

Operator manual

Portable Rotary Screw Compressor

MOBILAIR M120 SIGMA CONTROL SMART

No.: 902435 03 E

Manufacturer:

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Original instructions
/KKW/M120 2.03 en SBA-MOBILAIR

20241021 092312

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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:

- Certificate of acceptance / pressure vessel operating manual
- Declaration of Conformity in accordance with the applicable directive
- Chassis operating instructions (where applicable).
- SIGMA CONTROL SMART user manual

Missing documents can be requested from KAESER.

- Ensure that all documents are complete and observe the instructions contained within them.
- Please ensure that you provide the data from the nameplate when ordering documents.

1.3 Copyright

This operating manual is protected by copyright. Any queries regarding the use or duplication of this documentation should be referred to KAESER. Correct use of information will be fully supported.

1.4 Symbols and labels

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

1.4.1 Warnings

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

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

Signal word	Meaning	Consequences of non-compliance
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

1 Regarding this document

1.4 Symbols and labels

Signal word	Meaning	Consequences of non-compliance
CAUTION	Warns of a potentially dangerous situation	May result in a moderate physical injury

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

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

Example:



DANGER

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

The possible consequences of ignoring a warning are shown here.

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

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

Warning notes referring to a sub-section or the subsequent 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.

The word "WARNING" indicates that death or severe injury may result from ignoring the warning.

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

2. Always read and comply with warning instructions.

1.4.2 Potential damage warnings

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

Damage warnings have only one danger level, identified with this signal word:

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

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

Example:



NOTICE

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

Potential effects when ignoring the warning are indicated here.

- The protective measures against the damages are shown here.

- Carefully read and fully comply with warnings against damages.

1.4.3 Other alert notes and their symbols

This symbol indicates particular important information.

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

Precondition Here you will find conditional requirements necessary to carry out the task.
The conditions relevant to safety shown here will help you to avoid dangerous situations.

➤ This symbol is placed by lists of actions comprising one step of a task.

1. In process instructions with several steps ...
2. ... the sequence of steps is numbered.

Result Shows the expected conclusion of the previous action.

Option da ➤ Information relating to one option only is marked with an option code (e.g., "option da" means that this section is only valid for machines with the air treatment components "aftercooler and centrifugal separator"). Option codes used in this operating manual are explained in chapter 2.3.



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

The cause is named in the help text ...

➤ ... as is a solution.



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

Further information Further subjects are introduced here.

2 Technical Specifications

2.1 Nameplate

The model designation and important technical information are given on the machine's nameplate. The nameplate is located on the outside of the machine (see illustration in chapter 13.1).

➤ Enter here the nameplate data as a reference:

Feature	Value
Vehicle identity no.	
Permissible total weight	
Permissible coupling load	
Permissible axle load	
Portable compressor	
Material no.	
Serial no.	
Year of manufacture	
Total weight	
Lifting point load capacity	
Rated engine power	
Engine speed	
Maximum working pressure	

Tab. 3 Nameplate

2.2 Vehicle identification number

The vehicle identification number (VIN) is the only unmodifiable and therefore the most important identification feature on the machine.

The vehicle identification number remains associated with the machine throughout the entire duration of its service life. The vehicle identification number is stamped into the bodywork of the machine.

Further information For the location of the VIN stamp, see chapter 13.1.

2.3 Options – options label

A list of the options fitted to your machine helps to relate the information in this service manual. Options fitted to the machine are listed on the options label (code letters).

The nameplate is to be found:

- on the outside of the machine,
- on the front (see chapter 13.1)



The following table lists all possible options. Only the codes for those options fitted appear on the nameplate.

da _ _ dd _	<p>* r1 - r5 = place holders for chassis options:</p> <ul style="list-style-type: none"> ■ r1 = rb; rc; rd ■ r3 = rm; ro ■ r4 = rr; rs; rt ■ r5 = rw; rx
_ _ _ _	
fa _ _ _ _	
_ _ _ _ hd _	
_ _ _ _	
ba bb _ _ _ _	
la lb _ _ _ _	
_ _ _ _	
_ ob _ od oe	
_ _ _ _	
_ _ _ _	
r1 r2 r3 r4 r5	
ta tb tc _ te	
_ _ _ _	

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Tab. 4 Extract from the options label

➤ Take a list of fitted options from the options label and enter the fitted options as reference.

2.3.1 Option da, dd
Air treatment

Option	Option code	Supplied?
Aftercooler and cyclone separator	da	
Filter combination	dd	

Tab. 5 Air treatment options

2.3.2 Option fa
Air distributor

Option	Option code	Supplied?
Direct air flow	fa	

Tab. 6 Compressed air distributor option

2.3.3 Option hd
Non-return function

Option	Option code	Supplied?
Check valve (with Option dd)	hd	

Tab. 7 Non-return function options

2.3.4 Option ba
Low temperature equipment

Option	Option code	Supplied?
Low temperature equipment	ba	

Option	Option code	Supplied?
Engine coolant pre-heating	bb	

Tab. 8 Low temperature equipment options

2.3.5 Option la, lb Equipment for fire hazard areas

Option	Option code	Available?
Spark arrestor	la	
Spark arrestor and engine air intake shut-off valve (automatic/manual closing)	lb	

Tab. 9 Optional equipment for fire hazard areas

2.3.6 Option ob, od Automatic engine start/stop

Option	Option code	Available?
Automatic engine start/stop	ob	
Trickle charging for starter batteries	od	

Tab. 10 Automatic engine start/stop

2.3.7 Option rc/ro/rs, rc/ro/rr, rb/rm/rs, rw, rx Chassis



Chassis are defined by a combination of several option codes, as follows: *Design/axle load/height adjustment/service brake*

Example: *rc/ro/rs* means

GB chassis without height adjustment, with overrun brake

Chassis:

Chassis	Code	Supplied?
Version (rb, rc):		
EU chassis	rb	
GB chassis	rc	
Height adjustment (rm, ro):		
With height adjustment	rm	
Without height adjustment	ro	
Service brake (rs, rr):		
With overrun brake	rs	
Without service brake	rr	

Tab. 11 Chassis options

Stationary frame:

Chassis	Option code	Supplied?
Stationary (rw, rx):		
on skids	rw	
on base frame	rx	

Tab. 12 Options, stationary frame

2.3.8 Option ta, tb, tc, te Lighting

Option	Option code	Available?
None (stationary)	ta	
Reflective warning triangle	tb	
EG - 12 V	tc	
USA - 12 V (DOT conformity)	te	

Tab. 13 Lighting options

2.3.9 Option oe Sealed floor pan

Option	Option code	Available?
Sealed floor pan	oe	

Tab. 14 Closed floor pan option

2.3.10 Option oc TELEMATICS

Option	Option code	Supplied?
TELEMATICS	oc	

Tab. 15 TELEMATICS

2.4 Machine (without options)

2.4.1 Sound pressure level [dB(A)]

Measurement as per ISO 3744
 Measuring distance (hemisphere): 10 m

Sound pressure level	M 120.1
Sound pressure level [dB(A)]	83

Tab. 16 Sound pressure level [dB(A)]

2.4.2 Tightening torque

2.4.2.1 Tightening torques for screws



Overview:

- Standard values for M4–M8 screws
 - Surface finish: Galvanised (shiny).
 - Standard values for M10–M24 screws
 - Surface finish: Zinc flake coating (matte).
- Set the torque as appropriate for the surface finish and friction coefficient.



PLEASE NOTE:

Torque values for screw connections on the chassis may differ from these guidelines! The correct torque values can be found in the separate chassis user manual.

Standard values for M4–M8 screws with steel grade 8.8:

Thread	M4	M5	M6	M8
Torque [Nm]	3.0	5.9	10.0	24.5

Surface finish: Galvanised (shiny).

Standards based on VDI 2230.

Tab. 17 Torques for M4–M8 screws

Standard values for M10–M24 screws with steel grade 8.8:

Thread	M10	M12	M14	M16	M20	M24
Torque [Nm]	40	70	105	160	320	550

Surface finish: Zinc flake coating (matte).

Standards based on VDI 2230.

Tab. 18 Torques for M10–M24 screws

2.4.3 Ambient conditions

Positioning	Limit value
Maximum altitude amsl* [m]	1000
Minimum ambient temperature [°C]	–10
Maximum ambient temperature [°C]	+50

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

Tab. 19 Ambient conditions

2.4.4 Additional specifications according to the machine's operating licence

For specifications according to the machine's operating licence, such as:

- dimensions,

- track width,
- footprint,

are to be found in the dimensioned drawing in chapter 13.3.



The dimensional drawings also show the position of the following inlets and outlets:

- Cooling air inlet
- Cooling air outlet
- Compressed air outlet
- Exhaust

2.5 Chassis

2.5.1 Chassis options

- See the technical data relating to the chassis in the separate document "Chassis Operating Manual".

2.6 Machines with stationary frame design

2.6.1 Option rw, rx

Mass of machines with stationary frame design

Actual mass of individual machines are dependent on equipment fitted (see machine nameplate).

- Enter the actual overall weight* from the nameplate as reference.

Option	rw	rx
Type stationary frame design	Skids	Frame
Actual total weight [kg]*		

* Enter here for reference, the actual total weight taken from the nameplate.

Tab. 20 Mass of the machine

2.7 Compressor

2.7.1 Variable pressure flow rate control (pV control)

Overview:

- Maximum machine working pressure
- Rated system pressure and flow rate

Maximum machine working pressure:

Max. working pressure [bar]	10.3	14
SIGMA airend	27.1–G	27.1–G

Max. working pressure [bar]	10.3	14
Setting range, rated system pressure [bar(g)]	6.00 - 10.3	14

Tab. 21 Maximum working pressure

Rated system pressure and flow rate:


Definition of flow rate: Continuous delivery volume relative to intake conditions.
 Flow rate in accordance with ISO 1217:2009, Annex D

Pressure level 1 (8.6 - 10.3 bar):

Measuring point	Maximum working pressure (Rated pressure) [bar]	Flow rate [m ³ /min]
a1	8.6	12.2
a2	10.3	11.6

Tab. 22 Flow rate dependent on rated system pressure (pressure level 1)

Pressure level 2 (14 bar):

(Pressure level without pV control)

Measuring point	Maximum working pressure (Rated pressure) [bar]	Flow rate [m ³ /min]
a1	14	10.2

Tab. 23 Flow rate (pressure level 2)

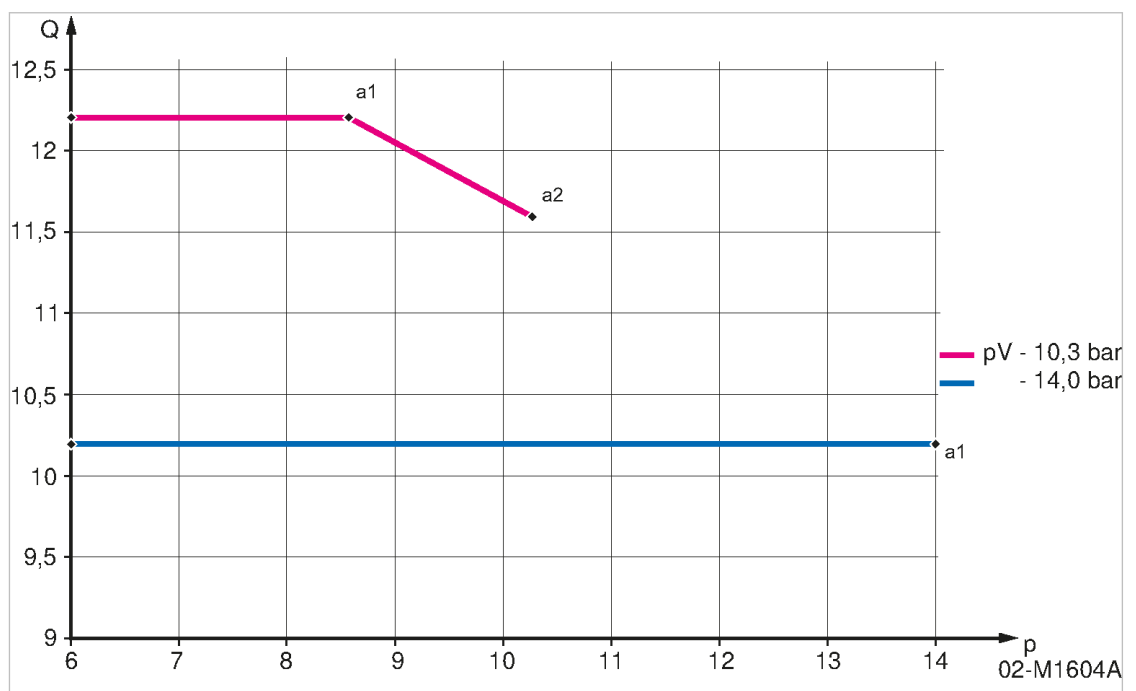


Fig. 1 Flow rate dependent on rated system pressure

Following applies for both pressure levels:

- Pressure reduction in increments of 0.1 bar
- Pressure reduction down to 6 bar



Use air tools only with the pressure (tool working pressure) appropriate for its intended use!
 Flow rate in accordance with ISO 1217:2009, Annex D.

2.7.2 Compressed air outlet

Outlet valve ["]	Number
G 3/4	3
G1 1/2	1

Tab. 24 Compressed air distributor

2.7.3 Safety valve

Maximum working pressure: see machine nameplate

Maximum working pressure [bar]	Actuating pressure [bar]
14	15.9

Tab. 25 Safety valve actuating pressure

2.7.4 Temperature

Required temperatures readiness to switch to LOAD mode	Values
Airend discharge temperature (ADT) [°C]	40
The engine coolant temperature (ECT) [°C]	40

Tab. 26 Required temperatures readiness to switch to LOAD mode

Airend discharge temperature	Values
Typical airend discharge temperature during operation [°C]	80 110
Maximum airend discharge temperature (automatic safety shut-down) [°C]	115

Tab. 27 Airend discharge temperature

2.7.5 Cooling oil recommendation

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

Cooling oils for general applications

	SIGMA FLUID		
	MOL	S-460	S-570
Description	Mineral oil	Synthetic oil	Synthetic oil
Application	Standard oil for all applications except in connection with processing of foodstuffs. Particularly suitable for machines with a low duty cycle.	Standard oil for all applications except in connection with processing of foodstuffs. Particularly suitable for machines with a high duty cycle. Not suitable for East and Southeast Asia.	Special oil for ambient conditions with high temperatures and humidity. Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a high duty cycle.
Viscosity at 40 °C	46 mm ² /s (ASTM D445)	46 mm ² /s (ASTM D445)	53 mm ² /s (ASTM D445)
Viscosity at 100 °C	6.9 mm ² /s (ASTM D445)	7.2 mm ² /s (ASTM D445)	8.0 mm ² /s (ASTM D445)
Flash point	230 °C (ASTM D92)	251 °C (ASTM D92)	258 °C (ASTM D92)
Density at 15 °C	0.868 g/cm ³ (ASTM D1298)	0.860 g/cm ³ (ASTM D1298)	0.869 g/cm ³ (ASTM D1298)
Pour point:	-30 °C (ASTM D97)	-27 °C (ASTM D97)	-54 °C (ASTM D97)

Tab. 28 Cooling oil recommendation

Cooling oils for applications in food processing

	SIGMA FLUID	
	FG-460	FG-680
Description	Synthetic oil	Synthetic oil
Application	Specifically for machines in applications where the compressed air may come into contact with foodstuff.	Special oil for ambient conditions with high temperatures and humidity. Specifically for machines in applications where the compressed air may come into contact with foodstuff.
Approval	USDA H1, NSF approved for applications where contact with foodstuffs may sporadically or incidentally be possible.	USDA H1, NSF approved for applications where contact with foodstuffs may sporadically or incidentally be possible.
Viscosity at 40 °C	46 mm ² /s (ASTM D445)	68 mm ² /s (ASTM D445)
Viscosity at 100 °C	8.0 mm ² /s (ASTM D445)	10.5 mm ² /s (ASTM D445)
Flash point	246 °C (ASTM D92)	238 °C (ASTM D92)

	SIGMA FLUID	
	FG-460	FG-680
Density at 15 °C	0.842 g/cm ³ (ASTM D1298)	0.854 g/cm ³ (ASTM D1298)
Pour point:	-39 °C (ASTM D97)	-39 °C (ASTM D97)

Tab. 29 Cooling oil recommendation (food processing)

2.7.6 Cooling oil charge quantity

Cooling oil	Fluid volume [l]
Machine	22.0

Tab. 30 Cooling oil charge quantity

2.8 Engine

2.8.1 Engine specifications

Characteristic	Specification
Make/model	Cummins / QSF 3.8
Engine control	Electronic
Fuel injection	Common-rail system
Rated engine power [kW]	97
Speed in LOAD operation [rpm]	2500
Speed in IDLE operation [rpm]	1200
Fuel type	Diesel *
Fuel consumption in LOAD operation [l/h]	24.0
Fuel consumption in IDLE operation [l/h]	8.5
Oil consumption relative to fuel consumption [%]	Approx. 0.5

* Only use diesel fuel in accordance with EN 590 or ASTM D975. Consult the engine manufacturer before using other fuel types!

Tab. 31 Engine specifications

2.8.2 Oil recommendations

The engine oil must meet the following classifications:

- ACEA, Class E5; E7
- API, Class CH-4; CI-4
- CES 20077; CES 20078



- Only use engine oil in compliance with these classifications.
- Engine oils that do not conform to the above can reduce the useful life of the engine!
- The use of unlisted engine oils requires prior authorisation by KAESER.
- Please contact your authorised KAESER SERVICE agent.

Oil/oil filter replacement intervals:

API Class	CES	ACEA Class	Sulphur content of fuel [ppm]	Replacement interval [oh/ months]*
CJ-4	CES 20081	E9	< 500	500/6
CI-4	CES 20078	E7	≤ 5.000	
CH-4	CES 20077	E5		
CF-4	CES 20075	E3		250/3

API = Classification of American Petroleum Institute; CES = Cummins® Engineering Standard ;ACEA = European Classification

* whichever occurs first

Tab. 32 Oil/oil filter replacement intervals

Viscosity:

The ambient temperature at the installation location and application area is decisive in selecting the appropriate viscosity class. Excess viscosity can cause difficulties when starting up, whilst too low a viscosity reduces the lubricating effect of the engine oil, leading to high oil consumption.

Viscosity is classified by SAE.



- Always use multigrade lubricating oils!
- Always ensure the specified lubricating oil quality when selecting the viscosity class!

Ambient temperatures [°C]	Viscosity class
-40 0	SAE 0W-30
-25 20	SAE 5W-30
-20 50	SAE 10W-30
>50	SAE 10W-40
-20 45	SAE 10W-30 (CL-4)
-15 60	SAE 5W-40/15W-40

Tab. 33 Engine oil recommendation

Initial engine oil filling:

The engine is filled initially with the following engine oil:

Ambient temperatures [°C]	Viscosity class
>50	SAE 10W-40

Tab. 34 Initial engine oil fill

2.8.3 Fuel recommendation

To comply with emission regulations, diesel engines fitted with an exhaust gas treatment system must be operated only with a sulphur-free diesel fuel. Compliance with the emission requirements but also the durability of the individual exhaust gas treatment components is not assured if this requirement is ignored!

The diesel fuel must meet the requirements of EN 590 and ASTM D975 respectively.

The use of other fuels as well as the mixing with additives is only permitted after consultation with the engine manufacturer.

The following fuel specifications are approved:

- Diesel fuels according to EN 590
 - ($\leq 0.0010\%$ Sulphur – EU: Level IIIB and higher)
- Diesel fuels according to ASTM D975
 - ($\leq 0.0015\%$ Sulphur – EPA: Tier 4 interim)

For the US market the use of extremely low-sulphur diesel fuel is required by law:

- Diesel fuels according to ASTM D975
 - ($\leq 0.0015\%$ Sulphur – EPA: Tier 4 interim and higher)



Cummins recommends diesel fuel ASTM No. 2D.

Using diesel fuels No. 2D ensures optimal engine performance. At temperatures below 0° C, satisfactory performance is achieved with a mixture of No. 2D and No. 1D.



Never store fuel in galvanised containers!

Bio diesel:

According to EN 590 and ASTM D975, a specific portion of bio diesel is permitted in the fuel.

Depending on the country of origin, bio diesel can be produced from different plant materials and thus have different properties.

Affected by temperature, atmospheric oxygen and time, these bio diesel components in the fuel may decompose in the fuel and thus cause damages within the fuel system.



The fuel must be filtered before it is filled into the machine when it has been supplied in barrels or canisters. This procedure prevents malfunctions in the fuel system caused by contamination.

2.8.4 Engine coolant recommendation

In fluid-cooled engines, the cooling fluid must be treated and monitored in order to prevent engine damage.

Water quality:

An important factor in the treatment of cooling fluid is the correct water quality.

As a rule, clear and clean fresh water complying with the following analysis values must be used:

Characteristic	Value
pH value	6.5 - 8.5

Characteristic		Value
Chlorine (Cl)	[ppm]	40
Sulphate (SO ₄)	[ppm]	100
Total hardness (CaCO ₃)	[ppm]	170
	[°dGH]	356
	[°e]	25.0
	[°fH]	35.6

Tab. 35 Water quality parameters for cooling water

Contact the local water utilities for information regarding water quality. If the water does not meet the above parameters, it must be treated.

If suitable water is not available, distilled or demineralised water should be used for treating the coolant. Seawater, brackish water, brine and industrial wastewater are not suitable. Salts may cause corrosion or the formation of disruptive residues.

Coolant quality:

In the course of ongoing technical development, a new anti-corrosion agent/antifreeze has been approved by the engine manufacturer.

This features the following advantages over the anti-corrosion agent/antifreeze that was approved previously:

- Less residue in the engine cooling system
- Improved heat flow
- Improved environmental compatibility

The coolant (cooling fluid) is treated by the addition of anti-freeze with ethylene glycol-based anti-corrosion additives to the water.

The coolant used must comply with the requirements of the ASTM D6210 standard specification and the Cummins Engineering Standard (CES) 14603.

- Do not use an anti-corrosion agent/antifreeze that has not been approved by the engine manufacturer.
- Avoid impermissible mixing ratios of anti-corrosion agent/antifreeze and water.

Further information See Chapter 10.4.1.3 "Mixing the coolant" for information on preparing/mixing the coolant for use.

Initial fill of anti-corrosion agent/antifreeze:

For the initial fill, the engine coolant cooler is filled with a mixture of the following liquid components:

Components	Description	Proportions [% vol.]
Anti-corrosion agent/antifreeze	KAESER FLUID ENGINE ANTIFREEZE / (Glysantin® G40®)	50
Water		50

Tab. 36 Initial fill for engine coolant cooler

Miscibility with other anti-corrosion agents/antifreezes:

Mixing with different anti-corrosion agents/antifreezes is not recommended, even if from the same manufacturer. This can result in significantly reduced corrosion/antifreeze protection, which may damage the engine cooling system and, consequently, the engine. A mixture of different types of anti-corrosion agent/antifreeze generally provides a lower level of performance than the specially balanced active components of a single coolant type.



Consequently, the use of different anti-corrosion agents/antifreezes is only permitted following consultation with and approval from the engine manufacturer!

2.8.5 Fluid volumes

Description	Fluid volume [litre]
Engine oil	12
Fuel	180.0
Coolant	16.0

Tab. 37 Fluid volumes

2.8.6 Battery

Characteristic	Value
Voltage [V]	12
Capacity [Ah]	135
PTC testing current [A] (according to EN 50342)	1000

Tab. 38 Battery

2.9 Options
2.9.1 Air treatment options
2.9.1.1 Air quality at the compressed air outlets

Interrelation between compressed air treatment and compressed air quality:

Compressed air treatment		Compressed air quality	
Option designation	Components	Characteristics	Abbreviation
da	<ul style="list-style-type: none"> ■ Aftercooler ■ Centrifugal separator 	cool and condensate-free	A
da + dd	<ul style="list-style-type: none"> ■ Aftercooler ■ Centrifugal separator ■ Filter combination 	dry and technically oil-free	F

Tab. 39 Interrelation between compressed air treatment and compressed air quality



The compressed air outlets at the air distributor are labelled with the identifiers of compressed air quality.

2.9.2 Option bb; od Auxiliary electrical equipment

Power supply connection details:

Mains supply	Value	Value
Mains voltage [V / 1-phase / N / PE]	120	230
Frequency [Hz]	60	50
Fuse rating on site (user's responsibility) [A]	15	16

Tab. 40 Power supply connection details

Option bb Diesel engine coolant pre-heating:

Coolant preheating device	Value	Value
Voltage [V]	120	230
Power [W]	750	550

Tab. 41 Technical data – Coolant pre-heating device

Option od Battery charger:

Battery charger	Value
Type	12V DC / 5A
Charging voltage [V]	14.4
Charging current [A]	>0.5
Maximum charging current [A]	5
Protection class	IP 65

Tab. 42 Battery charger specification

2.9.3 Option ba Low-temperature equipment

2.9.3.1 Ambient conditions

Installation	Limit value
Maximum installation elevation ASL* [m]	1000
Minimum ambient temperature [°C]	-20
Maximum ambient temperature [°C]	+50

* Higher elevations permissible only after consultation with the manufacturer

Tab. 43 Ambient conditions, low-temperature equipment

**2.9.4 Option oc
TELEMATICS**

GSM/GPS unit:

Feature	Specification
Supplier/Manufacturer	Proemion
Type	CANlink mobile 3653

Tab. 44 TELEMATICS: GSM/GPS unit

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.
- Do not use compressed air for breathing purposes unless it is specifically treated.

3.3 Incorrect Use

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

- Only use the machine as intended.
- Never direct compressed air at persons or animals.
- Do not use untreated compressed air for breathing purposes.
- Do not allow the machine to take in toxic, acidic, flammable or explosive gases or vapours.
- 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

These are, for example, nationally implemented European directives and/or applicable national legislation, safety and accident prevention regulations.

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

3.4.2 Determining personnel

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

Authorised operators possess the following qualifications:

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

Authorised maintenance personnel possess the following qualifications:

- are of legal age,
- are conversant with and adhere to the safety instructions and sections of the service manual relevant to maintenance,
- are fully conversant with the safety concepts and regulations of motor vehicle, electrical and compressed air engineering,
- are able to recognise the possible dangers of motor vehicle, 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.

Authorised transport personnel possess the following qualifications:

- are of legal age,
 - are conversant with and adhere to the safety instructions and sections of the service manual relevant to transporting,
 - are trained and authorised in safe vehicle transporting,
 - are conversant with the safety regulations relating to handling motor vehicles and transport goods,
 - are able to recognise the possible dangers of motor vehicles and take appropriate measures to safeguard persons and property.
- Ensure that personnel entrusted with transport, operation, and maintenance are qualified and authorised to carry out their tasks.

3.4.3 Complying with inspection schedules and accident prevention regulations

The machine is subject to local inspection schedules.

Examples of operation in Germany

- Have the pre-commissioning inspection carried out according to the Ordinance on Industrial Safety and Health, §15.
- Carry out recurring inspections to *DGUV Regel 100–500*, chapter 2.11:
The user must ensure that the machine's safety devices are checked for function as required or at least annually.

- Carry out oil changes to *DGUV Regel 100–500*, chapter 2.11:
The user must ensure that the cooling oil is changed as required or at least annually and the oil change must be documented. Intervals may be varied if an analysis proves that the oil is still usable.
- Keep to inspection intervals in accordance with the Ordinance on Industrial Health and Safety with maximum intervals as laid down in §16:

Inspection	Inspection interval	Inspection authority
Equipment inspection	Before commissioning	Approved supervisory body
Internal inspection	Every 5 years after commissioning or the last inspection	Competent person (e. g. KAESER SERVICE technician)
Strength test	Every 10 years after commissioning or the last inspection	Competent person (e. g. KAESER SERVICE technician)

Tab. 45 Inspection intervals according to Ordinance on Industrial Health and Safety

Checking the lifting point

The user is responsible for ensuring that the machine's lifting point and fixings are inspected according to national regulations for wear and damage.

- Have lifting eye checked.
Lifting eye is not in order: The machine must not be transported by crane. Have the machine repaired immediately.

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.

Exhaust fumes

Exhaust gases from combustion engines contain carbon monoxide, a colour- and odour-less but highly toxic gas. The inhalation of minute quantities can be lethal.

Furthermore, diesel exhaust contains soot particles, some of which are noxious.

- Do not inhale exhaust fumes.
- Park the machine in such a manner that the exhaust cannot blow towards the operators.
- Never use the machine in enclosed spaces, only in the open.

Fire and explosion

Spontaneous ignition and combustion of fuel can result in serious injury or death.

- Allow no open flames or sparks at the place of use.
- Do not smoke while refuelling.
- Never refuel the machine when it is running.
- Do not allow fuel to overflow.
- Wipe up spilled fuel immediately.
- Provide a fire extinguisher in the immediate vicinity.
- For the operation in combustible environment, fit the machine with a spark arrestor (option Ia).

Hot coolant

The cooling system of a liquid-cooled engine at running temperature is under high pressure. If the filler cap is unscrewed, hot coolant can spray out under pressure and cause severe scalding.

- Let the machine cool down before opening the cooling system.
- Unscrew the filler cap carefully by a quarter to half a turn at first. Remove the filler cap only when pressure has escaped completely.

Electricity

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

- Allow only qualified and authorised certified electricians or trained personnel under the supervision of a qualified and authorised certified electrician to carry out work on electrical equipment according to electrical engineering rules.
- Regularly check that all electrical connections are tight and in proper condition.
- Switch off any other external sources of voltage.
For example, the connections to the electrical engine coolant pre-heating.

Compressive forces

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

- Wait until the compressor has automatically vented (check: the pressure gauge: it must read 0 bar!)
- Then open an outlet valve carefully to ensure that the line between the minimum pressure check valve and the compressed air outlet is vented.
- Do not carry out welding, heat treatment or mechanical modifications to pressurised components (e.g. pipes and vessels) as this influences the components' resistance to pressure. The safety of the machine is then no longer ensured.

Compressed air quality

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

- Use appropriate systems for air treatment before using the compressed air from this machine as breathing air (fresh air reinforcement) and/or for the processing of comestibles.
- Use comestibles-compatible cooling oil whenever compressed air is to come into contact with comestibles.

Spring forces

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

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

- Do not open or dismantle any valves.

Rotating components

Touching the fan wheel, the coupling or the belt drive while the machine is switched on can result in serious injury.

- Do not open the service doors or panels while the machine is running.
- Prior to opening the service doors or the enclosure, switch off the engine, disconnect from power source and secure against unintended reactivation.
- 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

The operation of the combustion engine and the compression generate high temperatures. Touching hot components may cause injuries.

- Avoid contact with hot components.
These include combustion engine, airend, oil and compressed air lines, cooler and oil separator tank. Any objects in or near the flow of exhaust gas or discharged cooling air may become very hot.
- Wear protective clothing.
- Wear protective gloves when connecting or disconnecting external compressed air hoses to the outlet valves.
- Allow the machine to cool down before commencing any maintenance work.
- If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting oil vapours or parts of the machine.

Noise

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

- Operate the machine only with closed body and intact sound insulation.
- Wear hearing protection if necessary.
Safety valve blow-off results in high noise emission.
- Never generate compressed air without consumers being connected.

Operating fluids/materials

The operating fluids and materials used 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 fuel, oils, lubricants, antifreeze and chemical substances.
- Avoid contact with skin and eyes.
- Do not inhale fumes or vapours from fuel or oil.

- Do not eat or drink while handling fuel, cooling and lubricating fluids or antifreeze.
- Keep suitable fire-extinguishing media 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 original KAESER spare parts on pressure bearing parts.

Conversion or modification of the machine

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

- Do not convert or modify the machine!
- Do not install any non-approved additional components.
- Do not make any changes to the machine that will increase its weight beyond the permissible limit and/or endanger its safe use or transportation. Any such changes invalidate the approval to use the machine or tow it on the road.
- Prior to any technical modification and expansions of the machine, obtain the written approval of the manufacturer.

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

3.5.2.1 Transport

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

- Allow transport only by personnel trained in safely dealing with motor vehicles and the transport of goods.
- Ensure that no persons are on the machine when transporting.

Transport as trailer

Non-compliance with the basic rules for a safe trailer operation may cause severe accidents during machine transport.

- The maximum permissible load for the towing vehicle coupling and the maximum coupling load given for the machine must not be exceeded.
- Avoid causing a shift in the centre of gravity by an excessive or incorrectly distributed load.
- Do not tow in such a way as to impose excessive stress on the machine or chassis.
- Adjust towing speed to accommodate ground and weather conditions. This applies particularly to unpaved roads and when taking curves.
- The towbar must be parallel with the ground otherwise towing instability can develop, resulting in damage to the machine and/or towing vehicle.
- Before moving the machine, make sure any security devices (e.g. anti-theft chain) are released.

Transport as trailer on public roads

- Do not tow machines without service brake on public roads.
- Do not tow machines without illumination and signaling equipment on public roads.
- Ensure all running gear, including chassis, wheels, brakes, signalling and lighting, is in safe condition.
- The local laws and regulations regarding the use of public roads must be observed.

Transporting with a crane

Non-compliance with the safety regulations for load suspension and hoisting equipment may cause severe accidents during lifting and moving the machine with cranes.

- Do not enter the danger zone while the machine is being lifted.
- Never lift and move the machine over people or occupied buildings.
- Avoid extreme weight shifting caused by additional loads or additions (tilting).
- Do not exceed the lifting capacity on the machine's lifting point (lifting eye).
- Only the designated lifting point should be used to attach lifting gear and under no circumstances are handles, tow-bar or other components to be used.
- Use only hooks and shackles that comply with local safety regulations
- Do not attach cables, chains or ropes directly to the machine's lifting eye.
- Do not manipulate the crane suspension system, in particular the holding points of the crane lifting eye.
- If screwed crane fixings had to be removed, please use only new self-locking nuts when installing.
- Avoid jerking when lifting, as this may damage components.
- Loads must be slowly lifted and carefully set down.
- Never allow the load to hang from the crane longer than necessary.



The following are forbidden:

- Air transport of the machine by slinging beneath a helicopter.
- Dropping the machine by parachute.

3.5.2.2 Installation

The operator must ensure that only authorised personnel has access to the machine.

General instructions

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

- Do not position the machine directly against a wall. A build up of heat from the exhaust can damage the machine.
- Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
- Do not operate in areas in which specific requirements with regard to explosion protection are in force.
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Ensure adequate ventilation.
- 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:

- Exhaust gases from combustion engines,
 - Combustible, explosive or chemically unstable gases or vapours,
 - Acid- or base-forming chemicals such as ammonia, chlorine, or hydrogen sulphide.
- Do not position the machine in the warm exhaust air flow from other machines.
 - Keep suitable fire extinguishing agents ready for use.

Parking the machine:

Improper parking and use of the parked machine endangers personnel and material.

- To park the machine, select an even and solid surface which is capable of bearing the machine's weight.
- Move the machine only with a towing vehicle.
- Secure the parked machine:
 - Lower the prop stand / wind down the jockey wheel.
 - Chock the wheels to prevent unwanted movement.
 - Place chocks under the wheels.
 - Pull on the parking brake.
- Unauthorised persons must not be present in the parking area of the machine. The parking area must be properly secured.
- The machine – the chassis and the towing mechanism in particular – must not be stepped on or used for sitting.
- Do not place additional loads on the machine (e.g. excavator bucket as anti-theft measure).

3.5.2.3 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 authorised personnel.
- Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- Switch off the machine and lock out the supply disconnecting device.
- De-pressurise all pressurised components and enclosures.
 - Wait until the machine has automatically vented.
 - Carefully open the compressed air outlet valve.
 - Check: The pressure gauge must read 0 bar!
- For maintenance and repair work, isolate machines with "automatic start/stop" (Option ob) from the compressed air network and secure against automatic start.
- Allow the machine to cool down.
- Do not open the body 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.
- Operate the machine only in technically sound condition.
- Carry out regular inspections:
 - for visible damage and leakage,
 - of safety devices,
 - of the EMERGENCY STOP device,
 - of parts needing 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.
- Self-locking nuts removed for the installation must not be reused but replaced by new nuts, because the non-positive safety is no longer ensured.
- Use only suitable compressed air hoses.

Compressed air hoses must meet the following requirements:

- they are of the right type and size for the highest permissible machine working pressure,
- they are not damaged, worn or of reduced quality,
- they have couplings and connections of the right type and size.
- Wear protective gloves when connecting or disconnecting compressed air hoses.
- Make sure compressed air hoses are de-pressurised before disconnecting from the machine.
- Secure the open end of an air hose before applying air pressure. An unsecured hose may whip and cause injury.
- At working pressures > 7 bar, compressed air hoses should be secured by a cable to their respective outlet valves.
- Connect and operate only suitable air tools.

- The air tools must meet the set output pressure of the machine.
- Use a pressure reducer for air tools requiring a lower pressure.
- Use compressed air tools only with the pressure appropriate for its purpose (tool working pressure).

3.5.2.4 De-commissioning, storage and disposal

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

- Drain off fluids and dispose of them according to environmental regulations. These include, for example, fuel, engine oil and compressor cooling oil and engine coolant.
- Dispose of the machine in accordance with local environmental regulations.

3.5.3 Organisational Measures

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

3.5.4 Danger areas

The table gives information on areas dangerous to personnel.

Only authorized personnel may enter these areas.

Task	Danger area	Authorized personnel
Transport	Within a 3 m radius of the machine.	Operating personnel to prepare for transport. No personnel during transport.
	Beneath the lifted machine.	No personnel!
Commissioning	Within the machine.	Maintenance personnel
	Within a 1 m radius of the machine.	
Operation	Within a 1 m radius of the machine.	Operating personnel
Maintenance	Within the machine.	Maintenance personnel
	Within a 1 m radius of the machine.	

Tab. 46 Danger areas

3.6 Safety devices

Various safety devices ensure safe working with the machine.

- Do not change, bypass or disable safety devices.
- Regularly check safety devices for their correct function.
- Do not remove or obliterate labels and notices.
- Ensure that labels and notices are clearly legible.

Further information More information on safety devices is contained in chapter 4.5.

3.7 Safety signs

The tables list the various safety signs used and their meanings. The diagram shows the location of the safety signs on the exterior and interior of the machine.



During cleaning or maintenance work, it must be ensured that the attached safety signs are not damaged or removed. Arrange for missing or illegible signs to be replaced!

External safety signs:

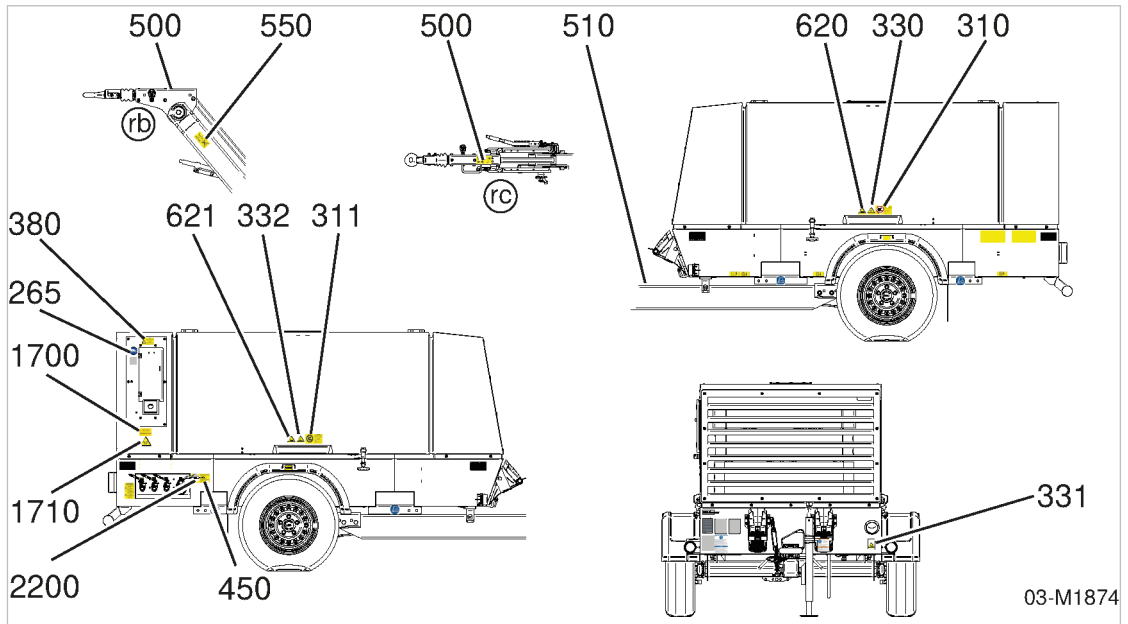









Fig. 2 Location of safety signs (exterior)

Item	Symbol	Meaning
265		<p>Caution!</p> <p>Risk of injury to personnel or damage to the machine from incorrect operation!</p> <ul style="list-style-type: none"> ➤ Ensure that you have read and understood the operating manual and all related safety information before switching on this machine.
310 311		<p>Warning!</p> <p>Operating the machine with open doors or enclosure is prohibited! Personal injury or damage to the machine can result from an open machine enclosure.</p> <ul style="list-style-type: none"> ➤ Only operate with the enclosure fully closed. ➤ Only transport with the enclosure fully closed.

(1) Portable machines only

(2) Machines with option ob only



rb-option rb: EC chassis; rc-option rc: GB chassis

Item	Symbol	Meaning
330 332		Warning! Hot surface! Danger of burns from contact with hot components. <ul style="list-style-type: none"> ➤ Do not touch the surface. ➤ Wear long-sleeved clothes (no synthetics, e.g. polyester) and protective gloves.
331		Warning! Hot surfaces and noxious gases! Burns from contact with hot components or gases. <ul style="list-style-type: none"> ➤ Do not touch the surface. ➤ Wear long-sleeved clothes (no synthetics, e.g. polyester) and protective gloves. ➤ Do not inhale noxious gases.
380		Danger! Toxic exhaust gases in work area! <ul style="list-style-type: none"> ➤ Only use the machine outdoors. ➤ Direct exhaust gases out to open air. ➤ Do not inhale noxious gases.
450 2200		Warning! Loud noise and compressed air blast! Hearing damage and injury if ball valve is opened without a compressed air hose being connected. <ul style="list-style-type: none"> ➤ 1. Connect a compressed air hose. ➤ 2. Open the ball valve.
500 ⁽¹⁾		Caution! Danger of accident due to unstable driving behaviour! Accidents and machine damage possible. <ul style="list-style-type: none"> ➤ The compressor tow bar must be parallel with the ground when coupled to the towing vehicle. ➤ Note instructions in the operating manual regarding transportation.
510 ⁽¹⁾		Warning! Malfunction due to deficient maintenance. Accidents and machine damage possible. <ul style="list-style-type: none"> ➤ Regularly service the chassis. ➤ Note the instructions in the operating manual regarding the chassis.
550 ⁽¹⁾		Warning! Failure of emergency braking! <ul style="list-style-type: none"> ➤ Install, hook in and secure the breakaway cable properly. ➤ Note the instructions in the operating manual regarding transportation of the machine as a trailer.

⁽¹⁾ Portable machines only

⁽²⁾ Machines with option ob only

rb-option rb: EC chassis; rc-option rc: GB chassis

Item	Symbol	Meaning
620 621		Warning! Risk of serious injuries (particularly to the hands) or severed limbs from rotating components! <ul style="list-style-type: none"> ➤ Operate the machine only with closed safety guards, maintenance doors and cover panels. ➤ Shut down the machine before opening the doors/enclosure and prevent from restarting.
1700	-	Note! <ul style="list-style-type: none"> ➤ Turn off circuit breaker and fuses when transporting and decommissioning the machine, or disconnecting the mains voltage.
1710 ⁽²⁾		Warning Danger of injury from automatic machine start. <ul style="list-style-type: none"> ➤ Prior to performing any work on the machine: <ul style="list-style-type: none"> ■ Shut the machine down. ■ Switch off the «battery isolating switch». ➤ Only operate the machine with doors closed.

⁽¹⁾ Portable machines only

⁽²⁾ Machines with option ob only

rb-option rb: EC chassis; rc-option rc: GB chassis

Tab. 47 Safety signs

Internal safety signs:

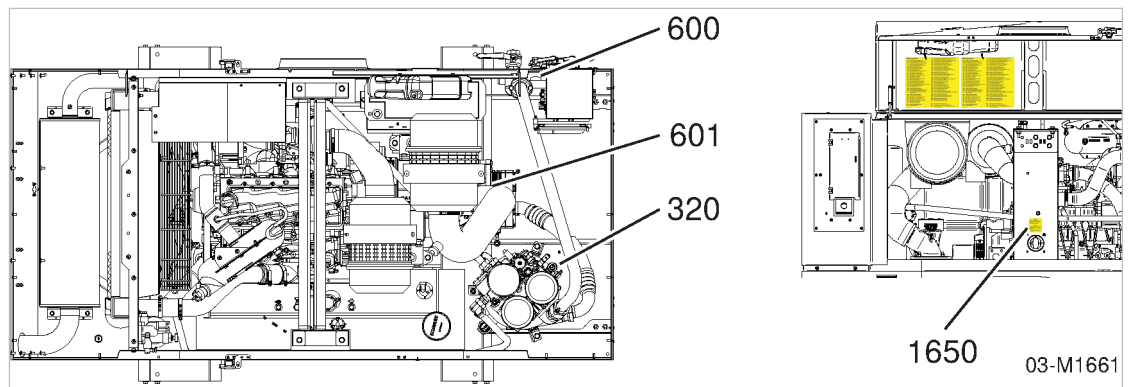





Fig. 3 Location of safety signs (interior)

Item	Symbol	Meaning
320		Loud noise and oil mist! Hearing damage and burns from safety valve blow-off. <ul style="list-style-type: none"> ➤ Wear ear protection and protective clothing. ➤ Close the enclosure or doors. ➤ Proceed with caution.

Item	Symbol	Meaning
600		Danger of fatal injury when dismantling valves (spring forces/pressure)!
601		<ul style="list-style-type: none"> ➤ Do not open or dismantle valves. ➤ Call an authorised service agent in the event of a fault.
1650		Damage may occur if the switch is operated with the engine running! <ul style="list-style-type: none"> ➤ Only use the «battery isolating switch» with the engine switched off. ➤ Do not use the «battery isolating switch» as an emergency or main switch.

Tab. 48 Safety signs

3.8 Emergencies

3.8.1 Correct actions in the event of a fire

Suitable measures

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

- Keep calm.
- Give the alarm.
- Shut down the machine from the instrument panel if possible.
- Warn and move endangered persons 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
- Avoid unsuitable extinguishing media:
 - Strong jet of water

3.8.2 Treating injuries from handling operating fluids/materials

The following operating fluids/materials are in the machine:

- Fuel
- Lubricating oils
- Compressor cooling oil
- Engine coolant
- Battery electrolyte
- Lubricant for breakers (option e)
- Antifreeze (option ba)

Eye contact:

Fuel, oil and other fluids/materials can cause irritation.

- Rinse open eyes thoroughly for a few minutes under running water.
- Seek immediate medical advice for persistent irritation.

Skin contact:

Fuel, oil and other fluids/materials may irritate after prolonged contact.

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

Inhalation:

Fuel and oil vapours impair breathing.

- Clear the respirator tract from fuel or oil vapour.
- Seek immediate medical help if difficulty with respiration continues.

Ingestion:

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

3.9 Warranty

This operating manual does not contain any independent warranty commitment. Our general terms and conditions apply with regard to warranty.

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

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

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

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

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

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

3.10 Recognising the consequences of impermissible modifications

The machine and its various assemblies are designed in accordance with the applicable regulations and are submitted for approval by the relevant authorities (where applicable).

Such assemblies include:

- Compressor drive engine
- Fuel system

- Exhaust system
- Chassis (if applicable)
- Compressor
- Pressure-bearing components (e.g. valves, receivers, piping)

Conversions or modifications can result in the interplay between individual assemblies no longer being in compliance with regulations. In such cases, the conditions for approval by the relevant authorities may no longer be met.

Examples of directives and regulations that may be applicable:

- Machinery Directive
- Pressure Equipment Directive
- EMC Directive
- Outdoor Noise Directive

In the case of machines for which a national road traffic approval applies, conversions or modifications may affect that approval:

- Exhaust emission limits may no longer be met.
- The conditions for approval may no longer be met.

Conversions or modifications restrict the service work that can be performed for you (examples):

- Warranty (if cause is attributed to the conversion or modification)
- Reduced spare part supply (scope, delivery times)
- SIGMA CONTROL SMART:
In the case of programming changes, only limited options for subsequent software updates.

3.11 Environment protection

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

- Do not allow operating materials to escape to the environment or into the sewage system.
- Store and dispose of operating materials and replaced parts in accordance with local environment protection regulations.
- Observe national regulations.
This applies particularly to parts contaminated with fuel, oil, coolants and acids.

4 Design and Function

4.1 Bodywork

The term "bodywork" refers to the external structure of the machine atop the chassis.

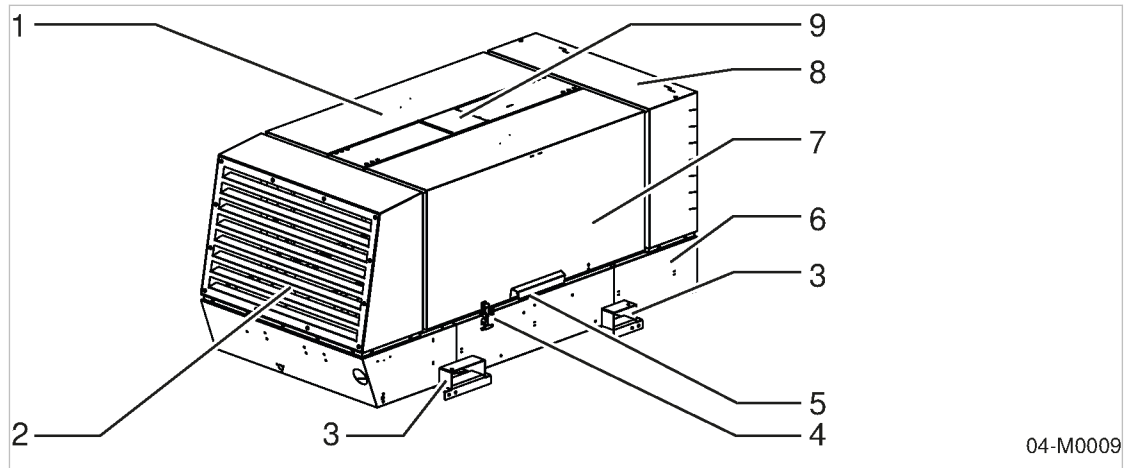


Fig. 4 Bodywork overview

- | | |
|------------------------|-----------------------|
| ① Right-hand wing door | ⑥ Lower part |
| ② Air outlet louvres | ⑦ Left-hand wing door |
| ③ Forklift pockets | ⑧ Air inlet louvres |
| ④ Snap fastener | ⑨ Lifting eye cover |
| ⑤ Handle | |

The bodywork fulfils several functions when closed:

- Weather protection
- Sound insulation
- Contact protection
- Cooling air flow

The bodywork is not suitable for the following uses:

- Walking on, standing on or sitting on.
- Placing or storing any type of load.



CAUTION

Trapping hazard!

Risk of serious trapping injury to fingers when closing doors and covers.

- Proceed with caution.
- Wear protective gloves if necessary.

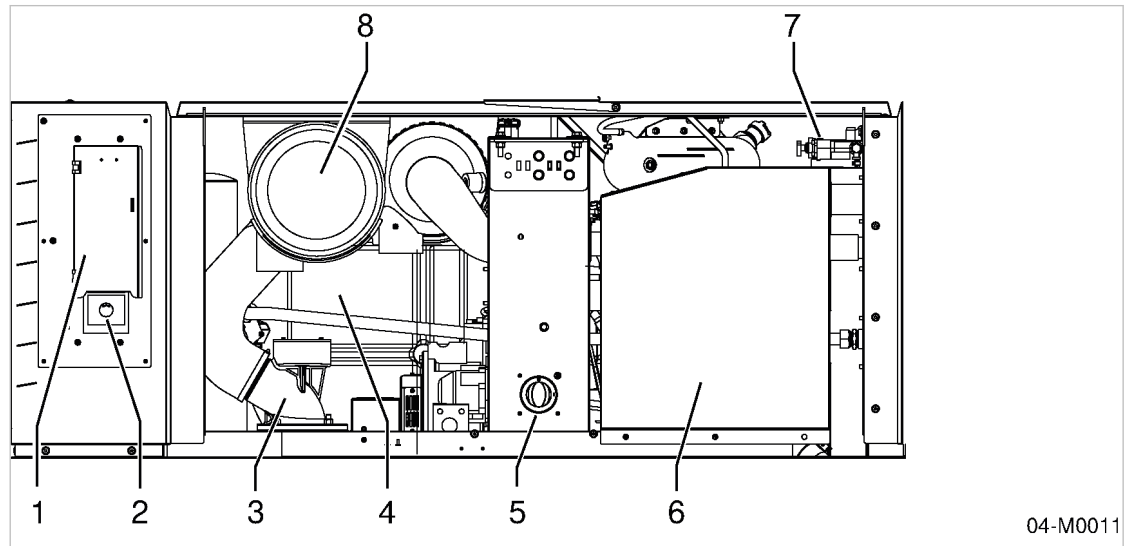
Safe and reliable operation is only ensured when the bodywork is closed.

The wing doors are provided with handles for opening. Release the doors by loosening the snap fasteners.

The wing doors are held open by means of gas pressure springs.

4.2 Machine layout

Right-hand side, door open:



04-M0011

Fig. 5 Right-hand door open

- | | | | |
|---|------------------------------|---|---|
| ① | Control panel (cover closed) | ⑤ | Battery isolating switch |
| ② | «EMERGENCY STOP» button | ⑥ | Heat shield |
| ③ | Inlet valve | ⑦ | Fuel filter with integrated water separator |
| ④ | Fuel tank (other side) | ⑧ | Compressor air filter |

Left-hand side, door open:

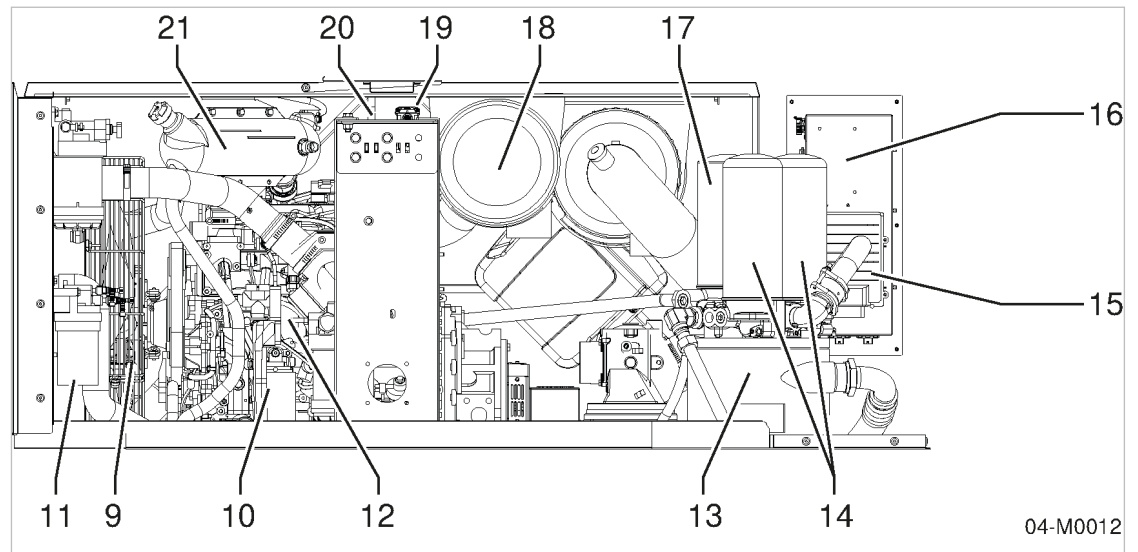


Fig. 6 Left-hand door open (fuel tank not illustrated)

- | | | | | | | | | | |
|---|--------------|---|-----------------------------------|---|------------------------|---|----------------------------|---|----------------------------------|
| ⑨ | Fan | ⑩ | Engine oil filter | ⑬ | Oil separator tank | ⑯ | Tank ventilation | ⑲ | Crane suspension and lifting eye |
| ⑪ | Fuel filter | ⑭ | Oil separator cartridge (spin-on) | ⑰ | Control unit | ⑱ | Electrical control cabinet | ⑳ | Compressor oil filter |
| ⑫ | Drive engine | ⑲ | Engine air filter | ㉑ | Coolant expansion tank | | | | |

View from above, roof panel removed:

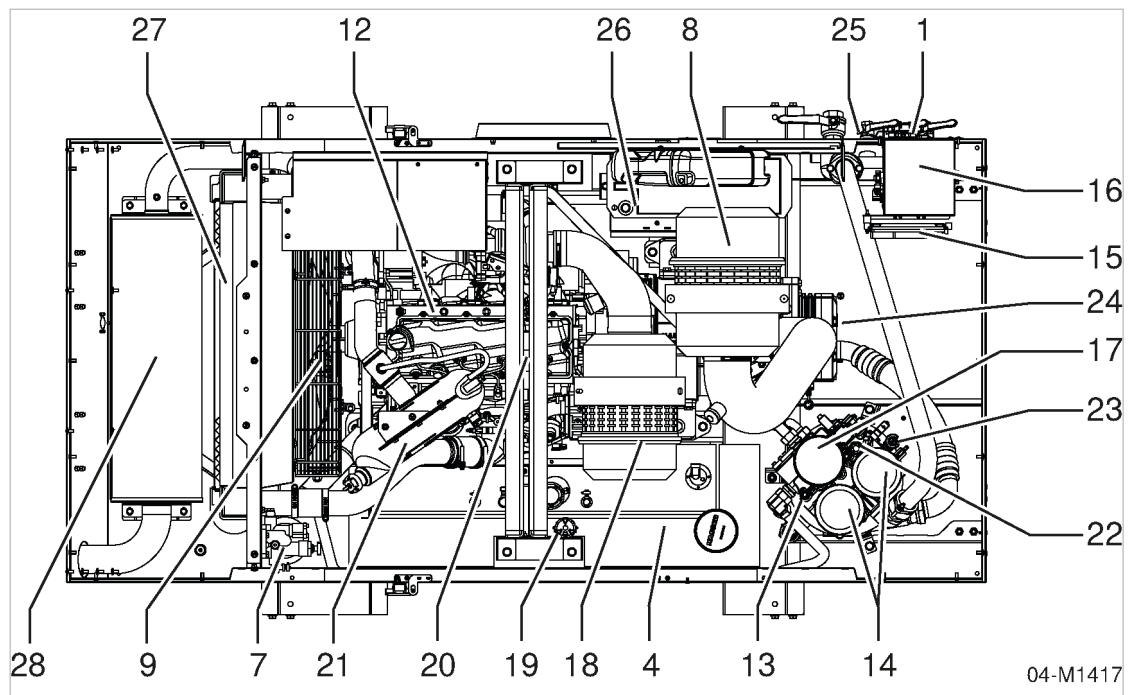
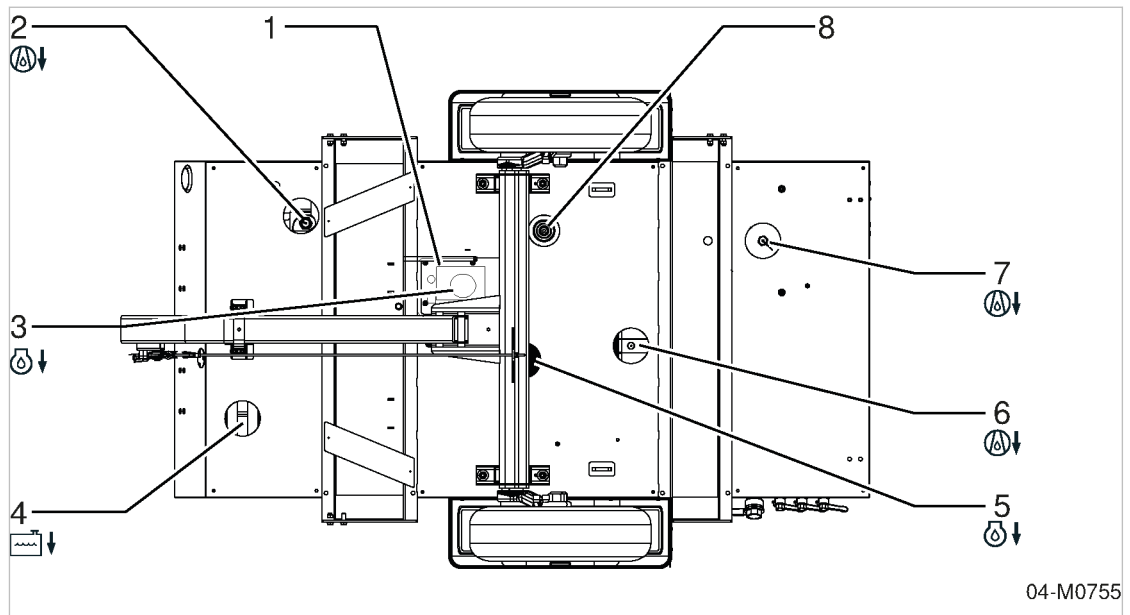


Fig. 7 View from above, roof panel removed

- | | | | |
|---|---|---|--|
| ① | Control panel | ⑱ | Engine air filter |
| ④ | Fuel tank | ⑲ | Tank ventilation |
| ⑦ | Fuel filter with integrated water separator | ⑳ | Crane suspension and lifting eye |
| ⑧ | Compressor air filter | ㉑ | Coolant expansion tank |
| ⑨ | Fan | ㉒ | Control valve with proportional controller |
| ⑫ | Drive engine | ㉓ | Safety valve |
| ⑬ | Oil separator tank | ㉔ | Airend |
| ⑭ | Oil separator cartridge (spin-on) | ㉕ | Air distributor |
| ⑮ | Control unit | ㉖ | Battery |
| ⑯ | Electrical control cabinet | ㉗ | Radiator block |
| ⑰ | Compressor oil filter | ㉘ | Exhaust silencer |

Machine from below, drainage points for operating fluids:



04-M0755

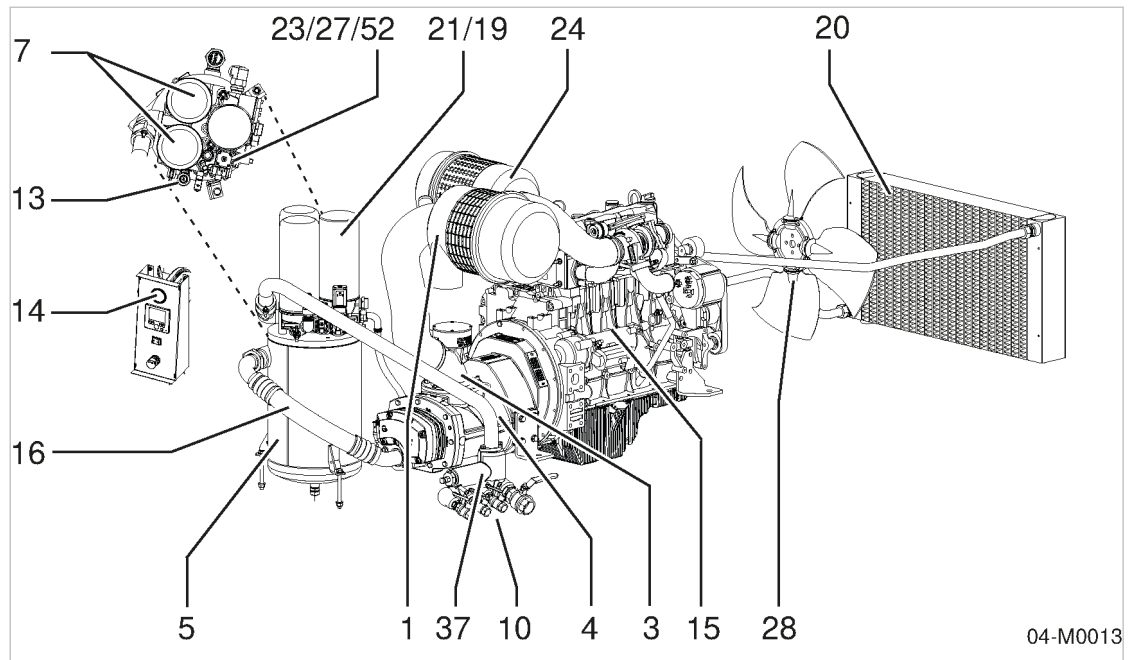
Fig. 8 Machine from below

- | | |
|---|---|
| ① Engine maintenance opening, with sheet metal cover closed | ⑤ Maintenance opening for engine oil drain |
| ② Maintenance opening for compressor oil cooler | ⑥ Maintenance opening for airend oil drain |
| ③ Engine fuel filter + oil filter drain | ⑦ Oil drain maintenance opening for compressor oil separator tank |
| ④ Engine coolant drain | ⑧ Maintenance opening for fuel tank drain |

4.3 Machine operation

Functional description of the machine (without options).

Item numbers correspond to the piping and instrument flow diagram (P&I diagram) in chapter 13.2.


Fig. 9 Machine overview

- | | |
|--------------------------------------|--|
| ① Compressor air filter | ⑲ Thermostatic valve (oil temperature regulator) |
| ③ Inlet valve | ⑳ Oil cooler |
| ④ Airend | ㉑ Oil filter |
| ⑤ Oil separator tank | ㉒ Proportional controller |
| ⑦ Oil separator cartridges (spin-on) | ㉓ Engine air filter |
| ⑩ Air distributor | ㉔ Venting valve |
| ⑬ Safety valve | ㉕ Fan |
| ⑭ Pressure gauge (on control panel) | ㉖ Minimum pressure check valve |
| ⑮ Drive engine | ㉗ Control valve |
| ⑯ Oil return line | |

Ambient air is cleaned as it is drawn in through the filter ①.

This air is then compressed inside the airend ④.

The airend is driven via an internal combustion engine ⑮.

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

The cooling oil is removed from the compressed air inside the oil separator tank ⑤ and cooled in the oil cooler ⑳. The oil then flows back to the point of injection, via the oil filter ㉑. The machine's internal pressure keeps the oil circulating. A separate pump is not required. A thermostatic valve ⑲ regulates and optimises the cooling oil temperature.

After being separated from the cooling oil inside the oil separator tank ⑤, the compressed air flows through the minimum pressure check valve ㉖ into the air distributor ⑩. The minimum pressure check valve ensures a minimal system pressure in order to maintain continuous circulation of the cooling oil in the machine.

The integrated cooling fan ㉕ ensures optimum cooling of all components within the bodywork.

4.4 Operating modes and control mode

4.4.1 Machine operating modes

The machine operates in the following modes:

- **WARM-UP**
 - The inlet valve is nearly fully closed.
 - The minimum intake air volume escapes via the venting valve.
 - The engine runs at minimum speed.
- **LOAD**
 - The inlet valve is open.
 - The engine runs at maximum speed.
 - The airend delivers compressed air.
- **MODULATING**
 - With the help of a control valve (the proportional controller) the degree of opening of the inlet valve is steplessly varied in response to the air demand.
 - The load and fuel consumption of the engine rises and falls with the air demand.
 - The airend delivers compressed air.
- **IDLE**
 - The inlet valve is closed.
 - The control valve opens, allowing pressure in the oil separator tank to be applied to the inlet valve.
 - Compressed air then flows in a closed circuit through the airend, the oil separator tank and the control valve.
 - The pressure in the oil separator tank remains constant.
 - The engine runs at minimum speed.
- **RUN-ON PERIOD/STANDSTILL**
 - The inlet valve closes.
 - The venting valve opens to de-pressurise the machine.
 - Machine cools down.
 - The engine stops.

4.4.2 MODULATING control

The control system regulates the volume of air generated to match the actual demand. The machine keeps the working pressure constant by continuously varying the volumetric flow rate within the machine's regulating range, independent of the air demand.

With the help of an electrical control valve (the proportional controller), the opening and closing of the inlet valve is continuously varied in response to the actual air demand. The airend provides compressed air for connected consumers.

This continuous delivery regulation minimises the fuel consumption of the engine. The load and fuel consumption of the engine rises and falls with the air demand.

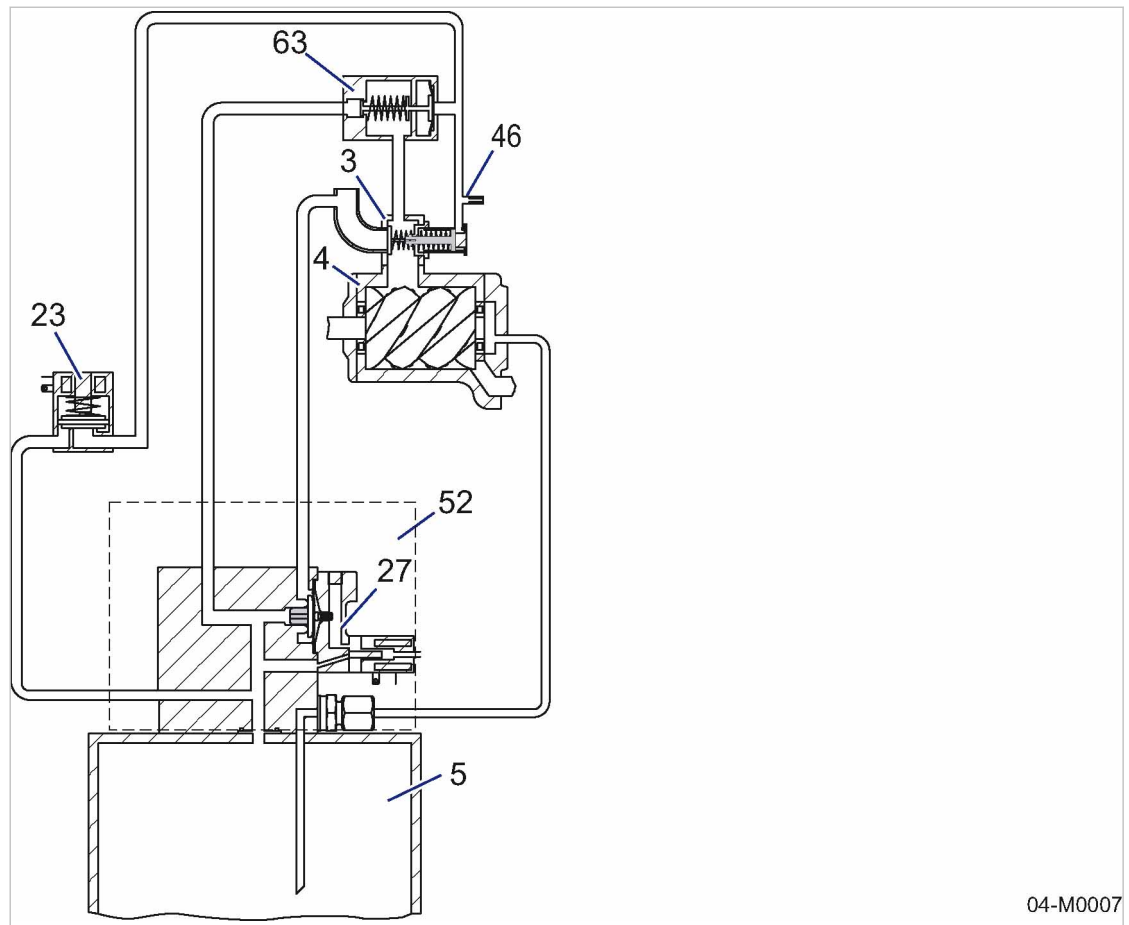


Fig. 10 Stepless regulation of volumetric flow (standstill)

- | | | | |
|----|------------------------------------|----|------------------------------------|
| ③ | Inlet valve | ②7 | Venting valve |
| ④ | Air end | ④6 | Nozzle |
| ⑤ | Oil separator tank | ⑤2 | Control valve |
| ②3 | Proportional controller (electric) | ⑥3 | Control valve (proportional valve) |

4.5 Safety devices

4.5.1 Monitoring function with shutdown

The SIGMA CONTROL SMART controller monitors important machine parameters. The machine is shut down automatically when a fault occurs.

The SIGMA CONTROL SMART saves the fault in its message history.

Further information Further information on controller fault messages is provided in chapter 9.2.1.

4.5.2 Further safety devices

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

- «EMERGENCY STOP» button
 :«The EMERGENCY STOP» button serves for immediate shutdown of the machine. The engine shuts down instantly. The pressure system is vented.

- Safety valves:
The safety valves protect the system against an impermissible pressure rise. They are set at the factory.
- Housing and covers for moving parts and electrical connections:
Provide protection against unintentional contact.

4.5.3 Battery isolating switch

A «battery isolating switch» is installed so that the battery can be disconnected completely from the machine's on-board electrical system (for protection of the electronic controller, fire protection, battery discharge protection).



NOTICE

Danger of short circuit!
Damage may occur to the machine's electrical system.

- Only use the «battery isolating switch» when the machine is switched off.
- Do not use the «battery isolating switch» as an emergency or main switch.

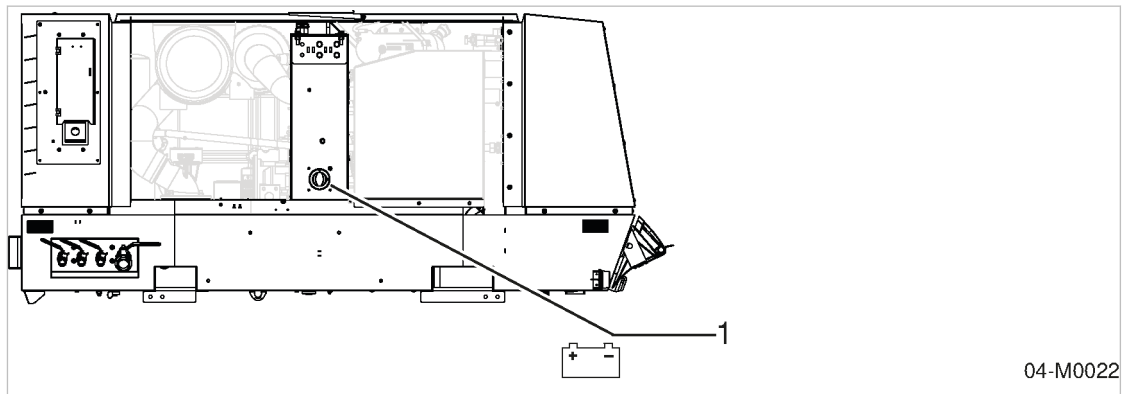


Fig. 11 Battery isolating switch

① «Battery isolating switch»

4.6 SIGMA CONTROL SMART control panel

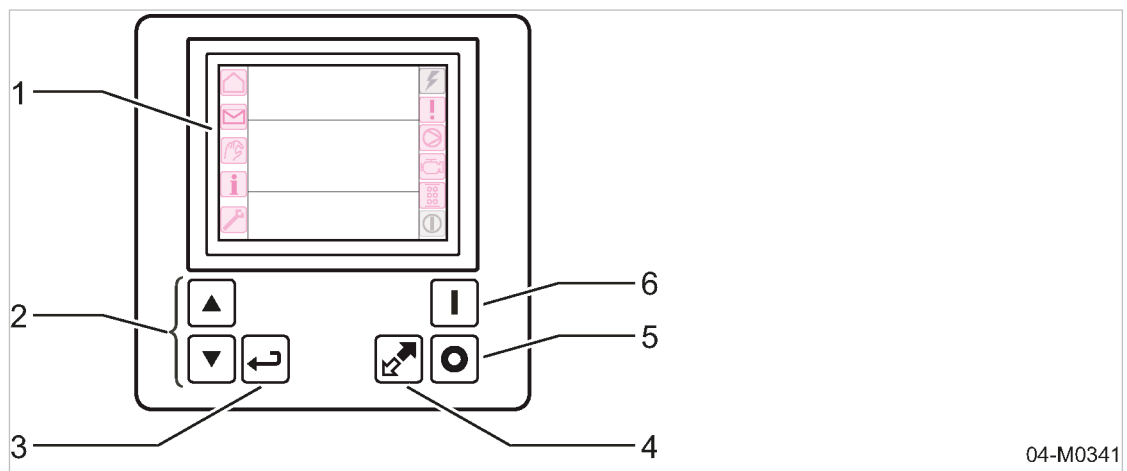








Fig. 12 SIGMA CONTROL SMART operator panel – overview

Location	Symbol	Description	Function	Background LED indicator
1	–	Indicator field or display	Graphical display.	–
2	 	«Up» key and «down» key	<ul style="list-style-type: none"> ■ Scrolls upwards or downwards through the menu options. ■ Enter settings. ■ Change values. ■ Switch between menu pages. 	–
3		«Enter» key	<ul style="list-style-type: none"> ■ Jumps to the selected sub-menu option. ■ Finish an entry. ■ Activate the input. ■ Acknowledges/resets maintenance tasks. ■ Returns to the superordinate menu item (press quickly) ■ Closes the menu (press for at least two seconds) 	–
4		Key «LOAD/IDLE»	Toggles the compressor between LOAD and IDLE operating modes.	Flashes when ready for switching to LOAD mode. Continuous light when the machine is running under LOAD.
5		«STOP» key	<ul style="list-style-type: none"> ■ Stops the machine. ■ Acknowledges/resets maintenance tasks. 	Continuous light when a fault has occurred.
6		«START» key	Starts the machine.	Flashes when ready to start. Lights continuously, when the engine is running.

Tab. 49 Instrument panel keys and displays

Further information For more information about the controller's functionality, please see the separate SIGMA CONTROL SMART user manual.

4.7 Options

The options available for your machine are described below.

4.7.1 Option da, dd
Air treatment options

For certain applications, the compressed air generated by this machine must be treated before use.

The following describes the possible air treatment options that may be fitted to the machine.

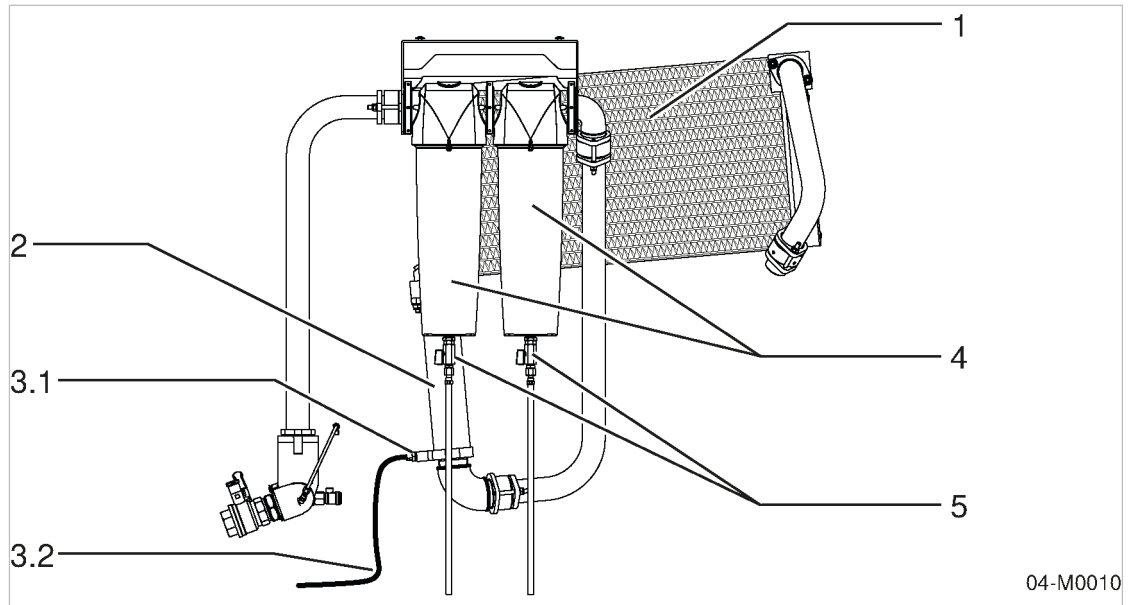


Fig. 13 Compressed air options

- | | |
|---|---|
| ① Compressed air after-cooler (Option da) | ③.2 Condensate drain pipe to exhaust gas pipe (option da) |
| ② Centrifugal separator (Option da) | ④ Filter combination (Option dd) |
| ③.1 Dirt trap (option da) | ⑤ Filter combination condensate drain (Option dd) |

4.7.1.1 Option da
Compressed air aftercooler

The compressed air aftercooler reduces the temperature of the compressed air down to only 5 K – 10 K above ambient. This exchange of heat and consequent lowering of the compressed air temperature causes the water and oil mist contained in the air to form as condensate. Most of the moisture present in the compressed air is removed in the aftercooler. This condensate, mixed with oil particles, must be drained by a separator.

4.7.1.2 Option da
Centrifugal separator

A centrifugal separator is used to isolate the condensate from the compressed air. The centrifugal separator moves the compressed air still containing moisture in a circular motion (vortex). The heavy dirt particles and water droplets contained in the condensate are thrown out against the inside walls of the separator by centrifugal force, where they then run down the sides and collect at the bottom.

**4.7.1.3 Option da
Dirt trap with condensate drain line**

A dirt trap is located at the bottom end of the centrifugal separator. As the condensate flows through the dirt trap, any dirt particles present are retained.

Subsequently, the condensate flows through the connected condensate drain pipe to the exhaust gas pipe. Due to the high exhaust temperatures during engine operation, the condensate evaporates completely.

**4.7.1.4 Option dd
Filter combination**

For oil-free compressed air, the dried compressed air passes through a prefilter and microfilter combination, from which it emerges both oil-free and free from solid particles.

**4.7.2 Option bb; od
Auxiliary electrical systems**

The following auxiliary electrical equipment is provided in the machine:

- Coolant pre-heating for diesel engine
- Battery charger for automatic start/stop

The auxiliary electrical equipment is pre-wired for operation. A separate mains power connection provides power.

A flexible power cable (supplied) connects the machine's power plug to the user's power socket.

Option bb Coolant pre-heating for diesel engine:

The engine's coolant should be pre-heated in order to protect the engine at low temperatures. A coolant pre-heating system is installed for this purpose. The coolant pre-heating works according to the principle of self-circulation.

Option od Battery charger for automatic start/stop:

The start/stop automatism can be set in the SIGMA CONTROL SMART controller for automatic machine start. The engine's starting battery must be sufficiently charged at any time, in order for the drive engine to be started even after longer standstill times. Use a battery charger.

**4.7.3 Option la, lb
Options for operation in fire hazard areas**

Diesel engines represent a potential source of ignition in environments where concentrations of gas, vapour or dust are present and can cause major fires with disastrous consequences for people, the environment and production.

For operation in fire hazard areas, the machine is equipped with the following options:

- Engine air shut-off valve
- Spark arrester

4.7.3.1 Option Ib
Engine air shut-off valve

In the event that combustible gases and vapours from the surrounding environment are drawn into the air inlet by the diesel engine, they will have the effect of an additional fuel supply. This may cause a sudden, uncontrolled increase in engine speed, which can result in mechanical damage to the machine. Without appropriate preventive measures, the engine and engine-driven equipment may be damaged irreparably. Explosion and/or fire are also a possibility.

When a combustible gas mixture is drawn into the engine, shutting off the fuel supply will no longer stop the engine. In order to shut down the engine quickly and reliably in such cases, the supply of combustion air must be cut off.

If a certain engine speed is exceeded, the engine shut-off valve closes automatically. The supply of intake air is cut off and the engine is brought to an immediate standstill.

Manually actuating the engine air shut-off valve:

Actuating the «EMERGENCY STOP» key (underneath the control panel) interrupts the air supply to the engine and, simultaneously, cuts off the fuel supply. This brings the engine to an immediate stop.

**NOTICE**

Thermal overload of the combustion engine!

Damage to the turbo charger from sudden shutdown of the engine at high loads.

- The «EMERGENCY STOP» key must only be used in a genuine emergency, when the ambient air contains a combustible gas mixture.
- Do not use the «EMERGENCY STOP» key as an OFF switch.

4.7.3.2 Option Ia
Spark arrester

Sparks in exhaust gases represent a considerable risk in environments where inflammable materials are present. Flying sparks combined with inflammable materials can cause fires and explosions.

A spark arrester on the exhaust silencer is required when operating a diesel engine in a fire hazard area, or in forestry and agricultural applications. In such applications, a spark may ignite flammable materials.

The spark arrester prevents the exhaust silencer emitting any glowing fuel residue.

4.7.4 Option ob, od
Automatic start/stop options**Option ob Automatic start/stop**

For automatic start-up of the machine, an automatic start/stop function can be set via the SIGMA CONTROL SMART controller.

Option od Trickle charging the starter batteries

The engine starter batteries must be sufficiently charged at all times, so that the drive engine can be started even after longer periods of standstill. To ensure that this is the case, a battery charger must be used. This charger should be connected to the user-end electrical system.

4.7.5 Transport options



See the separate document "Chassis Operating Manual" for information on the design of the individual chassis.

4.7.6 Frame design options for stationary machines

4.7.6.1 Option rw; rx Frame types of stationary machines

Option	Designation	Characteristics
rw	Skid	<ul style="list-style-type: none"> ■ Frame designed as skid ■ Use as stationary machine ■ Mounted on truck/trailer platform
rx	Frame	<ul style="list-style-type: none"> ■ The mounting assembly is designed as a frame. ■ Use as stationary machine ■ Mounted on truck/trailer platform

Tab. 50 Stationary machines

Further information See chapter 13.3 for the dimensional drawings of machines with stationary frame designs.

4.7.7 Option oe Closed floor pan option

The machine is fitted with a closed floor pan for catching liquids in the event of a leak, thereby preventing direct ground contamination.



The closed floor pan:

- cannot catch all liquids contained within the machine; it is intended only to capture small leaks in the vicinity of components at risk.
- is equipped with maintenance openings which are closed with bung plugs. These holes must be closed tightly following any cleaning tasks.
- When other components are removed from the closed floor pan (e.g. the sheet metal cover), they must be properly sealed prior to being reinstalled.

Position of maintenance openings in the closed floor pan:

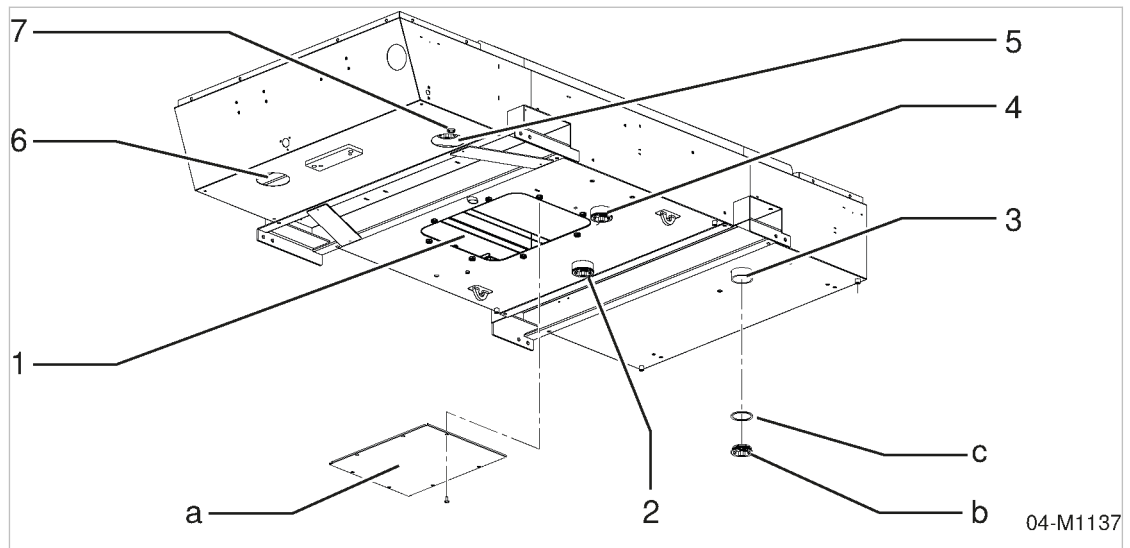


Fig. 14 Position of maintenance openings in the closed floor pan

- | | |
|--|--------------------------------------|
| ① Maintenance opening for engine and filter, with sheet metal cover closed | ⑥ Spark arrestor maintenance opening |
| ② Airend drain* | ⑦ Coolant drain (drain valve) |
| ③ Oil separator tank drain* | a Cover, screwed on |
| ④ Fuel tank drain* | b Bung plug |
| ⑤ Compressor oil cooler drain* | c Seal |

* Sealed with bung plug



For assignment of the individual maintenance openings in the floor pan, see chapter 4.2, Fig. 8.

4.7.8 Option oc TELEMATICS

The machine is equipped with a GSM/GPS unit. This is equipped with a SIM card and provides fleet management capability for the customer.

The TELEMATICS option allows you to determine the location of your portable compressor at any time using telemetric data from the GPS.

The GSM/GPS unit comprises:

- GSM modem
- GPS receiver



- Before operating the GSM/GPS unit, it must be equipped with a SIM card.
- Please observe all manufacturer instructions with regard to functionality, operation and service!

Further information Dealer/manufacturer and GSM/GPS unit model information can be found in chapter 2.9.4.

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 fuel or oil vapours 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 applied.
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Suitable fire extinguishing material must be to hand.
- Ensure that required ambient conditions are maintained.

Required ambient conditions may be:

- Ambient temperature
- Air composition at the installation site:
 - clean with no damaging contaminants (e.g., dust, fibres, fine sand)
 - free of explosive or chemically unstable gases or vapours
 - free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulfide.

5.2 Installation conditions

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

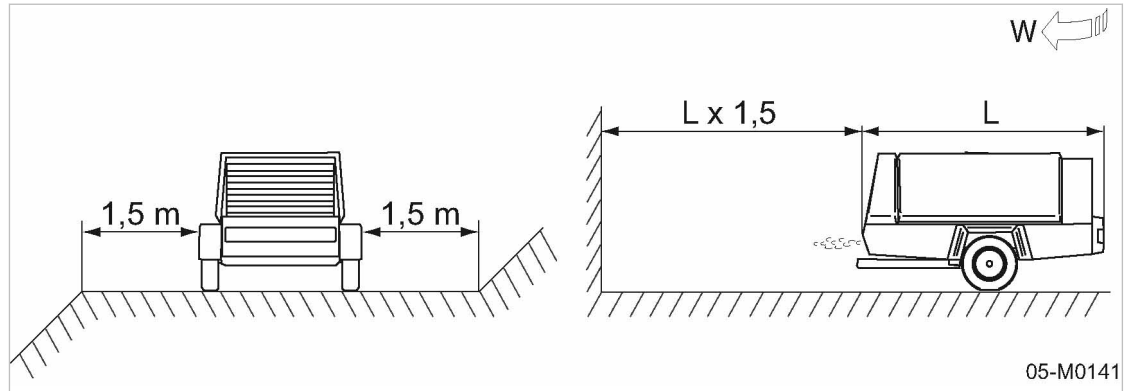



Fig. 15 Minimum distance from excavations/slopes and walls

 Wind direction

1. Keep sufficient distance (at least 1.5 m) from the edges of excavations and slopes.
2. Ensure that the machine is as level as possible.



The machine can be temporarily operated on a slope of not more than 15°.



3. Ensure accessibility so that all work on the machine can be carried out without danger or hindrance. The operator panel with the «EMERGENCY STOP» button must be accessible and within reach at any time.

4. **NOTICE!**
Fire hazard from build-up of heat and hot exhaust system!
Insufficient distance from a wall may well cause heat build-up that could damage the machine.

- Do not position the machine directly against a wall.
- Ensure always sufficient ventilation space around the machine.

5. Position the machine as far as possible from any wall.
6. Ensure there is enough free space all round and above the machine.
7. Keep air inlet and outlet openings free of obstructions so that the cooling air can flow freely through the machine.

8. Install the machine ensuring that
 - exhaust gases and heated exhaust air can escape freely.
 - Do not allow exhaust gases and heated cooling air to be drawn into the compressor.
Note the wind direction! (see figure 15)
 - Ensure the unimpeded intake of fresh air (air intake, cooling air).



9. **NOTICE!**
Ambient temperature too low.
Frozen condensate and highly viscous engine or compressor cooling oil can cause damage when starting the machine.

- Use winter grade engine oil.
- Use winter diesel fuel.
- Use low viscosity compressor cooling oil.

10. At ambient temperatures below 0 °C, follow the instructions in chapter 7.4.

5.3 Option rx Machine with stationary frame structure

Stationary machines mounted on a rack frame may be installed on the load platforms of lorries/trucks.

For a safe footing and vibration-damped storage, the machine must be fixed to the load platform via bolt-down anti-vibration mounts.

Prerequisites for installation on lorry/truck platforms:

1. Follow the vehicle manufacturer's loading guidelines for safe operation and transportation.
2. Ensure there is enough free space around and above the machine.
3. Ensure accessibility so that all work on the machine can be carried out without danger or hindrance. The operator panel with the «EMERGENCY STOP» pushbutton must be accessible and within reach at any time.
4. Keep air inlet and outlet openings free of obstructions so that the cooling air can flow freely through the machine.

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 authorised personnel.
- Do not reuse removed self-locking nuts but replace with new ones. The non-positive safety against loosening is no longer ensured when the nut is unscrewed.

Further information Details of authorised personnel are found in chapter 3.4.2.

Details of dangers and their avoidance are found in chapter 3.5.

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 found.

6.3 Perform regular maintenance on the chassis:

- See the separate document "Chassis Operating Manual" for instructions regarding maintenance on the chassis.

6.4 Option rx

Installing a machine with stationary frame superstructure on a truck platform

For safe footing, attach the machine frame with screw-in machine mounts on the load platform. See the dimensional drawing in chapter 13.3 for position and dimensions of the machine mounts.

These machine mounts are either supplied with the machine or can be ordered separately from KAESER.

Material Bolt-down machine feet (anti-vibration elements)
Fixing screws
Wrench

Precondition The machine is switched off.

Installing the machine mounts on the frame:

- Fasten the machine mounts (anti-vibration elements) at the frame:

Fasten the machine on the load platform:

Precondition The bolt-down machine mounts are attached to the machine.

1. Position the machine on the loading platform according to chapter 5.3, Installation conditions.
2. Use suitable screws to fasten the machine with the bolt-down machine feet to the loading platform.

6.5 Option od Electrical connection of the battery charger

A battery charger is used to ensure trickle charging of the starter batteries for the machine's "start-stop device" at all times. This battery charger must be connected to the user-end power supply network.

This battery charger is designed for operation in an industrial environment with a dedicated power supply network, separated from the public power supply network by a transformer or a generator. The operator must ensure that the battery charger is operated exclusively with a power supply network which meets these requirements.

- Connect the battery charger to a user-end power supply network which is separated from the public power supply network.

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 notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Commissioning tasks may only be carried out by authorised personnel!
- Make sure that no one is working on the machine.
- Ensure that all service doors and panels are locked.

Further information

Details of authorised personnel are found in chapter 3.4.2.

Details of dangers and their avoidance are found in chapter 3.5.

7.2 Before Initial Start-up (or Recommissioning)

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

7.2.1 Note when commissioning



The initial start-up of every machine takes place at the factory. Every machine is also given a trial run and passes a careful check.

- Commissioning may only be carried out by authorised installation and service personnel who have been trained on this machine.
- Remove all packing materials on and in the machine.
- Observe the machine during the first few hours of operation to ensure that it is operating correctly.

7.2.2 Special measures for recommissioning following storage or decommissioning

- Carry out the following tasks every time the machine is recommissioned following longer periods of storage/decommissioning:

Storage/ decommissioning periods longer than:	Measure
5 months	<p>Drive engine:</p> <ul style="list-style-type: none"> ➤ Take note of the information sign regarding long-term storage/decommissioning. ➤ Check whether preservation measures have been carried out on the drive engine. ➤ If preservation measures have been carried out, arrange for the entire oil reserve in the drive engine to be removed by a specialist workshop. ➤ Check the engine oil filter. ➤ Refill with fresh engine oil. ➤ Check the engine oil level. ➤ Remove desiccant from the engine air filter. ➤ Check the engine air filter. ➤ Check the engine coolant level. ➤ Check the battery charge level(s). ➤ Reconnect the battery (batteries). ➤ Check all fuel hoses for leaks, loose connections, chafe marks and damage. ➤ Check all pressure hoses on the drive engine (engine oil, coolant, charge air) for leaks, loose connections, chafe marks and damage. <hr/> <p>Compressor:</p> <ul style="list-style-type: none"> ➤ Remove desiccant from the compressor air filter. ➤ Check the compressor air filter. ➤ Check the compressor oil filter. ➤ Check the cooling oil level. ➤ Check all pressure hoses/lines on the compressor (cooling oil, compressed air, control air, condensate) for leaks, loose connections, chafe marks and damage. <hr/> <p>Bodywork:</p> <ul style="list-style-type: none"> ➤ Clean the bodywork with a grease- and dirt-removing agent.
36 months	<p>Technical condition:</p> <ul style="list-style-type: none"> ➤ Arrange for the overall technical condition to be checked by an authorised KAESER SERVICE agent.

Tab. 51 Measures for recommissioning the machine following storage or decommissioning

7.3 Checking installation and operating conditions

- Check and confirm all the items in the check list before first start-up of the machine.

To be checked	See chapter	Confirmed?
➤ Are the operators fully conversant with the applicable safety regulations?	–	
➤ Have all of the installation conditions been fulfilled?	5	
➤ Is there sufficient cooling oil in the separator tank?	10.5.1	
➤ Is there sufficient oil in the engine?	10.4.5	
➤ Is the maintenance indicator on the air intake filters (engine and compressor) OK?	10.4.2, 10.5.7	
➤ Is there sufficient coolant in the coolant expansion tank?	10.4.1	
➤ Is there sufficient fuel in the fuel tank?	–	
➤ Are all access doors closed and all body panels in place?	–	
➤ Are the tyre pressures OK?	–	

Tab. 52 Installation conditions checklist

7.4 Low-temperature operation (winter)

The machine's electrical system is designed for starting at ambient temperatures down to -10 °C.

- In temperatures below 0 °C, use the following operating materials/components:
 - Winter-grade engine oil
 - Low-viscosity cooling oil for the compressor
 - Winter-grade diesel fuel
 - Stronger battery



Under extremely cold conditions, use compressed air hoses that are as short as possible.

7.4.1 Jump-starting the machine

If the machine's starter battery is discharged, the machine can be jump-started with the batteries of another vehicle or machine powered by combustion engine.

Material Jump leads

Precondition The machine is disconnected from the towing vehicle and safely parked.


WARNING

Fire and explosion hazard.

Short-circuit currents caused by short-circuited battery. A damaged battery can catch fire or explode.

Battery housing may crack and allow electrolyte to spray out.

- Observe the instructions provided with the battery jump leads.
- Do not connect the battery jump leads to the negative terminal of the discharged battery or to the bodywork of the machine.
- Proceed with caution.

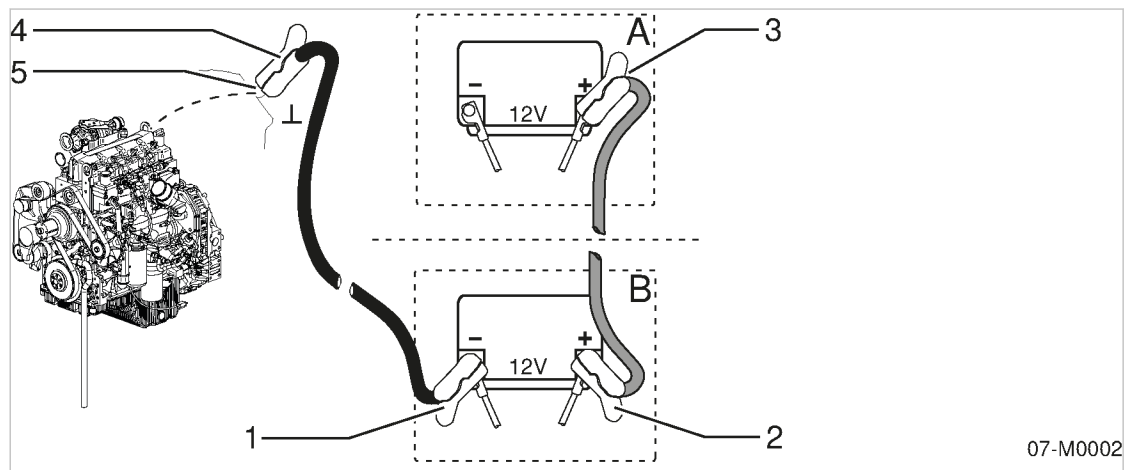


Fig. 16 Jump lead connection diagram

- | | |
|--|---|
| (A) Machine battery (receiving battery) | (3) Positive terminal clamp (red) on machine battery |
| (B) Assisting vehicle battery (external donor battery) | (4) Negative terminal clamp (black/blue) on machine earth |
| (1) Negative terminal clamp (black/blue) on battery of assisting vehicle | (5) Bare metal point on machine engine block (earth) |
| (2) Positive terminal clamp (red) on battery of assisting vehicle | |

Comply with safety instructions:

1. WARNING!

Fault in jump-start process!

- Connect batteries of the same nominal voltage only.
- Ensure that machine and assisting vehicle do not touch.
- Switch off all consumers prior to connecting and disconnecting the batteries.
- Only use battery jump leads of sufficient diameter and with insulated terminal clamps.
- Observe the instructions provided with the battery jump leads.
- Keep jump leads away from rotating parts.
- Avoid short circuits due to incorrect polarising and/or bridging with tools.
- Do not bend over the batteries when attaching jump leads.
- Do not attempt to start the machine if the battery is frozen. Allow the battery to thaw first.
- Do not try to start the machine with a boost charger.

2. Comply with safety instructions when jump-starting and using starter batteries.

Preparations:

1. Park the assisting vehicle a close distance from the engine, without any direct bodywork contact.
2. Stop the engine on the assisting vehicle.
3. Open the battery access (remove maintenance doors/bonnet and terminal caps).
4. Shut down all power consumers.

Connecting the battery jump leads:

1. Clamp the first terminal clamp (3) on the red jump lead to the positive terminal on the machine's battery.
2. Clamp the second terminal clamp (2) on the red jump lead to the positive terminal on the assisting vehicle's battery.
3. **DANGER!**
Explosion hazard!
Sparks can ignite an explosive gas mixture.
 - Do not, under any circumstances, connect the negative terminal of the assisting vehicle to the negative terminal of the battery in the machine.
Sparks may be caused when connecting and disconnecting.
 - Proceed with caution.
4. Connect the first terminal clamp (4) on the black jump lead to the engine block or a connected, solid and unpainted metal component of the machine (5) (as far as possible from the battery).
5. Clamp the second terminal clamp (1) on the black jump lead to the negative terminal on the assisting vehicle's battery.

**Starting the engine:**

1. Start the engine of the assisting vehicle and run at high speed.
2. Start the machine engine.



Upon a successful start, run both engines for approximately 10 – 15 minutes. This is particularly important for deep-discharged batteries. The battery will pick up only a little current at the beginning and has a high internal resistance. Any voltage peaks occurring in the engine generator in this state can be attenuated only by the battery of the assisting vehicle. In particular the engine electronics of the machine are sensitive to voltage surges and could easily be damaged.

Disconnecting the battery jump leads:

1. Stop the engine on the assisting vehicle.
2. Disconnect the jump leads in reverse order: first the negative, then positive terminals.
3. Replace the terminal caps.
4. Close the maintenance doors/bonnet.



If the machine's engine stops as soon as the cables are disconnected, this could indicate major damage (e.g. to the engine generator or batteries), which must be repaired by a specialist workshop.

7.4.2 Option ba Starting up low-temperature equipment

Option bb Starting the engine coolant preheating:

The engine coolant can be preheated to improve start-up under cold conditions.

- Start the coolant preheating as described in chapter 7.5.

7.5 Option bb; od Commissioning electrical equipment

The auxiliary electrical equipment is pre-wired for operation. A separate mains power connection provides power. A common device plug is provided at the lower part of the machine, beneath the operator panel, for the connection with the supplied power cable.

The supply voltage must be permanently connected as long as the compressor is to be operated in standby mode. Trickle charging the battery ensures that it is always in a condition to start the portable compressor.

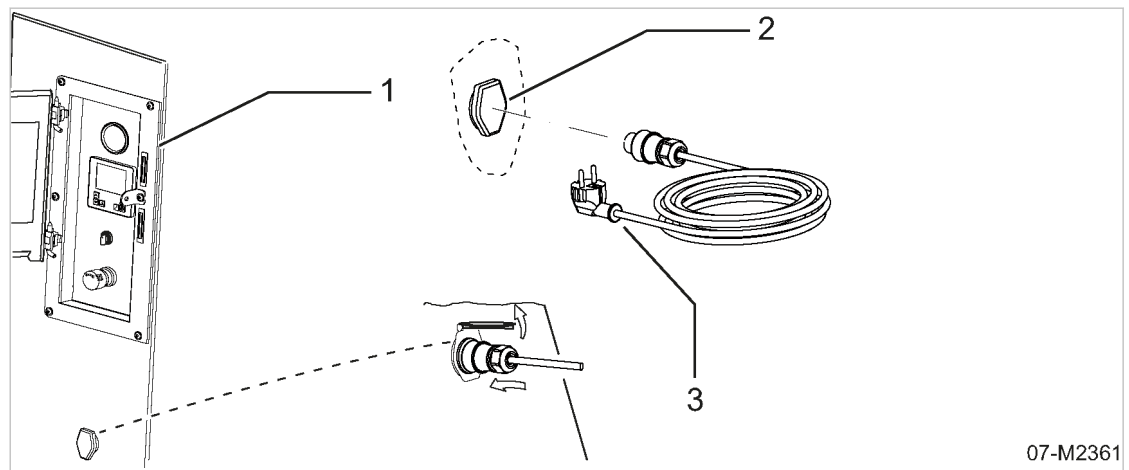


Fig. 17 Connect auxiliary electrical systems

- ① Operating panel
- ② Device connector (plug) for auxiliary electrical systems
- ③ Power cable



1. DANGER!

Danger of fatal injury from electric shock!

Serious injury or death can result from a short-circuit in the electrical equipment.

- The power cable for the electrical equipment may only be plugged into an electrical socket fitted with a protective earth.
- Have the electrical equipment and associated wiring checked according to the maintenance schedule.

2. Connect the power cable with the user's power outlet.

Further information Chapter 4.7.2 gives an overview of the electrical equipment.

8 Operation

8.1 Ensuring safety

Here you will find instructions for a safe operation of the machine.
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'.
- Make sure that no one is working on the machine.

Preventing accidental contact

Intensely heated, rotating or electrically live components can cause severe injuries.

- Ensure that all doors, canopy, and panels are closed,
- Do not carry out any checks or settings while the machine is running.
- Shut down the machine before opening any doors/canopy.

Safe working with compressed air tools and hoses

Open and pressurised compressed air hoses move erratically and can cause serious injury to people.

- Pressurise compressed air hoses only after the tool has been connected.
- Do not pressurise open compressed air hoses.
- Detach compressed air hoses only after the hose has been purged of compressed air.
- At working pressures >7 bar, compressed air hoses should be secured by a cable to their respective outlet valves.

Condensate formation in compressed air hoses

Use the shortest possible compressed air hoses to minimise the temperature difference between the machine's compressed air outlet and the air tool. The hose length represents a cooling section. With increasing cooling, the compressed air gives off moisture capable of damaging the air tool.

- Use short compressed air hoses.

Condensate formation in compressed air receivers

Compressed air stored in a containers will cool down. The compressed air precipitates moisture that collects at the container's bottom. Corrosion may damage the container.

- Regularly drain the condensate.

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

8.2 Starting and stopping

Precondition No personnel are working on the machine.
Service doors and panels are locked.

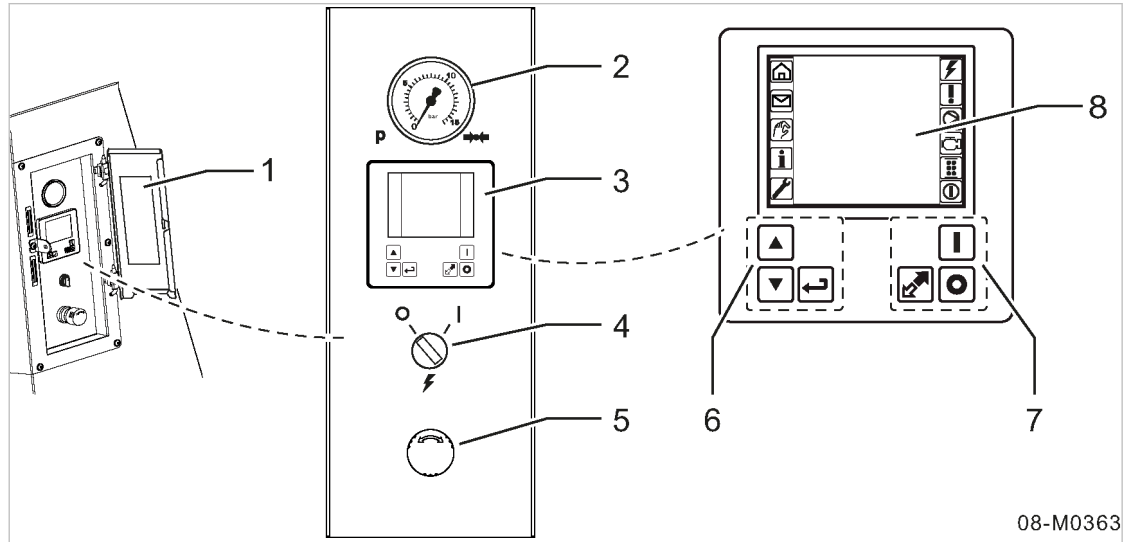


Fig. 18 Starting instruments

- | | |
|--|--------------------------------|
| ① Instrument panel cover, with adhesive label providing brief instructions | ⑤ «EMERGENCY STOP» push button |
| ② Operating panel of the SIGMA CONTROL SMART controller | ⑥ «Menu bar navigation» keys |
| ③ «Controller ON/OFF» switch | ⑦ Operation keys |
| ④ Compressed air outlet pressure gauge | ⑧ Display |

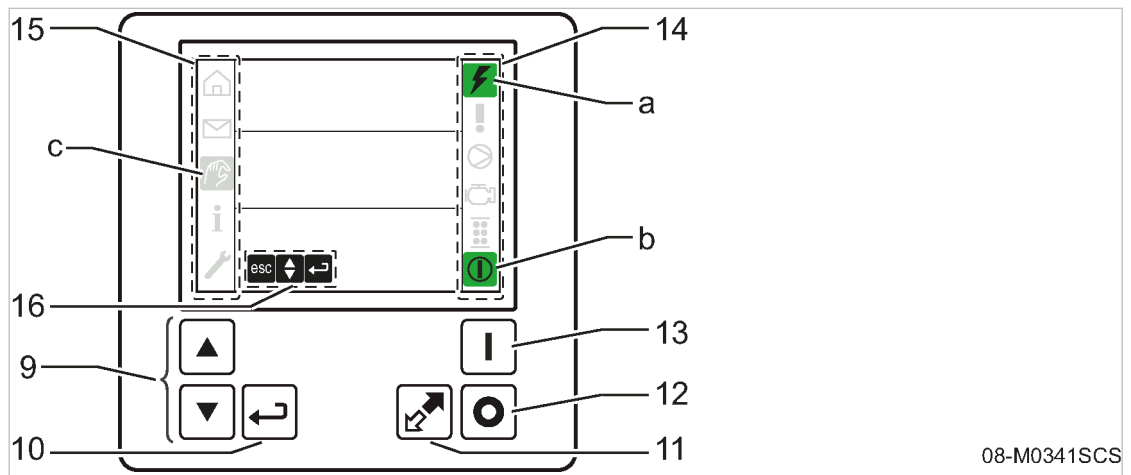


Fig. 19 Instrument panel keys and indicators

- | | |
|--------------------------|-----------------------|
| ⑨ «up» and «down» keys | a Controller power ON |
| ⑩ «Enter» key | b READY (flashes) |
| ⑪ «LOAD/IDLE» toggle key | ⑮ Menu bar |
| ⑫ «STOP» key | c Settings menu |
| ⑬ «START» key | ⑯ Navigation menu |
| ⑭ Status bar | |

8.2.1 Follow the brief operating instructions

Brief instructions containing symbolic information on starting and stopping are attached at the inside of the instrument panel cover.

Starting sequence:

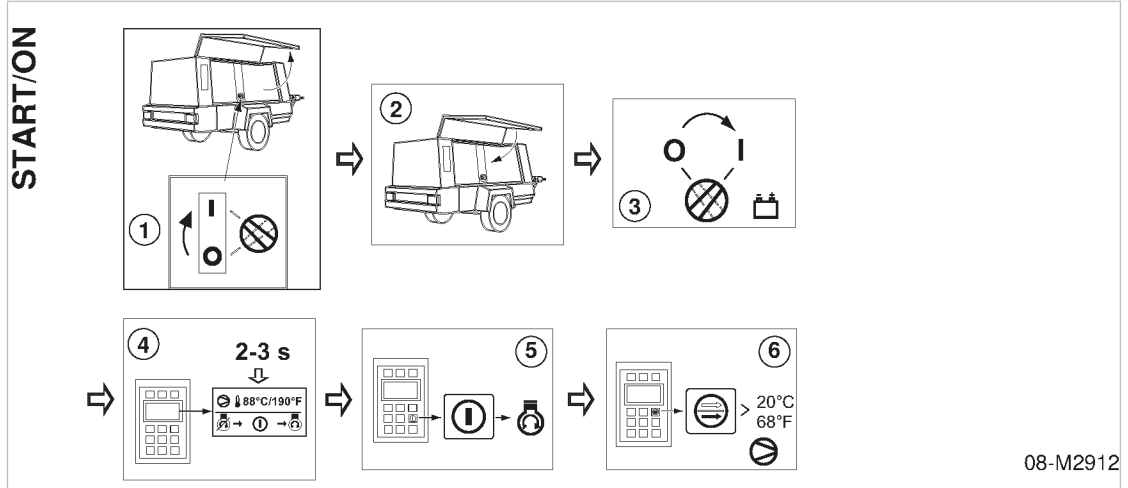


Fig. 20 Brief instructions on starting procedure

- Open the instrument panel cover and follow the brief instructions on the starting procedure attached at the inside.

Shut-down sequence:

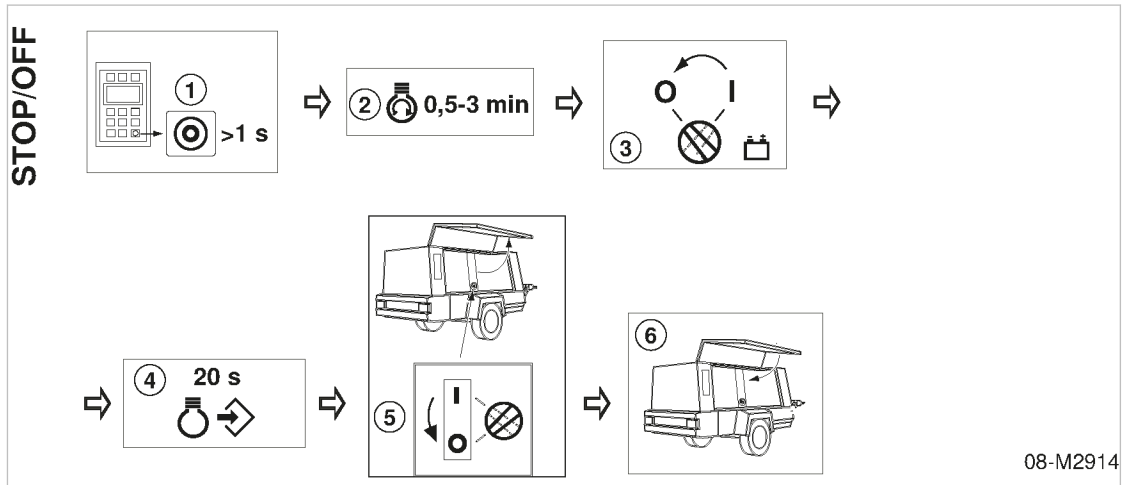


Fig. 21 Brief instructions on stopping procedure

- Open the instrument panel cover and follow the brief instructions on the stopping procedure attached at the inside.



The individual steps are fully explained below.

8.2.2 Commissioning the machine

Notes concerning snow and ice:

Considerable snow or ice may build up on the machine under low temperature conditions.

- Remove any snow and ice from the machine before operating.

As a safety measure, check the function of the «EMERGENCY STOP» pushbutton.



1. **WARNING!**

«EMERGENCY STOP» pushbutton locked out.

The machine cannot be stopped quickly in an emergency.

- Check the function of the «EMERGENCY STOP» pushbutton.
- Do not operate the machine if the «EMERGENCY STOP» pushbutton does not work.

2. Push the «EMERGENCY STOP» push-button.

The «EMERGENCY STOP» push-button cannot be pressed or does not engage: Defrost the «EMERGENCY STOP» push-button.

3. Disengage the «EMERGENCY STOP» push-button again.



The «EMERGENCY STOP» push-button still does not function after defrosting.

- Have the «EMERGENCY STOP» push-button replaced.

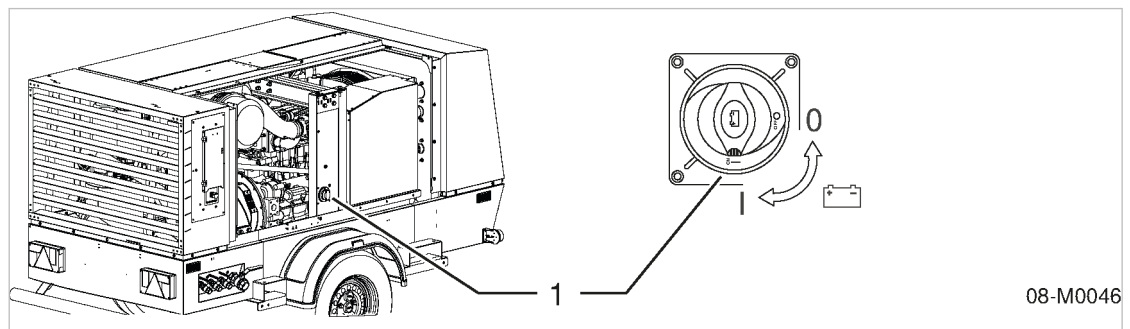


Fig. 22 «Battery isolating switch»

- ① «Battery isolating switch»
 I – on
 0 – off

1. Open the left-hand door.

2. Turn on the «battery isolating switch».

The battery is now connected to the machine's electrical system.

3. Close the door.

The machine can now be started.

8.2.3 Starting the machine



NOTICE

Serious damage to the engine from cold starting sprays!

Cold-start assists, such as ether or other sprays, can cause severe engine damage.

- Do not use cold start sprays.

Preparing the start:

1. Open the control panel cover.
2. Switch the «Controller ON/OFF» key to ON.
 - The controller boots up and the operating indicators appear on the display.
 - The *Ready* indicator flashes if the controller has no fault.

Starting the engine:

- Press the «START» key.
 - The machine automatically preheats; the preheating time depends on the ambient temperature.
 - The engine is started
 - The machine is in *warm-up phase* and runs at IDLE speed.



- The machine is ready to be switched to LOAD as soon as the specified *air end discharge temperature (ADT)* is attained. (for temperature settings, see chapter 2.7.4)
- If the starting sequence fails or is interrupted by pressing the «EMERGENCY STOP» push button, the “re-start inhibitor” is activated for 20 seconds. The display shows the remaining time before another start can be attempted.



Despite "preheating", the engine does not start in cold weather.
The engine is still too cold.

- Restart the controller.
 - Switch off the «controller ON/OFF» key.
 - Switch on the «Controller ON/OFF» key.
- Press the «START» key. The engine preheats once again.

Switching the machine to LOAD operation:

Precondition **Specified value for the *engine coolant temperature (ECT)* is attained:**

- Press «LOAD/IDLE» key.
The machine switches to LOAD mode and is ready to deliver compressed air.

Precondition **Specified value for the *engine coolant temperature (ECT)* is not attained:**

- Press «LOAD/IDLE» key.
 - The load demand is saved.
 - The engine runs up.
 - As soon as the specified *engine coolant temperature (ECT)* is attained, the machine automatically switches to LOAD and is ready for operation.

8.2.4 Setting the compressed air discharge pressure

The compressed air discharge pressure can be modified only when this option is activated in the machine controller.

(Separate user manual for the SIGMA CONTROL SMART controller).

The compressed air discharge pressure (nominal pressure) can be set when the engine is in standstill (with the controller activated) or during operation (with the machine running).

- The pressure can only be set lower than the maximum working pressure (nominal pressure) of the machine.
- You can adjust the settings in increments of 0.1 bar or 1 psi.
- The adjustment appears on the display.


CAUTION

Danger from incorrectly set pressure!

Danger from malfunctioning or not functioning compressed air tools when the machine's discharge pressure is set incorrectly.

- Use connected compressed air tools only with the pressure appropriate for its purpose (tool working pressure).
- Comply with the information and notes provided in the compressed air tool's operating instruction.

The Settings menu for the compressed air discharge pressure can be reached in two ways:

- Quick access from the main menu
- Access via menu structure

Precondition The controller is switched on
The pressure adjustment option is enabled.

- Select the access type.

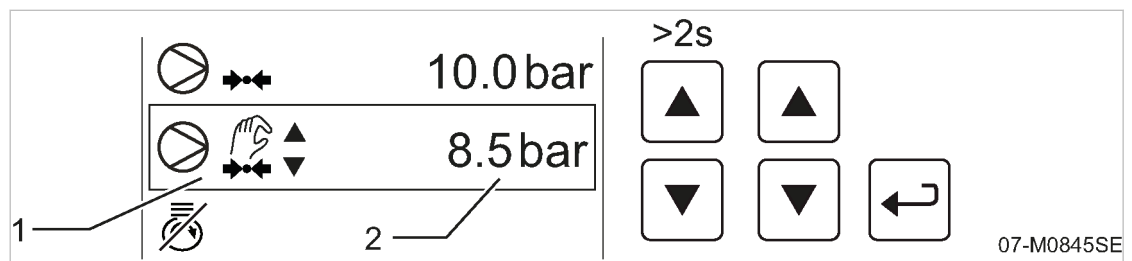
Quick access from the main menu:


Fig. 23 Quick access adjustment compressed air output pressure

- ① Symbol for setting the compressed air discharge pressure
- ② Set value

1. Press «UP» or «DOWN» for more than two seconds and release.
The display immediately jumps to the line for "Setting the compressed air discharge pressure".
The Settings menu has a flashing frame.
2. Press the «UP» and/or «DOWN» keys to select the required pressure.
The set value for the compressed air discharge pressure is immediately active and remains saved.
3. Press «Enter».
The frame disappears.
4. Press «Enter».
Jumps back to the menu bar, the "Main menu" symbol appears with a black background.

Access via menu structure:

Precondition The Settings menu (hand symbol) is selected.

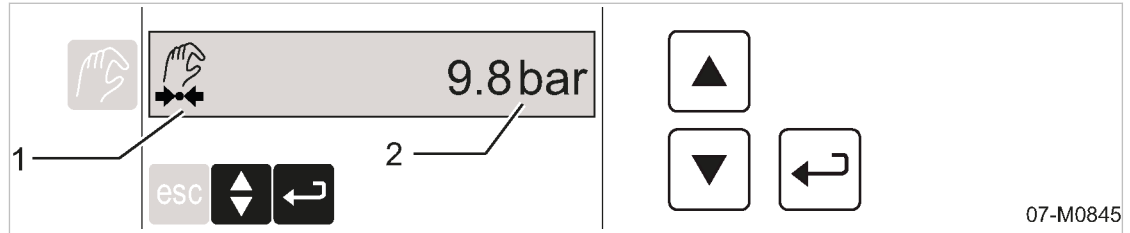


Fig. 24 Setting the compressed air discharge pressure

- ① Adjustment of compressed air discharge pressure
- ② Set value

1. Press «down» for a short time.
The "Setting compressed air discharge pressure" line is framed.
 2. Press «Enter».
The frame flashes and thus signals that input is possible.
You can set the required compressed air discharge pressure.
 3. Press the «UP» and/or «DOWN» keys to select the required pressure.
The set value for the compressed air discharge pressure is immediately active and remains saved.
 4. Press «Enter».
The frame stops flashing.
 5. Press «Enter» for at least two seconds.
Jumps back to the menu bar, the "Settings menu" symbol receives a black background.
- or:
1. Press «UP» or «DOWN» until all lines of the Settings menu no longer have a frame.
 2. Press «Enter» briefly.
Jump back to the menu bar, the "Settings menu" symbol receives a black background.



The modification of the pressure setting at the display can be blocked upon the entry of the Customer password (password level 1). The last setting of the compressed air discharge pressure is retained.

8.2.5 Shutting down the machine

NOTICE

Thermal overload of the turbocharger!
Abrupt stopping of the engine under load can cause a fault or damage to the turbo charger.

- Use the controller to shut down the machine as normal; do not use the «EMERGENCY STOP» push button to save time.

Switching the machine to the run-on phase:

- Switch the machine to the run-on phase.
 - ➤ Press «LOAD/IDLE» key.
 - The machine switches to *unloaded run-on*.
 - The engine runs at IDLE speed.
 - Oil separator tank (OST) is vented.
 - The inlet valve closes.
 - ⏳ 0.5 - 3 minutes (motor can be switched off).
 - ➤ Press and hold the «STOP» key for more than 1 second.
 - The engine switches off.

Shutting the engine down:

- Turn the engine off after the cooling-down phase.
 - ➤ Press and hold the «STOP» key for more than 1 second.
 - The machine switches to *unloaded run-on*.
 - The engine runs at IDLE speed.
 - Oil separator tank (OST) is vented.
 - The inlet valve closes.
 - The engine switches off, controlled by a timer.



- The controller display shows *back pressure* if the pressure in the oil separator tank is still > 1 bar.
- When the machine is fully vented, the display changes to *ready to start*.
- When the OST is fully vented after shut down, the re-start inhibitor is activated and is indicated by the timer counting down from 20 seconds.

Shutting down the controller:


1. **NOTICE!**
Memory fault!
Damage to the machine electronics and/or controller is possible.
 - Shut down the controller only after the engine control unit has completed save process.
2. Shut down the controller.
 - ➤ Switch off the «controller ON/OFF» key.

Shutting down the machine:


If the machine is not to be used again, the «Battery isolating switch» should be switched off.



1. **NOTICE!**
Danger of short circuit!
Damage to the machine electrics is possible.
 - Use the «battery isolating switch» only when the machine is at standstill.
 - Do not use the «battery isolating switch» as a main or emergency switch.

2. Disconnect the machine's power supply.
 - ⏱ 30 seconds.
 - ➤ Switch off the «battery disconnect switch».
 - The battery(ies) is/are disconnected from the machine's electrical system.
3. Close all «compressed air outlet valves» on the air distributor.
4. Close the operating panel cover and all doors. Lock if necessary.

8.2.6 Checking the shut-off valve

To prevent customer equipment from venting (after the machine shuts down), a shut-off valve is installed in the control line between the oil separator tank and compressed air distributor.

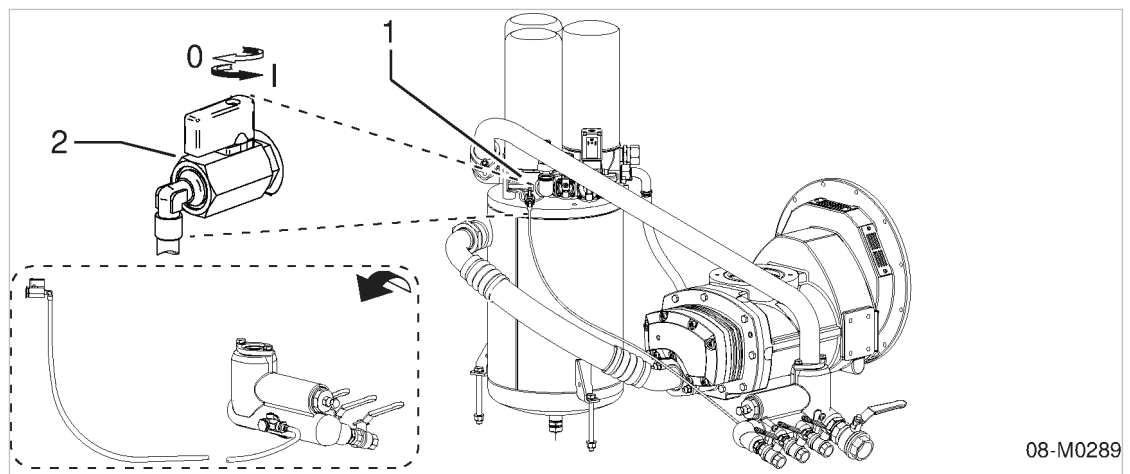


Fig. 25 Control line shut-off valve

- ① Multivalve on oil separator tank
- ② Shut-off valve (ball valve)
 - 1 - Open
 - 0 - Closed

1. Open the left-hand door.
2. Check the shut-off valve on the multivalve.
 - If the shut-off valve is closed: Open the shut-off valve.
 - The machine is ready for operation.
3. Close the door.

8.2.7 Shutting down in an emergency

Stop the machine in case of danger by pressing the «EMERGENCY STOP» pushbutton.



Use the «EMERGENCY STOP» pushbutton to stop the machine only in **emergencies**.

Quick shut-down:

- Actuate the «EMERGENCY STOP» pushbutton.
 - The engine stops immediately.
 - The «EMERGENCY STOP» push-button remains locked after being pressed.

Put the machine back into operation:

When the fault has been cleared, the machine must be reset.

Precondition Fault rectified.

- Disengage «EMERGENCY STOP» push button.
- Confirm the message with the «Apply» key .
The machine can now be restarted.

8.3 Confirming alarm and warning messages

- The information evaluated in the controller is stored in the event memory.
- The warning and alarm messages are shown on the display.
- The message is stored in the controller's event memory at the same time.

8.3.1 Confirming alarm messages

When an alarm message is displayed,

- the machine is shut down and/or cannot be restarted.
- The associated signal indicator illuminates red.

Precondition Fault rectified.

- Confirm the message with the «Enter» key.
The alarm indicator is extinguished.
The alarm symbol in the status bar remains active.



If the fault is not yet rectified:
The message line in the event memory has a coloured (red) frame.

8.3.2 Confirming warning messages

Before an alarm, the system displays a warning and

- The assigned signal indicator illuminates orange.

Precondition The cause of the alarm is rectified

- Confirm the message with the «Enter» key.
The warning message is extinguished.
The warning symbol in the status bar remains active.



If the cause of the fault is not yet rectified:
The message line in the event memory features a coloured (orange) frame.

Acknowledging the message:

The status bar of the event memory continues to display the confirmed message.

Upon rectification of the fault, the message must be acknowledged by restarting the controller.

Precondition Machine is shut down
 Fault is rectified

- Switch the «Controller ON/OFF» key to ON.
 - The acknowledged message is deleted.
 - The machine can be started.

Further information For more information about the event memory and resetting the maintenance timer, see the separate user manual of the SIGMA CONTROL SMART

8.4 Operating the options

- Comply with all instructions.

8.4.1 Option ob

Operating the machine with the "Automatic start/stop" option

If you purchased a machine with the "Automatic start/stop" option, the operator can select between running the controller in *automatic* or *manual* mode. The machine is factory-set for *manual* operation when you switch the machine on. The machine can be controlled in *manual* mode as usual during normal operation.



The respective current setting is saved.



The battery can deplete if the controller stays continuously switched on (readiness for automatic machine start). The starting voltage is insufficient to start the engine when needed. Moreover, exhaustive discharge of the battery can result in battery damage.

- Use battery maintenance charge.

Precondition External connector cable of the master controller connected.
 No personnel are working on the machine.
 Service doors and panels are locked.

Preparing readiness to start:

- Switch on the «Controller ON/OFF» switch.
 - The controller boots up and the operating indicators appear on the display.
 - If necessary, the engine control unit decides to automatically preheat the engine with the glow plug.
 - The *READY* indicator flashes if the controller has no fault.

Waiting for start command:

After switching on the machine (with automatic mode active) the «START» key must be pressed once to *Prepare start*.

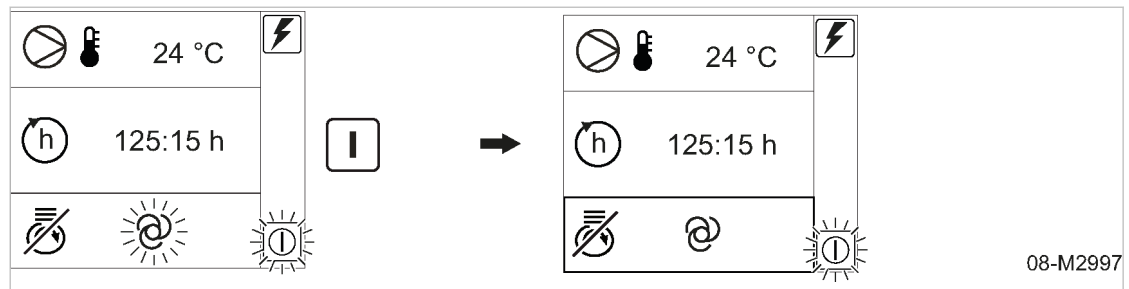


Fig. 26 Preparing start of the "Automatic start/stop"

- Press the «START» button.



The machine is ready to start.

The remote contact of the master control system signals the compressed air demand to the controller:

- The motor/engine is automatically started.
- The controller switches the machine to LOAD as soon as the required airtend discharge temperature (ADT)* has been attained.
- If the starting sequence fails or is interrupted by pressing the «EMERGENCY STOP» push-button, the "re-start inhibitor" is activated for 20 seconds. The display shows the remaining time before another start can be attempted.

Further information * For temperature settings, see chapter 2.7.4

8.4.1.1 Suspend automatic mode for operating cycle (forced manual operation)

The automatic operation can be cancelled when the machine is standing still or running!

If the «START» or «STOP» buttons are pressed for longer than two seconds, the controller switches to manual operation (manual mode) for this operating cycle.

- Push the «START», or «STOP» button longer than 2 seconds.

The machine can be controlled as usual in normal operation.



The forced manual mode applies only to the current operating cycle. After shut-down and re-start of the machine, the *Automatic* mode is automatically reselected.

8.4.1.2 Shutting down the machine

When the compressed air demand via the remote contact of the master controller stops, the machine shuts down as follows:

1. The machine switches to *run-on phase*:

- The engine runs at IDLE speed.
- The inlet valve closes.
- Oil separator tank (OST) is vented.



When there is a new compressed air demand, the machine starts and goes into LOAD mode.

2. The machine switches to *engine run-on*:

- The engine cools down.
- The engine switches off.



Starting is not possible; the machine switches off and is subsequently restarted.

Switch the controller off:



1. **NOTICE!**
Memory fault!
Damage to the machine electronics and/or controller is possible.
 - Shut down the controller only after the engine control unit has completed its save process.
2. Switch the controller off:
 - ⌚ approx. 3 minutes.
 - ➤ Switch off the «controller ON/OFF» key.

Further information Please see the separate operating manual of the SIGMA CONTROL SMART for details on changing the parameters of the "Start-stop automatic" and for changing the operating mode to *manual mode*.

8.4.2 Option bb Running the coolant pre-heating

- Carry out the coolant pre-heating as described in chapter 7.4.2.

8.4.3 Option lb Shutting down the machine immediately in the event of danger

In the event of danger (intake of a combustible gas mixture from the ambient air), the engine can be shut down immediately by closing the engine air shut-off valve.

In the event that a combustible gas mixture is drawn in with the ambient air, shut the engine down immediately by pressing the «EMERGENCY STOP» button.



Only use the «EMERGENCY STOP» button for shutting down the machine in an **emergency!**

Precondition A combustible gas mixture is detected in the surrounding air

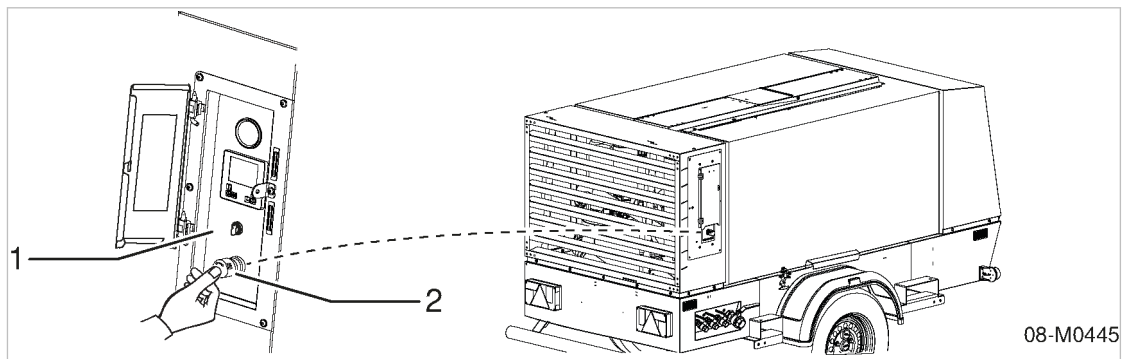


Fig. 27 «EMERGENCY STOP» button for closing the engine air shut-off valve

- ① Control panel
- ② «EMERGENCY STOP» button

Shutting the machine down quickly:

- Activate the «EMERGENCY STOP» button.
 - The engine shuts down immediately.
 - The fuel supply is instantly cut off.
 - The engine air shut-off valve closes and the supply of intake air is cut off.
 - The engine air shut-off valve remains closed for approx. 1 minute and then opens again.
 - The «EMERGENCY STOP» button remains locked off after being activated.
 - The restart inhibitor on the controller is activated (lock-off period 20 seconds).

Decommissioning the machine:

1. Switch off the «Controller On» switch.
2. Switch off the «battery isolating switch».

Recommissioning the machine following an emergency shutdown:

Before the machine can be operated again, it must be unlocked.

Precondition No combustible gas mixture is present in the ambient air.

- Unlock the «EMERGENCY STOP» button.
The machine can now be restarted.

8.5 Refuelling the machine

In order to avoid accidents caused by igniting fuel, special caution must be exercised when filling the fuel tank.

**DANGER**

Fuel constitutes a fire hazard!

Overflowing or spilled fuel can ignite upon contact with hot engine parts, open flames or sparks, resulting in serious burns.

- Only refuel the machine after switching it off and allowing it to cool down.
 - Never refuel the machine in the vicinity of open flames or sparks.
 - Do not allow fuel to spill or overflow.
 - Do not smoke.
- Follow all instructions carefully.

8.5.1 Use the correct type of fuel

The use of incorrect fuels in modern diesel engines may – in the most serious cases – result in a total loss of the injection system and engine.

In the worst case scenario, irreparable damage occurs when a modern diesel engine is started with petrol or premium-grade petrol in the fuel tank. Because these fuels lack the special lubricating properties of diesel fuel, it is primarily the precision components in the injection system that are destroyed. Secondary damage may occur to the drive engine.

Example: Machine with diesel engine	Measures
<ul style="list-style-type: none"> ■ Fuel tanks are filled with petrol or premium-grade fuel. ■ Error is noticed. ■ Drive engine is not started. 	<ul style="list-style-type: none"> ➤ Do not start the engine under any circumstances. ➤ Arrange for the incorrect fuel to be drained / pumped out from the tanks. ➤ Arrange for the fuel tanks to be cleaned. ➤ Fill the tanks with diesel fuel.
<ul style="list-style-type: none"> ■ Fuel tanks are filled with petrol or premium-grade fuel. ■ Error is not noticed. ■ Drive engine is started. 	<ul style="list-style-type: none"> ➤ Switch off the drive engine immediately. ➤ Contact a specialist workshop. ➤ Arrange for the incorrect fuel to be drained / pumped out from the tanks. ➤ Arrange for the fuel tanks to be cleaned. ➤ Arrange for the fuel system to be cleaned. ➤ Have the injection system checked/replaced. ➤ Arrange for the drive engine to be checked / replaced. ➤ Fill the tanks with diesel fuel.

Tab. 53 Measures required should the fuel tanks be filled with the incorrect fuel type

The manufacturer shall not be liable for any damage caused due to filling the tanks with the incorrect fuel type.

The fuel tanks must be filled exclusively with liquid fuel of the correct type and the recommended specification.

A label placed on the fuel tank in the vicinity of the filler neck indicates the correct fuel type, see Figure 28.



NOTICE

Operating the machine with the incorrect fuel type will result in damage to the injection system and the drive engine!

- Arrange for the fuel tank to be emptied and cleaned.
- Arrange for the entire fuel system to be cleaned.
- If necessary, replace the injection system/drive engine.
- Only fill the fuel tank with diesel that complies with the recommended fuel specifications.

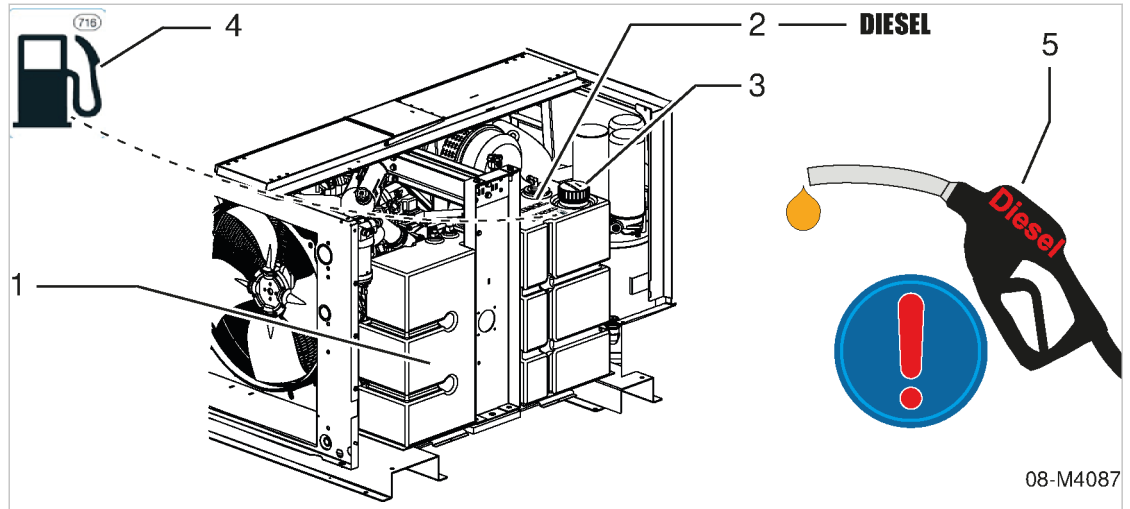


Fig. 28 Filling the tank with the correct fuel type

- | | |
|-----------------------|----------------------|
| ① Fuel tank | ④ Refuelling label |
| ② Specified fuel type | ⑤ Diesel fuel nozzle |
| ③ Fuel tank cap | |

➤ Check the correct fuel type and specifications by referring to Table 54.

Fuel type/fuel specification	Designation/standard
Fuel type	Diesel fuel
Recommended fuel specification	EN590 ⁽¹⁾
	ASTM D975 ⁽²⁾

⁽¹⁾ ≙ Sales region Europe, ⁽²⁾ ≙ Sales region USA

Tab. 54 Fuel type/fuel specification



Fuel type / specification does not comply with regulations.

➤ Under no circumstances must the fuel tank be filled with the incorrect fuel type.

Further information For more details on the correct fuel specification, see Chapter 2.8.3.

8.5.2 Filling the fuel tank at a pump by means of a refuelling nozzle



Liquid fuels expand at high ambient temperatures. To prevent overflowing, the fuel tanks must not be filled to the brim.

The *maximum fill level* is indicated on the fuel tank.

Precondition

- The machine is switched off.
- The machine is standing level.
- The machine is fully vented, the pressure gauge reads 0 bar.
- The machine has cooled down.
- All compressed air consumers are disconnected, the discharge valves are open.
- The «battery isolating switch» is switched off.
- The selected fuel meets the requirements specified in Table 54.

1. Open the left-hand wing door.

2. Loosen and remove the fuel tank cap.
3. Insert the diesel fuel nozzle into the filler port.
4. Activate the fuel nozzle.
Refuelling begins.
5. Wait until the maximum fill level of the fuel tanks has been reached.
Sufficient expansion volume remains.
6. Shut off and remove the fuel nozzle.
7. Close the filler port with the cap.
8. Close the door.



Dispose of any spilled fuel and fuel-contaminated working materials in accordance with applicable environmental regulations.

8.5.3 Filling the fuel tank on a construction site by means of a canister



Liquid fuels expand at high ambient temperatures. To prevent overflowing, the fuel tanks must not be filled to the brim.

The *maximum fill level* is indicated on the fuel tank.

Material Funnel

Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.
The selected fuel meets the requirements specified in Table 54.

1. Open the left-hand wing door.
2. Loosen and remove the fuel tank cap.
3. Insert the funnel into the filler port.
4. Carefully pour the contents of the canister into the funnel.
5. Do not allow any fuel to spill or overflow.
6. Fill the tank to the *maximum fill level* marking.
Sufficient expansion volume remains.
7. Remove the funnel.
8. Close the filler port with the cap.



Dispose of any spilled fuel and fuel-contaminated working materials in accordance with applicable environmental regulations.

Preparing for operation

1. Switch on the «battery isolating switch».
2. Close the door.

8.6 Cleaning the machine after operation

Material High-pressure cleaner

Precondition The machine is switched off.

The machine has cooled down.

The machine is fully vented, the pressure gauge reads 0 bar.

All compressed air consumers are disconnected and the air outlet valves are open.

Maintain the following minimum distances to the object to be cleaned in order to prevent damages to the machine when cleaning with the high-pressure cleaner.

- Circular section jets: approximately 70 cm
- Fan jets: approximately 30 cm
- Dirt blasters: approximately 30 cm



Keep the water jet in permanent motion during the cleaning process. You prevent thus damage.



Cleaning with dry-ice jets is strictly forbidden as it could cause unforeseeable damages.



1. **NOTICE!**

Machine damage caused by strong water jet!

Direct water jets can damage or even destroy sensitive components.

- Do **not** directly focus a strong water jet towards sensitive components.
- Work carefully.

2. Carefully clean the machine with the high-pressure cleaner.



Water has accumulated in the sealed floor pan.

- Drain the water.



Catch the liquid and dispose in accordance with applicable environmental regulations.

Further information See chapter 10.13.5 for information to the draining of liquids within the machine.

9 Fault Recognition and Rectification

9.1 Basic instructions

The following tables are intended to assist in fault finding and rectification.

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 authorised KAESER SERVICE representative.

Further information Observe the instructions in chapter 3 "Safety and Responsibility" and prevailing local safety regulations when rectifying faults and malfunctions.
Comply also with local applicable safety provisions!

9.2 Analysing SIGMA CONTROL SMART messages

There are three types of message:

- Alarm messages, see chapter 9.2.1
- Warning messages, see chapter 9.2.2
- Maintenance messages, see chapter 10.2

The messages applicable to your machine are dependent on the controller factory settings and individual equipment with which the machine is provided.

9.2.1 Alarm messages on the controller (machine off)

Fault with automatic deactivation of the machine.



You must acknowledge the alarm message upon correction of the fault before you can restart the machine.

Further information Further information on the acknowledgement of alarm messages can be found in Chapter 8.3.

Alarm codes, range 1100 – 1199 "Motor/engine faults":

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
1100	Fault - motor/engine oil pressure (p76) low.	Check the engine oil level.	10.4.5	–	–
		Have the engine oil pressure checked.	–	X	–
		Have the oil pressure switch checked.	–	X	X

SW = specialised workshop; KS = KAESER SERVICE; DPF = Diesel particulate filter
SCS - SIGMA CONTROL SMART; ECU - engine control unit

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
1110	Fault – coolant temperature (T70) high.	Check the coolant level.	10.4.1	–	–
		Clean the cooler.	10.6	–	–
		Have the coolant cooling checked.	–	X	X
1111	Fault – coolant level too low.	Check the coolant level.	10.4.1	–	–
1121	Fault – turbo air temperature (T73) high.	Check setup conditions. Allow the machine to cool down.	5.2	–	–
1124	Fault - motor/engine fault air flow meter.	Have checked.	–	X	X
1130	Fault – fuel level too low.	Refuel.	–	–	–
1132	Fault – fuel pressure low.	Have checked.	–	–	–
1135	Fault – fuel pump.	Have checked.	–	X	X
1136	Fault – floor pan fluid level.	Drain the liquid.	10.13.5	–	–
1137	Fault - fuel solenoid.	Have checked.	–	X	X
1140	Fault - motor/engine generator does not charge.	Have checked.	–	X	X
1150	Fault – ECU other faults.	Have checked.	–	X	X
1151	Fault – ECU-SCS communication.	Have it checked.	–	X	X
1160	Fault – rail pressure sensor.	Have checked.	–	X	X
1161	Fault – speed sensor.	Have checked.	–	X	X
1162	Fault - drive engine speed high.	Have it checked.	–	X	X
1164	Fault - fuel system.	Have it checked.	–	X	X
1165	Fault - drive motor/engine speed low.	Have checked.	–	X	X
1170	Fault – automatic start mode fault.	Have it checked.	–	X	X
1180	Fault – fault in emission treatment.	Check DPF.	–	X	X
1186	Fault message emission treatment – temperature high.	Check DPF.	–	X	X

SW = specialised workshop; KS = KAESER SERVICE; DPF = Diesel particulate filter
 SCS - SIGMA CONTROL SMART; ECU - engine control unit

Tab. 55 Alarm messages and actions concerning the motor/engine.

Alarm codes, range 1200 – 1299 “Compressor faults”:

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
1200	Fault - ADT high.	Check operating conditions. Allow the machine to cool down.	5.2	–	–
		Check the cooling oil level.	10.5.1	–	–
		Clean the cooler.	10.6	–	–
1201	Fault - OST pressure high.	Have it checked.	–	–	X

SW = specialised workshop; KS = KAESER SERVICE

ADT = Airend discharge temperature; OST - Oil separator cartridge

Tab. 56 Alarm messages and actions concerning the compressor unit

Alarm codes, range 1300 – 1399 “Controller faults”:

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
1300	Fault – PLC memory error	Have it checked.	–	–	X
1302	Fault PLC – HMI communication.	Have it checked.	–	–	X
1303	Fault PLC – temperature high.	Check setup conditions. Allow the machine to cool down.	5.2	–	–
1304	Fault – PLC power supply.	Have it checked.	–	–	X
1306	PLC - ECU communication fault.	Have checked.	–	–	X
1310	Fault – Fault in Watchdog.	Have it checked.	–	–	X
1311	I/O module fault.	Have it checked.	–	–	X

SW = specialised workshop; KS = KAESER SERVICE

PLC = Programmable logic controller; HMI = Human-machine interface; Watchdog = Function monitoring; ECU - Motor electronic

Tab. 57 Alarm messages and actions concerning the controller.

Alarm codes, range 1400 – 1499 "General faults":

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
1400	Fault - EMERGENCY STOP.	Unlock.	8.2.7	–	–
		Have it checked.	–	–	X
1410	Fault - OST pressure sensor open circuit.	Have it checked and re-paired.	–	–	X
1412	Fault – inlet valve pressure transducer open circuit.	Have it checked and re-paired.	–	–	X
1414	Fault – ADT sensor open circuit.	Have it checked.	–	–	X
1416	Fault – fuel level sensor open circuit.	Have it checked.	–	–	X
1420	Fault – venting valve open circuit.	Have it checked and re-paired.	–	–	X
1424	Fault – inlet valve control valve open circuit.	Have it checked.	–	–	X
1450	Fault - GSM module control locked.	Have the GSM modem unlocked.	–	–	X

SW = specialised workshop; KS = KAESER SERVICE

GSM = Global system for mobile communications; OST = Oil separator tank

ADT = Airend discharge temperature

Tab. 58 Alarm messages and troubleshooting in "General faults"

9.2.2 Warning messages on the controller

The machine is not shut down.



- In the case of an excessive temperature warning, the machine switches automatically to IDLE mode to cool down.
- The warning message must be confirmed after remedying the fault.

Further information Further information on the acknowledgement of warning messages can be found in chapter 8.3.

Message codes, range 3100 – 3199 "Motor/engine warning":

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
3112	Warning - sensor coolant temperature (T70) faulty.	Have it checked.	–	–	–

SW = Specialised workshop; KS = KAESER SERVICE

DPF = Diesel particulate filter; ECU = Electronic Control Unit

UM SCS = Separate user manual for the SIGMA CONTROL SMART controller

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
3120	Warning - turbo air pressure fault.	Have the turbo air pressure sensor checked.	–	X	X
3124	Warning - air flow meter fault.	Have it checked.	–	X	X
3130	Warning – fuel level low.	Refuel.	–	–	–
3135	Warning - fuel pump.	Have it checked.	–	X	X
3136	Warning - fuel filter water level.	Empty the fuel filter water trap.	10.4.3	–	–
3150	Warning - ECU miscellaneous error.	Have it checked.	–	–	–
3154	Warning – drive motor/engine sensor fault.	Have it checked.	–	X	X
3155	Warning – drive motor actuator fault.	Have it checked.	–	X	X
3164	Warning - fuel system fault	Have it checked.	–	X	X
		Clean / replace the fuel filter.	10.4.3	–	–
3185	Warning - fault in exhaust gas treatment.	Check DPF.	–	X	X
3188	Warning - emission treatment - regeneration necessary.	Initiate parked regeneration.	UM SCS	–	–

SW = Specialised workshop; KS = KAESER SERVICE

DPF = Diesel particulate filter; ECU = Electronic Control Unit

UM SCS = Separate user manual for the SIGMA CONTROL SMART controller

Tab. 59 Warning messages and measures relating to the engine.

Message codes, range 3200 – 3299 “Compressor unit warnings”:

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
3200	Warning – ADT high.	Check setup conditions. Allow the machine to cool down.	5.2	–	–
		Check the cooling oil level.	10.5.2	–	–
		Clean the cooler.	10.6	–	–
3201	Warning – OST pressure high.	Have it checked.	–	–	X

SW = specialised workshop; KS = KAESER SERVICE

ADT = Airend discharge temperature; OST - Oil separator tank

Tab. 60 Warning messages and measures relating to the compressor

Alarm codes, range 3300 – 3399 “Controller warnings”:

Code	Meaning	Remedy	See chapter	Where can I get help?	
				SW	KS
3303	Warning - PLC temperature high.	Check setup conditions. Allow the machine to cool down.	5.2	–	–
3313	Warning - HMI temperature high.	Check setup conditions. Allow the machine to cool down.	5.2	–	–

SW = Specialised workshop; KS = KAESER SERVICE

PLC - Programmable logic controller; HMI = Human-machine interface

Tab. 61 General warning messages and measures

9.3 Evaluating engine faults and alarms

9.3.1 Engine refuses to start or does not turn over

Possible cause	Measure	Where can I get help?	
		SW	KS
«EMERGENCY STOP» control device activated.	Unlatch the «EMERGENCY STOP» control device, see chapter 8.2.7.	–	–
Defective starter.	Have changed.	X	–
Engine electrical fault	Have repaired/changed.	X	–
Fuel tank empty.	Fill up the fuel tank	–	–
Airlock in the fuel line between fuel tank and injector pump.	Bleed the fuel line (see chapter 10.4.3).	–	–
Fuel filter clogged.	Clean or replace, see chapter 10.4.3.	–	–
Fuel line broken.	Have changed.	X	–
Defective control fuse or relay.	Have repaired or replaced if necessary.	X	X
Discharge temperature too high.	Have it checked.	–	X
SIGMA CONTROL SMART defective.	Have repaired/changed.	–	X
Electrical connections and/or cables loose or broken	Tighten the connection or have the cable replaced.	X	–
Defective battery or low charge.	Maintain battery, see chapter 10.9.	–	–
Motor alternator defective.	Have changed.	X	–
Defective alternator regulator.	Have changed.	X	–

SW = Specialised workshop; KS = KAESER SERVICE

Possible cause	Measure	Where can I get help?	
		SW	KS
Oil pressure switch indicating insufficient oil pressure.	Check the engine oil level (see chapter 10.4.5).	–	–
	Have the engine repaired or exchanged.	X	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 62 Fault: engine refuses to start or comes to a stop.

9.3.2 Engine does not reach full speed

Possible cause	Measure	Where can I get help?	
		SW	KS
Airlock in the fuel line between fuel tank and injector pump.	Bleed the fuel line (see chapter 10.4.3).	–	–
Fuel filter clogged.	Clean or replace, see chapter 10.4.3.	–	–
Fuel line broken.	Have changed.	X	–
Engine electrical fault	Have repaired/changed.	X	–
SIGMA CONTROL SMART defective.	Have repaired/changed.	–	X
Cleaning process of the diesel particulate filter is active.	Wait until cleaning is complete.	X	X

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 63 Alarm: "engine does not reach full speed".

9.4 Analysing compressor faults and alarms

9.4.1 Working pressure too high

Possible cause	Measure	Where can I get help?	
		SW	KS
Proportional controller defective.	Have repaired or replaced if necessary.	–	X
Inlet valve does not close.	Check the controller, control line and inlet valve and replace if necessary.	–	X
Pressure gauge indicating incorrect reading.	Have it repaired or replaced if necessary.	–	X
Venting valve does not blow off.	Check the connections and function and have it repaired or replaced as necessary.	–	X

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 64 Fault: working pressure too high

9.4.2 Working pressure too low

Possible cause	Measure	Where can I get help?	
		SW	KS
Proportional controller defective.	Have repaired or replaced if necessary.	–	X
Inlet valve not opening or only opening partially.	Repair or have it replaced if necessary.	–	X
Pressure gauge indicating incorrect reading.	Have it repaired or replaced if necessary.	–	X
Safety valve maladjusted and/or leaking.	Have it repaired or replaced if necessary.	–	X
Venting valve blowing off.	Check the connections and function and have it repaired or replaced as necessary.	–	X
Engine does not run at maximum speed (in LOAD mode).	See chapter 9.3	X	X
Engine air filter and/or compressor air filter clogged.	Clean or change, see chapters 10.4.2 and 10.5.7.	–	–
Oil separator cartridge heavily clogged.	Change, see chapter 10.5.6.	–	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 65 Fault: working pressure too low

9.4.3 Safety valve blows off

Possible cause	Measure	Where can I get help?	
		SW	KS
Oil separator cartridge heavily clogged.	Change, see chapter 10.5.6.	–	–
Inlet valve does not close.	Check the controller, control line and inlet valve and replace if necessary.	–	X
Safety valve maladjusted and/or leaking.	Adjust or have it replaced if necessary.	–	X

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 66 Fault: safety valve blowing off

9.4.4 Machine overheating

Possible cause	Measure	Where can I get help?	
		SW	KS
Defective cooling fan.	Have the blades or the complete fan wheel replaced.	–	X

SW = Specialised workshop; KS = KAESER SERVICE

Possible cause	Measure	Where can I get help?	
		SW	KS
Oil cooler surface clogged.	Clean surface, see chapter 10.6.	–	–
The working element of the thermostatic valve not working.	Have it repaired or replaced if necessary.	–	X
Working pressure too high (proportional controller maladjusted).	Reset to the permissible value or have it replaced.	–	X
Oil separator cartridge heavily clogged.	Measure the pressure differential and change the cartridge if greater than 1 bar. Change, see chapter 10.5.6.	–	X
Compressor oil filter cartridge clogged.	Change, see chapter 10.5.4.	–	–
Compressor cooling oil level too low.	Replenish, see chapter 10.5.2.	–	–
Oil pipes leaking.	Seal leaks or have pipes changed.	X	X
Engine coolant cooling or engine cooling fan defective.	Have it repaired.	X	X
Ambient temperature too high.	See installation conditions in chapter 5.2.	–	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 67 Fault: machine overheating

9.4.5 Too much oil residue in the compressed air

Possible cause	Measure	Where can I get help?	
		SW	KS
Oil separator cartridge oil return line of compressor clogged.	Clean the oil separator cartridge dirt trap or replace the strainer and nozzle if necessary. See chapter 10.5.5	–	X
Cracked oil separator cartridge.	Change, see chapter 10.5.6.	–	–
Oil level in the oil separator tank too high.	Reduce to maximum level, see chapters 10.5.1 and 10.5.3.	–	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 68 Alarm: "Too much oil residue in the compressed air"

9.4.6 Oil flows from the compressor air filter after shutdown

Possible cause	Measure	Where can I get help?	
		SW	KS
Defective non-return function of the inlet valve.	Repair or have it replaced if necessary.	–	X

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 69 Alarm: "Oil flows from the compressor air filter after shutdown"

**9.4.7 Option da, db, dc, dd
 High moisture content in the compressed air**

Possible cause	Measure	Where can I get help?	
		SW	KS
Blocked condensate drain on the cyclone separator.	Clean the cyclone separator dirt trap or replace the strainer and nozzle if necessary. See chapter 10.13.1	–	X

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 70 Fault: high moisture content in the compressed air

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.
- Do not reuse removed self-locking nuts but replace with new ones. The non-positive safety against loosening is no longer ensured when the nut is unscrewed.
- 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. 71 Advise others that the machine is being serviced.

- Before switching on, make sure that:
 - nobody is working on the machine,
 - all protective guards and cover panels are attached,
 - all doors, canopy, and panels are closed,
 - all tools have been removed from the machine.
- Do not perform any checks or maintenance while the machine is running.



The access doors are held up by gas struts.

- Check that the doors remain open.

If door does not remain opened: Have the gas-filled spring changed.

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.

- Disconnect the air consumers.
- De-pressurise all pressurised components and enclosures.

- Wait until the machine has automatically vented.
 - Carefully open the compressed air outlet valve.
 - Check: The pressure gauge must read 0 bar!
- Do not open or dismantle any valves.

When working on the drive system

Touching rotating, very hot or current-carrying components can cause severe injuries.

- Shut down the machine before opening any doors/canopy.
- Switch the «battery isolating switch» to the 'off' position.
- Ensure that the machine has cooled down.

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

10.2 Observing maintenance messages in the controller

Selected maintenance cycles for the machine are displayed by the SIGMA CONTROL SMART controller. Display commences 25 hours before the expiry of the current maintenance cycle.

Upon activation of the controller, the symbols for the component to be serviced are prominently displayed.

The operating hours until the maintenance is due and the message code for the maintenance task are displayed beneath.



Once maintenance has been completed, the maintenance interval counter must be reset.

- Read off the message code from the controller display.

10.2.1 Evaluating maintenance messages

- Determine any upcoming maintenance tasks using the table below and perform the maintenance in accordance with the maintenance schedule provided in Chapter 10.3.3.1.

Code	Meaning	Measure	See chapter
Message code, range 2100 – 2199 “Engine maintenance”			
2100	Maintenance - change engine oil filter (500h)	Change the engine oil filter.	10.4.8
2101	Maintenance - clean or change engine air filter (500h).	Clean or replace the air filter.	10.4.2
2102	Maintenance - change engine oil (500h)	Change the engine oil.	10.4.7
Message codes, range 2200 – 2299 “Compressor maintenance”:			
2200	Maintenance - change compressor oil filter (1000h)	Change the compressor oil filter.	10.5.4
2201	Maintenance - clean/change compressor air filter (500h).	Clean/replace the air filter.	10.5.7

h - operating hours

Code	Meaning	Measure	See chapter
2202	Maintenance - change compressor cooling oil (1000h).	Change the cooling oil.	10.5.3
h - operating hours			

Tab. 72 Maintenance messages and required measures

10.2.2 Completing the maintenance

Resetting the maintenance timer:

Precondition The required maintenance has been carried out

- Reset the maintenance timer as described in the separate operating manual for the SIGMA CONTROL SMART controller, chapter "Resetting the maintenance timer".

10.3 Following the maintenance plans

10.3.1 Logging maintenance work



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

- In adverse conditions (e.g. oil and filter changes), perform maintenance work at shorter intervals.

Adverse conditions are, e.g.:

- poor fuel quality
- high/low temperatures
- much dust
- frequent use

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

- Logging all maintenance 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 10.14.

10.3.2 Preventive maintenance

Preventive maintenance begins with a daily check of the machine.

- Before starting the machine, check for the following:
 - increased consumption of oil, coolant or fuel
 - loose components or leakage
 - worn or damaged drive belts
 - worn or defective cable assemblies
 - smell of fuel
 - electrical smell
- When the motor is running, be alert for unusual system noises that may indicate the need for servicing or maintenance work.

Result When problems occur, take appropriate action to address malfunctions or contact KAESER SERVICE.

10.3.3 Regular maintenance tasks

The following table lists the various maintenance intervals for the machine.

Maintenance interval	Short description
Daily	–
Every 250 h, at least annually	A250
Every 500 h, at least annually	A500
Every 1000 h, at least every 2 years	A1000
Every 1500 h, at least every 3 years	A1500
Every 3000 h, at least every 6 years	A3000

Tab. 73 Maintenance intervals and regular maintenance tasks

The table below lists regular maintenance tasks.

1. Carry out maintenance tasks punctually taking ambient and operating conditions into consideration.
2. Change consumables and operating fluids according to each site.

10.3.3.1 Machine maintenance schedule

➤ Carry out maintenance tasks on time in accordance with the table below:



In this table:

- Maintenance tasks marked with a (1) depend on the engine oil and fuel used. The replacement intervals can be halved when using lower-quality operating fluids/materials.
- Maintenance tasks marked with a (2) comply with country-specific regulations. Example for operation in Germany: Adhere to the maintenance interval for “Compressor oil change” as per DGUV Regulation 100-500, chapter 2.11. Change the oil as per requirement, once per year at a minimum.
- Maintenance tasks marked with a (3) comply with country-specific regulations. Example for operation in Germany: As per DGUV Regulation 113–20, it is recommended to replace the pressure hoses for the compressor after 6 years.

Assembly: Task	Daily	A250	A500	A1000	A3000	See chapter	Note
Drive engine:							
Check engine air filter maintenance indicator.	X					10.4.2	
Check engine oil level.	X					10.4.5	
Check air intake lines.	X						
Clean engine air filter, replace if necessary.			X			10.4.2	
Change engine oil ⁽¹⁾ .			X			10.4.7	
Change engine oil filter ⁽¹⁾ .			X			10.4.8	KS; SW
Check fan for cracks and hidden or loose blades. Arrange for them to be replaced if necessary.			X				
Check engine belt and replace if necessary.			X			10.4.9	KS; SW
Arrange for fan belt tensioning to be checked.			X			10.4.9	KS; SW
Arrange for fan hub (belt drive) to be checked.			X			10.4.9	KS; SW
Ensure fan guard is securely fitted. If required, retighten screw connections.			X				
Change engine air filter.				X		10.4.2	
Arrange for turbocharger to be checked/cleaned.					X		KS; SW
Arrange for charge air hoses to be checked.				X			KS; SW

KS = Contact KAESER SERVICE; SW = Contact Specialist Workshop

Assembly: Task	Daily	A250	A500	A1000	A3000	See chapter	Note
Check engine mounts.				X			KS; SW
Arrange for cylinder head group to be adjusted.					X		KS; SW
Replace engine belt.						10.4.9	KS; SW
Check engine coolant level.	X					10.4.1	
Clean cooler.		X				10.6	
Arrange for cooler pressure seal to be checked.			X				KS; SW
Check coolant antifreeze.			X			10.4.1	KS; SW
Change coolant.						10.4.1	KS; SW
Fill fuel tank.	X						
Empty fuel prefilter (water separator).	X					10.4.3	
Clean tank strainer.			X				
Change fuel prefilter ⁽¹⁾ .			X			10.4.3	
Change fuel filter ⁽¹⁾ .			X			10.4.3	KS; SW
Replace venting filter for fuel tank.						10.4.4	
Check fuel tank for contamination, clean if necessary.			X				
Check battery electrolyte level and service the battery cable connections.			X			10.4.11	
Check crankcase venting line.	X					10.4.10	KS; SW
Arrange for fan drive to be checked.				X			KS; SW
Arrange for valve clearance to be adjusted.					X		KS; SW
Exhaust system:							
Check exhaust system for leaks.	X						
Compressor:							
Check compressor air filter maintenance indicator.	X					10.5.7	
Check cooling oil level.	X					10.5.1	
Clean compressor air filter, replace if necessary.			X			10.5.7	
Clean compressor oil cooler.		X				10.6	

KS = Contact KAESER SERVICE; SW = Contact Specialist Workshop

Assembly: Task	Daily	A250	A500	A1000	A3000	See chapter	Note
Clean/check dirt trap in oil separator tank valve unit.			X			10.5.5	
Check dirt trap strainer in oil separator tank valve unit.				X		10.5.5	
Change compressor air filter.				X		10.5.7	
Change cooling oil ⁽²⁾ .				X		10.5.3	
Change compressor oil filter.				X		10.5.4	
Change oil separator cartridge in oil separator tank valve unit.				X		10.5.6	KS, SW
Safety functions:							
Check EMERGENCY STOP device.	X					10.12.1	
Arrange for EMERGENCY STOP device to be tested.			X				KS; SW
Arrange for safety valve(s) to be tested.			X			10.12.2	KS
Arrange for excess temperature safety shutdown to be tested for proper function.			X			10.12.3	KS
Bodywork/chassis:							
Check wing doors.			X			10.7	KS
Check screw connections.			X			10.7	
Service rubber sealing strips.			X			10.9	
Arrange for crane suspension to be checked.			X				KS; SW
Pipes and hose lines (fuel hoses, pressure hoses):							
Check all pipes and hose lines on the machine are securely fitted and free from leaks or wear, replace if necessary ⁽³⁾ .			X			10.11	KS; SW
Further maintenance tasks:							
Check engine interior for foreign substances, remove if necessary.	X						
Check all accessible screw connections, pipes and clamps in machine are securely fitted and free from wear.			X				

KS = Contact KAESER SERVICE; SW = Contact Specialist Workshop

Assembly: Task	Daily	A250	A500	A1000	A3000	See chapter	Note
Check all electrical connections for tightness.			X				
Check lighting system is functioning.	X						

KS = Contact KAESER SERVICE; SW = Contact Specialist Workshop

Tab. 74 Regular machine maintenance tasks

10.3.3.2 Options maintenance schedule

- Carry out maintenance tasks on time in accordance with the table below:



Where annual operating hours exceed 500, maintenance work marked with (*) in the tables must be carried out every 6 months.

Option: Task	Daily	A250	A500	See chapter	Note
Option da, dd – Centrifugal separator:					
Clean/check dirt trap (*).			X	10.13.1	
Options da, dd – Compressed air aftercooler:					
Clean cooler.		X		10.6.2	
Option dd – Filter combination:					
Drain condensate.	X			10.13.2	
Change filter elements (*).			X	10.13.2	
Option bb/od – Auxiliary electric devices:					
Check the coolant pre-heating and connecting lines.			X		EL KS; SW
Have the battery charger for start/stop automatic checked.			X		
Option la – Spark arrester:					
Clean spark arrester.		X		10.13.3	
Blow out spark arrester with compressed air.			X		
Option lb - engine air shut-off valve:					
Clean/check the engine air shut-off valve.		X		10.13.4	
Option oe – Closed floor pan:					
EL = qualified electrician					
KS = Contact KAESER SERVICE; SW = Contact specialised workshop					

Option: Task	Daily	A250	A500	See chapter	Note
Check the machine interior for liquid accumulations and drain, if required.	X			10.13.5	

EL = qualified electrician

KS = Contact KAESER SERVICE; SW = Contact specialised workshop

Tab. 75 Regular maintenance tasks for options

10.3.4 Option oe

Draining operating fluids from machines with a closed floor pan

On machines with a closed floor pan, the maintenance openings in the floor pan are sealed with a metal plate covering or bung plugs.

- The maintenance openings must be opened before the respective operating fluids can be drained.
- The location of the maintenance openings can be found in chapter 4.7.7.
- For assignment of the individual maintenance openings in the floor pan, see chapter 4.2, Fig. 8.

1. Open the maintenance opening in the floor panel.
2. Drain the operating fluid.
3. Reseal the maintenance opening tightly.

10.4 Drive engine maintenance

- Conduct maintenance tasks in accordance with the maintenance schedule in Chapter 10.3.3.1.

10.4.1 Coolant cooler maintenance

Material Coolant
 Coolant tester
 Receptacle
 Drain hose with hose coupling (separately enclosed with machine)
 Funnel
 Cleaning cloth

Precondition The machine is switched off.
 The machine is standing level.
 The machine is fully vented, the pressure gauge reads 0 bar.
 The machine has cooled down.
 All compressed air consumers are disconnected and the air discharge valves are open.



WARNING

Danger of scalding from hot coolant!
Serious injuries can be caused by hot coolant.

- Allow the machine to cool down before opening the cooling system.



CAUTION

Danger of chemical burns from coolants containing antifreeze!

- Avoid eye and skin contact with coolant. In case of contact, rinse immediately with running water.
- Wear safety glasses and protective gloves.



NOTICE

Insufficient coolant in the cooling circuit can damage the machine!
Insufficient coolant will cause the engine to overheat. Overheating can result in significant damage to the engine.

- Check the coolant level daily.
- Replenish the coolant as necessary.

- Open the left-hand door.

10.4.1.1 Checking the coolant level

The coolant level in the engine cooling circuit must be checked daily prior to commissioning.

The level is checked via the coolant expansion tank:

- The tank is transparent so the coolant level can be seen from outside.
- The fluid level should be between the *minimum and maximum* marks when the engine is cool.

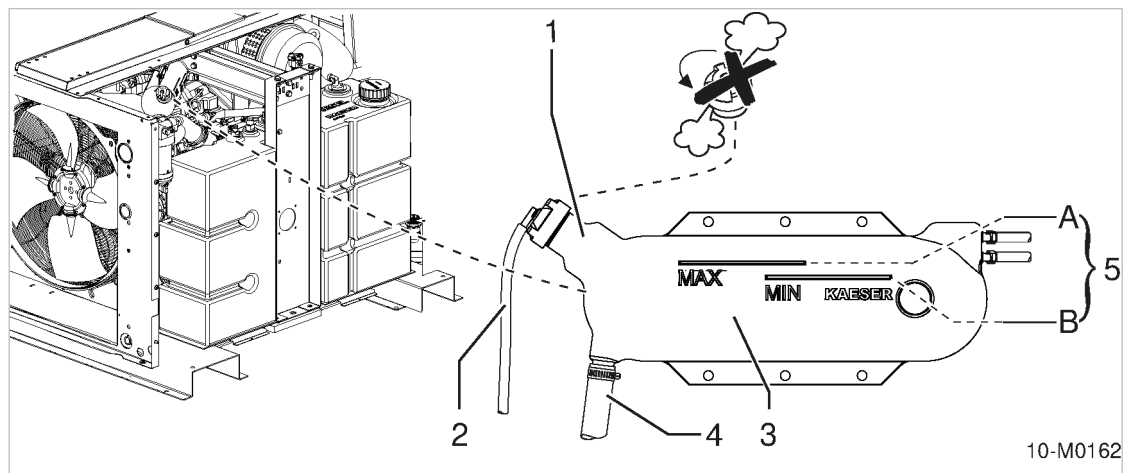


Fig. 29 Checking the coolant level

- | | |
|--------------------------|----------------------------|
| ① Filler port with cap | ⑤ Coolant level |
| ② Overflow | Ⓐ Maximum mark (FULL) |
| ③ Coolant expansion tank | Ⓑ Minimum check mark (LOW) |
| ④ Cooler connection hose | |

1. Check the level of coolant in the expansion tank.

When the coolant level falls below the *minimum mark* Ⓑ: Replenish the coolant.

2. Close the door.



Arrange for the cause of the coolant loss to be determined and rectified.

10.4.1.2 Checking the coolant

The coolant should be checked in line with the maintenance schedule to ensure quality and long service life.

Coolant quality can be determined by the following parameters:

- Visual check
 - Measuring the concentration of the antifreeze
- Unscrew and remove the filler port cap ^①.

Performing a visual check:

The coolant should be checked for discolouration and any floating particles (flocculation).

- Take a coolant sample and analyse it.
- If the coolant is heavily discoloured and/or contains floating particles: Change the coolant.

Measuring the antifreeze concentration:

An coolant testing instrument (e.g. refractometer) is used to check the antifreeze concentration of the coolant.

Maximum frost protection is ensured with an antifreeze concentration of 55% volume, as frost protection and heat transfer properties deteriorate beyond this point. A higher concentration also leads to higher operating temperatures.



1. **NOTICE!**
The engine can be damaged if the antifreeze concentration is too low!
Corrosion.
Damage to the cooling system.
Engine housing fracture.
 - Check the coolant.
 - Ensure frost protection for the coolant.
 - Replenish immediately if necessary.
2. To test the coolant, use the coolant tester as instructed by the manufacturer.
Concentration of antifreeze is too low: Change the coolant.

Performing final work steps:

1. Screw the cover back on again.
2. Close the door.

10.4.1.3 Mixing the coolant

Never use water without added coolant. Water alone is corrosive at engine operating temperatures. Water alone does not offer sufficient protection from boiling or freezing of the coolant.

The coolant is a mixture of clean, fresh water with special additives (corrosion protection/antifreeze additives).

To protect against corrosion and raise the boiling point, the coolant must remain in the cooling system throughout the year.

The maximum permissible service life for the coolant is 3 years.



Fig. 30 Recommended mixture ratio for coolant

- ① Water
- ② Anti-corrosion agent/antifreeze

➤ Observe the coolant recommendations in chapter 2.8.4!

Preparing the coolant:

Precondition The coolant used must comply with the ASTM D6210 specification and the Cummins Engineering Standard (CES) 14603.

➤ The coolant should be mixed in the ratio specified by the manufacturer.

Coolant mixture table:

Proportions [% vol.]		Frost protection to approx. [°C]
Anti-corrosion agent/anti-freeze	Water	
50	50	-37

Tab. 76 Coolant mixture table



Do not use a higher concentration than 55% vol. of anti-corrosion agent/antifreeze, even at extremely low ambient temperatures. The maximum frost protection is reached with 55% of anti-corrosion agent/antifreeze. This corresponds to frost protection down to approx. -45°C. The concentration of antifreeze should not be less than 33%, since corrosion protection can no longer be guaranteed and heat transfer properties deteriorate beyond this point!

10.4.1.4 Filling/replenishing the coolant

In order to ensure optimum frost/corrosion protection and prevent the build-up of deposits (sludge) in the cooling circuit, the proportion of antifreeze in the coolant should not be permitted to fall below 33%. Replenishing solely with water dilutes the antifreeze concentration and is therefore prohibited.



Ensure that there is sufficient space for the coolant to expand without overflowing when hot.

Precondition The «battery isolating switch» is switched off.

1. Loosen and remove the coolant expansion tank filler cap.
2. Mix a quantity of coolant as per the table and replenish to the level indicated.
Replenish the coolant to just below the *maximum mark*

3. Screw on the filler cap.
4. Switch on the «battery isolating switch».
5. Close the door.
6. Start the engine and allow to run in IDLE for about 1 minute.
7. Switch off the engine.
8. Open the left-hand door.
9. Check the coolant level.
If the coolant level in the coolant expansion tank has decreased: Replenish the coolant.
10. Visually inspect for leaks.
11. Close the door.

10.4.1.5 Draining the coolant

Precondition The machine has cooled down.

The «battery isolating switch» is switched off.

The coolant contained in the cooling circuit can be fully drained at the engine's coolant cooler. This is carried out via a drain valve with the aid of a separate drain hose. This drain valve is accessible by means of a maintenance opening in the floor pan.



See chapter 4, Fig. 8 for the location of the maintenance openings/drainage points for oil and coolant in the floor pan.

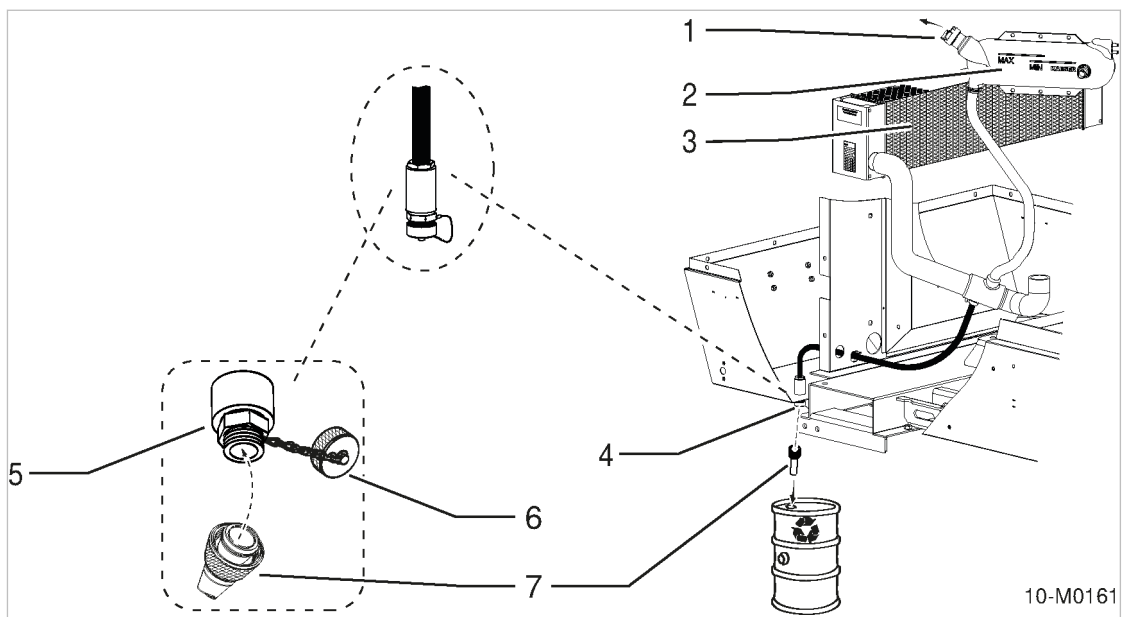


Fig. 31 Draining the coolant from the engine coolant cooler

- | | |
|---------------------------------|--|
| ① Filler port cap | ⑤ Coolant drain valve |
| ② Coolant expansion tank | ⑥ Coolant drain valve protective cap |
| ③ Coolant cooler | ⑦ Drain hose with quick-release coupling |
| ④ Coolant drain, coolant cooler | |

1. Unscrew and remove the expansion tank filler port cap.
2. Position a receptacle beneath the coolant cooler (hole in the floor panel).
3. Place the free end of the drain hose in the receptacle.

4. Remove the protective cap from the coolant drain valve.
5. Feed the drain hose through the drainage opening in the floor pan and screw onto the coolant drain valve using the quick-release coupling.
The coolant drain valve opens and the coolant drains out through the hose.
6. After fully draining the coolant, uncouple the quick-release coupling from the coolant drain valve and remove the drain hose.
7. Replace the protective cap on the coolant drain valve.
8. Screw on the filler cap.
9. Close the door.

Removing scaling from inside the coolant cooler

After extended periods of use, scaling may form inside the cooling circuit and in particular in the coolant cooler. Due to the resulting reduction in heat transfer, the engine may overheat.



1. **NOTICE!**
Scaling in the cooling circuit!
Damage caused by engine overheating.
 - Use a cooler cleaning agent to remove scaling from inside the coolant cooler.
2. Read and observe the manufacturer's instructions regarding the use of cooler cleaning agent.
3. Having drained the coolant, use a coolant cleaning agent to descale the water cooler.

10.4.2 Engine air filter maintenance

Clean the filter according to the maintenance schedule or if the maintenance indicator shows this to be necessary.

Renew the air filter element after 2 years or after it has been cleaned 5 times.



- Using the drive motor without an air filter element is not permitted!
- Do not use a filter element with damaged folds or gasket.
- The use of an unsuitable air filter can permit dirt to enter the engine and cause premature wear and damage.

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

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected and the air outlet valves are open.



- NOTICE**
Damaged air filter element.
Wear in the engine from intake of contaminated air.
- Do not try to clean the filter element by striking or knocking it.
 - Do not wash the filter element.

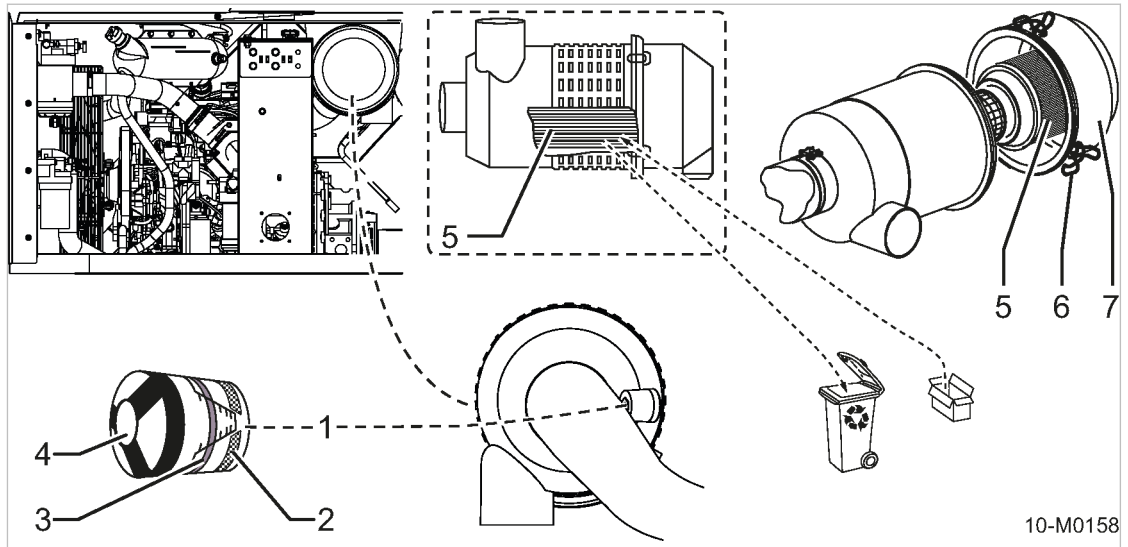


Fig. 32 Engine air filter maintenance

- | | |
|--|------------------|
| ① Maintenance indicator | ⑤ Filter element |
| ② Red zone indicator scale | ⑥ Retaining clip |
| ③ Indicating piston of the maintenance indicator | ⑦ Filter cap |
| ④ Reset knob maintenance indicator | |

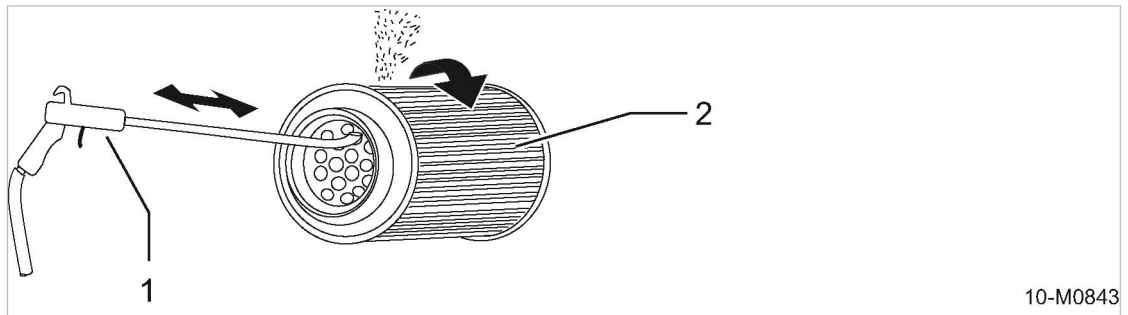


Fig. 33 Cleaning the filter element

- | |
|---|
| ① Compressed air gun with blast pipe bent to 90° at the end |
| ② Filter element |

➤ Open both doors.

Checking the contamination level of the air filter

Air filter maintenance is necessary when the yellow piston inside the maintenance indicator reaches the red zone.

➤ Check the air filter maintenance indicator.

If the yellow piston reaches the red zone, Clean or renew the filter element.

Cleaning the air filter:

1. Release the retaining clamps, lift off the cap and extract the air filter.
2. Carefully clean the inside of the housing, the cover and sealing faces with a damp cloth.

3. Cleaning the filter element:
 - Use dry compressed air (≤ 5 bar!) at an angle to blow dust from the element from inside to outside until no further dust develops.
 - The blast pipe must be long enough to reach the bottom of the element.
 - The tip of the blast pipe must not touch the element.
 - Clean sealing faces.
4. Inspect the element carefully for any damage.
Damaged filter element: Replace filter element.
5. Insert the cleaned or new filter element into the filter housing. Make sure it is properly in place and sealed by its gaskets.
6. Replace the cap and secure with the clip.

Resetting the maintenance indicator

- Repeatedly press the reset knob on the maintenance indicator.
The yellow piston within the indicator is reset and the maintenance indicator is ready for use again.
- Close the doors.



Dispose of old parts and contaminated materials according to environmental regulations.

10.4.3 Fuel system maintenance

Ensure that no dirt can get into the fuel system during maintenance. Clean components and their immediate surroundings before disassembling.

Material Spare parts
Receptacle
Cleaning cloth

Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.

**DANGER**

Risk of fire from spontaneous ignition of fuel!
Serious injury or death could result from the ignition and combustion of fuel.

- Ensure there are no open flames or sparks in the immediate vicinity.
- Ensure that the maximum ambient temperature is not exceeded at the place of operation.
- Switch off the engine.
- Wipe up any spilled fuel.
- Keep fuel away from hot machine components.

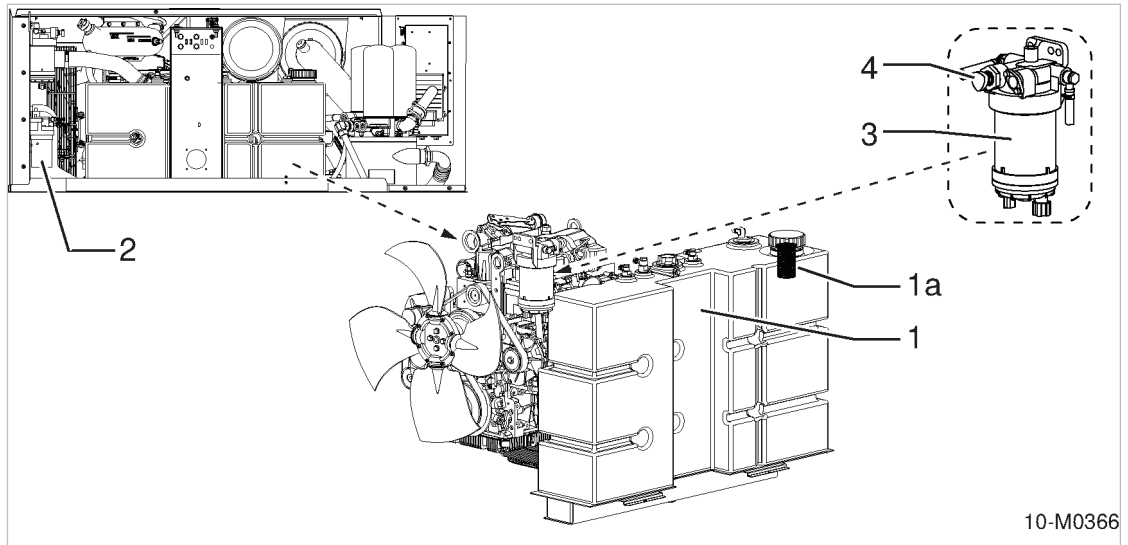


Fig. 34 Fuel system maintenance

- | | |
|------------------|--|
| ① Fuel tank | ③ Fuel prefilter with integrated water separator |
| ①a Tank strainer | ④ Manual fuel pump |
| ② Fuel filter | |

➤ Open the left-hand door.

10.4.3.1 Bleeding the fuel system

When the fuel tank is completely empty following replacement of the fuel filter, or when carrying out work on the fuel lines, air can enter the fuel system.

If the engine refuses to start despite a full tank, bleed the fuel system.

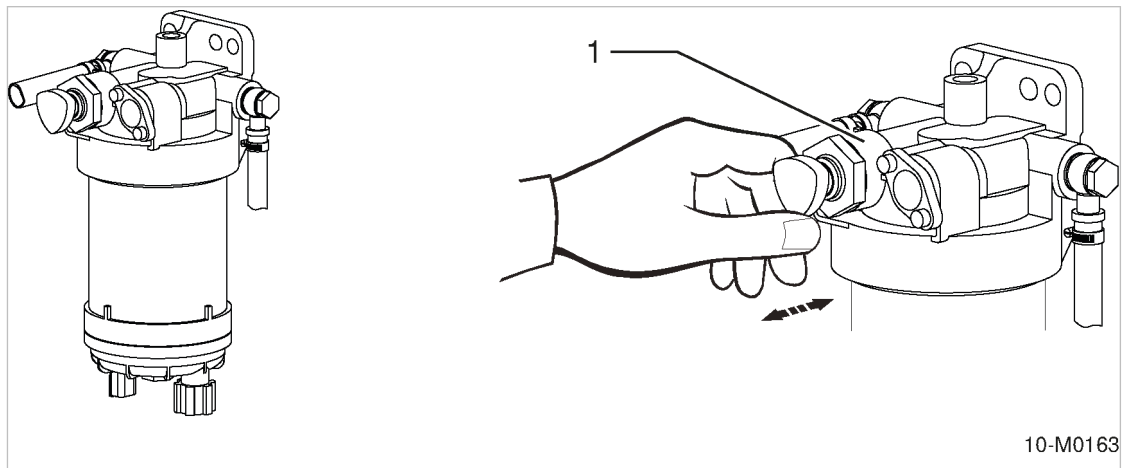


Fig. 35 Bleeding the fuel system

- ① Manual fuel pump

1. Place a receptacle beneath the fuel prefilter housing.
2. Unlatch the manual fuel pump bayonet lock by pressing and turning anti-clockwise. The pump piston is pushed out by the spring.
3. Actuate the manual fuel pump until the bleed screw does no longer emit air bubbles.
4. Continue to actuate the manual pump until high resistance is felt and pumping is very slow.

5. Keep pumping until the return line is filled.
6. Latch the bayonet lock on the manual fuel pump back in place by pressing and turning clockwise.
7. Open the right-hand access door.
8. Switch on the «battery isolating switch».
9. Close the door.



Start the engine as soon as the fuel system has been bled and allow machine to run for at least 5 minutes in IDLE.

10. Open the left-hand door.
11. Check the fuel prefilter for leaks.
If any fuel has escaped: Retighten the filter cartridge and all screw connections.
12. Close the door.

10.4.3.2 Fuel prefilter maintenance

Emptying the fuel/water separator:

The fuel prefilter is equipped with an integrated water separator. Contaminants in the water are trapped by the water collector in the filter cartridge.

The water separator is connected to the controller by a sensor. If the water in the water collector reaches a specified level, the controller will display a warning message.

The message *Fuel filter water level* will appear on the controller display.



The water separator must be emptied immediately when this warning is displayed.

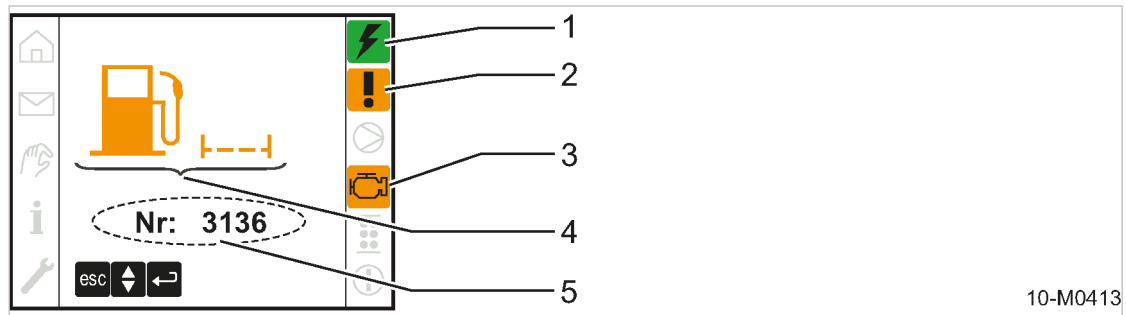


Fig. 36 Warning message: Fuel filter water level

- | | | | |
|---|---|---|--|
| ① | Controller voltage ON (green) indicator | ④ | Symbols for fault localisation (Fuel + level) (orange display indicates warning) |
| ② | Warning indicator (orange) | ⑤ | Fault code |
| ③ | Engine (orange display indicates a warning) | | |

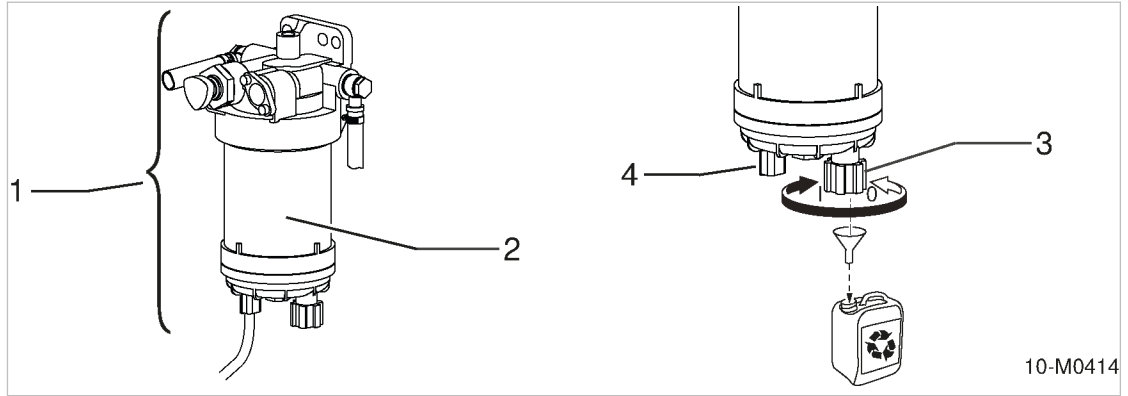


Fig. 37 Empty the fuel prefilter and water separator

- | | |
|--|--|
| <ul style="list-style-type: none"> ① Fuel prefilter ② Filter cartridge with integrated water collector | <ul style="list-style-type: none"> ③ Water draining stopper with integrated level sensor
I - open
O - close ④ Level sensor connecting plug (fuel filter maintenance) |
|--|--|

1. Place a receptacle beneath the fuel prefilter housing.
2. Open the drainage stopper on the bottom of the filter cartridge.
 - Turn the drain valve by approx. 3.5 rotations anticlockwise until it lowers by approx. 25 mm.
 - Separated water and contaminants drain out.
3. Close the drainage stopper.
 - Lift the drain valve and hand-tighten by turning it clockwise.
 - Do not overtighten the drain valve when closing it. Overtightening may damage the thread.
4. Open the right-hand access door.
5. Switch on the «battery isolating switch».
6. Close the door.

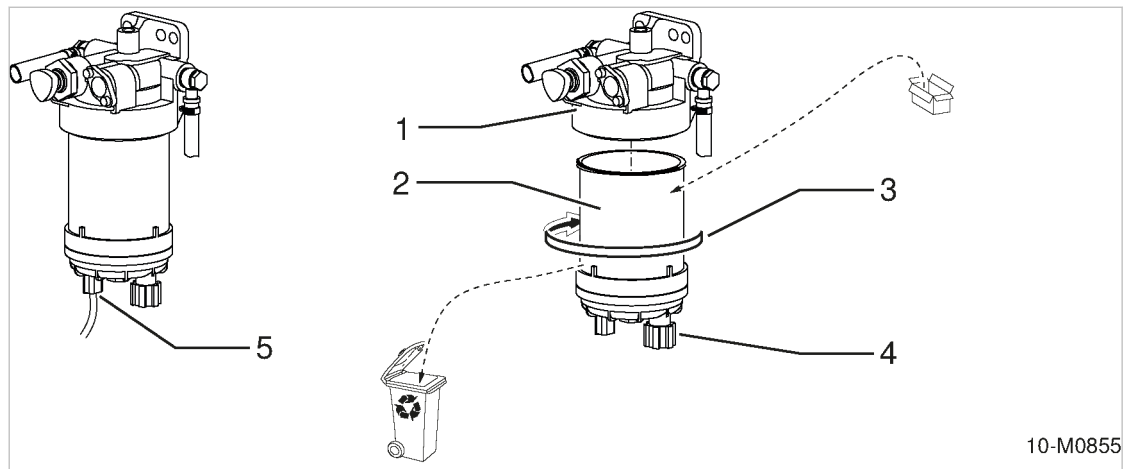
Maintenance must be acknowledged after the water separator has been emptied.

Precondition The water separator has been emptied.

- Confirm the warning with the «Enter» key.



The mixture of fuel and water, as well as any materials contaminated with fuel, must be disposed of in accordance with environmental protection regulations.

Changing the filter cartridge:

Fig. 38 Replacing the fuel prefilter cartridge

- | | | | |
|---|--|---|--|
| ① | Filter head | ④ | Drain plug with integrated level sensor |
| ② | Filter cartridge with integrated water collector | ⑤ | Water level sensor connecting plug (fuel filter maintenance) |
| ③ | Direction of rotation to unscrew the draining stopper. | | |

1. Place a receptacle beneath the fuel prefilter housing.
2. Open the drainage stopper in the bottom of the filter cartridge and drain water and contamination.
3. Remove the connecting plug of the water level sensor.
4. Use a standard wrench to loosen and unscrew (counter-clockwise) the filter cartridge.
5. Empty any remaining fuel into the receptacle.
6. Clean the sealing surfaces of the new filter cartridge and the opposite side of the filter head with a lint-free cloth.
7. Mount the filter cartridge on the filter head:
 - Fill the filter cartridge with fuel.
 - Moisten the sealing surfaces of the new filter cartridge with a little fuel.
 - Manually screw the filter cartridge onto the filter head in a clockwise direction, until the seal is tight.
 - Continue turning manually until the filter cartridge is secured tightly ($\frac{1}{2}$ turn approximately).
8. Secure the water level sensor connecting plug in place.
9. Open the right-hand access door.
10. Switch on the «battery isolating switch».
11. Close the door.



The fuel system must be bled once the filter cartridge has been replaced.



Dispose of escaped fuel and any materials and components contaminated with it in accordance with environmental protection regulations.

10.4.3.3 Fuel filter maintenance

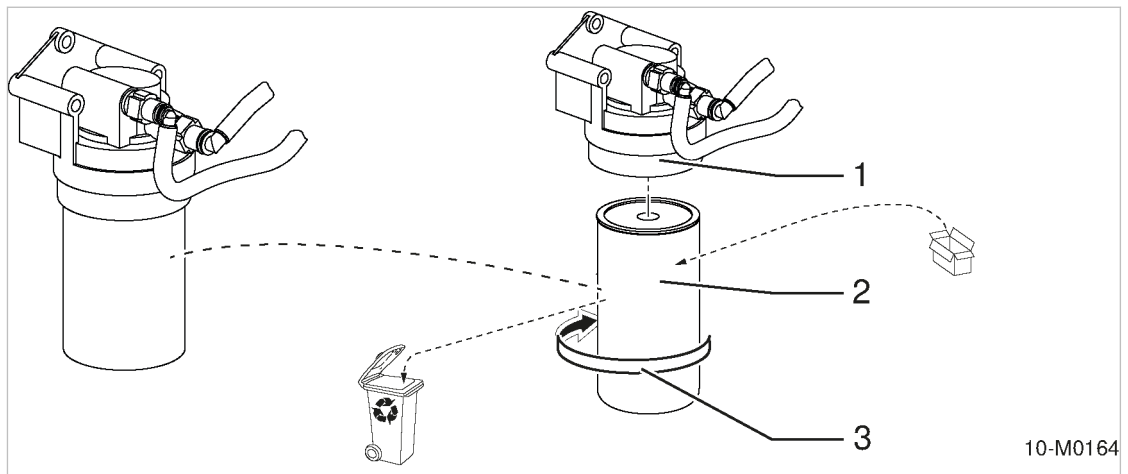


Fig. 39 Fuel filter maintenance

- ① Filter holder
- ② Filter cartridge
- ③ Direction of rotation for unscrewing the filter cartridge

1. Place a receptacle beneath the housing of the fuel filter.
2. Use a filter wrench to loosen then unscrew the filter cartridges. Collect any escaping fuel.
3. Clean the sealing faces of the new filter cartridges and the opposing side of the filter holder with a lint-free cloth.
4. Mount the filter cartridges to the filter holder:
 - Moisten the rubber seals of the filter holder and the sealing faces of the new filter cartridges with some fuel.
 - Manually screw the filter cartridges to the filter holder (clockwise), until seals are tight.
 - Continue to manually turn until the filter cartridges are seated tightly ($\frac{1}{2}$ to $\frac{3}{4}$ turn approximately).
5. Open the right-hand access door.
6. Switch on the «battery isolating switch».
7. Close the door.



The fuel system must be bled after the filter cartridges have been changed.



Dispose of fuel and any materials and components contaminated with it in accordance with environmental protection regulations.

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE for approx. 1 minute.
2. Shut down the machine.
3. Open the left-hand door.
4. Visually check the fuel system for leaks.
5. Tighten all screw connections.
6. Close the door.

10.4.4 Replacing the fuel tank venting filter

Check that all sealing surfaces are matching. Missing or unsuitable filter cartridges may allow dirt to enter the fuel system.

Material Spare parts
 Cleaning cloth

Precondition The machine is switched off.
 The machine is standing level.
 The machine is fully vented, the pressure gauge reads 0 bar.
 The machine has cooled down.
 All compressed air consumers are disconnected, the discharge valves are open.
 The «battery isolating switch» is switched off.

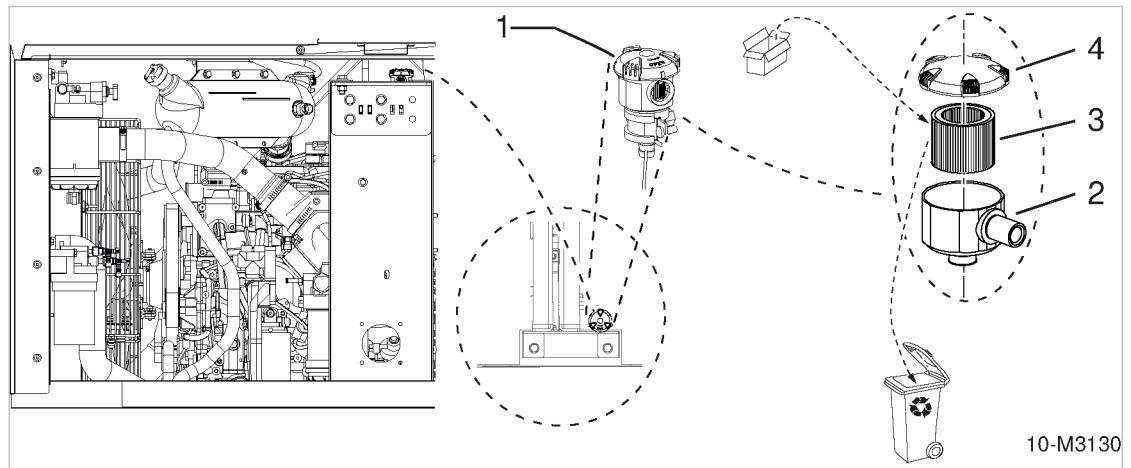


Fig. 40 Changing the ventilation filter

- | | |
|------------------|--------------------|
| ① Venting filter | ③ Filter cartridge |
| ② Filter housing | ④ Filter cap |

1. Open left-hand doors.
2. Open the filter cap by turning it anticlockwise and remove it.
3. Remove the filter cartridge from the filter housing and dispose of it.
4. Carefully clean the inside of the housing, the cover and sealing faces with a damp cloth.
5. Insert the new filter cartridge in the housing. Make sure it is correctly in place and properly sealed.
6. Replace the filter cap and screw down tight.
7. Close the door.



Dispose of old parts and contaminated materials according to applicable environmental regulations.

10.4.5 Checking the engine oil level

The engine oil is indicated by a dipstick in the oil sump. The oil level should ideally be between the two marks on the dipstick. The oil level should not be allowed to fall below the *minimum level*.

- Material Cleaning cloth
- Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The engine has cooled down.
All compressed air consumers are disconnected and the air outlet valves are open.

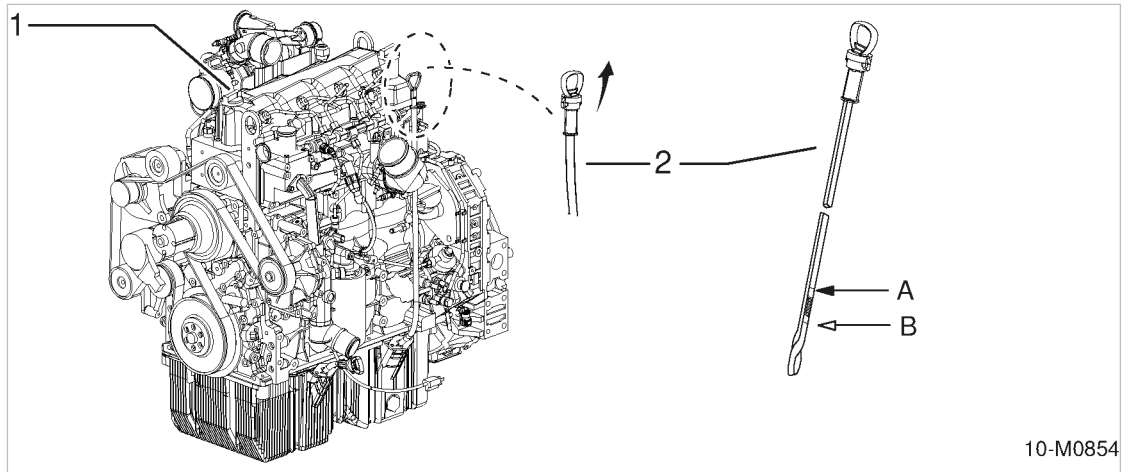


Fig. 41 Checking the engine oil level

- | | | | |
|---|----------------------------------|-----|-----------------------------------|
| ① | Oil filler neck cover, motor oil | (A) | Mark for <i>maximum oil level</i> |
| ② | Dip-stick | (B) | Mark for <i>minimum oil level</i> |

1. Open the left-hand door.
2. Withdraw the dipstick, wipe with a lint-free cloth and insert fully.
3. Withdraw the dipstick once more and read off the oil level.
Oil level between both markings: Oil level OK.
The level has reached the *minimum level* or is below the mark: Replenish engine oil.
4. Close the door.



The marked *maximum oil level* should not be exceeded in order for the level of oil in the crankcase not to reach the crankshaft. If this were to occur, it could create oil bubbles that would reduce the oil's lubricating capability and impair engine performance.

10.4.6 Engine oil filling and topping up

- Material Engine oil
Cleaning cloth
Funnel
- Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
All compressed air consumers are disconnected and the air discharge valves are open.
The «battery isolating switch» is switched off.

Filling with engine oil

See chapter 2.8.5 for engine oil filling volume.
The oil dipstick is marked with the «maximum oil level».

1. Open the left-hand door.
2. Remove the filler cap and fill with fresh oil.
3. Wait 5 minutes then check the oil level.



It takes a few minutes for oil to reach the sump.

Low oil level: Replenish engine oil.

4. Replace the plug in the filler port.
5. Turn on the «battery isolating switch».
6. Close the door.

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE for approx. 5 minutes.
2. Shut the machine down.
3. Wait until the machine has automatically vented.
The pressure gauge reads 0 bar!
4. Open the left-hand door.
5. After approximately 5 minutes: Check the engine oil level.
Oil level still too low: Replenish the engine oil.
6. Visually inspect for leaks.
7. Close the door.

10.4.7 Changing the engine oil

The engine oil must be changed:

- in accordance with the maintenance schedule,
- dependent upon the degree of contamination in the intake air,
- at least once a year.



Information on changing the oil when there is a heavy dust load in the ambient air can be found in the engine manufacturer's operating manual.

Material Engine oil
Receptacle
Wrench
Cleaning cloth

Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The engine has warmed up to operating temperature.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.



CAUTION

Danger of burns from hot components and escaping engine oil!

➤ Wear long-sleeved clothing and gloves.

Draining the engine oil

The oil is drained directly from the engine oil pan. This is achieved via an oil drain valve with the aid of a separate drain hose.

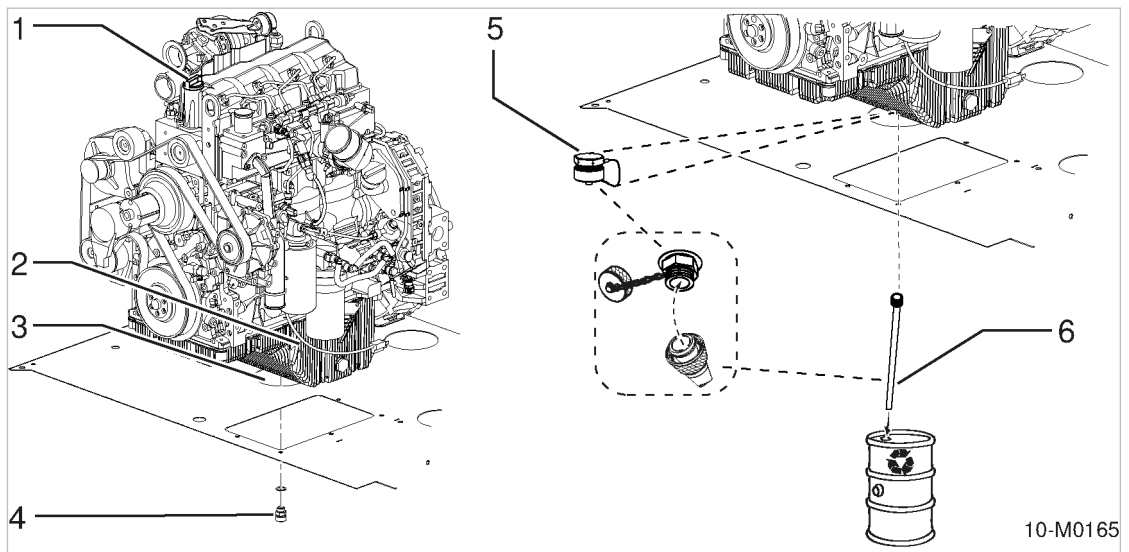


Fig. 42 Draining the engine oil

- | | |
|------------------------------|--|
| ① Engine oil filler cap | ④ Engine oil drain device |
| ② Engine oil pan | ⑤ Oil drain valve |
| ③ Floor pan drainage opening | ⑥ Drain hose with quick-release coupling |

1. Open the left-hand door.
2. Remove the oil filler cap.
3. Place a receptacle beneath the drainage opening in the floor pan.
4. Unscrew the protective cap from the oil drain valve.
5. Feed the free end of the drain hose through the drainage opening in the floor pan and into the receptacle.

6. Screw the drain hose with quick-release coupling onto the oil drain valve.
The oil drain valve opens and engine oil flows out through the hose.
7. Once all the engine oil has drained out, detach the quick-release coupling from the oil drain valve and remove the drain hose.
8. Replace the protective cap on the oil drain valve.
9. Replace the cap on the oil filler opening.
10. Close the door.



Dispose of old oil and working materials contaminated with oil in accordance with environmental protection regulations.

Further information For filling the engine oil, see chapter 10.4.6.

10.4.8 Replacing the engine oil filter

Material Spare part
Strap wrench (order number 8.9410.0)
Cleaning cloth
Receptacle

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The engine has cooled down.
All compressed air consumers are disconnected and the air outlet valves are open.
The «battery isolating switch» is switched off.



CAUTION

Danger of burns from hot components and escaping engine oil!
➤ Wear long-sleeved clothing and gloves.

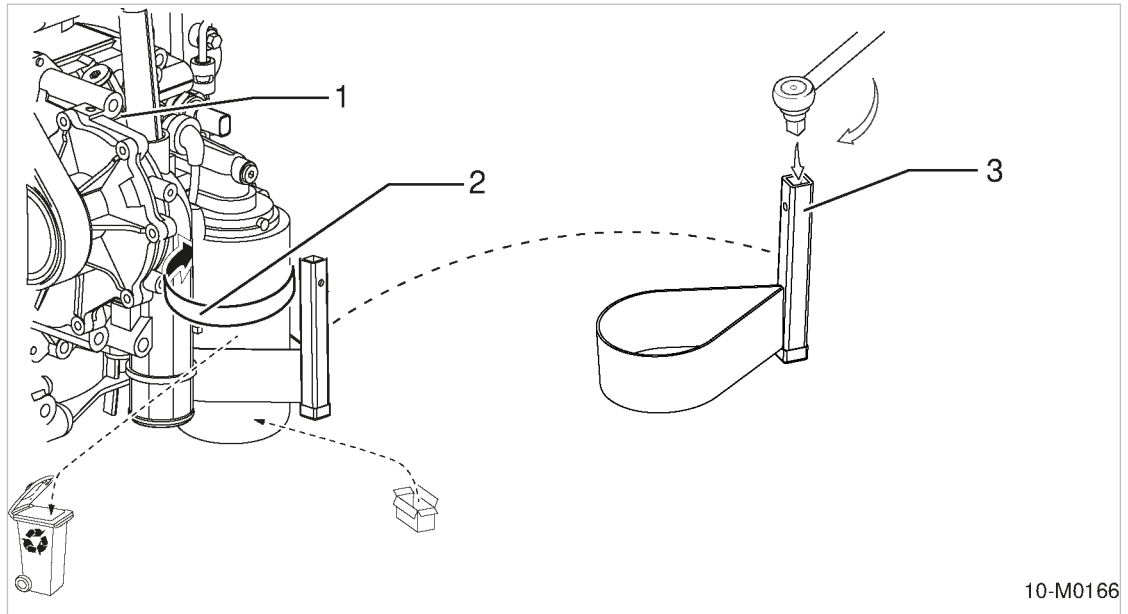


Fig. 43 Changing the oil filter

- ① Engine
- ② Direction of rotation to unscrew the filter
- ③ Strap wrench

Due to restricted space, a strap wrench should be used to unscrew the oil filter. The strap wrench is operated with a 1/2" ratchet (reversible).

1. Open the left-hand door.
2. Prepare a receptacle.
3. Loosen the filter using the strap wrench and unscrew. Catch any escaping engine oil in the receptacle.
4. Carefully clean the sealing surfaces using a lint-free cloth.
5. Lightly oil the gasket on the new filter.
6. Manually turn the oil filter clockwise to tighten.
7. Check the engine oil level.
If the oil level is too low: Replenish the engine oil.
8. Open the right-hand access door.
9. Switch on the «battery isolating switch».
10. Close the door.



Dispose of old oil filter, old oil and materials contaminated with oil according to applicable environmental protection regulations.

10.4.9 Engine belt maintenance

Defective engine belts may tear. A torn engine belt no longer drives the coolant pump and the engine generator. The engine may overheat and be damaged.

Material Ratchet
Socket
Spare part

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.

➤ Open both doors.

10.4.9.1 Carrying out a visual check

1. Check the engine belt thoroughly for tears, fraying or stretching.
If damaged or worn: Replace the engine belt immediately.

Checking belt tension:

Check belt tension only when the engine belt is warm but not hot, in order to avoid different lengths due to temperature differences.



The engine belt is pre-tensioned by the spring force in the belt tensioner.

Check the belt tension by pressing your thumb against the belts at the mid-point between the pulleys.

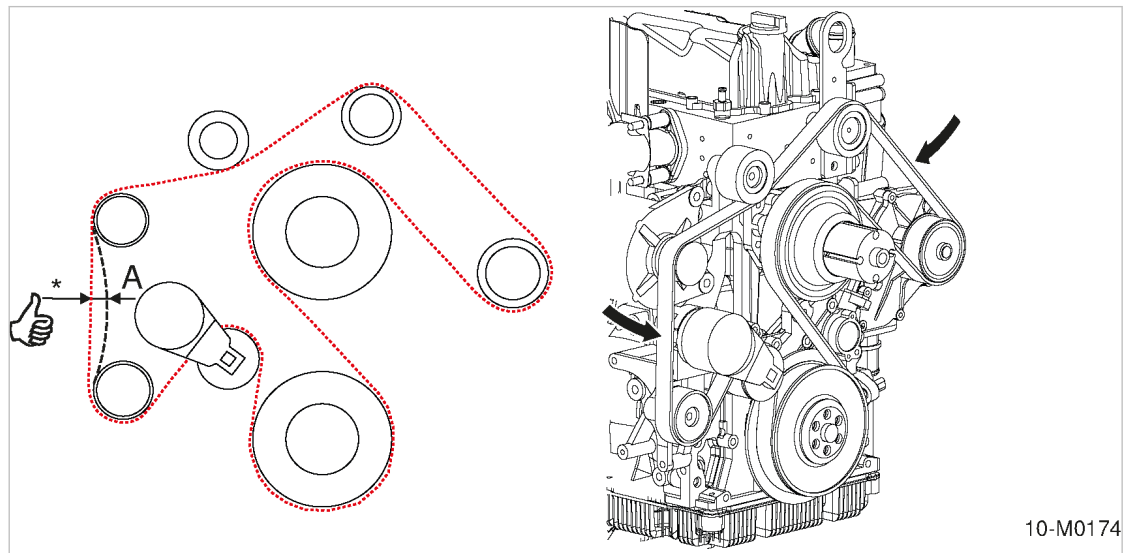


Fig. 44 Checking the belt tension by hand

- (A) Permissible indentation depth for the engine belt
- (*) Compressive load: approx. 10 kg
Permissible indentation depth: 10 – 15 mm

1. Check the belt tension by hand (see Fig. 44).
2. Replace loose engine belts.
If, following replacement of the belt, tension is still not correct: Replace belt tensioner.

Checking the belt tensioner/belt mounting:

With the engine belt installed, check the belt tensioner, belt pulleys and tensioner stops for tears. Replace the belt tensioner if any tears are detected.

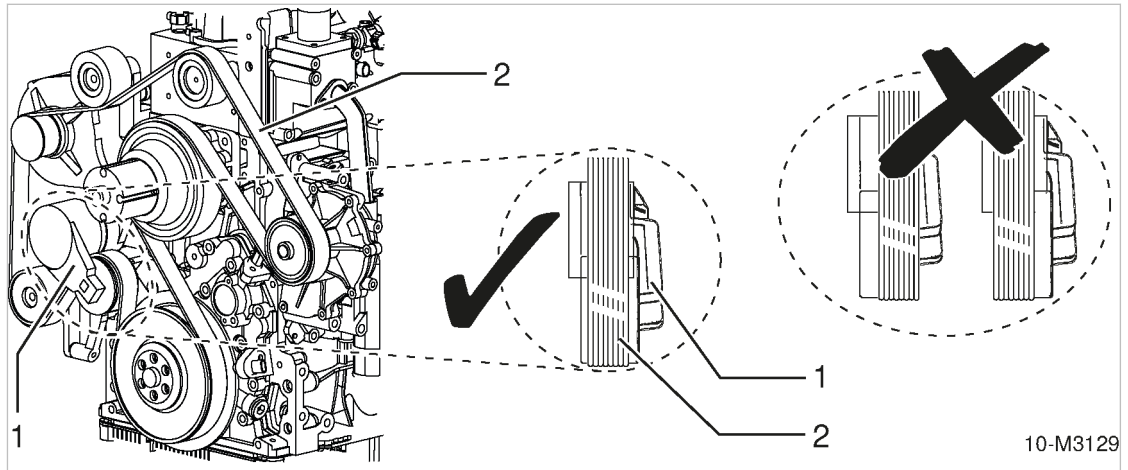


Fig. 45 Checking the belt mounting

- ① Belt tensioner
- ② Engine belt

1. Check the belt tensioner for tears.
2. Check the engine belt position on the belt tensioner pulley.

The engine belt should sit in the centre of the pulley. Incorrectly aligned belts result in belt wear. If necessary, align or exchange belt.

Preparing for operation:

1. Switch on the «battery isolating switch».
2. Close the doors.

10.4.9.2 Replacing the engine belt

If the engine belt is worn, torn or otherwise appears damaged, it must be replaced.

**WARNING**

Belt tensioner is under spring force!
Risk of lacerations or pinching when loosening or tightening the device.

- Take great care when working on the tensioning device.
- Ensure precision-handling of the tool.

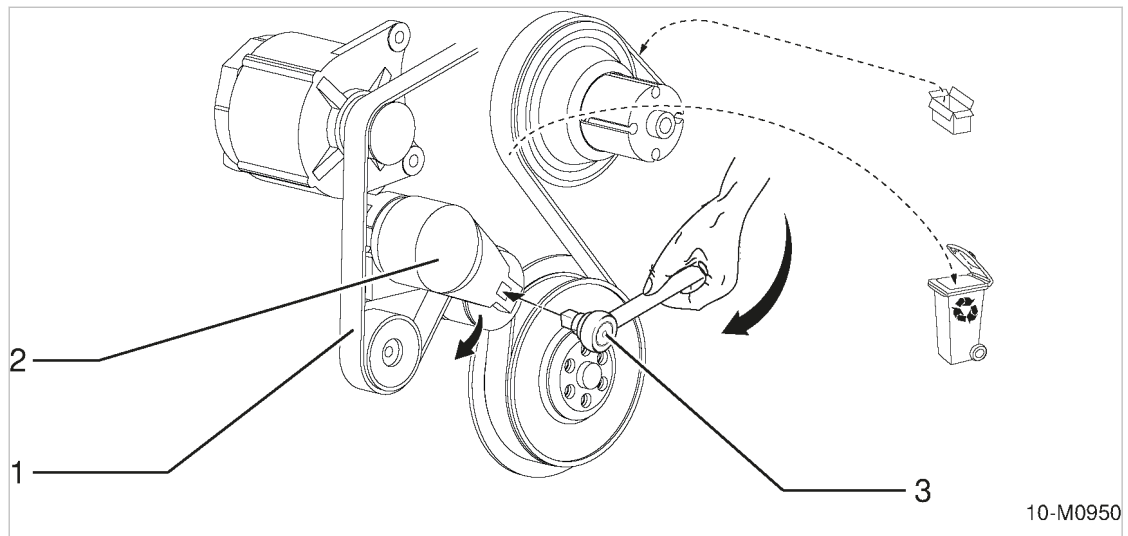
Removing the engine belt:


Fig. 46 Loosen the engine belt

- ① Engine belt
- ② Belt tensioner (tensioning pulley)
- ③ Ratchet

1. Insert the ratchet square in the corresponding hole in the belt tensioner.
2. Using the ratchet, press the belt tensioner in the direction of the arrow until the engine belt is loose.
3. Firstly, pull the engine belt off the smallest wheel or off the belt tensioner.

Maintenance checks with engine belt removed:

1. Check the pulleys for dirt and/or wear.
 If a pulley is dirty: Clean the pulley.
 If a pulley is worn: Replace the pulley.
2. Check the belt tensioner for dirt and/or wear and cracks.
 If the belt tensioner is dirty: Clean the belt tensioner
 If belt tensioner is worn: Replace the belt tensioner.
3. Check the fan hub.
 It must be possible to turn the fan hub without vibration or excessive axial clearance (axial clearance max. 0.15 mm).
 Check/replace if necessary.

Fitting the engine belt:

1. Using the ratchet, press the belt tensioner in the direction of the arrow until the engine belt can be pulled into position.
2. Manually position the new engine belt over the pulleys without using force.
3. Using the ratchet, slowly turn back the belt tensioner to tension the engine belt.
 The belt tensioner is pushed upwards by spring tension and pre-tensions the engine belt. Ensure that the engine belt is correctly positioned in its guide.



A belt that has been removed may not be used again.



Old belts should be disposed of in accordance with the latest environmental regulations.

Putting into operation:

1. Replace the service opening cover.
2. Switch on the «battery isolating switch».
3. Close the doors.

10.4.10 Checking the crankcase venting line

The crankcase venting line must be checked daily for contamination and wear.

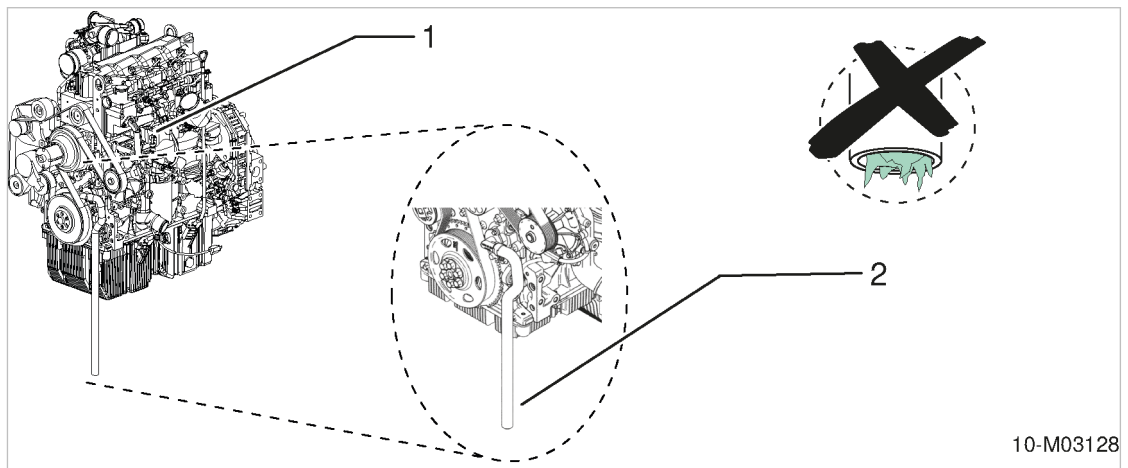


Fig. 47 Checking the crankcase venting line

- ① Engine block
- ② Crankcase venting line

➤ Open the left-hand door.

10.4.10.1 Checking the crankcase venting line for contamination

Check the outlet of the venting line for sludge, foreign particles, excessive oil discharge and/or ice.



In the event of ambient temperatures near freezing, this check must be carried out more frequently!

- Check the crankcase venting line for contamination.
If the outlet of the venting line is contaminated:
Clean the outlet.

Cleaning the venting line:

- Clean the crankcase venting line with warm water and cleaning agent.

10.4.10.2 Checking the crankcase venting line for wear

Check the venting line for material wear, such as cracks, holes and other damage.

- Check the crankcase venting line for wear.

If the venting line is worn:

Replace crankcase venting line.

- Close the door.

10.4.11 Battery maintenance

- Check the charging system if the battery discharges for no apparent reason.

10.4.11.1 Safety

WARNING

Danger of acid burns from leaking electrolyte!

- Wear appropriate protective clothing, including acid-proof gloves.
- Always wear eye and face protection.
- Do not tip the battery. Electrolyte may escape from the venting holes.
- Proceed with caution.

When working on batteries, note the following safety signs:

A warning label with safety signs is attached to the battery.



10-M0167

Fig. 48 Safety signs - warning label on the battery

- Note and abide by all safety signs provided on the battery warning label. The individual safety signs represent the following meaning:
 - ① – Fire, sparks, open flame and smoking prohibited!
 - ② – Danger of acid burns - eye and face protection must be worn!
 - ③ – Keep children away from batteries and electrolyte!
 - ④ – Wear protective gloves - batteries are filled with caustic electrolyte!
 - ⑤ – Observe the instructions provided by the battery manufacturer!
 - ⑥ – Explosion hazard - follow all safety instructions!

Further instructions for handling batteries:

- Do not remove the battery terminal covers unnecessarily.


- Do not place tools on top of the battery. This can cause the battery to short-circuit, overheat or explode!
- Take particular care when the battery has been in service for a long time or after charging, as highly explosive gas is emitted!
Ensure adequate ventilation!

10.4.11.2 Ensuring the batteries are charged

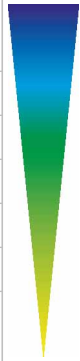
The battery may be subject to self-discharge if the machine has been out of operation for an extended period. In this case, the starting voltage will be insufficient to start the engine when needed. Deep discharge of the battery may also lead to battery damage.



The following applies to starter batteries:
Recharge if stored for 30 days or longer!

The current charge level of the starter battery can be read off from the  *Battery voltage* operating indicator on the SIGMA CONTROL SMART controller.

Starter battery charge level:

Charge level [%]		Voltage indicator [V]		Electrolyte density [kg/l]	Remarks
		12 V	24 V		
100		12.7 - 12.85	25.4 - 25.7	1.27	Battery in order, fully charged.
75		12.5	25.0	1.24	Recharge required!
65		12.4	24.8	1.22	
50		12.3	24.6	1.21	Starting capacity limit!
25		12.0	24.0	1.16	Battery discharged below permissible discharge limit.
20		11.9	23.8	1.14	
0		11.6	23.2	1.09	Battery permanently damaged due to deep discharge!

Values at 25 °C

Tab. 77 Starter battery charge level

- Check battery charge and recharge with a suitable charging device if necessary.

10.4.11.3 Battery check and care

Even so-called “maintenance-free” batteries need a certain degree of care to achieve their maximum possible service life.



Clean the battery housing and connections regularly using a soft cloth. This prevents leakage currents and minimises self-discharge.

Material Terminal grease
Distilled water
Cleaning cloth
Protective gloves
Eye protection

Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.

- Open the right-hand door.
- 1. Clean the housing and connections. Do not use a wire brush!
- 2. Lightly grease the contacts with terminal grease to prevent corrosion.
- 3. Check that the batteries and cable connections are securely fitted and retighten if necessary.

Checking the battery electrolyte level:

The amount of electrolyte is generally sufficient for the lifetime of the battery. Nevertheless, the electrolyte level should be checked once per year. The electrolyte level should reach up to the mark, i.e. 1 cm above the plates.



Replace the battery immediately if the housing leaks!



1. **NOTICE!**
Irreparable battery damage!
Replenishing with pure electrolyte will increase the level of concentration and can irreparably damage the battery.
 - Replenish with distilled water only.

2. Check the electrolyte level.



If the electrolyte level does not reach the mark:
➤ Replenish with distilled water.

- Close the door.

Winter operation:

Battery performance is strongly affected by winter operating conditions. Only a fraction of the normal starting power is available at low temperatures.



1. **NOTICE!**
Risk of batteries freezing!
Discharged batteries are susceptible to frost damage and can freeze at -10 °C.
 - Check the battery charge level using an acid density tester.
 - Recharge the battery.
 - Clean the battery connections and apply terminal grease.
2. Check the battery charge on a weekly basis.
Recharge as necessary.

- If the machine is not to be operated for a period of several weeks: Remove the battery and store in a frost-free room.



In extreme cases, the use of a heavy-duty, cold-start battery and/or an additional booster battery is recommended.

10.4.11.4 Battery removal and installation

Precondition The machine is switched off.
 The machine is standing level.
 The machine is fully vented, the pressure gauge reads 0 bar.
 The machine has cooled down.
 The «battery isolating switch» is switched off.



- CAUTION!**
 Danger of batteries exploding!
 If a battery is short-circuited, it will overheat and can explode.
 - Never short-circuit a battery (e.g. with a tool).
 - Wear protective gloves and eye protection.



- NOTICE!**
 Overvoltage produced by the engine generator!
 Voltage peaks can irreparably damage the engine generator regulator and diodes.
 - The battery serves as a buffer and must not be disconnected while the engine is running.
 - Carry out work on the batteries only when the machine has been shut down.
- Open the right-hand door.
- Disconnect the negative cable first, then the positive cable.
- Unscrew the battery clamping bracket.
- When reinstalling, follow the above steps in reverse order.
- Make sure the battery is properly secured.
- Switch on the «battery isolating switch».
- Close the door.

Replacing the battery:

Replacement batteries must have the same capacity, current strength and structural shape as the original batteries.

- Always replace a battery with one of the same type.



Old batteries constitute hazardous waste and must be disposed of correctly in accordance with the applicable environmental protection regulations.

10.5 Compressor Maintenance

- Perform maintenance tasks according to the schedule in chapter 10.3.3.1.

10.5.1 Check the cooling oil level

The oil level is checked at the oil separator tank oil filler. Oil must be visible when the screw plug is removed.

Material Wrench
 Cleaning cloth

Precondition The machine is shut down.
 The machine is standing level.
 The machine is fully vented with the pressure gauge reading 0 bar.
 All compressed air consumers are disconnected and the air outlet valves are open.

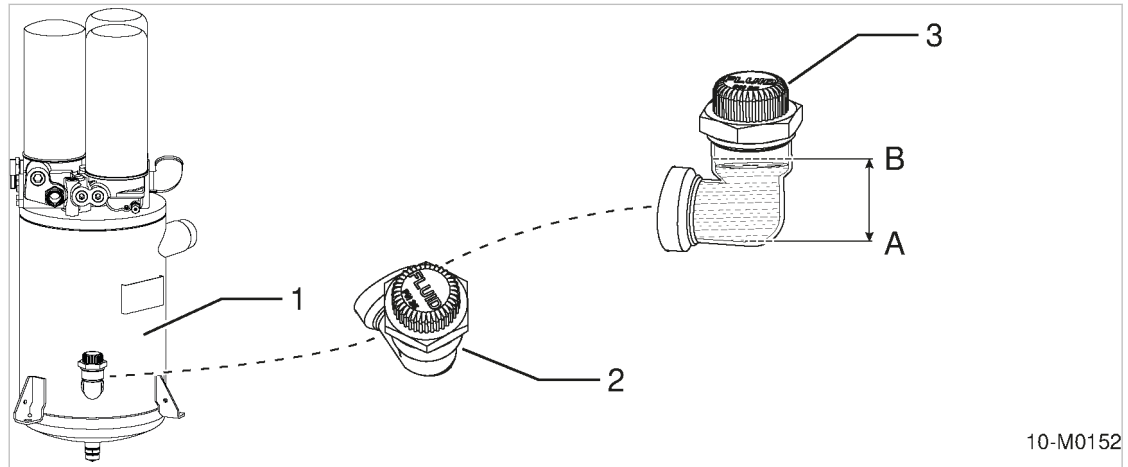


Fig. 49 Checking the cooling oil level

- | | |
|----------------------|---------------------|
| ① Oil separator tank | Ⓐ Minimum level |
| ② Oil filler | Ⓑ Maximum oil level |
| ③ Screw plug | |

1. Open the left-hand door.
2. Slowly unscrew and withdraw the plug from the oil filler.
3. Check the cooling oil level.
 If oil is not visible: Top up the cooling oil.
4. Replace the plug in the filler port.
5. Close the door.

10.5.2 Filling and replenishing with cooling oil

Material Cooling oil
 Funnel
 Cleaning cloth
 Wrench

Precondition The machine is shut down.
 The machine is standing level.
 The machine is fully vented, the pressure gauge reads 0 bar.
 The machine has cooled down.
 All compressed air consumers are disconnected, the discharge valves are open.
 The «battery isolating switch» is switched off.


Filling with cooling oil

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

**1. NOTICE!**

Damage to the machine from incompatible cooling oil!

- Never mix different types of oil.
- Only ever replenish the cooling oil with the same type of oil already used in the machine.

2. Open the left-hand door.
3. Slowly unscrew and withdraw the plug from the oil filler port.
4. Top up the cooling oil to the maximum level  with the help of a funnel.
5. Check the oil level.
6. Check the screw plug seal for damage.
If the seal is damaged: Replace the seal.
7. Replace the screw plug in the filler neck.
8. Switch on the «battery isolating switch».
9. Close the door.

Starting the machine and performing a test run:

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the discharge valves.
3. Shut the machine down.
4. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
5. Open the take-off valves.
6. Open the left-hand door.
7. Check the cooling oil level after about 5 minutes.
If the cooling oil level is too low: Replenish the cooling oil.
8. Visually check for leaks.
9. Close the door.

10.5.3 Changing the cooling oil

Drain the oil completely from the following components:

- Oil separator tank
 - Oil cooler
 - Oil pipes
- Always change the oil filter when changing the oil.

Material Cooling oil
Receptacle
Drain hose with hose coupling is disconnectedly laying at the machine
New gasket for the drain plug
Funnel
Cleaning cloth

Precondition The machine is shut down.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine is at operating temperature.
All compressed air consumers are disconnected and the air outlet valves are open.
The «battery isolating switch» is off.

**CAUTION**

There is risk of burns from hot components and escaping oil.

➤ Wear long-sleeved clothing and gloves.

➤ Open both doors.

10.5.3.1 Draining the cooling oil

Drainage of the cooling oil is carried out at the oil separator tank and oil cooler via oil drain valves, with the aid of a separate drain hose. The airend is drained via a drain plug.

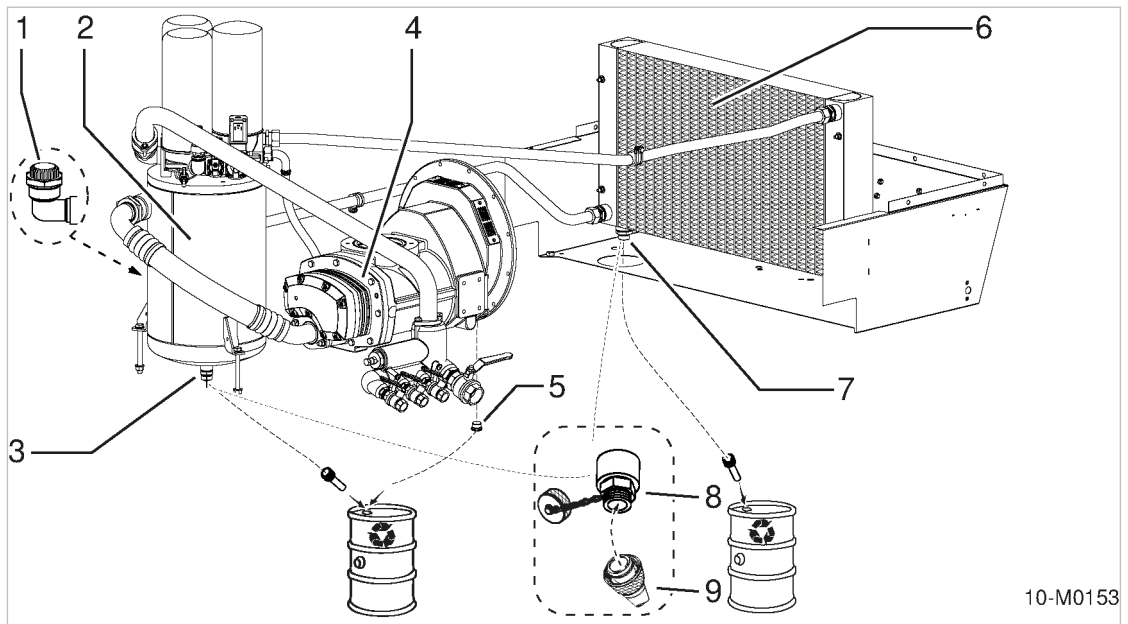


Fig. 50 Draining the compressor cooling oil

- | | | | |
|---|--------------------------------|---|--|
| ① | Screw plug for oil filler port | ⑥ | Oil cooler |
| ② | Oil separator tank | ⑦ | Oil cooler drain |
| ③ | Oil separator tank drain valve | ⑧ | Oil drain valve |
| ④ | Air end | ⑨ | Drain hose with quick-release coupling |
| ⑤ | Drain plug | | |

- Unscrew the screw plug for the oil filler port on the oil separator tank.

Draining the cooling oil from the oil separator tank:

This is carried out via an oil drain valve in the bottom of the oil separator tank, with the aid of a separate drain hose.

1. Place a receptacle beneath the appropriate service opening in the floor pan.
2. Feed the free end of the drain hose through the drainage opening in the floor pan and into the receptacle.
3. Unscrew the protective cap from the oil drain valve.
4. Screw the drain hose with quick-release coupling onto the oil drain valve.
The oil drain valve opens and the cooling oil drains through the drain hose.
5. When all the cooling oil has drained out, unscrew the quick-release coupling and remove the drain hose.
6. Refit the protective cap on the oil drain valve.
7. Carefully remove the receptacle.

Draining the cooling oil from the oil cooler:

This is carried out via a drain valve in the oil cooler, with the aid of a separate drain hose.

1. Place a receptacle beneath the appropriate service opening in the floor pan.
2. Feed the free end of the drain hose through the drainage opening in the floor pan and into the receptacle.
3. Unscrew the protective cap from the oil drain valve.

4. Screw the drain hose with quick-release coupling onto the oil drain valve.
The oil drain valve opens and the cooling oil drains through the drain hose.
5. When all the cooling oil has drained out, unscrew the quick-release coupling and remove the drain hose.
6. Refit the protective cap on the oil drain valve.
7. Carefully remove the receptacle.

Draining the cooling oil from the airend:

The airend cooling oil should be drained last, since this is the lowest point in the oil circuit and this is where the contaminated residual oil collects.

The airend can be drained via a drainage opening (accessible from below, through a hole in the floor pan).

1. Place a receptacle beneath the appropriate service opening in the floor pan.
2. Unscrew the drain plug in the bottom of the airend and catch the cooling oil as it drains.
3. Fit a new seal on the drain plug and screw it back in.
4. Carefully remove the receptacle.

Closing tasks:

1. Screw in the screw plug for the oil filler port on the oil separator tank.
2. Close the doors.



Dispose of old oil and working materials contaminated with oil in accordance with the applicable environmental protection regulations.

Further information For filling the cooling oil, see chapter 10.5.2.

10.5.4 Replacing the compressor oil filter

The compressor oil filter is located on the oil separator tank cover, beside the two oil separator cartridges.

Material Spare part
Receptacle
Cleaning cloth

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.

**CAUTION**

Danger of burning from hot components and oil!

- Wear long-sleeved clothing and gloves.

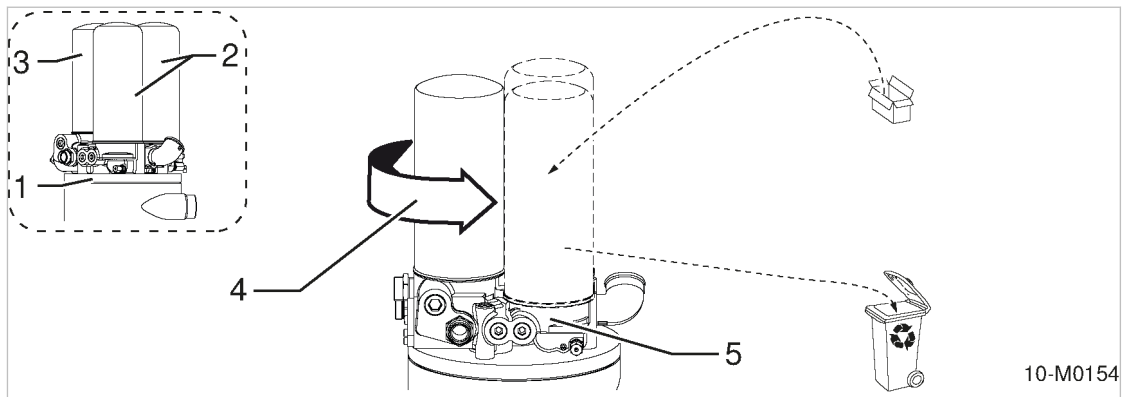


Fig. 51 Replacing the oil filter

- | | | | |
|---|---------------------------|---|--|
| ① | Top of oil separator tank | ④ | Direction of rotation for unscrewing the oil filter |
| ② | Oil separator cartridges | ⑤ | Filter head housing with integrated thermostatic valve |
| ③ | Oil filter | | |

➤ Open the left-hand door.

Changing the oil filter:

1. Prepare a receptacle.
2. Loosen the filter by turning it anticlockwise, catching any escaping oil in the receptacle.
3. Carefully clean sealing surfaces using a lint-free cloth.
4. Lightly oil the seal on the new filter.
5. Screw in the new oil filter by hand in the clockwise direction, until the oil filter is touching the sealing surfaces of the filter head housing.
6. Manually turn the oil filter clockwise to tighten.
7. Check the oil level in the oil separator tank.
If the cooling oil level is too low: Replenish the cooling oil.

Preparing for operation:

1. Open the right-hand door.
2. Switch on the «battery isolating switch».
3. Close the door.



Dispose of escaped cooling oil and any working materials or parts contaminated with it in accordance with the applicable environment protection regulations.

Starting the machine and performing a test run:

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the discharge valves.
3. Shut the machine down.
4. Wait until the machine has vented automatically.
The pressure gauge reads 0 bar!
5. Open the discharge valves.
6. Open the left-hand door.

7. After approximately 5 minutes: Check the cooling oil level.
If the cooling oil level is too low: Replenish the cooling oil.
8. Visually check for leaks.
9. Close the door.

10.5.5 Servicing the dirt trap on the oil separator tank

The valve unit of the control valve is mounted on the oil separator tank cover. The valve unit has two different dirt traps that must be cleaned at least once a year.

Material Cleaning cloth
Wrench
Small screwdriver
Control valve maintenance kit
Cleaning solvent or spirit

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.

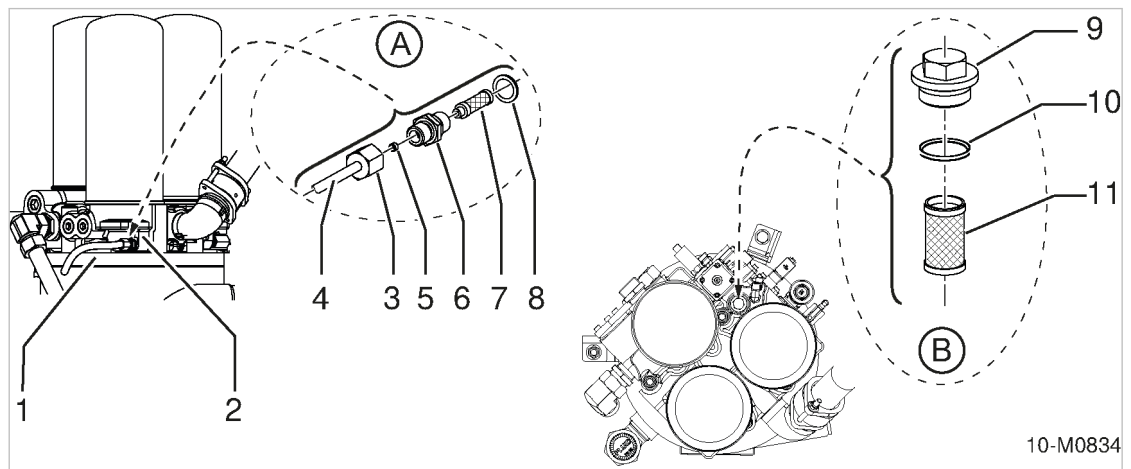


Fig. 52 Dirt trap maintenance on the oil separator tank

- | | | | |
|---|------------------------------------|---|--|
| ① | Top of oil separation tank | ⑦ | Strainer |
| ② | Control valve | ⑧ | Sealing ring |
| Ⓐ | Detail: Dirt trap, oil return line | Ⓑ | Detail: Dirt trap, proportional controller |
| ③ | Clamping nut | ⑨ | Screw plug |
| ④ | Oil return line | ⑩ | O-ring |
| ⑤ | Nozzle | ⑪ | Strainer |
| ⑥ | Screw-in connector | | |

➤ Open the left-hand door.

10.5.5.1 Servicing the dirt trap on the oil return line

See Fig. 52; Detail: A.

1. Undo the union nut ③ and bend the oil return line ④ to one side.

2. Unscrew the screw-in connector (6).
3. Unscrew the strainer (7) from the screw-in connector.
4. Use a screwdriver to unscrew the nozzle (5) from the screw-in connector.
5. Clean the housing, strainer and sealing ring (8) with cleaning solvent or spirit.
6. Check the nozzle, strainer and sealing ring for wear.
In case of signs of wear: Replace the necessary components.
7. Fit the nozzle and strainer to the screw-in connector.
8. Screw in the connector making sure the sealing ring seats properly.
9. Refit the oil return line.

10.5.5.2 Maintenance of the proportional controller dirt trap

See Fig. 52; Detail: B.

1. Unscrew the plug (9) and remove the strainer(11).
2. Clean the plug, strainer and O-ring (10) with cleaning solvent or spirit.
3. Check the strainer and O-ring for wear.
In case of signs of wear: Replace the necessary components.
4. Place the screw plug on the strainer.
5. Screw in the plug making sure the O-ring seats properly.

Preparing for operation:

1. Open the right-hand access door.
2. Switch on the «battery isolating switch».
3. Close the door.



Dispose of old parts and contaminated materials in accordance with applicable environmental regulations.

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE for approx. 5 minutes.
2. Switch off the machine.
3. Wait until the machine has vented automatically.
The pressure gauge reads 0 bar!
4. Open the take-off valves.
5. Open the left-hand door.
6. Visually check for leaks.
7. Switch off the machine.
8. Close the door.

10.5.6 Changing the oil separator cartridge



Separation of the cooling oil is carried out via two individual oil separator cartridges (SpinON) on the oil separator tank cover.

The separator cartridges cannot be cleaned. They must all be replaced at the same time.

The service life of the oil separator cartridges is influenced by:

- Contaminants in the intake air
- Adherence to the replacement intervals for the:
 - Cooling oil
 - Oil filter
 - Air filter

Material Spare parts
Receptacle
Cleaning cloth
Filter strap wrench

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.
The «battery isolating switch» is switched off.



CAUTION

Danger of burning from hot components and oil!

- Wear long-sleeved clothing and gloves.

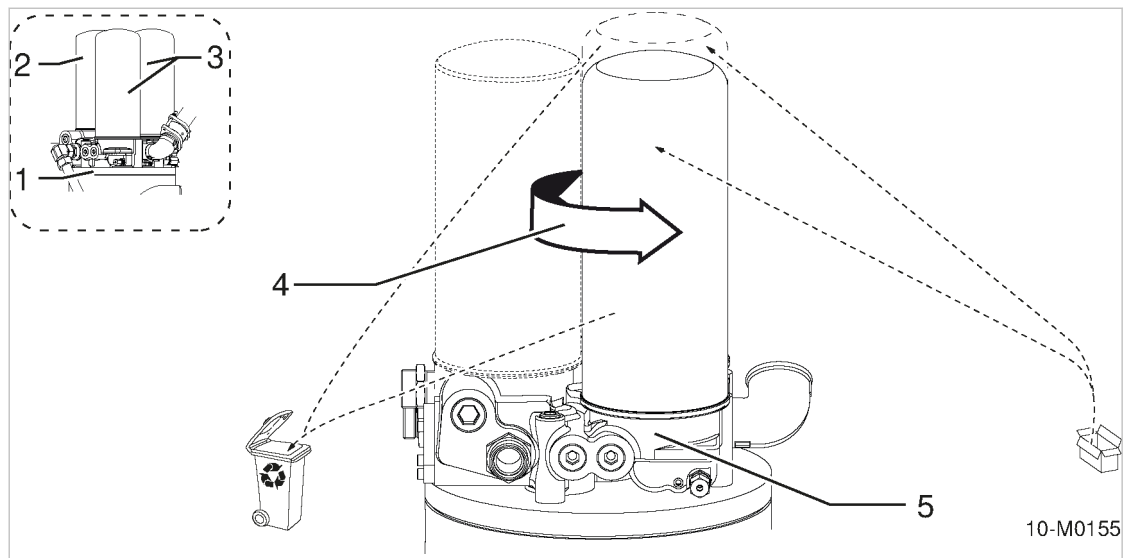


Fig. 53 Changing the oil separator cartridge

- | | |
|-----------------------------|--|
| ① Top of oil separator tank | ④ Direction of rotation for unscrewing the oil separator cartridge |
| ② Oil filter | ⑤ Filter head housing |
| ③ Oil separator cartridges | |

- Open the left-hand door.

Changing oil separator cartridges:

1. Prepare a receptacle.
2. Unscrew oil separator cartridges by turning anticlockwise. Catch any escaping oil.

3. Set aside the old oil separator cartridges.
4. Carefully clean sealing surfaces on the filter head housing using a lint-free cloth.
5. Lightly oil the seals on the new oil separator cartridges.
6. Screw in the new oil separator cartridges individually by hand in the clockwise direction, until the cartridges are touching the sealing surfaces.
7. Manually tighten each new oil separator cartridge.
8. Check the oil level in the oil separator tank.

If the cooling oil level is too low: Replenish the cooling oil.



Maintenance of the dirt trap in the oil separator tank must be carried out whenever the oil separator cartridge is changed.

Further information Information regarding maintenance of the control valve dirt trap can be found in chapter 10.5.5.

Preparing for operation:

1. Open the right-hand door.
2. Switch on the «battery isolating switch».
3. Close the door.



Dispose of old parts and contaminated materials in accordance with applicable environmental regulations.

Starting the machine and performing a test run:

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the discharge valves.
3. Shut down the machine.
4. Wait until the machine has vented automatically.
The pressure gauge reads 0 bar!
5. Open the discharge valves.
6. Open the left-hand door.
7. After approximately 5 minutes: Check the cooling oil level.
Cooling oil level too low: Replenish the cooling oil.
8. Visually check for leaks.
9. Close the door.

10.5.7 Compressor air filter maintenance

Clean the air filter in accordance with the maintenance table, or at the latest when the corresponding maintenance indicator shows it to be necessary.

Renew the air filter after 2 years at the latest or after it has been cleaned 5 times.



- Using the machine without an air filter element is not permitted!
- Do not use filter elements with damaged pleats or seals.
- The use of unsuitable or damaged filter elements can allow dirt to enter the pressure system and cause premature wear and damage to the machine.

Material Compressed air for blowing out
Spare part (if required)
Cleaning cloth

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.



NOTICE

Damaged air filter insert.
Damage to machine due to contaminated intake air.

- Do not try to clean the filter element by striking or tapping it.
- Do not wash the filter element.

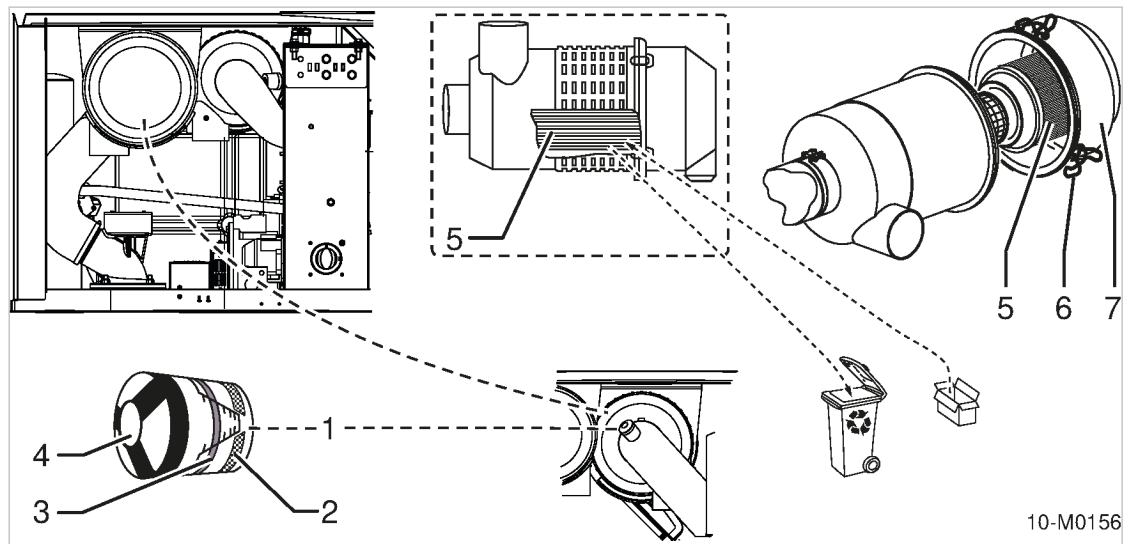


Fig. 54 Compressor air filter maintenance

- | | |
|--|------------------|
| ① Maintenance indicator | ⑤ Filter element |
| ② Red zone, indicator scale | ⑥ Retaining clip |
| ③ Indicating piston of the maintenance indicator | ⑦ Filter cap |
| ④ Reset knob of the maintenance indicator | |

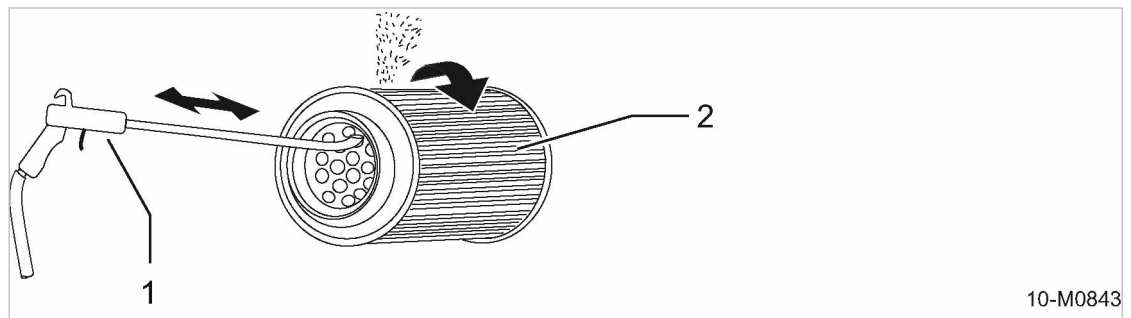


Fig. 55 Cleaning the filter element

- | |
|---|
| ① Compressed air gun with blast pipe (bent to approx. 90° at the end) |
| ② Filter element |

- Open both doors.

Checking the contamination level of the air filter:

Air filter maintenance is required when the yellow piston inside the maintenance indicator reaches the red zone.

- Check the air filter maintenance indicator.
If the yellow piston has reached the red zone: clean or renew the filter element.

Cleaning the air filter:

1. Release the retaining clamps, lift off the cap and extract the air filter.
2. Carefully clean the inside of the filter housing, the cap and sealing faces with a damp cloth.
3. Cleaning the filter element:
 - Use dry compressed air (≤ 5 bar!) at an angle to blow dust from the element from inside to outside until no more dust appears.
 - The blast pipe must be long enough to reach the bottom of the element.
 - The tip of the blast pipe must not touch the filter element.
 - Clean the sealing surfaces.
4. Inspect the filter element carefully for any damage.
If the filter element is damaged: Replace the filter element.
5. Insert the cleaned or new filter element into the filter housing. Make sure that the filter element is inserted correctly and the seals can function properly.
6. Replace the cap and secure with the clips.

Resetting the maintenance indicator:

- Press the reset button on the maintenance indicator repeatedly.
The yellow piston inside the indicator is reset and the maintenance indicator is ready for use again.
- Close the doors.



Dispose of old parts and contaminated materials in accordance with environmental regulations.

10.6 Cleaning the coolers

The required cleaning frequency depends heavily on the local operating conditions.

Severe clogging of the coolers causes overheating and damage to the machine.

Check coolers regularly for clogging.

Avoid stirring up dust. Wear breathing protection if necessary.

Do not clean coolers with a sharp object, as this can cause damage.

Arrange for severely contaminated coolers to be cleaned by KAESER SERVICE.

Material Compressed air
Breathing mask (if necessary)
Water or steam jet washer

Precondition The machine is positioned in a washing station equipped with an oil separator.
The machine is switched off.
The machine has cooled down.
The machine is fully vented, the pressure gauge reads 0 bar.
All compressed air consumers are disconnected and the air discharge valves are open.
The «battery isolating switch» is switched off.



NOTICE

Damage can be caused to the machine by water or steam jets!

Direct water or steam jets can damage or destroy electrical components and display instruments.

- Cover up electrical components such as the control cabinet, generator, starter and display instruments.
 - Do **not** direct water or steam jets at sensitive components such as the generator, starter or display instruments.
 - Deploy the extension pole of the high-pressure washer in order to maintain a distance of at least 50 cm from the surface of the cooler, at an approximate angle of 90°.
- Open both doors.

10.6.1 Cleaning the compressor and engine cooler

The compressor and engine coolers are combined in a single cooler block.

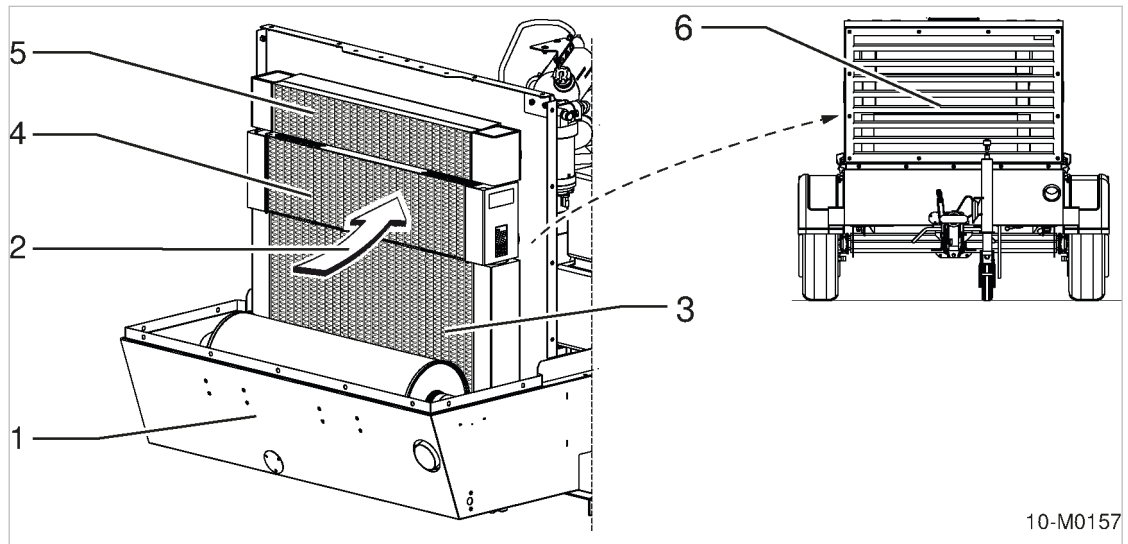


Fig. 56 Cleaning the compressor and engine coolers

- | | |
|--|------------------------------|
| ① Front side of machine (bodywork cover not illustrated) | ④ Coolant cooler (engine) |
| ② Direction of cleaning with water or steam jet (from outside to inside) | ⑤ Charge air cooler (engine) |
| ③ Oil cooler (compressor) | ⑥ Air outlet grille |

Cleaning the cooler:

1. Seal off the air intakes for the engine and compressor air filters before cleaning.
2. Remove the air outlet grille in front of the coolers.
3. Clean the cooling fins with compressed air, water or steam jet in the opposite direction to the cooling air flow (from outside to inside).
4. Reattach the air outlet grille.
5. Remove the protective coverings from the intake openings for the air filters.
6. Switch on the «battery isolating switch».
7. Close the doors.
8. Start the machine and run up to operating temperature so that any residual water is evaporated.

Checking the coolers for leaks:

1. Open both doors.
2. Visually inspect for leaks: Is oil/coolant leaking out?



Is a cooler leaking?

- Arrange for defective coolers to be repaired or replaced immediately by an authorised KAESER SERVICE agent.

- Close the doors.



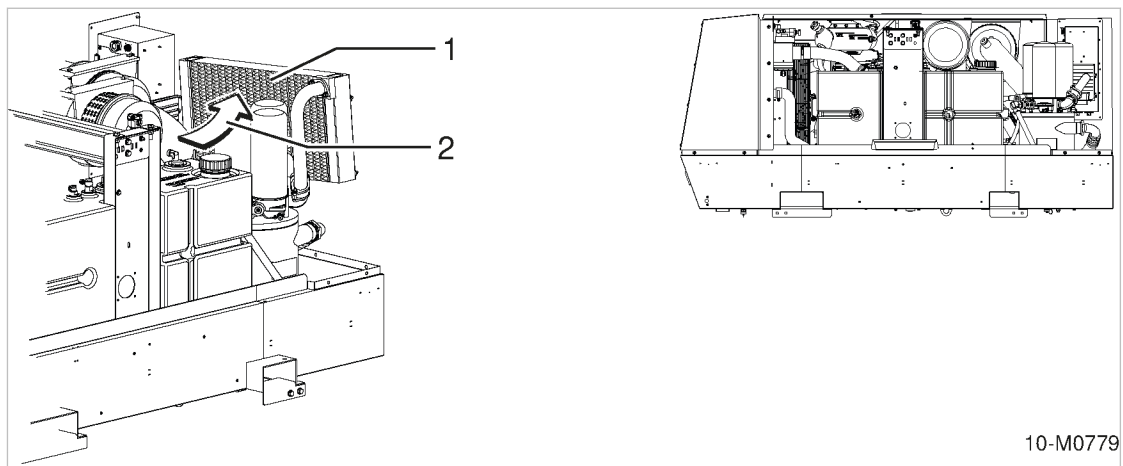
Only clean the cooler fins in a washing area equipped with an oil separator!

10.6.2 Option da, dd

Cleaning the compressed air aftercooler

The compressed air aftercooler is located separately amongst the compressed air treatment devices.

Option da, dd



10-M0779

Fig. 57 Cleaning the compressed air aftercooler

- ① Compressed air aftercooler
- ② Direction of water or steam jet (from inside to outside)

1. Seal off the air intake openings for the engine and compressor air filters before starting cleaning.
2. Clean the cooler fins with compressed air, water or steam jet in the opposite direction to the cooling air flow (from inside to outside).
3. Remove the protective coverings from the intake openings for the air filters.
4. Switch on the «battery isolating switch».
5. Close the doors.
6. Start the machine and run up to operating temperature so that any residual water is evaporated.



Only clean the cooler fins in a washing area equipped with an oil separator!

10.7 Checking screw connections

Overview:

- Guideline values for tightening torques.
 - General guideline values for tightening torques.
 - Specific guideline values for tightening torques.
 - Sealed screw connections.
- Follow all instructions carefully.

General guideline values for tightening torques:

Guideline values for the required tightening torques are dependent upon the size of the screw connection, the strength class of the screw material and the friction coefficient.



1. **NOTICE!**
Damage to the machine from insufficient clamping force at screw connections
 - Tighten all screw connections with the defined tightening torque.
2. Determine the thread size for the screw connection.
3. For determining the defined torque, see chapter 2.4.2.
4. Tighten all screw connections with the defined torque.

Specific guideline values for tightening torques:

Screw connections for components that are either safety-related or under particular stress must be tightened with specific tightening torques.

Examples:

- For details of specific tightening torques, see chapter 2.4.2.
 - E.g. Screw connections on lifting eyes.
- Values for further specific tightening torques are provided in the section covering the relevant maintenance task.



1. **NOTICE!**
Damage to the machine from insufficient clamping force at screw connections
 - Screw connections for components that are either safety-related or under particular stress must be tightened exclusively with the correct specific tightening torque.
2. Determine the correct specific tightening torque.
3. Tighten the screw connections with the specific tightening torque.

Sealed screw connections:

Screw connections which must not be adjusted are sealed with a coloured locking varnish.



1. **NOTICE!**
Damage to the machine caused by adjusting the settings
 - Leave sealed screw connections in their original condition.
2. Do not loosen or adjust sealed screw connections.



Failure to comply with these instructions will invalidate all warranty claims.

10.8 Check wing doors

The closed wing doors perform the following functions when the machine is running: Protection against contact, cooling air flow, sound proofing and weather protection.

To ensure these functions at all times, the doors and their connecting elements must always be in perfect working condition.

Material Acid-free oil

Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.

Check function of wing doors:

1. Close all wing doors.
2. Close all catches.



One or more wing doors are not resting properly on the body or cannot be latched.

- Contact authorised KAESER SERVICE.

Checking connecting elements of wing doors:

The connecting elements of the wing doors may include:

- Screw connections
- Hinges
- Handles
- Latches
- Snap fasteners
- Gas struts

1. Check all connecting elements of the wing doors for damage, wear and firm seating.
2. If necessary, grease the hinges.
3. Clean gas struts.
4. Check that gas struts will open the unlocked wing doors properly.
Wing doors open independently to the maximum opening angle.
5. Check that open wing doors remain open at maximum angle.



- Wing doors do not open properly or do not stay open.
- Replace defective gas struts.

10.9 Maintenance of rubber sealing strips

The rubber sealing strips between the body panels and the access doors serve both as a sound-proofing measure and to prevent ingress of rain water.

Care of the rubber sealing strips is especially necessary in winter to prevent the strips from sticking and tearing when the access panels are opened.

Material Cleaning cloth
Silicone or Vaseline

Precondition The machine is shut down.
The machine is fully vented, the pressure gauge reads 0 bar.
Machine is cooled down.
All compressed air consumers are disconnected and the air outlet valves are open.

1. Open all the doors.
2. Clean the rubber sealing strips with a lint-free cloth and check for cracks, holes and other damage.
Have any damaged gasket replaced.
3. Properly grease the rubber strips.
4. Close the doors.

10.10 Performing maintenance tasks on the chassis

Perform maintenance tasks on the chassis:

- See the separate document "Chassis Operating Manual" for instructions regarding maintenance tasks on the chassis.

Performing maintenance tasks on the chassis:

- Carry out maintenance tasks according to maintenance schedule 10.3.3.1 "Machine's Maintenance Schedule".

10.11 Check/replace hose lines

Overview of hose lines of machine:

- Fuel lines of the drive engine

- Pressure hoses of the drive engine
- Pressure hoses of the compressor



The hose lines are subject to natural ageing regardless of proper storage or permitted utilisation during machine operation. This ageing changes the material and compound properties and reduces the performance capability of the hose lines. As a result the period of use for hose lines is limited.

The operator must ensure that all hose lines are checked at reasonable intervals and are replaced if required, see maintenance schedule 10.3.3.1

- Comply with all instructions!

10.11.1 Replace the fuel lines of the drive engine.

- Have a KAESER SERVICE technician replace the fuel lines of the drive engine.

10.11.2 Replace the pressure hoses of the drive engine.



Overview of all pressure hoses at drive engine:

- Engine oil
- Coolant for the coolant cooler
- Charge air (if available)

- Have a KAESER SERVICE technician replace the pressure hoses of the drive engine.

10.11.3 Replace the pressure hoses of the compressor



Overview of all pressure hoses on the compressor:

- Cooling oil
- Compressed air
- Control air
- Condensate

- Have a KAESER SERVICE technician replace the pressure hoses of the compressor.

10.12 Check safety functions

- Perform inspection tasks/have them performed according to the maintenance schedule in chapter 10.3.3.1.

10.12.1 Check the EMERGENCY STOP device

In order to shut down the machine in the event of danger, the machine is equipped with an EMERGENCY STOP device. The EMERGENCY STOP device of the machine is referred to as «EMERGENCY» pushbutton

The position of the «EMERGENCY-STOP» pushbutton is shown in Chapter 4.2 "Machine Design".



Use the «EMERGENCY STOP» pushbutton to stop the machine only in emergencies!

Check the mechanical function of the «EMERGENCY STOP» pushbutton daily with the machine shut down.



WARNING

«EMERGENCY STOP» pushbutton locked out!

The machine cannot be stopped quickly in an emergency.

- Check the function of the «EMERGENCY STOP» pushbutton.
- Do not operate the machine if the «EMERGENCY STOP» pushbutton does not work.

Precondition The machine is switched off.
The drive engine stands still.

1. Push the «EMERGENCY STOP» pushbutton.
2. Check if «EMERGENCY STOP» pushbutton locks properly and remains locked.
3. Check if the «EMERGENCY STOP» pushbutton unlocks by turning it in the direction of the arrow.



The «EMERGENCY STOP» pushbutton cannot be pressed or does not engage.

- Do not start the machine.
- Have the «EMERGENCY STOP» pushbutton replaced.

10.12.2 Checking the safety valve actuating pressure

The machine should shut down if the actuating pressure of the safety valve reaches P_{max} . (for P_{max} , see table 78).



Check as described in the section: "Check actuating pressure of safety valve" in the separate operating manual for the SIGMA CONTROL SMART controller, chapter "Have safety functions checked".

Maximum working pressure: see machine nameplate

Maximum working pressure [bar]	Actuating pressure [bar]
14	15.9

Tab. 78 Safety valve actuating pressure

Material Ear protection
Eye protection



WARNING

Risk of hearing damage when safety valve blows off!

- Close all the doors/enclosures.
- Wear ear protection.



WARNING

Risk of burns due to released cooling oil and compressed air when safety valve blows off!

- Wear eye protection.
- Check the actuating pressure of the safety valve.

Result When the "actuating pressure" is reached, the safety valve blows off.



- If the safety valve does not blow off when the “actuating pressure” is reached:
- Decommission the machine immediately and cease further operation.
 - Arrange inspection and/or replacement of the safety valve.

10.12.3 Having excessive temperature shut-down function checked

The machine should shut down if the discharge temperature reaches a maximum of $T_{max.}; T_{max.}$ [°C] see table 79.



Check in accordance with section: "Check safety shut-down at excessive airend discharge temperature" in the separate operating manual for the SIGMA CONTROL SMART controller, chapter "Have safety functions checked".

Machine temperature	Value
Maximum airend discharge temperature (automatic safety shut-down) [°C]	115

Tab. 79 Safety shut-down at excessive airend discharge temperature

- Have shut-down at excessive airend discharge temperature checked.

Result When the maximum airend discharge temperature is exceeded, the SIGMA CONTROL SMART controller switches the machine off.



- The machine does not shut down?
The excessive temperature shut-down function is no longer ensured.
- Immediately shut down the machine and cease any further operation.
 - Have machine checked.

10.13 Maintenance of Optional Items

- Perform maintenance tasks according to the schedule in chapter 10.3.3.2.

10.13.1 Option da, dd Centrifugal separator maintenance

Clean the centrifugal separator dirt trap if the moisture content in the compressed air is too high.

Material Cleaning cloth
Wrench
Small screwdriver
Dirt trap maintenance kit
Petroleum ether or spirit

Precondition The machine is switched off.
The machine has cooled down.
The machine is fully vented, the pressure gauge reads 0 bar.
All compressed air consumers are disconnected and the air discharge valves are open.
The «battery isolating switch» is switched off.

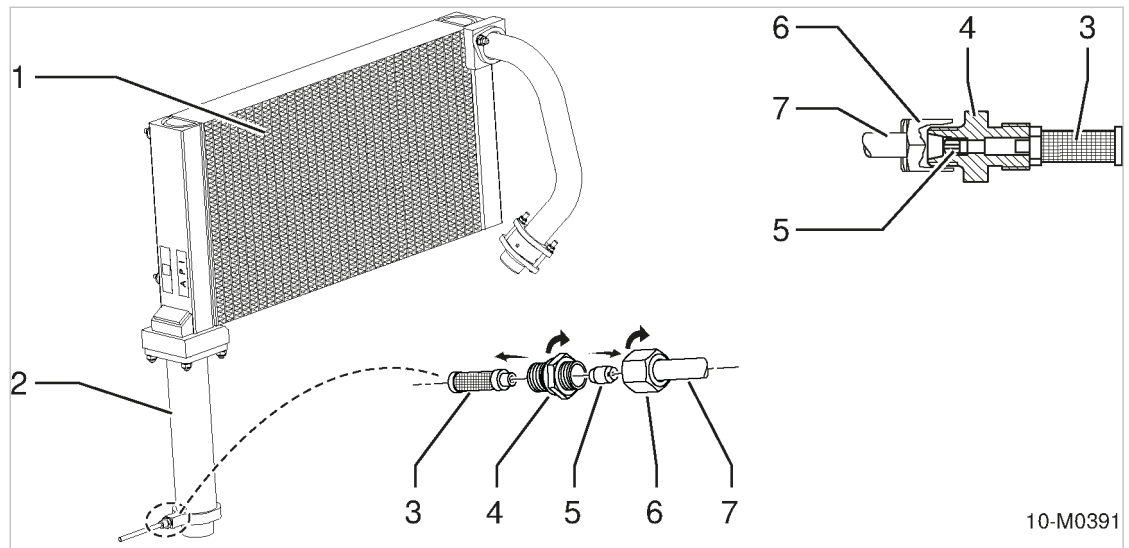


Fig. 58 Cleaning the condensate drain

- | | | | |
|---|-----------------------|---|------------------------------------|
| ① | Aftercooler | ⑤ | Nozzle |
| ② | Centrifugal separator | ⑥ | Condensate drain hose clamping nut |
| ③ | Strainer | ⑦ | Condensate drain hose |
| ④ | Screw-in fitting | | |

- Open the right-hand access door.

Cleaning the condensate drain

1. Loosen the union nut ⑥ and detach the condensate drain hose ⑦ from the screw-in fitting.
2. Unscrew the screw-in fitting ④ from the centrifugal separator and pull off the strainer ③.
3. Use a screwdriver to unscrew the nozzle ⑤ from the housing of the screw-in fitting.
4. Clean the nozzle, strainer and screw-in fitting with cleaning solvent or spirit.
5. Check the nozzle and strainer for wear.
If severely worn: Replace components.
6. Reattach the strainer to the screw-in fitting.
7. Reattach the screw-in fitting to the centrifugal separator.
8. Screw in the nozzle and reattach the condensate drain hose with the clamping nut.

Preparing for operation:

1. Switch on the «battery isolating switch».
2. Close the door.

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE for approx. 5 minutes.
2. Shut the machine down.
3. Wait until the machine has automatically vented.
The pressure gauge reads 0 bar!
4. Open the discharge valves.
5. Open the right-hand door.

6. Check the centrifugal separator housing and hose line for leaks.
7. Close the door.

10.13.2 Option dd Filter combination maintenance

Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
All compressed air consumers are disconnected and the air discharge valves are open.



WARNING

Danger of injury from escaping compressed air!
The filter combination is pressurised during operation. Serious injury can result from loosening or opening components under pressure.

- Wait until the machine is fully vented (check: pressure gauge reads 0 bar).
- Vent the filter combination.

Option dd

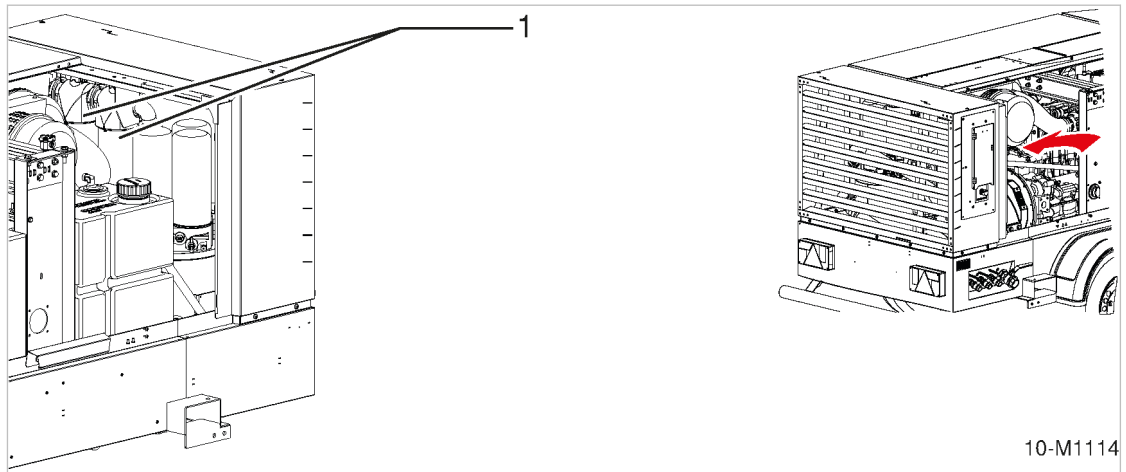


Fig. 59 Filter combination

- ① Filter combination

Option dd

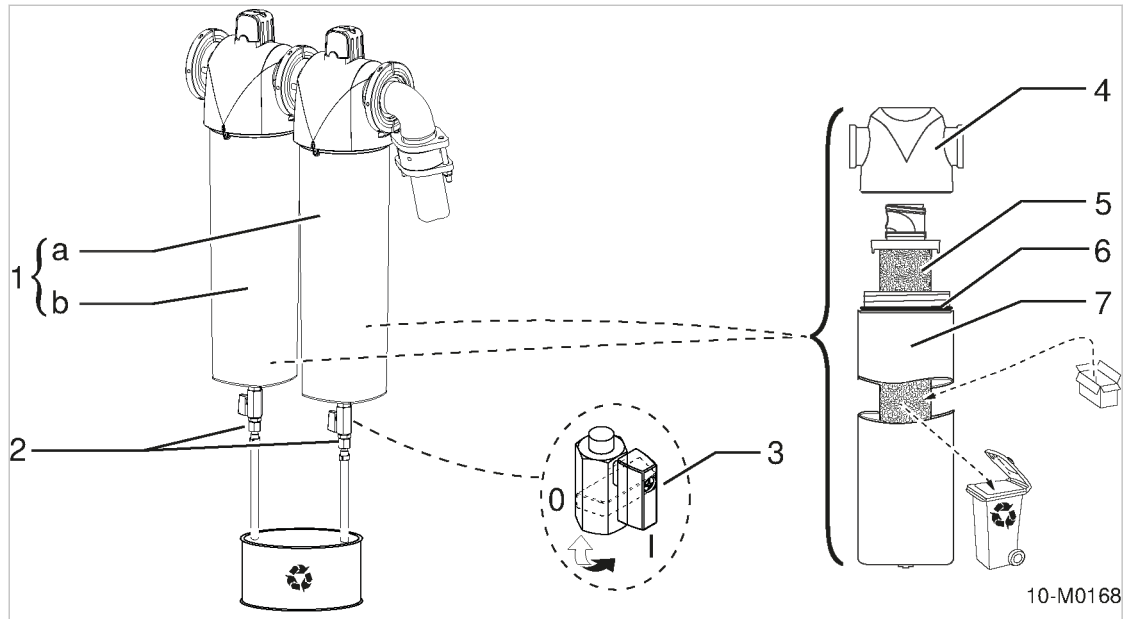


Fig. 60 Servicing the filter combination

- | | | | |
|---|--|---|----------------|
| ① | Filter combination | ④ | Filter head |
| ⓐ | Prefilter | ⑤ | Filter element |
| ⓑ | Fine filter (microfilter) | ⑥ | Housing seal |
| ② | Screw connection for condensate drain hose (at shut-off valve) | ⑦ | Filter housing |
| ③ | Shut-off valves (ball valve) for condensate drain | | |
| | 0 – Closed | | |
| | I – Open | | |

➤ Open the right-hand door.

10.13.2.1 Draining the condensate

Material Receptacle
Cleaning cloth

1. Place the receptacle beneath the filter combination hose lines.
2. Open the prefilter and fine filter condensate drain shut-off valves.
3. Close the door.
4. Start up the machine and run in IDLE.
The condensate discharged into the filter combination housings is blown out.
5. As soon as compressed air alone begins to flow out, shut down the machine.
6. Open the left-hand door.
7. Close the shut-off valves.
8. Close the door.



Condensate must be stored in suitable containers and disposed of in accordance with applicable environmental protection regulations.

10.13.2.2 Changing the filter elements

The prefilter and fine filter contain two different elements, which must be replaced as a pair. Note positioning!



Operating the filter combination without filter elements installed is not permitted!

Only handle new filter elements when wearing clean fabric gloves. Do not touch the new filter elements with bare fingers – contamination risk!

Material Spare parts
Filter wrench
Wrench
Cleaning cloth
Clean fabric gloves

Precondition The machine has cooled down.
The «battery isolating switch» is switched off.

Ensuring that the filter combination is not under pressure:

- Slowly open the shut-off valves on the prefilter and fine filter condensate drain.
Any remaining pressure is released.

Gaining access to the filter housing:

- Loosen the screw connection for the condensate drain hoses from the filter housings for the prefilter and fine filter and remove the drain hoses.

Changing the prefilter element:

1. Unscrew the filter housing in the anticlockwise direction.
2. Pull off the filter element downwards.
3. Clean the filter head, housing and sealing surfaces with a lint-free cloth.
4. Check the housing seal.
If the housing seal is damaged: Replace the seal.
5. Insert a new filter element.



Wear gloves!

6. Screw the filter housing back on in the clockwise direction.

Replacing the filter element on the fine filter:

1. Unscrew the filter housing in the anticlockwise direction.
2. Pull off the filter element downwards.
3. Clean the filter head, housing and sealing surfaces with a lint-free cloth.
4. Check the housing seal.
If the housing seal is damaged: Replace the seal.

5. Insert a new filter element.



Wear gloves!

6. Screw the filter housing back on in the clockwise direction.

Preparing for operation:

1. Screw the condensate drain hoses onto the housings for the prefilter and fine filter.
2. Close the condensate drain shut-off valves.
3. Tighten all filter combination screw connections.
4. Switch on the «battery isolating switch».
5. Close the door.



Dispose of old parts and contaminated materials in accordance with applicable environmental regulations.

Further information

Further information on replacing filter elements can be found in the “Filter Operating Instructions” in chapter 13.6.

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE for approx. 5 minutes.
2. Shut the machine down.
3. Wait until the machine has vented automatically.
The pressure gauge reads 0 bar!
4. Open the discharge valves.
5. Open the left-hand door.
6. Check the filter combination housing and hose lines for leaks.
7. Close the door.

**10.13.3 Option Ia
Cleaning the spark arrestor**

The spark arrestor must be cleaned of any accumulated soot approximately every two months, in order to prevent the emission of glowing combustion residue from the exhaust silencer.

Material Suitable rubber hose
Receptacle to collect the soot
Cleaning cloth
Protective gloves
Eye protection

Precondition The machine is switched off.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.



DANGER

Danger of suffocation from toxic exhaust fumes!

Exhaust fumes from internal combustion engines contain carbon monoxide, which is odourless and fatal if inhaled!

- Only use the machine outdoors!
- Do not inhale exhaust fumes.



CAUTION

Danger of burns from hot components and sparks!

- Wear long-sleeved clothing and gloves.
- Wear eye protection.

Cleaning the spark arrestor:

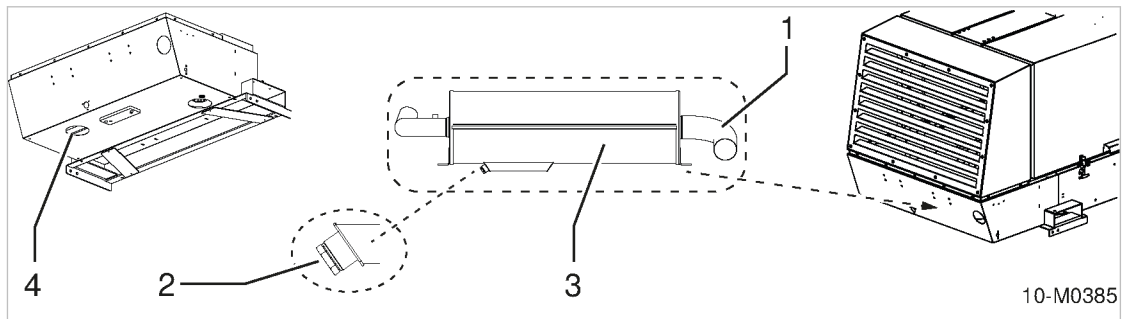


Fig. 61 Clean the spark arrestor (floor pan with maintenance openings)

- | | |
|--|--|
| ① Exhaust silencer end pipe | ③ Exhaust silencer with integrated spark arrestor |
| ② Soot trap discharge port with sealing plug | ④ Maintenance opening in floor panel to access both drainage ports |

1. Unscrew the sealing plug from the drainage port on the soot collector.
2. Attach the hose to the drainage port, suspending the other end of the hose inside the collection receptacle.
3. Start the engine on the machine.
4. To increase the pressure in the exhaust system, partially cover the exhaust silencer end pipe with a fire-resistant object.
Soot is blown out through the hose into the collection receptacle.
5. Shut the engine down.
6. Remove the hose and screw the sealing plug onto the drainage port.



It is recommended to blow out the spark arrestor with compressed air once a year.



Dispose of soot in accordance with environmental regulations.

10.13.4 Option 1b Engine air shut-off valve maintenance

Material Compressed air for blowing out
Cleaning solvent or spirit
Cleaning cloth

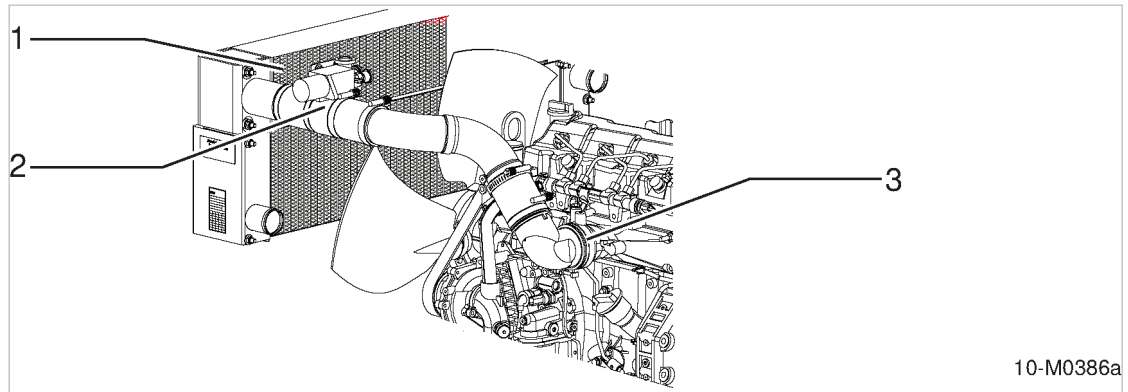
Precondition The machine is switched off.
The machine is fully vented, the pressure gauge reads 0 bar.
The machine has cooled down.
All compressed air consumers are disconnected, the discharge valves are open.

**NOTICE**

Engine air shut-off valve misaligned!

The engine air shut-off valve does not close when inflammable gas is drawn into the engine.
If the machine does not shut down: Irreparable engine damage, explosion and/or fire are possible.

- Do not adjust the valve closing mechanism.
- The valve must only be adjusted by a specialist workshop or KAESER SERVICE agent.



10-M0386a

Fig. 62 Engine air shut-off valve

- ① Charge air cooler
- ② Electrically operated engine air shut-off valve
- ③ Turbo air inlet for motor

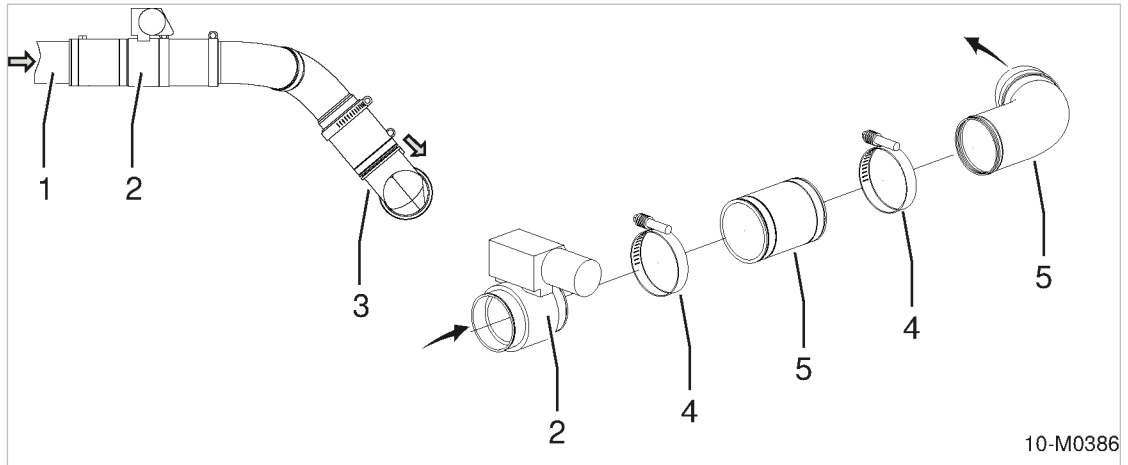


Fig. 63 Engine air shut-off valve maintenance

- | | |
|---|------------------|
| ① Turbo air hose (turbo air cooler side) | ④ Hose clamp |
| ② Electrically operated engine air shut-off valve | ⑤ Turbo air hose |
| ③ Turbo air inlet for motor | |

➤ Open the left-hand door.

Cleaning the interior of the engine air shut-off valve:



1. **NOTICE!**
If the engine air shut-off valve does not close fully:
The machine will not shut down. Irreparable engine damage, explosion and/or fire are possible.
➤ Do not grease the valve, as this may cause the valve to stick due to dust build-up.
2. Loosen the hose clamp on the engine air shut-off valve, remove the air pipe and swing it to one side.
3. Check if the interior of the engine air shut-off valve is clean.
If the engine air shut-off valve is clogged: Blow out with compressed air.



- If necessary, clean the valve with cleaning solvent or spirit and allow to dry.
- If dirt cannot be removed: Contact a specialist workshop or KAESER SERVICE agent.

Checking the function and mobility of the engine air shut-off valve:

1. Check the valve for damage and signs of excessive wear.
2. Check that the valve flap closes fully and without hindrance.

Result In case of severe wear or functional problems: Arrange for the engine air shut-off valve to be replaced.

1. Resecure the air hose and retighten the hose clamp screw connections.
2. Close the door.
3. Start the engine and switch the machine to LOAD.

If the engine stops in LOAD: Arrange for the engine air shut-off valve to be checked by a specialist workshop or KAESER SERVICE agent. If a defect is discovered, arrange for the valve to be replaced.

10.13.5 Option oe Draining liquid accumulation within the machine

The so-called "closed floor pan" contributes to the protection of the environment by preventing a contamination of the soil in the event of leaking operating fluids. Liquid accumulations within the machine's body can also cause corrosion or electrical faults. Liquid accumulations must be removed as quickly as possible to avoid any faults of the machine. For draining the liquid, maintenance openings have been added to the floor panel of the machine which are closed with bungs.



In order to clean the machine, see chapter 4.7.7 for the location of the service openings.

Material	Oil receptacle Cleaning cloths
Precondition	The machine is switched off. The machine is standing level. The machine is secured against moving. The machine is fully vented, the pressure gauge reads 0 bar. The machine has cooled down. All compressed air consumers are disconnected and the air outlet valves are open. The «battery isolating switch» is off. ➤ Open all doors.

Checking the machine interior for liquid accumulations:

1. Check the machine interior for liquid accumulations.
If liquid is present in the floor pan: Drain the liquid.
2. Close the doors.

Draining the liquid:

1. Place a receptacle underneath the service opening(s).
2. Unscrew and remove the bung(s) from the service openings.
The liquid will drain.
3. Clean the bungs and service openings.
4. Close all service openings with bungs.
The machine body is sealed.
5. Using the cleaning cloth, remove any dirt within the machine.
6. Close the doors.



Dispose of collected liquid and contaminated working materials according to environmental protection regulations.

11 Spares, Operating Materials, Service

11.1 Note the nameplate

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

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

11.2 Ordering maintenance parts and operating fluids/materials

KAESER maintenance parts and operating fluids/materials are genuine parts. They are specifically selected for use in our machines and ensure trouble-free operation.

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

Personal injury may result from such damage.



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.
- Do not use alternative maintenance parts and operating fluids/materials.

Compressor

Designation	Unit/quantity	Number
Air filter element	1	1260
Compressor oil filter	1	1210
Oil separator cartridge (complete set)	1	1450
Cooling oil	1	1600

Tab. 81 Compressor maintenance parts

Engine parts Cummins

Designation	Unit/quantity	Number
Air filter element	1	1280
Fuel prefilter (filter cartridge at the water separator)	1	1915
Fuel filter (cartridge)	2	1920
Tank ventilation filter (cartridge)	1	1243
Engine oil filter (cartridge)	1	1905
Injector nozzle	1	4475
Injector nozzle seal	1	4476
Engine belt	1	4470

Designation	Unit/quantity	Number
Engine oil	1	1925

Tab. 82 Consumable engine parts

Option dd **Filter combination**

Name	Unit/quantity	Number
Filter element - Prefilter	1	1550
Filter element - Micro-filter	1	1551
Housing seal	2	1548

Tab. 83 Replacement parts, combination filter

11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

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

11.4 Replacement parts for service and repair

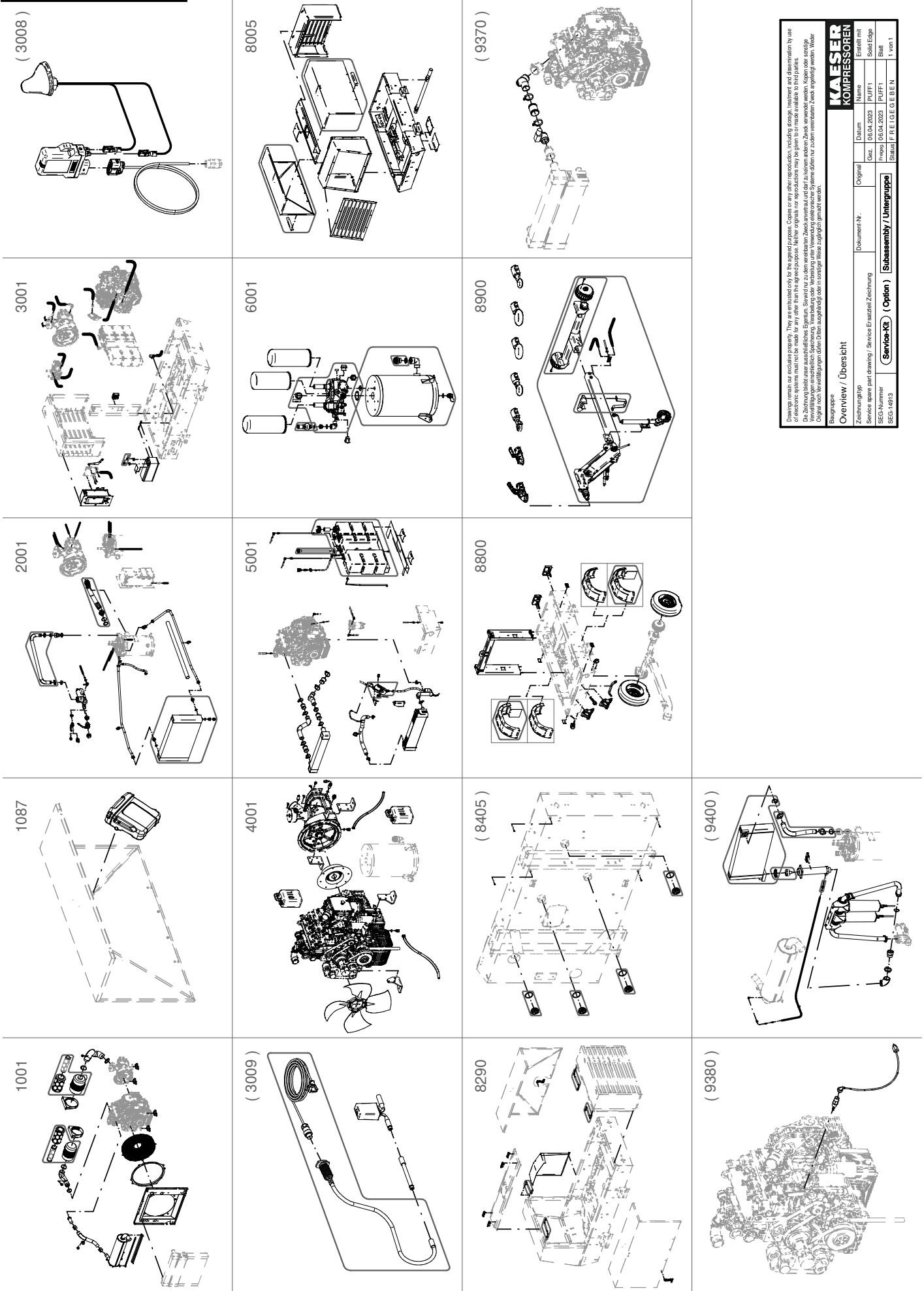
With the help of the parts list you can plan your material requirement according to operating conditions, and order the spare parts you need.



WARNING

Personal injury or machine damage due to incorrect working on the machine!
 Incorrect inspection, service or repair can damage the machine or severely impair its function. Personal injury may result from damage.

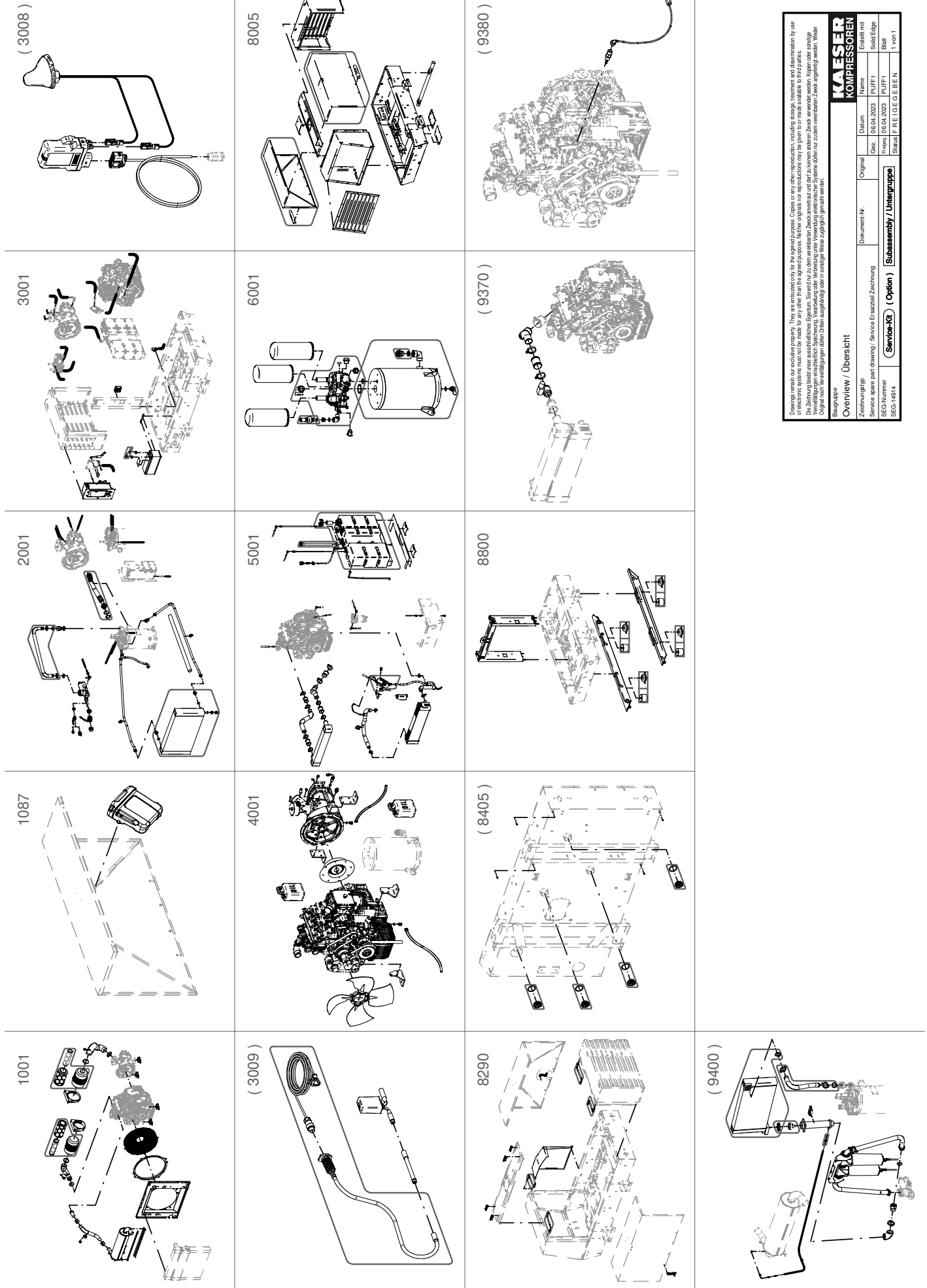
- Inspections, preventive maintenance or repair tasks not described in this Operating Manual must not be carried out by unqualified personnel.
- Have further tasks, not described in this Operating Manual, carried out by motor vehicle workshops or KAESER SERVICE only.



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Blattgruppe		Original		Erstellt mit	
Zachemungstyp		Datum		Name	
Service spare part drawing / Service Ersatzteil Zeichnung		08.04.2023		PUFFI	
SECS-Nummer		Revise		Solid Edge	
SEG-4813		08.04.2023		PUFFI	
		Status		1 von 1	
		Subassembly / Untereinheit			

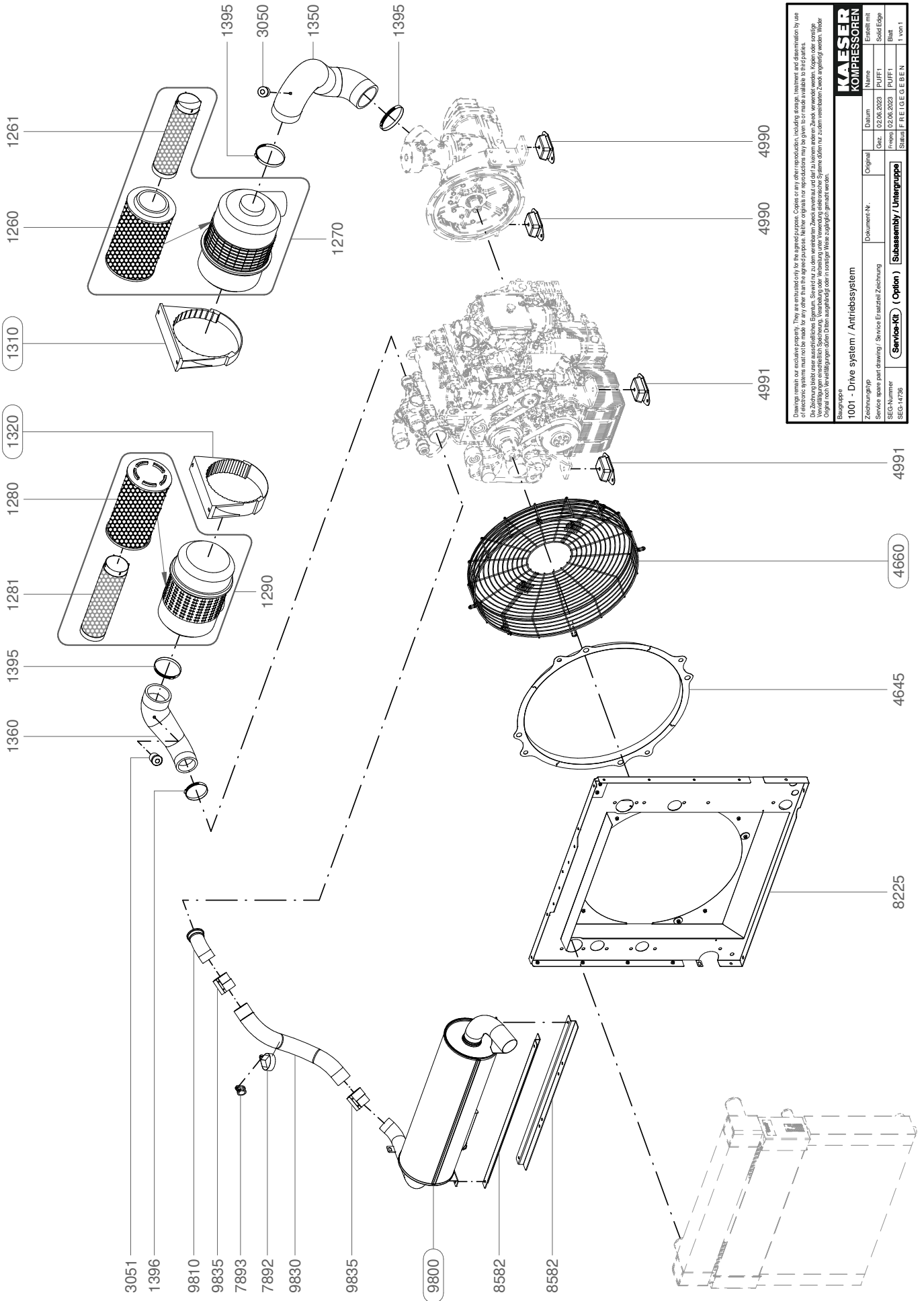
KAESER KOMPRESSOREN
 Overview / Übersicht
 (Service-Kit) (Option)



KAESER KOMPRESSOREN

Blattgruppe	Overview / Übersicht	
Zeichnungstyp	Erstellt mit	
Service spare part drawing / Service-Ersatzteil-Zeichnung	Datum	
SECS-Nummer	Gez.	18.04.2023
SECS-Nummer	Revise	18.04.2023
SECS-Nummer	Status	F R E I G G E B E N
SECS-Nummer	Subassembly / Untereinheit	
SECS-Nummer	Option	
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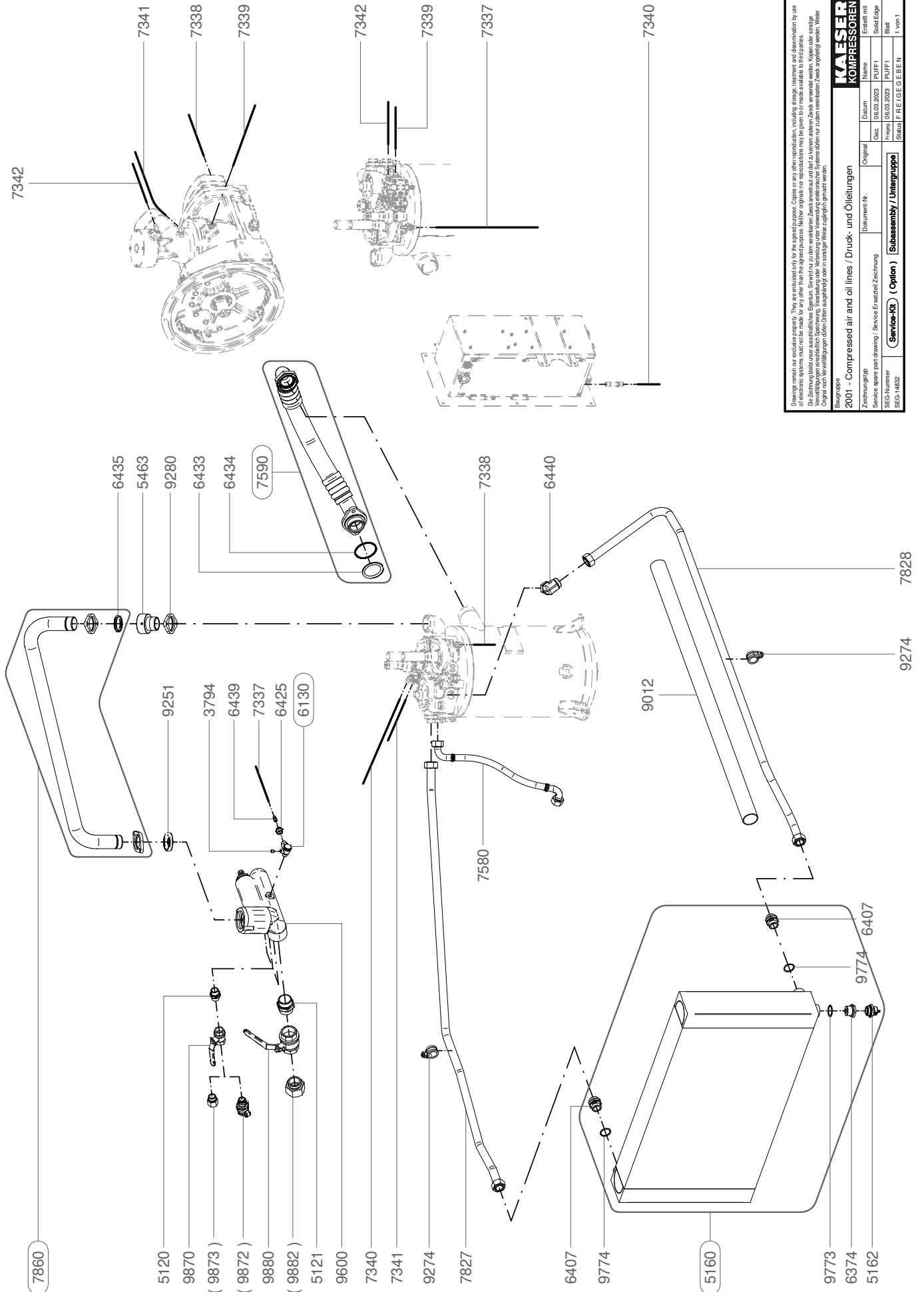


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KOMPRESSOREN

Blattgruppe: 1001 - Drive system / Antriebsystem

Zzeichnungstyp	Original	Datum	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung		12.08.2023	PUFF1
SECS-Nummer	Subassembli / Untereinheit	Revise	Sozial Edge
SEG-11736	(Service-Kit) (Option)	12.08.2023	PUFF1
		Status	BELEG
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Original Name: PUFFI
 Date: 18.03.2023
 Drawn: PUFFI
 Checked: PUFFI
 Status: DE | G E | B E | N

Blatt: 1 von 1

Subassembly / Untereinheit: (Service-Kit) (Option)

SECS-Nummer: SEG-14832

Document-Nr.: 2001 - Compressed air and oil lines / Druck- und Ölleitungen

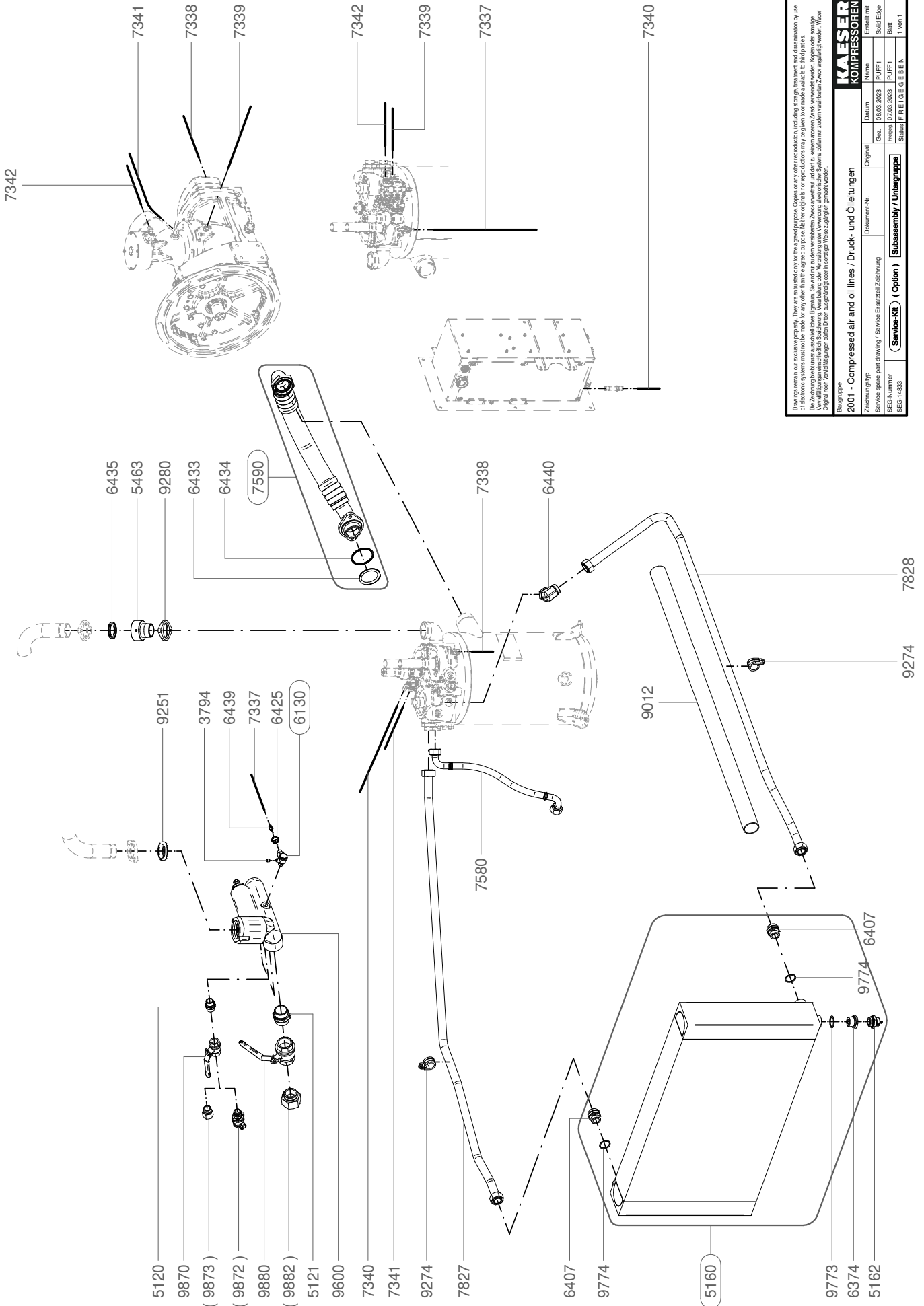
Zachnungstyp: Service spare part drawing / Service Ersatzteil Zeichnung

Original: PUFFI

Erstellt mit: Solid Edge

Blatt: 1 von 1

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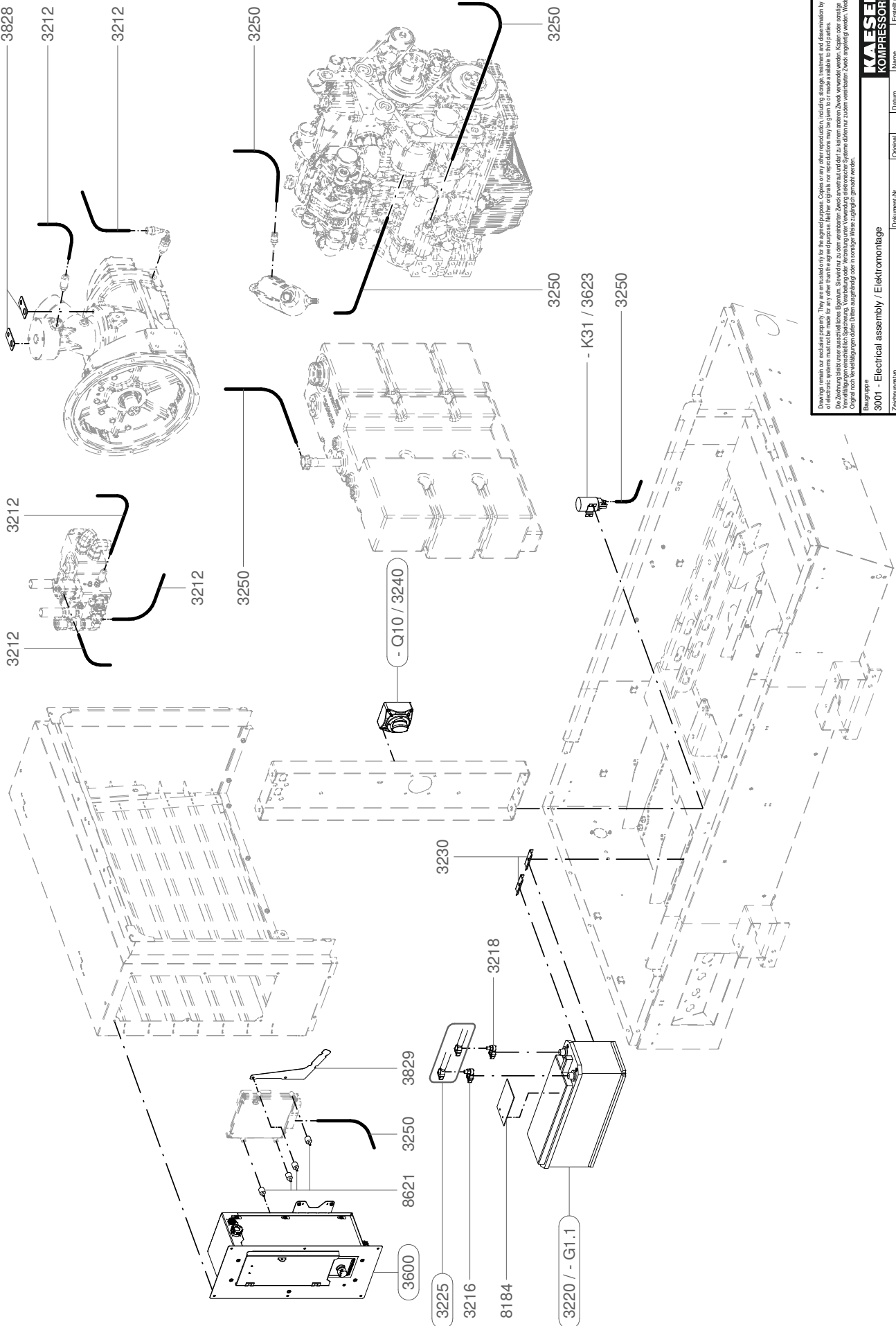
KAESER KOMPRESSOREN

2001 - Compressed air and oil lines / Druck- und Öleitungen

Blattgruppe: **SECS-14833** (Service-Kit) (Option) Subassembly / Untereinheit

Zachemungstyp	Original	Datum	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung	106.03.2023	106.03.2023	Soft Edge
SECS-Nummer	106.03.2023	106.03.2023	PUFF1
SECS-14833	Status	106.03.2023	PUFF1
			Blatt
			1 von 1

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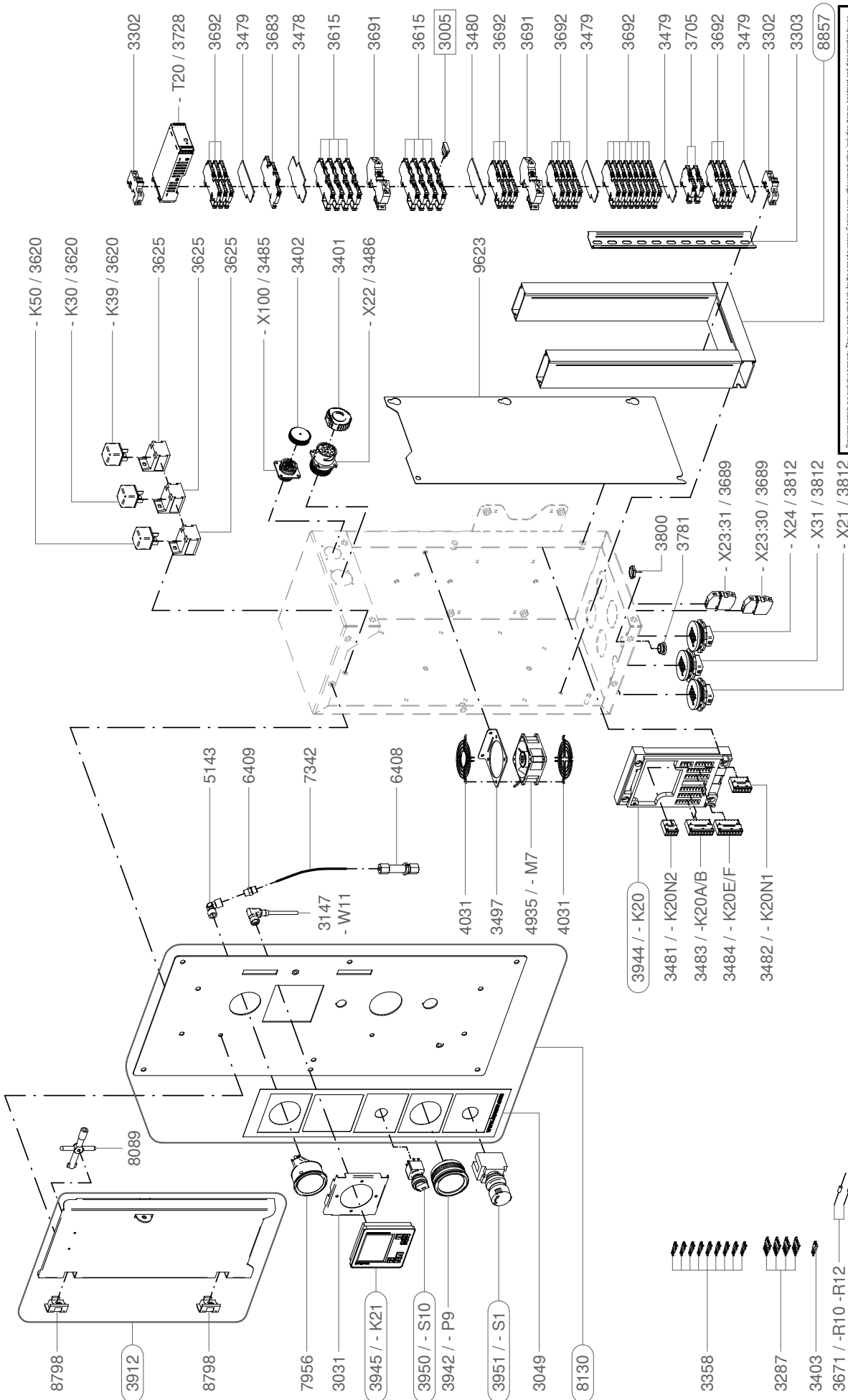


Blattgruppe: **KAESER KOMPRESSOREN**

3001 - Electrical assembly / Elektromontage

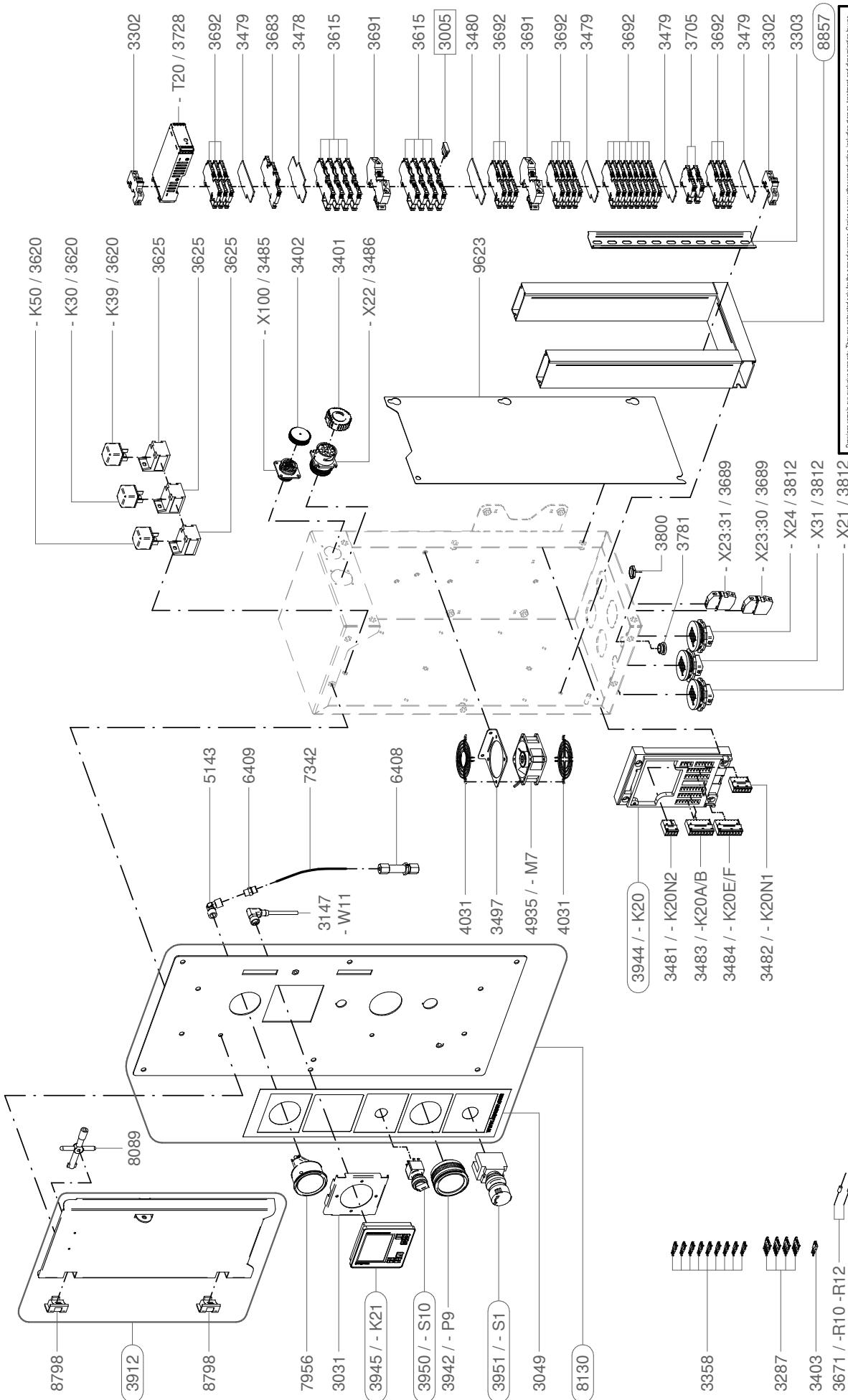
Zzeichnung/Nr.	Original	Datum	Erstellt mit
Service spare part drawing / Service-Ersatzteil-Zeichnung		13.04.2023	PUFFI
SEGS-Nummer	(Service-Kit) / Subassembly / Untereinheit	13.04.2023	PUFFI
SEGS-14902		Status	1 von 1

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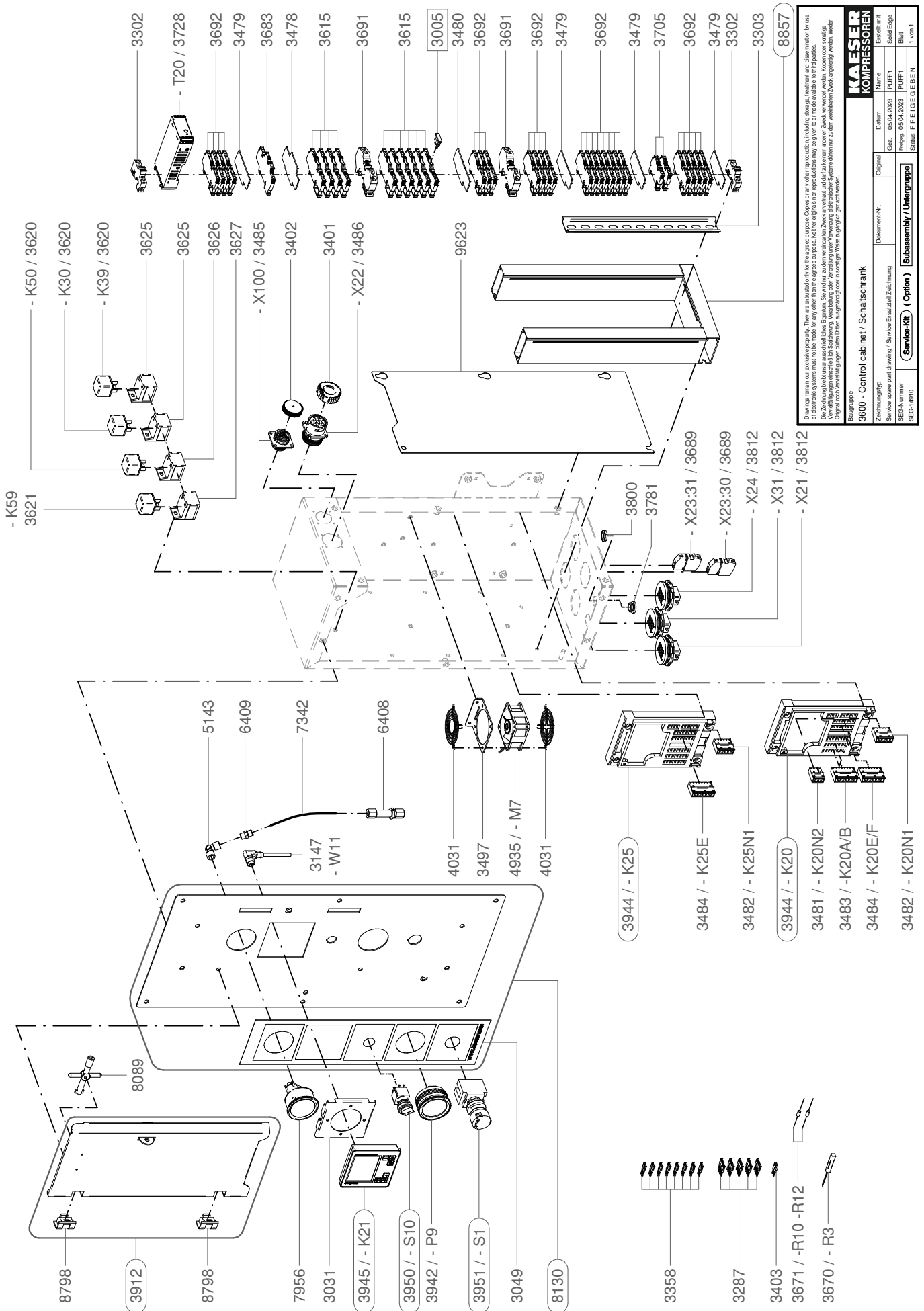
Read the instructions for use carefully. This is especially true for the electrical system. The use of the wrong components can lead to damage to the compressor and its accessories. The use of the wrong components can lead to damage to the compressor and its accessories. The use of the wrong components can lead to damage to the compressor and its accessories.

KAESER KOMPRESSOREN		Erstellt mit	
Name	Original	Datum	03.04.2023
Zeichnungstyp	Service Ersatzteil Zeichnung	Gez.	PUFFI
Service spare part drawing / Service Ersatzteil Zeichnung	Original	Datum	03.04.2023
SECS-Nummer	Subassembly / Untereinheit	Gez.	PUFFI
SEG-14807	(Service-Kit) (Option)	Status	RELEASE N
		Blatt	1 von 1



Readings must be available at all times. This is especially true for the electrical system. The user must be informed of the correct use of the system and the correct use of the electrical system. The user must be informed of the correct use of the system and the correct use of the electrical system. The user must be informed of the correct use of the system and the correct use of the electrical system.

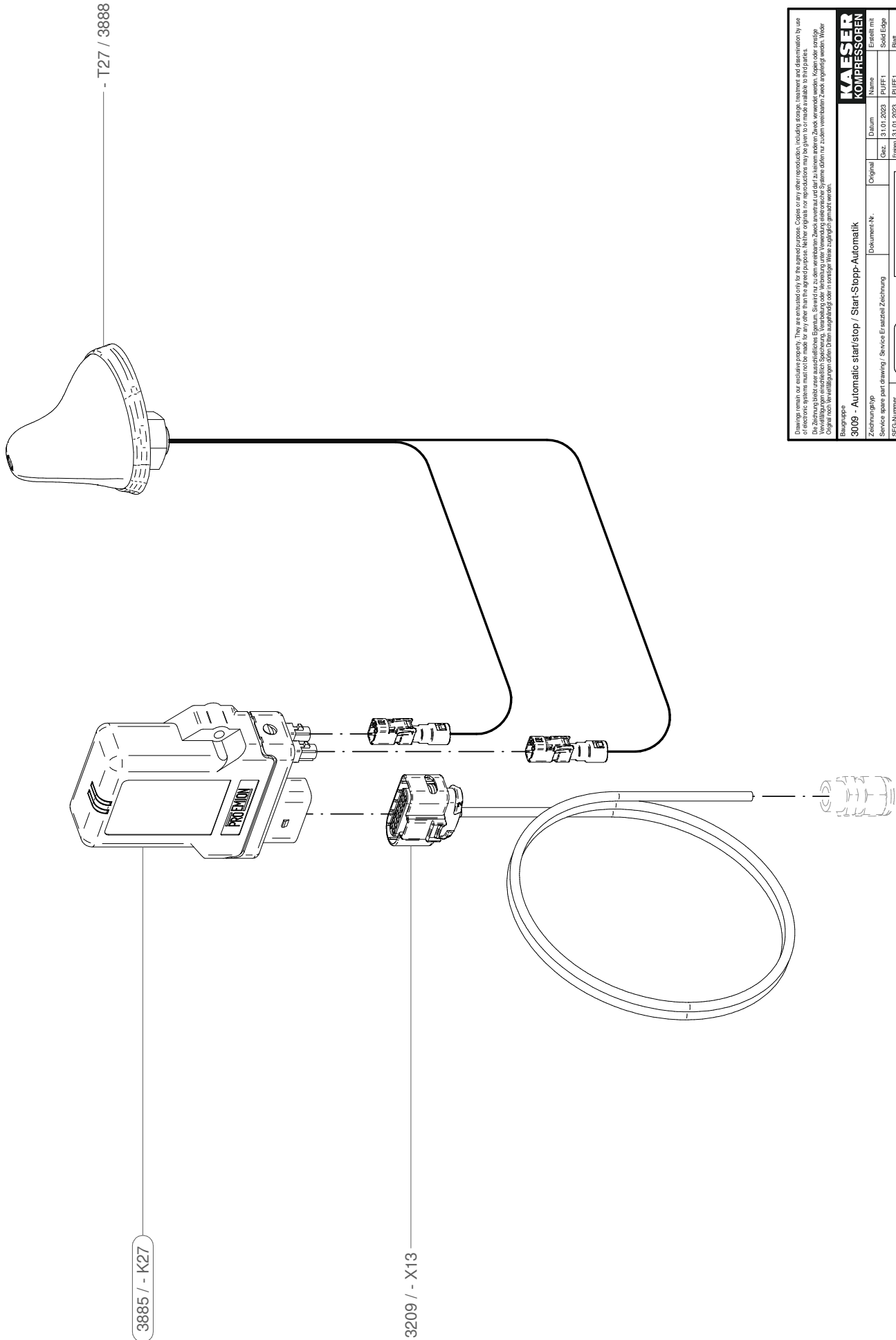
KAESER KOMPRESSOREN	
Name	Erstellt mit
Datum	PUFFI
Gez.	13.04.2023
Revis.	13.04.2023
Status	PUFFI
Blatt	1 von 1
Zeichnungsgruppe Zeichnungstyp Service spare part drawing / Service Ersatzteil Zeichnung Dokument-Nr. Original SECS-Nummer SEG-14009 (Service-Kit) (Option) Subassembly / Untereinheit	



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KAESER KOMPRESSOREN	
Name	Erstellt mit
Datum	PUFF1
Gez. (05.04.2023)	Sozial Edge
Revis. (05.04.2023)	PUFF1
Status (F R E I G E B E N)	Blatt
1 von 1	

Zeichnungsgruppe: **3600 - Control cabinet / Schaltschrank**
 Zeichnungstyp: **Service spare part drawing / Service Ersatzteil Zeichnung**
 Dokument-Nr.: **(Service-Kit) (Option) Subassembli / Untereinheit**
 SEG-Nummer: **SEG-14810**



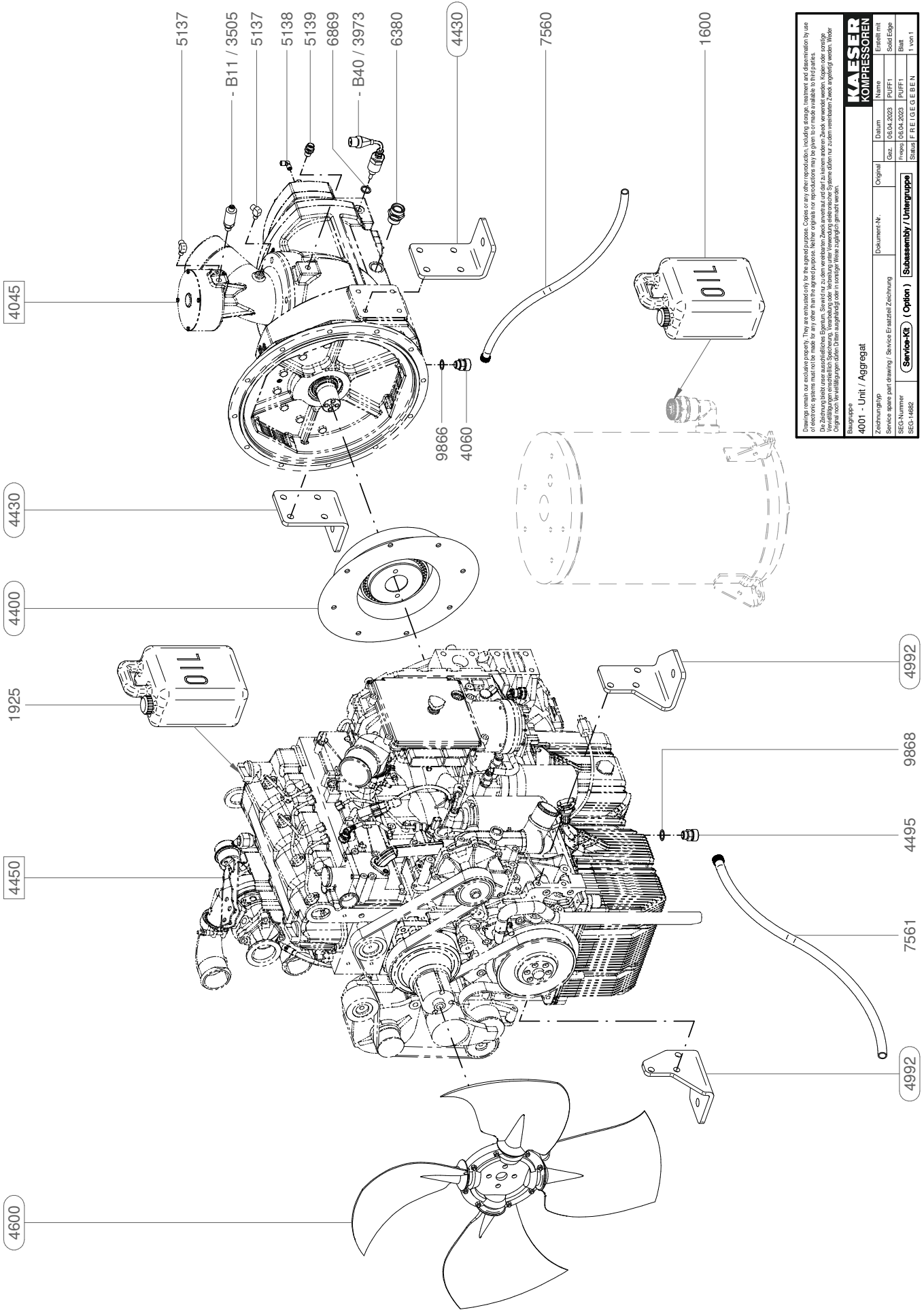
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KAESER KOMPRESSOREN		Erstellt mit	
Zeichnungsart	Original	Datum	31.01.2023
Service spare part drawing / Service-Ersatzteil-Zeichnung	Dokument-Nr.	Gez.	PUFFI
SECC-Nummer	(Service-Kit) (Option)	Revis.	PUFFI
3885-4402	Subassembly / Untereinheit	Status	RELEASE N
Bildgruppe		1 von 1	
3009 - Automatic start/stop / Start-Stopp-Automatik			



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Blattgruppe: 4001 - Unt / Aggregat

Name	Erstellt mit
Original	Sozial Edge
Datum	Blatt
Gez. 18.04.2023	PUFFI
Gez. 18.04.2023	PUFFI
Inves. 18.04.2023	PUFFI
Status F T E I G E E N	1 von 1

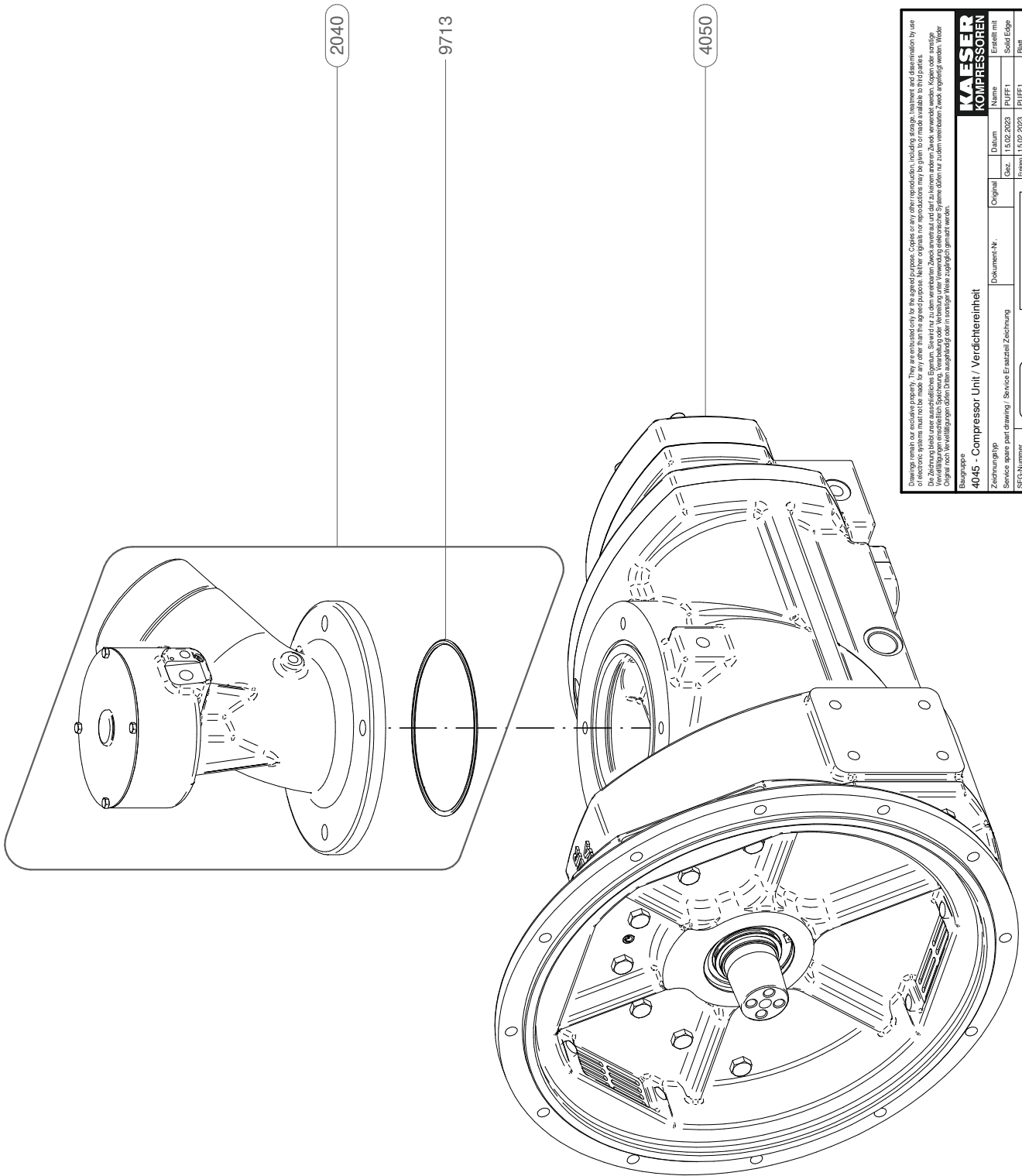
Zeichnungstyp: Service Ersatzteil Zeichnung

Document-Nr.:

SECS-Nummer: SEG-4482

(Service-Kit) (Option) Subassembly / Untereinheit

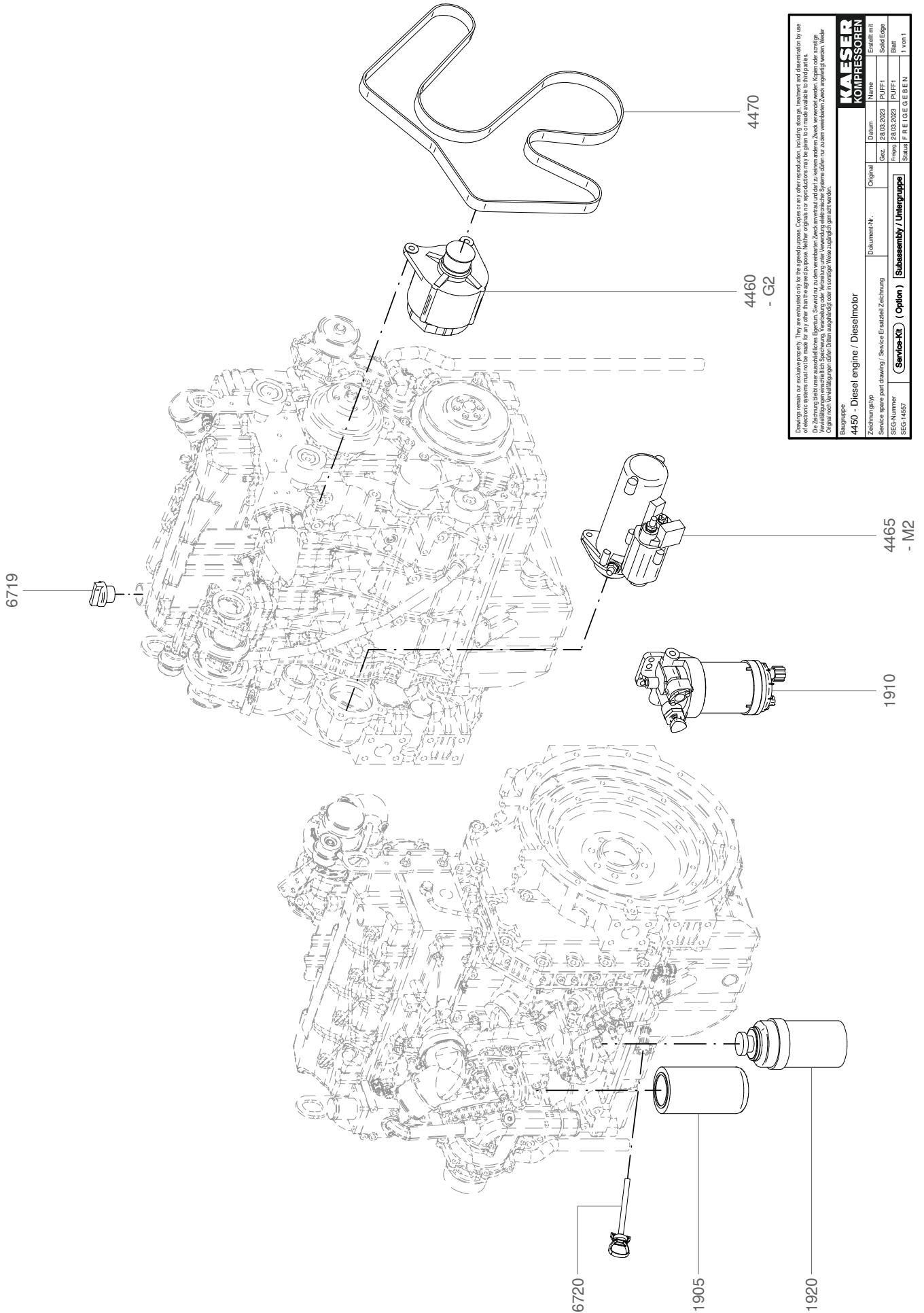
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Blattgruppe	4045 - Compressor Unit / Verdichtereinheit	
Zeichnungstyp	Dokument-Nr.	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung		PUFF1
SECS-Nummer	Original	Sozial Edge
SEG-14883	Gez. 15.02.2023	PUFF1
	Revis. 15.02.2023	Blatt
	Status F T E L G E B E N	1 von 1
	(Service-Kit) (Option)	Subassembly / Untereinheit

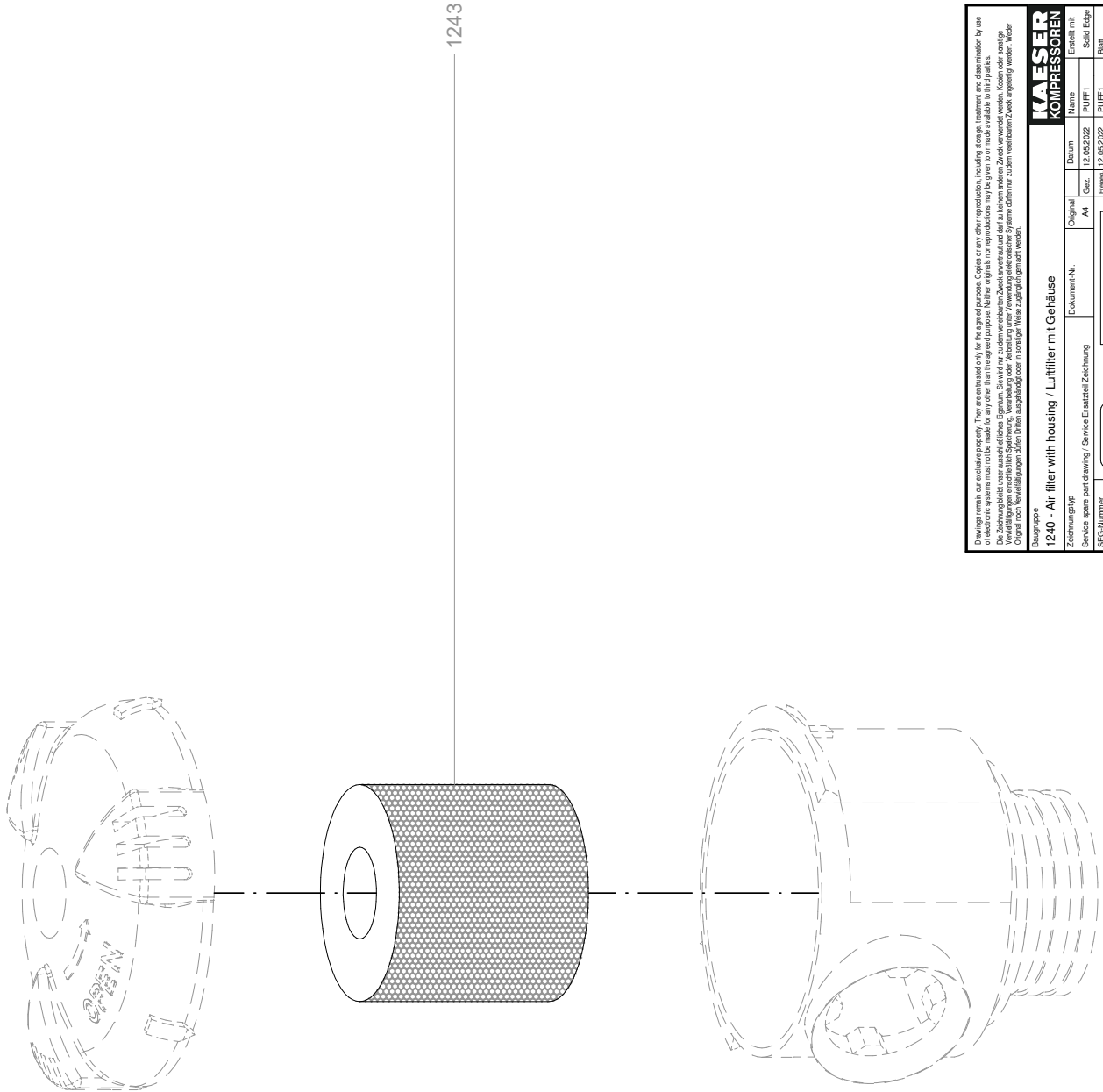


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Blattgruppe: 44450 - Diesel engine / Dieselmotor

Name	Datum	Original	Dokument-Nr.	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung	28.03.2023			Soft Edge
SECS-Nummer	Index	Status	Subassembly / Untereinheit	Blatt
SEG-14557	28.03.2023		(Service-Kit) (Option)	1 von 1

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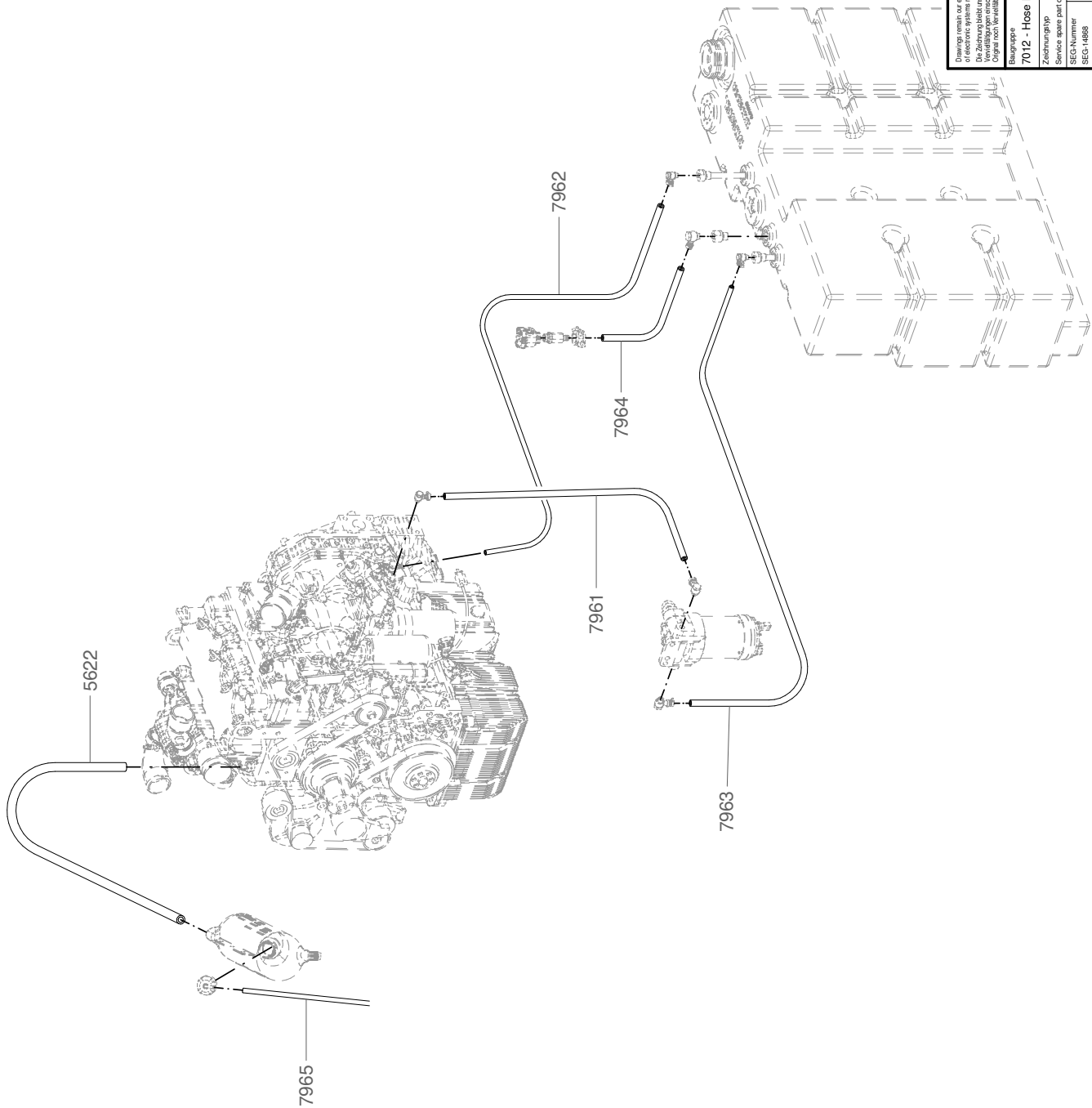
Original parts for maintenance only. They are not intended for the repair of the compressor. Copies of the original parts, including drawings, technical specifications and data sheets, are available for use in the production of replacement parts. The drawings are not to be used for the production of replacement parts. The drawings are not to be used for the production of replacement parts. The drawings are not to be used for the production of replacement parts.

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Original parts for maintenance only. They are not intended for the repair of the compressor. Copies of the original parts, including drawings, technical specifications and data sheets, are available for use in the production of replacement parts. The drawings are not to be used for the production of replacement parts. The drawings are not to be used for the production of replacement parts.

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KAESER KOMPRESSOREN		Erstellt mit	
Zachungstyp	Dokument-Nr.	Name	PUFFI
Service spare part drawing / Service Ersatzteil Zeichnung	A1	Datum	12.05.2022
SECC-Nummer	Original	Gez.	12.05.2022
SEG-13970	(Service-Kit) (Option)	Status	PUFFI
	Subassembly / Untereinheit		1 von 1



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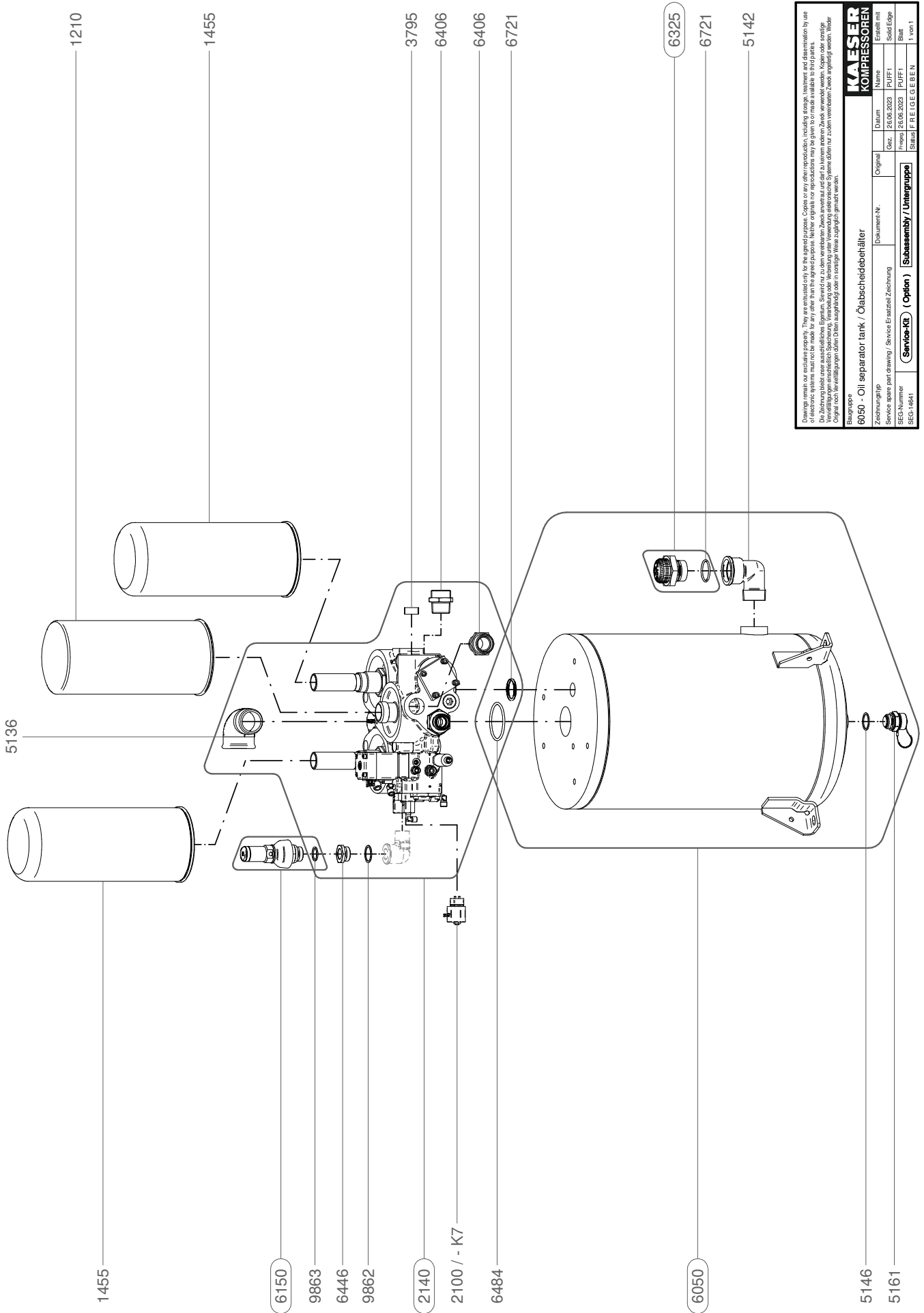
Original	Name	Erstellt mit
Original	15.03.2023	PUFF1
Gez.	15.03.2023	PUFF1
Revis.	19.04.2023	PUFF1
Status	15.03.2023	1 von 1

Blattgruppe: **7012 - Hose lines / Schlauchleitungen**

Zeichnungstyp: **Service spare part drawing / Service Ersatzteil Zeichnung**

SECS-Nummer: **SEG-14888**

Subassembly / Untereinheit: **(Service-Kit) (Option)**

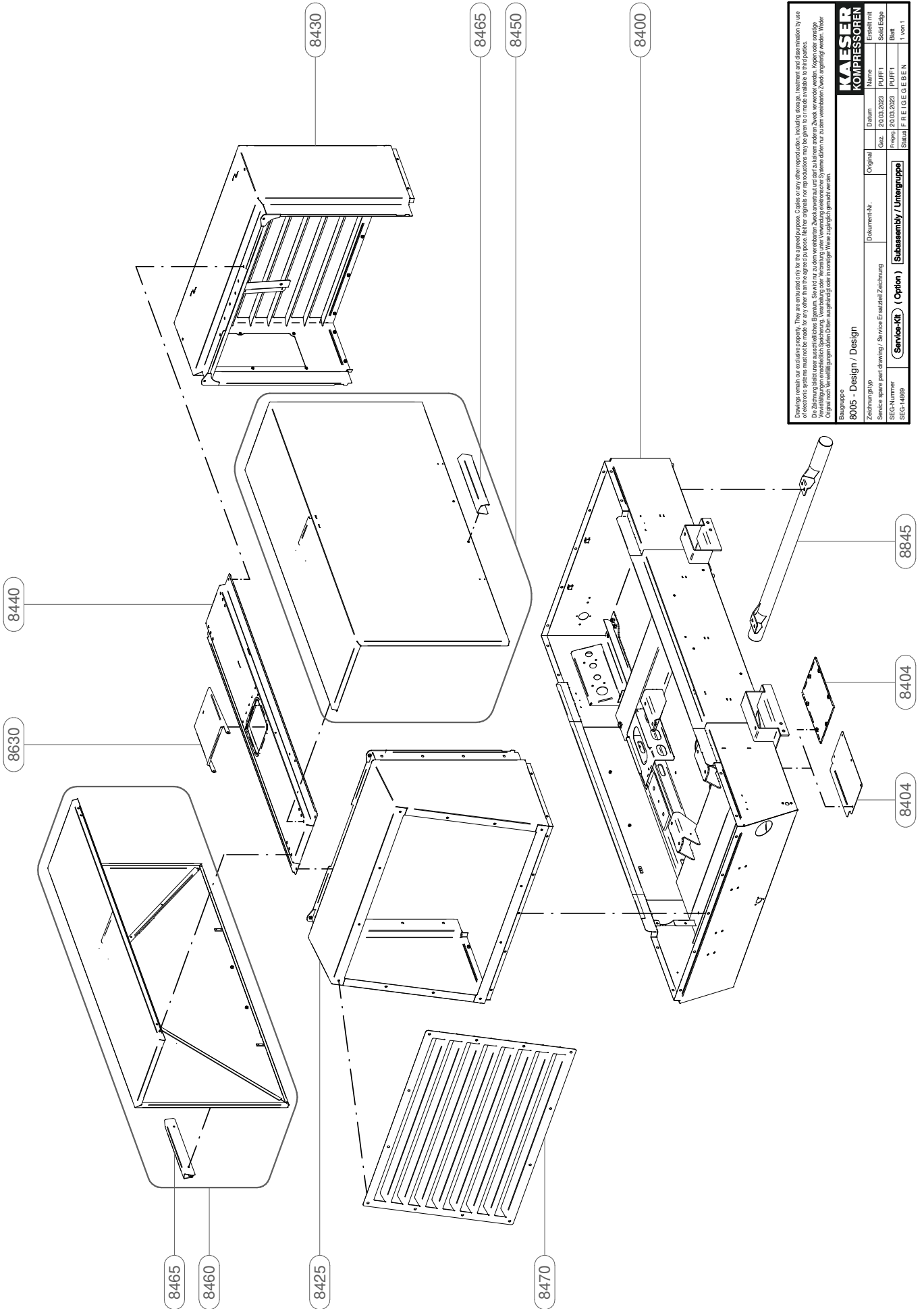


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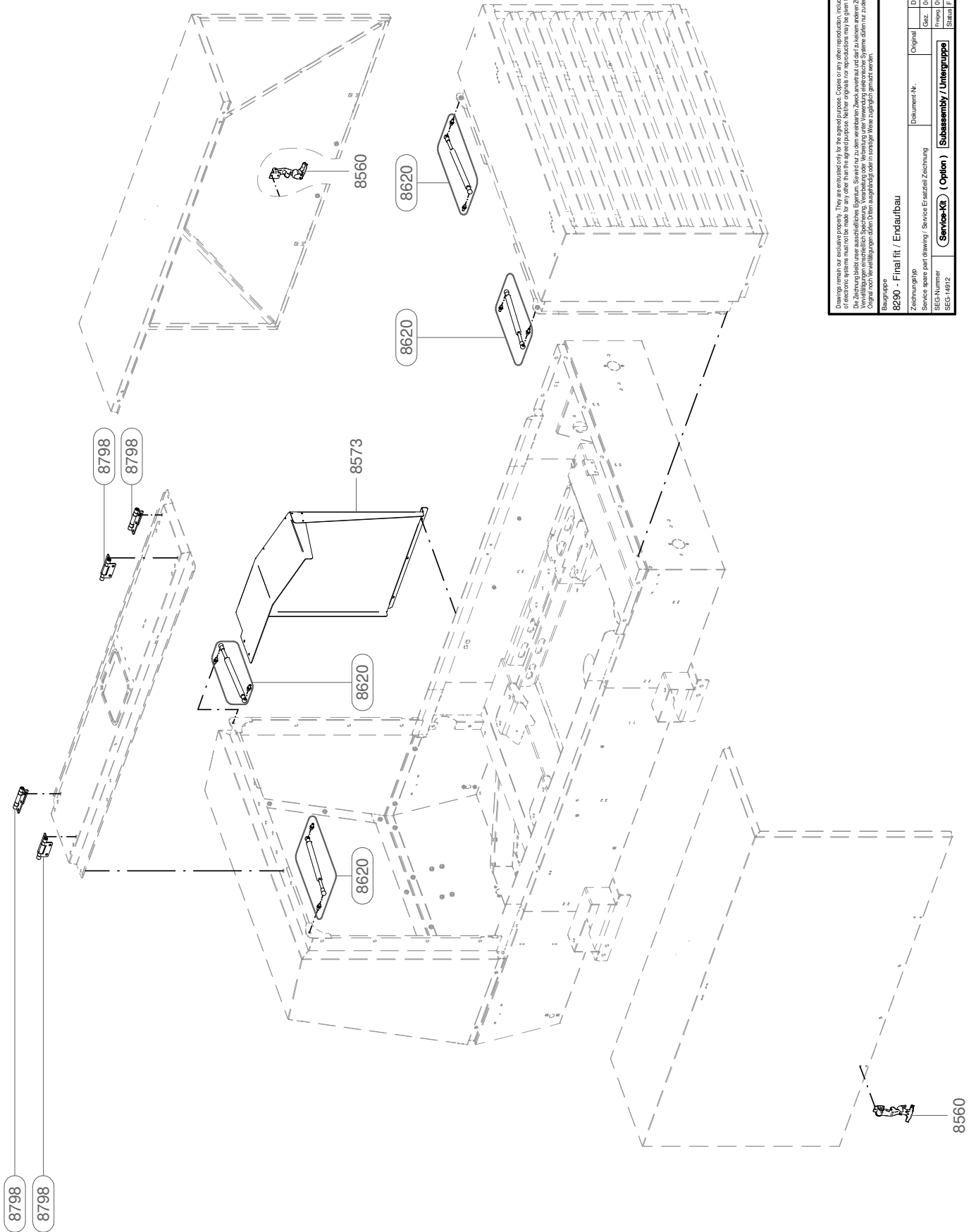
6050 - Oil separator tank / Ölabscheidebehälter

Blattgruppe	Blatt	1 von 1
SEK-Nummer	SEK-Nummer	SEK-Nummer
6050-1464	6050-1464	6050-1464
Subassembli / Untereinheit	Subassembli / Untereinheit	Subassembli / Untereinheit
(Option)	(Option)	(Option)
Dokument-Nr.	Dokument-Nr.	Dokument-Nr.
Service spare part drawing / Service-Ersatzteil-Zeichnung	Service spare part drawing / Service-Ersatzteil-Zeichnung	Service spare part drawing / Service-Ersatzteil-Zeichnung
Original	Original	Original
Erstellt mit	Erstellt mit	Erstellt mit
PUFF1	PUFF1	PUFF1
Gez. / 28.08.2023	Gez. / 28.08.2023	Gez. / 28.08.2023
Gezeichnet	Gezeichnet	Gezeichnet
PUFF1	PUFF1	PUFF1
Status / 1	Status / 1	Status / 1
DE	DE	DE
GE	GE	GE
BE	BE	BE
EN	EN	EN



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KAESER KOMPRESSOREN
 Blatt 1 von 1
 Status: F D E I G C E B E N
 Zeichnungsgruppe: (Service-Kit) (Option) / Subassembly / Untereinheit
 Zeichnungs-Nr.: Original
 Datum: 20.03.2020
 Name: PUFFI
 Erstellt mit: Solid Edge
 Zeichnungstyp: Service spare part drawing / Service-Ersatzteil-Zeichnung
 Gezeichnet: 20.03.2020
 Revise: 20.03.2020
 PUFFI
 Blatt 1 von 1
 Status: F D E I G C E B E N
 Zeichnungsgruppe: (Service-Kit) (Option) / Subassembly / Untereinheit
 Zeichnungs-Nr.: Original
 Datum: 20.03.2020
 Name: PUFFI
 Erstellt mit: Solid Edge
 Zeichnungstyp: Service spare part drawing / Service-Ersatzteil-Zeichnung
 Gezeichnet: 20.03.2020
 Revise: 20.03.2020
 PUFFI
 Blatt 1 von 1
 Status: F D E I G C E B E N

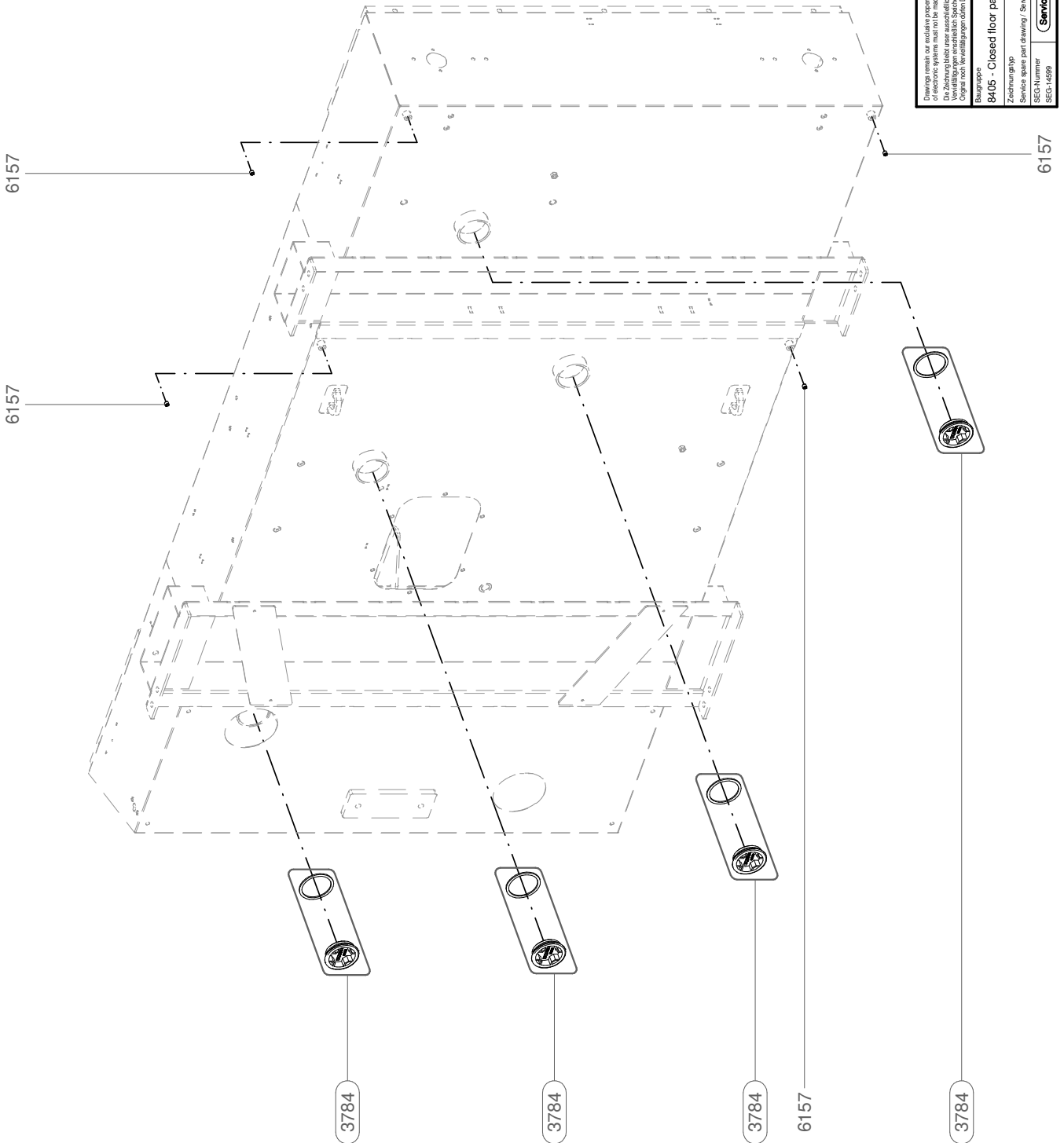


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KOMPRESSOREN

Original Name Datum
 Zeichnungstyp: Service spare part drawing / Service Ersatzteil Zeichnung Dokument-Nr.: Original
 Gez.: 18.04.2023 PUFFI
 Revise: 18.04.2023 PUFFI
 Status: F D E I G E B E N Blatt
 SECC-Nummer: 8560-14812 (Service-Kit) (Option) Subassembly / Untereinheit 1 von 1

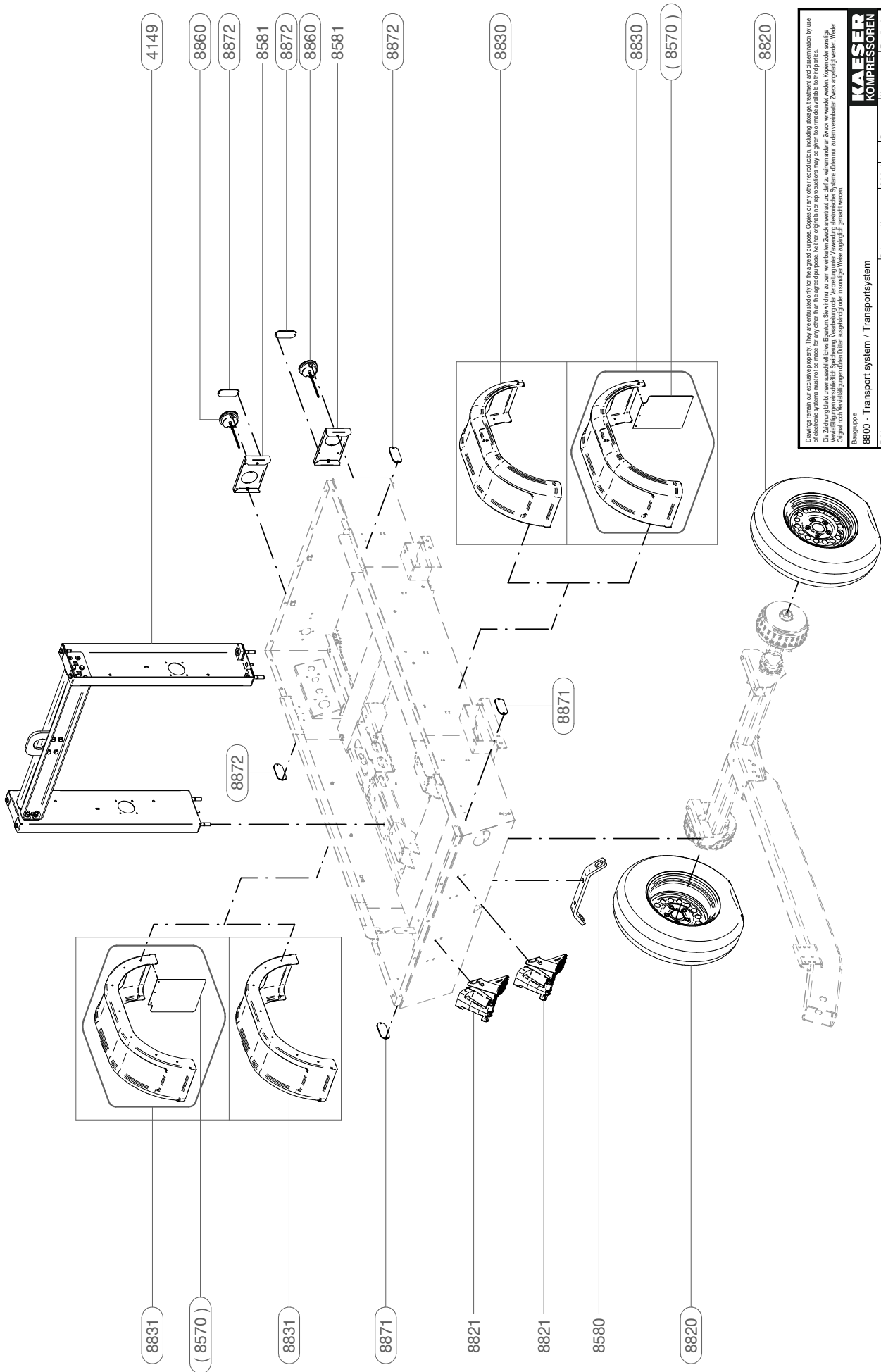
8290 - Final fit / Endaufbau

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KAESER KOMPRESSOREN		Erstellt mit	
Name	Datum	Original	Sozial Edge
Service spare part drawing / Service Ersatzteil Zeichnung	Gez. 24.01.2023		PUFFI
SEGS-Nummer	Revis. 24.01.2023		Blatt
14699	Status D E I G E B E N		1 von 1
Blattgruppe		Subassembly / Untereinheit	
8405 - Closed floor pan / Geschlossene Bodenwanne		Dokument-Nr.	



KAESER KOMPRESSOREN

8800 - Transport system / Transportsystem

Blattgruppe: 1 von 1

Blatt: 1

SECC-Nummer: 44861

Service-KIT (Option) / Subassembly / Untereinheit

Dokument-Nr.: Original

Name: Entgelt mit

Sozial-Edge: PUFFI

Gez.: 13.03.2023

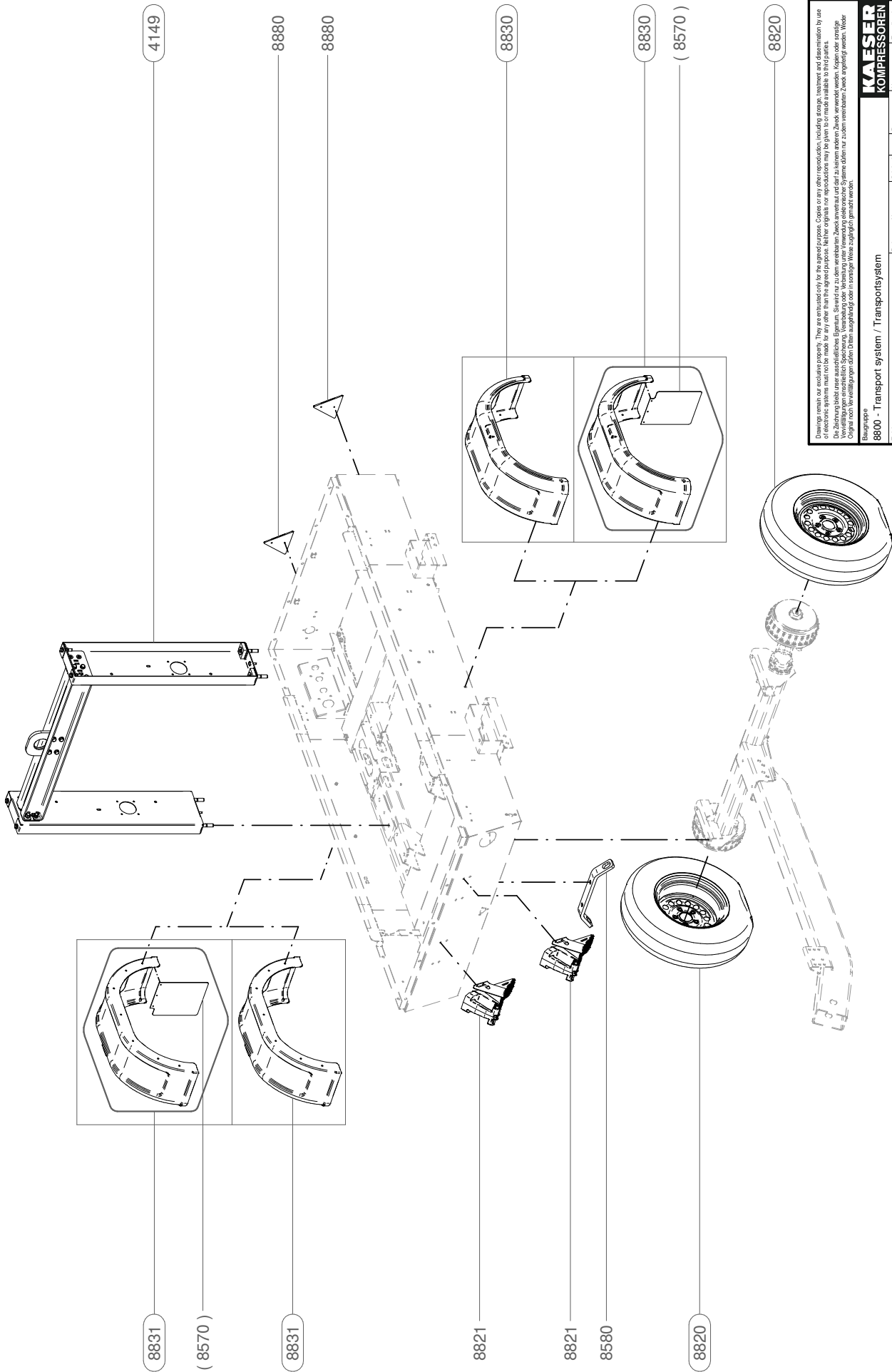
Datum: PUFFI

Revised: 13.03.2023

Gez.: PUFFI

Status: F T E I G E B E N

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8800 - Transport system / Transportsystem

Blattgruppe: 1 von 1

Erstellt mit: Solid Edge

Name: PUFFI

Datum: 13.03.2023

Original

Zu: PUFFI

Service spare part drawing / Service Ersatzteil Zeichnung

Dokument-Nr.: PUFFI

Gez.: 13.03.2023

Revise: 13.03.2023

PUFFI

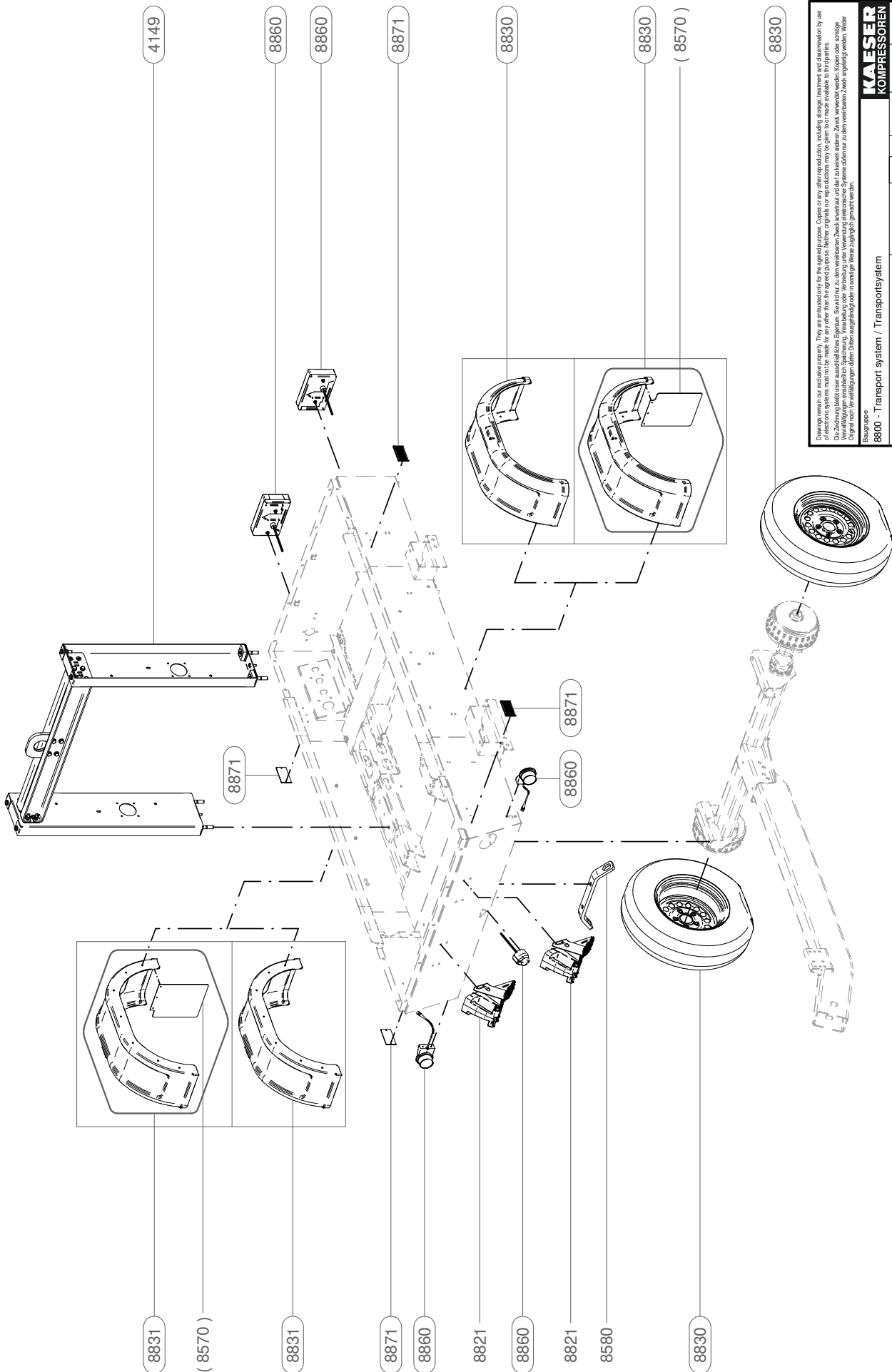
SECS-Nummer: PUFFI

SECS-4882

Status: F T E L G E B E N

(Service-Kit) (Option) Subassembly / Untereinheit

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KAESER KOMPRESSOREN

8800 - Transport system / Transportsystem

Blattgruppe
 Zeichnungsgruppe
 Service spare part drawing / Service Ersatzteil Zeichnung
 SECS-Nummer
 SEG-14883

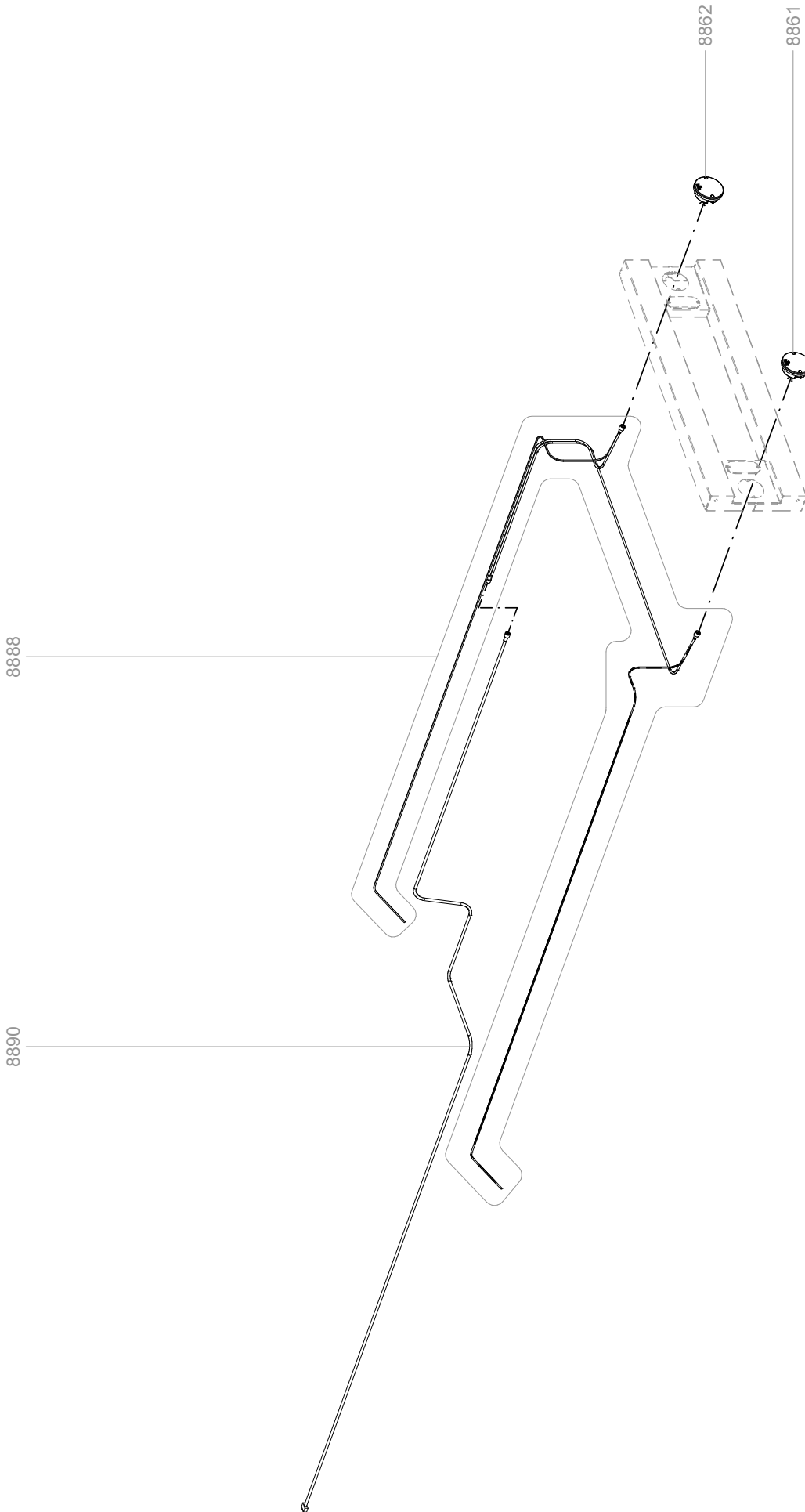
Document-Nr.
 Original
 Gez. | 13.03.2023
 Status | F T E L O G E B E N

Name
 PUFFI
 PUFFI
 PUFFI

Erstellt mit
 Solid Edge
 Blatt
 1 von 1

Subassembly / Untereinheit
 (Service-Kit) (Option)

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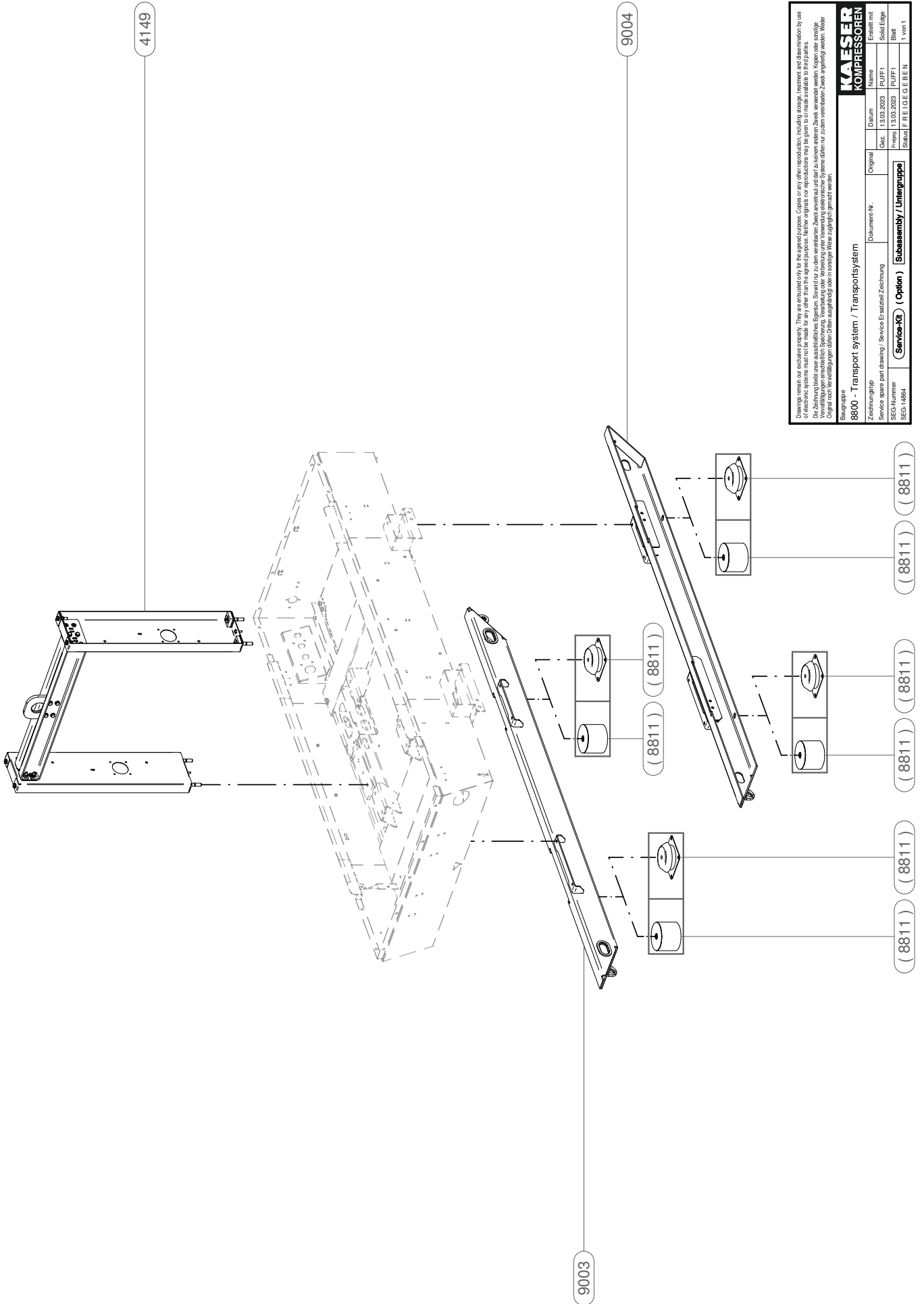


KAESER
KOMPRESSOREN

Beleggruppe
8860 - Lighting set / Beleuchtungssatz

Zzeichnungtyp	Original	Datum	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung	A1	10.02.2020	PUFFI
SECS-Nummer	Subassembly / Untereinheit	Revised	Boht
SEG-11/03	SECS-Kit (Option)	28.07.2020	PUFFI
	Status	F R E I G E B E N	1 von 1

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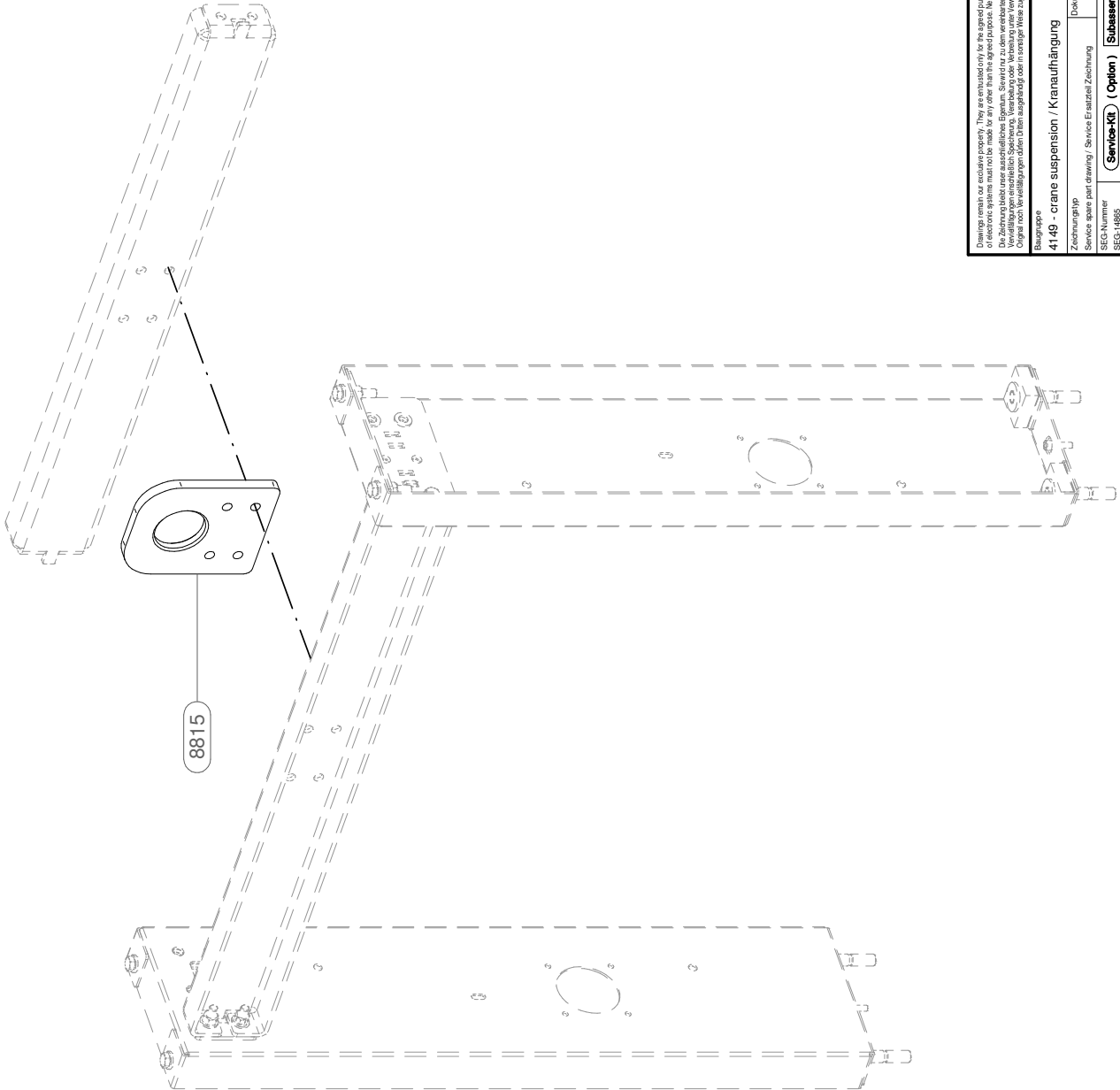
KAESER KOMPRESSOREN

8800 - Transport system / Transportsystem

Blattgruppe

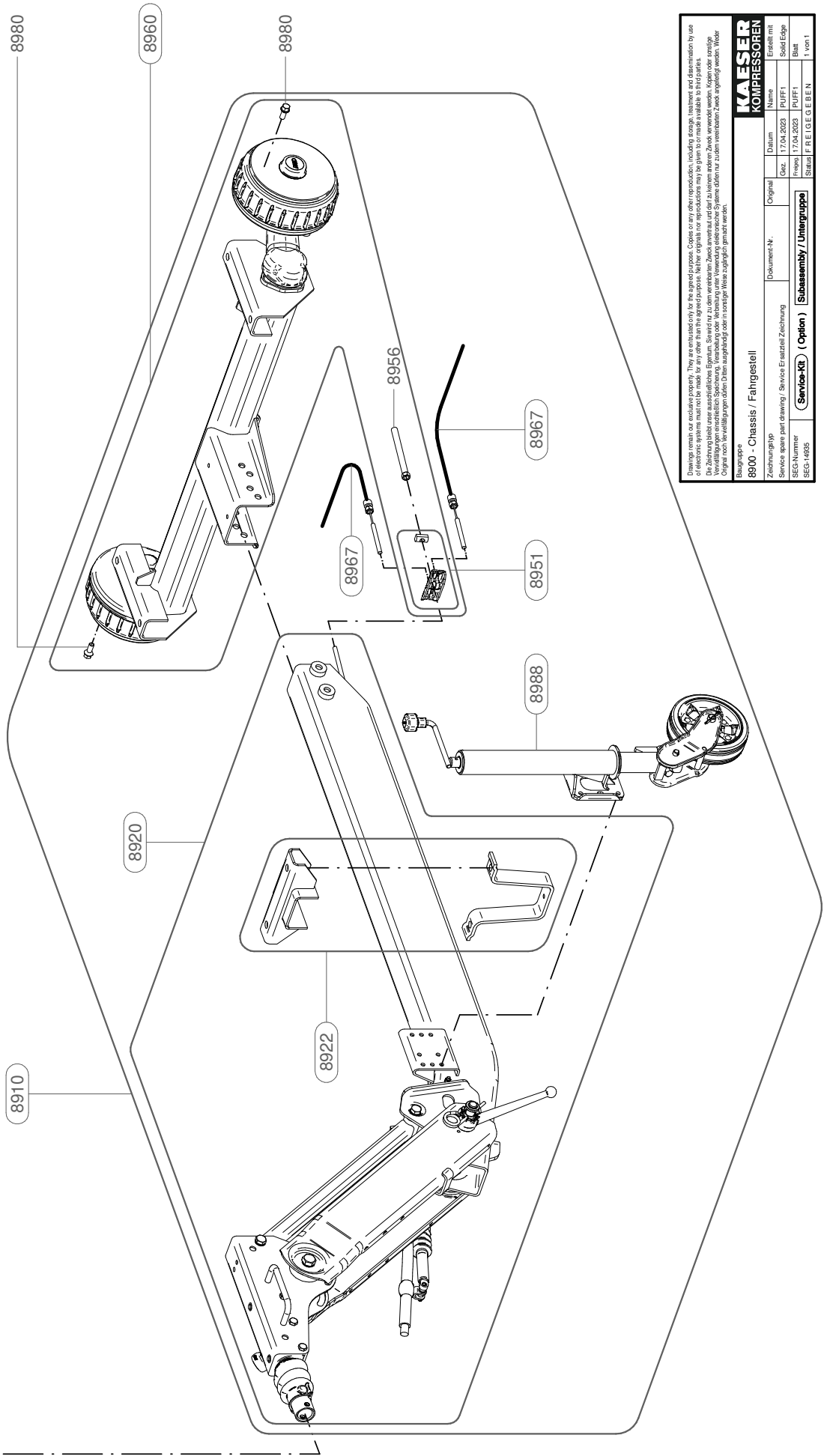
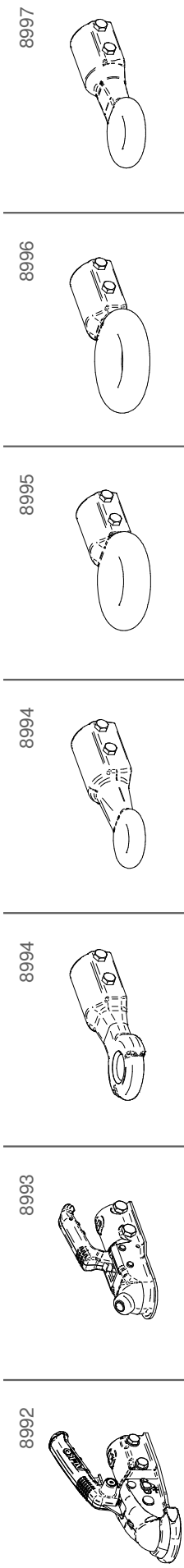
Zzeichnungstyp	Dokument-Nr.	Name	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung	Original	8800	Soft Edge
SECS-Nummer	Datum	Reviz.	Blatt
SEG-4884	13.03.2023	13.03.2023	1 von 1
		Status	DE G E B E N
			(Service-Kit) (Option) Subassembly / Untereinheit

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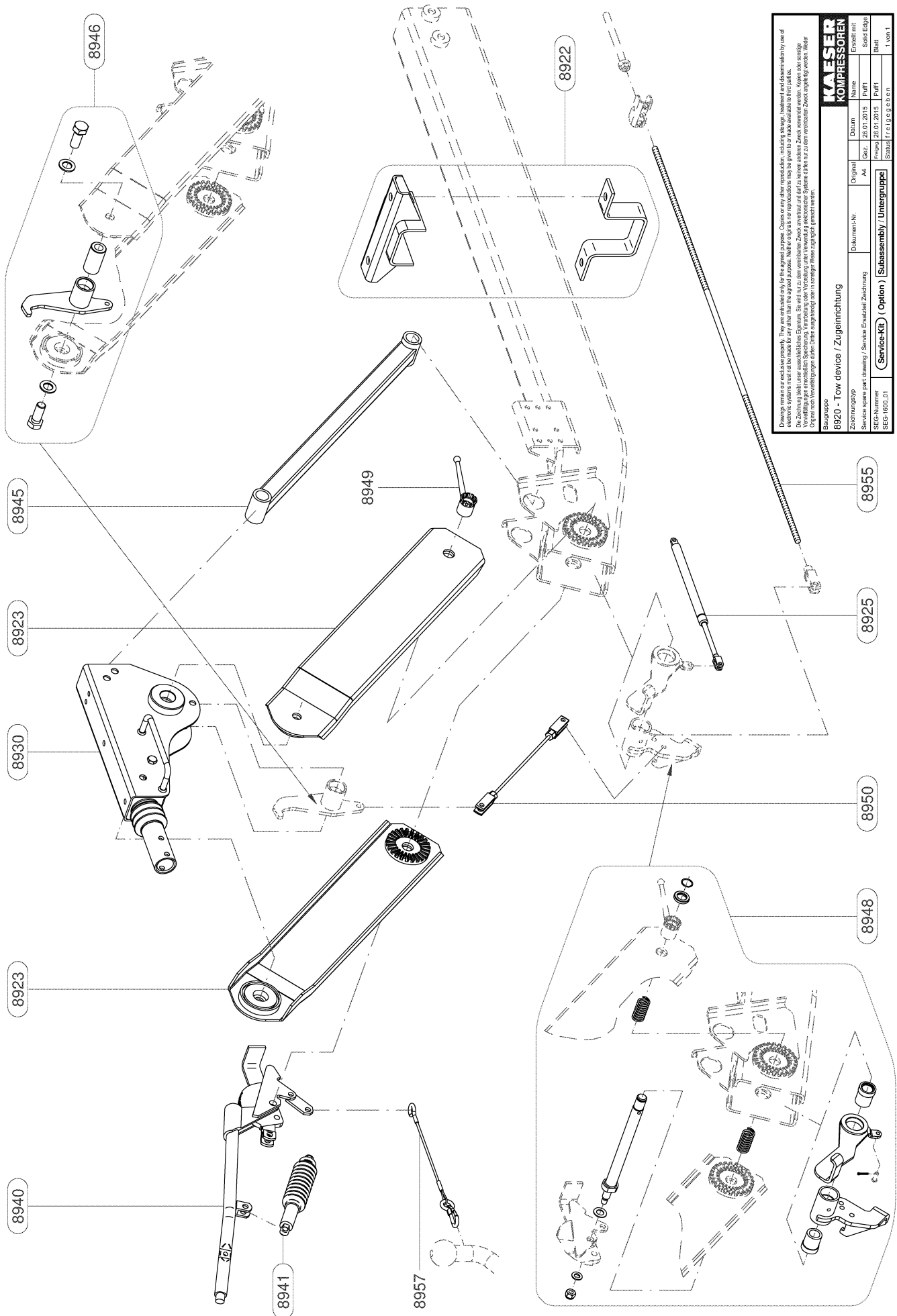
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KAESER KOMPRESSOREN		Erstellt mit	Soled Edge
Name	Datum	Gez.	13.03.2023
PUFF1	PUFF1	Revise	13.03.2023
PUFF1	PUFF1	Status	D E E G E B E N
Blatt		1 von 1	
Baugruppe			
4149 - crane suspension / Kranaufhängung			
Zzeichnungstyp	Dokument-Nr.		
Service spare part drawing / Service Ersatzteil Zeichnung			
SECS-Nummer	(Service-Kit) (Option) Subassembly / Untereinheit		
SEG-41865			



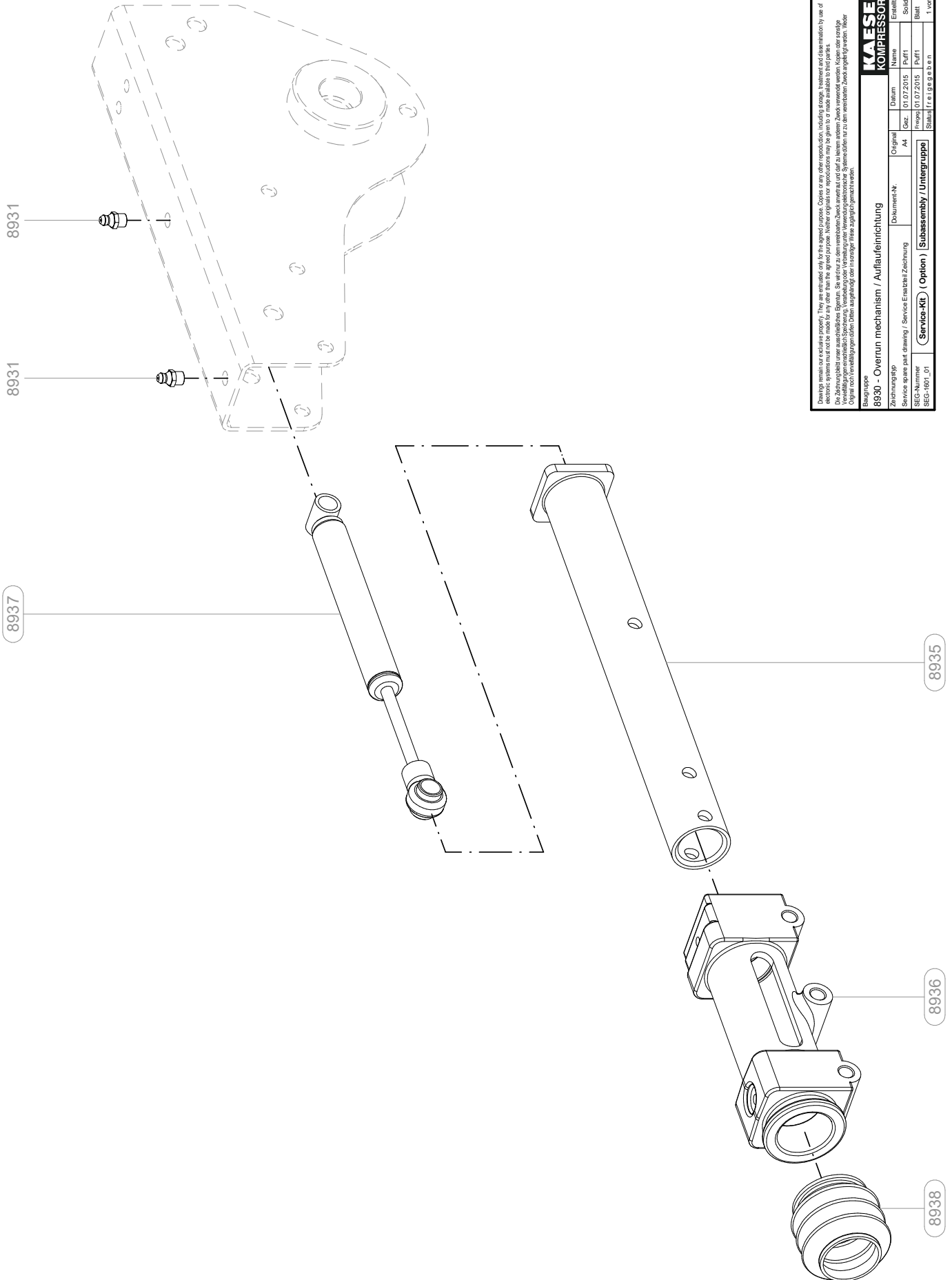
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KAESER KOMPRESSOREN	
Blattgruppe	Erstellt mit
8800 - Chassis / Fahrgestell	Name
Zeichnungsart	Datum
Service spare part drawing / Service Ersatzteil Zeichnung	Gez. 17.04.2023
SECS-Nummer	Original
SEG-14835	Gez. 17.04.2023
	Revised 17.04.2023
	Status F R E L G E B E N
	1 von 1
	Subassembly / Untereinheit
	(Service-Kit) (Option)



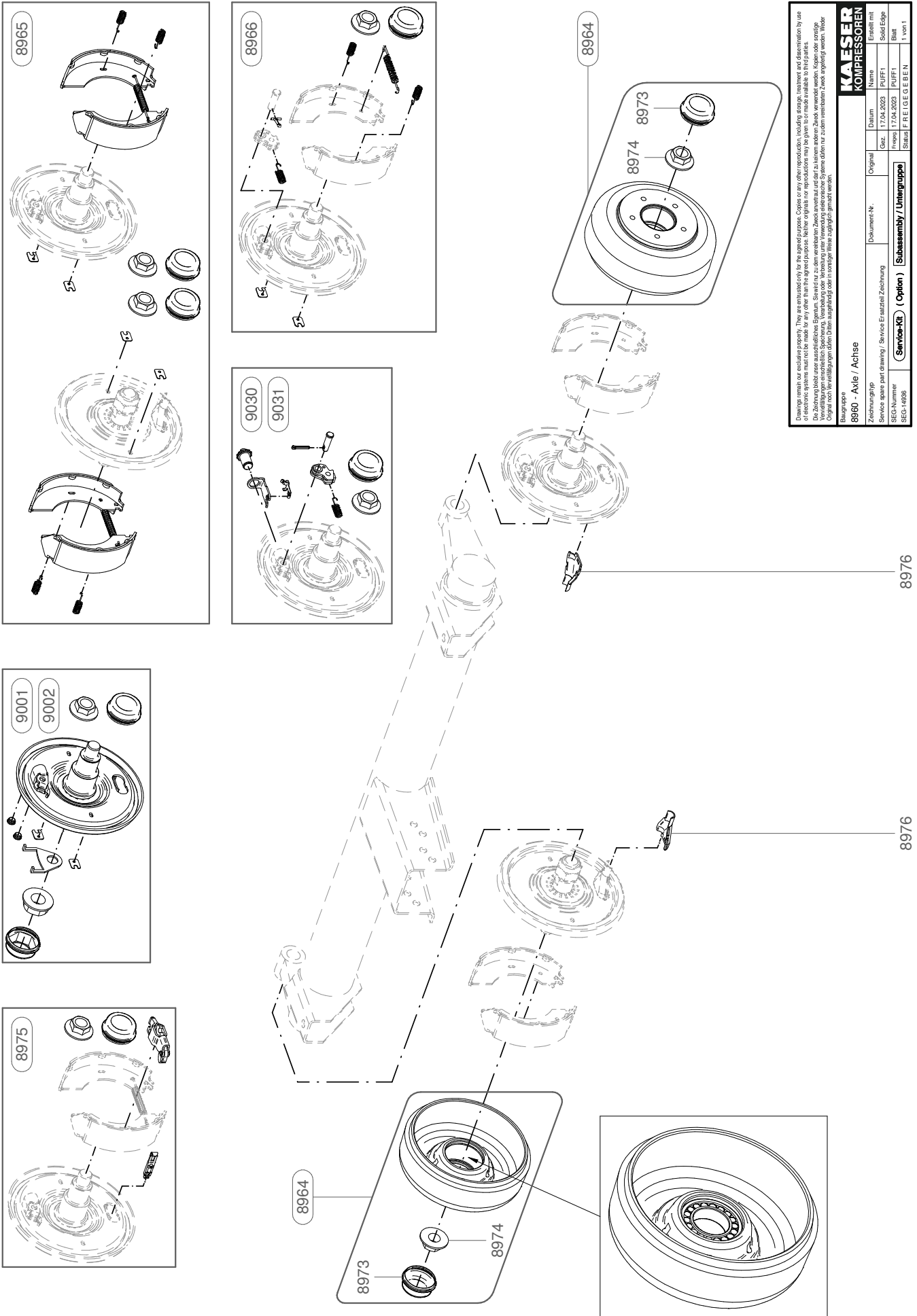
Die Zeichnung ist eine Ersatzteil-Zeichnung. Sie ist nicht als Montageanleitung zu verstehen. Die Zeichnung ist ausschließlich für den Ersatzteilbedarf der jeweiligen Kompressor- und Zylinder-Modellreihen vorgesehen.
 The drawing is a spare part drawing. It is not to be understood as an assembly instruction. The drawing is intended exclusively for the spare part needs of the respective compressor and cylinder model ranges.
 This drawing is not to be used as a repair manual. The original repair manual must be followed for any repair work. The drawing is not a substitute for the repair manual.
 Die Zeichnung stellt eine Ersatzteil-Zeichnung dar. Sie ist nicht als Montageanleitung zu verstehen. Die Zeichnung ist ausschließlich für den Ersatzteilbedarf der jeweiligen Kompressor- und Zylinder-Modellreihen vorgesehen.
 This drawing is not to be used as a repair manual. The original repair manual must be followed for any repair work. The drawing is not a substitute for the repair manual.
 The drawing is intended for use as a spare part drawing for the respective compressor and cylinder model ranges. It is not a substitute for the repair manual.

KAESER KOMPRESSOREN			
Blattgruppe	Original Name	Erstellt mit	
Zugangsgruppe	Datum	Perf1	
Zeichnungsgruppe	Dokument-Nr.	Akt	
Service spare part drawing / Service Ersatzteil-Zeichnung	Original Art.	Perf1	
SEGA-Nummer	Revisions	Perf1	
SECO-1800_01	Status / Art. / G. / B. / G. / I.	Perf1	
(Service-Kit) (Option) / Subassembly / Untergruppe			1 von 1



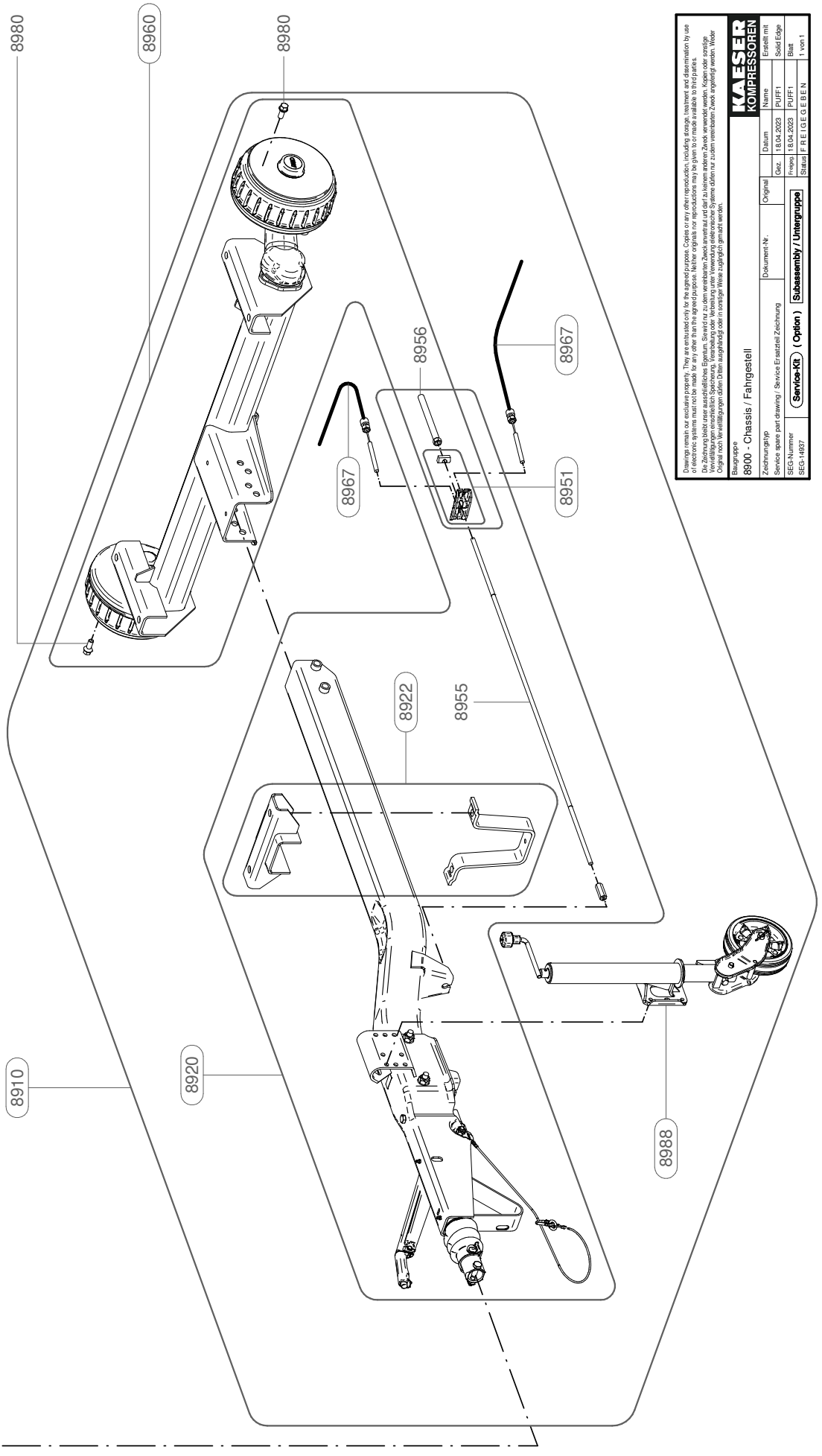
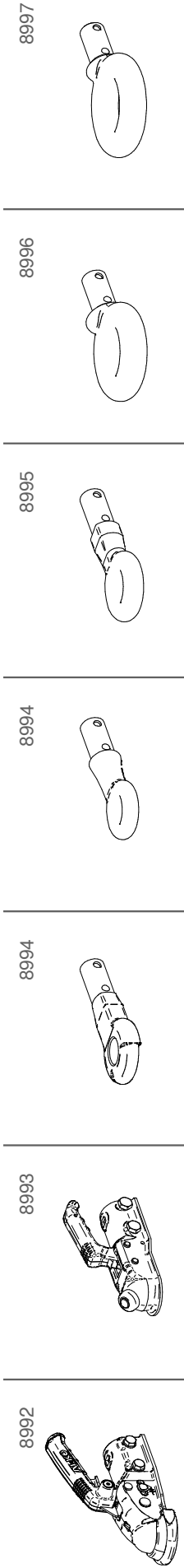
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KAESER KOMPRESSOREN		Erstellt mit	
88300 - Overrun mechanism / Auflaufeinrichtung		Solid Edge	
Zeichnungsgruppe	Dokument-Nr.	Datum	Name
Service spare part drawing / Service Ersatzteil-Zeichnung	A4	01.07.2015	Part11
SEG-Nummer	SEG-1901_01	Revised	01.07.2015 Part11
Service-Kit (Option)		Subassembly / Untereinheit	
SEG-1901_01		Status: f r e e b e n	
		1 von 1	



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KAESER KOMPRESSOREN		Erstellt mit	
Name	Datum	Name	Software
Zzeichnungstyp	Original	Gez.	PUFFI
Service spare part drawing / Service Ersatzteil Zeichnung	Dokument-Nr.	Revis.	PUFFI
SECS-Nummer	17.04.2023	Status	1 von 1
SECS-41836	17.04.2023	Subassembli / Untereinheit	
		Option	



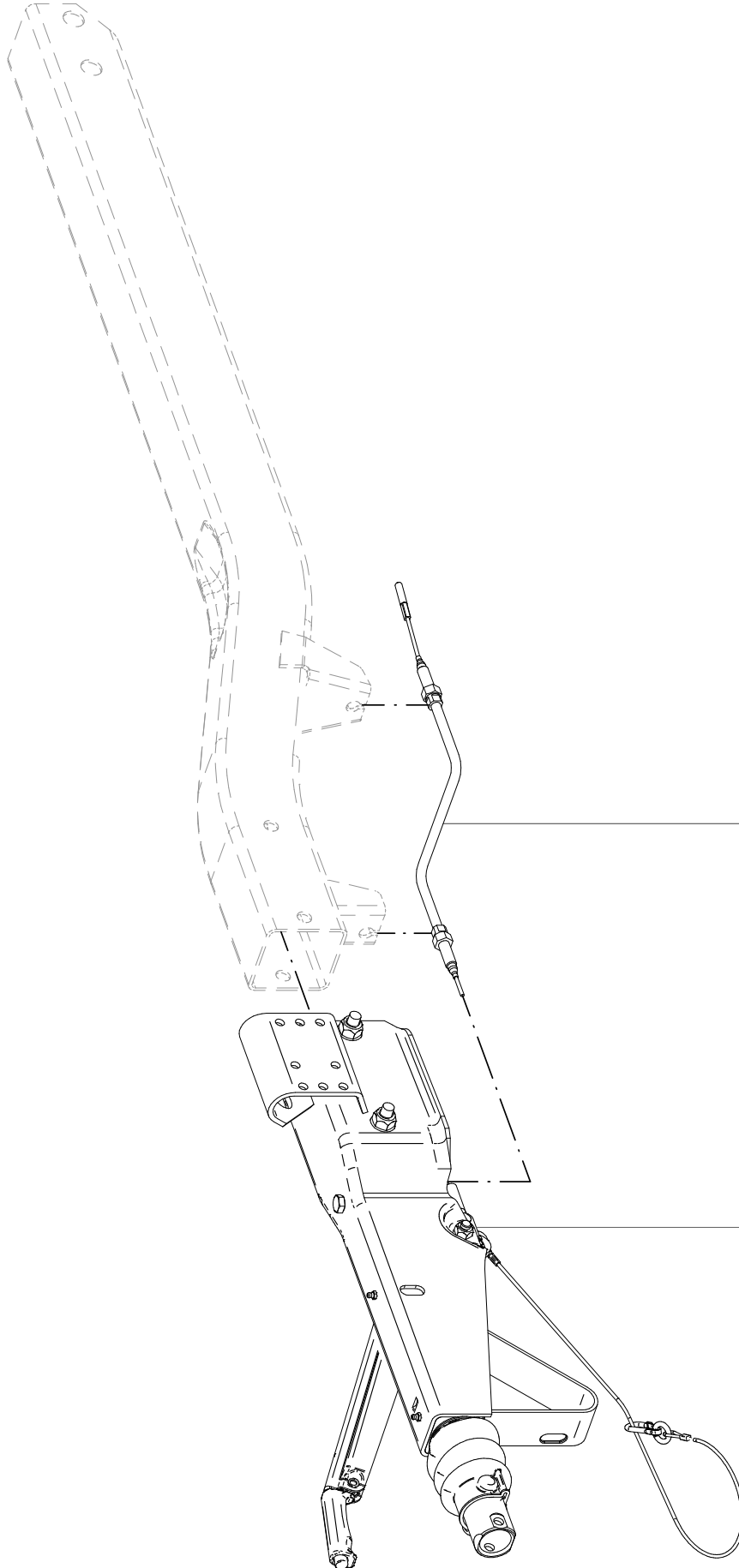
KAESER KOMPRESSOREN

Original Name: ERTEILT MIT
 Datum: 18.04.2023
 Zeichnungszahl: PUFF1
 Service spare part drawing / Service Ersatzteil Zeichnung: PUFF1
 Zeichnungsgruppe: 18.04.2023
 SECS-Nummer: PUFF1
 Status: F T E L G E B E N
 Blatt: 1 von 1

Subassembli / Untereinheit: (Service-Kit) (Option)

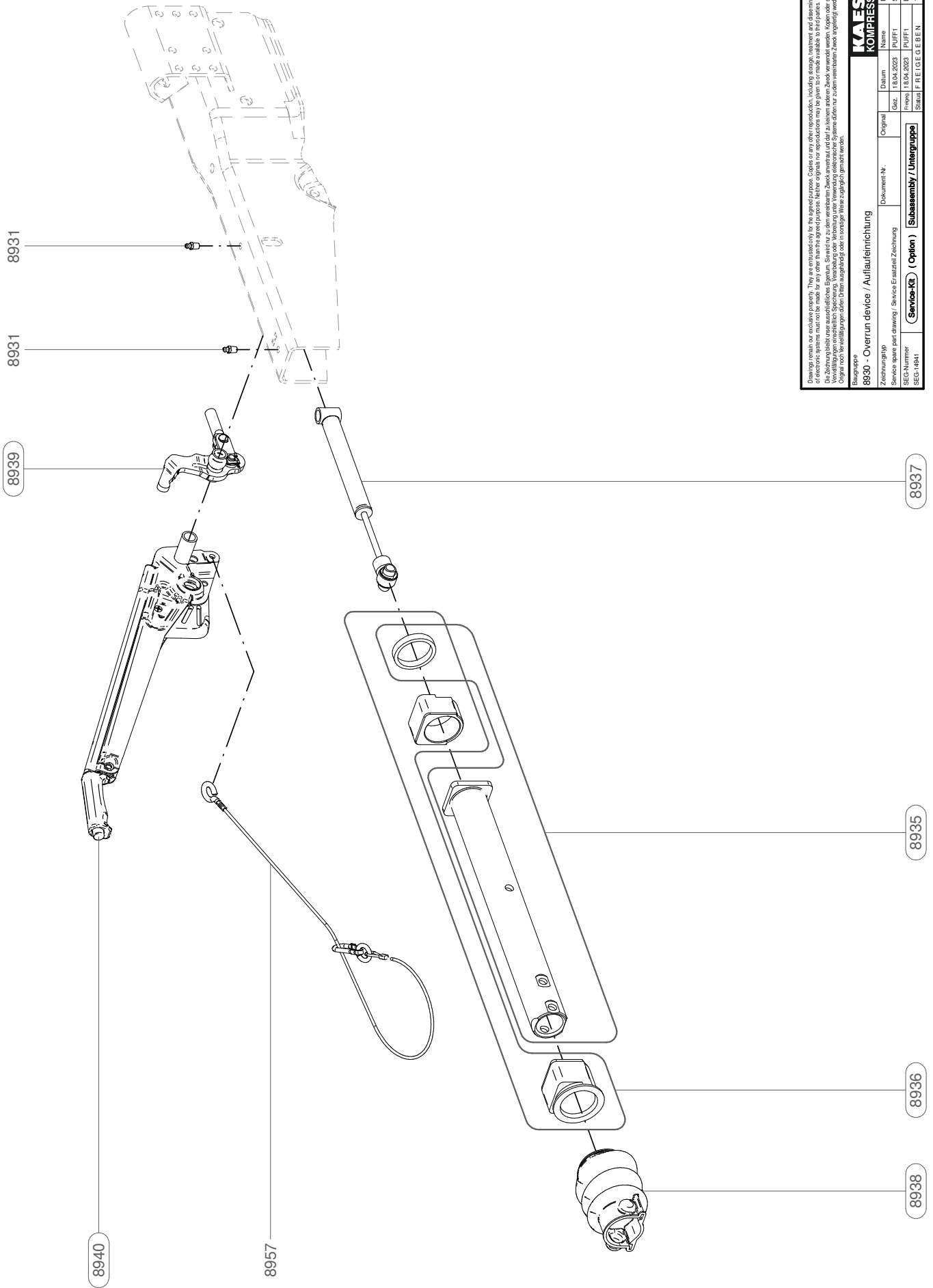
8900 - Chassis / Fahrgestell

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KAESER KOMPRESSOREN		Erstellt mit	
Blattgruppe	8820 - Group towbar / Zugdrehseil	Name	
Zeichnungstyp	Service spare part drawing / Service-Ersatzteil-Zeichnung	Datum	
SECS-Nummer	SEG-18940	Gez.	18.04.2023
		Revis.	18.04.2023
		Status	RELEASE
		Dokument-Nr.	
		Original	
		Subassembly / Untereinheit	
		(Service-Kit) (Option)	
		Soled Edge	
		Blatt	1 von 1

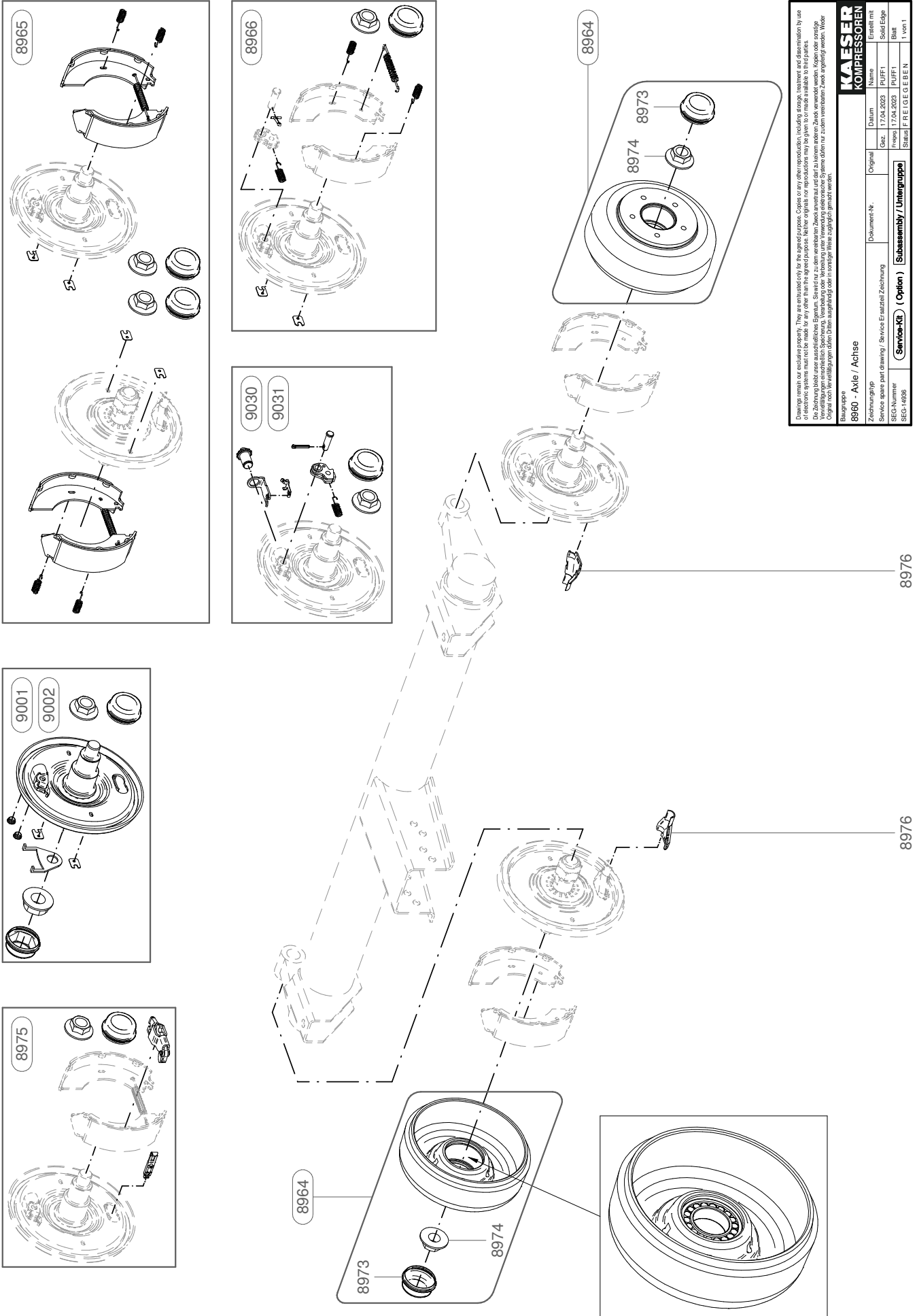


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Blattgruppe: 8930 - Overrun device / Aufaufreichtung

Zzeichnungstyp	Dokument-Nr.	Name	Datum	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung	Original	PUFFI	18.04.2023	PUFFI
SECS-Nummer	Subassembly / Untereinheit	Blatt	Revised	Soled Edge
8930-1084	(Service-Kit) (Option)	8930	18.04.2023	PUFFI
	Status	1	DE	1
		1	von 1	



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8860 - Axle / Achse

Original	Erstellt mit
Datum	Name
Gez. 17.04.2023	PUFFI
Original	Sozial Edge
Datum	Name
Gez. 17.04.2023	PUFFI
Original	Sozial Edge
Datum	Name
Gez. 17.04.2023	PUFFI
Original	Sozial Edge

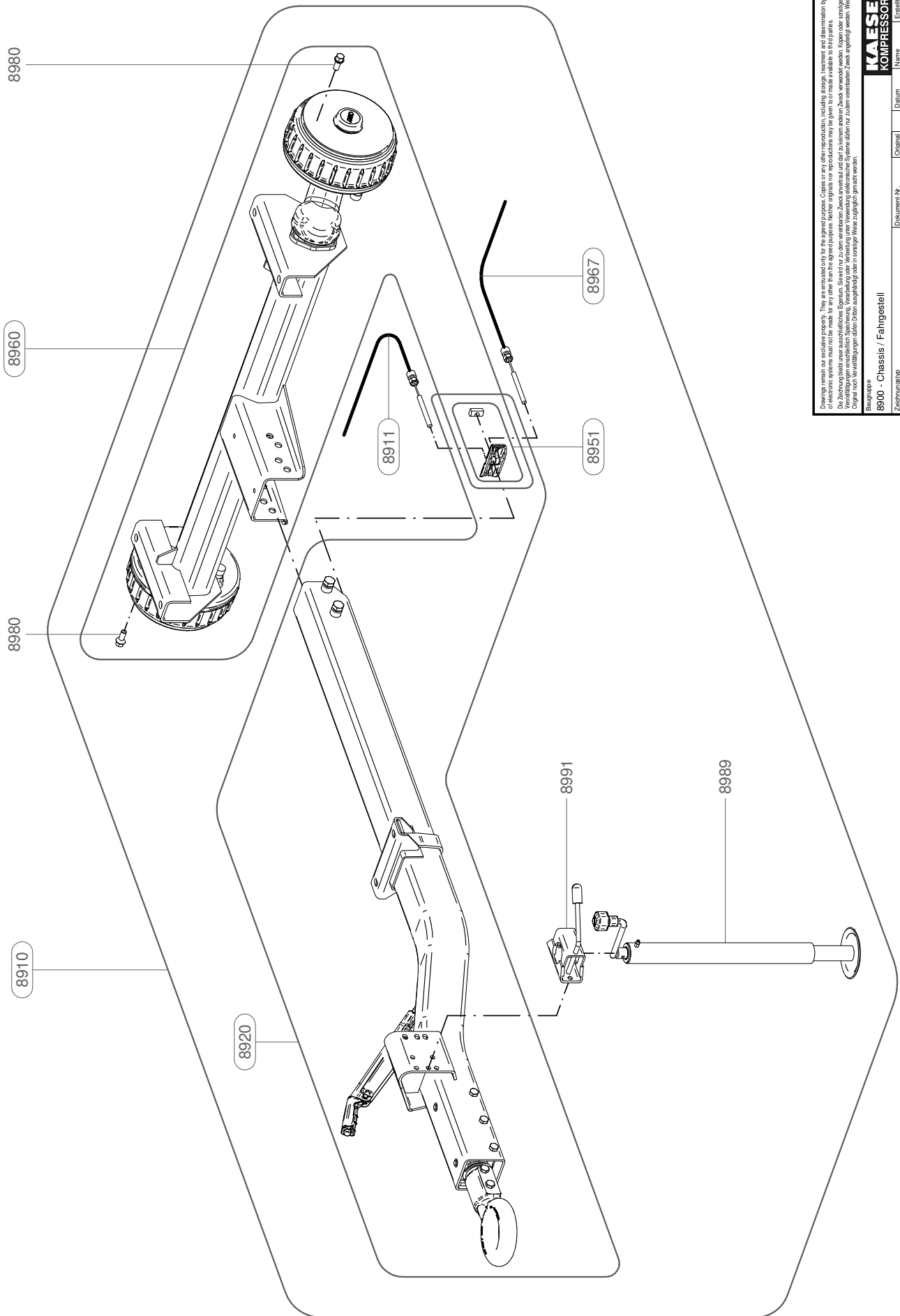
SECS-Nummer | Status | F R E I G E G E N

SECS-41836 | Status | F R E I G E G E N

Subassembli / Untereinheit

(Service-Kit) (Option) Subassembli / Untereinheit

1 von 1

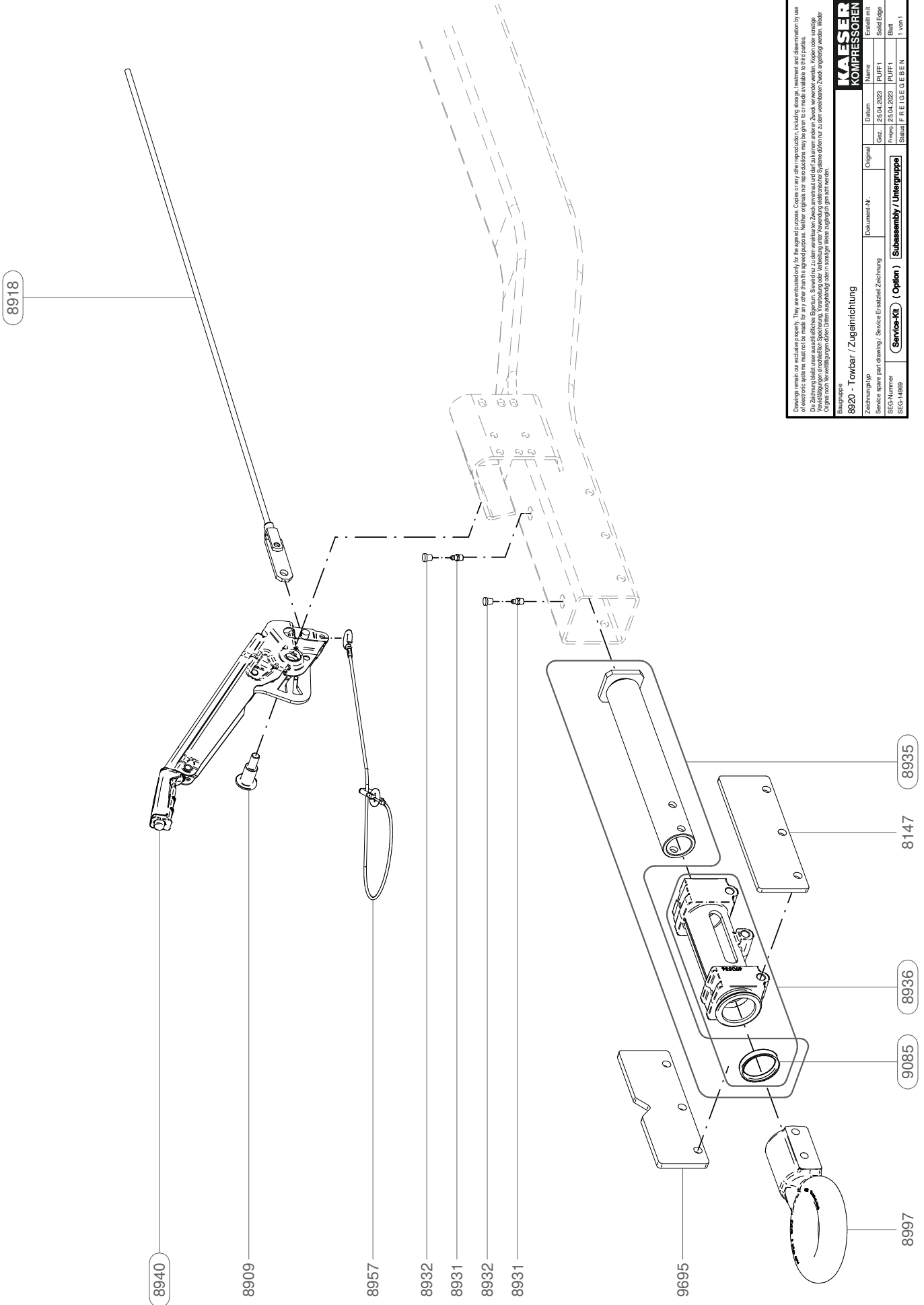


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Blattgruppe: 8800 - Chassis / Fahrgestell

KAESER KOMPRESSOREN		Erstellt mit	
Zzeichnungstyp	Dokument-Nr.	Name	Sozial-Edge
Service spare part drawing / Service-Ersatzteil-Zeichnung	Original	Datum	PUFFI
SEG-Nummer	18.04.2023	Gez.	18.04.2023
SEG-14038	(Option)	Status	1 von 1

Subassembly / Untereinheit: (Service-Kit) (Option)



KAESER KOMPRESSOREN

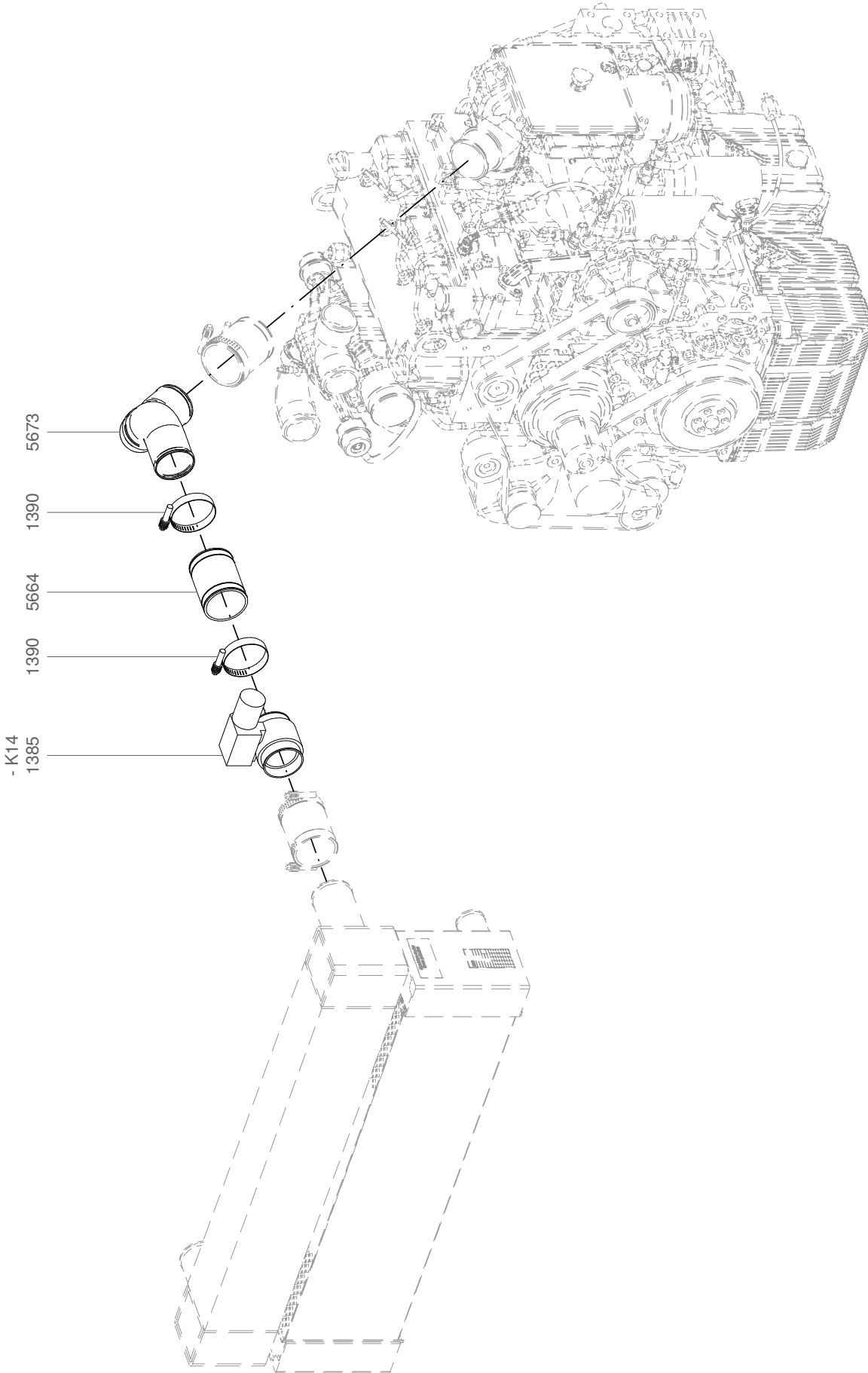
8920 - Towbar / Zugvorrichtung

Blattgruppe: 1 von 1

Zeichnungsgruppe	Original	Name	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung		PUFFI	Soled Edge
SECS-Nummer	SECS-Nummer	Datum	Reviz
8920-1089	8920-1089	24.04.2023	1
		Gez.	24.04.2023
		Zeichner	24.04.2023
		Status	PUFFI
			PUFFI
			1 von 1

Subassembli / Untereinheit: (Service-Kit) (Option)

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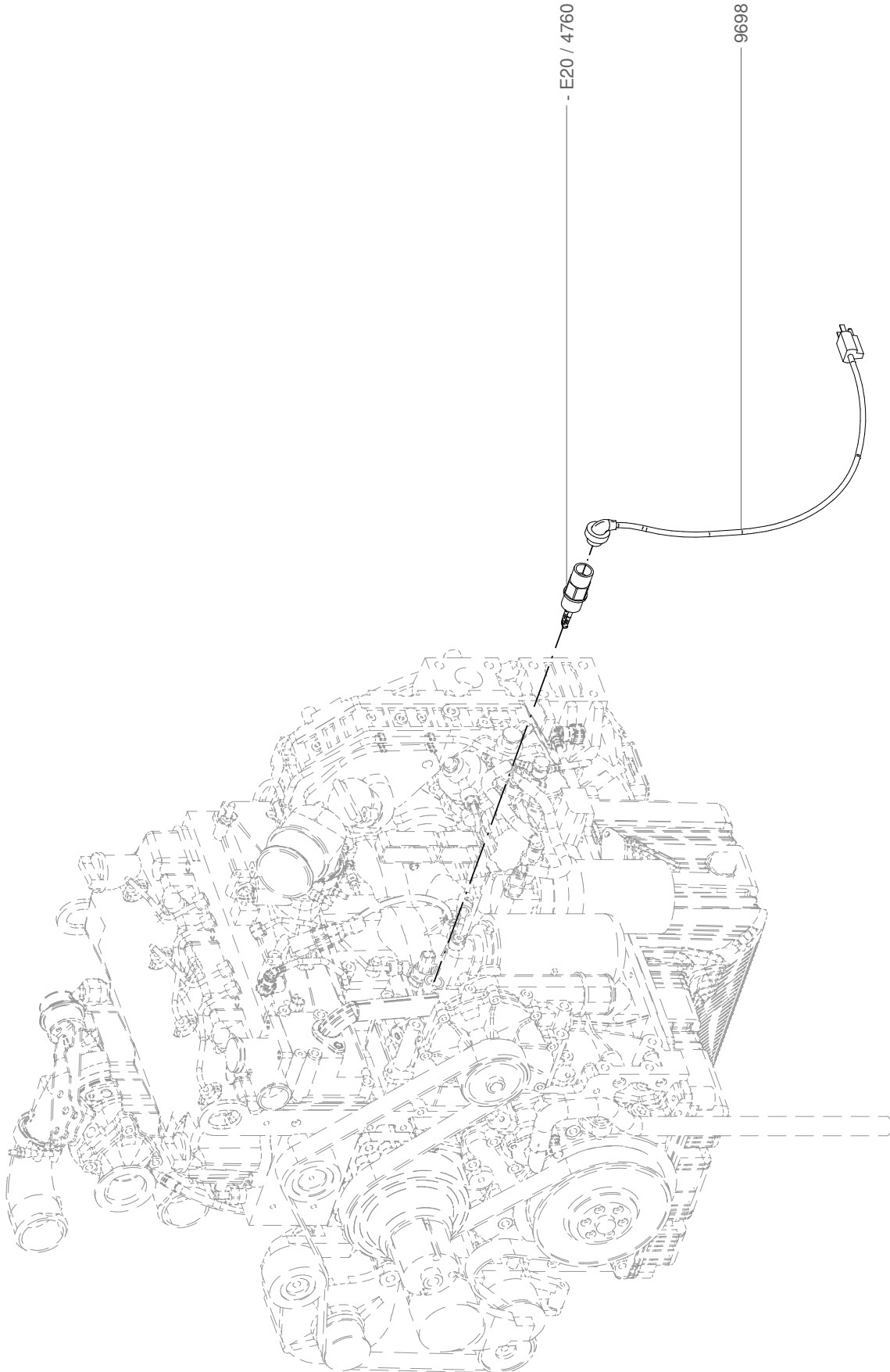
9370 - Engine air shut-off valve / Motorluftabsperventil

Original Name: PUFFI
Date: 31.01.2023
Drawing type: PUFFI
Service spare part drawing / Service Ersatzteil Zeichnung: PUFFI
SECS-Number: PUFFI
SEG-Number: PUFFI
Status: F R E I G E G E B E N

Subassembly / Untereinheit: (Service-Kit) (Option) Subassembly / Untereinheit

Blatt: 1 von 1

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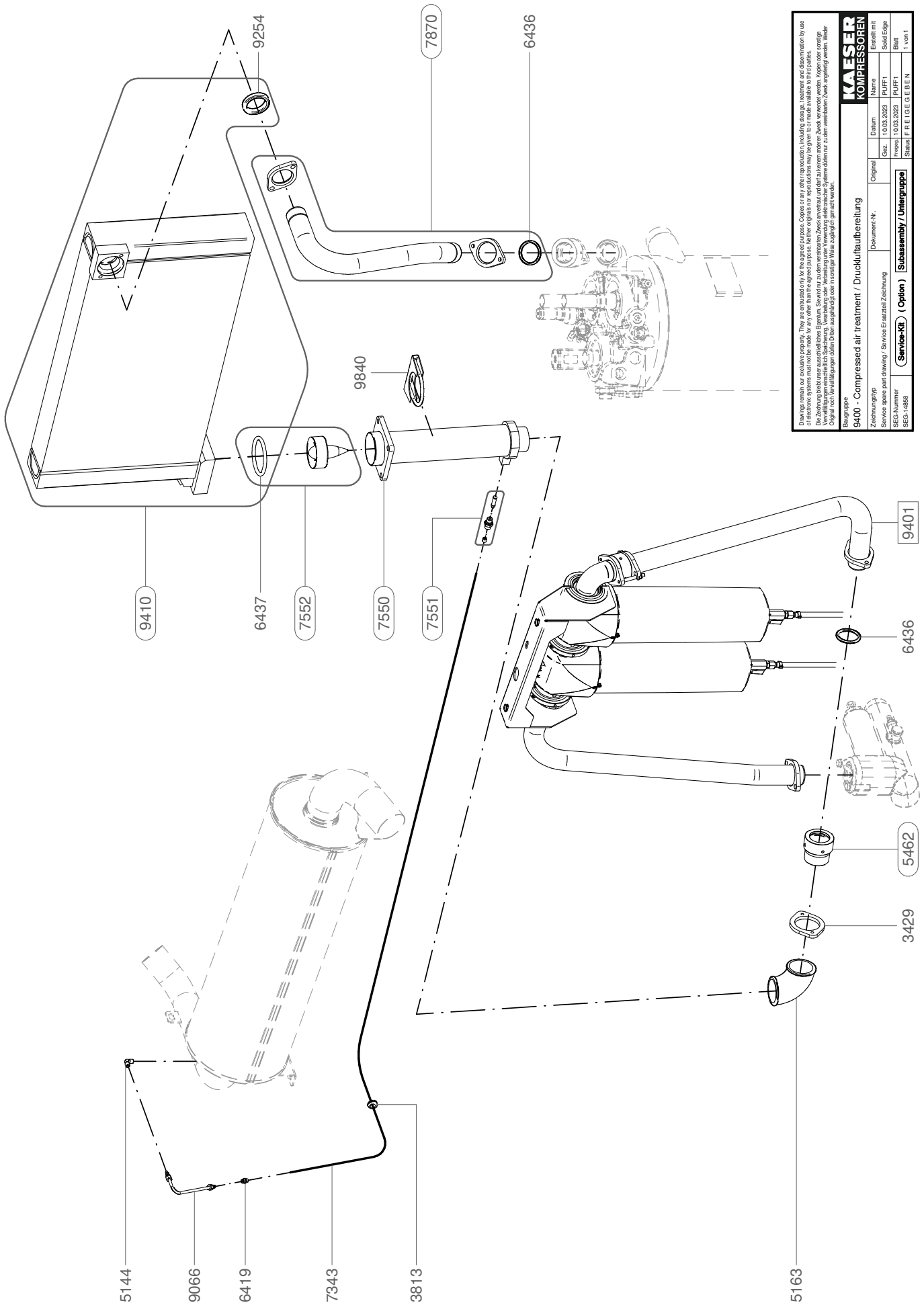


KAESER KOMPRESSOREN

Original
 Name: E20 / 4760
 Datum: 31.01.2020
 Zeichnungstyp: Service Ersatzteil Zeichnung
 Gez.: PUFFI
 Status: Original
 SECS-Nummer: 9698
 Revise: 31.01.2020
 PUFFI
 Blatt: 1 von 1
 (Service-Kit) (Option) Subassembly / Untereinheit

Blattgruppe: 9698 - Engine preheater / Motorvorwärmung
 Dokument-Nr.:
 Erteilt mit: Solid Edge
 Blatt: 1 von 1

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KAESER KOMPRESSOREN

Blattgruppe: 9400 - Compressed air treatment / Druckluftaufbereitung

Zusammenbau: Original

Service spare part drawing / Service Ersatzteil Zeichnung

SEK-Nummer: SEG-14859

Original Name: PUFFI

Datum: 10.03.2023

Gez.: PUFFI

Revised: 10.03.2023

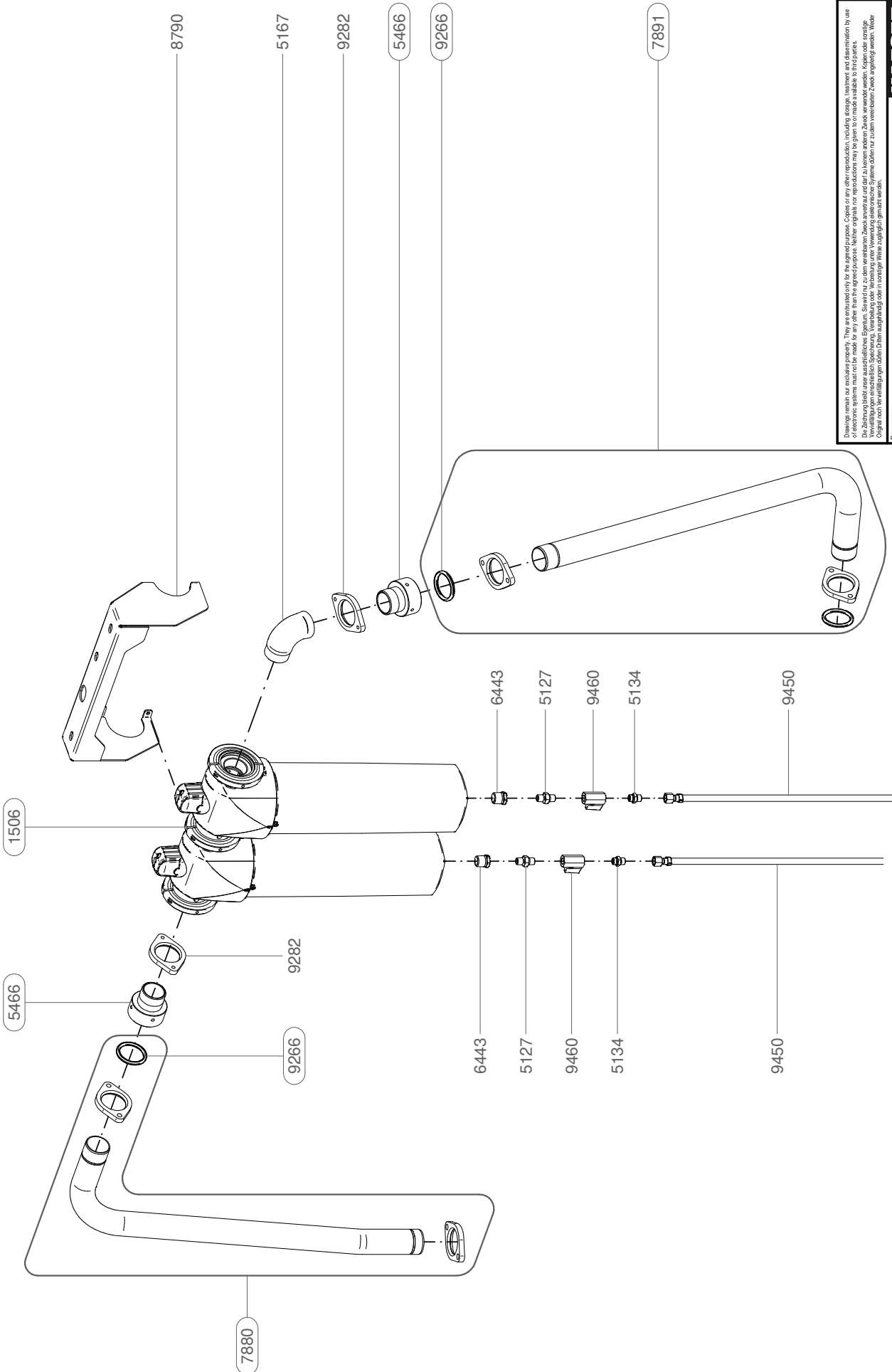
Status: F R E I G E B E N

Erstellt mit: Solid Edge

Blatt: 1 von 1

Subassembli / Untereinheit: (Service-Kit) (Option)

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Blattgruppe: 9401 - Filter combination / Filterkombination

Zzeichnungstyp: Service spare part drawing / Service-Ersatzteil-Zeichnung

SECS-Nummer: SEG3-1480

Original: (Service-Kit) (Option) / Subassembly / Untereinheit

Name: Erteilt mit

Datum: 10.03.2023

Gez.: PUFFI

Gez.: PUFFI

Status: F D E I G E B E N

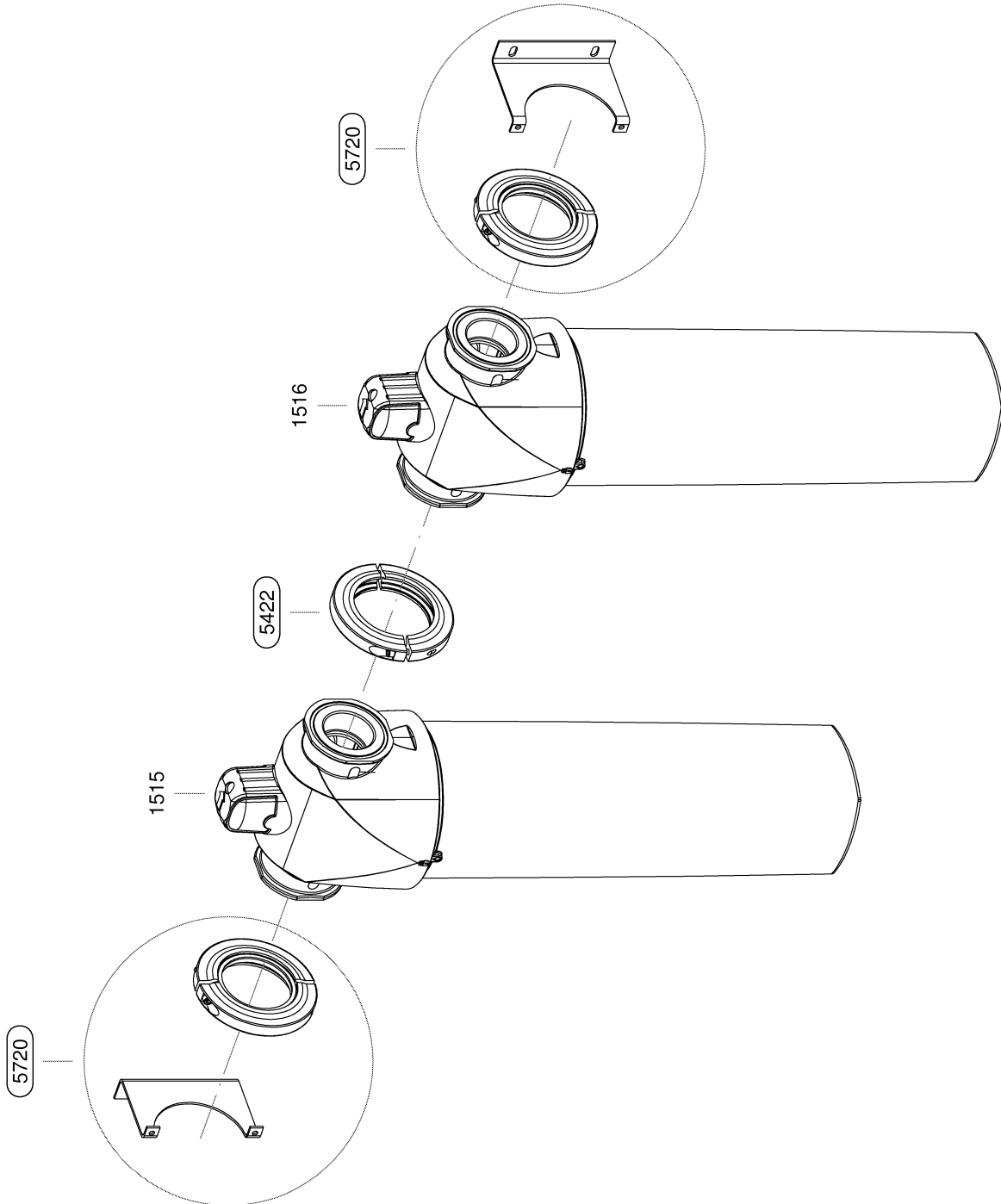
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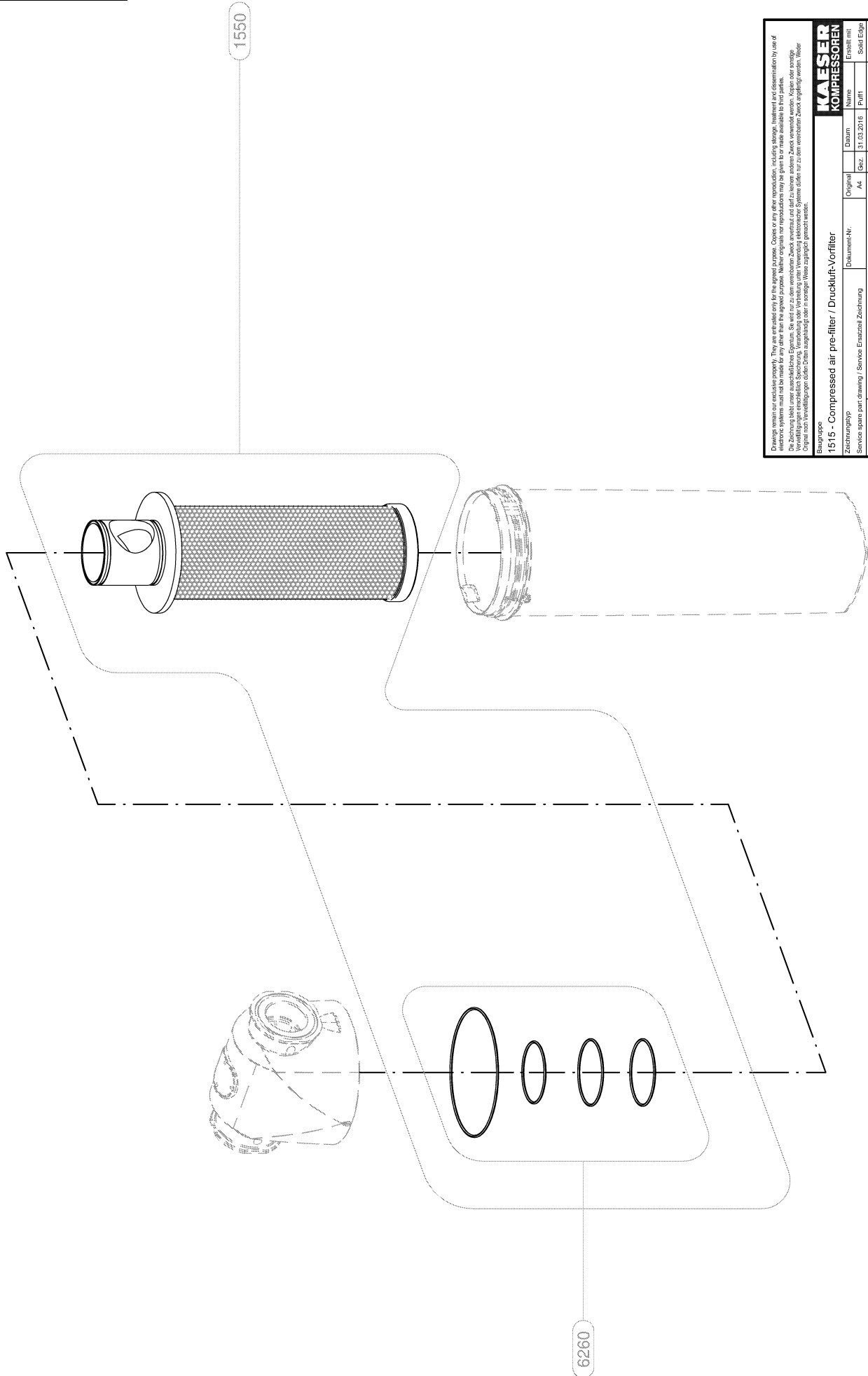
1 von 1

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Service-Kit
(Option)

SEG-5736_01





CAUTION: This is not a spare part. It is a replacement part. It is not recommended to use it for any other purpose. The use of this part for any other purpose may void the warranty. The use of this part for any other purpose may void the warranty. The use of this part for any other purpose may void the warranty.

WARNING: This is not a spare part. It is a replacement part. It is not recommended to use it for any other purpose. The use of this part for any other purpose may void the warranty. The use of this part for any other purpose may void the warranty. The use of this part for any other purpose may void the warranty.

DISCLAIMER: The manufacturer is not responsible for any damage or injury caused by the use of this part. The manufacturer is not responsible for any damage or injury caused by the use of this part. The manufacturer is not responsible for any damage or injury caused by the use of this part.

Service spare part drawing / Service Ersatzteil-Zeichnung

Original	Name	Erstellt mit
A4	Perf1	Solid Edge
Version	Perf1	Blatt
Standard	Perf1	1 von 1

1515 - Compressed air pre-filter / Druckluft-Vorfilter

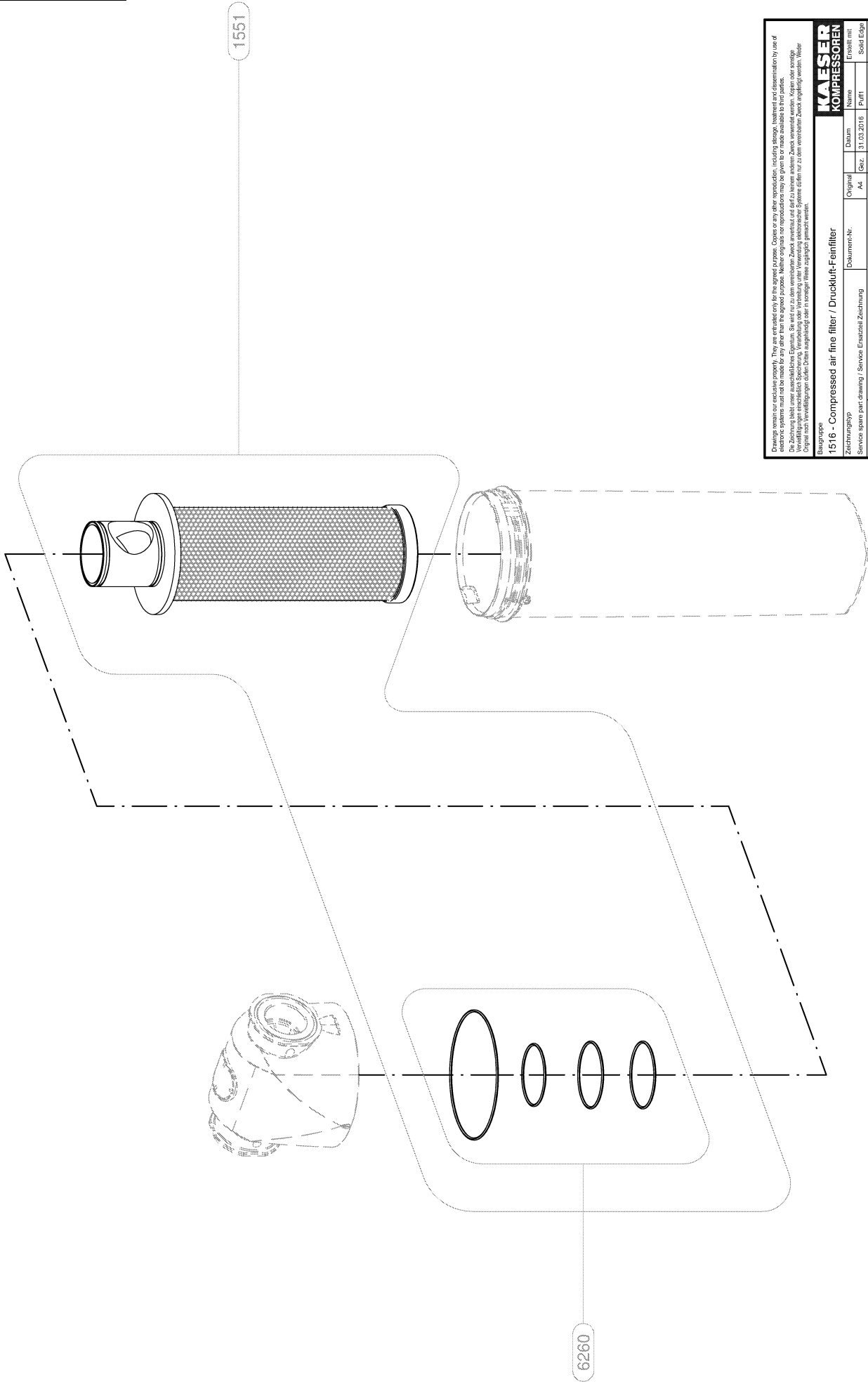
Zeichnungsgruppe: _____

Service spare part drawing / Service Ersatzteil-Zeichnung

SEGA-Nummer: _____

SEG-7932.01 (Service-Kit) (Option) Subassembly / Untergruppe

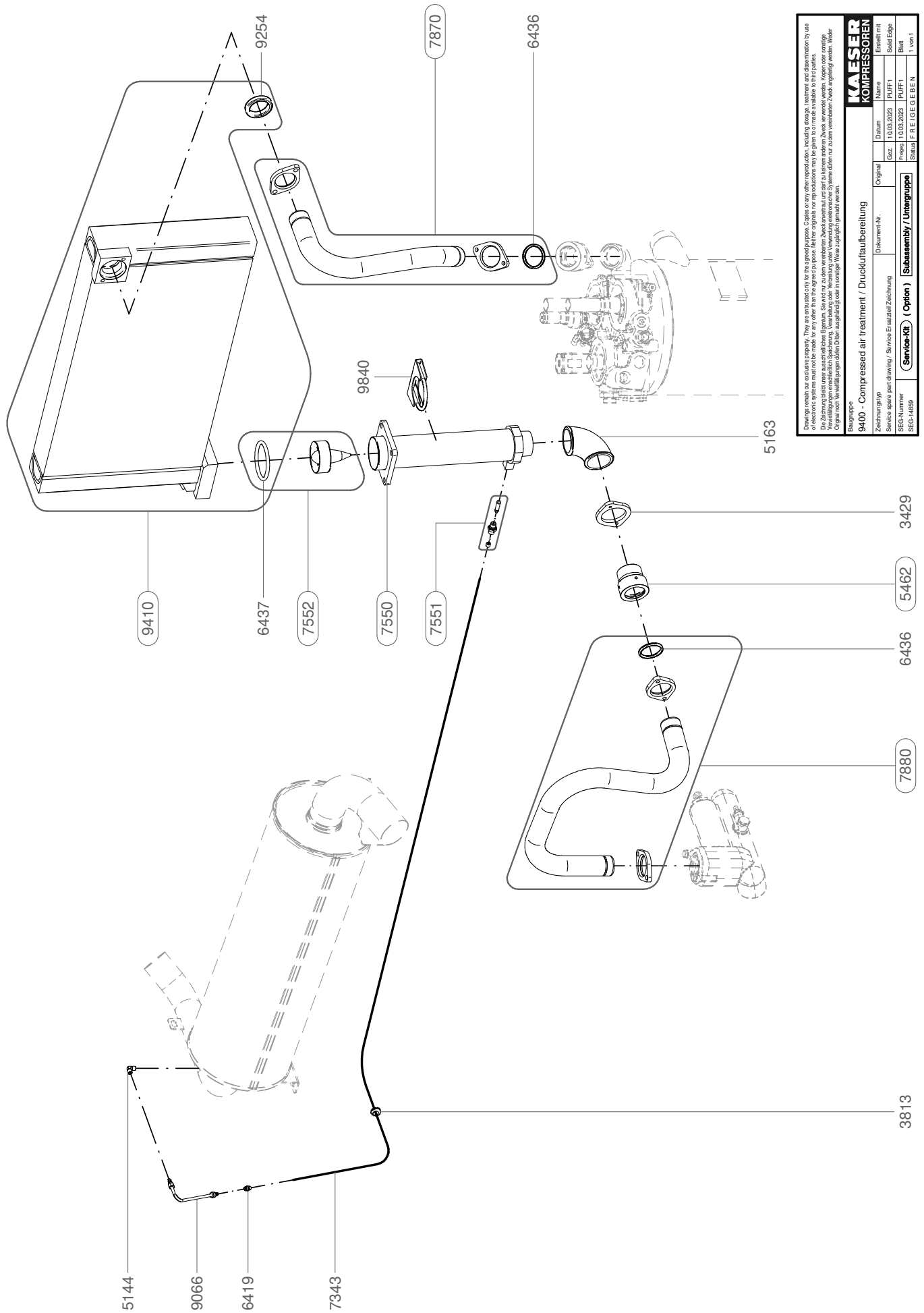
Blattgruppe: _____



Produktionsanweisung beachten! Dieses Ersatzteil ist für ein bestimmtes Originalgerät oder System vorgesehen. Nach dem Einbau ist das System auf Leckfreiheit zu überprüfen. Das System muss nach dem Einbau für einen Zeitraum von 15 Minuten auf Leckfreiheit überprüft werden. Nach dem Einbau muss das System für einen Zeitraum von 15 Minuten auf Leckfreiheit überprüft werden. Nach dem Einbau muss das System für einen Zeitraum von 15 Minuten auf Leckfreiheit überprüft werden. Nach dem Einbau muss das System für einen Zeitraum von 15 Minuten auf Leckfreiheit überprüft werden.

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Zzeichnungsgang	Original
Service spare part drawing / Service Ersatzteil-Zeichnung	Datum
SEGA-Nummer	Rev.
SEG-7923_01	31.03.2015
(Service-KIT) (Option) / Subassembly / Untergruppe	Perf1
	Perf1
	Blatt
	1 von 1



KAESER KOMPRESSOREN

9400 - Compressed air treatment / Druckluftaufbereitung

Blattgruppe: 1 von 1

Zzeichnungsgang	Original	Datum	Erstellt mit
Service spare part drawing / Service Ersatzteil Zeichnung	Original	10.03.2023	PUFFI
SECS-Nummer	Subassembly / Untereinheit	Revised	Soled Edge
SEG-1489	(Service-Kit) (Option)	10.03.2023	PUFFI
		Status	BEI
			1 von 1

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12 Decommissioning, Storage and Transport

12.1 De-commissioning

De-commissioning is necessary, for example, under the following circumstances:

- The machine is temporarily not needed
- The machine will not be needed for a considerable time.
- The machine is to be scrapped.

Precondition The machine is shut down.

Machine dry and cool.

1. Carry out the following de-commissioning procedures.
2. Place a notice on the instrument panel describing the de-commissioning procedures carried out.

12.1.1 Temporary de-commissioning

Decommissioning for about 4 months.

Material Plastic sheeting

Moisture-resistant adhesive tape

1. Disconnect the battery (the minus terminal first and then the plus terminal).
2. Close off the following openings with plastic foil and moisture-resistant adhesive tape.
 - Engine air inlet
 - Compressor air inlet
 - Exhaust silencer
3. Attach the following notice on the instrument panel showing the decommissioning measures taken.

Attention!

1. The machine is temporarily decommissioned.
 2. The following machine openings have been covered:
 - Engine air inlet
 - Compressor air inlet
 - Exhaust silencer
 3. Recommission according to service manual.
- Date / signature

Tab. 84 "Temporarily decommissioned" information notice

Decommissioning of the compressor for several weeks during severe frost



1. **NOTICE!**
 Danger of batteries freezing!
 Discharged batteries are subject to frost damage and can freeze at $-10\text{ }^{\circ}\text{C}$.
 - Store batteries in a frost-free place.
 - Store batteries preferably fully charged.
2. Remove the battery (batteries) and store in a frost-free room.
3. Make sure batteries are fully charged.

12.1.2 Long-term decommissioning/storage

Decommissioning the machine for periods of longer than 5 months or permanently.

- Material
- Preservative
 - Desiccant
 - Plastic sheeting
 - Moisture-resistant adhesive tape

➤ The following measures must be taken for longer periods of decommissioning and storage:

Long-term decommissioning and storage tasks	See chapter	Confirmed?
➤ Check the drive engine coolant.	10.4.1	
➤ Arrange for preservation measures to be carried out on the drive engine by a specialist workshop.	–	
➤ Disconnect the battery/batteries (negative terminal first, then positive terminal) and store in a frost-free room.	–	
➤ Check the battery fluid level.	10.9	
➤ Check the battery charge monthly and recharge if necessary to prevent the battery fluid from freezing.	–	
➤ Clean the battery terminals and coat with acid-resistant grease.	–	
➤ Close the compressed air discharge valves.	–	
➤ Cover the following openings using plastic sheeting and moisture-proof adhesive tape: <ul style="list-style-type: none"> ■ Engine air intake ■ Compressor air intake ■ Exhaust silencer 	–	
➤ Clean the bodywork and treat with preservative.	–	
➤ Attach a notice to the control panel indicating the decommissioning measures taken.	–	

Tab. 85 Checklist for long-term decommissioning/storage

- Attach the following notice to the control panel, indicating the decommissioning measures taken:

Attention!

1. This machine has been decommissioned.
2. Preservation measures have been carried out on the drive engine.
3. When recommissioning:
 - Carry out measures for recommissioning following long-term decommissioning/storage.
 - Recommission as per the instructions in the operating manual.

Date/signed:

Tab. 86 Notice text: "Long-term decommissioning/storage"

- Store the machine in a dry place not subject to temperature fluctuations.

12.2 Transport

Precondition Machine switched off and locked off
(«battery isolating switch »off)

The machine is fully vented, the pressure gauge reads 0 bar.

Machine is cooled down.

All compressed air consumers are disconnected.

All connecting lines and hoses disconnected and removed.

Any loose or movable parts that may fall when transporting are removed or secured.

12.2.1 Safety



Allow transportation only by personnel trained in safely dealing with motor vehicles and the transporting of goods.



1. **WARNING!**

There is danger of being run over or crushed by an overturning vehicle.

Death or serious injury can result from being crushed or run-over by a machine under tow.

- Riding on the machine while it is under tow is strictly forbidden.

2. Make sure the danger area is clear of personnel.

12.2.2 Transporting the machine as trailer

- Note the instructions in the separate document "Chassis Operating Manual" regarding the topic "transport of the machine as trailer".

12.2.3 Transport by crane

Additional precautions for snow and ice:

Significant snow or ice build-up can occur on the machine when operating in winter conditions.

This may adversely affect the machine's centre of gravity (tilting).

This may cause the permissible load of the crane and machine hoists to be exceeded.

- Carry out the following preliminary tasks in conditions of snow and ice:
 - Remove any snow and/or ice from the machine before lifting by crane.
 - Make sure the lifting eye cover plate is freely accessible and can be opened.

Perform the following tasks prior to moving the machine by crane:

A lifting eye is provided for transportation by crane. The lifting eye is located beneath a lift-up cover plate in the centre of the enclosure.

1. Open one of the two doors.
2. Unlock the cover from the inside by actuating the built-in hand lever and lift up.
3. Close the door.
4. Position the crane hook vertically above the lifting eye.
5. Engage the crane hook in the eye.
6. Close and lock the access doors.
7. Lift and move the machine slowly and carefully.

Take note when setting down the machine:

1. **NOTICE!**
Incorrect setting down can damage the machine!
Machine components, particularly the chassis, can be damaged by incorrectly setting down the machine.
 - Set the machine down carefully.
 - Do not set down unevenly.
2. Set the machine down slowly and carefully.
 1. Disengage the crane hook.
 2. Press the lifting eye cover down and close. Make sure it locks into place.

12.2.4 Transporting the machine by forklift

Precondition The machine is switched off.
All connecting lines and hoses disconnected and removed.

**CAUTION**

Incorrect lifting with a forklift can damage the machine!
The machine could fall or be damaged by the forks.

- Pick up the machine only from the side with the forks through the lifting lugs.

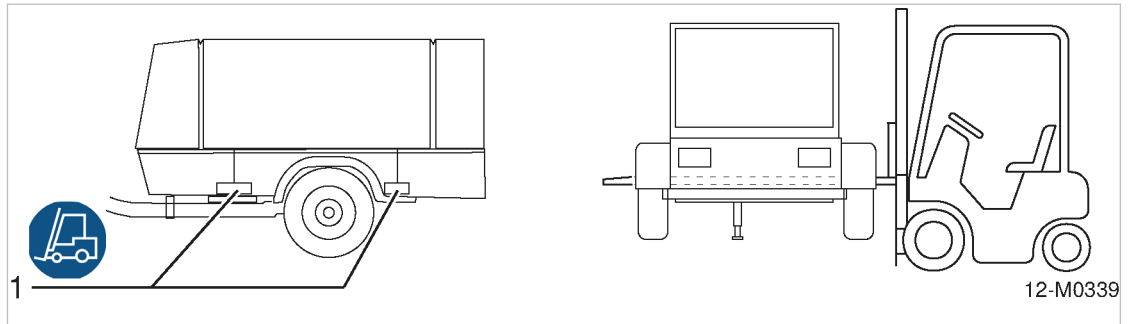


Fig. 64 Transporting using a forklift truck

① Lifting lugs

1. Close and lock the doors.
2. Position the fork truck to the side of the machine with the forks lined up with the lifting lugs.
3. Drive the forks fully through the lifting lugs as far as possible.
The lifting forks are fully under the machine.
4. Lift and move the machine slowly and carefully.

Take note when setting down the machine:



1. **NOTICE!**
Incorrect setting down can damage the machine!
Machine components, particularly the chassis, can be damaged by incorrectly setting down the machine.
➤ Set the machine down carefully.
2. Set the machine down slowly and carefully.

12.2.5 Transporting the machine as a load

The transportation method determines the way in which the machine is packed and the load secured.

Packing and securing methods must be selected that will ensure the load arrives in perfect condition if handled properly.

Additional measures must be taken for the transportation of machines by sea or air. Please contact an authorised KAESER SERVICE agent for more information.

Material Chocks

Stop blocks or squared timbers

Bracing (tensioning straps)

Notes on securing loads:

- National directives and regulations for the securing of loads during transportation must be adhered to.
- The load must be secured in such a manner that it cannot slide, fall, roll around or cause avoidable noise in case of emergency braking or sudden turns. Recognised technical regulations should be observed (e.g. in Germany: VDI Directive 2700 ff).
- Responsibility for proper securing of the load rests with the driver, owner and carrier.

**1. NOTICE!**

Bracing or tensioning straps can damage the bodywork!

Forces of movement during transportation can cause damage to the bodywork.

- Do not use bracing or tensioning straps over the bodywork.
- Only attach bracing or tensioning straps using the lashing points welded to the base frame of the machine.

2. Always observe the applicable accident prevention and safety regulations during transportation.

3. Loads must be secured against rolling, tipping, slipping and falling.



Contact KAESER SERVICE with any questions regarding transport or securing loads.

KAESER accepts no liability and provides no warranty for damage arising from improper transportation or insufficient/incorrect load securing.

When transporting machines for the purposes of loans, rentals and trade shows, any transportation safety devices used for the delivery must also be used for the return transport.

Load securing:

The following instructions are intended only as an example for securing a machine as a load.

Responsibility for proper securing of the load rests with the driver, owner and carrier.

Use chocks, stop blocks or squared timbers to secure the load. If necessary, attach tension belts or other bracing devices to the lashing points provided.

Adhesive labels on the machine indicate the position of the lashing eyes.

The following lashing points (eyes) are provided on the machine:

-
- 2 lashing points behind the rear axle

Precondition The load bed must be suitable for transportation (maximum load) and securing of the machine (vehicle with integrated lashing points/eyes)

The surface of the load bed must be swept, clean and dry

Tension belts must be free from damage and in working order

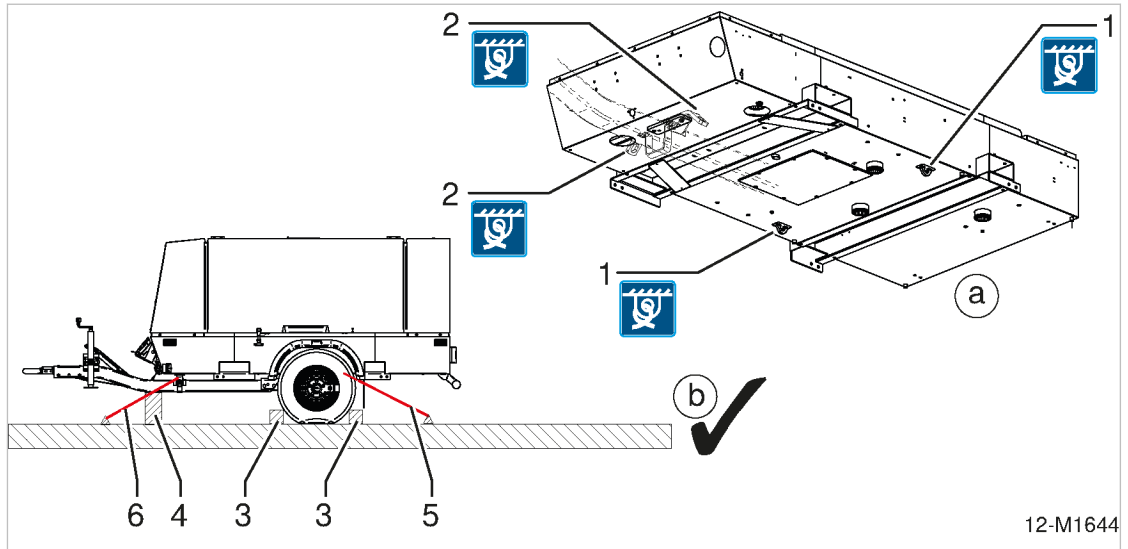


Fig. 65 Load-securing points for transport securing

- | | |
|--|---|
| <ul style="list-style-type: none"> ① Lashing points behind rear axle (fixing eyes) ② Lashing points on front drawbar fastening (distance plate fastening bracket) ③ Squared timber ④ Squared timber ⑤ Tension belts in direction of travel ⑥ Tension belts against direction of travel | <ul style="list-style-type: none"> ③ Squared timber ④ Squared timber ⑤ Tension belts in direction of travel ⑥ Tension belts against direction of travel |
|--|---|
- (a) Machine (view from beneath), lashing points
 (b) View, correct bracing

1. Use a crane or forklift to place the machine in the centre of the load bed.
 2. Apply the parking brake.
 3. Position a squared timber in front of and behind the wheels to secure mobile machines against rolling.
 4. Crank in the stand/jockey wheel to the limit stop.
 5. Position a suitable squared timber by the stand/jockey wheel beneath the drawbar tube to protect the stand/jockey wheel against overloading.
 6. Fasten the machine with tensioning straps to the load bed of the vehicle:
 - Securing against driving direction (diagonal strapping, 2 strapping points)
 - Securing in driving direction (diagonal strapping, 2 strapping points)
 - Fastening points, see Fig. 65
 7. Tension the straps.
- The machine is secured against sliding, tipping over and rolling for transportation as a load.



The tension of the straps must be checked during transportation and retightened if necessary.

Before shipment as air freight:

The machine must be designated as hazardous goods for air freight purposes. Non-compliance may result in severe penalties!

**1. WARNING!**

Danger of fire or explosion from operating fluids/materials!
The machine is equipped with a combustion engine.

- Any dangerous fluids/materials contained within the machine must be removed before transportation by air.

2. Remove all dangerous fluids/materials.

These include:

- Residues of fuel and fuel vapours.
- Lubricants in the engine and compressor.
- Batteries containing electrolytes.

12.3 Storage

Moisture can lead to corrosion, particularly in the engine, airend and oil separator tank.

Frozen moisture can damage components, valve diaphragms and gaskets.

The following measures also apply to machines not yet commissioned.



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

**NOTICE**

Moisture and frost can damage the machine!

- Prevent ingress of moisture and formation of condensation.
 - Maintain a storage temperature of $>0\text{ }^{\circ}\text{C}$.
-
- Store the machine in a dry place, free from frost if possible.

12.4 Disposal



To dispose of the machine in accordance with environmental regulations, the starter battery must be removed and delivered to a designated disposal system. Substances that are harmful to living things and the environment can thus be removed and disposed of efficiently or reprocessed. In particular, this procedure facilitates the recycling of batteries.

All operating fluids in the machine must be drained and disposed of in accordance with environmental regulations. All components contaminated with operating fluids must be removed and disposed of in accordance with environmental regulations.

Any residual quantities of condensate must be drained and disposed of in accordance with environmental regulations.

Once these conditions have been fulfilled, deliver the machine to an authorised disposal agent.

Overview:

- Remove the battery.
- Drain all operating fluids.
- Drain the condensate.

- Remove used filters/filter elements.
- Deliver the machine to an authorised disposal agent.
- Follow all instructions carefully.

12.4.1 Removing the battery

Overview:

- Removing the battery
- Disposing of the battery in accordance with environmental regulations

1. Observe the safety instructions for handling batteries.
2. Observe the safety signs on the battery.

Further information When handling batteries, observe the specific safety rules and safety signs, see chapter 10.4.11.

- Remove the starter battery from the internal combustion engine.

Disposing of the battery in accordance with environmental regulations:

Batteries contain substances that are harmful to living things and the environment. For this reason, batteries must not be disposed of with unsorted municipal waste. They must be delivered to a national battery collection system. This facilitates the correct handling and recycling of batteries.

In EU member states, used batteries must be returned to the point of sale or to a disposal system (free of charge) in accordance with Directive 2006/66/EC. Disposal facilities may be local recycling centres for used electrical devices and electronic waste, or the original points of sale.

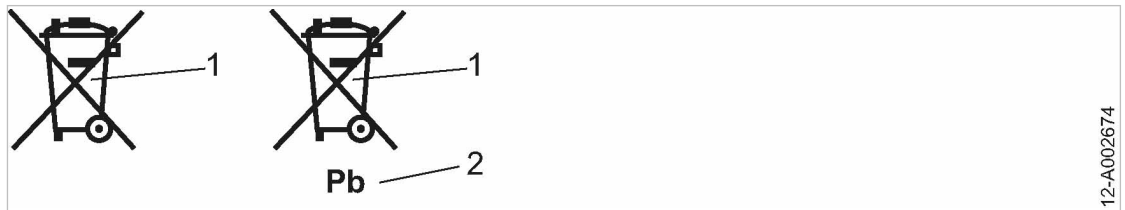


Fig. 66 Battery labelling

- ① Do not dispose of battery with municipal waste
- ② Battery contains lead (if applicable)

1. Observe national disposal regulations!
2. Deliver the battery to the designated disposal system.



You actively contribute to the protection of the environment when you take used batteries to the designated disposal system.

12.4.2 Draining operating fluids



To prevent it from accidentally igniting, always drain the fuel when working on the interior of the machine.

Material Receptacle
Cleaning cloth

- Drain and collect the following operating fluids from your machine.

Designation	Drive engine	Compressor
Fluid	Fuel	Cooling oil
	Engine oil	-
	Coolant	-

Tab. 87 Machine fluids



Dispose of operating fluids, as well as working materials and components contaminated with them, in accordance with the applicable environmental protection regulations.

12.4.3 Draining condensate

Material Receptacle
Cleaning cloth

1. Check compressed air options with condensate separation.
2. Drain and collect any residual quantities of condensate.



Dispose of any residual quantities of condensate and contaminated working materials in accordance with applicable environmental protection regulations.

12.4.4 Removing filters/filter elements

Material Cleaning cloth
Receptacle

1. Remove all filters/filter elements from the machine.

Designation	Drive engine	Compressor
Filters/filter elements	Air filter insert	Air filter insert
	Engine oil filter	Oil filter
	Fuel prefilter (filter cartridge on water separator)	Oil separator cartridge (spin-on)
	Fuel filter	—
	Fuel tank venting filter	—

Tab. 88 Machine filters/filter elements

2. Remove all filters/filter elements from the options specified on the machine.

Designation	Filter combination option
Filters/filter elements	Prefilter
	Fine filter

Tab. 89 Machine option filters/filter elements



Dispose of working materials and components contaminated with operating fluids in accordance with applicable environmental protection regulations.

12.4.5 Disposing of the machine

- Precondition All batteries have been removed and delivered to the designated disposal system.
- All operating fluids have been drained and disposed of in accordance with applicable environmental regulations.
- All residual quantities of condensate have been drained and disposed of in accordance with applicable environmental regulations.
- All used filters/filter elements have been removed and disposed of in accordance with applicable environmental regulations.
- Deliver the machine to an authorised disposal agent.

13 Annex

13.1 Labelling

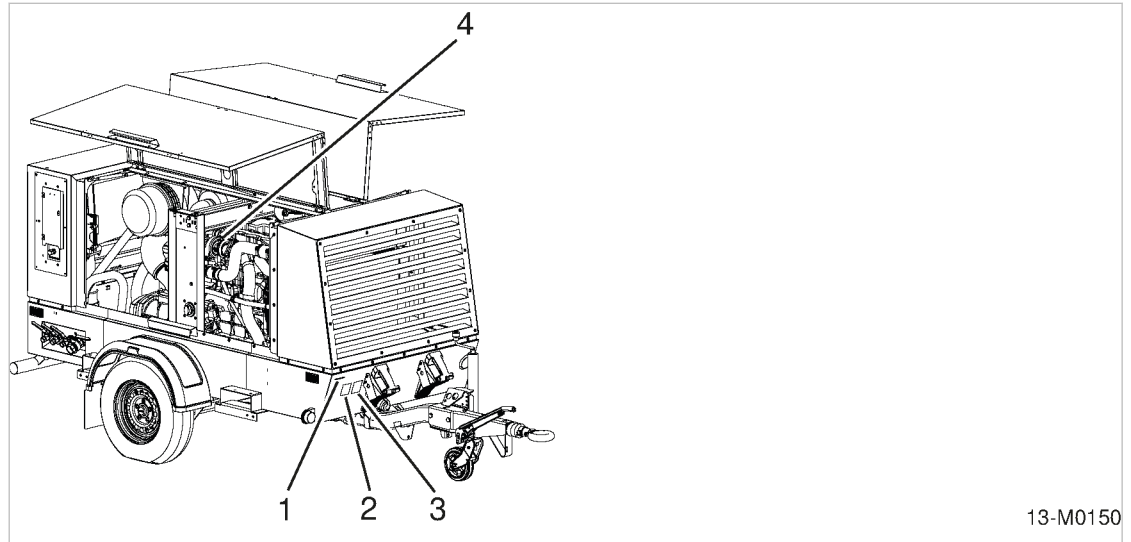
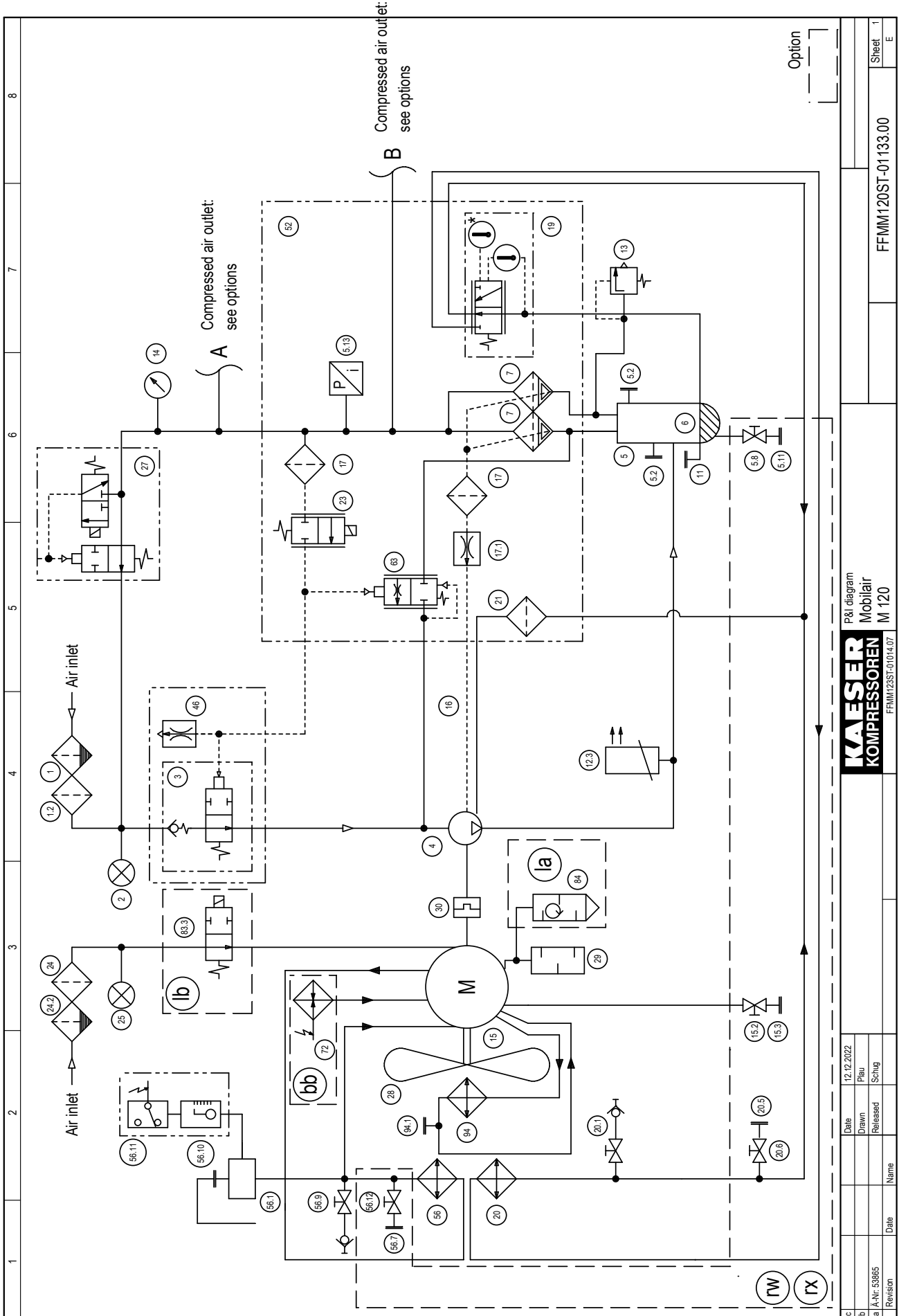


Fig. 67 Labelling

- | | | | |
|---|--|---|--|
| ① | VIN number *) (stamped on the bodywork) | ③ | Machine nameplate with unit serial number |
| | * Vehicle identification number (WKA number) | ④ | Engine nameplate with engine serial number |
| ② | Options label | | (on the engine transmission housing) |

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



c	Date	12.12.2022	Plan	
b	Drawn		Released	Schug
a	A-Nr.	53885		
Revision	Date		Name	

P&I diagram
Mobilair
M 120

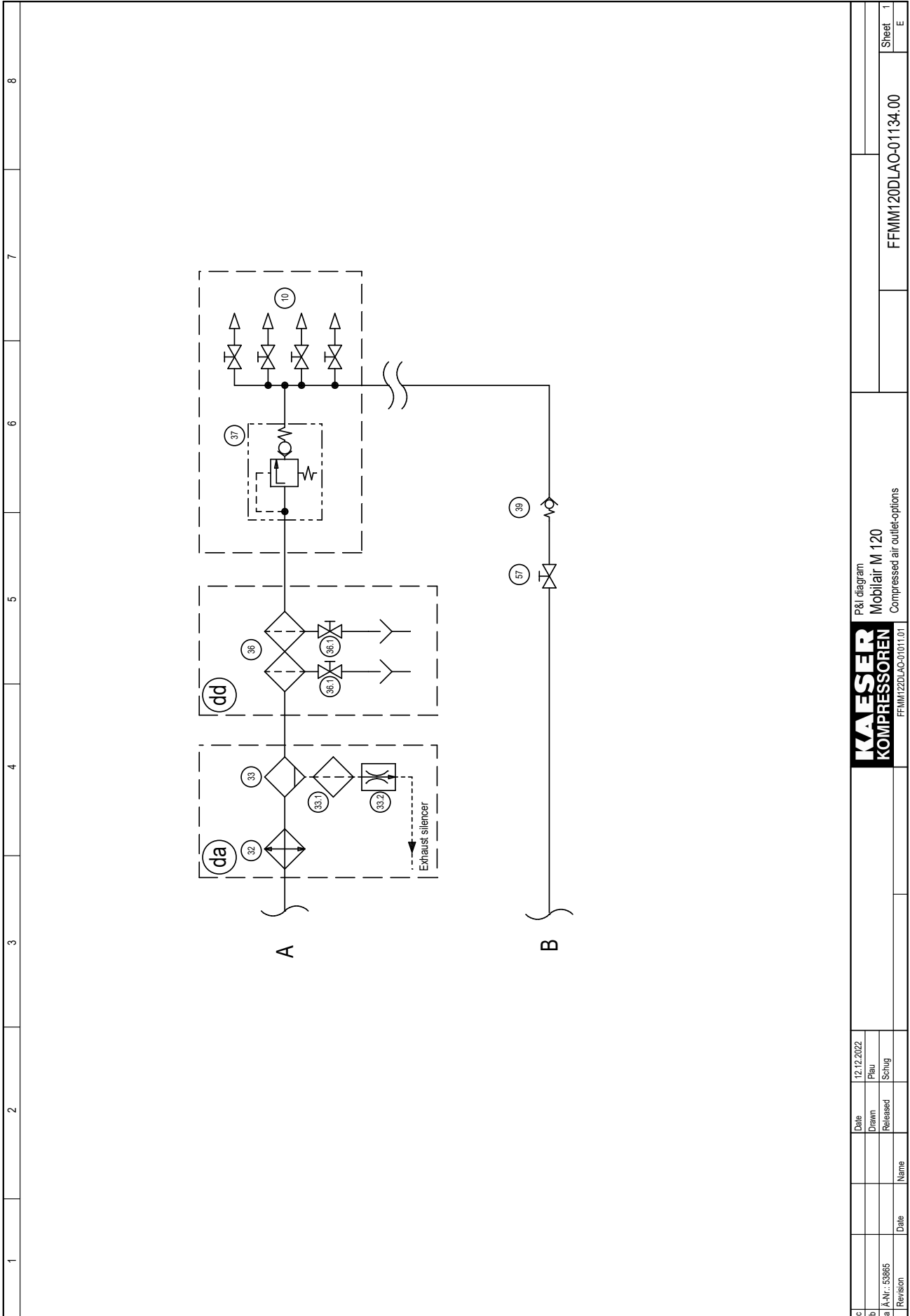
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Sheet: 1
E

1	2	3	4	5	6	7	8
1	Compressor - Air filter						
1.2	Dust collector						
2	Maintenance indicator, Compressor-Air filter						
3	Inlet valve						
4	Rotary screw airend						
5	Oil separator tank						
5.2	Screw plug						
5.8	Shut-off valve - Oil drain device						
5.11	Screw plug - Oil drain device						
5.13	Pressure transducer - Internal pressure						
6	Oil reserve						
7	Oil separator cartridge						
11	Oil filler with screw plug						
12.3	Temperature sensor - Airend discharge temperature						
13	Safety valve						
14	Pressure gauge Compressed air - Control panel						
15	Diesel engine						
15.2	Shut-off valve - Oil drain device						
15.3	Screw plug - Oil drain device						
16	Oil return line						
17	Dirt trap						
17.1	Nozzle						
19	Thermostatic valve						
20	Oil cooler						
20.1	Shut-off valve with hose coupling - Oil drain device						
20.5	Screw plug- Oil drain device						
20.6	Shut-off valve- Oil drain device						
21	Oil filter						
23	Electric proportional controller						
24	Motor - Air filter						
24.1	Dust collector						
25	Maintenance indicator, Motor - Air filter						
27	Venting valve						
28	Fan						
29	Exhaust silencer						
30	Coupling						
46	Nozzle (Secondary side Proportional controller)						
52	Control valve						
56	Coolant cooler						
56.1	Coolant expansion tank						
56.7	Screw plug - Water drain device						
56.9	Shut-off valve with hose coupling - Water drain device						
56.10	Coolant filler with screw plug and overpressure valve						
56.11	Coolant level indicator (switching)						
56.12	Shut-off valve - Water drain device						
63	Regulating valve (Recirculation valve)						
83.3	Engine air shut-off valve (electrically operated)						
84	Spark arrester						
94	Charge air cooler						
94.1	Screw plug						
	Option						
	bb						
	la						
	lb						
	Coolant pre-heating						
	Spark arrester						
	Spark arrester + Engine air shut-off valve (automatic, closes via EMERGENCY STOP)						

Revision		Date	Name	Date		12.12.2022	P&I diagram legend	
c				Drawn	Plau		Mobilair	
b				Released	Schug		M 120	
a							FFMM120ST-01/14.07	
				FFMM120ST-01/133.00				Sheet 2
								E

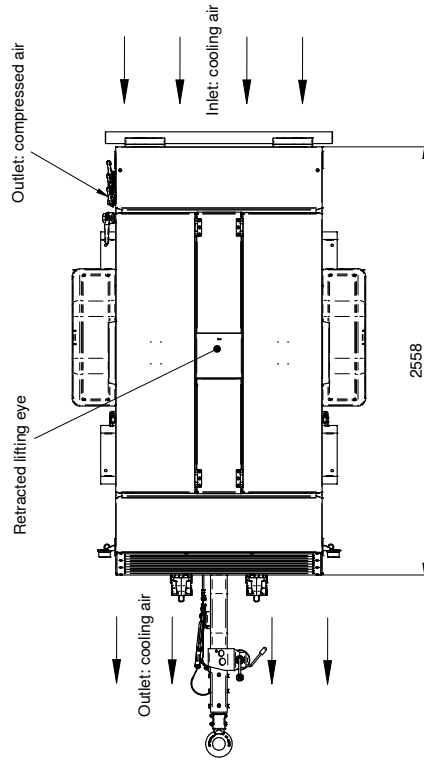
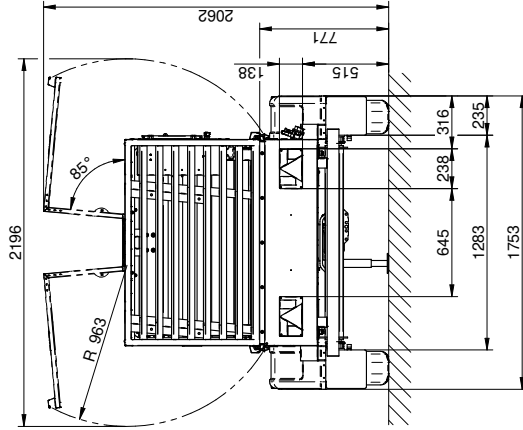
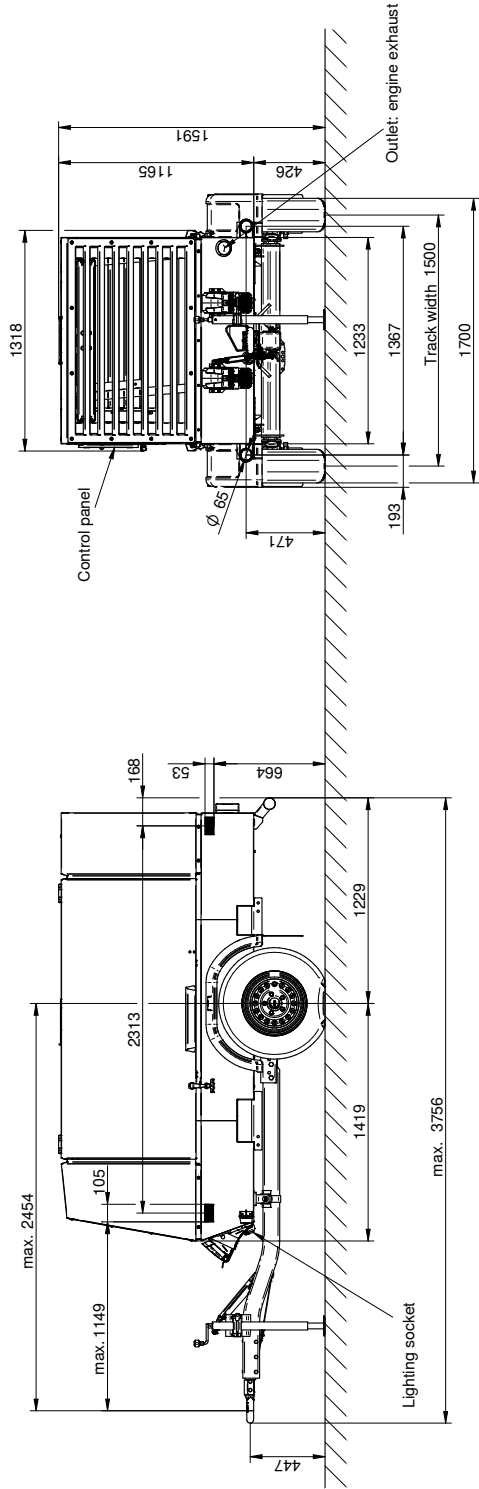


13.3 Dimensional drawings

13.3.1 Option rc/ro/rr

Dimensional drawing – chassis

- Option rc - Chassis, GB type
- Option ro - Chassis without height adjustment
- Option rr - Chassis without service brake



Change number	Projection	Scale	Date	Name
10656820 E 00	1st angle	A2	20.07.2022	PLAU2
10656820 D 00	1st angle	A2	14.12.2022	SCHUG1
10656820 D 00	1st angle	A2	11.12.2022	SCHUG1

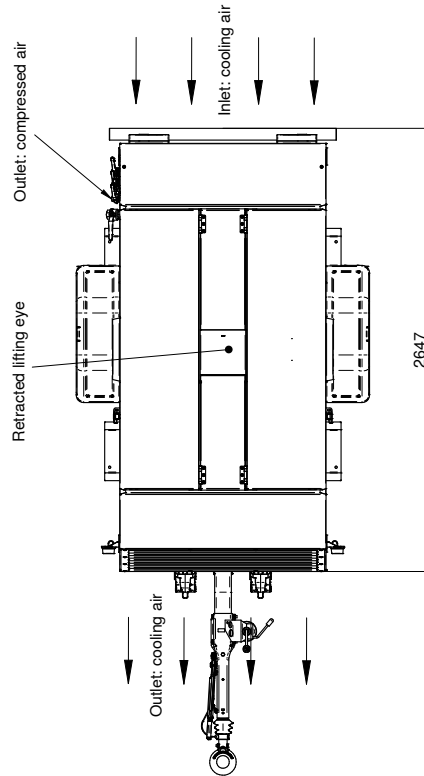
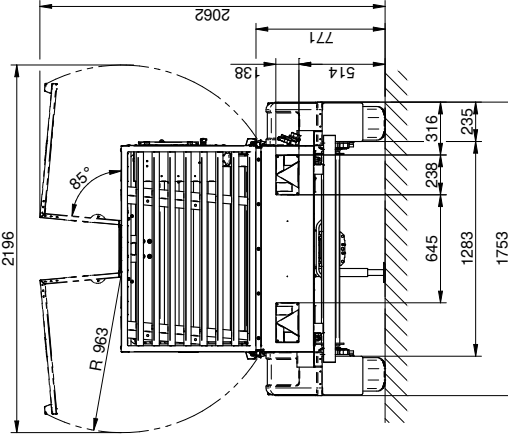
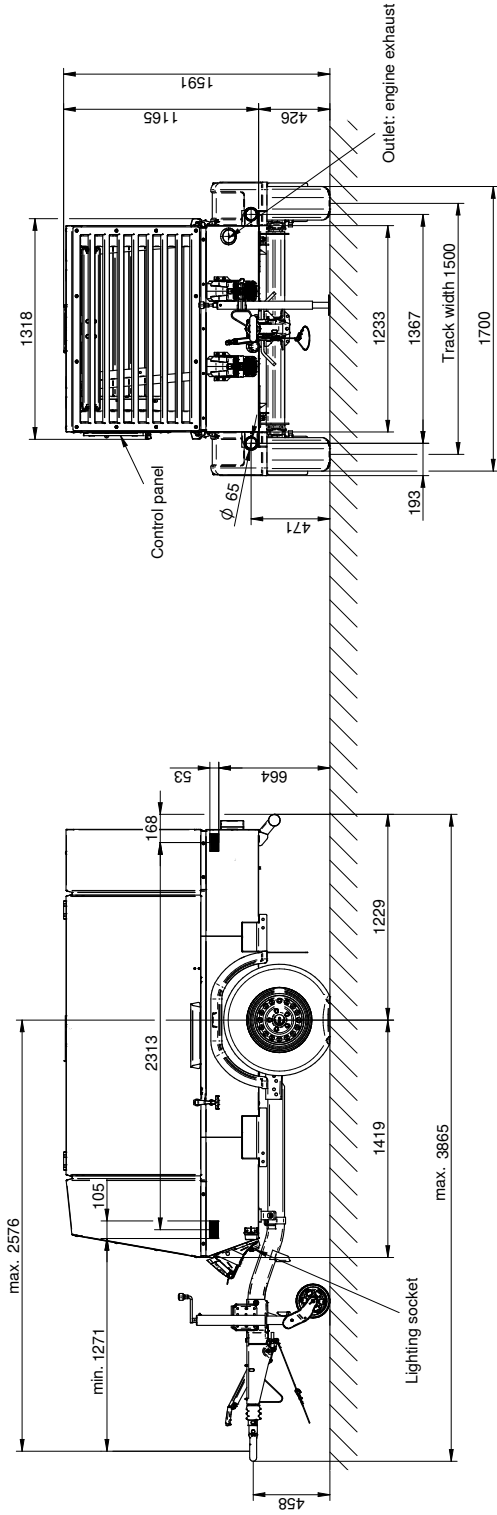
Document ZAM	Document ZD	Designation
10656820 E 00	10656820 D 00	M120.1 1800 rc ro rr
10656820 E 00	10656820 D 00	Dimension and connection dim.

no	Without height adjustment
rr	Without service brake
rc	IGZ chassis

Area covered by the portable compressor (without chassis): 3,58 m²

13.3.2 Option rc/ro/rs Drawing chassis

- Option rc - chassis GB version
- Option ro - chassis with fixed height tow bar
- Option rs - chassis with overrun brake



Change number	Projection	Scale	Date	Name
10659823 E 00	1:1	A2	20.07.2022	PLAU2
10659823 D 00	1:1	A2	15.12.2022	PLAU2
Released			15.12.2022	SCHU01

no	Without height adjustment
rs	With overrun brake
rc	IGZ chassis

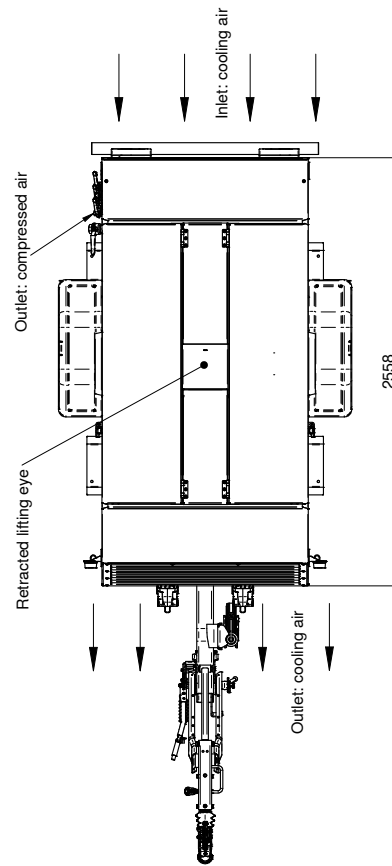
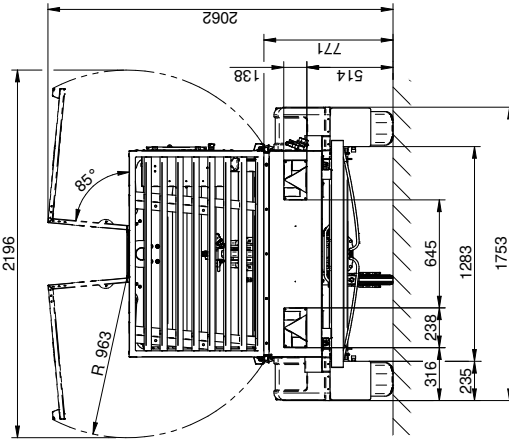
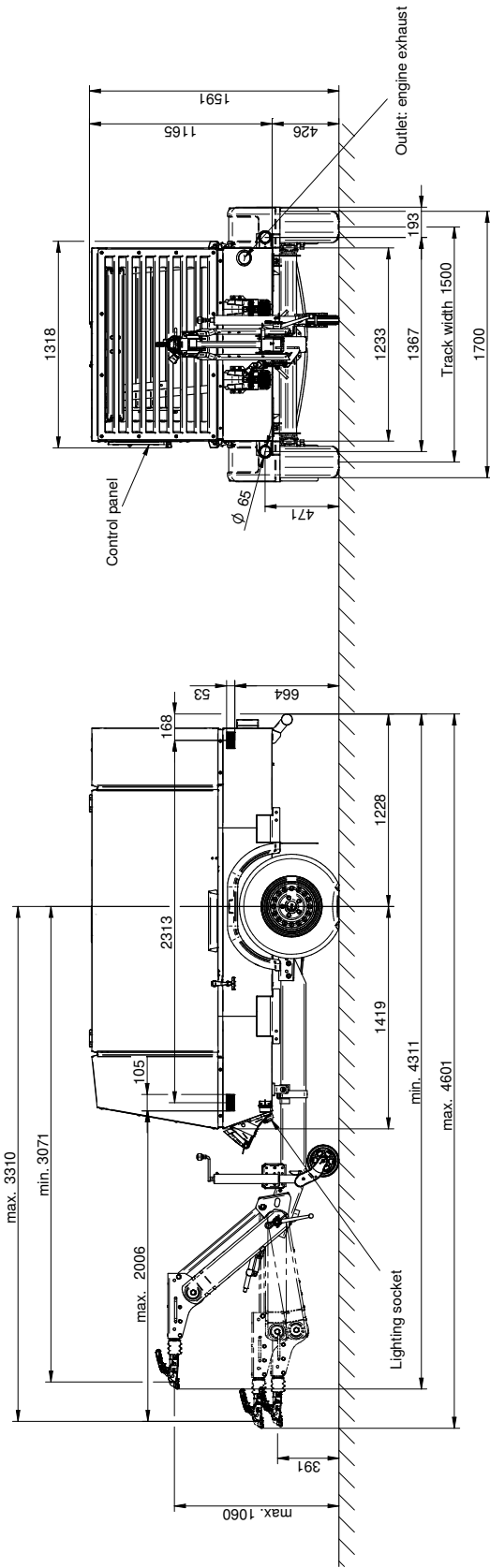
Document TZN	Document TZO	Designation
10659823 E 00	10659823 D 00	M120.1 1800 rc ro rs

Dimension and connection dim.
Released

Area covered by the portable compressor (without chassis): 3,58 m²

13.3.3 Option rb/rk/rm/rs Drawing chassis

- Option rb - chassis EU version
- Option rk - Chassis with low axle load
- Option rm - chassis with height-adjustable tow bar
- Option rs - chassis with overrun brake



Change number	Projection	Scale	Date	Name
10669821 E 00	1st angle	A2	20.07.2022	PLAU2
10669821 E 00			03.01.2023	PLAU2
10669821 D 00			03.01.2023	SCHU01

Document ZAM	Original	Released	Language	Sheet
10669821 E 00	A2		E	1 / 1

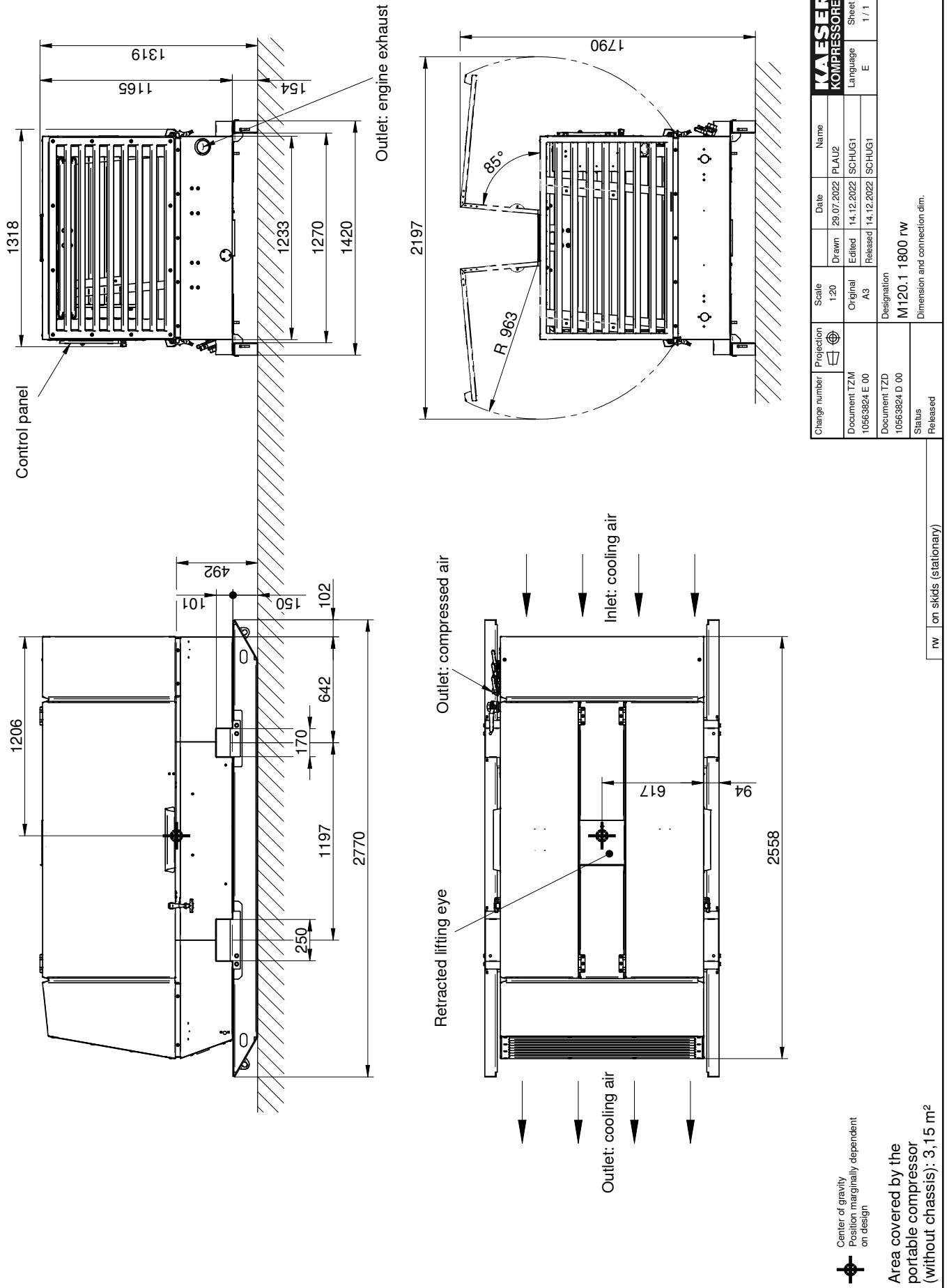
Document TZO	Designation	Status
10669821 D 00	M120.1 1800 rb rrr rs	Released

mm	With height adjustment
rs	With overrun brake
rb	EU chassis

Area covered by the portable compressor (without chassis): 3,58 m²

13.3.4 Option rw Dimensional drawing, stationary version

- Option rw - Skid frame on runners



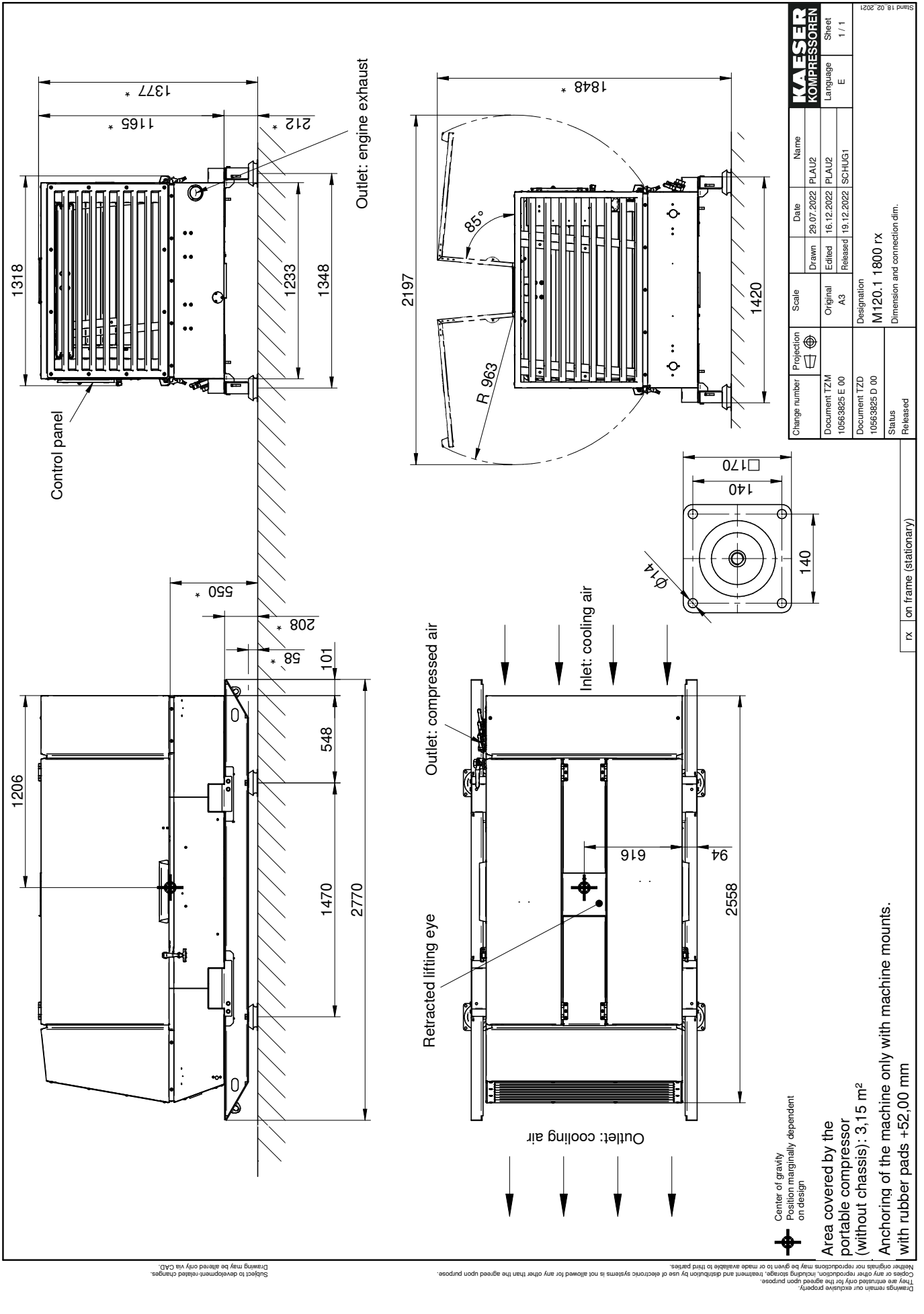
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120			1:20	29.07.2022	PLAU2
Document TZM			Original		
10563824 E 00			A3		
Document T2D					
10563824 D 00					
Status					
Released					

KAESER KOMPRESSOREN	
Language	E
Sheet	1 / 1

Designation	
M120.1 1800 rw	Dimension and connection dim.

13.3.5 Option rx Dimensional drawing, stationary version

- Option rx - Frame



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

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13.4 Wiring diagrams

13.4.1 Electrical Diagram

1	2	3	4	5	6	7	8
<p>Electrical diagrams</p> <p>MOBILAIR M120</p> <p>CUMMINS Engine</p> <p>SIGMA CONTROL SMART</p>							
<p>Manufacturer: KAESER KOMPRESSOREN SE 96450 Coburg GERMANY</p>							
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>							
<p>c AN 58310 Date 28.08.2024 E</p>		<p>Date 28.08.24 Drawn Seibert</p>		<p>Date 28.08.24 Released Ender</p>		<p>Date 16.10.23 Released Ender</p>	
<p>a AN 58119 Date A Change</p>		<p>En/Se F/Ta</p>		<p>En/Se F/Ta</p>		<p>En/Se F/Ta</p>	
<p>KAESER KOMPRESSOREN</p>				<p>Cover page MOBILAIR M120</p>			
				<p>=</p>		<p>+</p>	
				<p>DF A120-03059.01</p>		<p>page 1 1 Str.</p>	

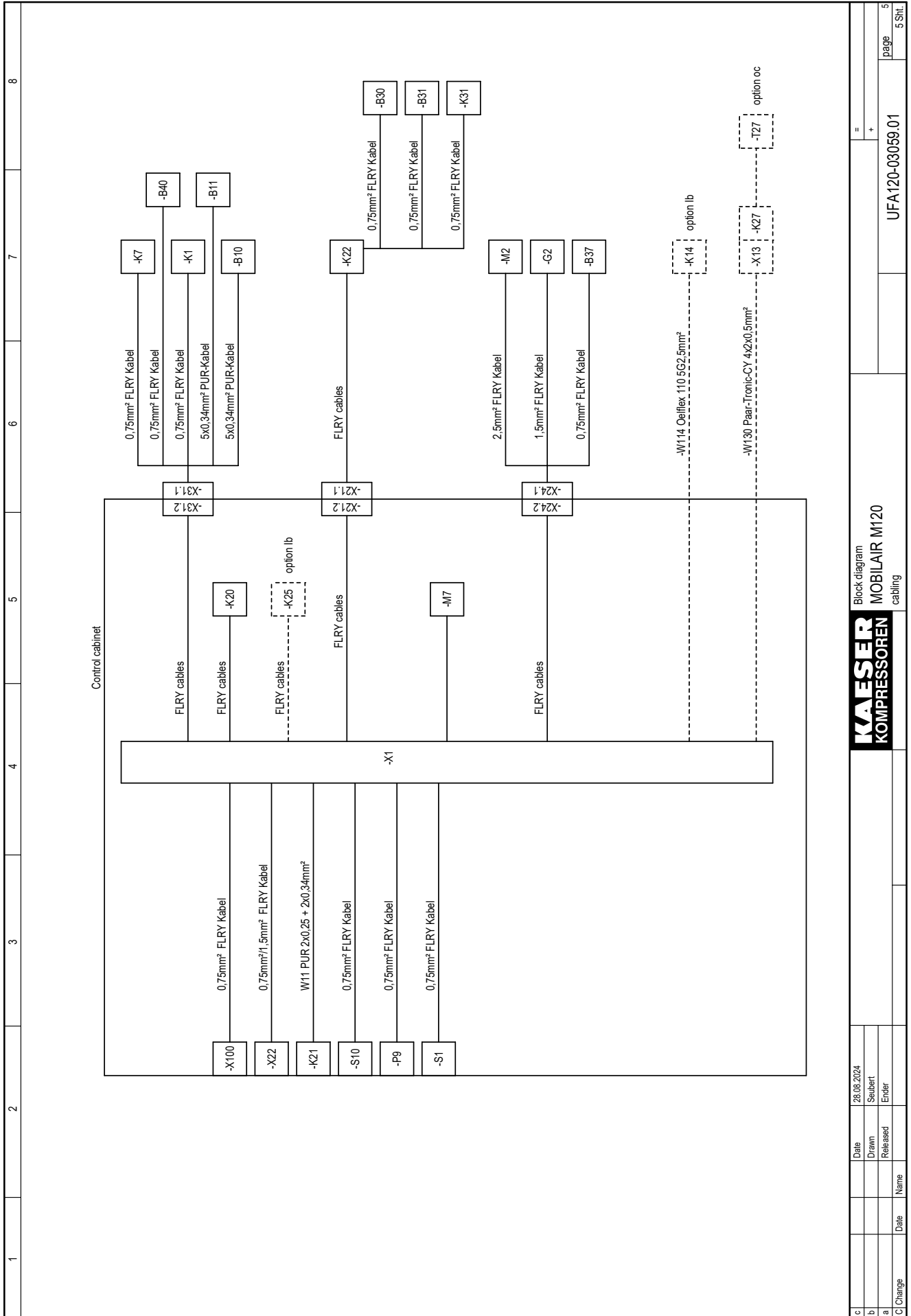
1	2	3	4	5	6	7	8												
<p>general instructions</p> <p>Control voltage 12VDC</p> <p>All non-designated conductors FLY 0,75mm² white</p> <p>All control lines marked a) are 1,5mm² FLY white</p> <p>All control lines marked b) are 2,5mm² FLY white</p> <p>All control lines marked c) are 0,75mm² FLY brown</p>																			
<p>potentials:</p> <p>15 switched plus + (unit ON)</p> <p>19 Preheat with glowplug</p> <p>30 + terminal (Battery)</p> <p>31 - terminal (Battery), earth</p> <p>50 Starter-Control</p>																			
<p>wiring colors:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">BU = blue</td> <td style="width: 50%;">OG = orange</td> </tr> <tr> <td>BN = brown</td> <td>PK = pink</td> </tr> <tr> <td>YE = yellow</td> <td>RD = red</td> </tr> <tr> <td>GN = green</td> <td>BK = black</td> </tr> <tr> <td>GNYE = green-yellow</td> <td>VT = violet</td> </tr> <tr> <td>GY = grey</td> <td>WH = white</td> </tr> </table>								BU = blue	OG = orange	BN = brown	PK = pink	YE = yellow	RD = red	GN = green	BK = black	GNYE = green-yellow	VT = violet	GY = grey	WH = white
BU = blue	OG = orange																		
BN = brown	PK = pink																		
YE = yellow	RD = red																		
GN = green	BK = black																		
GNYE = green-yellow	VT = violet																		
GY = grey	WH = white																		

<p>option ob = Automatic-start-stop</p> <p>option oc = GPS Modem</p> <p>option lb = Spark arrestor + Engine air shut-off valve</p> <p>option bb = Engine coolant pre-heating</p>																			
c	Date	28.08.2024																	
b	Drawn	Seubert																	
a	Released	Ender																	
C	Change	Date	Name																
			KAESER KOMPRESSOREN			Block diagram MOBILAIR M120													
						=	+												
						UFA120-03059.01													
						page	1												
						5 Str.													

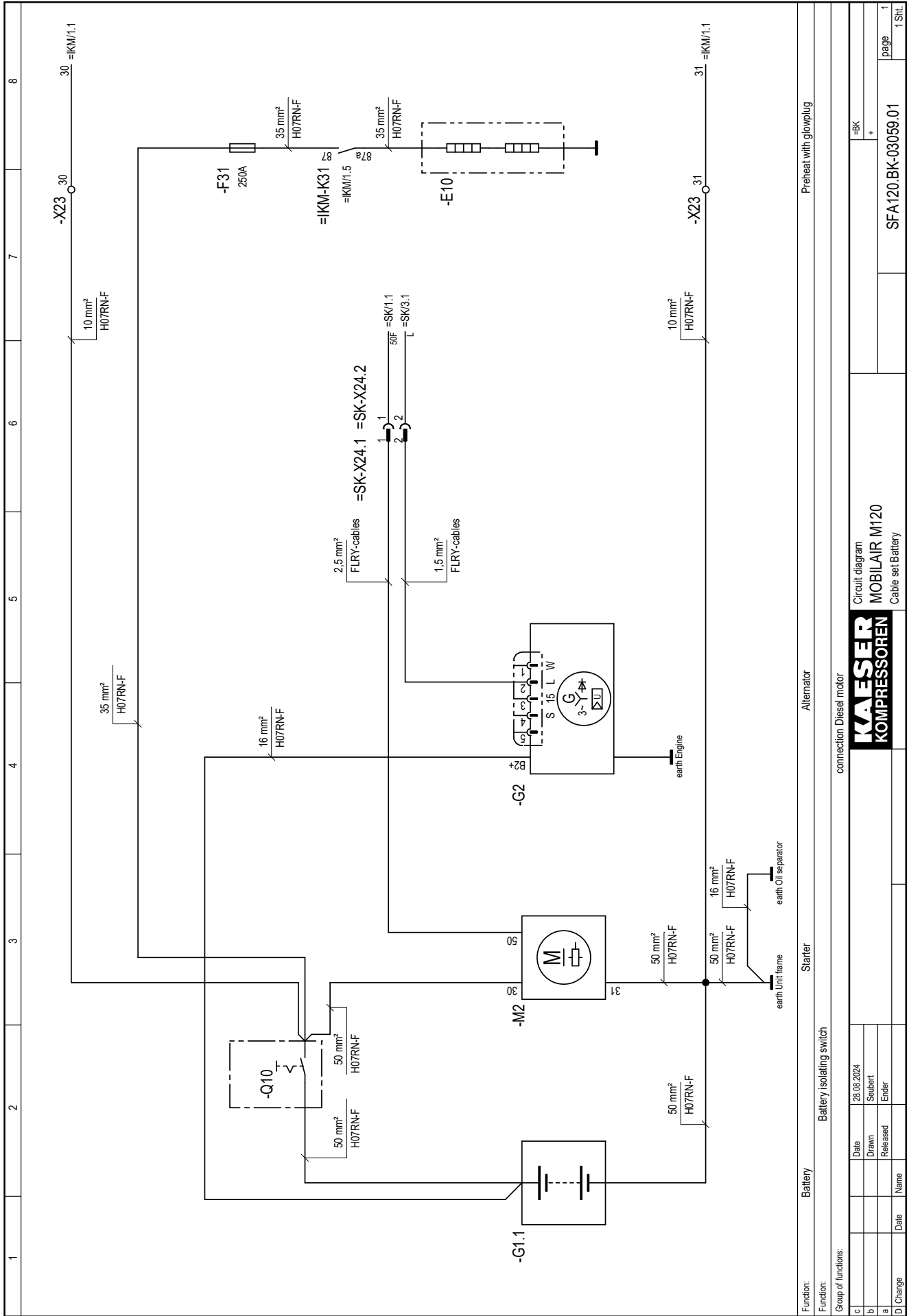
1	2	3	4	5	6	7	8		
<p>components Control cabinet</p> <ul style="list-style-type: none"> -K20 Control board SIGMA CONTROL SMART -F13,-F15,-F20,-F25,-F27,-F30,-F39,-F100 Fuse -K30 Relay Starter -K39 Relay switching on -K50 Relay KI.50 -M7 Control cabinet ventilator -R3,-R10,-R11,-R12 Charging control lamp -T20 Voltage transformer DC/DC -X1 Terminal strip -X21,-X24,-X31 Adaptor connector -X22 Diagnostic socket CUMMINS -X23:30,-X23:31 Lead-through terminal -X100 Diagnostic socket KAESER 		<p>components Control panel</p> <ul style="list-style-type: none"> -K21 Operating unit SIGMA CONTROL SMART -P9 Display fuel level -S1 EMERGENCY STOP -S10 Control voltage ON/OFF switch 		<p>components unit</p> <ul style="list-style-type: none"> -B10 Pressure transducer system pressure -B11 Pressure transducer Control pressure -B30 sensor coolant level -B31 sensor Filter maintenance indication -B37 sensor fuel level -B40 sensor airtend temperature -F31 Fuse -K1 Control valve Inlet valve -K7 Valve Venting -K31 glow relay -R13 Resistor 		<p>components Drive motor</p> <ul style="list-style-type: none"> -E10 Preheat with glowplug -G2 Alternator -G1.1 Battery -K22 engine control unit -M2 Starter -Q10 Battery isolating switch 		<p>model-dependent components:</p> <ul style="list-style-type: none"> -F59,-F113 Fuse -X13 GPS Modem interface -K14 Engine air shut-off valve Pull coil/Holding coil -K25 Control board SIGMA CONTROL SMART -K27 GPS Modem -K59 Relay Engine air shut-off valve Pull coil -K60 Relay Engine air shut-off valve Holding coil -T27 GPS antenna -E20 Heating Engine coolant pre-heating -X2 Plug -X20 plug connection 	
		KAESER KOMPRESSOREN		Block diagram MOBILAIR M120					
c AN 58310		Date 28.08.2024		=					
b AN 56119		Date 28.08.24		+					
c Change		Date 16.10.23		UFA120-03059.01		page 2			
		Date 16.10.23				5 Str.			

Equipment parts list		M120.1		Equipment parts list		MOBILAIR M120		UFA120-03059.01		page 3		5 Sht.		
model		M120.1												
machine power supply		12 V DC												
Control cabinet														
Control cabinet	Wagner	228390.0												
Control cabinet	Wagner	226692.0												
Control cabinet	Wagner	228414.0												
Control board	-K20 ifm	7.9200.11000 CR9052												
Connector housing	-K20N2 Boersig	7.9200.01300 4-pole												
	-K20N1 Boersig	7.9200.01310 6-pole												
	-K20 A, -K20B Boersig	7.9200.01320 8-pole												
	-K20E, -K20F Boersig	7.9200.01330 8-pole												
	Operating unit	-K22 ifm	7.9200.11010 CR9047											
EMERGENCY STOP pushbutton	-S1	7.3217.0 QRUV												
Switching element		7.3218.0 MTHOO												
	Schlegel													
Rotary control switch	-S10	7.9027.10050 BK 0-1 16 mm												
Auxiliary switch		7.9027.10030 1S/1OE												
	Schlegel													
fuel level	-P9 VDO	8.6476.10020 12 VDC												
Relay	-K30, -K39, -K50 FTM	8.6544.00050 12V 1W 30/40 A												
Relay socket		7.3411.00020 -												
	FTM													
Control cabinet ventilator	-M7 Rübsamen	7.9660.0 -												
Lead-through terminal	-X23:30, -X23:31 Phoenix	7.9073.0 HDFK 10 / 10 mm ²												
Terminal strip	-X1	7.3149.02080 WKFN 2,5D2/3/35												
		7.3149.02680 WKFN 2,5DI/E2												
		7.3149.01810 WKFN 4												
	Wieland	7.3149.02170 WKF 16/35 PV/WKFN												
		7.3985.0 E/UK												
	Fuse	-F27 FTM	7.6411.00180 UNI VAL 2 A											
			7.6411.00040 UNI VAL 5 A											
Fuse	-F20, -F100 FTM	7.6411.00100 UNI VAL 7,5 A												
		7.6411.00050 UNI VAL 10 A												
Fuse	-F15 FTM	7.6411.00060 UNI VAL 15 A												
		7.6411.00170 UNI VAL 30 A												
Fuse	-F39 FTM	7.6411.00060 UNI VAL 15 A												
		7.6411.00170 UNI VAL 30 A												
Diagnostic socket KAESER	-X100 Boersig	7.6589.12000 14-pole												
Diagnostic socket Motor	-X22 Schlegel	7.8773.0 9-pole												
Adaptor connector	-X21, -X24, -X31 Boersig	7.6589.10520 12-pole												
Resistor	-R10, -R12 Bürklin	7.5392.00030 120Ohm 0,5W 5 %												
Resistor	-R3 Bürklin	7.5392.00060 100Ohm 11W 10 %												
		7.9235.0 2,5 A 6-16V												
Voltage transformer DC/DC	-T20 TDK-Lambda													

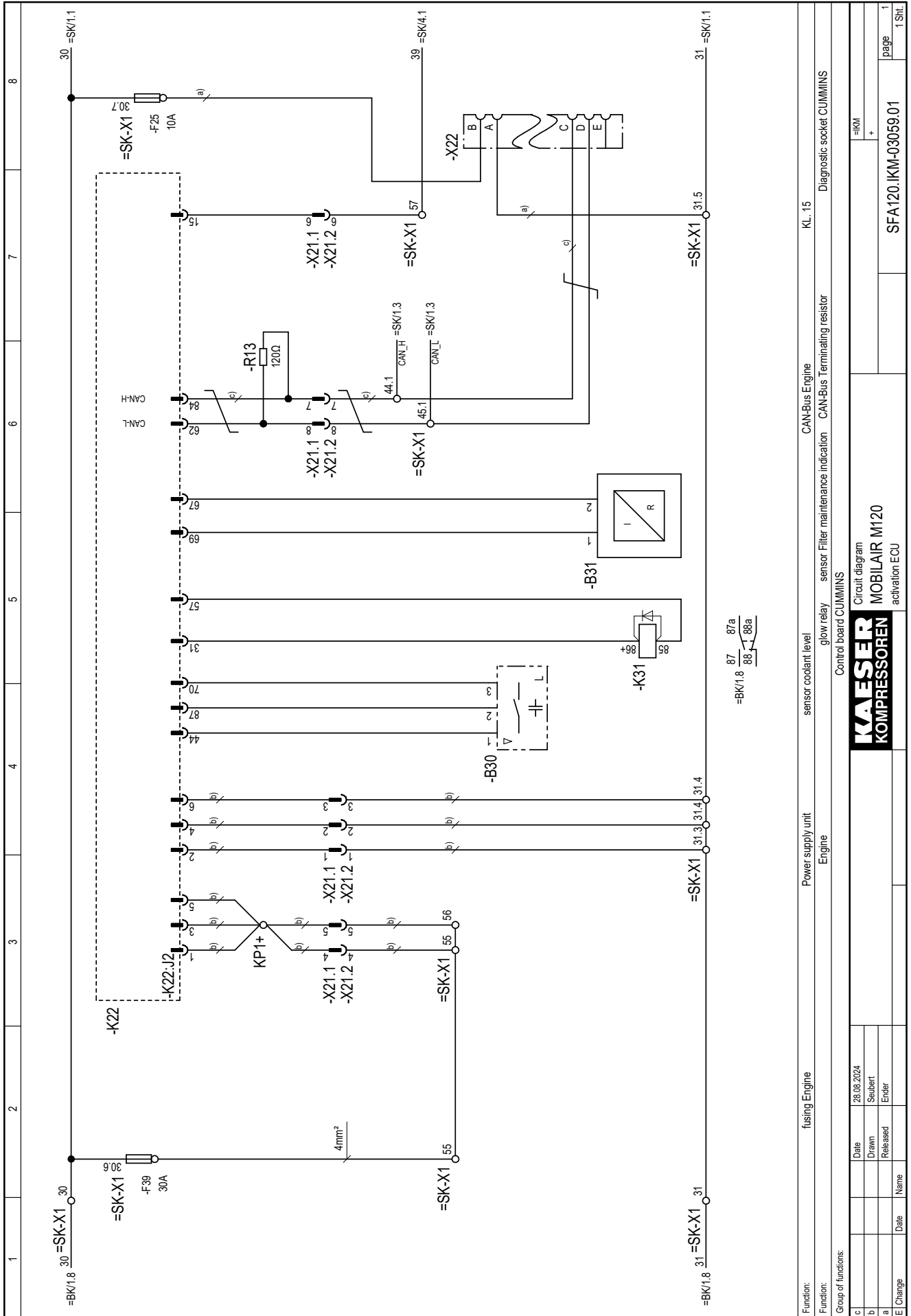
Equipment parts list		M120.1		=		+		UFA120-03059.01		page 4		5 Sht.																																																									
model		Equipment parts list		M120.1																																																																	
machine power supply		12 V DC																																																																			
unit components																																																																					
Pressure transducer	-B10	7.9204.00010																																																																			
	Hubacontrol	0-16 bar 0-10 V																																																																			
Pressure transducer	-B11	7.9203.00010																																																																			
	Hubacontrol	-1-5 bar 0-10 V																																																																			
coolant level	-B30	7.9250.0																																																																			
	Bedia	1 S, T = 7s																																																																			
Filter maintenance indication	-B31	Lieferumfang Motor																																																																			
	Bedia																																																																				
fuel level	-B37	7.9201.10130																																																																			
	Bedia	IST-60 Tanksensor - 800 mm																																																																			
VET Temperature	-B40	7.9202.40010																																																																			
	Bedia	Pt 1000, 0,5 V-9,5 V, 12V-36V																																																																			
Preheat with glowplug	-E10	Lieferumfang Motor																																																																			
	Cummins	-																																																																			
Fuse	-F31	-																																																																			
	FTM	250 A																																																																			
Inlet valve	-K1	7.5851.1																																																																			
	Bürkert	Form A Plug																																																																			
Venting valve	-K7	-																																																																			
	Kürkert	Form C Plug																																																																			
Control board Cummins	-K22	Lieferumfang Motor																																																																			
	Cummins	CM2280																																																																			
Relay	-K31	8.6544.00250																																																																			
	FTM	12V DC 1S 200 A																																																																			
Battery isolating switch	-Q10	7.5788.00040																																																																			
		600 A 1p																																																																			
model-dependent components																																																																					
Fuse	-F113	7.6411.00070																																																																			
(option lb)	FTM	UNI VAL 25 A																																																																			
Fuse	-F59	7.6411.00090																																																																			
(option lb)	FTM	UNI VAL 40 A																																																																			
Heating Motor Cooling water	-E20	7.8827.10020																																																																			
(option bb)		120V 750W																																																																			
Engine air shut-off valve	-K14	8.2281.00250																																																																			
(option lb)		-																																																																			
Control board	-K25	7.9200.11000																																																																			
(option lb)	ifm	CR9052																																																																			
Connector housing	-K25N1	7.9200.01310																																																																			
	Boersig	6-pole																																																																			
(option lb)	-K25E	7.9200.01330																																																																			
	Boersig	8-pole																																																																			
GPS Modem	-K27	7.9208.04000																																																																			
(option oc)	Proemion	model 3651																																																																			
Relay	-K59	8.6544.00030																																																																			
(option lb)	FTM	12 V 1S 70 A																																																																			
Relay	-K60	8.6544.00050																																																																			
(option lb)	FTM	12 V 1W 30/40 A																																																																			
GPS antenna	-T27	7.9208.03010																																																																			
(option oc)	Proemion	Antenne LTE																																																																			
Plug	X2, X20	7.4766.00010																																																																			
(option bb)	Defa	-																																																																			
GPS Modem interface	X13	7.9200.01040																																																																			
(option oc)	Proemion	14-pole																																																																			
<table border="1"> <tr> <td>c</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>a</td> <td>AN 56119</td> <td>F/T/a</td> <td>16.10.23</td> <td>Released</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>C</td> <td>Change</td> <td>Date</td> <td>Name</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>														c														b														a	AN 56119	F/T/a	16.10.23	Released										C	Change	Date	Name										
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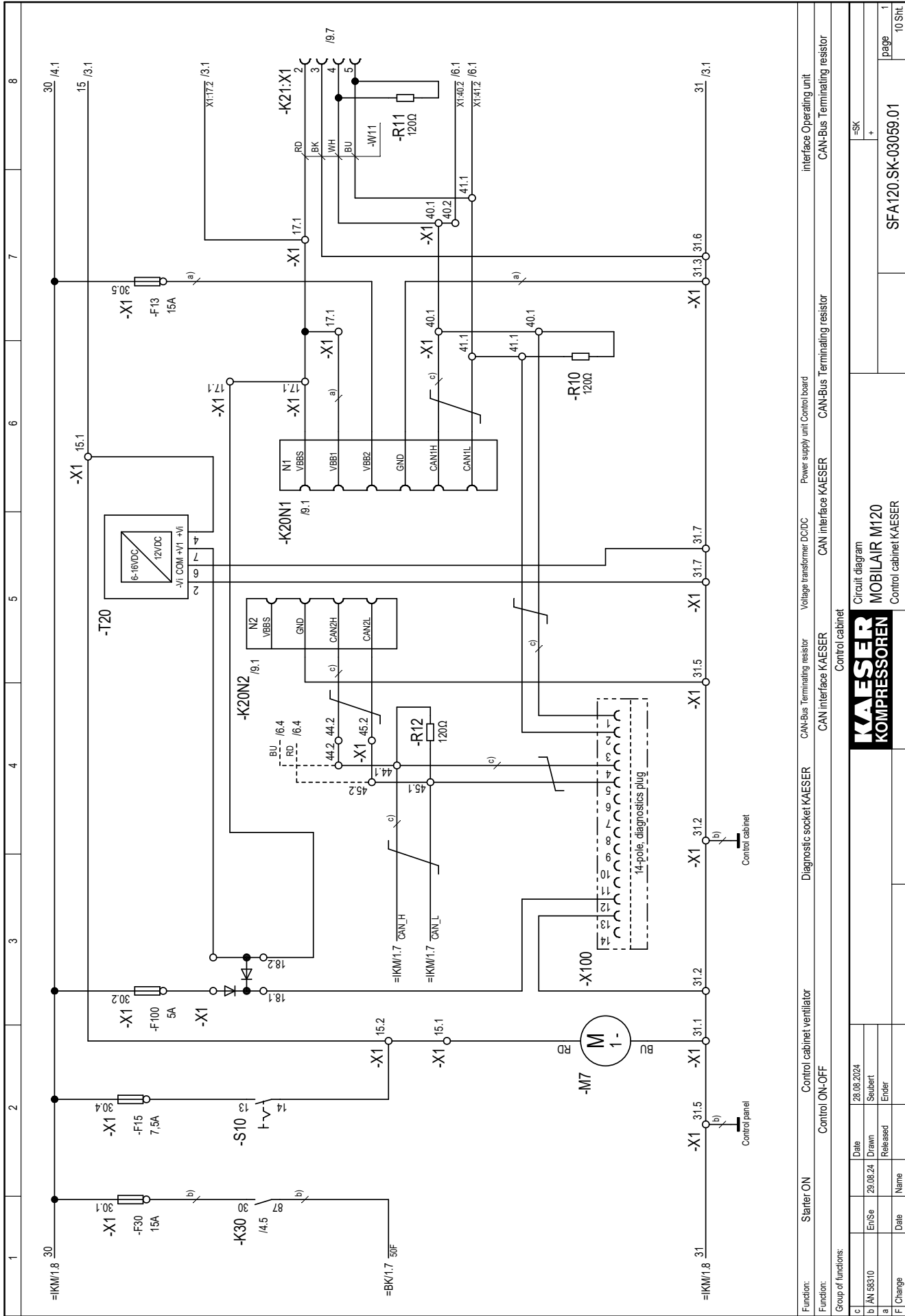
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b	Drawn	Seubert	MOBILAIR M120		+			
a	Released	Ender	cabling					
C	Change	Date	Name			UFA120-03059.01		page 5
								5 Str.



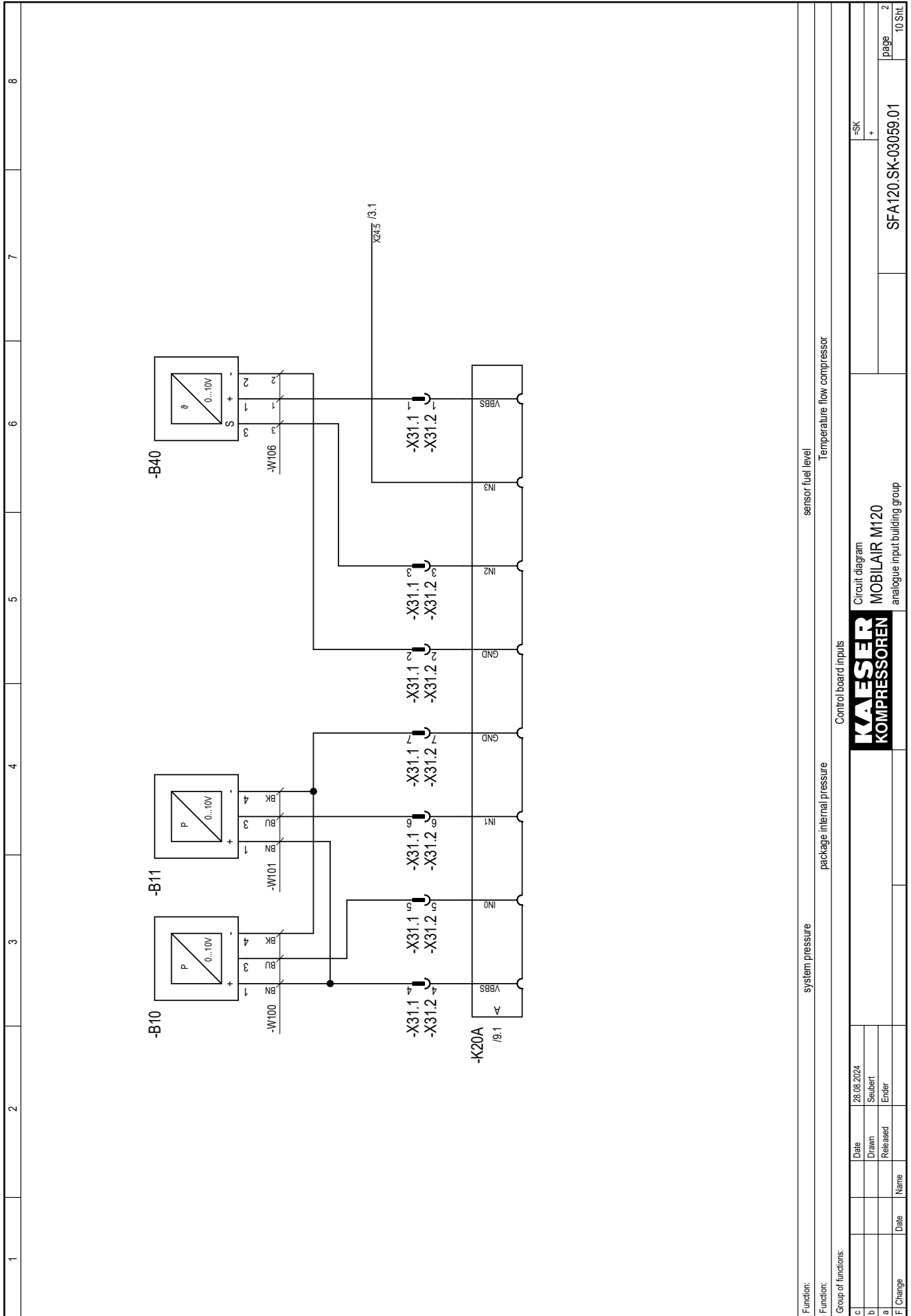
Function:		Battery		Starter		Alternator		Preheat with glowplug	
Group of functions:		Battery isolating switch		connection Diesel motor		connection Diesel motor		Preheat with glowplug	
c	Date	28.08.2024							
b	Drawn	Seubert							
a	Released	Ender							
D	Change	Date	Name						
Circuit diagram			MOBILAIR M120			-BK			
Cable set Battery			SFA120.BK-03059_01			page 1			
						1 SHL			



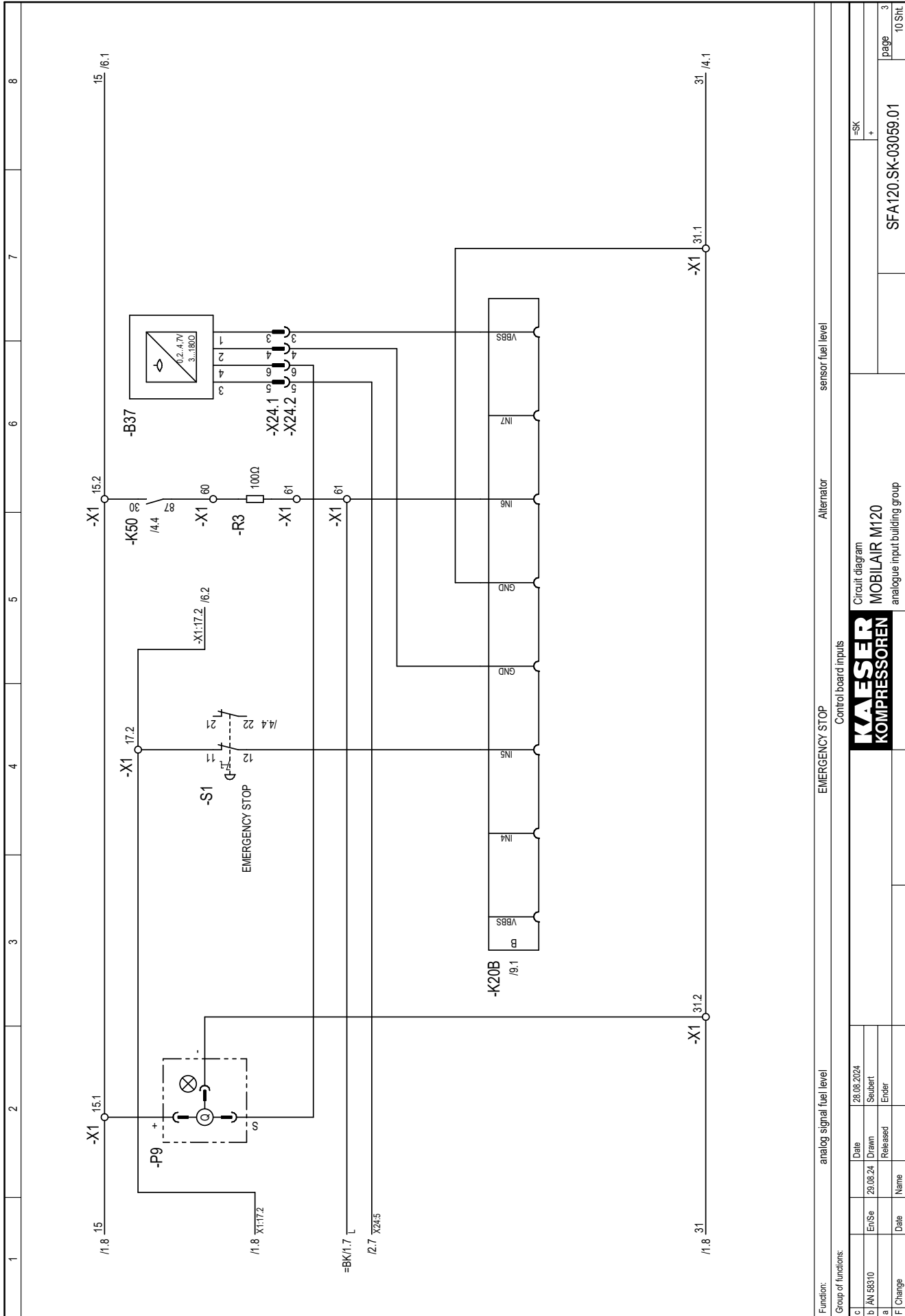
Function:		fusing Engine		Power supply unit		sensor coolant level		CAN-Bus Engine		KL. 15	
Group of functions:		Engine		Engine		glow relay		sensor Filler maintenance indication		CAN-Bus Terminating resistor	
Date		28.08.2024		Date		28.08.2024		Control board CUMMINS		Diagnostic socket CUMMINS	
Drawn		Seulbert		Date		28.08.2024		Circuit diagram		=IKM	
Released		Ender		Date		28.08.2024		MOBILAIR M120		+	
Name				Date				activation ECU		SFA120.IKM-03059.01	
Date				Date				Control board CUMMINS		page 1	
Name				Date				MOBILAIR M120		1 SH.	
Date				Date				activation ECU		1 SH.	
Name				Date				MOBILAIR M120		1 SH.	
Date				Date				activation ECU		1 SH.	



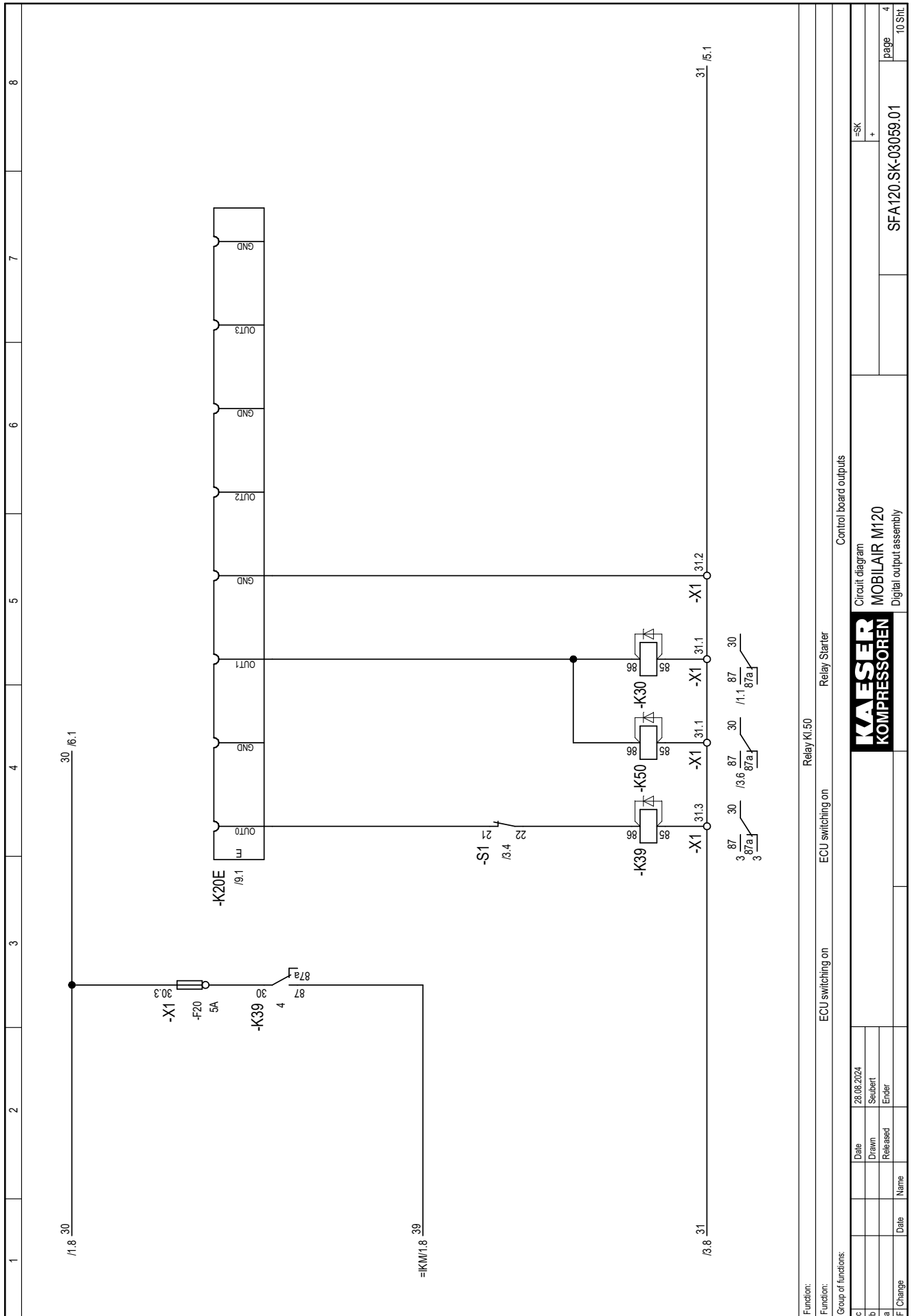
Function:		Starter ON	Control cabinet ventilator	Diagnostic socket KAESER	Voltage transformer DC/DC	Power supply unit Control board	interface Operating unit
Function:		Control ON-OFF	Control cabinet	CAN-Bus Terminating resistor	CAN interface KAESER	CAN-Bus Terminating resistor	CAN-Bus Terminating resistor
Group of functions:							
c	Date	28.08.2024					
b	Drawn	Seubert					
a	Released	Ender					
F	Date						
F	Name						
			Circuit diagram				
			KAESER KOMPRESSOREN				
			MOBILAIR M120				
			Control cabinet KAESER				
			SFA120.SK-03059_01				
						page 1	
						10 SHL	

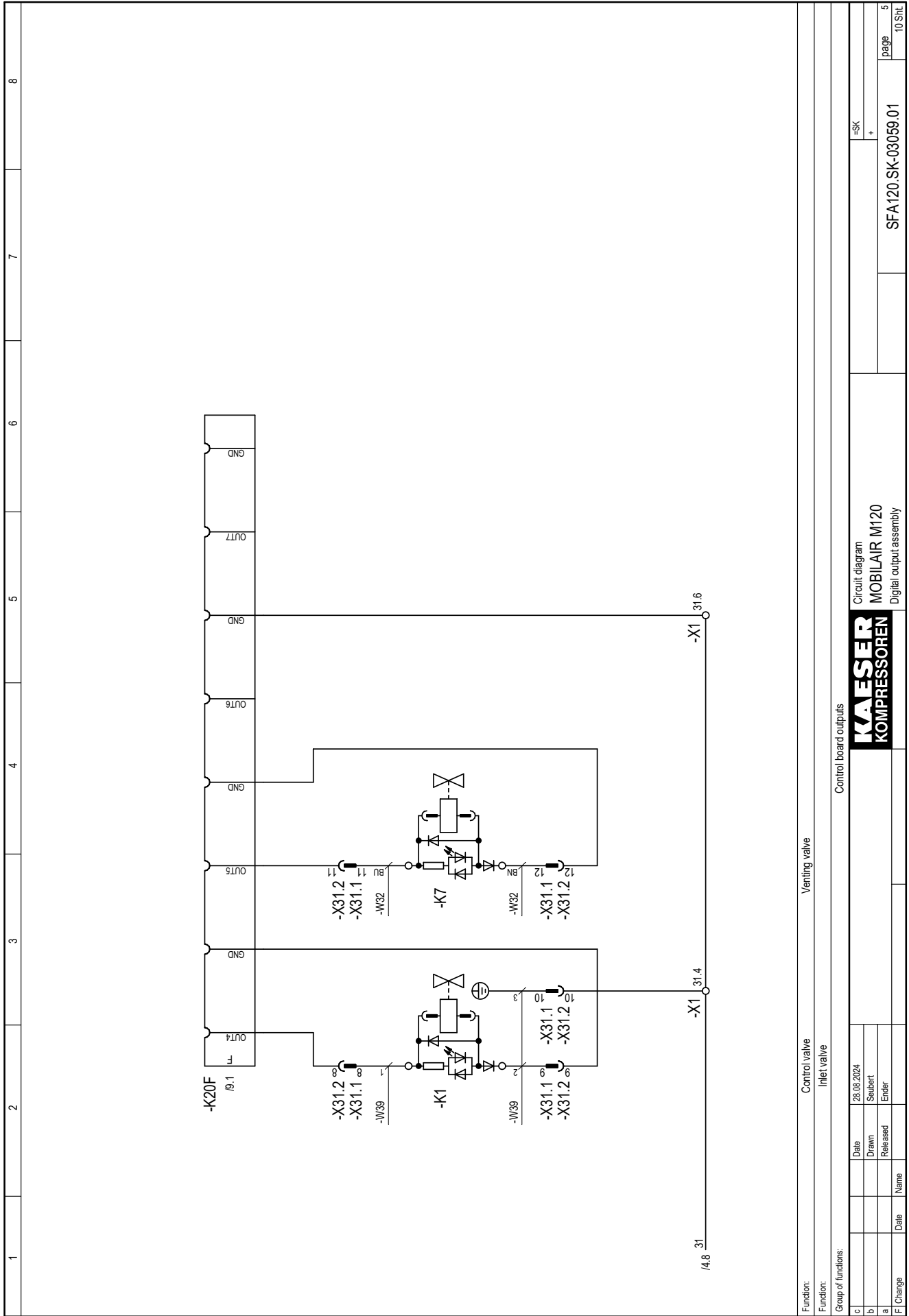


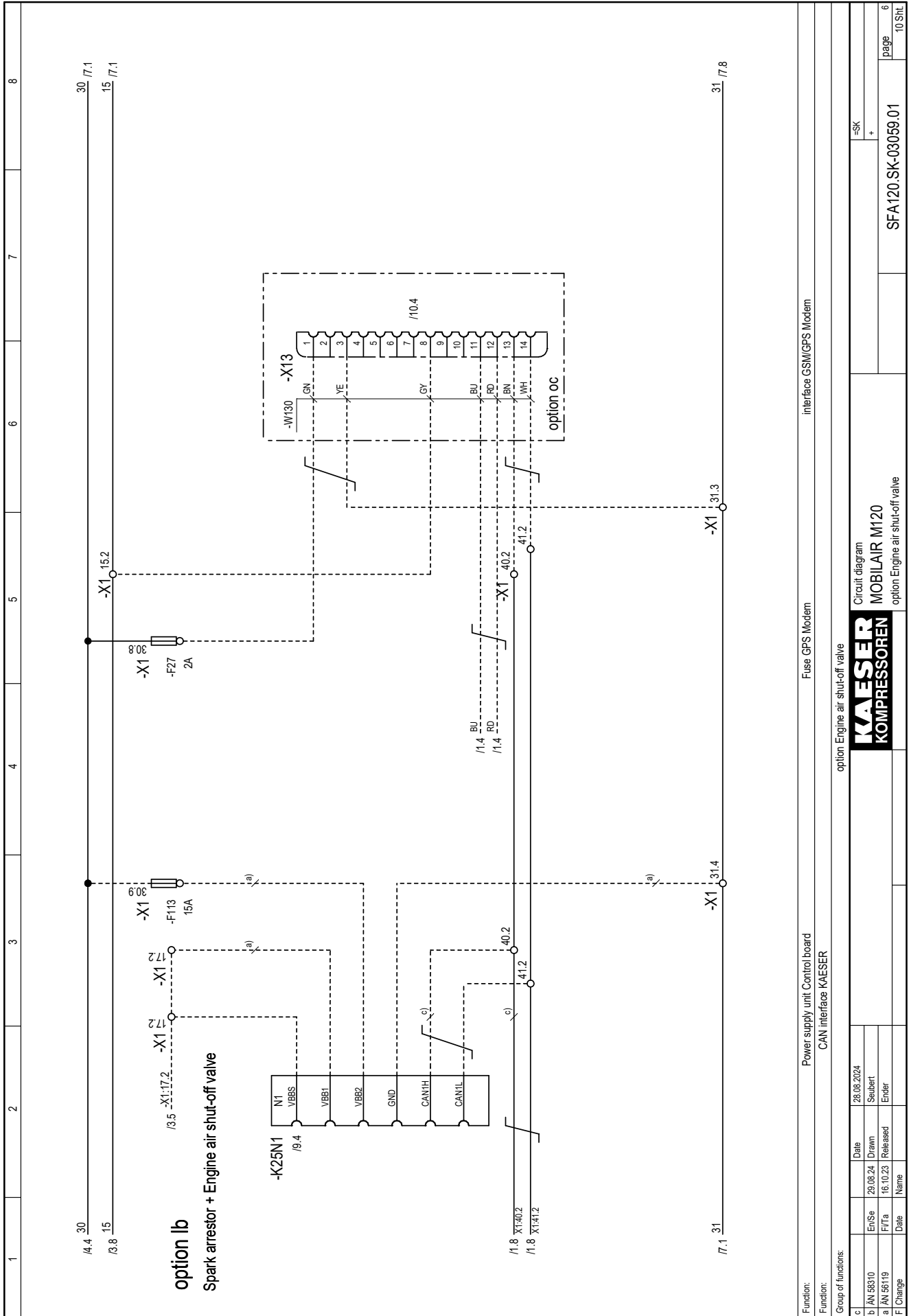
Function:		sensor fuel level	
Function:		Temperature flow compressor	
Group of functions:		Control board inputs	
package internal pressure		analogue input building group	
system pressure		MOBILAIR M120	
Control board inputs		-SK	
Circuit diagram		+	
MOBILAIR M120		SFA120.SK-03059_01	
analogue input building group		page 2	
-		10 SHL	

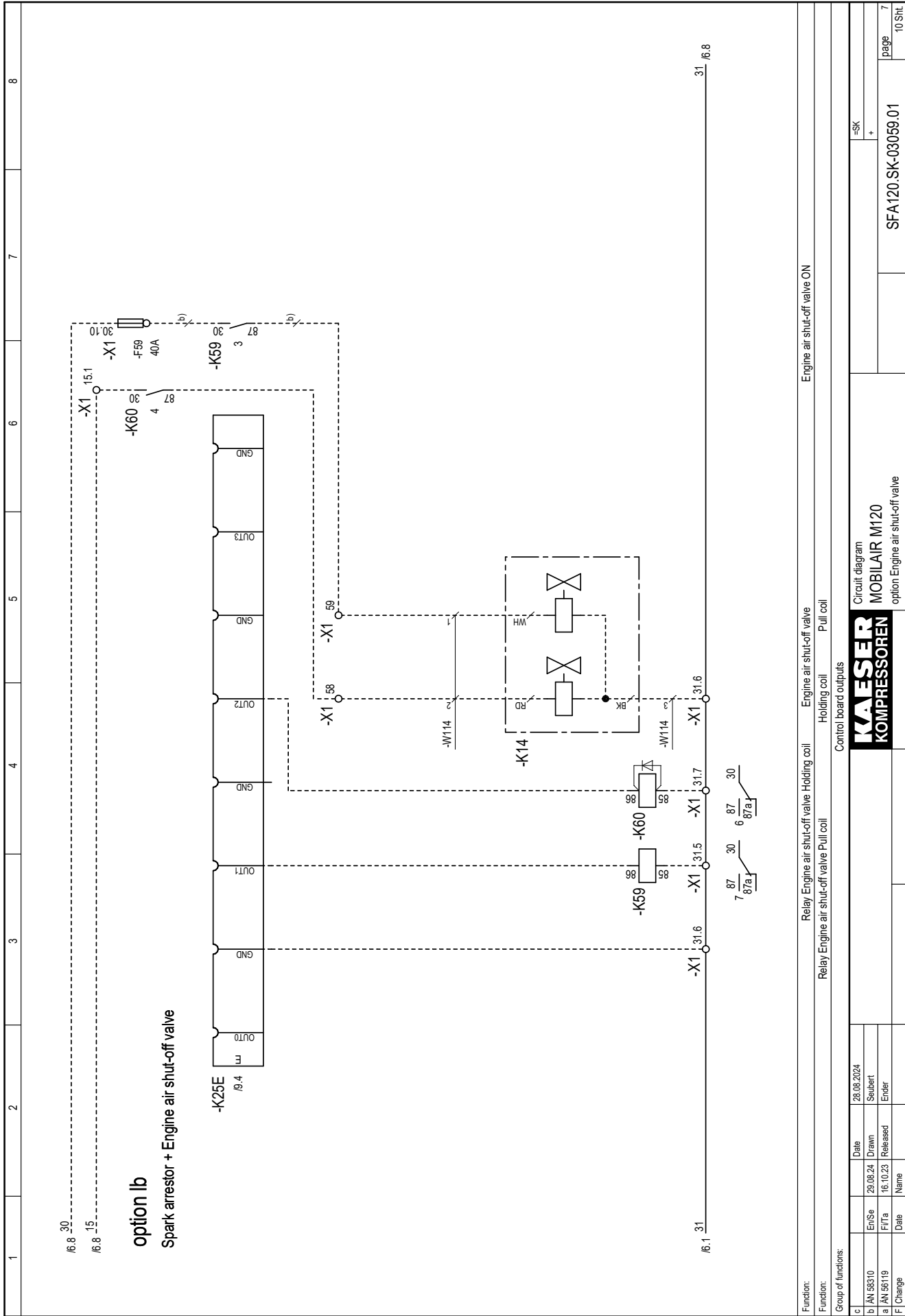


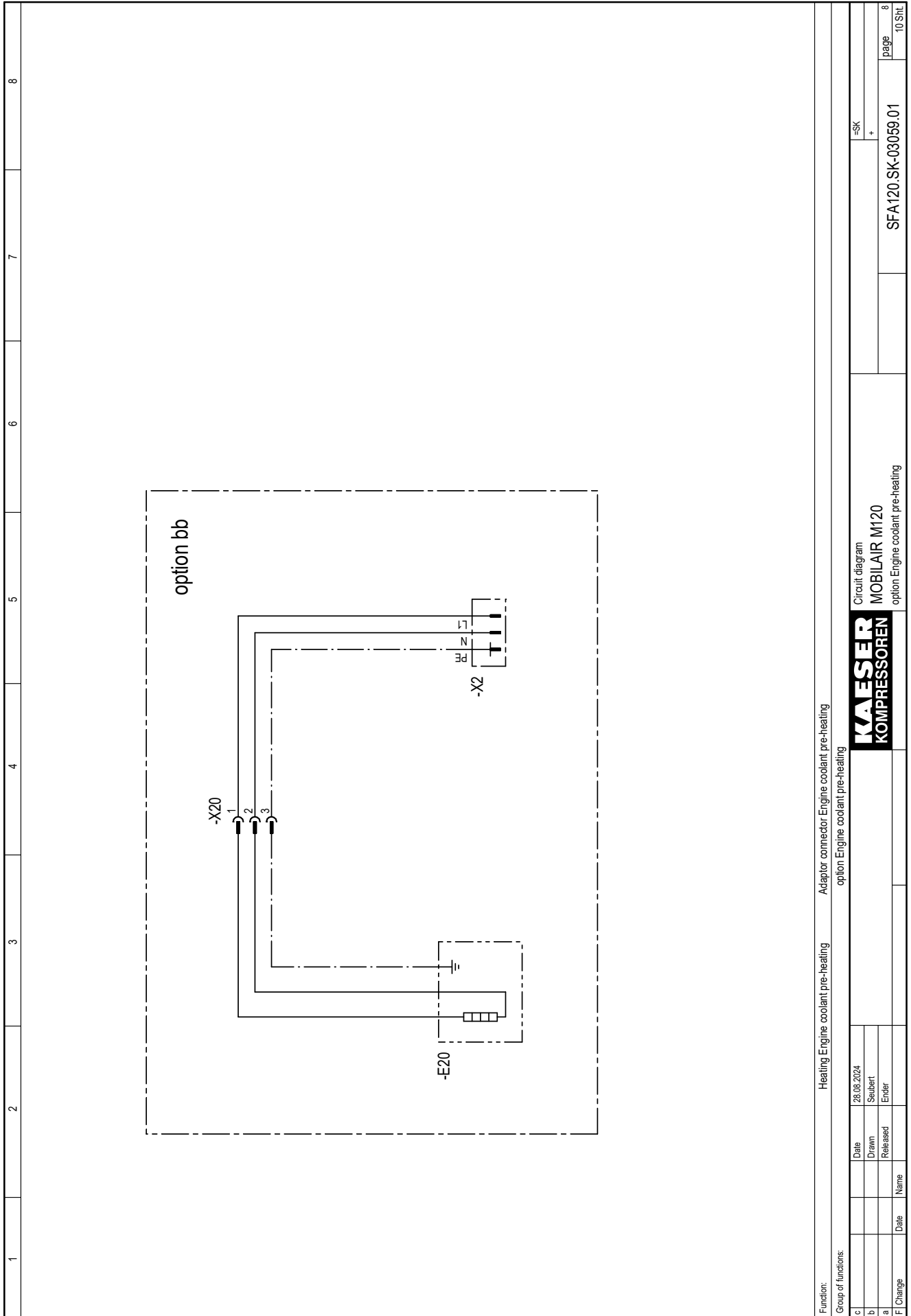
Function:		analogue signal fuel level		EMERGENCY STOP		Alternator		sensor fuel level	
Group of functions:		Control board inputs							
c	Date	28.08.2024	Drawn	Seubert					-SK
b	En/Se	28.08.24	Released	Ender					+
a	Date		Released						
F	Name								
								SFA120.SK-03059.01	
								page 3	
								10 SHL	



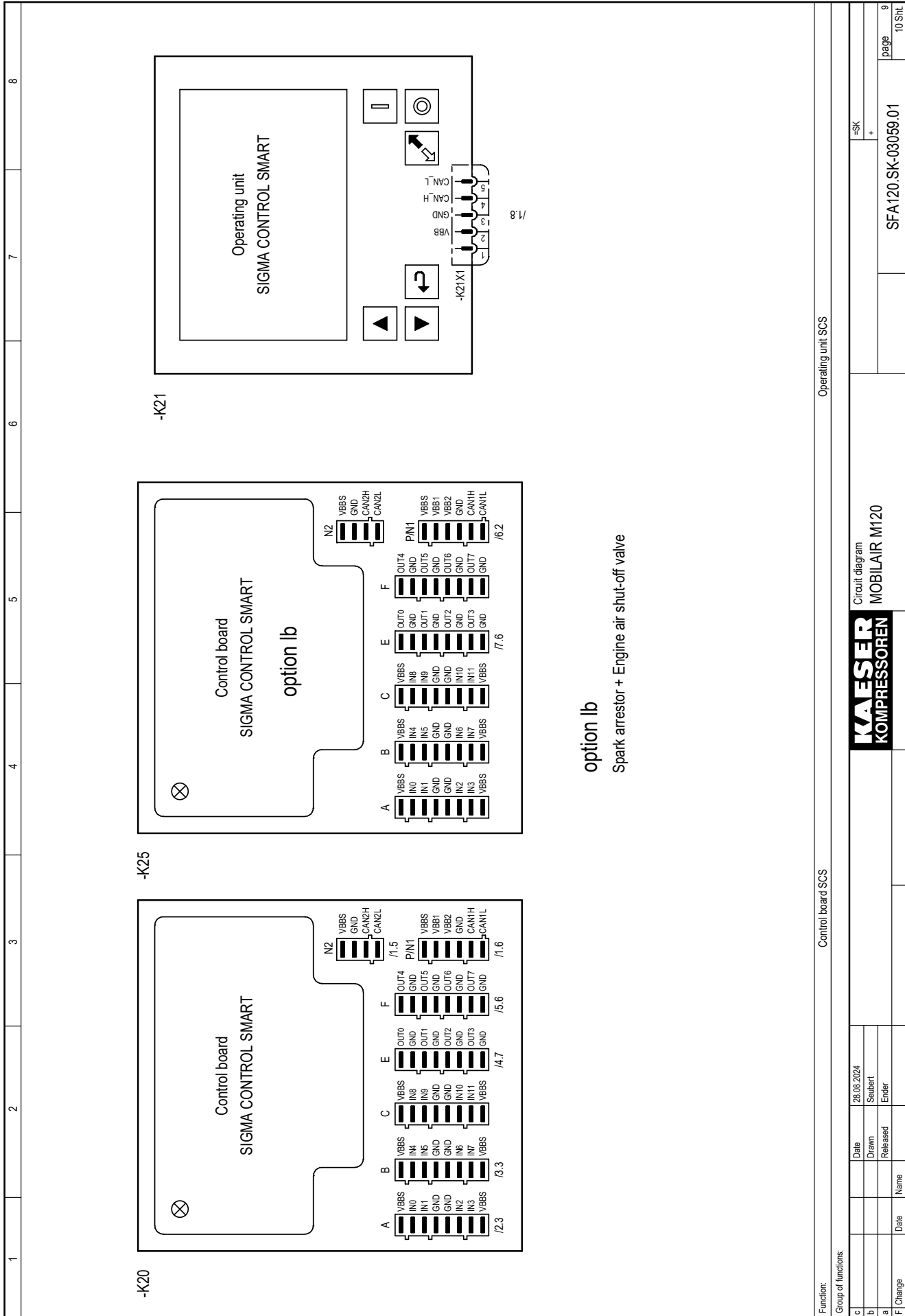




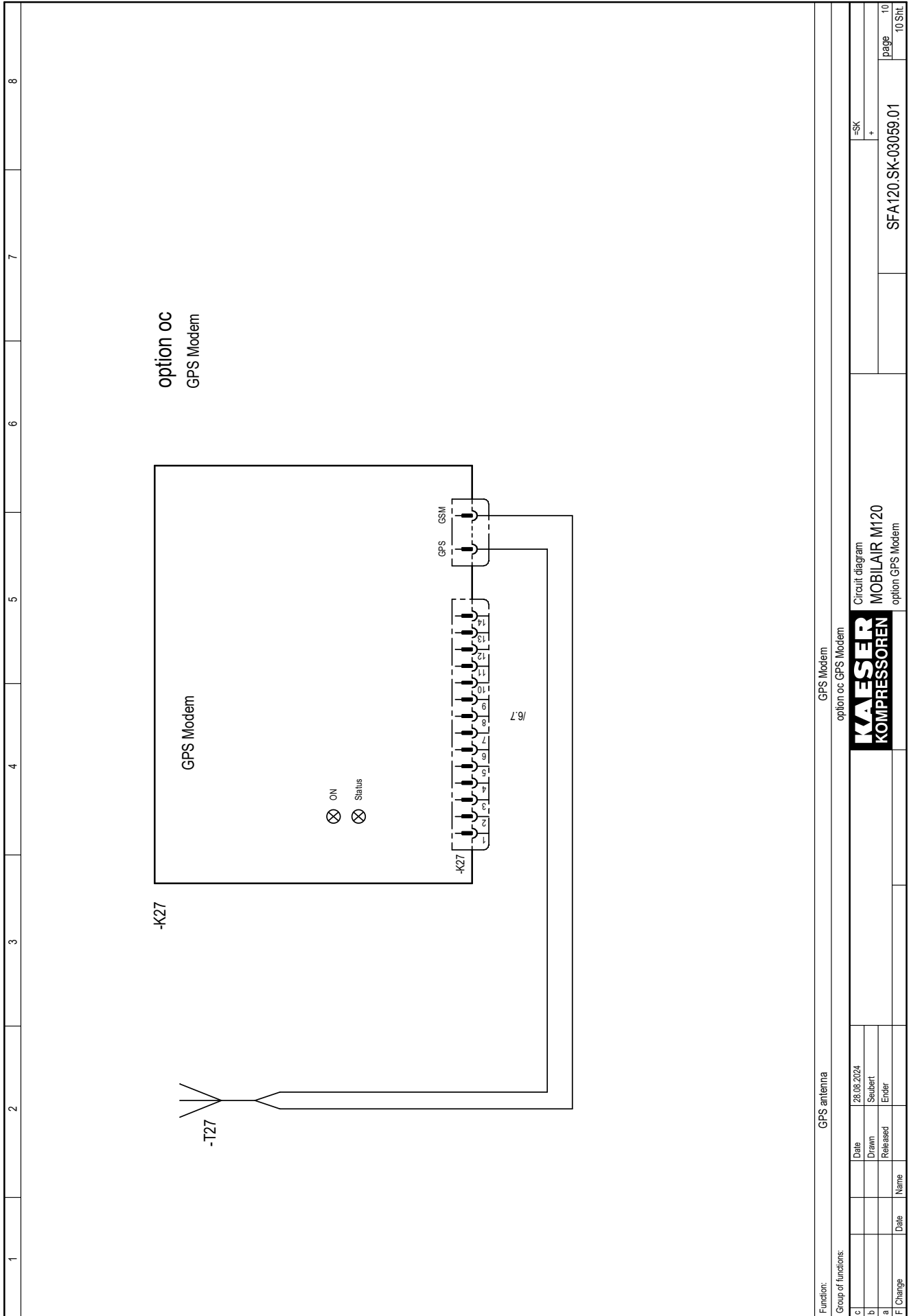




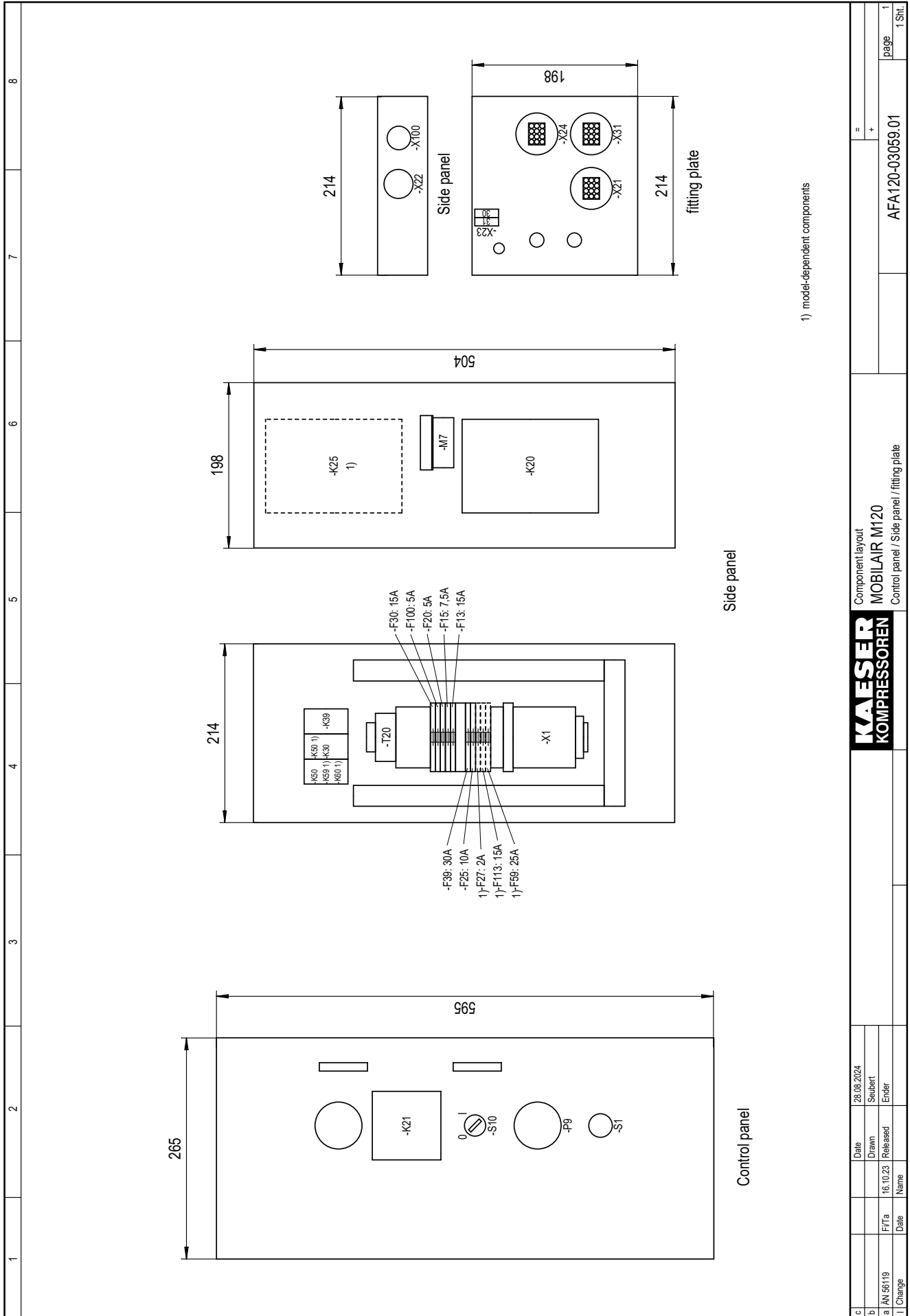
Function:		Heating Engine coolant pre-heating		Adaptor connector Engine coolant pre-heating		option Engine coolant pre-heating	
Group of functions:		Heating Engine coolant pre-heating		Adaptor connector Engine coolant pre-heating		option Engine coolant pre-heating	
c	Date	28.08.2024	Drawn	Seulbert	-SK		page 8 10 SHL
b	Released		Ender	+		SFA120.SK-03059.01	
a	Released		Ender	-			
f	Change	Date	Name	Circuit diagram		MOBILAIR M120 option Engine coolant pre-heating	



Group of functions:		Operating unit SCS	
Function:		Control board SCS	
c	Date	28.08.2024	-SK
b	Drawn	Seubert	+
a	Released	ENDER	
F Change	Date	Name	
Circuit diagram MOBILAIR M120			SFA120.SK-03059_01
			page 9
			10 SHL

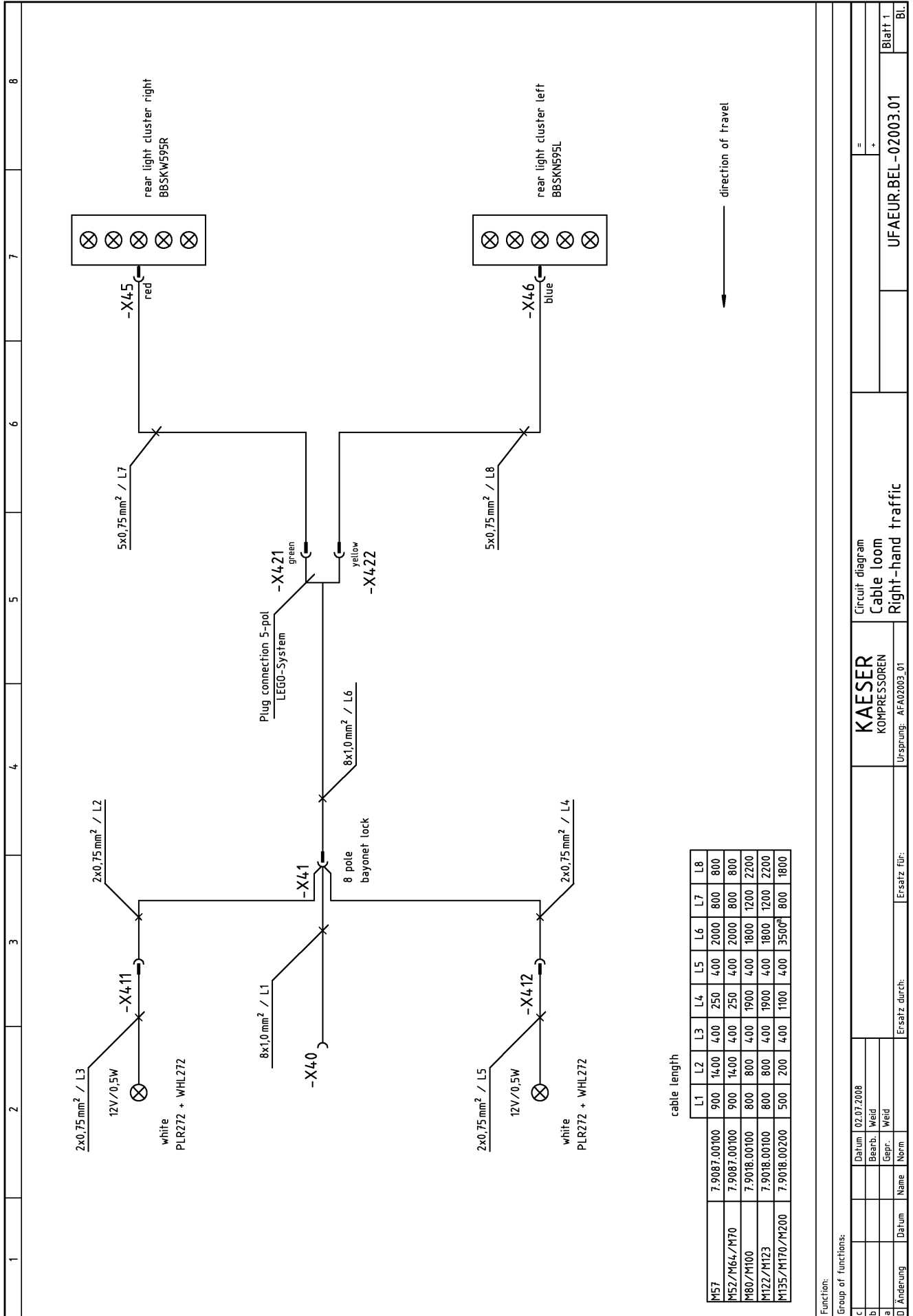


Function:		GPS antenna		GPS Modem		GPS Modem	
Group of functions:		option oc GPS Modem		option oc GPS Modem		option oc GPS Modem	
c	Date	28.08.2024	Drawn	Seulbert	Circuit diagram		
b	Released		Released	Ender	MOBILAIR M120		
a	Name		Name		option GPS Modem		
F. Change	Date		Date		SFA120.SK-03059.01		
				-SK +			
				page 10 10 SHL			



13.4.2 Option tc
Lighting and signalling system connection

1	2	3	4	5	6	7	8	
<div style="border: 1px solid black; padding: 20px; margin: 20px auto; width: 80%;"> <p>Electrical diagrams MOBILAIR Lighting equipment connection 12V/13-pole</p> </div> <p style="text-align: center; margin-top: 20px;"> Manufacturer: Kaeser Kompressoren GmbH Postfach 2143 96410 Coburg</p>								
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>								
c	Datum	02.07.2008	E		=			
b	Bearb.	Weld			+			
a	Gepr.	Weld						
D	Änderung	Datum	Name	Norm	Ersatz durch:			Blatt 1
					Ersatz für:			Bl.
KAESER KOMPRESSOREN				Cover page MOBILAIR Lighting equipment				DFAEUR.BEL-02003.01
				<small>Ursprung: AFA02003_01</small>				



Function:
Group of functions:

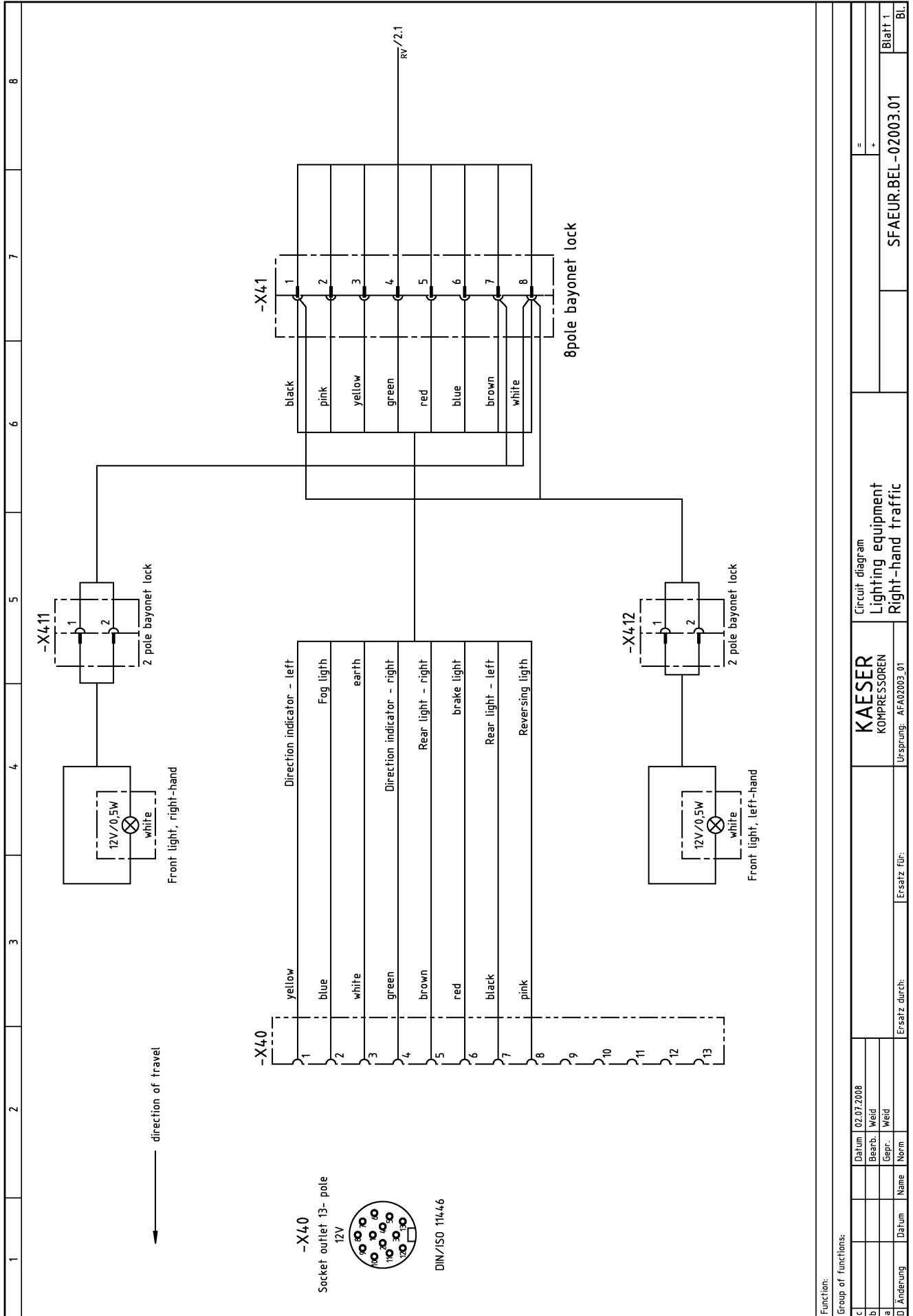
c	Datum	02.07.2008
b	Bearb.	Weld
a	Gepr.	Weld
D	Änderung	Datum
	Name	Norm
	Ersatz durch:	
	Ersatz für:	

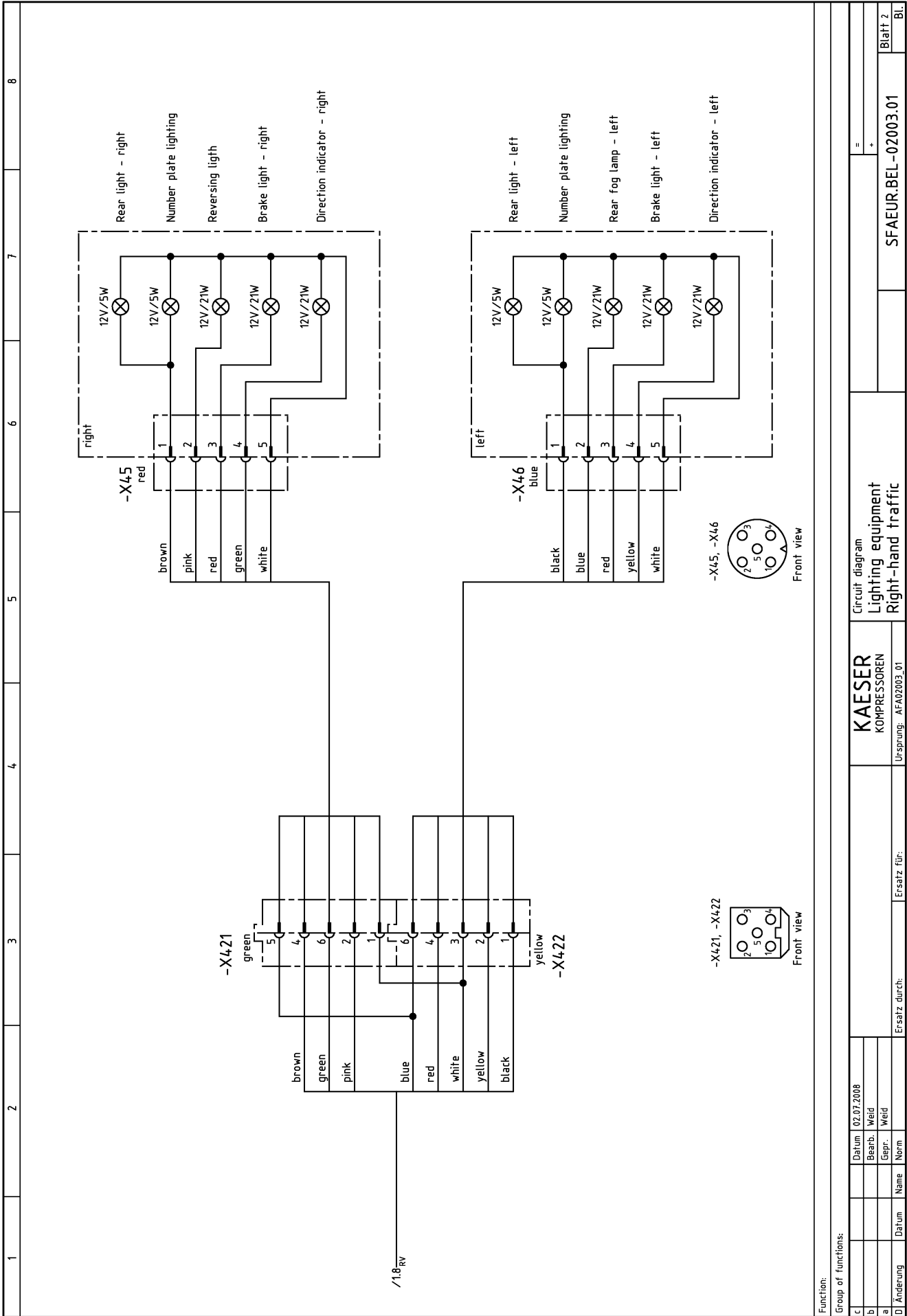
KAESER
KOMPRESSOREN
Ursprung: AFA02003_01

Circuit diagram
Cable loom
Right-hand traffic

=
+
UFAEUR.BEL-02003.01

Blatt 1
Bl.





Function:
Group of functions:

c	Datum	02.07.2008
b	Bearb.	Weld
a	Gepr.	Weld
D	Änderung	Datum Name Norm
Ersatz durch:		Ersatz für:

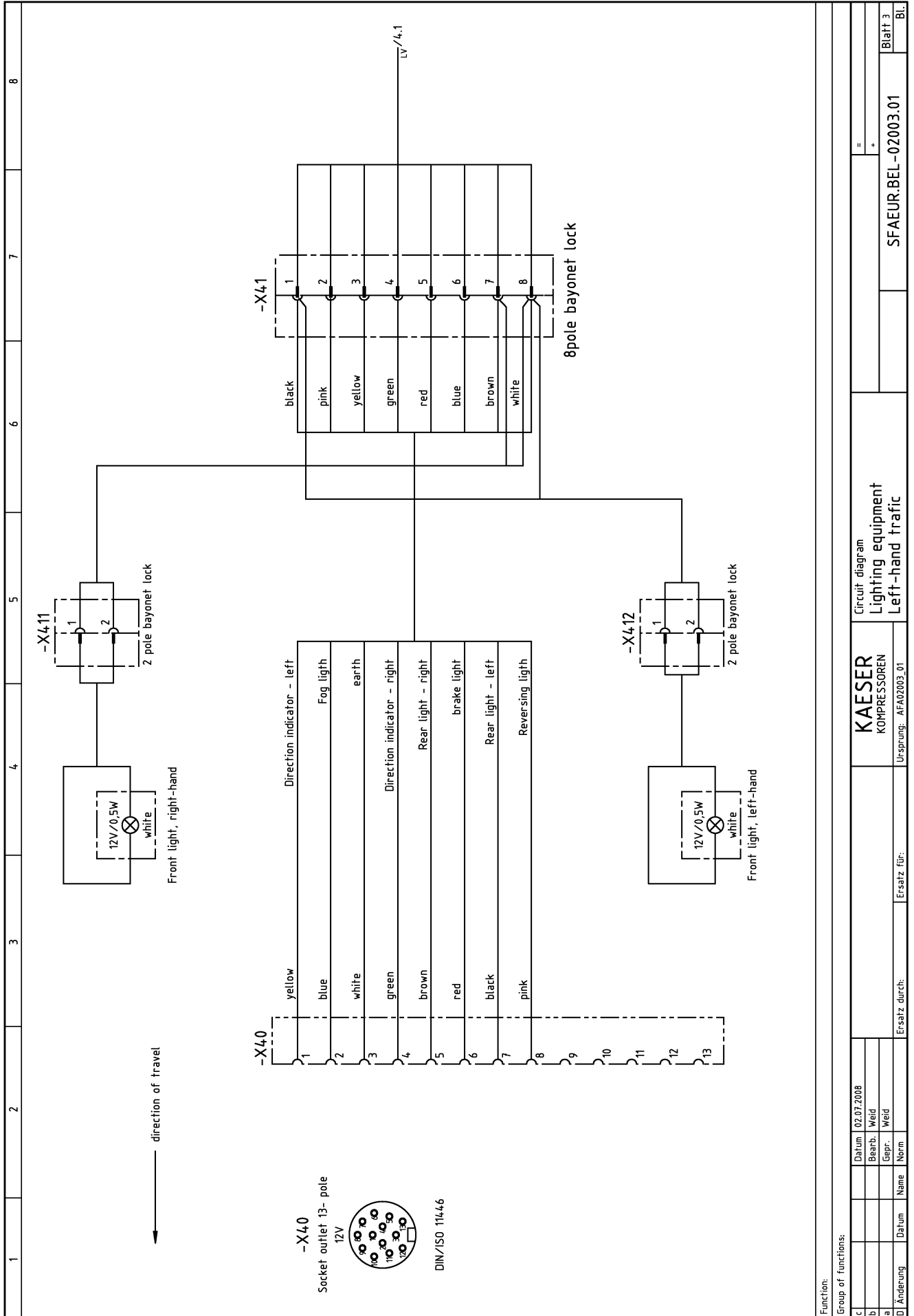
Circuit diagram
Lighting equipment
Right-hand traffic

KAESER
KOMPRESSOREN
Ursprung: AFA02003_01

=
+

SFAEUR.BEL-02003.01

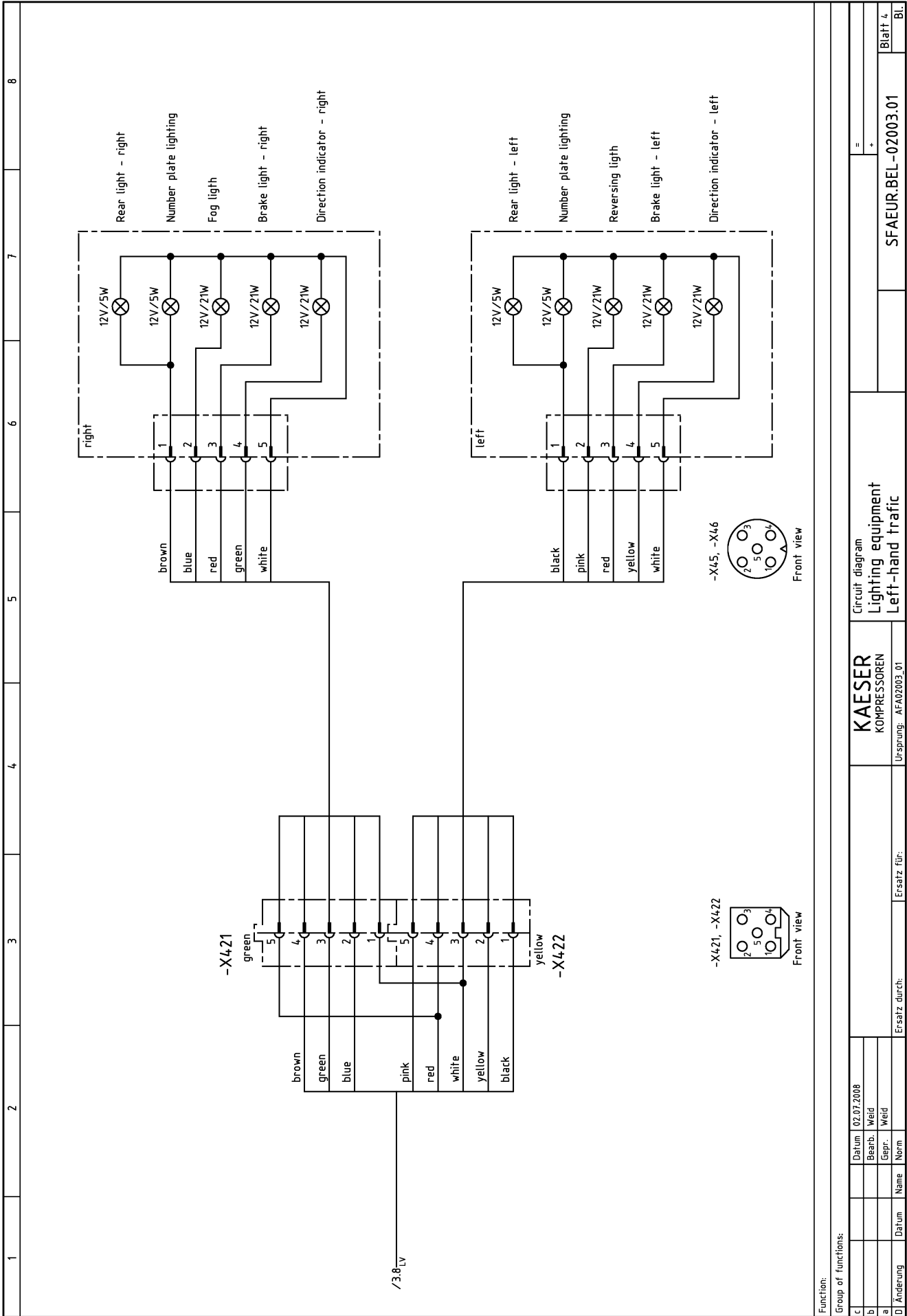
Blatt 2
Bl.



Function:
Group of functions:

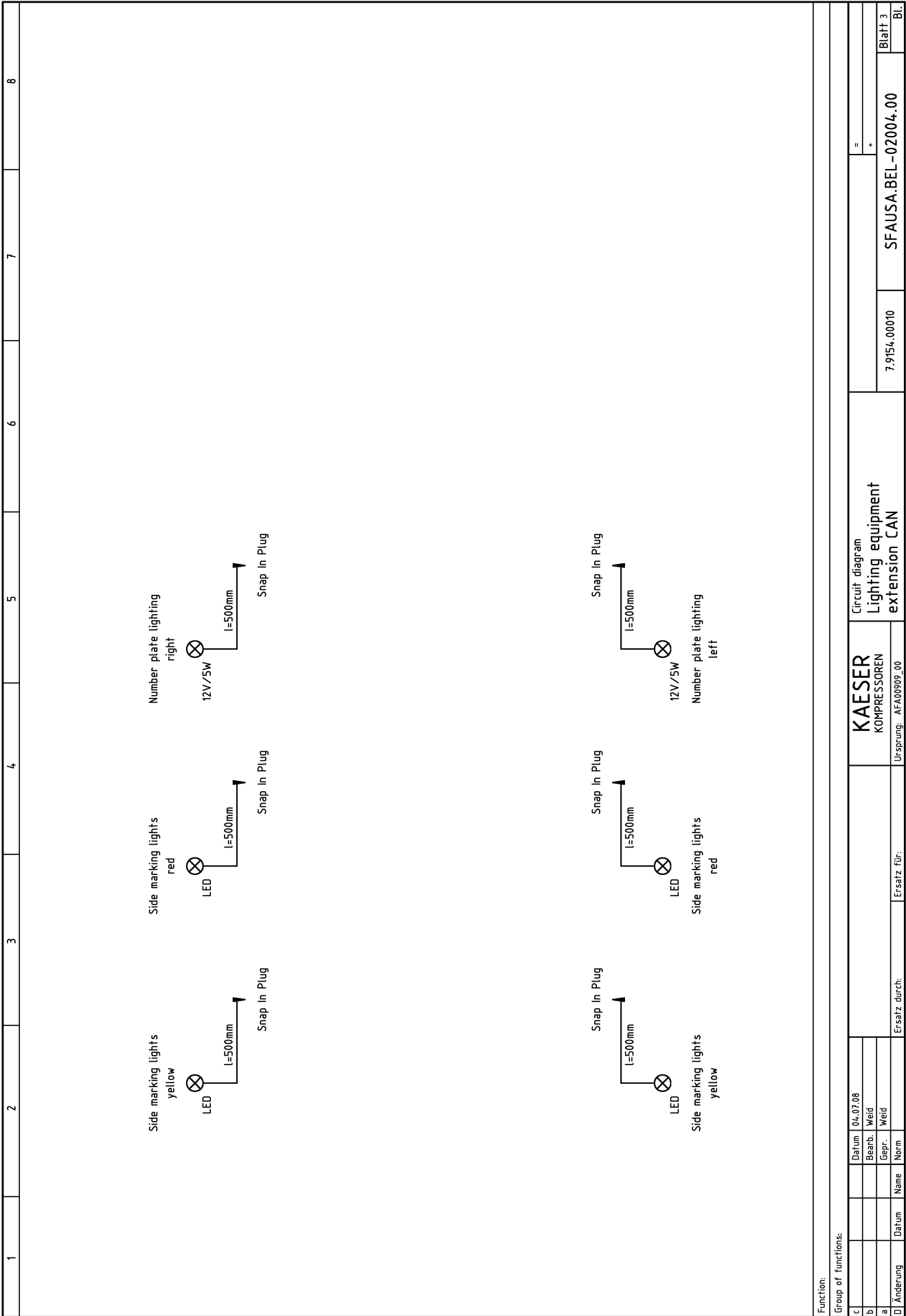
c	Datum	02.07.2008
b	Bearb.	Weld
a	Gepr.	Weld
D	Änderung	Datum Name Norm
Ersatz durch:		Ersatz für:

Kaeser KOMPRESSOREN		Circuit diagram	
Lighting equipment		Left-hand traffic	
Ursprung: AFA02003_01		SFAEUR.BEL-02003.01	
Ersatz für:		Blatt 3	
Ersatz durch:		Bl.	



**13.4.3 Option te
Lighting and signalling system connection**

1	2	3	4	5	6	7	8	
<div style="border: 1px solid black; padding: 20px; margin: 0 auto; width: 80%;"> <p>Electrical diagrams MOBILAIR Lighting equipment for USA / CAN</p> </div> <p style="text-align: center; margin-top: 20px;"> Manufacturer: Kaeser Kompressoren GmbH Postfach 2143 96410 Coburg </p>								
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>								
c	Datum	04.07.08	E		KAESER KOMPRESSOREN			Cover page
b	Bearb.	Weid			MOBILAIR			=
a	Gepr.	Weid			Lighting equipment			+
d	Änderung	Datum	Name	Norm	Ersatz für:		DFAUSA.BEL-02004.00	
				Ersatz durch:		Blatt 1		
						Bl.		



Function:
Group of functions:

c	Datum	04.07.08	Bearb.	Weid
b			Gepr.	Weid
a				
D	Änderung	Datum	Name	Norm

KAESER KOMPRESSOREN	Circuit diagram Lighting equipment extension CAN	=	+
Ersatz für:	Ersatz durch:	7,9154,00010	SFAUSA.BEL-02004.00
Ursprung: AFA00902_00			Blatt 3
			Bl.

13.4.4 Option od
Battery charger electrical diagrams

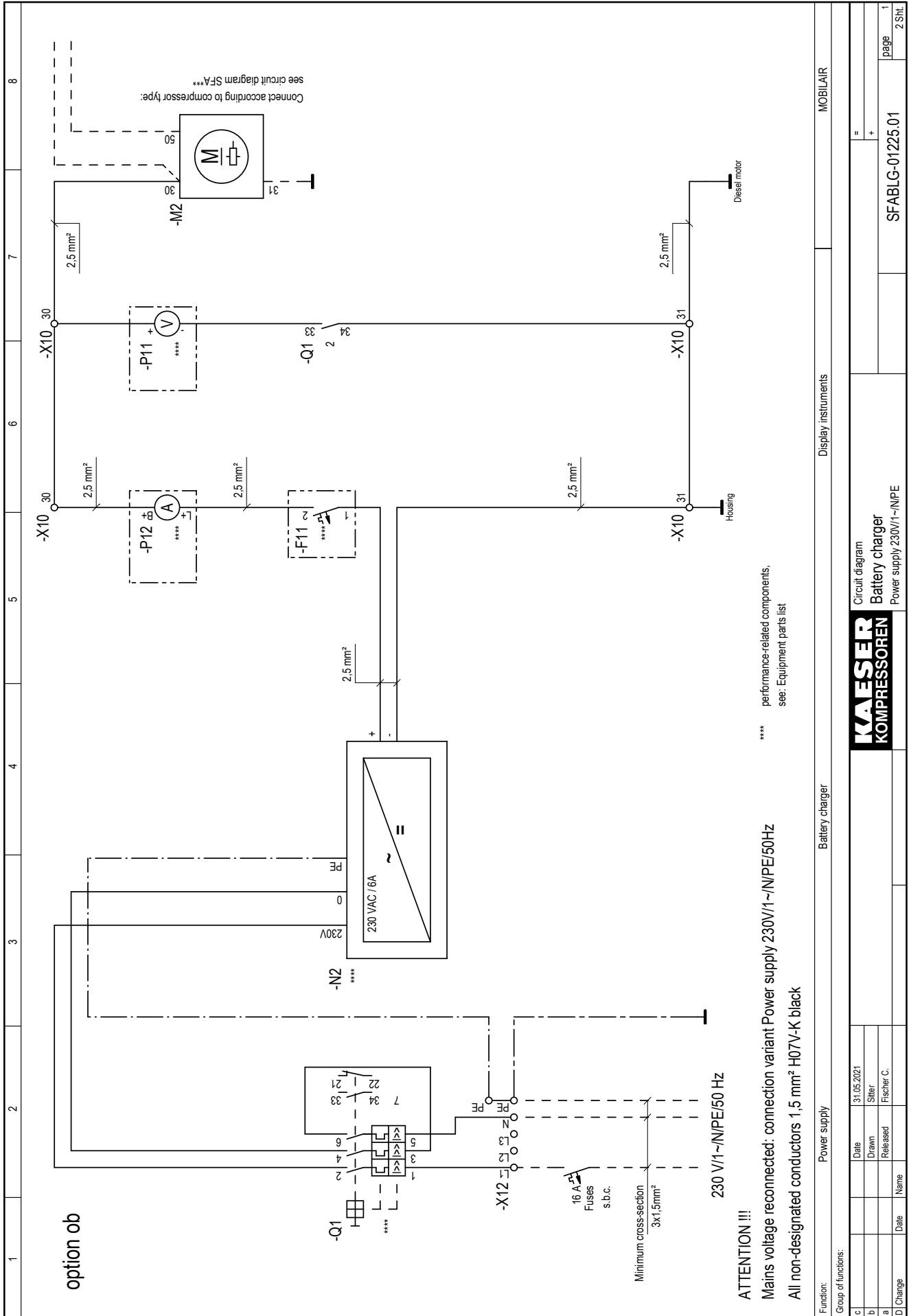
1	2	3	4	5	6	7	8	
<p>Electrical diagrams</p> <p>Battery charger 12/24 V DC</p> <p>Power supply:</p> <p>400 V/3~/N/PE/50 Hz</p> <p>230 V/1~/N/PE/50 Hz</p>								
<p>Manufacturer: KAESER KOMPRESSOREN SE</p> <p>Postfach 2143</p> <p>96410 Coburg</p>								
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>								
c	Date	31.05.2021	E	Cover page				=
b	Drawn	Siller		MOBILAIR				+
a	Released	Fischer C.		Battery charger				DFABLG-01225.01
A	Change	Date	Name					page 1
								1 SHL

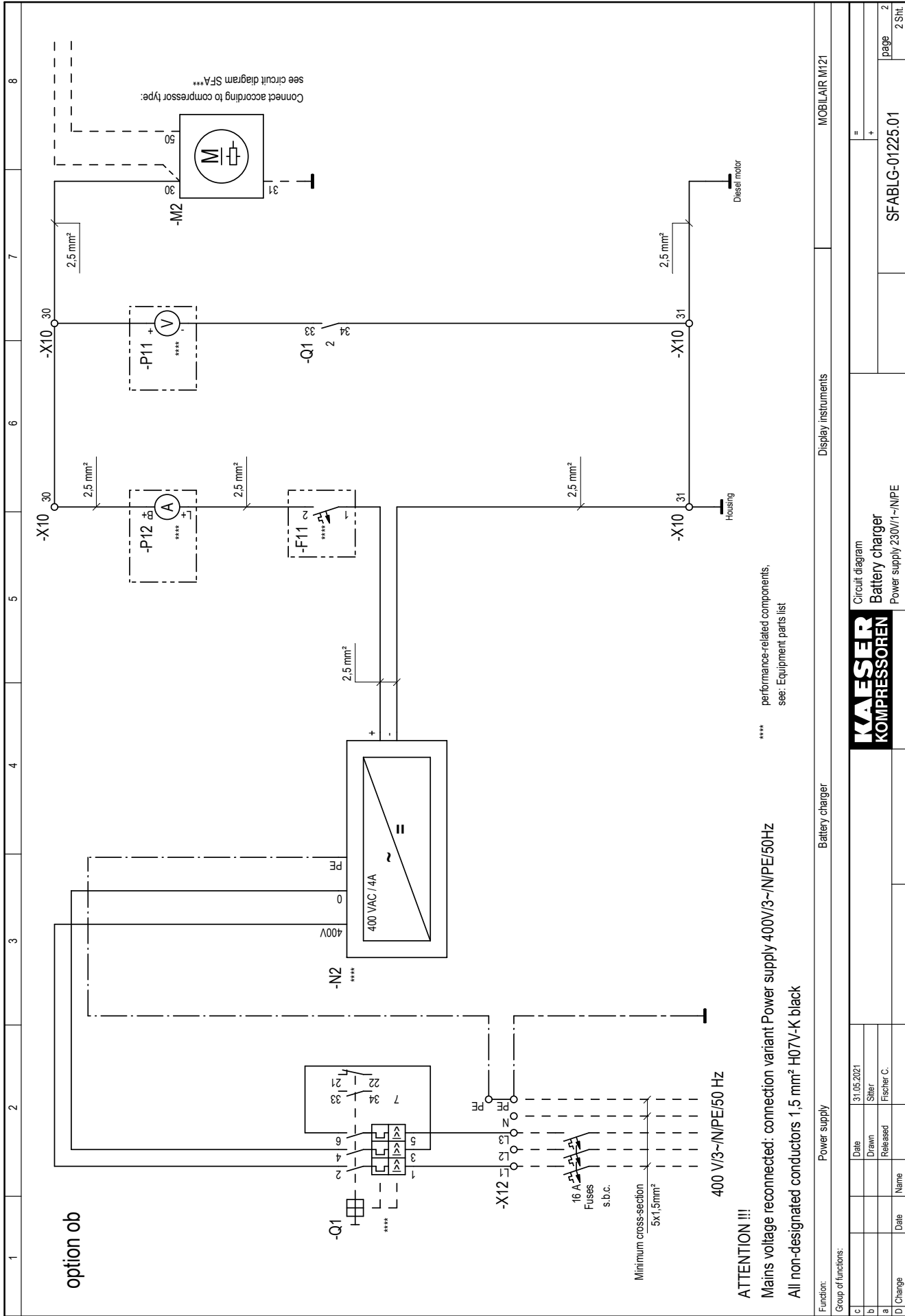
Lfd. Nr. No.	Benennung Name	Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	Cover page	Battery charger	DFABLG-01225.01	1	
2	List of contents	Battery charger	ZFABLG-01225.01	1	
3	Block diagram	general instructions	UFABLG-01225.01	1	
4	Equipment parts list		UFABLG-01225.01	2	
5	Circuit diagram	Power supply 230V/1~/N/PE	SFABLG-01225.01	1	
6	Circuit diagram	Power supply 230V/1~/N/PE	SFABLG-01225.01	2	
7	Terminal schedule	Terminal strip -X10.-X12	KFABLG-01225.01	1	
8	Component layout	Battery charger 24VDC	AFABLG-01225.01	1	
9	Component layout	Battery charger 12VDC	AFABLG-01225.01	2	

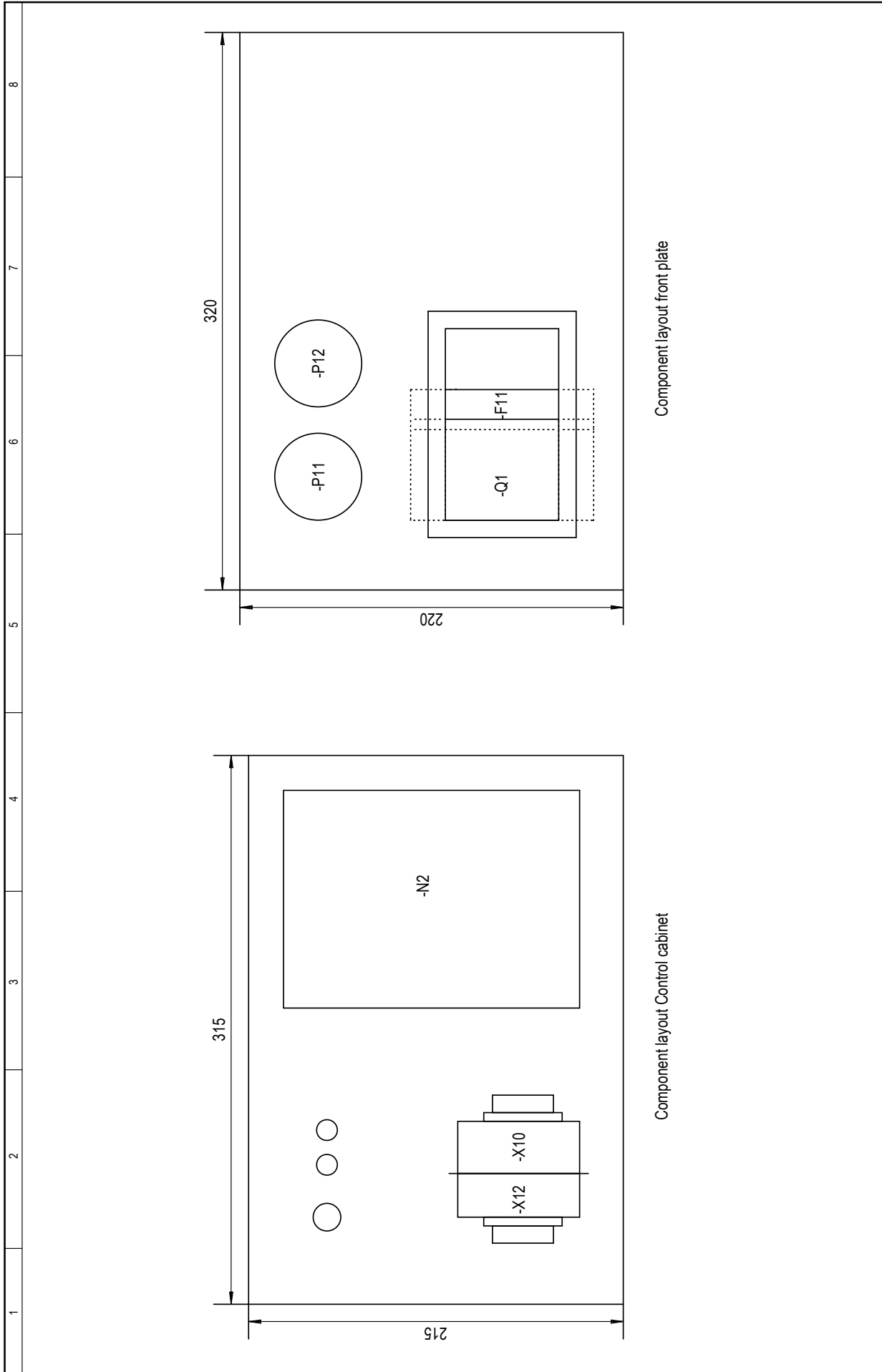
c	Date	31.05.2021	List of contents	=	
b	Drawn	Siller	MOBILAIR	+	
a	Released	Fischer C.	Battery charger		
B	Change				ZFABLG-01225.01
	Date				page 1
	Name				1 Sheet

1	2	3	4	5	6	7	8
<p>general instructions ATTENTION !!! Install supplies, grounding and shock protection to local safety regulations. Do not make or break live plug-in connectors.</p>							
<p>control cabinet wiring for non-designated conductors with multi-standard stranded conductors</p> <p>primary circuits: black</p> <p>Control voltage AC: red 1mm² H07V-K, 18AWG UL-Style 1015, CSA-TEW</p> <p>Control voltage DC: blue 1mm² H07V-K, 18AWG UL-Style 1015, CSA-TEW</p> <p>external voltage: orange 1,5mm² H07V-K, 16AWG UL-Style 1015, CSA-TEW</p> <p>measuring circuits: violet 1mm² H07V-K, 18AWG UL-Style 1015, CSA-TEW</p> <p>earth conductor: green/yellow</p>							
<p>option ob = Automatic-start-stop</p>							
<p>Electrical equipment identification</p> <p>-F11 Cut-out -N2 Battery charger -Q1 Motor protection switch -P11 voltmeter -P12 Ammeter -X0 Plug -X10,-X12 Terminal strip</p>							
<p style="text-align: right;">Block diagram Battery charger general instructions</p>							
<p>KAESER KOMPRESSOREN</p>							
<p>Date 31.05.2021</p> <p>Drawn Siller</p> <p>Released Fischer C.</p>							
<p>Date Name</p>							
<p>C Change</p>							
<p>= +</p>							
<p>UFABLG-01225-01</p>							
<p>page 1</p>							
<p>2 SHL</p>							

model		Equipment parts list Battery charger				page	2																		
Power supply		230 V ±10 %, 50 Hz	400 V ±10 %, 50 Hz	230 V ±10 %, 50 Hz	400 V ±10 %, 50 Hz	=	+																		
Voltage Battery		12VDC	12VDC	24 VDC	24 VDC																				
Control cabinet																									
Battery charger	-N2 Eltroma	7.9117.00010 BGL 1024 / 12V	7.9117.00010 BGL 1024 / 12V	7.9117.0 BGL 1024 / 24 V	7.9117.0 BGL 1024 / 24 V	Equipment parts list Battery charger KAESER KOMPRESSOREN																			
Motor protection switch	-Q1	7.8742.01170 3RV2021-1GA10 4,5-6,3 A setting: 6 A	7.8742.01170 3RV2021-1GA10 4,5-6,3 A setting: 6 A	7.8742.01170 3RV2021-1GA10 4,5-6,3 A setting: 6 A	7.8742.01170 3RV2021-1GA10 4,5-6,3 A setting: 6 A																				
Auxiliary switch	Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E																				
Cut-out	-F12 Siemens	7.3140.02750 5SY6116-7 C16 A 16 A	7.3140.02750 5SY6116-7 C16 A 16 A	7.3140.02750 5SY6116-7 C16 A 16 A	7.3140.02750 5SY6116-7 C16 A 16 A																				
voltmeter	-P11 VDO	7.9033.00010 332-030-001G 8-16VDC	7.9033.00010 332-030-001G 8-16VDC	7.9033.0 332-040-001G 16-32VDC	7.9033.0 332-040-001G 16-32VDC																				
Ammeter	-P12 VDO	7.9118.0 190-037-001G -30.0.+ 30 A	7.9118.0 190-037-001G -30.0.+ 30 A	7.9118.0 190-037-001G -30.0.+ 30 A	7.9118.0 190-037-001G -30.0.+ 30 A																				
front plate 6TE	Mennekes	7.5390.00020 40986	7.5390.00020 40986	7.5390.00020 40986	7.5390.00020 40986																				
Attachment piece 6TE	Mennekes	7.5395.00020 41431	7.5395.00020 41431	7.5395.00020 41431	7.5395.00020 41431																				
Terminal	-X10/-X12	7.3149.01810 WKFN4/35 4 mm²	7.3149.01810 WKFN4/35 4 mm²	7.3149.01810 WKFN4/35 4 mm²	7.3149.01810 WKFN4/35 4 mm²																				
PE earth terminal	-X10 Wieland	7.3149.01830 WKFN4/SL/35 4 mm²	7.3149.01830 WKFN4/SL/35 4 mm²	7.3149.01830 WKFN4/SL/35 4 mm²	7.3149.01830 WKFN4/SL/35 4 mm²																				
<table border="1"> <tr> <td>c</td> <td>Change</td> <td>Date</td> <td>Name</td> </tr> <tr> <td>b</td> <td>Released</td> <td>Date</td> <td>Name</td> </tr> <tr> <td>a</td> <td>Drawn</td> <td>Date</td> <td>Name</td> </tr> <tr> <td></td> <td>Sitter</td> <td>31.05.2021</td> <td>Fischer C.</td> </tr> </table>								c	Change	Date	Name	b	Released	Date	Name	a	Drawn	Date	Name		Sitter	31.05.2021	Fischer C.		
c	Change	Date	Name																						
b	Released	Date	Name																						
a	Drawn	Date	Name																						
	Sitter	31.05.2021	Fischer C.																						



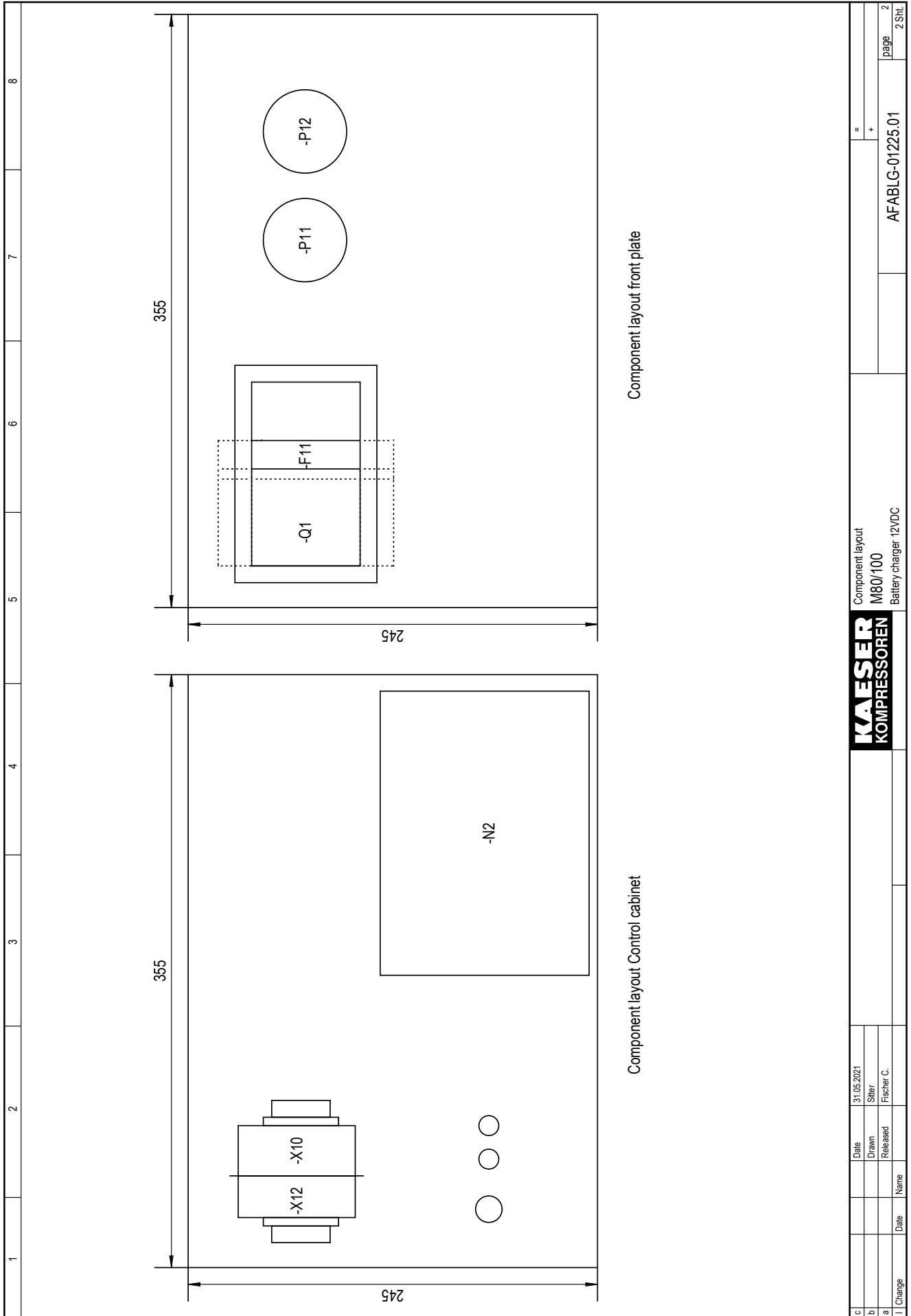




Component layout front plate

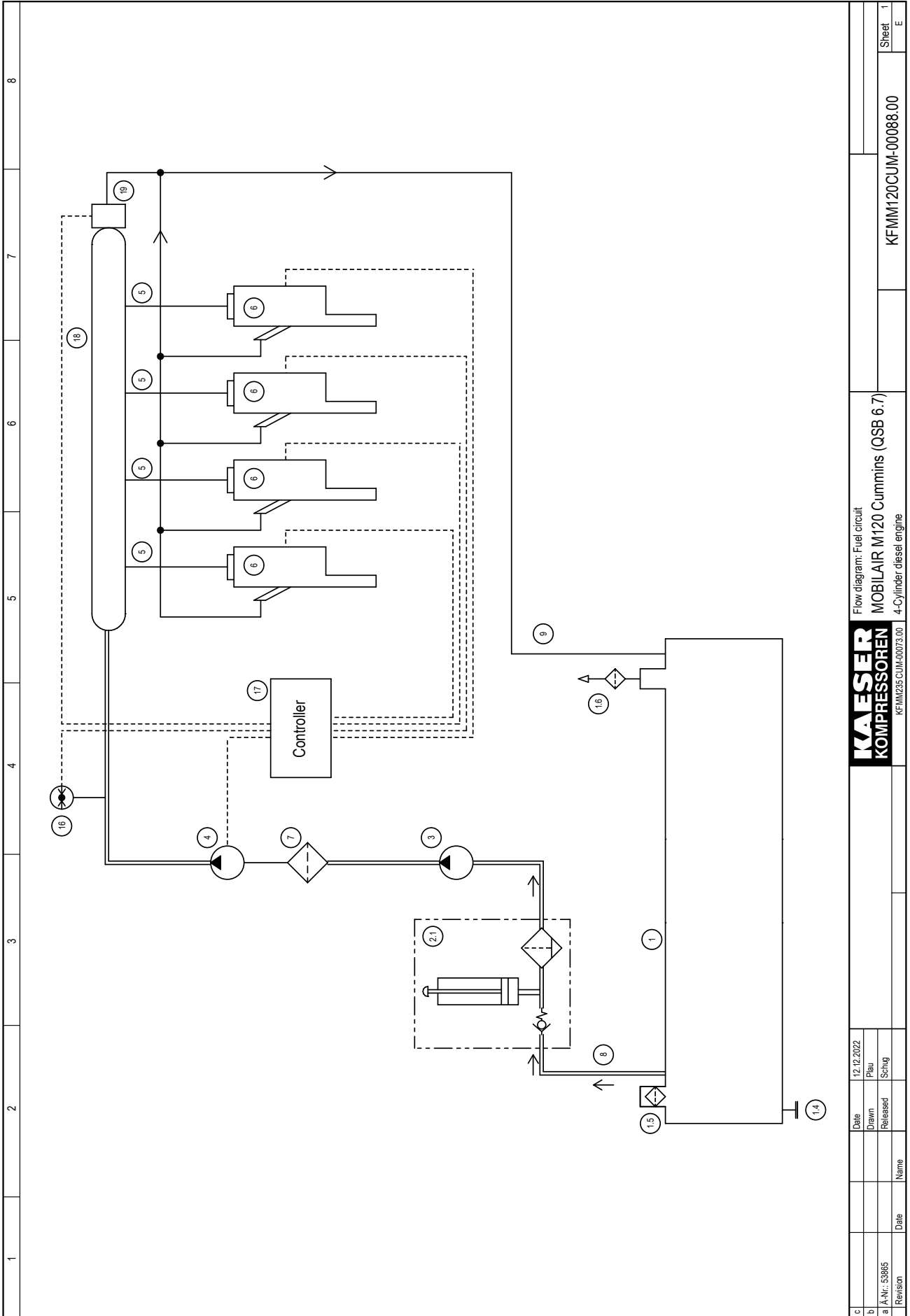
Component layout Control cabinet

c	Date	31.05.2021		
b	Drawn	Siller		
a	Released	Fischer C.		
l	Change	Date	Name	
				Component layout
				M122/123 M135/170 M200
				Battery charger 24VDC
				AFABLG-01225-01
				page 1
				2 SHL



c	Date	31.05.2021		
b	Drawn	Siller		
a	Released	Fischer C.		
I	Change	Date	Name	
			Component layout M80/100 Battery charger 12VDC	
			AFABLG-01225-01	
			page	2
			2 SHL	

13.5 Fuel circulation diagram



Date		12.12.2022	
Drawn		Piau	
Released		Schug	
Revision		a A-Nr.: 53865	
Date	Name	Name	
Flow diagram: Fuel circuit			
MOBILAIR M120 Cummins (QSB 6.7)			
4-Cylinder diesel engine			
KFM235 CUM-0073.00		KFM235 CUM-0073.00	
KFM120CUM-00088.00		KFM120CUM-00088.00	
Sheet		1	
E		E	

1	2	3	4	5	6	7	8	
		1 Fuel tank						
		1.5 Fuel filler neck with integrated strainer						
		1.6 Venting with filter						
		2.1 Fuel prefilter with water separator and integrated manual pump						
		3 Fuel feed pump						
		4 Injection pump						
		5 Injection pipe						
		6 Injector nozzle						
		7 Fuel filter						
		8 Fuel supply line						
		9 Fuel return line						
		16 Pressure transducer						
		17 Engine control unit						
		18 Distributing pipe						
		19 Pressure limiting valve						
c	Date	12.12.2022	<p>KAESER KOMPRESSOREN</p> <p>KFMM235CUM-00773.00</p> <p>Flow diagram: Fuel circuit MOBILAIR M120 Cummins (QSB 6.7) 4-Cylinder diesel engine</p>					<p>KFMM120CUM-00088.00</p>
b	Drawn	Plau						
a	Released	Schug						
Revision	Date	Name						Sheet
								E

13.6 Option dd
Operating instructions for compressed air filter (combination filter)

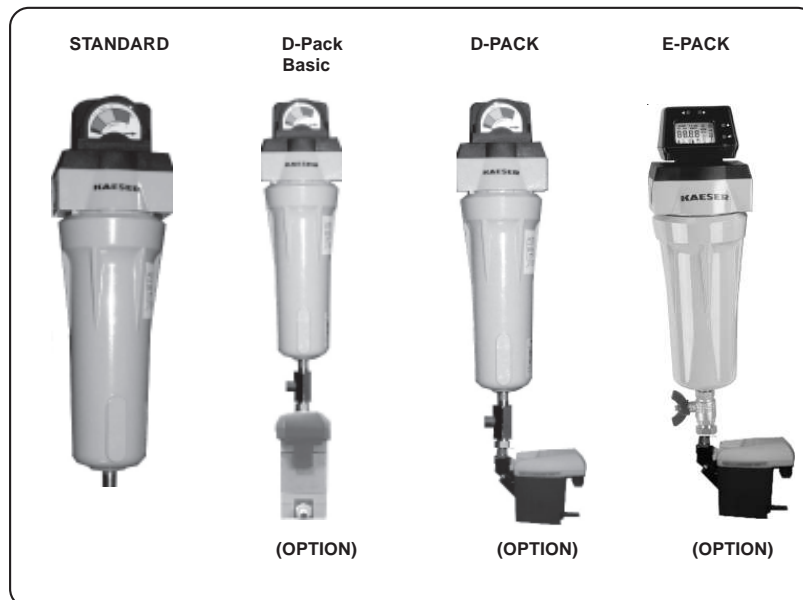
Bedienungsanleitung
Instruction Manual

Hochleistungs - Druckluftfilter

Compressed-air filters

Serie / Series

FA (D), FB (D&E), FC (D&E), FD (E), FE (D&E), FF (D&E), FG



Kaeser Kompressoren GmbH
Postfach 2143
96410 Coburg
Tel.: 09561/640-0
Fax: 09561/640130
<http://www.kaeser.com>

KAESER

gültig ab 01.04.2007

(D) (GB)

A Kap. 9.2, 9.3 Wartungsintervalle	04.12.08	SK
Änd. Mittlg.	Datum	Bearb.

F0507	05.03.07	KC	05.03.07	KC	F0412	
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

FI HANK-MOB_02 D E

Materialkennzeichnung
Sign of material

Filter: Standard		Filter: D-Pack		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Nr./No.
FA-6	9.4600.0	FA-6 D	9.4600.00110	E-A-6	9.4800.0
FA-10	9.4601.0	FA-10 D	9.4601.00110	E-A-10	9.4801.0
FA-18	9.4602.0	FA-18 D	9.4602.00110	E-A-18	9.4802.0
FA-28	9.4603.0	FA-28 D	9.4603.00110	E-A-28	9.4803.0
FA-48	9.4604.0	FA-48 D	9.4604.00010	E-A-48	9.4804.0
FA-71	9.4605.0	FA-71 D	9.4605.00010	E-A-71	9.4805.0
FA-107	9.4606.0	FA-107 D	9.4606.00010	E-A-107	9.4806.0
FA-138	9.4607.0	FA-138 D	9.4607.00010	E-A-138	9.4807.0
FA-177	9.4608.0	FA-177 D	9.4608.00010	E-A-177	9.4808.0
FA-221	9.4609.0	FA-221 D	9.4609.00010	E-A-221	9.4809.0
FA-185	9.4610.0	FA-185 D	9.4610.00010	E-A-185	9.4810.0
FA-283	9.4611.0	FA-283 D	9.4611.00010	E-A-283	9.4811.0
FA-354	9.4612.0	FA-354 D	9.4612.00010	E-A-185	9.4810.0
FA-526	9.4613.0	FA-526 D	9.4613.00010	E-A-185	9.4810.0
FA-708	9.4614.0	FA-708 D	9.4614.00010	E-A-185	9.4810.0
FA-885	9.4615.0	FA-885 D	9.4615.00010	E-A-185	9.4810.0
FA-1420	9.4616.0	FA-1420 D	9.4616.00010	E-A-185	9.4810.0
FA-1950	9.4617.0	FA-1950 D	9.4617.00010	E-A-185	9.4810.0
FA-2480	9.4618.0	FA-2480 D	9.4618.00010	E-A-185	9.4810.0

D-Pack: Filter mit ECO-DRAIN /

D-Pack: Filter with ECO-DRAIN

Filter: Standard		Filter: D-Pack Basic		Filter: D-Pack		Filter: E-Pack		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Typ/Type	Typ/Type	Nr./No.
FB-6	9.4620.0	FB-6 B	9.4620.00110	FB-6 D	9.4620.00120	FB-6 E	E-B-6	E-B-6	9.4812.0
FB-10	9.4621.0	FB-10 B	9.4621.00110	FB-10 D	9.4621.00120	FB-10 E	E-B-10	E-B-10	9.4813.0
FB-18	9.4622.0	FB-18 B	9.4622.00110	FB-18 D	9.4622.00120	FB-18 E	E-B-18	E-B-18	9.4814.0
FB-28	9.4623.0	FB-28 B	9.4623.00110	FB-28 D	9.4623.00120	FB-28 E	E-B-28	E-B-28	9.4815.0
FB-48	9.4624.0	FB-48 B	9.4624.00110	FB-48 D	9.4624.00120	FB-48 E	E-B-48	E-B-48	9.4816.0
FB-71	9.4625.0	FB-71 B	9.4625.00110	FB-71 D	9.4625.00120	FB-71 E	E-B-71	E-B-71	9.4817.0
FB-107	9.4626.0	FB-107 B	9.4626.00110	FB-107 D	9.4626.00120	FB-107 E	E-B-107	E-B-107	9.4818.0
FB-138	9.4627.0	FB-138 B	9.4627.00110	FB-138 D	9.4627.00120	FB-138 E	E-B-138	E-B-138	9.4819.0
FB-177	9.4628.0	FB-177 B	9.4628.00110	FB-177 D	9.4628.00120	FB-177 E	E-B-177	E-B-177	9.4820.0
FB-221	9.4629.0	FB-221 B	9.4629.00110	FB-221 D	9.4629.00120	FB-221 E	E-B-221	E-B-221	9.4821.0
FB-185	9.4630.0	-	-	FB-185 D	9.4630.00120	FB-185 E	E-B-185	E-B-185	9.4822.0
FB-283	9.4631.0	-	-	FB-283 D	9.4631.00120	FB-283 E	E-B-283	E-B-283	9.4823.0
FB-354	9.4632.0	-	-	FB-354 D	9.4632.00120	FB-354 E	E-B-185	E-B-185	9.4822.0
FB-526	9.4633.0	-	-	FB-526 D	9.4633.00120	FB-526 E	E-B-185	E-B-185	9.4822.0
FB-708	9.4634.0	-	-	FB-708 D	9.4634.00120	FB-708 E	E-B-185	E-B-185	9.4822.0
FB-885	9.4635.0	-	-	FB-885 D	9.4635.00120	FB-885 E	E-B-185	E-B-185	9.4822.0
FB-1420	9.4636.0	-	-	FB-1420 D	9.4636.00020	FB-1420 E	E-B-185	E-B-185	9.4822.0
FB-1950	9.4637.0	-	-	FB-1950 D	9.4637.00020	FB-1950 E	E-B-185	E-B-185	9.4822.0
FB-2480	9.4638.0	-	-	FB-2480 D	9.4638.00020	FB-2480 E	E-B-185	E-B-185	9.4822.0

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

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F0507	05.03.07	KC	05.03.07	KC	F0412	
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

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Materialkennzeichnung
Sign of material

Filter: Standard		Filter: D-Pack Basic		Filter: D-Pack		Filter: E-Pack		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Typ/Type	Nr./No.	Nr./No.
FC-6	9.4640.0	FC-6 B	9.4640.00110	FC-6 D	9.4640.00120	FC-6 E	E-C-6		9.4824.0
FC-10	9.4641.0	FC-10 B	9.4641.00110	FC-10 D	9.4641.00120	FC-10 E	E-C-10		9.4825.0
FC-18	9.4642.0	FC-18 B	9.4642.00110	FC-18 D	9.4642.00120	FC-18 E	E-C-18		9.4826.0
FC-28	9.4643.0	FC-28 B	9.4643.00110	FC-28 D	9.4643.00120	FC-28 E	E-C-28		9.4827.0
FC-48	9.4644.0	FC-48 B	9.4644.00110	FC-48 D	9.4644.00120	FC-48 E	E-C-48		9.4828.0
FC-71	9.4645.0	FC-71 B	9.4645.00110	FC-71 D	9.4645.00120	FC-71 E	E-C-71		9.4829.0
FC-107	9.4646.0	FC-107 B	9.4646.00110	FC-107 D	9.4646.00120	FC-107 E	E-C-107		9.4830.0
FC-138	9.4647.0	FC-138 B	9.4647.00110	FC-138 D	9.4647.00120	FC-138 E	E-C-138		9.4831.0
FC-177	9.4648.0	FC-177 B	9.4648.00110	FC-177 D	9.4648.00120	FC-177 E	E-C-177		9.4832.0
FC-221	9.4649.0	FC-221 B	9.4649.00110	FC-221 D	9.4649.00120	FC-221 E	E-C-221		9.4833.0
FC-185	9.4650.0	-	-	FC-185 D	9.4650.00120	FC-185 E	E-C-185		9.4834.0
FC-283	9.4651.0	-	-	FC-283 D	9.4651.00120	FC-283 E	E-C-283		9.4835.0
FC-354	9.4652.0	-	-	FC-354 D	9.4652.00120	FC-354 E	E-C-185		9.4834.0
FC-526	9.4653.0	-	-	FC-526 D	9.4653.00120	FC-526 E	E-C-185		9.4834.0
FC-708	9.4654.0	-	-	FC-708 D	9.4654.00120	FC-708 E	E-C-185		9.4834.0
FC-885	9.4655.0	-	-	FC-885 D	9.4655.00120	FC-885 E	E-C-185		9.4834.0
FC-1420	9.4656.0	-	-	FC-1420 D	9.4656.00020	FC-1420 E	E-C-185		9.4834.0
FC-1950	9.4657.0	-	-	FC-1950 D	9.4657.00020	FC-1950 E	E-C-185		9.4834.0
FC-2480	9.4658.0	-	-	FC-2480 D	9.4658.00020	FC-2480 E	E-C-185		9.4834.0

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

Filter: Standard		Filter: E-Pack		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Typ/Type	Typ/Type	Nr./No.
FD-6	9.4660.0	FD-6 E		E-D-6	9.4836.0
FD-10	9.4661.0	FD-10 E		E-D-10	9.4837.0
FD-18	9.4662.0	FD-18 E		E-D-18	9.4838.0
FD-28	9.4663.0	FD-28 E		E-D-28	9.4839.0
FD-48	9.4664.0	FD-48 E		E-D-48	9.4840.0
FD-71	9.4665.0	FD-71 E		E-D-71	9.4841.0
FD-107	9.4666.0	FD-107 E		E-D-107	9.4842.0
FD-138	9.4667.0	FD-138 E		E-D-138	9.4843.0
FD-177	9.4668.0	FD-177 E		E-D-177	9.4844.0
FD-221	9.4669.0	FD-221 E		E-D-221	9.4845.0
FD-185	9.4670.0	FD-185 E		E-D-185	9.4846.0
FD-283	9.4671.0	FD-283 E		E-D-283	9.4847.0
FD-354	9.4672.0	FD-354 E		E-D-185	9.4846.0
FD-526	9.4673.0	FD-526 E		E-D-185	9.4846.0
FD-708	9.4674.0	FD-708 E		E-D-185	9.4846.0
FD-885	9.4675.0	FD-885 E		E-D-185	9.4846.0
FD-1420	9.4676.0	FD-1420 E		E-D-185	9.4846.0
FD-1950	9.4677.0	FD-1950 E		E-D-185	9.4846.0
FD-2480	9.4678.0	FD-2480 E		E-D-185	9.4846.0

E-Pack: Filter mit Filtermonitor

E-Pack: Filter with filtermonitor

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

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D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

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Materialkennzeichnung

Sign of material

Filter: Standard		Filter: D-Pack Basic		Filter: D-Pack		Filter: E-Pack		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Typ/Type	Nr./No.	Nr./No.
FE-6	9.4700.0	FE-6 B	9.4700.00110	FE-6 D	9.4700.00120	FE-6 E	E-E-6	9.4860.0	
FE-10	9.4701.0	FE-10 B	9.4701.00110	FE-10 D	9.4701.00120	FE-10 E	E-E-10	9.4861.0	
FE-18	9.4702.0	FE-18 B	9.4702.00110	FE-18 D	9.4702.00120	FE-18 E	E-E-18	9.4862.0	
FE-28	9.4703.0	FE-28 B	9.4703.00110	FE-28 D	9.4703.00120	FE-28 E	E-E-28	9.4863.0	
FE-48	9.4704.0	FE-48 B	9.4704.00110	FE-48 D	9.4704.00120	FE-48 E	E-E-48	9.4864.0	
FE-71	9.4705.0	FE-71 B	9.4705.00110	FE-71 D	9.4705.00120	FE-71 E	E-E-71	9.4865.0	
FE-107	9.4706.0	FE-107 B	9.4706.00110	FE-107 D	9.4706.00120	FE-107 E	E-E-107	9.4866.0	
FE-138	9.4707.0	FE-138 B	9.4707.00110	FE-138 D	9.4707.00120	FE-138 E	E-E-138	9.4867.0	
FE-177	9.4708.0	FE-177 B	9.4708.00110	FE-177 D	9.4708.00120	FE-177 E	E-E-177	9.4868.0	
FE-221	9.4709.0	FE-221 B	9.4709.00110	FE-221 D	9.4709.00120	FE-221 E	E-E-221	9.4869.0	
FE-185	9.4710.0	-	-	FE-185 D	9.4710.00120	FE-185 E	E-E-185	9.4870.0	
FE-283	9.4711.0	-	-	FE-283 D	9.4711.00120	FE-283 E	E-E-283	9.4871.0	
FE-354	9.4712.0	-	-	FE-354 D	9.4712.00120	FE-354 E	E-E-185	9.4870.0	
FE-526	9.4713.0	-	-	FE-526 D	9.4713.00120	FE-526 E	E-E-185	9.4870.0	
FE-708	9.4714.0	-	-	FE-708 D	9.4714.00120	FE-708 E	E-E-185	9.4870.0	
FE-885	9.4715.0	-	-	FE-885 D	9.4715.00120	FE-885 E	E-E-185	9.4870.0	
FE-1420	9.4716.0	-	-	FE-1420 D	9.4716.00020	FE-1420 E	E-E-185	9.4870.0	
FE-1950	9.4717.0	-	-	FE-1950 D	9.4717.00020	FE-1950 E	E-E-185	9.4870.0	
FE-2480	9.4718.0	-	-	FE-2480 D	9.4718.00020	FE-2480 E	E-E-185	9.4870.0	

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

Filter: Standard		Filter: D-Pack Basic		Filter: D-Pack		Filter: E-Pack		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Typ/Type	Nr./No.	Nr./No.
FF-6	9.4720.0	FF-6 B	9.4720.00110	FF-6 D	9.4720.00120	FF-6 E	E-F-6	9.4872.0	
FF-10	9.4721.0	FF-10 B	9.4721.00110	FF-10 D	9.4721.00120	FF-10 E	E-F-10	9.4873.0	
FF-18	9.4722.0	FF-18 B	9.4722.00110	FF-18 D	9.4722.00120	FF-18 E	E-F-18	9.4874.0	
FF-28	9.4723.0	FF-28 B	9.4723.00110	FF-28 D	9.4723.00120	FF-28 E	E-F-28	9.4875.0	
FF-48	9.4724.0	FF-48 B	9.4724.00110	FF-48 D	9.4724.00120	FF-48 E	E-F-48	9.4876.0	
FF-71	9.4725.0	FF-71 B	9.4725.00110	FF-71 D	9.4725.00120	FF-71 E	E-F-71	9.4877.0	
FF-107	9.4726.0	FF-107 B	9.4726.00110	FF-107 D	9.4726.00120	FF-107 E	E-F-107	9.4878.0	
FF-138	9.4727.0	FF-138 B	9.4727.00110	FF-138 D	9.4727.00120	FF-138 E	E-F-138	9.4879.0	
FF-177	9.4728.0	FF-177 B	9.4728.00110	FF-177 D	9.4728.00120	FF-177 E	E-F-177	9.4880.0	
FF-221	9.4729.0	FF-221 B	9.4729.00110	FF-221 D	9.4729.00120	FF-221 E	E-F-221	9.4881.0	
FF-185	9.4730.0	-	-	FF-185 D	9.4730.00120	FF-185 E	E-F-185	9.4882.0	
FF-283	9.4731.0	-	-	FF-283 D	9.4731.00120	FF-283 E	E-F-283	9.4883.0	
FF-354	9.4732.0	-	-	FF-354 D	9.4732.00120	FF-354 E	E-F-185	9.4882.0	
FF-526	9.4733.0	-	-	FF-526 D	9.4733.00120	FF-526 E	E-F-185	9.4882.0	
FF-708	9.4734.0	-	-	FF-708 D	9.4734.00120	FF-708 E	E-F-185	9.4882.0	
FF-885	9.4735.0	-	-	FF-885 D	9.4735.00120	FF-885 E	E-F-185	9.4882.0	
FF-1420	9.4736.0	-	-	FF-1420 D	9.4736.00020	FF-1420 E	E-F-185	9.4882.0	
FF-1950	9.4737.0	-	-	FF-1950 D	9.4737.00020	FF-1950 E	E-F-185	9.4882.0	
FF-2480	9.4738.0	-	-	FF-2480 D	9.4738.00020	FF-2480 E	E-F-185	9.4882.0	

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

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D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

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Materialkennzeichnung

Filter: Standard		Filter: Element/Cartridge	
Typ/Type	Nr./No.	Typ/Type	Nr./No.
FG-6	9.4740.0	E-G-6	9.4884.0
FG-10	9.4741.0	E-G-10	9.4885.0
FG-18	9.4742.0	E-G-18	9.4886.0
FG-28	9.4743.0	E-G-28	9.4887.0
FG-48	9.4744.0	E-G-48	9.4888.0
FG-71	9.4745.0	E-G-71	9.4889.0
FG-107	9.4746.0	E-G-107	9.4890.0
FG-138	9.4747.0	E-G-138	9.4891.0
FG-177	9.4748.0	E-G-177	9.4892.0
FG-221	9.4749.0	E-G-221	9.4893.0
FG-185	9.4750.0	E-G-185	9.4894.0
FG-283	9.4751.0	E-G-283	9.4895.0
FG-354	9.4752.0	E-G-185	9.4894.0
FG-526	9.4753.0	E-G-185	9.4894.0
FG-708	9.4754.0	E-G-185	9.4894.0
FG-885	9.4755.0	E-G-185	9.4894.0
FG-1420	9.4756.0	E-G-185	9.4894.0
FG-1950	9.4757.0	E-G-185	9.4894.0
FG-2480	9.4758.0	E-G-185	9.4894.0

Sign of material

Filter: Standard		Filter: D-Pack Basic		Filter: D-Pack		Filter: E-Pack
Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type	Nr./No.	Typ/Type
FFG-6	9.4760.0	FFG-6 B	9.4760.00110	FFG-6 D	9.4760.00120	FFG-6 E
FFG-10	9.4761.0	FFG-10 B	9.4761.00110	FFG-10 D	9.4761.00120	FFG-10 E
FFG-18	9.4762.0	FFG-18 B	9.4762.00110	FFG-18 D	9.4762.00120	FFG-18 E
FFG-28	9.4763.0	FFG-28 B	9.4763.00110	FFG-28 D	9.4763.00120	FFG-28 E
FFG-48	9.4764.0	FFG-48 B	9.4764.00110	FFG-48 D	9.4764.00120	FFG-48 E
FFG-71	9.4765.0	FFG-71 B	9.4765.00110	FFG-71 D	9.4765.00120	FFG-71 E
FFG-107	9.4766.0	FFG-107 B	9.4766.00110	FFG-107 D	9.4766.00120	FFG-107 E
FFG-138	9.4767.0	FFG-138 B	9.4767.00110	FFG-138 D	9.4767.00120	FFG-138 E
FFG-177	9.4768.0	FFG-177 B	9.4768.00110	FFG-177 D	9.4768.00120	FFG-177 E
FFG-221	9.4769.0	FFG-221 B	9.4769.00110	FFG-221 D	9.4769.00120	FFG-221 E
FFG-185	9.4770.0	-	-	FFG-185 D	9.4770.00120	FFG-185 E
FFG-283	9.4771.0	-	-	FFG-283 D	9.4771.00120	FFG-283 E
FFG-354	9.4772.0	-	-	FFG-354 D	9.4772.00120	FFG-354 E
FFG-526	9.4773.0	-	-	FFG-526 D	9.4773.00120	FFG-526 E
FFG-708	9.4774.0	-	-	FFG-708 D	9.4774.00120	FFG-708 E
FFG-885	9.4775.0	-	-	FFG-885 D	9.4775.00120	FFG-885 E
FFG-1420	9.4776.0	-	-	FFG-1420 D	9.4776.00020	FFG-1420 E
FFG-1950	9.4777.0	-	-	FFG-1950 D	9.4777.00020	FFG-1950 E
FFG-2480	9.4778.0	-	-	FFG-2480 D	9.4778.00020	FFG-2480 E

Filterkombination bestehend aus Serie FF & FG

Filter combination consist of series FF & FG

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter Serie FF mit Filtermonitor und ECO-DRAIN

E-pack: Filter series FF with filtermonitor and ECO-DRAIN

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

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Wir haben den Inhalt der Bedienungsanleitung auf Übereinstimmung mit dem beschriebenen Gerät geprüft. Dennoch können Abweichungen nicht ausgeschlossen werden, so daß wir für die vollständige Übereinstimmung keine Gewähr übernehmen.

We have examined the content of the operating instructions for conformity with the appliance described. Inconsistencies cannot be ruled out, however, with the result that we do not guarantee complete conformity

Technische Änderungen vorbehalten.

We reserve the right to alter the specifications without prior notice

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1. Einleitung

1.1 Allgemeines

Die in dieser Betriebsanleitung dokumentierten Druckluftfilter erfüllen alle Anforderungen, die an moderne Filtersysteme gestellt werden.

Um Sie optimal nutzen zu können, benötigt der Anwender ausführliche Informationen.

In der vorliegenden Betriebsanleitung haben wir diese Informationen möglichst vollständig und in entsprechende Kapitel gegliedert zusammengestellt.

Lesen und beachten Sie diese Informationen. Sie helfen Ihnen auch Unfälle zu vermeiden.

1.2 Erklärung der Symbole in der Bedienungsanleitung

- Aufzählungen werden mit diesem Punkt oder Sternchen * gekennzeichnet.



Mit diesem Symbol werden Textstellen gekennzeichnet, die unbedingt zu beachten sind.

- Wichtige Sicherheitshinweise
- Wichtige Bedienungs-/Wartungshinweise
- Warnung vor möglichen Fehlbedienungen
- Warnung vor Gefahren



Elektrisches Gefahrensymbol



Ausführende Tätigkeit.
Vom Bediener auszuführende Bedienschritte.

1.3 Erklärung der Symbole am Gerät



Automatischer Kondensatablaß / Automatic Condensate Drain



Elektroanschluß / Electrical Supply

1. Introduction

1.1 General remarks

The compressed air filters documented in these instruction manual has all requirements that can be expected from a modern filter/ -system.

In order to obtain maximum benefit from using the filters/ -system the user should have sufficient information.

These instruction manual gave the user this information which has been divided into separate sections for easy reference.

Please read carefully before installing and operating the filter/ -system.

1.2 Explanation to the symbols in the instruction manual

- Technical data or instructions.
*



Parts that require absolute attention

- Vital safety instructions
- Essential operation and maintenance instructions
- Warnings on handling or moving the dryer
- Danger areas



Electrical danger symbol



Changes sequence of operation

1.3 Symbols used in the filter



Drucklufteintritt / Compressed Air Inlet



Druckluftaustritt / Compressed Air Outlet

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D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

**2. Sicherheitsregeln,
Warnhinweise**

**2. Safety rules,
warnings**

2.1 Bestimmungsgemäßer Gebrauch

2.1 Use of filter/ -system

 **Achtung!**

 **Achtung!**

- Die Filter dürfen nur für die in dieser Bedienungsanleitung vorgesehenen Einsatzfälle zur Aufbereitung von Druckluft verwendet werden.
- Der einwandfreie und sichere Betrieb der Produkte erfordert sachgerechten Transport, Lagerung, Aufstellung und Montage, sowie sorgfältige Bedienung und Instandhaltung.

- The filter must only be used for the purpose as designated in the instruction manual to upgrading the compressed air.
- To obtain maximum efficiency and operation of the filter/ -system ensure all sections of the manual are read carefully.

2.2 Sicherheitsregeln

2.2 Safety rules

 **Warnung!**

 **Warning!**

- Die Filter dürfen nur von qualifiziertem Personal genutzt, bedient, gewartet oder instandgesetzt werden.
- Qualifiziertes Personal im Sinne der sicherheitsbezogenen Hinweise in dieser Dokumentation oder auf dem Produkt selbst, ist Personal das:
 - * im Umgang mit Einrichtungen der Druckluft vertraut und unterwiesen sowie über die damit verbundenen Gefahren unterrichtet ist.
 - * Den auf die Bedienung bezogenen Inhalt dieser Dokumentation kennt.
 - * Es besitzt als solches eine zur Inbetriebnahme und Wartung derartiger Einrichtungen befähigende Ausbildung bzw. Berechtigung.

- The filter/ -system must only be used, operated, inspected and repaired by trained personnel.
- Trained personnel are defined as follows:
 - * Operating staff who are skilled in the field of compressed air engineering and who are familiar with the filter/ -system and possible dangers in unauthorised operation or service.
 - * Who can interpret and action the contents of this operation instruction manual.
 - * Who have had the appropriate training and qualified as being competent in these fields.

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**2. Sicherheitsregeln,
Warnhinweise**

**2. Safety rules,
warnings**

2.3 Warnhinweise

2.3 Security-warnings

 **Warnung!**

Das (die) Filter beinhalten unter erhöhtem Druck stehende Systeme.
Vor Servicearbeiten sind sie drucklos zu machen.

 **Warning!**

The filter/ -system contains components under high pressure.
Before starting any service work turn off compressed air supply to the dryer and depressurise the system.

 **Warnung!**

Filtersysteme mit elektrisch gesteuerten Kondensatableitern enthalten unter elektrischer Spannung stehende Bauteile.
Vor Servicearbeiten sind diese allpolig vom elektrischen Spannungsversorgungsnetz zu trennen.
(Netzstecker ziehen, Hauptschalter ausschalten)

 **Warning!**

The filter/ -systems with electrical condensate discharger contains components that are electrically live and which can cause danger to life.
Before starting any service work ensure all power is isolated from the filter/ -system, mains isolator to be off, mains plug if fitted to be removed.

ACHTUNG!
Alle Arbeiten am elektrischen System dürfen nur von elektrotechnisch geschultem Fachpersonal, oder unter Aufsicht von diesem, durch Unterwiesene ausgeführt werden.

ATTENTION!
Any electrical work on the dryer must only be carried out by skilled staff - qualified electricians, or persons under supervision of qualified staff.

 **Hinweis!**

Die Filter sind ausschließlich zur Aufbereitung von Druckluft einzusetzen.

 **Remark!**

Use filter for compressed air applications only.

ACHTUNG!
Die Verwendung in Verbindung mit brennbaren Gasen ist verboten!

Attention!
The use of combustible gases is prohibited.

 **ACHTUNG!**

Filter/ -systeme zur Aufbereitung von Atemluft dürfen nur nach Genehmigung des Herstellers der Filter/ -systeme eingesetzt und betrieben werden.

 **ATTENTION!**

Filter/ -systems for breathing air applications must be approved from manufacturer.

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3. Technische Daten

3. Technical data

MODELL BEZEICHNUNG / MODEL DESIGNATION		Volumenstrom Capacity [m³/min]	Anschluß Connection []	Betriebsdruck Working Pressure [max]	Abmessungen Dimensions		Gewicht Weight [kg]	AUSTAUSCH-FILTERELEMENTE FILTER REPLACEMENT CARTRIDGE		
FILTER- GRAD / GRADE	FILTER- GEHÄUSE / HOUSING				Höhe / Height [mm]	Breite / Width [mm]		FILTER- GRAD / GRADE	FILTER- GEHÄUSE / HOUSING	Anzahl Quantity
MODUL-BAUWEISE / MODULAR SYSTEM										
	-6	0,58	3/8"	16	105				-6	1
	-10	1,00	1/2"	16	105	siehe Kapitel			-10	1
FA	-18	1,75	1/2"	16	105	„Maßzeich- nung“	siehe Kapitel „Maßzeichnung“		-18	1
	-28	2,83	3/4"	16	133				-28	1
FB	-48	4,83	1"	16	133				-48	1
	-71	7,10	1-1/2"	16	164		see chapter „dimensional drawing“		-71	1
FC	-107	10,7	1-1/2"	16	164				-107	1
	-138	13,8	2	16	194				-138	1
FD	-177	17,7	2-1/2"	16	194				-177	1
	-221	22,1	2-1/2"	13	194				-221	1
BEHÄLTER-BAUWEISE / PRESSURE VESSEL										
FE	-185	18,5	DN80	16	1025		siehe Kapitel		-185	1
	-283	28,3	DN80	16	1045		„Maßzeichnung“		-283	2
FF	-354	35,4	DN80	16	1045				-354	2
	-526	52,6	DN100	16	1085				-526	3
FG	-708	70,8	DN100	16	1105		see chapter „dimensional drawing“		-708	4
	-885	88,5	DN100	16	1105				-885	5
	-1420	142	DN150	16	1215				-1420	8
	-1950	195	DN150	16	1245				-1950	11
	-2480	248	DN150	16	1245				-2480	14

- Volumenstrom m³/h bezogen auf +20°C und 1 bar absolut, bei Betriebsüberdruck 7 bar / Air flow m³/h based on +20°C and 1 bar absolute, at working pressure 7 bar
- Größere Betriebsdrücke auf Anfrage / Contact factory for dryers with a higher working pressure
- Filtergehäuse F-185 – F-2480: Konstruktion der Behälter entspricht der EG-Richtlinie 87/404/EEC für einfache Druckbehälter und ist mit CE-Zeichen versehen / Filter bowls F-185 – F-2480: Vessel construction complies with directive 87/404/EEC, simple pressure vessels, and is marked with the EC symbol

Volumenstrom - Korrekturtabelle / Sizing

Minimaler Betriebsdruck / Minimum working pressure bar															
Korrekturfaktor / Correction factor	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	0,38	0,52	0,63	0,75	0,88	1,00	1,13	1,26	1,38	1,52	1,65	1,76	1,87	2	2,14

Auslegung

Bei Drücken abweichend von 7 bar berechnet sich der max. Volumenstrom wie folgt:

den Korrekturfaktor des entsprechenden minimalen Betriebsdruckes mit dem gewählten Volumenstrom aus o.g. Tabelle multiplizieren.

Based on

To find the maximum flow at pressures other than 7 bar:

multiply the flow (from table above) by the correction factor corresponding to the minimum working pressure of the filter.

Betriebsbedingungen:

Min. Betriebstemperatur: +1°C

Max. Betriebstemperatur: 66°C.

Min. Betriebsdruck mit automatischem Kondensatableiter: 2,0 bar

Working conditions:

Min. Working temperature: +1°C

Max. Working temperature: 66°C

Min. working pressure with automatic condensate drain: 2.0 bar

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4. Funktionsbeschreibung

4. Description of operation

4.3 Serie FC

4.3 Series FC

1-MIKRON-COALESCEING-FILTER

1-MICRON-COALESCEING-FILTER

- Zweistufige Tiefenfiltration bewirkt hervorragende Leistung und höhere Standzeiten des Filterelementes
- Entfernt 100% des Kondensats
- Entfernt Feststoffpartikel bis herunter zu 1 Mikron
- Restölgehalt < 1 ppm w/w
- Automatischer Kondensatableiter
- Differenzdruckanzeige am Filtergehäuse
- max. Flüssigkeitsbelastung: 2g/m³

- Two in-depth filter beds offer superior performance and extended cartridge life
- Removes 100% of liquid water
- Removes solid particles down to 1 micron
- Oil content < 1 ppm w/w
- Automatic condensate drain
- Differential pressure indicator at the filter housing
- max. liquid load: 2g/m³

Anwendungen:

Application:

- Allgemeine Filter für Werkstattluft
- Vorfilter für Hochleistungsfilter
- Nachfilter für Adsorptionstrockner
- Endstellenfiltration bei Einsatz von Nachkühlern oder Trocknern

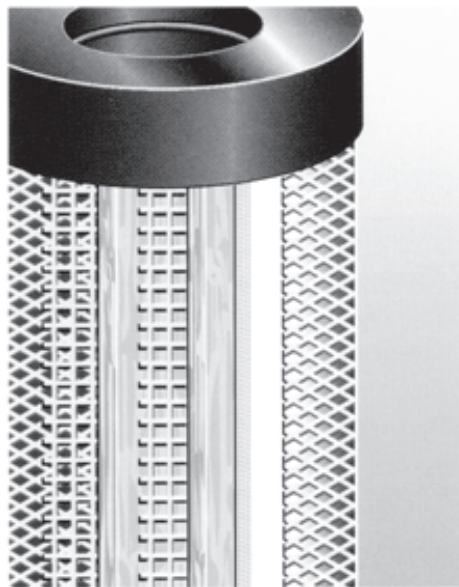
- General filter for shop air
- Prefilter for high efficiency filters
- Afterfilter for pressure-swing desiccant dryers
- Point-of-use filter on systems utilising aftercoolers or dryers

Funktion:

Operation:

Die Luft tritt von oben in das Filterelement FC ein und strömt radial durch den perforierten inneren Stützmantel zur 1. Filtrationsstufe. Diese Stufe besteht aus mehreren Lagen Glasfaser und einer stützenden Glasfasermatte. Größere Feststoffteilchen werden hier zurückgehalten. Die Luft gelangt nun in die 2. Filtrationsstufe, bestehend aus einer mehrlagigen Mischung von imprägnierten Glasfasern und Mikrofibern. In beiden Stufen werden Feststoffpartikel und Flüssigkeiten nach dem Prinzip der Tiefenfiltration sowie des Coalescings ausgefiltert. Die Luft tritt durch den perforierten äußeren Stützmantel aus.

Air enters the inside of the cartridge FC and flows outwardly through two in-depth beds of glass fibres. Larger particles are collected in the first bed while all remaining particles one micron and larger are collected in the second bed. A combination of large void areas and stabilized media allows heavy particulate loading and low pressure drop resulting in a long service life for the cartridge. Throughout both stages, liquid aerosols are captured and coalesced. The coalesced liquids then drain to the bottom of the cartridge for removal.



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4. Funktionsbeschreibung

4.5 Serie FE

0,01-MIKRON-COALESCEING-FILTER
(bei 0,01 ppm w/w max. Ölgehalt)

DUO-System Abscheidung

1. Stufe: flüssige Bestandteile
2. Stufe: Ölbestandteile

- Entfernt mehr als 99,99% der Öl-Aerosole
- Entfernt Feststoffpartikel bis herunter zu 0,01 Mikron
- Restölgehalt < 0,01 ppm w/w
- Automatischer Kondensatableiter
- Differenzdruckanzeige am Filtergehäuse
- max. Flüssigkeitsbelastung: 1g/m³

Anwendungen:

- Vorfilter für Membrantrockner
- Vorfilter für Adsorptionstrockner
- Endstellenfiltration (falls geringfügige Feuchtigkeit vorhanden ist)

Funktion:

Die Luft tritt von oben in das Filterelement FE ein und strömt durch den inneren Stützmantel, radial durch verschiedenartige Lagen Fiberglas. Dann strömt die Luft durch ein weiteres Sieb. In dieser 1. Filtrationsstufe werden größere Partikel entfernt. In der zweiten Filtrationsstufe werden Aerosole und feste Bestandteile durch eine Mehrschicht-Membranwand aus epoxidharz verstärktem Fiberglas gefiltert, daß speziell für feinste Aerosole geeignet ist. Das Filtermedium ist ein Bett aus submikrofeinen Glasfasern und wirkt nach dem Prinzip des Coalescing sowie der Tiefenfiltration. Der innere Schaumstoffmantel gleicht Luftschwankungen und Aerosolkonzentrationen aus und gewährleistet eine gleichmäßige Verteilung. Im äußeren Schaumstoffmantel werden die Öltröpfchen gesammelt, fließen durch Schwerkraft in den unteren Teil des Filters und tropfen dann in den Filterbehälter ab.

4. Description of operation

4.5 Series FE

0,01-MICRON-COALESCEING-FILTER
(at 0,01 ppm w/w max. oil content)

DUO-system separation

1. Stage: liquid particles
2. Stage: oil particles

- Removes more than 99,99% of oil aerosols
- Removes solid particles down to 0,01 microns
- Oil content < 0,01 ppm w/w
- Automatic condensate drain
- Differential pressure indicator at the filter housing
- max. liquid load: 1g/m³

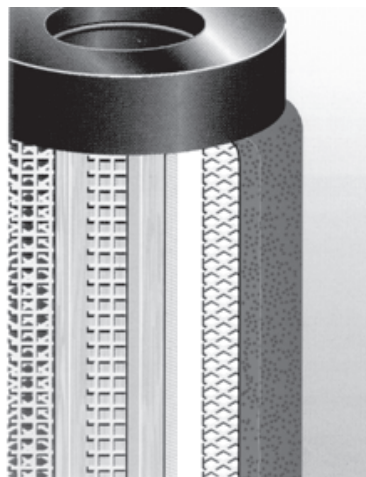
Application:

- Prefilter for membrane dryers
- Prefilter for pressure-swing desiccant dryers
- Point-of-use filter (may be used if light liquid load is present)

Operation:

Air enters the inside of the cartridge FE and flows through an inner foam sleeve, radially outward through various layers of glass fibers. Then the air flows through another screen. In the first stage filter section the larger solid particles are trapped. In the second stage filter section aerosols and solid particles are trapped using a multi-layered membrane wall made of epoxy resin-reinforced glass fibres which was especially designed for the finest aerosols.

The filter media is a bed of submicronic glass fibers and works to the principle of coalescing and in-depth filtration. The inner foam sleeve compensates air cycling and aerosol concentrations and maintains uniform distribution. The outer foam sleeve collects the coalesced oil droplets which then, due to gravity, travel downstream to the bottom of the sleeve and drain to the bottom of the filter bowl.



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7. Montage

7. Mounting

7.1 Montageort

Das Filter/ -system sollte in einem trockenen, frostfreien Innenraum installiert werden.
Zur Wartung ist genügend Freiraum vorzusehen.

7.1 Location of mounting

The filter/ -system should be installed in a dry and frost-proof room indoors.
Ample free, space should be allowed for the maintenance.

7.2 Montage

Das Filter/ -system ist senkrecht so zu montieren, daß der Druckluft-ein- und austritt waagrecht erfolgt.

7.2 Mounting

Mount the filter/ -system so that inlet and outlet connections are horizontal (filter bowl vertical).

Im Filtergehäuse eingebaute Filterelemente können sich während des Transportes lösen.
Prüfen Sie den richtigen Sitz der Filterelemente vor der Inbetriebnahme.

Cartridges installed in the filter housing may become dislodged during transport.
Make sure that the cartridge is correctly installed before use.

⚠ ACHTUNG!
Achten Sie bei der Montage darauf, daß keine Zug- und Druckkräfte auf die Geräteanschlüsse übertragen werden.

⚠ ATTENTION!
When installing the filter/ -system ensure all connections are even and no pressure is placed on inlet and outlet connections.

⚠ Hinweis!
Bei den Standard-Filtern FB, FC, FE und FF der Größe -185 & -283 ... -2480, den D-Pack-Basic-Filtern FB, FC, FE und FF, sowie den E-Pack-Filtern FA, FB, FC, FE und FF sind die Kondensatableiter beige packt und müssen wie in Kapitel 11. „Maßzeichnung“ angebaut werden.

⚠ Remark!
By the standard-filter FB,FC,FE and FF with the size -185 & -283 ... -2480, by the D-pack-basic-filter FB, FC, FE, FF and by the E-pack-filter FA, FB, FC, FE and FF the condensate drains are attached and must mount as shown in chapter 11. „Dimensional drawing“.

7.3 Anschluß an das Druckluftnetz

Die Druckluftein- und -austrittsleitung sollte für Servicezwecke mit einem Bypass versehen werden.
Die Dimensionierung der Anschlüsse entnehmen Sie bitte dem Kapitel 3. „Technische Daten“.

7.3 Connection to the compressed air system

The compressed air inlet and outlet line should be equipped with a by-pass system for the maintenance.
For the sizing of the connections please see chapter 3. „Technical data“.

⚠ ACHTUNG!
Durchflußrichtung beachten.
Druckluftein- und austritt dürfen nicht vertauscht werden.

⚠ ATTENTION!
Pay attention to the flow direction.
Do not exchange the compressed air inlet and outlet.

7.4 Kondensatableitung

Für die automatische Kondensatableitung ist bei den Filtern (FA, FB, FC, FE, FF) ein Anschluß vorhanden.
Die Dimensionierung des Anschlusses entnehmen Sie bitte Kapitel 5. „Kondensatableiter“.

7.4 Condensate drain

The filters (FA, FB, FC, FE, FF) are equipped with one connection for the automatically condensate drain.
For the sizing of the connection please see chapter 5. „Condensate discharger“.

⚠ Achten Sie bei der Montage der Kondensatableitung darauf, daß das abgeschiedene Kondensat ungehindert abfließen kann.

⚠ When fitting the drains please see to it, that the condensate separated is drained off into a system that does not create a back pressure.

⚠ HINWEIS!
Bei der Entsorgung des Kondensats ist der Schmutzanteil zu berücksichtigen.
Beachten Sie die jeweils geltenden gesetzlichen Vorschriften.

⚠ Instruction!
When disposing of the condensate the amount of pollution has to be taken into consideration. Please act according to the prevailing regulations of law.

Bei den Filtern FD, FG entfällt der Kondensatableitungsanschluß.

Condensate drain does not exist in filters FD, FG.


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8. Inbetriebnahme, Betrieb

8. Start-up, operation

8.1 Bereitschaft zur Inbetriebnahme





8.1 Preconditions for starting the dryer





-  **Druckluftfilter/ -systeme sind bereit zur Inbetriebnahme, wenn:**
- Der auf dem Typenschild angegebene Druck dem maximalen Betriebsdruck entspricht.
 - Sie entsprechend Kapitel 7. „Montage“ installiert wurden.
 - Alle Zu- und Ableitungen sachgerecht angeschlossen sind.
 - Die erforderlichen Energien (Druckluft) verfügbar sind.
 - Absperrorgane (z.B. Ventil, Kugelhahn) in der Druckluftein- und austrittsleitung geschlossen sind.
 - Kondensat durch die Kondensatableitung ungehindert abfließen kann.
 - Der elektrisch gesteuerte Kondensatableiter an das elektrische Spannungsversorgungsnetz mit der richtigen Betriebsspannung angeschlossen ist. (Nur bei elektrisch gesteuerten Kondensatableitern)
 - Das Filter/ -system mit den richtigen Filterelementen ausgerüstet ist.

-  **The filter/ -system is ready for starting when:**
- Check unit serial number tag to verify working pressure.
 - They has been installed in accordance with section 7. „Mounting“.
 - All inlet and outlet lines have been correctly connected.
 - The required forms of energy (compressed-air) are available.
 - The shut-off devices (e.g. ball valve) in the compressed-air inlet and outlet lines are closed.
 - The condensate is able to flow through the condensate discharger without obstruction.
 - The electrical condensate drain has been connected to the electric power supply system with the correct operating voltage (only electrical condensate drains).
 - The filter/ -system is equipped with the right cartridges.

8.2 Inbetriebnahme, Betrieb

8.2 Start up, operation

-  **Vor der Inbetriebnahme ist sicherzustellen, daß alle Bedingungen des Abschnittes 8.1 „Bereitschaft zur Inbetriebnahme“ erfüllt sind.**
-  Setzen Sie das Filter/ -system durch langsames Öffnen der Drucklufteintritts- und austrittsleitung unter Druck.
-  Schließen Sie das Absperrorgan im Bypass (falls vorhanden).
-  **Das Filter/ -system ist nun in BETRIEB.**

-  **Before starting the dryer, ensure that all the requirements specified in section 8.1 „Preconditions for starting the dryer“ have been fulfilled.**
-  Place filter/ -system under pressure gradually by slowly opening the compressed air inlet/outlet.
-  Close the shut-off device in the bypass (if installed).
-  **The filter/ -system is now OPERATIVE.**

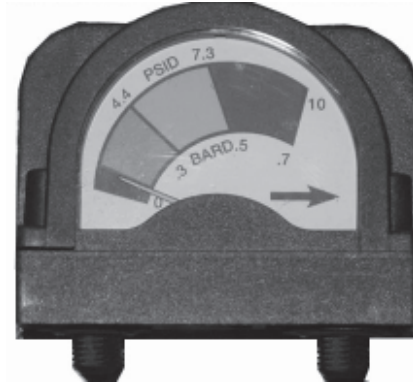
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8. Inbetriebnahme, Betrieb

8. Start-up, operation

8.3 Differenzdruckanzeige-Standard und D-Pack (OPTION)

8.3 Differential pressure indicator-standard and D-Pack (OPTION)



Die Differenzdruckanzeige informiert als Störanzeige über eine atypische Verschmutzung.

The differential pressure indicator indicates atypical contamination.

⚠ **Unabhängig von der Differenzdruckanzeige müssen die Filterelemente gemäß der Wartungsintervalle gewechselt werden. (Siehe Kapitel 9)**

⚠ **We recommend installing a new filter cartridge according to the maintenance periods. (See chapter 9)**

⚠ **Das Filter FG benötigt keine Differenzdruckanzeige.**

⚠ **The FG filter does not require a differential pressure gauge.**

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**9. Wartung
Austausch der Filterelemente**

9. Servicing, filter cartridge replacement

9.1 Standzeit der Filterelemente

9.1 Serviceable life of cartridge

Die Standzeit der Filterelemente ist abhängig von der Beladung. Mit steigender Beladung der Elemente erhöht sich der Differenzdruck über den Filter.
Die Filterelemente müssen gemäß unten stehender Tabelle gewechselt werden.

The cartridge's serviceable life depends upon the degree of contamination. As the cartridge becomes more contaminated, the differential pressure above the filter increases.
The filterelements must be changed according to the table below.

9.2 Austausch der Filterelemente

9.2 Replacing the cartridge

Filtergehäuse -6 bis -221

Filter housing -6 to -221

Anzahl der Filterelemente siehe Kapitel 4. „Technische Daten“.


Number of cartridges see chapter 4. „Technical data“.


⚠️ WARNUNG!

⚠️ CAUTION!


- Verwenden Sie keine Werkzeuge! (Filtergehäuse -6 bis -48)
- Öffnen und Schließen Sie das Filter nicht mit Gewalt.
- Das (die) Filter beinhaltet(n) unter erhöhtem Druck stehende Systeme.
Vor Servicearbeiten sind sie drucklos zu machen.


- Do not use any tools (filter housings -6 to -48)
- Do not force the filter open or closed.
- The filter(s) contain(s) systems under high pressure.
All pressure must be let off before servicing.


 Absperrvorrichtung im Druckluftein- und -austritt schließen.

 Close the shut-off device in the compressed air inlet/outlet.

 Kondensatableitungsschlauch an (1) lösen.
(Nur bei FB, FC, FE, FF).

 Loosen condensate drain hose at (1) (only on FB, FC, FE, FF models).

 Rändelschraube (1) langsam im Uhrzeigersinn lösen.
Das Filtergehäuse wird entlüftet.

 Slowly turn the knurled screw (1) clockwise. This will release the air from the housing.

Wartungsintervalle / Maintenance-intervals

Wartungsteil Part of maintenance	Type	Anwendung Application	Wartungs-Intervall Maintenance-interval
Filter-Elemente / filter cartridges	FB, FC	Vorfilter Pre-filter	6.000 Bh, max. 1 Jahr / 6.000 Bh, max. 1 year
	FE, FF	Microfilter	3.000 Bh, max. 1 Jahr/ 3.000 Bh, max. 1 year
	FEG	Filterkombination Filter combination	3.000 Bh, max. 1 Jahr (Type FE) 3.000 Bh, max. 1 year (Type FE)
	FFG		1.000 Bh, max. 1 Jahr (Type FG) 1.000 Bh, max. 1 year (Type FG)
	FD	Nachfilter After-filter	6.000 Bh, max. 1 Jahr/ 6.000 Bh, max. 1 year
	FG	Aktivkohlefilter Act.carbon filter	1.000 Bh
Kondensatableiter / condensate drain	Service-unit	Vorfilter Pre-filter	6.000 Bh
	Service-unit	Microfilter	6.000 Bh
	Service-unit	Filterkombination Filter combination	6.000 Bh

Bh = Kompressor-Betriebsstunden / Working hours



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**9. Wartung
Austausch der Filterelemente**

Filtergehäuse entfernen.

- **Filtergehäuse -6 bis -48 (Bajonett-Verschluss)**
 - * Das Filtergehäuse nach oben, gegen den Filterkopf drücken.
 - * Dann das Filtergehäuse im Uhrzeigersinn langsam gegen den Anschlag drehen (etwa 1/8 Drehung) und nach unten abziehen.
- **Filtergehäuse -71 bis -221 (Gewinde-Verschluss)**
 - * Schrauben Sie das Filtergehäuse gegen den Uhrzeigersinn (per Hand oder mit Hilfe eines Filterschlüssels) auf.

Filterelement gemäß unten stehender Skizze abziehen, bzw. wechseln.

Hinweis: Die Schaumstoffummantelung der Filterelemente Serie FE, FF und FG dürfen nicht mit den Fingern angefaßt werden.

Filtergehäuse in umgekehrter Reihenfolge zusammenbauen.

Filter durch langsames Öffnen der Absperrvorrichtung wieder mit Druck beaufschlagen.



9. Servicing, filter cartridge replacement

Remove housing.

- **Housing -6 to -48 (bayonet-style head)**
 - * Push housing upwards against the filter head.
 - * Then slowly turn the housing clockwise to the stop (about 1/8 of a turn) and remove by pulling downwards.
- **Housing -71 to -221 (threaded head)**
 - * Screw off the housing counter-clockwise (by hand or using a filter wrench).

Remove and replace cartridge as shown below.

Please note: Do not touch the foam sleeves of the cartridges from the FE, FF and FG series with your fingers.

Re-assemble the housing in the reverse order.

Place filter under pressure again by slowly opening the shut-off device.



Filtergehäuse -185 bis -2480

Anzahl der Filterelemente siehe Kapitel 3. „Technische Daten“.

WARNUNG!

- Das (die) Filter beinhaltet(n) unter erhöhtem Druck stehende Systeme.
Vor Servicearbeiten sind sie drucklos zu machen.

Housing -185 to -2480










Number of cartridges see chapter 3. „Technical data“.

CAUTION!










- The filter(s) contain(s) systems under high pressure.
Alle pressure must be let off before servicing

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D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

**9. Wartung
Austausch der Filterelemente**

-  Absperrvorrichtung im Druckluftein- und -austritt schließen.
 -  Kondensatableitungsschlauch an (1) lösen. (Nur bei FB, FC, FE, FF).
 -  Um das Filtergehäuse zu entlüften müssen Sie beim:
- Kondensatableiter Nr. 30505 und Nr. 30506 die Entlüftungsschraube (3) entgegen dem Uhrzeigersinn lösen.
- FG den Kugelhahn (5) öffnen.
 -  Schrauben der Flanschverbindung am Boden des Filtergehäuses vorsichtig lösen, da evtl. noch ein geringer Restdruck im System vorhanden ist.
 -  Schrauben bis auf eine entfernen und Flansch zur Seite schwenken.
 -  Filterelemente entgegen dem Uhrzeigersinn herausschrauben.
 -  Neue Filterelemente ohne Werkzeug „fingerfest“ einschrauben.
- Hinweis:** Die Schaumstoffummantelung der Filterelemente Serie FE, FF, FG dürfen nicht mit den Fingern angefaßt werden.
-  Filtergehäuse in umgekehrter Reihenfolge schließen.
 -  Filter durch langsames Öffnen der Absperrvorrichtungen wieder mit Druck beaufschlagen.

9. Servicing, filter cartridge replacement

-  Close shut-off device in compressed air inlet/outlet.
 -  Loosen condensate drain hose at (1) (only on FB, FC, FE, FF models).
 -  Follow these steps to release the air from the housing:
- for condensate drain no. 30505 and no. 30506, loosen the bleed screw (3) in counter-clockwise direction.
- on FG models, open the ball valve (5).
 -  Gently loosen the screws at the bottom flange of the housing. Caution is necessary as the system may still be under slight residual pressure.
 -  Remove all screws except one and swing flange to the side.
 -  Screw out cartridge counter-clockwise.
 -  Screw in new cartridge by hand until „handtight“. Do not use a wrench.
- Please note:** Do not touch the foam sleeves of the cartridges from the FE, FF, FG series with your fingers.
-  Close housing in reverse order.
 -  Place filter under pressure again by slowly opening the shut-off device.



F0507	05.03.07	KC	05.03.07	KC	F0412	
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

**9. Wartung
Austausch der Filterelemente**

**9. Servicing, filter cartridge
replacement**

9.3 Austausch der

**Schwimmerableiter /
ECO-DRAIN Service-unit /
ECO-DRAIN Membransätze**

9.3 Changing of

**Float drain /
ECO-DRAIN Service-unit /
ECO-DRAIN membrane set**

Die Kondensatableiter / Wartungspakete sind gemäß unten aufgeführter Tabelle regelmäßig zu wechseln.

The condensate drains / service packages must be changed according to the table below.

Wartungsteil Part of maintenance	Wartungs-Intervall Maintenance-interval
Schwimmer-Kondensatableiter/ Float drain	3.000 Bh
Service-Unit (ECO DRAIN 30/31)	6.000 Bh
ECO DRAIN Verschleißteilsatz (ECO DRAIN 13/14) ECO DRAIN wearing part set (ECO DRAIN 13/14)	6.000 Bh

Nähere Informationen finden Sie auch im Anhang ECO DRAIN.

For more details please see annexe ECO DRAIN.

F0507	05.03.07	KC	05.03.07	KC	F0412	
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

10. Garantiebedingungen

10. Garantie conditions

10.1 Allgemeines

Die Garantie erstreckt sich, im Rahmen unserer allgemeinen Lieferbedingungen, auf das gelieferte Filter/-system.

10.1 General

The guarantee covers the delivered device with regard to our general terms of delivery.

10.2 Garantieausschluß

Garantieansprüche bestehen nicht,

- wenn das Filter/ -system durch Einfluß höherer Gewalt oder durch Umwelteinflüsse beschädigt oder zerstört wird.
- bei Schäden, die durch unsachgemäße Behandlung, insbesondere Nichtbeachtung der Betriebs- und Wartungsanleitung aufgetreten sind (regelmäßige Kontrolle des Kondensatableiters / regelmäßiger Wechsel der Filterelemente).
- falls das Filter/ -system nicht seinen Bestimmungen entsprechend eingesetzt war (siehe Kapitel 3. „Technische Daten“).
- falls das Filter/ -system durch nicht hierfür autorisierte Werkstätten oder andere Personen unsachgemäß geöffnet oder repariert wurde und/oder mechanische Beschädigungen irgendwelcher Art aufweist.

10.2 Exclusion from guarantee coverage

No guarantee claims shall be assertible,

- if the filter/ -system is damaged or destroyed due to force majeure or environmental effects.
- for damage resulting from incorrect handling, in particular failure to comply with the operating and maintenance instructions (regular inspection of the condensate discharger, regular change of the filter cartridges).
- if the filter/ -system has not been used in accordance with its specifications (see section 3. „Technical data“).
- if the filter/ -system has been opened or repaired by workshops or other persons unauthorised for this purpose and/or reveals any type of mechanical damage.

F0507	05.03.07	KC	05.03.07	KC	F0412	
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

13.7 Oil-injected MOBILAIR service intervals

Maintenance strategy:000510 (1 x service per year)/

000500 (2 x service per year)

Package sequence	A	B	C	B	A	D	From the beginning
Years	1	2	3	4	5	6	

Tab. 90 Service maintenance package - (1 x service per year)



Replacement intervals apply to favourable ambient conditions, such as good fuel quality, cool to medium ambient temperatures, low humidity and low to medium dust exposure. Replacement intervals should be more frequent in case of harsher ambient conditions.

Group	Item no. Parts list	Available only for certain ma- chine types	Change intervals and maintenance packages (Additionally in case of annual operation > 500 h)					Note
			A 1 year	B 2 years	C 3 years	D 6 years	Operating hours max.	
Part (with mounting location)								
Filter SET (compressor and engine):	550			X			X	
Compressor oil filter	1210							
Engine oil filter	1905							
Compressor air filter	1260							
Compressor safety filter element	1261	I						
Engine air filter	1280							
Engine safety filter element	1281	I						
Fuel prefilter	1910, 1915							
Fuel filter	1920							
Water separator filter insert	1985							

Tab. 91 Service intervals for MOBILAIR parts, Filter SET group (compressor and engine)

Compressor group Part (with mounting location)	Item no. Parts list	Available on-ly for certain machine types	Change intervals and maintenance packages (Additionally in case of annual operation > 500 h)					Note	
			A 1 year	B 2 years	C 3 years	D 6 years	Operating hours max.		
SIGMA FLUID cooling oil	1600			X		X	2	1000	
Compressor oil filter	1210			X		X	2	1000	
Compressor air filter	1260			X		X	2	1000	
Compressor safety filter element	1261	I		X		X	2	1000	
Oil separator cartridge(s)	1450 1455	I I		X		X	2	1000	M255.1; M120.1: externally mounted oil separator cartridge/s
Airend drive belt or cooler fan wheel	1801	I			X	X	3	1500	Airend drive (e.g. M13-M17) or cooler fan wheel (e.g. M250) in oil separator tank extraction line
Service kit for dirt trap	9416	I		X		X	2	1000	<i>Option da</i> : to compressed air aftercooler
Service kit, dirt trap, control valve	2148	I		X		X	2	1000	For oil separator cartridge oil scavenging, component of the control valve (e.g. M114, M122, M123)
Service kit for dirt trap	9420	I		X		X	2	1000	<i>Option da</i> : to compressed air aftercooler
Filter element for compressed air prefilter	1550	I	X	X	X	X	1		<i>Option dd</i>
Filter element for compressed air microfilter	1551	I	X	X	X	X	1		<i>Option dd</i>
Prefilter/microfilter element seal	1548	I	X	X	X	X	1		<i>Option dd</i>

Compressor group	Item no. Parts list	Available on-ly for certain machine types	Change intervals and maintenance packages (Additionally in case of annual operation > 500 h)					Note
			A 1 year	B 2 years	C 3 years	D 6 years	Operating hours max.	
Part (with mounting location)								
Fresh air filter element set	1549	I	X	X	X	X	1	<i>Option dc</i>

Tab. 92 Service intervals for MOBILAIR parts, compressor group

Engine group Part (with mounting location)	Item no. Parts list	Available only for certain machine types	Change intervals and maintenance packages (Additionally in case of annual operation > 500 h)					Note	
			A 1 year	B 2 years	C 3 years	D 6 years	Operating hours max.		
Engine oil	1925		X	X	X	X	1	500	
Engine oil filter	1905		X	X	X	X	1	500	
Engine air filter	1280			X		X	2	1000	
Engine safety filter element	1281	I		X		X	2	1000	
Fuel prefilter / fuel filter	1910 1915 - 1919			X		X	2	1000	
Fuel fine filter	1920	I		X		X	2	1000	
Antifreeze	5195	I			X	X	3	1500	
Engine drive belt	1800 4470	I I			X	X	3	1500	
Air filter insert	1250 1243	I		X		X	2	1000	Add-on filter, tank ventilation

Tab. 93 Service intervals for MOBILAIR parts, engine group



The vast majority of oil-injected MOBILAIR machines with combustion engines operate for approximately 350 h/year on average. – somewhat less for smaller machine types and somewhat more for larger ones.

