 50,00			82		
G1/2 A	0,2 – 14,20	24	14	63	24	24
	14,21 – 39,90			75		
	39,91 – 50,00			82		

Order description: (Please pay attention to the indication on the back sheet)

e.g. SVW 8 – 11 bar – G ¼ A – ...

- ... special wishes
- G ¼ A spigot
- 11 bar differential test pressure
- 8 nominal size
- SVW type

Changes in the sense of the technical progress reserve.

Armaturen- und Metallwerke Zöblitz GmbH
Bahnhofstraße 16, 09496 Marienberg Tel. 037363 480-0 / Fax 037363 480-90
Internet: www.armaturen-zoeblitz.de e-mail: info@armaturen-zoeblitz.de

Safety valves

Type SVW/SVWN/SVWC	DN 8	PN 50	-25 to 180 °C	type tested CE 0036

blow-off value

p_e [bar]	qm [m³/h] at 0°C/760 Torr
0,2	13,6
0,8	19,3
0,9	37,6
1,4	48,1
1,9	58,6
2	69,2
2,5	81,2
3	93,2
3,5	105,1
4	117,1
5	141,0
6	165,0
7	188,9
8	212,8
9	236,4
10	260,7
11	284,6
12	308,6
13	332,5

p_e [bar]	qm [m³/h] at 0°C/760 Torr
14	356,4
15	380,4
16	404,3
17	428,2
18	452,2
19	476,1
20	500,0
21	524,0
22	547,9
23	571,8
24	595,8
25	619,7
26	643,6
27	667,6
28	691,5
29	715,4
30	739,4
31	763,3
32	787,2

p_e [bar]	qm [m³/h] at 0°C/760 Torr
33	811,2
34	835,1
35	859,0
36	883,0
37	906,9
38	930,8
39	954,8
40	978,7
41	1.002,6
42	1.026,6
43	1.050,5
44	1.074,4
45	1.098,4
46	1.122,3
47	1.146,3
48	1.170,2
49	1.194,1
50	1.218,1

The showed blow-off values will be reached at an increase of pressure of 10% above the differential test pressure.

Indication:

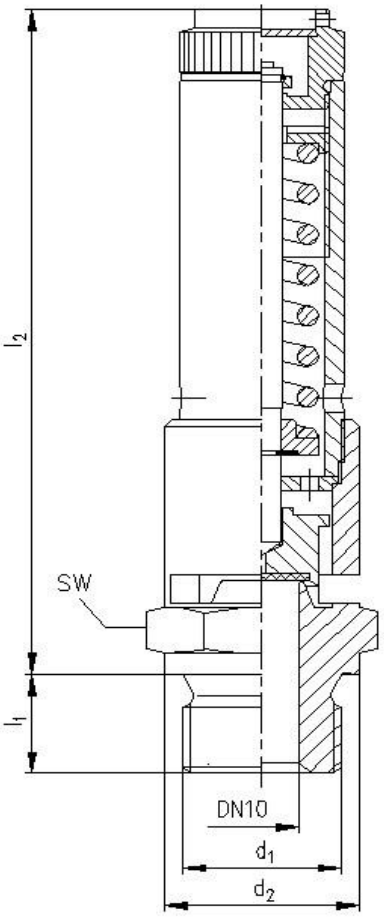
Safety valves of model SVWC are only suitable for temperatures between –10 and 180°C .
Valves are adjusted and supplied leaded. Special variants (other spigot, nickel plated or similar) on request.
Delivery with knurled thumb screw is possible.
We ask for indication of the medium and the operating temperature in order
Please find safety references and the guidance of maintenance on the back sheet of our inspection certificate or on inquiry.

Changes in the sense of the technical progress reserve.

Armaturen- und Metallwerke Zöblitz GmbH
Bahnhofstraße 16, 09496 Marienberg Tel. 037363 480-0 / Fax 037363 480-90
Internet: www.armaturen-zoeblitz.de e-mail: info@armaturen-zoeblitz.de

Safety valves

Type SVW/SVWN/SVWC	DN 10	PN 50	-25 till 180 °C	type tested CE 0036



Use area:

- ⇨ for compressed air other gases of the fluid group 2;
- ⇨ blow-off freely,
- ⇨ therefore not suitable for fluids and steam

Models

SVW ⇨ 2.0401 / C38500 (brass)
SVWC ⇨ 1.4401 / A316 (stainless steel)
SVWN ⇨ 1.4571 / A316Ti (stainless steel)

Characteristics:

open type +++ elastic valve seat seal (Viton) +++
compression spring of stainless steel +++
ventilate with knurled thumb screw +++
connection with spigot +++ product-mark TÜV and GL +++
TÜV- and GL - individual inspection +++
certificates according to EN 10204 possible

connection tap (d_1)	area of differential test pressure [bar]	d_2 [mm]	l_1 [mm]	l_2 [mm]	SW
G3/8 A	0,20 - 8,50	22	12	75	27
	08,51 - 40,00			95	
	40,01 - 50,00			120	
G1/2 A	0,20 – 8,50	26	14	75	
	08,51 - 40,00			95	
	40,01 - 50,00			120	
G3/4 A	0,20 - 8,50	32	16	75	32
	08,51 - 40,00			95	
	40,01 - 50,00			120	

Order description:

e.g. SVW 10 – 11 bar – G 3/8 A – ...

- ... special wishes
- G 3/8 A spigot
- 11 bar differential test pressure
- 10 nominal size
- SVW type

(Please pay attention to the indication on the back-sheet.)

Changes in the sense of the technical progress reserve.

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Bahnhofstraße 16, 09496 Marienberg Tel. 037363 480-0 / Fax 037363 480-90
Internet: www.armaturen-zoeblitz.de e-mail: info@armaturen-zoeblitz.de

Safety valves

Type SVW/SVWN/SVWC	DN 10	PN 50	-25 till 180 °C	type tested CE 0036

Blow-off value

p_e [bar]	qm [m³/h] at 0°C/760 Torr	p_e [bar]	qm [m³/h] at 0°C/760 Torr	p_e [bar]	qm [m³/h] at 0°C/760 Torr
0,2	24,0	15	649,2	34	1.425,3
0,8	59,4	16	690,0	35	1.466,2
1,3	76,9	17	730,8	36	1.507,0
1,8	94,5	18	771,7	37	1.547,8
2,3	112,1	19	812,6	38	1.588,7
2,8	129,5	20	853,4	39	1.629,5
3,3	147,1	21	894,3	40	1.670,4
3,8	164,1	22	935,1	41	1.711,3
4	199,8	23	975,9	42	1.752,1
5	240,7	24	1.016,8	43	1.792,9
6	281,5	25	1.057,7	44	1.833,8
7	322,4	26	1.098,5	45	1.874,6
8	363,3	27	1.139,4	46	1.919,5
9	404,0	28	1.180,2	47	1.956,4
10	444,9	29	1.221,1	48	1.997,2
11	485,8	30	1.261,9	49	2.038,1
12	526,6	31	1.302,7	50	2.078,9
13	567,5	32	1.343,6		
14	608,3	33	1.384,5		

The showed blow-off values will be reached at an increase of pressure of 10% above the differential test pressure.

Indication:

Valves are adjusted and supplied leaded. Special variants (other spigot, nickel-plated or similar) on request.
Delivery with jet deflection ring is possible.
We ask for indication of the medium and the operating temperature in order.
Please find safety references and the guidance of maintenance on the back sheet of our inspection certificate or on inquiry.

Changes in the sense of the technical progress reserve.

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Bahnhofstraße 16, 09496 Marienberg Tel. 037363 480-0 / Fax 037363 480-90
Internet: www.armaturen-zoeblitz.de e-mail: info@armaturen-zoeblitz.de

Datenblatt Data sheet Fiche technique

BAUREIHE 2108

LINE 2108 SÉRIES 2108

Freiabblasendes Sicherheitsventil
Safety valve with free outlet
Soupape de securité à décharge libre

LORCH

Geeignet für / Adapted for / Convenant pour

Luft air air	neutrale Gase neutral gas Gaz neutres

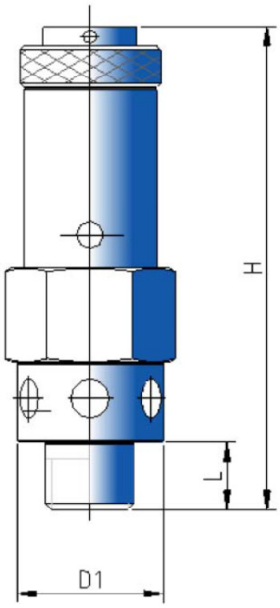
Zulassung / Homologation / Homologation: CE 97/23/CE DEKRA

Anforderungen / Requirement / Exigences:
DGR 97/23/CE
DIN EN ISO 4126-1
AD 2000-A2
VdTÜV-Merkblatt Sicherheitsventil 100

Nennweite / Nominal size / Diamétre nominal: 8 mm

Druckbereich / Pressure range / Plage de pression: 0,3 - 47,0 bar

k: 0,73



Eingangsgewinde Inlet connection Filetage de raccord	Druckbereich Pressure range Plage de pression (bar)	Drehmoment Torque Couple de rotation (Nm)	Schlüssel-weite SW Width across Surplat (mm)	H (mm)	L (mm)	D1 (mm)
G 1/4" M	0,3 - 9,3	14	22	72	10	21,8
	9,4 - 21,0	14	22	81	10	21,8
	21,1 - 47,0	14	24	88	10	23,8
G 3/8" M	0,3 - 9,3	40	22	72	10	21,8
	9,4 - 21,0	40	22	81	10	21,8
	21,1 - 47,0	40	24	88	10	23,8
G 1/2" M	0,3 - 9,3	65	27	73	12	26,8
	9,4 - 21,0	65	27	82	12	26,8
	21,1 - 47,0	65	27	90	12	26,8
M18x1,5	0,3 - 9,3	40	22	72	10	21,8
M16x1,5	9,4 - 21,0	40	22	81	10	21,8
	21,1 - 47,0	40	24	88	10	23,8

Datenblatt Data sheet Fiche technique

BAUREIHE 2108

LINE 2108 SÉRIES 2108

Freiabblasendes Sicherheitsventil
Safety valve with free outlet
Soupape de securité à décharge libre

LORCH

OPTIONEN / OPTIONS / OPTION

Kundenspezifische Sonderausführungen auf Anfrage / Customized models, upon request / Réalisations spéciales sur demande

BAUTEILWERKSTOFFE / COMPONENT MATERIALS / MATÉRIAUX DES PIÉCES

Bauteilwerkstoffe / Component materials / Matériaux des piéces	Messing / Brass / Laiton -50/ +250 °C	Edelstahl / Stainless steel / Acier inoxydable -196/ +250 °C
Eintrittskörper / Body in / Piéce d'entrée	CW614N-R430	1.4404
Austrittskörper / Body out / Piéce de sortie	CW614N-R430	1.4404
Innenteile / Innert part / Piéces intérieures	CW614N-R430	1.4301
Druckfeder / Spring / Ressort	1.4310	1.4310

DICHTUNG / GASKET / JOINT

Dichtung / Gasket / Joint	FKM (bei / at / à 2,4-47 bar)	VMQ (bei / at / à 0,3-47 bar)	EPDM (bei / at / à 2,4-47 bar)	PTFE (bei / at / à 2,4-47 bar)
min. Anwendungstemperatur (°C) Operating temperature (°C) Température de service (°C)	-20	-50	-50	-196
max. Anwendungstemperatur (°C) Operating temperature (°C) Température de service (°C)	+200	+200	+150	+250

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We reserve the right to make technical modifications. Errors or printing errors excepted. Illustrations are not binding.
Sous réserve de modification techniques, d'erreurs d'impression ou de contenu, les illustrations n'ont aucun caractére contraignant



FA - freiabblasende Sicherheitsventile

Leistungsdaten Durchfluss/ flow range *

Druck/ set pressure	bar	Luft (m³/h) 2108	2110	2115	2120	2125	2132	2024	2032	2048
	0,5	40	46	128	255	345	778	308	380	1062
	0,6	43	50	137	273	370	834	330	407	1137
	0,8	49	57	155	310	419	944	374	461	1288
	1	55	67	174	346	468	995	418	755	1439
	1,5	69	84	203	437	590	1089	528	953	1816
	2	83	107	330	563	892	1206	637	1187	2193
	2,5	98	125	387	660	1045	1413	747	1391	2570
	3	112	148	443	757	1198	1620	856	1595	2947
	3,5	126	168	500	854	1351	1827	966	1800	3323
	4	141	190	557	951	1505	2035	1075	2004	3700
	4,5	155	209	613	1048	1658	2242	1185	2208	4077
	5	169	232	670	1145	1811	2449	1294	2412	4454
	5,5	184	252	727	1242	1965	2656	1404	2616	4831
	6	198	275	784	1338	2118	2863	1513	2820	5208
	6,5	212	295	840	1435	2271	3071			
	7	226	318	898	1532	2425	3278			
	7,5	241	340	954	1629	2578	3485			
	8	255	362	1011	1726	2731	3692			
	8,5	270	381	1067	1823	2885	3900			
	9	284	406	1124	1920	3038	4107			
	9,5	298	428	1181	2017	3191	4314			
	10	313	450	1238	2114	3345	4521			
	11	341	489	1351	2307	3498	4936			
	12	371	539	1465	2501	3958	5350			
	13	399	580	1578	2695	4264				
	14	428	629	1692	2889	4571				
	15	456	673	1805	3083	4878				
	16	485	720	1919	3276	5184				
	17	513	758	2032	3470	5491				
	18	543	811	2146	3664	5798				
	19	570	855	2259	3858	6104				
	20	601	903	2373	4051	6411				
	21	628	941	2486	4245	6717				
	22	659	995	2600	4439	7024				
	23	685	1041	2713	4633	7331				
	24	716	1088	2827	4827	7637				
	25	742	1128	2940	5020	7944				
	26	774	1182	3054	5214	8251				
	27	780	1232	3158	5408	8557				
	28	832	1276	3281	5602	8864				
	29	857	1321	3384	5796	9170				
	30	889	1370	3508	5989	9477				
	32	942	1453							
	34	1000	1541							
	36	1057	1652							
	38	1115	1742							
	40	1177	1847							
	42	1229	1943							
	44	1287								
	46	1344								
	47	1379								

* Durchflüsse gemessen bei 20°C und im Betriebszustand mit eingebauter Feder

TDB-8.2092.0-D_03E

www.lorch.de lorch@lorch.de Phone: +49(0)711-22720-400 Fax: +49(0)711-22720-489 Version: 05 Stand: August 2013

Honeywell | Safety Valves

S245B

Safety valve

High performance valve for compressed air

APPLICATION

Safety valves of this type are direct loaded high performance safety valves with lifting device. They protect pressurized compressed air vessels (cylinders, tanks) against excessive pressure.

Safety valves of this type are used for compressors and other industrial purposes.

APPROVALS

- Approved by VdTÜV for pressure range from 0.5 - 30.0 bar
- Approved by ASME (American Society of Mechanical Engineers) for pressure range 2.8 - 30.0 bar (41 - 435 PSI)
- Certified to Pressure Equipment Directive 2014/68/EU, reference no.: CE 0035

SPECIAL FEATURES

- Sturdy metal construction
- Shakeproof lifting mechanism admitting no additional load
- Set pressure adjustment at factory
- Set pressure settings possible between 0.5 and 30 bar in steps of 0.1 bar on request
- Light weight

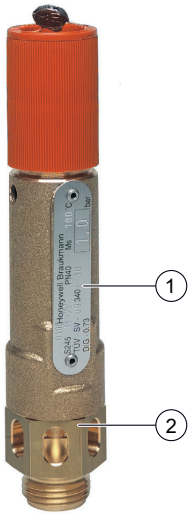
CE

TECHNICAL DATA

Media	
Medium:	Compressed air. Non-toxic, non-corrosive and non inflammable gases which may be discharged to atmosphere. Not suitable for oxygen and steam.
Connections/Sizes	
Connection sizes:	G $^1/_2$" - G 2"
Discharge rate	
TÜV α w:	0.73
ASME Kd:	0.863
Operating temperatures	
Max. operating temperature medium:	180 °C (ASME), 260 °C (TÜV / CE)

S245B - Safety valve

CONSTRUCTION

Overview		Components	Materials
	**1**	Spring bonnet	Brass (sizes $^1/_2$" to 1") Cast iron, powder coated (sizes $1^1/_4$" to 2")
	2	Housing	Brass
		Not depicted components:	
		Spring	Stainless steel
		Valve cone	Brass
		Seal disc	Viton

METHOD OF OPERATION

Safety valves are direct-acting. The disc seal is pushed up by the pressure from the system against a spring which is holding the valve closed. If the opening force exceeds the force exerted by the spring, the valve disc is lifted off the valve seat and the valve discharges the medium. In accordance with the requirements of the standard, the full discharge capacity of the valve will be achieved when the system pressure climbs to no more than 10%above the set pressure of the valve. Full shut-off must be achieved if the system pressure falls to below 90% of the nominal set pressure value.

TRANSPORTATION AND STORAGE

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

Parameter	Value
Environment:	clean, dry and dust free
Min. ambient temperature:	5 °C
Max. ambient temperature:	55 °C
Min. ambient relative humidity:	25 % *
Max. ambient relative humidity	85 % *

*non condensing

INSTALLATION GUIDELINES

Setup requirements

- Safety valves for pressurised air should be positioned vertically, facing upwards in the pipeline or on a pressure vessel. Other installation positions on request.
- Connections through all pipe, fittings and nonreclosing pressure relief devices (if installed) between a pressure vessel and its safety valve shall have at least the area of the safety valve inlet.
- The characteristics of the upstream system shall be such that the pressure drop will not reduce the relieving capacity below that required or adversely affect the proper operation of the safety valve.
- The opening in the vessel wall shall be designed to provide unobstructed flow between the vessel and its safety valve.
- There shall be no intervening stop valves between the vessel and its safety valves.
- A set pressure function test should be carried out at least once per year. The detailed test procedure is determined by the user
- Requires regular maintenance in accordance with EN 806-5

Installation Example

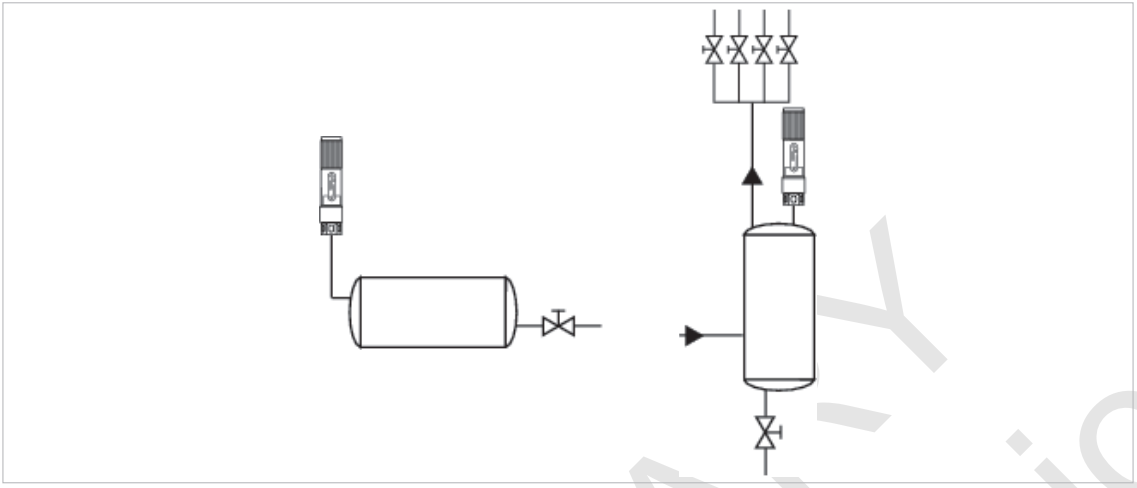


Fig. 1 Standard installation example for the safety valve

TECHNICAL CHARACTERISTICS

Discharge capacity

Discharge capacity for compressed air (TÜV) Type S245B [Approval reference TÜV · SV ··*• 340 · D0 · D/G · aw · p]							
Opening pressure:		**Amount of air in Nm^3/h (0 °C, 1.013 bar):**					
bar	psi	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
bar	psi	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
0,5	7	61	138	245	382	626	978
1	15	83	186	331	517	847	1323
1,5	22	104	234	417	651	1067	1667
2	29	126	283	503	786	1287	2011
2,5	36	147	331	589	920	1508	2356
3	44	169	380	675	1055	1728	2700
3,5	51	190	428	761	1189	1948	3044
4	58	212	477	847	1324	2169	3388
4,5	65	233	525	933	1458	2389	3733
5	73	255	573	1019	1593	2609	4077
5,5	80	276	622	1105	1727	2830	4421
6	87	298	670	1191	1862	3050	4766
6,5	94	319	719	1277	1996	3270	5110
7	102	341	767	1364	2131	3491	5454
7,5	109	362	815	1450	2265	3711	4799
8	116	384	864	1536	2400	3931	6143
8,5	123	405	912	1622	2534	4152	6487
9	131	427	961	1708	2669	4372	6831
9,5	138	448	1009	1794	2803	4592	7176
10	145	470	1058	1880	2938	4813	7520
10,5	152	492	1106	1966	3072	5033	7864
11	160	513	1154	2052	3206	5254	8209
11,5	167	535	1203	2138	3341	5474	8553
12	174	556	1251	2224	3475	5694	8897
12,5	181	578	1300	2310	3610	5915	9241
13	189	599	1348	2396	3744	6135	9586
13,5	196	621	1396	2483	3879	6355	9930

S245B - Safety valve

Discharge capacity for compressed air (TÜV) Type S245B [Approval reference TÜV · SV ··*• 340 · D0 · D/G · aw · p]							
Opening pressure:		Amount of air in Nm^3/h (0 °C, 1.013 bar):					
14	203	642	1445	2569	4013	6576	10274
14,5	210	664	1493	2655	4148	6796	10619
15	218	685	1542	2741	4282	7016	10963
15,5	225	707	1590	2827	4417	7237	11307
16	232	728	1638	2913	4551	7457	11652
16,5	239	750	1687	2999	4686	7677	11996
17	247	771	1735	3085	4820	7898	12340
17,5	254	793	1784	3171	4955	8118	12684
18	261	814	1832	3257	5089	8338	13029
18,5	286	836	1881	3343	5224	8559	13373
19	276	857	1929	3429	5358	8779	13717
19,5	283	879	1977	3515	5493	8999	14062
20	290	900	2026	3601	5627	9220	14406
20,5	297	922	2074	3688	5762	9440	14750
21	305	943	2123	3774	5896	9660	15094
21,5	312	965	2171	3860	6031	9881	15439
22	319	986	2219	3946	6165	10101	15783
22,5	326	1008	2268	4032	6300	10322	16127
23	334	1029	2316	4118	6434	10542	16472
23,5	341	1051	2365	1204	6569	10762	16816
24	348	1073	2413	4290	6703	10983	17160
24,5	355	1094	2462	4376	6838	11203	17505
25	363	1116	2510	4462	6972	11423	17849
25,5	37	1137	2558	4548	7107	11644	18193
26	377	1159	2607	4634	7241	11864	18537
26,5	384	1180	2655	4720	7376	12084	18882
27	392	1202	2704	4807	7510	12305	19226
27,5	399	1223	2752	4893	7645	12525	19570
28	406	1245	2800	4979	7779	12745	19915
28,5	413	1266	2849	5065	7914	12966	20259
29	421	1288	2897	5151	8048	13186	20603
29,5	428	1309	2946	4237	8183	13406	20947
30	435	1331	2994	5323	8317	13627	21292

Discharge capacity for compressed air (ASME) Type S245B [Approval reference ASME 30,492]							
Opening pressure:		Discharge capacity in SCFM* (60 °F, 14.5 PSI):					
bar	psi	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
bar	psi	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
2,8	41	115	258	458	716	1173	1832
3	44	121	272	483	754	1236	1931
3,5	51	136	306	545	851	1394	2178
4	58	152	341	606	947	1552	2425
4,5	65	167	376	668	1044	1710	2672
5	73	182	411	730	1140	1868	2919
5,5	80	198	445	792	1237	2027	3166
6	87	213	480	853	1333	2185	3413
6,5	94	229	515	915	1430	2343	3661
7	102	244	549	977	1526	2501	3908
7,5	109	260	584	1039	1623	2659	4155
8	116	275	616	1100	1719	2817	4402

Discharge capacity for compressed air (ASME) Type S245B [Approval reference ASME 30,492]							
Opening pressure:		Discharge capacity in SCFM* (60 °F, 14.5 PSI):					
8,5	123	291	654	1162	1816	2975	4649
9	131	306	688	1224	1912	3133	4896
9,5	138	321	723	1286	2009	3291	5143
10	145	337	758	1347	2105	3449	5390
10,5	152	352	793	1409	2202	3608	5637
11	160	368	827	1471	2298	3766	5884
11,5	167	383	862	1533	2395	3924	6131
12	174	399	897	1594	2491	4082	6378
12,5	181	414	932	1656	2588	4240	6625
13	189	429	966	1718	2684	4398	6872
13,5	196	445	1001	1780	2781	4556	7119
14	203	460	1036	1841	2877	4714	7366
14,5	210	476	1071	1903	2974	4872	7613
15	218	491	1105	1965	3070	5030	7860
15,5	225	507	1140	2027	3167	5188	8107
16	232	522	1175	2089	3263	5347	8354
16,5	239	538	1210	2150	3360	5505	8601
17	247	553	1244	2212	3456	5663	8848
17,5	254	568	1279	2274	3553	5821	9095
18	261	584	1314	2336	3649	5979	9342
18,5	268	599	1348	2397	3746	6137	9589
19	276	615	1383	2459	3842	6295	9836
19,5	283	630	1418	2521	3939	6453	10083
20	290	646	1453	2583	4035	6611	10330
20,5	297	661	1487	2644	4132	6769	10577
21	305	677	1522	2706	4228	6928	10824
21,5	312	692	1557	2768	4325	7086	11071
22	319	707	1592	2830	4421	7244	11318
22,5	326	723	1626	2891	4518	7402	11565
23	334	738	1661	2953	4614	7560	11812
23,5	341	754	1696	3015	4711	7718	12059
24	348	769	1731	3077	4807	7876	12306
24,5	355	785	1765	3138	4904	8034	12554
25	363	800	1800	3200	5000	8192	12801
25,5	370	815	1835	3262	5097	8350	13048
26	377	831	1870	3324	5193	8509	13295
26,5	384	846	1904	3385	5290	8667	13542
27	392	862	1939	3447	5386	8825	13789
27,5	399	877	1974	3509	5483	8983	14036
28	406	893	2009	3571	5579	9141	14283
28,5	413	908	2043	3632	5676	9299	14530
29	421	924	2078	3694	5772	9457	14777
29,5	428	939	2113	3756	5869	9615	15024
30	435	954	2147	3818	5965	9773	15271

S245B - Safety valve

Corrective-Factor

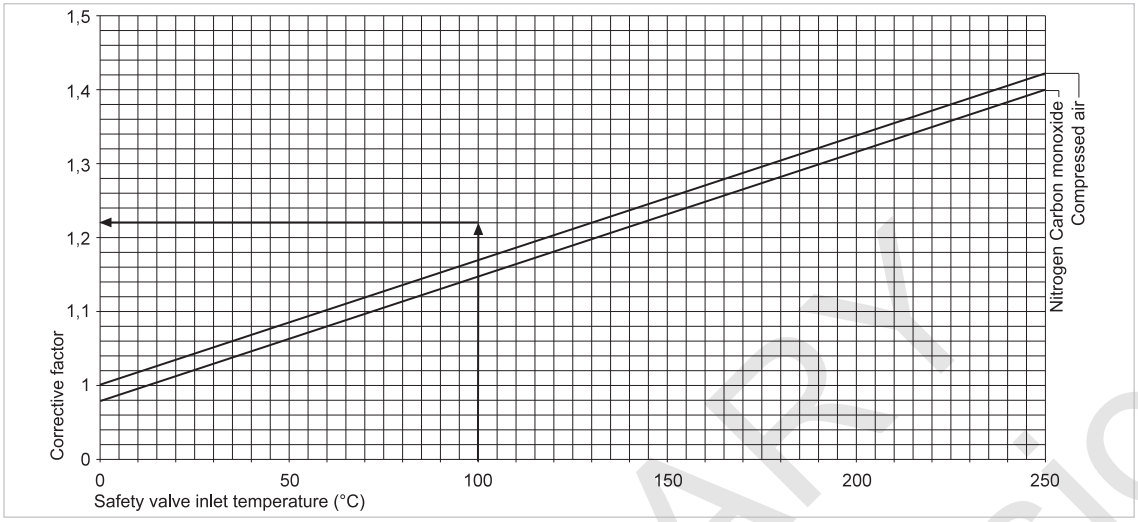
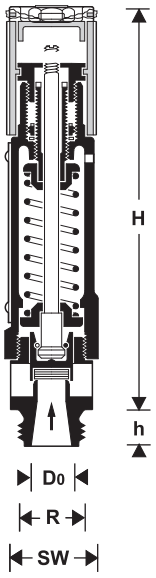


Fig. 2 Corrective factor in dependency of the temperature

DIMENSIONS

Overview



Parameter		Values					
Connection sizes:	R	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Weight:	kg	0.4	0.6	0.9	1.7	3.0	8.0
Dimensions:	h	10	15	20	25	32	40
	H	138	153	185	231	293	367
	D0h	12	15	16	18	20	22
	SW	27	36	41	50	60	80

Note: All dimensions in mm unless stated otherwise.

S245B - Safety valve

ORDERING INFORMATION

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.

Options

The valve is available in the following sizes: $^1/_2$" - 2".

• standard

- not available

		S245B-...ZA*pp	S245B-...ZB*pp
Pressure range:	Safety valve, set pressure 1.0 -12.0 bar	•	–
	Safety valve, set pressure < 1.0 or > 12.0 bar	–	•

Note: ... = space holder for connection size

Note: pp = space holder for set pressure

Note: Ordering number example for Safety valve (soft seat version), size 3/4", set pressure 5.8 bar: S245B-3/4ZA5.8

Note: Ordering number example for Safety valve (soft seat version), size 1", set pressure 0.8 bar: S245B-1ZB 0.8

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EN0H-1309GE25 R0916
Subject to change

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