

Operator manual

Portable compressor

MOBILAIR M20

No.: 9_9439 33 E

Manufacturer:

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1 Regarding this document

1.1 Using this document

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

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

1.2 Further documents

Further documents included with this operating manual are:

- Certificate of acceptance / operating instructions for the pressure vessel
- Declaration of Conformity in accordance with the applicable directive
- Chassis documentation (where applicable)

Missing documents can be requested from KAESER.

- Make sure all documents are complete and observe the instructions contained in them.
- Make sure you provide the data from the nameplate when ordering documents.

1.3 Copyright

This 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
CAUTION	Warns of a potentially dangerous situation	May result in a moderate physical injury

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

1 Regarding this document

1.4 Symbols and labels

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

Example:



DANGER

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

The possible consequences of ignoring a warning are shown here.

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

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

Warning notes referring to a sub-section or the subsequent 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 2.2.



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

➤ Enter here the nameplate data as a reference:

Characteristic	Value
Portable screw compressor	
Material-No. / Serial-No.	
Actual total mass	
Lifting point load capacity	
Rated power	
Rated engine speed	
Maximum working pressure PS	

Tab. 3 Nameplate

2.2 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.

MOBILAIR M20

Material No.

Serial no.

Options fitted

__	__	__	__	__
ea	__	__	__	__
fa	__	__	__	__
__	__	__	__	__
__	__	__	__	__
ba	bb	__	__	__
__	__	__	__	__
__	__	__	__	__
oa	oe	__	__	__
__	__	__	__	ne
__	__	__	__	__
r1	__	r3	r4	r5
ta	tb	tc	__	te
sf	__	ua	__	__

* {
r1= rb; rc; rd; rg
r3= rm; ro
r4= rr; rs; rt
r5= rw, rx

02-M0277

* r1 - r5 = place holders for chassis options

Tab. 4 Options label

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

2.2.1 Option ea, ec Tool lubricator

Option	Option code	Available?
Tool lubricator (with option fa)	ea	
Tool lubricator (with option fc)	ec	

Tab. 5 Tool lubricator option

2.2.2 Option fa, fc Compressed air distributor

Option	Option code	Available?
Non-separated compressed air distribution line	fa	
Separated compressed air lines downstream of the option	fc	

Tab. 6 Compressed air distributor option

2.2.3 Option ba Low temperature equipment

Option	Option code	Available?
Low temperature equipment	ba	
Coolant pre-heating	bb	

2 Technical Specifications

2.2 Options – options label

Option	Option code	Available?
Defroster	bc	

Tab. 7 Low temperature equipment options

2.2.4 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)	lb	

Tab. 8 Optional equipment for fire hazard areas

2.2.5 Option ne Fuel de-watering filter

Option	Option code	Available?
Fuel de-watering filter	ne	

Tab. 9 Fuel de-watering filter option

2.2.6 Option oa Battery isolating switch

Option	Option code	Available?
Battery isolating switch	oa	

Tab. 10 Optional battery isolating switch

2.2.7 Option oe Sealed floor pan

Option	Option code	Available?
Sealed floor pan	oe	

Tab. 11 Closed floor pan option

2.2.8 Option rb/rm/rr, rb/rm/rs, rc/ro/rr, rg/rp/rr, rc/ro/rs, rd/ro/rr, rd/rn/rr Chassis



Chassis are defined by the combination of several option designations as follows:

Model/Height adjustment/Anti-twist protection/Service brake

Example: *rb/rm/rs* means:

Chassis in European design, with height adjustment and overrun brake

2 Technical Specifications

2.2 Options – options label

Chassis:

Chassis	Option code	Available?
Model (rb, rc, rd):		
EG chassis	rb	
GB chassis	rc	
GB chassis	rg	
USA chassis	rd	
Height adjustment (rm, rn, ro):		
With height adjustment	rm	
adjustable coupling height	rn	
Without height adjustment	ro	
Anti-twist protection, tow bar tube (rp)		
Adapter, mounted rotatable	rp	
Service brake (rr, rs):		
Without service brake	rr	
With overrun brake	rs	
EC ≙ Europe, GB ≙ Great Britain, US ≙ United States of America		

Tab. 12 Chassis options

2.2.9 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

2.2.10 Option rw,rx Frame design for stationary machines



Frame design for stationary machines are defined by option designations as follows:

Frame:

Frame	Option code	Available?
Stationary (rw, rx):		
on skids	rw	

2 Technical Specifications

2.3 Machine (without options)

Frame	Option code	Available?
on frame	rx	

Tab. 14 Options for stationary frame design

2.2.11 Option ua Hose reels

Option	Option code	Available?
Hose reels	ua	

Tab. 15 Hose reel option

2.2.12 Option sf Anti-theft device

Option	Option code	Available?
Anti-theft device	sf	

Tab. 16 Optional anti-theft device

2.2.13 Option sg Pedestrian protection

Option	Option code	Available?
Pedestrian protection	sg	

Tab. 17 Pedestrian protection option

2.3 Machine (without options)

2.3.1 Noise emission

Guaranteed sound power level:

Type	M20
Guaranteed sound power level ^{(1), (2)} [dB(A)]	97

⁽¹⁾ in accordance with Machinery Directive 2000/14/EC,

⁽²⁾ applies exclusively to machines lined with sound proofing material.

Tab. 18 Guaranteed sound power level

2 Technical Specifications

2.3 Machine (without options)

Emission sound pressure level

Type	M20
Emission sound pressure level ⁽³⁾ [dB(A)] (according to EN ISO 11203)	81
Measurement distance: d = 1 m	
Logarithmic surface ratio: Q2 = 15.9 dB(A)	
⁽³⁾ Calculated from the guaranteed sound power level (2000/14/EC Directive, Sound Emission Standard ISO 3744)	

Tab. 19 Emission sound pressure level

2.3.2 Tightening torques for screws

Recommended values for screws of property class 8.8

Thread	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Torque [Nm]	3.0	5.9	10.0	24.5	48.0	84.0	133.0	206.0	295.0	415.0

Information provided according to VDI 2230.

Tab. 20 Tightening torques for screws (property class 8.8, coefficient of friction $\mu = 0,12$)

2.3.2.1 Torque cover fixing screws oil separator tank

Recommended values for screws corresponding to the strength category:

Screws	Strength category	Thread	Torque [Nm]
Hex-head screw	8.8	M10	48

Tab. 21 Torque cover fixing screws oil separator tank

2.3.2.2 Torques for lifting eye

Recommended values for screws corresponding to the strength category:

Screws	Strength category	Thread	Torque [Nm]
Hex-head screw	8.8	M12	84
Stud	8.8	M12	84

Tab. 22 Torques for lifting eye screws

2.3.3 Ambient conditions

Positioning	Limit value
Maximum altitude amsl* [m]	1000
Minimum ambient temperature [°C]	-10
Maximum ambient temperature [°C]	+45

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

Tab. 23 Ambient conditions

2.3.4 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

2.4 Chassis

2.4.1 Chassis options

- Chassis instructions are found in the separate chassis documentation.

2.5 Machines with stationary frame design

2.5.1 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. 24 Mass of the machine

2.6 Compressor

2.6.1 Working gauge pressure and volumetric flow rate

Definition of volumetric flow rate: Constant delivery volume relative to intake conditions

Max. working pressure [bar]	7	–	–	–
SIGMA airend	100	–	–	–

Volumetric flow as per ISO 1217:2009. Annex D

Max. working pressure [bar]	7	–	–	–
Flow rate [m³/min]	2.0	–	–	–
Volumetric flow as per ISO 1217:2009. Annex D				

Tab. 25 Working gauge pressure and volumetric flow rate

2.6.2 Compressed air outlet

Outlet valve ["]	Number
G 3/4	2
G 1	–

Tab. 26 Compressed air distributor

2.6.3 Air quality at the compressed air outlets



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

Interrelation between compressed air treatment and compressed air quality:

Air treatment		Compressed air quality	
Option designation	Components	Characteristics	Abbreviation
ea / ec	Tool lubricator	containing lubricants	E

Tab. 27 Interrelation between compressed air treatment and compressed air quality

2.6.4 Pressure relief valve

Maximum working pressure: see machine nameplate

Maximum working overpressure [bar]	7	–	–	–
Relief valve activating pressure* [bar]	9.0	–	–	–

*The pressure relief valve is fitted to the oil separator tank.

Tab. 28 Relief valve activating pressure

2.6.5 Select temperature

2.6.5.1 Thermostatic valve

A thermostatic valve regulates the compressor temperature accordingly.

Machine temperatures	Values
Recommended airend discharge temperature for switching to load [°C]	30
Typical airend discharge temperature during operation [°C]	75 100
Maximum airend discharge temperature (automatic safety shut-down) [°C]	110

Tab. 29 Machine temperatures

2.6.5.2 Thermostatic valve with Anti-Frost Control

A thermostatic valve with Anti-Frost Control regulates the temperature level of the machine depending on the ambient temperature.

Temperatures	Values	
Ambient temperature [°C]	< 10	20
Airend discharge temperature [°C]	90	65–85

Tab. 30 Airend package discharge temperature

2.6.6 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. 31 Cooling oil recommendation

Cooling oils for applications in food processing

	SIGMA FLUID	
	FG-460	FG-680
Description	Synthetic oil	Synthetic oil

2 Technical Specifications

2.7 Engine

	SIGMA FLUID	
	FG-460	FG-680
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)
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. 32 Cooling oil recommendation (food processing)

2.6.7 Cooling oil charge

Cooling oil	Fluid volume [l]
Machine	4.5

Tab. 33 Cooling oil charge

2.7 Engine

2.7.1 Engine specification

Feature	Specification
Make/Model	Kubota D722-EB
Engine control	Mechanical
Fuel injection	Mechanical
Rated engine power [kW]	14.9
Speed at LOAD operation [min ⁻¹]	3600
Speed at IDLE operation [min ⁻¹]	2400
Type of fuel	Diesel *
Fuel consumption under LOAD operation [l/h]	4.3

* Use only diesel fuel to EN 590 or ASTM D975. Consult the engine manufacturer on the use of other fuels if necessary.

Feature	Specification
Oil consumption relative to fuel consumption [%]	approx. 0.2
* Use only diesel fuel to EN 590 or ASTM D975. Consult the engine manufacturer on the use of other fuels if necessary.	

Tab. 34 Engine specification

2.7.2 Carbon dioxide emission value

These CO₂ measurements result from testing a (parent) engine over a fixed test cycle under laboratory conditions. The engine is representative of the engine family and shall not imply or express any guarantee of the performance of an individual engine.

CO ₂ measurement	Value
CO ₂ emission [g/kWh]	1019.8

Tab. 35 CO₂ emission value

2.7.3 Oil recommendation

The engine oil must meet the following classification:

- ACEA, class E4, E7
- API, class CF, CI-4



The engine is filled initially with engine oil of viscosity class SAE 10W-40.

Ambient temperature [°C]	Viscosity class
-30 30	SAE 0W-30 SAE 5W-30
-30 40	SAE 0W-40 SAE 5W-40
-20 30	SAE 1 W-30
-20 40	SAE 10W-40
-15 40	SAE 15W-40
-5 40	SAE 20W-50

Tab. 36 Engine oil recommendation

2.7.4 Fuel recommendation

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

According to these standards 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 use of other fuels as well as the mixing with additives is only permitted after consultation with the engine manufacturer.

2.7.5 Engine coolant recommendation

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

Water quality:

An important factor for treating the cooling fluid is the correct water quality.

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

Characteristic		Value
pH value		6.5-8.0
Chloride	[mg/l]	max. 80
Chloride + sulphate	[mg/l]	max. 160
Alkaline earth ions	mmol/l	2.7
Hardness	°dH	15
1°dH = 0.1783 mmol/l; alkaline earth ions = 7.147 mg/l Ca ²⁺ or 4.336 mg/l Mg ²⁺		

Tab. 37 Water quality specification

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

If no suitable water is available, distilled or demineralised water shall be used for preparing the coolant. Seawater, brackish water, brines and industrial wastewater are not suitable. Salts may promote corrosion or disruptive deposits.

Coolant quality:

Within the scope of further technical development, new corrosion inhibitors/antifreeze have been approved by the engine manufacturer.

Compared to the previously approved corrosion inhibitors/antifreeze, they feature the following advantages:

- Fewer deposits in the engine cooling system
- Improved heat flow
- Higher environmental sustainability

The coolant (cooling fluid) is treated by adding anti-freeze with corrosion protection additives on the basis of ethylene glycol to the water.

Coolant must meet the operating instructions of the engine manufacturer KUBOTA.

- Do not use a corrosion inhibitor/antifreeze that has not been approved by the engine manufacturer.
- Do not use any impermissible mixing ratios of corrosion inhibitor/antifreeze and water.

Further information See chapter 10.3.1.3 for information on preparing/mixing the coolant to be used.

Initial filling of corrosion inhibitor/antifreeze:

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

Components	Description	Percentages [% vol.]
Corrosion inhibitor/antifreeze	Glysantin® G40®	50
Water		50

Tab. 38 Initial filling of coolant cooler

Miscibility with other corrosion inhibitors/antifreeze agents:

We do not recommend mixing with different corrosion inhibitors/antifreeze agents even if from the same manufacturer. This can result in significantly reduced corrosion protection/antifreeze and may damage the engine cooling system and consequently the engine. Mixtures of different corrosion inhibitors/antifreeze agents generally provide a lower performance than the specially balanced active components of one coolant type.



Therefore, the use of different corrosion inhibitors/antifreeze agent is only allowed after consulting with and approval from the engine manufacturer!

2.7.6 Fluid volumes

Description	Fluid volume [litre]
Engine oil	3.5
Fuel	30
Coolant	4.5

Tab. 39 Fluid volumes

2.7.7 Batteries

Feature	Value
Voltage [V]	12
Capacity [Ah]	44
PTC testing current [A] (according to EN 50342)	360

Tab. 40 Batteries

Further information Depending on machine equipment, a higher capacity battery may be required. See chapter 2.8.2.

2.8 Options

2.8.1 Option ea, ec Tool lubricator

Name	Temperature range [°C]	Fluid volume [l]
Special road breaker lubricant	-25 – 50	2.5

Tab. 41 Road breaker lubricant recommendation

2.8.2 Low temperature equipment
2.8.2.1 Ambient conditions

Installation	Limit value
Maximum elevation ASL* [m]	1000
Minimum ambient temperature [°C]	–25
Maximum ambient temperature [°C]	+45

* Higher altitudes are permissible only after consultation with the manufacturer

Tab. 42 Ambient conditions, low temperature equipment

**2.8.2.2 Option bb
Coolant pre-heating**

Coolant pre-heating device	Value
Voltage [V]	230
Power [W]	550

Tab. 43 Coolant pre-heating device

**2.8.2.3 Option bc
Compressed air line frost protection**

Antifreeze	Fill quantity [l]
Wabcothyl	0.3

Tab. 44 Recommended antifreeze

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.

3 Safety and Responsibility

3.5 Dangers

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

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, coolers and oil separator tank. Any objects in or near the flow of exhaust gas or discharged cooling air will 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 enclosure 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.
- Check machines that are lined with sound insulation material for perfect condition of the sound insulation material.
- Wear ear protection if necessary.
Safety valve blow-off results in high noise emission.
- Never generate compressed air without consumers being connected.

Operating fluids/materials

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

- Strictly forbid fire, open flame and smoking.
- Follow safety regulations when dealing with fuel, oils, lubricants, antifreeze and chemical substances.

- Avoid contact with skin and eyes.
- Do not inhale fumes or aerosols from fuel or oil.
- Do not eat or drink while handling fuel, oil, cooling and lubricating fluids or antifreeze.
- Keep suitable fire extinguishing agents ready for use.
- Use only KAESER approved operating materials.

Unsuitable spare parts

Unsuitable spare parts compromise the safety of the machine.

- Use only spare parts approved by the manufacturer for use in this machine.
- Use only 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 mass 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 information will provide you with the necessary code of conduct to ensure safe handling of the machine during individual product life phases.

Personal protective equipment

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

- Wear protective clothing as necessary.

Suitable protective clothing (examples):

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

3.5.2.1 Transport

In order to prevent accidents, the mass and size of the machine require safety measures to be taken during its transport.

- 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 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 a manner that will impose excessive stress on the machine or chassis.
- Adjust towing speed to accommodate road conditions. This applies particularly to unpaved roads and when negotiating 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 removed or turned off.

Transport as trailer on public roads

- Do not tow machines without lighting and signalling 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 lifting accessories and hoisting equipment may cause severe accidents when lifting and moving the machine with cranes.

- Do not enter the danger zone whilst the machine is being lifted.
- Never lift and move the machine over people or residential 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 hoist 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

A suitable installation location for the machine prevents the potential for 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 example, requirements on the "proper use in areas at risk of explosion" according to 2014/34/EU ATEX Directive.
- Ensure adequate ventilation.
- Place the machine in such a manner that the working conditions in its environment are not impaired.
- Comply with limit values for ambient temperatures and humidity.
- The intake air must not contain any damaging contaminants.

Damaging contaminants are for instance:

- 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.
 - Chock the wheels to prevent unwanted movement.
 - 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.

- Work should be carried out by authorised personnel only.
- Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- Switch off the machine and lock against unexpected activation.
- Wait until the compressor has automatically vented (check: the pressure gauge must read 0 bar!)
- Then open the outlet valve carefully to ensure that the line between the minimum pressure check valve/check valve and the compressed air outlet is vented.
- 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.
- Carry out regular inspections:
 - for visible damage and leakage,
 - of safety devices,
 - of EMERGENCY STOP devices,
 - of parts needing monitoring.
- Pay particular attention to cleanliness during all maintenance and repair work. Cover components and exposed openings with clean cloths, paper or tape to keep them clean.

- Do not leave any loose components, tools or cleaning rags on or in the machine.
- Components removed from the machine can still be dangerous:
Do not attempt to open or destroy any components taken from the machine.
- 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.
-
- 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 safety cable to their respective outlet valves.

3.5.2.4 Parking the machine

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

- Select an even surface for parking.
- Use a coupled towing vehicle to move the machine into position.
- Place chocks under the wheels.
- Pull the parking brake.
- Loosen the lighting and signalling system.
- Detach the breakaway cable/safety chain.
- Lower the prop stand / wind down the jockey wheel.
- Uncoupling the machine
- Ensure that the machine is properly separated from the towing vehicle.
- Remove the towing vehicle from the machine.
- Nobody must enter the parked machine and its body, in particular.
- Nobody must sit on the parked machine and in particular its towing mechanism.

3.5.2.5 De-commissioning, storage and disposal

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

- Drain off fluids and dispose of them according to applicable environmental regulations.
These include, for example, fuel, engine oil and compressor cooling oil and 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 figure shows the position of the safety signs on the machine. The table lists the various safety signs used and their meanings.

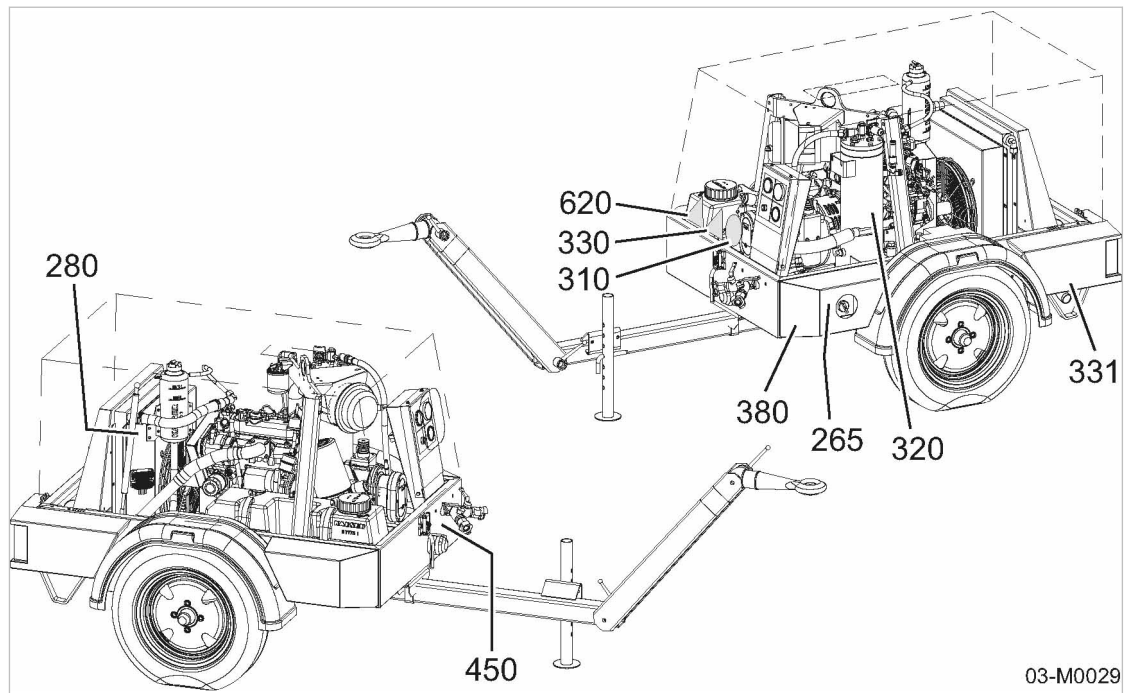


Fig. 1 Location of safety signs

Location	Sign	Meaning
3		Hazardous good! Identifies machines filled with fuel during transport as a hazardous good.
265		Personal injury or damage to the machine due to incorrect operation! ➤ Read and understand the operating manual and all safety signs before switching on this machine.
310 311		It is forbidden to operate the machine with open enclosure or cover panels! Personal injury or machine damage can result from an open machine enclosure. ➤ Operate only with the enclosure fully closed. ➤ Transport only with the enclosure fully closed.
320 ⁽¹⁾		Loud noise and oil mist! Hearing damage and burns from relief valve blow off. ➤ Wear hearing protectors and protective clothing. ➤ Close the enclosure. ➤ Work with caution.
330 331		Hot surface! Risk of burns caused by contact with hot components! ➤ Do not touch the surface. ➤ Wear long-sleeved garments (no synthetics such as polyester) and protective gloves.

⁽¹⁾ Position within the machine,

⁽²⁾ only machines with option ga,

⁽³⁾ only machines with option dc

Location	Sign	Meaning
380		Toxic gases into areas of work! ➤ Use the machine only outdoors. ➤ Direct the exhaust fumes to the open air.
450		Loud noise and compressed air blast! Damage to hearing and injury if ball valve is opened without a compressed air hose being connected. ➤ Connect a compressed air hose. ➤ Open the ball valve.
600 ⁽¹⁾		Risk of fatal injury when dismantling valves (spring-loaded or under pressure)! ➤ Do not open or dismantle valves. ➤ Call an authorised Service Technician in the event of a fault.
620 621		Risk of serious injuries (to the hands, in particular) or even severing of extremities from rotating components! ➤ Operate the machine only with closed safety guards, access doors and panels. ➤ Shut down the machine before opening a door or enclosure.
850 ⁽²⁾		Risk of fatal injury caused by contact with live components! ➤ Take protective measures.
1222 ⁽³⁾		Danger! Mortal danger from CO, CO ₂ or toxic gasses. ➤ Draw in only surrounding air of breathing quality.
		Danger! Danger to health from discharge of oily compressed air! ➤ Maintain surrounding air temperature between +1.5 °C and 30 °C. ➤ Check the oil indicator at least once a day.
1650 ⁽¹⁾		Machine damage if switched while the engine is running! ➤ Use the «battery isolating switch» only with the engine stopped. ➤ Do not use the «battery isolating switch» as a main or emergency switch.

⁽¹⁾ Position within the machine,

⁽²⁾ only machines with option ga,

⁽³⁾ only machines with option dc

Tab. 47 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 Environmental protection

Operation of this machine may present an environmental hazard.

- Do not allow operating fluids/materials to escape into the environment or into the wastewater system!
- Store and dispose of operating fluids/materials and replaced parts in accordance with local environmental protection regulations.
- Observe relevant national regulations.

This applies particularly to parts contaminated with fuel, oil, coolants and acids.



For the emission output of the corresponding engine class to always comply with applicable requirements, the drive engine must only be operated, used and maintained in accordance with instruction provided to the end user.

Intentional manipulation of the drive engine management system, improper operation or deficient maintenance are prohibited.

4 Design and Function

4.1 Bodywork

Bodywork is understood to be the exterior of the machine mounted on the chassis.

The bodywork has several functions when it is closed:

- Weather protection
- Sound insulation
- Guarding against touching
- Cooling air flow

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

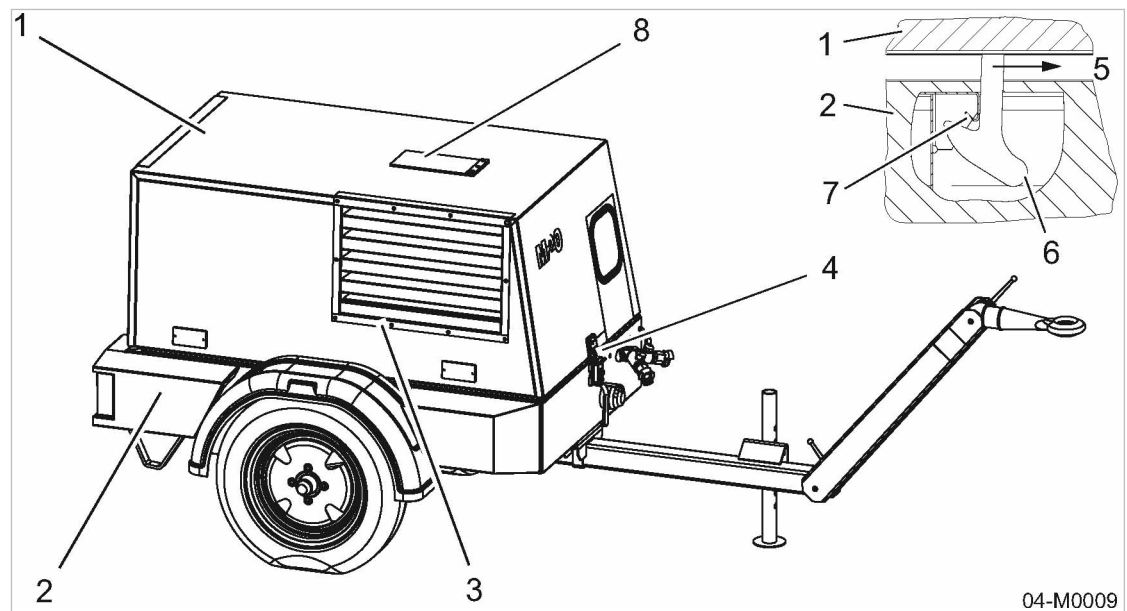


Fig. 2 Overview Bodywork

- | | |
|---------------------|-------------------------|
| ① Canopy | ⑤ Direction of arrow |
| ② Lower body | ⑥ Canopy safety catch |
| ③ Cooling air inlet | ⑦ Lock |
| ④ Snap fastener | ⑧ Cover for lifting eye |

The canopy ① can be opened when all the snap fasteners ④ and the canopy safety latch ⑥ are released. The safety latch is located inside the canopy on the left, next to the snap fastener ④. The safety latch can be seen when all snap fasteners are released.

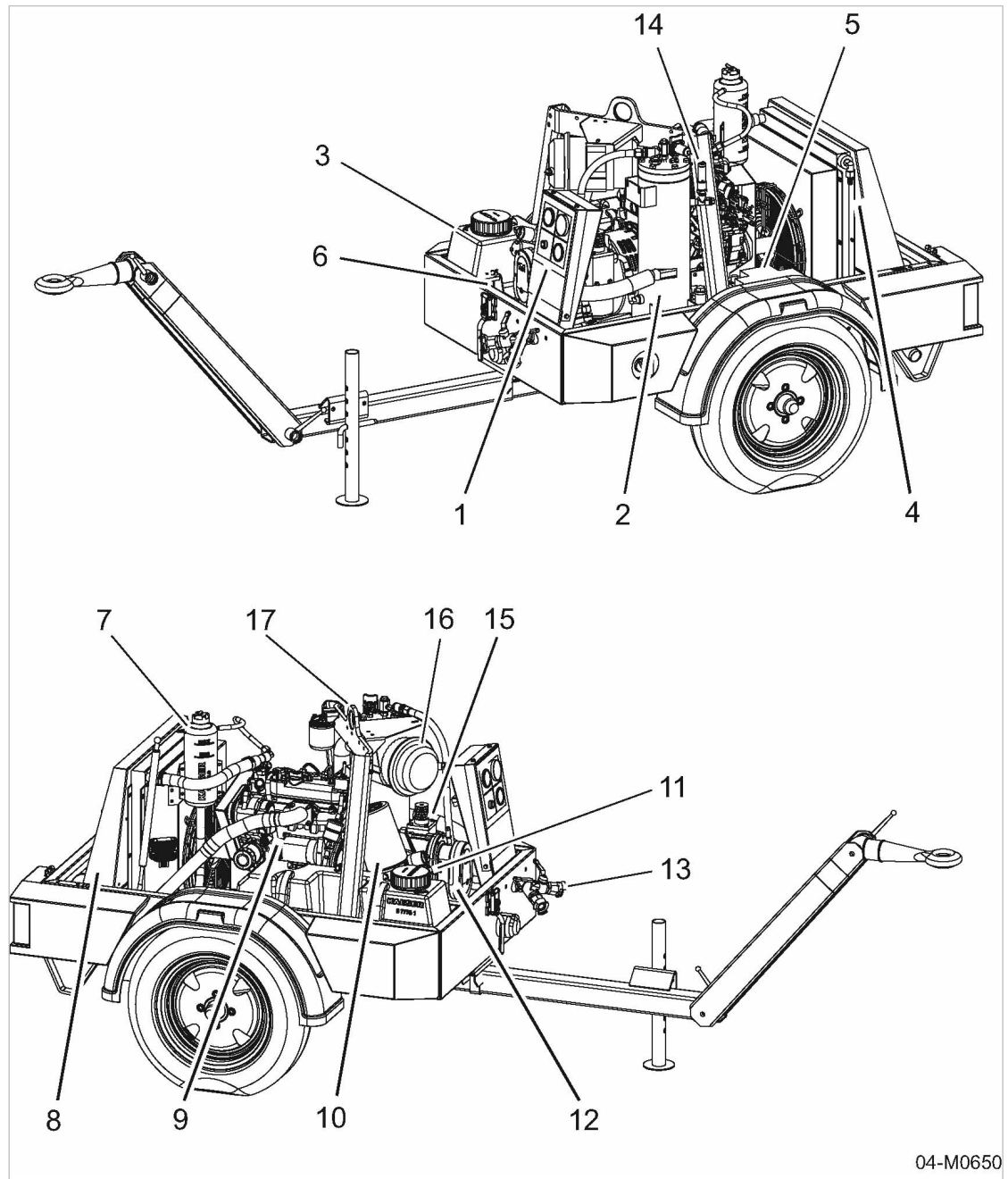
If the safety latch is unlocked (pressed in the direction of the arrow), the canopy opens independently.

Two gas-filled springs maintain the opened position of the canopy.

The bodywork is not suitable for the following uses:

- Walking on, standing or sitting on.
- Use as resting place or storage of any kind of load.

4.2 Machine layout



04-M0650

Fig. 3 Side view (enclosure removed)

- | | |
|----------------------------|-------------------------------|
| ① Control panel | ⑩ Compressor air filter |
| ② Oil separator tank | ⑪ Inlet valve |
| ③ Fuel tank | ⑫ Airend |
| ④ Oil cooler | ⑬ Compressed air outlet valve |
| ⑤ Battery | ⑭ Safety valve |
| ⑥ Canopy safety catch lock | ⑮ Thermostatic valve |
| ⑦ Coolant expansion tank | ⑯ Engine air filter |
| ⑧ Coolant cooler | ⑰ Lifting eye |
| ⑨ Drive engine | |

4.3 Machine function

Machine function (without options)

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

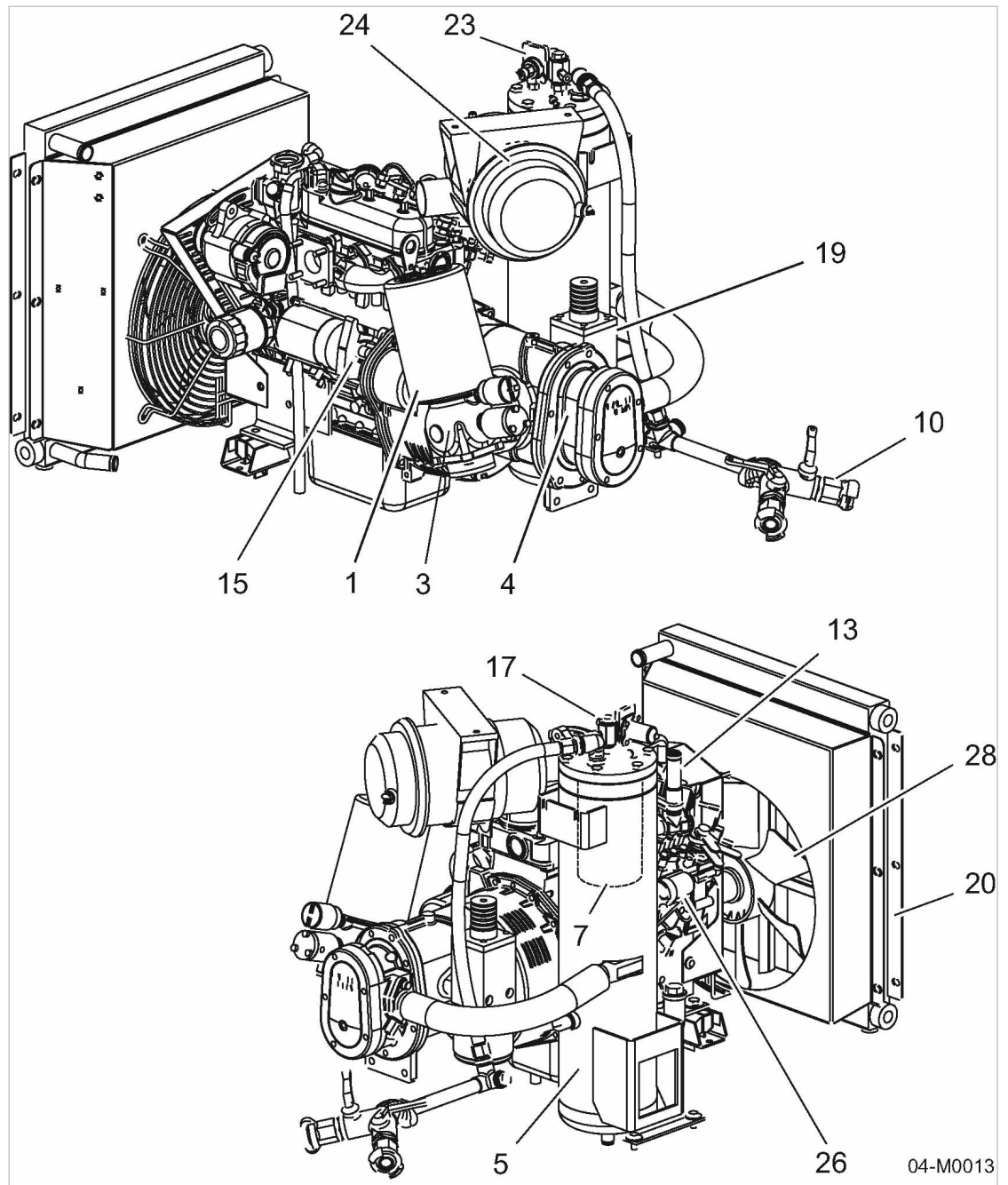


Fig. 4 Machine overview

- | | | | |
|---|-------------------------|---|-------------------------------|
| ① | Compressor air filter | ⑮ | Drive engine |
| ③ | Inlet valve | ⑲ | Thermostatic valve |
| ④ | Airend | ⑳ | Oil cooler |
| ⑤ | Oil separator tank | ㉓ | Proportional controller |
| ⑦ | Oil separator cartridge | ㉔ | Engine air filter |
| ⑩ | Air distributor | ㉖ | Engine speed adjusting piston |
| ⑬ | Pressure relief valve | ㉘ | Fan |

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

The air is then compressed in the airend ④.

The airend is driven by an internal combustion engine ⑮.

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

Cooling oil recovered from the compressed air in the oil separator tank [5] gives up its heat in the oil cooler [20]. The oil then flows through the oil filter [21] and back to the point of injection. The pressure within the machine keeps the oil circulating. A separate pump is not necessary.

A thermostatic valve [19] regulates and optimises the cooling oil temperature. For machines with Anti-Frost Control, the ambient temperature is considered.

Compressed air, freed of cooling oil in the oil separator tank [5], flows through the minimum pressure nozzle [8] into the compressed air distributor [10]. The minimum pressure nozzle ensures that there is always sufficient internal air pressure to maintain cooling oil circulation.

The cooling fan [28] ensures optimum cooling of all components within the enclosure.

4.4 Operating modes and control mode

4.4.1 Machine operating modes

The machine operates in the following modes:

- **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.
- **STANDSTILL (shut down)**
 - The inlet valve closes.
 - The venting valve opens to de-pressurise the machine.
 - 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 a mechanical control valve (the proportional controller), the opening and closing of the inlet valve is continuously varied in relation 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.

4.5 Safety devices

4.5.1 Monitoring functions with shut-down

The following functions are monitored automatically.

- Engine oil pressure
- Coolant temperature
- Airend discharge temperature
- Engine-generator



The fuel stop device is activated when an alarm occurs. The engine comes to a stop and the venting valve releases pressure from the machine.

4.5.2 Further safety devices

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

- Pressure relief valve:
This valve protects the system from excessive pressure. It is factory set.
- Enclosures and covers over moving parts and electrical connections:
These protect against accidental contact.

4.6 Sealed floor pan

The machine is fitted as standard with a sealed floor pan.

In the event of a leak, all liquids required for the machine's operation are caught in the floor pan. Service openings in the floor pan are closed with plugs. These openings must be tightly re-closed after performing any cleaning work.

The sealed floor pan can be deselected:

Floor pan design	Designation options label
Design with sealed floor pan (standard)	"oe" option designation present
Floor pan design with unclosed maintenance openings	"oe" option designation not present

Tab. 48 Floor pan design

4.7 Options

The options available for your machine are described below.

4.7.1 Option ea Tool lubricator

Lubricant is added to compressed air for the lubrication of certain pneumatic tools.

A metering wheel regulates the lubricant content in the compressed air:

- minimum lubricant to lubricate the pneumatic tools and prevent corrosion,
- more lubricant for cleaning and to prevent wear in the tools.

The lubricant addition can be controlled by a shut-off valve. The shut-off valve is at the air pipe. The lubricant quantity adjusts to changes in air demand (one or more tools/consumers on line).

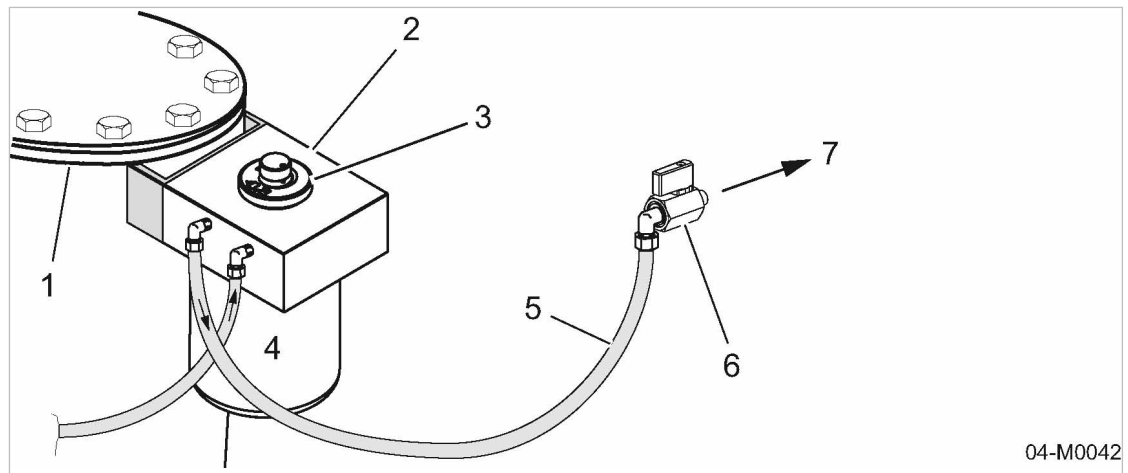


Fig. 5 Tool lubricator

- | | |
|-----------------------|--------------------------------------|
| ① Oil separator tank | ⑤ Air line with additional lubricant |
| ② Tool lubricator | ⑥ Shut-off ball valve |
| ③ Metering wheel | ⑦ Air pipe |
| ④ Lubricant container | |

Please note for air tools not to be lubricated:



NOTICE

Compressed air containing lubricants!
Air tools can be damaged.

- Blow any residual lubricant out of the air line before connecting such a pneumatic tool.

4.7.2 Option ba Low temperature equipment

The machine is fitted with low-temperature equipment for the operation in extremely low temperatures up to -25 °C. The electrical equipment starts the drive engine of the machine at ambient temperatures as low as -10 °C.

You can improve the cold-start behaviour of the machine with the following options:

Option / option designation	Function
Coolant pre-heating / bb	Pre-heat the drive engine coolant.

Option / option designation	Function
Defroster / bc	Moisten components of the control and regulating system with anti-freeze.

Tab. 49 Low temperature equipment options

4.7.2.1 Option bb Pre-heat the drive engine coolant

The drive engine coolant can be pre-heated in order to attain an improved cold-start behaviour. An electric pre-heating device has been installed for this purpose. The heating element of the pre-heating device protrudes directly into the drive engine coolant.

The thermal output from the heating element into the coolant results in a slower circulation of the coolant. Resulting from the circulation the supplied heat is evenly distributed. The coolant of the drive engine and its direct surrounding significantly warm up above the local ambient temperature. A melting protection protects against overheating.

The ideal pre-heating time depends on the outside temperature. Approx. 3 hours of pre-heating time result in thermal balance. This means that subsequently supplied heat only serves to maintain the already existing temperature. The rest of the subsequently supplied heat is emitted to the surroundings.



Damages to the drive engine and electrical pre-heating device are precluded with pre-heating times lasting longer than 3 hours. However, the unnecessary energy consumption should be prevented by shutting down the pre-heating device on time!

A flexible power cable has been included with the machine. To commission the pre-heating device you only need to connect the power cable to the machine's connection and the user's power socket.

Further information See Fig. 6 for the position of the device connection.

4.7.2.2 Option bb Device connection of coolant pre-heating on the machine

Option bb

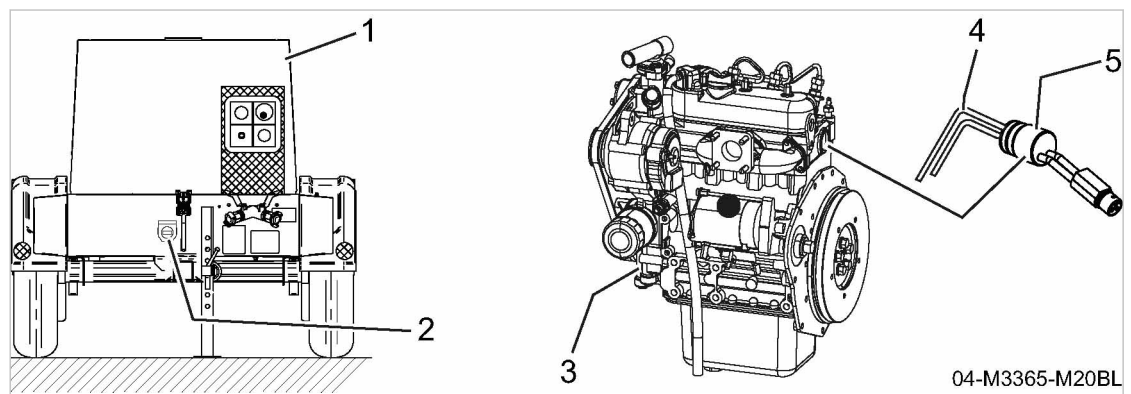


Fig. 6 Device connection on the machine

- ① Machine
- ② Device connection
- ③ Drive engine

- ④ Heating element
- ⑤ Pre-heating device

**4.7.2.3 Option bc
Defroster**

The control and regulating system of the machine can be moistened with antifreeze in order to attain an improved cold-start behaviour. A defroster has been installed for this purpose. The defroster tank has been filled with antifreeze.

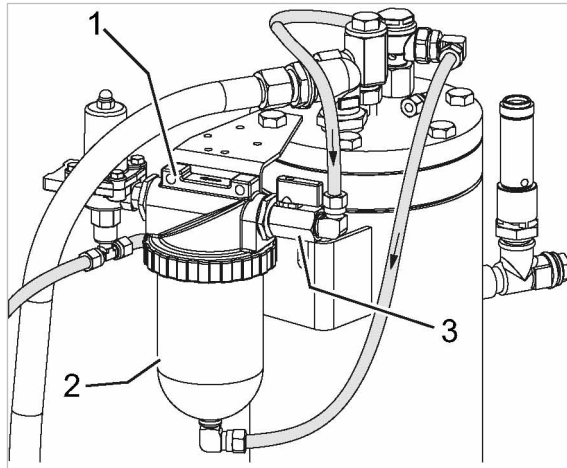
Antifreeze that is added to the air flow of the control and regulating system prevents the freezing of control lines, nozzles and valves. Adding antifreeze is solely required at ambient temperatures of below 0 °C. For this reason the defroster is fitted with a shut-off valve.

The correct switching position of the shut-off valve must be adjusted to the respective ambient temperatures.

Further information See Fig. 7 for the position of the shut-off valve.

**4.7.2.4 Option bc
Defroster shut-off valve**

Option bc



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Fig. 7 Position of the defroster shut-off valve

- ① Top of the defroster
- ② Defroster tank
- ③ Shut-off valve

Further information See chapter 7.4.3 for antifreeze operation

**4.7.3 Option la, lb
Options for operating in fire hazard areas****4.7.3.1 Option la
Spark arrestor**

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

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

**4.7.3.2 Option lb
Engine air shut-off valve**

Any flammable gas drawn into the diesel engine's air intake alters and enriches the controlled fuel/air mixture fed to the engine. This causes a sudden and uncontrolled increase in engine speed that can result in serious mechanical damage. Without appropriate preventive measures, the engine and driven devices can be destroyed. Explosion or fire are also possible.

When flammable gas is drawn into the engine, shutting off the fuel supply will no longer stop the engine. Only by shutting off the air intake can the engine be brought to an immediate stop.

The self-closing valve shuts off the engine air intake as soon as flammable gas is drawn in. This brings the engine to an immediate stop.

**4.7.4 Option ne
Fuel de-watering filter option**

A fuel de-watering filter has been installed in order to remove water from the fuel in the event of reduced fuel quality.

**4.7.5 Option oa
Optional battery isolating switch**

The «battery isolating switch» disconnects the battery completely from the machine's electrical system (fire protection, battery discharge protection).

**NOTICE**

Danger of short circuit!

Damage to the machine electrics is possible.

- Use the «battery isolating switch» only when the machine is shut down.
- Do not use the «battery isolating switch» as a main or emergency switch.

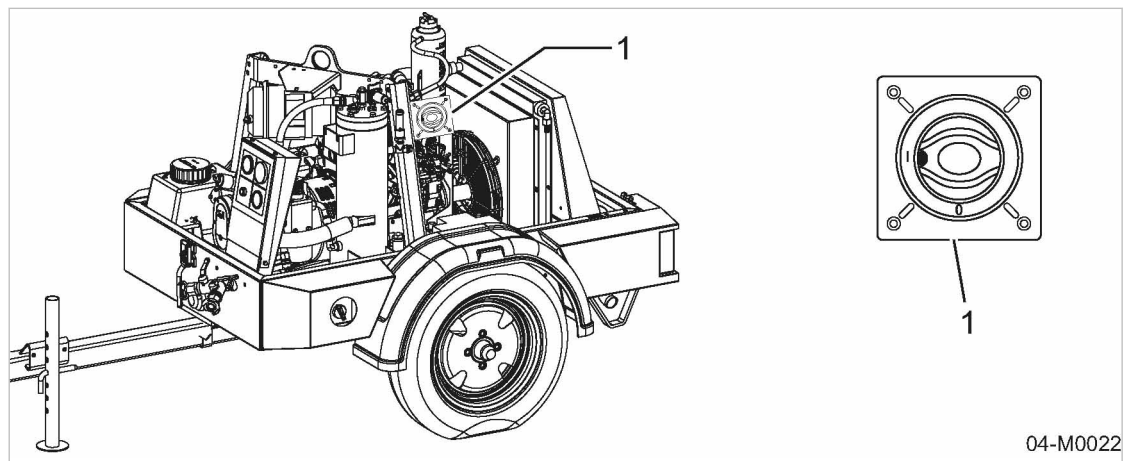


Fig. 8 Battery isolating switch

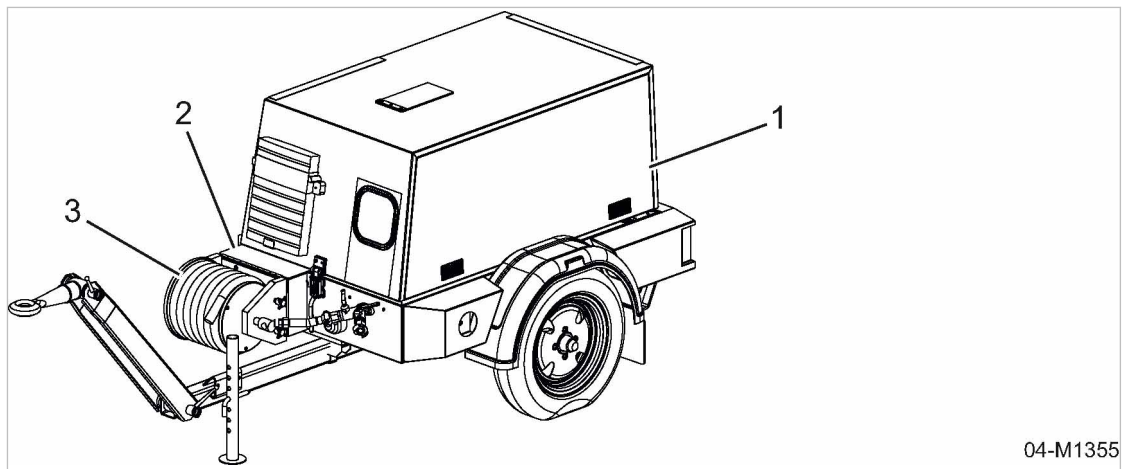
① «Battery isolating switch»

4.7.6 Option ua Hose reel option

The machine is provided with an extension hose to allow connection and operation of remote air tools. A hose reel is provided for safe storage of this hose.

4.7.7 Option sf Optional anti-theft device

The machine is fitted with a security chain as theft protection. The supplied safety chain is stored in a container at the front of the machine.



04-M1355

Fig. 9 Container for safety chain

- ① Machine
- ② Container for safety chain
- ③ Hose Reel

4.8 Frame design options for stationary machines

4.8.1 Option rw, rx Chassis types of stationary machines

Option	Designation	Characteristics
rw	Skids	■ Frame designed as skid ■ Use as stationary machine ■ Mounted on truck/trailer platform
rx	Frame	■ 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.

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 in force.
For instance, the requirements of ATEX directive 2014/34/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Keep suitable fire extinguishing agents ready for use.
- 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 sulphide.

5.2 Installation conditions

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

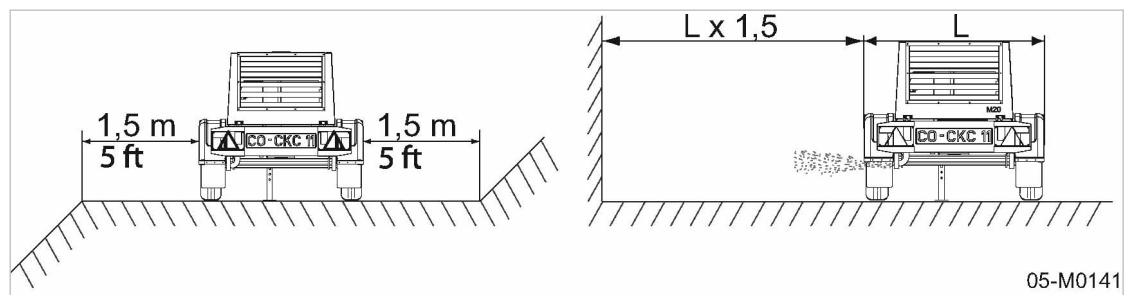


Fig. 10 Minimum distance from excavations/slopes and walls

1. Keep sufficient distance (at least 1.5 m) from the edges of excavations and slopes.

5 Installation and Operating Conditions

5.3 Requirements for positioning on a lorry platform

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.



4. **NOTICE!**

Danger of burning from build up of heat and hot exhaust.

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. Place the machine in such a manner that

- wind does not blow into the cooling air outlet.
- exhaust gases and heated cooling air can not be drawn into the compressor.



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 low viscosity compressor cooling oil.
- Allow the machine to warm up in IDLE (low speed), see chapter 8.2.3.

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

5.3 Requirements for positioning on a lorry platform

For special applications, a stationary machine may be installed on the platform of a lorry. In this case, fasten the machine with bolt-down machine mounts on the load platform.



Special prerequisites for the installation on lorry platforms:

1. Follow the vehicle manufacturer's loading guidelines for safe operation and transportation.
2. Ensure sufficient clearance for access to the machine while fastened to the platform.
 - Ensure that operating activities are possible.
 - Ensure that monitoring activities are possible.
 - Ensure that maintenance activities are possible.
 - Ensure that an emergency shut-down is possible.
3. Ensure sufficient clearance for air supply to and exhaust lines from the machine while fastened to the platform.
 - Keep the intake air openings unobstructed.
 - Keep the exhaust air openings unobstructed.

4. Ensure sufficient clearance for the exhaust gas conduit from the machine while fastened to the platform.
 - Keep the exhaust gas opening unobstructed.
 - Ensure sufficient distance and discharge option for escaping exhaust gas.
5. If required, attach a hazardous goods label at the machine.

Further information For the installation of the bolt-down machine mounts, see chapter 6.3.

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.

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 Option rx, rw Fastening a stationary machine

When stationary machines are ordered with bolt-down mounts (anti-vibration elements), a complete set of these bolt-down machine mounts are provided in a separate cardboard box. If the machine mounts have not been purchased with the machine, you may separately order them from KAESER.

Use bolt-down machine mounts to correctly fasten the stationary machine on the installation surface. These machine mounts, designed for the overall machine mass, also ensure a vibration-reducing positioning of the machine.

You may use machine mounts with or without rubber pads. When using machine mounts with rubber pads, take the changed height of the machine into consideration.

Bores for the fastening bolts of the machine mounts are provided in the frame or skid. See the corresponding dimensional drawing in chapter 13.3 to see the precise distances of the bores for your machine.

Select the fastening bolts according to the properties of the installation surface.

Material Bolt-down machine feet (anti-vibration mounts)

Fixing screws

Wrench

Precondition The machine is switched off.

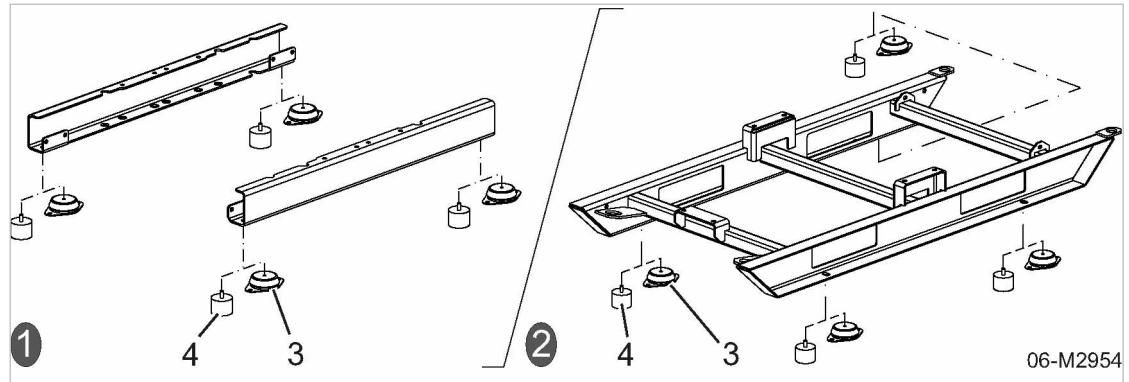


Fig. 11 Fitting the Mounting Pads.

- | | | | |
|---|-------------------|---|---------------|
| ① | Frame (Option rx) | ③ | Machine mount |
| ② | Skid (Option rw) | ④ | Rubber pad |

1. Lift the machine with appropriate hoisting gear.
2. Place square timbers under the frame or skid.
3. Set the machine down carefully.
4. Bolt all machine mounts to the frame or skid.
5. Lift the machine and position it on a suitable surface as specified in chapter 5.2, Installation conditions.
6. Use appropriate fastening bolts for attaching the machine mounts.

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 re-commissioning after storage or de-commissioning

- Carry out the following before every start-up of the machine after long period of storage or de-commissioning:

Storage/de-commissioning period longer than:	Action
5 months	Drive engine: ➤ Remove desiccant from engine air filter. ➤ Check the engine air filter. ➤ Check the engine oil filter. ➤ Drain the preserving oil from the engine. ➤ Fill up with engine oil. ➤ Check the engine coolant level. ➤ Check the battery charge state(s). ➤ Re-connect the battery (batteries). ➤ Check all fuel hoses for leaks, loose connections, wear and damage. ➤ Check all pressure hoses of the drive engine (engine oil, coolant, charging air) for leaks, loose connections, wear and damage. Compressor: ➤ Remove desiccant from compressor air filter. ➤ Check the compressor air filter. ➤ Check the compressor oil filter. ➤ Drain the preserving oil from the separator tank. ➤ Fill with cooling oil. ➤ Check all pressure hoses/lines of the compressor (cooling oil, compressed air, control air, condensate) for leaks, loose connections, wear and damage. Body: ➤ Clean the bodywork with a grease and dirt dissolving agent.
36 months	Technical condition: ➤ Have the overall technical condition checked by an authorised KAESER SERVICE technician.

Tab. 51 Measures for re-commissioning the compressor after a long period of storage or de-commissioning

7.3 Checking installation and operating conditions

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

Task	See chapter	Confirmed?
➤ Are the operators fully conversant with safety regulations?	—	
➤ Have all the installation conditions been fulfilled?	5	
➤ Is there sufficient cooling oil in the separator tank?	10.4.1	

7 Initial Start-up

7.4 Low-temperature operation

Task	See chapter	Confirmed?
➤ Is the contamination indicator on the compressor air filter OK?	10.4.7	
➤ Is there sufficient oil in the drive engine?	10.3.4	
➤ Is the contamination indicator on the drive engine air filter OK?	10.3.2	
➤ Is there sufficient coolant in the coolant expansion tank?	10.3.1	
➤ Is there sufficient fuel in the fuel tank?	—	
➤ Is there sufficient lubricant in the tool lubricator? (option ea, ec)	10.9.1	
➤ Is there enough antifreeze in the frost protector? (Option ba)	10.9.2	
➤ Enclosure closed?	—	
➤ All access doors closed?	—	
➤ All panels installed?	—	

Tab. 52 Checklist for installation and operating conditions

7.4 Low-temperature operation



Cold ambient temperatures during seasonal winter operation require adjustment of operating fluids, components and warming-up of the machine.

- Adjusting the operating fluids.
 - Use winter engine oil
 - Use low viscosity cooling oil for the compressor
 - Use winter diesel fuel
- Adjusting the components
 - Use stronger battery
 - Use short compressed air hoses
- Let the machine warm up
 - Carry out specific warming-up when temperatures are low
- Use low temperature equipment (option ba)
 - Pre-heat the drive engine coolant
 - Use antifreeze for the control and regulating system

➤ Follow all instructions!

Result The carried out adjustments increase the service life of your machine.

7.4.1 Carrying out warming-up when temperatures are low



1. **NOTICE!**

Low temperatures disturb the pneumatic control of the machine!
 Damage to control and regulating devices may be caused by ice particles.

➤ Warm-up machine by letting it run in IDLE mode.

2. Open the compressed air outlet valves at the compressed air outlet.

3. Start the machine.

4. Run the machine in unloaded state with opened air compressed air outlet valves until it has warmed up.

5. Wait until the airend discharge temperature of +30 °C has been reached.
6. Check on the *remote contact thermometer* that the airend discharge temperature of +30 °C has been reached.

7.4.2 Starting assistance



The machine's electrical equipment is designed for starting at ambient temperatures as low as –10 °C.

If the machine's starter battery is discharged, it can be started with the battery of another vehicle or machine with combustion engine.

Material Jumper cables

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



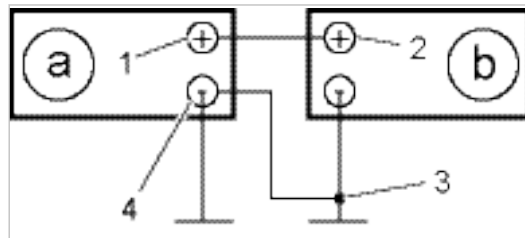
WARNING

Fire and explosion hazard.

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

Battery casing may crack and allow acidic fluid to spray out.

- Observe the instructions provided with the battery jumper cables.
- Do not connect the battery jumper cables to the negative pole of the discharged battery or to the bodywork of the machine.
- Work with caution.



07-M0002

Fig. 12 Jumper cable connection diagram

- | | |
|--|---|
| <p>Ⓐ Assisting vehicle battery (external donor battery)</p> <p>Ⓑ Engine battery (receiving battery)</p> <p>① Positive (+) terminal starting assistance</p> | <p>② Positive (+) terminal of the machine battery</p> <p>③ Bare metal point on the engine block (earth)</p> <p>④ Negative (-) terminal of assisting vehicle battery</p> |
|--|---|

Complying with safety instructions:**1. WARNING!**

Fault in starting aid process!

- Connect batteries of the same 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 jumper cables of sufficient diameter and with insulated terminal clamps.
- Observe the instructions provided with the battery jumper cables.
- Keep jumper cables away from rotating parts.
- Avoid short-circuits due to incorrect poling and/or bridging with tools.
- Do not bend over the battery when attaching jumper cables.
- Do not attempt to start the machine if its battery is frozen. Allow the battery to thaw first!
- Do not try to start the machine with a boost charger.

2. Comply with the safety instruction shown when using starting aids and starter batteries.

Preparations:

1. Park the assisting vehicle in close distance to the engine, without their bodywork touching each other.
2. Stop the drive engine of the assisting vehicle.
3. Open the accesses to the batteries (remove maintenance panels/bonnet and pole caps).
4. Switch off all power consumers.

Connecting the battery jumper cables:

1. Connect the positive terminals ② and ①.

2. DANGER!

Explosion hazard!

A spark may ignite an explosive gas mixture.

- Do not, under any circumstances, connect the negative pole of the assisting machine to the negative pole of the battery in the machine to be started.
This can cause sparks when connecting and disconnecting.
- Work with caution.

3. Connect the minus pole of the assisting battery ④ to a bare metal point on the machine's drive engine ③ to be started (as far away from the battery as possible).

Starting the drive engine:

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



Let the two drive engines run for approximately 10-15 minutes after the successful start. This is important, in particular for fully discharged batteries. They will pick up little current only in the beginning and have 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. The engine electronics of the machine, in particular, is sensitive to overvoltages and could be damaged easily.

Disconnecting the battery jumper cables:

1. Stop the drive engine of the assisting vehicle.
2. Disconnect the jumper cables in the reverse order, first negative (-) then positive (+).
3. Place the pole caps.
4. Close the maintenance panels and/or bonnet.



A stop of the machine's drive engine as soon as the cables are disconnected could indicate major damage (e.g. to the engine generator or battery) which must be repaired by a specialised workshop.

7.4.3 Starting up low-temperature equipment

- Check which low temperature equipment is fitted to your machine.

7.4.3.1 Option bb

Pre-heat the drive engine coolant

In order to improve the cold-start behaviour your machine is equipped with an electric coolant pre-heating device. The corresponding power cable has been included with the machine.

See Fig. 13 for the position of the device connection on the machine.

Option bb

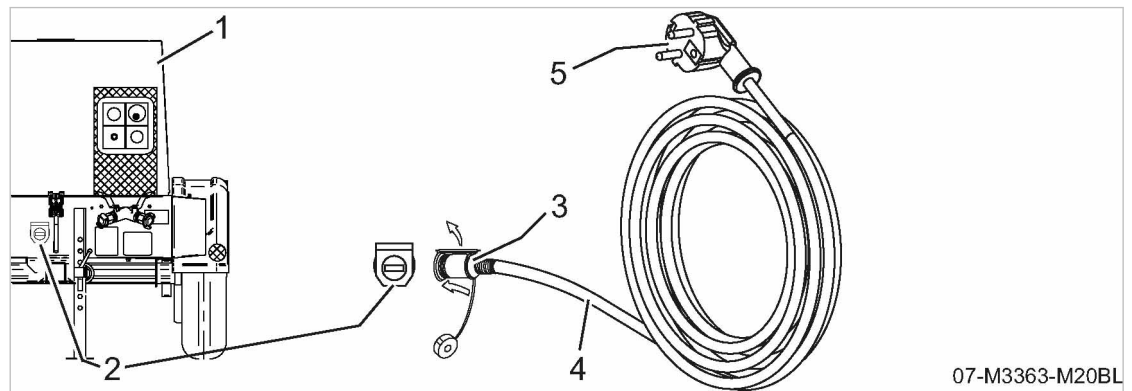


Fig. 13 Coolant pre-heating

- | | |
|--|---------------|
| ① Machine | ④ Power cable |
| ② Connection for the coolant pre-heating | ⑤ Mains plug |
| ③ Unit plug | |



1. DANGER!

Danger of fatal injury from electric shock

- Connect mains plug of power cable to user's power socket only.
- Have the coolant pre-heating and associated power cable checked according to the maintenance schedule.

2. Open the enclosure.
3. Remove the power cable from the machine's interior.
4. Close the enclosure.
5. Connect the unit plug to the connection of the machine.

6. Connect the mains plug to the user's power outlet.
The heating element of the pre-heating device warms up the drive engine's coolant.
7. Note the pre-heating time of approx. 3 hours.

7.4.3.2 Option bc
Checking the shut-off valve of the defroster

When the ambient temperatures are constantly below 0°C (winter operation), individual components of the control system must be moistened with anti-freeze. A defroster has been installed to meet this requirement. Adding antifreeze to the air flow of the control system for a short time only then makes sense when the machine is de-commissioned daily.

The heat generated by the machine prevents individual components of the control system from freezing up during operation. In order to prevent unnecessary use of antifreeze during the machine's operation, a shut-off valve blocks the constant addition of antifreeze to the air flow of the control system.



See Fig. 14 for the switching positions of the corresponding shut-off valve.
The correct switching position for summer operation may vary depending on the model.
Please see Table 53 for the correct switching position of your machine.

Option bc

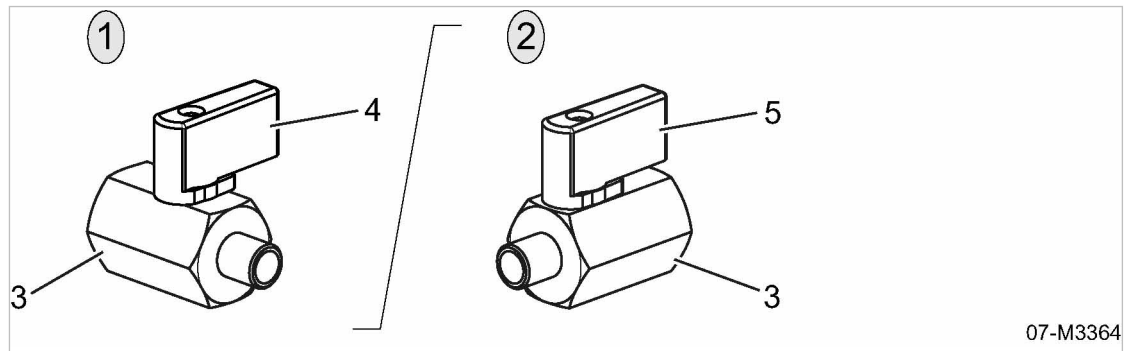


Fig. 14 Shut-off valve of switching position

- | | |
|-------------------------|---|
| ① Shut-off valve closed | ④ The lever is positioned across the flow direction |
| ② Open shut-off valve | ⑤ The lever is positioned in the flow direction |
| ③ Shut-off valve | |

Precondition The machine is switched off and cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar!
The negative cable to the battery is disconnected.

1. Check the level of the antifreeze in the defroster tank, see chapter 10.9.2.
2. Check the position of the shut-off valve during the daily start-up of the machine.

Instructions	Switching position for summer operation	Complied with?
Open the shut-off valve	X	
X ≙ applicable, — ≙ not applicable		

Instructions	Switching position for summer operation	Complied with?
Close the shut-off valve	—	
X $\triangleq$ applicable, — $\triangleq$ not applicable		

Tab. 53 Block antifreeze

3. If necessary, open the shut-off valve and keep it open.
The constant addition to the air flow of the control system is prevented during operation with antifreeze.

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

Pictograms directly above the instrument panel illustrate the starting and stopping procedures, see also item ① in the following illustration. The switch «Control ON» is positioned within the machine, behind the instrument panel.

Precondition No personnel are working on the machine.



NOTICE

Serious damage to 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.

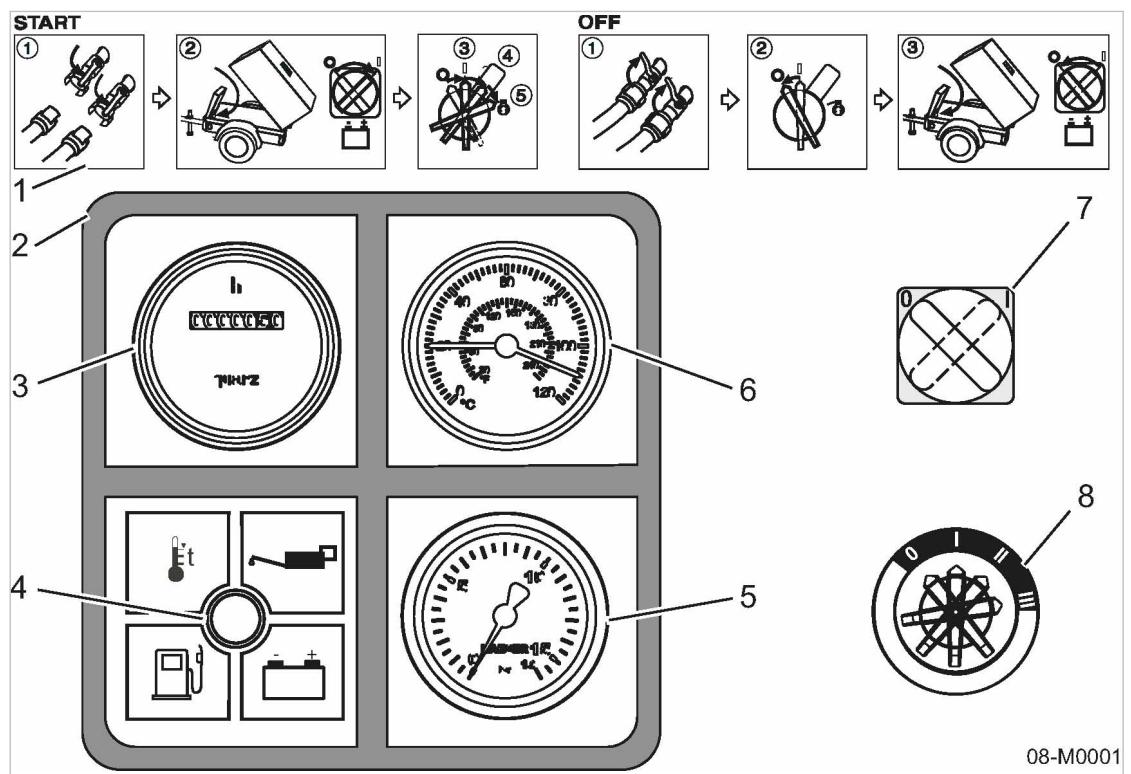


Fig. 15 Starting instruments

- | | |
|--|--------------------------|
| ① Starting and stopping pictogram | ⑦ «Controller On» switch |
| ② Operating panel | ⑧ «Starter switch »: |
| ③ Operating hours counter | 0 STOP / OFF |
| ④ <i>Charging indicating light, Group alarm lamp</i> | I ON |
| ⑤ Compressed air outlet pressure gauge | II Preheating |
| ⑥ Temperature gauge switch | III START |

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.

8.2.1 Starting the machine

1. Raise the cover.
2. Turn the «Controller ON » [7] switch to the "I" position.
3. Close and lock the canopy.
4. Open all compressed air outlet valves.

8.2.2 Starting the machine



1. **NOTICE!**
Destruction of the starter!
Improper operation could destroy the starter.
 - As long as the engine is running, do not actuate the starter switch.
 - Do not turn and hold the starter switch for longer than 30 seconds.
 - Wait for a few minutes after each attempt to start the engine.
 - The «ignition switch» must be returned to the neutral position before each start attempt (restart protection).
2. Turn the «ignition switch» [8] to the "I" position.
The *charging indicator lamp* must light.
3. Turn the «ignition switch» to "II" and hold (max. 5-10 seconds).
The engine's glow plugs are energised and the engine pre-heated.
4. Turn the «ignition switch» to "III" and release it as soon as the engine starts.
The *charging indicator lamp* extinguishes as soon as the engine is running.
A fault has occurred if the charging indicator lamp does not extinguish, see chapter 9.2.

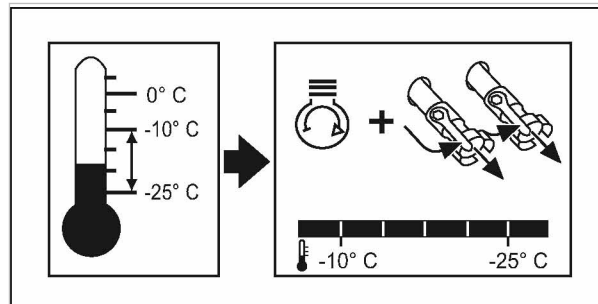


The electric fuel pump starts automatically during pre-heating. This vents the fuel line before each start.
Maximum preheating time should be 5-10 seconds.

8.2.3 Allow the machine to run up to operating temperature

To avoid unnecessary wear, the engine should be run in IDLE until the airend discharge temperature reaches +30 °C. The airend discharge temperature is shown at the remote thermometer contact on the instrument panel.

Option ba



08-M0008

Fig. 16 Label referring to the warm-up period when ambient temperatures are below -10 °C

- Allow the machine to warm up in IDLE (low speed).

8.2.4 The machine is running under load

Precondition The airend discharge temperature must be at least +30 °C

1. Connect the consumer to the compressed air outlet valves.
2. Open the compressed air outlet valves.

8.2.5 Shutting down the machine

1. Close all «compressed air outlet valves» on the air distributor.
The engine runs in IDLE.
2. Turn the «ignition switch» to “0” position.
The engine turns off.

Shutting down the machine:

1. Raise the cover.
2. Turn the «controller ON» switch to “0” position.
3. Close the canopy.



Lock the canopy if necessary.

8.3 Ending the reverse engine run

Engine backfiring causes a short turning of the engine in the opposite direction. This backfiring can trigger the expulsion of exhaust gas into the intake end which may cause a fire.

If the engine runs in reverse, it must be shut down immediately because the oil circuit is interrupted potentially causing mechanical damage.

**Characteristics of a reverse engine run**

- Oil pressure drops significantly.
- Oil pressure switch indicates insufficient oil pressure.
- Exhaust gases escape from the air filter.
- The knocking sound of the engine becomes audibly louder.

**CAUTION**

Reverse engine run
Mechanical damage from interrupted oil circuit.

- Shut down the machine immediately.

1. Shut down the machine immediately.
2. Check the air filter.
3. Check the suction pipe.
4. If necessary, replace the components.

8.4 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.

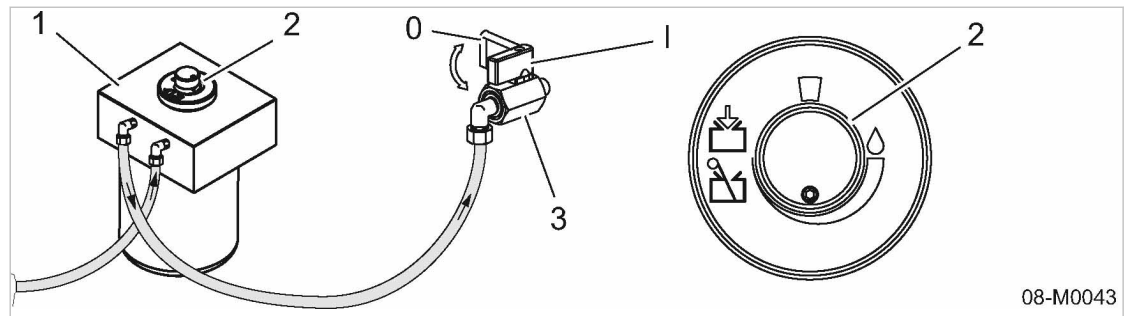
Further information See chapter 10.8 for information to the draining of liquids within the machine.

8.5 Operating the options

- Comply with all instructions.

8.5.1 Option ea Operating the tool lubricator

Precondition The machine is switched off.
Lubricant container filled with enough lubricant.



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Fig. 17 Setting the tool lubricator

- | | |
|-------------------|-----------------------|
| ① Tool lubricator | ③ Lubricant container |
| ② Metering wheel | ④ Shut-off valve |
| | I – open |
| | 0 – closed |

➤ Open the canopy.

Switch on the lubricant addition:

1. Open the shut-off valve ④.
2. Close the enclosure.

Set the lubricant content:

The lubricant content the compressed air should contain depends on the application and must be determined by the user. It depends on the nature of the pneumatic tools used and the supply hoses connected.

The lubricant content can be controlled by the metering wheel:

- Turning clockwise: Reduce lubricant content.
- Turning counter-clockwise: Increase lubricant content.

1. Set the required lubricant content at the metering wheel.
2. Close the enclosure.

Further information Fill the lubricant container with lubricant (see chapter 10.9.1).

Switch off the lubricant addition:

1. Close the shut-off valve ④.
2. Close the enclosure.

8.5.2 Option ba Using the low-temperature equipment

Overview:

- Pre-heat the drive engine coolant
- Use antifreeze for the control and regulating system

➤ Follow all instructions!

8.5.2.1 Option bb

Using the coolant pre-heating

1. Start the coolant pre-heating as described in chapter 7.4.3.
2. Pre-heat the drive engine coolant for approx. 3 hours.
Thermal balance achieved.
3. Disconnect the mains plug from the user's power outlet.
4. Disconnect the unit plug from the connection of the machine.
5. Open the enclosure.
6. Stow the power cable inside the machine.
7. Close the enclosure.
- Gently start the machine with the pre-heated coolant of the drive engine.



Diesel engines run more efficiently if the diesel engine has been pre-heated. The use of coolant pre-heating therefore reduces pollutant emissions and the fuel consumption due to the shortened warm-up phase.

In addition, wear of the drive engine is reduced, thus increasing its service life.

8.5.2.2 Option bc

Using antifreeze

Prior to daily de-commissioning, the machine must be run with switched-on antifreeze for a short time in order to prevent the control and regulating system of the machine from freezing.

Precondition The machine is switched off.

Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar!

1. Open the enclosure.
2. Set the defroster shut-off valve to winter operation as described in table 54.

Instructions	Switching position for winter operation	Complied with?
Open the shut-off valve	—	
Close the shut-off valve	X	

X ≙ applicable, — ≙ not applicable

Tab. 54 Switch on the antifreeze

3. Close the enclosure.
4. Start the machine.
5. Let machine run in IDLE mode for a short time.
The control and regulating system of the machine is moistened with antifreeze.
6. Switch off the machine.
7. Wait until the machine has automatically vented.
8. Open the enclosure.
9. Set the shut-off valve to summer operation.
10. Close the enclosure.

Result During wintry ambient temperatures, the control and regulating system of the switched-off machine is protected against freezing. When the machine is started and warmed-up on the next day, the control and regulating system can immediately function properly.

Further information See chapter 10.9.2 for filling the defroster tank with antifreeze.

8.5.3 Option oa Operating the battery isolating switch

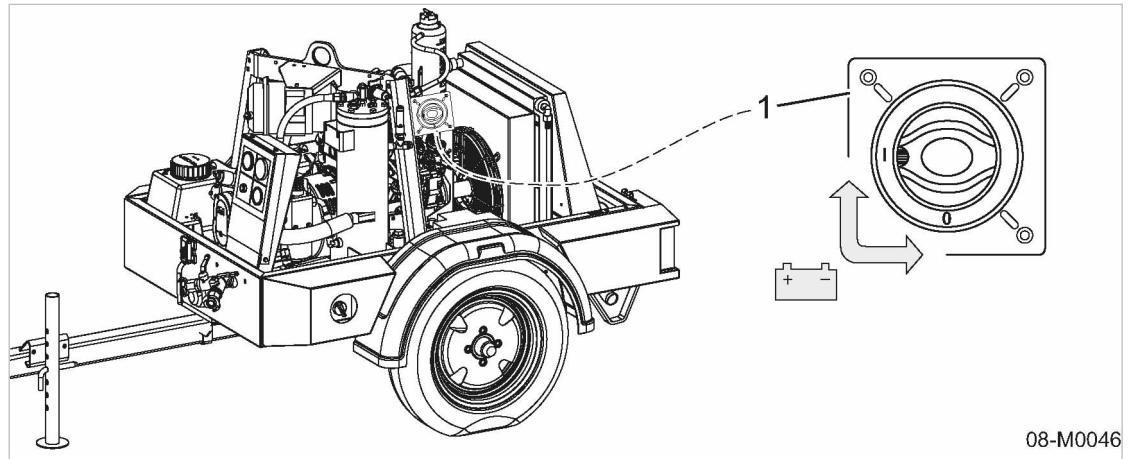


Fig. 18 Battery isolating switch

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

➤ Open the canopy.

Start the machine

1. Switch the «battery isolating switch» on.
The battery is now connected to the machine's electrical system. The machine can now be started.
2. Close the canopy.

Shutting down the machine

1. Switch the «battery isolating switch» to the 'off' position.
The battery is disconnected from the machine's electrical system.
2. Close the canopy.

8.5.4 Option ua Using the hose reel

The hose reel is positioned at the front of the machine.

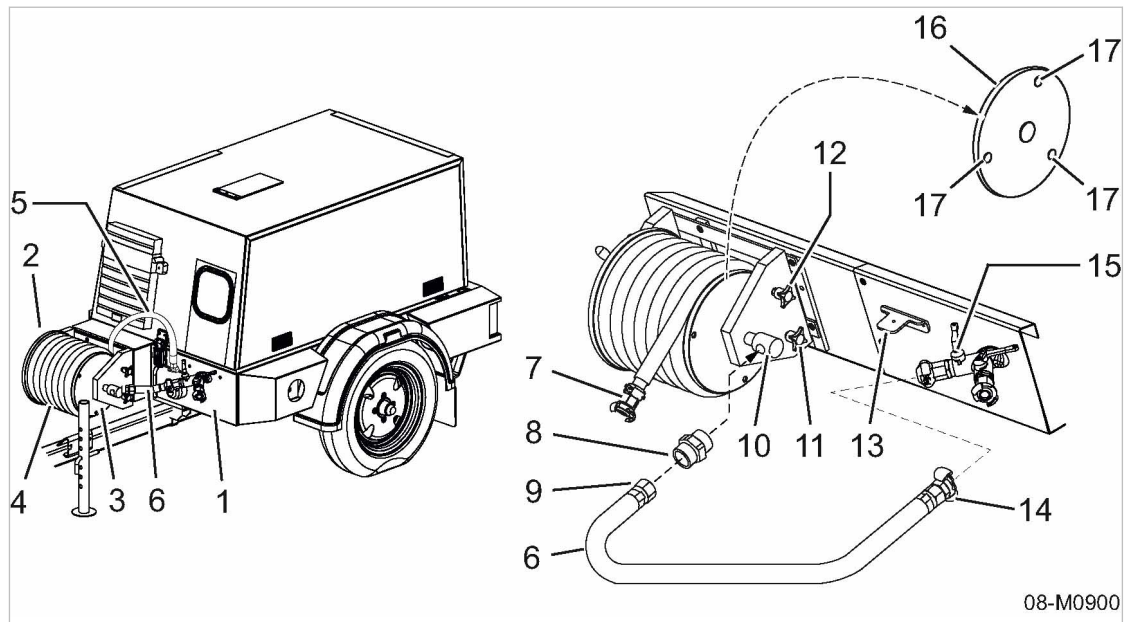


Fig. 19 Hose reel

- | | |
|---------------------------------|-------------------------------|
| ① Front side, machine | ⑩ Connecting bore |
| ② Winding handle (fold out) | ⑪ Clamping screw |
| ③ Hose reel | ⑫ Transport securing bolt |
| ④ Compressed air extension hose | ⑬ Bracket |
| ⑤ Hose end in safety position | ⑭ Claw coupling |
| ⑥ Connecting hose | ⑮ Compressed air outlet valve |
| ⑦ Claw coupling | ⑯ Side wall with safety bores |
| ⑧ Adapter | ⑰ Securing holes |
| ⑨ Union nut | |

8.5.4.1 Operating the machine with an extension air hose

A connecting hose ⑥ supplies the extension hose with compressed air.

Precondition The connecting hose is installed.

The compressed air outlet valve is closed.

1. Pull the hose coupling ⑦ of the bracket ⑬.
2. Loosen the transport securing bolt ⑫.
3. Loosen the clamping screw ⑪.
4. Unfold the crank ②.
5. Reel out the required length of the extension hose ④.
6. Tighten the clamping screw ⑪.
The reel is locked against unwanted reeling in or out.
7. Fold the crank ②.
8. Connect the air tool.
9. Activate the machine
10. Hold the air consumer at its handle.
11. Open the compressed air outlet valve for the compressed air extension hose ⑮.

8.5.4.2 Operating the machine without an extension air hose

1. Close the shut-off valve for the compressed air extension hose.
2. Disconnect the air consumer.
3. Unfold the crank.
4. Coil the hose evenly and tightly.
5. Tighten the clamping knob.
The reel is locked against unwanted reeling in or out.
6. Fold the crank.

8.5.4.3 Securing the hose reel for transport

1. Check that the compressed air extension hose is firmly and evenly reeled in.
2. Reel again, if necessary.
3. Tighten the clamping knob.
4. Engage the securing screw fully.
5. Plug the hose coupling onto the bracket.

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 Evaluate engine faults and alarms

9.2.1 The engine refuses to start or stops

Possible cause	Remedy	Where can I get help?	
		SW	KS
Defective starter.	Have changed.	X	–
The fuel cut-off device has not opened.	Check the coil and electrics and have changed if necessary.	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 10.3.3).	–	–
Fuel filter clogged.	Clean or replace, see chapter 10.3.3.	X	X
Fuel line broken.	Have changed.	X	X
Defective control fuse or relay.	Have repaired or replaced if necessary.	X	X
Airend discharge temperature too high.	Have adjusted	–	X
Defective temperature gauge switch giving no enable signal	Have repaired or replaced if necessary.	–	X
Ignition switch defective.	Have repaired or replaced if necessary.	–	X
Electrical connections and/or cables loose or broken	Tighten the connection or have the cable replaced.	X	X
The battery is electrically isolated from the on-board power supply.	Set the battery isolating switch (option) to the "I" position, see chapter 8.	–	–
Defective battery or low charge.	Maintain battery, see chapter 10.3.8.	–	–
Motor alternator defective.	Have repaired or replaced if necessary.	X	X

SW = specialised workshop; KS = KAESER SERVICE

9 Fault Recognition and Rectification

9.2 Evaluate engine faults and alarms

Possible cause	Remedy	Where can I get help?	
		SW	KS
Defective alternator regulator.	Have repaired or replaced if necessary.	X	X
Oil pressure switch indicating insufficient oil pressure.	Check engine oil level, see chapter 10.3.4.	X	X
	Have the engine repaired or exchanged.	X	X

SW = specialised workshop; KS = KAESER SERVICE

Tab. 55 "Engine refuses to start or comes to a stop" fault

9.2.2 Engine does not reach full speed

Possible cause	Remedy	Where can I get help?	
		SW	KS
Airlock in the fuel line between fuel tank and injector pump.	Bleed the fuel line (see chapter 10.3.3).	X	X
Fuel filter clogged.	Clean or replace, see chapter 10.3.3.	X	X
Fuel line broken.	Have changed.	X	X
Speed adjustment cylinder mal-adjusted or defective.	Repair or have replaced if necessary.	X	X

SW = specialised workshop; KS = KAESER SERVICE

Tab. 56 "Engine does not reach full speed" fault

9.2.3 Indicator lamp remains on

Possible cause	Remedy	Where can I get help?	
		SW	KS
Electrical connections and/or cables loose or broken	Tighten the connection or have the cable replaced.	X	X
Motor alternator defective.	Have repaired or replaced if necessary.	X	X
Defective alternator regulator.	Have repaired or replaced if necessary.	X	X
Engine oil pressure too low.	Check engine oil level, see chapter 10.3.4.	X	X
	Check the engine and have repaired if necessary.	X	X

SW = specialised workshop; KS = KAESER SERVICE

Tab. 57 "Indicator lamp remains on" fault

9.2.4 Engine running backwards

Possible cause	Remedy	Where can I get help?	
		SW	KS
Engine backfiring	Immediately shut down the engine, check air filter and rubber intake pipe (see chapter 8.3). If necessary, have damaged components replaced.	X	X
–	–		

SW = specialised workshop; KS = KAESER SERVICE

Tab. 58 "Engine running backwards" fault

9.3 Analysing compressor faults and alarms

9.3.1 Working pressure too high

Possible cause	Measure	Where can I get help?	
		SW	KS
Proportional controller maladjusted or defective.	Have it 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. 59 Fault: working pressure too high

9.3.2 Working pressure too low

Possible cause	Measure	Where can I get help?	
		SW	KS
Proportional controller maladjusted or defective.	Have it 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

SW = Specialised workshop; KS = KAESER SERVICE

9 Fault Recognition and Rectification

9.3 Analysing compressor faults and alarms

Possible cause	Measure	Where can I get help?	
		SW	KS
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 9.2	X	X
Engine air filter and/or compressor air filter clogged.	Clean or change, see chapters 10.3.2 and 10.4.7.	–	–
Oil separator cartridge heavily clogged.	Change, see chapter 10.4.6.	–	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 60 Fault: working pressure too low

9.3.3 Safety valve blows off

Possible cause	Measure	Where can I get help?	
		SW	KS
Oil separator cartridge heavily clogged.	Change, see chapter 10.4.6.	–	–
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. 61 Fault: safety valve blowing off

9.3.4 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
Oil cooler surface clogged.	Clean surface, see chapter 10.5.	–	–
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

SW = Specialised workshop; KS = KAESER SERVICE

9 Fault Recognition and Rectification

9.3 Analysing compressor faults and alarms

Possible cause	Measure	Where can I get help?	
		SW	KS
Oil separator cartridge heavily clogged.	Measure the pressure differential and change the cartridge if greater than 1 bar. Change, see chapter 10.4.6.	–	X
Compressor oil filter cartridge clogged.	Change, see chapter 10.4.4.	–	–
Compressor cooling oil level too low.	Replenish, see chapter 10.4.2.	–	–
Oil pipes leaking.	Seal leaks or have pipes changed.	X	X
Liquid cooling of the drive engine defective.	Have it repaired.	X	X
Cooling air blower defective.	Have it repaired.	X	X
Sediments in the coolant cooler.	Clean the coolant cooler from inside, see chapter 10.3.1.	–	–
Ambient temperature too high.	See installation conditions in chapter 5.2.	–	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 62 Fault: machine overheating

9.3.5 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 10.4.5	–	X
Cracked oil separator cartridge.	Change, see chapter 10.4.6.	–	–
Oil level in the oil separator tank too high.	Reduce to maximum level, see chapters 10.4.1 and 10.4.3.	–	–

SW = Specialised workshop; KS = KAESER SERVICE

Tab. 63 Alarm: "Too much oil residue in the compressed air"

9.3.6 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. 64 Alarm: "Oil flows from the compressor air filter after shutdown"

10 Maintenance

10.1 Ensuring safety

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



Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

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

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

Tab. 65 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 carry out any checks or maintenance while the machine is running.

When working on the pressure 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 compressor has automatically vented.
 - Open the compressed air outlet valve carefully.
 - Check: the pressure gauge reads 0 bar!
- Do not open or dismantle any valves.

When working on the drive system

Touching rotating, very hot or electrically live components can result in serious injury.

- Shut down the machine before opening any doors/canopy.
- Disconnect the negative terminals on the batteries.
- Ensure that the machine is cooled down.

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

10.2 Following the maintenance plans

10.2.1 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 you to determine the frequency of individual maintenance tasks and deviations from our recommendations.

Further information A list is available in chapter 10.10.

10.2.2 Maintenance tasks after commissioning

The table below lists maintenance tasks required after commissioning (initial start-up).

- Perform maintenance tasks according to the following schedule.

Component: Task	after the first 50 h	after the first half year (250 hours)	see Chapter	Note
Drive engine:				
Have fuel lines and clamps checked.	X			KS, FW
–				

h ≙ operating hours

KS ≙ Contact KAESER SERVICE,

FW ≙ Contact specialised workshop.

Tab. 66 Maintenance tasks after commissioning

10.2.3 Regular maintenance tasks

The following table lists the various maintenance intervals.

Maintenance interval	Short description
Daily	–
Every 250 h, at least annually.	A250

Maintenance interval	Short description
Every 500 h, at least annually.	A500
Every 1000 h, at least annually.	A1000
Every 1500 h, at least annually.	A1500
Every 2000 h, at least every 2 years.	A2000
Every 3000 operating hours	A3000
Every 36000 h, at least every 6 years.	A36000

Tab. 67 Maintenance intervals and regular maintenance tasks

The table below lists regular maintenance tasks.

- Carry out maintenance tasks punctually taking ambient and operating conditions into consideration.

10.2.3.1 Machine maintenance schedule

- Carry out maintenance tasks according to the following schedule:



The maintenance work marked with (*) must also be carried out every 6 months if the annual runtime of your machine exceeds 500 operating hours.

Assembly: Task	Daily	A250	A500	A1000	A1500	A2000	A3000	A36000	See chapter	Note
Drive engine:										
Check engine air filter maintenance indicator.	X								10.3.2	
Check the engine oil level.	X								10.3.4	
Replace the engine oil (*).		X							10.3.4	
Replace the engine oil filter (*).		X							10.3.5	KS, FW
Replace the engine air filter.				X					10.3.2	KS, FW
Check/adjust the drive belt tension.		X							10.3.6	KS, FW
Replace the drive belt.			X						10.3.6	KS, FW
Check the coolant level.	X								10.3.1	
Clean the coolant cooler.		X							10.5	
Check coolant/antifreeze.			X						10.3.1	KS, FW
Change the coolant.				X					10.3.1	KS, FW
Remove residue within the coolant cooler.				X					10.3.1	KS, FW
Fill up the fuel tank.	X									
Replace the fuel prefilter (*).				X					10.3.3	KS, FW

KS ≙ contact KAESER SERVICE,
 FW ≙ contact specialised workshop

Assembly: Task	Daily	A250	A500	A1000	A1500	A2000	A3000	A36000	See chapter	Note
Replace the fuel filter (*)				X					10.3.3	KS, FW
Check the fuel tank for dirt and clean, if necessary.			X							
Clean the tank strainer.			X							
Check fuel tank for secure fixing.		X							10.3.9	
Check the fuel return line for leakage and firm seating.			X							KS, FW
Have the injector nozzles checked.							X			KS, FW
Have the injection pump checked.							X			KS, FW
Have the antivibration mount checked.				X					10.3.7	KS, FW
Have the valves adjusted.					X					KS, FW
Maintain the battery electrolyte level and cable connections.			X						10.3.8	
Check the exhaust gas section for leakages.	X									
Compressor:										
Check the compressor air filter maintenance indicator.	X								10.4.7	
Check the cooling oil level.	X								10.4.1	
Change the cooling oil.				X					10.4.3	
Change the compressor oil filter.				X					10.4.4	
Clean the compressor oil cooler.		X							10.5	
Clean the compressor air filter.		X							10.4.7	
Change the compressor air filter.				X					10.4.7	
Clean/inspect the dirt trap for the oil separator cartridge extraction line.			X						10.4.5	
Change the oil separator cartridge in the oil separator tank.						X			10.4.6	
Have the safety valve(s) checked.			X						10.4.8	KS, FW
Enclosure:										
Check sound insulation material.			X						10.6.1	
KS ≙ contact KAESER SERVICE, FW ≙ contact specialised workshop										

Assembly: Task	Daily	A250	A500	A1000	A1500	A2000	A3000	A36000	See chapter	Note
Carry out rubber sealing strip maintenance.			X						10.6.2	
Check function of closed enclosure.			X						10.6.3	
Check connection elements.		X							10.6.4	
Check the function of the enclosure safety catch.		X							10.6.5	
Body:										
Closed floor pan: Check the machine interior for liquid accumulations.	X								10.8	
Have lifting eye and fixings checked.			X							KS, FW
Hose lines (pressure hoses, fuel hoses):										
Check all hose lines of the machine for proper seating, leaks and wear; have them replaced if necessary.			X						10.7	KS, FW
Have the fuel lines of the drive engine replaced.								X	10.7.1	KS, FW
Have the pressure hoses of the drive engine replaced.								X	10.7.2	KS, FW
Have the pressure hoses of the compressor replaced.								X	10.7.3	KS, FW
Other maintenance tasks:										
Check all accessible screw fittings, lines and clamps for wear and tightness.			X							KS, FW
Check that all electrical connections are tight.			X							KS, FW
Check the lighting system's function.	X									
KS ≙ contact KAESER SERVICE, FW ≙ contact specialised workshop										

Tab. 68 Regular machine maintenance tasks

10.2.3.2 Maintenance schedule options

- Carry out maintenance tasks according to the following schedule:



The maintenance work marked with (*) must additionally be carried out every 6 months if the annual runtime of your machine exceeds 500 operating hours.

Option: Task	Daily	A100	A250	A500	A1000	A2000	See chapter	Note
Option ea – tool lubricator:								
Check the level in the lubricant container.	X						10.9.1	
Option bb – Coolant pre-heating:								
Have the coolant pre-heating checked.				X				EF
Have the mains supply cable checked.				X				EF
Option bc – Defroster:								
Check/top up the level of the receiver tank.	X						10.9.2	
Option la – spark arrestor:								
Blow out any soot residue.				X			10.9.3	
Option la - engine air intake shut-off valve:								
Clean/check the engine air intake shut-off valve.			X				10.9.4	
Have the engine air intake shut-off valve checked/adjusted.			X				10.9.4	KS, FW
Option ne - fuel water trap:								
Empty the fuel water trap.		X					10.3.3.3	
Replace the fuel/water separator filter					X		10.3.3.3	
KS ≙ Contact KAESER SERVICE, FW ≙ Contact specialised workshop, EF ≙ Contact certified electrician								

Tab. 69 Regular maintenance task options

10.3 Drive engine maintenance

- Carry out maintenance according to the schedules in chapter 10.2.

10.3.1 Maintaining the coolant cooler

Material For suitable coolant, please see the information regarding the initial filling, chapter 2.7.5.

Coolant tester

Cooler cleaning agent

Collecting vessel

Funnel

Cleaning cloth

Precondition The machine is switched off.
The machine is installed on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar!



WARNING

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

- Let the machine cool down before opening the cooling system.



CAUTION

Risk of chemical burns from coolant containing antifreeze!

- Avoid eye and skin contact with coolant. If the eyes are affected, rinse immediately with running water.
- Wear protective glasses and gloves.



NOTICE

Insufficient coolant levels can lead to machine damage!
Insufficient coolant levels will cause the drive engine to overheat. Overheating can cause serious damage to the drive engine.

- Check the coolant level daily.
- Top up the coolant as necessary.

- Open the enclosure.

10.3.1.1 Checking the coolant level

The coolant level in the drive engine cooling circuit must be checked daily prior to start-up.

The level is checked on the coolant expansion tank:

- The tank is semi-transparent so the coolant level can be seen from outside.
- The level should be between the *minimum and maximum markings* when the drive engine has cooled down.

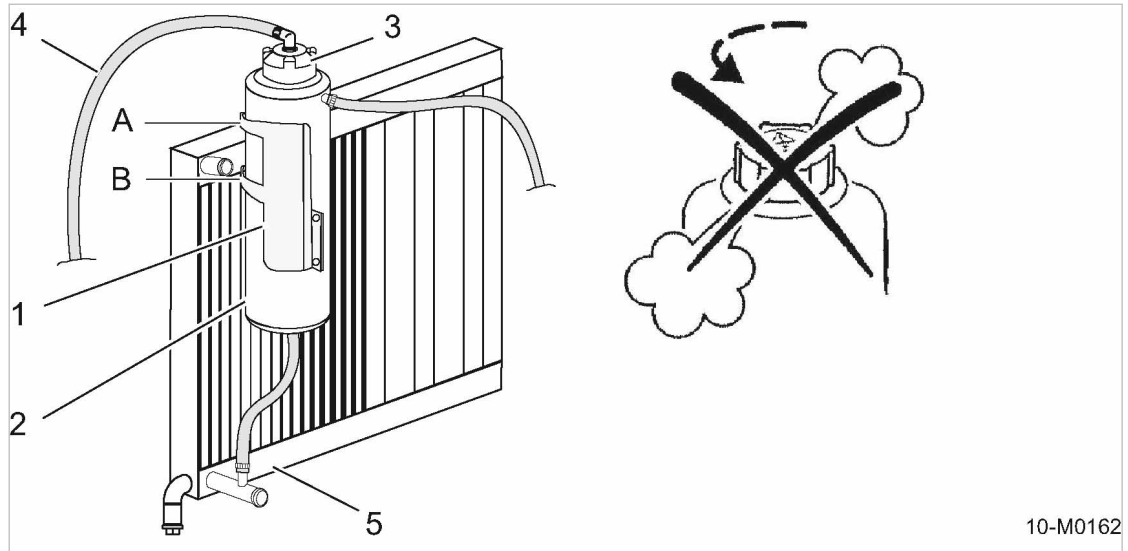


Fig. 20 Check the coolant level

- | | |
|------------------------------|------------------------|
| ① Coolant level indicator | ③ Filler neck with cap |
| A <i>Maximum mark</i> (FULL) | ④ Overflow |
| B <i>Minimum mark</i> (LOW) | ⑤ Coolant cooler |
| ② Coolant expansion tank | |

1. Check the level of coolant in the coolant expansion tank.
If the coolant level falls below the *minimum mark* ②: Top up the coolant.
2. Close the enclosure.



Have the cause for the coolant loss determined and rectified.

10.3.1.2 Checking the coolant

The coolant should be checked according to the maintenance schedule to ensure quality and operational life.

Coolant quality can be determined by the following parameters:

- Visual check
- Antifreeze concentration measurement
- Loosen and remove the expansion tank filler cap ③.

Performing visual check:

The coolant should be checked for its colour and any particles or sediments floating in it.

- Take a coolant sample and analyse.

The coolant is badly discoloured and/or contains floating particles: Change the coolant.

Performing antifreeze concentration measurement:

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

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



1. **NOTICE!**

The engine can be damaged if the antifreeze concentration is insufficient!

Corrosion.

Damage to the cooling system.

Engine casing fracture.

- Check coolant.
- Protect the coolant against frost.
- Immediately top up as necessary.

2. Use the coolant tester as instructed by the manufacturer to test the coolant.

Concentration of antifreeze is too low: Change the coolant.

Performing final work steps:

1. Close the filler cap.
2. Close the enclosure.

10.3.1.3 Mixing coolant

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

For reasons of corrosion protection and the need to raise the boiling point, the coolant must remain in the cooling system throughout the year.

The maximum permissible coolant life is 3 years.

Never use water without coolant additive. Water alone is corrosive at drive engine operating temperature. Water alone does not offer sufficient protection from boiling or freezing.

You will find an adhesive label with the recommended mixture ratio for the coolant close by to the coolant expansion tank, see Figure 21.

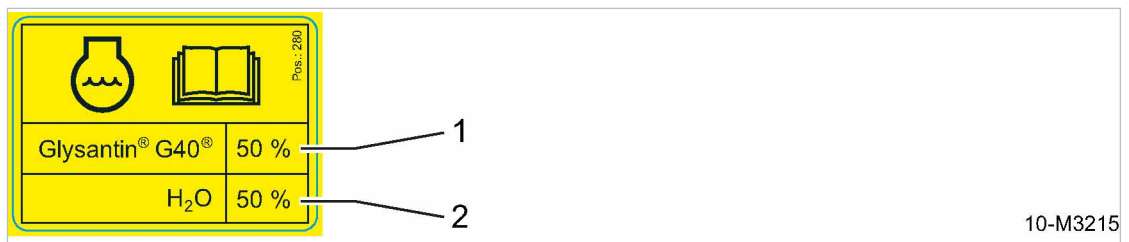


Fig. 21 Recommended mixture ratio for coolant

- ① Water
- ② Corrosion inhibitor/antifreeze

- For recommended coolant, please see the information regarding the initial filling, chapter 2.7.5!

Preparing coolant:

Precondition Coolant meets the prescribed operating instructions of the engine manufacturer KUBOTA.

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

Coolant mixture table:

Percentages [% vol.]		Frost protection up to approx. [°C]
Corrosion inhibitor/anti-freeze	Water	
50	50	–37

Tab. 70 Coolant mixture table



Do not use a concentration higher than 55% vol. of corrosion inhibitor/antifreeze even in extremely low ambient temperatures. The maximum frost protection is reached with 55% of corrosion inhibitor/antifreeze. This corresponds to frost protection 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!

10.3.1.4 Filling and topping up the coolant

The percentage of antifreeze in the coolant should not fall below 33% to ensure optimal frost and corrosion protection and prevent the build-up of deposits (sludge) in the cooling circuit. Topping up with water alone dilutes the antifreeze concentration and is therefore forbidden.



Make sure that there is sufficient room for the coolant to expand without overflowing when hot.

Precondition The negative cable to the battery is disconnected.

1. Loosen and remove the coolant expansion tank filler cap.
2. Mix a quantity of coolant according to the table and replenish to the mark.
Replenish the coolant to just below the *maximum mark* .
3. Close the filler cap.
4. Connect the negative cable to the battery.
5. Close the enclosure.
6. Start the drive engine and allow to IDLE for about 1 minute.
7. Stop the drive engine.
8. Open the enclosure.
9. Check the coolant level.
If the coolant level in the expansion tank has decreased: Top up the coolant.
10. Visually inspect for leaks.
11. Close the enclosure.

10.3.1.5 Draining the coolant

Precondition The machine has cooled down.
The negative cable to the battery is disconnected.

Draining the coolant:

The complete volume of coolant contained in the circuit can be drained at the drive engine's water cooler. The coolant cooler is drained by a separate screw plug (accessible from underneath through the access hole in the floor pan).

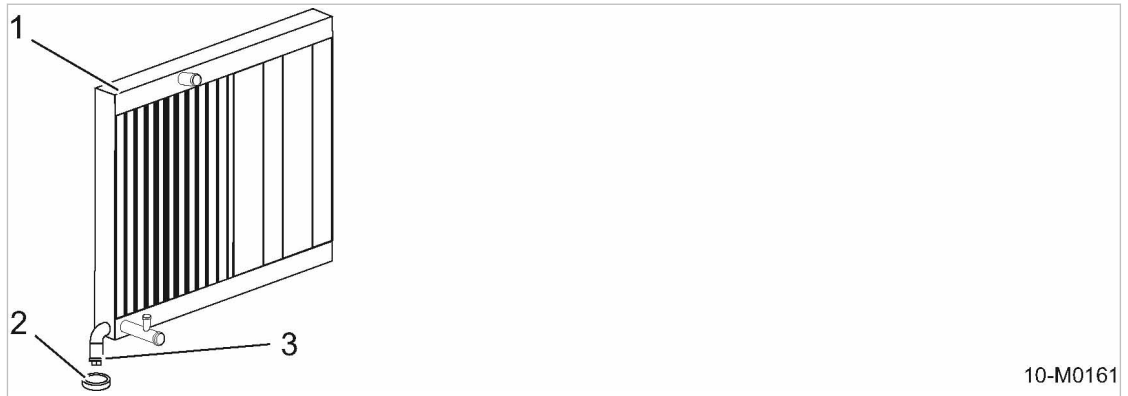


Fig. 22 Draining the coolant

- ① Coolant cooler
- ② Bung
- ③ Screw plug

1. Loosen and remove the expansion tank filler cap.
2. Remove the bung from the floor pan.
3. Position a receptacle beneath the water cooler drain point (accessible through a hole in the floor panel).
4. Loosen and remove the screw plug ②.
5. Allow the coolant to drain out completely.
6. Insert the plug with sealing ring and tighten.
7. Close the floor pan opening with a bung.
8. Close the filler cap.
9. Close the enclosure.



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

10.3.1.6 Removing scaling within the coolant cooler

After extended periods of use, scale may form in the cooling circuit and within the coolant cooler in particular. Due to the resulting poorer heat transfer, the drive engine may overheat.



NOTICE

Scaling in the cooling circuit
 Damage caused by drive engine overheating.

- Use cooler cleaning agent to remove scaling in the coolant cooler.

1. Read and follow the manufacturer's instructions regarding the use of cooler cleaning agent.
2. Use cooler cleaning agent to remove scaling from the coolant cooler.

Further information If the system reports "Change coolant", use cooler cleaning agent to remove scaling in the coolant cooler, see chapter 10.2.3.1.

10.3.2 Engine air filter maintenance

Clean the air filter as soon as the corresponding maintenance indicator activates.

Replace the filter element according to the maintenance schedule, see chapter 10.2.3.1.



- Using the engine without 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 cloth

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



NOTICE

Damaged 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.

- Raise the cover.

Checking contamination of the air filter:

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

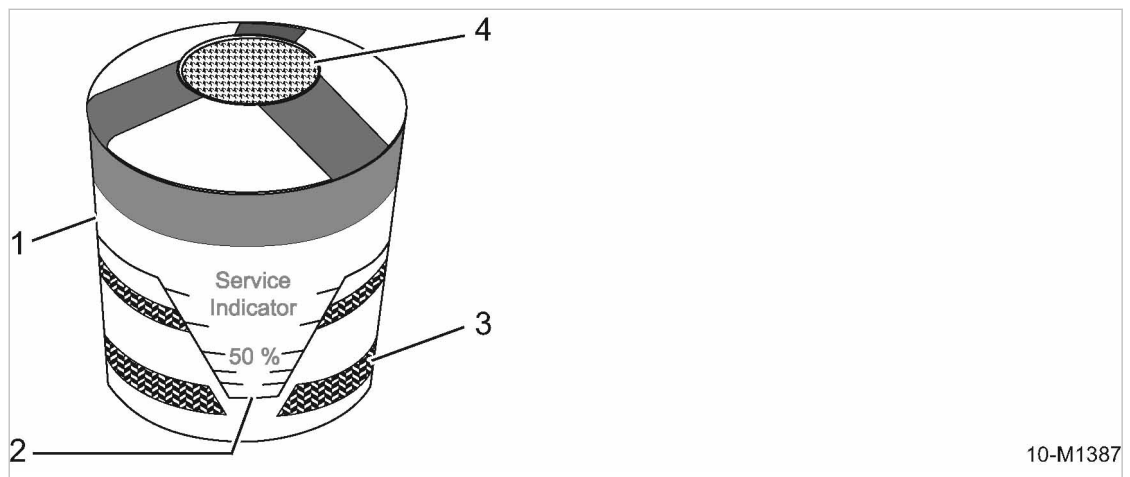


Fig. 23 Maintenance indicator

- | | |
|--|--|
| ① Maintenance indicator | ③ Red zone indicator scale |
| ② Indicating piston of the maintenance indicator | ④ Reset knob for the maintenance indicator |

- Check the air filter maintenance indicator.
If the yellow piston reaches the red zone, clean or renew the filter element.

Cleaning the air filter:

The dust evacuator valve must always point vertically to the bottom. The dust evacuation valve ② is positioned on the filter cover.

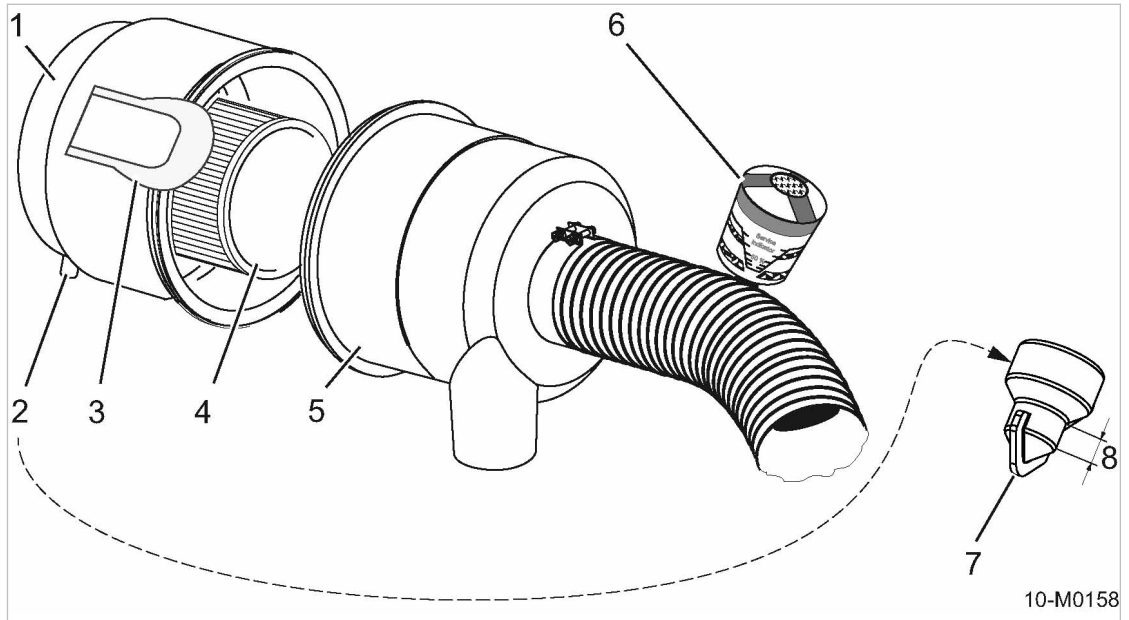


Fig. 24 Engine air filter maintenance

- | | |
|-------------------------|-------------------------|
| ① Filter cap | ⑤ Filter housing |
| ② Dust evacuating valve | ⑥ Maintenance indicator |
| ③ Spring retaining flap | ⑦ Drain slit |
| ④ Filter element | ⑧ Valve part |

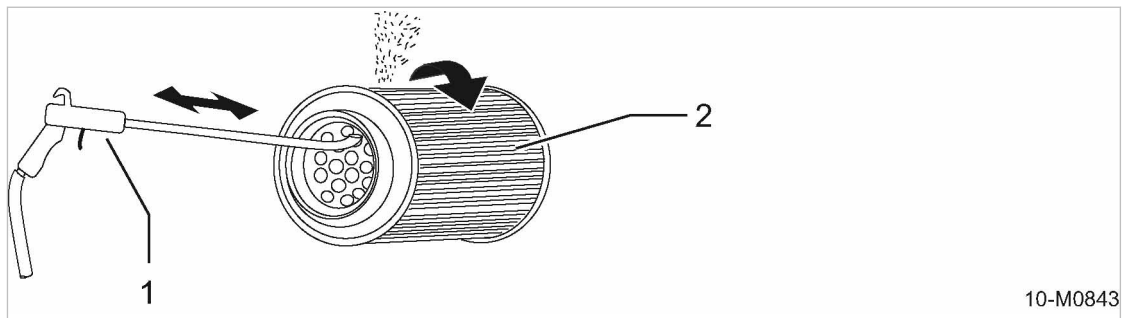


Fig. 25 Cleaning the filter element

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

1. Press both spring retaining flaps together, remove the cover, and pull the filter element out.
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 diagonally 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.
Replace any damaged filter element.
5. To empty the dust evacuator valve 
 - Pinch the valve part  above the drain slit  (drain slit opens).
 - Remove any dust clumps.
 - Clean the slit.
6. Insert the cleaned or new filter element into the filter housing. Make sure it is properly in place and sealed by its gaskets.
7. With the dust evacuator valve pointing to the bottom, place the filter cover in front of the filter casing.
8. Place the filter cap on the housing and press home.
9. Press on the cap until the spring retaining flaps snap home.

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 cover.



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

10.3.3 Fuel system maintenance**Overview:**

- Bleeding the fuel system
- Fuel system maintenance
 - Changing the fuel prefilter insert
 - Replacing the filter cartridge of the fuel filter
 - Starting the machine and performing a test run
- Fuel/water separator maintenance (option)

Material Spare parts

Collecting vessel

Cleaning cloth

Precondition The machine is switched off.
The machine is standing level.
The machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar.
The negative cable to the battery is disconnected.



DANGER

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

- Allow no open flames or sparks at the place of use.
- Stop the drive engine.
- Wipe up escaped fuel.
- Keep fuel away from hot machine parts.
- Ensure that the maximum ambient temperature is not exceeded at the place of use.



To ensure proper function of the fuel system no dirt particles may enter the fuel system. Before dismantling components for maintenance thoroughly clean these components, as well as their immediate vicinity.

- Follow all instructions.

10.3.3.1 Bleeding the fuel system

The electric fuel pump is used to bleed the system. The negative battery cable must be connected for the pump to operate and bleeding to be carried out.
 When the «starter switch» is turned to the "II" position, the pump starts and bleeds the fuel system. The drive engine is not started!

Air can find its way into the fuel system under certain conditions or during maintenance tasks:

- Fuel tank empty.
- Replacing the filter element/fuel filter cartridge of:
 - Fuel prefilter
 - Fuel filter
- Replacing the fuel pump
- Work on the fuel lines

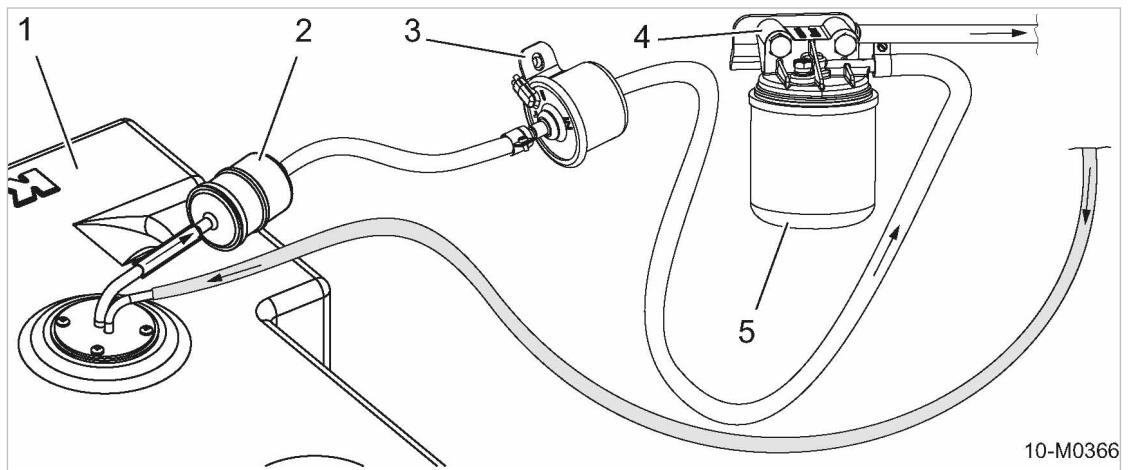


Fig. 26 Bleeding the fuel system

- | | |
|----------------------|-------------------------|
| ① Fuel tank | ④ Fuel filter head |
| ② Fuel prefilter | ⑤ Fuel filter cartridge |
| ③ Electric fuel pump | |

1. Reconnect the negative cable to the battery.

2. Turn the «starter switch» to the "II" position and hold it there.
The fuel system is bled.
3. Turn the «starter switch» to the "0" position.
The venting process is completed.
4. Disconnect the negative cable on the battery.

10.3.3.2 Filter maintenance**Changing the fuel prefilter element:**

The fuel filter element is a wear part and must be replaced at regular intervals, see maintenance schedule, chapter 10.2.

Precondition The negative cable to the battery is disconnected!

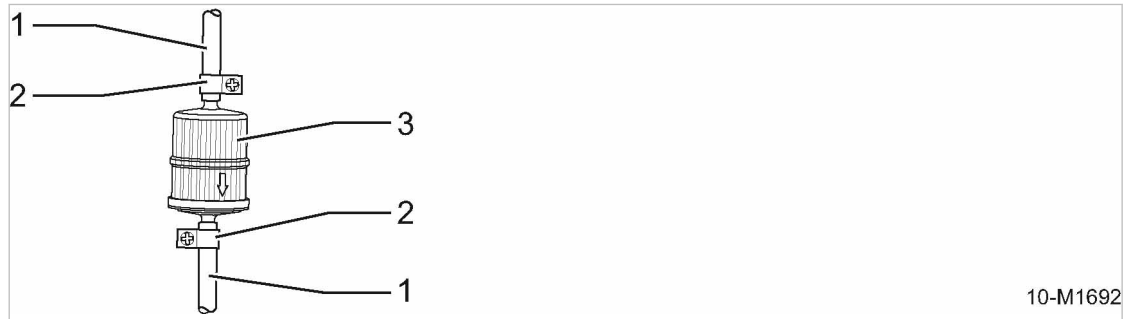


Fig. 27 Fuel prefilter maintenance

- ① Fuel line
- ② Hose clamp
- ③ Fuel prefilter

1. Place the collecting vessel under the fuel prefilter.
2. Loosen the hose clamp of the fuel line on the filter cap.
3. Pull off the fuel line.
4. Catch fuel in the vessel.
5. Loosen and remove the fuel prefilter cap.
6. Remove the filter element.
7. Insert the new filter element.
8. Replace and fasten the fuel prefilter cap on the lower part.
9. Connect the fuel line to the cap.
10. Fasten the hose clamp of the fuel line.
11. Bleed the system as described previously.



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

Replacing the fuel filter cartridge of the fuel filter:

The fuel filter cartridge is a wear part and must be replaced at regular intervals, see maintenance schedule, chapter 10.2.



Tools customary in the trade, such as filter wrench or belts may be used in order to loosen the old fuel filter cartridge for removal. The new fuel filter cartridge, however, may only be installed and tightened by hand force.

Precondition The negative cable to the battery is disconnected!

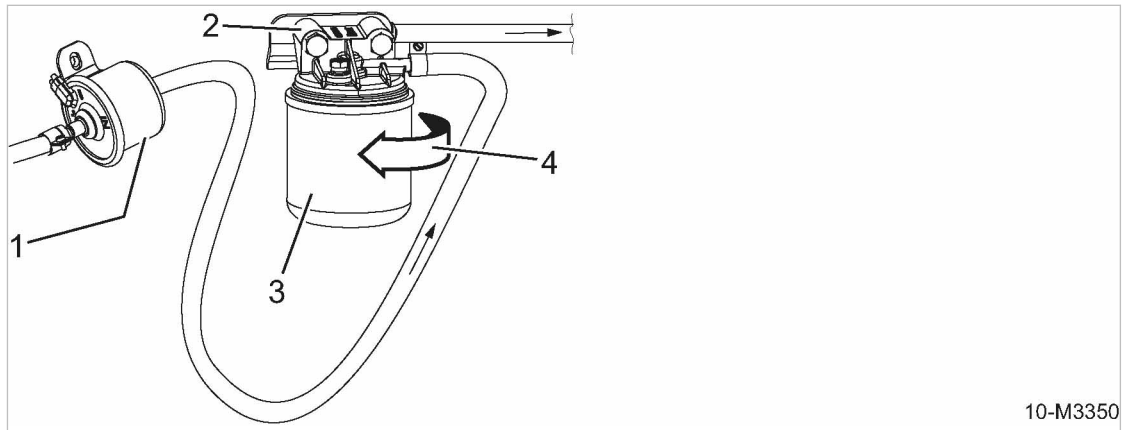


Fig. 28 Changing the filter cartridge

- | | |
|----------------------|-------------------------|
| ① Electric fuel pump | ③ Fuel filter cartridge |
| ② Fuel filter head | ④ Direction of arrow |

1. Place the collecting vessel under the fuel cartridge ③.
2. Turn the old fuel filter cartridge in the direction of the arrow ④ in order to loosen it.
3. Allow fuel to drain.
4. Remove the old fuel filter cartridge.
5. Clean the fuel filter head and sealing face.
6. Smear diesel fuel on the gasket of the new fuel filter cartridge.
7. Set new fuel filter cartridge into installation position.
8. Turn the new fuel filter cartridge clockwise using only hand force until the gasket fits tightly on the sealing surface.
9. Tighten new fuel filter cartridge by hand force.
10. Bleed the system as described previously.



Dispose of old fuel filter cartridge, fuel and any materials 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 mode for approx. 1 minute.
2. Visually check the fuel system for leaks.
3. Switch off the machine.
4. Re-tighten screw connections.

10.3.3.3 Option ne Fuel/water separator maintenance

The fuel/water separator is positioned between the fuel tank and the fuel pump. It protects the fuel pump against water deposits and against premature wear.

Here, the fuel/water separator is fitted with an additional fuel filter.



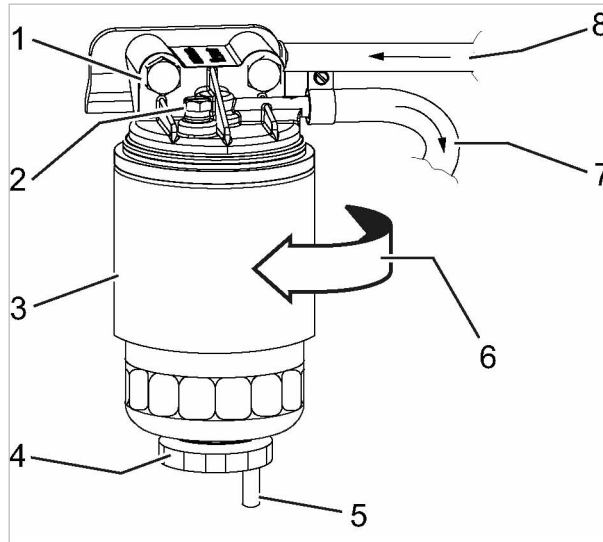
Standard tools, such as filter wrench or belts may be used in order to loosen the old fuel filter for removal. The new fuel filter, however, may only be installed and tightened by hand force.

Material

- Wrench
- Collecting vessel
- Cleaning cloth

Precondition

- The machine is switched off.
- The machine is installed on level ground, the machine has cooled down.
- Air consumers are disconnected, the outlet valves are open, the machine is fully vented, the pressure gauge reads 0 bar.
- The negative cable to the battery is disconnected.



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Fig. 29 Fuel/water separator

- | | |
|--------------------|----------------------|
| ① Fuel filter head | ⑤ Drain pipe |
| ② Venting screw | ⑥ Direction of arrow |
| ③ Fuel filter | ⑦ Fuel outlet |
| ④ Hand wheel | ⑧ Fuel inlet |

Emptying the fuel/water separator:

The fuel/water separator must be emptied at regular intervals, see maintenance schedule options, chapter 10.2.

1. Place a collecting vessel under the water separator fuel filter.
2. Loosen the venting screw ② on the fuel filter head.
3. Loosen the hand wheel ④ to open the drain pipe.
4. Drain separated water and dirt particles into the collecting vessel.
5. Tighten the hand wheel to close the drain pipe.
6. Tighten the venting screw.



If the venting screw is open, air will continuously flow into the fuel system during the subsequent ventilation process.

7. Connect the negative cable to the battery.
8. Close the enclosure.



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

Replace the fuel filter:

The fuel filter is a wear part and must be replaced at regular intervals, see maintenance schedule, chapter 10.2.

Precondition Spare part is available.

The old fuel/water separator has been emptied.

1. In order to loosen the old fuel filter, turn the old fuel filter in the direction of the arrow .
2. Remove the old fuel filter.
3. Clean the fuel filter head and sealing face.
4. Smear diesel fuel on the gasket of the new fuel filter.
5. Set new fuel filter into installation position.
6. Turn the new fuel filter clockwise using only hand force until the gasket fits tightly on the sealing surface.
7. Tighten the new fuel oil filter by hand force.
8. Check if the venting screw on the fuel filter head is tightened.
9. If necessary, tighten the venting screw.
10. Connect the negative cable to the battery.
11. Close the enclosure.



Dispose of old fuel filter, contaminated fuel and any materials contaminated with fuel in accordance with environmental protection regulations.

Bleeding the fuel system

Precondition Negative cable to the battery connected.

- Bleed the fuel system, see bleeding process, chapter 10.3.3.

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE mode for approx. 1 minute.
2. Visually check the fuel system for leaks.
3. Switch off the machine.
4. Re-tighten screw connections.

10.3.4 Changing the engine oil

The engine oil should be changed:

- according to the maintenance schedule,
- according to the degree of contamination of the intake air,
- at least once a year.

Material New engine oil, see chapter 2.7.6 for engine oil filling quantity.

Oil receptacle

New gasket for the filler cap

Cleaning cloths

Wrench

Funnel

Precondition The machine is switched off.

The machine is standing level.

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

Engine at operating temperature.

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

The negative cable to the battery is disconnected.



CAUTION

Danger of burns from hot components and escaping engine oil!

- Wear long-sleeved clothing and gloves.

Changing the engine oil

In order to drain the engine oil, unscrew the screw plug in the oil pan. For this purpose, a drainage outlet is provided in the floor pan, which is closed with a bung.

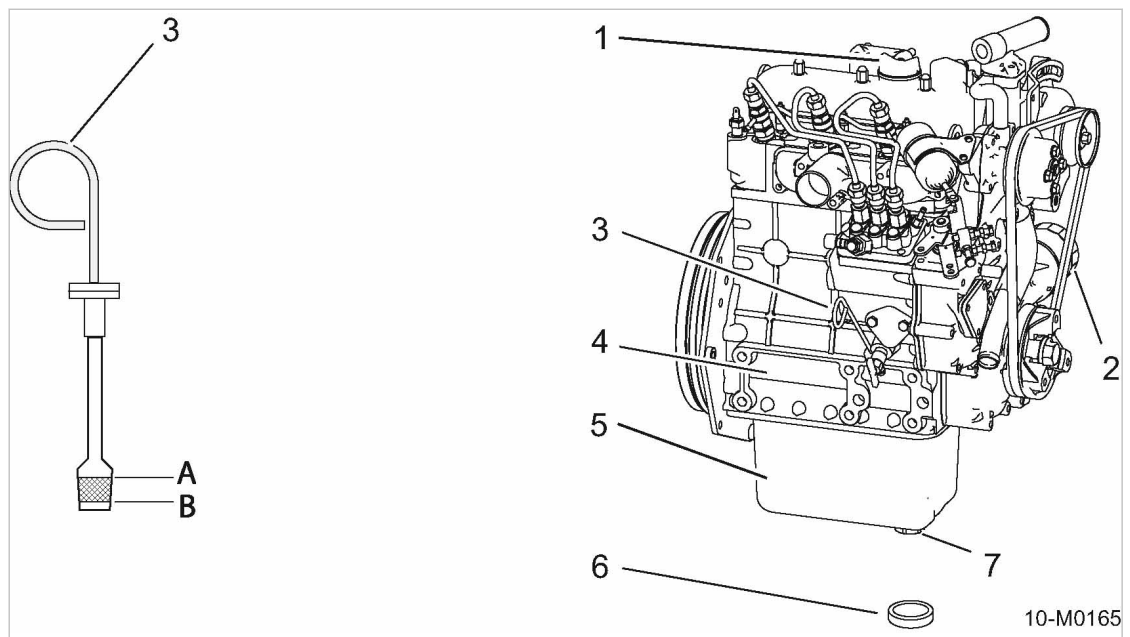


Fig. 30 Draining the engine oil

- ① Filler cap
- ② Oil filter
- ③ Oil dipstick
- ④ Engine block

- ⑤ Oil pan
- ⑥ Bung
- ⑦ Screw plug

1. Open the canopy.

2. Remove the oil oil filler cover.

3. Remove the bung from the floor pan.
4. Place the oil receptacle below the drain hole in the floor pan.
5. Unscrew the drain plug and allow the engine oil to drain into the receptacle.
6. Clean the screw plug and screw in with a new gasket.
7. Insert the bung.
8. Replace the plug in the filler port.
9. Close the canopy.



Dispose of old oil and oil-soaked working materials according to environmental protection regulations.

Filling with engine oil

Precondition Screw plug with the sealing ring screwed into the oil pan.
Filler plug tightened.

1. Pour in the specified volume of fresh oil into the oil filler.
2. Screw on the filler cap.

Checking the engine oil level



It takes a few minutes for oil to reach the sump.
Wait 5 minutes then use the dip stick to check the oil level.
The level must be between marks A and B.

1. Pull out the dip stick, wipe it clean and reinsert it.
2. Pull out the dipstick once more and read off the oil level.
3. Top up if the level is too low.
4. Reconnect the negative battery terminal.

Starting the machine and performing a trial run

Precondition Battery connected

1. Start the machine and allow it to idle for at least 5 minutes.
2. Check the engine oil level.
Top up as necessary.
3. Visually inspect for leaks.
4. Shut down the machine.

10.3.5 Changing the engine oil filter

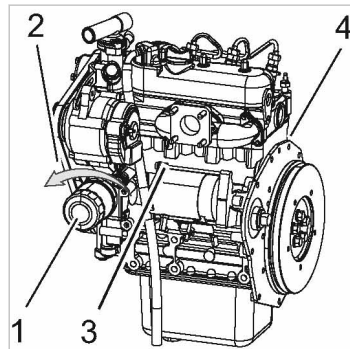
Material Spare part
Common tools
Cleaning cloths
Oil receptacle

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

**CAUTION**

Danger of burns from hot components and escaping engine oil!

- Wear long-sleeved clothing and gloves.



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Fig. 31 Changing the engine oil filter

- | | |
|---|----------------|
| ① Engine oil filter | ③ Engine |
| ② Direction of rotation to unscrew the filter | ④ Oil dipstick |

1. Open the canopy.
2. Prepare a receptacle.
3. Note the direction of rotation ② to unscrew the oil filter.
4. Unscrew the engine oil filter ①. Catch any escaping oil.
5. Carefully clean sealing surfaces using lint-free cloth.
6. Lightly oil the new filter's gasket.
7. Turn the oil filter clockwise by hand to tighten.
8. Check the engine oil level.
Low oil level: Replenish engine oil.
9. Close the canopy.



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

10.3.6 Drive belt maintenance

The life of the drive belts is influenced by belt tension.

- Slack belts can slip and become damaged and may result in engine overheating.
- Over-tight belts cause excessive strain and, hence, a reduction of the service life. Over-tight belts also place unnecessary stress on bearings and shorten their life.

Material V-belt tension measuring device
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 and the air outlet valves are open.
Negative cable to the batteries disconnected.

**WARNING**

Beware of rotating pulleys and moving belts.
There is danger of serious injury from pinching.

- Never check the drive belt unless the engine is at standstill.
 - Never run the machine without a belt guard.
- Open the canopy.

10.3.6.1 Carry out visual check

Precondition Belt guard is removed

1. Check the belt thoroughly for cracks, fraying or stretching.
When damaged or worn: Replace the drive belt immediately.
2. Replace the belt guard.
3. Reconnect the negative battery terminal.
4. Close the canopy.

10.3.6.2 Checking belt tension

Check belt tension when they are warm, not hot, to avoid length variations through temperature.
Use the belt tension measuring device.
The belt tension may also be checked by hand if no tension measuring device is available.

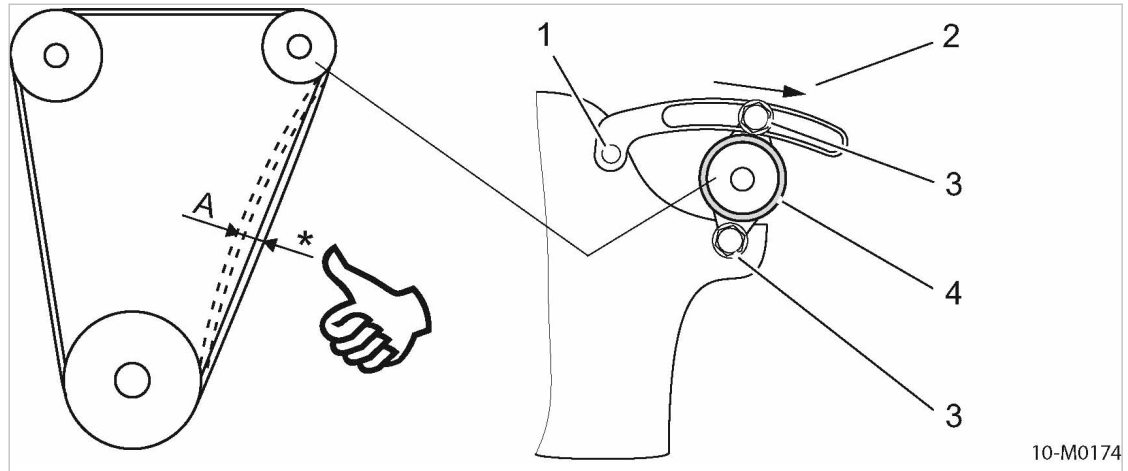


Fig. 32 Manually checking the belt tension

- | | | | |
|---|--|---|-------------------------|
| Ⓐ | Permissible deflection of the belt | ② | Direction of arrow |
| * | Compressive load approximately: 10 kg
permissible intrusion depth: 7 – 9 mm | ③ | Engine alternator screw |
| ① | Engine block mounting | ④ | Engine alternator |

Checking and resetting belt tension with tension measuring device:	Manually check and retension the belt:
1. Remove the belt guard. 2. Check belt tension with the tension measuring device. 3. Tensioning a loose belt: ■ Loosen both securing screws ③ on the engine alternator ④. ■ Using a suitable lever, pull the engine alternator in the direction of the arrow ② until the correct belt tension is achieved. ■ Re-tighten both securing screws ③. 4. Replace the belt guard. 5. Reconnect the negative battery terminal.	1. Remove the belt guard. 2. Using your thumbs, push the belt between the belt pulleys (see illustration 32). 3. Tensioning a loose belt: ■ Loosen both securing screws ③ on the engine alternator ④. ■ Using a suitable lever, pull the engine alternator in the direction of the arrow ② until the correct belt tension is achieved. ■ Re-tighten both securing screws ③. 4. Replace the belt guard. 5. Reconnect the negative battery terminal.

Replace the drive belt.

1. Loosen both screws ③ at the engine alternator ④.
2. Press the engine alternator in opposite direction of the arrow.
The drive belt is free of tension.
3. Pull the drive belt.
4. Check the pulleys for dirt and wear.
 - Dirty pulley: Clean pulley.
 - Worn pulley: Change the pulley.
5. Manually route the new drive belt over the pulleys without using force.
6. Using a suitable lever, pull the engine alternator in the direction of the arrow ② until the correct belt tension is achieved.
7. Re-tighten both securing screws ③.



A belt that has been replaced may not be used again.
 Check the belt tension after running for approximately 15 minutes.



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

Putting in operation:

1. Replace the belt guard.
2. Reconnect the negative battery terminal.
3. Close the canopy.

10.3.7 Having the antivibration mount checked

Antivibration mounts are elastomer metal elements, that are used, for example, for vibration-dampened bearing of the drive of construction machines. They consist of two U-profiles that are fastened to each other through an elastomer.

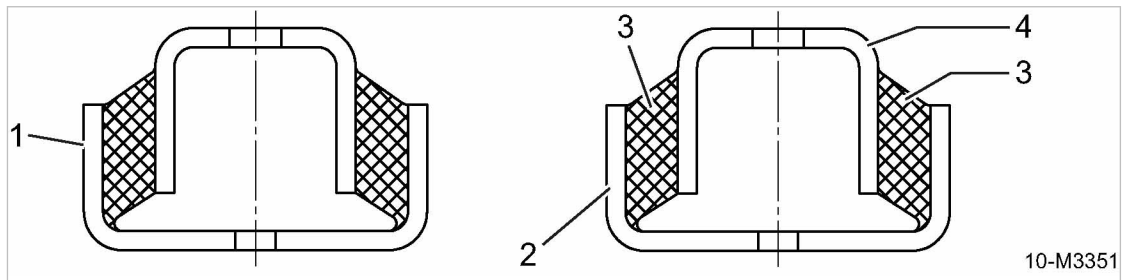


Fig. 33 Example for antivibration mount of drive engine

- | | |
|-----------------------|-----------------|
| ① Antivibration mount | ③ Elastomer |
| ② Bottom U-profile | ④ Top U-profile |

- Have the antivibration mount of the drive engine checked by KAESER SERVICE.



- Elastomer of antivibration mount is destroyed or porous.
- Have the antivibration mount replaced by KAESER SERVICE.

10.3.8 Battery maintenance

- Check the charging system if the battery discharges without reason.

10.3.8.1 Safety



WARNING

Danger of acid burns from escaping electrolyte!

- Wear appropriate protective clothing including acid-proof rubber gloves.
- Always wear eye and face protection.
- Do not tip the battery. Electrolyte may run out of the vent holes.
- Work with caution.

When working on the battery comply with the following safety signs:

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



10-M0167

Fig. 34 Safety signs - warning stickers on the battery

- Take heed of any safety signs on the battery warning labels.

The individual safety signs have the following meaning:

- ① – Fire, sparks, open flame and smoking are forbidden!
- ② – Eye and face protection must be worn because of the danger of acid burns.
- ③ – Keep children well away from batteries and acids!
- ④ – Wear protective gloves, batteries are filled with caustic electrolyte!
- ⑤ – Observe the battery manufacturer's instructions!
- ⑥ – Follow the safety rules, explosion hazard!

Further instructions on working with batteries:

- Do not remove battery terminal covers unnecessarily.
- Do not lay tools on the battery. This can lead to short circuiting, overheating and battery bursting.
- Take particular care when the battery has been in service for a long time or has just been charged, as highly explosive gas is emitted.
Ensure adequate ventilation.

10.3.8.2 Ensure the batteries are charged

The battery may be subject to self-discharge if the machine has been out of operation for an extended period. The starting voltage is insufficient to start the engine when needed. Moreover, exhaustive discharge of the battery can result in battery damage.



Always consider the following for starter batteries:
Recharge if stored for 30 days or longer!

1. Check the battery charge.
2. If required, recharge the battery with corresponding charging device.

10.3.8.3 Battery checking and care

Even so-called 'maintenance-free' batteries need a degree of care to obtain their maximum operational life.



The housing and the battery connections must not be cleaned with hard objects, e.g. a wire brush!

The outside of the battery and the terminals should be cleaned regularly with a soft cloth. This avoids current leaks and minimises the discharge rate.

Material Terminal grease
Distilled water
Cleaning cloth
Protective gloves
Eye protection

Precondition The machine is switched off.
The machine is installed on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar!

1. Open the enclosure.
2. Clean the casing and terminals.
3. Lightly grease the terminals to prevent corrosion.
4. Check that the batteries and cable connections are properly seated and tighten if necessary.

Check the battery electrolyte level:

The fluid is generally sufficient for the life of the battery. Nevertheless, the fluid level should be checked annually. The level should be up to the mark, 1 cm above the plates.



Replace the battery immediately if the casing leaks!



1. **NOTICE!**
Battery destruction!
Topping up with pure acid will increase the electrolyte concentration and can destroy the battery.
 - Top up only with distilled water.
2. Check the electrolyte level.



If the electrolyte level does not reach the mark -

- top up with distilled water.

➤ Close the enclosure.

Winter operation:

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

**1. NOTICE!**

Danger of batteries freezing!

Discharged batteries are subject to frost damage and can freeze at -10°C .

- Check battery charge with a specific gravity tester.
- Recharge the battery
- Clean the battery terminals and wipe with grease.

2. Check the battery charge weekly.

Recharge as necessary.

3. For machine standstill times of several weeks: Remove the battery and store in a frost-free room.

In extreme cases, the use of heavy-duty cold-start batteries and/or additional batteries is recommended.

10.3.8.4 Battery removal and installation

Precondition The machine is switched off.
The machine is installed on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar!

**1. WARNING!**

There is danger of batteries bursting!

If a battery is short circuited it will overheat and can burst.

- Never short-circuit a battery (e.g. with a hand tool).
- Wear gloves and eye protection.

**2. NOTICE!**

Excessive voltage produced by the alternator!

Voltage peaks can destroy the alternator regulator and diodes.

- The battery serves as a buffer and must not be disconnected while the engine is running.
- Carry out work on batteries only with the machine shut down.

3. Open the enclosure.**4. Disconnect the negative cable first, then the positive cable.****5. Unscrew the battery fixing clamp.****6. Replace in the reverse order.****7. Make sure the battery is properly secured.****8. Close the enclosure.****Battery replacement:**

If the battery is to be replaced, the new battery should have the same capacity, current rating and shape as the original battery.

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



Old batteries are hazardous waste and must be disposed of correctly in accordance with local environmental protection regulations.

10.3.9 Checking the fastening of the fuel tank

The machine is equipped with a fuel tank or tanks. These are fastened with lashing strips and ratchets.

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

**NOTICE**

- The lashing strip of the fuel tank is overly tightened.
The plastic tank can be damaged by excessive tightening of the lashing strips.
The fuel tank may burst and spill.
- Do not overtighten the lashing strips.
 - Slightly hand-tighten the lashing strips.

Carry out visual check

1. Check the lashing strips for tears and fraying in the fabric, and for damages to the ratchet.
Change any damaged lashing strip immediately.
2. Check whether the lashing strips are tight with the tank and that the ratchet is closed.
If the lashing strips sits loose, or the ratchet is not closed properly, tighten the fastening.

Tightening the fastening of the fuel tank:

The lashing strips are tensioned via the integrated ratchet.

The lashing strips must fit closely around the fuel tank. The tensioning force of the strips must not exceed 10 daN (slightly hand-tighten only).

- Hand-tighten the lashing strip with the integrated ratchet and push the ratchet to the strip.

10.4 Compressor Maintenance

- Perform maintenance tasks according to the schedule in chapter 10.2.3.1.

10.4.1 Checking cooling oil level

The oil level is checked at the oil separator tank filling port. Oil must be visible in the port when the filler plug is removed; see also figur 35.

- Material Wrench
Cleaning cloth

- Precondition The machine is shut down.
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 outlet valves are open.

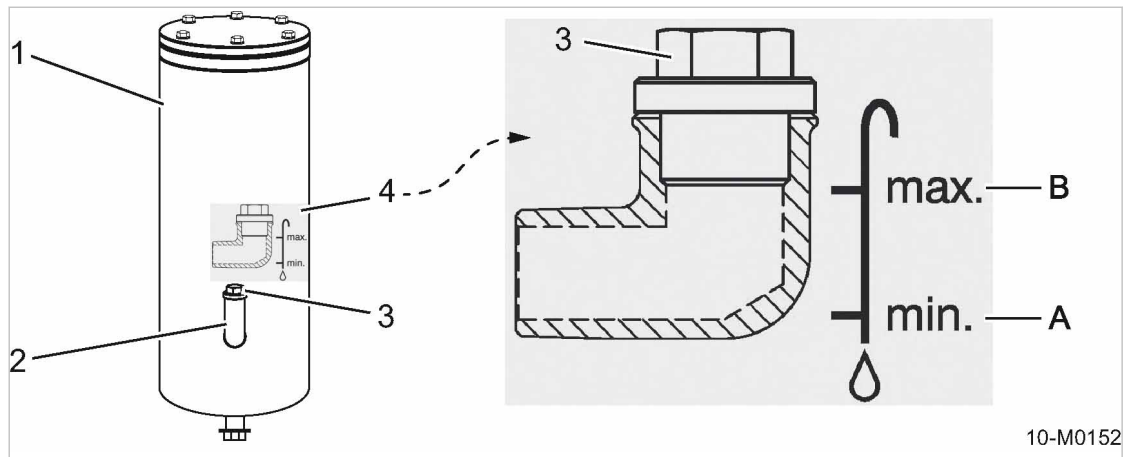


Fig. 35 Checking cooling oil level

- | | |
|----------------------|-------------------------------------|
| ① Oil separator tank | ④ Adhesive label, cooling oil level |
| ② Oil filler port | Ⓐ Minimum level |
| ③ Screw plug | Ⓑ Maximum level |

1. Raise the cover.
2. Slowly unscrew and withdraw the plug from the oil filler port.
3. Check the cooling oil level.
Top up if no oil is visible.
4. Replace the plug in the filler port.
5. Close the canopy.

10.4.2 Cooling oil filling and topping up

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.
 Machine is cooled down.
 All compressed air consumers are disconnected and the air outlet valves are open.
 The negative cable to the battery is disconnected.

Filling with cooling oil

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



1. **NOTICE!**
 The machine could be damaged by unsuitable oil.
 - Never mix different types of oil.
 - Never top up with a different type of oil than that already used in the machine.
2. Open the canopy.
3. Slowly unscrew and withdraw the plug from the oil filler port.

4. Top up the cooling oil to the maximum level **(B)** with the help of a funnel.
5. Check the oil level.
6. Check the filler plug gasket for damage.
Change a damaged gasket.
7. Replace the plug in the filler port.
8. Reconnect the negative battery terminal.
9. Close the canopy.

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 outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
5. Open the outlet valves.
6. Open the canopy.
7. Check the oil level after about 5 minutes.
Top up if necessary.
8. Carry out a visual check for leaks.
9. Close the canopy.

10.4.3 Changing the cooling oil

Drain the oil completely from the following components:

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

Material See chapter 2.6.7 for oil filling volume.

Receptacle

Cleaning cloth

Funnel

New gasket for the filler caps

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 is at operating temperature.
All compressed air consumers are disconnected and the air outlet valves are open.
The negative cable to the battery is disconnected.



CAUTION

Danger of burning from hot components and oil.

➤ Wear long-sleeved clothing and gloves.

➤ Raise the cover.

10.4.3.1 Draining the cooling oil

In order to drain the cooling oil, you must remove the drain plugs from the oil separator tank and the oil cooler. The plugs of oil separator tank and oil cooler can be accessed via openings in the floor pans. During operation, these openings in the floor pan are closed with bungs.

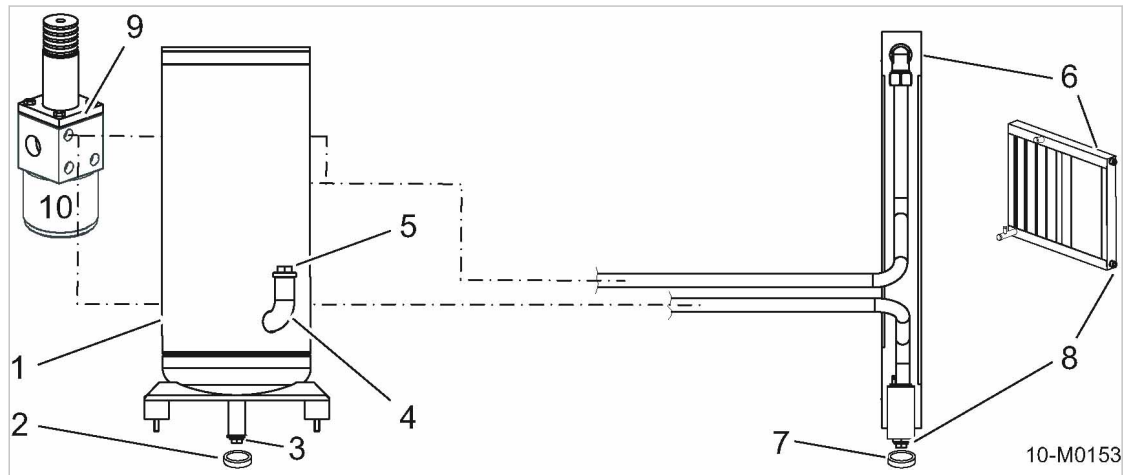


Fig. 36 Draining the compressor cooling oil

- | | |
|----------------------------|----------------------|
| ① Oil separator tank | ⑥ Oil cooler |
| ② Bung | ⑦ Bung |
| ③ Plug, oil separator tank | ⑧ Plug, oil cooler |
| ④ Oil filler port | ⑨ Thermostatic valve |
| ⑤ Oil filler plug | ⑩ Oil filter |

Draining the cooling oil:

1. Unscrew the drain plug in the oil separator tank.
2. Remove both bungs from the floor pan.
3. Place a receptacle beneath the drain plug of the oil separator tank.
4. Unscrew the drain plug and allow the cooling oil to drain into the receptacle.
5. Screw the plug with a new gasket in the oil separator tank.
6. Place a receptacle beneath the drain plug of the oil cooler.
7. Unscrew the drain plug and allow the cooling oil to drain into the receptacle.
8. Screw the plug with a new gasket in the oil cooler.
9. Close both openings in the floor pan with the bungs.

Performing final work steps:

1. Replace the plug in the oil separator tank filling port.
2. Close the canopy.



Dispose of used oil and oil-contaminated working materials according to current environmental protection regulations.

Further information See chapter 10.4.2 for cooling oil filling.

10.4.4 Replacing the compressor oil filter

Material Spare part
Tool
Collecting vessel
Cleaning cloth

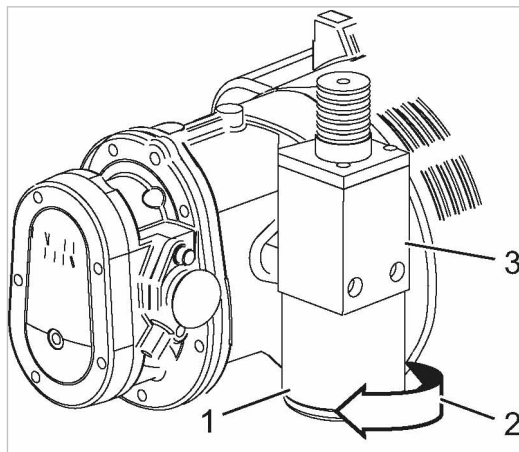
Precondition The machine is switched off.
The machine has been set down on level ground, the machine is at operating temperature.
Air consumers are disconnected, the outlet valves are open, the machine is fully vented, the pressure gauge reads 0 bar.
Enclosure is open, negative cable to battery has been disconnected.



CAUTION

Danger of burning from hot components and oil.

- Wear long-sleeved clothing and gloves.



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Fig. 37 Change the oil filter

- ① Oil filter
- ② Direction of arrow (loosen oil filter)
- ③ Thermostatic valve

Changing the oil filter:

1. Prepare a receptacle.
2. Loosen oil filter (turn in direction of arrow ②).
3. Remove the oil filter.
4. Catch any escaping cooling oil.
5. Carefully clean sealing surface (flange) using lint-free cloth.

6. Lightly oil the new filter's gasket.
7. Set oil filter into installation position.
8. Turn the new oil filter clockwise by hand until the oil filter fits tightly on the sealing surface (flange).
9. Tighten new oil filter by hand.
10. Check the oil level in the oil separator tank.



Cooling oil level too low.
➤ Top up the cooling oil.

11. Reconnect the negative battery terminal.
12. Close the enclosure.



Dispose of old cooling oil and any materials or parts contaminated with oil according to 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 outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
5. Open the discharge valves.
6. Open the enclosure.
7. After approximately 5 minutes: Check the cooling oil level.



Cooling oil level too low.
➤ Top up the cooling oil again.

8. Visually inspect for leaks.
9. Close the enclosure.

10.4.5 Oil separator tank dirt trap maintenance

Material Cleaning cloth
 Wrench
 Small screwdriver
 Maintenance kit, control valve
 Petroleum ether or spirit

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.
 Negative cable to the batteries disconnected.



Fig. 38 Oil separator tank dirt trap maintenance

- | | |
|---------------------|-----------------|
| ① Oil return line | ④ Strainer |
| ② Union nut | ⑤ O-ring |
| ③ Dirt trap housing | ⑥ Screw fitting |

➤ Open the canopy.

Dirt trap maintenance:

1. Undo the union nut ② and bend the oil return line ① to one side.
2. Unscrew the dirt trap ③.
3. Remove and clean the strainer ④ and O-ring ⑤.
4. Check the strainer and O-ring for function and wear.
Replace components if they are heavily worn.
5. Clean the housing and fitting ⑥ of the dirt trap.
6. Re-insert the strainer and O-ring in the housing and close with the fitting.
7. Refit the oil return line and tighten the union nut.

Making operational:

1. Reconnect the negative battery terminal.
2. Close the canopy.



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

Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE mode for approx. 5 minutes.
2. Shut down the machine.
3. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
4. Open the outlet valves.
5. Open the canopy.
6. Carry out a visual check for leaks.
7. Shut down the machine.
8. Close the canopy.

10.4.6 Changing the oil separator cartridge



The oil separator cartridge cannot be cleaned.

The life of the oil separator cartridge is influenced by:

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

Material Spares
 Cleaning cloth
 Wrench

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.
 The negative cable to the battery is disconnected.

➤ Open the canopy.

10.4.6.1 Changing the oil separator cartridge

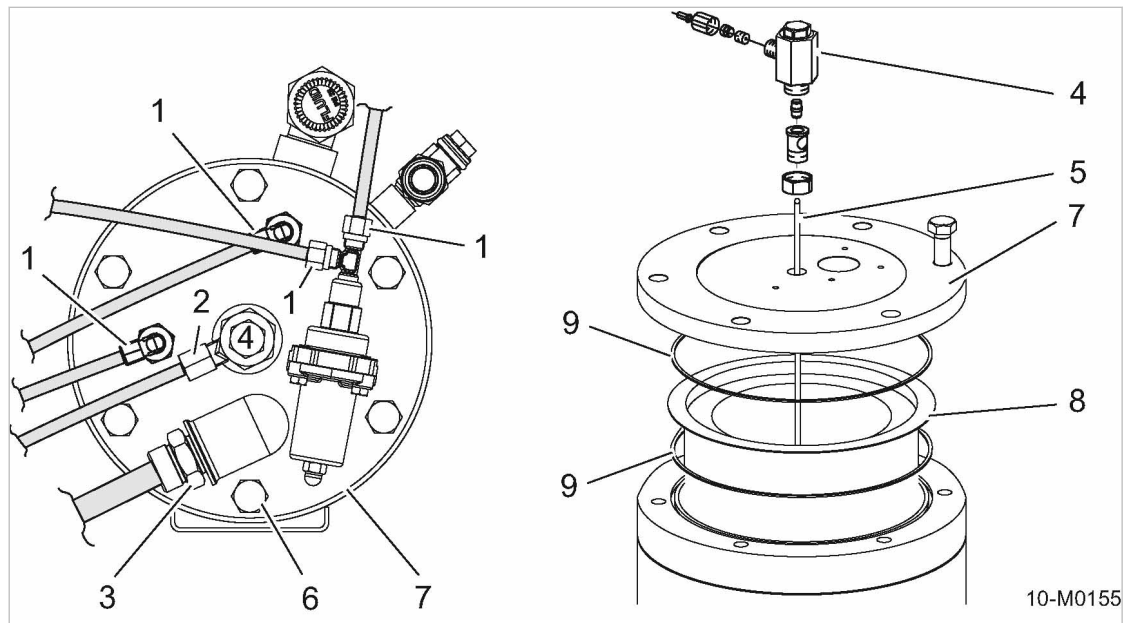


Fig. 39 Changing the oil separator cartridge

- | | |
|--|---------------------------|
| ① Control air line union nut | ⑥ Fixing screw |
| ② Oil scavenge pipe union nut | ⑦ Cover |
| ③ Compressed air hose union nut | ⑧ Oil separator cartridge |
| ④ Dirt trap | ⑨ Gasket or O-ring |
| ⑤ Oil scavenge pipe (screwed to the cover) | |

Changing the oil separator cartridge

1. Undo the union nuts **1**, **2** and **3**.
2. Remove the control line, oil scavenge line and compressed air hose.
3. Unscrew the dirt trap **4**.
4. Carefully draw out the dirt trap with the oil scavenge pipe **5** and lay them to one side.
5. Remove the fixing screws **6** and carefully lift the cover **7** and lay it to one side.
6. Take out the old cartridge **8** and gaskets **9**.
7. Clean all sealing surfaces, taking care that no foreign bodies (dirt particles) fall into the oil separator tank.
8. Insert the new oil separator cartridge with gaskets and screw down the cover.
9. Replace and tighten all fittings.
10. Check the oil level in the oil separator tank.

Cooling oil level too low: Replenish the cooling oil.



Maintenance of the dirt trap must be carried out whenever the oil separator cartridge is changed.

Further information

Information on dirt trap maintenance is given in chapter 10.4.5.

Making operational:

1. Reconnect the negative battery terminal.
2. Close the canopy.



Dispose of old parts and contaminated materials according to 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 outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
5. Open the outlet valves.
6. Open the canopy.
7. Check the oil level after about 5 minutes.
Top up if necessary.
8. Carry out a visual check for leaks.
9. Close the canopy.

10.4.6.2 Option ba**Changing the oil separator (machine with low-temperature equipment)**

Changing the oil separator cartridge with the frost protector option is carried out as described above.

In addition, the frost protector must be emptied and its fittings undone.

Be careful of the frost protector control lines when removing the separator tank cover.

1. Empty the lower part of the frost protector. See chapter 10.9.2 on frost protector maintenance.

2. Remove the screws fixing the frost protector to the cover.
3. Lift the cover carefully and remove the frost protector control lines if necessary.

Making operational:

1. Reconnect the negative cable to the batteries.
2. Close the canopy.



Dispose of old parts and contaminated materials according to 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 outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
5. Open the outlet valves.
6. Open the canopy.
7. Check the oil level after about 5 minutes.
Top up if necessary.
8. Carry out a visual check for leaks.
9. Close the canopy.

10.4.7 Compressor air filter maintenance

Compressor air filter maintenance:

- Replace the filter element when the corresponding maintenance indicator responds.
- Replace the filter element according to the maintenance schedule, see chapter 10.2.3.1.



- Using the machine without an air filter element installed is not permitted!
- Do not use filter elements with damaged surface or seals.
- The use of an unsuitable air filter can permit dirt to ingress the pressure system and cause premature wear and damage to the machine.

Material Spare part
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

Dirty air filter element
Loss of machine performance
➤ Replace the filter element.

- Open the canopy.

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.

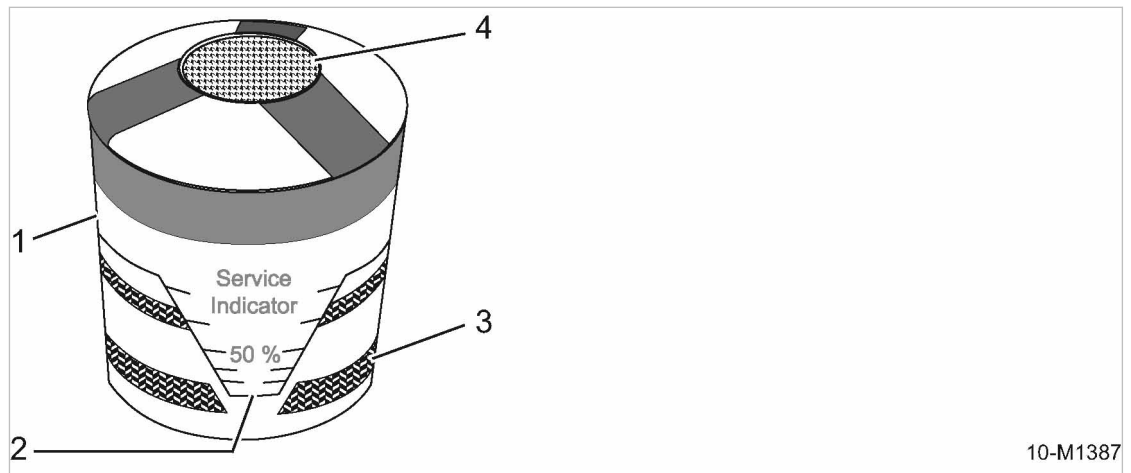
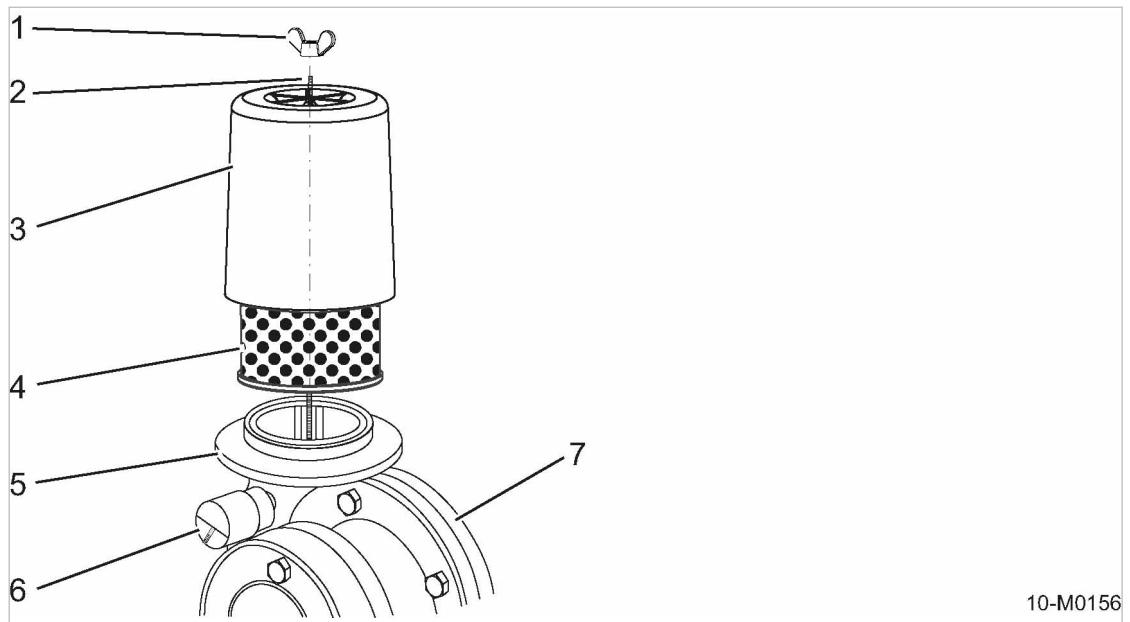


Fig. 40 Maintenance indicator

- | | |
|--|--|
| ① Maintenance indicator | ③ Red zone indicator scale |
| ② Indicating piston of the maintenance indicator | ④ Reset knob for the maintenance indicator |

- Check the air filter maintenance indicator.
If the yellow piston reaches the red zone, Replace the filter element.

Replacing the filter element**Fig. 41 Compressor air filter maintenance**

- | | |
|------------------|-------------------------|
| ① Wing nut | ⑤ Inlet valve |
| ② Threaded rod | ⑥ Maintenance indicator |
| ③ Filter cap | ⑦ Airend |
| ④ Filter element | |

1. Remove the wing nut.
2. Pull up and lift the filter cap.
3. Pull up and lift the filter element.
4. Carefully clean the sealing face on the inlet valve using a damp cleaning cloth.
5. Carefully clean the filter cap with a damp cleaning cloth.
6. Align the new filter element with the sealing face pointing downward.
7. Guide the new filter element over the threaded rod until the filter element is placed on the sealing face of the inlet valve.
The new filter element is properly seated on the inlet valve's sealing face.
8. Align the filter cap with the opening downward.
9. Guide the filter cap over the threaded rod until the filter cap is placed.
The filter cap is properly seated above the filter element.
10. Secure the filter cap with the wing nut.
11. Check that the filter cap is fastened correctly.

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 canopy.



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

10.4.8 Check pressure relief valves

- Have pressure relief valves checked by KAESER SERVICE in accordance with the maintenance schedule.

10.5 Cleaning the cooler

The respective engine and compressor coolers are arranged together in a radiator block.

Heavy contamination of both coolers will result in cooler overheating, and therefore overheating of the machine. The frequency of cleaning is mainly dependent on local operating conditions.

Check both coolers regularly for clogging. Severe contamination should be cleaned by KAESER SERVICE.

Material Compressed air
Breathing mask (if necessary)
Water or steam jet blaster

Precondition The machine is switched off.
The machine has been set down in cleaning area with oil separator,
The machine has been set down on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar.
Enclosure is open,
negative cable to battery has been disconnected.



CAUTION

Swirling dust due to cleaning with compressed air!
Illness of the respiratory tract.

- Wear breathing mask.



NOTICE

Damage to the machine can be caused 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 indicating instruments.
- Deploy the extension pole of the pressure washer at a distance of at least 50 cm and at an approximate 90° angle to the cooler/radiator surface.


NOTICE

Improper cleaning with hard objects!
 Damage to oil cooler/coolant cooler.

- Do not use hard objects to clean the oil cooler/coolant cooler.

- Follow all instructions.

10.5.1 Cleaning the oil cooler and coolant cooler

The cleaning direction by means of compressed air, water or steam jet must always be in the opposite direction of the cooling air flow.

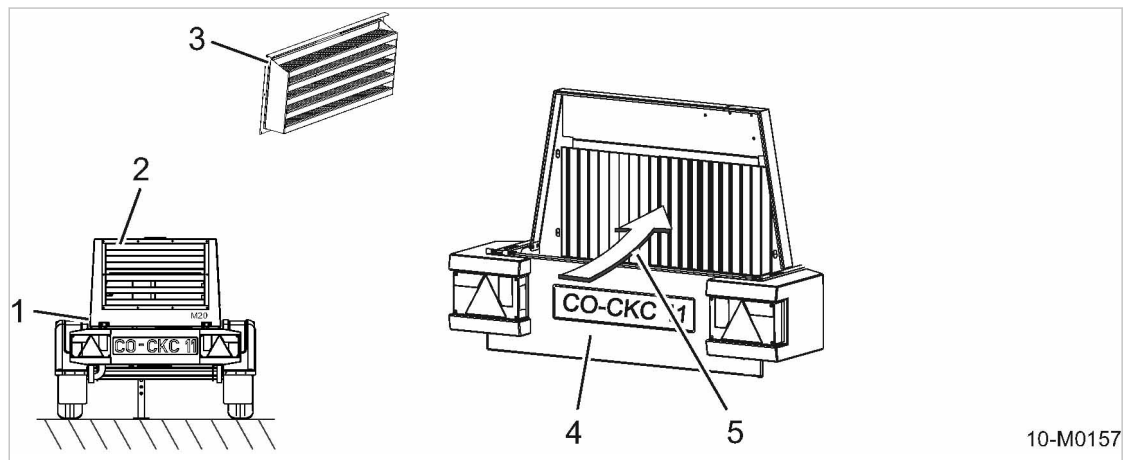


Fig. 42 Cleaning the cooler

- | | |
|---|---|
| <p>① Machine</p> <p>② Location of the exhaust air grating on the machine</p> <p>③ Exhaust air grating with integrated noise damping inserts</p> | <p>④ Machine rear view, enclosure removed</p> <p>⑤ Direction of impacting water or steam jet (from outside to inside)</p> |
|---|---|

Cover the intake openings of both air filters:

1. Cover the intake openings of both the engine and compressor air filters.
2. Close the enclosure.

Removing the exhaust air grating:

1. Loosen all screws of the exhaust air grating.
2. Remove all screws.
3. Remove the exhaust air grating with integrated noise damping inserts.

Cleaning the oil cooler and coolant cooler:

- Clean the cooler fins with compressed air, water or steam jet in the opposite direction to the cooling air flow (from inside to outside).

Installing the exhaust air grating:

1. Position the exhaust air grating with integrated noise damping inserts.

2. Position all screws.
3. Tighten screws.

Remove the protective coverings from the two air filters:

1. Open the enclosure.
2. Remove the covers from the intake openings of both the engine and compressor air filters.

Preparing for operation:

1. Connect the negative battery terminal.
2. Turn the «Controller On» switch to the "I" position.
3. Close the enclosure.

Putting the machine into operation:

1. Start the machine.
2. Let the machine warm up in IDLE mode to allow residual water to evaporate.
Warm-up has been successful when required airtend discharge temperature (ADT) has been reached.
3. Turn the «starter switch» to the "0" position.
The machine is shut down.
4. Wait until the machine has automatically vented.
Pressure gauge reads 0 bar!
5. Open the discharge valves.

Inspecting both cooler for leaks:

1. Open the enclosure.
2. Turn «Controller On» switch to position "0".
3. Visually inspect for leaks: Is cooling oil/coolant leaking out?



Is the oil cooler/coolant cooler leaking?

➤ Have the defective oil cooler/coolant cooler repaired or replaced immediately by KAESER SERVICE.

- Close the enclosure.

10.6 Checking the enclosure

The machine's closed enclosure fulfils the following functions during the machine's operation: Protection against contact, cooling air flow, sound proofing and weather protection.

In order to ensure these functions at any time, the enclosure and its connecting elements must always be in a perfect condition.

Overview:

- Check sound proofing material
- Maintain rubber sealing strips.
- Check closed enclosure

- Check connecting elements
- Check the function of the enclosure safety catch

Precondition The machine is switched off.
The machine is installed on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar!

➤ Follow all instructions.

10.6.1 Check sound proofing material



In order to limit the machine's noise emissions to a minimum the sound proofing material that has been built into the enclosure must be checked regularly. Damages sound proofing material must be replaced immediately.

- Check sound proofing material inside the enclosure for condition, fastening and dirt.



The sound proofing material is porous, cracked, no longer exists or severely contaminated with oil, fuel or cleaning agent.

- Have a KAESER SERVICE technician replace the sound proofing material that can no longer be used.

10.6.2 Maintain rubber sealing strips.

Material Cleaning cloth
Silicone or Vaseline

The rubber sealing strips inside the enclosure seal against rain water and additionally reduce noise emissions. Care of the rubber sealing strips is especially necessary in winter to prevent the strips from sticking and tearing when the enclosure is opened.

1. Open the enclosure.
2. Carefully clean all rubber sealing strips using a lint-free cloth.
3. Check the rubber sealing strips for cracks, holes and other damage.
4. Grease all rubber sealing strips.



Rubber sealing strips are damaged.

- Have a KAESER SERVICE technician replace the damaged rubber sealing strips.

10.6.3 Checking function of closed enclosure

1. Close the enclosure.
2. Lock all snap fasteners.



The enclosure does not properly rest on the body or cannot be locked.

- Contact authorised KAESER SERVICE.

10.6.4 Checking connecting elements of enclosure

Material Acid-free oil

The connecting elements of the enclosure may include:

- Screw connections
- Hinges
- Grip
- Snap fasteners
- Gas struts

1. Check all connecting elements of the enclosure for damages, wear and firm seating.
2. If necessary, grease the hinges.

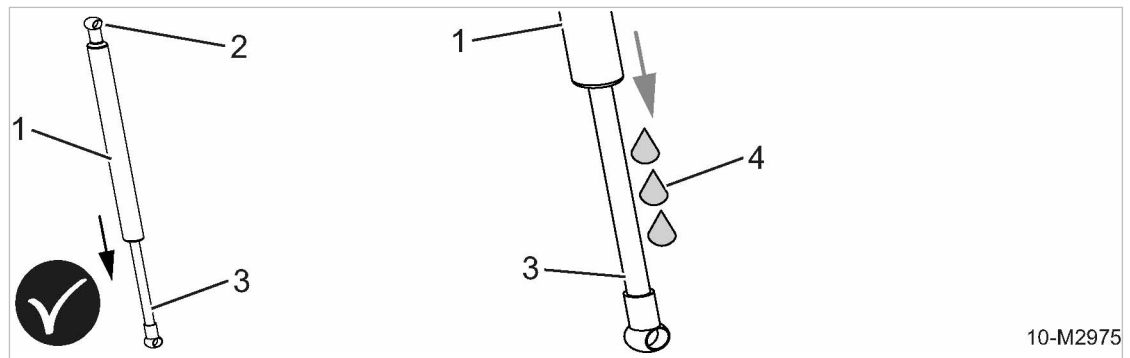


Fig. 43 Connecting rod alignment

- | | |
|------------------------|------------------|
| ① Gas strut - cylinder | ③ Connecting rod |
| ② Ball cup | ④ Lubrication |

3. Check both gas struts.



In order to ensure lubrication of the connecting rod, the connecting rod must be always aligned towards the ground.

4. Check if both gas struts open the unlocked enclosure independently.
Enclosure opens independently until the technically possible opening angle.
5. Check if the already opened enclosure stays open.



Enclosure does not open properly or does not stay open.
➤ Replace both gas struts.

10.6.5 Checking the function of the enclosure safety catch



In order to secure the enclosure from opening independently, the machine is equipped with an enclosure safety catch.

When the enclosure locks are open and the enclosure safety catch is locked in place, there is only a small gap between the machine's body and the enclosure. In order to completely open the enclosure, the enclosure safety catch must be manually unlocked.

For the technically possible opening angle of the enclosure, see the machine's dimensional drawing, Chapter 13.3

- Follow all instructions.

10.6.5.1 Checking the locking function

Precondition Enclosure is closed.
 All snap fasteners have been locked.

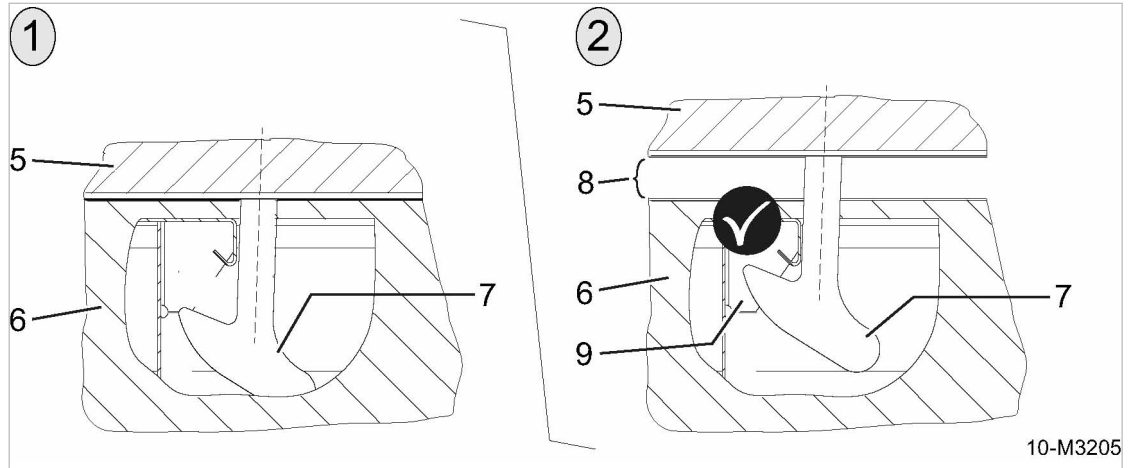


Fig. 44 Check the locking function

- | | |
|---|--------------------------|
| ① Enclosure is locked with snap fasteners | ⑦ Enclosure safety catch |
| ② Enclosure safety catch is locked | ⑧ Gap |
| ⑤ Enclosure (top) | ⑨ Locking position |
| ⑥ Body (lower part) | |

➤ Unlock all snap fasteners of the enclosure.

Both gas struts will only open the enclosure until the enclosure safety catch locks into place in the locking position.

A gap ⑧ is created between the body and the enclosure.

The enclosure safety catch secures the enclosure against independent complete opening.



After all snap fasteners have been unlocked, the enclosure opens all the way immediately.
 Enclosure safety catch does not lock.

➤ Have a KAESER SERVICE technician replace the enclosure safety catch immediately.

10.6.5.2 Unlocking the enclosure safety catch

Precondition All snap fasteners have been unlocked.
 The enclosure safety catch has locked into place in the locking position.

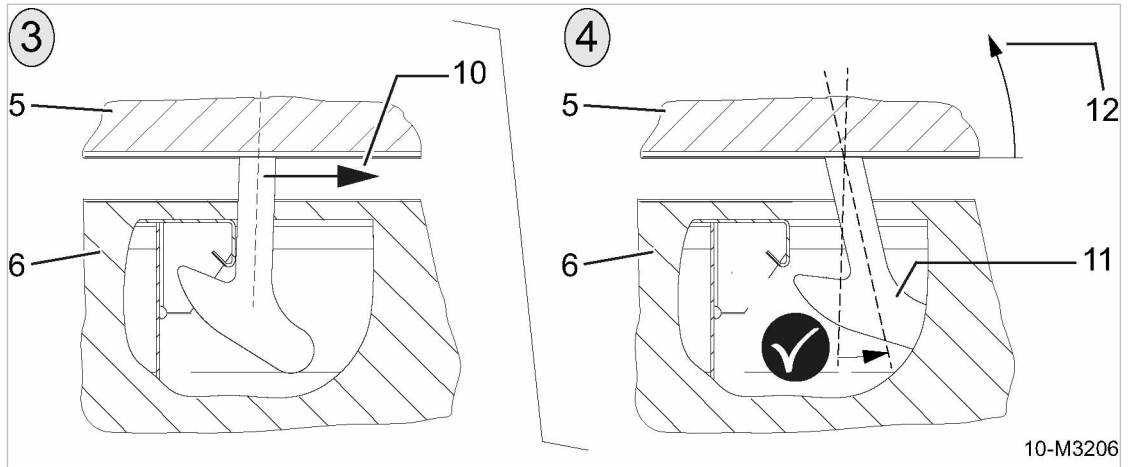


Fig. 45 Unlock the enclosure safety catch

- | | | | |
|---|--|---|---------------------------------|
| ③ | Manually unlock the enclosure safety catch | ⑩ | Direction of arrow |
| ④ | Enclosure safety catch has been unlocked | ⑪ | Unlocked enclosure safety catch |
| ⑤ | Enclosure (top) | ⑫ | Opening direction of enclosure |
| ⑥ | Body (lower part) | | |

- Manually press the enclosure safety catch into the direction of the arrow ⑩ in order to open the enclosure all the way.

Enclosure safety catch has been unlocked;

Two gas struts open the enclosure all the way.

10.7 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 line 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 10.2.3.1

- Comply with all instructions!

10.7.1 Replace the fuel lines of the drive engine.

- Have a KAESER SERVICE technician replace the fuel lines of the drive engine.

10.7.2 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.

10.7.3 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.

10.8 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 in order to avoid potential machine faults.

For draining the liquid, maintenance openings have been added to the floor panel of the machine which are closed with bungs.



Option rw; rx:

For machines with a stationary frame structure, we recommend using a vehicle hoist or installation above a vehicle pit due to the restricted ground clearance.

It is forbidden to lift the machine with a crane and leave it hanging on the hoisting gear for inspection or maintenance purposes!

Material Receptacle
 Cleaning cloth

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.

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.



Dispose of collected liquid and contaminated working materials according to applicable environmental protection regulations.

10.9 Maintenance of Optional Items

- Perform maintenance tasks according to the schedule in chapter 10.2.3.2.

10.9.1 Option ea Tool lubricator maintenance

Material Special lubricant for road breakers
Funnel
Cleaning cloth

Precondition The machine is switched off.
The machine is installed on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar.

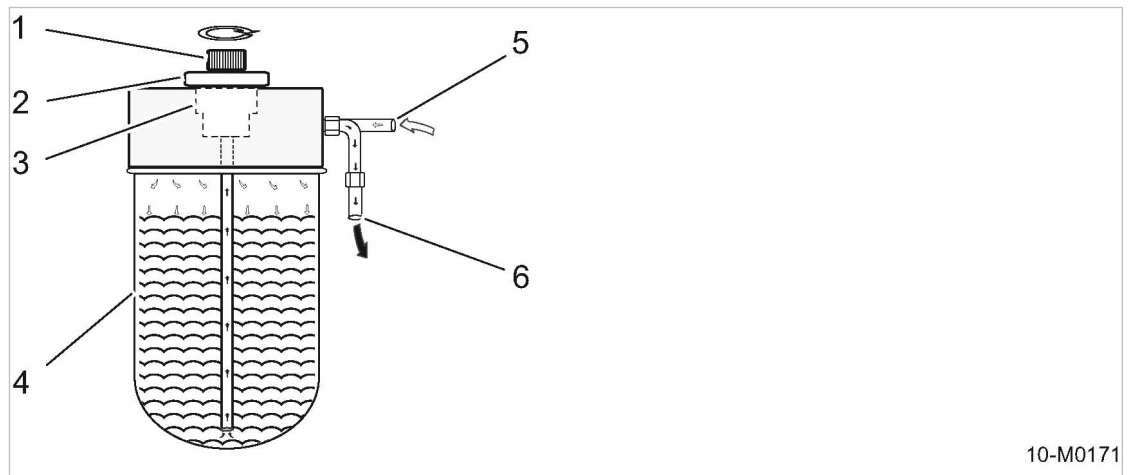


Fig. 46 Tool lubricator maintenance

- | | |
|---|------------------------|
| ① Metering wheel | ④ Lubricant container |
| ② Filler plug with lubricant dipstick and integrated riser tube | ⑤ Compressed air input |
| ③ Tool lubricator top with lubricant filler neck | ⑥ Lubricant outlet |

- Open the enclosure.

Check the level in the lubricant container:

Check the level in the lubricant container daily.

A dip stick is attached to the underside of the lubricant filler plug with which to measure the level in the lubricant container.

The level should be in the upper third of the dipstick.

1. Slowly loosen and withdraw the screw plug from the lubricant filler neck.
2. Wipe off the lubricant dipstick with a lint-free cloth or rag and screw the plug fully in again.
3. Unscrew and withdraw the plug once more and read off the filling level on the lubricant dipstick.



Below required filling level.

- Top up the lubricant.

4. Close the enclosure.

Fill in and top up the lubricant:

1. Slowly loosen and withdraw the screw plug from the lubricant filler neck.
2. Use a funnel to fill in the lubricant to the maximum level (10 –15 mm below the top of the lubricant container).
3. Check filling level.
4. Check the filler plug O-ring for external damage.



O-ring is damaged.

- Replace the O-ring.

5. Insert the plug to close the lubricant filler port.
6. Close the enclosure.

Further information See chapter 2.8.1 for suitable lubricant grade and volume.

**10.9.2 Option bc
Defroster maintenance**

Regularly check the tank level when ambient temperatures are below 5 °C, see Maintenance schedule options 10.2.3.2.



The maximum tank level should be at $\frac{3}{4}$ of its capacity.

In order to check the level you must first remove the tank.

Material New antifreeze
Cleaning cloth

Precondition The machine is switched off and cooled down.
The machine is standing level.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar.
The negative cable to the battery is disconnected.


DANGER

Danger of fire or explosion caused by the spontaneous ignition of antifreeze!

- Never top up antifreeze unless the machine is switched off and cooled down.


WARNING

Compressed air!

The defroster is pressurised during operation.

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

- De-pressurise the defroster.

Option bc

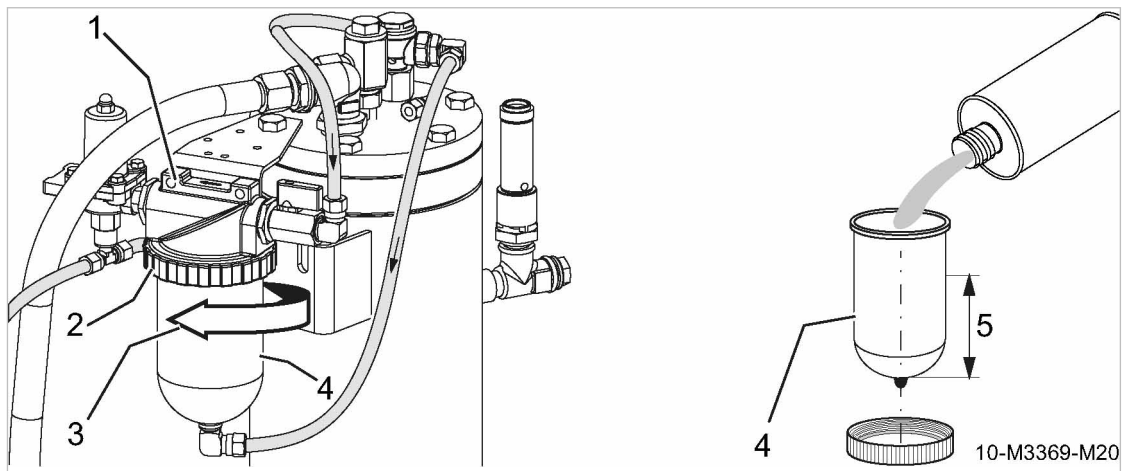


Fig. 47 Top up antifreeze

- ① Top of the defroster
- ② Threaded ring
- ③ Direction of arrow

- ④ Defroster tank
- ⑤ Maximum level

Removing the tank

1. In order to loosen the threaded ring, slowly turn the threaded ring in the direction of the arrow ③.
2. Completely depressurise in the event of any remaining pressure.
3. Continue to turn the threaded ring in the direction of the arrow until the threaded ring is completely removed from the top.
4. Remove the threaded ring and tank from the top.

Cleaning/checking the sealing surfaces and gasket

1. Clean all sealing surfaces.
2. Check the O-ring in the top for damages.
3. If necessary, replace damaged O-ring.

Checking/topping up level

1. Check filling level.
2. If necessary, top up with new antifreeze, by adhering to the maximum level ⑤.

Installing the tank

1. Hold tank underneath the top.
2. Install the threaded ring.
3. Tighten the threaded ring by hand force.
4. If necessary, wipe up any spilled antifreeze.



Dispose of antifreeze-soaked working materials according to environmental protection regulations.

**10.9.3 Option Ia
Spark arrestor cleaning**

The spark arrestor must be cleaned of any soot residue at certain intervals to prevent the emission of glowing particles from the exhaust silencer with integrated spark arrestor. A drain plug on the exhaust silencer and a service opening in the floor panel ensure a user-friendly procedure. Clean spark arrestor according to the maintenance schedule (chapter 10.2.3.2).

- Remove soot drain plug
- Produce environmentally-friendly soot drain
- Perform cleaning procedure "blow out soot"
- Close soot enclosure outlet port

Material Suitable rubber hose
 Soot receptacle
 Cleaning cloth
 Protective gloves
 Eye protection

Precondition The machine is switched off.
 The machine is installed on level ground,
 the machine has cooled down.
 Air consumers are disconnected,
 the outlet valves are open,
 the machine is fully vented, the pressure gauge reads 0 bar!

**DANGER**

Danger of suffocation from toxic exhaust fumes.

Exhaust fumes from internal combustion engines contain carbon monoxide, which is odourless and deadly.

- Use the machine only outdoors!
- Do not inhale exhaust fumes.

**CAUTION**

Danger of burns from hot components and sparks.

- Wear long-sleeved clothing and gloves.
- Wear eye protection.

Option 1a

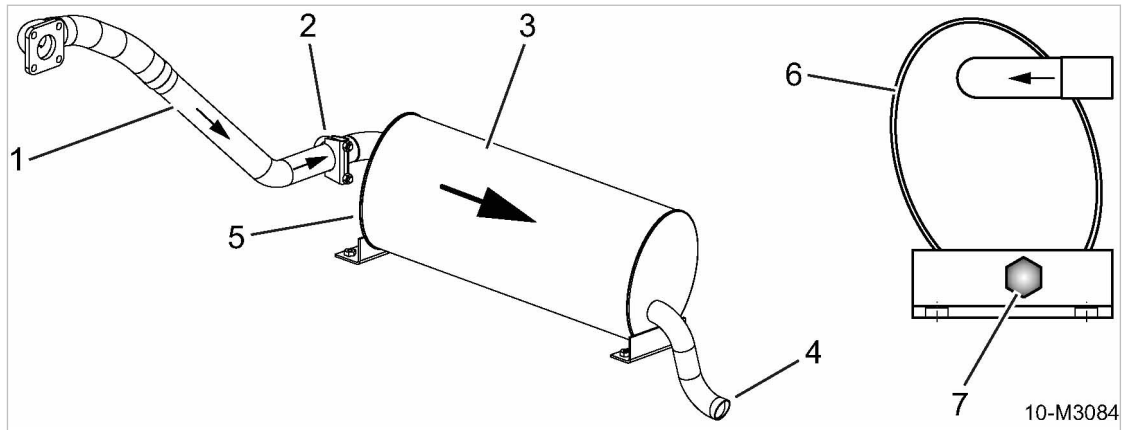


Fig. 48 Exhaust silencer with integrated spark arrestor

- | | |
|---|---------------------------------|
| ① Exhaust gas pipe | ⑤ Location of plug |
| ② Clamp | ⑥ Side view of exhaust silencer |
| ③ Exhaust silencer with integrated spark arrestor | ⑦ Soot drain plug |
| ④ Tail pipe | |

➤ Open the enclosure.

Produce environmentally-friendly soot drain:

A suitable hose must be attached to the outlet port to collect the soot environmentally sound in a collector tank. The free hose end is fed through the service opening in the floor panel and subsequently positioned in the collector tank.

Option 1a

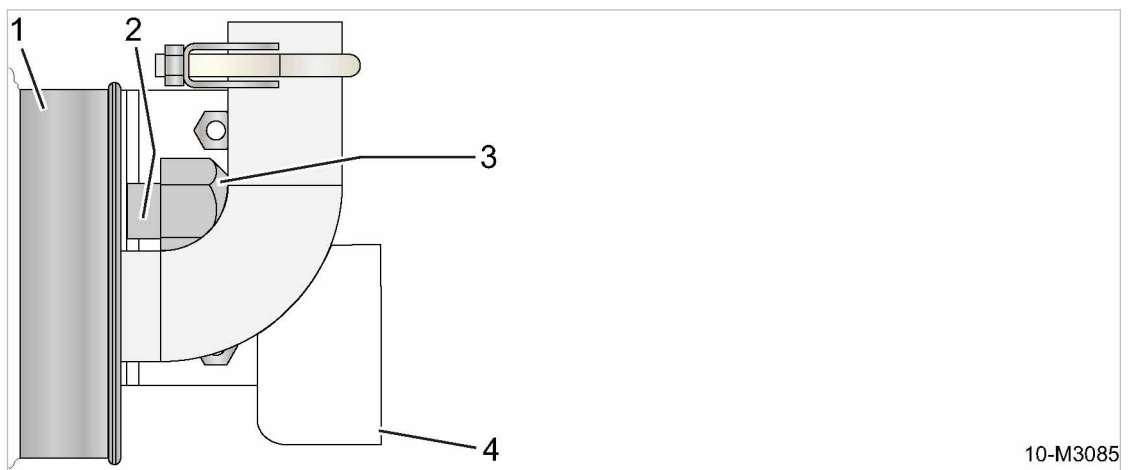


Fig. 49 Produce soot drain

- | | |
|---|--------------------------------------|
| ① Exhaust silencer with integrated spark arrestor | ③ Plug |
| ② Soot enclosure outlet port | ④ Service opening in the floor panel |

1. Loosen soot enclosure drain plug.
2. Remove plug.
3. Attach hose to soot enclosure outlet port.

4. Feed the hose end through the service opening in the floor panel.
5. Position the hose end in the collector tank and fasten.

Perform cleaning procedure "blow out soot"

Precondition Hose has been attached to outlet port
Hose end is positioned in the collector tank

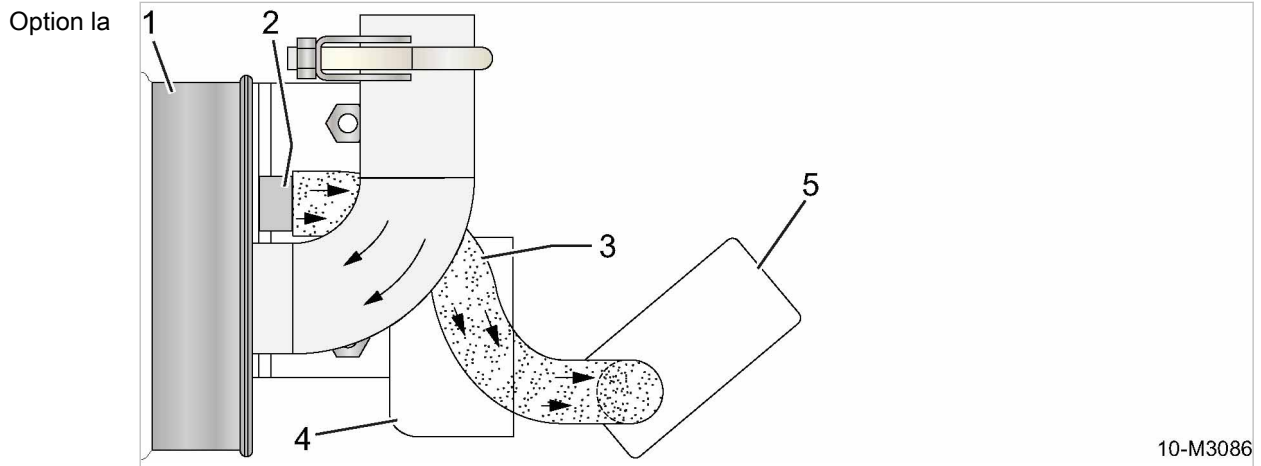


Fig. 50 Blow out soot

- | | |
|--------------------|--------------------------------------|
| ① Exhaust silencer | ④ Service opening in the floor panel |
| ② Outlet port | ⑤ Collection chamber |
| ③ Hose | |

1. Close the canopy.
2. Start the compressor engine.
3. Cover part of tail pipe of exhaust silencer with fire-proof object.
Pressure in exhaust system is rising.
Soot is blown out through the hose into the collector tank for soot.
4. Wait until all the soot has been blown out.
5. Shut down the engine.
6. Allow the machine to cool down.
7. Uncover tail pipe of exhaust silencer.



Dispose of soot according to environment protection regulations.

Close soot enclosure outlet port

Precondition The machine has cooled down

1. Open the enclosure.
2. Remove hose from soot enclosure outlet port.
3. Close soot enclosure outlet port with plug.
4. Tighten plug.
5. Check to ensure that the tail pipe of exhaust silencer is uncovered.

10.9.4 Option Ib
Engine air shut-off valve maintenance

To ensure the shut-off function of the automatically closing engine air shut-off valve in cases of emergency, settings on this valve may only be carried out by KAESER SERVICE or a specialist workshop!

Overview:

- Detach inlet tract
- Check the engine air intake shut-off valve for contamination
- Clean the engine air shut-off valve
- Keep engine shut-off valve free from lubricants
- Check the engine air intake shut-off valve for correct function and movement
- Install inlet tract
- Starting the machine and performing a trial run

Material Compressed air for blowing out
Petroleum ether or spirit
Cleaning cloth

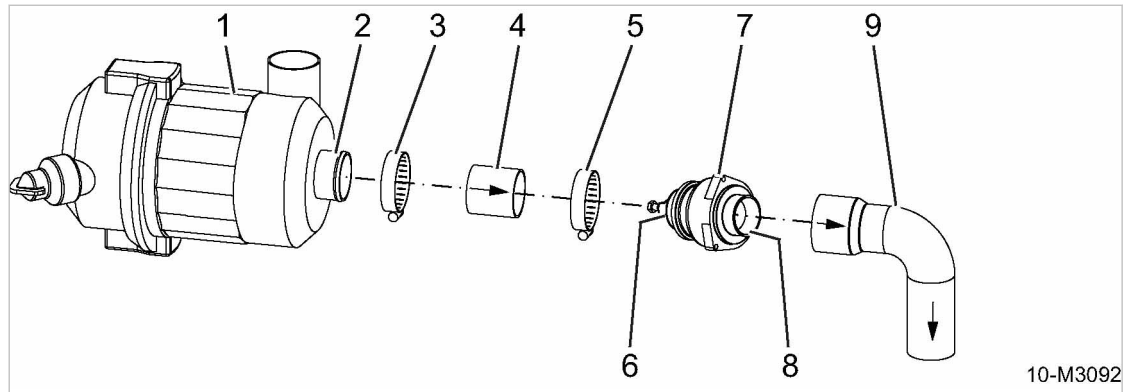
Precondition The machine is switched off
The machine is installed on level ground,
the machine has cooled down.
Air consumers are disconnected,
the outlet valves are open,
the machine is fully vented, the pressure gauge reads 0 bar.

**NOTICE**

The shut-off function of the engine shut-off valve is defective!
Destruction of the engine and explosion and/or fire are possible in the event of emergencies.

- Have valve adjusted by KAESER SERVICE or a specialist workshop only.
- Do not move the valve adjusting screw.
- Do not grease the bearing points of the valve.

Option Ib



10-M3092

Fig. 51 Combustion engine inlet tract with engine air intake shut-off valve

- | | | | |
|---|--------------------------|---|---------------------------------------|
| ① | Filter housing | ⑥ | Engine air shut-off valve inlet side |
| ② | Filter housing set-off | ⑦ | Engine air shut-off valve |
| ③ | Worm thread hose clamp | ⑧ | Engine air shut-off valve outlet side |
| ④ | Hose piece (filter side) | ⑨ | Air inlet hose (engine side) |
| ⑤ | Worm thread hose clamp | | |

➤ Open the enclosure.

Detach inlet tract:

1. Loosen worm thread hose clamp ⑤ at the inlet side ⑥ of the engine air shut-off valve.
2. Pull back air inlet hose ⑨ until the outlet side ⑧ of the engine air shut-off valve ⑦ is exposed.
3. Push air inlet hose to the side and hold it there.
4. Remove the engine air shut-off ⑦ valve from the hose piece ④.

Check the engine air intake shut-off valve for contamination:

➤ Check if the interior of the shut-off valve is clean.



Engine shut-off valve is clogged

➤ Clean the engine air shut-off valve.

Clean the engine air shut-off valve:

1. Blow out engine air shut-off valve with compressed air.
2. If necessary, clean the engine air shut-off valve with petroleum ether or spirit and allow to dry.
3. Contact the authorised KAESER SERVICE or a specialist workshop if you are unable to remove the contamination.

Keep engine shut-off valve free from lubricants

Bearing points with lubricant within the engine air shut-off valve may jam if exposed to dust. This endangers the correct functioning of the shut-off valve.



1. **NOTICE!**

Bearing points with lubricant jam due to constant exposure to dust
Shut-down of engine intake air only functions to some extent or not at all.

➤ Keep engine shut-off valve free from lubricants.

2. Do not lubricate the bearing points of the engine shut-off valve.

Check the engine air intake shut-off valve for correct function and movement:

The shut-off function of the engine shut-off valve must work flawlessly. Flawless functioning includes the following facts:

- The throttle valve of the engine shut-off valve closes effortlessly.
- The throttle valve of the engine shut-off valve closes completely.
- Bearing points of the engine shut-off valve are free from lubricants.

1. Check the valve for wear.
2. Check if the shut-off function of the engine shut-off valve works flawlessly if lubricant-free.



Traces of wear and functional problems do exist.

- Have engine shut-off valve checked/adjusted by KAESER SERVICE or a specialist workshop.
- If necessary, have engine shut-off valve replaced by KAESER SERVICE or a specialist workshop.

Install inlet tract

1. Pull air inlet hose ⑨ back and hold it there.
2. Slide air inlet hose onto the outlet side ⑧ of the engine shut-off valve.
3. Slide engine shut-off valve ⑦ with the inlet side ⑥ onto the hose piece ④.
4. Tighten worm thread hose clamp ⑤ at the inlet side of the engine air shut-off valve.

Starting the machine and performing a trial run

1. Close the canopy.
2. Starting the engine.
3. Run the machine in IDLE until the operating temperature is reached.
4. Perform LOAD operation.



The engine stops in LOAD operation.

- Have engine shut-off valve adjusted by KAESER SERVICE or a specialist workshop.

10.10 Documenting maintenance and service work

Machine number:

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

Tab. 71 Maintenance log

11 Spares, Operating Materials, Service

11.1 Note the nameplate

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

- Please give the information from the nameplate with every enquiry and order for spares.

11.2 Ordering consumable parts and operating fluids/materials

KAESER consumable parts and operating materials are original Kaeser products. They are matched to application in our machines and ensure trouble-free operation.

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

Personal injury may result from machine damage.



WARNING

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

- Use only original KAESER parts and operating fluids/materials.
- Do not use alternative consumable parts and operating fluids and materials.

Compressor

Name	Quantity	Number
Air filter element	1	1260
Oil filter	1	1210
Oil separator cartridge set	1	1450
Cooling oil	1	1600

Tab. 72 Compressor consumables

KUBOTA engine parts

Name	Quantity	Number
Air filter element	1	1280
Fuel prefilter insert	1	1915
Main fuel filter cartridge	1	1920
Oil filter cartridge	1	1905
Oil drain plug sealing ring	1	4496
Injector nozzle	1	4475
Injector sealing ring	1	4476
V-belt	1	4470
Engine oil	1	1925

Tab. 73 Consumable engine parts

11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- authorised service technicians with KAESER factory training,
 - Increased operational reliability ensured by preventive maintenance
 - Energy savings achieved by avoidance of pressure losses,
 - 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

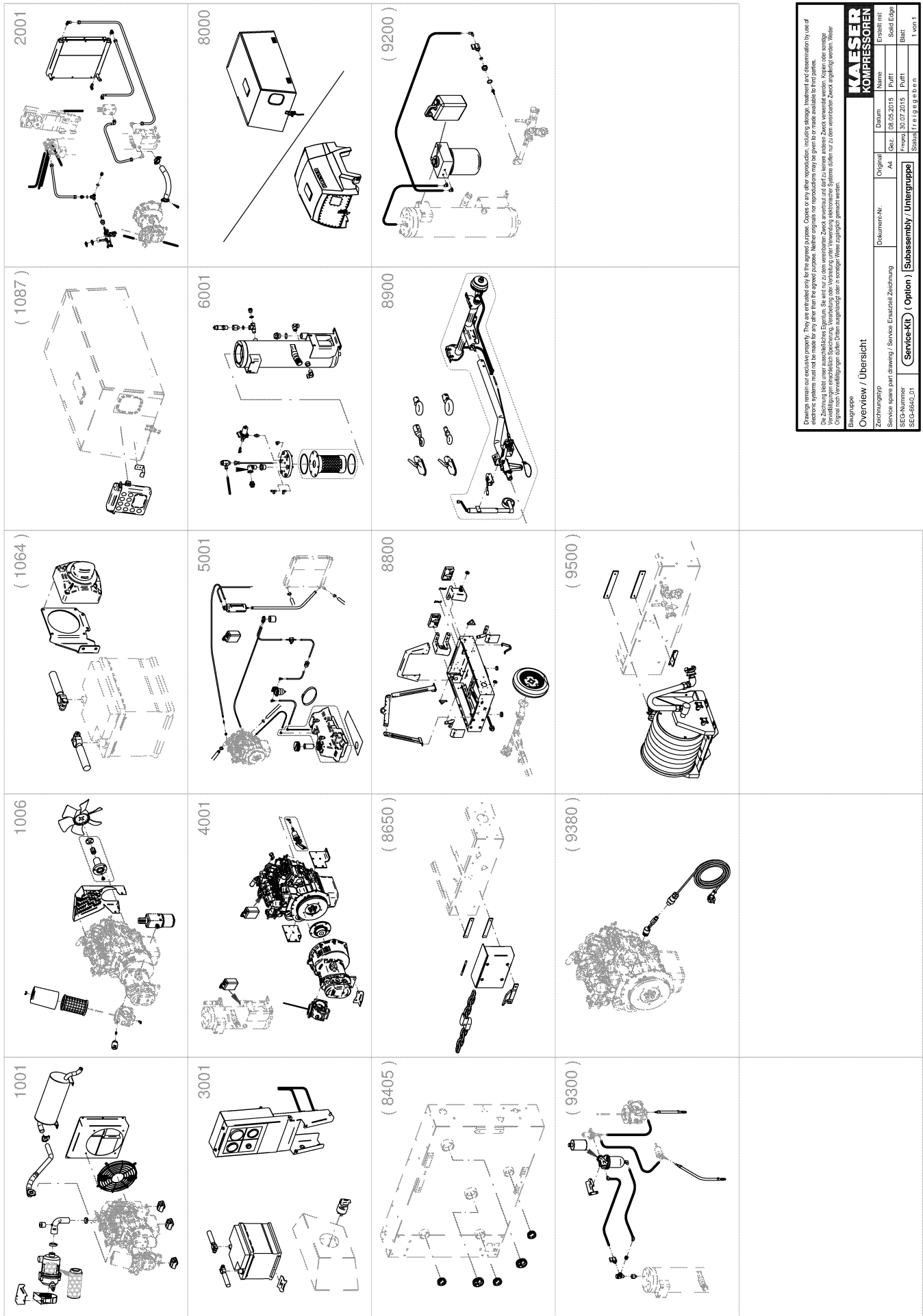
Use these parts lists to plan your material requirement according to operating conditions and to order the required spare parts.



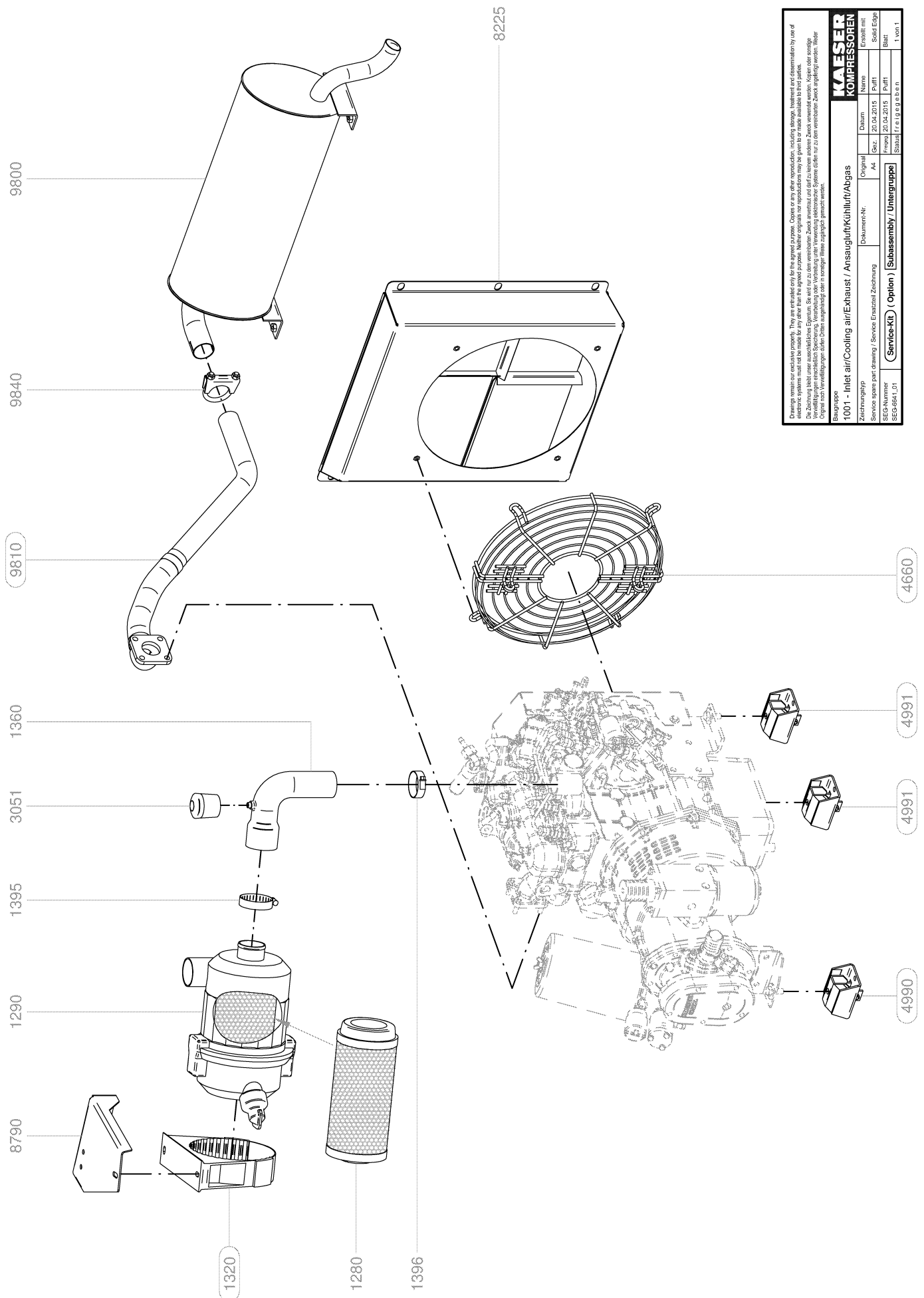
WARNING

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 manual must not be carried out by unqualified personnel.
- Have further tasks, not described in this operating manual, carried out by specialist workshops or the authorised KAESER SERVICE technician.



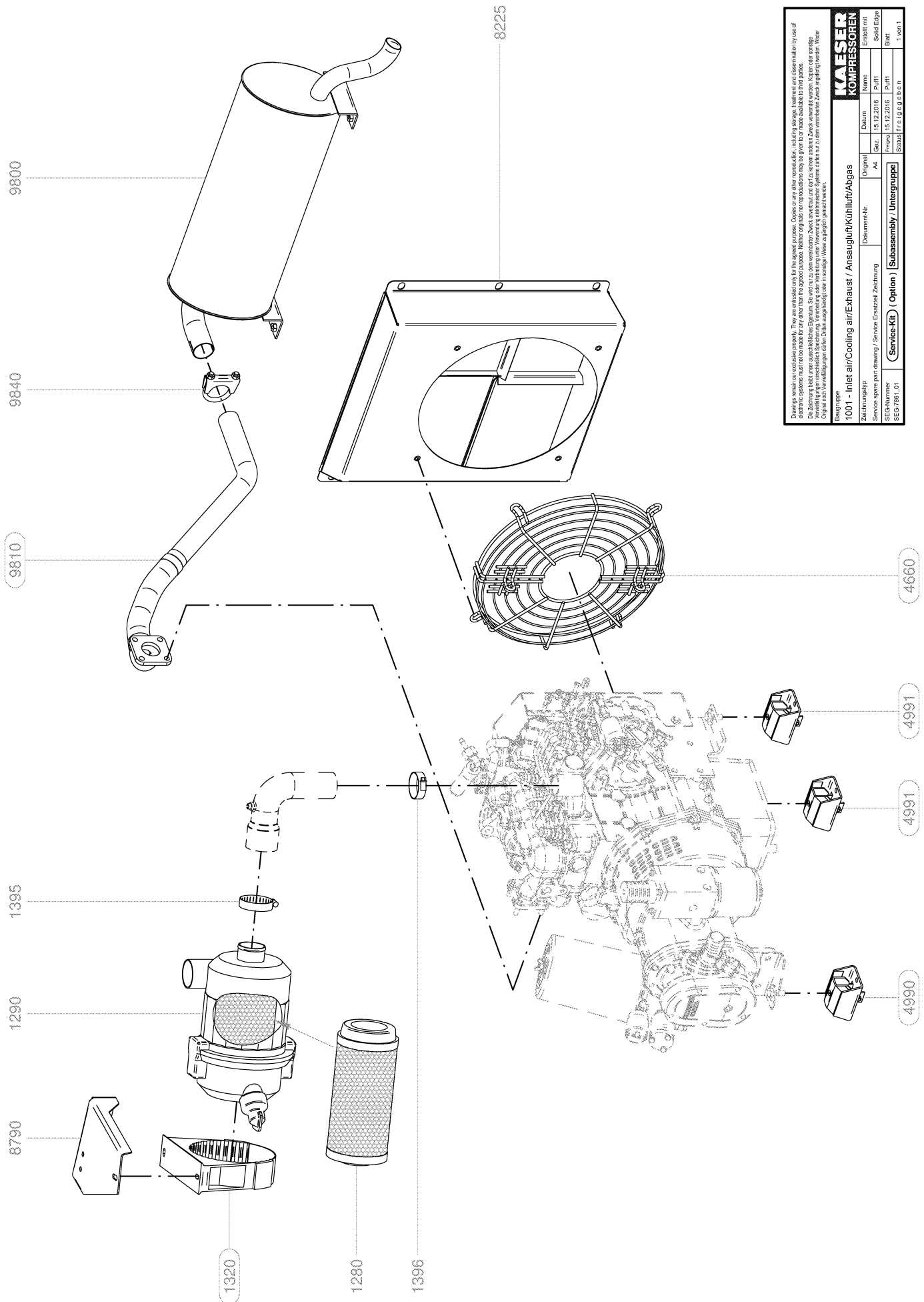
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Overview / Übersicht		Datum		Name					
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Service spare part drawing / Service Ersatzteil Zeichnung		Original		A4		Perf.			
SEGA-Nummer		30.07.2015		Perf.		Blatt			
SEGA-6540_01		30.07.2015		Perf.		Blatt			
Service-Kit		Option		Subassembly / Untergruppe		1 von 1			



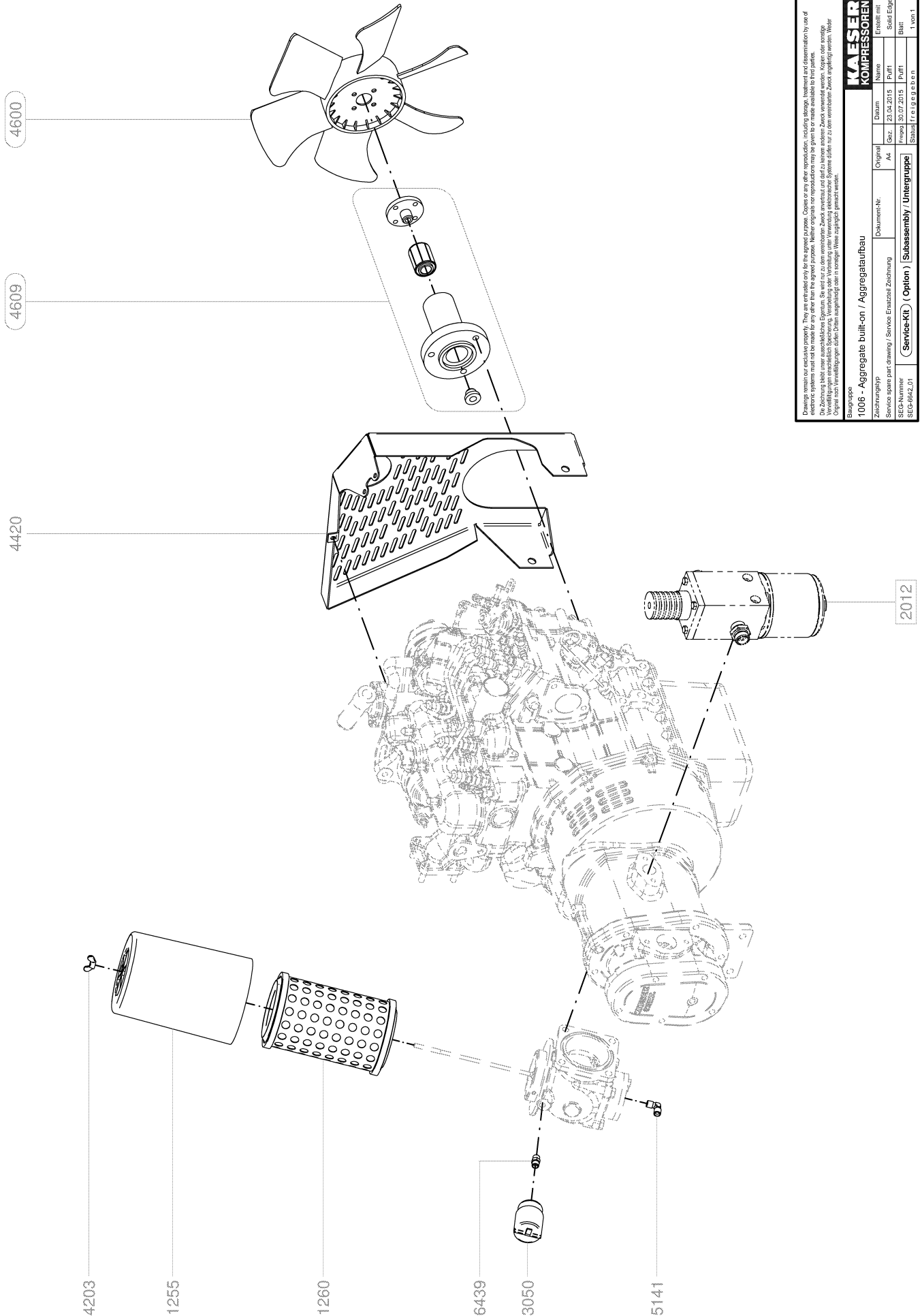
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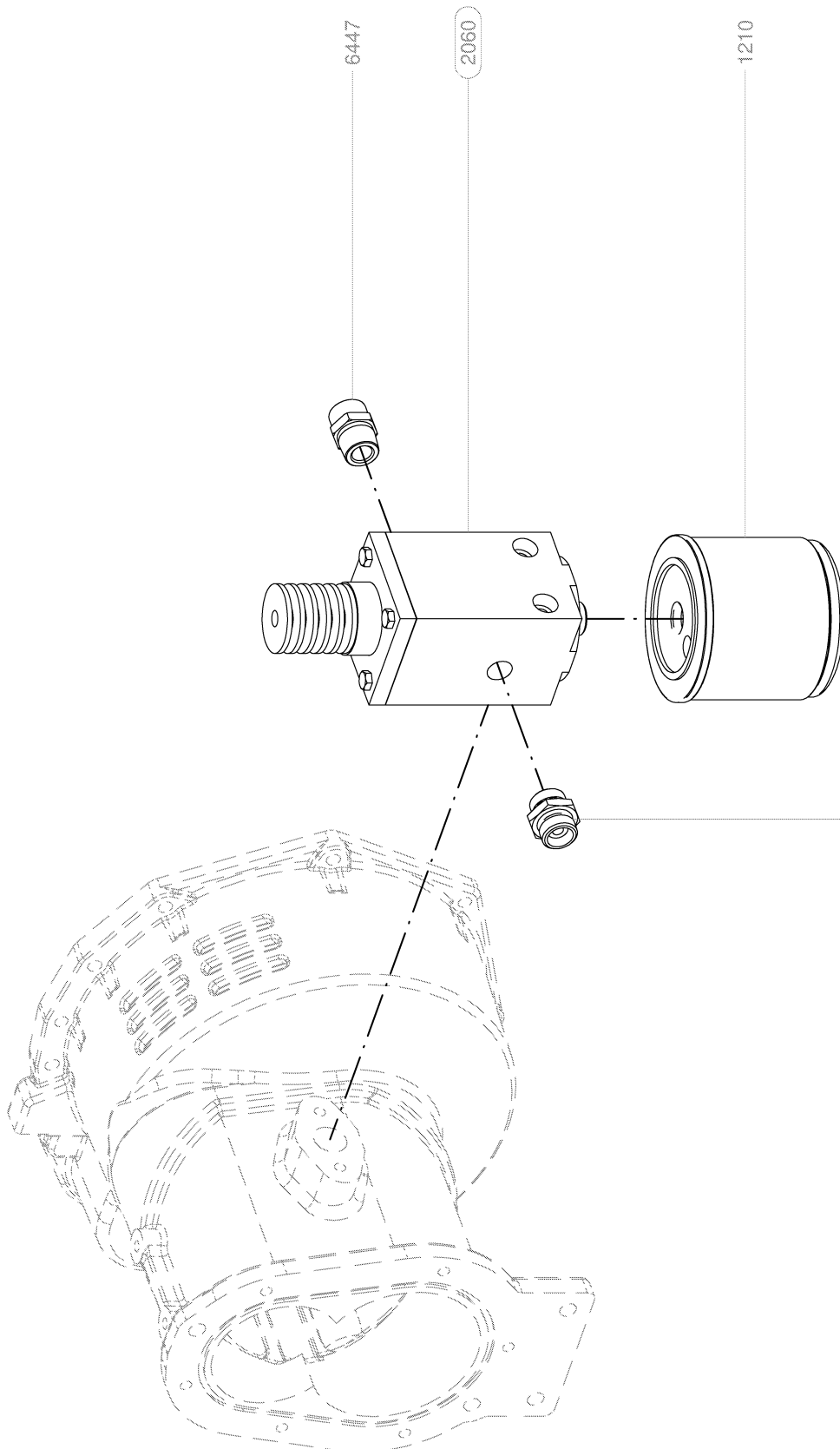
Baureihe		KAESER	
Zuchtengruppe		Kompressoren	
1001 - Inlet air/Cooling air/Exhaust / Ansaugluft/Kühlluft/Abgas			
Zuchtingenieur	Dokument-Nr.	Original	Name
Zeichnungsperson (per drawing) Service Ersatzteil Zeichnung	A4		Enschel mit Seal Edge
SEIFA-Nummer	Service-Kit	Option	Subassembly / Untergruppe
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			1 von 1

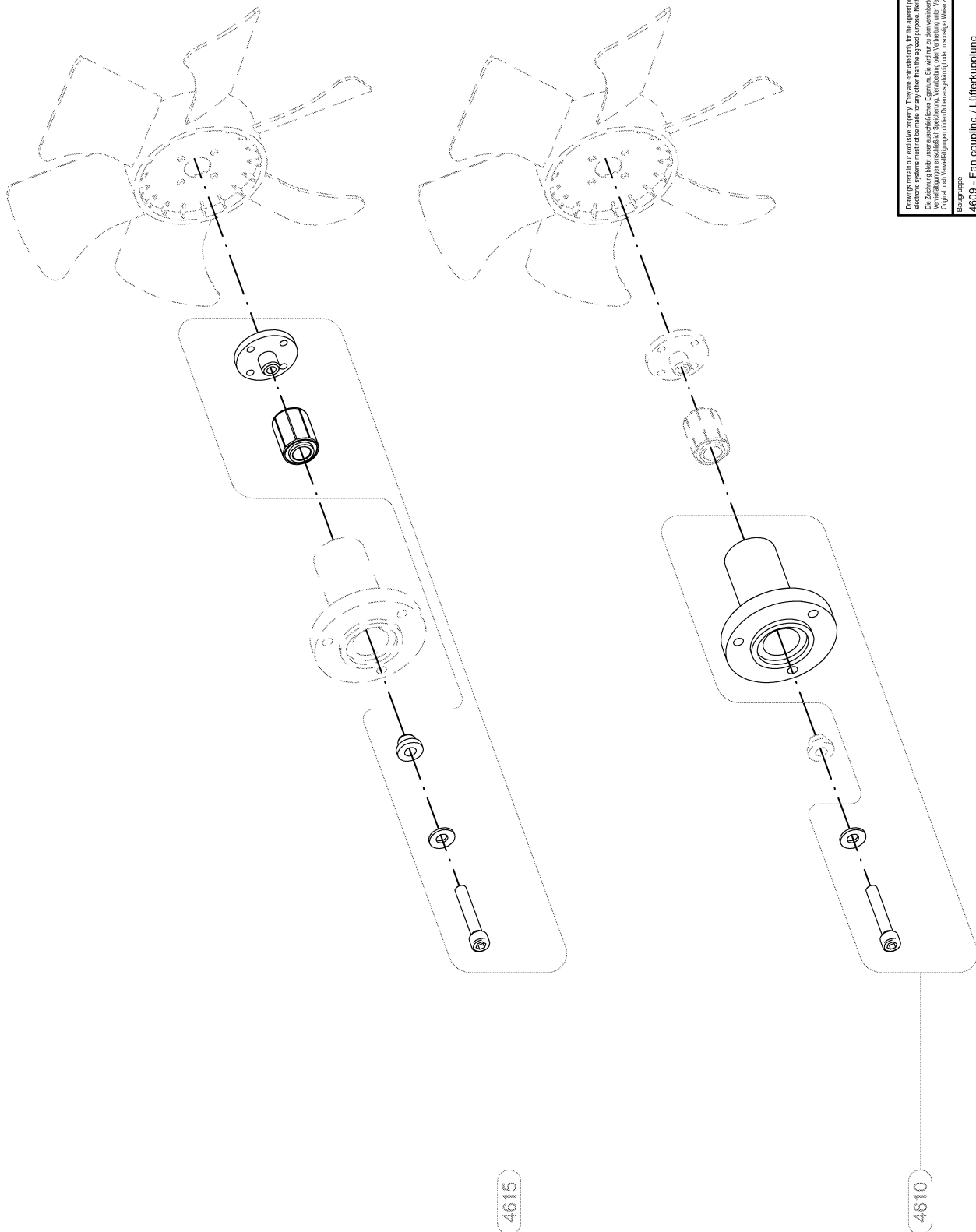


KAESER KOMPRESSOREN			
Original	Name	Original	Ersetzt mit
Gez.	15.12.2015	A4	Solid Edge
Zeichnungsgruppe	Service spare part drawing / Service Ersatzteil Zeichnung	Perf1	Blatt
SEGA-Nummer	15.12.2015	Perf1	1 von 1
SEG-7893_01	Subassembly / Untergruppe	Perf1	
Baugruppe 1001 - Inlet air/Cooling air/Exhaust / Ansaugluft/Kühlluft/Abgas			



KAESER KOMPRESSOREN 1006 - Aggregate built-on / Aggregataufbau Zeichnungsgruppe: ☐ Original ☐ Ersatzteil mit Service spare part drawing / Service Ersatzteil Zeichnung SEGA-Nummer: ☐ Original ☐ Ersatzteil SEGA-6462_01 Blatt: ☐ Original ☐ Ersatzteil Stand: ☐ Original ☐ Ersatzteil 1 von 1									
KAESER KOMPRESSOREN 1006 - Aggregate built-on / Aggregataufbau Zeichnungsgruppe: ☐ Original ☐ Ersatzteil mit Service spare part drawing / Service Ersatzteil Zeichnung SEGA-Nummer: ☐ Original ☐ Ersatzteil SEGA-6462_01 Blatt: ☐ Original ☐ Ersatzteil Stand: ☐ Original ☐ Ersatzteil 1 von 1									

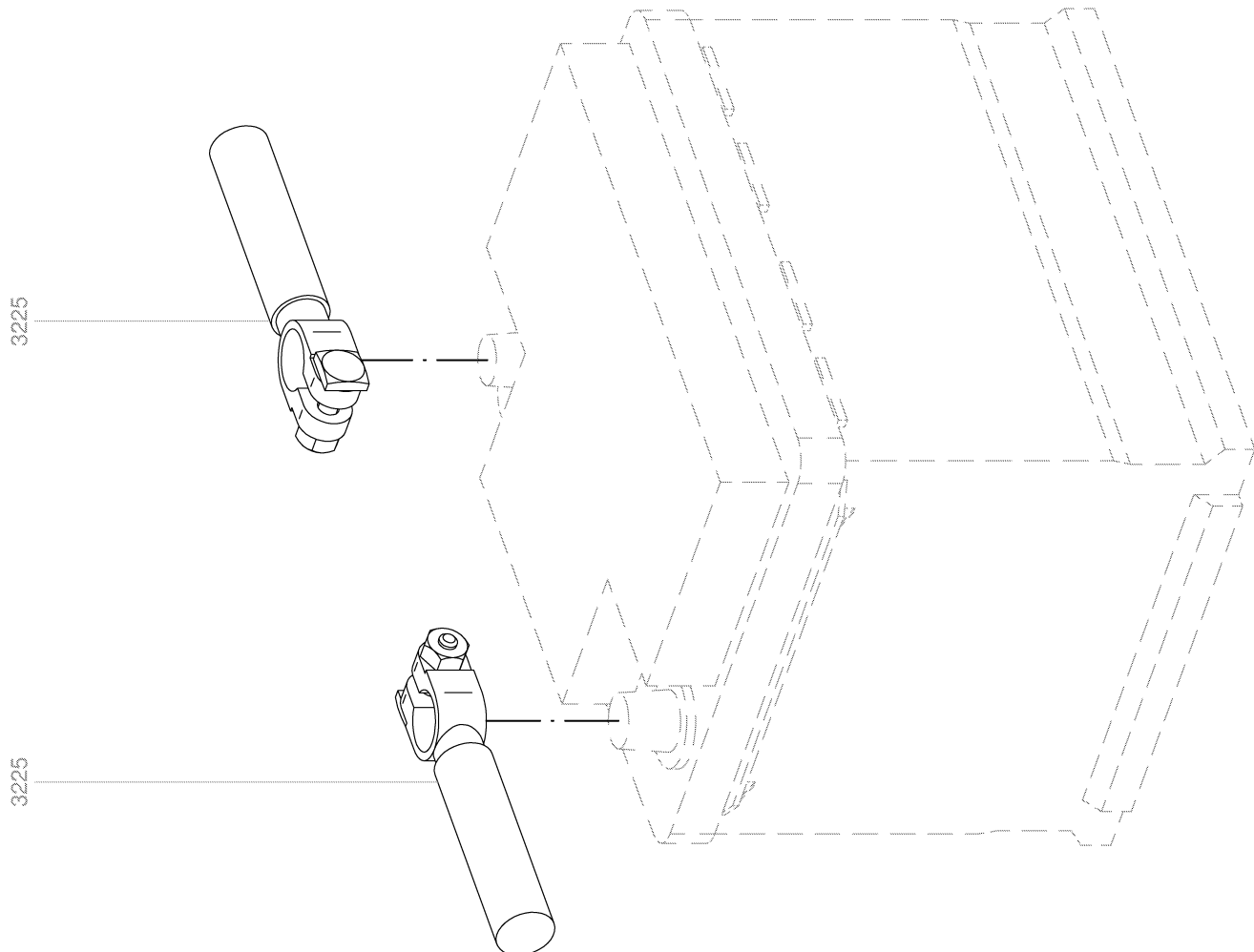
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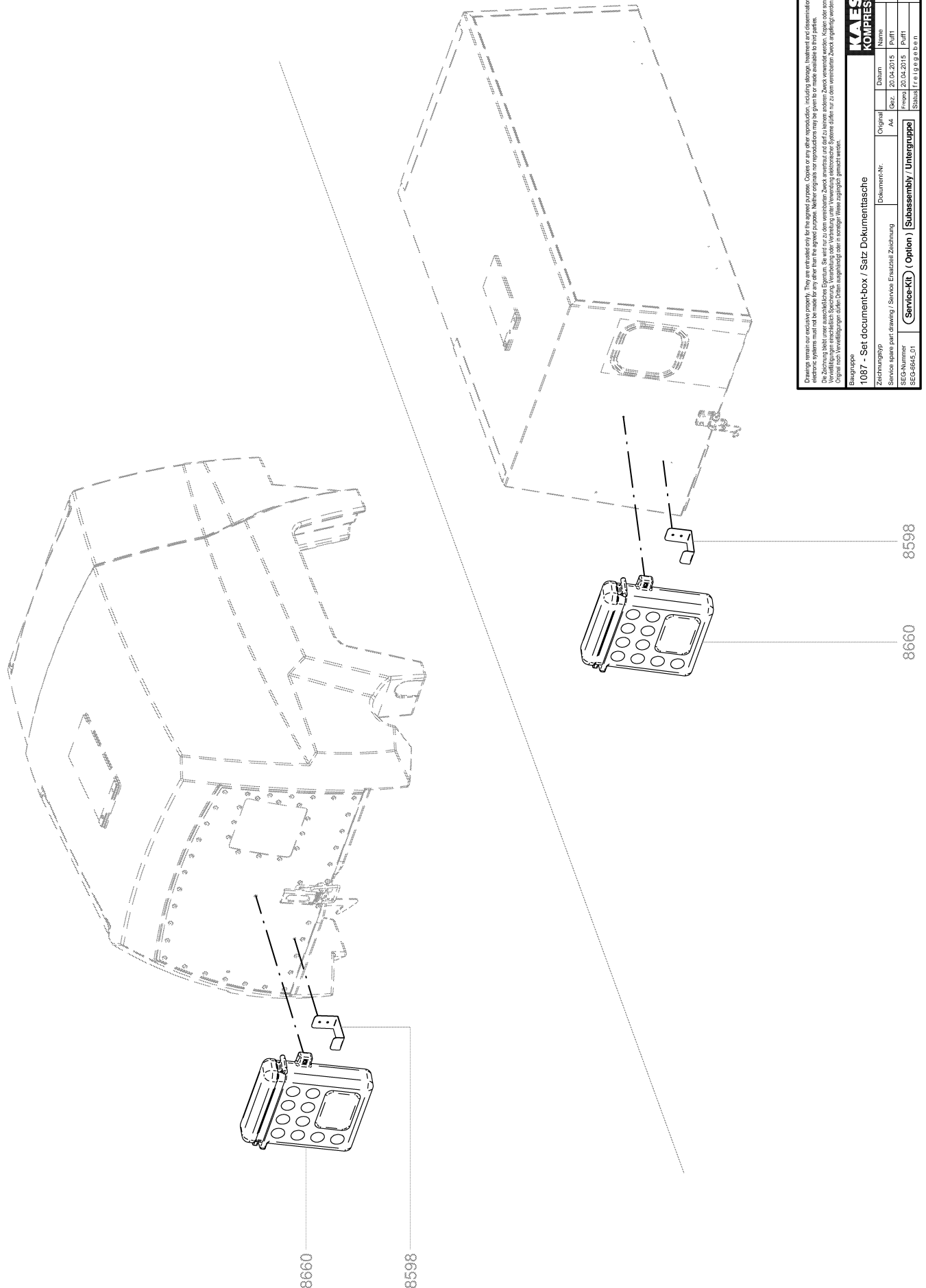


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Bezeichnung 4609 - Fan coupling / Lüfterkupplung	KAESER KOMPRESSOREN	
	Zeichnungsgruppe Service spare part drawing / Service Ersatzteil Zeichnung	Name Puffl
Zeichnungsnummer SEG-0902_01	Datum 30.07.2015	Erstellt mit Solid Edge
(Service-Kit) (Option)	Original A4	Blatt 1 von 1
Untergruppe SEG-0902_01	(Service-Kit) (Option)	Status 1 von 1

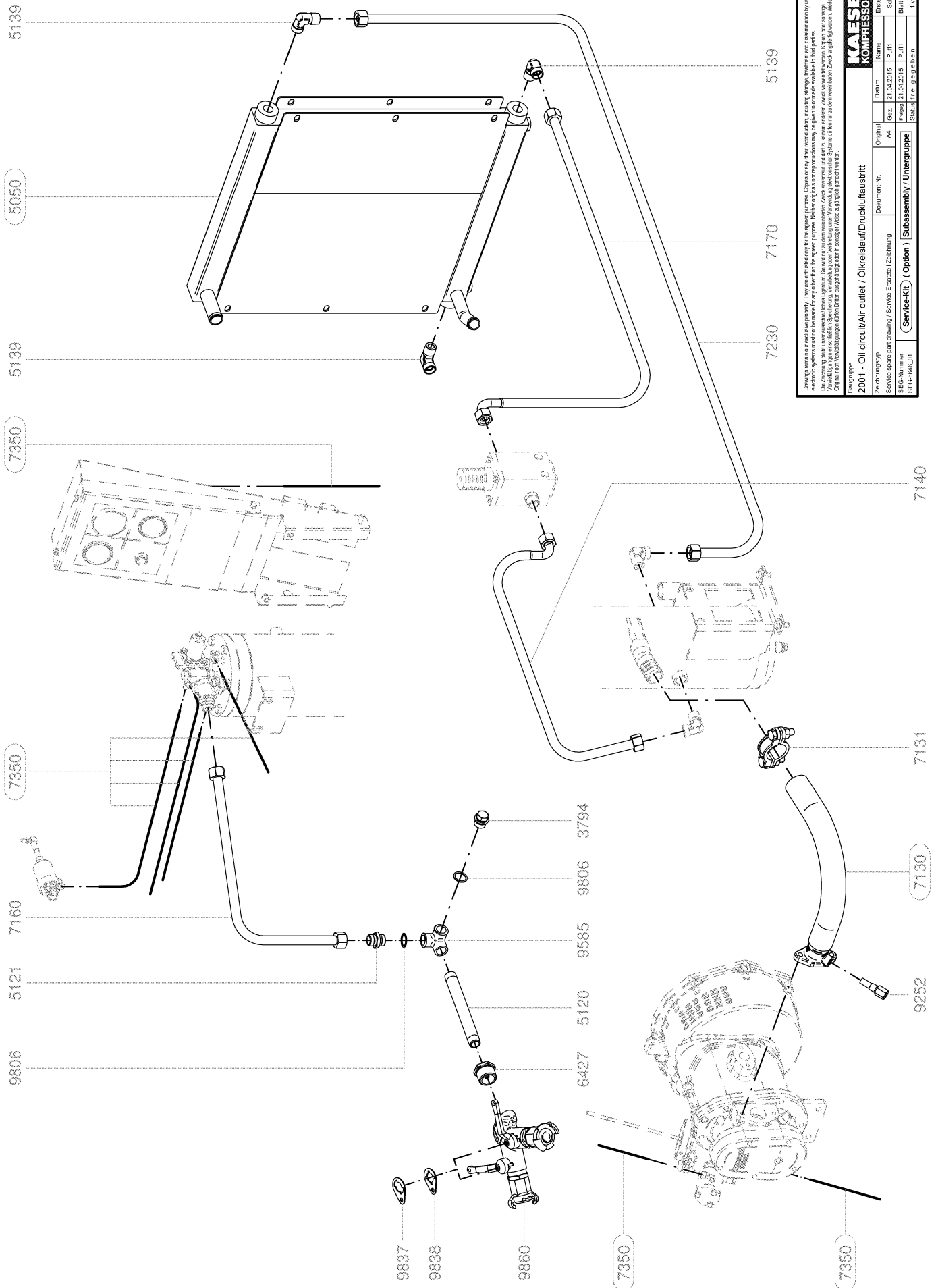
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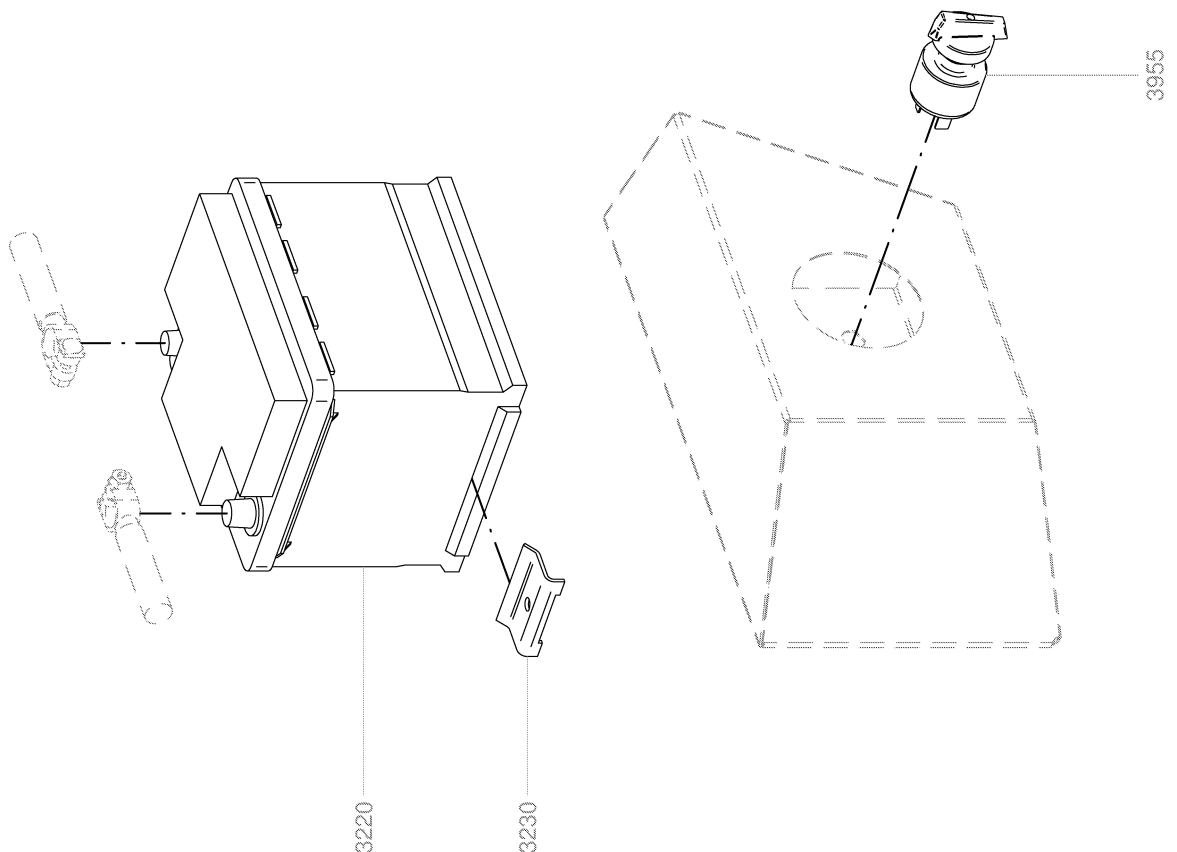
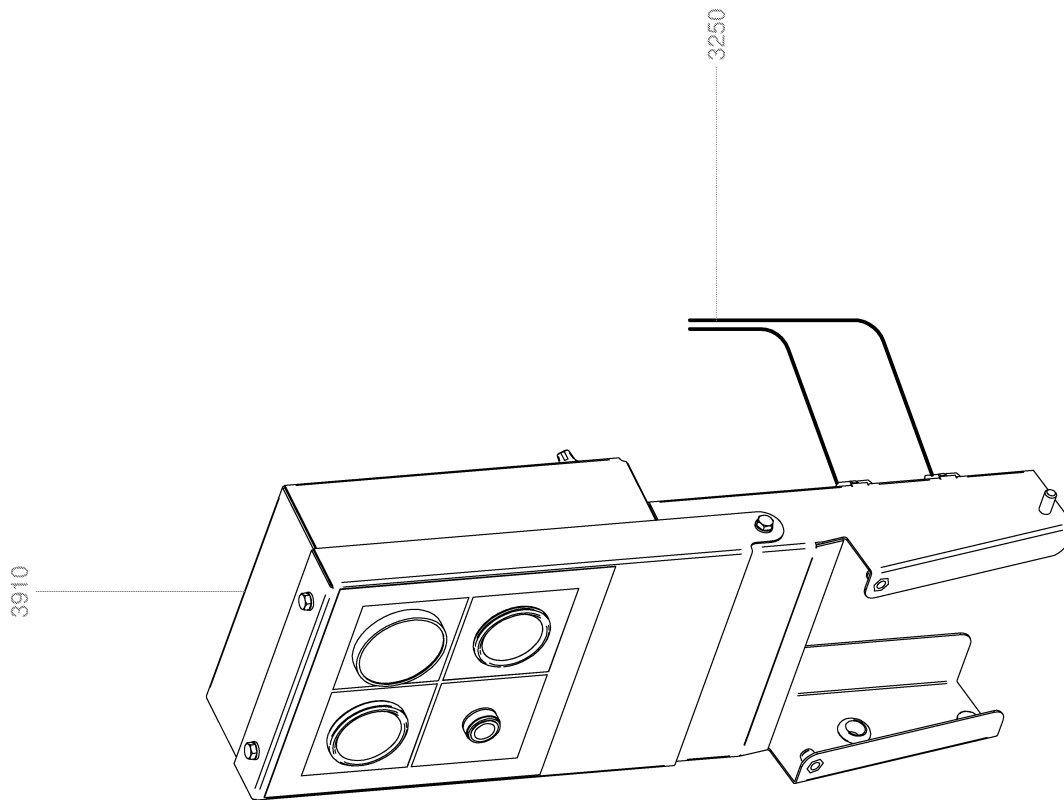
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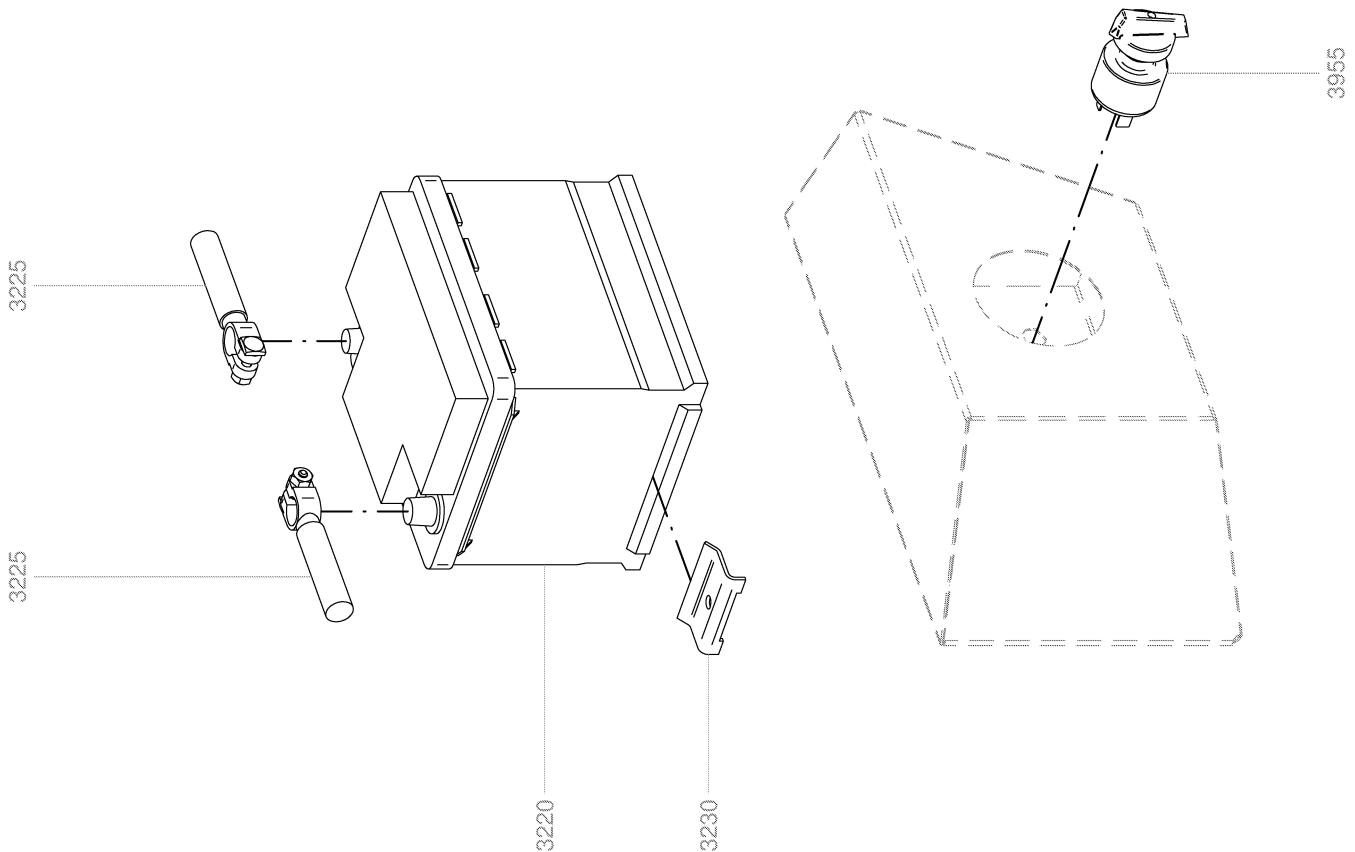
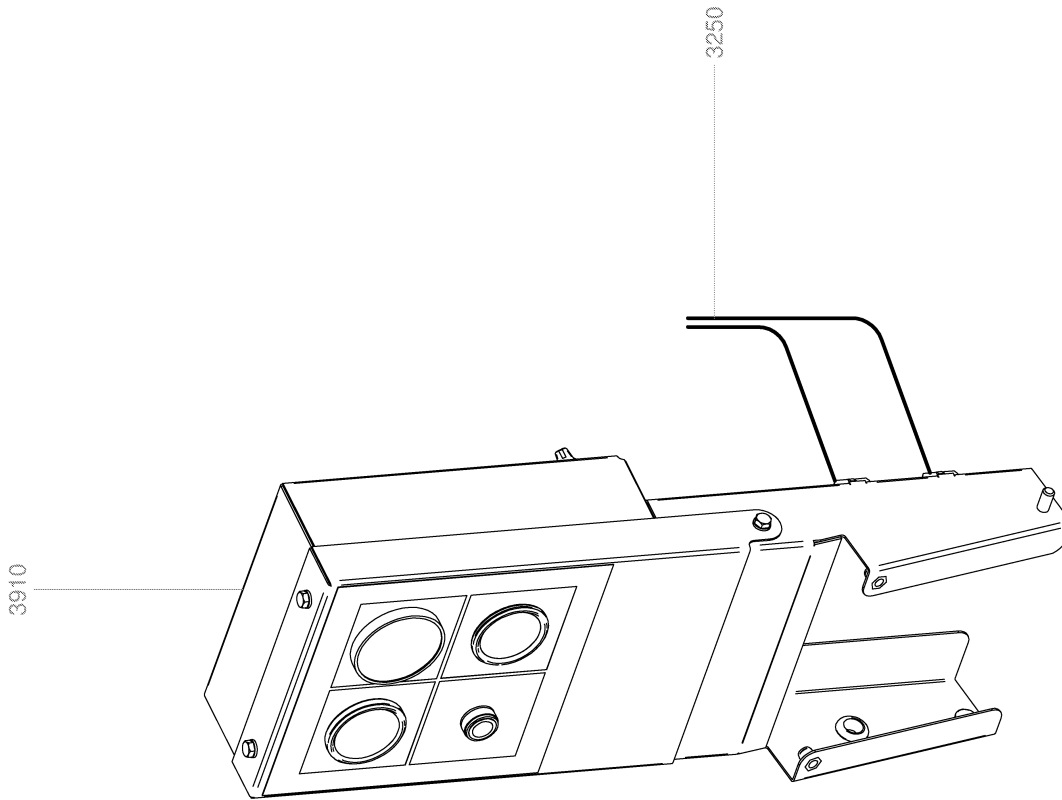
Baupläne	1087 - Set document-box / Satz Dokumententasche		KAESER KOMPRESSOREN	
	Zielfachungstyp	Dokument-Nr.	Original	Name
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SEF-Nummer			20.04.2015	Pufl
SEG-0545			20.04.2015	Pufl
			Preis	20.04.2015
			Stanz	1 von 1



KAESER KOMPRESSOREN									
Baugruppe		Original		Ersetzt mit					
Zeichnungsgruppe		Dokument-Nr.		Datum					
Service spare part drawing / Service Ersatzteil Zeichnung		A4		21.04.2015					
SEGA-Nummer		Perf1		Perf1					
SEG-4646_01		Perf1		Perf1					
		Subassembli / Untergruppe		Blatt					
		Service-Kit (Option)		Status (z.B. a, b, c, n)					



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SEGA-Nummer		Blatt:		Blatt:		21.04.2015		Perf1	
SEG-6947_01		(Service-Kit) (Option) (Subassembly) / Untergruppe		Blatt:		21.04.2015		Perf1	
								1 von 1	



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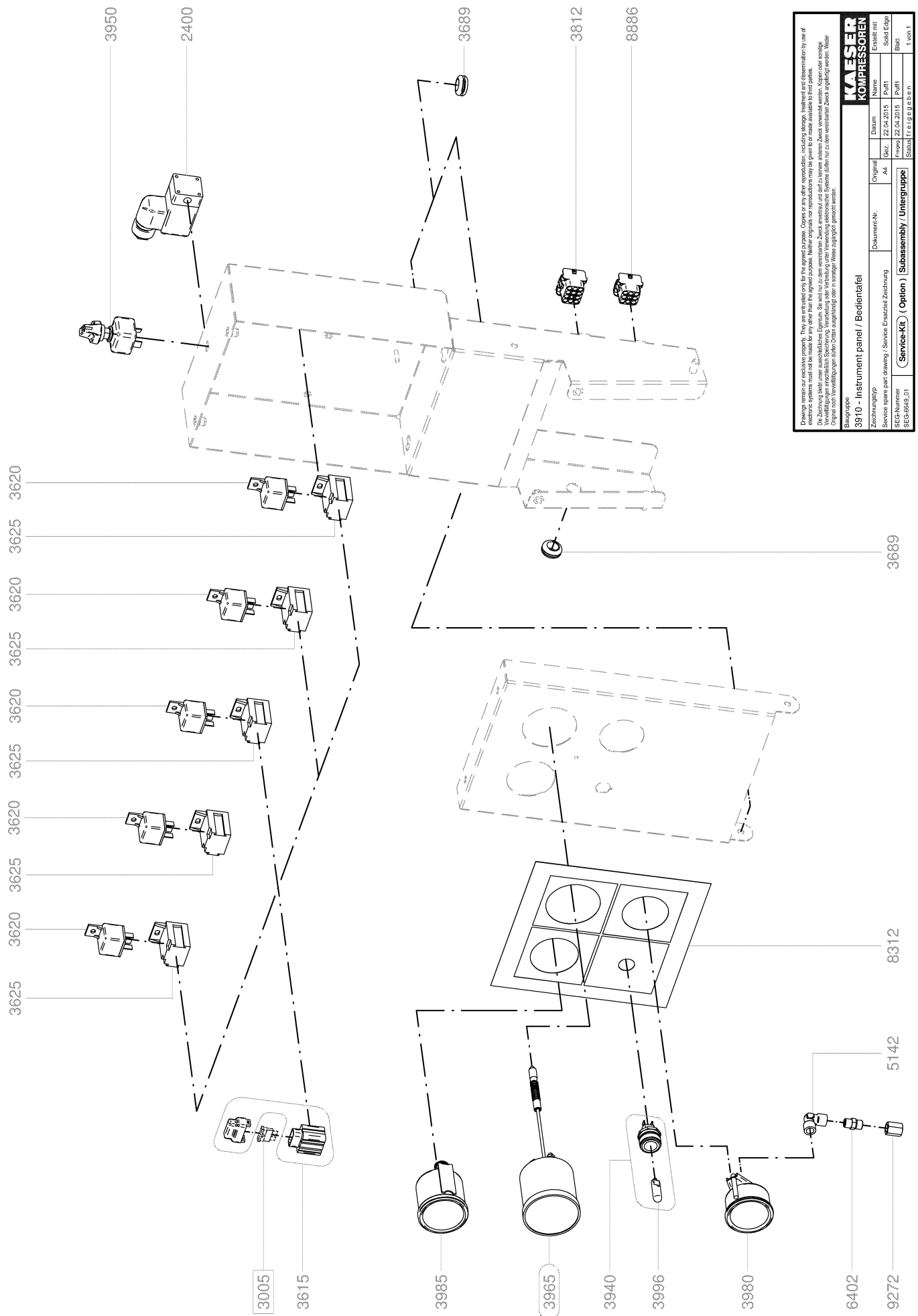
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Original
Name
Datum
Erstellt mit

Zeichnungsart
Service spare part drawing / Service Ersatzteil Zeichnung
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Gez.
21.04.2015
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SEGA-4648_01
Freigegeben
21.04.2015
Perf1

SEGA-4648_01
Stand
Freigegeben
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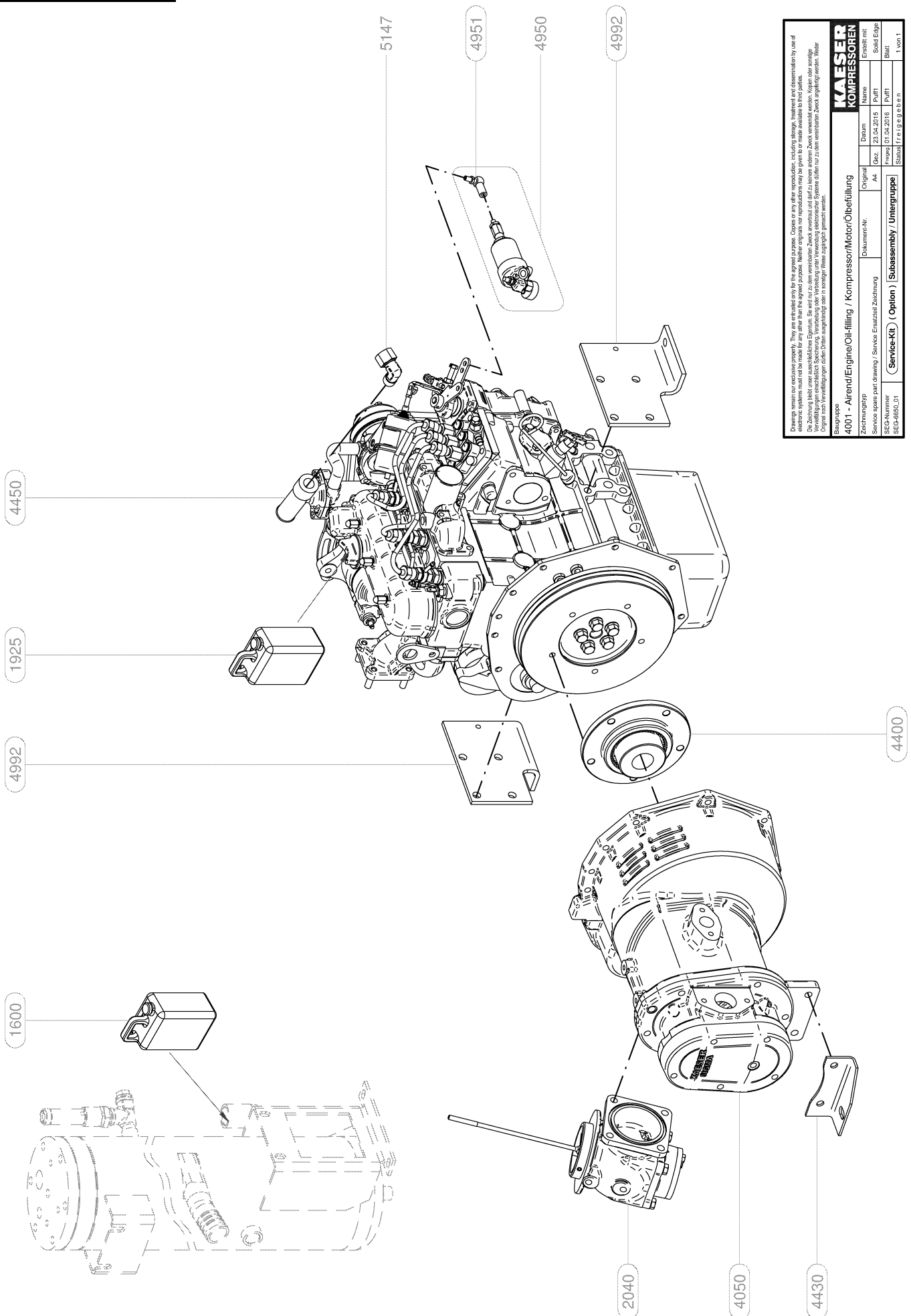
(
Service-Kit
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(
Option
)
Subassembly / Untergruppe



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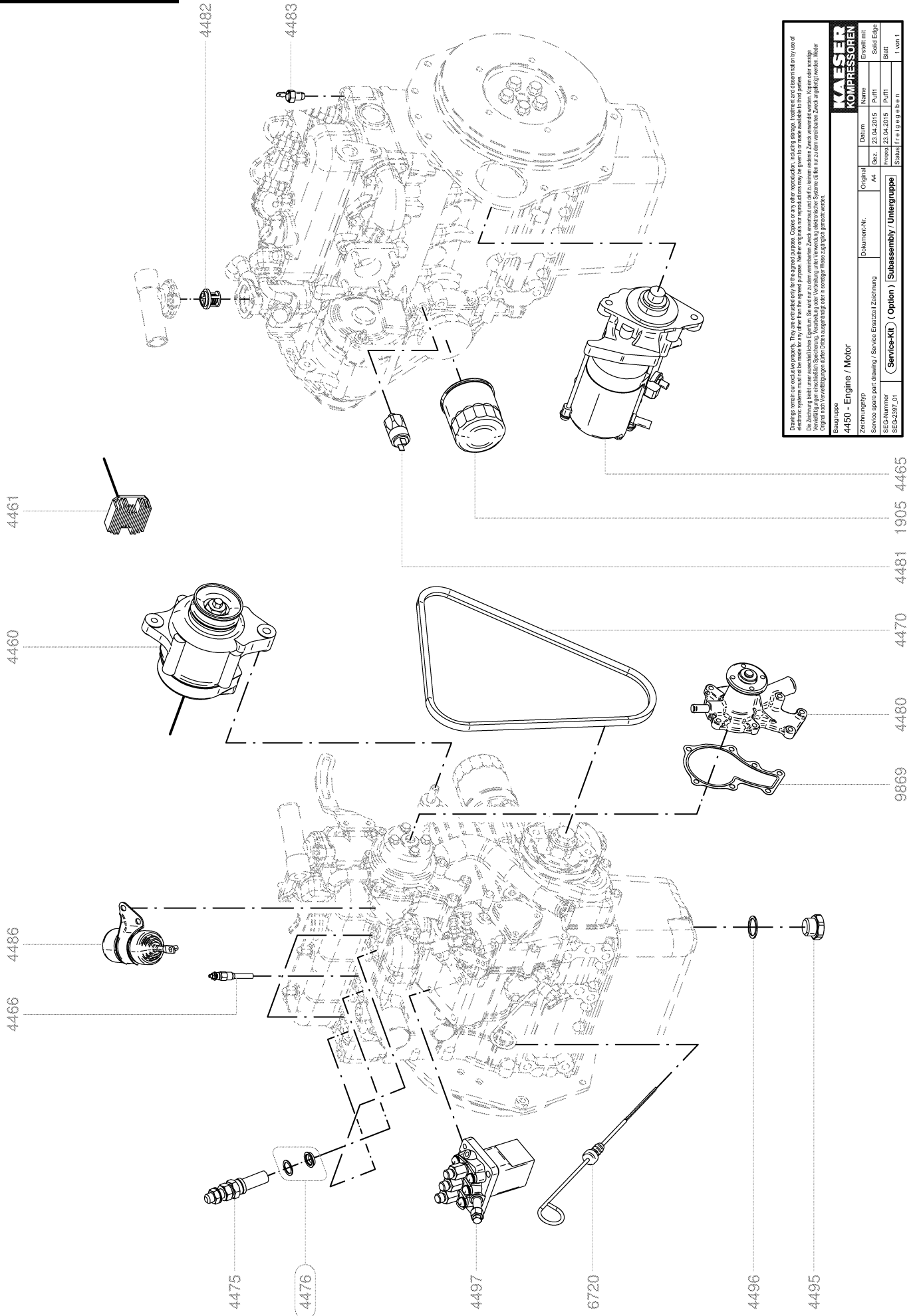
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Baupläne		3910 - Instrument panel / Bedienfeld		KAESER		KOMPRESSOREN	
Zeichnungsart		Dokument-Nr.		Original		Datum	
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SEK-Nummer		(Service-Kit)		(Option)		Puffl	
SEG-0410		Subassembly / Untergruppe		Stanz		1 von 1	

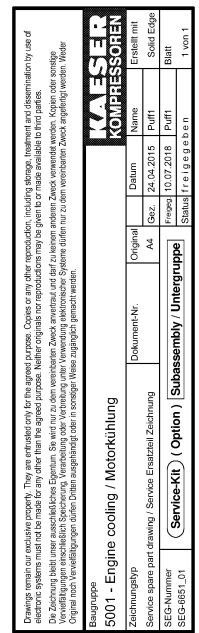


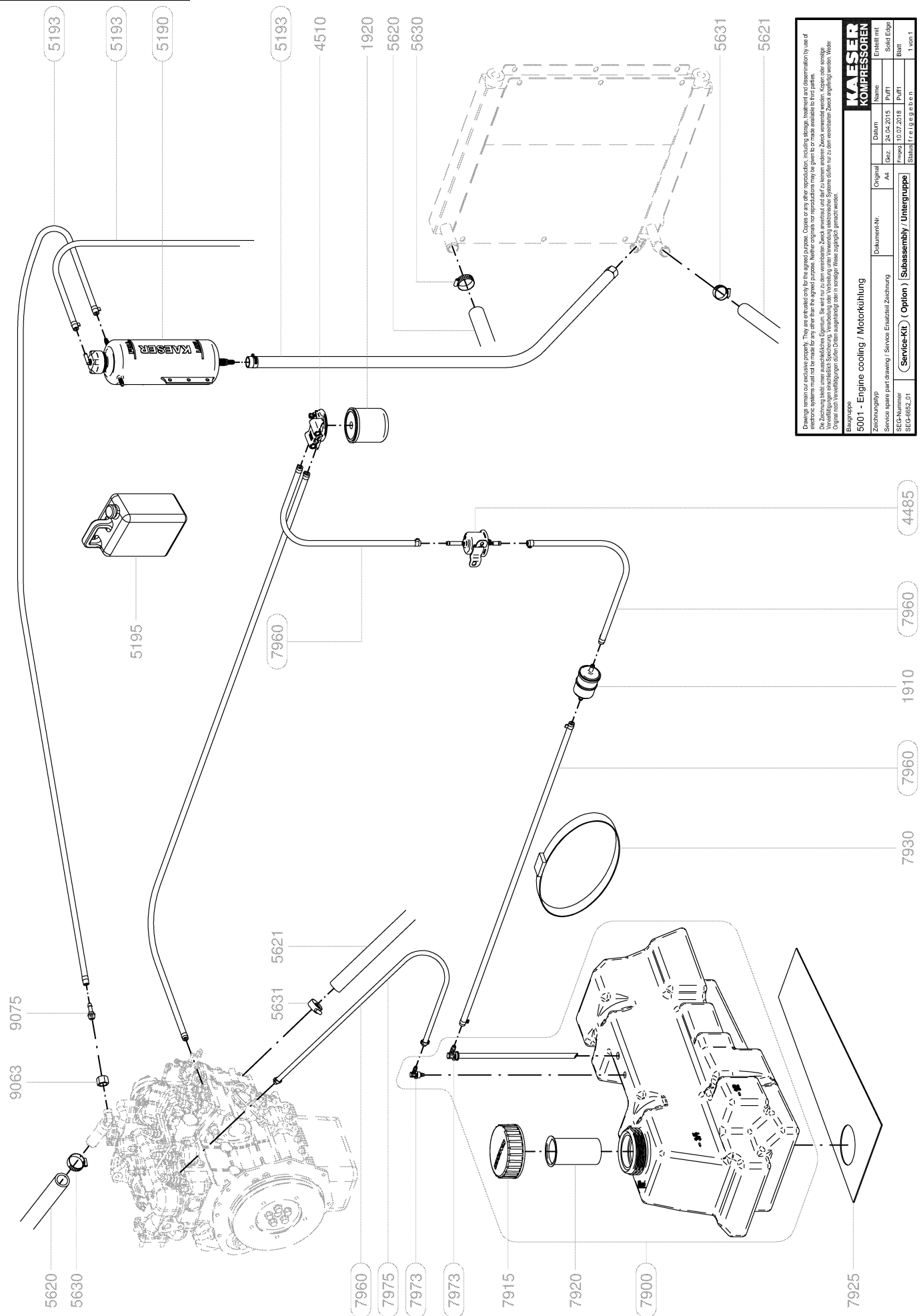
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KAESER KOMPRESSOREN	
40001 - Airend/Engine/Oil-filling / Kompressor/Motor/Öbfüllung	
Baugruppe	Zeichnungsgruppe
40001 - Airend/Engine/Oil-filling / Kompressor/Motor/Öbfüllung	Service spare part drawing / Service Ersatzteil Zeichnung
SEGA-Nummer SED-0450.01	Dokument-Nr. A4
(Service-Kit)	(Option)
Subassemblies / Untergруппe	1 von 1
Name	Enthalten mit
Datum	Name
23.04.2015	Puflf
01.04.2016	Puflf
10.04.2016	Blatt
Status	1 von 1



KAESER KOMPRESSOREN									
4450 - Engine / Motor									
Zeichnungsgruppe	Original	Alt	Gez.	Datum	Name	Erstellt mit			
Service spare part drawing / Service Ersatzteil Zeichnung				23.04.2015	Perf1	Solid Edge			
SEGA-Nummer				23.04.2015	Perf1	Blatt			
SEG-2397_01				23.04.2015	Perf1	1 von 1			
(Service-Kit) (Option) / Subassembly / Untergruppe									

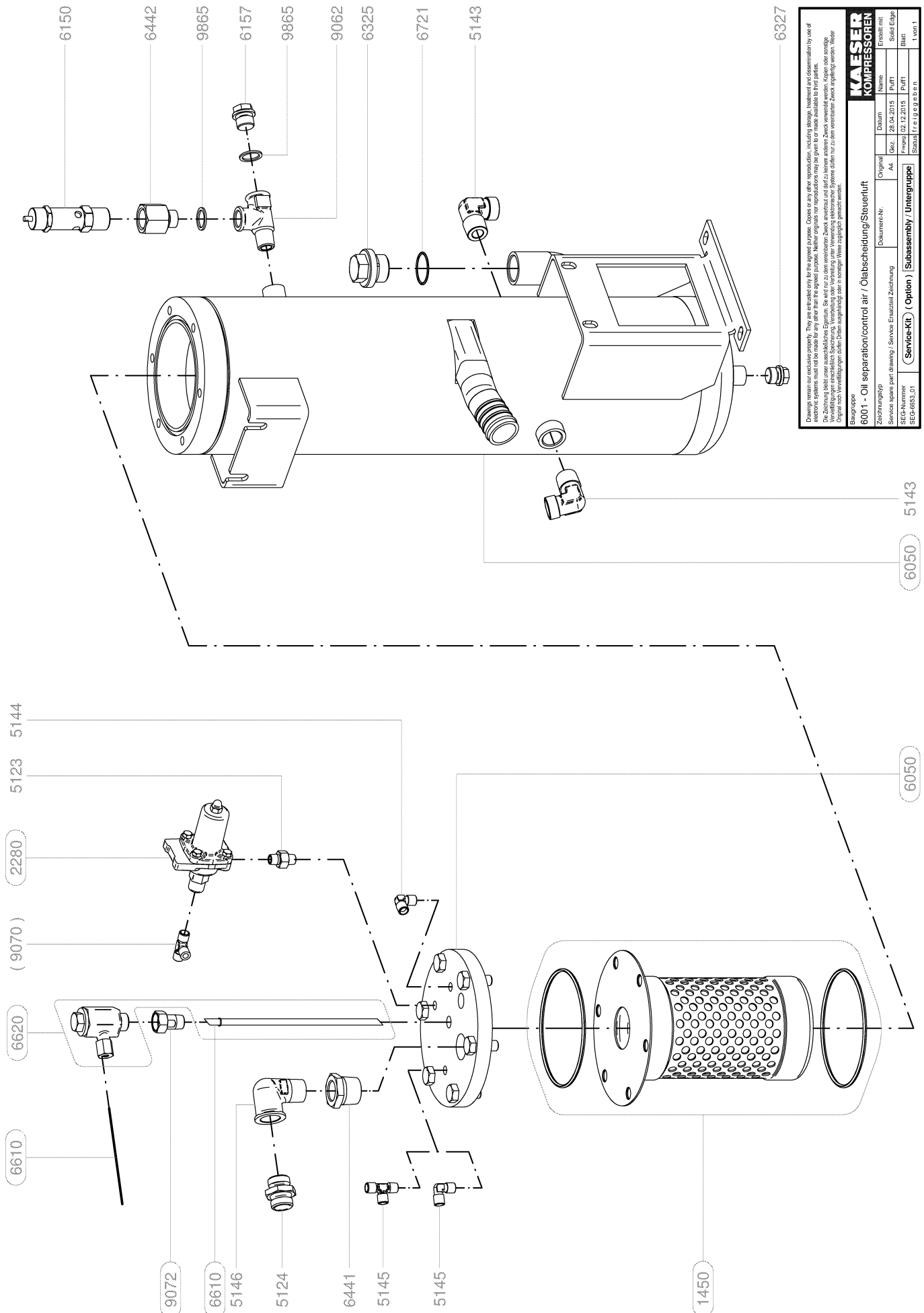


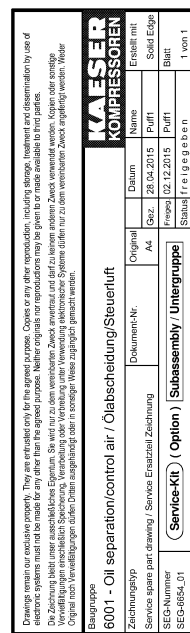


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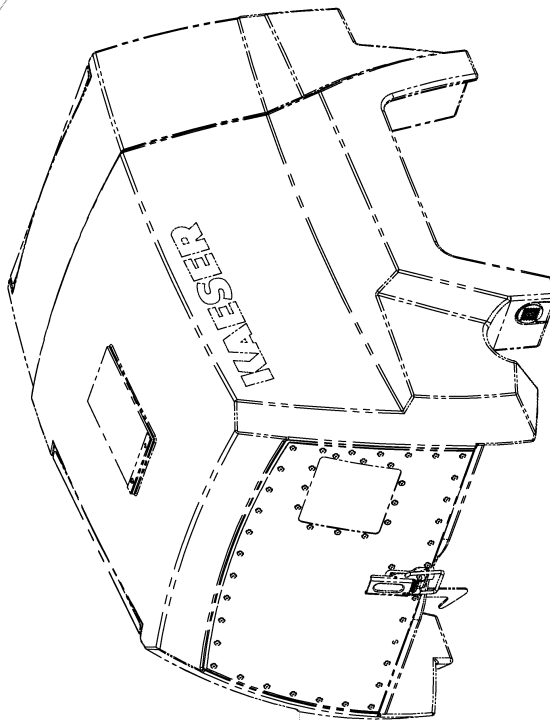
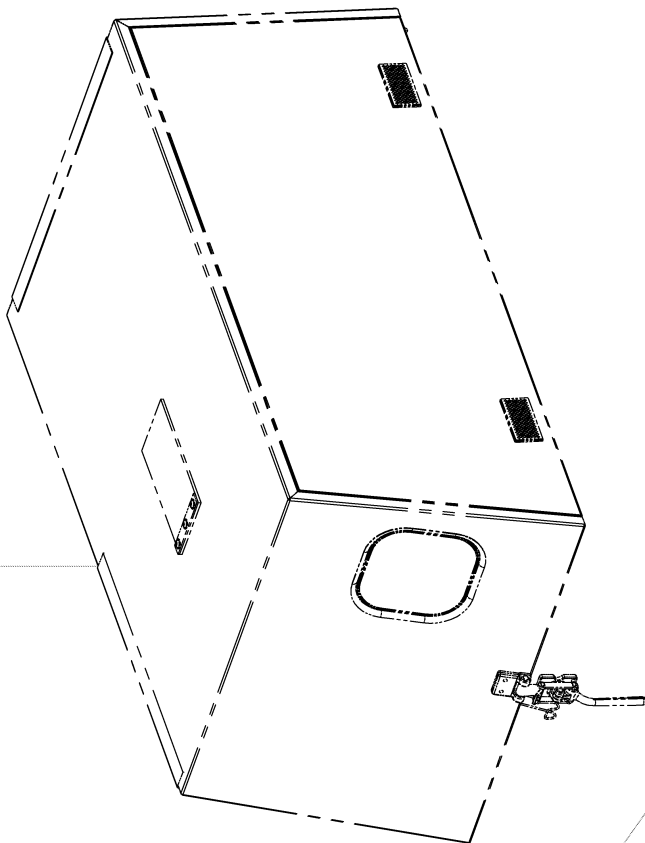
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Baureihe	5001 - Engine cooling / Motorabkühlung	Zeichnungsart Service spare part drawing / Service Ersatzteil Zeichnung	Dokument-Nr. A4	Original 26.04.2015	Datum 26.04.2015	Name Puffl	Erstellt mit Solid Edge	KAESE KOMPRESSIONEN	Baureihe
SEG-Nummer SEG-6852_01			Service-Kit Option		Subassembly / Untereinheit		Blatt 1 von 1		



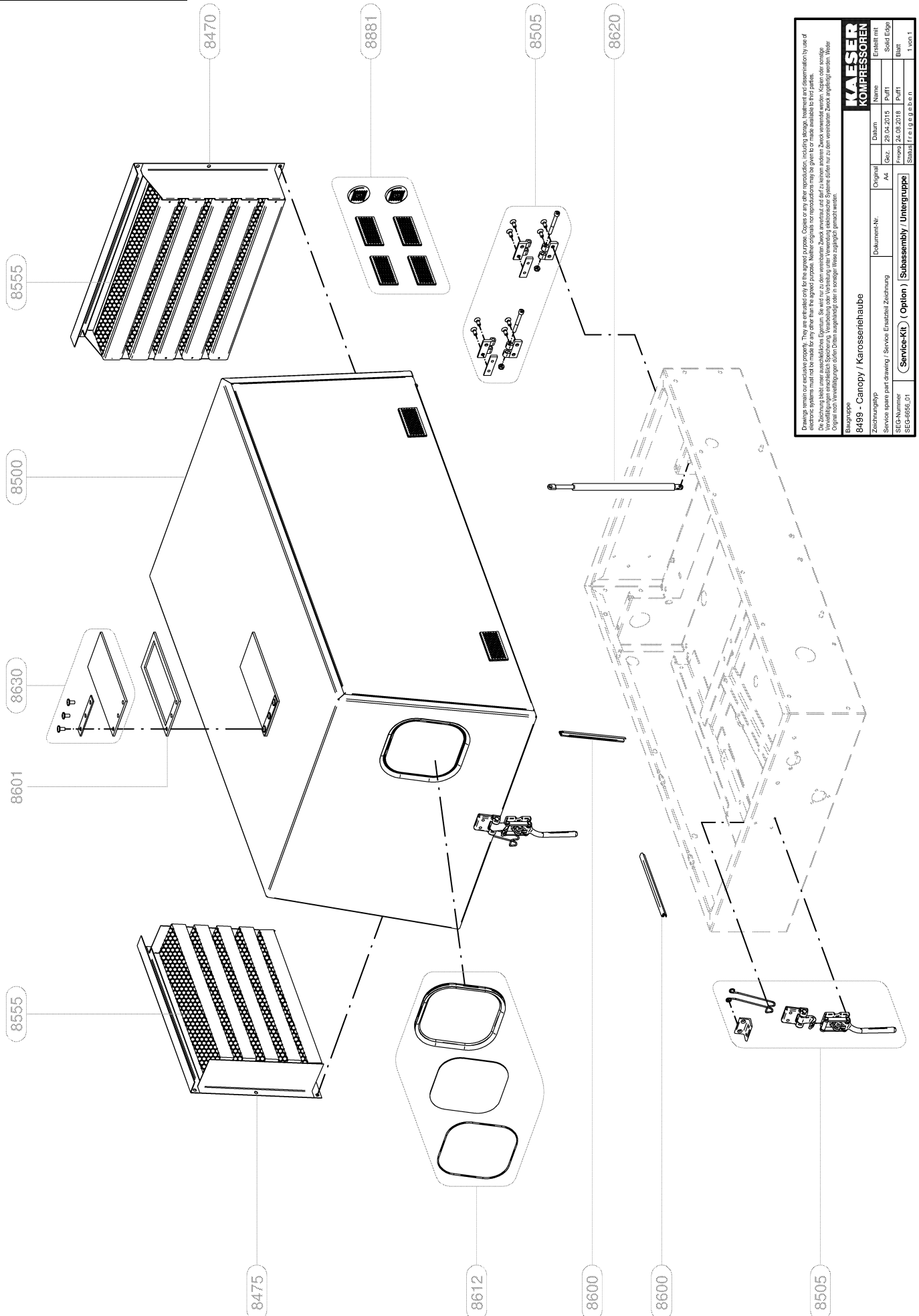


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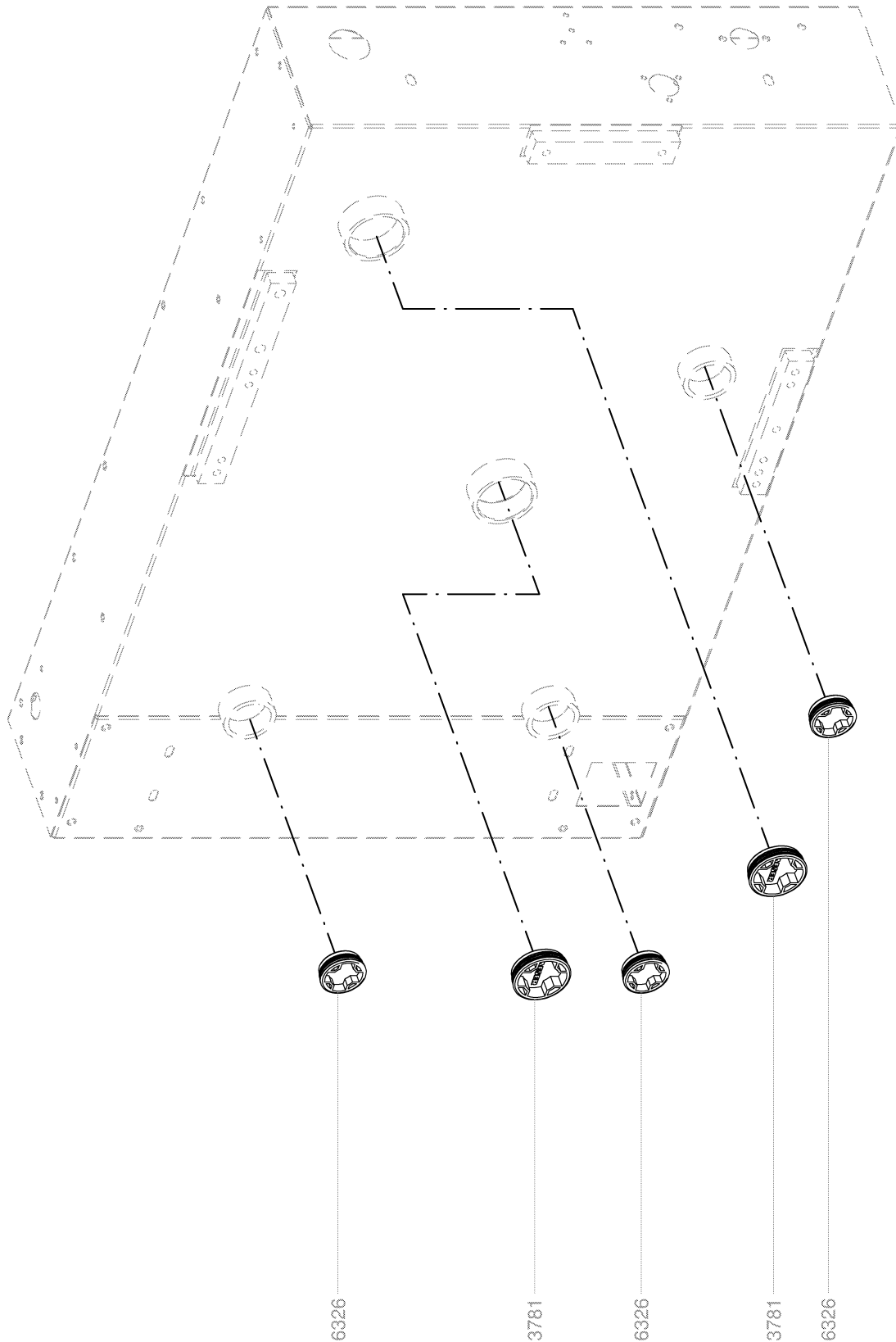
KAESER KOMPRESSOREN									
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8000 - Bodywork / Karosserie									
Zeichnungsgruppe		Dokument-Nr.		Original		Datum		Name	
Service spare part drawing / Service Ersatzteil Zeichnung		A4		A4		28.04.2015		Perft	
SEGA-Nummer		SEGA-6555_01		Perft		Perft		Blatt	
SEGA-6555_01		(Service-Kit) (Option) / Subassembly / Untergruppe		Status		1 von 1			



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Baugruppe 8498 - Canopy / Karosseriehaube	KAESER KOMPRESSOREN Erstellt mit Solid Edge										
	Zeichnungsart		Original		Datum		Name		Erstellt mit		
	Service spare part drawing		A4		20.02.2015		Puffi		Solid Edge		
	SEG-Nummer		Project		28.04.2015		Puffi		Bauteil		
	SEG-4650.01								1 von 1		
		Dokument-Nr.				Status		1 von 1			
						Service-Kit		Option		Subassembly / Untergruppe	



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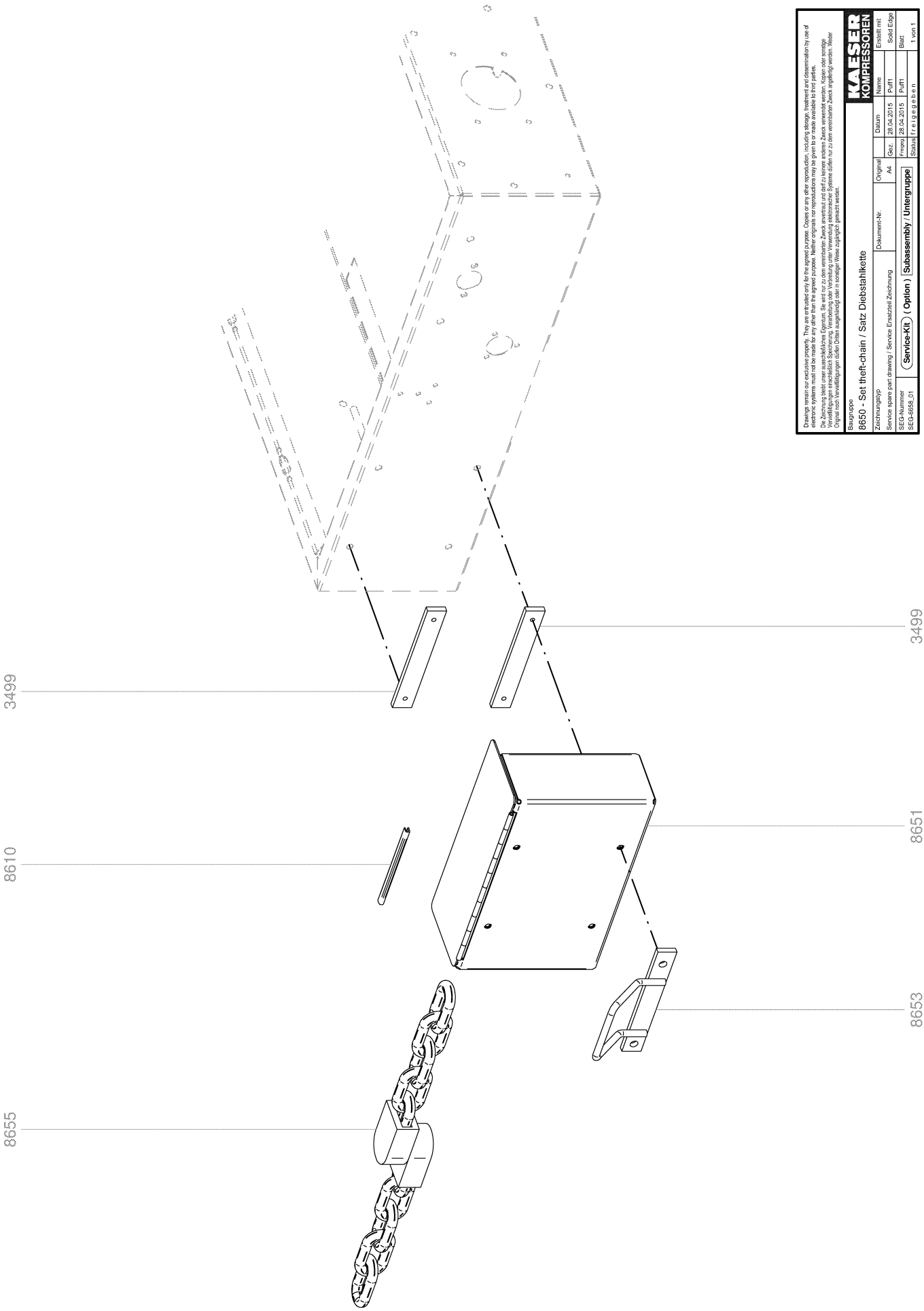
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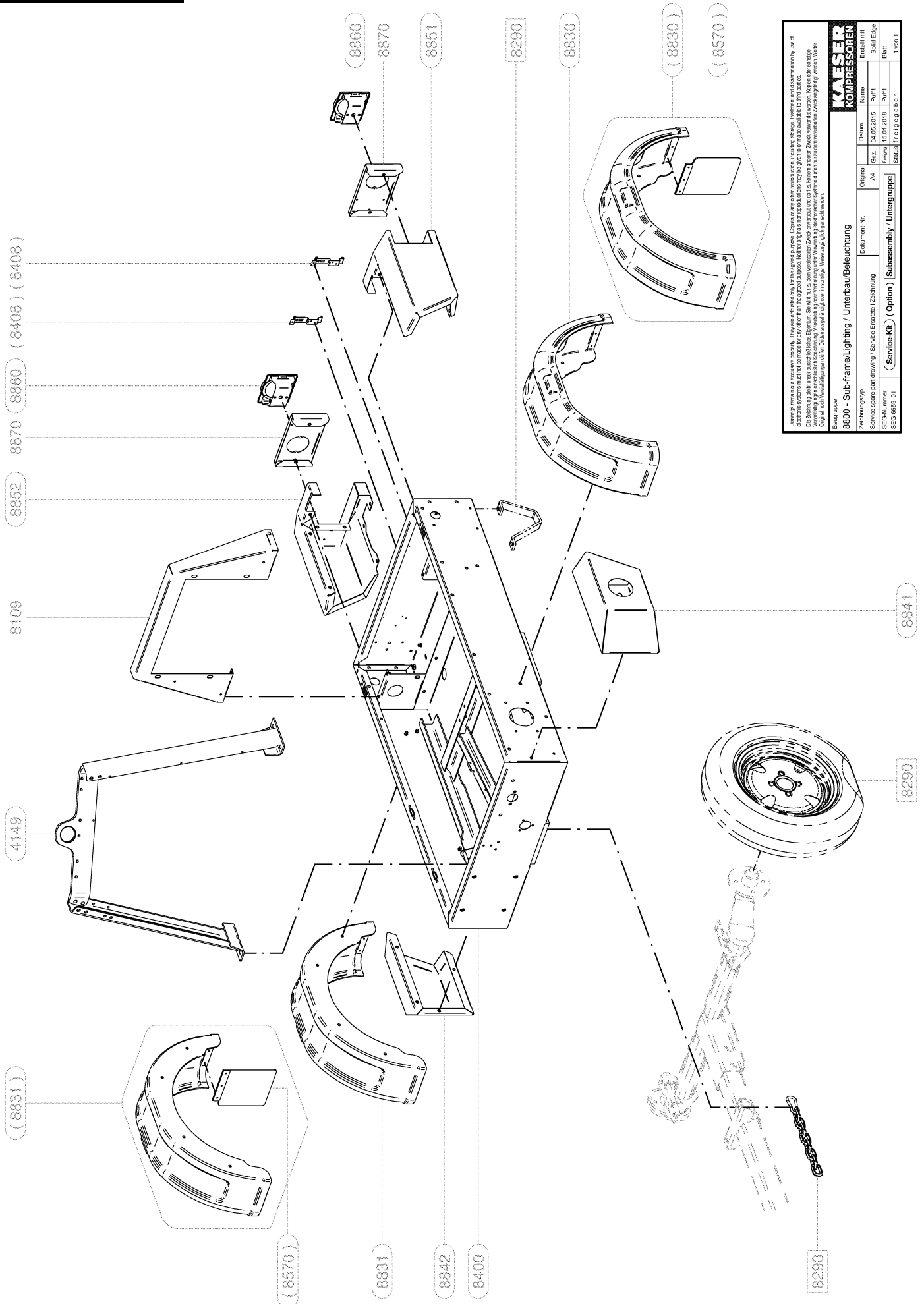
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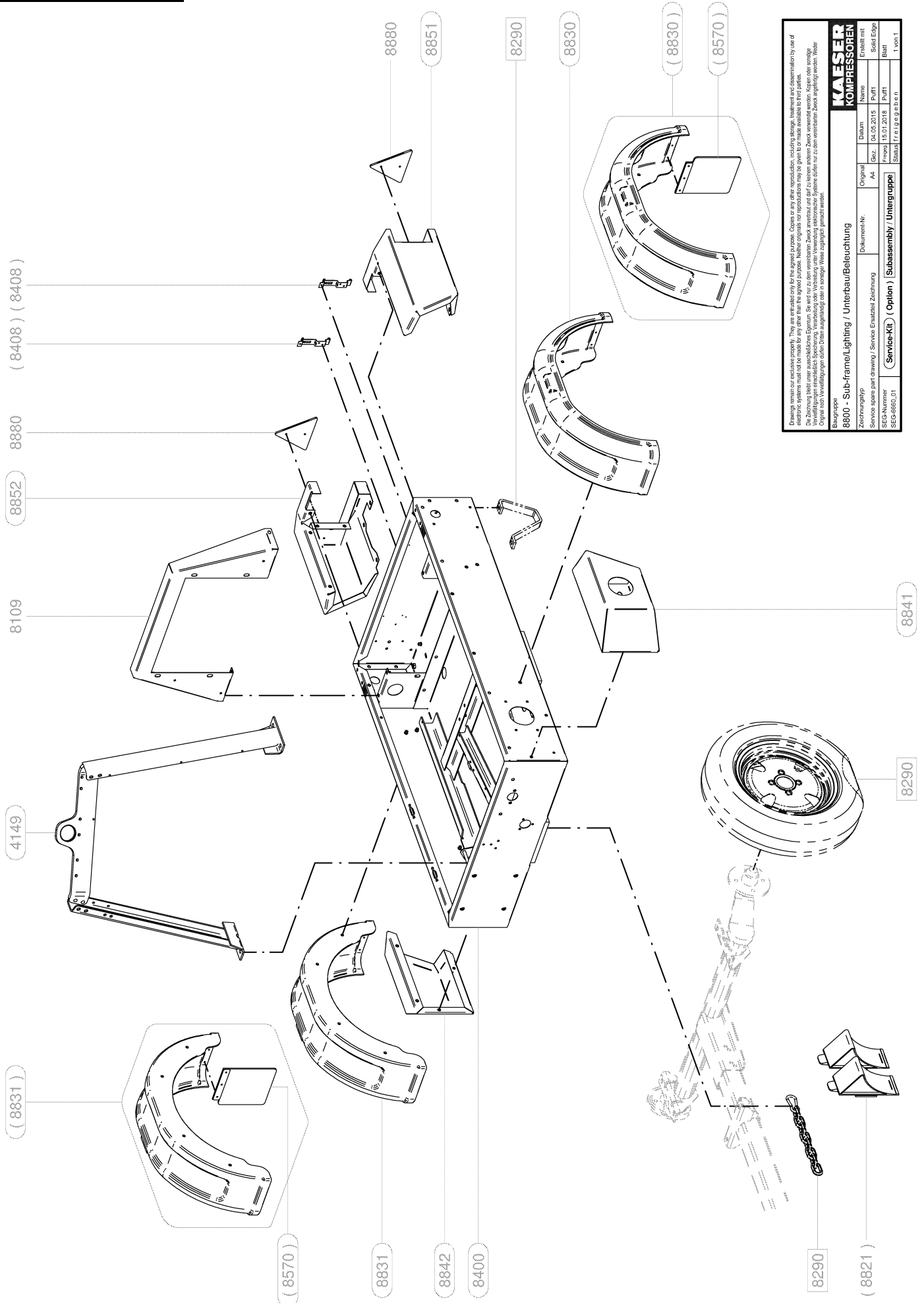
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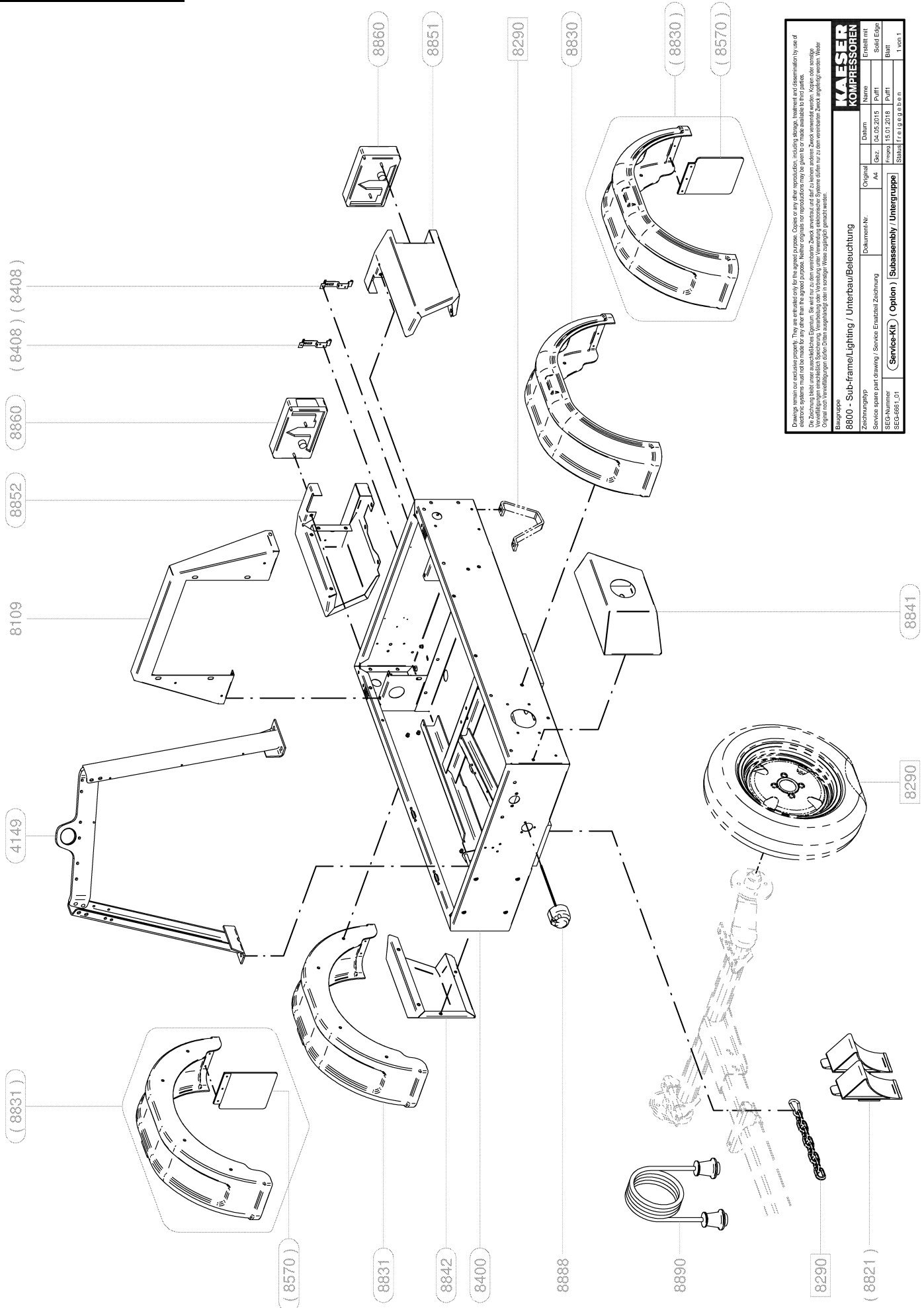
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8650 - Set theft-chain / Satz Diebstahlkette									
Zeichnungsgruppe	Zeichnungs-Nr.	Original	Datum	Name	Erstellt mit				
Service spare part drawing / Service Ersatzteil-Zeichnung	A4	Perf1	28.04.2015	Perf1	Solid Edge				
SEGA-Nummer	SEGA-06508_01	(Service-Kit)	(Option)	(Subassembly)	(Untergruppe)				
						Blatt	1 von 1		



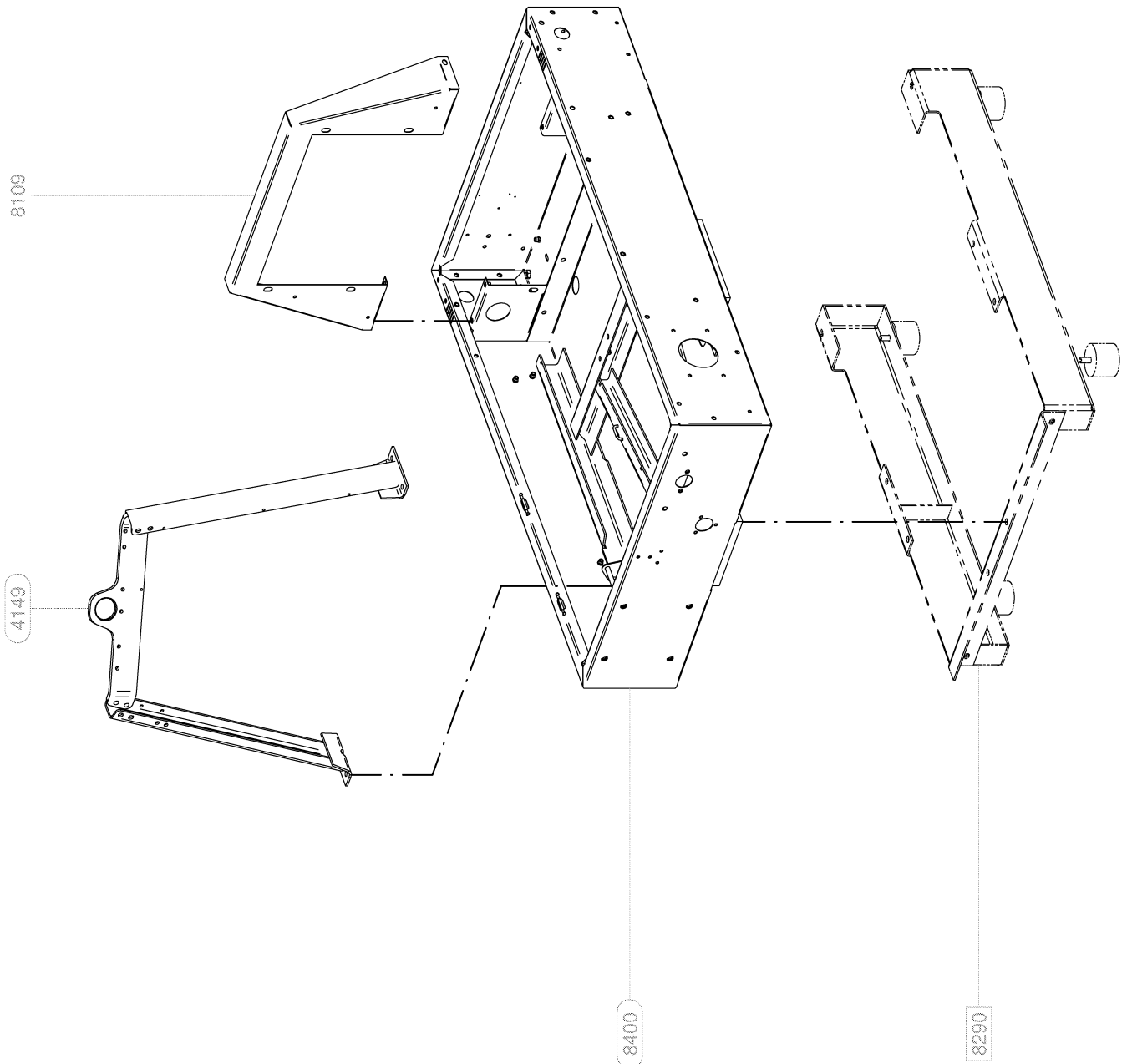
KAESER KOMPRESSOREN									
Baugruppe		8800 - Sub-frame/Lighting / Unterbau/Beleuchtung							
Zeichnungsgruppe		Dokument-Nr.							
Service spare part drawing / Service Ersatzteil Zeichnung		Original	A4	Gez.	Datum	Erstellt mit			
SEGA-Nummer		Perfl		Perfl		Solid Edge			
SEG-4659_01		15.01.2015		15.01.2015		Blatt		1 von 1	
		Status		Tr e i b e r		Subassembly / Untergruppe			



KAESER KOMPRESSOREN						
Original		Name		Datum		Erstellt mit
Zeichnungsgruppe		Original		Alt		Alt
Service spare part drawing / Service Ersatzteil Zeichnung		Dokument-Nr.		Gez.		15.01.2015
SEGA-Nummer		SEGA-4860_01		Perf1		Blatt
8800 - Sub-frame/Lighting / Unterbau/Beleuchtung		(Service-Kit) (Option) / Subassembly / Untergruppe		1 von 1		



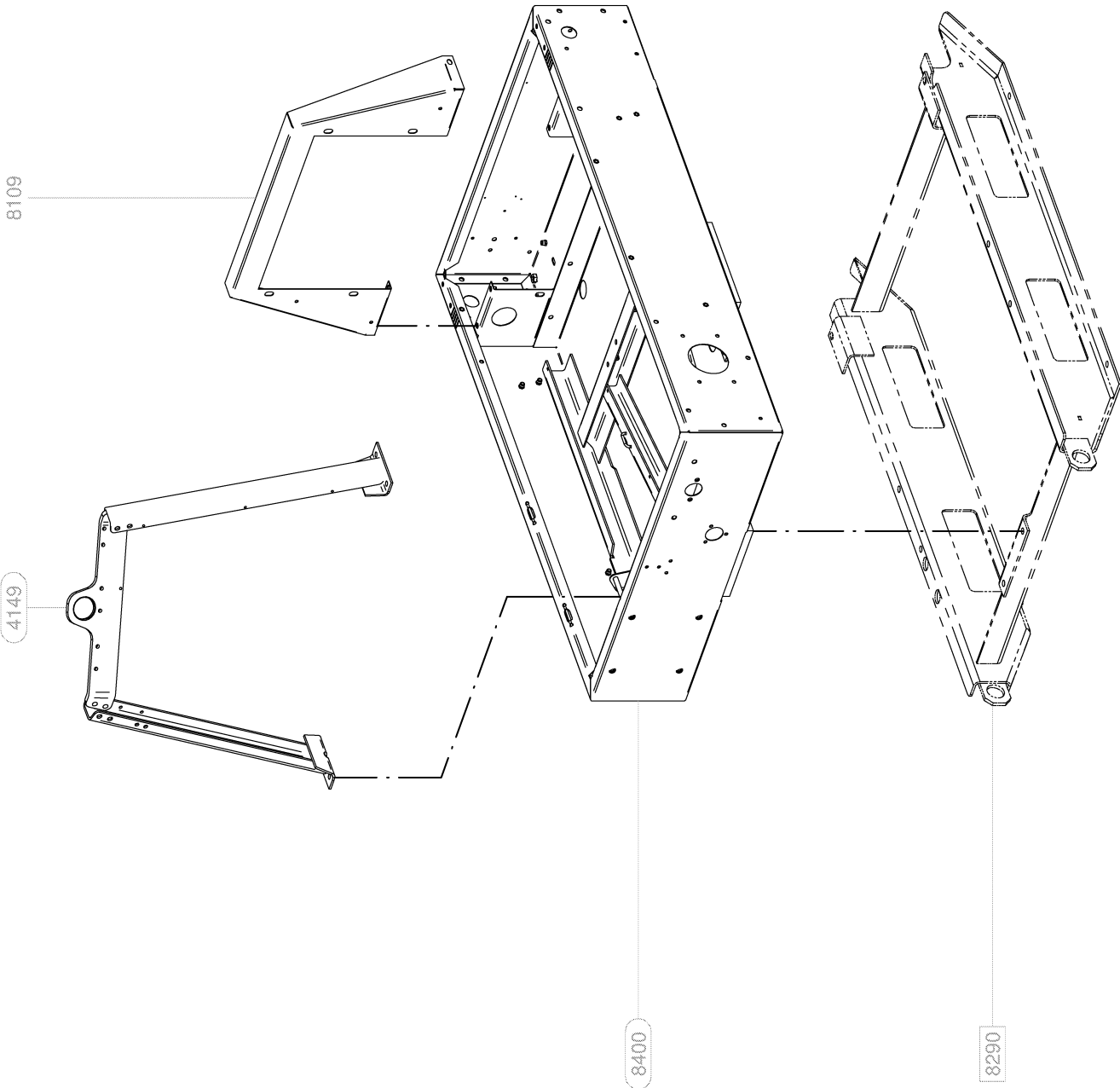
KAESER KOMPRESSOREN									
Baugruppe		8800 - Sub-frame/Lighting / Unterbau/Beleuchtung							
Zeichnungsgruppe		Service spare part drawing / Service Ersatzteil Zeichnung							
Dokument-Nr.		Original		Erstellt mit		Name			
SEGA-Nummer		A4		Gez.		Datum		Perf1	
SEG-4801_01		15.01.2015		15.01.2015		15.01.2015		15.01.2015	
Status		1 von 1		1 von 1		1 von 1		1 von 1	
Service-Kit		Option		Subassembly		Untergruppe		1 von 1	



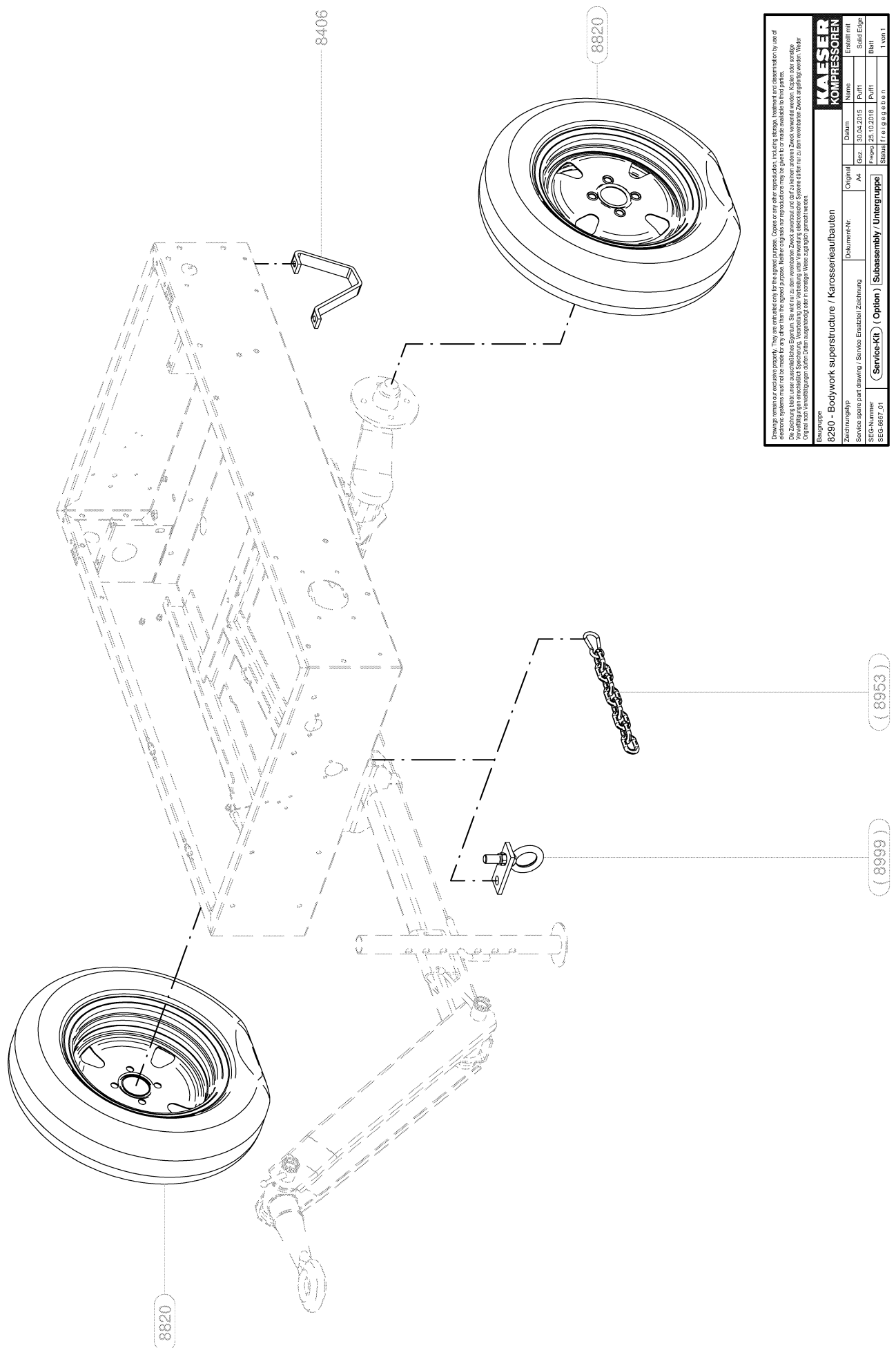
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Bauplanung		8800 - Sub-frame/Lighting / Unterbau/Beleuchtung		KAESER	
Zeichnungsgruppe		Dokument-Nr.		Erstellt mit	
Zeichnungsname		Original		Name	
Service spare part drawing / Service Ersatzteil Zeichnung		A4		Datum	
SEF-Nummer		Original		Anz.	
SEG-0605.01		A4		Größe	
		Original		Ausg.	
		A4		Hrzt.	
		A4		15.01.2015	
		A4		Pufft	
		A4		Blatt	
		A4		1 von 1	



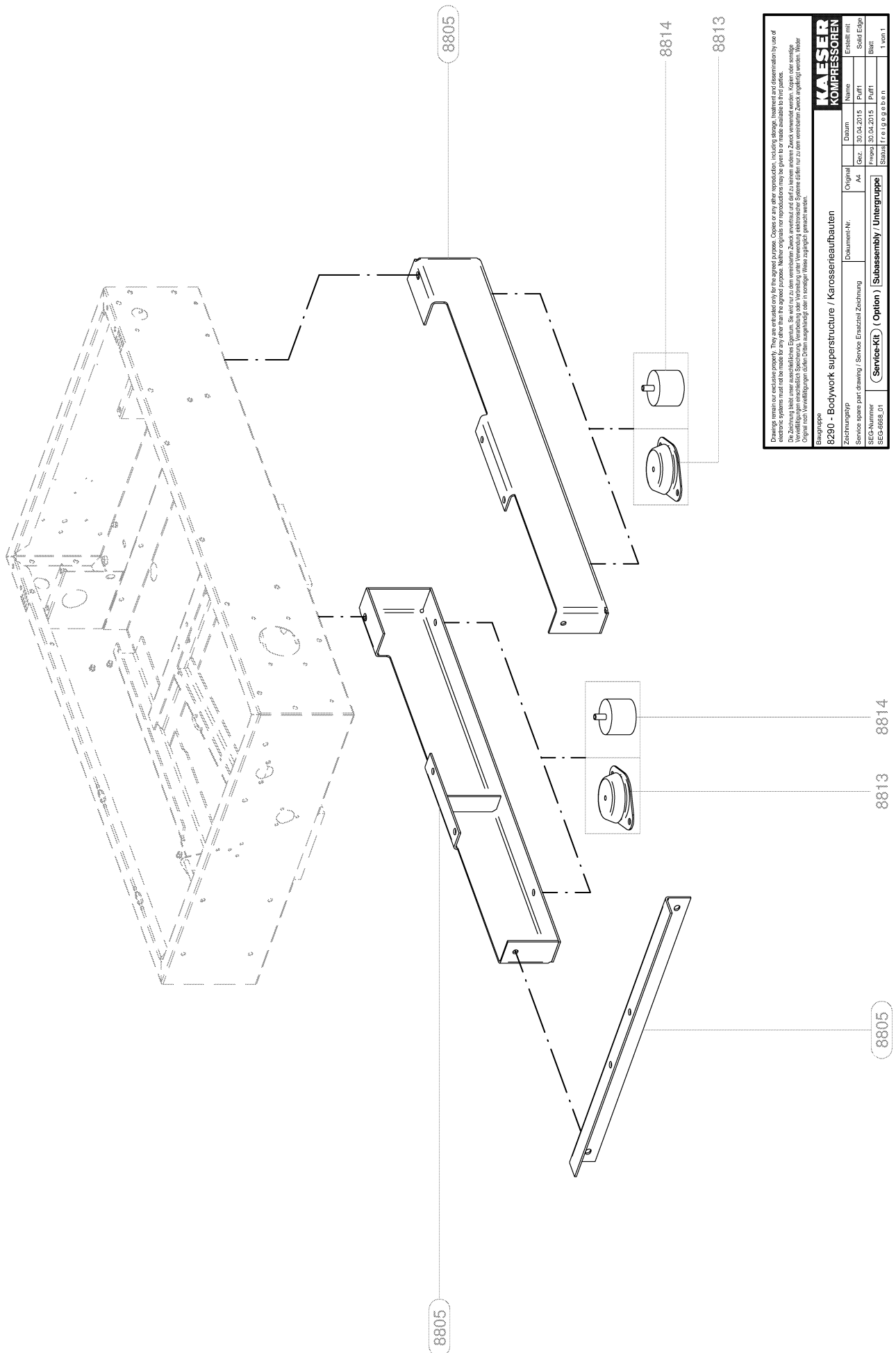
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KAESER KOMPRESSOREN									
8800 - Sub-frame/Lighting / Unterbau/Beleuchtung									
Zeichnungsgruppe	Dokument-Nr.	Original	Datum	Name	Erstellt mit				
Service spare part drawing / Service Ersatzteil Zeichnung	A4	Gez.	04.05.2015	Perfi	Solid Edge				
SEGA-Nummer	SEGA-4606_01	Freigegeben	15.01.2015	Perfi	Blatt				
						Status		1 von 1	

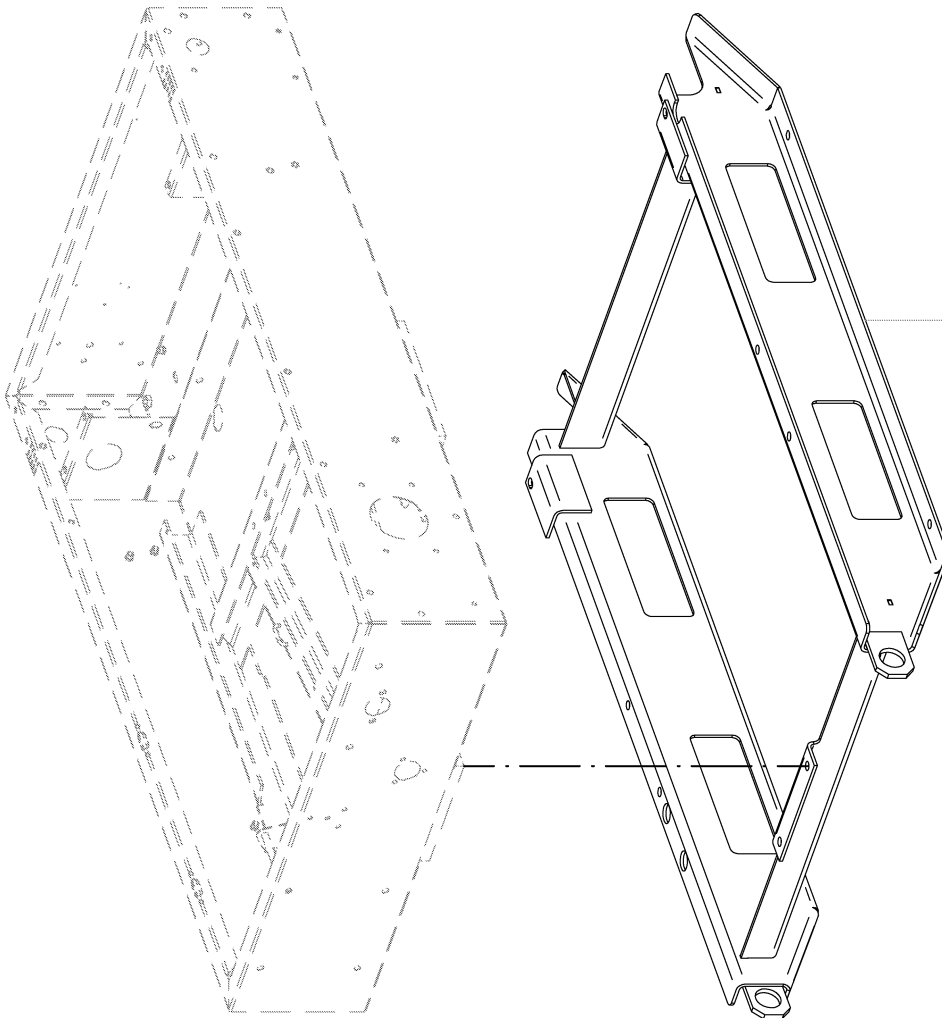


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Bauplanung	8290 - Bodywork superstructure / Karosserieaufbauten	Zeichnungsgruppe	Dokument-Nr.	Original	KAESER KOMPRESSOREN			Erstellt mit
					Name	Datum	Version	
		Service spare part drawing / Service Ersatzteil Zeichnung		A4	Gsz.	30.04.2018	Pufl	Solid Edge
		SEG-Nummer			Prozess	25.10.2018	Pufl	Blatt
		SEG-5687_01			Status	freigegeben		1 von 1
					Service-Kit Option Subassembly / Untereinheit			

[illegible]

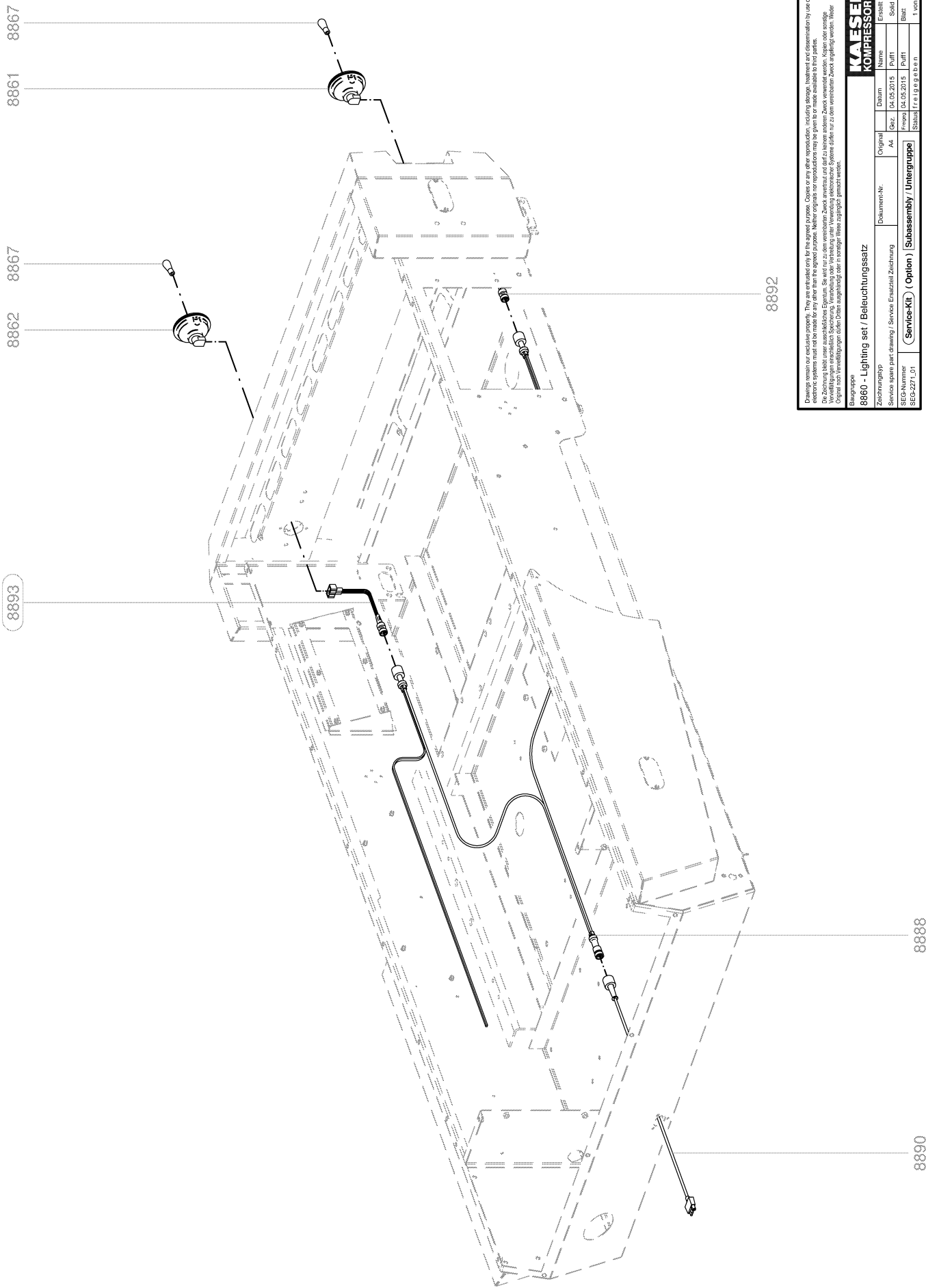


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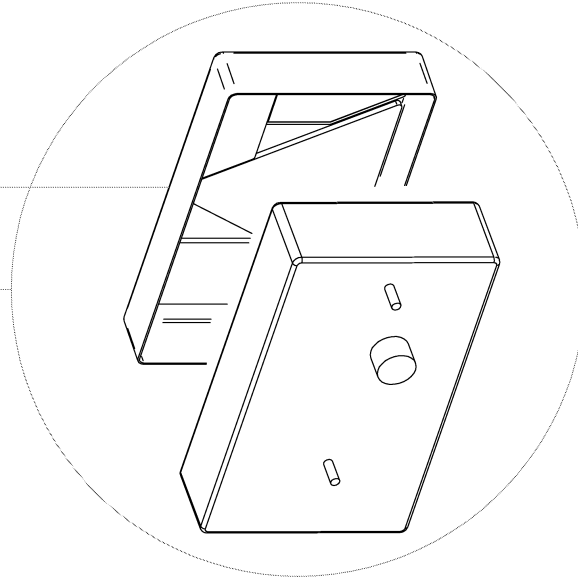
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[illegible]

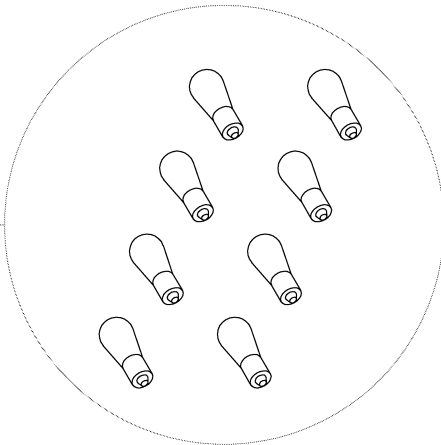


KAESER KOMPRESSOREN									
Original		Erweitert mit		Name		Erstellt mit			
Gez.		Gez.		Datum		Solid Edge			
Perf.		Perf.		A4		Blatt:			
Perf.		Perf.		04.05.2015		Status / Freigegeben			
Blatt		Blatt		04.05.2015		1 von 1			
8860 - Lighting set / Beleuchtungssatz									
Zuordnung:									
Service spare part drawing / Service Ersatzteil Zeichnung									
SEGA-Nummer									
SEGA-2271_01									
(Service-Kit) (Option) / Subassembly / Untergruppe									
Status: Freigegeben									

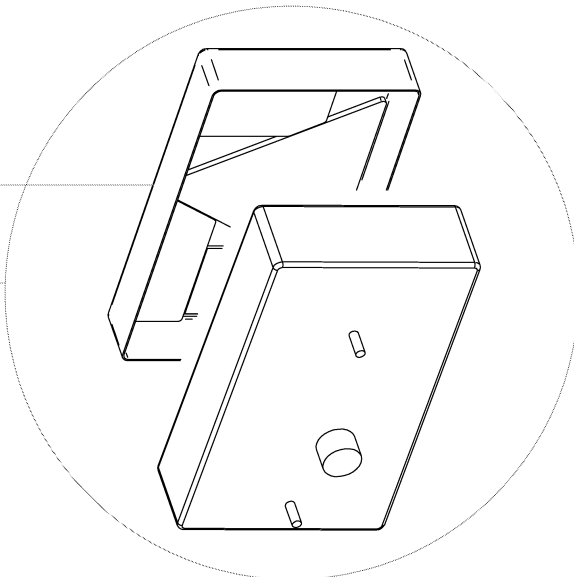
8861 8863



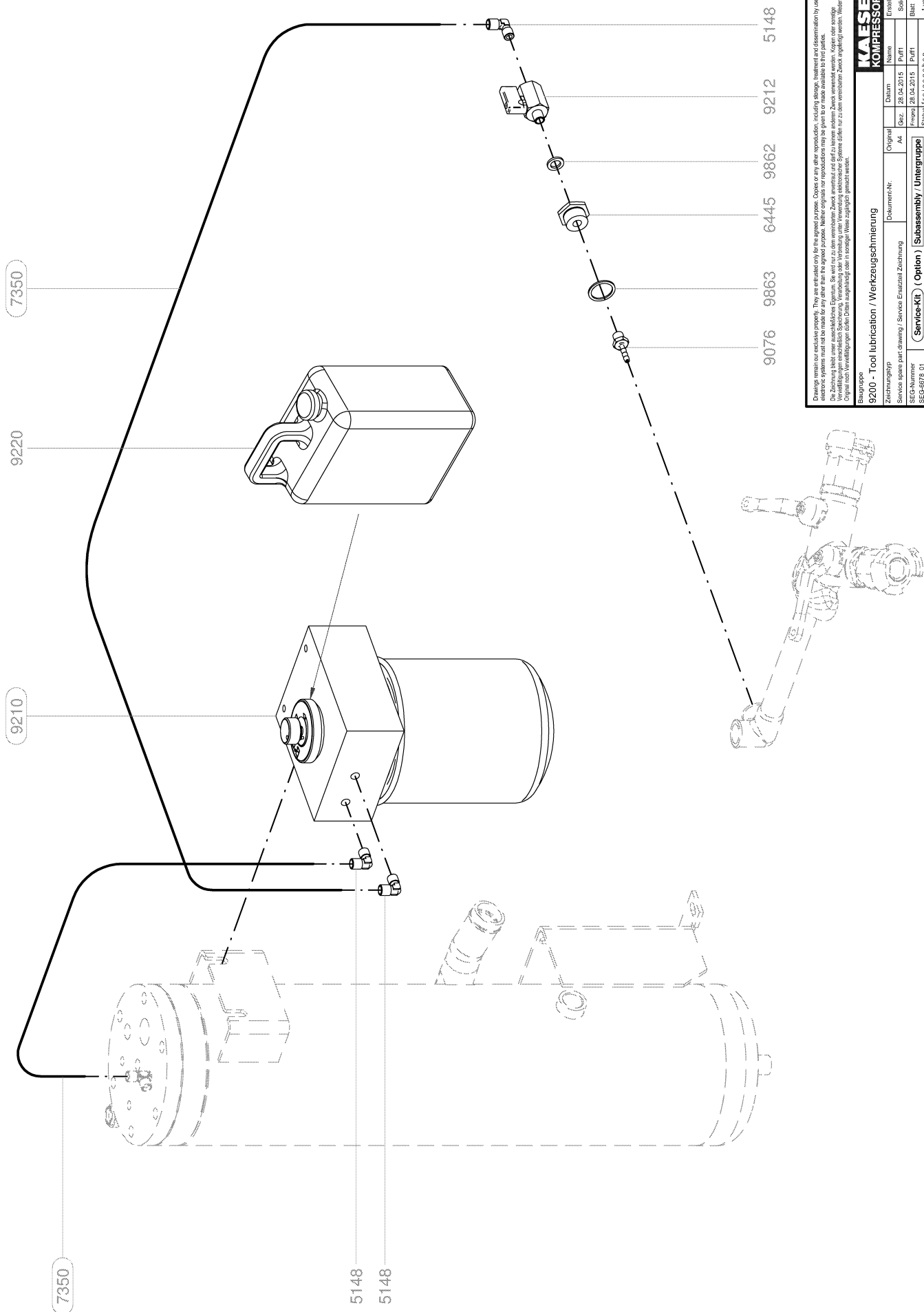
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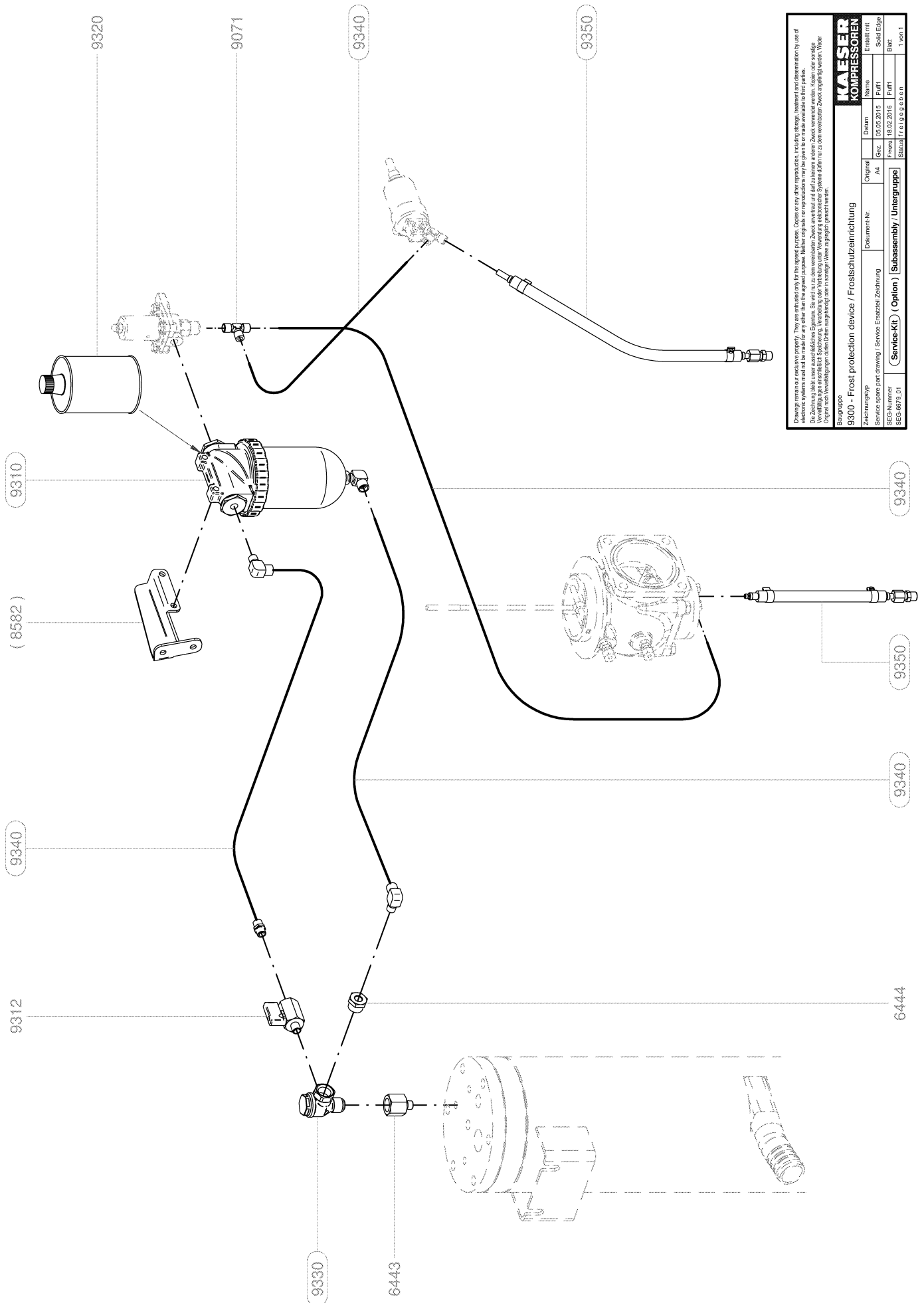
8862 8864



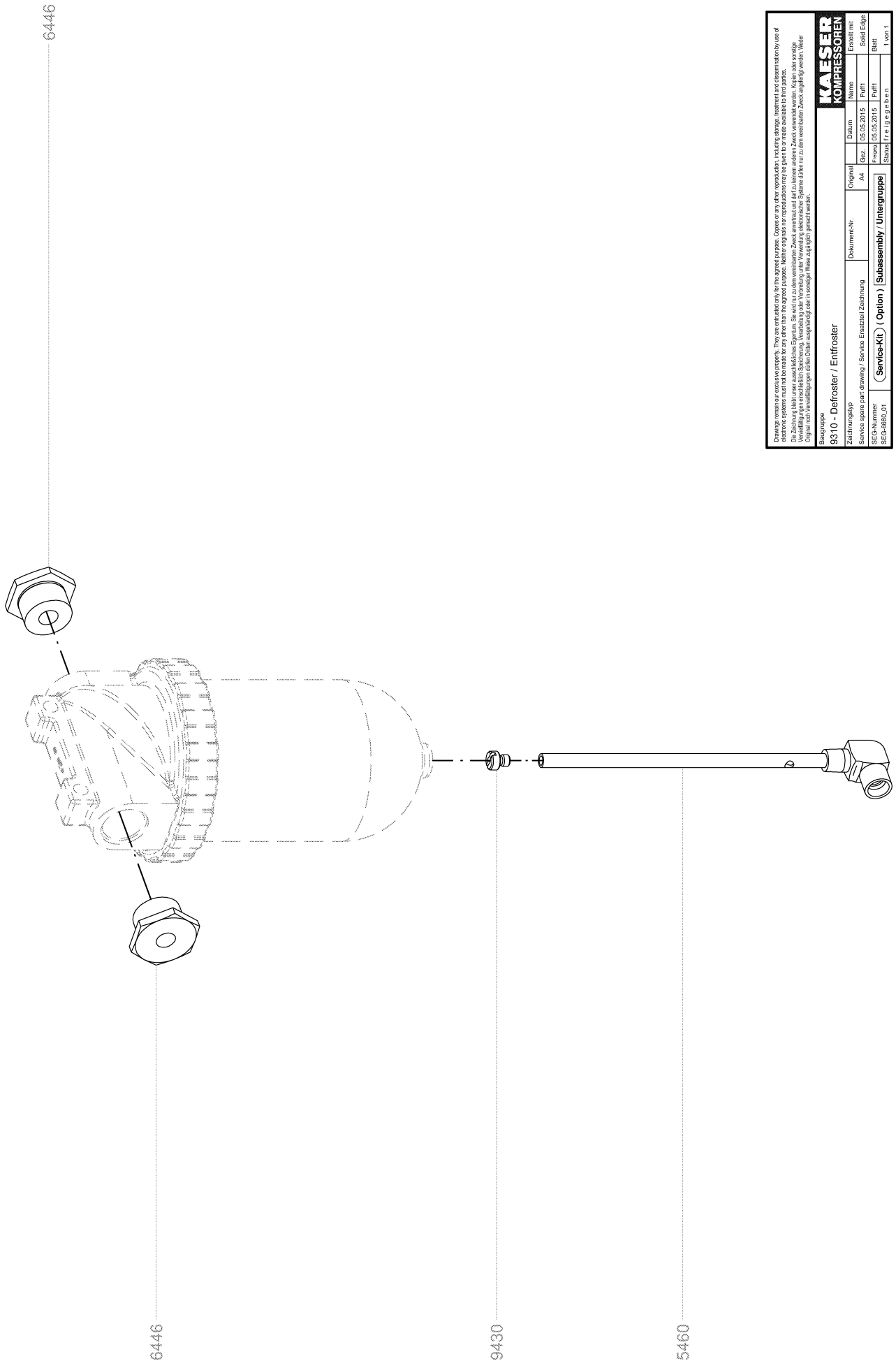
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Bezeichnung: 8860 - Lighting set / Beleuchtungssatz									
Zeichnungsgruppe:		Dokument-Nr.:		Original:		Datum:		Erstellt mit:	
Service spare part drawing / Service Ersatzteil-Zeichnung		A4		A4		04.05.2015		Perfl	
SEGA-Nummer		04.05.2015		Perfl		Blatt:		1 von 1	
SEG-4866_01		(Service-Kit) (Option) / Subassembly / Untergruppe		Status		Freigegeben			



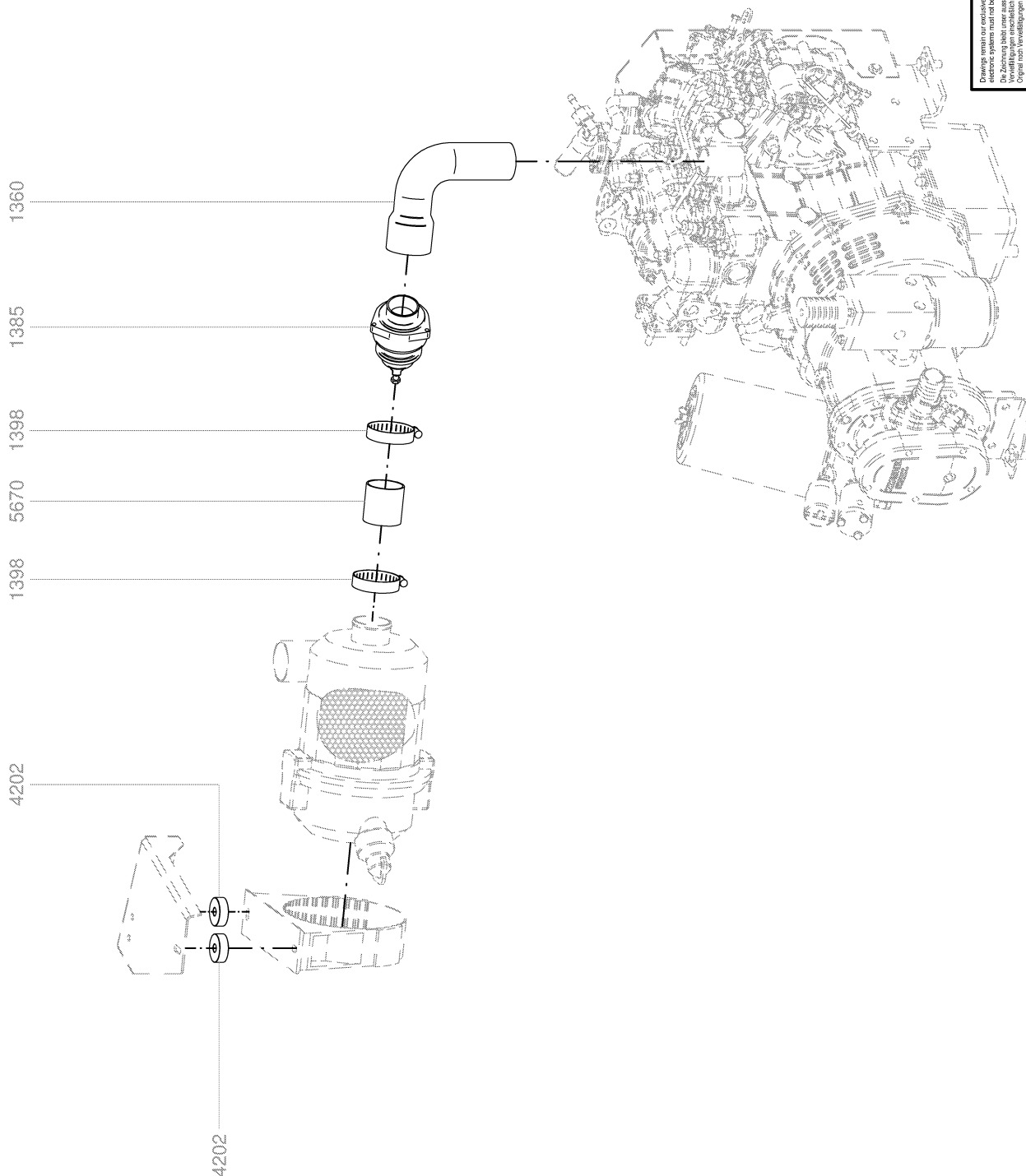
KAESER KOMPRESSOREN									
Baugruppe		9200 - Tool lubrication / Werkzeugschmierung							
Zeichnungsgruppe		Service spare part drawing / Service Ersatzteil-Zeichnung							
SEGA-Nummer		SEG-6078_01							
Original		A4							
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Name		Solid Edge							
Original									



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KAESER KOMPRESSOREN									
9300 - Frost protection device / Frostschutzeinrichtung									
Zeichnungsgruppe:		Zeichnungs-Nr.:		Original:		Datum:		Erstellt mit:	
Service spare part drawing / Service Ersatzteil-Zeichnung		A4		A4		05.05.2015		Solid Edge	
SEGA-Number		18.02.2015		Perf1		Perf1		Blatt	
SEGA-0679_01		1 von 1		Status		Freigegeben		1 von 1	
(Service-Kit) (Option) / Subassembly / Untergruppe									



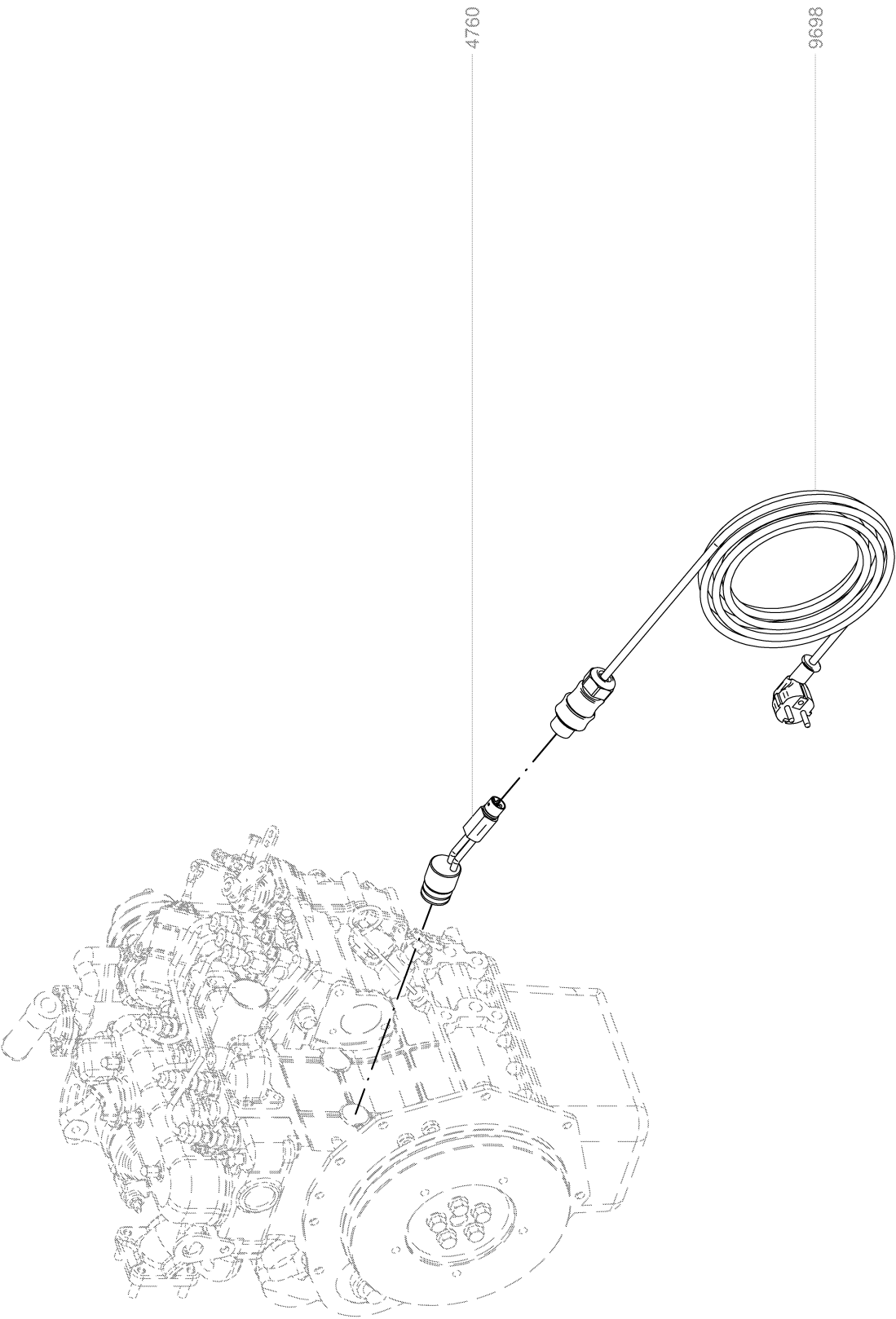
Drinking water is not suitable for drinking. This is not intended for the medical sector. Caution: Do not use for drinking water. Drinking water is not intended for drinking. The use of electronic systems must not be made for any other than the agreed purpose. Neither original nor reproduction may be given to or made available to third parties. Die Zeichnung bleibt unter ausschließlichen Eigentum. Sie wird nur zu dem vereinbarten Zweck anvertraut und darf zu keinem anderen Zweck verwendet werden. Kopien oder sonstige Vervielfältigungen ohne schriftliche Genehmigung sind strafbar. Nachdruck ist ohne schriftliche Genehmigung des Herstellers ist strafbar. Nachdruck ist ohne schriftliche Genehmigung des Herstellers ist strafbar.									
KAESER KOMPRESSOREN									
Baugruppe		9310 - Defroster / Entfroster							
Zeichnungsart		Dokument-Nr.		Original		Datum		Erstellt mit	
Service spare part drawing / Service Ersatzteil Zeichnung		A4		05.05.2015		Perfi		Solid Edge	
SEGA-Nummer		05.05.2015		Perfi		Blatt		1 von 1	
SEG-6880_01		(Service-Kit) (Option) / Subassembli / Untergruppe		Status		Freigegeben			



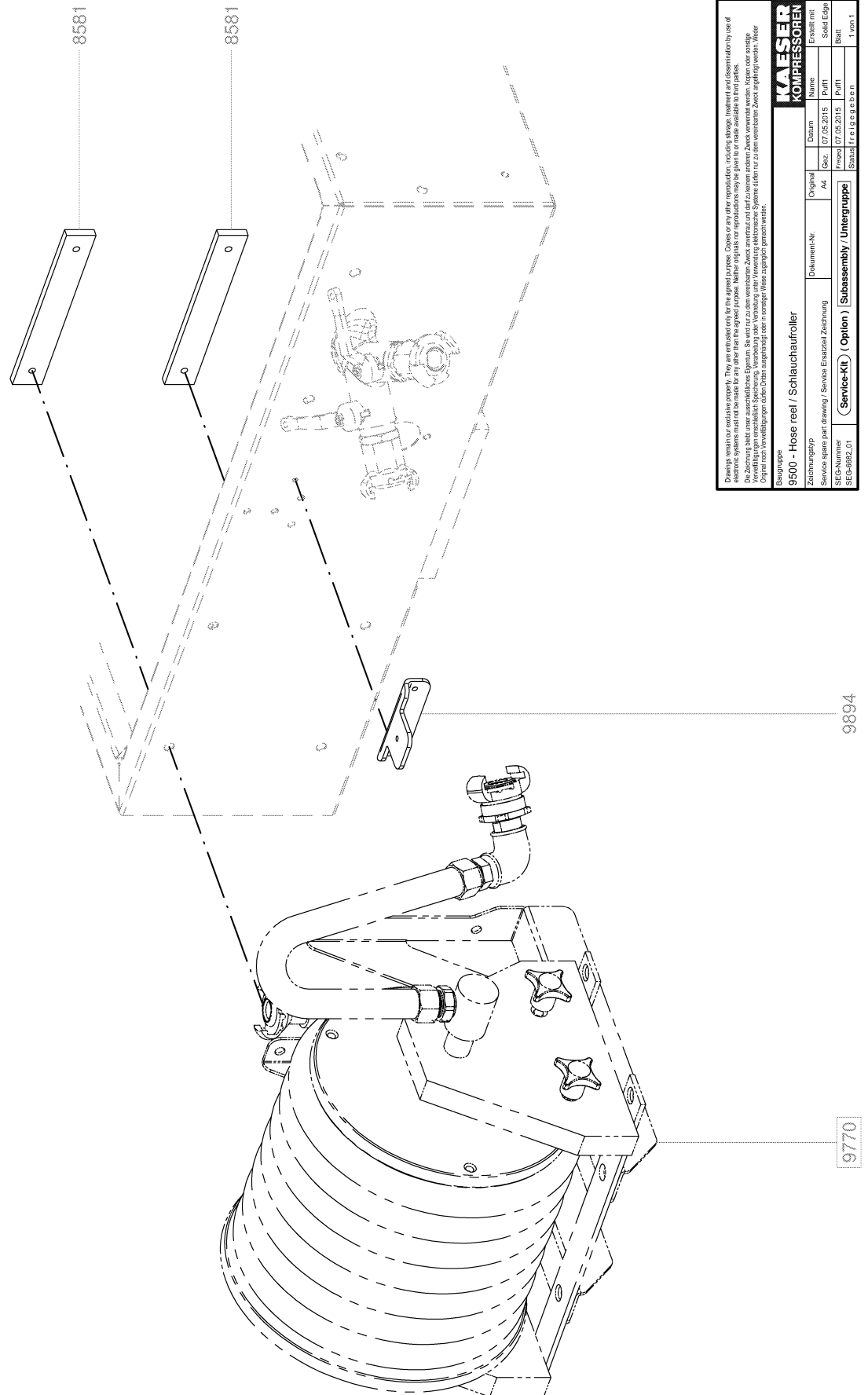
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KAESER KOMPRESSOREN	
9370 - Engine air intake shut-off / Motorluftabspernung	
Zeichnungsgruppe	Original
Zeichnungsname	A4
Dokument-Nr.	Datum
Service-Kit	01.12.2016
Option	Puffi
Subassembly / Untergruppe	Puffi
SFC-Nummer	14.12.2016
SEG-7802_01	Blatt
Status	1 von 1



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KAESER KOMPRESSOREN																	
Baugruppe 9380 - Motor preheater / Motorvorwärmung																	
Zeichnungsart		Original		Datum		Name											
Service spare part drawing / Service Ersatzteil Zeichnung		A4		Gez.		17.05.2015		Solid Edge									
SEGA-Nummer				Perf1		Perf1		Blatt									
SEG-4881_01								Status: Freigegeben									
Service-Kit (Option) Subassembly / Untergruppe																	



Zeichnungs-Nr. _____

Service part drawing

Service Kit _____

Option _____

Subassembly / Unterguppe _____

Original _____

A4 _____

Revised _____

17.05.2015 _____

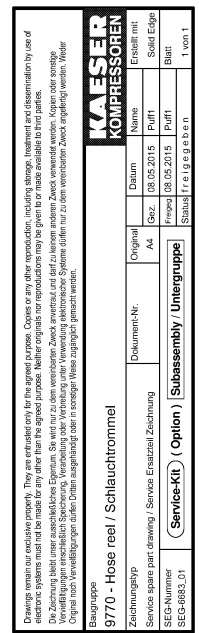
Prof. _____

Blatt _____

Samstag _____

Freigegeben _____

1 von 1



12 Decommissioning, Storage and Transport

12.1 De-commissioning

De-commissioning is necessary, for example, under the following circumstances:

- The machine is temporarily not needed
- The machine 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. 74 "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 de-commissioning and storage

Decommissioning the machine for 5 months or longer.

Material Receptacle
 Preserving oil
 Preservative
 Desiccant
 Plastic sheeting
 Moisture-resistant adhesive tape

➤ The following measures must be taken for long-term decommissioning and storage:

Long-term decommissioning and storage tasks	See chapter	Complied?
➤ Check engine coolant.	10.3.1	
➤ Drain the engine oil.	10.3.4	
➤ Drain the oil from the oil separator tank and the oil cooler.	10.4.3	
➤ Fill the separator tank and engine with preserving oil.	10.4.2 10.3.4	
➤ Run the machine for about 10 minutes to coat all parts with a protective oil film.	–	
➤ Disconnect the battery, the minus terminal first and then the plus terminal, and store in a frost-free room.	–	
➤ Check the battery fluid level.	10.6.2	
➤ Check the battery charge monthly and recharge if necessary to prevent the battery fluid freezing.	–	
➤ Clean the battery terminals and coat with acid-resistant grease.	–	
➤ Close the compressed air outlet valves.	–	
➤ Use plastic sheeting and moisture-resistant adhesive tape to seal off the following openings:	–	
■ Engine air inlet		
■ Compressor air inlet		
■ Exhaust silencer		
➤ Clean the bodywork and treat with preservative.	–	

Long-term decommissioning and storage tasks	See chapter	Complied?
➤ Hang a notice on the instrument panel informing of the decommissioning measurements taken.	–	

Tab. 75 "Long-term decommissioning and storage" checklist

- Hang the following notice on the instrument panel informing of the decommissioning measurements taken.

Attention!

1. The machine is decommissioned.
2. It is filled with preserving oil.
3. For recommissioning:
 - Measures for recommissioning the compressor after a long period of storage.
 - Recommission according to service manual.

Date / signature

Tab. 76 Text for the "long-term decommissioned and storage" information notice

- Store in a dry place with even temperature.

12.2 Transport

To locally move the machine or to transport the machine as load, you can, depending on the option, decide for one of these transport options:

- Transport with a crane.
 - Transport by crane is allowed for all machines with crane lifting eye.
- Transport with a forklift truck.
 - Transport by forklift truck is allowed only for stationary machines with the frame designed as skid (Option rw).
- Transporting the machine as load.



Transporting the machine as trailer on public roads is shown in the chassis operating manual.

Precondition

- The machine is shut down.
- The machine is secured against unintentional activation.
- The machine is fully vented, the pressure gauge reads 0 bar.
- The machine has cooled down.
- All compressed air consumers are disconnected.
- All connecting lines and hoses disconnected and removed.
- Any loose or movable parts that could fall off when transporting are removed or secured.
- Comply with all instructions.

12.2.1 Safety

Allow transport only by personnel trained in safely dealing with motor vehicles and the transport 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 transported is strictly forbidden.

2. Make sure the danger area is clear of personnel.**12.2.2 Transporting with a crane****Additional precautions for conditions of snow and ice:**

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

This may adversely effect the machine's centre of gravity.

It is possible that the permissible loading on the crane or lifting eye is exceeded.

➤ Perform the following tasks in snow and ice conditions:

- Remove any snow and ice from the machine before lifting by a 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 transporting with a crane. The lifting eye is located beneath a lift-up cover in the centre of the canopy.

Precondition The canopy is closed and locked

1. Open the lifting eye cover.
2. Position the crane hook vertically over the lifting eye.
3. Engage the hook in the eye.
4. Lift the machine carefully.

Take care 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.

- Set the machine down carefully.
- Do not set down unevenly.

2. Set the machine down slowly and carefully.**12.2.3 Option rw****Transport with a forklift truck**

Stationary machines with skid frame (Option rw) are fitted with lifting lugs into which forks can be driven. Only stationary machines with skid-type frames may be lifted and locally transported with a forklift truck.

- Precondition** The machine mass is known (nameplate).
 A suitable forklift truck (designed for the machine mass) is available.
 The machine is switched off.
 All connecting lines and hoses disconnected and removed.
- Comply with all instructions.

12.2.3.1 Preparing for transport

When using a forklift truck to transport a stationary machine with skid-type frame, you must first drive the forks into the lifting lugs.



NOTICE

Incorrect fork placement can damage the machine.

- Insert the lifting forks only into the lifting lugs provided.

Option rw

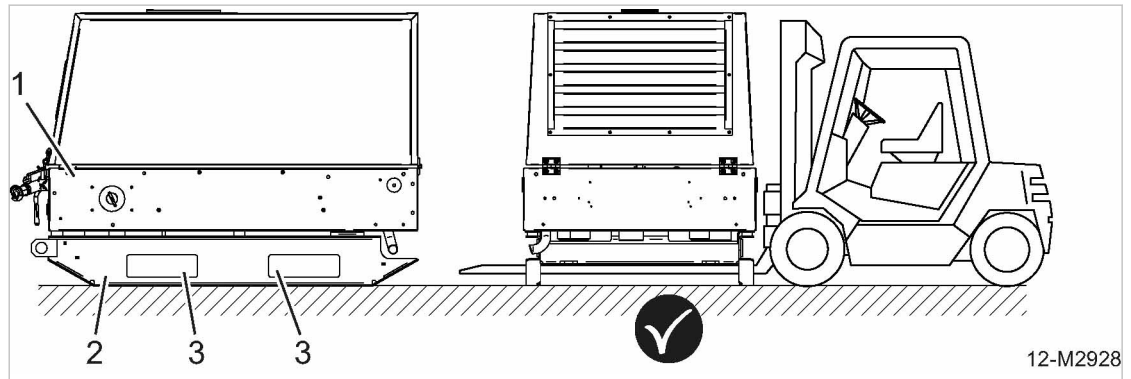


Fig. 52 Preparing for transport using a forklift truck

- | | |
|--------------------------|-------------------------------------|
| ① Transverse side | ③ Lifting lugs |
| ② Skid-type frame design | ④ Forks pushed through lifting lugs |

- Precondition** The machine is parked on even ground.
1. Close and lock the canopy.
 2. Position the forklift truck to the transverse side of the machine with the forks opposite to the lifting lugs.
 3. Align the forks with the machine's lifting lugs.
 4. Carefully drive the forks over the full length through the lifting lugs.

Result Forks are driven over the full length through the lifting lugs.

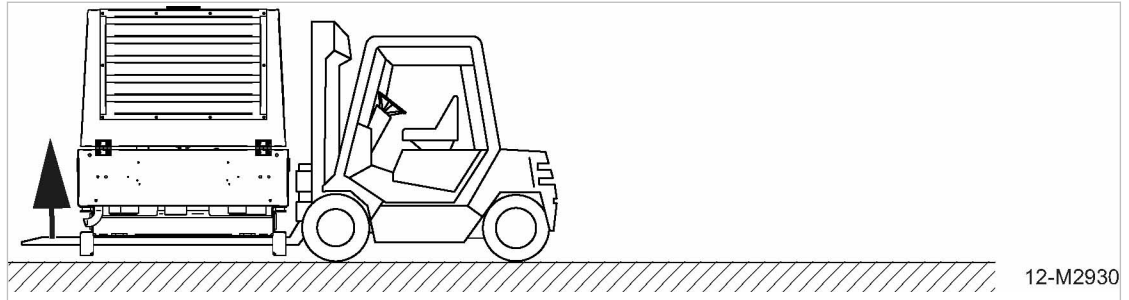
12.2.3.2 Lifting the machine with a forklift truck

Fig. 53 Lifting the machine with a forklift truck

Precondition The machine is parked on even ground.

- Lift the machine carefully.

Result The machine rests fully on the lifting forks.

Proper transport position and transport elevation (minimum clearance to ground) for horizontal transport are given.

12.2.3.3 Transport with a forklift truck

Example: The machine is unloaded from the loading bay/lorry loading platform and transported from A to B.

Following the unloading from a loading bay or lorry loading platform, always lower the elevated forks as a prerequisite for horizontal transport.

Precondition The machine is unloaded and rests on the forks.

The forks are elevated, see Fig. 54.

**CAUTION**

The machine falls off the elevated forks during transport.
Heavy machine damage

- After unloading from the loading bay/lorry load platform, lower the forks immediately.

Option rw

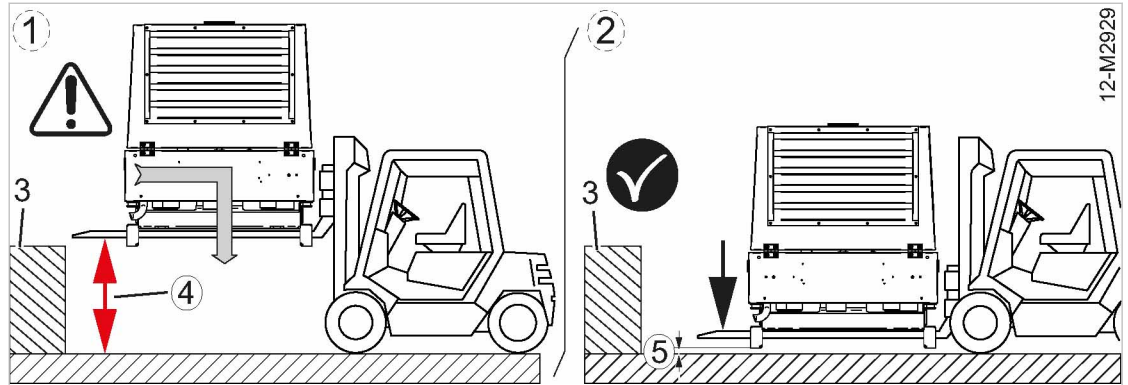


Fig. 54 Transport with a forklift truck

- | | |
|---|--------------------------------|
| ① Lifting the machine from loading bay or lorry load platform | ④ Improper transport elevation |
| ② Lowering the machine for horizontal transport | ⑤ Proper transport elevation |
| ③ Loading bay/lorry load platform | |

1. Carefully reverse the forklift truck with machine from the loading bay or lorry load platform.
2. Reverse the forklift truck until you have sufficient clear space to lower the forks.
3. Lower the forks immediately.
4. Lower the forks until the proper transport elevation (minimum clearance to the ground) is reached.
5. Transport the machine on the lowered forks from A to B.

12.2.4 Transported as load

The medium of transport determines the type of packing and securing. Packing and securing methods must be such that, assuming proper handling, the goods arrive in perfect condition at the destination.

Always observe valid accident and safety regulations when transporting.



- National directives and regulations for securing loads should be followed.
- Load securing is taken to mean that by full braking or sudden turning the load will not slide, fall, roll or cause unnecessary noise. Generally accepted technical regulations should be observed (e.g., in Germany: the VDI Directive 2700 ff).
- Responsibility for properly secured loads falls on the driver, the vehicle keeper and the carrier.



Contact KAESER SERVICE with any questions regarding transporting or load securing. KAESER accepts no liability and provides no guarantee for damage arising from incorrect transport or insufficient or incorrect load securing provisions.

For hire, rental and trade fair plant, any transport safety devices used for the delivery must also be used for the return transport.

Use the following transport safety devices:

- Wedges
- Squared timbers

- Restraints
- Straps

Material Chocks
 Restraints or timber beams
 Straps



NOTICE

Straps can damage the bodywork.
 Movement during transportation can damage the bodywork.

- Do not use straps over the bodywork.
- Secure portable machines only by means of straps across the chassis.
- Stationary machines with skid-type frames or rack may only be secured by means of straps across the chassis.

- Comply with all instructions.

Further information Additional measures must be taken for the transport of machines by sea or air. Please contact KAESER SERVICE for more information.

12.2.4.1 Perform load securing for portable machines

If necessary, use straps or other bracket systems across the chassis.

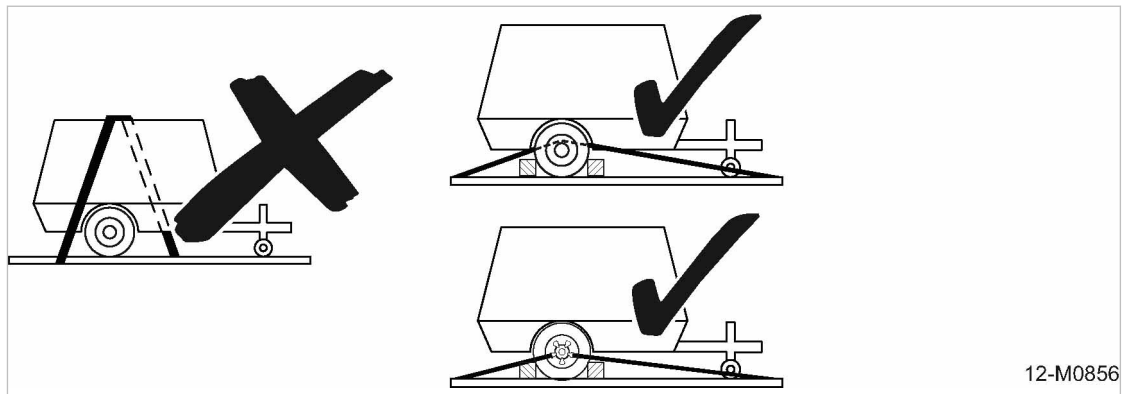


Fig. 55 Bracket systems as load securing (machine with chassis)

- The loads must be secured against rolling, tipping, slipping and falling.

12.2.4.2 Perform load securing for stationary machines

If necessary, use straps or other bracket systems across the skid-type frame/rack.

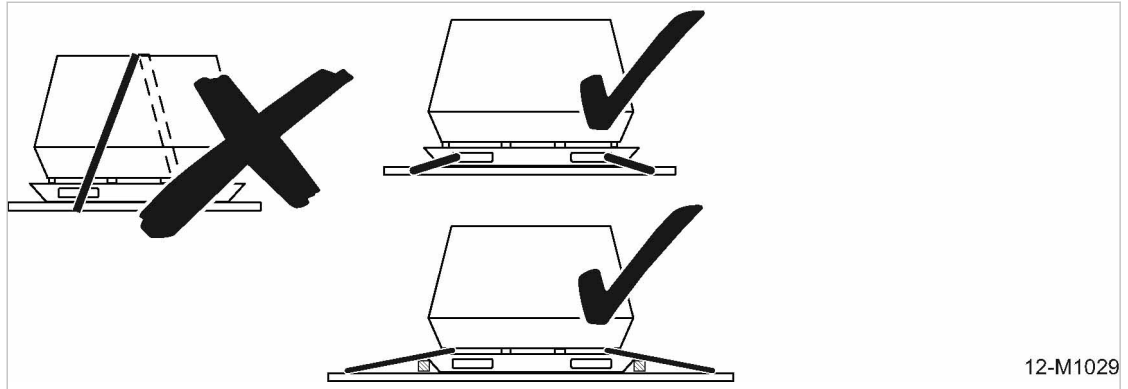


Fig. 56 Bracket systems as load securing (machine in stationary frame-type design)

- The load must be secured against rolling, tipping, slipping and falling.

12.2.4.3 To be noted before shipment as air freight

The machine is designated as dangerous goods for air freight purposes; any disregard can result in a heavy fine.



1. **WARNING!**

Danger of fire or explosion from operating fluids/materials.
The machine incorporates an internal combustion engine.

- Any dangerous fluids/materials contained within the machine must be removed before transport.

2. Remove all dangerous fluids/materials.

These include:

- Residues of fuel or fuel vapours
- Lubricants in engine and compressor.
- Battery electrolyte
- Residual quantities of lubricant in the tool lubricator (option ea, ec)
- Residual quantities of antifreeze in the frost protector (Option ba)

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

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

Precondition The machine is decommissioned.

1. Completely drain the fuel from the machine.
2. Completely drain the cooling oil and engine oil from the machine.
3. Remove used filters and the oil separator cartridge.
4. Drain the coolant from water-cooled engines and systems.
5. The battery has been removed.
6. Hand the machine over to an authorised disposal expert.



- Operating materials and components contaminated with fuel, cooling oil or engine oil must be disposed of in accordance with local environment protection regulations.
- Old batteries are hazardous waste and must be disposed of correctly in accordance with local environment protection regulations

13 Annex

13.1 Marking

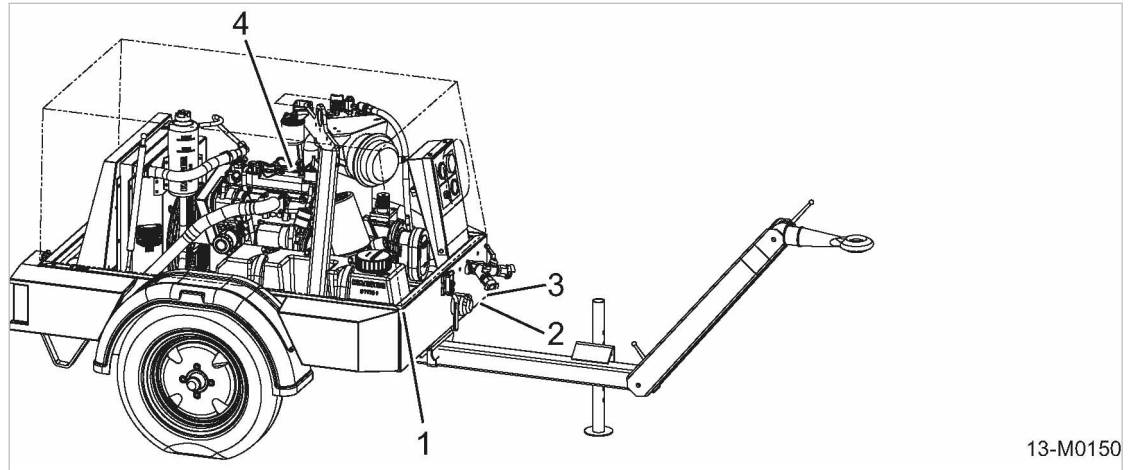
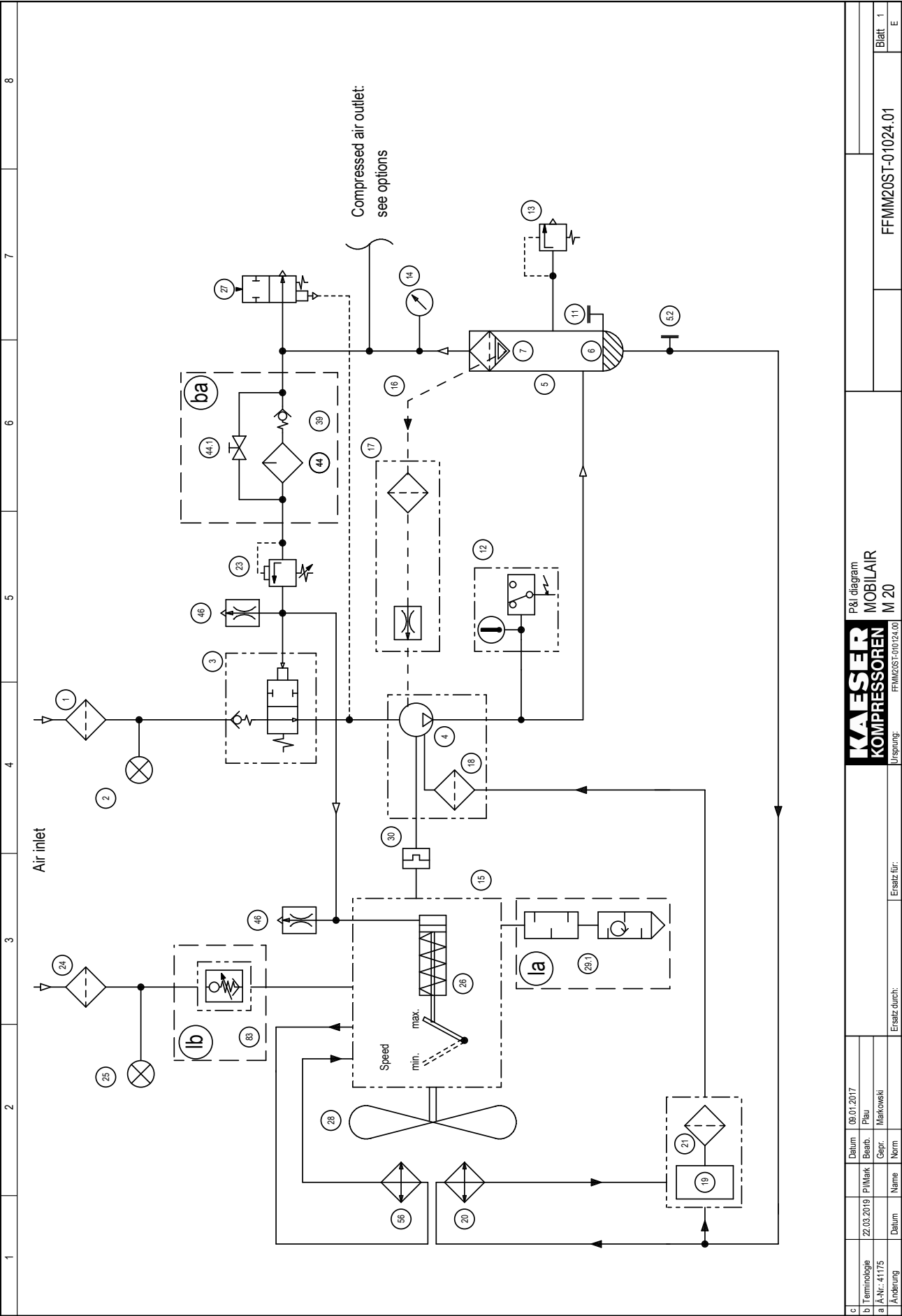


Fig. 57 Marking

- | | |
|---|---|
| ① VIN *) (stamped under the reflector)
* Vehicle identity number | ③ Machine nameplate with system serial number |
| ② Options label | ④ Engine nameplate with engine serial number |

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



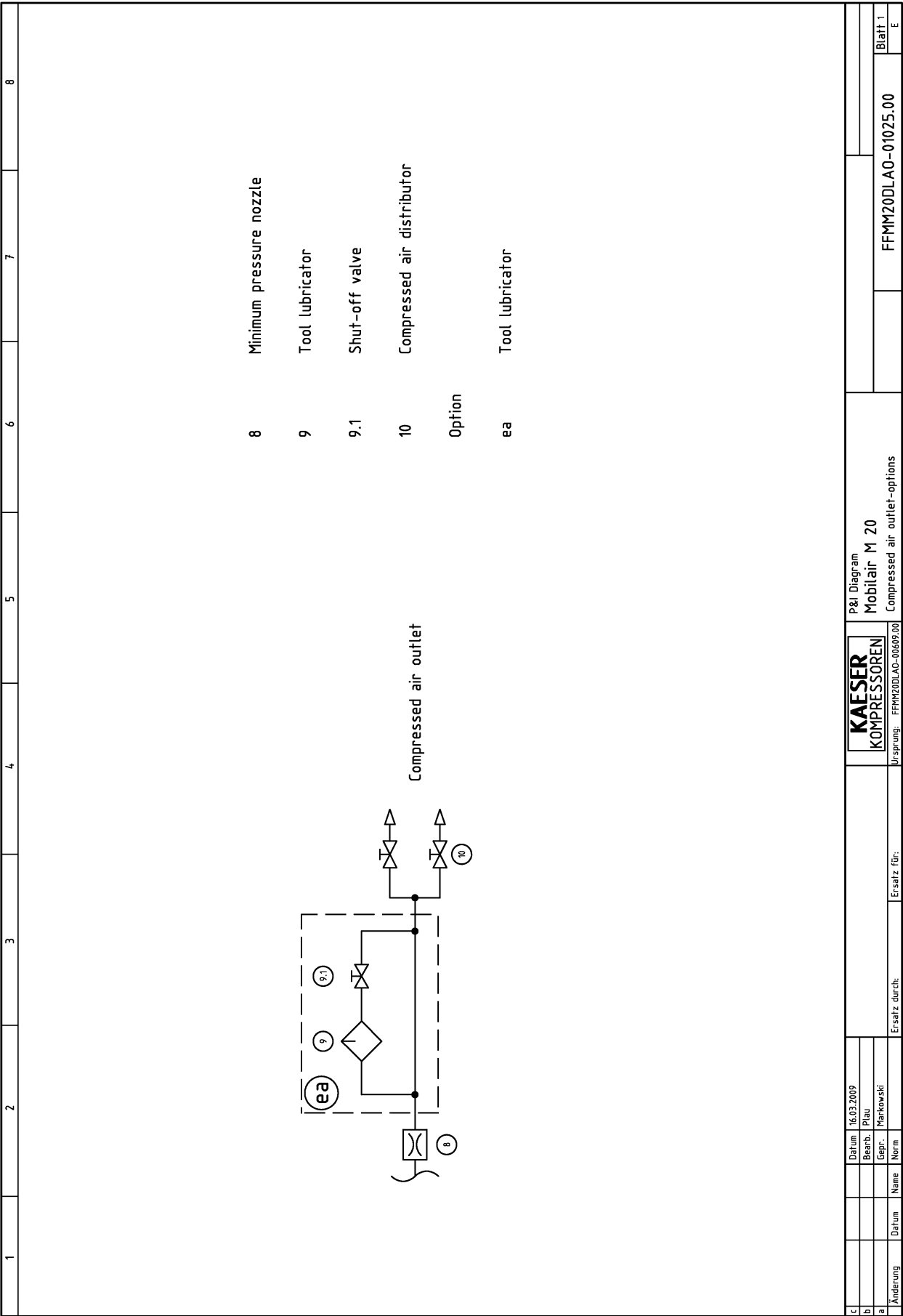
P&I diagram
MOBILAIR
M 20

c				Datum	09.01.2017
b	Terminologie	22.03.2019	PIVMark	Bearb.	Plau
a	Ä-Nr.: 41175			Gepr.	Markowski
Änderung		Datum	Name	Norm	

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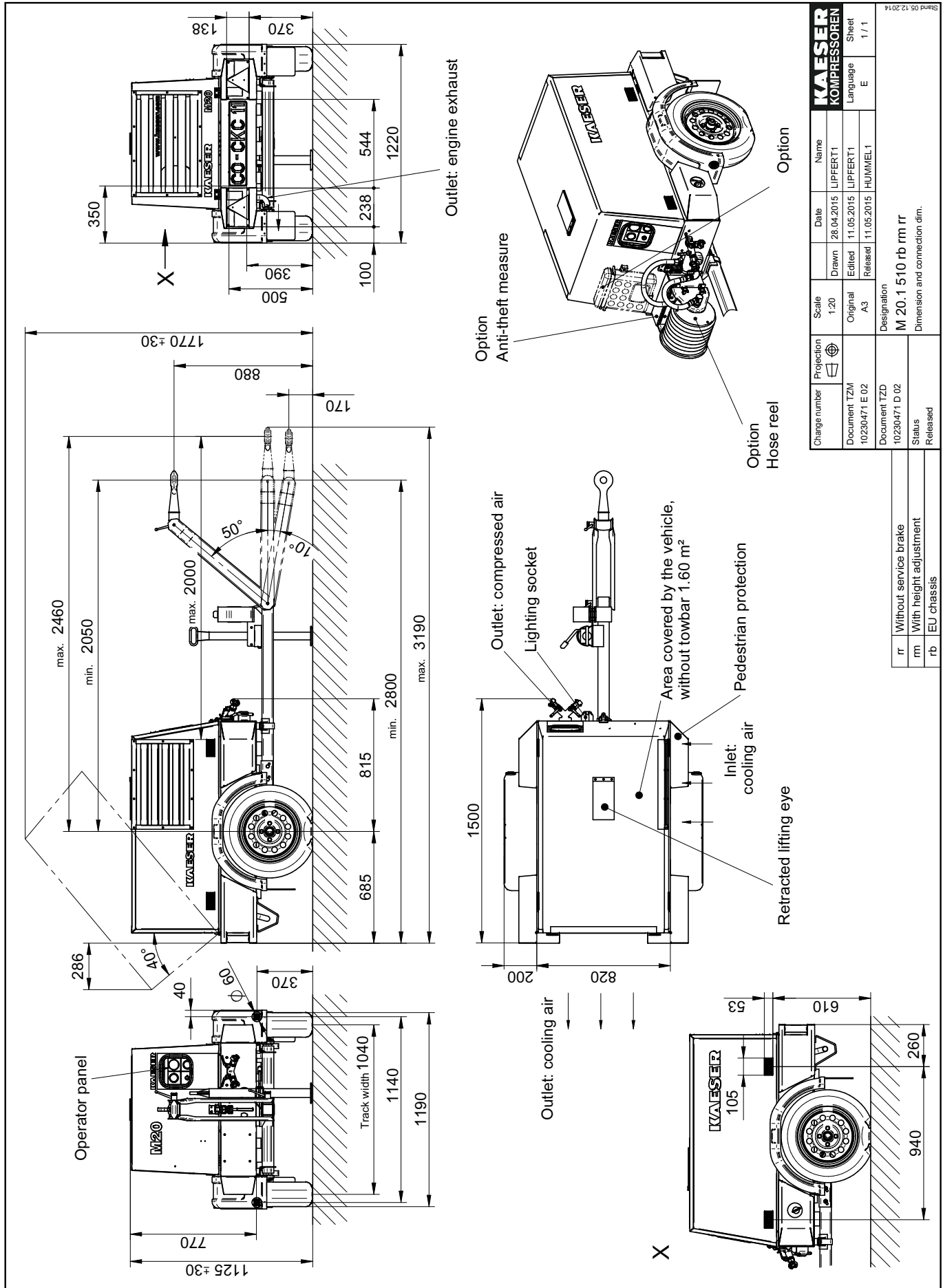
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13.3 Dimensional drawings

13.3.1 Option rb/rm/rr Dimensional drawing – chassis

- Option rb - chassis EU version
- Option rm - Chassis with height adjustment
- Option rr - Chassis without service brake



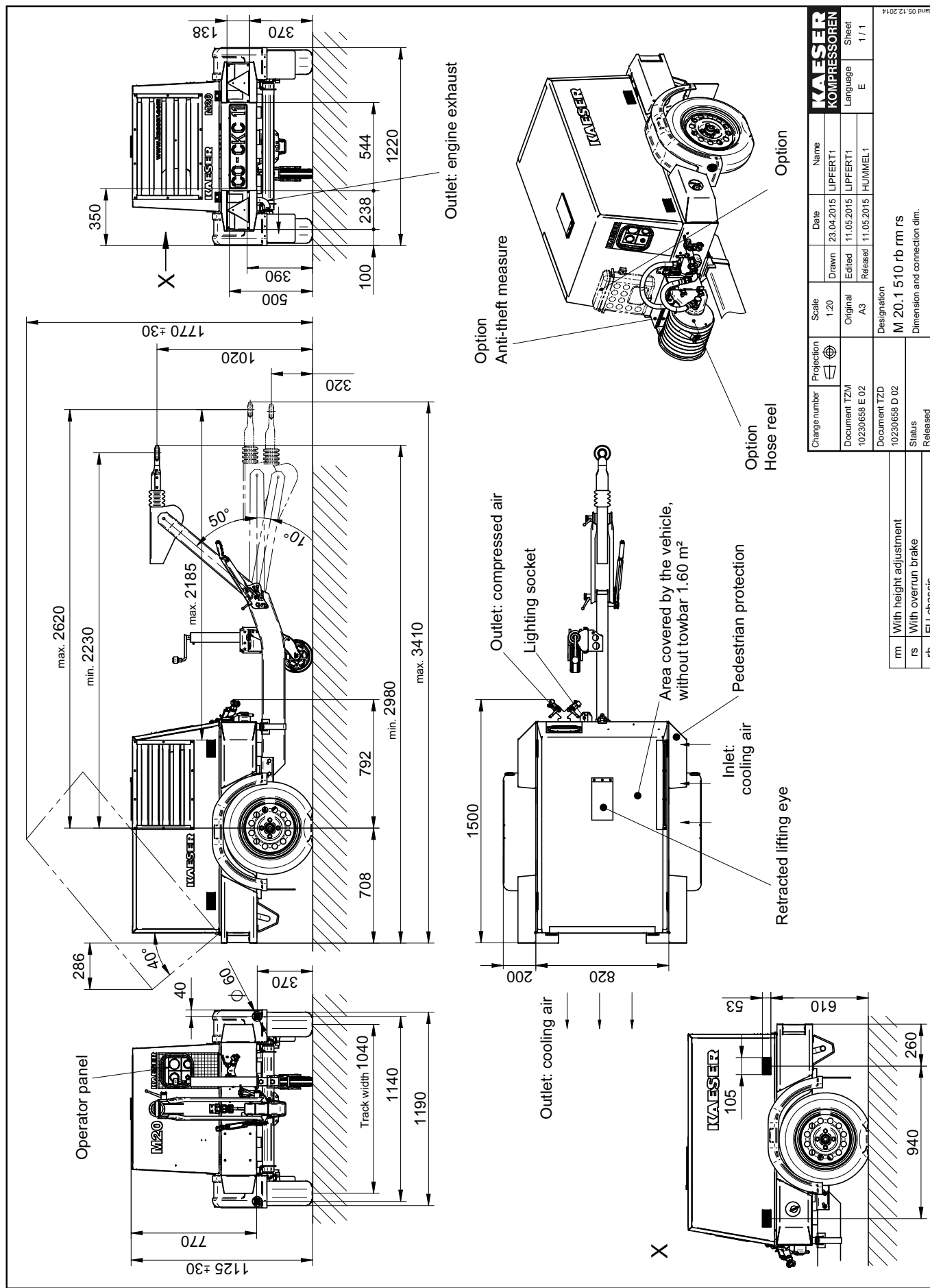
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10230471 D 02	TZD	A3	11.05.2015	HUMMEL1	E
Designation					
M 20.1 510 rb rr					
Dimension and connection dim.					
Status					
Released					
Without service brake					
With height adjustment					
EU chassis					

Stand 05.12.2014

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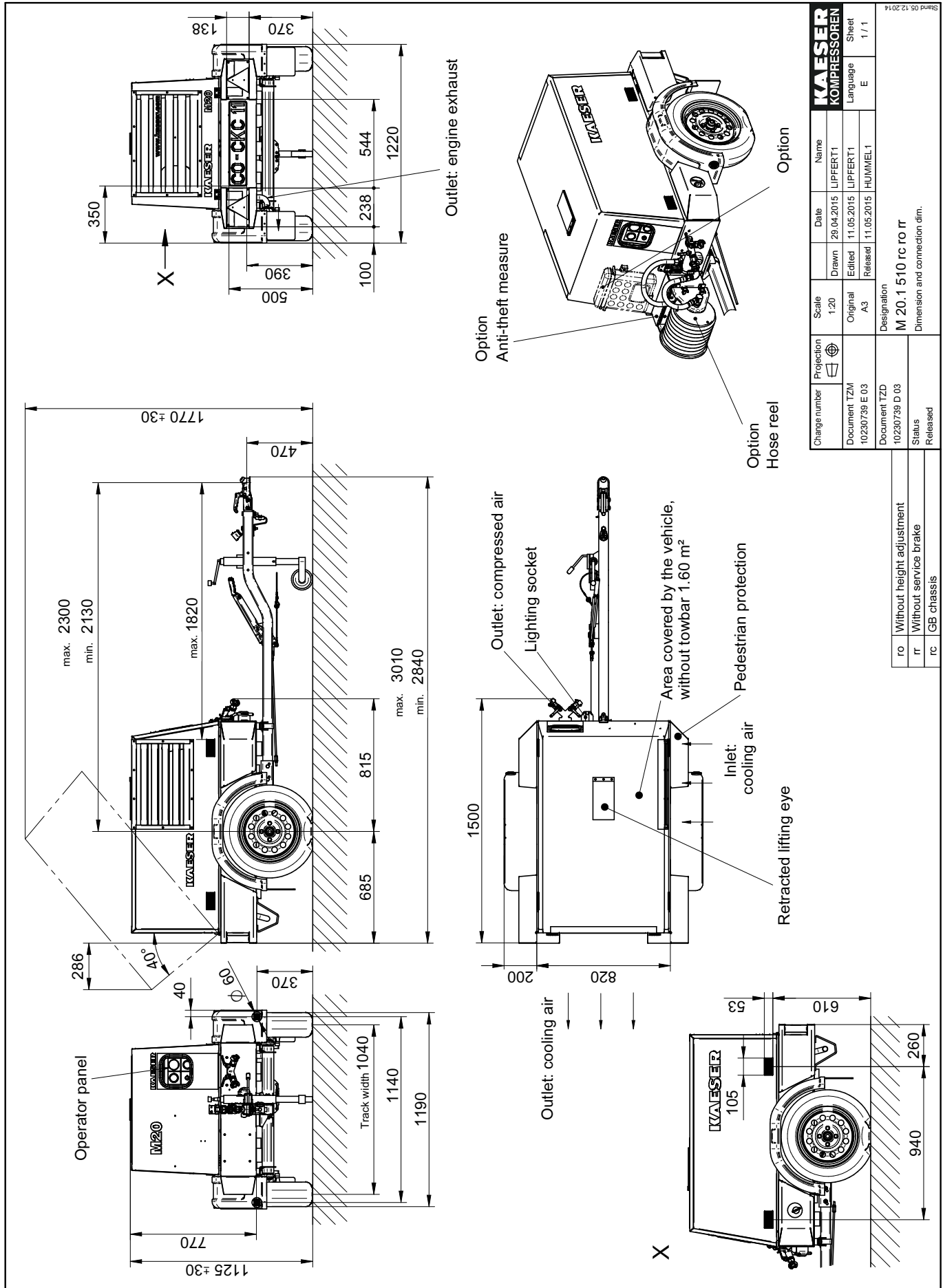
13.3.2 Option rb/rm/rs
Dimensional drawing – chassis

- Option rb - chassis EU version
- Option rm - Chassis with height adjustment
- Option rs - Chassis with overrun brake



13.3.3 Option rc/ro/rr
Dimensional drawing – chassis

- Option rc - Chassis, GB type
- Option ro - Chassis without height adjustment
- Option rr - Chassis without service brake



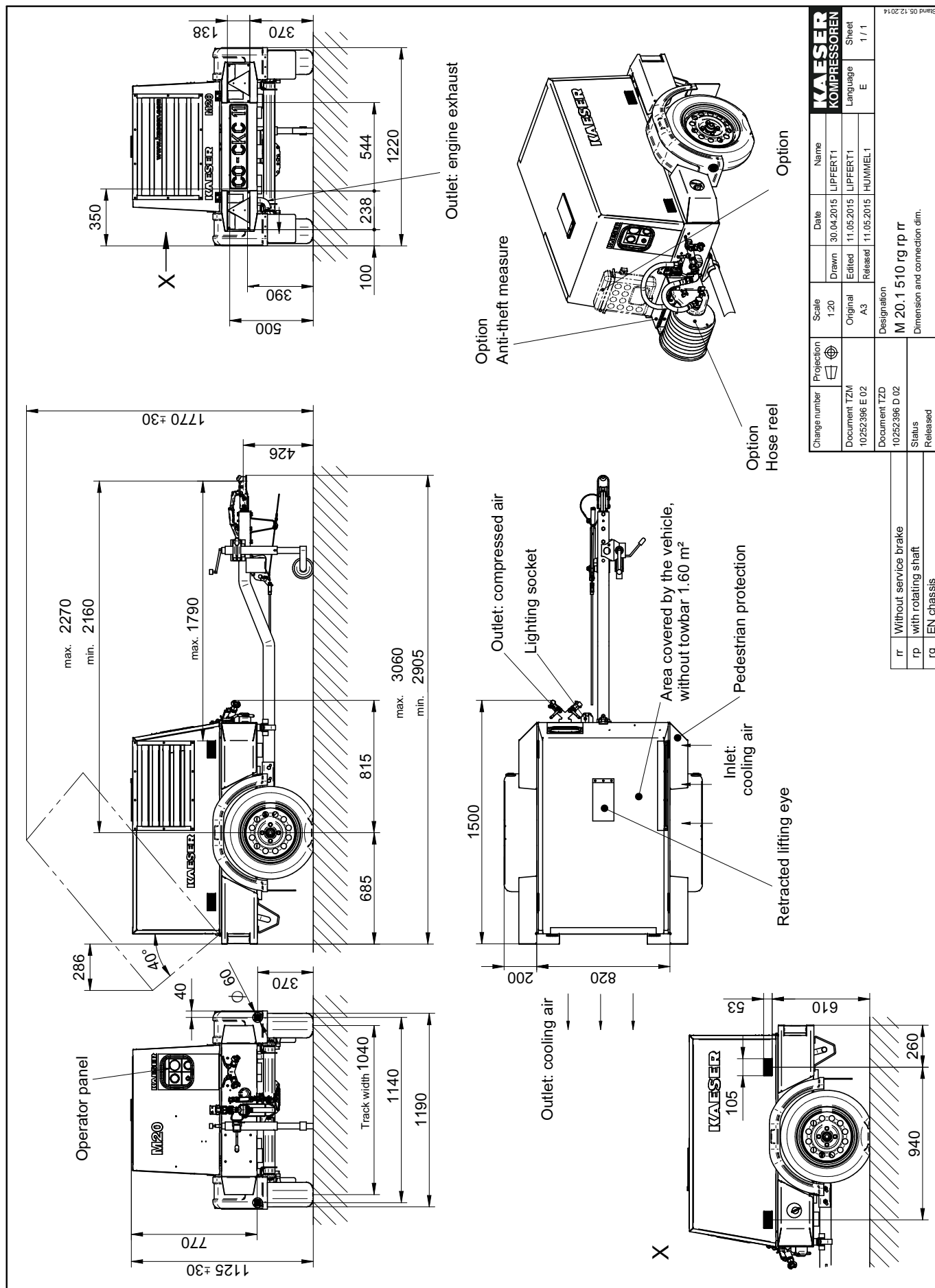
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Document TZD			11.05.2015		
10230739 D 03					
Status					
Released					
Designation					
M 20.1 510 rc ro rr					
Dimension and connection dim.					
ro Without height adjustment					
rr Without service brake					
rc GB chassis					

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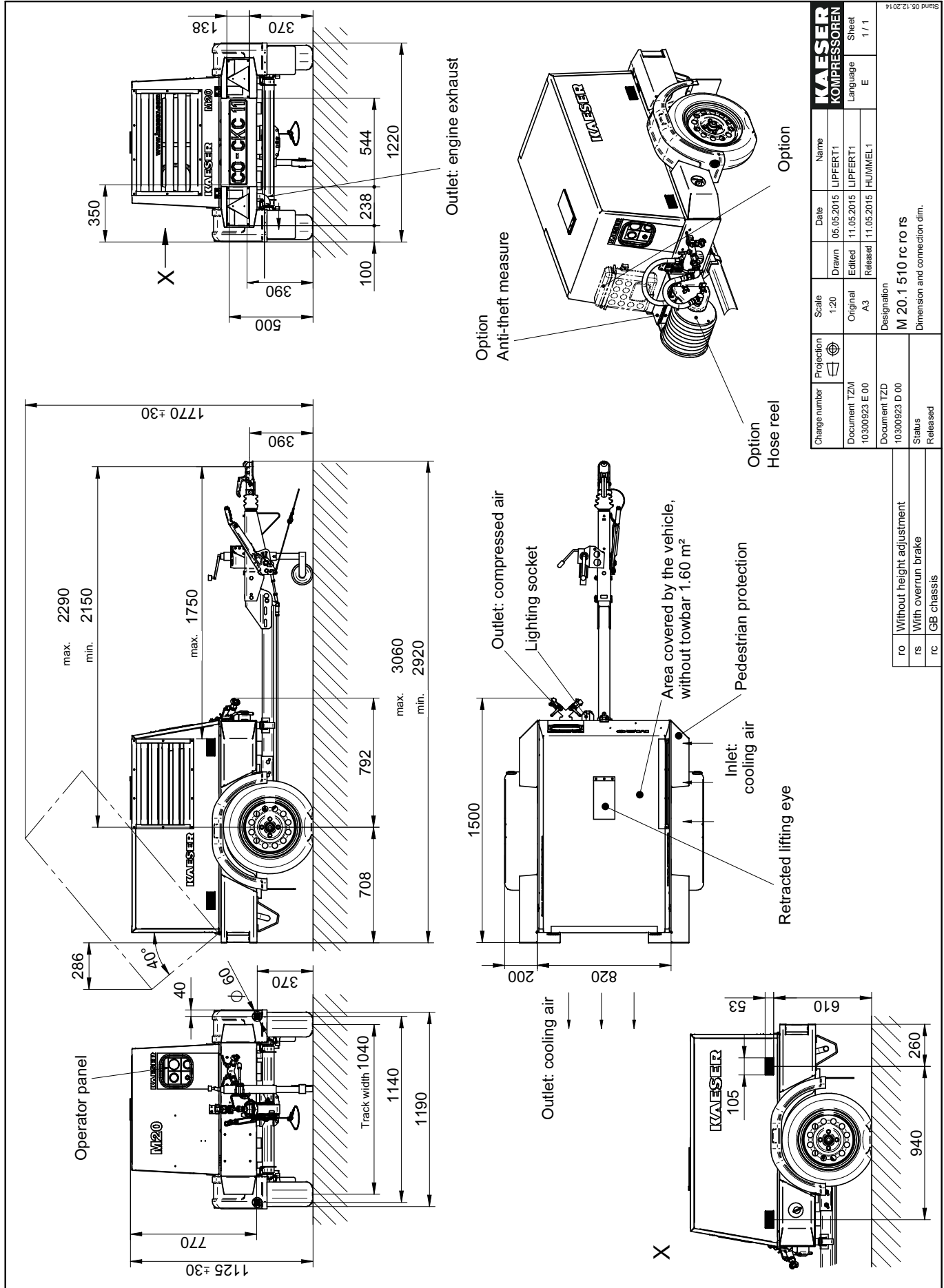
13.3.4 Option rg/rp/rr
Dimensional drawing – chassis

- Option rg - Chassis, GB type
- Option rs - Chassis with anti-twist protection
- Option rr - Chassis without service brake



13.3.5 Option rc/ro/rs
Dimensional drawing – chassis

- Option rc - Chassis, GB type
- Option ro - Chassis without height adjustment
- Option rs - Chassis with overrun brake

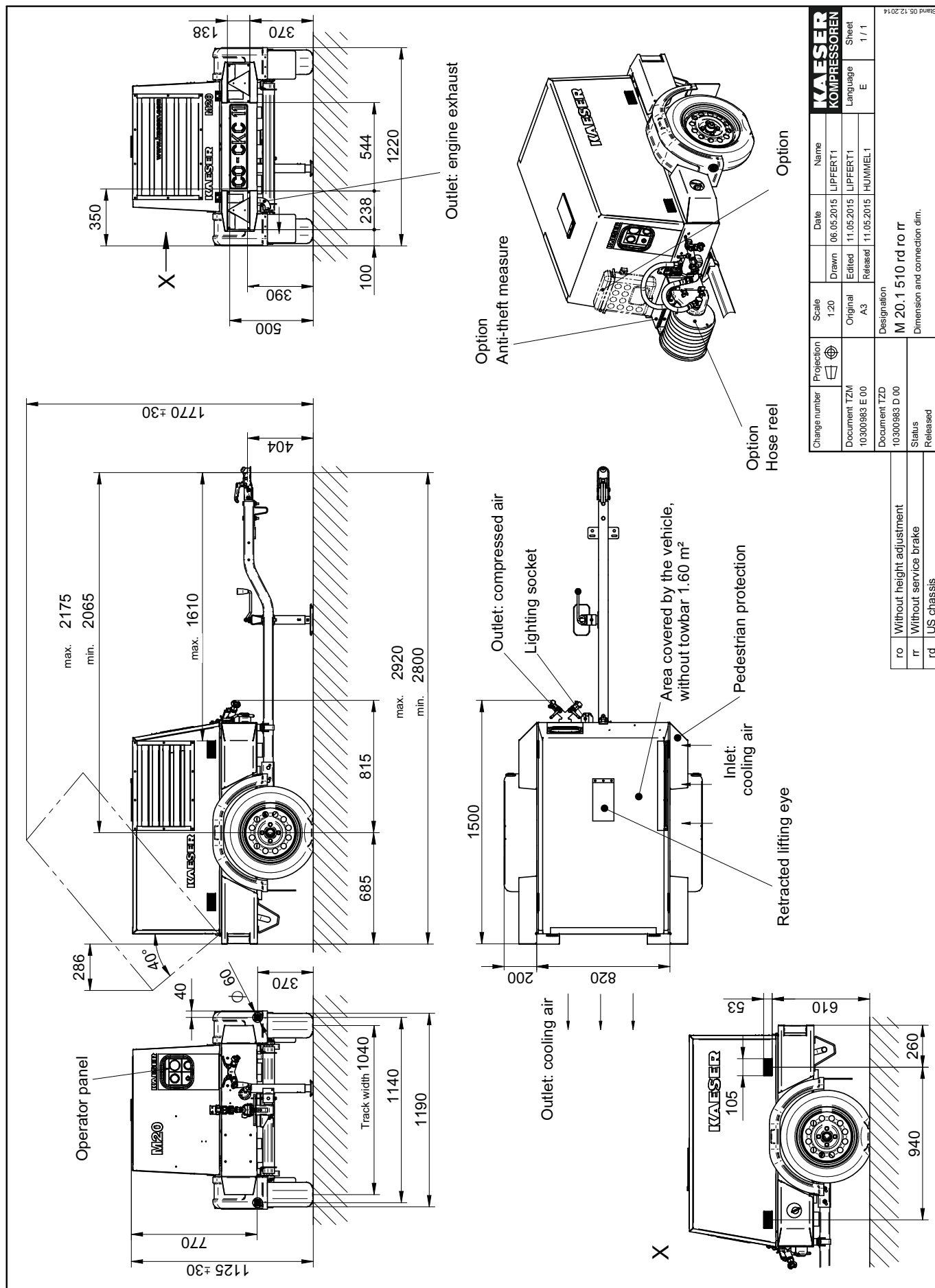


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		A3	Released		
Document TZO					
10300923 D 00					
Status					
Released					
Designation					
M 20.1 510 rc ro rs					
Dimension and connection dim.					
ro Without height adjustment					
rs With overrun brake					
rc GB chassis					

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 Subject to development-related changes.

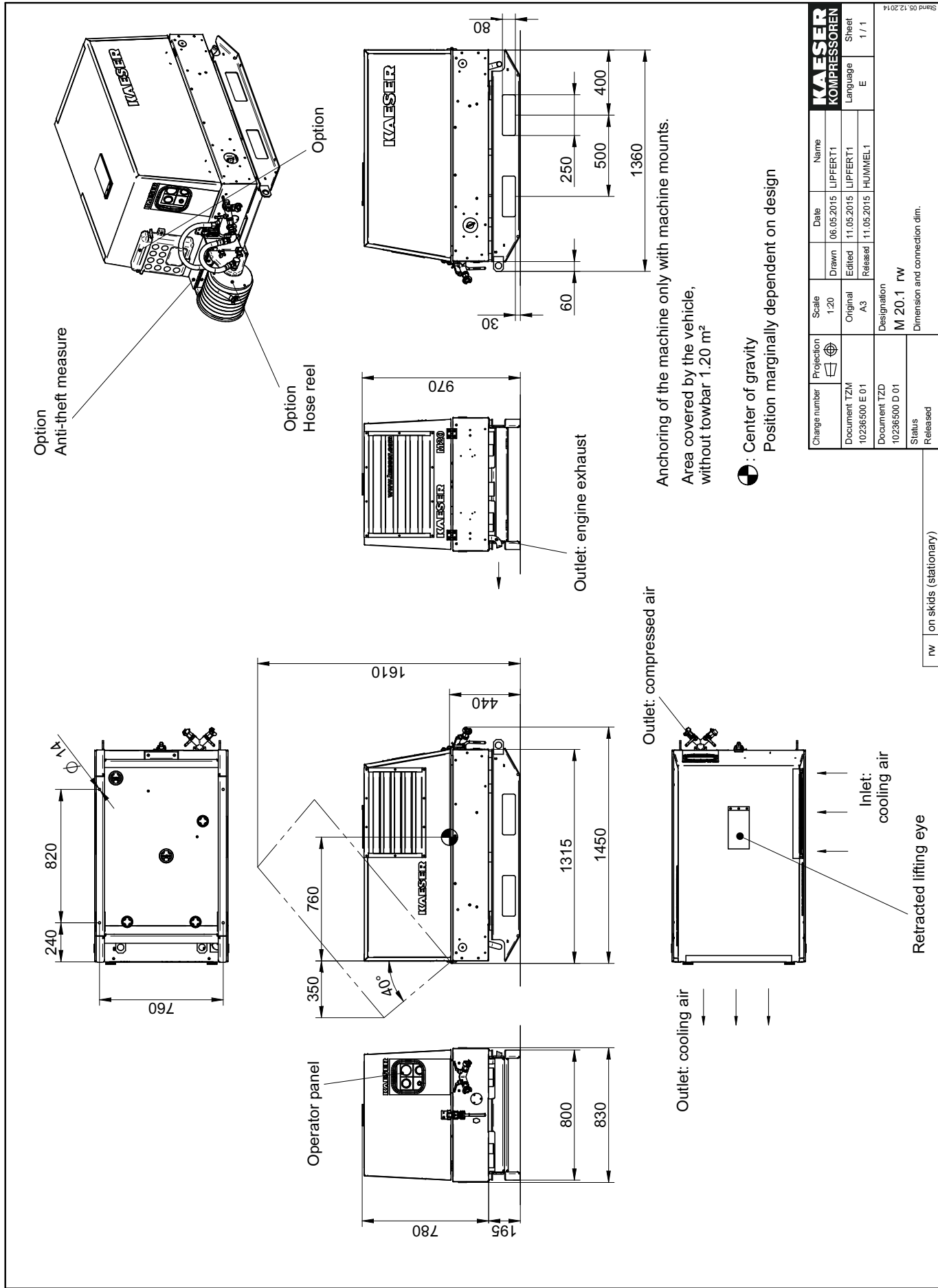
13.3.6 Option rd/ro/rr
Dimensional drawing – chassis

- Option rd - Chassis, US type
- Option ro - Chassis without height adjustment
- Option rr - Chassis without service brake



13.3.7 Option rw
Dimensional drawing, stationary version

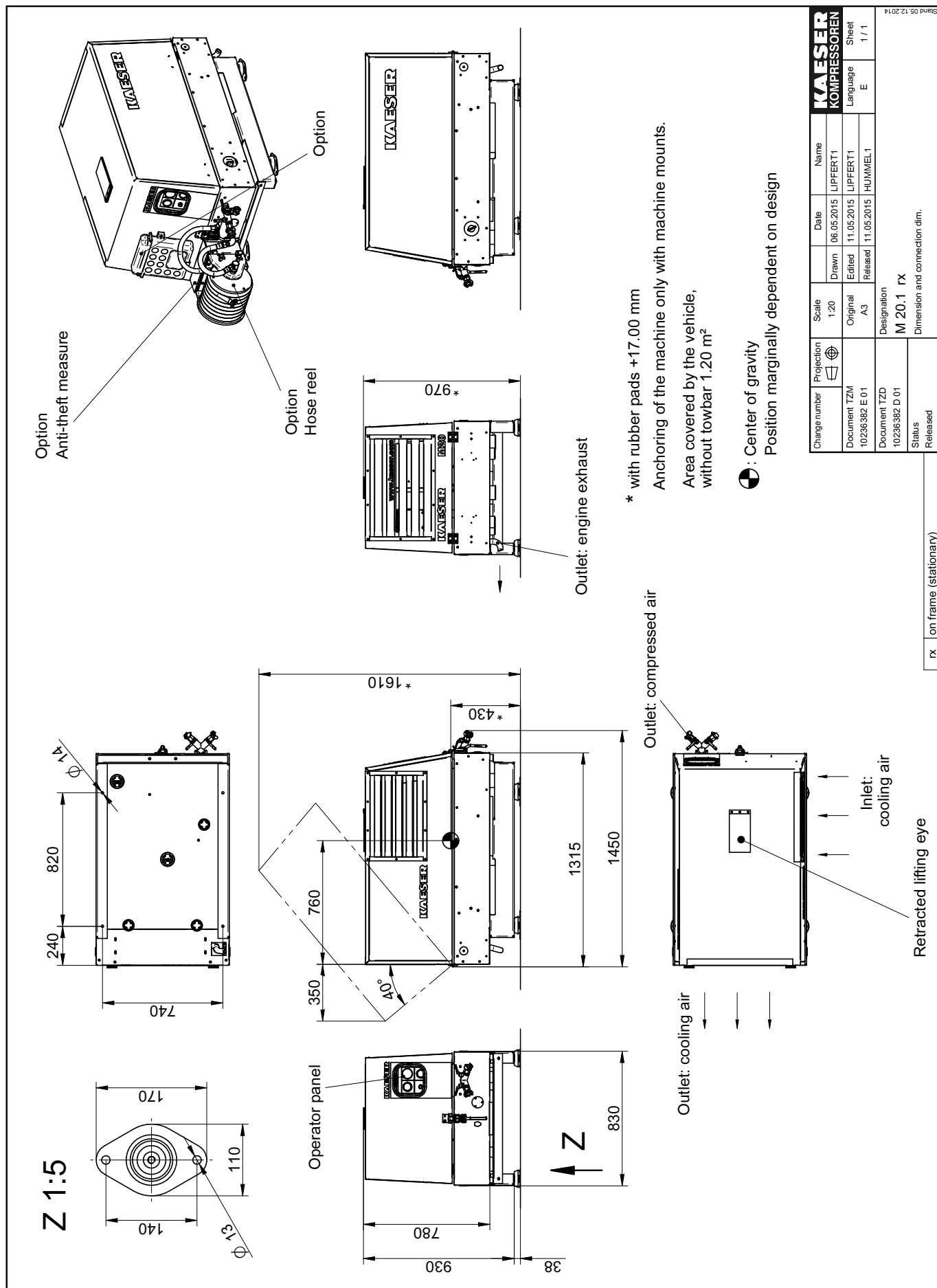
- Option rw - Skid frame on runners



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13.3.8 Option rx
Dimensional drawing, stationary version

- Option rx - Frame



13.4 Wiring diagrams**13.4.1 Electrical Diagram**

1	2	3	4	5	6	7	8
Electrical diagrams MOBILAIR M20 KUBOTA - Motor							
Manufacturer:				KAESER KOMPRESSOREN SE Postfach 2143 96410 Coburg			
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c		Datum		18.02.2015		E	
b		Bearbeiter		Stiller			
a		Geprüft		Weid			
A) Änderung		Datum		Name		Norm	
Ersatz durch:				Ersatz für:			
KAESER KOMPRESSOREN Ursprung: afa01020_01				Cover page MOBILAIR M20			
				=		+	
				DFA20-03014.00		page 1	
						1 Bl.	

Lfd. Nr. No.	Benennung Name		Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	Cover page			DFA20-03014.00	1	
2	List of contents			ZFA20-03014.00	1	
3	Block diagram			UFA20-03014.00	1	
4	Circuit diagram	Compressor - unit		SFA20-03014.00	1	
5	Circuit diagram	Control		SFA20-03014.00	2	
6	Component layout	Control cabinet		AFA20-03014.00	1	

c

b

a

Änderung

Datum

Bearbeiter

Gepüft

Name

18.02.2015

Siller

Weid

Norm

Ersatz durch:

Ersatz für:

Ürsprung:

KAESER KOMPRESSOREN

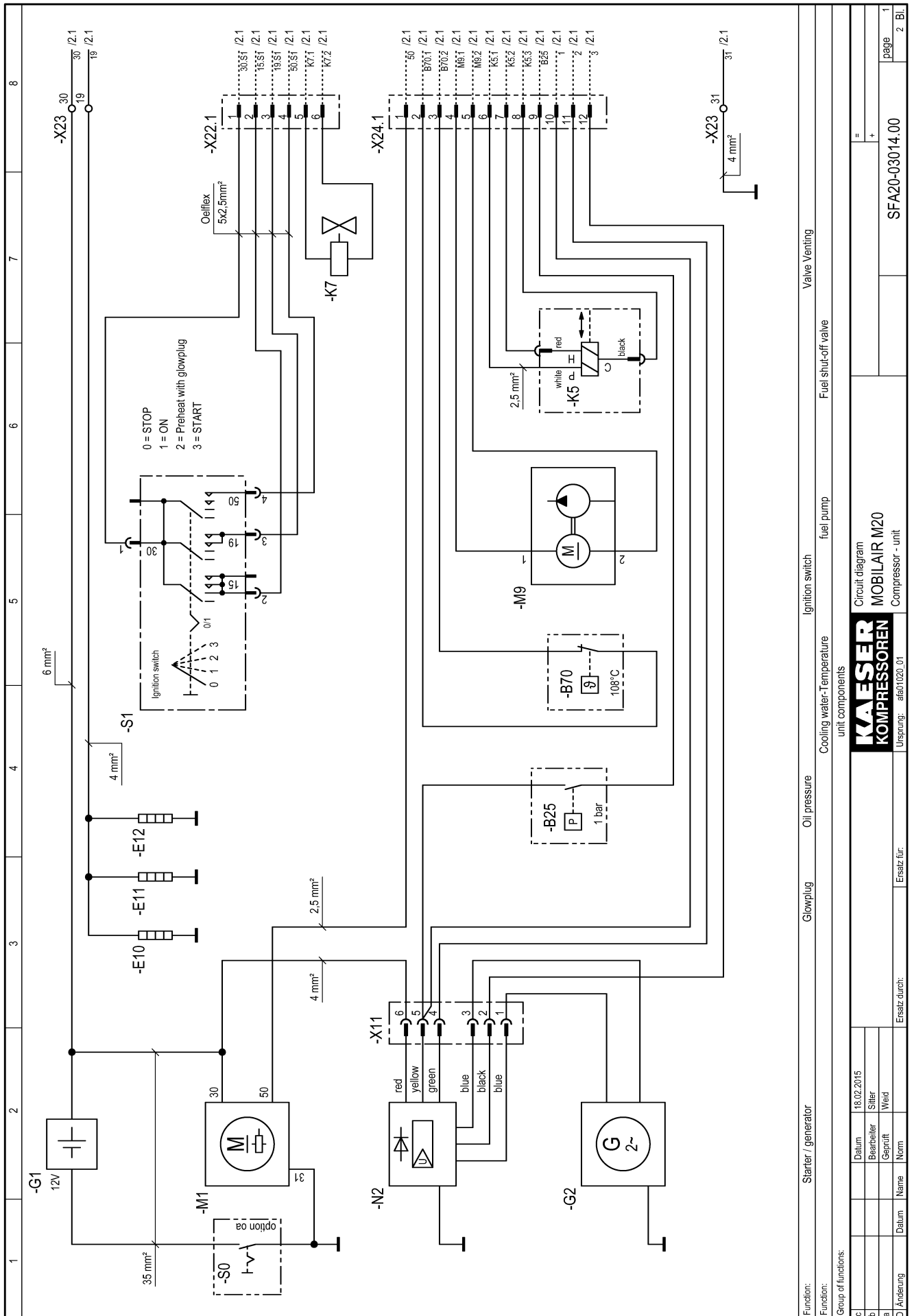
List of contents MOBILAIR M20

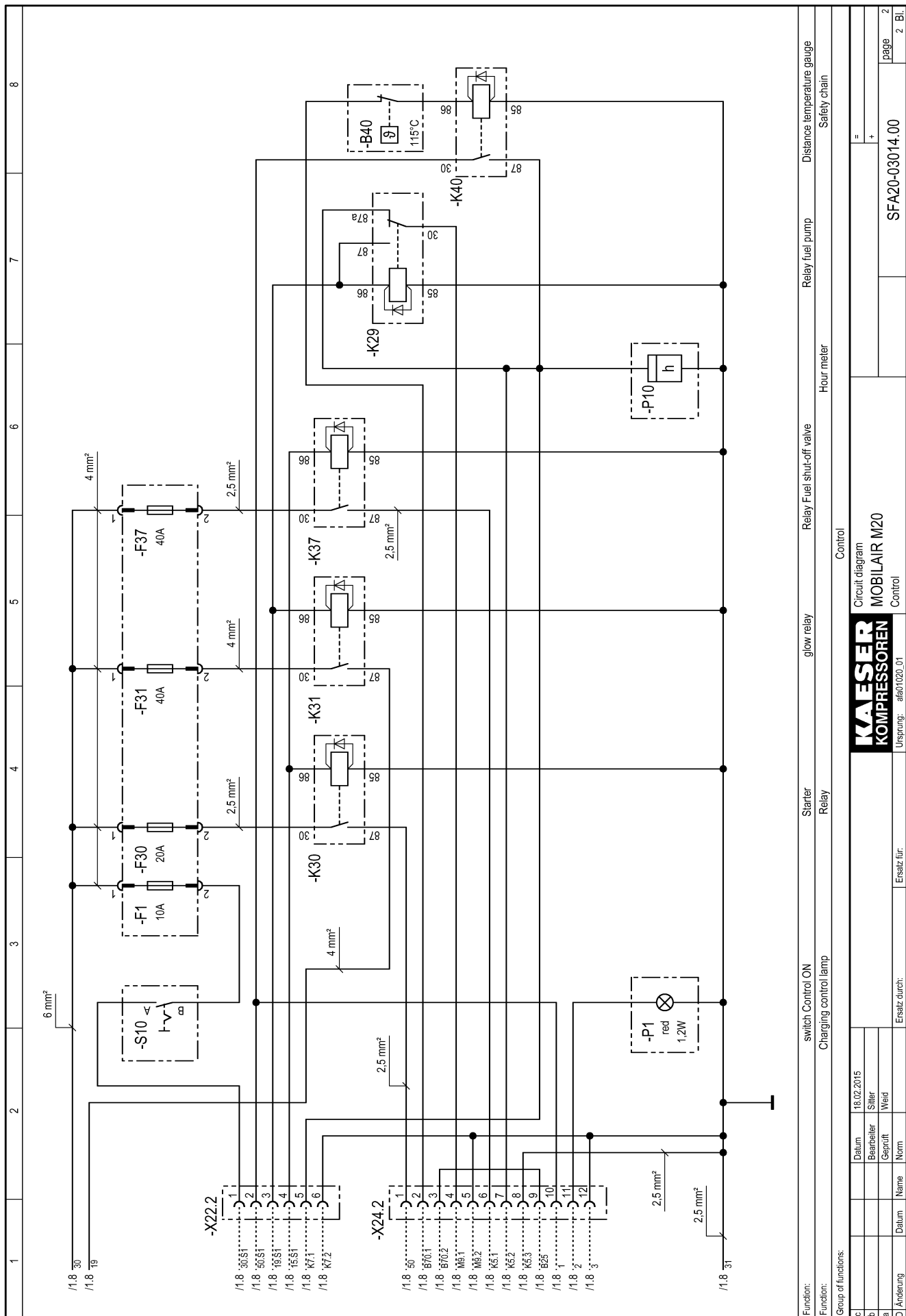
= +

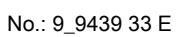
ZFA20-03014.00

page 1 1 Bl.

1	2	3	4	5	6	7	8
general instructions Control voltage 12VDC All non-designated conductors FLRY 0,75mm² white							
potentials: 15 switched plus + (unit ON) 30 + terminal (Battery) 31 - terminal (Battery), earth 50 Starter-Control							
0 = STOP 1 = ON 2 = Preheat with glowplug 3 = START							
Charging control lamp Hour meter switch "Control ON" Ignition switch							
plug connection, Regulator plug connection, Control panel plug connection							
option oa -S0 Battery isolating switch							
Oil pressure switch Motor Distance temperature gauge Compressor airend Cooling water-Thermostat Glowplug Control fuse Fuse Starter Fuse Glowplug Fuse Fuel shut-off valve Battery Three-phase generator Fuel shut-off valve Valve Venting Relay fuel pump Relay Starter glow relay Relay Fuel shut-off valve Relay Safety chain Starter-Motor fuel pump Regulator Alternator							
-B25 -B40 -B70 -E10...-E12 -F1 -F30 -F31 -F37 -G1 -G2 -K5 -K7 -K29 -K30 -K31 -K37 -K40 -M1 -M9 -N2							
Block diagram MOBILAIR M20							
UFA20-03014.00							
1 Bl.							

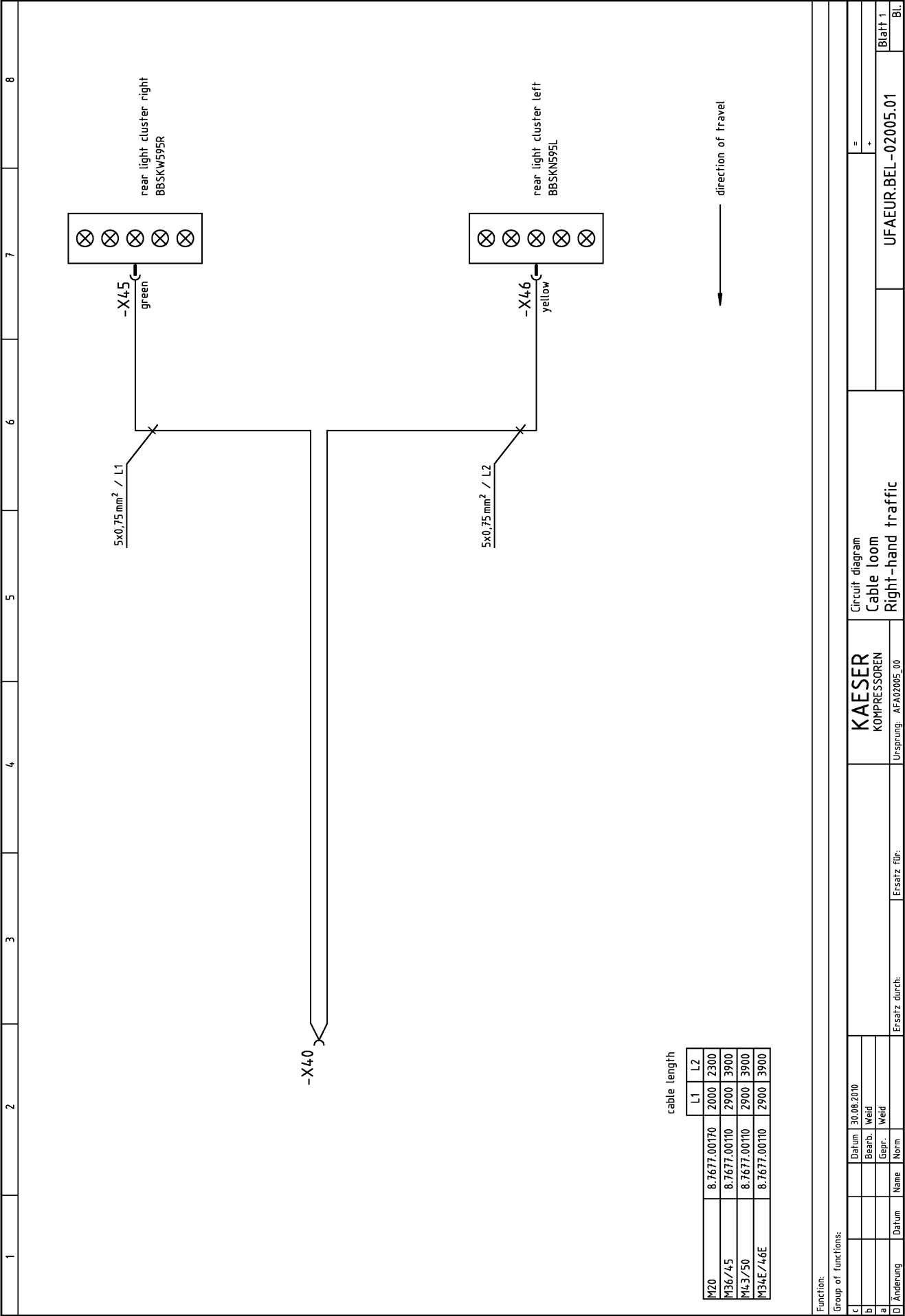


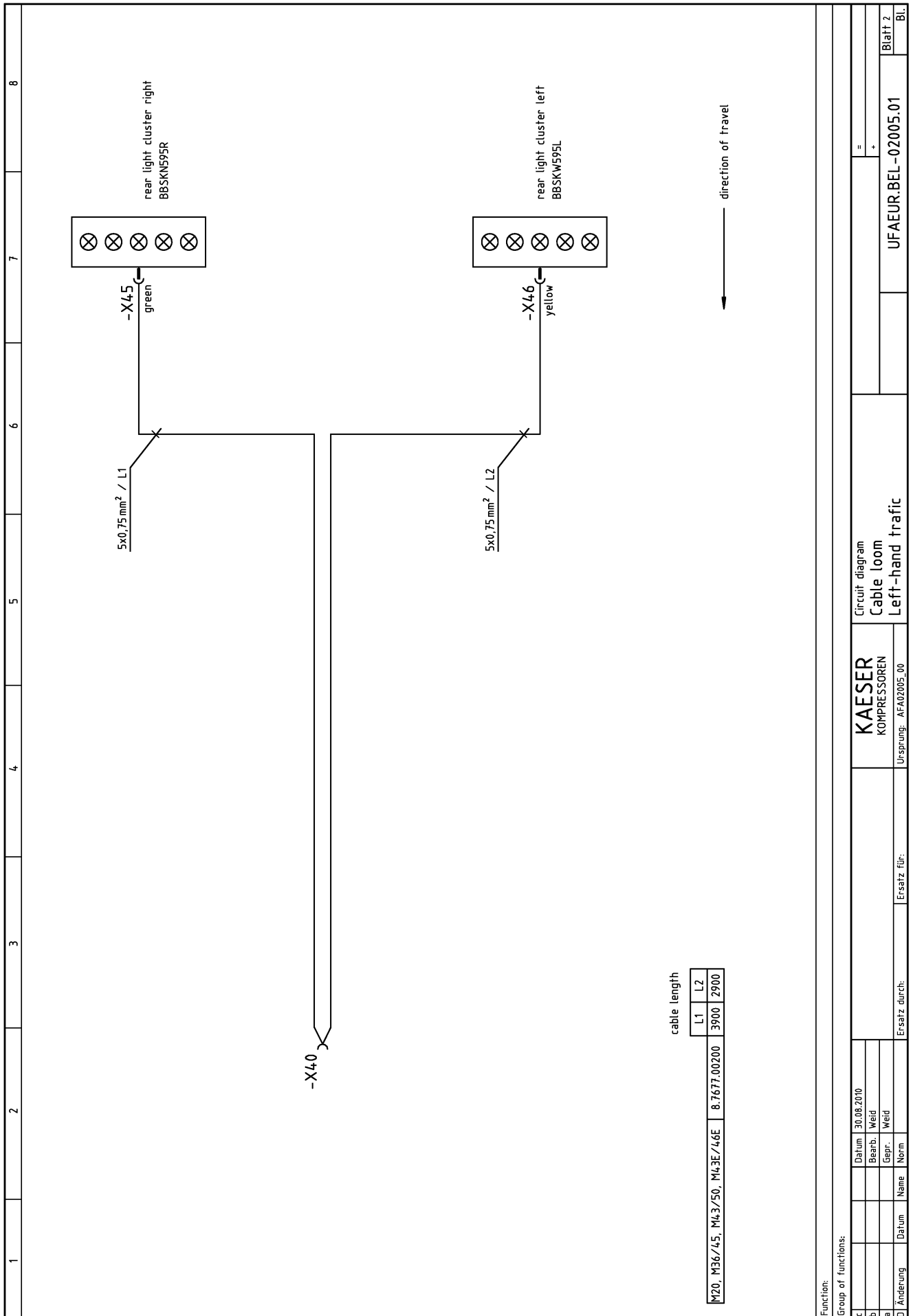


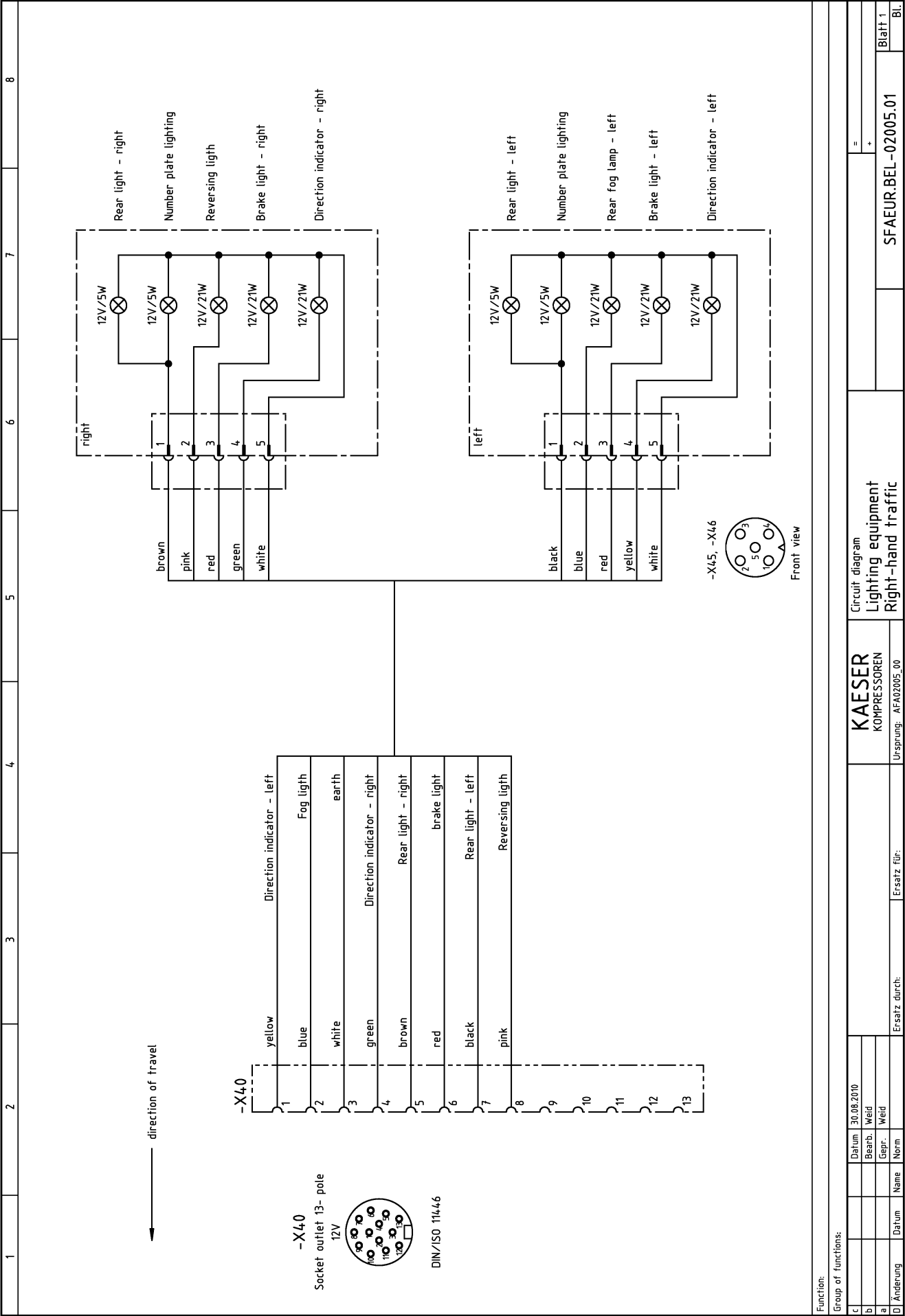


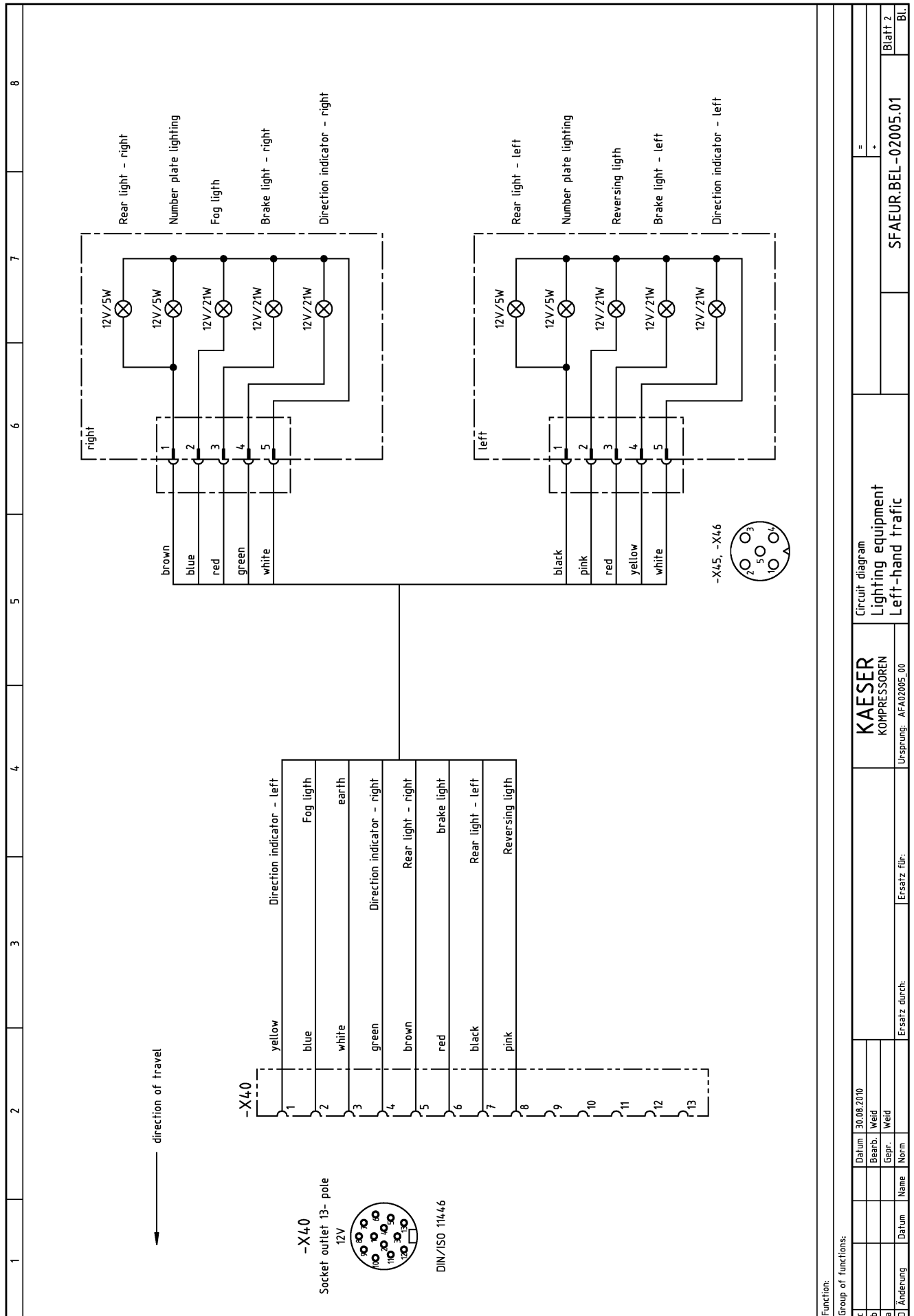
13.4.2 Option tc
Lighting and signalling system connection

1	2	3	4	5	6	7	8
Electrical diagrams MOBILAIR Lighting equipment connection 12V/13-pole Manufacturer: Kaeser Kompressoren GmbH Postfach 2143 96410 Coburg							
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c			Datum	30.08.2010	E		
b			Bearb.	Weld			
a			Gepr.	Weld			
D Änderung	Datum	Name	Norm	Ersatz durch:		Ersatz für:	
KAESER KOMPRESSOREN				Cover page MOBILAIR Lighting equipment			
Ursprung: AFA02005_00				DFAEUR.BEL-02005.01		Blatt 1 Bl.	



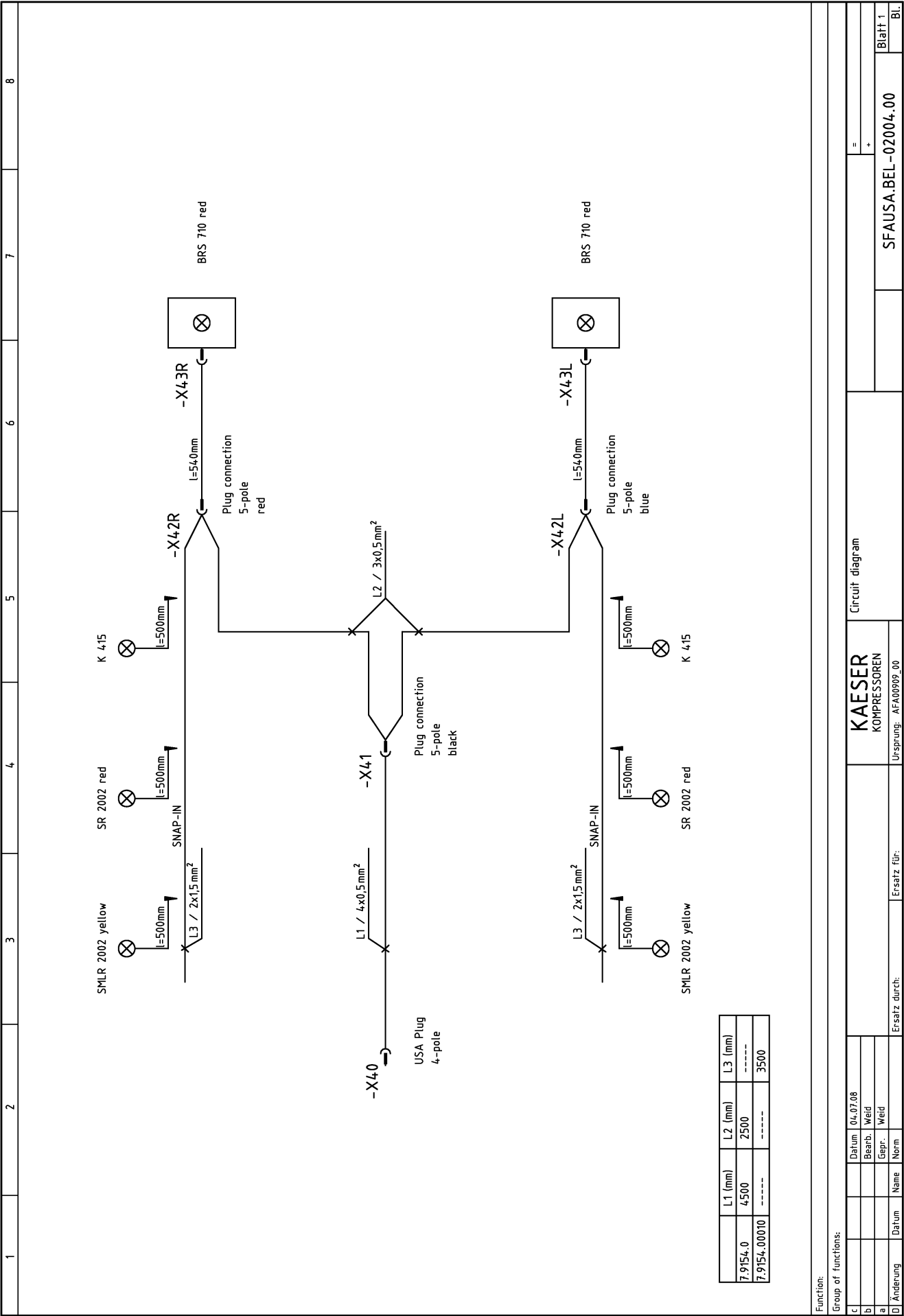


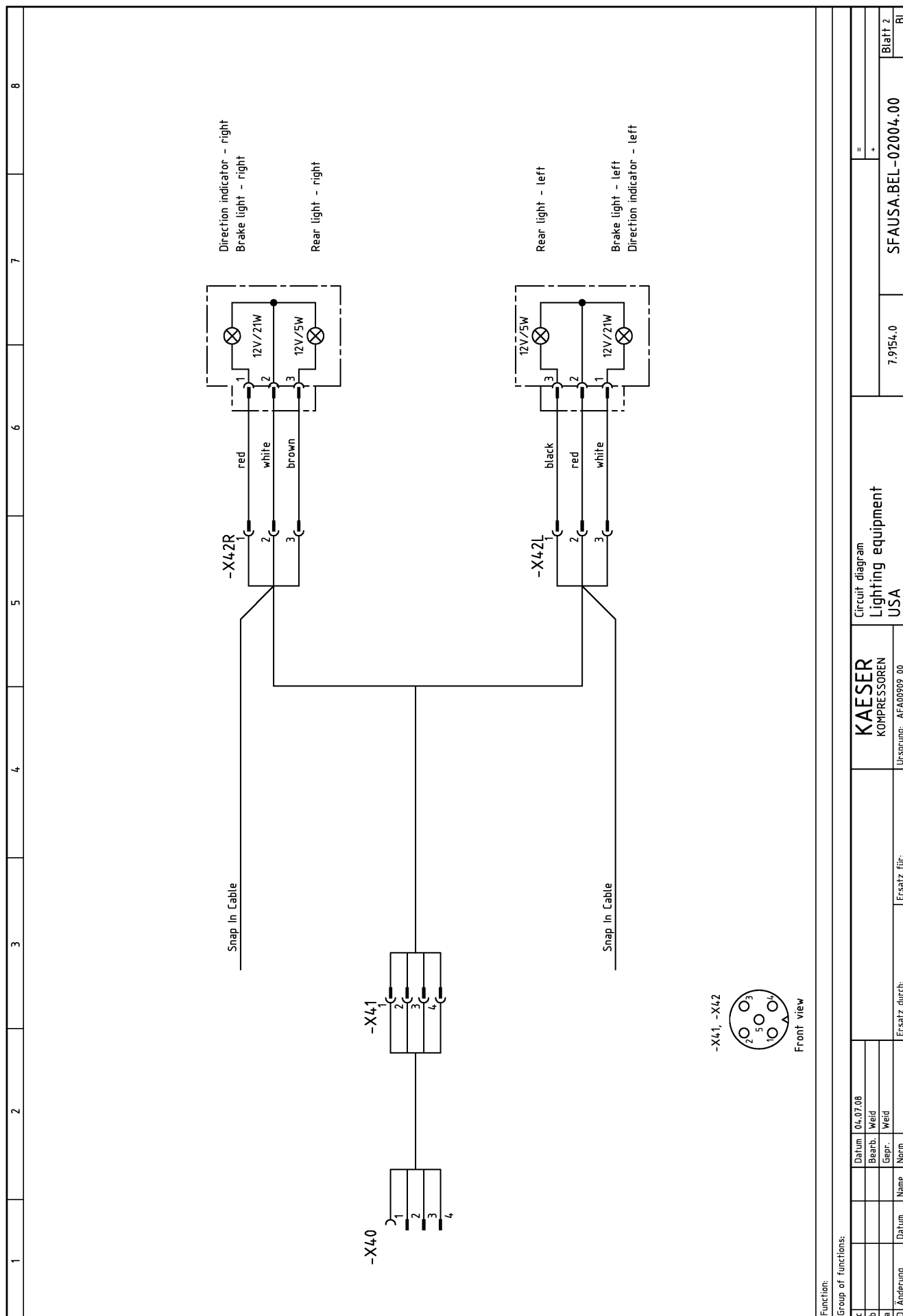




**13.4.3 Option te
Lighting and signalling system connection**

1	2	3	4	5	6	7	8
Electrical diagrams MOBILAIR Lighting equipment for USA / CAN Manufacturer: Kaeser Kompressoren GmbH Postfach 2143 96410 Coburg							
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c		Datum		04.07.08		E	
b		Bearb.		Weid			
a		Gepr.		Weid			
D Änderung		Datum		Name		Norm	
		Ersatz durch:		Ersatz für:			
KAESER KOMPRESSOREN				Cover page MOBILAIR Lighting equipment			
Ursprung: AFA00992_00							
				=		+	
				DFAUSA.BEL-02004.00		Blatt 1 Bl.	





1	2	3	4	5	6	7	8
Side marking lights yellow Side marking lights red Number plate lighting right							
Side marking lights yellow Side marking lights red Number plate lighting left							

Function:

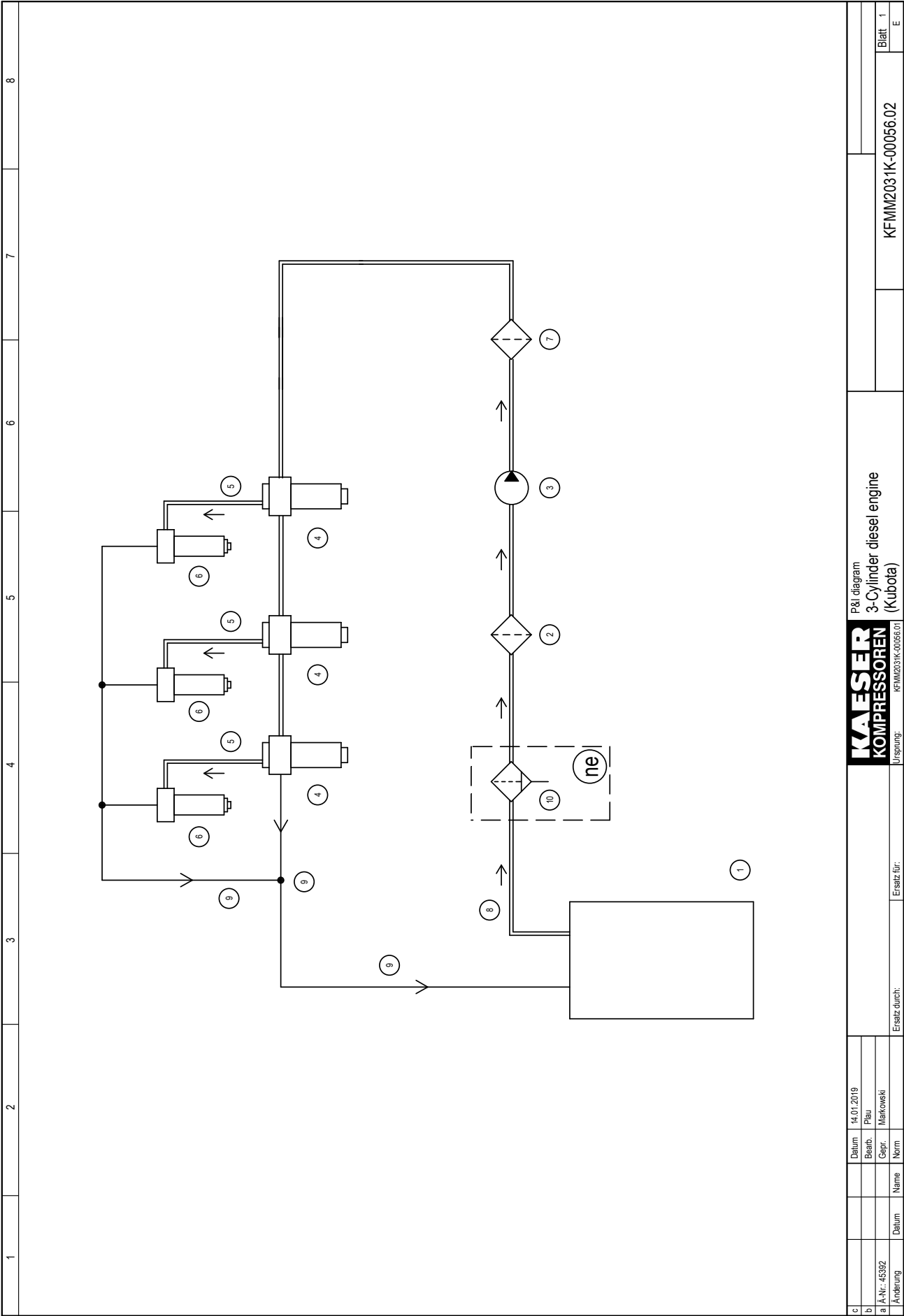
Group of functions:

c	Datum	04.07.08
b	Bearb.	Weid
a	Gepr.	Weid
	Name	Norm

Ersatz durch:		Ersatz für:
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KAESER KOMPRESSOREN Ursprung: AFA00999_00		Circuit diagram Lighting equipment extension CAN	=	
			*	
			7.9154.00010	SFAUSA.BEL-02004.00
				Blatt 3
				BL

13.5 Fuel circulation diagram



[illegible]

