

Operating manual

Booster

CN C SIGMA CONTROL 2

No.: 901869 24 USE

Read this manual before using this product.

Failure to follow the instructions and safety precautions in this manual can result in serious injury or death.

Manufacturer:

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Original instructions
/KKW/PCNC 2.04 en Z1 SBA-NV-AGGREGAT

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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

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

1.4 Symbols and labels

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

1.4.1 Warnings

Warning notices indicate 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 very likely 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:

1 Regarding this Document

1.4 Symbols and labels

⚠ DANGER

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

The possible consequences of ignoring a warning are shown here.

If you ignore the warning notice, the "DANGER" signal word indicates a lethal or severe injury will occur very likely.

➤ *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.
The conditions relevant to safety shown here 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 machine mountings). Option codes used in this operator 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 contains the model type and important technical information.

The nameplate is located on the outside of the machine:

- at the rear of the machine.

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

Feature	Value
booster	
Material No.:	
Serial No.:	
Ambient temperature*	
Compressed air inlet temp. TS*	
Rated power	
Inlet pressure* (ref. value: PS)	
Max. working pressure PS	
Rated motor speed	
Phases:	
Frequency:	
Voltage	
Full load current	
Full load current drive motor	
Electrical wiring diagram	
Option	

*Deviating values are given in the operating manual.

Tab. 3 Nameplate

Further information The ***compressor block's 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 available options. The options for this machine are displayed on the nameplate.

2 Technical Data

2.3 Weight

➤ Enter the options here as a reference:

Option	Option code	Available?
KAESER FILTER KB with electronic condensate drain	F14	
Adjustable machine feet	H1	
Oil collection tray	H4	
Air-cooling	K1	✓
Electronic condensate drain with floating contacts	K6	
Available: ✓ Not available: -		

Tab. 4 Options

2.3 Weight

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

	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Weight [lb.]	1742	2028	2028	2028

Tab. 5 Weight

2.4 Temperature

	CN 7 C - CN 22 C
Maximum Air discharge tempera- ture ¹⁾ [°F]	≤140
Maximum Block discharge tempera- ture ¹⁾ [°F]	≤430
¹⁾ Automatic shutdown	

Tab. 6 Temperature

2.5 Ambient conditions

	CN 7 C - CN 22 C
Maximum eleva- tion AMSL ¹⁾ [ft.]	3000
Permissible ambient tem- perature [°F]	37 – 115
¹⁾ Higher altitudes are permissible only after consultation with the manufacturer.	

	CN 7 C - CN 22 C
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 specified are the minimum guideline values that must be maintained.

	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Air inlet aperture (Z) see Figure 15 [ft²] (free cross-section)	11.8	11.8	11.8	11.8
Required volume of air for exhaust fan (A) at static compression 0.01 psi [cfm] (machine in enclosed space without ducting)	3767	3767	3767	3767
Exhaust air (hot air) without duct [cfm] 1)	2943	2943	2943	2943
Permissible pressure drop across user-end cooling air ducting [in. of water]	1/4	1/4	1/4	1/4
1) Basis for duct design				

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

Maximum working pressure [psig]	Safety relief valve activating pressure [psig]
650	670

Tab. 9 Safety relief valve opening pressure

Further information See chapter 13.5 for safety relief valve data.

2.8 Calculating the flow rate

Compressor block rated speed

Type	Rated speed 60Hz [rpm]
N 253	790
	840
	900
	960
	1020
	1080
	1200
N 502	740
	795
	850
	900
	950
	1060
	1190

Tab. 10 Compressor block rated speed

Flow rate parameters

	N 253	N 502
KL _a = Coefficient Flow rate: a	-0.00166491000	0.00337566
KL _b = Coefficient Flow rate: b	0.00381298000	0.0120406
KL _c = Coefficient Flow rate: c	-0.01262020000	-0.0133394
KL _d = Coefficient Flow rate: d	0.00000084641	-0.00000143101
KL _e = Coefficient Flow rate: e	-0.00001625250	-0.0000483539
KL _f = Coefficient Flow rate: f	0.00024541600	0.000531306

	N 253	N 502
KLg = Coefficient Flow rate: g	0.00009283030	0.000208973
KLh = Coefficient Flow rate: h	-0.00076322300	-0.00132836
KLi = Coefficient Flow rate: i	0.00094996800	0.00167599
KLk = Coefficient Flow rate: k	0.95238400000	-1.46988
KLr = Coefficient Flow rate: r	14.50377	14.50377
KLs = Coefficient Flow rate: s	35.31467	35.31467

Tab. 11 Flow rate parameters

Formula for flow rate calculation (valid for compressor block type N253 / N502)

$$Q = (k + a \times n + b \times \left(\frac{p_4}{r}\right) + c \times \left(\frac{p_1}{r}\right) + d \times (n)^2 + e \times n \times \left(\frac{p_4}{r}\right) + f \times n \times \left(\frac{p_1}{r}\right) + g \times \left(\frac{p_4}{r}\right)^2 + h \times \left(\frac{p_4}{r}\right) \times \left(\frac{p_1}{r}\right) + i \times \left(\frac{p_1}{r}\right)^2) \times s$$

Description of formula:

- Q = Flow rate as per ISO 1217: 2009 (Annex C)
- n = Compressor rated speed
- p₁ = Initial pressure [psi (g)]
- p₄ = Final pressure [psi (g)]

Example for N 502 compressor block:

p₁ = 100 psi(g)

p₄ = 400 psi(g)

n = 1060 rpm

$$\begin{aligned} Q = & (-1.46988 + 0.00337566 \times 1060 + 0.0120406 \times \left(\frac{400}{14.50377}\right) + -0.0133394 \\ & \times \left(\frac{100}{14.50377}\right) + -0.00000143101 \times (1060)^2 + -0.0000483539 \times 1060 \times \left(\frac{400}{14.50377}\right) \\ & + 0.000531306 \times 1060 \times \left(\frac{100}{14.50377}\right) + 0.000208973 \times \left(\frac{400}{14.50377}\right)^2 + -0.00132836 \\ & \times \left(\frac{400}{14.50377}\right) \times \left(\frac{100}{14.50377}\right) + 0.00167599 \times \left(\frac{100}{14.50377}\right)^2) \times 35.31467 \end{aligned}$$

Q = 113 cfm

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.

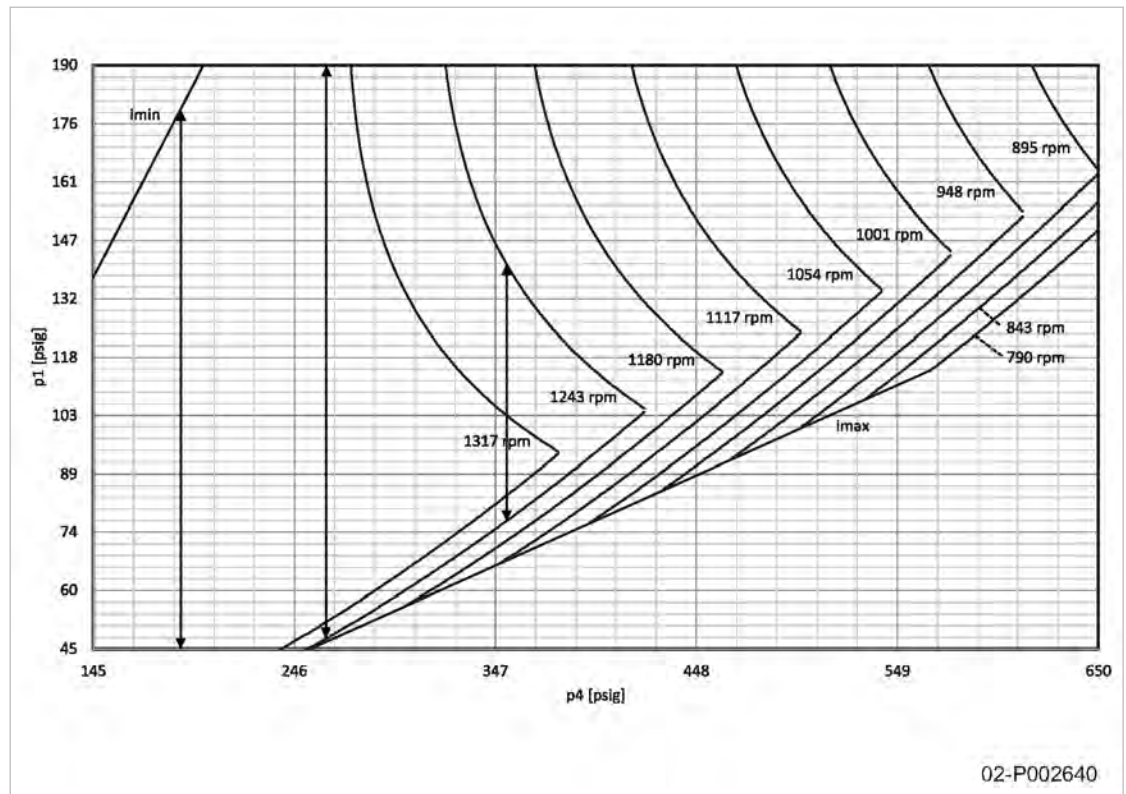


Fig. 1 Initial pressure diagram

- (A) $p_4=190 \text{ psi(g)}$ $45 \text{ psi(g)} \leq p_1 \leq 178 \text{ psi(g)}$ at all speeds
- (B) $p_4=260 \text{ psi(g)}$ $50 \text{ psi(g)} \leq p_1 \leq 190 \text{ psi(g)}$ at $n= 1243 \text{ min}^{-1}$
- (C) $p_4=350 \text{ psi(g)}$ $77 \text{ psi(g)} \leq p_1 \leq 140 \text{ psi(g)}$ at $n= 1243 \text{ min}^{-1}$

2.10 Calculating the configurable switching differential SD

Star-delta machine

$$SD = 14.5 \times \frac{Q}{4 \times \text{receiver size}} \text{ psi}$$

Condition $SD < p_4 - p_1$

Flow rate Q in cfm (as per ISO 1217:2009, Annex C)

Receiver size in ft^3

Switching differential SD in psi

Initial pressure p1 in [psi (g)]

Final pressure p4 in [psi (g)]

Example 1

Machine flow rate Q	173 cfm
Receiver size	35 ft^3
Initial pressure p1	145 psi(g)
Final pressure p4	580 psi(g)

Tab. 12 Example 1

2 Technical Data

2.11 Noise emissions [dB(A)]

$$SD = 14.5 \times \frac{173}{4 \times 35} \text{ psi}$$

SD = 18 psi

Condition check:

$p_4 - p_1 = 580 \text{ psi(g)} - 145 \text{ psi(g)} = 435 \text{ psi} > \text{switching differential SD } 18 \text{ psi} \rightarrow \text{Condition fulfilled}$



The setting for switching differential SD in the controller must not be lower than 18 psi.

Example 2

Machine flow rate Q	219 cfm
Receiver size	9 ft ³
Initial pressure p1	190 psi(g)
Final pressure p4	217 psi(g)

Tab. 13 Example 2

$$SD = 14.5 \times \frac{219}{4 \times 9} \text{ psi}$$

SD = 88 psi

Condition check:

$p_4 - p_1 = 217 \text{ psi(g)} - 190 \text{ psi(g)} = 27 \text{ psi} < \text{switching differential SD } 88 \text{ psi} \rightarrow \text{Condition not fulfilled}$



Receiver is too small.

Selected new receiver size → 35 ft³

$$SD = 14.5 \times \frac{219}{4 \times 35} \text{ psi}$$

SD = 23 psi

Condition check:

$p_4 - p_1 = 217 \text{ psi(g)} - 190 \text{ psi(g)} = 27 \text{ psi} > \text{switching differential SD } 23 \text{ psi} \rightarrow \text{Condition fulfilled}$



The setting for switching differential SD in the controller must not be lower than 23 psi.

2.11 Noise emissions [dB(A)]

Main frequency	CN 7 C	CN 11 C	CN 15 C	CN 22 C
60 Hz	72	74	75	76

Noise pressure level as per ISO 2151 and basic standard ISO 9614-2, operating at maximum gauge working pressure and maximum speed; tolerance: ±3 dB(A)

Tab. 14 Noise emissions [dB(A)]

2.12 Motors and performance

2.12.1 Compressor motor

Mains frequency: 60 Hz

	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Rated power [hp]	10	15	20	30
Rated speed [rpm]	3600	3600	3600	3600
Enclosure protection	TEFC	TEFC	TEFC	TEFC
Motor bearing regreasing interval [h]	8000	8000	8000	8000
Grease required per bearing [g]	10	10	10	10

h = operating hours

Tab. 15 Compressor motor (60Hz)

2.12.2 Option K1 Fan motor

Mains frequency: 60 Hz

	CN 7 C - CN 22 C
Rated power [hp]	1.68
Rated speed [rpm]	1030
Enclosure protection	TEFC

h = operating hours

Tab. 16 Fan motor (60Hz)

2.13 Compressor oil recommendation

The standard compressor oil is VDL 150.

For special applications FGP oil is used and the machine carries a sticker indicating this.

Information on ordering compressor oil is found in chapter 11.

➤ Mark the oil that your compressor contains in the table below.

	Standard oil	Special oil
Oil type	VDL 150	FGP
Description	Synthetic oil	Synthetic oil
Application	Standard oil for all applications except in connection with processing of foodstuffs. May contain traces of silicone.	Specially for use in compressors where the compressed air may occasionally come into contact with foodstuffs.

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

	Standard oil	Special oil
Oil contained in my compressor		
* Cool to moderate ambient temperatures, low humidity, moderate to high duty cycle.		

Tab. 17 Compressor oil recommendation

2.13.1 Compressor oil charge quantity

Type	Total charge [quarts]	Topping off volume [qt] (minimum–maximum)
N 253	2.3	0.2
N 502	4.8	0.39

Tab. 18 Compressor oil charge quantity

2.14 Power supply

Basic requirements

The machine is designed for an electrical supply according to National Electric Code (NEC), edition 2020, particularly article 670 and NFPA 79, edition 2018, particularly section 4.3. In the absence of any user-specified alternatives, the limits given in these standards must be adhered to. Consult manufacturer for any other specific power supply.

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

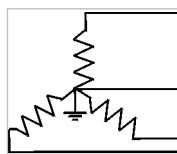
If external sensors or communication lines are to be connected to the machine, use shielded cables and insert the same through EMC fittings into the control panel.

Three-phase

Do **NOT** operate package on any unsymmetrical power supply. Also do **NOT** operate package on power supplies such as a three phase WYE system with center point not solidly grounded or three-phase (open) delta.

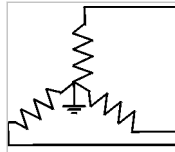
The machine requires a symmetrical three-phase power supply transformer with a WYE configuration output as shown in Figure 2 and Figure 3. In a symmetrical three phase supply the phase angles and voltages are all the same.

Other power supplies are not suitable.



03-S0235

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



03-S0236

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

Further information Please contact an authorized KAESER service representative for options.
The electrical diagram 13.3 contains further specifications for electrical connection.

2.14.1 Power supply specifications

The following multi-strand copper core wires are given according to 2020 NEC 310.14, 310.15, 310.16 and table 310.16 for 40°C ambient temperature.

If other local conditions prevail, like for example high temperature, the cross section should be checked and adjusted according to 2020 NEC 110.14(C), 220.3, 310.14, 310.15, 310.16, table 310.15(B)(1), table 310.15(C)(1), 430.6, 430.22, 430.24, 670.4(A) and other local codes.

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

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

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

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

Type	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Rated power [hp]	10	15	20	30
Pre-fuse [A]	45	70	90	125
Supply per phase and ground (75 °C)	AWG 8	AWG 4	AWG 3	AWG 1
Consumption [A]	31.9	45.6	60.1	82.7

Tab. 19 Supply 208V / 3ph / 60Hz

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

Type	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Rated power [hp]	10	15	20	30
Pre-fuse [A]	45	60	80	110
Supply per phase and ground (75 °C)	AWG 8	AWG 6	AWG 4	AWG 2
Consumption [A]	29.5	42.3	56.3	75.7

Tab. 20 Supply 230V / 3ph / 60Hz

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

Type	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Rated power [hp]	10	15	20	30
Pre-fuse [A]	25	40	50	70
Supply per phase and ground (75 °C)	AWG 10	AWG 8	AWG 8	AWG 4
Consumption [A]	17.8	25.6	34.2	45.7

Tab. 21 Supply 380V / 3ph / 60Hz

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

Type	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Rated power [hp]	10	15	20	30
Pre-fuse [A]	20	30	45	50
Supply per phase and ground (75 °C)	AWG 12	AWG 10	AWG 8	AWG 6
Consumption [A]	15.1	21.5	28.5	38.2

Tab. 22 Supply 460V / 3ph / 60Hz

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

Type	CN 7 C	CN 11 C	CN 15 C	CN 22 C
Rated power [hp]	10	15	20	30
Pre-fuse [A]	15	25	35	45
Supply per phase and ground (75 °C)	AWG 14	AWG 10	AWG 10	AWG 8
Consumption [A]	12.1	17.2	22.9	30.5

Tab. 23 Supply 575V / 3ph / 60Hz

2.15 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 = 11 bar (160 psi), pressure/volume product = 990.

Inspection	Inspection interval	Inspection authority
Installation and equipment inspection	Before commissioning if $PS \times V \leq 200$	Competent person (e. g. KAESER SERVICE technician)
	Before commissioning on compressors with type approval (Ordinance on Industrial Safety and Health, annex 5 no. 25) $PS \times V \leq 1000$.	Competent person (e. g. KAESER SERVICE technician)
	Before commissioning if $PS \times V > 200$.	Approved supervisory body
Internal inspection	Every 5 years after installation or the last inspection if pressure PS x volume $V \leq 1000$	Competent person (e. g. KAESER SERVICE technician)
	Every 5 years* after installation or the last inspection if $PS \times V > 1000$.	Approved supervisory body
Strength test	Every 10 years after installation or the last inspection if $PS \times V \leq 1000$	Competent person (e. g. KAESER SERVICE technician)
	Every 10 years* after installation or the last inspection if $PS \times V > 1000$.	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. 24 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	Maintenance personnel
	Within a 3 ft. radius around the machine	

Tab. 25 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 Service life of safety functions

Pursuant to ISO 13849-1: 2015, the 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; 3	c
Cooler compressed air inlet temperature switch	1; 3	c

Tab. 26 Category and Performance Level

The safety-relevant components of the safety functions are designed for a service life of 20 years. The service 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
- Cooler compressed air inlet temperature switch

1. Have the components of the safety functions replaced after a service life of 20 years by KAESER.
2. Have the reliability of the safety functions checked by KAESER.

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.

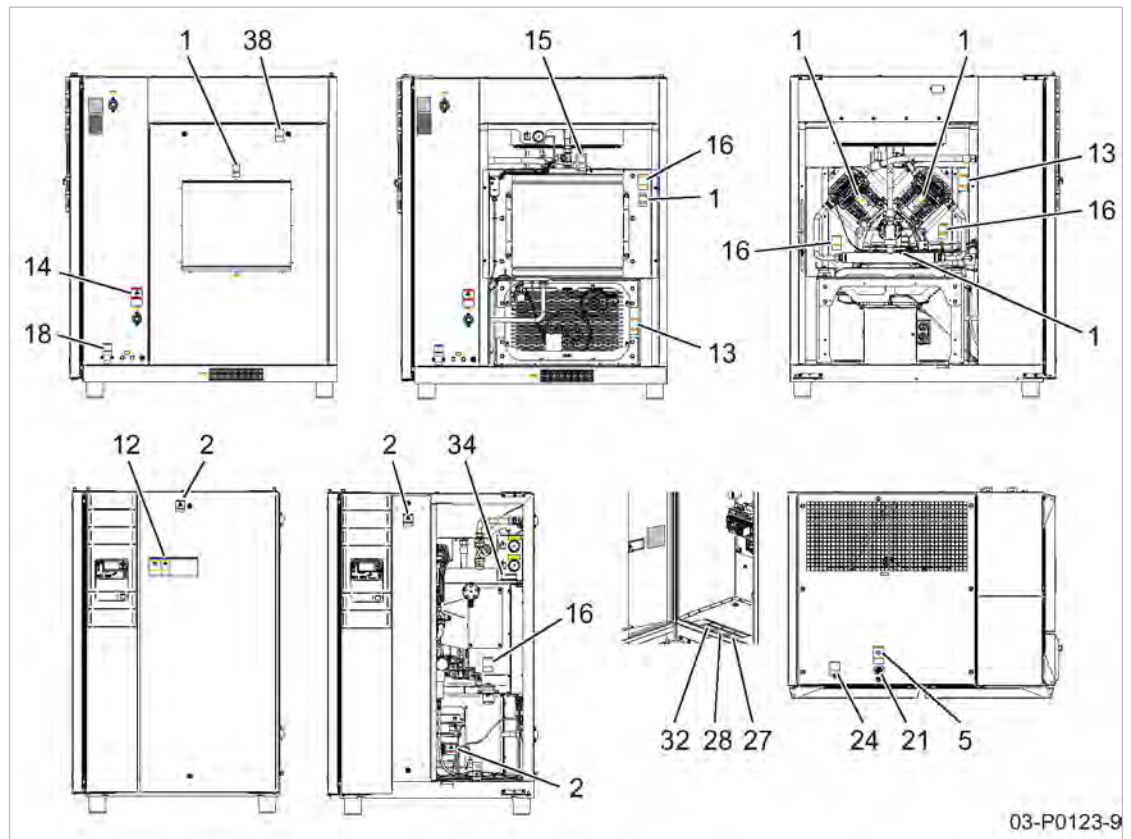


Fig. 4 Location of safety signs

Item	Symbol	Meaning
1		Hot surface can cause burns! ➤ Let the machine cool down. ➤ Work carefully. ➤ Wear long-sleeved garments (not synthetics such as polyester) and protective gloves.
2		HAZARDOUS VOLTAGE! Touching electrically live components can cause serious injury or death. ➤ Isolate completely from the power supply (all conductors) and ensure the supply cannot be switched on again (lock out). ➤ Check that no voltage is present.
5		Flying debris! Severe injury, especially of the eyes, could result while the fan is rotating. ➤ Prevent all materials from falling into the fan guard. ➤ Never work over the running machine. ➤ Isolate completely from the power supply (all conductors) and ensure the supply cannot be switched on again (lock out).

3 Safety and Responsibility

3.8 Safety signs

Item	Symbol	Meaning
12		Injury and/or machine defects caused by improper use! ➤ Maintenance should be performed by properly trained personnel only. ➤ Read and understand manual and all safety labels before switching the machine on. ➤ Never remove or cover safety labels.
		Machine starts automatically! Severe injury could result from rotating components, electrical voltage and air pressure. ➤ Isolate completely from the power supply (all conductors) and ensure the supply cannot be switched on again (lock out). ➤ Check that no voltage is present.
13		Severe injury could result from touching the fan blades while it is rotating! ➤ Never switch the machine on without guard in place over the fan blade. ➤ Isolate completely from the power supply (all conductors) and ensure the supply cannot be switched on again (lock out).
		
14		Injury and/or contamination can result from breathing compressed air! Contamination of food can result from using untreated compressed air for food processing! ➤ Never breathe untreated compressed air. ➤ Air from this compressor must meet OSHA 29 CFR1910.134 and FDA 21 CFR178.3570 standards, if used for breathing or food processing. ➤ Use proper compressed air treatment. - Food grade coolant must be used for food processing.
		
15		Loud noise when safety relief valve opens! Ear damage and burns can occur. ➤ Wear ear protection and protective clothing. ➤ Close all maintenance doors and cover panels.
		
16		Serious injury or death can result from loosening or opening component under pressure! ➤ Depressurize all pressurized components and enclosures. ➤ Ensure that the machine remains depressurized. ➤ Check that machine is depressurized.
		
18		Bearing damage due to re-greasing in standstill! ➤ Re-grease the bearings only with the motor running. ➤ Use only ESSO UNIREX N3 bearing grease. ➤ For lubrication interval and volume required, please refer to service manual.
		
21		Danger of falling or damage to the machine! ➤ Do not sit or walk on the enclosure. ➤ Do not place or store any load on the enclosure.
		
24		Risk of hand injury without safety guard! ➤ Never switch the machine on without guard in place over the fan blade.
		

3 Safety and Responsibility

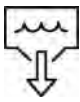
3.9 Operating information signs

Item	Symbol	Meaning
27		Risk of fire or electric shock! If the interrupter has tripped, current-carrying components of the controller should be examined and replaced if damaged to reduce the risk of fire or electric shock.
28		Risk of fire or electric shock! To maintain overcurrent, short-circuit and ground-fault protection, the manufacturers instructions for setting the interrupter must be followed to reduce the risk of fire or electric shock.
32		EXTERNAL VOLTAGE! Touching electrically live components can cause serious injury or death. ➤ Isolate completely from the power supply (all conductors) and ensure the supply cannot be switched on again (lock out). ➤ Check that no voltage is present.
34		Serious injury can result from compressed air. ➤ Do not direct air stream at body.
38	 	Risk of hand injury during machine run-on! ➤ Wait at least 1 minute following machine shutdown before opening enclosure.

Tab. 27 Safety signs

3.9 Operating information signs

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

Symbol	Meaning
	Service the air filter regularly.
	Drain the condensate daily. If fitted: Check the automatic condensate drain at regular intervals.
	Regularly check the oil level and change the oil at the intervals specified.

Tab. 28 Operating information signs

3.10 Emergency situations

3.10.1 Correct fire fighting

Suitable measures

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

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

Extinguishing substances

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

3.10.2 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.

4 Design and Function

4.1 Enclosure

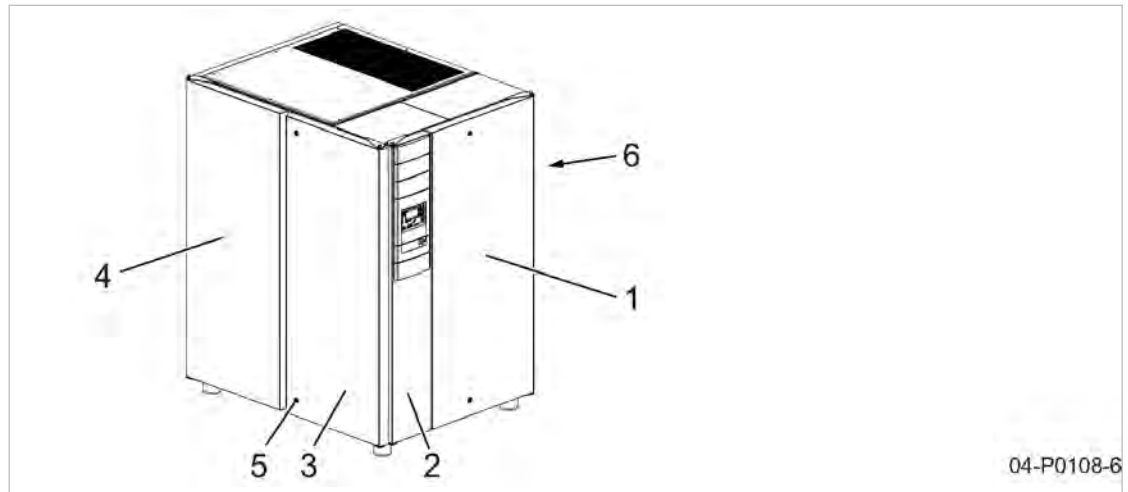


Fig. 5 Enclosure overview

- | | |
|----------------------------|---------------------------|
| ① Maintenance door (side) | ④ Maintenance door (left) |
| ② Control cabinet door | ⑤ Latch |
| ③ Maintenance door (right) | ⑥ Removable access panel |

When closed, the housing serves various functions:

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

The housing is not suitable for the following purposes:

- Walking on, standing on, or sitting on
- No loads of any kind should be placed or stored on the machine

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

Access doors are hinged to swing open, removable panel must be lifted off.

The latches are released by means of a key supplied with the machine.

4.2 Machine function

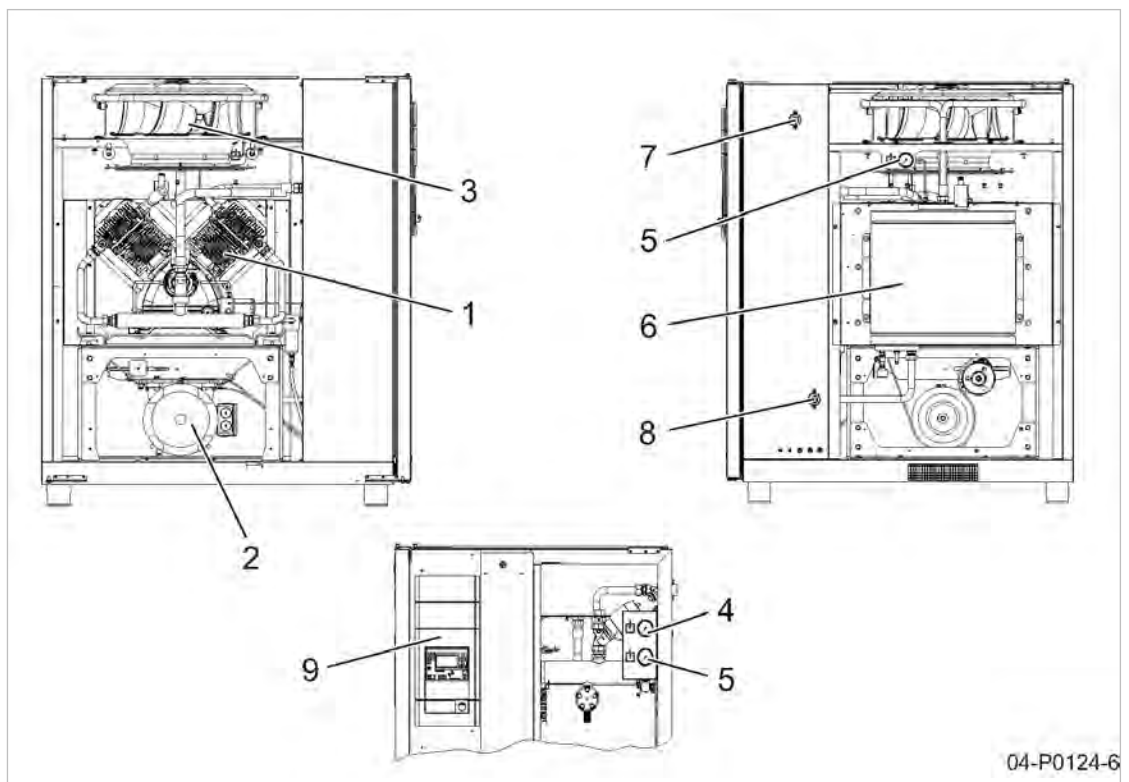


Fig. 6 Machine overview

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

4.2.1 Brief description

An electric motor drives the compressor block via a V-belt.

The block is equipped with two cylinders.

The cooling fins on the cylinder and cylinder head serve to dissipate the heat, which is then conveyed outside the machine by a fan.

When operating in LOAD mode, the inlet valve is open and the safety relief valve closed.

The pre-compressed air is drawn into the compressor block through the open inlet valve and then conveyed into the high-pressure network via the open check valve and the cooler.

During this process, the cooler serves to cool down the compressed air.

4.3 Safety devices

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

- **EMERGENCY STOP push button:**
Shuts the machine down immediately in an emergency situation. The motor stops. The pressure system is vented.

- Safety relief valve:
The safety relief valve protects the system against impermissible pressure rise. It is delivered ready-set by the factory.
- Enclosure and covers for moving parts and electrical connections:
Used for protection against unintentional contact.
- Temperature sensors:
Trigger shutdown of the machine if temperatures rise to an impermissible level.
- Compressed air inlet temperature switch, cooler:
An alarm message is displayed if the machine exceeds the compressed air inlet temperature at the cooler.
- Pressure transducer:
Monitors the compression ratios at various locations within the machine.

4.4 Operating panel SIGMA CONTROL 2

Keys

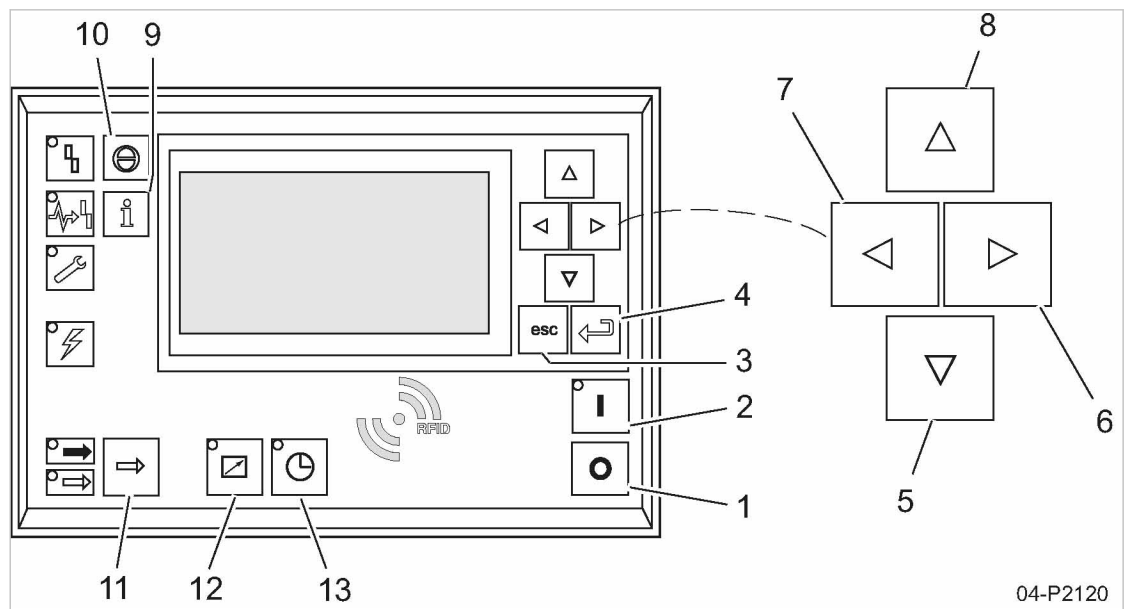


Fig. 7 Keys – overview

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.

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

Tab. 29 Keys

LEDs

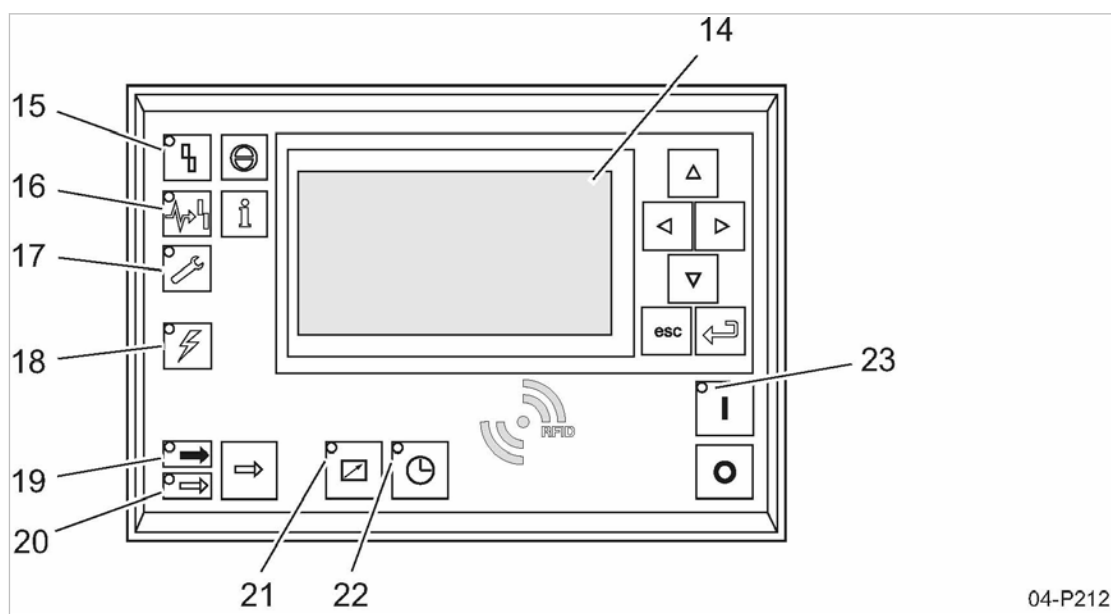


Fig. 8 Indicators – overview

Item	Name	Function
14	Indicator field or display	Graphic display with 8 lines and 30 characters per line.
15	<i>Fault</i>	Flashes red to indicate a machine fault. Continuous red light after acknowledgement.
16	<i>Communication</i>	Continuous red illumination if a communication connection (Ethernet, USS, COM modules) has a fault.

Item	Name	Function
17	<i>Warning</i>	Flashes in yellow in the following events: ■ Maintenance work due ■ Warning message Lights yellow continuously when acknowledged.
18	<i>Control voltage</i>	Lights green when the power supply is switched on.
19	<i>LOAD</i>	Lights green when the compressor is running under LOAD.
20	<i>IDLE</i>	Lights green when the compressor is running in IDLE. Flashes when the «LOAD/IDLE» toggle key is pressed.
21	<i>Remote control</i>	The LED lights when the machine is in remote control.
22	<i>Timer control</i>	The LED lights when the machine is in clock control (timer).
23	<i>Machine ON</i>	Lights green when the machine switched on.

Tab. 30 Indicators

RFID sensor field

RFID is the abbreviation for “Radio Frequency Identification” 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.)

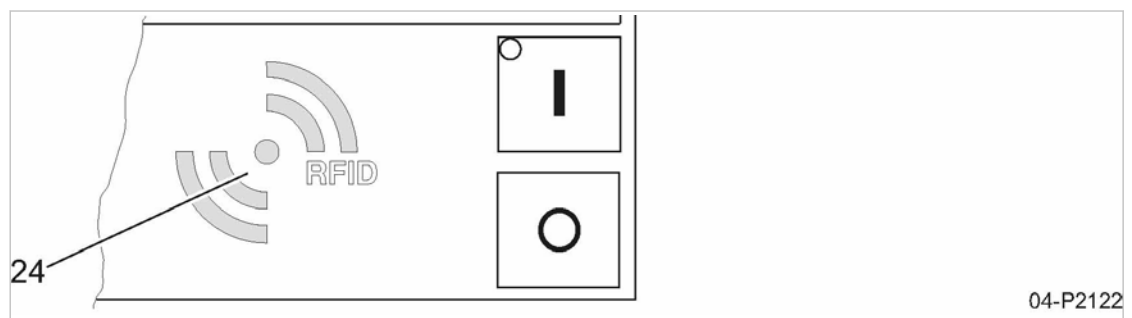


Fig. 9 RFID sensor field

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

Tab. 31 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. 32 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.

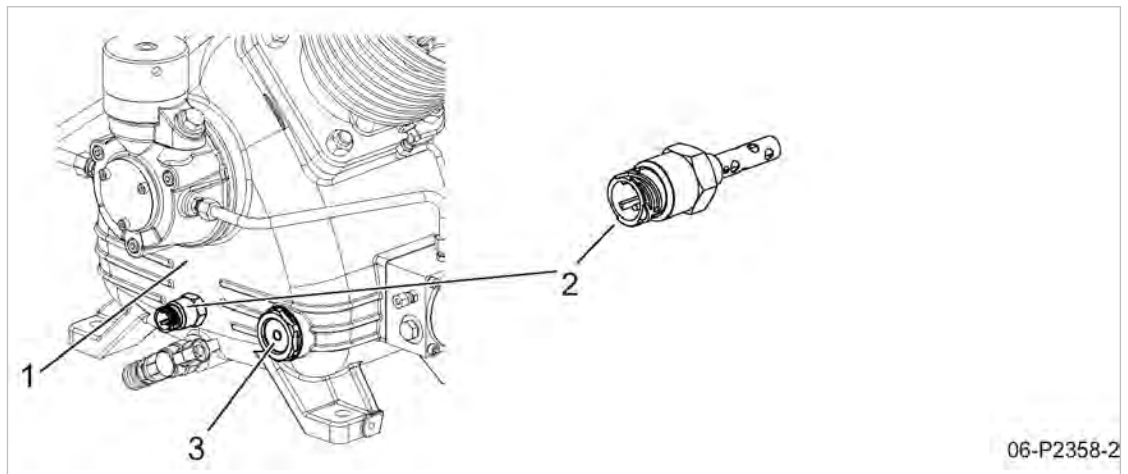


Fig. 10 Oil level monitoring

- 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 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.

4.8 Options

The options available for your machine are described below.

4.8.1 Option F14 KAESER FILTER KB ECO-DRAIN

- KAESER FILTER KB removes aerosols and solid particles from the intake compressed air.

Condensate is removed via an electronic condensate drain, which opens automatically as soon as sufficient liquid has accumulated in the filter housing. The electronic condensate drain can be swivelled horizontally through 360 degrees.

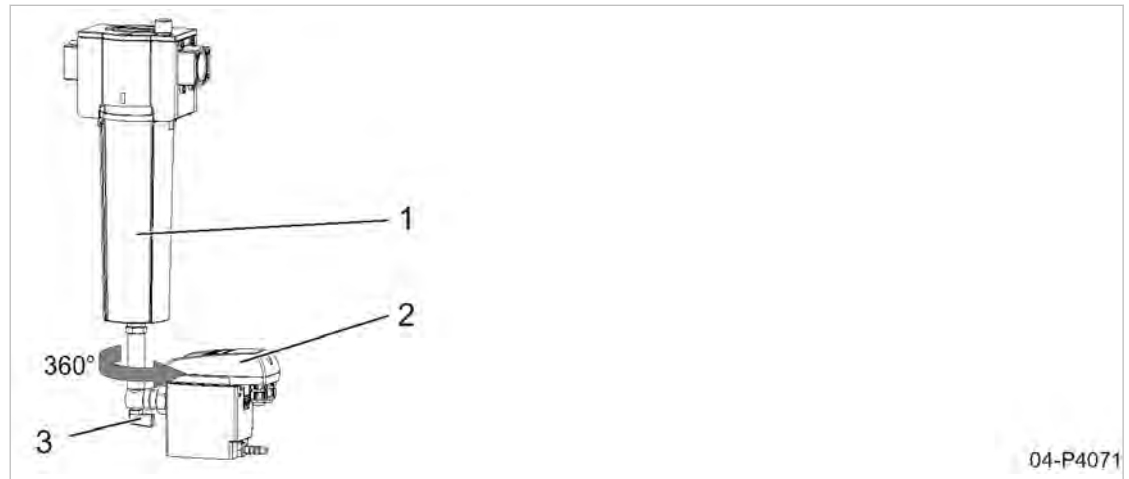


Fig. 11 Option F14 KAESER FILTER KB ECO-DRAIN

- ① KAESER FILTER KB
- ② Electronic condensate drain
- ③ Shut-off valve

Further information A description of the option codes can be found in chapter 2.2.
The information provided in chapter 6.5 is also valid for the condensate line.

4.8.2 Option H1 Machine mountings

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

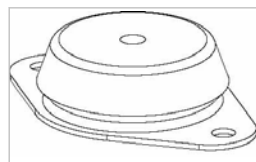


Fig. 12 Machine mountings

4.8.3 Option H4 Oil collection tray

Any leaks occurring at the machine are captured by the oil collection tray.

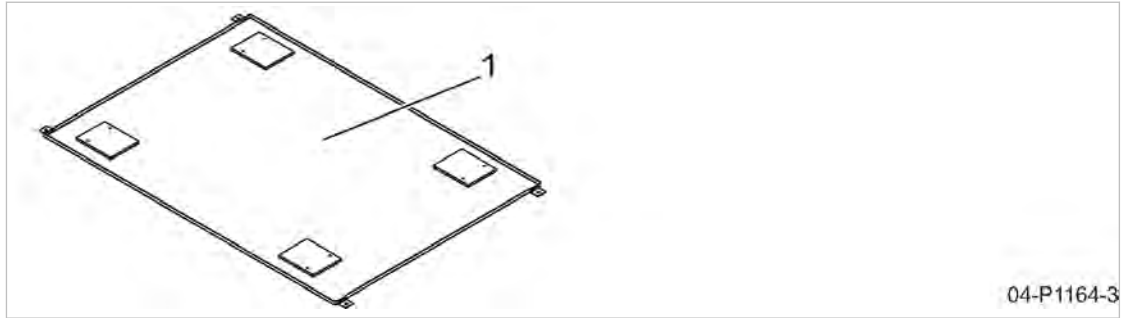


Fig. 13 Oil collection tray

① Oil collection tray

4.8.4 Option K6 Electronic condensate drain

The condensate accumulating in the compressed air cooler is removed by an electronic condensate drain.



The electronic condensate drain is additionally equipped with a contact for malfunction (alarm function). A floating contact will transmit a signal in the event of a fault.

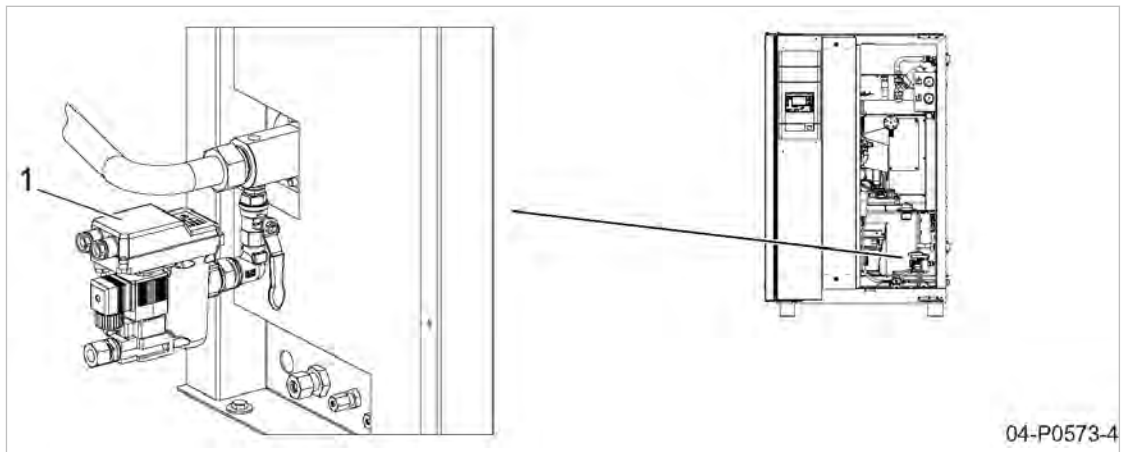


Fig. 14 Option K6: Electronic condensate drain

① Condensate drain

Condensate drain operating states

The operating states of the condensate drain are displayed by LEDs:

Display	Operating state	Function
	<i>Ready to operate</i>	Voltage is applied.
	Draining	Drain line open
	<i>Fault/alarm</i>	Fault occurred. Valve opens and closes repeatedly in an attempt to clear the fault.

Display	Operating state	Function
	Testing the valve function	Press the key for approximately 2 seconds to test the valve function.
	Test the alarm function	To test the alarm function, press and hold the key for at least 1 minute.

Tab. 33 Option K6: Electronic condensate drain operating states

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 a suitable machine room. Information on wall clearances and ventilation is given below.



The clearances specified are recommended clearances and ensure unhindered access to all machine parts.

- In the event that these cannot be complied with, please consult an authorized KAESER service representative for further advice.

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

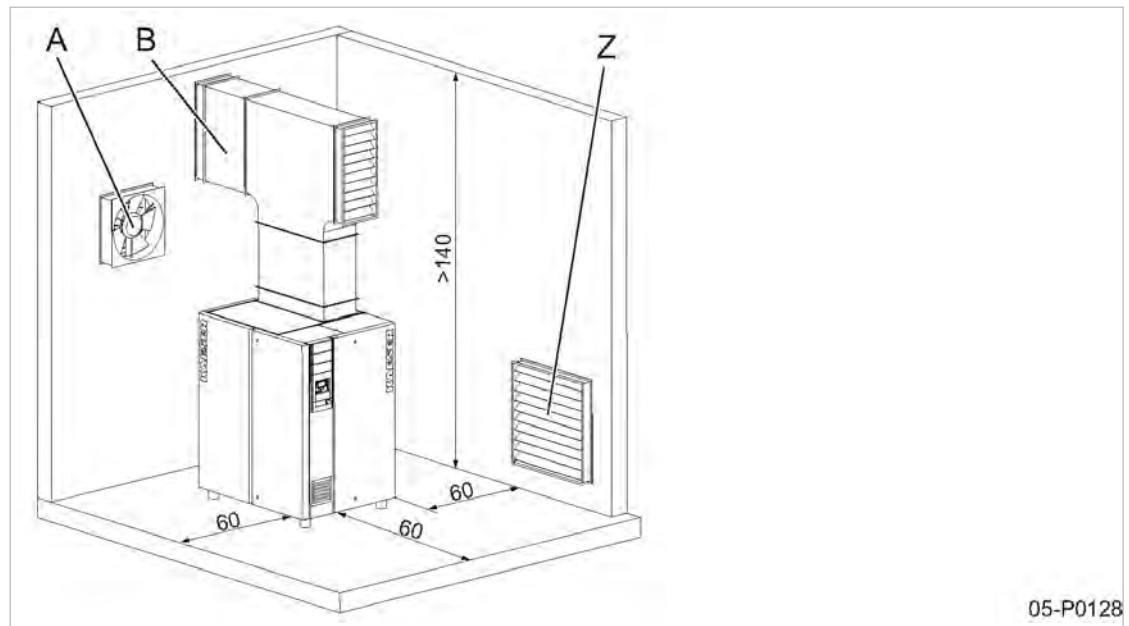


Fig. 15 Recommended installation, distances [in]

- (A) Exhaust fan
- (B) Exhaust air duct
- (Z) Ventilation inlet air opening

1. **NOTICE** *Ambient temperature too low!*
Frozen condensate and highly viscous compressor oil can cause damage when starting the machine.
 - Ensure that the temperature of the machine is at least +37°F before switching it on.
 - Heat the machine room sufficiently or install a auxiliary heater.
2. Ensure accessibility and 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 air inlet and exhaust air openings in the enclosure remain open.
5. Observe additional clearances in accordance with local occupational safety and building regulations, so as to ensure that escape and rescue routes can be reached safely even when the machine enclosure is open.



If the machine is installed in a location containing other equipment (compressors, refrigerated dryers, etc.), then **under no circumstances** may hot exhaust air be directed towards the cooling air inlet side of the machine.
 Hot exhaust air can cause damage to the machine.

5.2.2 Ensuring adequate machine room ventilation

In the absence of an exhaust air duct, a high-performance exhaust fan must be installed at the user-end (see chapter 2.6).

Adequate ventilation of the machine room fulfils several functions:

- It conveys exhaust heat away from the machine, thus ensuring the necessary operating conditions.



- In the event that conditions for adequate ventilation of the machine room cannot be guaranteed, please consult an authorized KAESER service representative or further advice.

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. Ensure that the machine and exhaust fan can only be operated when the air inlet opening is open.
3. Keep the inlet and exhaust openings free from obstructions so that the cooling air can flow freely through the machine room.
4. Ensure clean air so as to support the proper functioning of the machine.

Further information See chapter 13.2 for dimensions of air inlet and exhaust air openings.

5.2.3 Exhaust air ducting design

The exhaust air duct serves to convey away the cooling air, which results in the room heating up less than it would otherwise (lower air inlet requirement).

On the air inlet and exhaust air side, the machine can only overcome the air resistance stipulated within its design specifications. Any additional air resistance will reduce the airflow and negatively affect cooling of the machine.

Consult an authorized KAESER service representative before determining:

- Design of the exhaust air ducting
 - Junction between machine and exhaust air ducting
 - Length of the ducting
 - Number of bends in the ducting
 - Design of flaps or shutters
- Consult KAESER for advice.

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 to the compressed air network

Install flexible compressed air lines that run as directly as possible to the low-pressure and high-pressure sides of the machine. If the lines are directed upwards, 90 ° bends may be required.

Use a swan neck pipe for the compressed air connection to the low-pressure and high-pressure networks.



Condensate in the compressed air network can damage the piping:

- Only use corrosion-resistant piping.
- Use fluoroelastomers as the material for the seals.
- Take the electrochemical series into account.
- Consult KAESER regarding suitable materials for the compressed air network.
- Do not introduce or discharge any forces to/from the machine for which the compressive forces must be compensated by bracing.

Precondition Fully vent the compressed air network (see chapter 10.11).

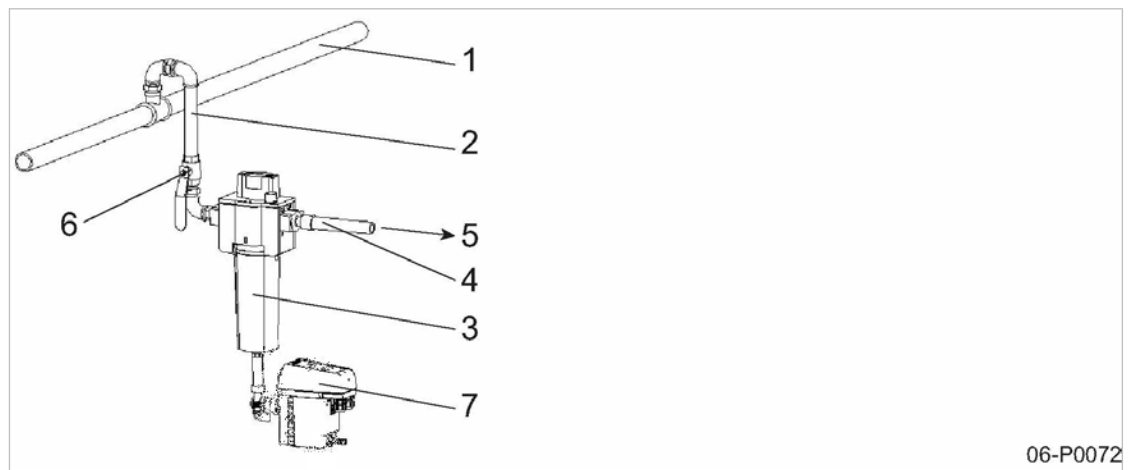
⚠ WARNING

High pressure!

High, pulsating and rising pressures.

- *Avoid compressive forces entering/exiting the machine by using appropriate bracing (fixed point) for the compressed air lines.*

6.3.1 Connecting the machine to the low-pressure network



06-P0072

Fig. 16 Low-pressure network connection

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

- Install a KAESER FILTER KB to ensure that the inlet air is free from condensate and dirt (when Option F14 is selected, a KAESER FILTER KB is not required at the user-end).

1. **⚠ WARNING** *Serious injury can result from loosening or opening components under pressure!*
 - Fully vent all pressurized components and enclosures.
 - A shut-off valve must be installed by the user in the connecting line.
2. Connect the machine to the low-pressure network using a flexible compressed air line.

6.3.2 Connecting the machine to the high-pressure network

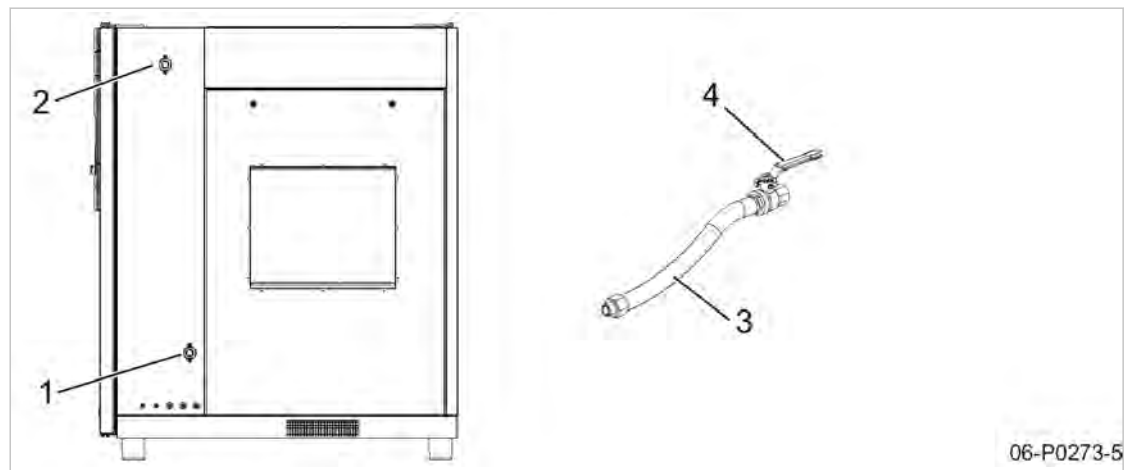


Fig. 17 High-pressure network connection

- | | |
|-----------------------------------|--------------------------------|
| ① Machine (compressed air outlet) | ③ Flexible compressed air line |
| ② Machine (compressed air inlet) | ④ User-end shut-off valve |

- Install an electronic condensate drain to prevent condensate from flowing back into the machine.

1. **⚠ WARNING** *Serious injury can result from loosening or opening components under pressure!*
 - Fully vent all pressurized components and enclosures.
2. A shut-off valve must be installed by the user in the connecting line.
- Connect the machine to the high-pressure network using a flexible compressed air line.

Further information For the size and positions of the compressed air connections, see the dimensional drawing in chapter 13.2.

Piping example with Option K6

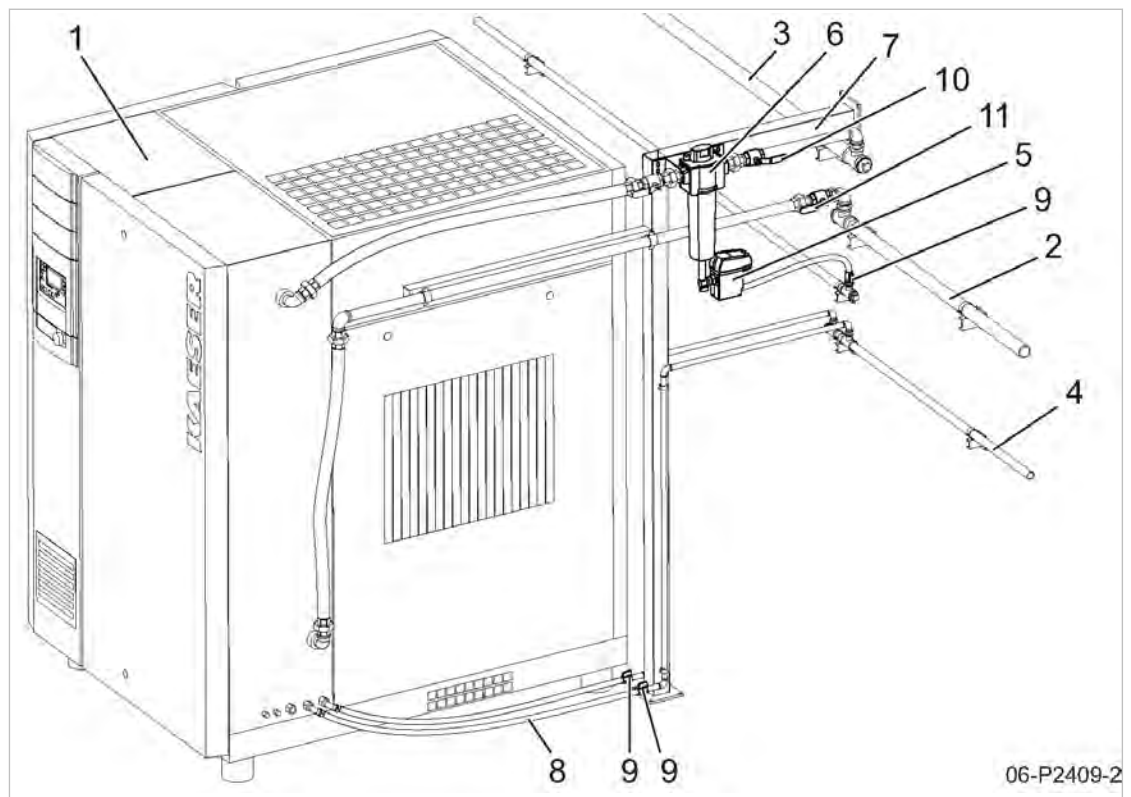


Fig. 18 Piping example with Option K6

- | | | | |
|---|--|---|--|
| ① | Booster | ⑦ | Fixed point |
| ② | High-pressure network | ⑧ | Condensate line, Option K6 |
| ③ | Low-pressure network | ⑨ | User-end shut-off valve (condensate line) |
| ④ | Condensate line | ⑩ | User-end shut-off valve (initial pressure) |
| ⑤ | Electronic condensate drain (low pressure) | ⑪ | User-end shut-off valve (final pressure) |
| ⑥ | KAESER FILTER KB | | |

➤ Shut-off valves must be installed by the user in the condensate line.



When Option F14 is selected, a KAESER FILTER KB is not required at the user-end.

Piping example without Option K6

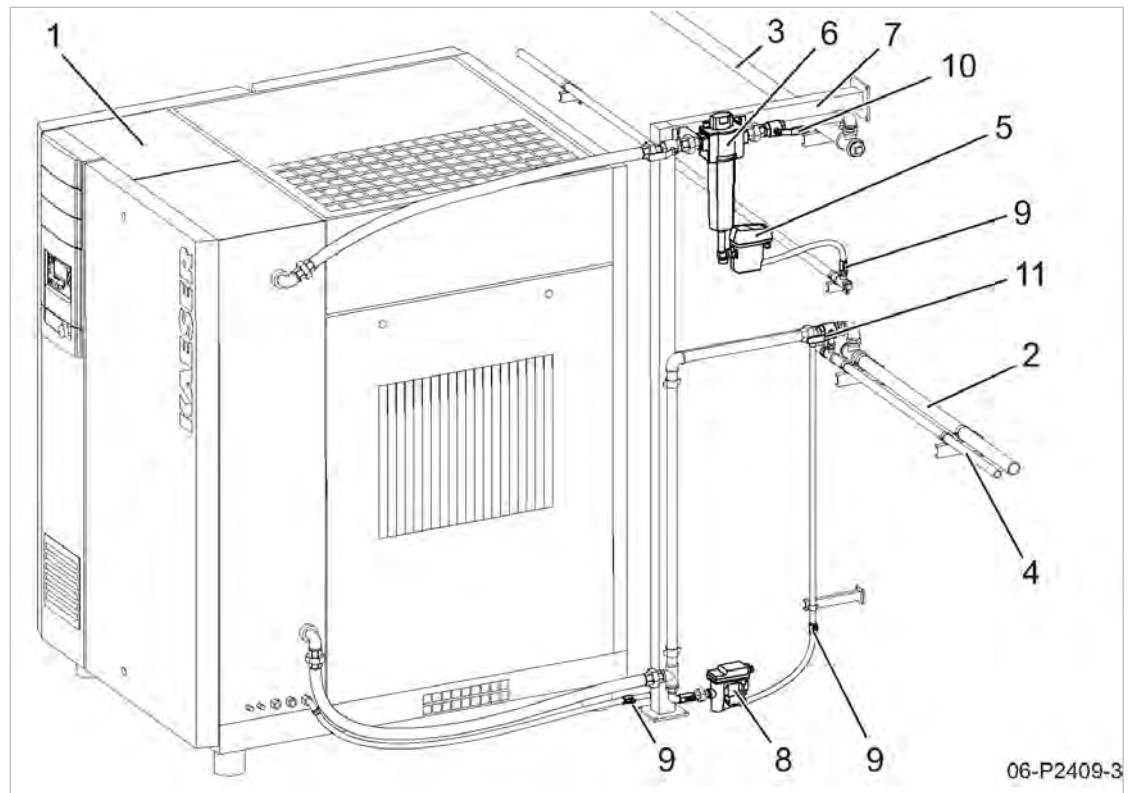


Fig. 19 Piping example without Option K6

- | | | | |
|---|--|---|---|
| ① | Booster | ⑦ | Fixed point |
| ② | High-pressure network | ⑧ | Electronic condensate drain (high pressure) |
| ③ | Low-pressure network | ⑨ | User-end shut-off valve (condensate line) |
| ④ | Condensate line | ⑩ | User-end shut-off valve (initial pressure) |
| ⑤ | Electronic condensate drain (low pressure) | ⑪ | User-end shut-off valve (final pressure) |
| ⑥ | KAESER FILTER KB | | |

- A shut-off valve must be installed in the condensate line at the user-end.
- Install the electronic condensate drain (high pressure) as a water trap in the compressed air outlet line.



When Option F14 is selected, a KAESER FILTER KB is not required at the user-end.

6.4 Installation example

The following installation example is a suggestion only and does not relate to an actual application.

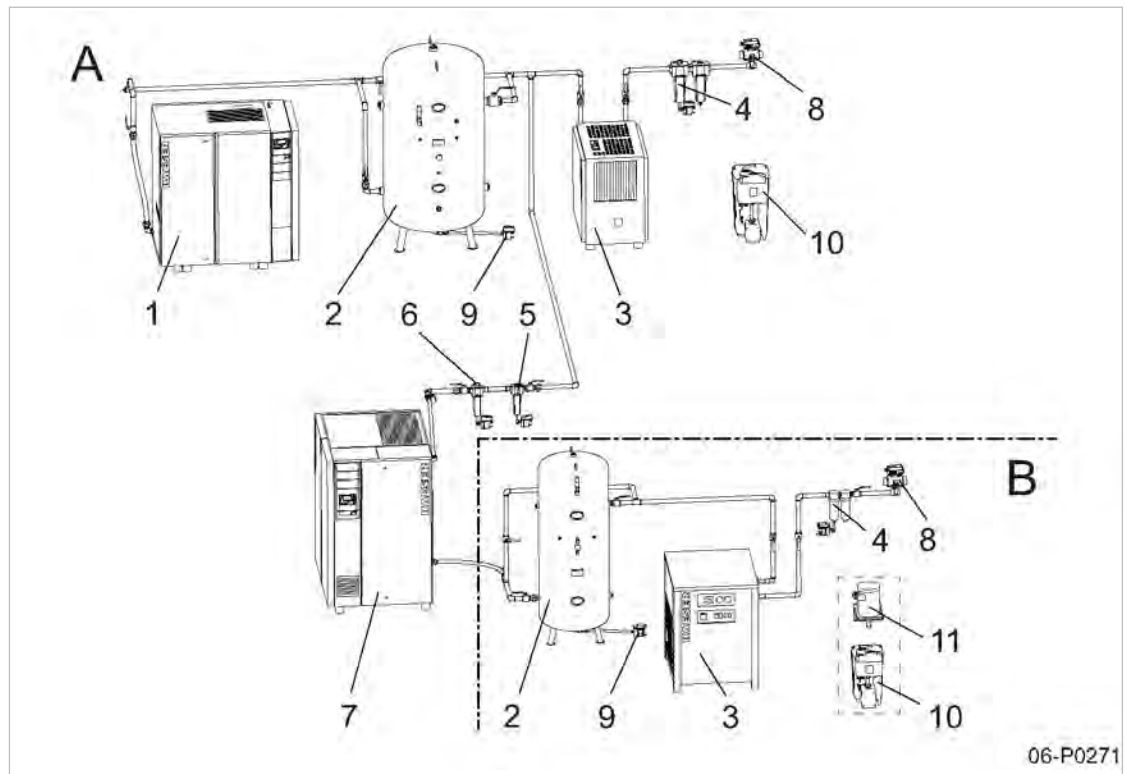


Fig. 20 Installation example (suggestion)

- | | |
|-------------------------------|-----------------------------------|
| (A) Low-pressure network | (6) KAESER FILTER KB |
| (B) High-pressure network | (7) Booster |
| (1) Rotary screw compressor | (8) Air-main charging system |
| (2) Air receiver | (9) Condensate drain |
| (3) Refrigerated dryer | (10) Condensate treatment system |
| (4) KAESER FILTER, e.g. KE/KA | (11) High-pressure relief chamber |
| (5) KAESER FILTER KC (Option) | |

6.5 Connecting the condensate drain

A threaded hose connection is provided for attaching a condensate line.



The condensate must be able to drain off freely.

- Only a condensate collection line with a minimum permissible gauge working pressure of 910 psi may be connected to the machine.

Fig. 21 depicts a recommended installation.

The condensate flows downwards in the collection line. This prevents condensate from flowing back into the machine.

If condensate flows into the condensate collection line at several points, you must install shut-off valves in the condensate lines so as to be able to shut off the lines before commencing any maintenance work.

6 Installation

6.5 Connecting the condensate drain

Condensate line

Characteristic	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 final pressure of the machine.

Tab. 34 Condensate line

Condensate collection line

Characteristic	Value
Gradient [%]	≥3
Max. length ¹⁾ [ft]	65
Material (pressure-resistant, corrosion-proof)	Copper Stainless steel Hose line

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

Tab. 35 Condensate collection line

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

¹⁾ Use compressed air flow rate as a guide for the expected condensate volume

Tab. 36 Condensate collecting line: Line cross-section

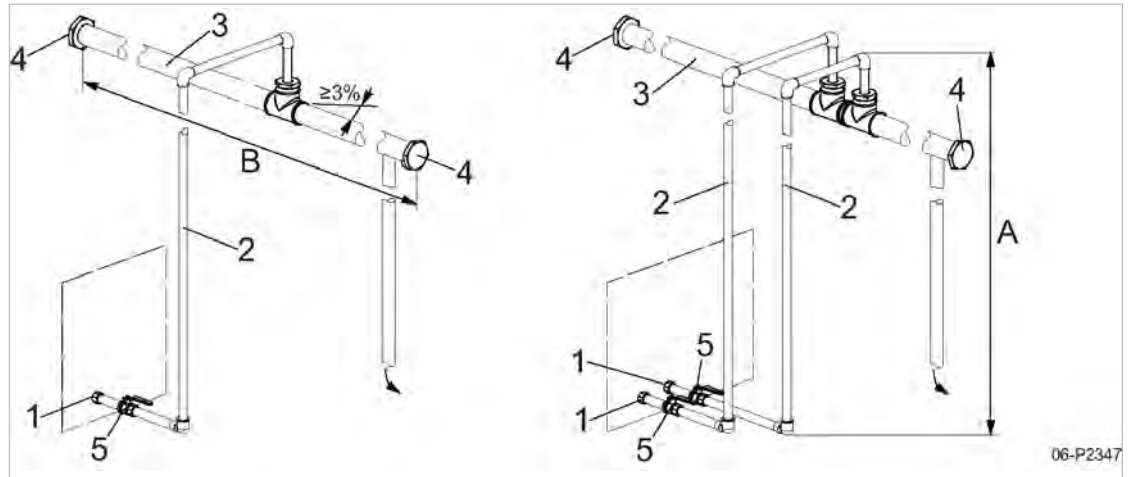


Fig. 21 Connecting the condensate drain

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

Depending on the version of the machine, you may require multiple condensate drains.

➤ Connect each condensate drain directly to the condensate collection line.



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

Further information

The size and position of the connection port can be found in the dimensional drawing provided in chapter 13.2.

6.6 Connecting the machine to a power supply network

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

The tolerance limits of the power supply network are within the permissible tolerance limits of the rated machine voltage.

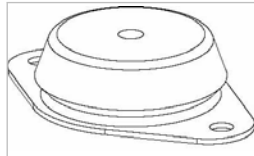
1. The power supply must only be established by authorized installation personnel or authorized, certified electricians.
2. Observe required safety measures as stipulated in the applicable regulations and in national accident prevention regulations. Also observe the regulations of the local electricity supplier.
3. Select supply cable cross-sections and overcurrent protective devices (backup fuses) in accordance with local regulations.
4. Test the overload protective device to ensure that the time it takes to disconnect in response to a fault is within the permitted limit.
5. The user is required to fit the machine with a lockable power supply disconnecting device in accordance with local regulations.
This could be, for example, a load disconnecting switch with fused input. If a circuit breaker is used, it must be suitable for the applicable motor starting characteristics.

6. Check that the control voltage transformer connections are in accordance with the power supply.
If necessary, reconnect the control transformer to suit the power supply.
7. **⚠ DANGER** *Danger of fatal injury from electric shock!*
 - *Switch off and lock out / tag out the power supply disconnecting device and verify the absence of any voltage.*
8. Connect the machine to the power supply.

Further information The wiring diagram in chapter 13.3 contains further details regarding the electrical connection.

6.7 Options

6.7.1 Option H1 Anchoring the Machine



04-P0023

Fig. 22 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 H4 Oil collection tray



Any leaks occurring at the machine are captured by the oil collection tray.

Precondition Installation site is level
Sufficient space for the assembly
Suitable hoisting gear

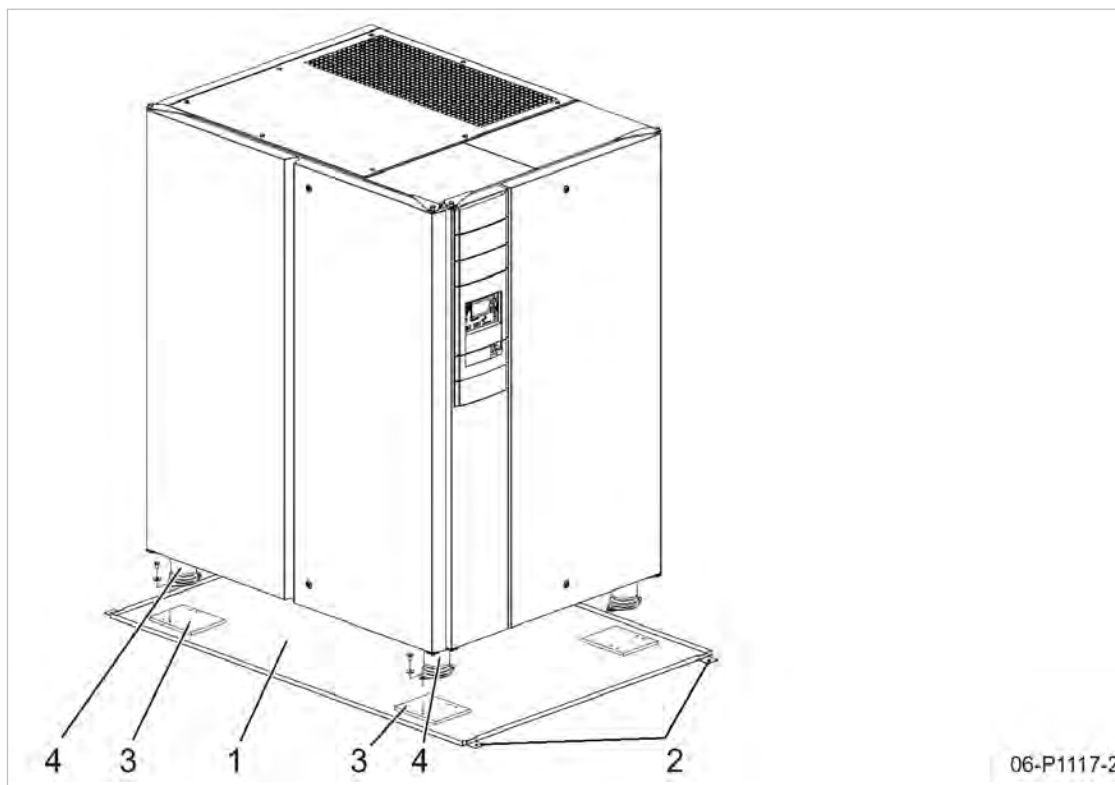


Fig. 23 Oil collection tray

- ① Oil collection tray
- ② Fixing points

- ③ Support plate for mounting feet
- ④ Mounting feet

- Horizontally align the oil collection tray on the ground and fasten at the fixing points.
- Use suitable hoisting gear to place the machine on the oil collection tray in such a manner that the mounting feet stand securely on the support plates.
- Screw the mounting feet onto the support plates.

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.

7 Initial Start-up

7.3 Checking installation and operating conditions

- 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. 37 Re-commissioning after storage/standstill

7.3 Checking installation and operating conditions

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

Check:	see chapter	Confirmed?
➤ Are the operators completely familiar with the applicable safety regulations?	–	
➤ Have all of the installation conditions been fulfilled?	5	
➤ Has a lockable power supply disconnecting device been installed at the user-end?	6.6	
➤ Are the tolerance limits of the power supply network within the permissible tolerance limits of the rated voltage (machine)? (see nameplate in the control cabinet)	2.1	
➤ Are the cable cross-sections and fuse ratings sufficient?	2.14.1	
➤ Is the compressor motor overload relay appropriate for the power supply voltage?	7.4	
➤ Is the fan motor protection switch appropriate for 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 established using a shut-off valve and flexible pressure line?	6.3	
➤ Has the belt tension been checked?	10.23	
➤ Has it been rechecked after 24 operating hours following initial commissioning?		
➤ Is there sufficient oil in the compressor block housing? (With the machine switched off, the oil level should be 0.2 – 0.3 inches above the red zone on the oil sight glass)	10.12	
➤ Has an external condensate line been connected?	–	
➤ Has it been verified that no other compressed air components are located in the hot exhaust air flow exiting the machine?	5.2.3	

Check:	see chapter	Confirmed?
➤ Is the machine firmly anchored to the floor? (Option H1)	6.7.1	
➤ Are all maintenance doors closed and all removable panels secured in place?	–	

Tab. 38 Checklist for 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 7.8.

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 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	xxxxxxxxx		Submenu
➤2	xxxxxxxxx		Submenu
➤3	xxxxxxxxx		Submenu
➤4	xxxxxxxxx		Submenu
➤5	xxxxxxxxx		Submenu
➤6	xxxxxxxxx		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.

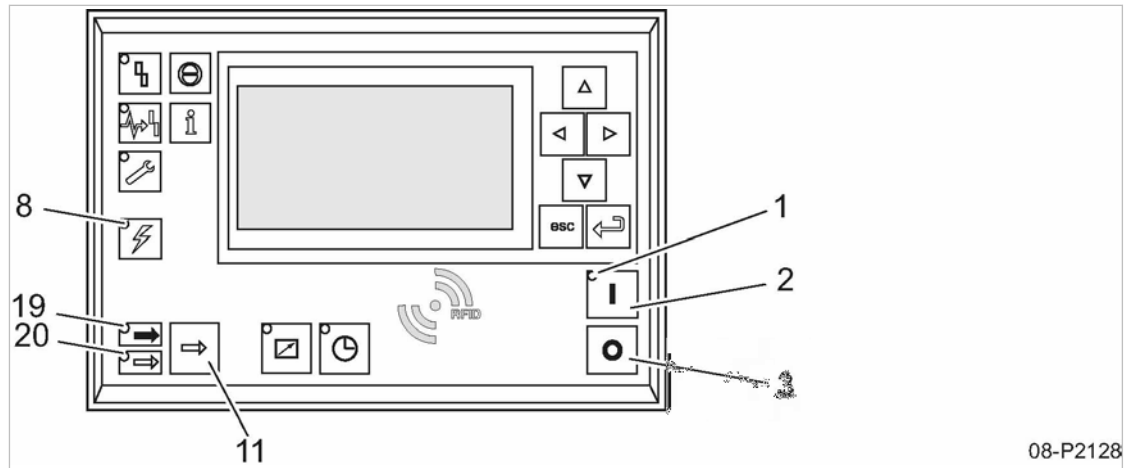


Fig. 24 Switching on and off

- | | |
|---------------------------------|--------------------------|
| ① <i>Machine ON</i> LED | ⑪ «LOAD/IDLE» toggle key |
| ② «ON» key | ⑲ <i>LOAD</i> LED |
| ③ «OFF» key | ⑳ <i>IDLE</i> LED |
| ⑧ <i>Controller voltage</i> 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.

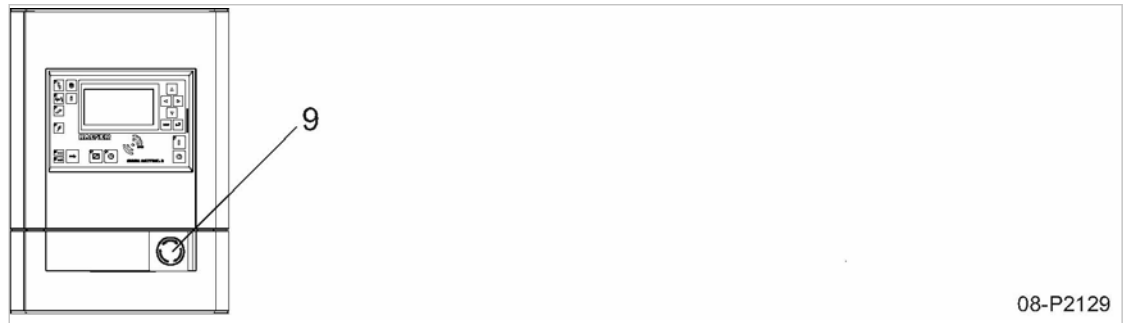


Fig. 25 Switching off in an emergency
⑨ EMERGENCY STOP push button

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.

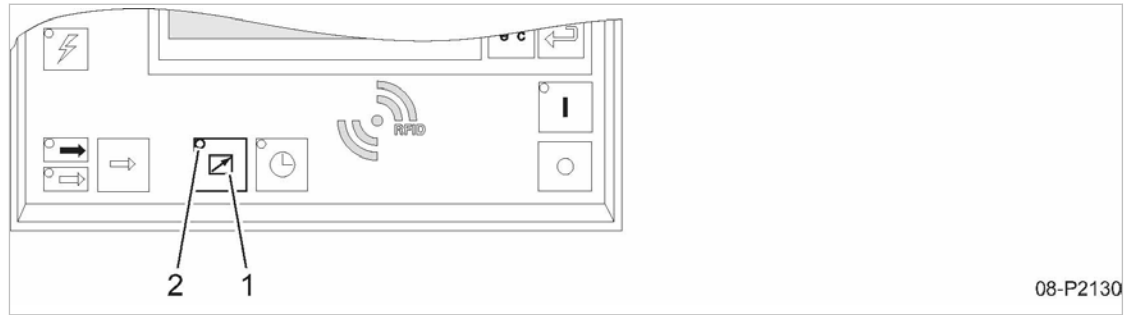


Fig. 26 Using the remote control for switching on and off

- 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. 39 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. 40 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.

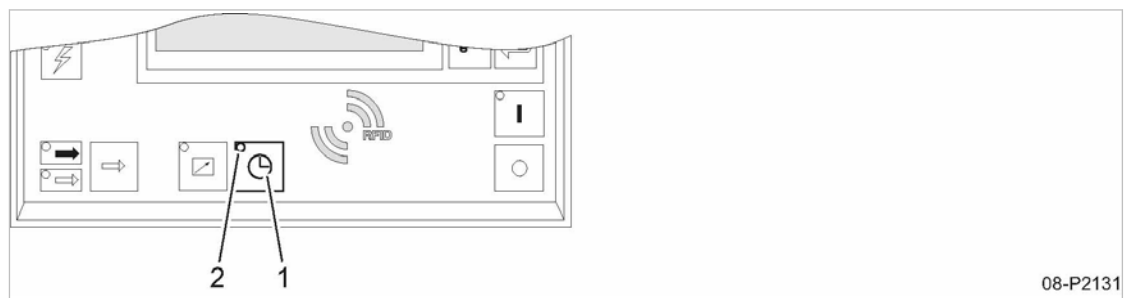


Fig. 27 Switching on and off with the clock

- 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. 41 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

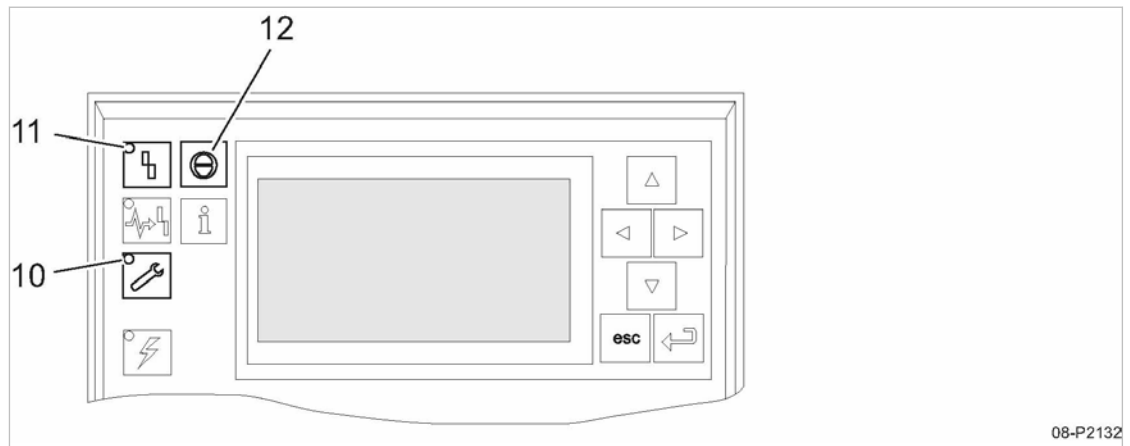


Fig. 28 Acknowledging messages

- 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. 42 Other faults and remedies

9.3 Electronic condensate drain alarm function

When the machine is equipped with both Option F14 and Option K6, two electronic condensate drains are installed.



Both electronic condensate drains are equipped with an alarm message contact. In the event of a fault, they can transmit a signal by means of a floating contact. The floating contacts for each electronic condensate drain are connected to the controller together.

Condensate drain warning/alarm message

Precondition A warning or alarm message is issued for the condensate drain.

1. Check on which of the two electronic condensate drains the alarm function has been activated (*Alarm* LED flashes when alarm function is active).

2. Undertake corrective measures on the corresponding condensate drain.

Message	Possible cause	Action
0068 Condensate drain	Condensate drain faulty / not ready.	Check condensate drain and condensate lines.
	Too much accumulated condensate.	Check the lines.
	Line broken/disconnected.	Check the ECO-DRAIN.
	Condensate cannot be drained.	Check the inlet conditions.

Tab. 43 Condensate drain alarm message

Further information A list of all warning and alarm messages can be found in the SIGMA CONTROL 2 operating manual.
Operating instructions for the electronic condensate drains can be found in chapter 13.6.

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 10.25.

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 and service work

The following table provides an overview of the various maintenance intervals for the machine.

Selected maintenance intervals for the machine can be displayed via the SIGMA CONTROL 2 controller.

Maintenance interval	Short description
Weekly	Week
Yearly	Year
SIGMA CONTROL 2: Maintenance package A (Every 1000 operating hours; at least every 1 years)	Package A
SIGMA CONTROL 2: Maintenance package B (Every 2000 operating hours; at least every 2 years)	Package B
SIGMA CONTROL 2: Maintenance package C (Every 12000 operating hours; at least every 6 years)	Package C
SIGMA CONTROL 2: Maintenance package D (Every 24000 operating hours; at least every 12 years)	Package D
SIGMA CONTROL 2: Belt inspection (Every 500 operating hours)	Belt
SIGMA CONTROL 2: Hose lines (Every 24000 operating hours; Interval dependent on the number of load changes for the machine)	Lines
SIGMA CONTROL 2: Air cooler (Interval dependent on the number of load changes for the machine)	Cooler
SIGMA CONTROL 2: Electrical system (Every 9000 operating hours)	Electrical system
At least after 20 years	20 years

Tab. 45 Maintenance intervals, regular maintenance and service work

The following table gives an overview of the regular maintenance and service work required.

1. Maintenance and service work should be carried out in a timely manner, taking local ambient and operating conditions into account.
2. Replace maintenance parts and operating fluids in accordance with their respective service lives.

10.2.3.1 Machine maintenance and service schedule

- Tasks indicated with "KS" may only be carried out by an authorized KAESER service representative.
- Carry out maintenance and service work in accordance with the following table and at the times specified:

Task	Week	Year	Package A	Package B	Package C	Package D	Belt	Lines	Cooler	Electrical system	20 years	See Chapter	Note
------	------	------	-----------	-----------	-----------	-----------	------	-------	--------	-------------------	----------	-------------	------

Safety functions:

KS = Contact KAESER SERVICE; CE = Contact certified electrician

¹⁾ Adjust interval as necessary, see Table 47.

²⁾ Interval dependent on the number of load changes for the machine.

Task	Week	Year	Package A	Package B	Package C	Package D	Belt	Lines	Cooler	Electrical	system	20 years	See Chapter	Note
Check the safety relief valve.		X											10.7	
Check the excess temperature safety shutdown function.		X											10.8	
Check the EMERGENCY STOP push button.		X											10.9	
Check the temperature shutdown function on the compressed air inlet cooler.		X											10.10	
Replace safety-relevant components for safety functions.											X		—	KS
Air filter:														
Service the air filter.				X	X	X							10.3	
Compressor block:														
Check the compressor oil level.	X												10.12	
Change the compressor oil ¹⁾ .				X	X	X							10.14	
Replace the oil filter.				X	X	X							10.16	
Service the dirt trap.			X	X	X	X							10.17	
Crankcase ventilation: Replace the filter element.				X	X	X							10.15	
Replace the hydraulic bearing.						X							—	KS
Motor and bearings:														
Service the motor anti-friction bearing.				X	X	X							10.6	
Check the drive belt tension.							X						10.23	
Replace the drive belt.					X	X							—	KS
Check the belt tensioning lever.					X	X							—	KS
Replace the fan motor.						X							—	KS
Valves:														
Service the Idle mode check valve.				X	X	X							10.18.1	
Replace the solenoid valve.				X	X	X							10.19	
Replace the safety relief valve.				X	X	X							—	KS
Service the control valve.				X	X	X							—	KS
Service the inlet valve.				X	X	X							—	KS
Service the venting valve.					X	X							—	KS

KS = Contact KAESER SERVICE; CE = Contact certified electrician

¹⁾ Adjust interval as necessary, see Table 47.

²⁾ Interval dependent on the number of load changes for the machine.

Task	Week	Year	Package A	Package B	Package C	Package D	Belt	Lines	Cooler	Electrical system	20 years	See Chapter	Note
Venting line: Replace the filter element.					X	X						—	KS
Heat exchanger:													
Check the cooler for leaks.		X										10.4	
Replace the cooler ²⁾ .									X			10.5	KS
Pipe and hose lines:													
Replace the hose lines ²⁾ .					X	X		X				—	KS
Replace the control lines ²⁾ .					X	X		X				—	KS
Electrical connections:													
Check that all electrical and screw connections are sufficiently tightened.		X								X		—	KS; CE
Options:													
Option F14: Check the electronic condensate drain.	X											10.20.1	
Option F14: Replace the service unit.			X	X	X	X						10.20.2	
Option F14: Replace the filter element.			X	X	X	X						10.21	
Option K6: Check the electronic condensate drain.	X											10.22.1	
Option K6: Service the electronic condensate drain.			X	X	X	X						—	KS

KS = Contact KAESER SERVICE; CE = Contact certified electrician

¹⁾ Adjust interval as necessary, see Table 47.

²⁾ Interval dependent on the number of load changes for the machine.

Tab. 46 Regular machine maintenance and service work

10.2.3.2 Compressor oil: Change interval

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



Advice can be obtained from an authorized KAESER service representative regarding suitable oil change intervals.

- Check operating conditions and adjust intervals as necessary; log the results in table 47 for future reference.

Compressor oil	Maximum permissible oil change interval [operating hours/years]	
	Favorable operating conditions ¹⁾	My operating conditions
VDL 150	2000/1	
FGP	2000/1	

¹⁾ Cool to moderate ambient temperatures, low humidity, moderate to high duty cycle.

Tab. 47 Compressor oil: Change intervals

10.3 Air filter maintenance

Check that all sealing surfaces are matching. The use of an unsuitable air filter can permit dirt to enter the pressure system and cause damage to the machine.

Material Air filter

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

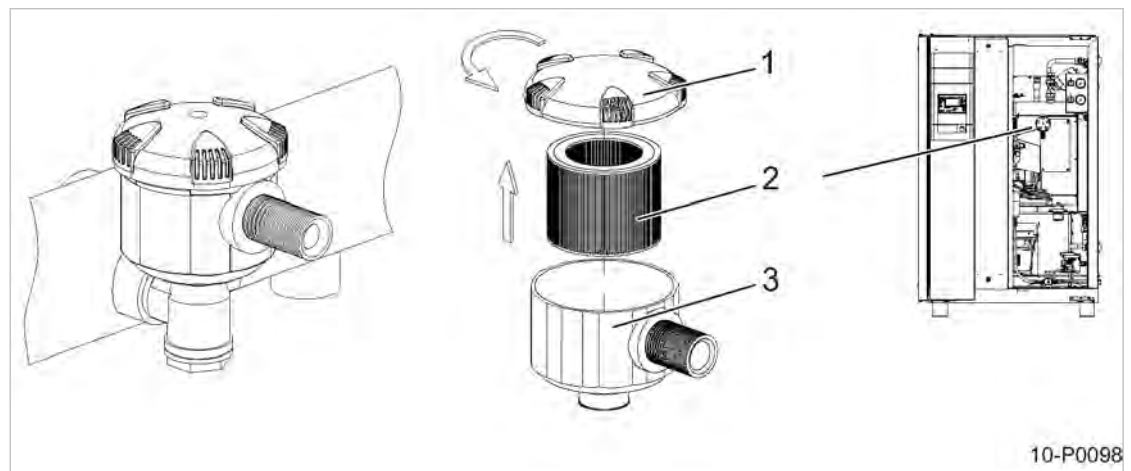


Fig. 29 Air filter maintenance

- ① Cover
- ② Air filter
- ③ Air filter housing

Replacing the air filter

1. Unscrew and remove the cover.
2. Remove the used air filter and dispose of it in accordance with environmental protection regulations.
3. Clean the air filter housing and sealing surfaces.
4. Insert the new air filter.

5. Replace the cover and screw down tight.
6. Switch on the power supply disconnecting device and reset the maintenance counter.

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.

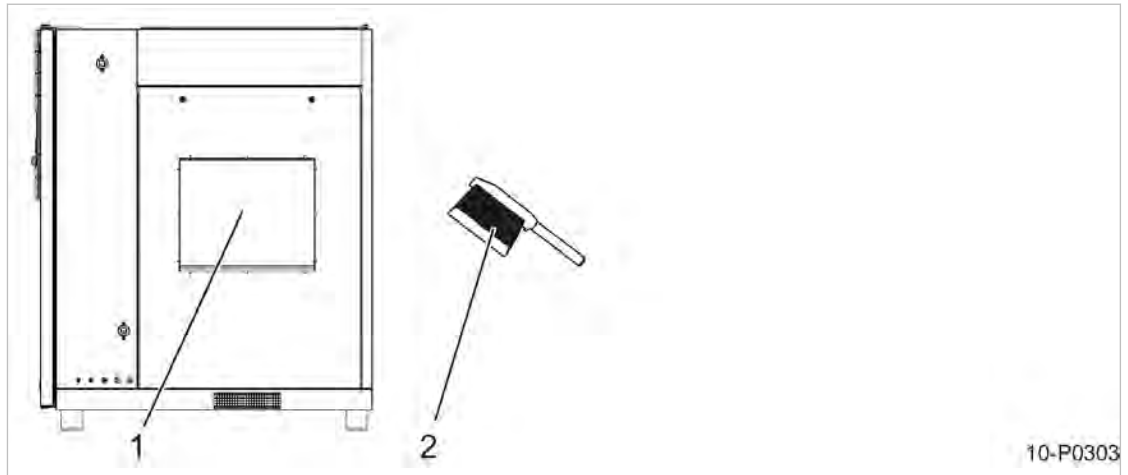


Fig. 30 Cleaning the cooler

- 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 Option K1 Replacing the cooler

The maintenance interval for replacement of the air-cooled compressed air aftercooler is dependent on the number of load changes for the machine.

1. **⚠ WARNING** *Danger of serious injury from the compressed air aftercooler bursting!*
 - *Observe maintenance intervals for the compressed air aftercooler!*
2. Replacement intervals will be displayed by the controller.
3. Arrange for the compressed air aftercooler to be replaced without delay by an authorized KAESER service representative.

10.6 Motor maintenance

The compressor motor is equipped with bearings featuring a re-greasing facility. The grease fittings are located on the outside of the machine. The grease lines are pre-filled at the factory.



Only use UNIREX N3 high-temperature grease for the motor bearings. Damage to bearings resulting from the use of alternative brands of grease is excluded from the warranty.

Material Grease gun with UNIREX N3 bearing grease
Cleaning cloth

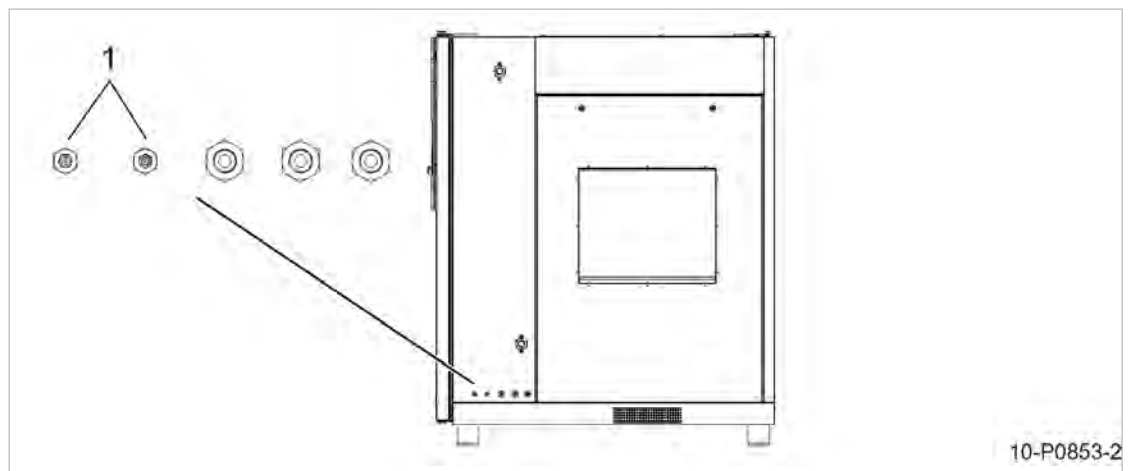


Fig. 31 Motor maintenance

- ① Compressor motor grease fitting

Compressor motor:

The quantity of grease required is provided on the nameplate of the compressor motor, see chapter 2.12.1

Precondition Compressor motor is running

1. Clean the grease fitting with a cleaning cloth.
2. Lubricate both motor bearings using a grease gun.
3. Reset the maintenance counter.

10.7 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 the SIGMA 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.

10.8 Checking the overheating safety shutdown function

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

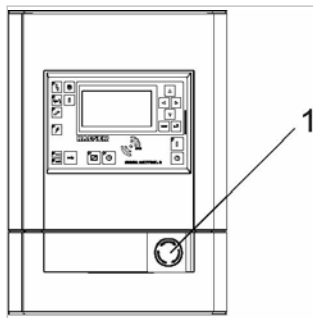
- Check the safety shutdown function as described in the SIGMA CONTROL 2 operating manual.



The machine does not shut down?

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

10.9 Checking the EMERGENCY STOP push button



10-P2166

Fig. 32 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.

10.10 Compressed air inlet temperature switch, cooler

Should the machine exceed the compressed air inlet temperature at the cooler (Option K1 $\geq 311^\circ\text{F}$), an alarm message will be displayed on the SIGMA CONTROL 2 (see operating manual for the SIGMA CONTROL 2).



Arrange for the shutdown function of the temperature switch to be checked by an authorized KAESER service representative.

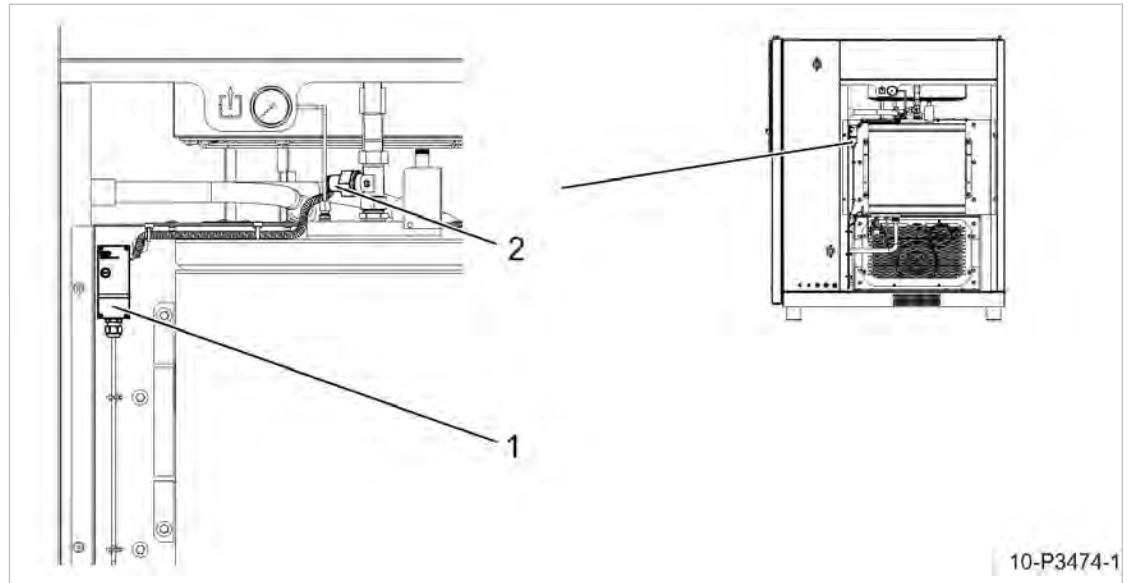


Fig. 33 Compressed air inlet temperature switch

- ① Temperature switch
- ② Temperature sensor

➤ The temperature switch is non-adjustable.

Unlocking the temperature switch

Should the compressed air inlet temperature fall below the set value, the temperature switch must be unlocked manually.

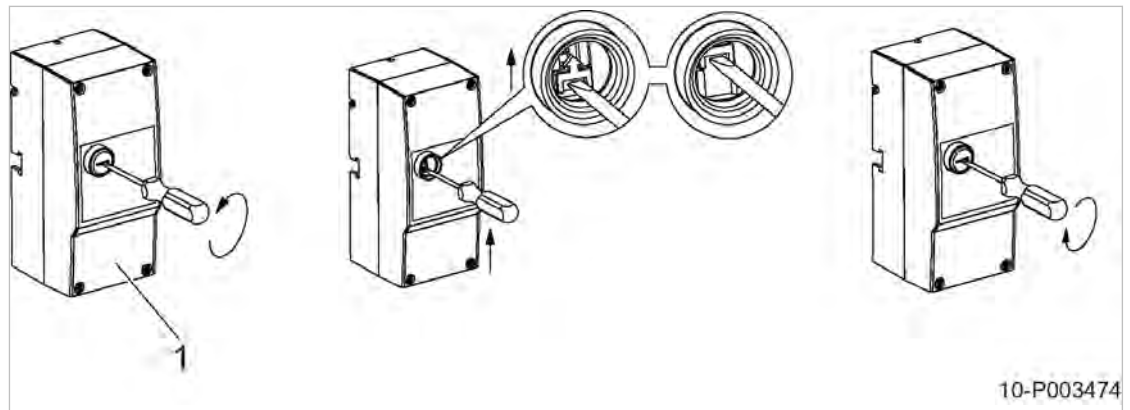


Fig. 34 Unlocking the temperature switch

- ① Temperature switch

1. Open the cover.
2. Unlock the snap-action switch by pulling it upwards.
3. Close the cover
4. Acknowledge the alarm message.

10.11 Venting the machine (depressurizing)

Venting takes place in three stages:

- Isolate the machine from the compressed air network.
- Vent the cooler.
- Discharge the compressed air manually from behind the network pressure (initial pressure) gauge (behind side maintenance door).



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

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

⚠ CAUTION

Compressed air!

Compressed air and pressurized components can cause injury or death if the energy contained within is released suddenly.

➤ *Fully vent all pressurized components and enclosures.*

Isolating the machine from the compressed air system

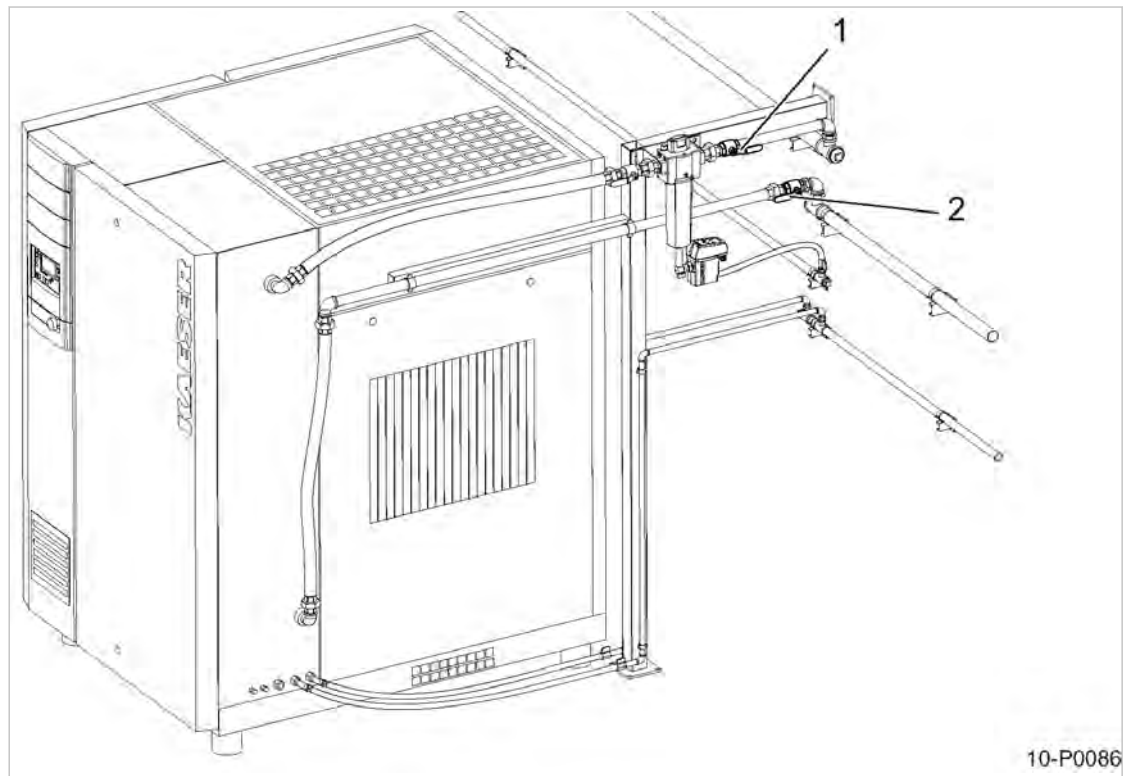


Fig. 35 Install user-end shut-off valves

- ① User-end shut-off valve (initial pressure)
- ② User-end shut-off valve (final pressure)

➤ Close the user-end shut-off valves (initial and final pressure).



In the event that no shut-off valves have been installed by the user, the entire compressed air network must be vented.

Venting the cooler

Precondition Access panel removed (see chapter 4.1).

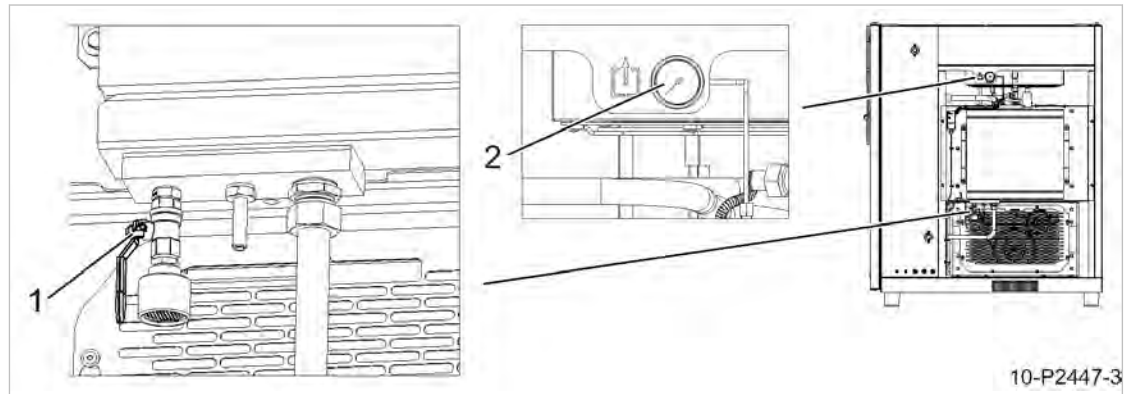


Fig. 36 Venting the cooler

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

- Slowly open the shut-off valve ① and check that the network pressure gauge (final pressure) ② reads 0 psi.



Should the network pressure gauge (final pressure) not read 0 psi after automatic venting:

- Ensure that the shut-off valve ① is open or that the entire compressed air network is vented.
- Slowly open the shut-off valve ① to release the pressure.
- If manual venting does **not** achieve depressurization: Contact an authorized KAESER service representative.

Venting the initial pressure side

Precondition Side maintenance door open (see chapter 4.1).

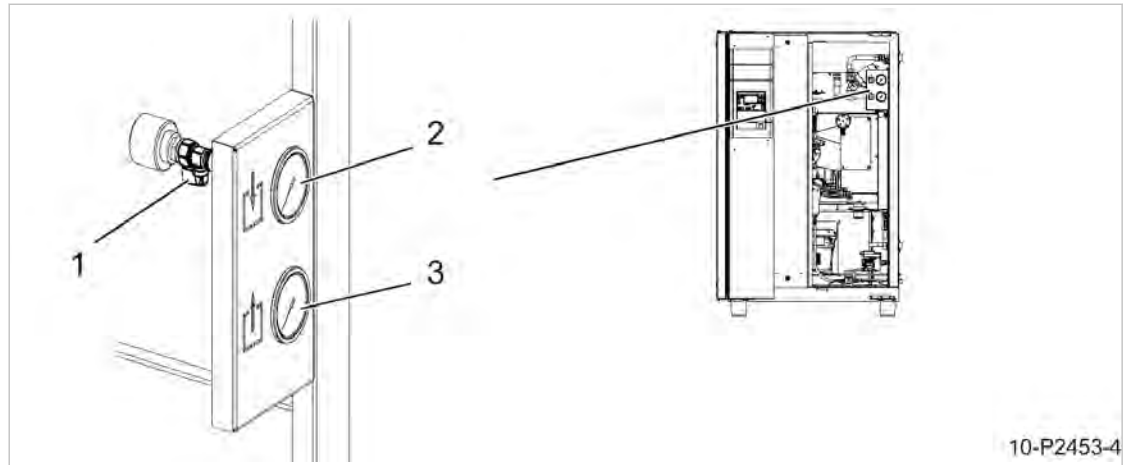


Fig. 37 Venting the initial pressure side

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

- Slowly open the shut-off valve ① and check that the network pressure gauge (initial pressure) ② reads 0 psi.



Should the network pressure gauge (initial pressure) not read 0 psi after automatic venting:

- Ensure that the shut-off valve is open or that the entire compressed air network is vented.
- Slowly open the shut-off valve ① to release the pressure.
- If manual venting does **not** achieve 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.

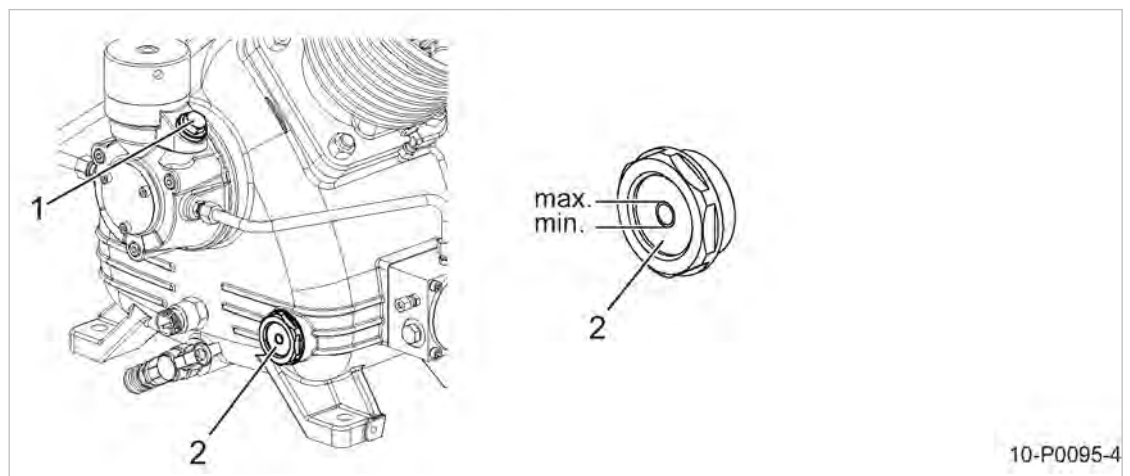


Fig. 38 Checking the oil level

- 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).

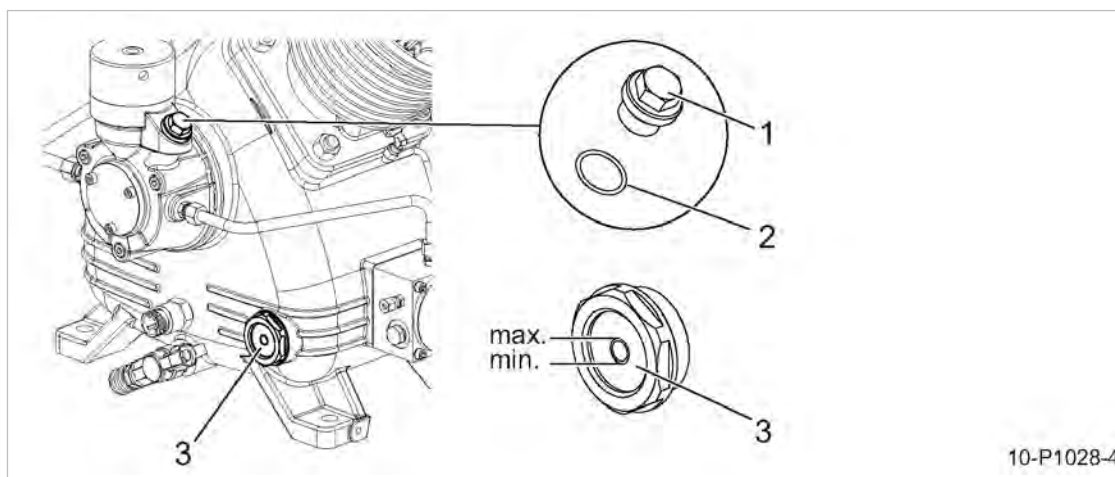


Fig. 39 Topping off the compressor oil

- 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 47.

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 device,
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.*

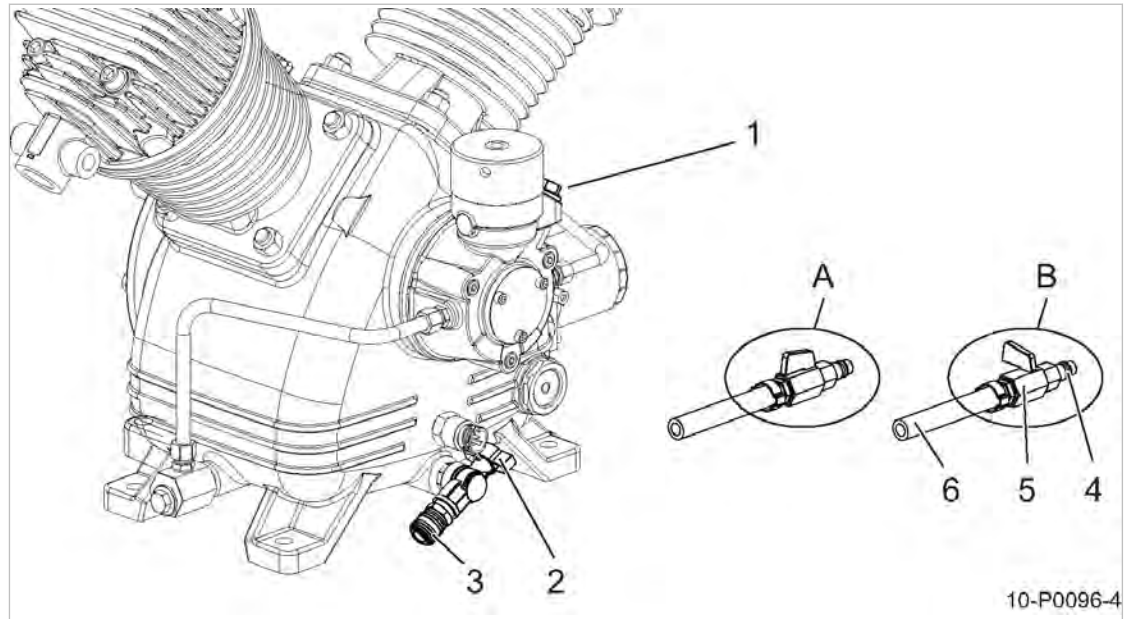


Fig. 40 Changing the compressor oil

- | | | | |
|---|----------------------------|---|-----------------------|
| ① | Screw plug | ⑤ | Shut-off valve |
| ② | Shut-off valve (oil drain) | Ⓐ | Shut-off valve open |
| ③ | Hose coupling | Ⓑ | 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. 40) 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.

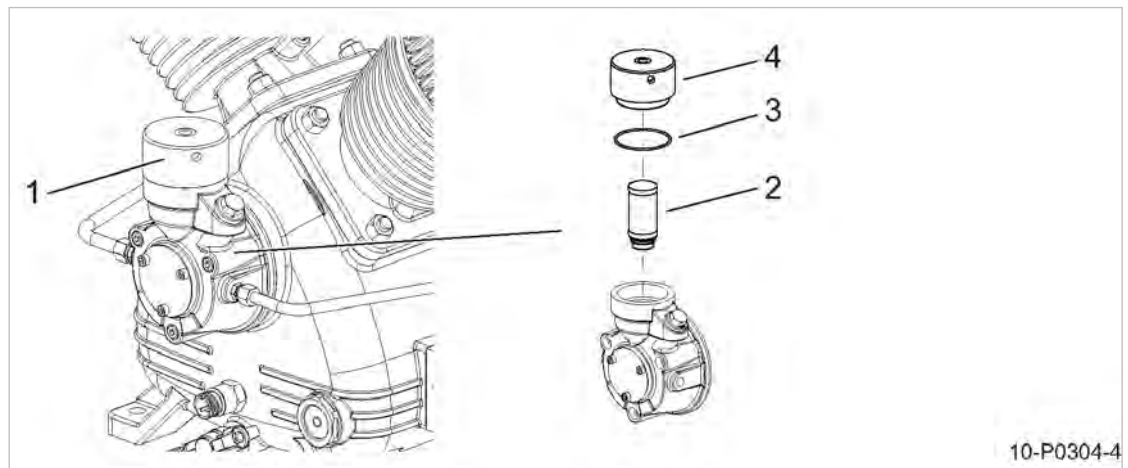


Fig. 41 Changing the micro-filter element in the crankcase vent

- | | |
|------------------------|---------------|
| ① Crankcase venting | ③ O-ring |
| ② Micro-filter element | 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.

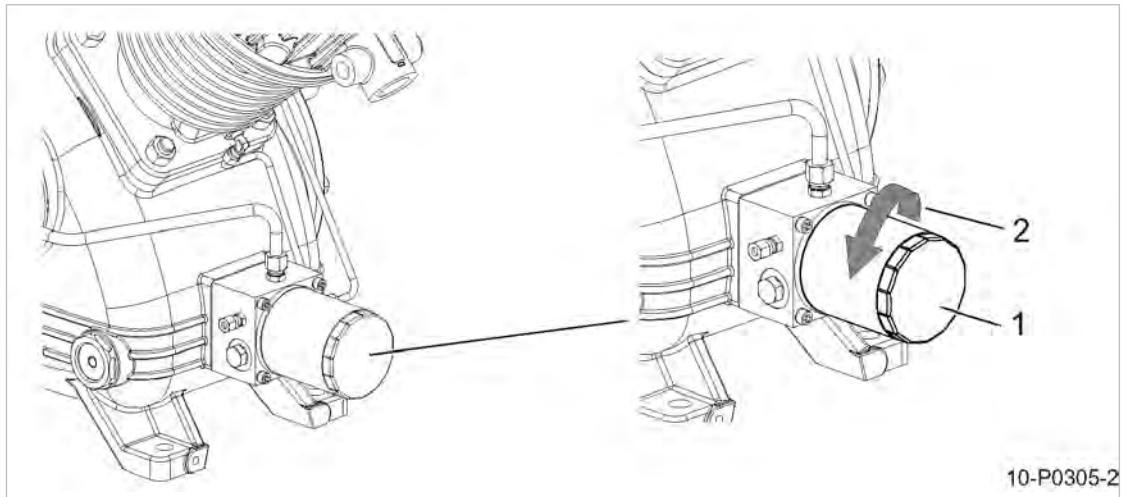


Fig. 42 Changing the crankcase oil filter

- 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, lock out and tag out the device, the absence of any voltage has been verified.
The machine has cooled down.
Fully vent 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.

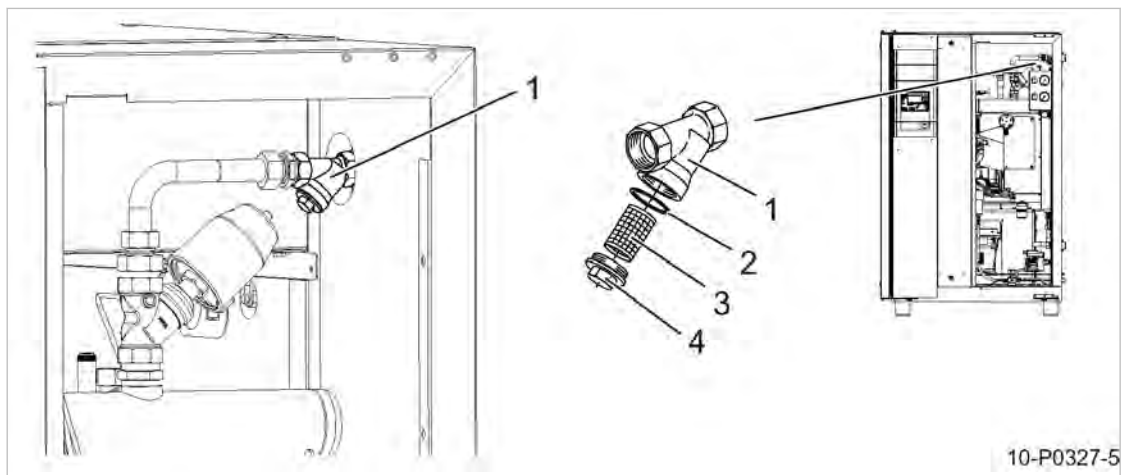


Fig. 43 Dirt trap in the inlet line

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

1. **⚠ CAUTION** *Risk of fatal injury caused by components under high pressure!*
 - Isolate the machine from the compressed air network.
 - Vent the machine completely.
 - Verify the absence of pressure.
2. Remove the plug and clean the gasket or O-ring.
3. Remove the dirt trap strainer and blow clean.
4. Re-assemble all parts with gasket or O-ring.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user-end compressed air inlet and outlet shut-off valves.
3. Close the shut-off valves 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 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.

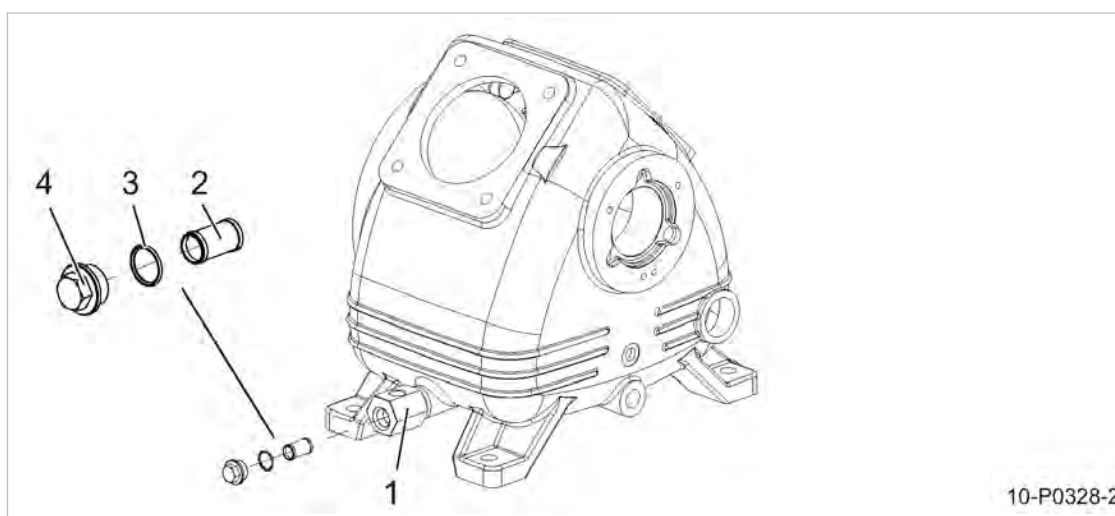


Fig. 44 Dirt trap in the crankcase

- | | |
|----------------------|--------------|
| 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 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 performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user-end compressed air inlet and outlet 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 and reset the maintenance 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

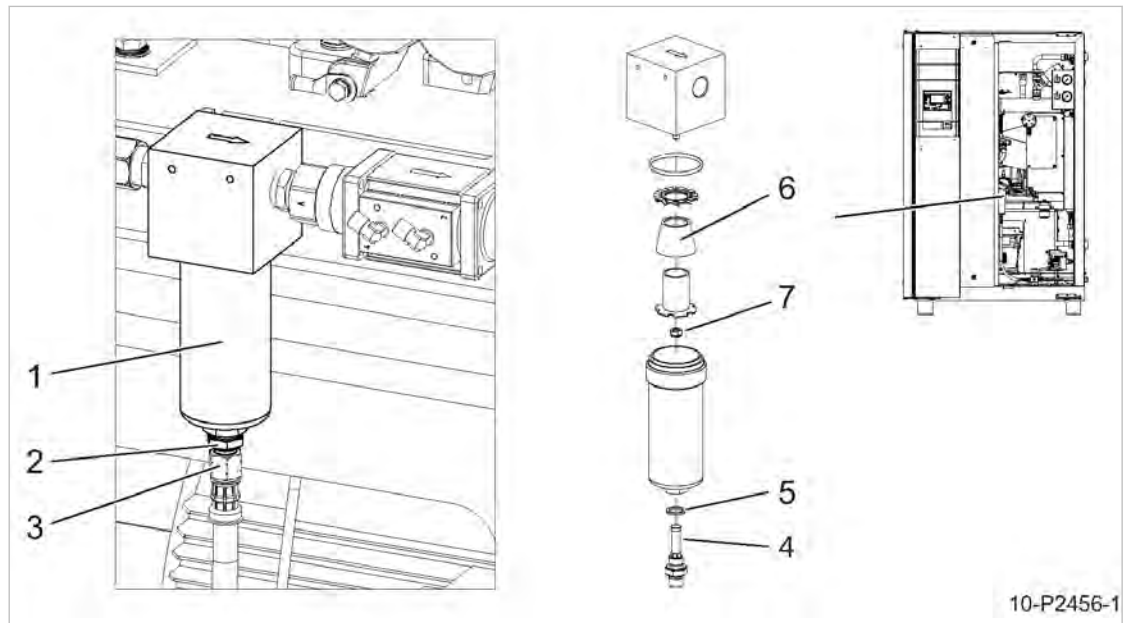


Fig. 45 Dirt trap in the filter

- | | | | |
|---|--------------------------------|---|-----------------|
| ① | Filter housing | ⑤ | Seal |
| ② | Double-ended male stud fitting | ⑥ | Silencer insert |
| ③ | Condensate drain hose | ⑦ | Nut |
| ④ | Dirt trap with double fitting | | |

1. **⚠ CAUTION** *Risk of fatal injury caused by components under high pressure!*
 - Isolate the machine from the compressed air network.
 - Vent the machine completely.
 - Verify the absence of 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 performing a test run

1. Close all access doors, replace and secure all removable panels.

2. Open the user-end compressed air inlet and outlet 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 and reset the maintenance counter.
5. Start the machine and run it for 2 minutes, then stop it and visually check for leaks.

10.18 Check valve maintenance



The machine must be isolated from the compressed air network and completely vented before undertaking any work that entails opening the pressure system. Both network pressure gauges (initial and final pressure) read 0 psig.

Material Compressed air for blowing out
 Cleaning cloth
 Service KIT (if required)

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

10.18.1 Idle mode check valve

The check valve is mounted on the collecting pipe. It prevents compressed air from escaping out into the ambient air while the machine is running.

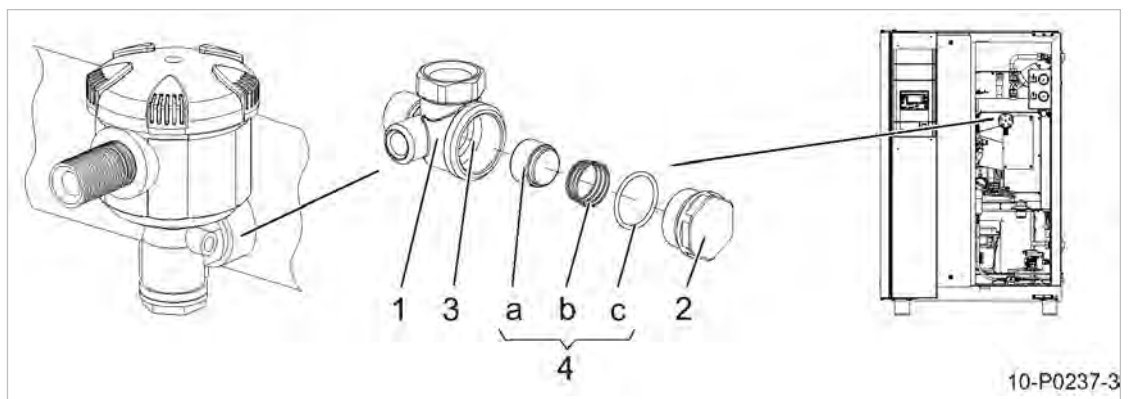


Fig. 46 Idle mode check valve

- | | |
|---------------|--------------|
| ① Housing | ⓐ Valve cone |
| ② Screw plug | ⓑ Spring |
| ③ Valve seat | ⓒ O-ring |
| ④ Service KIT | |

1. **⚠ WARNING** *Risk of fatal injury from components under high pressure!*
 - Isolate the machine from the compressed air network.
 - Vent the machine completely.
 - Verify the absence of pressure.
2. Open the screw plug.

3. Clean the valve seat and valve cone with a cleaning cloth or blow out with dry compressed air (<30 psi!).



Should the valve seat show severe wear or damage, the check valve must be replaced by an authorized KAESER service representative.

If required, replace the valve cone, spring and O-ring (Service KIT).

4. Insert the O-ring into the groove on the screw plug.
5. Insert the valve cone with spring into the screw plug.
6. Close the check valve using the screw plug.

Starting the machine and performing a test run

1. Close all maintenance doors, replace and secure all removable panels.
2. Open the user-end compressed air inlet and outlet shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (initial pressure).
4. Switch on the power supply disconnecting device.
5. Switch the machine on and run it for around 2 minutes, then shut it down and visually check for leaks.

10.19 Replacing the condensate drain solenoid valve

Ingress of dirt during operation can cause the solenoid valve to leak. For operational safety reasons, replace the condensate drain solenoid valve when the SIGMA CONTROL 2 controller displays the corresponding message.

Material Spare part

Precondition The machine is switched off.

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

Fully vent all pressurized components and enclosures (see chapter 10.11).

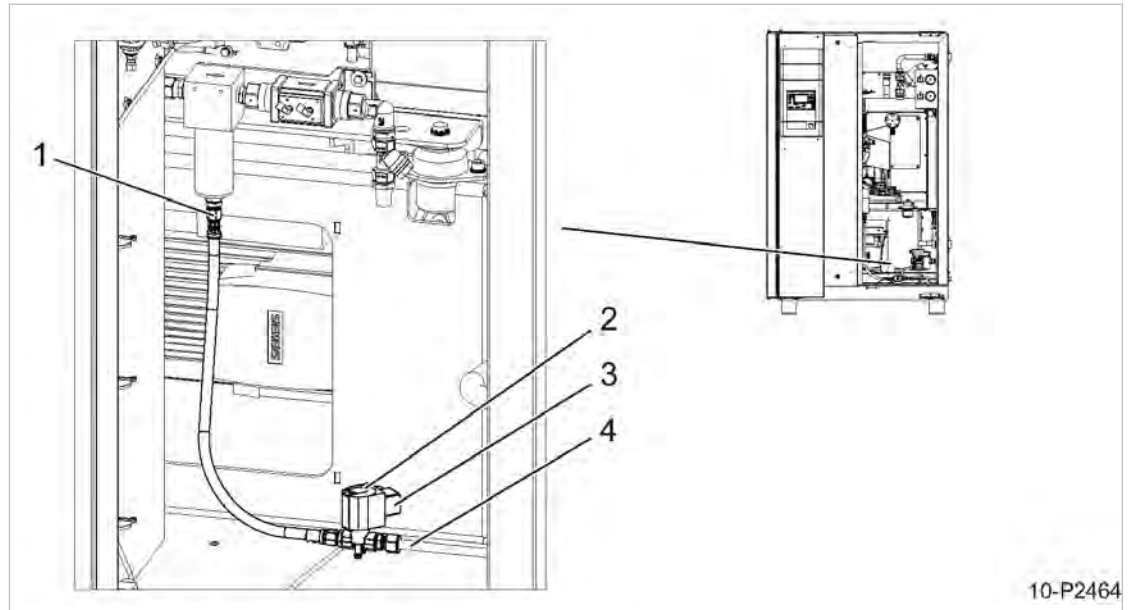


Fig. 47 Replacing the condensate drain solenoid valve

- | | |
|-----------------------------------|-----------------------------------|
| ① Union screw connection | ③ Connecting socket |
| ② Condensate drain solenoid valve | ④ Condensate outlet pressure line |

1. **⚠ WARNING** *Risk of fatal injury from components under high pressure!*
 - Isolate the machine from the compressed air network.
 - Fully vent the machine.
 - Verify the absence of pressure.
2. Remove the connecting socket from the solenoid valve.
3. Remove the union screw connection from the filter.
4. Remove the hose from the condensate outlet.
5. Remove the pressure lines from the condensate drain solenoid valve.
6. Install the new condensate drain solenoid valve and reattach the pressure lines.
7. Secure the connecting socket.

Starting the machine and performing a test run

1. Close all maintenance doors, replace and secure all removable panels.
2. Open the user-end compressed air inlet and outlet shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (initial pressure).
4. Switch on the power supply disconnecting device and reset the maintenance counter.
5. Switch the machine on and run it for around 2 minutes, then shut it down and perform a visual inspection.

10.20 Option F14 Electronic condensate drain

The accumulated condensate is removed by an electronic condensate drain.

The condensate drain cannot be cleaned. If condensate no longer drains, the service unit must be exchanged.

- Check the condensate drain regularly as described below and exchange the service unit as necessary.

10.20.1 Condensate drain check

Dependent on the condensate drain version, the controller is equipped with an additional LED *Alarm*.

Precondition The machine is switched off.
The *Power/Service* LED is illuminated.

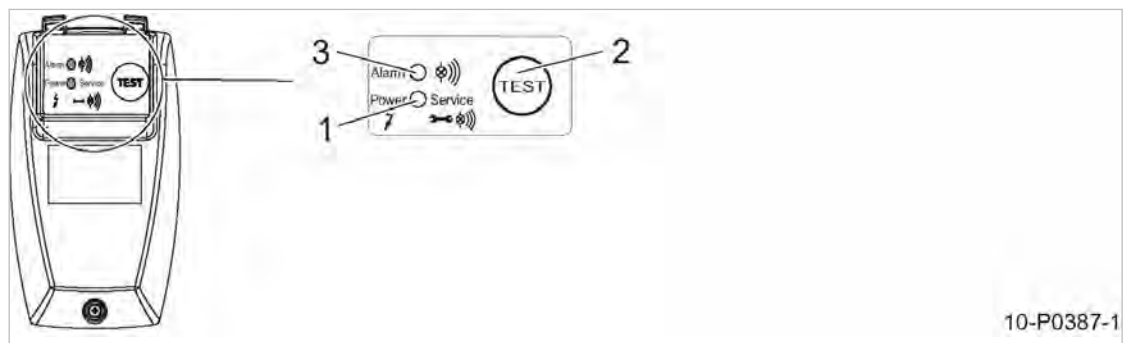


Fig. 48 Option K5/K6: Condensate drain check

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

1. **⚠ CAUTION** *Danger of burns from hot components around the condensate drain!*
➤ *Proceed with caution.*
2. With one hand, lightly touch the condensate line on the condensate drain.
3. With your other hand, push and hold the «TEST» key on the condensate drain for at least 2 seconds.

Result As soon as the condensate drain opens, you will feel a short pressure surge in the condensate line.
In the event that you do **not** feel any pressure surge during the manual test, replace the service unit.

10.20.2 Replace the service unit



The condensate drain cannot be cleaned. If condensate no longer drains, the service unit must be exchanged.

Material KAESER Service-Unit
Sealing tape for sealing the screw-in part
If required: O-ring 16x2 (5.1519.0)

Precondition The machine is switched off.
The *Power/Service* LED is illuminated. (see figure 48).

⚠ WARNING

Danger of fatal injury from electric shock!

➤ *Never open the control unit.*

Removing the service unit

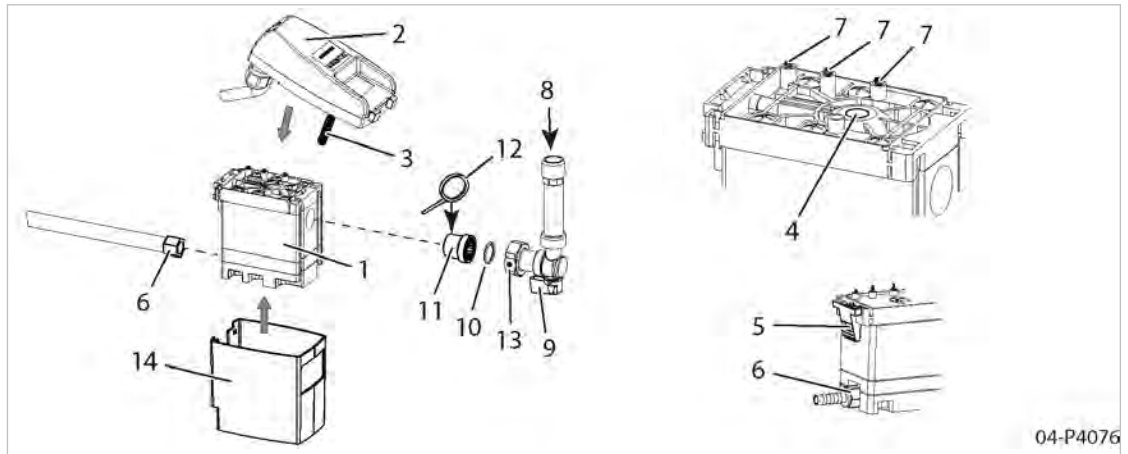


Fig. 49 Replacing the service unit

- | | |
|------------------------------------|-------------------------------|
| ① Service unit | ⑧ Condensate inlet |
| ② Control unit | ⑨ Shut-off valve |
| ③ Sensor | ⑩ O-ring |
| ④ Sensor opening | ⑪ Screw-in part |
| ⑤ Snap fastener | ⑫ Sealing tape |
| ⑥ Condensate line screw connection | ⑬ Clamping nut with vent hole |
| ⑦ Contact springs | ⑭ Casing |

1. **⚠ WARNING** *Serious injury can result from loosening or opening components under pressure!*
➤ *Fully vent all pressurized components and enclosures.*
2. Close the shut-off valve ⑨ upstream of the condensate drain.
3. Unscrew the screw connection ⑥ at the condensate line.
4. Press the snap fastener ⑤ and carefully remove the control unit ② from the service unit ①.
5. Carefully loosen the clamping nut ⑬ at the shut-off valve ⑨ until remaining residual air has escaped through the venting hole.
6. Unscrew the screw-in part ⑪ from the service unit and place aside.
7. Remove the casing ⑭ from the service unit.

Installing the service unit

To ensure that the condensate drain functions correctly, use only KAESER service units.

Precondition Make sure that the top of the service unit and the contact springs are clean and dry.

1. Fit the casing ⑭ to the service unit ①.
2. Carefully insert the sensor ③ for the control unit ② into the opening ④ on the service unit.
3. Insert the snap fastener ⑤ on the control unit into the eyes on the service unit.

4. Press the control unit against the service unit until the snap fastener can be heard clicking into place.
5. Replace old sealing material on the screw-in part (11) with new sealing tape.
6. Install the screw-in part into the service unit and tighten to a maximum of 15 lbf/ft.
7. If necessary, insert a new O-ring (10).
8. Tighten the clamping nut (13) on the shut-off valve (9).
9. Attach the condensate line.
10. Open the shut-off valve upstream of the condensate drain.

Further information Also note the installation instructions supplied with the service unit.

10.21 Option F14

Replacing the filter element



- To avoid damage, handle all components with care and install without the use of tools. This is particularly important when it comes to the frontal sealing surfaces.



The machine must be isolated from the compressed air network and completely vented before undertaking any work that entails opening the pressure system. Both network pressure gauges (initial and final pressure) read 0 psig.

Material KAESER filter element (including silicone-free sealing grease and O-ring)

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

10.21.1 Removing the filter element

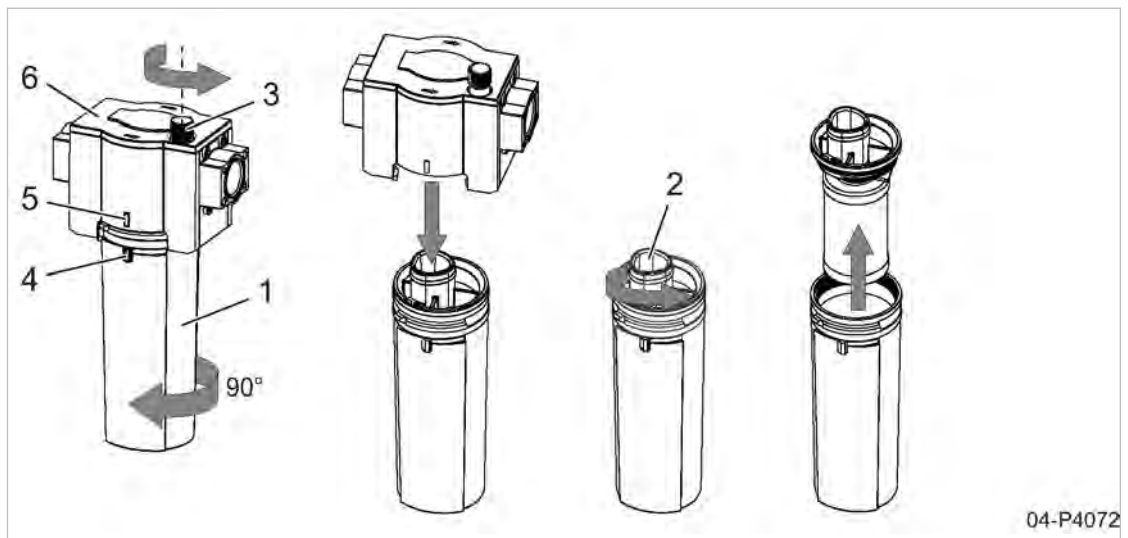


Fig. 50 Removing the filter element

- | | |
|--|---|
| ① Filter housing | ④ Installation mark on the filter housing |
| ② Filter element | ⑤ Installation mark on the filter head |
| ③ Locking screw (secured against complete removal) | ⑥ Filter head |

1. **⚠ WARNING** Risk of fatal injury from components under high pressure!

- Isolate the machine from the compressed air network.
- Vent the machine completely.
- Verify the absence of pressure.

2. Loosen the locking screw ③ by hand until you can feel resistance again.

If the compressed air filter was pressurized, the residual compressed air will escape.



If you can hear a continuous whistling sound:
The compressed air filter remains under pressure!

- Disconnect the compressed air filter from the compressed air network, or vent the entire network.

3. Jiggle the filter housing ① gently and then rotate by 90° until the installation marks on the filter housing ④ and the filter head ⑤ are facing one another.

4. Remove the filter housing together with the screwed-in filter element vertically downwards.

5. Unscrew the filter element ② from the filter housing (approx. 1 1/2 rotations required).

6. If required: Drain and dispose of any condensate.

7. Check the filter housing for corrosion.



If the filter housing is noticeably corroded:

- Determine the cause (e.g. composition of the compressed air, prevailing operating conditions)
- Completely replace the compressed air filter.



Dispose of the contaminated filter element in accordance with environmental regulations.

10.21.2 Installing the filter element

- Do not touch the surface of the filter material with your hand.

Precondition The inner surfaces of the filter head and the filter housing are clean.

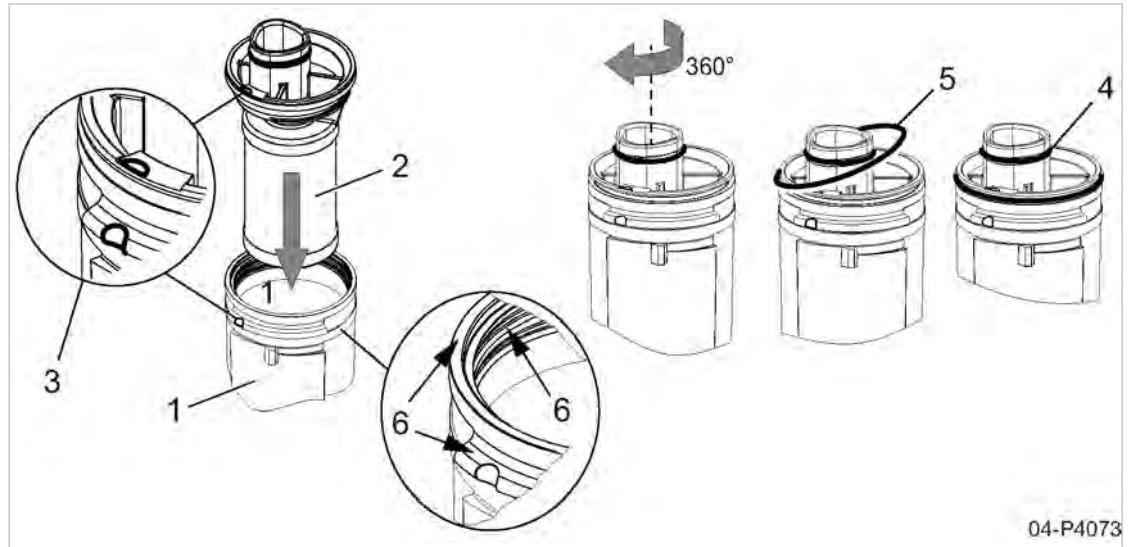


Fig. 51 Installing the filter element

- | | |
|----------------------|-------------------------|
| ① Filter housing | ④ O-ring |
| ② Filter element | ⑤ O-ring |
| ③ Installation marks | ⑥ Surface to be greased |

1. Grease the thread, front surface and bayonet catch of the filter housing (Pos. ⑥).
2. Push the filter element ② into the filter housing ① so that the installation marks ③ are aligned with one another.
3. Screw the filter element into the filter housing (one rotation required).
4. Fully grease the O-ring ⑤ and insert between the filter element and the filter housing.
5. Grease the O-ring ④.

10.21.3 Installing the filter housing

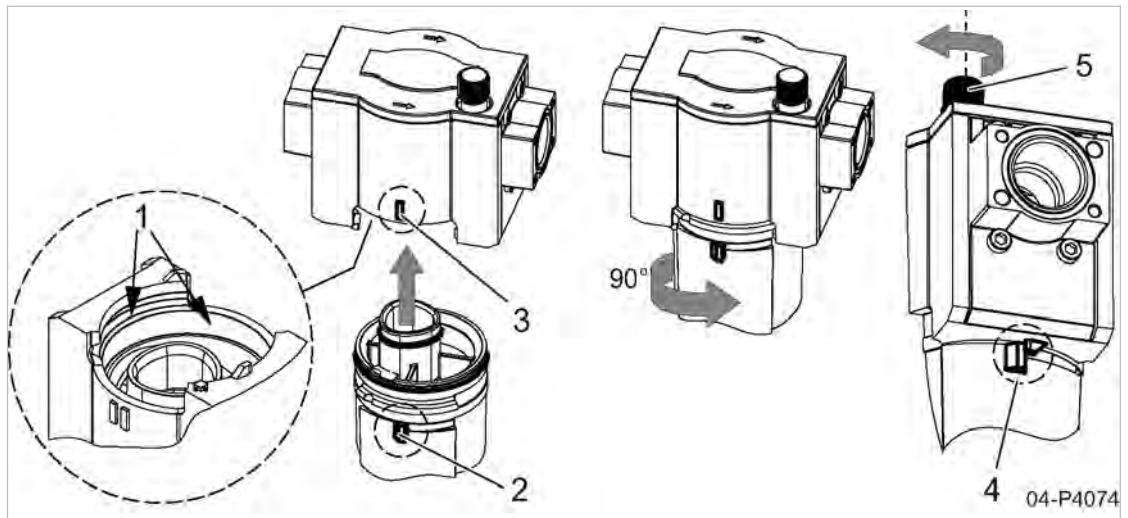


Fig. 52 Installing the filter housing

- | | |
|---|---------------------------------|
| ① Surface to be greased | ④ Limit stop on the filter head |
| ② Installation mark on the filter housing | ⑤ Locking screw |
| ③ Installation mark on the filter head | |

1. Grease the inner surface of the filter head (Pos. ①).
2. Align the installation marks (② and ③) on the filter housing and head with one another.
3. Insert the filter housing into the filter head.
4. Rotate the filter housing through 90° as far as the limit stop ④.
5. Manually tighten the locking screw ⑤.



If the locking screw cannot be tightened:

The bayonet catch on the filter housing is not fully closed.

- Rotate the filter housing as far as the limit stop.

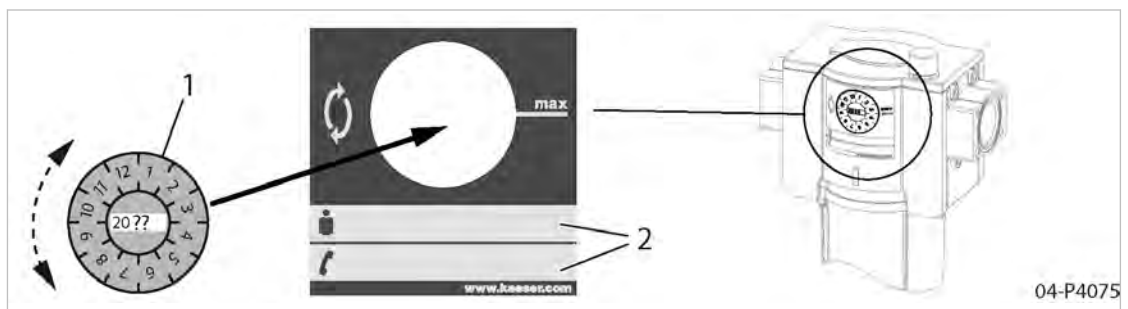


Fig. 53 Filling out the maintenance sticker

- | |
|-------------------------------|
| ① Maintenance sticker |
| ② Service contact information |

6. Fill out the maintenance sticker with the year in which the next maintenance falls due.
7. Attach the maintenance sticker so that the *max* mark is pointing to the month in which the next maintenance falls due.

10.21.4 Pressurizing the compressed air filter

A high fluid flow rate may damage the filter material.

1. Check that the locking screw has been tightened properly by hand.
2. Slowly open the user-end shut-off valve (initial pressure).
3. Slowly open the user-end shut-off valve (final pressure).

10.22 Option K6 Electronic condensate drain

Accumulated condensate is removed via an electronic condensate drain

- Check the condensate drain regularly as described below and carry out maintenance as necessary.

10.22.1 Checking the condensate drain

The *Valve* LED illuminates as soon as the condensate begins to drain.

Precondition The machine is switched off.

The *Power* LED is illuminated.

The *Alarm* LED is not illuminated.

The machine has been run for a sufficient period in LOAD.

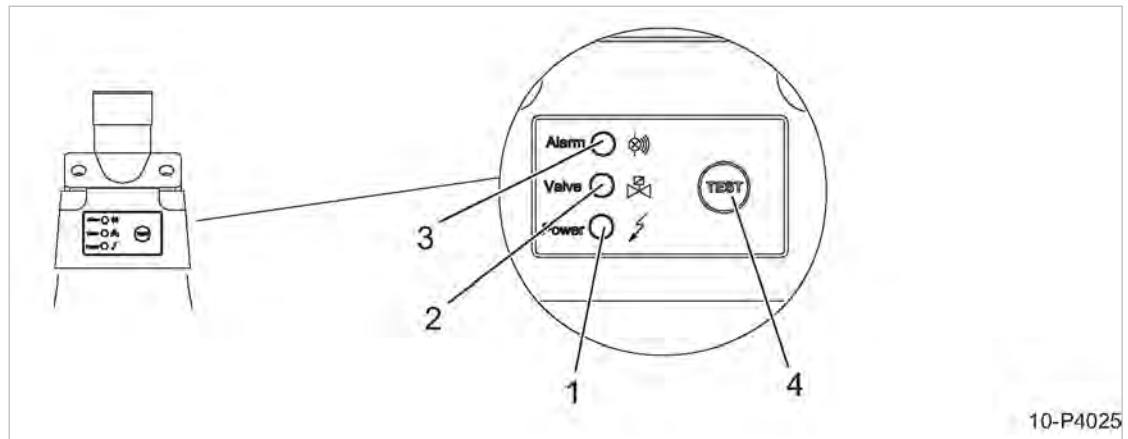


Fig. 54 Checking the condensate drain

- | | |
|-------------|--------------|
| ① Power LED | ③ Alarm LED |
| ② Valve LED | ④ «TEST» key |

1. **⚠ CAUTION** *Danger of burns from hot components around the condensate drain!*
➤ *Proceed with caution.*
2. With one hand, lightly touch the condensate line on the condensate drain.
3. With your other hand, push and hold the «TEST» key on the condensate drain for at least 2 seconds.

Result As soon as the condensate drain opens, you will feel a short pressure surge in the condensate line.



- If you do not feel any pressure surge during the manual test:
- Contact an authorized KAESER service representative.

10.22.2 Condensate drain maintenance

- Arrange for maintenance of the condensate drain to be carried out by an authorized KAESER service representative.

10.23 Drive belt maintenance

Only use KAESER drive belts. They are 100% oil-resistant.

Material Drive belt (if required)

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

 WARNING

Injury to hands from machine running on!

- *Wait at least 1 minute after switching off the machine before opening the removable access panel.*

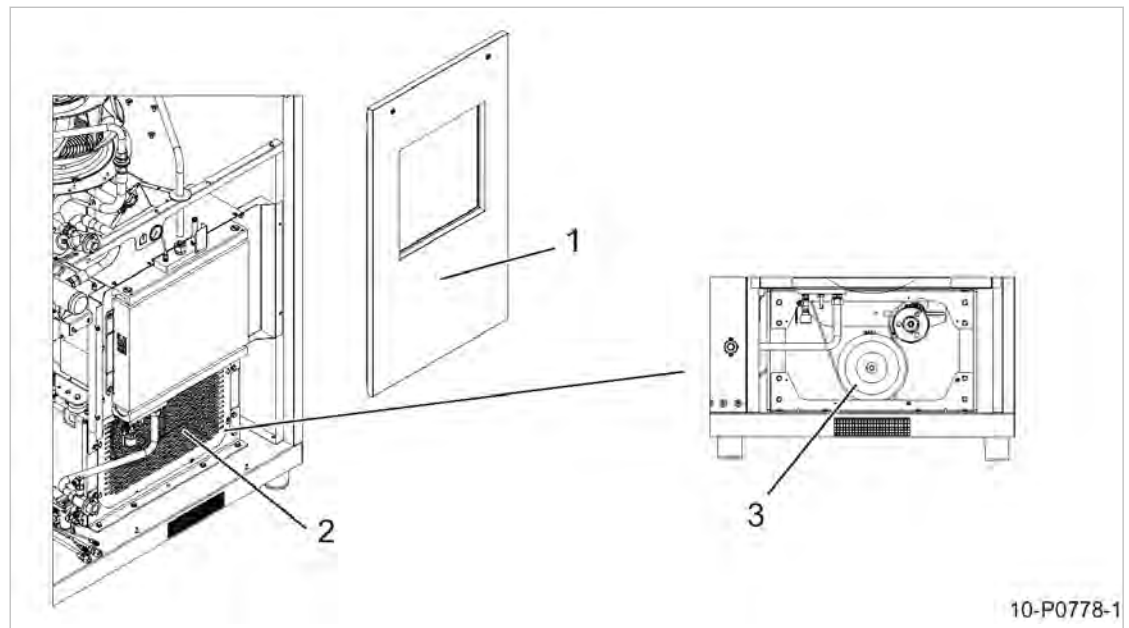
Visual check for damage

Fig. 55 Visual check for damage

- ① Removable access panel
- ② Belt guard
- ③ Motor pulley

1. Remove the access panel.
2. Remove the belt guard.
3. Turn the drive belt on the motor pulley by hand and inspect it for damage.
4. In case of damage: Arrange for the drive belt to be replaced immediately by KAESER.

Checking and adjusting the belt tension

The drive belt is equipped with an automatic belt-tensioning device. This ensures that the belt tension remains constant while the machine is in operation. The tension can be read off from the front position tab.

- Adjustment is required when the front position tab is congruent with the rear position tab.

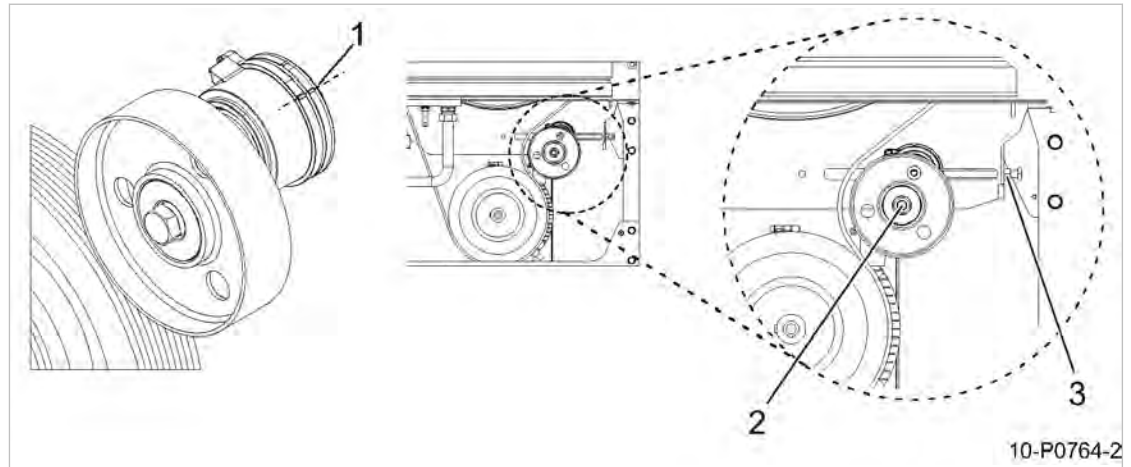


Fig. 56 Adjusting the drive belt

- ① Front and rear position tabs
- ② Cheese head screw with hexagon socket
- ③ Hex nut

1. Remove the belt guard.
2. Loosen the cheese head screw with hexagon socket ②
3. Loosen the hex nut ③.

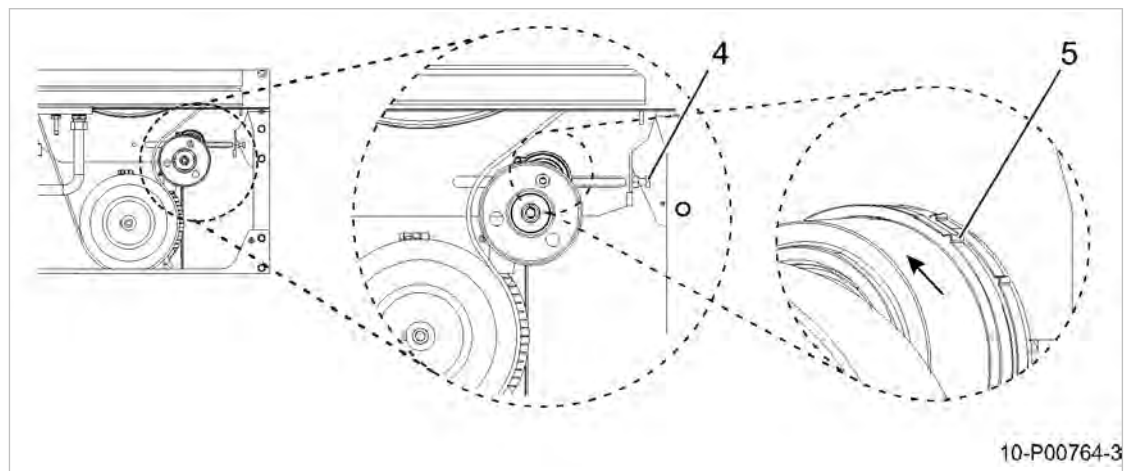


Fig. 57 Adjusting the drive belt

- ④ Hex-head bolt
- ⑤ Front position tab

1. Screw in the hex head bolt ④, slowly turning the fan wheel by hand as you do so. The front position tab ⑤ on the tensioning lever gradually moves to the left.



The front position tab cannot be moved over the fixed upper position tab. The automatic tensioning device is sufficiently pre-tensioned when the distance to the upper position tab is less than that to the lower position tab.

2. Retighten the cheese head screw with hexagon socket ② and hex nut ③.
3. Refit the belt guard.

Starting the machine and performing a test run

1. Close all maintenance doors, replace and secure all removable panels.
2. Open the user-end compressed air inlet and outlet shut-off valves.
3. Close the shut-off valve at the cooler and network pressure gauge (initial pressure).
4. Switch on the power supply disconnecting device and reset the maintenance counter.
5. Switch the machine on and run it for around 2 minutes, then shut it down and perform a visual inspection.

10.24 Cylinder head and valves

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

10.25 Documenting maintenance and service work

Machine number:

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

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 fluids/materials are genuine parts. They are specifically designed for use in KAESER machines.

Unsuitable or poor-quality maintenance parts and operating fluids/materials may result in damage to the machine or significantly impair its proper function.

Damage can result in injury to personnel.

⚠ WARNING

Risk of personal injury or damage to the machine resulting from the use of unsuitable spare parts or operating fluids/materials!

- *Only use genuine parts and operating fluids/materials.*
- *Arrange for an authorized KAESER service representative to carry out regular maintenance.*

Machine

Designation	Number
Air filter	1250
Oil filter	1200
Housing ventilation filter	1570
Drive belt	1800
Compressor oil	1600
Service unit	9602
Condensate drain (Option F14)	
Filter element (Option F14)	1550

Tab. 49 Machine maintenance 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

Decommissioning is necessary under circumstances such as the following:

- the machine is (temporarily) not needed,
- the machine is to be moved to another location,
- the machine is to be scrapped.

Temporary de-commissioning

Precondition The machine can be started at regular intervals.

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

Long-term de-commissioning

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

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 $>32^{\circ}\text{F}$.
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 KAESER if you intend to transport the machine in freezing temperatures.

Precondition Transport only by forklift truck or suitable load-carrying equipment and only by personnel trained in the safe transportation of loads.

- Ensure the danger area is cleared of personnel.

12.4.2 Transporting by forklift truck

Precondition The whole machine must be standing over the forks.



Fig. 58 Transporting with a forklift truck

1. Pay attention to the center of gravity.
2. Drive the forks completely under the machine or pallet and lift carefully.

12.4.3 Transporting with a hoist

Only suitable and approved load-carrying and lifting equipment can ensure proper transportation of the machine with a hoist (e.g. crane). Suitable crossbeams ensure there is sufficient distance between the lifting equipment and the machine housing so as to prevent damage.

The machine is not equipped with load-fastening points.

Examples of unsuitable load-fastening points:

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



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

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

The hoist, load-carrying, and lifting equipment or the raised machine do not endanger any personnel.

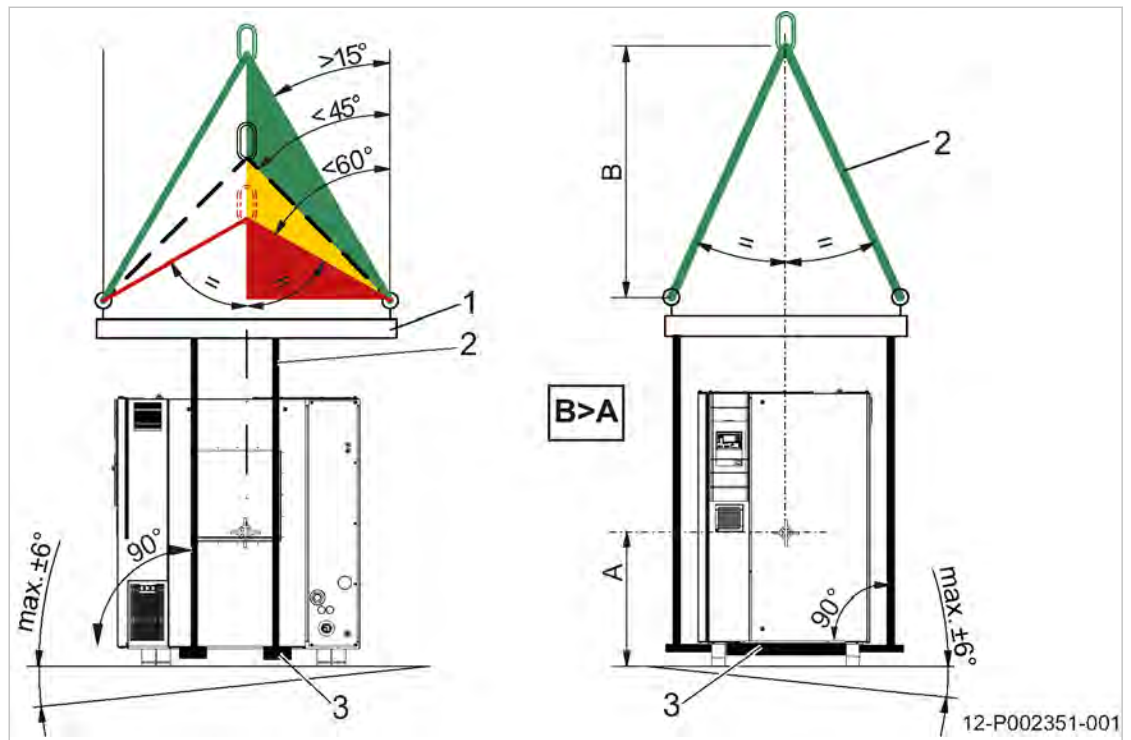


Fig. 59 Transporting by crane

- ① Load-carrying equipment
- ② Sling
- ③ Crossbeam

1. **⚠ WARNING** Risk of accident caused by incorrect use of load-carrying and lifting equipment!
 - Comply with permissible load limits.
 - Comply with the specific safety information for the load-carrying and lifting equipment.
2. Use load-carrying and lifting equipment correctly:
 - Ensure proper distribution of the load-fastening points relative to the center 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.
 - Tilt angles above 60° are prohibited.
 - Ensure a maximum horizontal tilt of 6° for the machine.
 - Ensure sufficient distance between the lifting equipment and the machine.
 - Ensure a positive stability height: Degree B > Degree A
 - Do not attach the lifting equipment to any of the machine's components.
3. Conduct a lifting test:
Slightly lift the machine to check whether it remains horizontal and does not swing.
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.

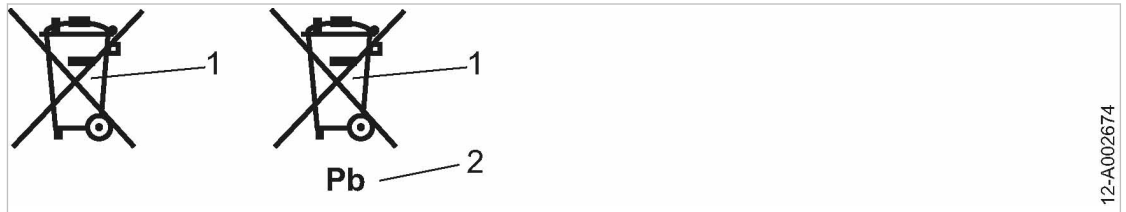


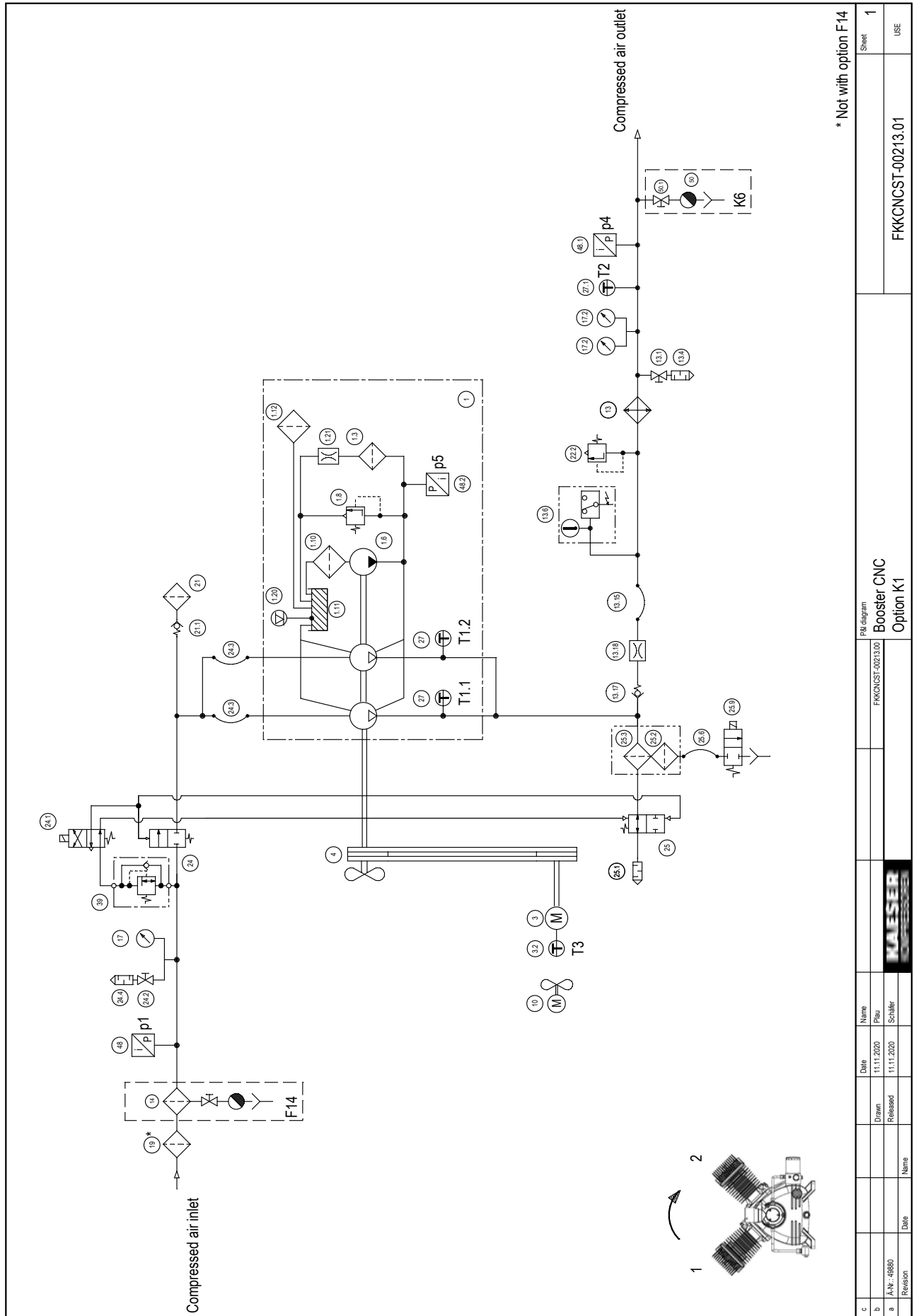
Fig. 60 Battery disposal

- 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)

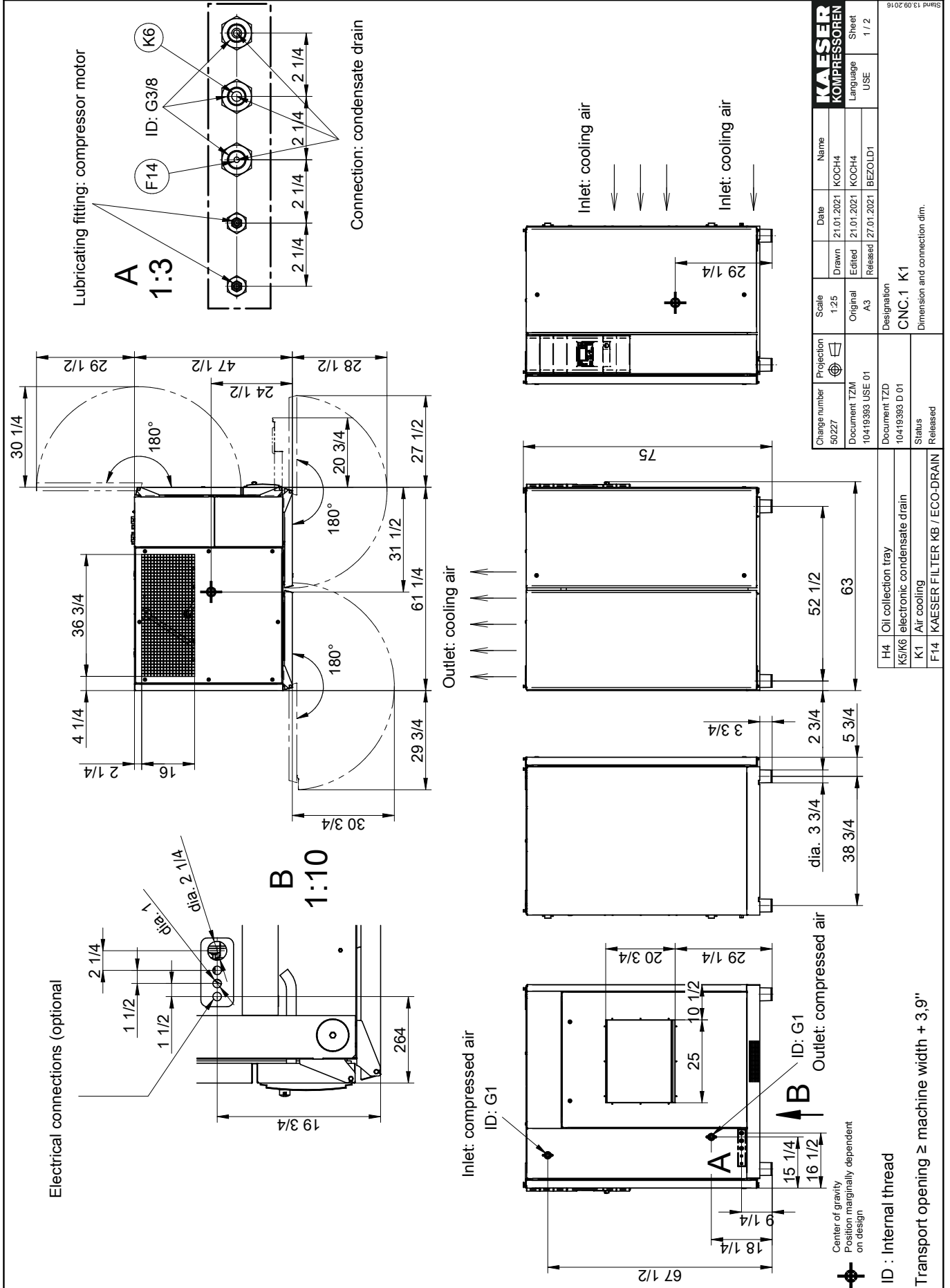


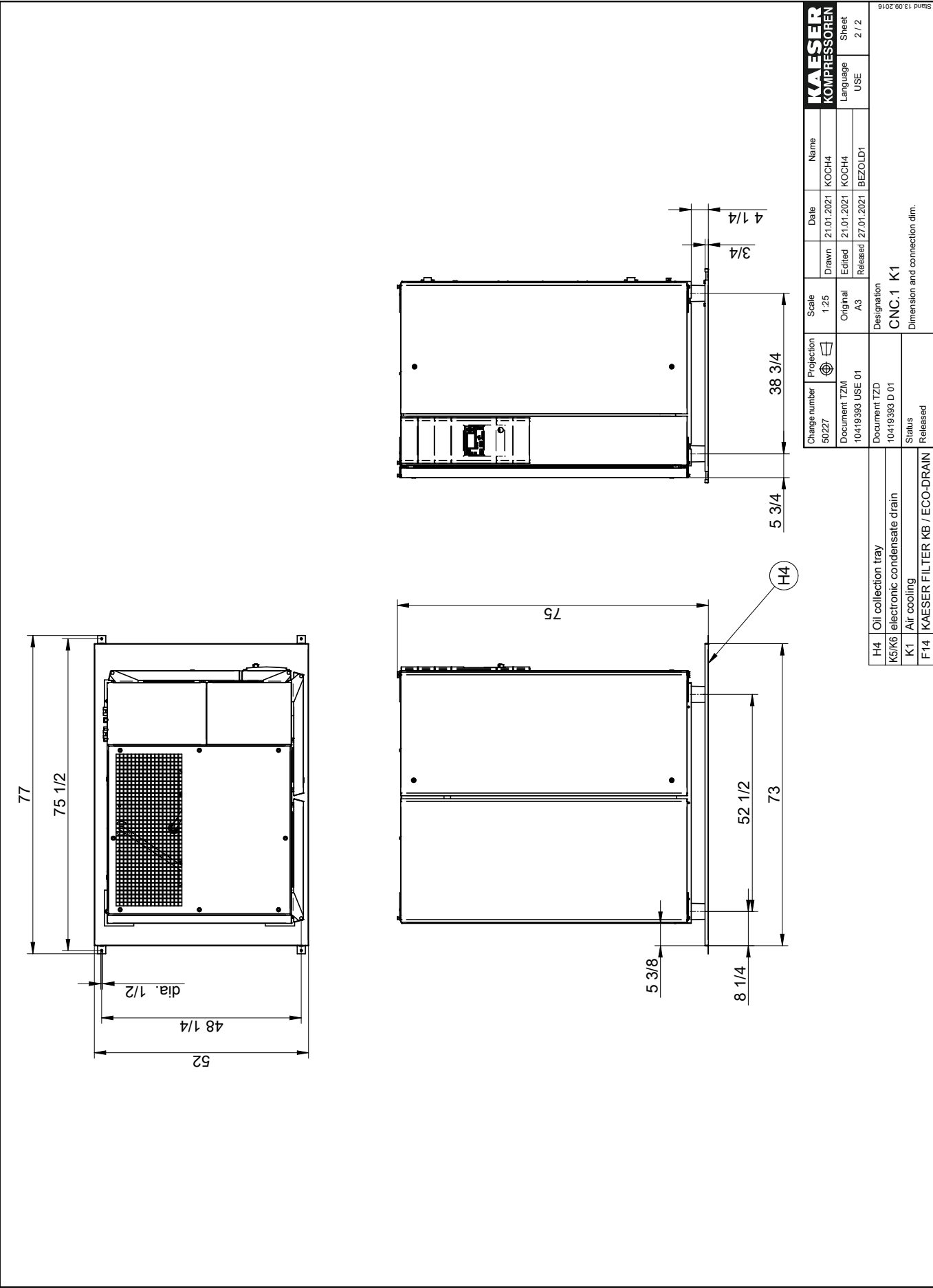
c					Name	Date				P&ID Diagram legend	Sheet	2
b				Drawn	Flau	11.11.2020				FKKNCST-00213.00		
a				Released	Schäfer	11.11.2020				Option K1		USE
Revision	Date	Name								FKKNCST-00213.01		

* Not with option F14

No.	Description	Accessories
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)	
13.4	Silencer	
13.6	Temperature switch	
13.15	Hose line (Discharge side)	
13.17	Check valve (Discharge side)	
13.18	Nozzle Pulsation dampening (Discharge side)	
14	KAESER FILTER KB with condensate drain	
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)	
24.4	Silencer	
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: Solenoid valve	
27	Pt100 temperature sensor - Aired discharge temperature (Cylinder 1, 2) [T1.1, T1.2]	
27.1	Pt100 temperature sensor - Compressed air outlet [T2]	
39	Pressure regulating valve	
48	Pressure transducer - Compressed air inlet [p1]	
48.1	Pressure transducer - Compressed air outlet [p4]	
48.2	Pressure transducer - Oil pressure [p5]	
50	Electronic condensate drain ECO-DRAIN	
50.1	Shut-off valve	
Option		
F14	KAESER FILTER KB (Electronic condensate drain ECO-DRAIN)	
K1	Air cooling	
K6	Electronic condensate drain	

13.2 Dimensional Drawing





13.3 Electrical Diagram

1	2	3	4	5	6	7	8
Wiring Diagram booster compressor CN7C/CN11C/CN15C/CN22C air 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 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. The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties. manufacturer: KAESER COMPRESSORS 96450 Coburg GERMANY cover page booster compressor KAESER KOMPRESSOREN c Date 25.01.2021 USE b Drawn Sitter a Released Burhner A Change SC2 MCS DKK-U3030.01 page 1 1 SHL							

Lfd. Nr.	Benennung	Zeichnungsnummer (Kunde)	Zeichnungsnummer (Hersteller)	Blatt	Anlagenkennzeichen
No.	Name	Drawing No. (customer)	Drawing No. (manufacturer)	Page	Unit designation
1	cover page		DKK-U0300.01	1	
2	list of contents		ZKK-U0300.01	1	
3	general instructions		UKK-U0300.01	1	
4	electrical equipment identification		UKK-U0300.01	2	
5	electrical component parts list		UKK-U0300.01	3	
6	electrical component parts list		UKK-U0300.01	4	
7	electrical component parts list		UKK-U0300.01	5	
8	electrical component parts list		UKK-U0300.01	6	
9	electrical component parts list		UKK-U0300.01	7	
10	wiring diagram	power supply/power unit	SKK-U0300.01	1	
11	wiring diagram	compressor motor	SKK-U0300.01	2	
12	wiring diagram	vent motor	SKK-U0300.01	3	
13	wiring diagram	control voltage tapping	SKK-U0300.01	4	
14	wiring diagram	safety chain	SKK-U0300.01	5	
15	wiring diagram	power supply unit	SKK-U0300.01	6	
16	wiring diagram	IO-module/configuration	SKK-U0300.01	7	
17	wiring diagram	sensors/actuators	SKK-U0300.01	8	
18	wiring diagram	sensors/actuators	SKK-U0300.01	9	
19	wiring diagram	sensors/actuators	SKK-U0300.01	10	
20	wiring diagram	volt-free contacts	SKK-U0300.01	11	
21	wiring diagram	inputs/outputs OM3	SKK-U0300.01	12	
22	wiring diagram	digital inputs - option C40	SKK-U0300.01	13	
23	wiring diagram	inputs/outputs - option C40	SKK-U0300.01	14	
24	wiring diagram	transformer diagrams	SKK-U0300.01	15	
25	wiring diagram	Handling: Terminals	SKK-U0300.01	16	
26	wiring diagram	Feed line connection	SKK-U0300.01	17	
27	wiring diagram	Feed line connection	SKK-U0300.01	18	
28	terminal connection	terminal strip -X0-X11-X12	KKK-U0300.01	1	
29	lay-out	Switchboard	AKK-U0300.01	1	

c			Date	25.01.2021	list of contents booster compressor	SC2 MCS	ZKK-U0300.01	=
b			Drawn	Sitter				+
a			Released	Buchner				
B Change		Date	Name					page 1 1 Sht

1	2	3	4	5	6	7	8
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 option K6 = Electronic condensate drain option F14 = KAESER FILTER KB							
c b a C Change Date Name 25.01.2021 Siller Büchner Released general instructions booster compressor KAESER KOMPRESSOREN SC2 MCS UKK-U3030.01 = + page 1 7 SHL							

1	2	3	4	5	6	7	8
electrical equipment identification							
general components				control			
-B25	overload relay,		-K20	<i>Main Control System SC2MCS</i>			
-K50	compressor motor		-X1	Ethernet			
	coupling relay,		-X2	IO-Bus			
-F4	temperature Compressed air aftercooler		-X3	RS485-FC (USS)			
	circuit breaker,		-X4	communication module (Bus)			
	vent motor		-X5	SD card slot			
-1FU,-2FU	primary control fuse		-X6	ground connection			
-3FU	secondary control fuse		-K21	<i>IO-module SC2IOM-3</i>			
-M1	compressor motor			inside			
-M4	vent motor		-X1	IO-Bus, input			
-Q1	main contactor		-X2	IO-Bus, output			
-Q2	delta contactor		-X3	analog input, Pt100			
-Q3	wye contactor		-X4	power supply unit, digital outputs			
-Q4	starter vent motor		-X5,-X9	Relay outputs			
-S1	EMERGENCY STOP pushbutton		-X6	analog input, analog output 4-20mA			
-T11	control transformer		-X8	digital inputs			
-T21,-T22	power unit			external			
			-X11...-X14	analog inputs, 4-20mA			
			-X15	analog output			
			-X18,-X19	digital inputs			
			-X20,-X21	digital outputs			
			-X22...-X32	analog inputs, Pt100			
			-K22	<i>IO-module SC2IOM-1</i>			
				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			
terminal strips							
-X0	terminal strip, power supply						
-X11	terminal strip, control						
-X12	terminal strip, control 24VDC						
				sensors/actuators			
				-B1	pressure transducer,		
				-B2	Compressed air outlet		
				-B3	pressure transducer,		
					Compressed air inlet		
				-B4	pressure transducer,		
					oil pressure		
				-B5	pressure transducer,		
					Pressure side return circuit		
					pressure transducer,		
					Intake side return circuit		
				-B40.1	temperature probe,		
					air end discharge temperature 1		
				-B40.2	temperature probe,		
					air end discharge temperature 2		
				-B42	temperature probe,		
					compressed air outlet temperature		
				-B50	temperature switch		
					Compressed air aftercooler		
				-B60	temperature probe,		
					compressor motor		
				-B70	oil level switch		
				-K1	Inlet control valve		
				-K2	Return valve		
				-K3	Relief control valve		
				-K10	condensate drain filter		
				-K11	condensate drain Compressed air outlet		
				-K12	condensate drain Prefilter		

c			Date	25.01.2021	electrical equipment identification			=				
b			Drawn	Sitter	booster compressor			+				
a			Released	Büchner								
C Change			Date	Name					SC2 MCS	UKK-U3030.01	page 2	7 SHL

model	electrical component parts list				electrical component parts list booster compressor	page 3 7 Sht
	CN 7.5 C	CN 11 C	CN 15 C	CN 22 C		
machine power supply	208 V ±10 %, 60 Hz	208 V ±10 %, 60 Hz	208 V ±10 %, 60 Hz	208 V ±10 %, 60 Hz	= +	UKK-U3030.01
motor -M1	10 hp	15 hp	20 hp	30 hp		
motor -M4	1.3 kW	1.3 kW	1.3 kW	1.3 kW	SC2 MCS	
lay-out	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1		
supply terminals	-X0:U1/V1/W1 Siemens Torque Stripped length	7.3140.05080 3RV2925-5EB 36 lb-in 10 mm	7.3140.05070 3RV2935-5E 53 lb-in 25 mm	7.3140.05070 3RV2935-5E 53 lb-in 25 mm		
	-X0:GRD Wieland Torque Stripped length Handling	7.3149.02460 WKNF16SL/35 --- 16 mm fig. 2, Sht. 16	7.3291.00010 WKN35SL/U 36 lb-in 20 mm ---	7.3149.01660 WKN70SL/U 150 lb-in 24 mm ---		
	supply connection	fig. 10, Sht. 17	fig. 11, Sht. 17	fig. 11, Sht. 17		
	terminal strip -X0	7.6836.00170 Wieland	7.6836.00430 Wieland	7.6836.00430 Wieland		
terminal strip	-X11 Handling	7.7113.00101 Wieland fig. 1, Sht. 16	7.7113.00101 Wieland fig. 1, Sht. 16	7.7113.00101 Wieland fig. 1, Sht. 16		
contactor	-Q1/-Q2	7.8740.00380 3RT2027-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00410 3RT2036-1AK60		
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
auxiliary switch	-Q1	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11		
contactor	-Q3	7.8740.00370 3RT2026-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00410 3RT2036-1AK60		
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
contactor	-Q4	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60		
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00		
coupling relay	-K50 Wieland	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F		
overload relay	-B25	7.8741.00070 3RB3026-1QB0 (6-25 A) setting: 15 A NEC 430.32(C) incremental setting: 17 A	7.8741.00150 3RB3036-2UB0 (12-50 A) setting: 23 A NEC 430.32(C) incremental setting: 25 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 31 A NEC 430.32(C) incremental setting: 35 A		
fuses	-1FU...-3FU	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)		
fuse socket	-1FU...-3FU Wöhner	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH		
circuit breaker	-F4	7.8742.01170 3RV2021-1GA10 (4.5-6.3 A) setting: 4.4 A NEC 430.32(C) incremental setting: 5.0 A	7.8742.01170 3RV2021-1GA10 (4.5-6.3 A) setting: 4.4 A NEC 430.32(C) incremental setting: 5.0 A	7.8742.01170 3RV2021-1GA10 (4.5-6.3 A) setting: 4.4 A NEC 430.32(C) incremental setting: 5.0 A		
terminal block		7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H		
auxiliary switch	Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E		
transformer	-T11	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15		
power supply	-T21/-T22 Prodrive	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5		
connection	-W11	---	---	---		
connection	-W13	7.6861.0 3RV1915-1AB	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00		
connection	-W14	14 AWG black 600 V, 90°C	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00		
cables	-W19.1/2	4G12 AWG 600 V, 90°C	4G8 AWG 600 V, 90°C	4G8 AWG 600 V, 90°C		
compressor control	-K20 Prodrive	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS		
IO-module	-K21 Prodrive	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3		
IO-module option C40	-K22 Prodrive	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1		
EMERGENCY STOP pushbutton	-S1	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		

model	electrical component parts list				electrical component parts list booster compressor	UKK-U3030.01	SC2 MCS	page 7 Sht
	CN 7.5 C	CN 11 C	CN 15 C	CN 22 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	10 hp	15 hp	20 hp	30 hp				
motor -M4	1.25 kW	1.25 kW	1.25 kW	1.25 kW				
lay-out	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1				
supply terminals	-X0:U1/V1/W1 Siemens Torque Stripped length	7.3140.05080 3RV2925-5EB 36 lb-in 10 mm	7.3140.05070 3RV2935-5E 53 lb-in 25 mm	7.3140.05070 3RV2935-5E 53 lb-in 25 mm	7.3140.05070 3RV2935-5E 53 lb-in 25 mm			
	-X0:GRD Wieland Torque Stripped length Handling	7.3149.02460 WKNF16SL/35 --- 16 mm fig. 2, Sht. 16	7.3291.00010 WKN35SL/U 36 lb-in 20 mm ---	7.3291.00010 WKN35SL/U 36 lb-in 20 mm ---	7.3149.01660 WKN70SL/U 150 lb-in 24 mm ---			
supply connection	fig. 10, Sht. 17	fig. 11, Sht. 17	fig. 11, Sht. 17	fig. 11, Sht. 17				
terminal strip	-X0	7.6836.00170 Wieland	7.6836.00430 Wieland	7.6836.00430 Wieland				
terminal strip	-X11 Handling	7.7113.00101 Wieland fig. 1, Sht. 16	7.7113.00101 Wieland fig. 1, Sht. 16	7.7113.00101 Wieland fig. 1, Sht. 16	7.7113.00101 Wieland fig. 1, Sht. 16			
contactor	-Q1/-Q2	7.8740.00380 3RT2027-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00410 3RT2036-1AK60	7.8740.00430 3RT2038-1AK60			
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00			
auxiliary switch	-Q1	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11			
contactor	-Q3	7.8740.00370 3RT2026-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00410 3RT2036-1AK60			
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00			
contactor	-Q4	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60			
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00			
coupling relay	-K50 Wieland	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F			
overload relay	-B25	7.8741.00070 3RB3026-1QB0 (6-25 A) setting: 13 A NEC 430.32(C) incremental setting: 15 A	7.8741.00150 3RB3036-2UB0 (12-50 A) setting: 20 A NEC 430.32(C) incremental setting: 23 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 28 A NEC 430.32(C) incremental setting: 32 A	7.8741.00100 3RB3036-1WB0 (20-80 A) setting: 39 A NEC 430.32(C) incremental setting: 44 A			
fuses	-1FU...-3FU Gould	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)			
fuse socket	-1FU...-3FU Wöhner	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH			
circuit breaker	-F4	7.8742.01160 3RV2021-1FA10 (3.5-5 A) setting: 3.9 A NEC 430.32(C) incremental setting: 4.4 A	7.8742.01160 3RV2021-1FA10 (3.5-5 A) setting: 3.9 A NEC 430.32(C) incremental setting: 4.4 A	7.8742.01160 3RV2021-1FA10 (3.5-5 A) setting: 3.9 A NEC 430.32(C) incremental setting: 4.4 A	7.8742.01160 3RV2021-1FA10 (3.5-5 A) setting: 3.9 A NEC 430.32(C) incremental setting: 4.4 A			
terminal block		7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H			
auxiliary switch	Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E			
transformer	-T11 Block	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15			
power supply	-T21/-T22 Prodrive	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5			
connection	-W11	---	---	---	---			
connection	-W13	7.6861.0 3RV1915-1AB	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00			
connection	-W14	14 AWG black 600 V, 90°C	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00			
cables	-W19.1/2	4G12 AWG 600 V, 90°C	4G8 AWG 600 V, 90°C	4G8 AWG 600 V, 90°C	4G6 AWG 600 V, 90°C			
compressor control	-K20 Prodrive	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS			
IO-module	-K21 Prodrive	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3			
IO-module option C40	-K22 Prodrive	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 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			

model		electrical component parts list				electrical component parts list booster compressor	page 5 7 Sht
		CN 7.5 C	CN 11 C	CN 15 C	CN 22 C		
machine power supply		380 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	380 V ±10 %, 60 Hz	UKK-U3030.01	SC2 MCS
motor	-M1	10 hp	15 hp	20 hp	30 hp		
motor	-M4	1.25 kW	1.25 kW	1.25 kW	1.25 kW	SC2 MCS	UKK-U3030.01
lay-out		fig. 2, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1		
supply terminals	-X0:U1/V1/W1	7.3149.02000 WKFN16D1/2/35 (Wieland)	7.3140.05080 3RV2925-5EB (Siemens)	7.3140.05070 3RV2935-5E	7.3140.05070 3RV2935-5E (Siemens)	SC2 MCS	UKK-U3030.01
	Torque	---	36 lb-in	53 lb-in	53 lb-in		
	Stripped length	16 mm	10 mm	25 mm	25 mm		
	-X0:GRD	7.3149.02020 WKFN16D1/2/SL/35	7.3149.02460 WKFN16SL/35	7.3291.00010 WKN35SL/U	7.3291.00010 WKN35SL/U		
supply	Torque	---	16 mm	36 lb-in	36 lb-in	SC2 MCS	UKK-U3030.01
	Stripped length	16 mm	16 mm	20 mm	20 mm		
	Handling	fig. 2, Sht. 16	fig. 2, Sht. 16	---	---		
	connection	fig. 12, Sht. 18	fig. 10, Sht. 17	fig. 11, Sht. 17	fig. 11, Sht. 17		
terminal strip		7.6836.00641 Wieland	7.6836.00170 Wieland	7.6836.00430 Wieland	7.6836.00430 Wieland	SC2 MCS	UKK-U3030.01
terminal strip		7.7113.00101 Wieland	7.7113.00101 Wieland	7.7113.00101 Wieland	7.7113.00101 Wieland		
contactor		7.8740.00360 3RT2025-1AK60	7.8740.00380 3RT2027-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00400 3RT2035-1AK60	SC2 MCS	UKK-U3030.01
interference suppressor	-Q11-Q2	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
	auxiliary switch	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11		
	-Q3	7.8740.00350 3RT2024-1AK60	7.8740.00370 3RT2026-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00400 3RT2035-1AK60		
interference suppressor	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
	contactor	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60		
	interference suppressor	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
	Siemens	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00		
coupling relay		7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	SC2 MCS	UKK-U3030.01
overload relay		7.8741.00060 3RB3026-1SB0 (3-12 A) setting: 8 A NEC 430.32(C) incremental setting: 9 A	7.8741.00170 3RB3026-2QB0 (6-25 A) setting: 12 A NEC 430.32(C) incremental setting: 14 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 17 A NEC 430.32(C) incremental setting: 19 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 23 A NEC 430.32(C) incremental setting: 26 A		
fuses		7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	SC2 MCS	UKK-U3030.01
fuses		7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)		
fuse socket		7.3320.00060 Wöhner	7.3320.00060 Wöhner	7.3320.00060 Wöhner	7.3320.00060 Wöhner	SC2 MCS	UKK-U3030.01
circuit breaker		7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A		
terminal block	-F4	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	SC2 MCS	UKK-U3030.01
	auxiliary switch	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E		
	transformer	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15		
	-T11	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15		
power supply		7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	SC2 MCS	UKK-U3030.01
connection		10 AWG black 600 V, 90°C	---	---	---		
connection		10 AWG black 600 V, 90°C	7.6861.0 3RV1915-1AB	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00	SC2 MCS	UKK-U3030.01
connection		14 AWG black 600 V, 90°C	14 AWG black 600 V, 90°C	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00		
cables		4G12 AWG 600 V, 90°C	4G12 AWG 600 V, 90°C	4G10 AWG 600 V, 90°C	4G8 AWG 600 V, 90°C	SC2 MCS	UKK-U3030.01
compressor control		7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS		
IO-module		7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	SC2 MCS	UKK-U3030.01
IO-module		7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1		
option C40		7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	SC2 MCS	UKK-U3030.01
EMERGENCY STOP pushbutton		7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV		
auxiliary contact		7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	SC2 MCS	UKK-U3030.01
		7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO		

model	electrical component parts list				electrical component parts list	booster compressor	Date	Drawn	Sitter	Released	Name	Date
	CN 7.5 C	CN 11 C	CN 15 C	CN 22 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	10 hp	15 hp	20 hp	30 hp								
motor -M4	1.35 kW	1.35 kW	1.35 kW	1.35 kW								
lay-out	fig. 2, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1								
supply terminals -X0:U1/V1/W1	7.3149.02000 WKFN16D1/2/35 (Wieland)	7.3140.05080 3RV2925-5EB (Siemens)	7.3140.05070 3RV2935-5E	7.3140.05070 3RV2935-5E (Siemens)								
Torque	---	36 lb-in	53 lb-in	53 lb-in								
Stripped length	16 mm	10 mm	25 mm	25 mm								
-X0:GRD	7.3149.02020 WKFN16D1/2/SL/35	7.3149.02460 WKFN16SL/35	7.3291.00010 WKN35SL/U	7.3291.00010 WKN35SL/U								
Torque	---	36 lb-in	36 lb-in	36 lb-in								
Stripped length	16 mm	16 mm	20 mm	20 mm								
Handling	fig. 2, Sht. 16	fig. 2, Sht. 16	---	---								
supply connection	fig. 12, Sht. 18	fig. 10, Sht. 17	fig. 11, Sht. 17	fig. 11, Sht. 17								
terminal strip -X0	7.6836.00641 Wieland	7.6836.00170 Wieland	7.6836.00430 Wieland	7.6836.00430 Wieland								
terminal strip -X11	7.7113.00101 Wieland	7.7113.00101 Wieland	7.7113.00101 Wieland	7.7113.00101 Wieland								
Handling	fig. 1, Sht. 16	fig. 1, Sht. 16	fig. 1, Sht. 16	fig. 1, Sht. 16								
contactor -Q1/-Q2	7.8740.00360 3RT2025-1AK60	7.8740.00380 3RT2027-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00400 3RT2035-1AK60								
interference suppressor	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00								
auxiliary switch -Q1	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11								
contactor -Q3	7.8740.00350 3RT2024-1AK60	7.8740.00370 3RT2026-1AK60	7.8740.00400 3RT2035-1AK60	7.8740.00400 3RT2035-1AK60								
interference suppressor	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	7.8740.05150 3RT2936-1CC00								
contactor -Q4	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60								
interference suppressor	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00								
coupling relay -K50	7.3149.01670 Wieland	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F								
overload relay -B25	7.8741.00060 3RB3026-1SB0 (3-12 A) setting: 7 A NEC 430.32(C) incremental setting: 7 A	7.8741.00170 3RB3026-2QB0 (6-25 A) setting: 10 A NEC 430.32(C) incremental setting: 11 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 14 A NEC 430.32(C) incremental setting: 16 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 19 A NEC 430.32(C) incremental setting: 22 A								
fuses -1FU...-3FU	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)								
fuse socket -1FU...-3FU	7.3320.00060 Wöhner	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH	7.3320.00060 AMBUS EASYSWITCH								
circuit breaker -F4	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A	7.8742.01140 3RV2021-1DA10 (2.2-3.2 A) setting: 2.3 A NEC 430.32(C) incremental setting: 2.6 A								
terminal block	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H								
auxiliary switch	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E								
transformer -T11	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15	7.7569.0 B0601024 (250 VA) diagram 1, Sht. 15								
power supply -T21/-T22	7.7605P0 Prodrive	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5								
connection -W11	10 AWG black 600 V, 90°C	---	---	---								
connection -W13	10 AWG black 600 V, 90°C	7.6861.0 3RV1915-1AB	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00								
connection -W14	14 AWG black 600 V, 90°C	14 AWG black 600 V, 90°C	7.3140.05270 3RA2933-3FA00	7.3140.05270 3RA2933-3FA00								
cables -W19.1/2	4G12 AWG 600 V, 90°C	4G12 AWG 600 V, 90°C	4G10 AWG 600 V, 90°C	4G10 AWG 600 V, 90°C								
compressor control -K20	7.7601.0 Prodrive	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS								
IO-module -K21	7.7604.1 Prodrive	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3								
IO-module option C40 -K22	7.7602.1 Prodrive	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 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								

electrical component parts list						page 7 Sht
model		CN 7.5 C	CN 11 C	CN 15 C	CN 22 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	10 hp	15 hp	20 hp	30 hp	
motor	-M4	1.35 kW	1.35 kW	1.35 kW	1.35 kW	
lay-out		fig. 2, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1	fig. 1, Sht. 1	
supply terminals	-X0:U1/V1/W1	7.3149.02000 WKFN16D1/2/35 (Wieland)	7.3140.05080 3RV2925-5EB (Siemens)	7.3140.05080 3RV2925-5EB (Siemens)	7.3140.05070 3RV2935-5E (Siemens)	
	Torque	---	36 lb-in	36 lb-in	53 lb-in	
	Stripped length	16 mm	10 mm	10 mm	25 mm	
	-X0:GRD	7.3149.02020 WKFN16D1/2/SL/35	7.3149.02460 WKFN16SL/35	7.3149.02460 WKFN16SL/35	7.3291.00010 WKN35SL/U	
supply	Torque	---	---	---	---	
	Stripped length	16 mm	16 mm	16 mm	20 mm	
	Handling	fig. 2, Sht. 16	fig. 2, Sht. 16	fig. 2, Sht. 16	---	
	connection	fig. 12, Sht. 18	fig. 10, Sht. 17	fig. 10, Sht. 17	fig. 11, Sht. 17	
terminal strip		7.6836.00641 Wieland	7.6836.00170 Wieland	7.6836.00170 Wieland	7.6836.00430 Wieland	
terminal strip		7.7113.00101 Wieland	7.7113.00101 Wieland	7.7113.00101 Wieland	7.7113.00101 Wieland	
Handling		fig. 1, Sht. 16	fig. 1, Sht. 16	fig. 1, Sht. 16	fig. 1, Sht. 16	
contactor		7.8740.00360 3RT2025-1AK60	7.8740.00380 3RT2027-1AK60	7.8740.00390 3RT2028-1AK60	7.8740.00400 3RT2035-1AK60	
interference suppressor		7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	
	Siemens					
auxiliary switch		7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	7.8740.05010 3RH2911-1HA11	
contactor		7.8740.00350 3RT2024-1AK60	7.8740.00370 3RT2026-1AK60	7.8740.00370 3RT2026-1AK60	7.8740.00400 3RT2035-1AK60	
interference suppressor		7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05150 3RT2936-1CC00	
	Siemens					
contactor		7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	7.8740.00340 3RT2023-1AK60	
interference suppressor		7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	7.8740.05140 3RT2926-1CC00	
	Siemens					
coupling relay		7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	7.3149.01670 flare 110 V-1W-250 V6 A-F	
overload relay		7.8741.00060 3RB3026-1SB0 (3-12 A) setting: 5 A NEC 430.32(C) incremental setting: 6 A	7.8741.00170 3RB3026-2QB0 (6-25 A) setting: 8 A NEC 430.32(C) incremental setting: 9 A	7.8741.00070 3RB3026-1QB0 (6-25 A) setting: 11 A NEC 430.32(C) incremental setting: 13 A	7.8741.00090 3RB3036-1UB0 (12-50 A) setting: 16 A NEC 430.32(C) incremental setting: 17 A	
fuses		7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	7.3316.1 ATQR 1 1/2 (1.5 A, 600 V)	
fuses		7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	7.3313.1 ATQR 2 1/2 (2.5 A, 600 V)	
fuse socket		7.3320.00060 Wöhner	7.3320.00060 Wöhner	7.3320.00060 Wöhner	7.3320.00060 Wöhner	
circuit breaker		7.8742.01130 3RV2021-1CA10 (1.8-2.5 A) setting: 1.8 A NEC 430.32(C) incremental setting: 2.1 A	7.8742.01130 3RV2021-1CA10 (1.8-2.5 A) setting: 1.8 A NEC 430.32(C) incremental setting: 2.1 A	7.8742.01130 3RV2021-1CA10 (1.8-2.5 A) setting: 1.8 A NEC 430.32(C) incremental setting: 2.1 A	7.8742.01130 3RV2021-1CA10 (1.8-2.5 A) setting: 1.8 A NEC 430.32(C) incremental setting: 2.1 A	
terminal block		7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	7.3140.05090 3RV2928-1H	
auxiliary switch		7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	
transformer		7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	7.2239.20080 USTE250 (250 VA) diagram 2, Sht. 15	
power supply		7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	7.7605P0 PSDC24/2.5	
connection		10 AWG black 600 V, 90°C	---	---	---	
connection		10 AWG black 600 V, 90°C	7.6861.0 3RV1915-1AB	7.6861.0 3RV1915-1AB	7.3140.05270 3RA2933-3FA00	
connection		14 AWG black 600 V, 90°C	14 AWG black 600 V, 90°C	14 AWG black 600 V, 90°C	7.3140.05270 3RA2933-3FA00	
cables		4G12 AWG 600 V, 90°C	4G12 AWG 600 V, 90°C	4G10 AWG 600 V, 90°C	4G10 AWG 600 V, 90°C	
compressor control		7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	7.7601.0 SIGMA CONTROL 2 MCS	
IO-module		7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	7.7604.1 SIGMA CONTROL 2 IOM-3	
IO-module		7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	7.7602.1 SIGMA CONTROL 2 IOM-1	
option C40		---	---	---	---	
EMERGENCY STOP pushbutton		7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	7.3217.0 / QRUV	
auxiliary contact		7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	7.3218.0 / MHTOO	

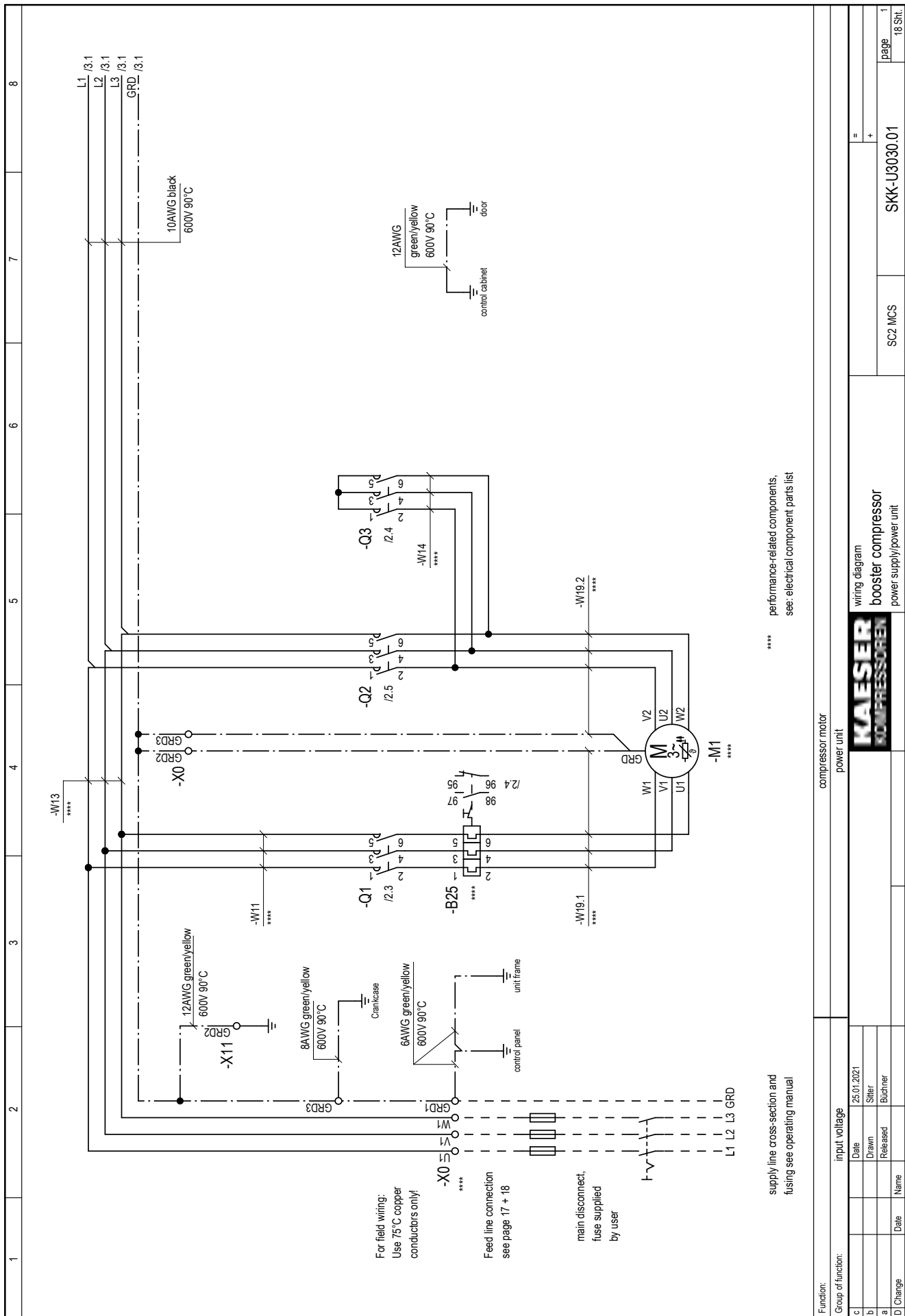
electrical component parts list
booster compressor

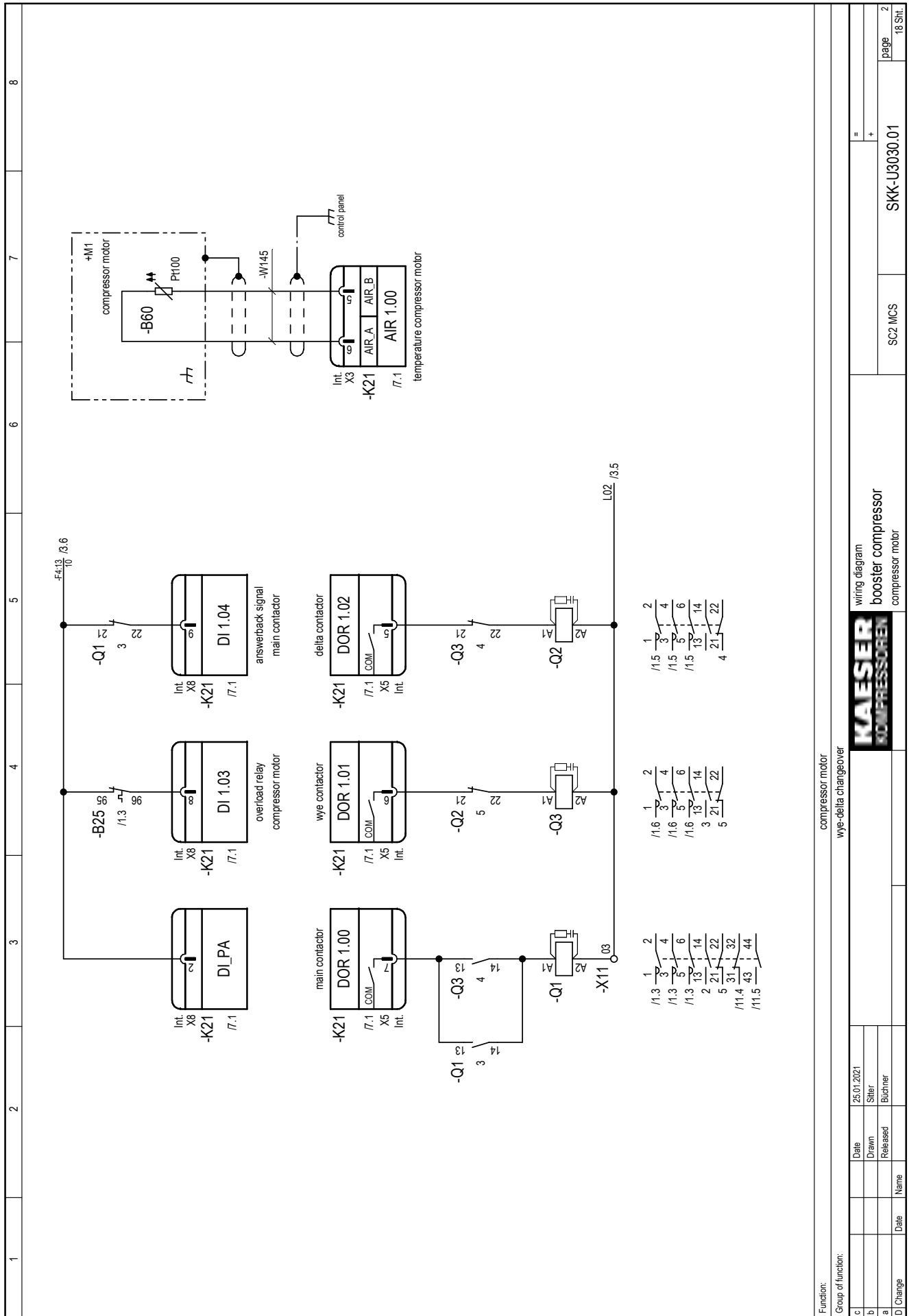
KAESER
KOMPRESSOREN

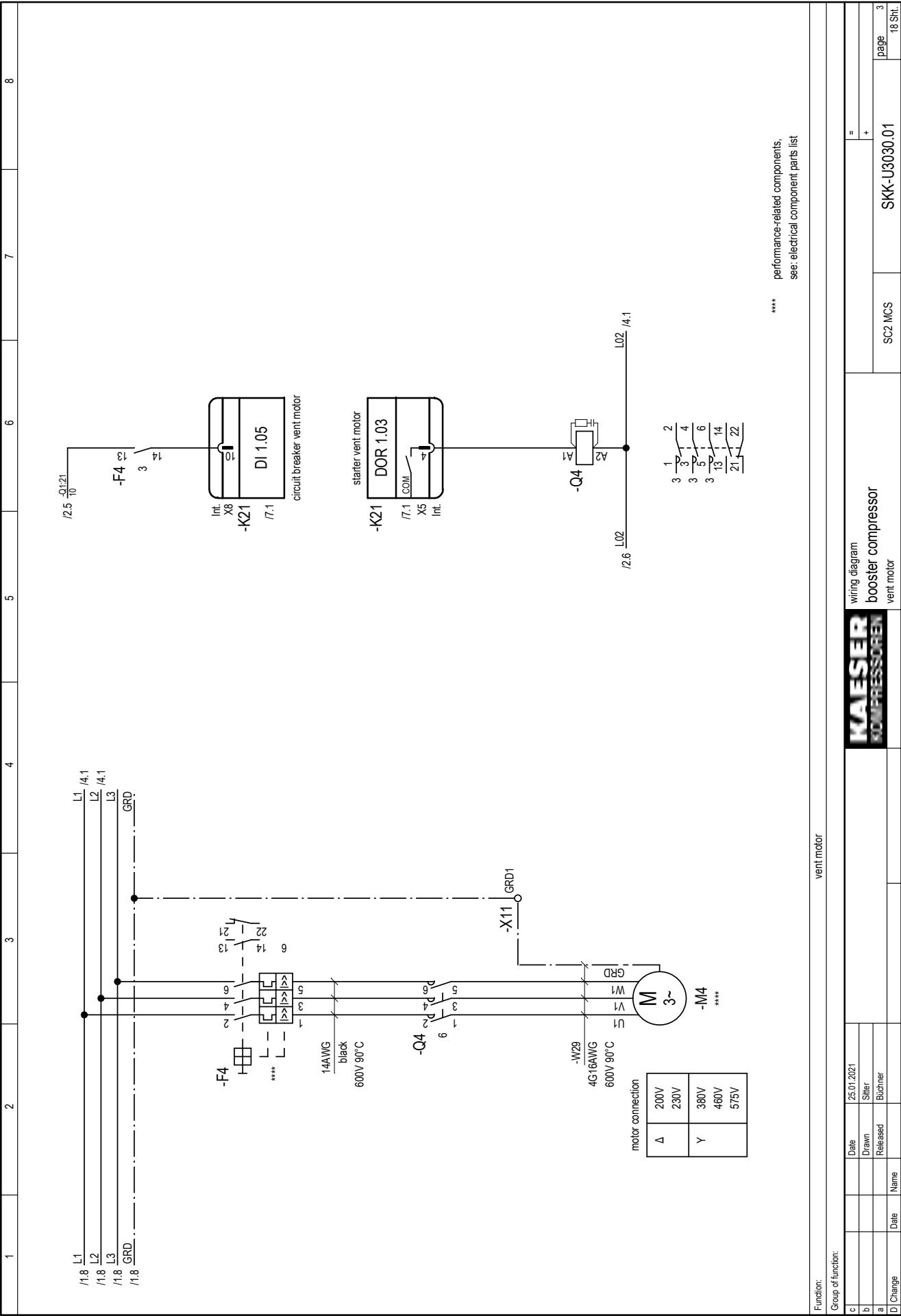
Date
25.01.2021
Drawn
Siller
Released
Büchner

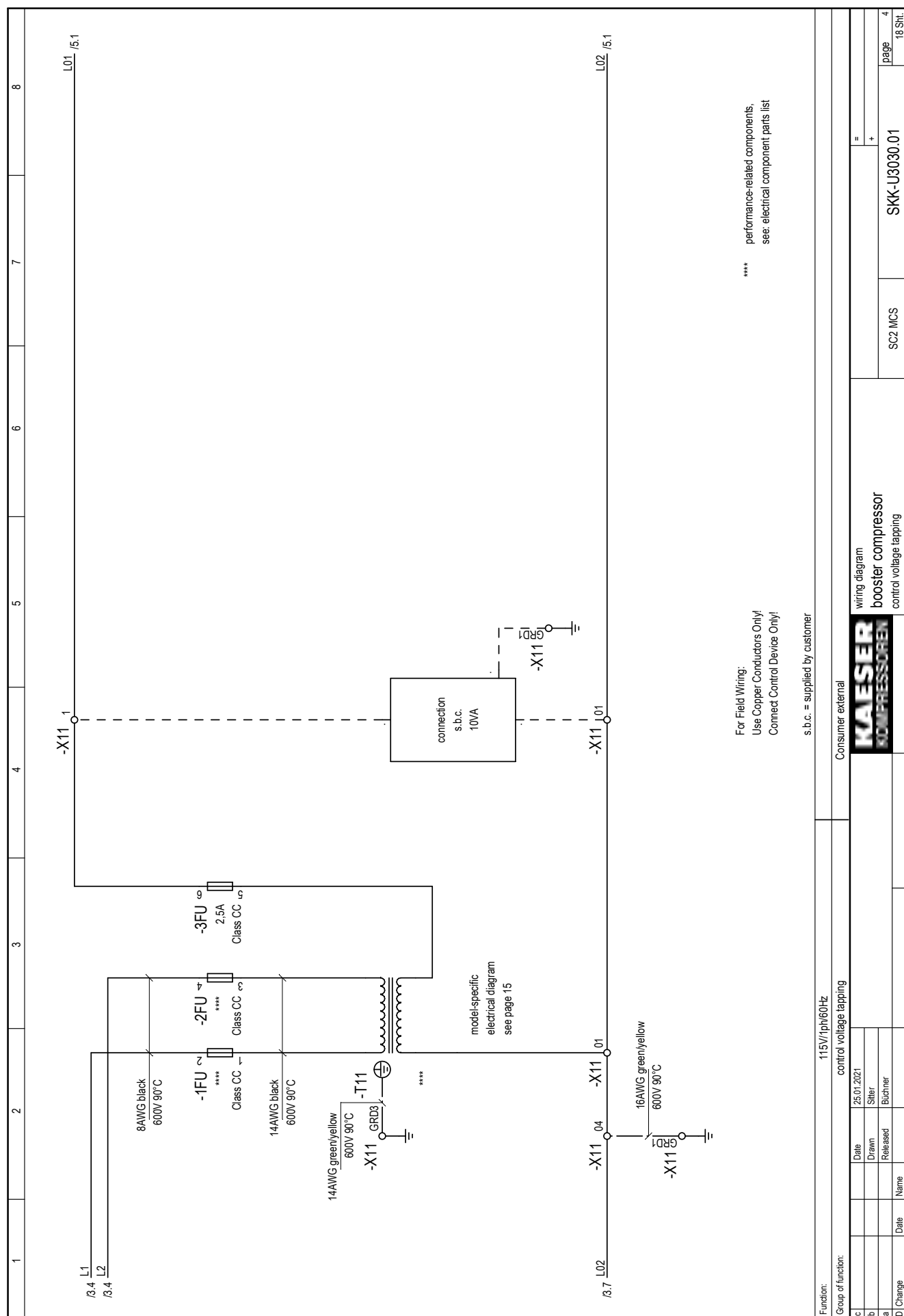
Name
Date

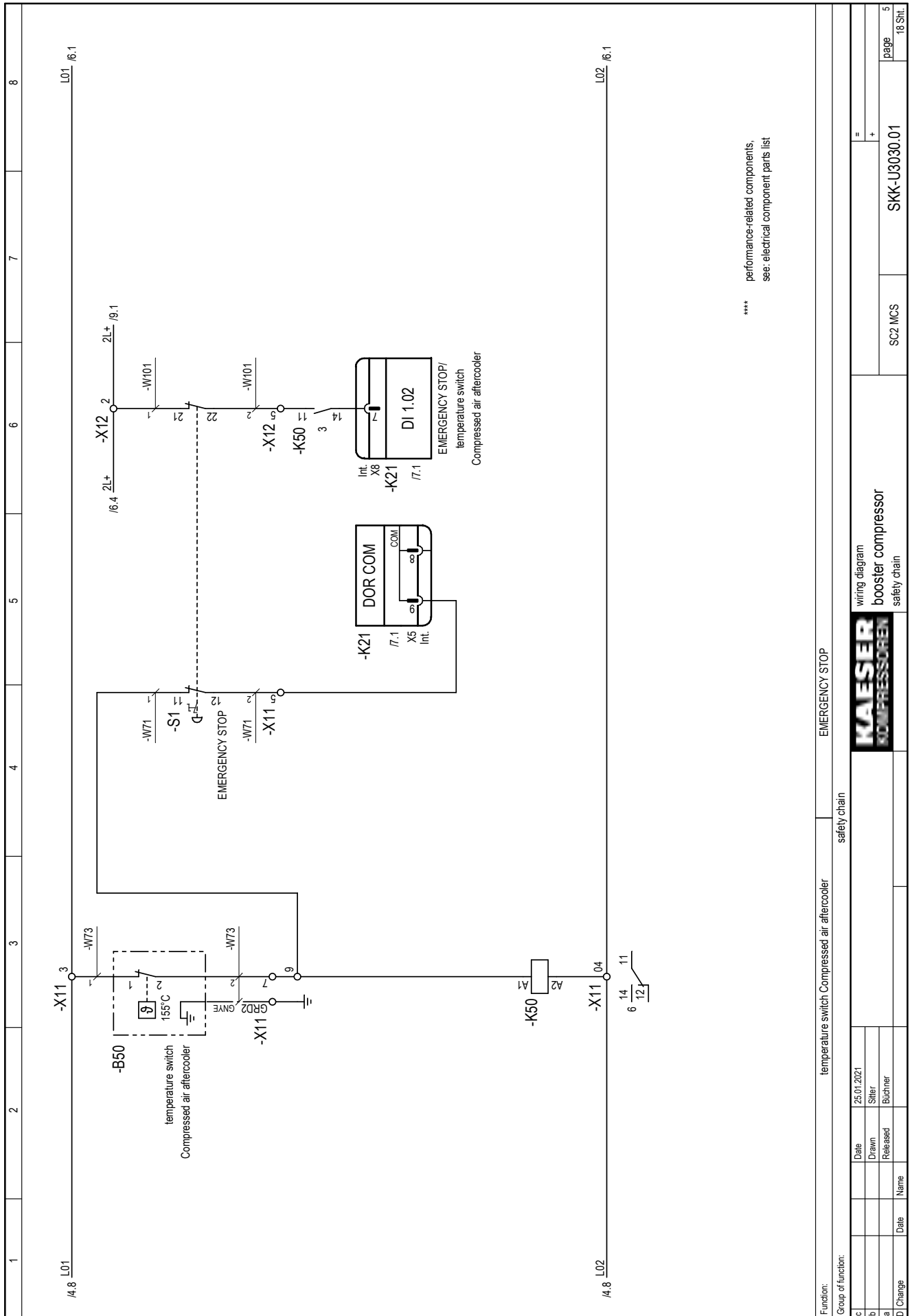
Change
a
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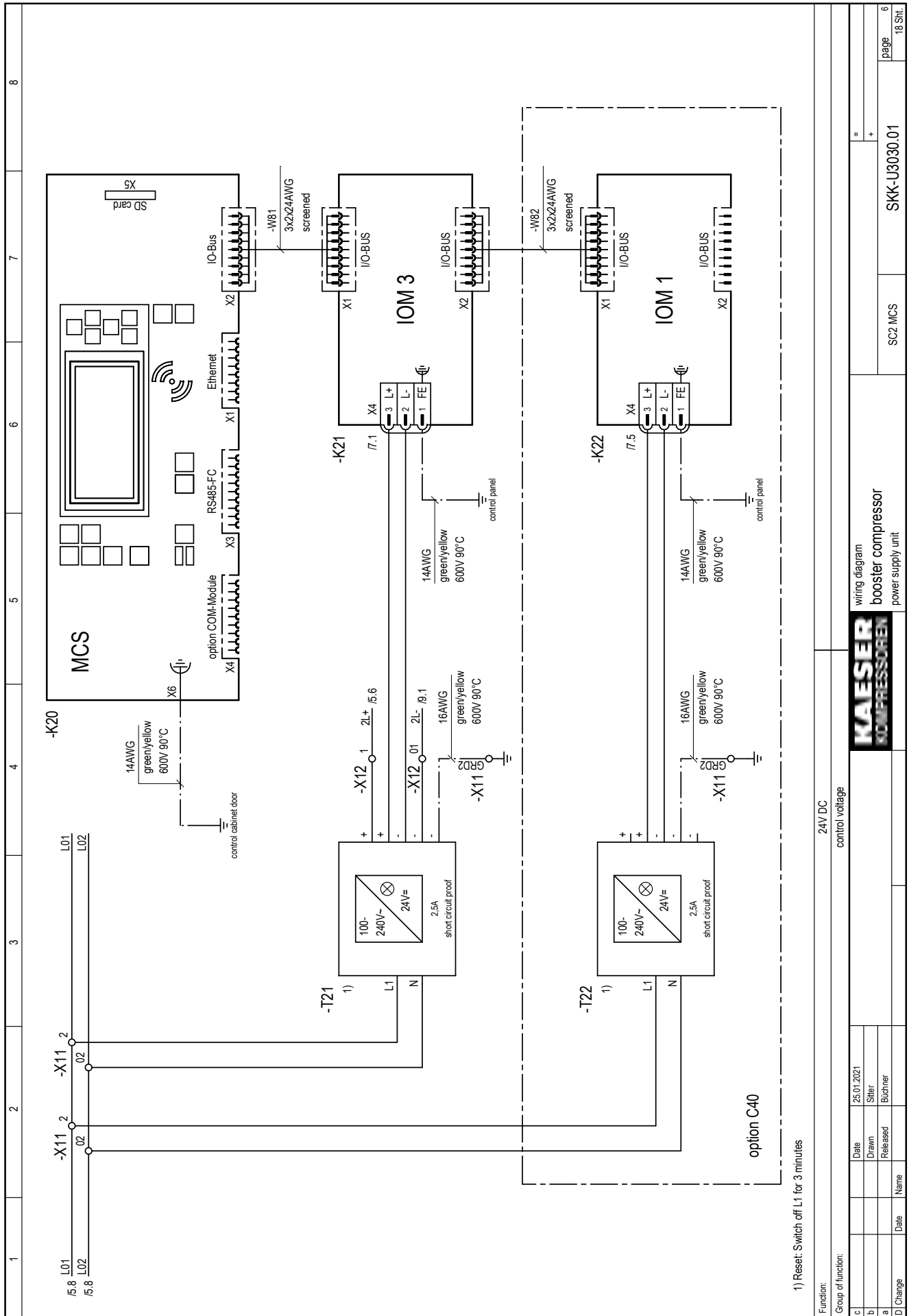


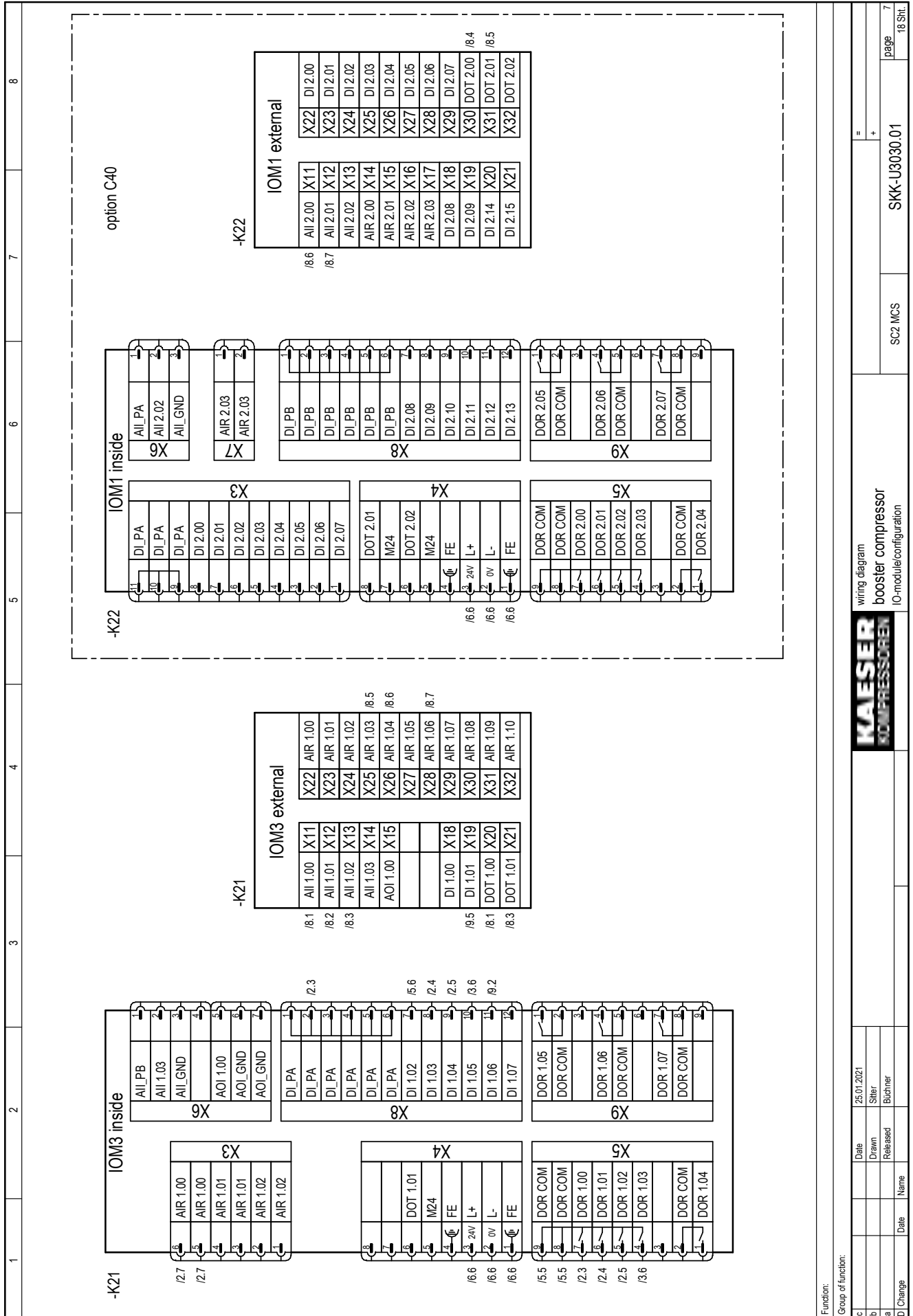


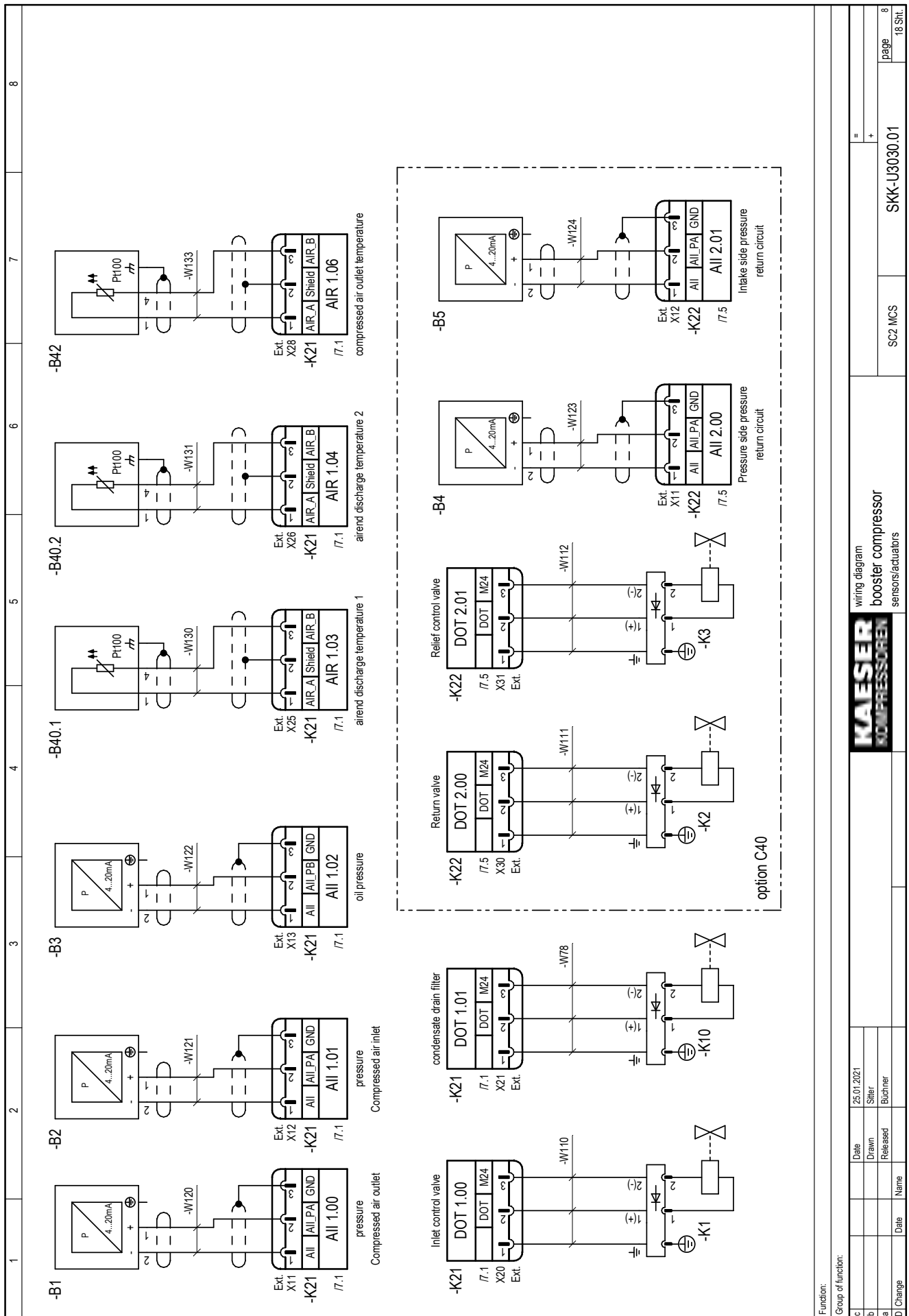


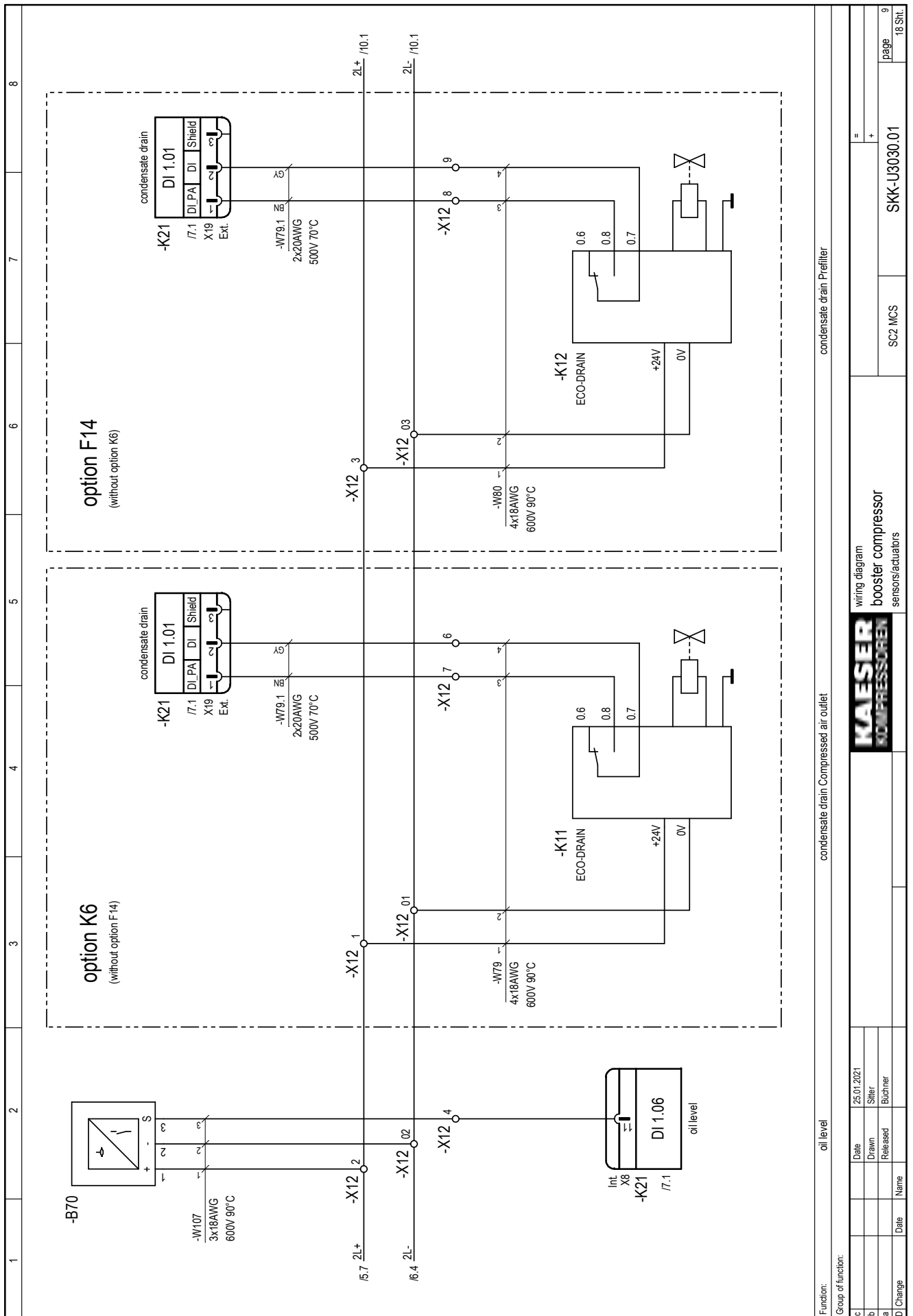


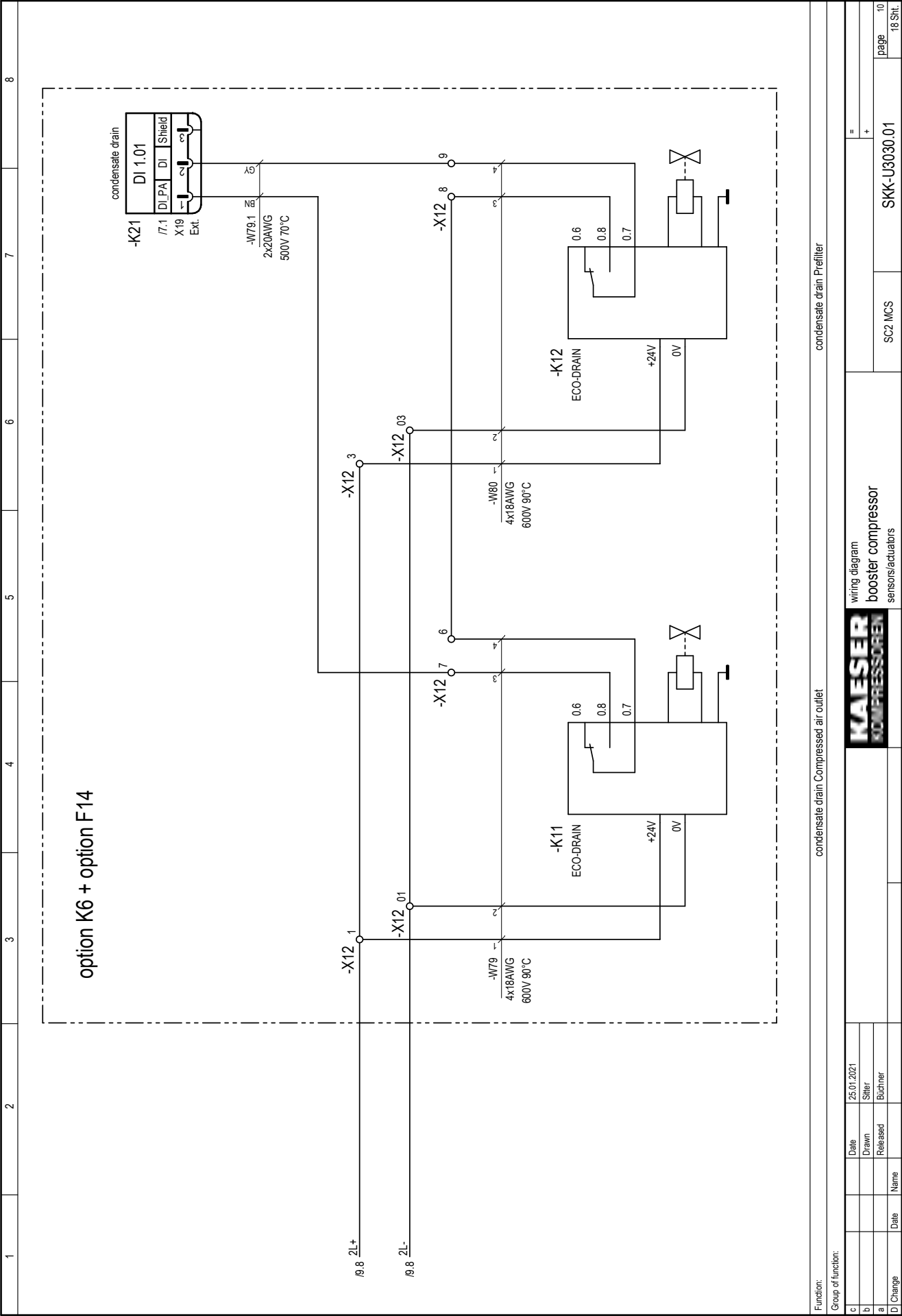


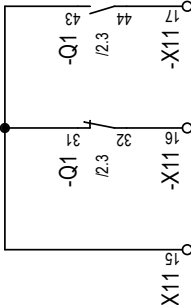


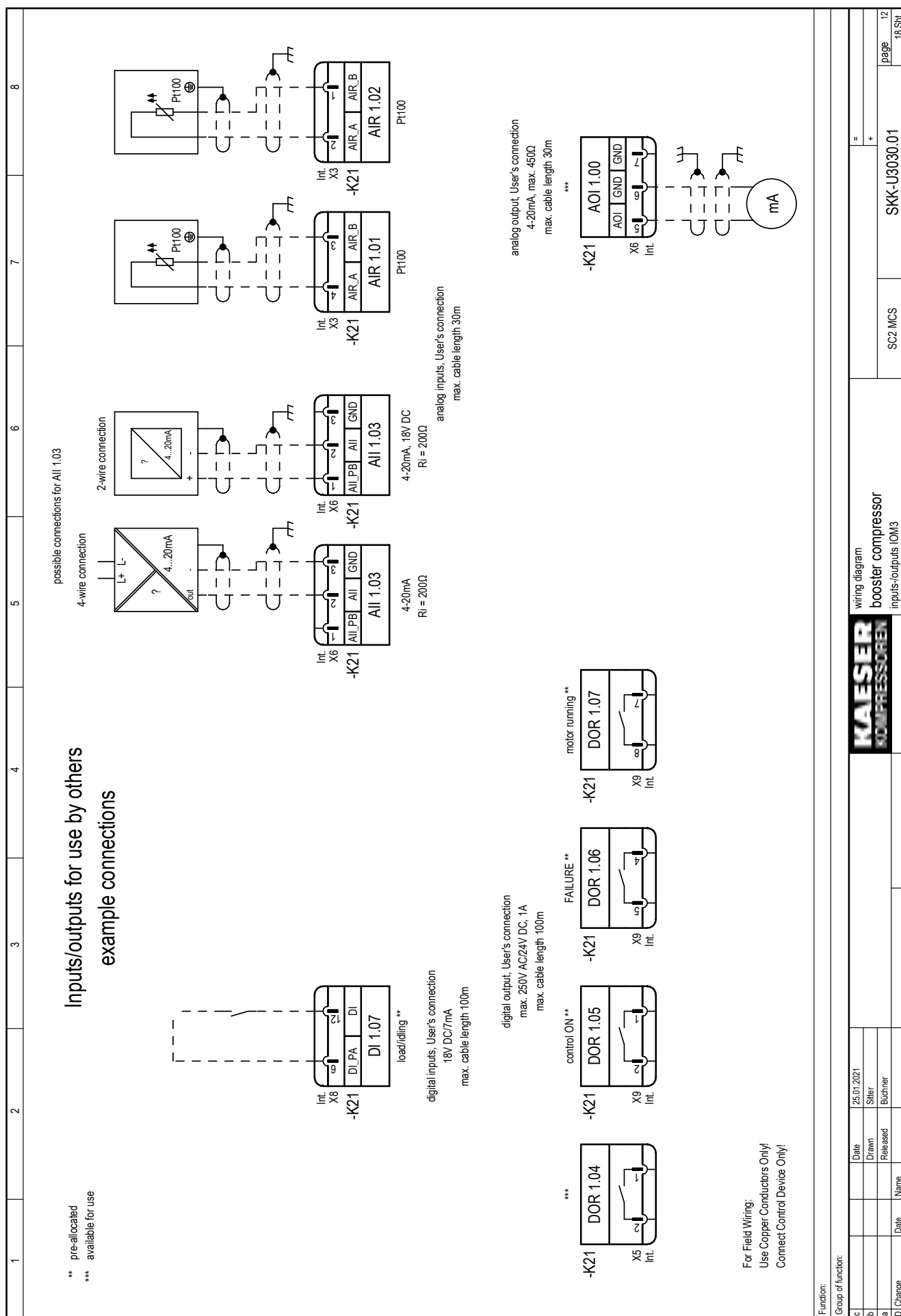


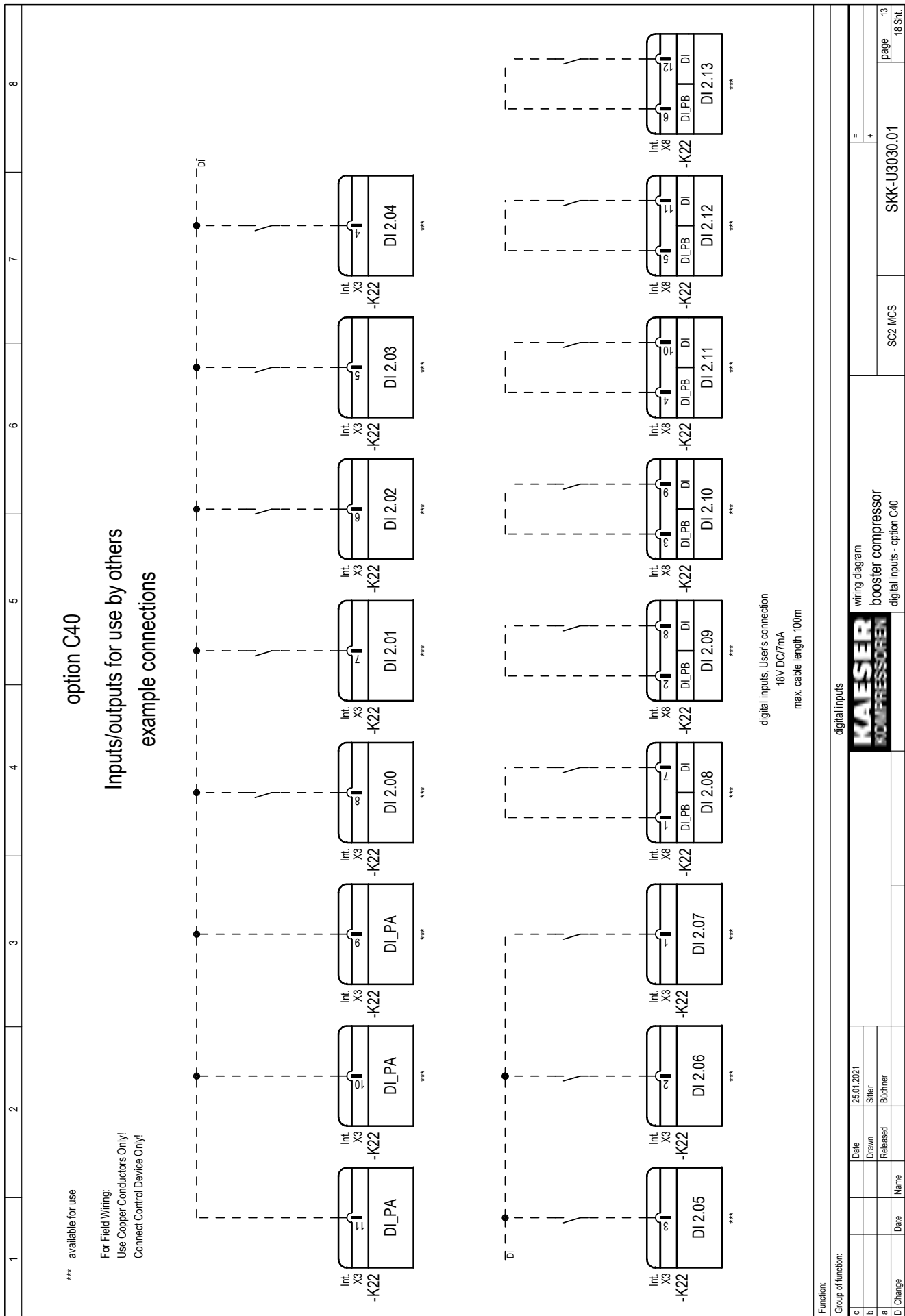


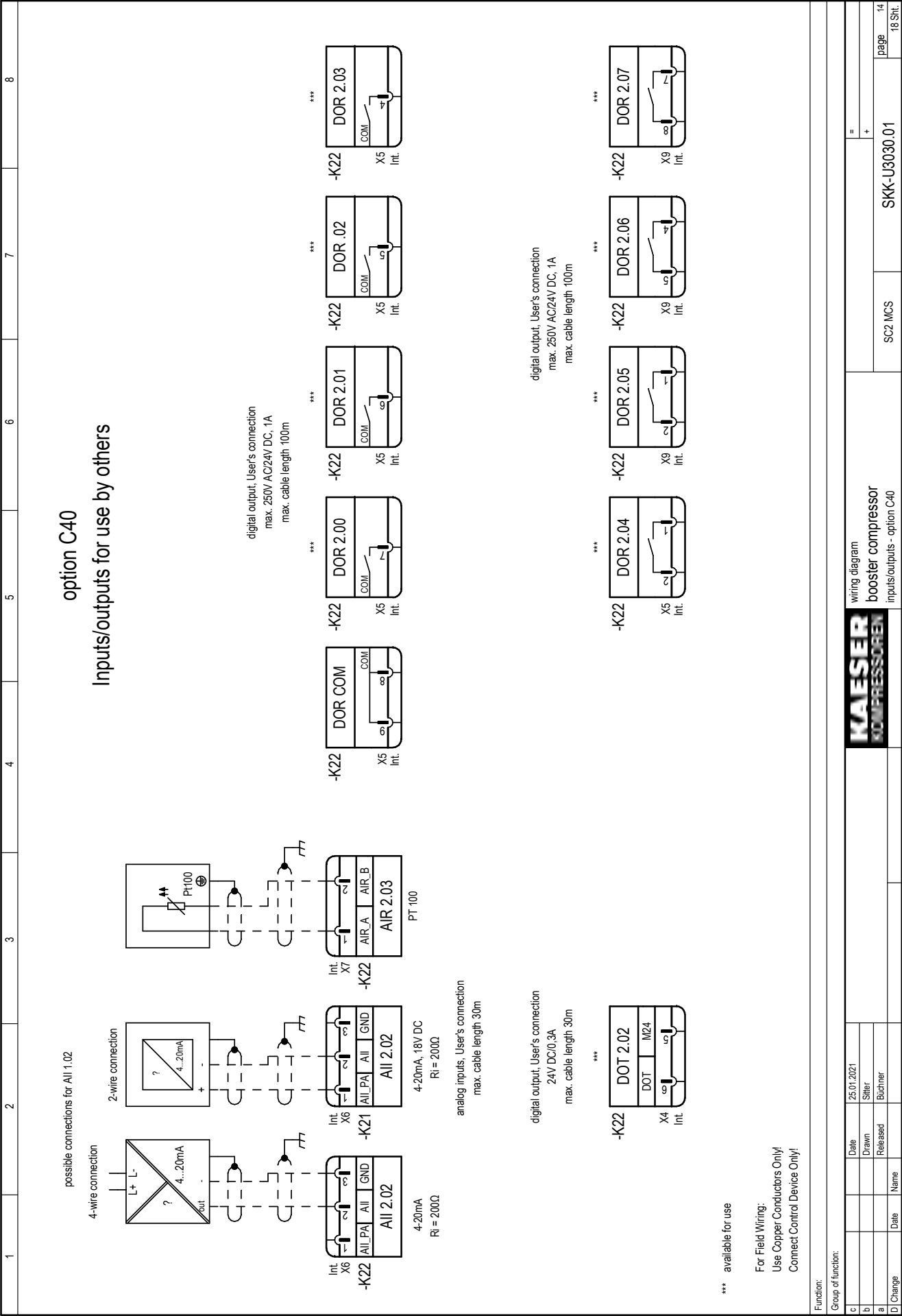


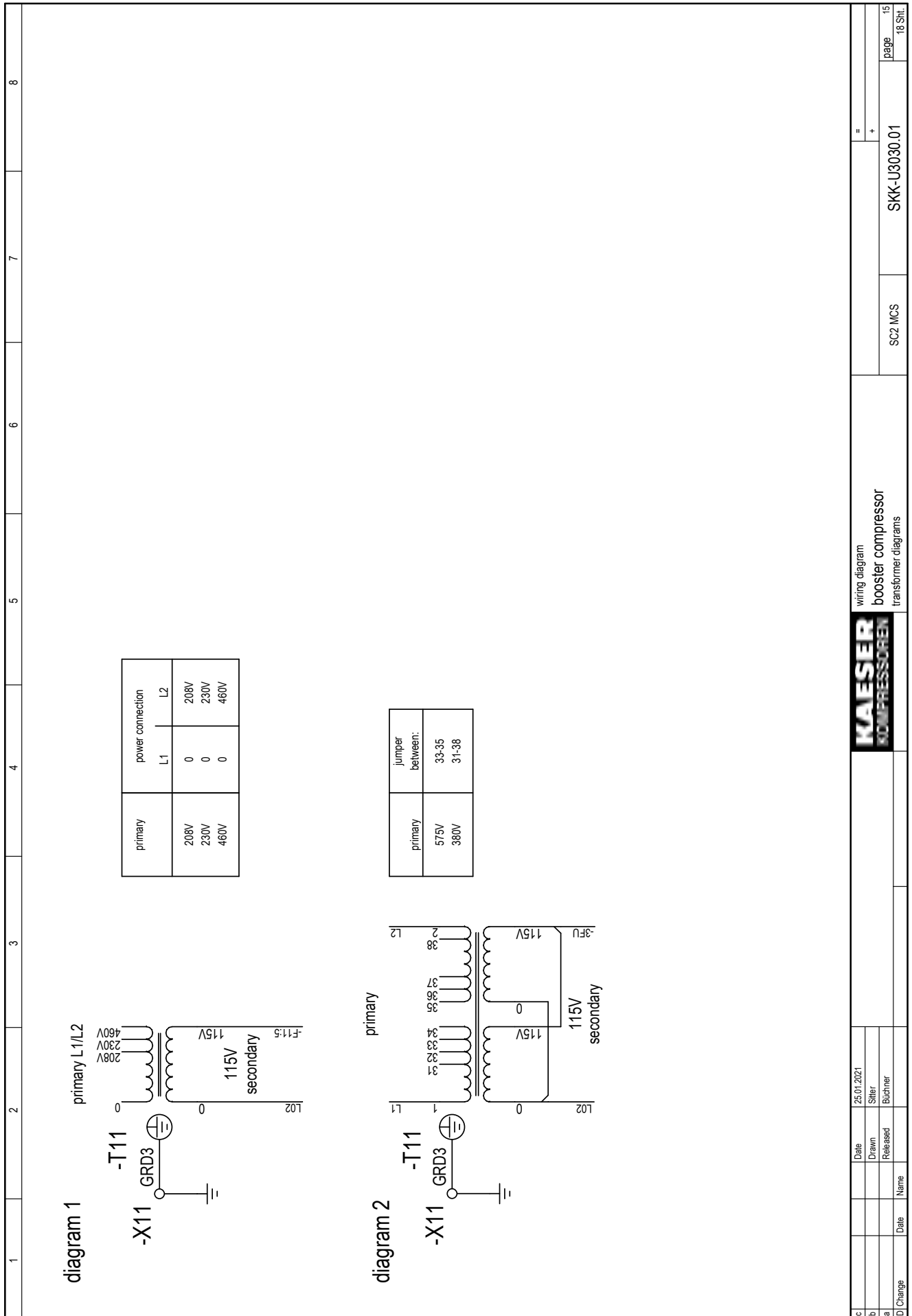


1	2	3	4	5	6	7	8
For Field Wiring: Use Copper Conductors Only! Connect Control Device Only! all non-designated conductors, 16AWG orange volt-free contacts User's connection  max. 250V AC/24V DC, 3A							
Function: Group of function:							
compressor motor running							
volt-free contacts							
wiring diagram				=			
booster compressor				+			
volt-free contacts				SKK-U3030.01			
SC2 MCS				page 11			
18 Str.				18 Str.			









1 2 3 4 5 6 7 8

fig. 1: Handling: Control line terminal

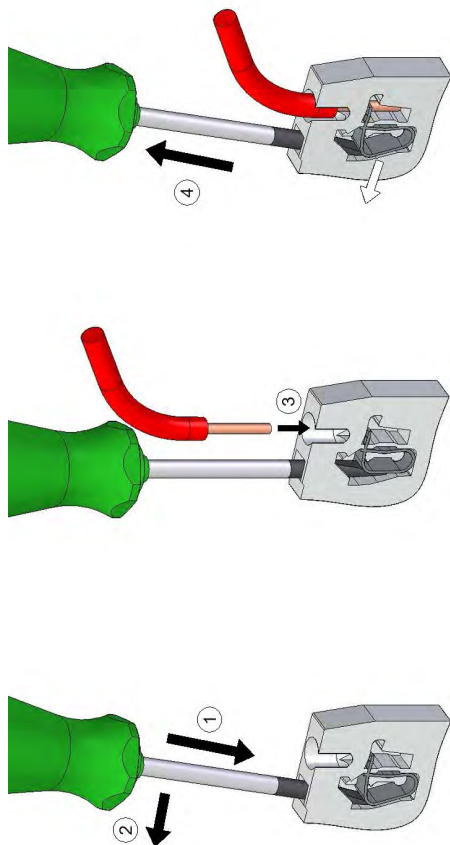
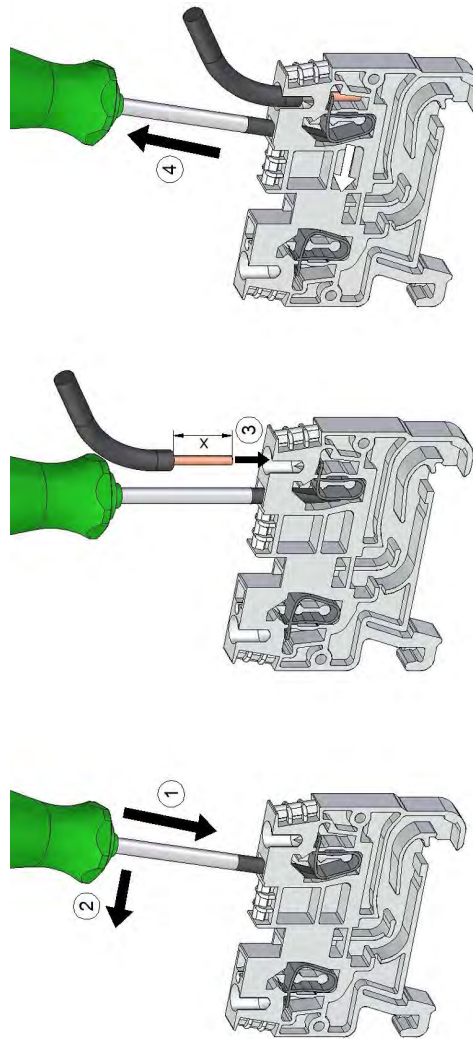


fig. 2: Handling: Supply terminal



c	Date	25.01.2021	wiring diagram		=		+		SKK-U3030.01		page	16
b	Drawn	Sitter	booster compressor								18	18
a	Released	Büchner	Handling: Terminals									
D	Change	Date	Name		SC2 MCS							

1	2	3	4	5	6	7	8
fig. 10: Feed line connection				fig. 11: Feed line connection			
wiring diagram				SC2 MCS			
booster compressor				SKK-U3030.01			
Feed line connection				page 17			
18 Str.				18 Str.			

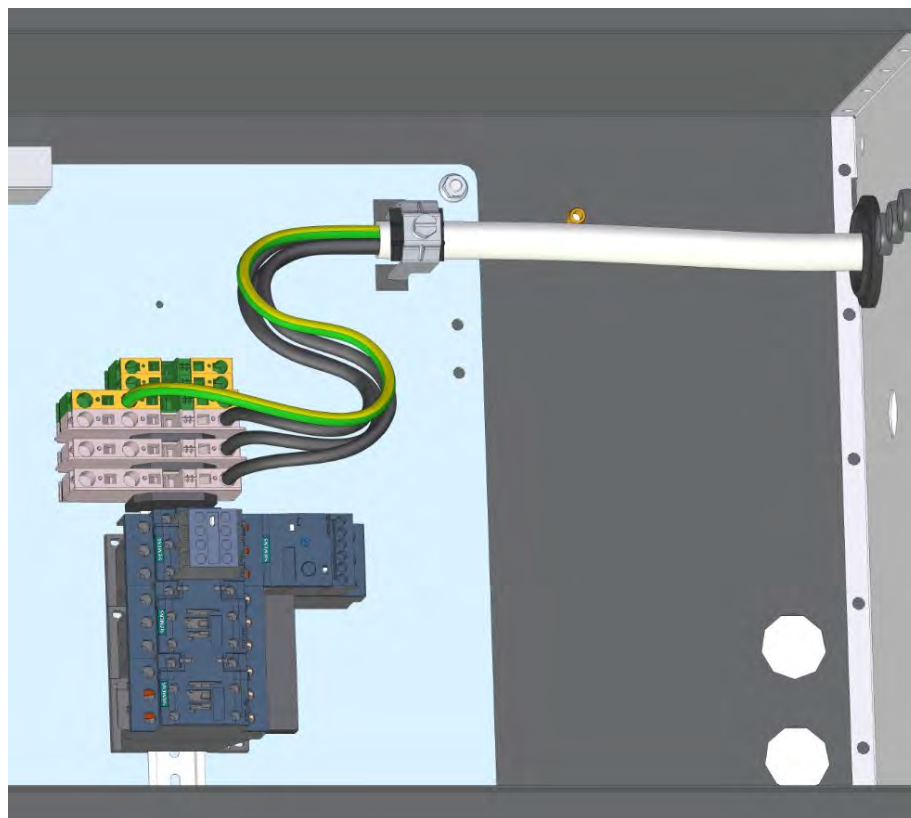
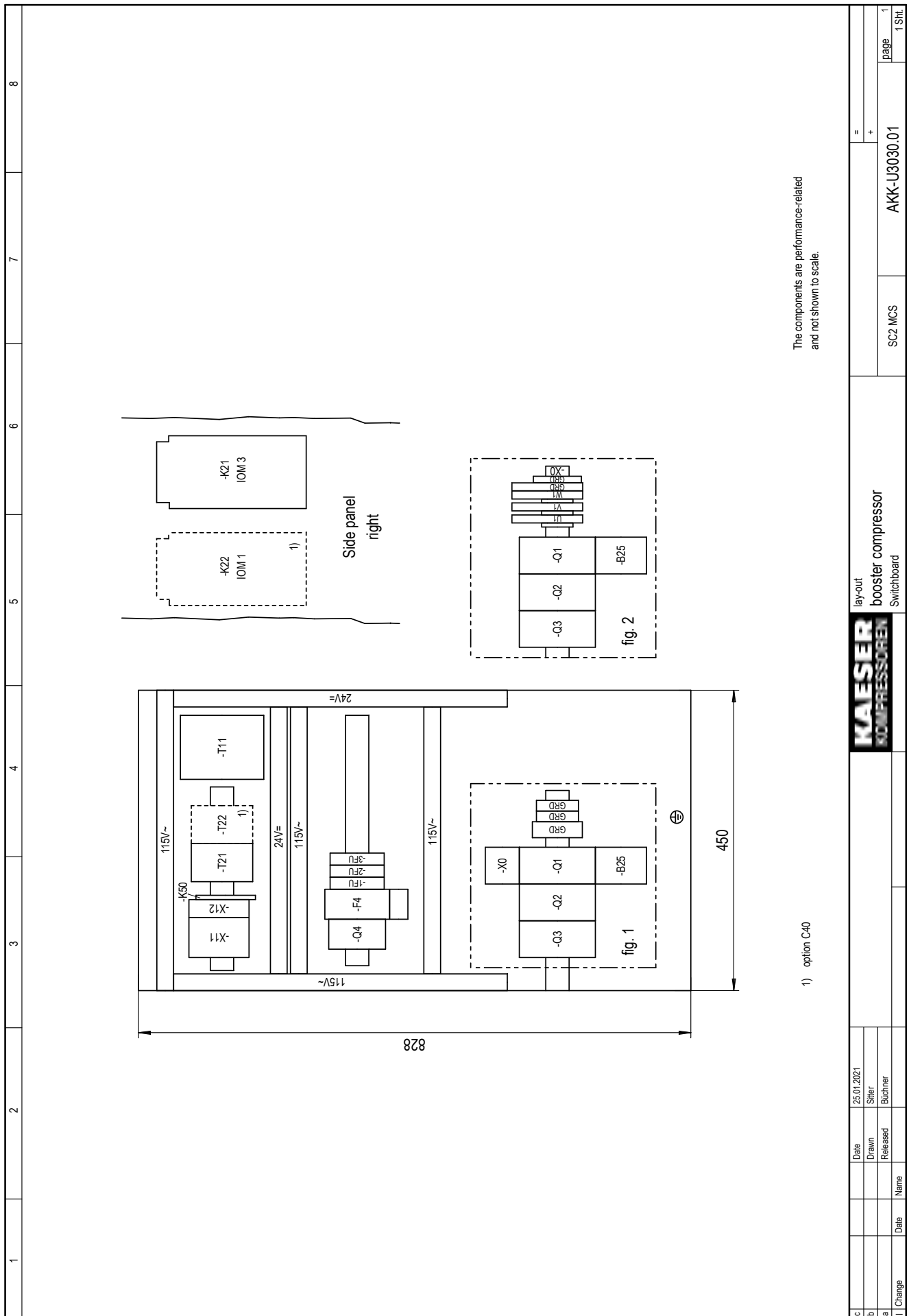


fig. 12: Feed line connection

c			Date	25.01.2021	 KAESER KOMPRESSOREN	wiring diagram booster compressor Feed line connection	=	+	page 18 18 Stk
b			Drawn	Seller					
a			Released	Buchner					
D	Change	Date	Name						

[illegible]



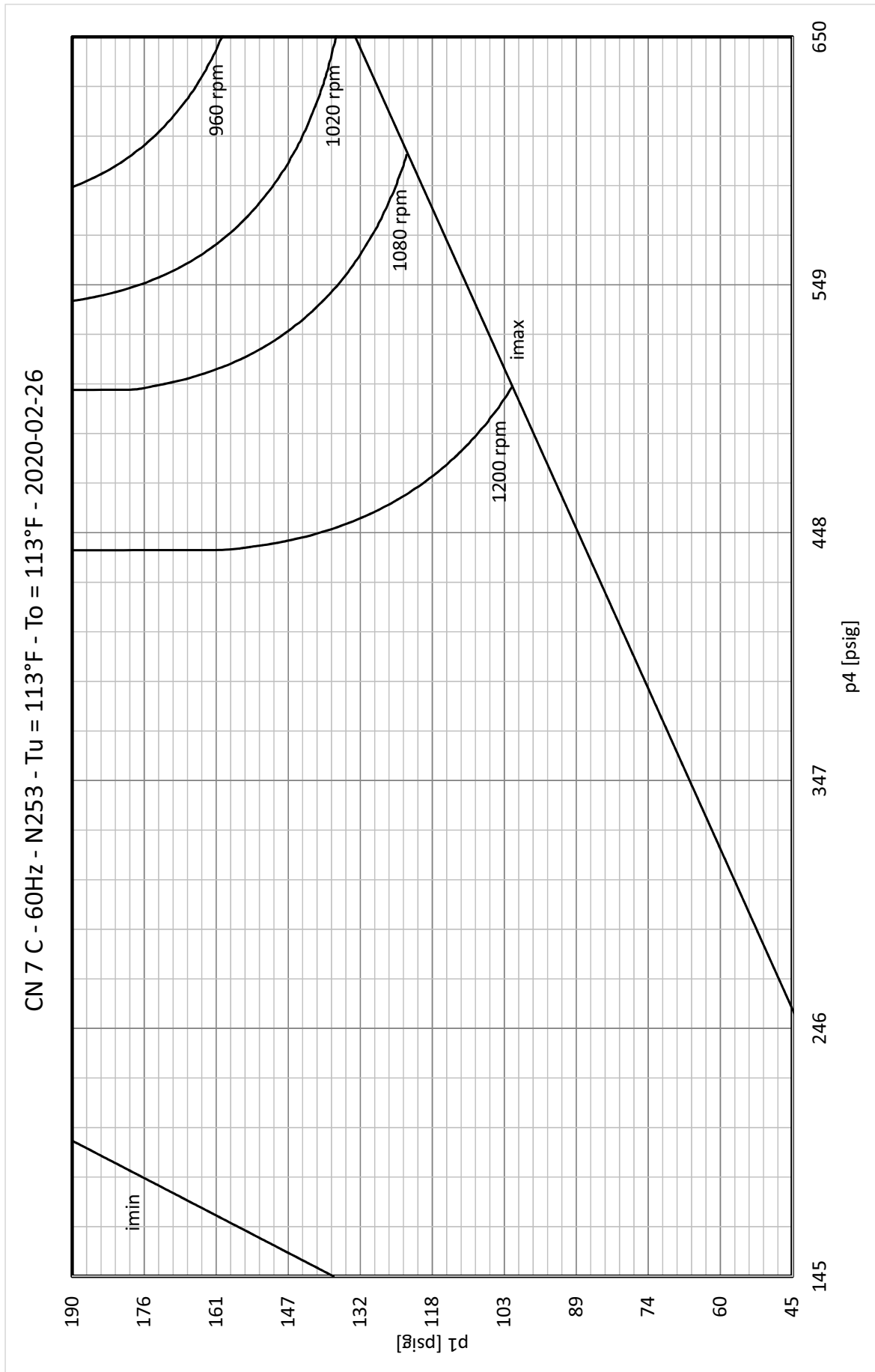
13.4 Determining the permissible initial pressure



Use the following diagrams to determine the permissible initial pressure.

The following data can be found in the diagrams:

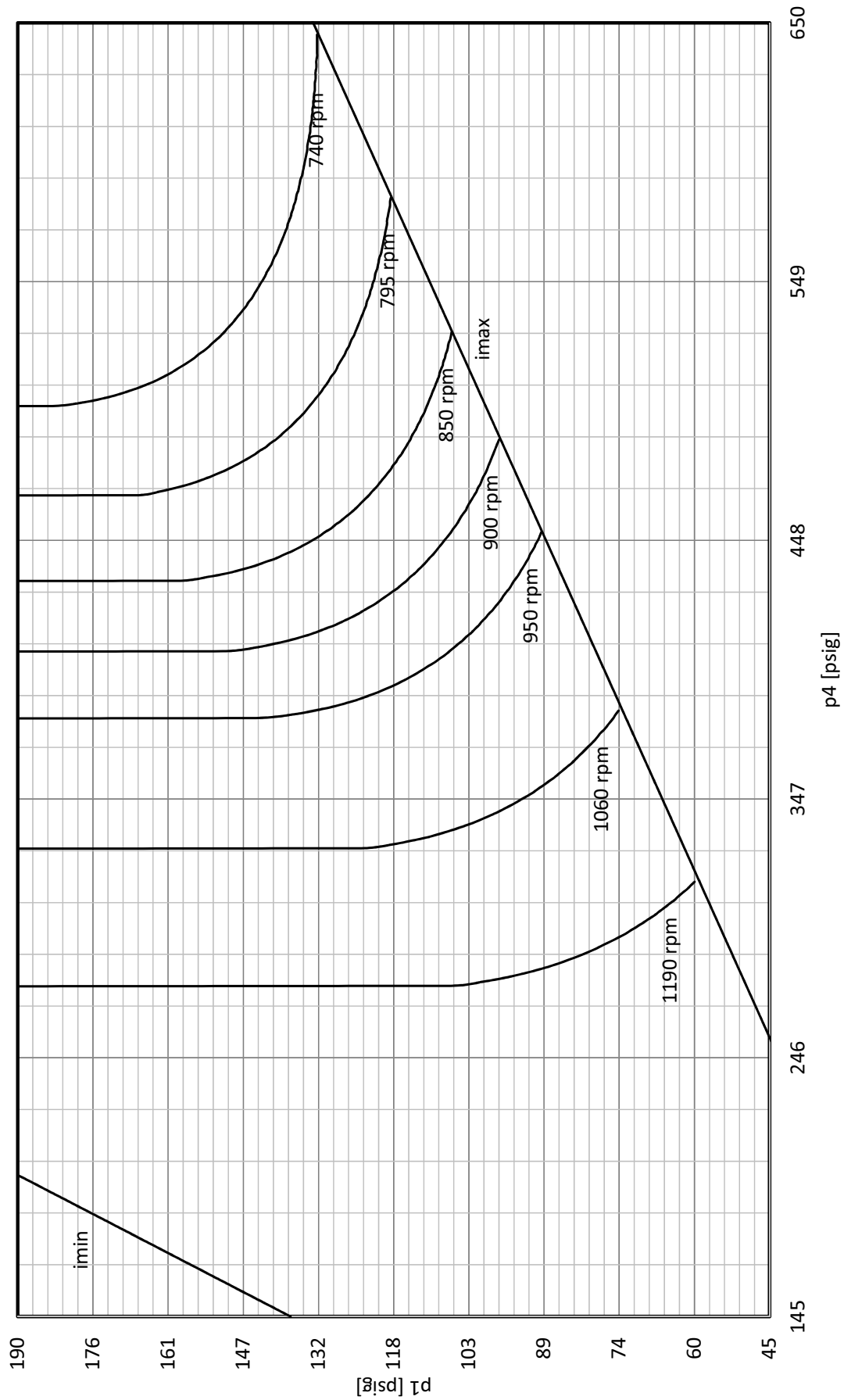
- Type
- Compressor block
- Main system frequency
- Unit of pressure
- Block speed
- i_{min} = Minimal permissible compression ratio of the machine
- i_{max} = Maximal permissible compression ratio of the machine
- T_o = Intake temperature
- T_u = Ambient temperature
- p_1 = Initial pressure
- p_4 = Discharge pressure



Version 1

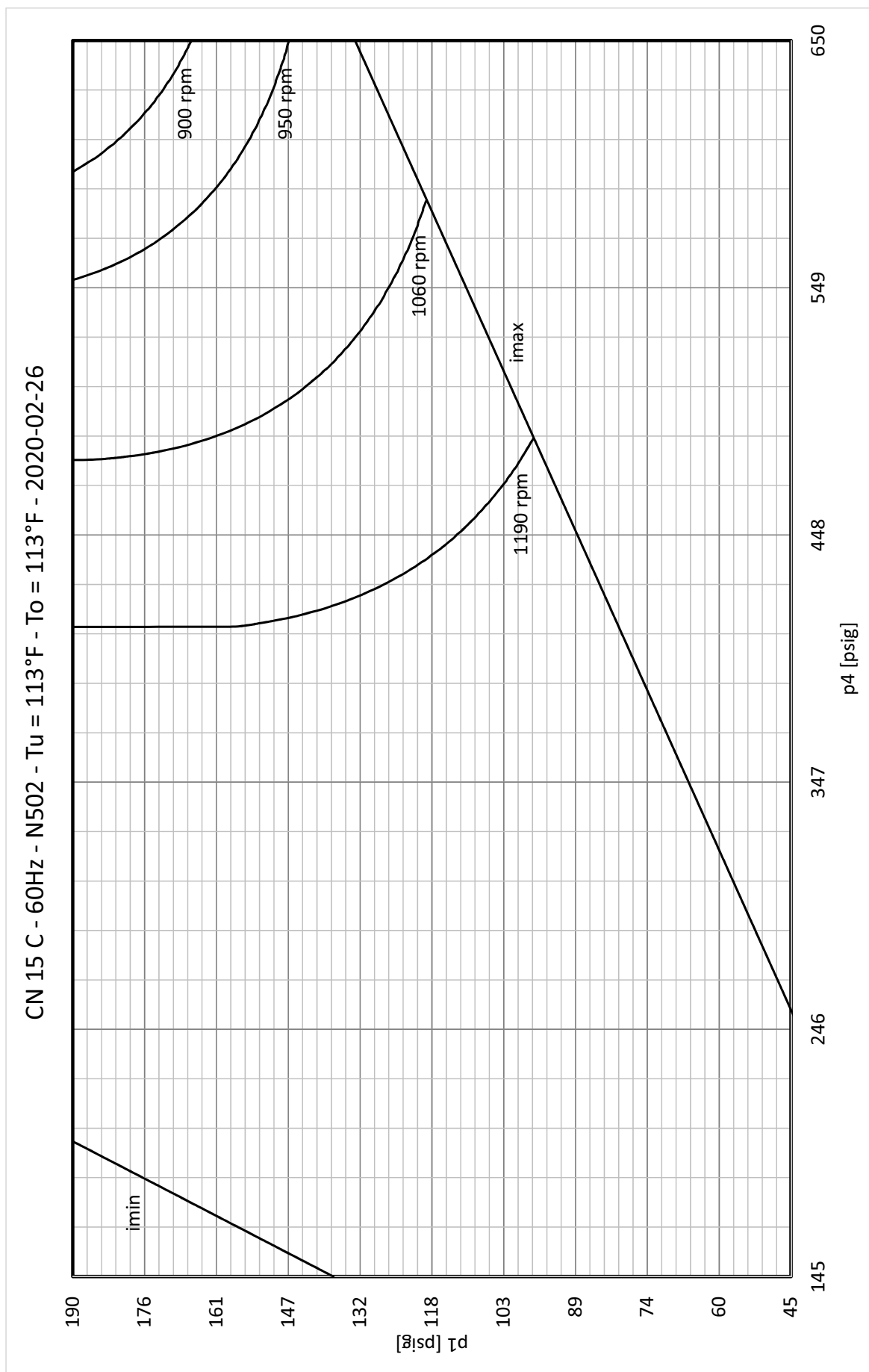
TB/Hollauer

CN 11 C - 60Hz - N502 - $T_u = 113^{\circ}\text{F}$ - $T_o = 113^{\circ}\text{F}$ - 2020-02-26



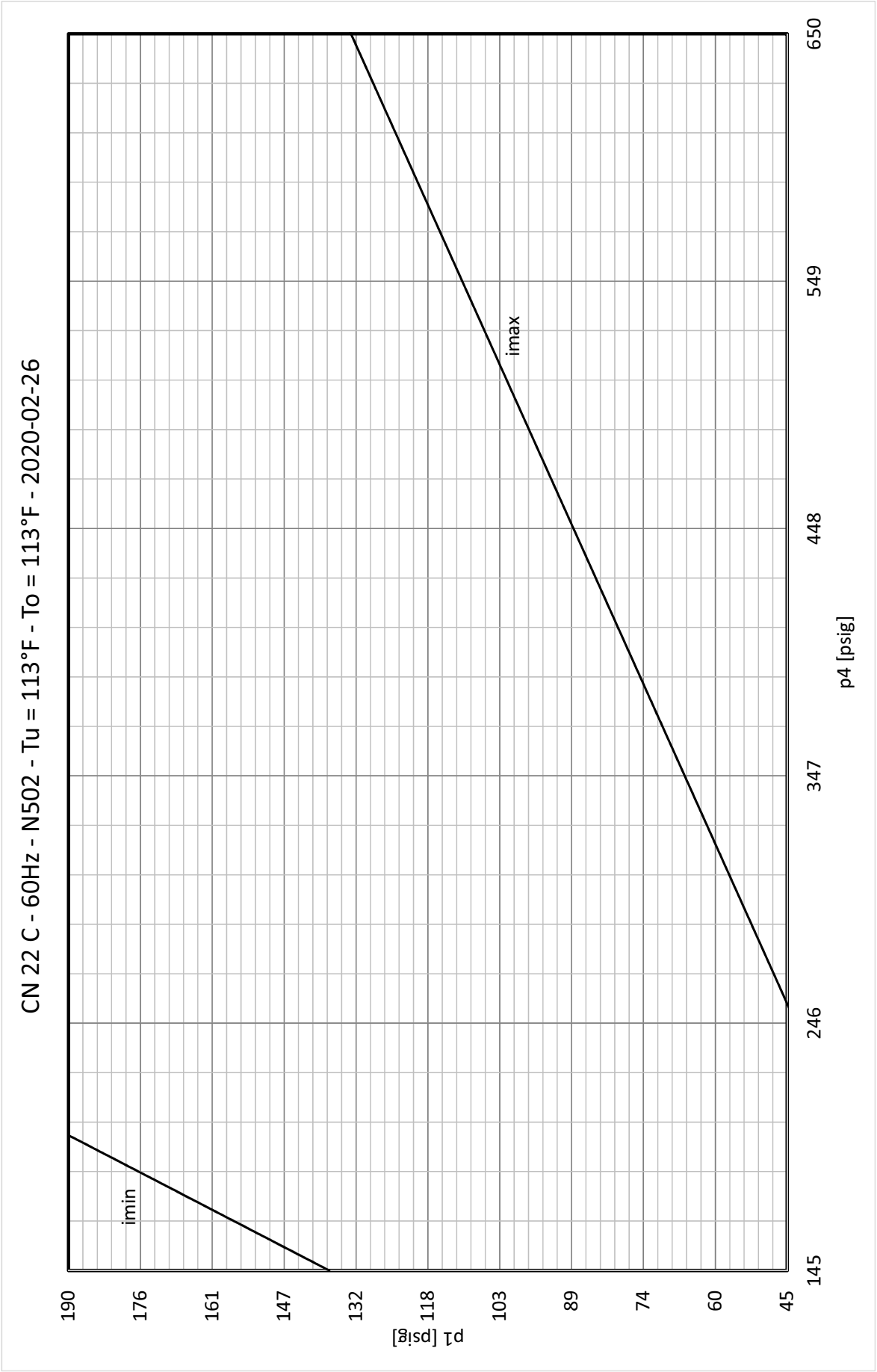
Version 1

TB/Hollauer



Version 1

TB/Hollauer



Version 1

TB/Hollauer

13.5 Safety relief valve data sheet**13.5.1 Data Sheet 1 of 3**

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.

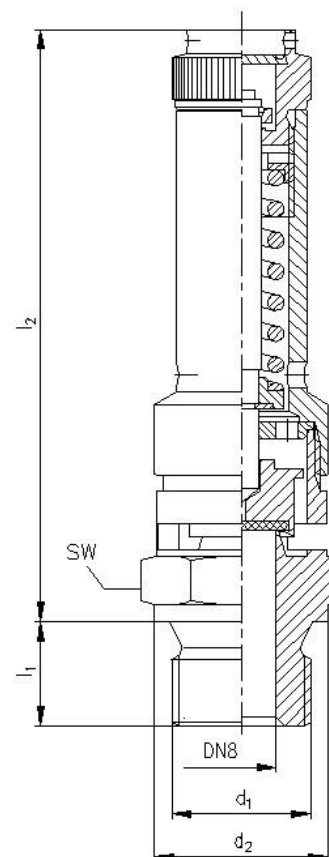
Models

- 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.

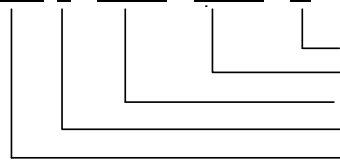
connectio n-tap (d ₁)	area of differential test pressure [bar]	d ₂ [mm]	l ₁ [mm]	l ₂ [mm]	SW	
					SVW	SVWN SVWC
M16x1,5	0,2 – 14,20	20	12	63	20	22
	14,21 – 39,90			75		
	39,91 – 50,00			82		
G1/4 A	0,2 – 14,20	18	10	63		
	14,21 – 39,90			75		
	39,91 – 50,00			82		
G3/8 A	0,2 – 14,20	20	12	63	24	24
	14,21 – 39,90			75		
	39,91 – 50,00			82		
G1/2 A	0,2 – 14,20	24	14	63		
	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 1/4 A – ...



special wishes
 spigot
 differential test pressure
 nominal size
 type

Changes in the sense of the technical progress reserve.



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 TDB-8.0308.0-D_03E

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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.



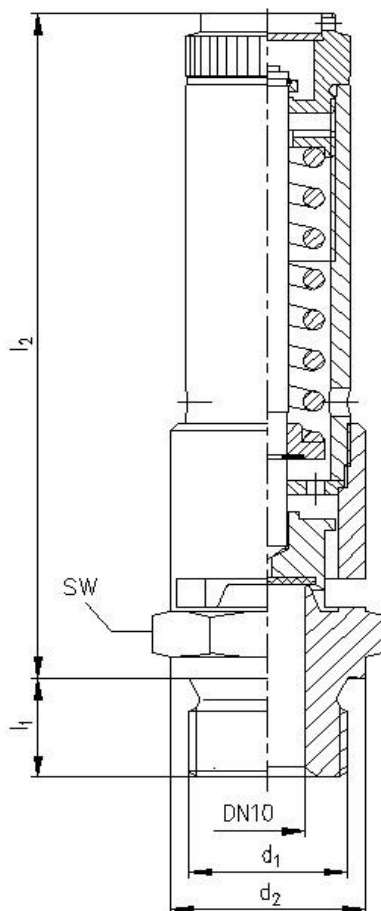
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13.5.2 Data Sheet 2 of 3

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	27
	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
- spigot
- differential test pressure
- nominal size
- type

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

Changes in the sense of the technical progress reserve.



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TDB-8.0313.0-D_03E

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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13.5.3 Data Sheet 3 of 3

**TÜV/CE atmospheric discharge safety valves
for industrial applications**

→ **Series 810**

4.2

810

Safety valves made of brass,
atmospheric discharge,
with threaded connections



■ MATERIAL



■ SPECIFICATION



1/4" – 1"



– 60°C to + 270°C
depending on version



0,2 – 50 bar

■ SUITABLE FOR

Air, gases and vapours neutral



■ EXAMPLES OF USE

For the protection of:

- pressure tanks and
- pressure systems

for air and other neutral, non-poisonous and non-flammable gases which
can be freely discharged into the environment.

Please observe plant-specific regulations and use of appropriate valve
version and sealing material.

- compressors
- pressure booster plants air-side
- paint spray shops
- pneumatic control units
- transport- and railway applications

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV Type test approval 2055	D/G
ASME	G
EC type examination	S/G
TSG ZF001-2006	D/G (S/G)
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G)

Type approval Deutsche Bahn

Requirements

AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
PED 2014/68/EU	

Classification society

Germanischer Lloyd	GL
Lloyd's Register EMEA	LR EMEA
Bureau Veritas	BV
American Bureau of Shipping	ABS
Det Norske Veritas	DNV
Russian Maritime Register of Shipping	RS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Brass	CW617N	CW617N
Outlet body	Brass	CW617N	CW617N
Internal parts	Brass	CW617N	CW617N
Spring	Stainless steel	1.4568	631



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Series 810 ■ VALVE VERSION

s	Standard	cylindrical form, atmospheric discharge, for air and similar neutral, non-toxic and non-flammable gases that can be freely discharged into the atmosphere.
----------	----------	--

■ MEDIUM

G	gaseous	Air and similar neutral gases
----------	---------	-------------------------------

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism
----------	--

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	8	10	15	20	25
Inlet	1/4" (8)	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)
Atmospheric discharge via outlet apertures	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
Against surcharge			
BSP-Tm / –	On request	Male thread BSP-T / –	DIN EN 10226, ISO 7-1 / –
NPT-m / –	On request	Male thread NPT-m / –	ANSI B1.20.1 / –

■ SEALS

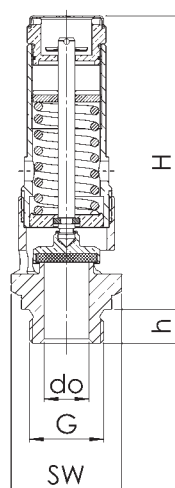
FKM	Fluorocarbon	Elastomere flat seal 0,2 – 25 bar	–20°C to +200°C
FKM VI	Fluorocarbon	Elastomere flat seal	–46°C up to +230°C in case of blowing of up to +270°C
PTFE	Polytetrafluoroethylene	Flat seal 25,1 – 50 bar	–60°C to +225°C
Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 0,2 – 25 bar	–60°C to +225°C

■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 810: Connection, installation dimensions, ranges of adjustment									
Nominal diameter	DN	8	10	15	20	25			
Connection DIN EN ISO 228	G	1/4" (8)	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)			
Installation dimensions in mm	H	60	65	78	94	104	111		
	h	10	10	10	12	12	14		
	SW	19	24	24	27	27	34	34	41
	do	7,5	10	10	11	11	16	16	20
Weight	kg	0,1	0,14	0,16	0,17	0,19	0,35	0,4	0,6
Range of adjustment	bar	0,2-50	0,2-9	9,1-50	0,2-7	7,1-50	0,2-9	9,1-50	0,2-50
Range of adjustment ASME	psi	15-725	15-130	131-725	15-102	103-725	15-130	131-725	15-725

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS

■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
810	s	G	K	10	m	—	10	—	FKM		11,5	50
810	s	G	K			—		—				
810	s	G	K			—		—				
810	s	G	K			—		—				

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which should be deleted before you enter your own data). Please complete the table by hand using the abbreviations in this datasheet and then fax it to: +49(0)7141.4889488
Please do not forget to add your personal data so that our sales team can contact you.

Name _____
First Name _____
Company _____
Telephone _____
E-Mail _____

■ CAPACITY TABLE

Series 810: Blowing-off rates at 10% above set pressure						
Nominal diameter DN		8	10	15	20	25
Set pressure bar						
Air Nm³/h	0,2	20	35	46	100	133
	0,3	25	45	54	119	144
	0,4	29	52	67	137	167
	0,5	32	58	74	158	185
	0,6	35	64	82	172	211
	0,7	37	70	87	187	235
	0,8	41	74	95	200	260
	0,9	43	80	101	213	282
	1	46	85	107	227	305
	1,5	60	108	137	286	408
	2	73	132	166	346	506
	3	100	182	222	465	699
	4	125	228	279	584	889
	5	151	274	336	703	1070
	6	176	321	393	821	1251
	7	201	367	450	940	1432
	8	227	414	507	1059	1613
	9	252	460	564	1178	1794
	10	278	507	621	1297	1975
	11	303	553	678	1416	2156
	12	329	599	735	1535	2337
	13	354	646	791	1654	2518
	14	380	692	848	1773	2700
	15	405	739	905	1891	2881
	16	431	785	962	2010	3062
	17	456	832	1019	2129	3243
	18	482	878	1076	2248	3424
	19	507	925	1133	2367	3605
	20	533	971	1190	2486	3786
	21	558	1017	1247	2605	3967
	22	584	1064	1304	2724	4148
	23	609	1110	1361	2843	4329
	24	635	1157	1417	2961	4510
	25	660	1203	1474	3080	4691
	26	685	1250	1531	3199	4872
	27	711	1296	1588	3318	5053
	28	736	1342	1645	3437	5234
	29	762	1389	1702	3556	5415
	30	787	1435	1759	3675	5597
	31	813	1482	1816	3794	5778
	32	838	1528	1873	3913	5959
	33	864	1575	1930	4031	6140
	34	889	1621	1986	4150	6321
	35	915	1667	2043	4269	6502
	36	940	1714	2100	4388	6683
	37	966	1760	2157	4507	6864
	38	991	1807	2214	4626	7045
	39	1017	1853	2271	4745	7226
	40	1042	1900	2328	4864	7407
	41	1068	1946	2385	4983	7588
	42	1093	1993	2442	5101	7769
	43	1119	2039	2499	5220	7950
	44	1144	2085	2556	5339	8131
	45	1170	2132	2612	5458	8313
	46	1195	2178	2669	5577	8494
	47	1220	2225	2726	5696	8675
	48	1246	2271	2783	5815	8856
	49	1271	2318	2840	5934	9037
	50	1297	2364	2897	6053	9218



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■ CAPACITY TABLE ASME

Series 810: Blowing-off rates at 10% above set pressure						
Nominal diameter DN		8	10	15	20	25
Set pressure bar psi(g)						
Air	15	31	55	67	142	221
	30	45	81	98	207	323
SCFM	40	56	99	120	254	397
	50	66	118	143	302	472
	60	77	137	165	350	546
	70	87	155	188	397	621
	87	105	187	226	478	747
	90	108	192	233	493	770
	100	119	211	255	540	844
	110	129	230	278	588	919
	120	140	248	300	636	993
	130	150	267	323	683	1068
	140	161	286	345	731	1142
	150	171	304	368	779	1217
	160	182	323	391	826	1291
	170	192	341	413	874	1366
	180	203	360	436	922	1440
	190	213	379	458	969	1515
	200	223	397	481	1017	1589
	210	234	416	503	1065	1663
	220	244	434	526	1112	1738
	230	255	453	548	1160	1812
	240	265	472	571	1208	1887
	250	276	490	593	1255	1961
	260	286	509	616	1303	2036
	270	297	528	638	1351	2110
	280	307	546	661	1398	2185
	290	318	565	683	1446	2259
	300	328	583	706	1494	2334
	320	349	621	751	1589	2483
	340	370	658	796	1684	2632
	360	391	695	841	1780	2781
	380	412	732	886	1875	2929
	400	433	770	931	1970	3078
	420	454	807	976	2066	3227
	440	475	844	1021	2161	3376
	460	496	881	1066	2256	3525
	480	517	919	1111	2351	3674
	500	538	956	1157	2447	3823
	520	559	993	1202	2542	3972
	540	580	1030	1247	2637	4121
	560	600	1067	1292	2733	4270
	580	621	1105	1337	2828	4419
	600	642	1142	1382	2923	4568
	620	663	1179	1427	3019	4717
	640	684	1216	1472	3114	4866
	660	705	1254	1517	3209	5015
	680	726	1291	1562	3305	5164
	700	747	1328	1607	3400	5313
	725	773	1375	1663	3519	5499


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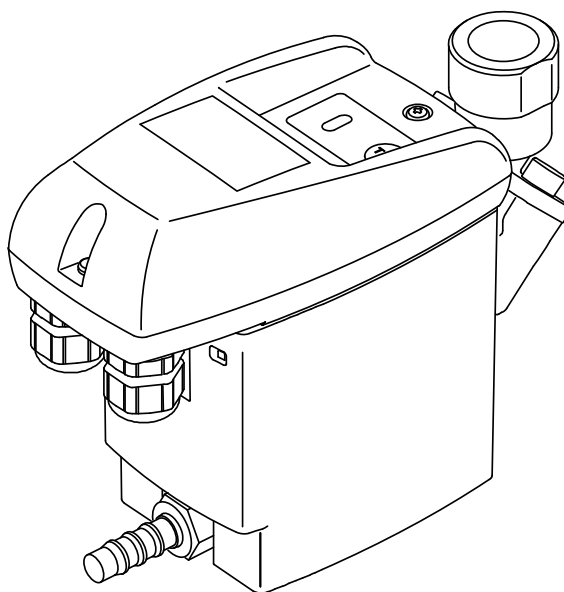
13.6 Condensate drain – operating instructions

KAESER
COMPRESSORS

EN-US - english US

Instructions for installation and operation

Condensate drain **ECO-DRAIN 31**



01-2336

ECO-DRAIN31 07 USE

Dear customer,

Thank you for deciding in favor of the ECO-DRAIN 31 condensate drain. Please read the installation and operating instructions carefully before mounting and starting up the ECO-DRAIN 31, and follow our directions. Perfect functioning of the ECO-DRAIN 31, and thus reliable condensate discharge, can only be guaranteed when the provisions and notes stipulated here are strictly adhered to.

1	Pictograms and symbols.....	4
2	Safety instructions.....	4
3	Proper use.....	6
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Pictograms and symbols

1 Pictograms and symbols



Observe the installation and operating instructions



Observe the installation and operating instructions (on the type plate)



General danger symbol (danger, warning, caution)



General danger symbol (danger, warning, caution) for supply voltage and supply voltage-carrying plants components

2 Safety instructions



Please check whether or not these instructions correspond to the device type.

Adhere to all advice given in these operating instructions. They include essential information which must be observed during the installation, operation and maintenance. Therefore, it is imperative for the service technician and the responsible operator / technical staff to read these operating instructions prior to installation, start-up and maintenance.

The operating instructions must be accessible at any time at the place of application of the ECO-DRAIN 31 .

In addition to these operating instructions, local or national regulations must be complied with, if necessary.

Make sure that the ECO-DRAIN 31 is operated only within the permissible limit values indicated on the type plate. Any deviation involves a risk for persons and materials, and may result in malfunction and service failures.

If you have any queries regarding these installation- and operating instructions, please contact KAESER.



Danger!

Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate).
- **Only carry out service measures when the system is pressure less.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.

Safety instructions

**Danger!****Supply voltage!**

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **When the control unit is open, service and installation works must only be undertaken when the system is deactivated.**
- **The removed control unit has no IP degree of protection.**
- All types of electrical works must be carried out by authorized and qualified personnel only.

Further safety instructions:

- For installation and operation, the national regulations and safety codes in force must also be adhered to.
- Do not use the ECO-DRAIN 31 in hazardous areas.
- Regarding the inlet screw joints, excessive tightening forces must be avoided. This applies in particular to conical screw joints.
- The ECO-DRAIN 31 will only function when voltage is applied.
- Do not use the test button for permanent drainage.
- Use genuine spare parts only. This is imperative to ensure perfect functioning.

Additional advice:

- The removed control unit has **no IP degree of protection**.
- During installation, use spanner flat at the feed pipe (wrench size SW27) as a back rest.
- The service unit must not be dismantled.

**Caution!****Malfunction during operation!**

Through incorrect installation and poor maintenance, malfunction may occur at the ECO-DRAIN.

Condensate which is not discharged may cause damage to plants and in production processes.

Measures:

- Condensate drainage which is reliable in performance directly optimizes the compressed-air quality.
- To prevent damage and breakdowns, it is imperative to observe the following:
 - Exact compliance with the specifications of use and with the performance parameters of the ECO-DRAIN, in connection with the case of application (see "Proper use" section)
 - Exact compliance with the installation- and operation instructions in this manual
 - Regular maintenance and control of the ECO-DRAIN in accordance with the instructions in this operating manual

Proper use

3 Proper use

- The ECO-DRAIN 31 is an electronically level-controlled condensate drain for compressed-air plants.
- The device is employed within the permissible performance parameters (see "Technical data").
- The ECO-DRAIN 31 is able to drain condensate under operating pressure from the plant components virtually without compressed-air loss.
- For its function, the ECO-DRAIN 31 requires an supply voltage and an operating pressure (see "Technical data").
- As far as the employment in plants with increased demands on compressed air is concerned (food industry, medical technology, laboratory equipment, special processes etc.), the operator must decide on measures for the monitoring of the compressed-air quality. These have an effect on the safety of the subsequent processes and may prevent damage to persons and plants.
- It is the task of the operator to ensure that the indicated conditions are met during the entire operating time.

4 Exclusion from the scope of application

- The ECO-DRAIN 31 as a condensate drain **alone cannot** guarantee a defined compressed-air quality, for this purpose, other additional technical devices are required.
- ECO-DRAIN 31 is **not** suitable for use in plants carrying vacuum or atmospheric ambient pressure or in ex-areas.
- The ECO-DRAIN 31 must not be exposed to permanent direct solar or thermal radiation.
- The ECO-DRAIN 31 must not be installed and operated in areas with an aggressive atmosphere.
- The ECO-DRAIN 31 is not heatable and, therefore, not suitable for the use in areas where frost is likely to occur.
- The ECO-DRAIN 31 is not suitable for CO₂ plants.

Technical data
5 Technical data

	
min./max. operating pressure (see type plate)	0,8...16 bar (12...230 psi) or 1,2...16 bar (17...230 psi)
min./max. temperature (see type plate)	+1...+60 °C (+34...+140 °F) or +1...+70 °C (+34...+158 °F)
Condensate inflow	NPT ½ (G ½) internal max. screw-in depth 13,5 mm (½")
Condensate outflow	G ¼ Ø 8 ... 10 mm hose connector
Condensate	oil-contaminated + oil-free
Housing	aluminium + plastic, glass fibre-reinforced
Weight (empty)	1.0 kg (2.2 lbs)

This product has been tested to the requirements of CAN/CSA-C22.2 No. 61010-1-12, third edition, including a later version of the same standard incorporating the same level of testing requirements.

Peak compressor performance	225 scfm
Peak refrig. dryer performance (only with pre-separation)	450 scfm
Peak filter performance (behind dryer)	2250 scfm

Electrical data
6 Electrical data

Supply voltage (see type plate)	95...240 VAC ±10% (50...60 Hz) / 100...125 VDC ±10% or 24...48 VAC ±10% (50...60 Hz) / 18...72 VDC ±10%
Power consumption	P = 0.6 ... 3 VA (W)
Recommended cable-jacket diameter	Ø 5.0...10 mm (0.20"...0.39")
Recommended wire cross section Spring-loaded terminal (voltage supply/relay)	0.75...1.5 mm² (AWG 16...20)
Recommended wire cross section Screw terminal (voltage supply)	0.75...2.5 mm² (AWG 14...20)
Recommended wire cross section Spring-loaded terminal (external test)	0.75...1.0 mm² (AWG 18...20)
Recommended wire cross section Screw terminal (relay/external test)	0.75...1.5 mm² (AWG 16...20)
Recommended stripping of cable jacket (voltage supply/relay)	~ 30 mm (~ 1.18")
Recommended stripping of cable jacket (external test)	~ 90 mm (~ 3.54")
Recommended length of the wire end tube Spring-loaded terminal	~ 8 mm (~ 0.31 inch)
Recommended length of the wire end tube Screw terminal	~ 6 mm (~ 0.24 inch)
Connection data of the potential- free contact Switch to load*)	AC: max. 250V / 1A DC: max. 30V / 1A
Connection data of the potential-free contact Switch to low signal*)	min. 5 VDC / 10 mA
Connection data of the external test contact	on the unit side 5 VDC; switching current ≥ 0,5 mA
Protection class	IP 67
Overvoltage category (IEC 61010-1)	II

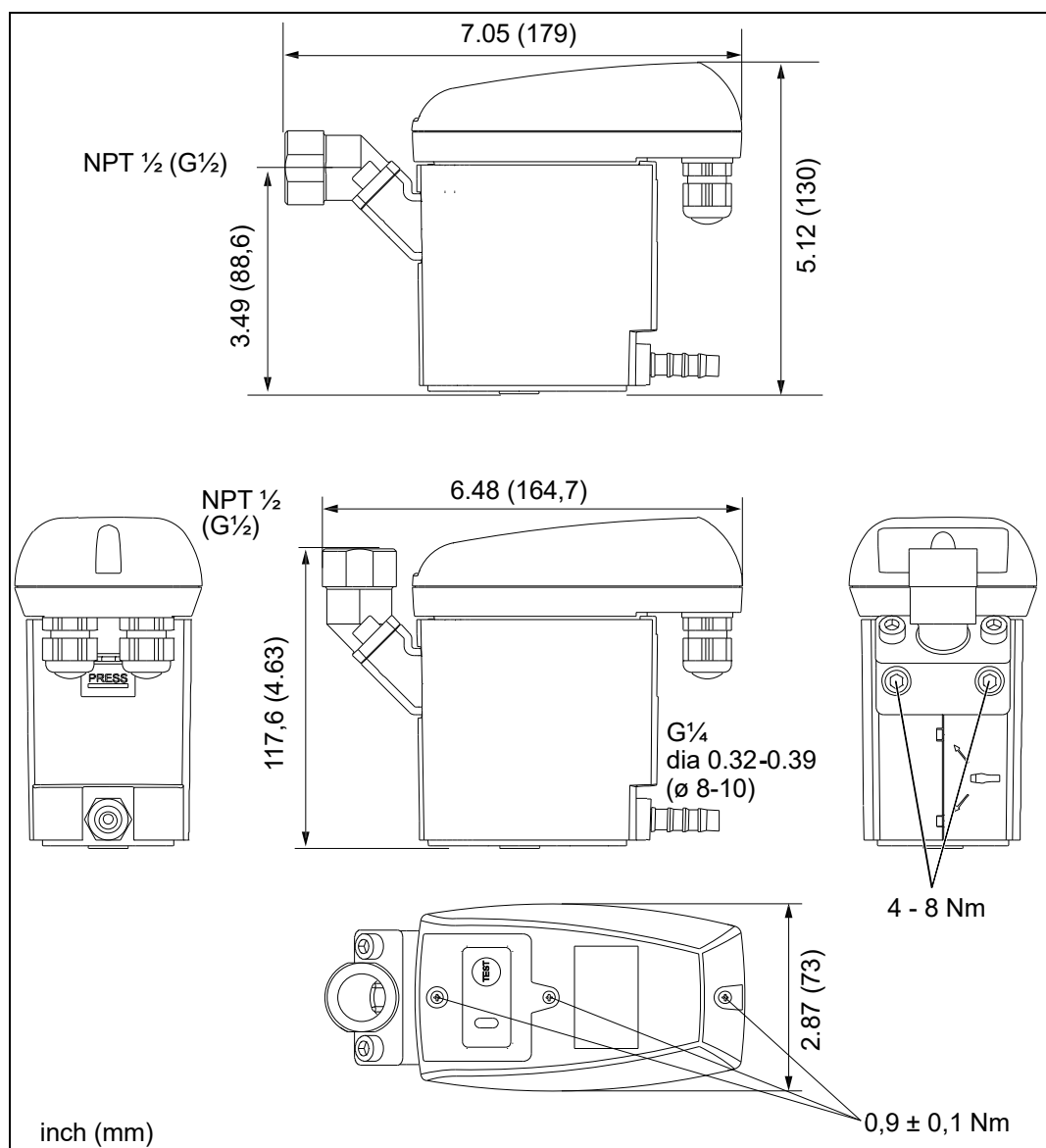
VAC = V alternating current

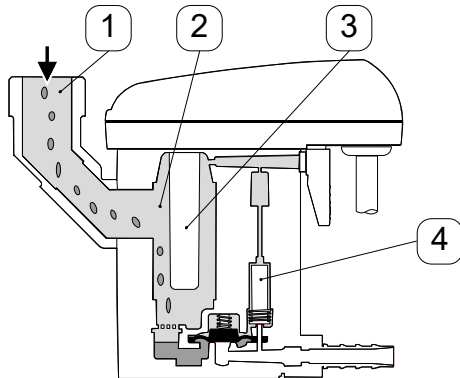
VDC = V direct current

*) The switching of loads means that the properties of the contact are no longer suitable for the switching of low signals.

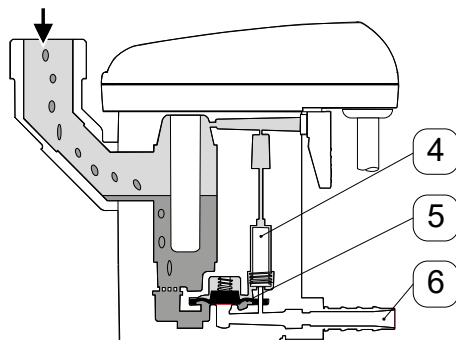
Dimension drawing

7 Dimension drawing



Function**8 Function**

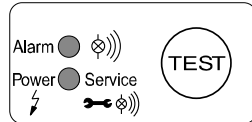
Via the inlet line (1) the condensate flows into the ECO-DRAIN 31 and accumulates in the housing (2). A capacitive functioning sensor (3) continuously registers the filling level and relays a signal to the electronic control as soon as the container is filled.



The pilot valve (4) is activated and the membrane (5) opens the outlet line to discharge the condensate (6). When the ECO-DRAIN 31 is empty, the outlet line is reclosed tightly in time before unnecessary compressed-air losses occur.

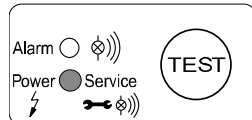
Function

At the ECO-DRAIN 31, two LEDs indicate the individual operating states.

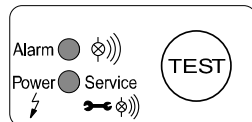


When applying supply voltage, the ECO-DRAIN 31 carries out a **self-test**.

Both LEDs are lit for approximately 1 second, subsequently, the device changes over to the "ready-to-operate" state.

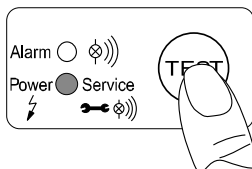


Ready to operate, voltage is applied.



In the event that the condensate discharge is disturbed, an alarm mode will start which is indicated by the flashing of the red alarm LED.

Malfunction/alarm

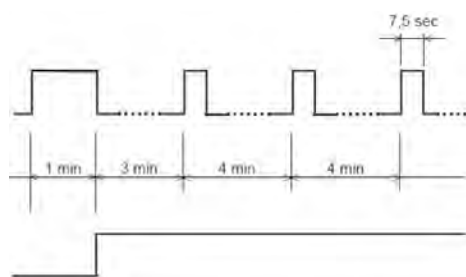


Test of the valve function (manual drainage): press and hold the button for approximately 2 s.

Test of the alarm function (see below): press and hold the button for at least 1 min.

Do not use for permanent drainage.

Switching sequence of the valve in the alarm mode



Trouble indication via a potential-free contact

Alarm mode:

In the event that the ECO-DRAIN is not empty after one minute, a trouble indication is released:

- The alarm LED flashes.
- The alarm relay switches over (the signal can be picked off potential-freely).
- The valve opens every four minutes for 7.5 seconds.
- When the malfunction has been eliminated, the ECO-DRAIN will switch back automatically into the normal mode.

Possible trouble sources include :

- Mistakes during installation
- Dropping below the minimum pressure
- Excessive accumulation of condensate (excess load)
- Blocked / obstructed outlet line
- Extreme amount of dirt particles
- Frozen pipe work

Function

The ECO-DRAIN 31 releases a maintenance message for a service that is to be carried out.

Depending on the operating mode, a visual maintenance message (service) is activated which signalizes the replacement of the service unit.

The maintenance message is indicated by the flashing supply voltage-LED "Power".

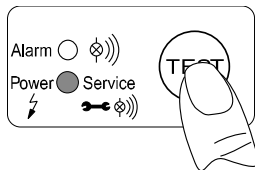
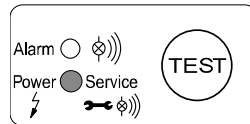
The maintenance message is released after 2 x 8.760 h or one million switching cycles.

The maintenance signal is released when one of these two values is reached.

In the event of a power outage or when the energy supply is deactivated, the status of the timer will be maintained.

The activities to be carried out regarding maintenance are described in the chapter entitled "Check and maintenance".

Prior to the replacement of the service unit, a reset needs to be carried out. The control unit is released by actuating the arresting hook. When removed, the TEST button must be pressed and held for at least five seconds.



9 Installation**Danger!****Compressed air!**

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate).
- **Only carry out service measures when the system is pressure less.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.

**Caution!****Malfunction during operation!**

Through incorrect installation and poor maintenance, malfunction may occur at the ECO-DRAIN.

Condensate which is not discharged may cause damage to plants and in production processes.

Measures:

- Condensate drainage which is reliable in performance directly optimizes the compressed-air quality.
- To prevent damage and breakdowns, it is imperative to observe the following:
 - Exact compliance with the specifications of use and with the performance parameters of the ECO-DRAIN, in connection with the case of application (see "Proper use" section)
 - Exact compliance with the installation- and operation instructions in this manual
 - Regular maintenance and control of the ECO-DRAIN in accordance with the instructions in this operating manual

**Note**

It is imperative to observe all hazard statements and warnings listed here.

Please also observe all regulations and notes regarding industrial safety and fire prevention at the place of installation.

As a matter of principle, only use suitable and appropriate tools and materials in a proper condition.

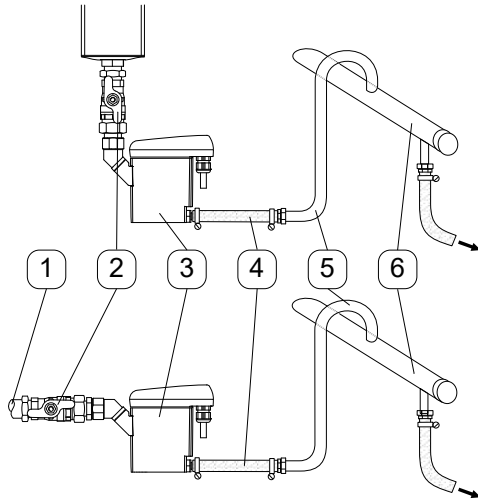
Do not use aggressive cleaners and improper devices such as high-pressure cleaners.

Please note that condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided.

Condensate is subject to mandatory waste disposal. As such, it must be collected in suitable containers, and disposed of or processed properly.

Installation

Installation instructions:



- Only the displayed installation position of the ECO-DRAIN (3) is permissible. Never install in a horizontal or any other tilted position.
- Feed pipe (1) and ball valve (2) at least G $\frac{1}{2}$.
- No filter or screen in the inlet line.
- Slope in the inlet line >1%.
- Use ball valves (2) only.
- Operating pressure: min. 0,8/1,2 bar (12/17 psig), max. 16 bar (230 psig). See type plate.
- Short pressure hose (4) fixed on a pressure-resistant pipe.
- The required minimum pressure increases by 0,1 bar (1,4 psi) per metre gradient in the discharge pipe (5).
- Discharge pipe (5) rising by max. 5 m (16,4ft).
- Install manifold (6) $\frac{1}{2}$ " with a slope of 1%.
- Introduce the discharge pipe (5) from the top into the manifold (6).
- Prior to the start-up, always carry out a leak test and verify the correct engagement of the control unit.

Installation

wrong	correct	
		 Pressure differences! Each condensate accumulation point must be drained separately.
		 Continuous slope! Avoid a water pocket when installing the feed pipe
		 Deflector area! If drainage is to be carried out directly from the pipe, deflection of the air flow will be useful.
		 Ventilation! If the slope in the inlet line is not sufficient or if any other inflow problems occur, a venting line needs to be installed.

Electrical installation

10 Electrical installation

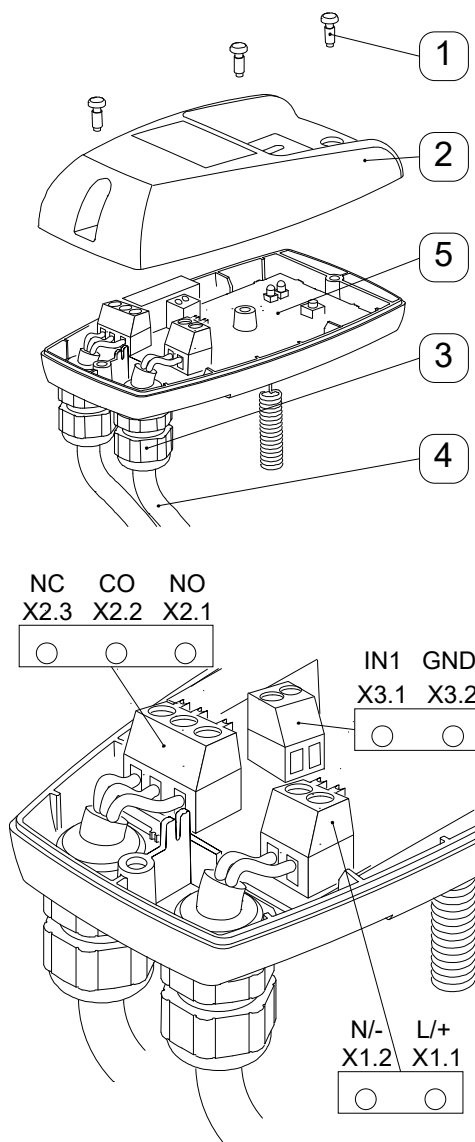


Danger!
Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **When the control unit is open, service and installation works must only be undertaken when the system is deactivated.**
- **The removed control unit has no IP degree of protection.**
- All types of electrical works must be carried out by authorized and qualified personnel only.



Note:

Power supply connection:

1. Read the permissible supply voltage on the type plate and make sure this voltage is observed.
2. For the supply voltage, a reliably accessible separator must be provided close-by (e.g. power plug or switch), which separates all current-carrying conductors.
3. At a low voltage supply (< 50 VAC / < 75 VDC), only use a protective extra-low-voltage.
4. Carry out installation in accordance with VDE 0100 / IEC 60364.
5. Observe the terminal assignment.
6. Do not install when the device is energized.
7. Unscrew the screws (1) and remove the upper part of the cover (2).
8. Unscrew the threaded cable connection (3), remove the plug (if there is one), and lead the cable (4) for the power supply through.
9. Connect the cable (4) with terminals X1 (1.1, 1.2) (5).
10. Install the cables as shown (see also terminal assignment in the following text).
11. Tighten the threaded cable connection (3) with a slightly sealing effect.
12. Put on the upper part of the cover (2) and tighten the screws (1) fingertight.

Electrical installation

Connection of the potential-free contact and of the external test:

1. Selection of the suitable cable.
2. Connection to X2 and X3, as shown on the left.
3. The installation steps are the same as for the power supply connection.
4. If the potential-free contact carries voltage that is dangerous in the case of contact, a corresponding separator must also be provided, as described above.
5. When using the potential-free contacts and the connection external test, sufficient clearance to the other parts of the unit, or suitable insulation in accordance with EN 60664-1 must be ensured.
6. When using a multiwire, common line for the connection of the potential-free contact and the external test, this line must be suitable for the highest occurring voltage and the intended temperature range with regard to its nominal ratings.

Electrical installation

Terminal assignment supply voltage (operating voltage)

X 1		X 2			X 3	
L/+	N/-	NO	CO	NC	IN1	GND
phase	neutral	normally open	common	normally closed	external test (IN1)	GND
1.1	1.2	2.1	2.2	2.3	3.1	3.2

Power supply

- X 1.1 L/+
- X 1.2 N/-

L = Outer conductor

N = Neutral conductor

Terminal assignment low voltage (operating voltage)

X 1		X 2			X 3	
L/+	N/-	NO	CO	NC	IN1	GND
power	power	normally open	common	normally closed	external test (IN1)	GND
1.1	1.2	2.1	2.2	2.3	3.1	3.2

Power supply

- X 1.1 L/+
- X 1.2 N/-

Terminal assignment of the potential-free contact and of the external test

X 1		X 2			X 3	
L/+	N/-	NO	CO	NC	IN1	GND
power	power	normally open	common	normally closed	external test (IN1)	GND
1.1	1.2	2.1	2.2	2.3	3.1	3.2

Fault indication/potential-free contact:

- X 2.1 n.o.
- X 2.2 com.
- X 2.3 n.c.

n.c. - com. closed in the event of malfunction or power failure

n.o. - com. closed during normal operation
(closed current principle)

The contacts X2.1 - 2.3 are potential-free.

External test / remote control:

- X 3.1 external test (IN1)
- X 3.2 GND

Contacts connected = test active = discharge

Contacts open = test inactive

The contacts X 3.1 -3.2 are not potential-free.

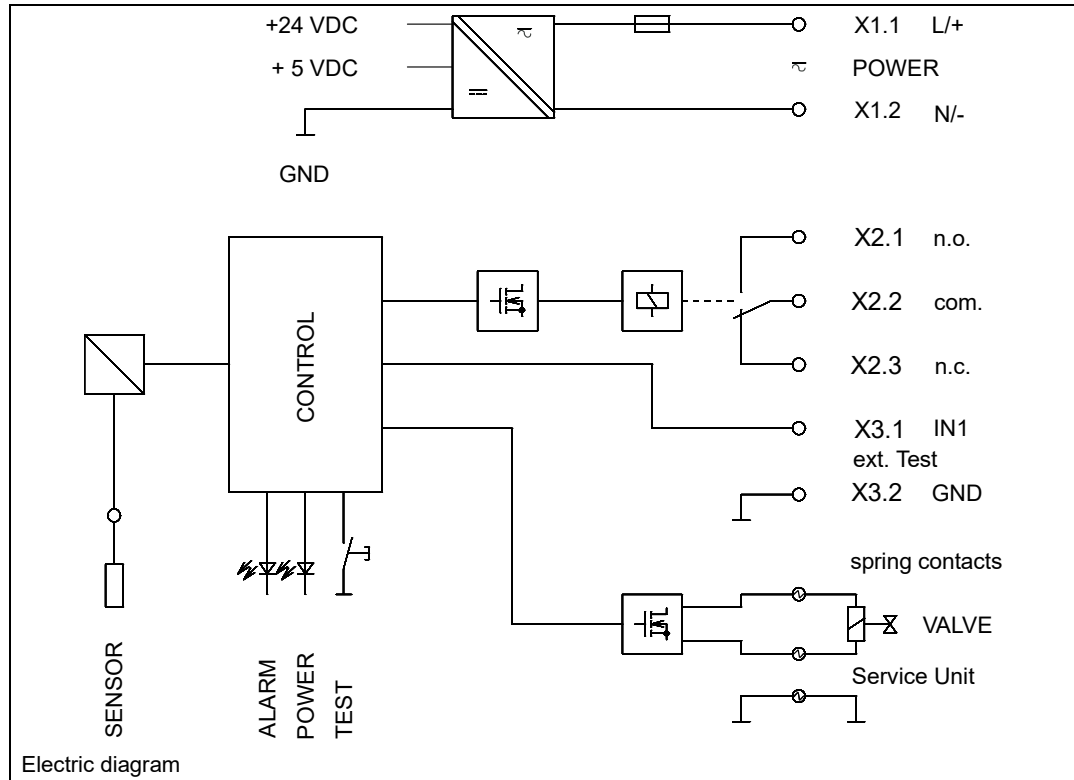


Electrical installation



Note:

At a low-voltage supply (< 50 VAC / < 75 VDC), only use a protective extra-low-voltage.
Tighten the threaded cable connection with a slightly sealing effect.



Inspection and maintenance

11 Inspection and maintenance

**Danger!****Compressed air!**

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate).
- **Only carry out service measures when the system is pressure less.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.

**Danger!****Supply voltage!**

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **When the control unit is open, service and installation works must only be undertaken when the system is deactivated.**
- **The removed control unit has no IP degree of protection.**
- All types of electrical works must be carried out by authorized and qualified personnel only.

**Caution!****Malfunction during operation!**

Through incorrect installation and poor maintenance, malfunction may occur at the ECO-DRAIN.

Condensate which is not discharged may cause damage to plants and in production processes.

Measures:

- Condensate drainage which is reliable in performance directly optimizes the compressed-air quality.
- To prevent damage and breakdowns, it is imperative to observe the following:
 - Exact compliance with the specifications of use and with the performance parameters of the ECO-DRAIN, in connection with the case of application (see "Proper use" section)
 - Exact compliance with the installation- and operation instructions in this manual
 - Regular maintenance and control of the ECO-DRAIN in accordance with the instructions in this operating manual

Inspection and maintenance

Note

It is imperative to observe all hazard statements and warnings listed here.

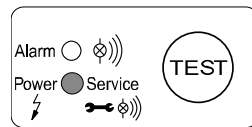
Please also observe all regulations and notes regarding industrial safety and fire prevention at the place of installation.

As a matter of principle, only use suitable and appropriate tools and materials in a proper condition.

Do not use aggressive cleaners and improper devices such as high-pressure cleaners.

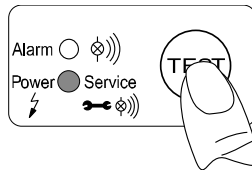
Please note that condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided.

Condensate is subject to mandatory waste disposal. As such, it must be collected in suitable containers, and disposed of or processed properly.

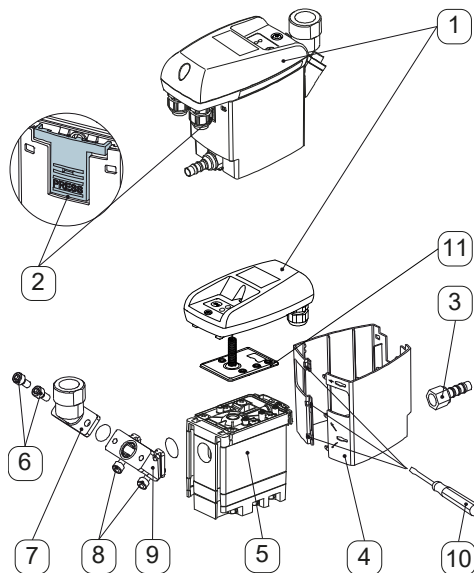

Maintenance recommendation:

After 2 x 8,760 operating hours or one million switching cycles, a maintenance message is released.

The green power LED flashes. Afterwards, or at the latest after two years (2 x 8,760 operating hours), the service unit (5) needs to be replaced.

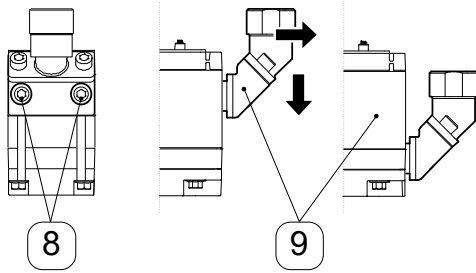


1. Prior to the replacement of the service unit, a reset needs to be carried out. The control unit is released by actuating the arresting hook. When removed, the TEST button below the LED must be pressed and held for at least five seconds.



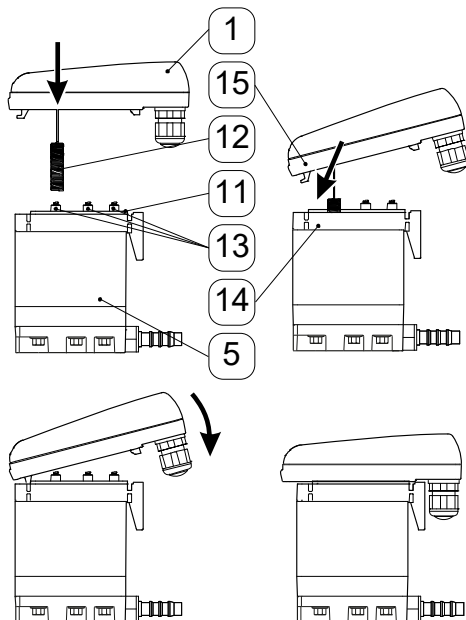
2. Remove the control unit (1) by pressing the arresting hook (2).
3. Unfasten the ECO-DRAIN 31 from the outlet (3).
4. Remove the design shell (4) (if there is one) using a screwdriver (10).
5. Detach the service unit (5) from the tubing at the inlet by removing the union nut.
6. **or** remove the screws (6) from the angle nozzle (7).

ECO-DRAIN 31
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Inspection and maintenance

 $M_{\max} = 4...8 \text{ Nm}$

7. **or** remove the screws (8) at the intermediate adapter (9) and remove the latter from the service unit by pulling it downwards.
8. Check whether or not the new service unit (5) goes with the control unit (1) (model designation and color of the arresting hook (2)).

9. Installation of the new service unit (5) in reverse order.


Installation of the control unit on the service unit:

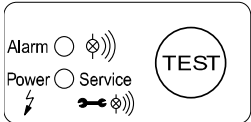
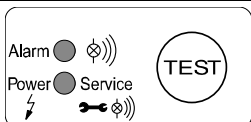
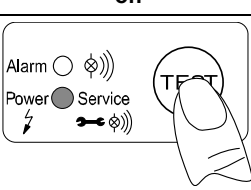
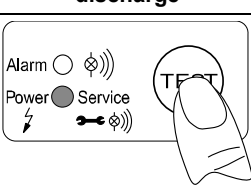
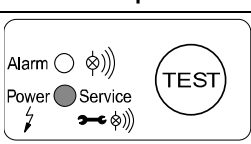
1. Check whether or not the service unit (5) goes with the control unit (1) (model designation and color of the arresting hook).
2. Check whether or not the sealing mat (11) and the contact springs (13) are clean, dry, and free from impurities.
3. Introduce the sensor (12) into the sensor tube plate (14).
4. Hang the hook (15) of the control unit (1) in the sensor tube plate (14).
5. Press the control unit (1) against the service unit (5) and snap into place.

Start-up subsequent to maintenance measures:

Always carry out prior to the start-up:

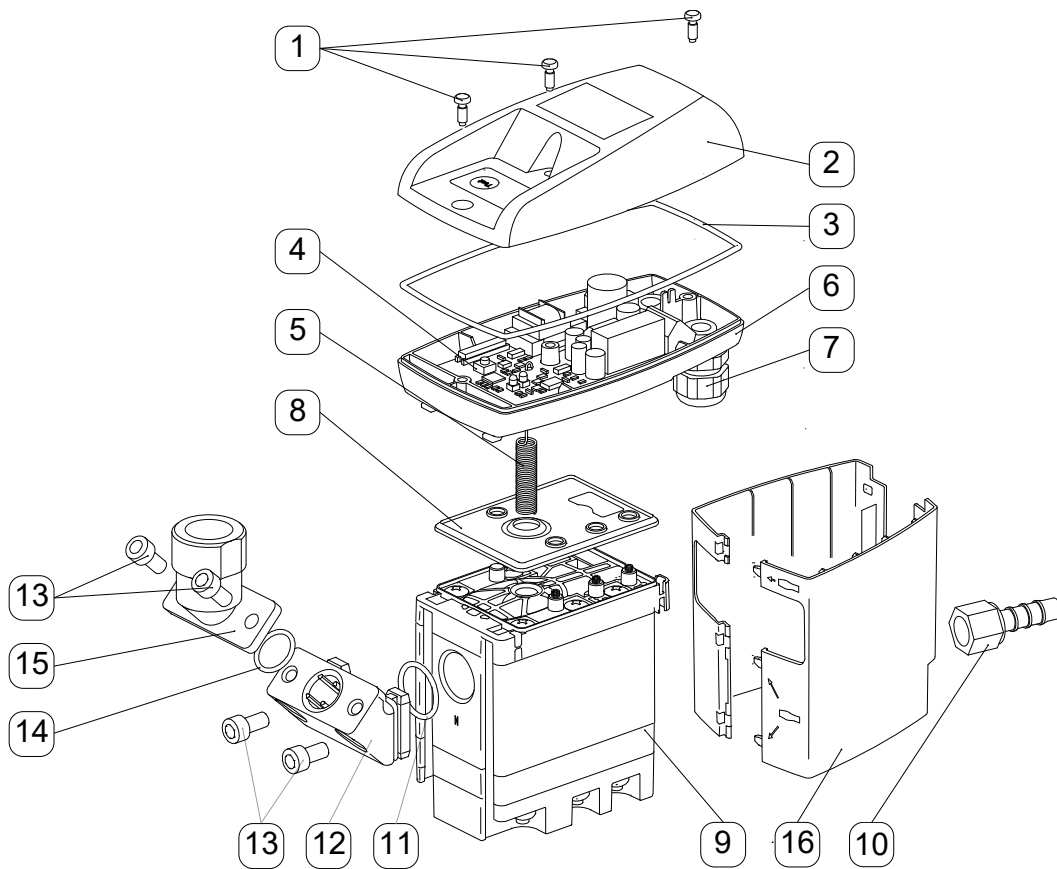
- Leak test of the screwed connector
- Check of the electrical connections
- Check of the correct engagement of the control unit

Troubleshooting and fault elimination
12 Troubleshooting and fault elimination

Symptoms	Possible reasons	Measures
 No LED lights up	Supply voltage incorrect Circuit board defective	Check the voltage on the type plate Check the connections and the supply voltage Check the circuit boards for possible damage
 All LEDs are continuously on	Failure during the start of the program Circuit board defective	Separate the device from the supply voltage and reactivate after > 5 s Check the circuit boards for possible damage
 Test button pressed, but no condensate discharge	Feed pipe and/or discharge pipe blocked or obstructed Wear and tear Circuit board defective Service unit defective Minimum pressure not reached Maximum pressure exceeded	Check feed and discharge pipe Check whether or not the valve opens audibly (press the test button several times for >2 seconds) Check the circuit board for possible damage Check the operating pressure
 Condensate discharge only when the test button is pressed	Feed pipe without sufficient slope Cross section not large enough Condensate accumulation too high (surge) Service unit extremely dirty	Install feed pipe with a slope Replace the service unit
 Device blows off continuously	Service unit defective or dirty	Replace the service unit

Elements and components

13 Elements and components



- 1 Screw 3.5 x 10
- 2 Upper part of the cover
- 3 Moulded gasket
- 4 Circuit board
- 5 Sensor
- 6 Lower part of the cover
- 7 Cable bushing
- 8 Sealing mat

- 9 Service unit
- 10 Hose connector
- 11 O-ring 20 x 2
- 12 Intermediate adapter
- 13 Screw M6 x 12
- 14 O-ring 14 x 1.78
- 15 Angle adaptor
- 16 Design shell

Recommended spare parts
14 Recommended spare parts

Available sets of spare parts	Contents	Order number
Service Unit AN8247400370 for ANECODRAIN31	8, 9, 11**	AN8247400370
Service Unit AN8247400370* for ANECO31-24DC		AN8247400370*
Gasket kit	3, 8, 11**, 14**	AN8247400390
Design shell*	16**	AN8247400410
Connection adapter G** Connection adapter NPT**	11**, 12**, 13**, 14**, 15**	AN4010155 AN4012610

** Not for ECO-DRAIN 31 built-in

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ECO-DRAIN 31

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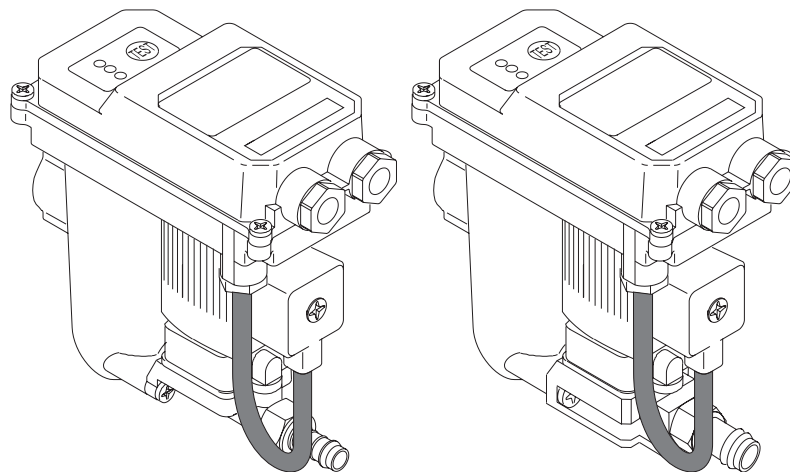
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KAESER
KOMPRESSOREN

Installations- und Betriebsanleitung
Instructions for installation and operation
Instructions de montage et de service
Installatie- en Gebruiksaanwijzing

Kondensatableiter / Condensate drain / Purgeur de condensat / Condensaatafvoer

ECO-DRAIN 12
ECO-DRAIN 12 CO
ECO-DRAIN 12 CO PN63



01-046

ECO-DRAIN 12_10 D E F NL

Sicherheitshinweise**Bitte prüfen, ob diese Anleitung auch dem Gerätetyp entspricht.**

Beachten Sie alle in dieser Bedienungsanleitung gegebenen Hinweise. Sie enthält grundlegende Informationen, die bei Installation, Betrieb und Wartung zu beachten sind. Daher ist diese Bedienungsanleitung unbedingt vor Installation, Inbetriebnahme und Wartung vom Monteur sowie vom zuständigen Betreiber/Fachpersonal zu lesen. Die Bedienungsanleitung muss jederzeit zugänglich am Einsatzort des ECO-DRAIN 12 / 12 CO / 12 CO PN63 verfügbar sein.

Zusätzlich zu dieser Betriebsanleitung sind ggf. örtliche bzw. nationale Vorschriften zu beachten.

Stellen Sie sicher, dass der ECO-DRAIN 12 / 12 CO / 12 CO PN63 nur innerhalb der zulässigen und auf dem Typenschild aufgeführten Grenzwerte betrieben wird. Es besteht sonst eine Gefährdung für Menschen und Material und es können Funktions- und Betriebsstörungen auftreten.

Bei Unklarheiten oder Fragen zu dieser Installations- und Betriebsanleitung setzen Sie sich bitte mit KAESER Kompressoren SE in Verbindung.

**Gefahr!
Druckluft!**

Durch Kontakt mit schnell oder schlagartig entweichender Druckluft oder durch berstende und/oder nicht gesicherte Anlagenteile besteht Gefahr schwerer Verletzungen oder Tod.

Maßnahmen:

- Max. Betriebsdruck nicht überschreiten (siehe Typenschild).
- **Wartungsarbeiten nur im drucklosen Zustand durchführen.**
- Nur druckfestes Installationsmaterial verwenden.
- Zulaufleitung fest verrohren. Ablaufleitung: kurzer, fixierter Druckschlauch an druckfestem Rohr.
- Verhindern Sie, dass Personen oder Gegenstände von Kondensat oder entweichender Druckluft getroffen werden können.

**Gefahr!
Netzspannung!**

Durch Kontakt mit Netzspannung führenden nicht isolierten Teilen besteht Gefahr eines elektrischen Schlag mit Verletzung und Tod.

Maßnahmen:

- Bei elektrischer Installation alle geltenden Vorschriften einhalten (z.B. VDE 0100 / IEC 60364).
- Wartungs- und Installationsarbeiten bei geöffneter Steuereinheit nur im spannungsfreien Zustand durchführen.
- Die abgenommene Steuereinheit hat keinen IP-Schutzgrad.
- Alle elektrischen Arbeiten dürfen nur von befugtem Fachpersonal durchgeführt werden.

Weitere Sicherheitshinweise:

- Bei Installation und Betrieb sind ebenfalls die geltenden nationalen Bestimmungen und Sicherheitsvorschriften einzuhalten.
- Den ECO-DRAIN 12 nicht in explosionsgefährdeten Bereichen einsetzen.
- Bei den Zulaufverschraubungen sind übermäßige Anzugskräfte zu vermeiden. Das gilt insbesondere für konische Verschraubungen.
- Der ECO-DRAIN 12 ist nur bei anliegender Spannung funktionstüchtig.
- Test-Taster nicht zur Dauerentwässerung nutzen.
- Nur Original-Ersatzteile verwenden. Nur so ist eine einwandfreie Funktion sichergestellt.

Zusatzhinweise:

- Bei Montage Schlüsselflächen am Zulauf (Schlüsselweite SW32) zum Gegenhalten benutzen.

**Vorsicht!****Fehlfunktionen in der Anwendung!**

Durch fehlerhafte Installation und mangelhafte Wartung kann es zu Fehlfunktionen am ECO-DRAIN kommen. Nicht abgeleitetes Kondensat kann zu Schäden an Anlagen und in Fertigungsprozessen führen.

Maßnahmen:

- Eine funktionssichere Kondensatableitung optimiert direkt die Druckluftqualität.
- Zur Vermeidung von Schäden und Ausfällen bitte unbedingt beachten:
 - genaues Einhalten der bestimmungsgemäßen Verwendung und der Betriebsparameter des ECO-DRAIN im Zusammenhang mit dem Einsatzfall (siehe dazu Kapitel „Bestimmungsgemäße Verwendung“)
 - genaues Einhalten der Installations- und Betriebshinweise in dieser Anleitung
 - regelmäßige Wartung und Kontrolle des ECO-DRAIN nach den Hinweisen in dieser Betriebsanleitung

Bestimmungsgemäße Verwendung

- Der ECO-DRAIN ist ein elektronisch-niveaugeregelter Kondensatableiter für Druckluftanlagen.
- Der Einsatz erfolgt innerhalb der zulässigen Betriebsparameter (siehe Technische Daten).
- Der ECO-DRAIN kann Kondensat unter Betriebsdruck nahezu ohne Druckluftverlust aus den Anlagenteilen ableiten.
- Der ECO-DRAIN benötigt zur Funktion eine Betriebsspannung und einen Betriebsdruck (siehe Technische Daten).
- Bei einem Einsatz in Anlagen mit erhöhten Anforderungen an die Druckluftqualität (Lebensmittelindustrie, Medizintechnik, Laborausrüstungen, spezielle Prozesse usw.), muss der Betreiber über Maßnahmen zur Überwachung der Druckluftqualität entscheiden. Diese beeinflussen die Sicherheit der nachfolgenden Prozesse und können Schäden an Menschen und Anlagen vermeiden.
- Es ist Aufgabe des Betreibers, die genannten Bedingungen während der gesamten Betriebsdauer zu gewährleisten.
- Für den Einsatz in CO₂-Anlagen muss ein ECO-DRAIN mit der Spezifikation CO (ECO-DRAIN .. CO) verwendet werden.
- Der ECO-DRAIN und die Kondensatzuleitung sind vor Frost zu schützen, da sonst die Funktion nicht gewährleistet ist. KAESER Kompressoren SE bietet auch hierfür geeignete Produkte an.

Ausschluss vom Anwendungsbereich

- Der ECO-DRAIN kann als Kondensatableiter **allein keine** definierte Druckluftqualität garantieren, hierzu sind andere zusätzliche technische Einrichtungen notwendig.
- Der ECO-DRAIN 12 ist **nicht** für den Einsatz an Unterdruck oder atmosphärischen Umgebungsdruck führenden Anlagen oder in Ex-Bereichen geeignet.
- Der ECO-DRAIN darf nicht dauerhafter direkter Sonnen- oder Wärmestrahlung ausgesetzt werden.
- Der ECO-DRAIN 12 darf nicht in Bereichen mit aggressiver Atmosphäre installiert und betrieben werden.

Safety instructions

Please check whether or not these instructions correspond to the device type!

Please adhere to all advice given in these operating instructions. They include basic information which needs to be observed during installation, operation and maintenance. Therefore, it is vital for the technician and the responsible operator /skilled personnel to read these operating instructions prior to installation, start-up and maintenance. The operating instructions must be accessible at all times at the place of application of the ECO-DRAIN 12 / 12 CO /12 CO PN63.

In addition to these operating instructions, local and national regulations need to be observed, if required.

Make sure that the ECO-DRAIN 12 / 12 CO /12 CO PN63 is operated only within the permissible limit values indicated on the type plate. Any deviation involves a risk for persons and materials, and may result in malfunction and service failures.

If you have any queries regarding these installation and operating instructions, please contact KAESER Kompressoren SE.


Danger!
Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate)!
- **Only carry out service measures when the system is pressureless.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.


Danger!
Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- Only carry out maintenance and installation work with the opened control unit when it is de-energized.
- The removed control unit has no IP degree of protection.
- All types of electrical work must be carried out by authorised and qualified personnel only.

Further safety advice:

- For installation and operation, the national regulations and safety codes in force must also be adhered to.
- Do not use the ECO-DRAIN 12 in hazardous areas.
- Regarding the inlet screw joints, excessive tightening forces must be avoided. This applies in particular to conical screw joints.
- The ECO-DRAIN 12 will only function when voltage is applied.
- Do not use the test button for permanent drainage!
- Only use genuine spare parts! This is imperative to ensure perfect functioning.

Additional advice:

- During installation, use the spanner flat at the feed pipe (width across flat 32) as a back rest.

**Caution!**
Malfunctions in the application!

Through incorrect installation and insufficient maintenance, the ECO-DRAIN can malfunction. Condensate which is not discharged can lead to damage to plants and in manufacturing processes.

Measures:

- Fail-safe condensate discharge directly optimises the compressed-air quality.
- To prevent damage and failures, it is imperative
 - To comply with the provisions regarding proper use and with the operating parameters of the ECO-DRAIN in connection with the case of application (see chapter "Proper use").
 - To strictly adhere to the installation and operating advice in these instructions.
 - To maintain and check the ECO-DRAIN at regular intervals in accordance with the advice in these operating instructions.

Proper use

- The ECO-DRAIN is an electronically level-controlled condensate drain for compressed-air plants.
- It is employed within the permissible operating parameters (see "Technical data").
- The ECO-DRAIN is able to drain condensate under operating pressure from the plant components virtually without compressed-air losses.
- For its function, the ECO-DRAIN 12 requires an operating voltage and an operating pressure (see "Technical data").
- As far as the employment in plants with increased demands on the compressed-air quality is concerned (food industry, medical technology, laboratory equipment, special processes etc.), the operator must decide on measures for the monitoring of the compressed-air quality. These have an effect on the safety of the subsequent processes and may prevent damage to persons and plants.
- It is the task of the operator to ensure that the indicated conditions are met during the entire operating time.
- For the employment in CO₂ plants, a ECO-DRAIN with a CO specification (ECO-DRAIN ... CO) must be used.
- The ECO-DRAIN and the condensate supply line need to be protected against frost, as otherwise the function cannot be guaranteed. KAESER Kompressoren SE also offers suitable products for this purpose.

Exclusion from the field of application

- The ECO-DRAIN as a condensate drain **alone cannot** guarantee a defined compressed-air quality, for this purpose, other additional technical devices are required.
- ECO-DRAIN 12 is not suitable for use in plants carrying vacuum or atmospheric ambient pressure or in hazardous areas.
- The ECO-DRAIN must not be exposed to permanent direct solar or thermal radiation.
- ECO-DRAIN 12 must **not** be installed and operated in areas with an aggressive atmosphere.

Consignes de sécurité**Vérifiez que cette notice corresponde bien au modèle d'appareil en votre possession.**

Respectez toutes les consignes données dans ce mode d'emploi. Il contient des informations fondamentales, à respecter lors de l'installation, de l'utilisation et de la maintenance. C'est pourquoi, il est impératif que ce mode d'emploi soit lu avant l'installation, la mise en service et la maintenance, par l'installateur ainsi que par l'exploitant et le personnel qualifié.

Le mode d'emploi doit être disponible et accessible à tout moment sur le lieu d'utilisation du ECO-DRAIN 12 / 12 CO / 12 CO PN63.

En plus de ce mode d'emploi, il faut respecter les éventuelles prescriptions locales ou nationales.

Assurez-vous que le ECO-DRAIN 12 / 12 CO / 12 CO PN63 ne soit utilisé qu'au sein des valeurs limites admissibles et mentionnées sur la plaque signalétique. Dans le cas contraire, il peut présenter un risque pour les personnes et le matériel, voire nuire au bon fonctionnement de l'installation ou générer des perturbations.

Si certains points ne sont pas clairs ou si vous avez des questions au sujet de ces instructions de montage et de service, n'hésitez pas à contacter la société KAESER Kompressoren SE.

**Danger !****Air comprimé !**

Tout contact avec de l'air comprimé s'échappant rapidement ou de façon brutale ou tout contact avec des parties de l'installation présentant un risque d'éclatement peut causer de graves blessures ou entraîner la mort.

Mesures préventives :

- Ne pas dépasser la pression de service maximale (voir plaque signalétique).
- **Dépressuriser le purgeur avant toute intervention d'entretien ou de maintenance.**
- N'utiliser que du matériel d'installation résistant à la pression.
- La conduite d'amenée doit toujours être réalisée en tuyauterie rigide et fixe. Conduite d'évacuation : flexible de faible longueur, fixé et relié à une tuyauterie, tous deux résistant à la pression.
- Veillez à ce qu'aucune personne ni objet ne risque d'être touché par le condensat ou l'air comprimé qui s'échappe.

**Danger !****Tension électrique !**

Tout contact avec des éléments non isolés et sous tension présente un risque de choc électrique pouvant provoquer des blessures ou entraîner la mort.

Mesures préventives :

- Lors de la réalisation de l'installation électrique, respecter toutes les prescriptions en vigueur (p. ex. VDE 0100 / IEC 60364).
- N'effectuez des travaux de maintenance et d'installation avec la centrale ouverte lorsque celle-ci est hors tension.
- L'unité de commande retirée n'a pas de degré de protection IP.
- Toute intervention électrique doit être réalisée exclusivement par un personnel qualifié et habilité.

Autres consignes de sécurité :

- Lors de l'installation et de l'utilisation, il faut également respecter les directives et consignes de sécurité en vigueur dans le pays en question.
- Ne pas utiliser le ECO-DRAIN 12 dans les atmosphères explosibles.
- Éviter les serrages trop importants au niveau des raccords de la conduite d'amenée Ceci est valable en particulier pour les raccords à filetage conique.
- Le ECO-DRAIN 12 n'est opérationnel que s'il est sous tension (alimentation électrique assurée).
- Ne pas utiliser le bouton Test pour l'évacuation permanente du condensat.
- Utiliser exclusivement des pièces de rechange d'origine. Seul le respect scrupuleux des consignes données peut garantir le parfait fonctionnement de l'appareil.

Consignes supplémentaires :

- Lors du montage, utiliser le méplat pour clé au niveau de l'arrivée (32 mm) pour maintenir le purgeur pendant le serrage.

**Prudence !****Dysfonctionnements au niveau de l'utilisation !**

En cas d'installation incorrecte et de maintenance insuffisante, des dysfonctionnements peuvent apparaître au niveau du ECO-DRAIN.

Tout condensat non évacué risque d'endommager les installations et de porter atteinte aux processus de fabrication.

Mesures préventives :

- Le bon fonctionnement de la purge des condensats permet une optimisation directe de la qualité de l'air comprimé.
- Pour éviter tout endommagement et tout arrêt de production, il est impératif de respecter les consignes suivantes :
 - Respecter scrupuleusement les instructions pour une utilisation conforme à l'usage prévu et les paramètres de fonctionnement du ECO-DRAIN dans le contexte de son utilisation (consulter à cet effet le chapitre „Utilisation conforme à l'usage prévu“).
 - Respecter scrupuleusement toutes les instructions d'installation et d'utilisation communiquées dans cette notice.
 - Respecter scrupuleusement la périodicité de maintenance et de contrôle du ECO-DRAIN selon les indications de ce manuel d'utilisation.

Utilisation conforme à l'emploi prévu

- Le ECO-DRAIN est un purgeur de condensat à régulation électronique de niveau pour les installations de production et distribution d'air comprimé.
- L'utilisation s'effectue dans le respect des paramètres de fonctionnement admissibles (voir caractéristiques techniques).
- Le ECO-DRAIN permet d'évacuer le condensat du réseau de distribution sous pression (pression de service) et ce, pratiquement sans perte de charge.
- Pour son fonctionnement, le ECO-DRAIN requiert une tension d'alimentation électrique et une pression de service (voir caractéristiques techniques).
- Lors d'une utilisation dans des installations soumises à des exigences plus poussées quant à la qualité de l'air comprimé (industrie alimentaire, techniques médicales, équipements de laboratoires, processus spéciaux, etc.), l'exploitant est tenu de prendre des mesures pour la surveillance de la qualité de l'air comprimé. Ces mesures ont une influence directe sur la sécurité des processus en aval et permettent ainsi d'éviter les dommages corporels et l'endommagement des installations.
- Il incombe à l'exploitant d'assurer les conditions mentionnées pendant toute la durée de service.
- Pour les installations de CO₂, il faut impérativement utiliser un ECO-DRAIN en version CO (ECO-DRAIN .. CO).
- Le ECO-DRAIN et la conduite d'amenée du condensat doivent être protégés contre le gel, sinon le fonctionnement n'est pas assuré. KAESER Kompressoren SE propose également des produits adéquats à cet effet.

Exclusion du domaine d'application

- En tant que purgeur de condensat, le ECO-DRAIN ne peut pas garantir à lui seul une qualité d'air comprimé définie ; pour ce faire, il faut d'autres équipements techniques en plus.
- Le ECO-DRAIN 12 ne convient pas pour l'utilisation sur des installations sous vide ou fonctionnant à la pression atmosphérique ambiante, ni pour l'utilisation dans les atmosphères explosibles.
- Le ECO-DRAIN ne doit pas être exposé en permanence au rayonnement direct du soleil ou à un rayonnement thermique.
- Le ECO-DRAIN 12 ne doit pas être installé ni utilisé dans les domaines exposés à une atmosphère agressive.

Veiligheidsinstructies**Controleer of deze handleiding ook overeenkomt met het apparaattype.**

Neem alle instructies in acht die in deze gebruiksaanwijzing worden gegeven. Zij omvat essentiële informatie die in acht moet worden genomen bij de installatie, het gebruik en het onderhoud. Daarom moet deze gebruiksaanwijzing vóór de installatie, de ingebruikname en het onderhoud absoluut gelezen worden door de monteur, de verantwoordelijke exploitant of het vakkundig personeel.

De gebruiksaanwijzing moet op elk gewenst moment toegankelijk beschikbaar zijn op de plaats waar de ECO-DRAIN 12 / 12 CO / 12 CO PN63 wordt gebruikt.

Voorts moeten bij deze gebruiksaanwijzing eventueel lokale resp. nationale voorschriften in acht worden genomen. Controleer of de ECO-DRAIN 12 / 12 CO / 12 CO PN63 uitsluitend wordt gebruikt binnen de toegestane grenswaarden die ook zijn aangegeven op de instructieplaat. Zo niet bestaat er gevaar voor personen en materiaal en kunnen er functie- en bedrijfsstoringen optreden.

Neem contact op met KAESER Kompressoren SE als er onduidelijkheden of vragen zijn over deze installatie- en gebruikershandleiding.

**Gevaar!
Perslucht!**

Contact met perslucht die snel of abrupt ontsnapt of wegspringende en/of niet beveiligde delen van de installatie leveren gevaar op met zwaar letsel of dood tot gevolg.

Maatregelen:

- Overschrijd de maximale bedrijfsdruk niet (zie instructieplaat).
- **Verricht onderhoudswerkzaamheden uitsluitend in drukloze toestand.**
- Gebruik uitsluitend drukbestendig installatiemateriaal.
- Verbind de toevoerleiding vast met het buizensysteem. Afvoerleiding: bevestig een korte hogedrukslang aan de drukbestendige buis.
- Voorkom dat personen of voorwerpen geraakt kunnen komen door condensaat of ontsnappende perslucht.

**Gevaar!
Netspanning!**

Contact met niet-geïsoleerde delen die de netspanning voeren, levert gevaar op door elektrische schok met letsel en dood tot gevolg.

Maatregelen:

- Volg bij elektrische installatie alle geldende voorschriften op (bijv. VDE 0100 / IEC 60364).
- Voer alleen onderhouds- en installatiewerkzaamheden uit terwijl de besturingsunit geopend is wanneer deze spanningsloos is.
- De verwijderde besturingseenheid heeft geen IP-beschermingsgraad.
- Alle elektrische werkzaamheden mogen uitsluitend worden uitgevoerd door bevoegd vakpersoneel.

Overige veiligheidsinstructies:

- Bij installatie en gebruik moeten tevens de geldende nationale bepalingen en veiligheidsvoorschriften in acht worden genomen.
- Gebruik de ECO-DRAIN 12 niet in explosiegevaarlijke zones.
- Vermijd overmatig aantrekken van de schroefverbindingen aan de toevoer. Dat geldt in het bijzonder voor conische schroefverbindingen.
- De ECO-DRAIN 12 kan alleen functioneren bij opgebrachte spanning.
- Gebruik de testknop niet voor continue drainage.
- Gebruik alleen originele reserveonderdelen. Alleen zo kan een foutloze werking worden gegarandeerd.

Aanvullende instructies:

- Gebruik bij montage de sleuteloppervlakken op de toevoer (sleutelbreedte SW32) om de ECO-DRAIN tegen te houden.



Let op!

Storingen tijdens het gebruik!

Er kunnen storingen aan de ECO-DRAIN ontstaan als gevolg van een foutieve installatie en gebrekkig onderhoud.

Niet afgevoerd condensaat kan schade veroorzaken aan installaties en in productieprocessen.

Maatregelen:

- Een veilig functionerende condensaatafvoer optimaliseert direct de persluchtkwaliteit.
- Neem het volgende absoluut in acht om schade en uitval te voorkomen:
 - Correct opvolgen van de instructies voor doelmatig gebruik en van de bedrijfsparameters van de ECO-DRAIN afhankelijk van de gebruikssituatie (zie hiervoor hoofdstuk "Doelmatig gebruik")
 - Correct opvolgen van de installatie- en bedrijfsinstructies in deze handleiding
 - Regelmatig onderhoud en controle van de ECO-DRAIN volgens de instructies in deze gebruiksaanwijzing

Doelmatig gebruik

- De ECO-DRAIN is een elektronisch niveaugeregelde condensaatafvoer voor persluchtinstallaties.
- Het gebruik vindt plaats binnen de toegestane bedrijfsparameters (zie technische gegevens).
- De ECO-DRAIN kan condensaat onder bedrijfsdruk praktisch zonder persluchtverlies uit de installatie afvoeren.
- Der ECO-DRAIN heeft voor het functioneren een bepaalde bedrijfsspanning en bedrijfsdruk nodig (zie technische gegevens).
- Bij een gebruik in installaties met hogere eisen aan de persluchtkwaliteit (voedingsmiddelenindustrie, medische techniek, laboratoriumuitrustingen, speciale processen enz.) moet de exploitant maatregelen treffen voor het bewaken van de persluchtkwaliteit. Deze hebben een invloed op de veiligheid van de nakomende processen en kunnen schade aan personen en installaties voorkomen.
- Het is de taak van de exploitant om de genoemde voorwaarden tijdens de totale bedrijfsduur te waarborgen.
- Voor toepassing in CO₂-installaties moet een ECO-DRAIN met de specificatie CO (ECO-DRAIN .. CO) worden gebruikt.
- Der ECO-DRAIN en de condensaatafvoer moeten beschermd worden tegen vorst omdat de werking anders niet gewaarborgd is.

KAESER Kompressoren SE biedt ook hiervoor geschikte producten aan.

Uitsluiting van toepassingsgebied

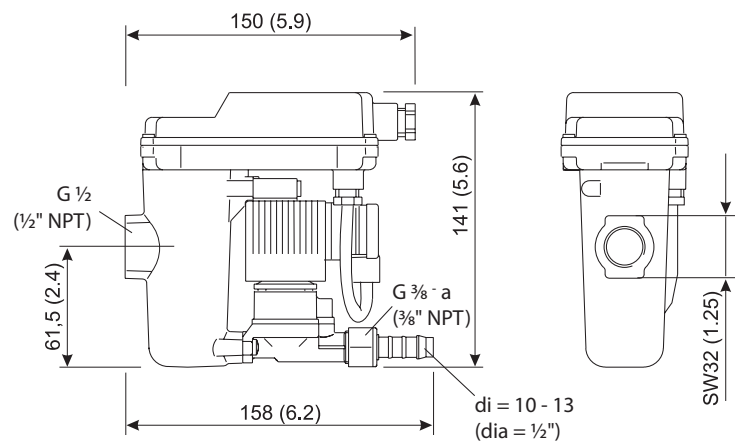
- De ECO-DRAIN kan als condensaatafvoer alleen geen gedefinieerde persluchtkwaliteit garanderen. Hiervoor zijn andere aanvullende, technische installaties noodzakelijk.
- De ECO-DRAIN 12 is niet geschikt voor het gebruik bij installaties met onderdruk of atmosferische omgevingsdruk of in ex-zones.
- De ECO-DRAIN mag niet continu worden blootgesteld aan direct zonlicht of warmtestraling.
- De ECO-DRAIN 12 mag niet worden geïnstalleerd en gebruikt in ruimtes met agressieve atmosfeer.

Technische Daten • Technical data Caractéristiques • Gegevens			
  Dieses Produkt wurde getestet nach den Anforderungen der CAN/CSA-C22.2 Nr. 61010-1, dritte Auflage, unter Einbeziehung der Ergänzung 1 oder einer späteren Version der gleichen Norm, unter Berücksichtigung des gleichen Niveaus an Testanforderungen. This product has been tested to the requirements of CAN/CSA-C22.2 No. 61010-1, third edition, including Amendment 1, or a later version of the same standard incorporation the same level of testing requirements. Ce produit a été testé selon les exigences de la norme CAN/CSA-C22.2 n° 61010-1, troisième édition, en tenant compte du complément 1 ou d'une version plus récente de la même norme, en appliquant le même niveau d'exigences en matière de tests. Dit product is getest volgens de vereisten van CAN/CSA-C22.2 nr. 61010-1, derde uitgave, inclusief aanvulling 1 of een latere versie van dezelfde norm, rekening houdend met hetzelfde niveau van testvereisten.			
ECO-DRAIN	12	12 CO	12 CO PN63
min./max. Betriebsdruck operating pressure, min/max Pression de service min/max Min./max. bedrijfsdruk	0,8 ... 16 bar (12 ... 230 psi / 0,08 ... 1,6 MPa)		1,2 ... 63 bar (18 ... 913 psi / 0,12 ... 6,3 MPa)
min./max. Temperatur min/max temperature Température min/max Min./max. temperatuur	+1 ... +60 °C (+34 ... +140 °F)		
Kondensatzulauf Condensate feed Entrée du condensat Kondensaatinvoer	G ½ / ½ NPT		
Kondensatablauf (Schlauch) Condensate discharge (hose) Sortie du condensat (flexible) Kondensaatafvoer (slang)	G ¾		G ¾
Kondensat condensate Condensat Kondensaat	ölhaltig oil-contaminated huileux oliehoudend	ölhaltig + ölfrei oil-contaminated + oil-free huileux + non huileux oliehoudend + olievrij	
Gehäuse housing Corps Behuizing	Aluminium Aluminium Aluminium Aluminium	Aluminium, hartcoatiert Aluminium, hard-coated Aluminium, avec revêtement dur Aluminium, hardgecoat	
Gewicht (leer) weight (empty) Poids (à vide) Gewicht (leeg)	0,8 kg (1.8 lbs)		0,9 kg (2.0 lbs)
Max. Leistung für Klimazone Blau – siehe auch Kapitel „Klimazone und Leistungsdaten“ Max. performance for the blue climatic zone – see also Chapter "Climatic zone and performance data". Capacité max. pour la zone climatique Bleu – voir aussi chapitre „Zones climatiques et Capacités“ Max. capaciteit voor klimaatzone blauw - zie ook het hoofdstuk "Klimaatzone en capaciteitsgegevens"			
max. Kompressorleistung peak compressor performance Capacité maximale du compresseur Max. compressorcapaciteit		6,5 m³/min (230 cfm)	
max. Kältetrocknerleistung (nur mit Vorabscheidung) peak refrigeration dryer performance (only with pre-separation) Capacité max. du sécheur frigo (seules avec pré-separation) Max. koeldrogercapaciteit (allen met voorafscheiding)		13 m³/min (460 cfm)	
max. Filterleistung (hinter Trockner) peak filter performance (behind dryer) Capacité maximale filtre (derrière sécheur) Max. filtercapaciteit (achter koeldroger)		65 m³/min (2300 cfm)	

Elektrische Daten • Electrical data Caractéristiques électrique • Elektrische gegevens	
Betriebsspannung Supply voltage Tension d'alimentation Bedrijfsspanning	230 / 115 / ... / 24 VAC ± 10%, 50 ... 60 Hz / 24 VDC ± 10% siehe Typenschild / see type plate voir plaque signalétique / zie instructieplaat
Leistungsaufnahme Power input Consommation Opgenomen vermogen	P < 8,0 VA (W)
Absicherung Fuse protection Fusibles Zekering	empfohlen AC: 1 A träge / vorgeschrieben DC: 1 A träge recommended AC: 1 A slow / stipulated DC: 1 A slow recomm. AC : 1 A fusion lente / prescrit DC : 1 A fusion lente aanbevolen AC: 1 A traag / specificatie DC: 1 A traag
empfohlener Kabelmanteldurchmesser recommended cable jacket diameter diamètre recommandé pour la gaine du câble aanbevolen kabeldoorsnede	ø 5,8 ... 8,5 mm (0.23" ... 0.34")
empfohlener Aderquerschnitt (Netzanschluss) recommended wire cross-section Section recommandée pour les conducteurs (alimentation secteur) Aanbevolen draaddoorsnede (netaansluiting)	3 x 0,75 ... 1,5 mm ² (0.03 ... 0.06 inches squared)
empfohlenes Absetzen des Kabelmantels recommended stripping of cable jacket Longueur recommandée pour le dénudage de la gaine du câble Aanbevolen strippen van de kabelmantel	PE: ~ 60 mm L/N: ~ 50 mm (PE: ~ 2.3" L/N: ~ 1.96")
empfohlene Abisolierlänge recommended wire stripping Longueur recommandée pour le dénudage Aanbevolen isolatielengte	~ 6 mm (~ 0.24")
Anschlussdaten des potenzialfreien Kontaktes Last schalten *) Connection data of the potential-free contact Switch to load *) Caractéristiques de raccordement du contact sans potentiel Commuter une charge *) Aansluitgegevens van het potentiaalvrije contact Last schakelen *)	AC: max. 250 V / 1 A DC: max. 30 V / 1 A
Anschlussdaten des potenzialfreien Kontaktes Kleinsignal schalten *) Connection data of the potential-free contact Switch to low signal *) Caractéristiques de raccordement du contact sans potentiel Commuter un petit signal *) Aansluitgegevens van het potentiaalvrije contact Laag signaal schakelen *)	min. 5 VDC / 10 mA
Schutzart Protection class Degré de protection Beschermingsklasse	IP 65
VAC = V alternating current (Wechselspannung) / VDC = V direct current (Gleichspannung) *) das Schalten von Lasten führt dazu, dass die Eigenschaften des Kontaktes für das Schalten von Kleinsignalen nicht mehr geeignet sind. VAC = V alternating current / VDC = V direct current *) The switching of loads has the result that the properties of the contact are no longer suitable for the switching of low signals. VAC = V alternating current (Tension alternative) / VDC = V direct current (Tension continue) *) La commutation de charges a pour conséquence que les propriétés du contact ne conviennent plus pour la commutation de petits signaux. VAC = V alternating current (wisselstroom) / VDC = V direct current (gelijkstroom) *) het schakelen van lasten heeft als gevolg dat de eigenschappen van het contact niet meer geschikt zijn voor het schakelen van lage signalen.	

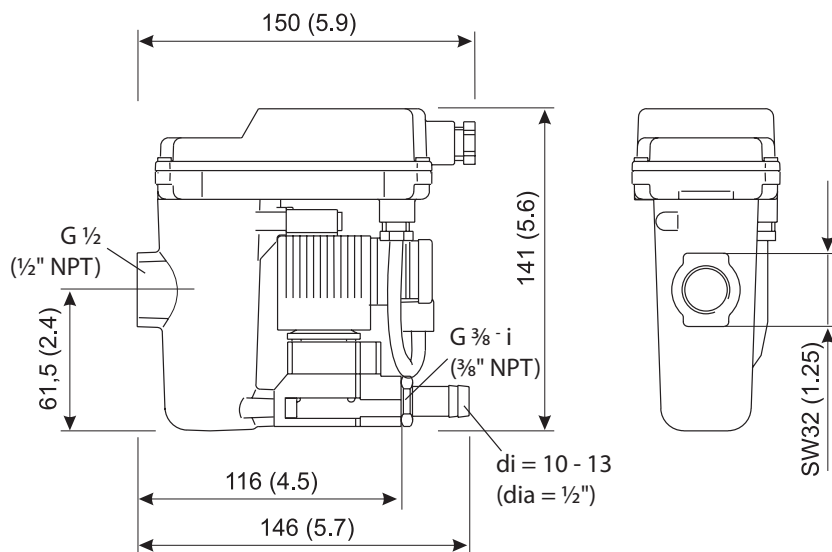
ECO-DRAIN 12, 12 CO, 12 CO PN63
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Abmessungen • Dimensions • Dimensions • Afmetingen



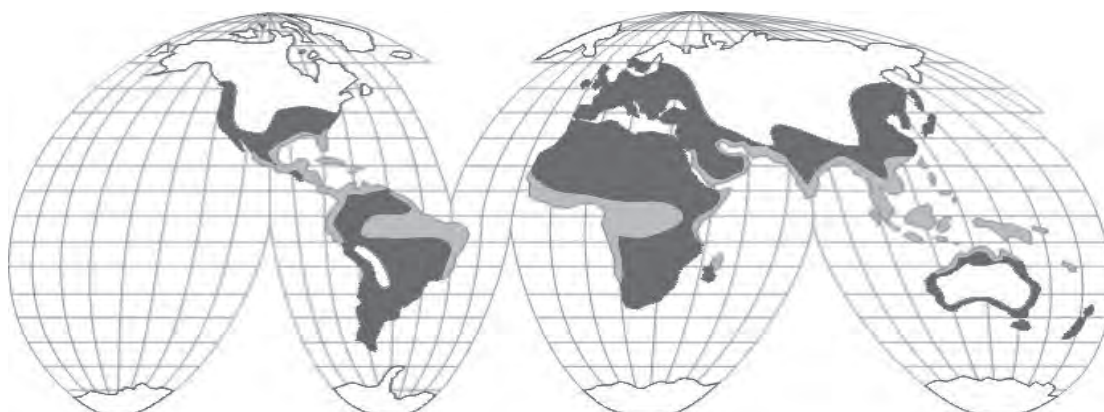
ECO-DRAIN 12
ECO-DRAIN 12 CO

mm (inch)



ECO-DRAIN 12 CO PN63

mm (inch)

Klimazonen • Climatic zone • Zones climatiques • Klimaatzone


Klimazone Climatic zone Zone climatique Klimaatzone	Max. Kompressorleistung Peak compressor performance Capacité max. du compresseur Max. compressorcapaciteit		Max. Trocknerleistung Peak dryer performance Capacité max. du sécheur Max. koeldrogercapaciteit		Max. Filterleistung Peak filter performance Capacité max. du filtre Max. filtercapaciteit	
	m³/min.	cfm	m³/min.	cfm	m³/min.	cfm
grün/green/vert/groen	8,0	283	16,0	565	80,0	2825
blau/blue/bleu/blauw	6,5	230	13,0	459	65,0	2300
rot/red/rouge/rood	4,0	141	8,0	283	40,0	1413

Die angegebenen Leistungsdaten beziehen sich auf gemäßigtes Klima mit Gültigkeit für Europa, weite Teile Süd-Ost-Asiens, Nord- und Südafrika, Teile Nord- und Südamerikas (Klimazone: Blau).

Für trockenes und/oder kühles Klima (Klimazone: Grün) gilt folgender Faktor:

Leistung in Klimazone "Blau" ca. x 1,2

Für warmes und/oder feuchtes Klima (Tropen; Klimazone: Rot) gilt folgender Faktor:

Leistung in Klimazone "Blau" ca. x 0,7

The compressor capacity figures relate to mild climate valid for Europe, large parts of South-East Asia, Northern Africa, parts of North- and South America (climate zone: Blue)

For dry and/or cold climate (climate zone: Green),

multiply the Blue zone figure with the following correction factor: approx. 1.2

For warm and/or wet climate (climate zone: Red),

multiply the Blue zone figure with the following correction factor: approx. 0.7

Les capacités indiquées se rapportent à un climat tempéré, valable pour l'Europe, certaines parties du Sud-Est asiatique, l'Afrique du Nord et du Sud, certaines parties de l'Amérique du Nord et du Sud (zone climatique: bleu).

Pour un climat sec et/ou frais (zone climatique: vert), il convient d'appliquer le facteur suivant :

Capacité en zone climatique "bleu" environ x 1,2

Pour un climat chaud et/ou humide (zones tropicales; zone climatique: rouge), il convient d'appliquer le facteur suivant:

Capacité en zone climatique "bleu" environ x 0,7

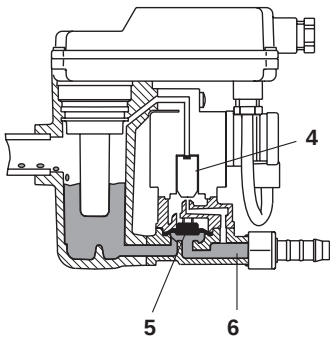
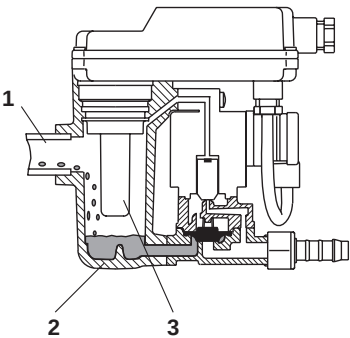
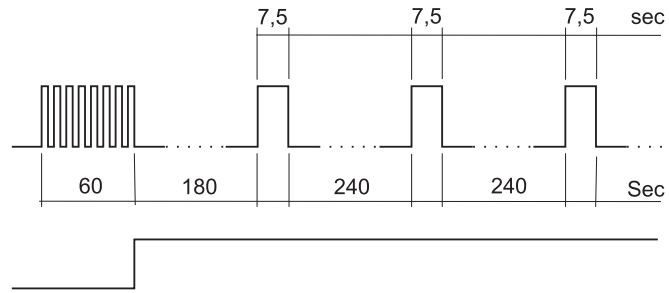
De aangegeven capaciteitsgegevens hebben betrekking op een gematigd klimaat en zijn geldig voor Europa, grote delen van Zuidoost-Azië, Noord- en Zuid-Afrika, delen van Noord- en Zuid-Amerika (klimaatzone: blauw).

Voor droog en/of koel klimaat (klimaatzone: groen) geldt de volgende factor:

vermogen in klimaatzone blauw ca. x 1,2

Voor warm en/of vochtig klimaat (de tropen; klimaatzone: rood) geldt de volgende factor:

vermogen in klimaatzone blauw ca. x 0,7

Funktion • Function Fonctionnement • Functiebeschrijving		deutsch						
		Das Kondensat strömt über die Zulaufleitung (1) in den ECO-DRAIN und sammelt sich im Gehäuse (2). Ein kapazitiv arbeitender Sensor (3) erfasst permanent den Füllstand und gibt ein Signal an die elektronische Steuerung sobald sich der Behälter gefüllt hat. Das Vorsteuerventil (4) wird betätigt und die Membrane (5) öffnet zur Kondensatausschleusung die Ablaufleitung (6). Ist der ECO-DRAIN geleert, wird die Ablaufleitung rechtzeitig wieder dicht verschlossen, bevor unnötige Druckluftverluste entstehen können.						
Alarm ☐ Valve ☐ Power ☒ TEST 1 Alarm ☐ Valve ☒ Power ☒ TEST 2 Alarm ☒ Valve ☐ Power ☒ TEST 3 Alarm ☐ Valve ☒ Power ☒ TEST 4		1 Betriebsbereitschaft Spannung liegt an 2 Ableitvorgang Ablaufleitung ist geöffnet 3 Störung Alarmmodus ist aktiviert 4 Test manuelle Entwässerung/Alarm Der Test-Taster dient zur Funktionskontrolle. <table><tr><th>Betätigung</th><th>Wirkung</th></tr><tr><td>ca. 2 sek.</td><td>manuelle Entwässerung</td></tr><tr><td>> 1 min</td><td>Alarmmodus</td></tr></table>	Betätigung	Wirkung	ca. 2 sek.	manuelle Entwässerung	> 1 min	Alarmmodus
Betätigung	Wirkung							
ca. 2 sek.	manuelle Entwässerung							
> 1 min	Alarmmodus							
Schaltfolge des Ventils im Alarmmodus Switching sequence of valve in alarm mode Séquence d'activation de la vanne en mode Alarme Schakelvolgorde van het ventiel tijdens alarmfase  Alarmmeldung über potentialfreien Kontakt Alarm signal via potential-free contact Signal d'alarme délivré sur le contact sans potentiel Alarmmelding via het potentiaalvrij contact		Stellt der Mikrocontroller eine Betriebsstörung fest, wird der Alarmmodus ausgelöst. Die Schaltfolge des Ventils (siehe Bild) dauert so lange an, bis die Ursache der Störung behoben ist (selbsttätig oder durch Wartung). Die rote LED blinkt während der Alarmfunktion. Mögliche Störungsursachern sind z.B.: • Fehler in der Installation • Unterschreiten des Minimaldruckes • zu hoher Kondensatanfall (Überlast) • verstopfte/gesperrte Ablaufleitung • extreme Schmutzpartikelmenge • eingefrorene Rohrleitungen Ist die Störung nicht innerhalb der ersten Minute behoben, wird eine Störmeldung ausgelöst (siehe Bild), die als potentialfreies Signal über das Alarmrelais abgegriffen wer den kann.						

english	français	nederlands																		
The condensate flows through the feed line (1) into the ECO-DRAIN unit and accumulates in the container (2). A capacitive sensor (3) continuously registers the liquid level and passes a signal to the electronic control as soon as the container is filled. The pilot valve (4) is then activated and the diaphragm (5) opens the outlet line (6) for discharging the condensate. When the ECO-DRAIN unit has been emptied, the outlet line is closed again quickly and tightly without wasting compressed air.	Amené dans le ECO-DRAIN par la conduite d'arrivée (1), le condensat est collecté dans le réservoir (2). Une sonde capacitive (3) surveille en permanence le niveau de remplissage et envoie un signal à la commande électronique dès que le réservoir est rempli. L'électrovanne pilote (4) est activée et la membrane (5) ouvre la conduite d'évacuation (6) pour l'éclusage du condensat. Dès que le ECO-DRAIN est vide, la conduite d'évacuation est à nouveau refermée avec une parfaite étanchéité, avant même que l'air comprimé ne puisse s'échapper.	Het kondensaat stroomt door de toevoerleiding (1) in de ECO-DRAIN en verzamelt zich in het reservoir (2). De capacatieve sensor (3) registreert permanent het kondensaatniveau en geeft een signaal aan de elektronica, zodra het reservoir gevuld is. De ventieleenheid (4) treedt hierdoor in werking en het membraan (5) wordt omhoog gedrukt. Het kondensaat kan hierdoor in de afvoerleiding (6) stromen. Als het reservoir van de ECO-DRAIN geleegd is, wordt de afvoer weer gesloten, voordat er onnodig verlies van dure perslucht kan plaats vinden.																		
1 Ready for operation Voltage is being applied 2 Discharge procedure Outlet line is open 3 Malfunction Alarm mode is activated 4 Test Manual drainage/alarm The test button is used for checking correct functioning. <table><tr><th>Pressing</th><th>Effect</th></tr><tr><td>approx. 2 sec</td><td>Manual drainage</td></tr><tr><td>> 1 min</td><td>Alarm mode</td></tr></table>	Pressing	Effect	approx. 2 sec	Manual drainage	> 1 min	Alarm mode	1 Prêt à fonctionner Tension d'alimentation présente 2 Phase de purge Conduite d'évacuation ouverte 3 Dysfonctionnement Mode Alarme activé 4 Test Purge manuelle/Alarme La touche Test sert à tester le fonctionnement. <table><tr><th>Action</th><th>Effet</th></tr><tr><td>environ 2 sec</td><td>Purge manuelle</td></tr><tr><td>> 1 min</td><td>Mode Alarme</td></tr></table>	Action	Effet	environ 2 sec	Purge manuelle	> 1 min	Mode Alarme	1 Bedrijfsklaar, de ECO-DRAIN staat onder spanning 2 Afvoerproces De afvoerleiding is geopend 3 Storing De alarmfase is geactiveerd 4 Test Handmatige afvoer/alarm De testschakelaar dient ter functiecontrole. <table><tr><th>Activiteit</th><th>Werking</th></tr><tr><td>ca. 2 sec</td><td>handmatige afvoer</td></tr><tr><td>> 1 min</td><td>alarmfase</td></tr></table>	Activiteit	Werking	ca. 2 sec	handmatige afvoer	> 1 min	alarmfase
Pressing	Effect																			
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> 1 min	Mode Alarme																			
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ca. 2 sec	handmatige afvoer																			
> 1 min	alarmfase																			
When the microcontroller registers a malfunction, the device will automatically change to the alarm mode. The switching sequence of the valve (see illustration) continues until the fault is cleared (automatically or through maintenance). The red LED flashes as long as the device is in the alarm mode. Malfunctioning could be caused by, e.g.: • Mistakes during installation • Dropping below the necessary minimum pressure • Excessive condensate quantities (overloading) • Blocked/shut off outlet line • Extreme amount of dirt particles • Frozen piping If the fault is not cleared within the first minute, a fault signal is triggered (see illustration) which can be picked off as a potential-free signal via the alarm relay.	Lorsque le microcontrôleur détecte une anomalie, il active le mode alarme. La séquence d'activation de la vanne (voir figure) persiste jusqu'à ce que le problème soit résolu (automatiquement ou par intervention de maintenance). La LED rouge clignote pendant la fonction d'alarme. Causes de dysfonctionnement possibles: • Défaut au niveau de l'installation • Pression minimale non atteinte • Trop de condensat (surcharge) • Ecoulement bouché ou obturé • Importantes quantités d'impuretés • Conduites gelées Si la panne n'est pas résolue en l'espace d'une minute, un signal d'alarme est émis (voir figure). Un signal sans potentiel est délivré par le relais d'alarme.	Indien de microprocessor een storing vaststelt, wordt de alarmfase in werking gesteld. De schakelvolgorde van het ventiel (zie afbeelding) duurt voort, zo lang tot de storing is opgelost (zelfstandig of door onderhoud). Gedurende de alarmfase knippert de rode LED. Mogelijke storingsoorzaken zijn b.v.: • Een installatiefout • De werkdruk ligt onder de min. druk • Overbelasting (te veel kondensaat) • Verstopte/afgesloten afvoerleiding • Extreme hoeveelheden vuildeeltjes • Bevroren leidingen Indien de storing niet binnen een minuut is verholpen, wordt een storing gemeld (zie afbeelding). Deze kan als potentiaalvrij signaal via het alarmrelais aan een centraal meldpunt worden doorgegeven.																		

ECO-DRAIN 12, 12 CO, 12 CO PN63
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Installation**Gefahr!
Druckluft!**

Durch Kontakt mit schnell oder schlagartig entweichender Druckluft oder durch berstende und/oder nicht gesicherte Anlagenteile besteht Gefahr schwerer Verletzungen oder Tod.

Maßnahmen:

- Max. Betriebsdruck nicht überschreiten (siehe Typenschild).
- **Wartungsarbeiten nur im drucklosen Zustand durchführen.**
- Nur druckfestes Installationsmaterial verwenden.
- Zulaufleitung fest verrohren. Ablaufleitung: kurzer, fixierter Druckschlauch an druckfestem Rohr.
- Verhindern Sie, dass Personen oder Gegenstände von Kondensat oder entweichender Druckluft getroffen werden können.

**Vorsicht!
Fehlfunktionen in der Anwendung!**

Durch fehlerhafte Installation und mangelhafte Wartung kann es zu Fehlfunktionen am ECO-DRAIN kommen. Nicht abgeleitetes Kondensat kann zu Schäden an Anlagen und in Fertigungsprozessen führen.

Maßnahmen:

- Eine funktionssichere Kondensatableitung optimiert direkt die Druckluftqualität.
- Zur Vermeidung von Schäden und Ausfällen bitte unbedingt beachten:
 - genaues Einhalten der bestimmungsgemäßen Verwendung und der Betriebsparameter des ECO-DRAIN im Zusammenhang mit dem Einsatzfall (siehe dazu Kapitel „Bestimmungsgemäße Verwendung“)
 - genaues Einhalten der Installations- und Betriebshinweise in dieser Anleitung
 - regelmäßige Wartung und Kontrolle des ECO-DRAIN nach den Hinweisen in dieser Betriebsanleitung

**Hinweis:**

Beachten Sie unbedingt alle aufgeführten Gefahren- und Warnhinweise.

Beachten Sie auch alle Vorschriften und Hinweise des Arbeits- und Brandschutzes am jeweiligen Installationsort.

Verwenden Sie grundsätzlich nur geeignetes und passendes Werkzeug und Material in ordnungsgemäßigem Zustand.

Verwenden Sie keine aggressiven Reinigungsmittel und ungeeignete Geräte, wie Hochdruckreiniger.

Beachten Sie, dass Kondensate aggressive und gesundheitsschädigende Bestandteile enthalten können. Deshalb sollte ein Hautkontakt vermieden werden.

Kondensat ist ein entsorgungspflichtiger Abfall, welcher in geeigneten Behältern aufgefangen, entsorgt oder aufbereitet werden muss.

Installation



Danger!
Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate)!
- **Only carry out service measures when the system is pressureless.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.



Caution!
Malfunctions in the application!

Through incorrect installation and insufficient maintenance, the ECO-DRAIN can malfunction. Condensate which is not discharged can lead to damage to plants and in manufacturing processes.

Measures:

- Fail-safe condensate discharge directly optimises the compressed-air quality.
- To prevent damage and failures, it is imperative
 - To comply with the provisions regarding proper use and with the operating parameters of the ECO-DRAIN in connection with the case of application (see chapter "Proper use").
 - To strictly adhere to the installation and operating advice in these instructions.
 - To maintain and check the ECO-DRAIN at regular intervals in accordance with the advice in these operating instructions.



Note:

It is imperative to observe all hazard statements and warnings listed here.

Please also observe all regulations and notes regarding the industrial safety and fire prevention at the respective place of installation.

As a matter of principle, only use suitable and appropriate tools and materials in a proper condition.

Do not use aggressive cleaners and improper devices such as high-pressure cleaners.

Please note that condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided.

Condensate is subject to mandatory waste disposal and must be collected in suitable containers, and disposed of or processed properly.

Installation


Danger !
Air comprimé !

Tout contact avec de l'air comprimé s'échappant rapidement ou de façon brutale ou tout contact avec des parties de l'installation présentant un risque d'éclatement peut causer de graves blessures ou entraîner la mort.

Mesures préventives :

- Ne pas dépasser la pression de service maximale (voir plaque signalétique).
- **Dépressuriser le purgeur avant toute intervention d'entretien ou de maintenance.**
- N'utiliser que du matériel d'installation résistant à la pression.
- La conduite d'amenée doit toujours être réalisée en tuyauterie rigide et fixe. Conduite d'évacuation : flexible de faible longueur, fixé et relié à une tuyauterie, tous deux résistant à la pression.
- Veillez à ce qu'aucune personne ni objet ne risque d'être touché par le condensat ou l'air comprimé qui s'échappe.


Prudence !
Dysfonctionnements au niveau de l'utilisation !

En cas d'installation incorrecte et de maintenance insuffisante, des dysfonctionnements peuvent apparaître au niveau du ECO-DRAIN.

Tout condensat non évacué risque d'endommager les installations et de porter atteinte aux processus de fabrication.

Mesures préventives :

- Le bon fonctionnement de la purge des condensats permet une optimisation directe de la qualité de l'air comprimé.
- Pour éviter tout endommagement et tout arrêt de production, il est impératif de respecter les consignes suivantes :
 - Respecter scrupuleusement les instructions pour une utilisation conforme à l'usage prévu et les paramètres de fonctionnement du ECO-DRAIN dans le contexte de son utilisation (consulter à cet effet le chapitre „Utilisation conforme à l'usage prévu“).
 - Respecter scrupuleusement toutes les instructions d'installation et d'utilisation communiquées dans cette notice.
 - Respecter scrupuleusement la périodicité de maintenance et de contrôle du ECO-DRAIN selon les indications de ce manuel d'utilisation.


Remarque :

Respectez impérativement toutes les informations relatives à un danger ou à un avertissement.

Respectez également toutes les prescriptions et consignes de sécurité relatives à la protection des travailleurs et à la protection incendie en vigueur au lieu d'installation en question.

Utilisez toujours l'outillage et le matériel appropriés et en bon état.

N'utilisez aucun produit de nettoyage agressif, ni d'appareils inadaptés, par exemple les nettoyeurs haute pression.

Notez bien que les condensats peuvent contenir des composants agressifs et néfastes pour la santé. C'est pourquoi, il est recommandé d'éviter tout contact avec la peau.

Les condensats sont soumis à la réglementation sur les déchets. Ils doivent être collectés dans des récipients appropriés, éliminés ou recyclés.

Installatie



Gevaar!
Perslucht!

Contact met perslucht die snel of abrupt ontsnapt of wegspringende en/of niet beveiligde delen van de installatie leveren gevaar op met zwaar letsel of dood tot gevolg.

Maatregelen:

- Overschrijd de maximale bedrijfsdruk niet (zie instructieplaat).
- **Verricht onderhoudswerkzaamheden uitsluitend in drukloze toestand.**
- Gebruik uitsluitend drukbestendig installatiemateriaal.
- Verbind de toevoerleiding vast met het buizensysteem. Afvoerleiding: bevestig een korte hogedrukslang aan de drukbestendige buis.
- Voorkom dat personen of voorwerpen geraakt kunnen komen door condensaat of ontsnappende perslucht.



Let op!
Storingen tijdens het gebruik!

Er kunnen storingen aan de ECO-DRAIN ontstaan als gevolg van een foutieve installatie en gebrekkig onderhoud.

Niet afgevoerd condensaat kan schade veroorzaken aan installaties en in productieprocessen.

Maatregelen:

- Een veilig functionerende condensaatafvoer optimaliseert direct de persluchtkwaliteit.
- Neem het volgende absoluut in acht om schade en uitval te voorkomen:
 - Correct opvolgen van de instructies voor doelmatig gebruik en van de bedrijfsparameters van de ECO-DRAIN afhankelijk van de gebruikssituatie (zie hiervoor hoofdstuk "Doelmatig gebruik")
 - Correct opvolgen van de installatie- en bedrijfsinstructies in deze handleiding
 - Regelmatig onderhoud en controle van de ECO-DRAIN volgens de instructies in deze gebruiksaanwijzing



Opmerking:

Neem alle opgesomde gevaar- en waarschuwingsinstructies absoluut in acht.

Neem ook alle voorschriften en instructies in acht in verband met de arbeidsomstandigheden en brandveiligheid op de respectievelijke installatieplek.

Gebruik in principe alleen maar geschikt en passend gereedschap en materiaal dat in goede staat is.

Gebruik geen agressieve reinigingsmiddelen en ongeschikte apparaten zoals hogedrukreinigers.

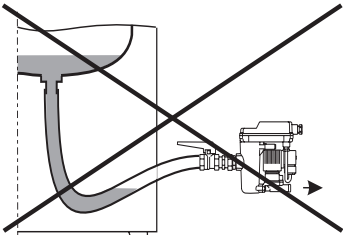
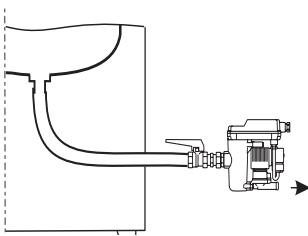
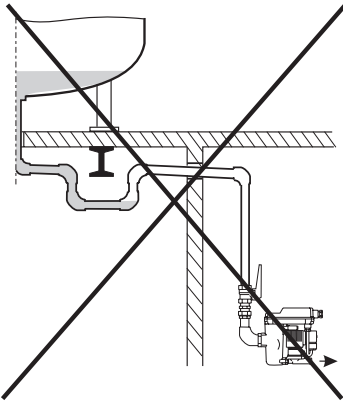
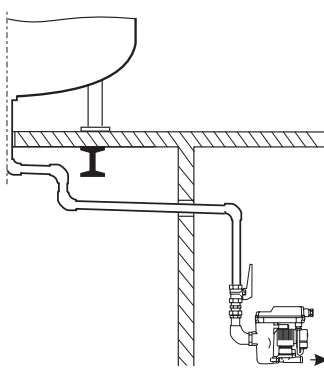
Let op! Condensaat kan agressieve bestanddelen bevatten die schadelijk kunnen zijn voor de gezondheid. Daarom moet contact met de huid worden vermeden.

Condensaat is afval dat verwijderd moet worden en in geschikte containers moet worden opgevangen, verwijderd of behandeld.

Installation • Installation Installation • Installatie		deutsch
		1. Zulaufrohr und Fitting mind. ½" (Innendurchmesser ≥13 mm (0.5"))! 2. Keine Filter im Zulauf! 3. Gefälle im Zulauf >1% ! 4. Nur Kugelventile verwenden! 5. Druck: mind. 0,8 bar (12 psi) bzw. 1,2 bar (18 psi)! Druck auf Typenschild ablesen. 6. Kurzer Druckschlauch! 7. Pro Meter Steigung in der Ablaufleitung, erhöht sich der erforderliche Mindestdruck um 0,1 bar (1.5 psi)! Ablaufleitung max. 5 m (17 feet) steigend! 8. Sammelleitung mind. ½" mit 1% Gefälle verlegen! 9. Bei Zulaufproblemen Entlüftungsleitung installieren.
falsch • wrong incorrect • onjuist	richtig • correct correct • juist	Beachten: Druckdifferenzen! Jede Kondensatanfallstelle muss separat entwässert werden!
		Beachten: Entlüftung! Bei nicht ausreichendem Gefälle im Zulauf oder anderen Zulaufproblemen muss eine Luftausgleichsleitung verlegt werden!
		Beachten: Prallfläche! Soll aus der Leitung direkt entwässert werden, ist eine Umlenkung des Luftstromes sinnvoll!

english	français	nederlands
1. Feed pipe and fitting at least ½"! (Inner diameter ≥13 mm (0.5")) 2. No filters in feed line 3. Slope in feed line > 1%! 4. Only use ball valves! 5. Pressure: min. 0.8 bar (12 psi) or 1.2 bar (18 psi)! Check type plate for correct pressure. 6. Short pressure hose! 7. For each metre of rising slope in the outlet line, the required minimum pressure will increase by 0,1 bar (1.5 psi). The rise of the outlet line must not exceed 5 metres (17 feet)! 8. Collecting line min. ½" with 1% slope 9. In the case of inflow problems, install venting line.	1. Tube d'amenée, au moins ½" ! (Diamètre intérieur ≥13 mm (0.5")) 2. Pas de filtre sur l'amenée ! 3. Pente de l'amenée >1% ! 4. Utiliser uniquement des vannes à boisseau sphérique ! 5. Pression : minimum 0,8 bar (12 psi) ou 1,2 bar (18 psi) ! Relever la pression sur la plaque. 6. Flexible pression de faible longueur! 7. Pour chaque mètre de pente montante sur la conduite d'évacuation, il faut augmenter la pression minimale requise de 0,1 bar (1.5 psi)! Evacuation: longueur max. de la partie montante : 5 m (17 feet) ! 8. Conduite collectrice : au minimum ½" avec 1% de pente! 9. La conduite d'écoulement doit être raccordée par un col de cygne sur la conduite collectrice	1. Toevoerleiding en fittingen minstens ½"! (Doorlaat diameter ≥13 mm (0.5")) 2. Geen filter in toevoerleiding monteren! 3. Toevoerleiding met verval monteren >1%! 4. Alleen kogelafsluiters gebruiken! 5. Druk: minimaal 0,8 bar (12 psi) resp. 1,2 bar (18 psi)! Druk is vermeld op typeplaatje 6. Korte hogedrukslang! 7. Per meter stijging in de afvoerleiding wordt de noodzakelijke minimumdruk verhoogd met 0,1 bar (1.5 psi)! Afvoerleiding max. 5 m (17 feet) omhoog-voeren! 8. Verzamelleiding minimaal ½" met minimaal 1% verval aanleggen! 9. By problemen met aanvoer drukvereffening installeren.
Note: Pressure differences! Each condensate source must be drained separately!	Important : différences de pression ! Chaque point de soutirage de condensat doit être purgé individuellement pour éviter le by-pass. Une purge continue ne serait plus possible dans ces conditions !	Belangrijk: Let op drukverschillen! Ieder afvoerpunt apart draineren. Het drukverschil tussen de afvoerpunten zorgt in de kondensaatafvoerleiding voor een by-pass stroming.
Note: Venting! If the feed line cannot be laid with sufficient slope or if there are other inflow problems, it will be necessary to install a venting line!	Important : équilibre d'air ! Si la pente de l'amenée n'est pas suffisante, il faut poser une conduite d'équilibre d'air !	Belangrijk: Ontluchten! Indien de toevoerleiding niet op afschot is gemonteerd of andere aanvoerproblemen, moet voor de toevoer een aparte ontluuchtingsleiding worden geïnstalleerd.
Note: Deflector area! If drainage is to take place directly from a line, it is advisable to arrange the piping so that the air flow is diverted.	Important : chicane ! Si la purge doit s'effectuer directement sur la tuyauterie, il faut prévoir une chicane pour que le condensat ne soit pas entraîné par le débit d'air comprimé !	Belangrijk: Diepste punt! Bij directe drainage in het leiding-systeem moet de ECO-DRAIN altijd op het diepste punt geïnstalleerd worden. Wij adviseren hiervoor een broekstuk te gebruiken.

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Installation • Installation Installation • Installatie		deutsch
falsch • wrong incorrect • onjuist	richtig • correct correct • juist	
		Beachten: kontinuierliches Gefälle! Wird ein Druckschlauch als Zulauf verwendet, Wassersack vermeiden!
		Beachten: kontinuierliches Gefälle! Auch bei Verrohrung der Zulaufleitung, Wassersack vermeiden.

english	français	nederlands
Note: Continuous slope It is important to avoid water pockets when using a pressure hose as a feed line!	Important : pente continue ! Si l'amenée est réalisée au moyen d'un flexible, il faut éviter toute "retenue d'eau" !	Belangrijk: Op afschot monteren! Wanneer een slang als toevoerleiding gebruikt wordt, mag er in geen geval een waterslot ontstaan!
Note: Continuous slope! Water pockets must also be avoided when laying a feed pipe.	Important : pente continue ! Si l'amenée est réalisée au moyen d'une tuyauterie rigide, il faut aussi éviter toute "retenue d'eau" !	Belangrijk: Continue verval! Ook bij het aanleggen van de afvoerleiding een waterslot vermijden.

Elektrische Installation**Gefahr!****Netzspannung!**

Durch Kontakt mit Netzspannung führenden nicht isolierten Teilen besteht Gefahr eines elektrischen Schlag mit Verletzung und Tod.

Maßnahmen:

- Bei elektrischer Installation alle geltenden Vorschriften einhalten (z.B. VDE 0100 / IEC 60364).
- **Wartungsarbeiten nur im spannungsfreien Zustand durchführen.**
- Alle elektrischen Arbeiten dürfen nur von befugtem Fachpersonal durchgeführt werden.
- **Bei AC-Versorgung muss in der Nähe eine zugängliche Trennvorrichtung vorgesehen werden (z.B. Netzstecker oder Schalter), der alle stromführenden Leiter trennt.**
- **Führt der potenzialfreie Kontakt berührungsgefährliche Spannungen, so ist auch hierfür eine entsprechende Trennvorrichtung vorzusehen.**
- Die bereitgestellte Spannung 24 VDC muss die Anforderungen für Funktionskleinspannungen mit sicherer Trennung (PELV) nach IEC 60364-4-41 erfüllen.

**Hinweis:**

Zwischen Anschlussklemmen KL 5 "±24 VDC" - KL 6 "±24 VDC" der VDC-Geräte und Gehäuse bzw. Kondensatanschlüssen besteht keine galvanische Trennung.

Bei Prüfungen, z.B. Schutzleiterprüfungen gemäß VDE 0701-0702 / IEC 85/361/CD, ist zu beachten, dass zwischen den berührbaren leitfähigen Teilen des Gerätes und dem Schutzleiterstützpunkt nur eine Verbindung zur Herstellung einer Funktionserdung und keine stromtragfähige Schutzverbindung besteht.

Die Kabelverschraubung leicht dichtend anziehen.

Potenzialfreier Kontakt

Über den potenzialfreien Kontakt kann das Alarmsignal weitergeleitet werden (z.B. an einen Leitstand). Der Umschaltkontakt kann z.B. im **Fail-safe-Modus** betrieben werden:

Liegt Betriebsspannung an und arbeitet der ECO-DRAIN störungsfrei ist das Alarmrelais angezogen. Der Arbeitskontakt (0.7 - 0.8) ist geschlossen.

Liegt keine Betriebsspannung an oder erfolgt eine Störmeldung fällt das Alarmrelais ab. Der Arbeitskontakt ist offen (Alarm).

Externer Test-Taster (optional)

Damit kann ferngesteuert vorhandenes Kondensat gezielt abgeleitet werden. Die normale Test-Taster-Funktion ist hier zusätzlich aus dem ECO-DRAIN herausgeführt. Wird der externe Kontakt geschlossen, öffnet das Ventil.

Zusätzliche Anleitung beachten!

Zwischen dem Schutzleiter-/PE-Anschluss und dem Rohrnetz ist keine Potenzialdifferenz zulässig. Gegebenenfalls ist ein Potenzialausgleich gemäß VDE 0100 / IEC 60364 vorzusehen.

Elektrical Installation



Danger!

Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **Service measures must only be undertaken when the system is deactivated!**
- All types of electrical work must be carried out by authorised and qualified personnel only.
- **At an AC supply, a reliably accessible separator must be provided close-by (e.g. power plug or switch), which separates all current-carrying conductors**
- **If the potential-free contact carries voltage that is dangerous in the case of contact, a corresponding separator must also be provided.**
- The provided 24 VDC voltage must meet the requirements for protective extra-low voltages (PELV) in accordance with IEC 60364-4-41.



Note:

Between terminals KL 5 "±24 VDC" and KL 6 "±24 VDC" of the VCD devices and housings or condensate connections, there is no galvanic isolation.

As regards tests, for example protective conductor tests in accordance with VDE 0701-0702 / IEC 85/361/CD, it must be observed that there is only a connection for the establishment of a functional earthing between the touchable conductive parts of the device and the protective conductor base, and no protective connection capable of carrying current.

Tighten the threaded cable connection with a slightly sealing effect.

Potential-free contact

Via the potential-free contact, the alarm signal can be transmitted (i.e. to a control system). The switch-over contact can be operated in the **fail-safe mode**.

For example, if supply voltage is applied and if the ECO-DRAIN functions trouble-free, the alarm relay is activated. The normally-open contact (0.7-0.8) is closed.

If no supply voltage is applied or if a trouble indication occurs, the alarm relay is released. The normally-open contact is open (alarm).

External test button (optional)

With this button, accumulated condensate can be discharged systematically via remote control. Here, the normal test-button function is additionally led out of the ECO-DRAIN. When the external contact is closed, the valve opens. Observe the additional instructions!

Between the protective conductor/PE connection and the piping, a potential difference is not admissible. If required, potential equalisation in accordance with VDE 0100 / IEC 60364 must be provided for.

Installation électrique



Danger !

Tension électrique !

Tout contact avec des éléments non isolés et sous tension présente un risque de choc électrique pouvant provoquer des blessures ou entraîner la mort.

Mesures préventives :

- Lors de la réalisation de l'installation électrique, respecter toutes les prescriptions en vigueur (p. ex. VDE 0100 / IEC 60364).
- **Avant toute intervention d'entretien ou de maintenance, mettre le purgeur HORS TENSION.**
- Toute intervention électrique doit être réalisée exclusivement par un personnel qualifié et habilité.
- **En cas d'alimentation en courant alternatif CA, il est impératif de prévoir à proximité un dispositif de sectionnement accessible (par ex. une fiche secteur ou un interrupteur), qui coupe tous les conducteurs véhiculant le courant électrique.**
- **Si le contact sans potentiel véhicule des tensions électriques dangereuses en cas de contact, il est impératif de prévoir un dispositif de sectionnement, comme décrit plus haut.**
- La tension continue de 24 VDC mise à disposition doit répondre aux exigences pour les Très Basses Tensions de Protection (T.B.T.P.) avec séparation sécurisée par rapport à la tension secteur (PELV = Protection by Extra Low Voltage) selon la norme IEC 60364-4-41.



Remarque :

Entre les bornes KL 5 "±24 VDC" - KL 6 "±24 VDC" des appareils VDC et le corps ou les raccords des conduites de condensat, il n'y a pas d'isolation galvanique.

Lors des vérifications, par ex. les tests du conducteur de protection selon VDE 0701-0702 / IEC 85/361/CD, il faut veiller à ce que – entre les éléments conducteurs et accessibles de l'appareil et le point d'appui du conducteur de protection – il n'y ait qu'une liaison permettant de réaliser une mise à la terre fonctionnelle et non une liaison de protection capable de véhiculer un courant.

Serrer légèrement le presse-étoupe de façon à assurer l'étanchéité.

Contact sans potentiel

Le contact sans potentiel peut être utilisé pour réaliser un report d'alarme (par exemple, vers un système de supervision ou de télésurveillance). Le contact inverseur peut être exploité par exemple en **mode fail-safe** (sécurité positive) :

Si la tension de service est présente et si le ECO-DRAIN fonctionne normalement, le relais d'alarme est excité. Le contact de travail (7 - 8) est fermé.

Si la tension d'alimentation n'est pas présente ou si un signal d'alarme est émis, le relais d'alarme est désexcité. Le contact de travail est ouvert (Alarme).

Bouton Test externe (en option)

Celui-ci permet de commander à distance, au moment voulu, la purge du condensat collecté. La fonction normale du bouton Test est ainsi reportée du ECO-DRAIN vers un contact externe. Lorsque ce contact est fermé, la vanne s'ouvre.

Suivre les instructions de la notice séparée !

Aucune différence de potentiel n'est admissible entre la borne PE du conducteur de protection et le réseau de conduites. Le cas échéant, il faut prévoir une liaison équipotentielle selon VDE 0100 / IEC 60364.

Elektrische installatie



Gevaar!

Netspanning!

Contact met niet-geïsoleerde delen die de netspanning voeren, levert gevaar op door elektrische schok met letsel en dood tot gevolg.

Maatregelen:

- Volg bij elektrische installatie alle geldende voorschriften op (bijv. VDE 0100 / IEC 60364).
- **Verricht onderhoudswerkzaamheden uitsluitend in drukloze toestand.**
- Alle elektrische werkzaamheden mogen uitsluitend worden uitgevoerd door bevoegd vakpersoneel.
- **Bij de wisselstroomvoeding moet een toegankelijke scheidingsinrichting binnen handbereik worden voorzien (bijv. netsnoer of schakelaar) die alle stroomgeleiders van elkaar scheidt.**
- **Als het potentiaalvrije contact tot spanningen leidt die aanrakingsgevaar opleveren, dan moet hiervoor ook een geschikte scheidingsinrichting worden voorzien.**
- De opgebrachte spanning 24 VDC moet voldoen aan de eisen voor functionele laagspanning met veilige scheiding (PELV) volgens IEC 60364-4-41.



Opmerking:

Tussen de aansluitklemmen KL 5 "±24 VDC" - KL 6 "±24 VDC" van de VDC-apparaten en behuizingen resp. condensaat-aansluitingen bestaat geen galvanische scheiding.

Bij metingen, bijv. bij aardleidingmetingen volgens VDE 0701-0702 / IEC 85/361/CD, dient u rekening te houden met het feit dat tussen de geleidende delen van het apparaat die aangeraakt kunnen worden en het aardleidingsteunpunt alleen een verbinding is voor het maken van een functieaarding en geen veiligheidsverbinding die stroom kan dragen.

Draai de schroefverbinding van de kabel aan totdat deze lichtjes afdicht.

Potentiaalvrij contact

Via het potentiaalvrije contact kan het alarmsignaal worden doorgegeven (bijv. naar een schakelpaneel). Het wisselcontact kan bijv. in de **fail-safe-modus** worden gebruikt:

Als de bedrijfsspanning is ingeschakeld en de ECO-DRAIN storingsvrij werkt, is het alarmrelais aangetrokken. Het werkcontact (7 - 8) is gesloten.

Als de bedrijfsspanning niet is ingeschakeld of als er een storingsmelding volgt, valt het alarmrelais af. Het werkcontact is open (alarm).

Externe testknop (optioneel)

Hiermee kan aanwezig condensaat op afstand doelgericht worden afgeleid. De normale testknopfunctie zit in dit geval ook aan de buitenkant. Als het externe contact wordt gesloten, gaat het ventiel open.

Kijk in de extra gebruiksaanwijzing!

Tussen de aansluiting van de beschermingsgeleider/PE-aansluiting en het buizensysteem mag er geen potentiaalverschil zijn. Eventueel moet een potentiaalvereffening worden verricht volgens VDE 0100 / IEC 60364.

Elektrische Installation • Electrical installation Installation électrique • Elektrische installatie	deutsch																																										
	• Zulässige Netzspannung unbedingt auf Typenschild (G) ablesen! • Installationsarbeiten gemäß VDE 0100 / IEC 60364 ausführen. • Nicht unter Spannung installieren. • Haubendeckel (A) nach Lösen der 4 Schrauben (B) demontieren. • Netzteilplatine (C) aus Haubendeckel (A) nach Lösen der Schraube (D) herausnehmen. • Kabel für Spannungsversorgung (E) und potenzialfreien Kontakt (F) durch Kabelverschraubungen führen. • Klemmenbelegung <table border="1"> <tr> <td colspan="3">VAC Spannungsversorgung</td> </tr> <tr> <td>0.0</td> <td>L</td> <td></td> </tr> <tr> <td>0.1</td> <td>N</td> <td></td> </tr> <tr> <td>0.2</td> <td>PE</td> <td></td> </tr> <tr> <td colspan="3">24 VDC Spannungsversorgung</td> </tr> <tr> <td colspan="3">+24 VDC (0V)</td> </tr> <tr> <td colspan="3">0V (+24 VDC)</td> </tr> </table> Bei 24 VDC-Betrieb darf nicht Masse auf + 24 VDC gelegt werden, da geräteintern Minus auf Gehäusepotential liegt. Die bereitgestellte Spannung 24 VDC muss die Anforderungen für Funktionskleinspannungen mit sicherer Trennung (PELV) nach IEC 60364-4-41 erfüllen.	VAC Spannungsversorgung			0.0	L		0.1	N		0.2	PE		24 VDC Spannungsversorgung			+24 VDC (0V)			0V (+24 VDC)																							
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	• Potenzialfreien Kontakt (F) an Klemmen 0.6 - 0.7 (bei Störung geschlossen) oder 0.7 - 0.8 (bei Störung geöffnet) anschließen. • Kabel (E + F) straffen und Kabelverschraubungen festschrauben • Netzteilplatine (C) im Haubendeckel (A) mit Schraube (D) befestigen. • Kabelstecker (H) auf Steuerplatine (K) aufstecken. • Falls irrtümlich die Einzellitzen aus dem Kabelstecker geschraubt wurden, gilt folgende Zuordnung: 1.0 = braun, 1.1 = blau, 2.0 = schwarz																																										
	<table border="1"> <tr> <td>0.8</td> <td></td> <td>normally open</td> </tr> <tr> <td>0.7</td> <td></td> <td>common</td> </tr> <tr> <td>0.6</td> <td></td> <td>normally closed</td> </tr> <tr> <td>0.2</td> <td>PE</td> <td>Earth/Ground</td> </tr> <tr> <td>0.1</td> <td>N</td> <td>Neutral</td> </tr> <tr> <td>0.0</td> <td>L</td> <td>Phase</td> </tr> </table> <table border="1"> <tr> <td>0.8</td> <td></td> <td>normally open</td> </tr> <tr> <td>0.7</td> <td></td> <td>common</td> </tr> <tr> <td>0.6</td> <td></td> <td>normally closed</td> </tr> <tr> <td>6</td> <td>±24V</td> <td>+24 VDC (0V)</td> </tr> <tr> <td>5</td> <td>±24V</td> <td>0V (+24 VDC)</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> Beachten! Netzteilplatine (C) sitzt gedreht (über Kopf) im Haubendeckel (A). Im lastfreien Betrieb kann an den Klemmen 1.0 und 1.1 (Kabelstecker (H)) eine Spannung von bis zu 36 VDC gemessen werden.	0.8		normally open	0.7		common	0.6		normally closed	0.2	PE	Earth/Ground	0.1	N	Neutral	0.0	L	Phase	0.8		normally open	0.7		common	0.6		normally closed	6	±24V	+24 VDC (0V)	5	±24V	0V (+24 VDC)									
0.8		normally open																																									
0.7		common																																									
0.6		normally closed																																									
0.2	PE	Earth/Ground																																									
0.1	N	Neutral																																									
0.0	L	Phase																																									
0.8		normally open																																									
0.7		common																																									
0.6		normally closed																																									
6	±24V	+24 VDC (0V)																																									
5	±24V	0V (+24 VDC)																																									

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Kontrolle und Wartung**Gefahr!
Druckluft!**

Durch Kontakt mit schnell oder schlagartig entweichender Druckluft oder durch berstende und/oder nicht gesicherte Anlagenteile besteht Gefahr schwerer Verletzungen oder Tod.

Maßnahmen:

- Max. Betriebsdruck nicht überschreiten (siehe Typenschild).
- **Wartungsarbeiten nur im drucklosen Zustand durchführen.**
- Nur druckfestes Installationsmaterial verwenden.
- Zulaufleitung fest verrohren. Ablaufleitung: kurzer, fixierter Druckschlauch an druckfestem Rohr.
- Verhindern Sie, dass Personen oder Gegenstände von Kondensat oder entweichender Druckluft getroffen werden können.

**Gefahr!
Netzspannung!**

Durch Kontakt mit Netzspannung führenden nicht isolierten Teilen besteht Gefahr eines elektrischen Schlag mit Verletzung oder Tod.

Maßnahmen:

- Bei elektrischer Installation alle geltenden Vorschriften einhalten (z.B. VDE 0100 / IEC 60364).
- Wartungsarbeiten nur im spannungsfreien Zustand durchführen.
- Alle elektrischen Arbeiten dürfen nur von befugtem Fachpersonal durchgeführt werden.

**Vorsicht!
Fehlfunktionen in der Anwendung!**

Durch fehlerhafte Installation und mangelhafte Wartung kann es zu Fehlfunktionen am ECO-DRAIN kommen. Nicht abgeleitetes Kondensat kann zu Schäden an Anlagen und in Fertigungsprozessen führen.

Maßnahmen:

- Eine funktionssichere Kondensatableitung optimiert direkt die Druckluftqualität.
- Zur Vermeidung von Schäden und Ausfällen bitte unbedingt beachten:
 - genaues Einhalten der bestimmungsgemäßen Verwendung und der Betriebsparameter des ECO-DRAIN im Zusammenhang mit dem Einsatzfall (siehe dazu Kapitel „Bestimmungsgemäße Verwendung“)
 - genaues Einhalten der Installations- und Betriebshinweise in dieser Anleitung
 - regelmäßige Wartung und Kontrolle des ECO-DRAIN nach den Hinweisen in dieser Betriebsanleitung

**Hinweis:**

Beachten Sie unbedingt alle aufgeführten Gefahren- und Warnhinweise.

Beachten Sie auch alle Vorschriften und Hinweise des Arbeits- und Brandschutzes am jeweiligen Installationsort.

Verwenden Sie grundsätzlich nur geeignetes und passendes Werkzeug und Material in ordnungsgemäßem Zustand.

Verwenden Sie keine aggressiven Reinigungsmittel und ungeeignete Geräte, wie Hochdruckreiniger.

Beachten Sie, dass Kondensate aggressive und gesundheitsschädigende Bestandteile enthalten können. Deshalb sollte ein Hautkontakt vermieden werden.

Kondensat ist ein entsorgungspflichtiger Abfall, welcher in geeigneten Behältern aufgefangen, entsorgt oder aufbereitet werden muss.

Supervision and maintenance



Danger!
Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate)!
- **Only carry out service measures when the system is pressureless.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.



Danger!
Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- Service measures must only be undertaken when the system is deactivated!
- All types of electrical work must be carried out by authorised and qualified personnel only.



Caution!
Malfunctions in the application!

Through incorrect installation and insufficient maintenance, the ECO-DRAIN can malfunction. Condensate which is not discharged can lead to damage to plants and in manufacturing processes.

Measures:

- Fail-safe condensate discharge directly optimises the compressed-air quality.
- To prevent damage and failures, it is imperative
 - To comply with the provisions regarding proper use and with the operating parameters of the ECO-DRAIN in connection with the case of application (see chapter "Proper use").
 - To strictly adhere to the installation and operating advice in these instructions.
 - To maintain and check the ECO-DRAIN at regular intervals in accordance with the advice in these operating instructions.



Note:

It is imperative to observe all hazard statements and warnings listed here.

Please also observe all regulations and notes regarding the industrial safety and fire prevention at the respective place of installation.

As a matter of principle, only use suitable and appropriate tools and materials in a proper condition.

Do not use aggressive cleaners and improper devices such as high-pressure cleaners.

Please note that condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided.

Condensate is subject to mandatory waste disposal and must be collected in suitable containers, and disposed of or processed properly.

Contrôle et maintenance



Danger !
Air comprimé !

Tout contact avec de l'air comprimé s'échappant rapidement ou de façon brutale ou tout contact avec des parties de l'installation présentant un risque d'éclatement peut causer de graves blessures ou entraîner la mort.

Mesures préventives :

- Ne pas dépasser la pression de service maximale (voir plaque signalétique).
- **Dépressuriser le purgeur avant toute intervention d'entretien ou de maintenance.**
- N'utiliser que du matériel d'installation résistant à la pression.
- La conduite d'amenée doit toujours être réalisée en tuyauterie rigide et fixe. Conduite d'évacuation : flexible de faible longueur, fixé et relié à une tuyauterie, tous deux résistant à la pression.
- Veillez à ce qu'aucune personne ni objet ne risque d'être touché par le condensat ou l'air comprimé qui s'échappe.



Danger !
Tension électrique !

Tout contact avec des éléments non isolés et sous tension présente un risque de choc électrique pouvant provoquer des blessures ou entraîner la mort.

Mesures préventives :

- Lors de la réalisation de l'installation électrique, respecter toutes les prescriptions en vigueur (p. ex. VDE 0100 / IEC 60364).
- Avant toute intervention d'entretien ou de maintenance, mettre le purgeur HORS TENSION.
- Toute intervention électrique doit être réalisée exclusivement par un personnel qualifié et habilité.



Prudence !
Dysfonctionnements au niveau de l'utilisation !

En cas d'installation incorrecte et de maintenance insuffisante, des dysfonctionnements peuvent apparaître au niveau du ECO-DRAIN.

Tout condensat non évacué risque d'endommager les installations et de porter atteinte aux processus de fabrication.

Mesures préventives :

- Le bon fonctionnement de la purge des condensats permet une optimisation directe de la qualité de l'air comprimé.
- Pour éviter tout endommagement et tout arrêt de production, il est impératif de respecter les consignes suivantes :
 - Respecter scrupuleusement les instructions pour une utilisation conforme à l'usage prévu et les paramètres de fonctionnement du ECO-DRAIN dans le contexte de son utilisation (consulter à cet effet le chapitre „Utilisation conforme à l'usage prévu“).
 - Respecter scrupuleusement toutes les instructions d'installation et d'utilisation communiquées dans cette notice.
 - Respecter scrupuleusement la périodicité de maintenance et de contrôle du ECO-DRAIN selon les indications de ce manuel d'utilisation.



Remarque :

Respectez impérativement toutes les informations relatives à un danger ou à un avertissement.

Respectez également toutes les prescriptions et consignes de sécurité relatives à la protection des travailleurs et à la protection incendie en vigueur au lieu d'installation en question.

Utilisez toujours l'outillage et le matériel appropriés et en bon état.

N'utilisez aucun produit de nettoyage agressif, ni d'appareils inadaptés, par exemple les nettoyeurs haute pression.

Notez bien que les condensats peuvent contenir des composants agressifs et néfastes pour la santé. C'est pourquoi, il est recommandé d'éviter tout contact avec la peau.

Les condensats sont soumis à la réglementation sur les déchets. Ils doivent être collectés dans des récipients appropriés, éliminés ou recyclés.

Controle en onderhoud


Gevaar!
Perslucht!

Contact met perslucht die snel of abrupt ontsnapt of wegspringende en/of niet beveiligde delen van de installatie leveren gevaar op met zwaar letsel of dood tot gevolg.

Maatregelen:

- Overschrijd de maximale bedrijfsdruk niet (zie instructieplaat).
- **Verricht onderhoudswerkzaamheden uitsluitend in drukloze toestand.**
- Gebruik uitsluitend drukkbestendig installatiemateriaal.
- Verbind de toevoerleiding vast met het buizensysteem. Afvoerleiding: bevestig een korte hogedrukslang aan de drukkbestendige buis.
- Voorkom dat personen of voorwerpen geraakt kunnen komen door condensaat of ontsnappende perslucht.


Gevaar!
Netspanning!

Contact met niet-geïsoleerde delen die de netspanning voeren, levert gevaar op door elektrische schok met letsel en dood tot gevolg.

Maatregelen:

- Volg bij elektrische installatie alle geldende voorschriften op (bijv. VDE 0100 / IEC 60364).
- Verricht onderhoudswerkzaamheden uitsluitend in spanningsvrije toestand.
- Alle elektrische werkzaamheden mogen uitsluitend worden uitgevoerd door bevoegd vakpersoneel.


Let op!
Storingen tijdens het gebruik!

Er kunnen storingen aan de ECO-DRAIN ontstaan als gevolg van een foutieve installatie en gebrekkig onderhoud.

Niet afgevoerd condensaat kan schade veroorzaken aan installaties en in productieprocessen.

Maatregelen:

- Een veilig functionerende condensaatafvoer optimaliseert direct de persluchtkwaliteit.
- Neem het volgende absoluut in acht om schade en uitval te voorkomen:
 - Correct opvolgen van de instructies voor doelmatig gebruik en van de bedrijfsparameters van de ECO-DRAIN afhankelijk van de gebruikssituatie (zie hiervoor hoofdstuk "Doelmatig gebruik")
 - Correct opvolgen van de installatie- en bedrijfsinstructies in deze handleiding
 - Regelmatig onderhoud en controle van de ECO-DRAIN volgens de instructies in deze gebruiksaanwijzing


Hinweis:

Neem alle opgesomde gevaar- en waarschuwingeninstructies absoluut in acht.

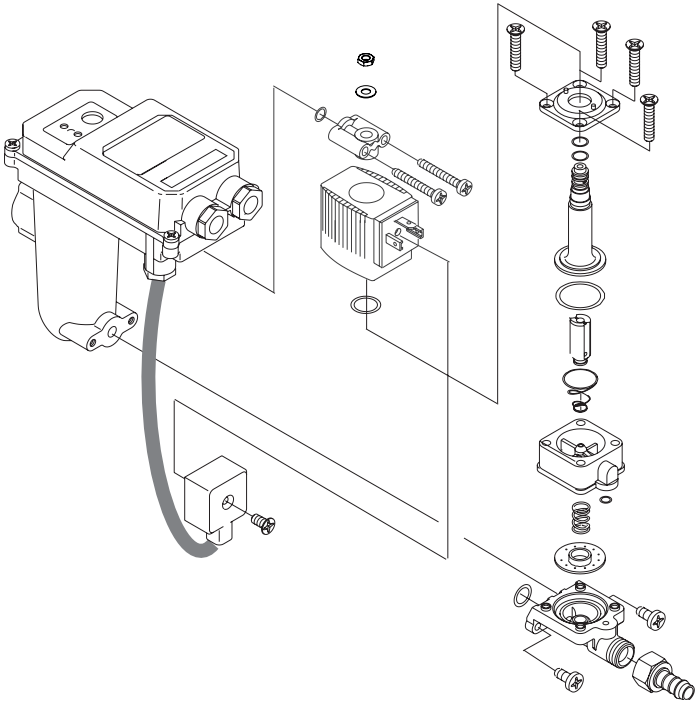
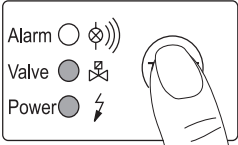
Neem ook alle voorschriften en instructies in acht in verband met de arbeidsomstandigheden en brandveiligheid op de respectievelijke installatieplek.

Gebruik in principe alleen maar geschikt en passend gereedschap en materiaal dat in goede staat is.

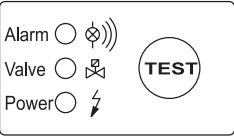
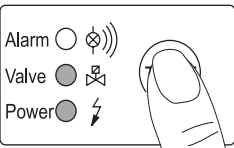
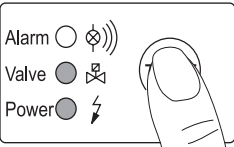
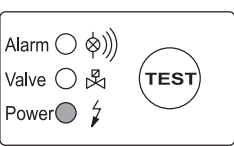
Gebruik geen agressieve reinigingsmiddelen en ongeschikte apparaten zoals hogedrukreinigers.

Let op! Condensaat kan agressieve bestanddelen bevatten die schadelijk kunnen zijn voor de gezondheid. Daarom moet contact met de huid worden vermeden.

Condensaat is afval dat verwijderd moet worden en in geschikte containers moet worden opgevangen, verwijderd of behandeld.

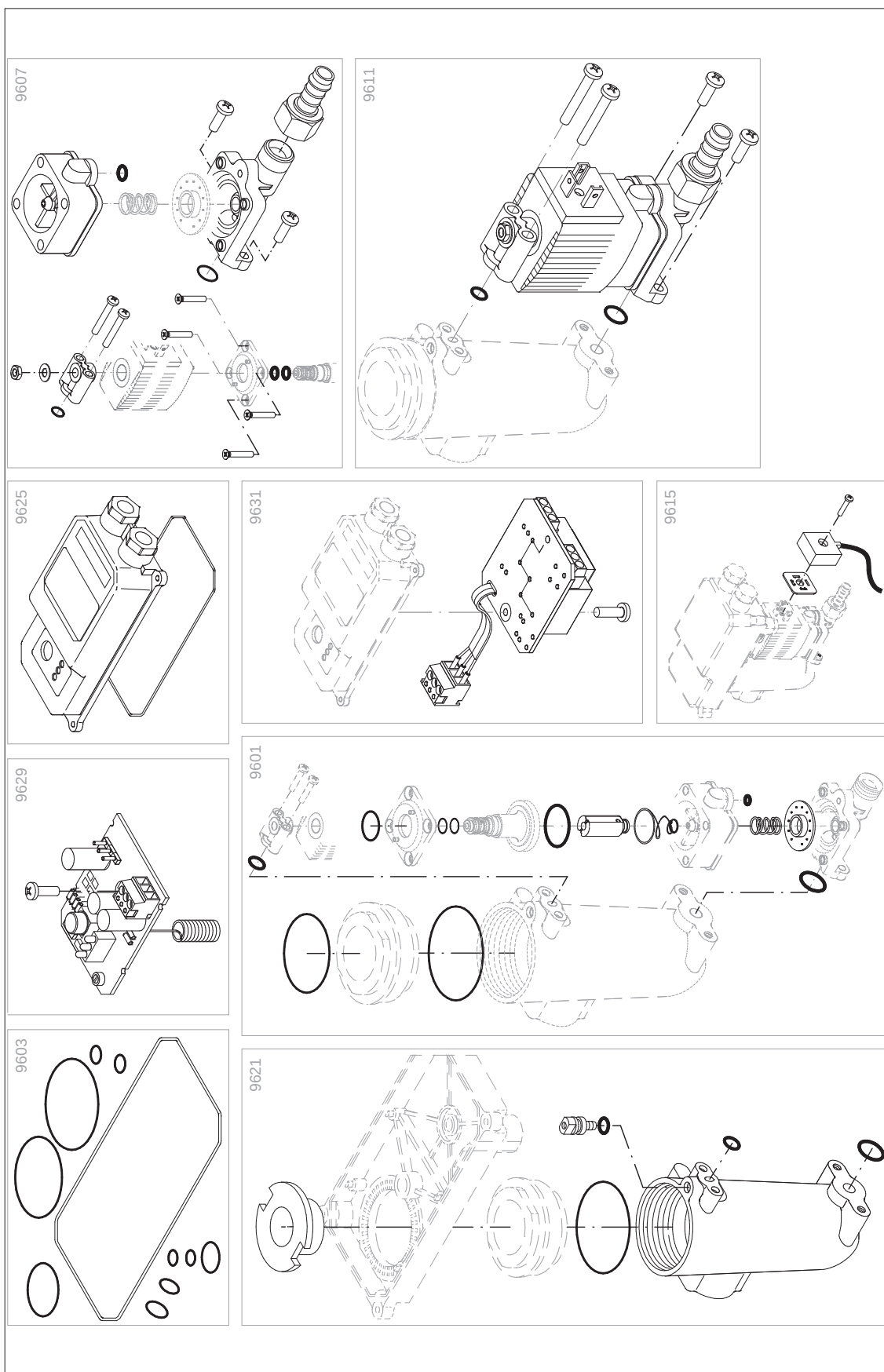
Wartung • Maintenance • Entretien • Onderhoud	deutsch
	<u>Empfehlung zur Wartung:</u> • Jährlich Gehäuse und Ventil reinigen • Jährlich Verschleißteile ersetzen
	<u>Funktionstest des ECO-DRAIN:</u> • Test-Taster ca. 2 sek. betätigen. • Ventil öffnet zur Kondensatableitung <u>Überprüfung der Störmeldung:</u> • Kondensatzulauf absperren • Test-Taster mind. 1 Minute betätigen • rote LED blinkt (nach 1 Minute) • Alarmsignal wird durchgeschaltet

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<u>Maintenance recommendation:</u> • Housing and valve should be cleaned once a year. • Replace wearing parts once a year.	<u>Recommandations pour l'entretien :</u> • 1 fois par an, nettoyer le boîtier et la soupape • 1 fois par an, remplacer les pièces d'usure	<u>Advies voor onderhoud:</u> • Jaarlijks behuizing en ventiel reinigen • Jaarlijks preventief onderhoud plegen
<u>Functional test of ECO-DRAIN device:</u> • Briefly press test button 2 sec. • Valve opens for condensate discharge. <u>Checking of alarm signal:</u> • Shut off condensate inflow. • Press test button for at least 1 minute. • Red LED flashes (after 1 minute). • Alarm signal is being relayed.	<u>Test de fonctionnement du ECO-DRAIN</u> • Pression brève sur la touche Test 2 s • La soupape s'ouvre pour la purge <u>Vérification du signal d'alarme :</u> • Obturer l'arrivée de condensat • Presser la touche Test pendant 1 minute au moins • La LED rouge clignote (après 1 minute) • Le signal d'alarme est activé	<u>Functietest van de ECO-DRAIN:</u> • Testschakelaar 2 seconden indrukken • Ventiel opent voor kondensaatafvoer <u>Controle van (externe) storingsmelder:</u> • Kondensaattoevoer afsluiten • Testschakelaar 1 minuut indrukken • Rode LED knippert (na 1 minuut) • Alarmsignaal wordt doorgeschakeld
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Fehlersuche • Trouble shooting Recherche de panne • Storingsoorzaken	deutsch
 keine LED leuchtet No LED lighting up Aucune LED n'est allumée Geen enkele LED brandt	<u>Mögliche Ursachen:</u> • Spannungsversorgung fehlerhaft • Netzteilplatine defekt • Steuerplatine defekt - Spannung auf Typenschild ablesen - Spannung auf Netzteilplatine an Klemmen 0.0 - 0.1 - 0.2 prüfen. - 24 VDC-Spannung auf Steuerplatine an Klemmen 1.0 - 1.1 prüfen (ohne Last bis 36 VDC messbar) - Steckerverbindung/Flachbandkabel prüfen
 Test-Taster ist betätigt, aber keine Kondensatableitung Pressing of test button, but no condensate discharge La touche Test est actionnée, mais sans purge du condensat De testknop is ingedrukt, maar er is geen kondensaatafvoer	<u>Mögliche Ursachen:</u> • Zu- und/oder Ablaufleitung abgesperrt oder verstopft • Verschleiß • Steuerplatine defekt • Magnetventil defekt - Zu- und Ablaufleitung kontrollieren - Verschleißteile austauschen - Prüfen, ob Ventil hörbar öffnet (Test-Taster mehrmals betätigen) - 24 VDC-Spannung auf Steuerplatine an Klemmen 3.0 - 3.1 - 3.2 prüfen (ohne Last bis 36 VDC messbar)
 Kondensatableitung nur wenn Test-Taster betätigt ist Condensate discharge only when test button is being pressed Purge du condensat uniquement si la touche Test est actionnée Kondensaat wordt alleen afgevoerd als de testknop is ingedrukt	<u>Mögliche Ursachen:</u> • Zulaufleitung ohne ausreichendes Gefälle • zu hoher Kondensatanfall • Fühlerrohr sehr stark verschmutzt • Mindestdruck unterschritten - Zulaufleitung mit Gefälle verlegen - Luftausgleichsleitung installieren - Fühlerrohr reinigen - Mindestdruck sicherstellen oder Low Pressure- oder Vakuumableiter installieren
 Gerät bläst permanent ab Device keeps blowing off air L'appareil refoule de l'air en permanence De ECO-DRAIN blaast continue af	<u>Mögliche Ursachen:</u> • Steuerluftleitung verstopft • Verschleiß - Ventileinheit komplett reinigen - Verschleißteile austauschen - Fühlerrohr reinigen

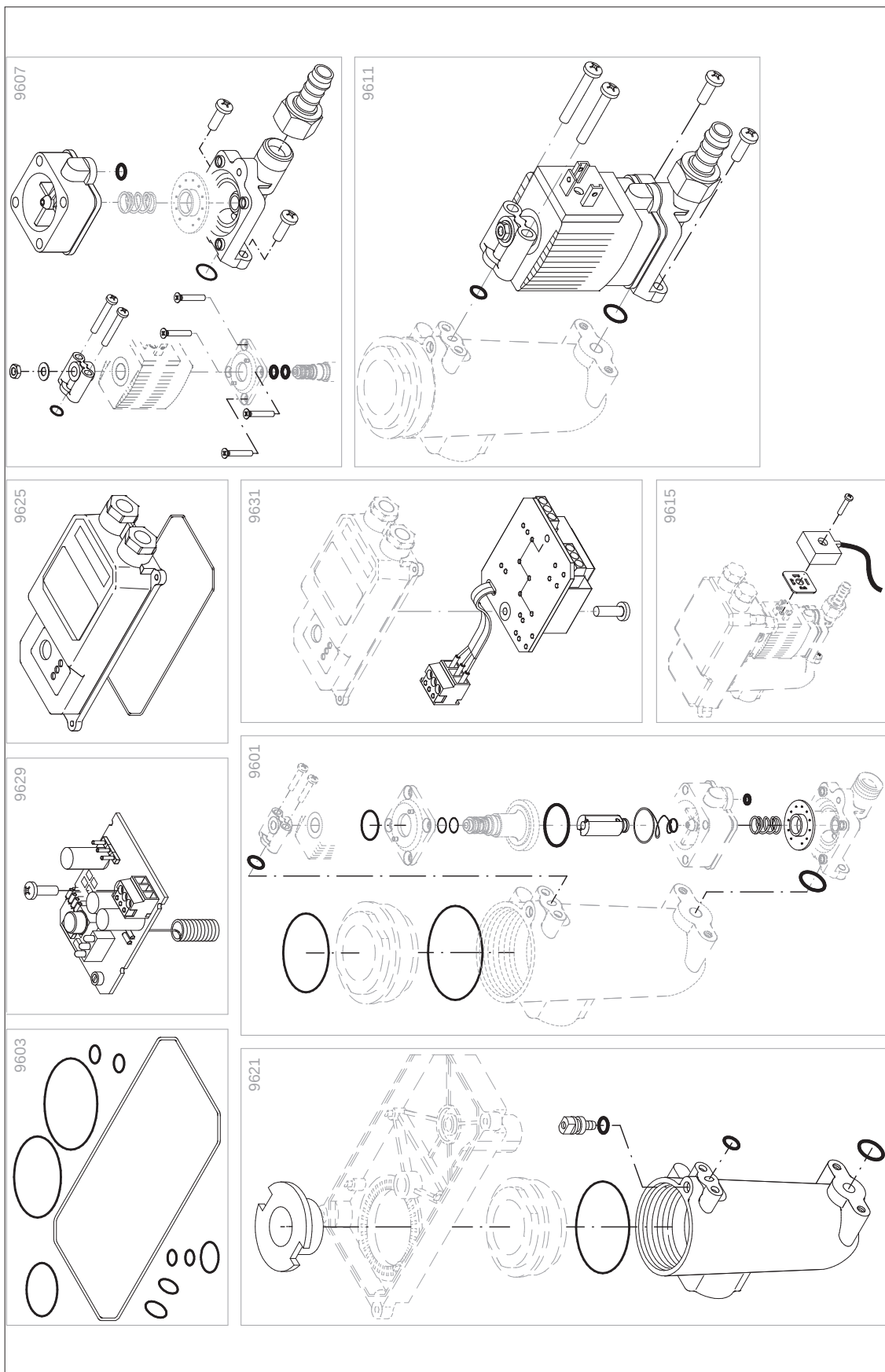
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<u>Possible causes:</u> • Power supply faulty • Power supply board defective • Control PCB defective - Check voltage on type plate. - Check voltage on power supply board at terminals 0.0 - 0.1 - 0.2. - Check 24 VDC voltage on control PCB at terminals 1.0 - 1.1 (without load up to 36 VDC may be measured) - Check plug connection/ribbon cable	<u>Origines possibles :</u> • Défaut d'alimentation électrique • Carte d'alimentation défectueuse • Carte de commande défectueuse - Relever la tension sur la plaque - Vérifier la tension sur la carte d'alimentation, aux bornes 0.0 - 0.1 - 0.2. - Vérifier la tension de 24 VDC sur la carte de commande, aux bornes 1.0 - 1.1 (mesurable sans charge jusqu'à 36 VDC) - Vérifier liaison enfichable/câble en nappe	<u>Mogelijke oorzaken:</u> • Spanning onjuist aangesloten • Voedingsprint defect • Besturingsprint defect - Spanning op typeplaatje aflezen - Spanning op voedingsprint op contact 0.0 - 0.1 - 0.2 controleren. - 24 VDC-spanning op de besturingsprint op contact 1.0 - 1.1 controleren (onbelast tot 36 VDC mogelijk) - Stekkerverbinding/flatcable controleren
<u>Possible causes:</u> • Feed and/or outlet line shut off or blocked • Wear • Control PCB defective • Solenoid valve defective - Check feed line and outlet line - Replace worn parts - Check if valve opens audibly (press test button several times) - Check 24 VDC voltage on control PCB at terminals 3.0 - 3.1 - 3.2 (without load up to 36 VDC may be measured)	<u>Origines possibles :</u> • Conduites d'arrivée et/ou d'évacuation obturées ou bouchées • Usure • Carte de commande défectueuse • Electrovanne défectueuse - Contrôler l'arrivée et l'évacuation - Remplacer les pièces d'usure - Vérifier si l'ouverture de la soupape est perceptible (Presser plusieurs fois la touche Test) - Vérifier les 24 VDC sur la carte de commande, aux bornes 3.0 - 3.1 - 3.2. (mesurable sans charge jusqu'à 36 VDC)	<u>Mogelijke oorzaken:</u> • Toe- en/of afvoerleiding afgesloten of verstopt • Onderdelen aan vervanging toe • Besturingsprint defect • Magneetventiel defect - Toe- en afvoerleiding controleren - Onderdelen vervangen - Testen, of het ventiel hoorbaar opent (testknop meerdere malen indrukken) - 24 VDC-spanning op besturingsprint op contact 3.0 - 3.1 - 3.2 controleren. (onbelast tot 36 VDC mogelijk)
<u>Possible causes:</u> • Feed line with insufficient slope • Excessive condensate quantities • Sensor tube extremely dirty • Dropping below necessary minimum pressure - Lay feed line with adequate slope - Install venting line - Clean sensor tube - Ensure minimum pressure, otherwise install low-pressure or vacuum condensate drain	<u>Origines possibles :</u> • Conduite d'arrivée avec pente insuffisante • Trop de condensat produit • Tube de sonde fortement encrassé • Pression minimale non atteinte - Réaliser l'arrivée avec une pente - Installer une conduite d'équilibrage d'air - Nettoyer le tube de sonde - Assurer la pression minimale ou installer un purgeur Low Pressure ou à dépression	<u>Mogelijke oorzaken:</u> • Toevoerleiding heeft onvoldoende verval • Te grote hoeveelheid condensaat • Voeler zeer sterk vervuild • Minimale werkdruk te laag - Toevoerleiding onder afschot monteren - Ontluchtingsleiding installeren - Voeler reinigen - Voldoen aan de minimale werkdruk of een lagedruk- of vacuüm-ECO-DRAIN installeren.
<u>Possible causes:</u> • Control air line blocked • Wear - Clean entire valve unit - Replace worn parts - Clean sensor tube	<u>Origines possibles :</u> • Conduite d'équilibrage d'air bouchée • Usure - Nettoyer entièrement le module soupape - Remplacer les pièces d'usure - Nettoyer le tube sonde	<u>Mogelijke oorzaken:</u> • Stuurluchtleiding verstopt • Onderdelen aan vervanging toe - Ventieleenheid compleet reinigen - Onderdelen vervangen - Voeler reinigen

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	Legende	KAESER KOMPRESSOREN																																	
	Kondensatableiter	SEL-4330_01 D																																	
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Bitte geben Sie bei der Ersatzteilbestellung Material- und Seriennummer der Anlage sowie Positionsnummer und Bezeichnung der Ersatzteile an. Vor und bei Ausführung aller Arbeiten sind die Sicherheits- und Servicehinweise in der Betriebsanleitung der Maschine zu beachten!																																			
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Item	Description	Option																																	
9601	Maintenance kit, condensate drain																																		
9603	Condensate drain gasket kit																																		
9607	Repair kit, control valve																																		
9611	Repair kit, condensate drain																																		
9615	Right-angle plug																																		
9601	Housing																																		
9623	Housing cover																																		
9625	Protection hood																																		
9629	Control board																																		
9631	Condensate drain mains adapter																																		
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering. Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!																																			

ECO-DRAIN 12, 12 CO, 12 CO PN63
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français

	Légende	KAESER KOMPRESSOREN
	Purgeur de condensat	SEL-4330_01 F

No. Repère	Désignation	Option
9601	Kit entretien Purg. condensat	
9603	Kit de joints Purg. condensat	
9607	Kit réparation Vanne de régul.	
9611	Kit révision Purg. condensat	
9615	Fiche coudée	
9601	Boîtier	
9623	Couvercle de boîtier	
9625	Capot de protection	
9629	Platine de réglage	
9631	Bloc d'alim. Purg. de condens.	

Indiquer sur chaque commande de pièces de rechange la référence et le No. de série de l'appareil, de même que le No. de repère et la désignation de la pièce de rechange.

Avant et pendant l'exécution des travaux, lire et observer impérativement les consignes de sécurité et de maintenance données dans la notice d'entretien de la machine!

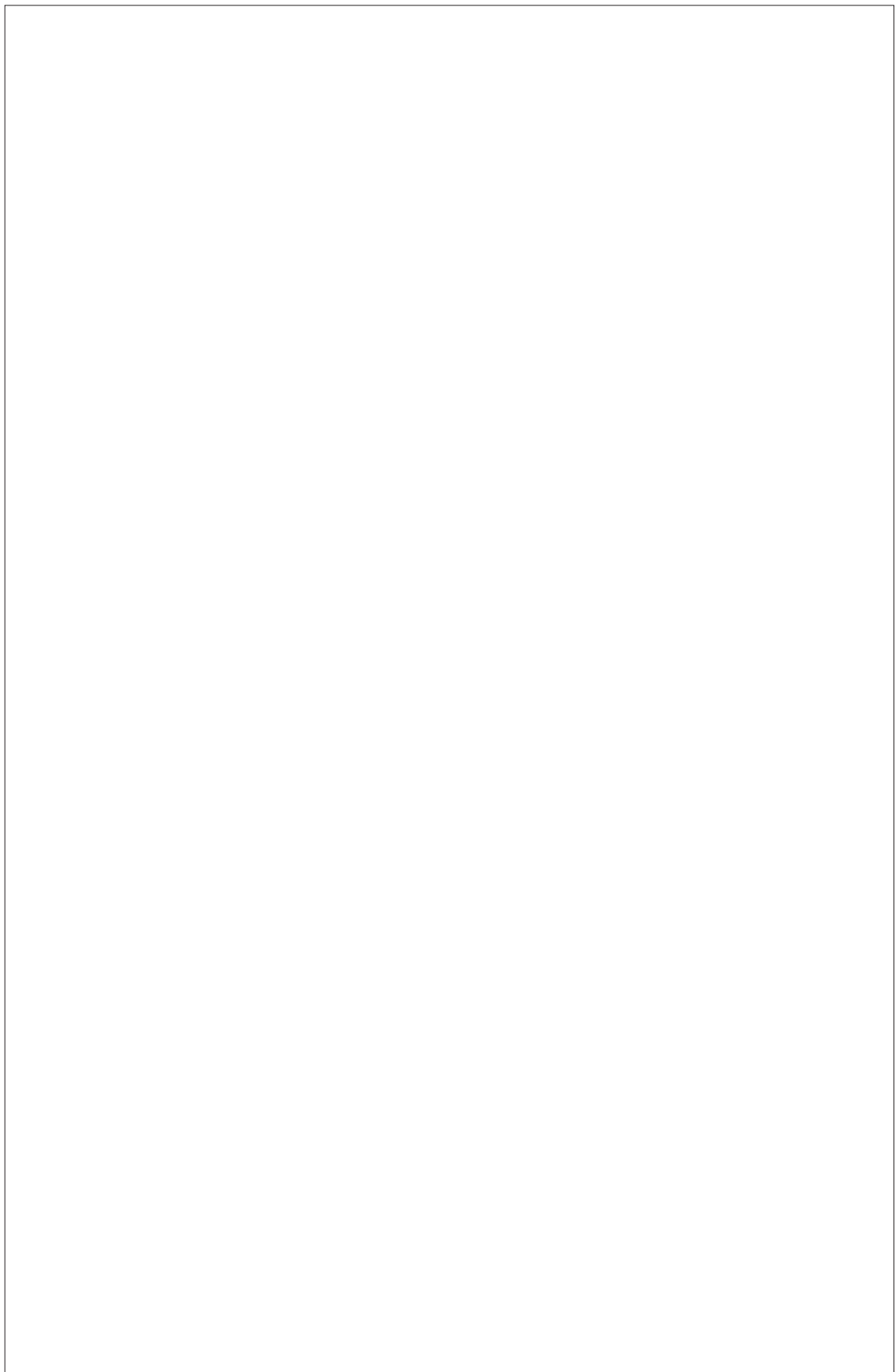
nederlands

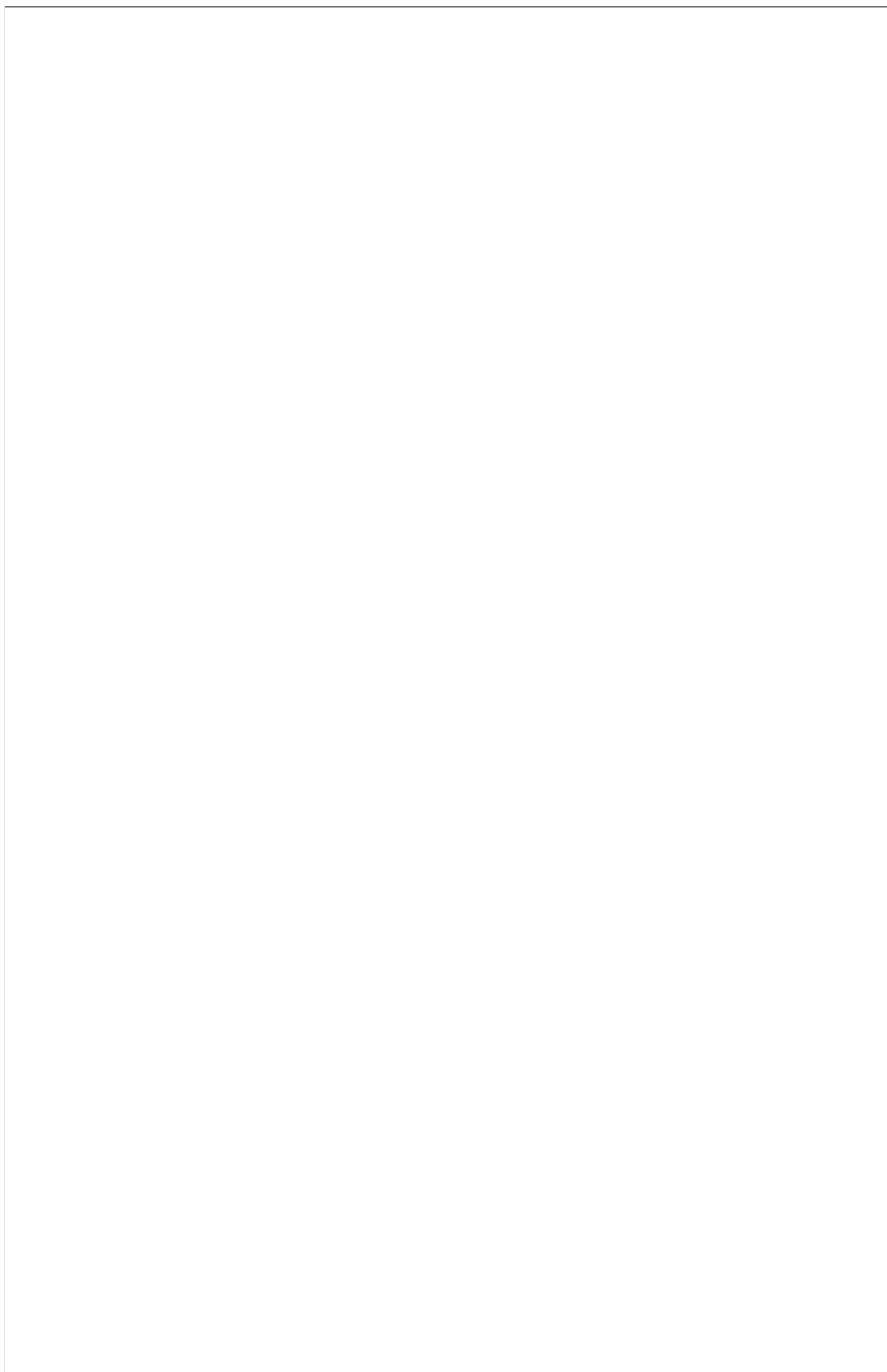
	Legende	KAESER KOMPRESSOREN
	Condensaataftap	SEL-4330_01 NL

Pos.nr.	Benaming	Option
9601	Onderhoudsset condensaataftap	
9603	Dichtingsset condensaataftap	
9607	Reparatieset stuurventiel	
9611	Revisieset condensaataftap	
9615	Haakse stekker	
9601	Huis	
9623	Huisdeksel	
9625	Beschermkap	
9629	Sturingsprintplaat	
9631	Voedingseenheid condens.-aftap	

Geef voor het bestellen van onderdelen artikel- en serienummer van de machine evenals nummer en benaming van het onderdeel op.

Voor en tijdens het uitvoeren van werkzaamheden moeten alle veiligheids- en serviceinstructies in het bedrijfsvoorschrift nageleefd worden!





ECO-DRAIN 12, 12 CO, 12 CO PN63

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EU-Konformitätserklärung

Wir erklären hiermit, dass die nachfolgend bezeichneten Produkte den Anforderungen der einschlägigen Richtlinien und technischen Normen entsprechen. Diese Erklärung bezieht sich nur auf die Produkte in dem Zustand, in dem sie von uns in Verkehr gebracht wurden. Nicht vom Hersteller angebrachte Teile und/oder nachträglich vorgenommene Eingriffe bleiben unberücksichtigt.

Produktbezeichnung:	Kondensatableiter
Modelle:	ECO-DRAIN 12, 12 CO, 12 CO PN63, 13, 13 CO, 13 CO PN 25, 13 CO PN 40, 14, 14 CO, 14 CO PN25, 16 CO Die Produkte werden hergestellt für: KAESER KOMPRESSOREN SE Carl-Kaeser-Str. 26 96450 Coburg
Spannungsvarianten:	24 VDC, 24 VAC, 48 VAC, 100 VAC, 115 VAC, 200 VAC, 230 VAC
Max. Betriebsdruck:	16 bar(g) (Standard) 25 bar(g) (nur ECODRAIN 13 CO PN25 und ECODRAIN 14 CO PN25) 40 bar(g) (nur ECODRAIN 13 CO PN40) 63 bar(g) (nur ECODRAIN 12 PN63)
Produktbeschreibung und Funktion:	Kondensatableiter zur elektronisch niveaugeregelten Ableitung von Kondensat im Druckluftnetz.

Niederspannungs-Richtlinie 2014/35/EU

Angewandte harmonisierte Normen: EN 61010-1:2010
 Kapitel 1-14, 16, 17, Anhang A-D, F, G, I-L, ZA

Die Geräte mit einer Betriebsspannung von 24 VDC, 24 VAC und 48 VAC fallen nicht in den Anwendungsbereich der Niederspannungs-Richtlinie.

EMV-Richtlinie 2014/30/EU

Angewandte harmonisierte Normen: Störaussendung
 EN 55011:2009 + A1:2010, Gruppe 1, Klasse B
 Störfestigkeit
 EN 61326-1:2013 (Industriebereich)

Druckgeräte-Richtlinie 2014/68/EU (nur ECO-DRAIN 16 CO)

Angewandtes
 Konformitätsbewertungsverfahren: Modul A

ROHS II-Richtlinie 2011/65/EU

Die Vorschriften der Richtlinie 2011/65/EU zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten werden erfüllt.

Der Hersteller trägt die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung.

Neuss, 24.01.2018

Unterzeichnet für und im Namen von:

BEKO TECHNOLOGIES GMBH

i.V. Christian Riedel

Leiter Qualitätsmanagement International

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EU Declaration of Conformity

We hereby declare that the products named below comply with the stipulations of the relevant directives and technical standards. This declaration only refers to products in the condition in which they have been placed into circulation. Parts which have not been installed by the manufacturer and/or modifications which have been implemented subsequently remain unconsidered.

Product designation:	Condensate drain
Type:	ECO-DRAIN 12, 12 CO, 12 CO PN63, 13, 13 CO, 13 CO PN 25, 13 CO PN 40, 14, 14 CO, 14 CO PN25, 16 CO The products are manufactured for: KAESER KOMPRESSOREN SE Carl-Kaeser-Str. 26 96450 Coburg
Supply voltage versions:	24 VDC, 24 VAC, 48 VAC, 100 VAC, 115 VAC, 200 VAC, 230 VAC
Maximum operating pressure:	16 bar(g) (Standard) 25 bar(g) (only ECODRAIN 13 CO PN25 and ECODRAIN 14 CO PN25) 40 bar(g) (only ECODRAIN 13 CO PN40) 63 bar(g) (only ECODRAIN 12 PN63)
Product description and function:	Condensate drain for the electronically level-controlled discharge of condensate in the compressed-air system.

Low Voltage Directive 2014/35/EU

Applied harmonised standards: EN 61010-1:2010
 Kapitel 1-14, 16, 17, Appendix A-D, F, G, I-L, ZA
 The devices with working voltage of 24 VDC, 24 VAC and 48 VAC are not in the scope of the Low-Voltage Directive.

EMC Directive 2014/30/EU

Applied harmonised standards: Emission
 EN 55011:2009 + A1:2010, Group 1, class B
 Immunity
 EN 61326-1:2013 (industrial areas)

Pressure Equipment Directive 2014/68/EU (only ECO-DRAIN 16 CO)

Applied conformity assessment procedure: Module A
 Category: I
 Description of the pressure device: Container device for fluids of Group 2

RoHS II Directive 2011/65/EU

The products meet the requirements laid down in European Directive 2011/65/EU concerning the restriction of the use of certain hazardous substances in electrical and electronic devices.

The manufacturer shall have sole responsibility for issuing this declaration of conformity.

Signed for and on behalf of:

Neuss, 24/01/2018

BEKO TECHNOLOGIES GMBH



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Technische Änderungen und Irrtümer vorbehalten.
Subject to technical changes without prior notice; errors not excluded.
Sous réserve de modifications techniques et d'erreurs typographiques.
Technische veranderingen en vergissingen voorbehouden.
eco-drain_12_manual_d-e-f-nl_01-046_v02

