

Service Manual

Screw Compressor

M43

No.: 9_9432 02 E

RAMIRENT

Manufacturer:

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Original instructions
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1 Regarding this document

1.1 Using the Document

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

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

1.2 Further Documents

Included with this service manual are additional documents intended to assist in the safe operation of the machine:

- Certificate of acceptance / operating instructions for the pressure vessel
- Manufacturer's declaration / declaration of conformity in accordance with applicable directives
- Chassis maintenance instructions
- Operating instructions from the chassis manufacturer
- Engine documentation (not electric-motor-driven machines)

Missing documents can be requested from KAESER.

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

1.3 Copyright

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

1.4 Symbols and Identification

1.4.1 Warnings

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

- DANGER
- WARNING
- CAUTION



1. **DANGER!**

These show the kind of danger and its source!

The possible consequences of ignoring a warning are shown here.

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

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

1 Regarding this document

1.4 Symbols and Identification

2. Always read and comply with warning instructions.

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

Tab. 1 The levels of danger and their meaning

1.4.2 Other instructions and symbols



This symbol refers to particularly important information.

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

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

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



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



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

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

2 Technical Specification

2.1 Nameplate

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

➤ Enter here the nameplate data as a reference:

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

Tab. 2 Nameplate

2.2 Options

A list of the options fitted to your machine helps to relate the information in this service manual. A list of options fitted is given as code letters on the right side of the coupling load / options label.

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.

- Take a list of fitted options from the combined coupling load / options label.

M43	MATNo	SERNo																																																								
Here is given the specified coupling load.		Options fitted																																																								
		<table border="1"> <tr><td>__</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>ea</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>__</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>ha</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>__</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>ba</td><td>bb</td><td>__</td><td>__</td></tr> <tr><td>la</td><td>lb</td><td>__</td><td>__</td></tr> <tr><td>__</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>oa</td><td>oe</td><td>__</td><td>__</td></tr> <tr><td>__</td><td>__</td><td>ne</td><td>__</td></tr> <tr><td>__</td><td>__</td><td>__</td><td>__</td></tr> <tr><td>sa</td><td>sb</td><td>sd</td><td>se</td></tr> <tr><td>__</td><td>tb</td><td>tc</td><td>__</td></tr> <tr><td>sf</td><td>sg</td><td>ua</td><td>__</td></tr> </table>	__	__	__	__	ea	__	__	__	__	__	__	__	ha	__	__	__	__	__	__	__	ba	bb	__	__	la	lb	__	__	__	__	__	__	oa	oe	__	__	__	__	ne	__	__	__	__	__	sa	sb	sd	se	__	tb	tc	__	sf	sg	ua	__
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__	__	__	__																																																							
sa	sb	sd	se																																																							
__	tb	tc	__																																																							
sf	sg	ua	__																																																							
		02-M0277-PE																																																								

Tab. 3 Combined label for coupling load and options fitted

2.2.1 Option ea
Tool lubricator

- Enter the fitted option as reference.

Option	Option code	Exists?
Tool lubricator	ea	

Tab. 4 Tool lubricator

2.2.2 Option ha
Non-return function

- Enter the fitted option as reference.

Option	Option code	Exists?
Check valve	ha	

Tab. 5 Non-return function

2.2.3 Option ne
Fuel filter with water trap

- Enter the fitted option as reference.

Option	Option code	Exists?
Fuel filter with water trap	ne	

Tab. 6 Fuel filter with water trap

2.2.4 Option ba, bb
Low temperature equipment

➤ Enter the fitted option as reference.

Option	Option code	Exists?
Frost protector	ba	
Engine coolant pre-heating	bb	

Tab. 7 Low temperature equipment

2.2.5 Option oa
Battery isolating switch

➤ Enter the fitted option as reference.

Option	Option code	Exists?
Battery isolating switch	oa	

Tab. 8 Battery isolating switch

2.2.6 Option oe
Sealed floor pan

➤ Enter the fitted option as reference.

Option	Option code	Exists?
Sealed floor pan	oe	

Tab. 9 Sealed floor pan

2.2.7 Option la, lb
Equipment for fire hazard areas

➤ Enter the fitted option as reference.

Option	Option code	Exists?
Spark arrestor	la	
Spark arrestor and engine air intake shut-off valve (automatic)	lb	

Tab. 10 Equipment for fire hazard areas

2.2.8 Option sa, sb, sd, se
Chassis

➤ Enter the fitted option as a reference in this overview:

Option	Option code	Available?
EU chassis 01	sa	
EU chassis 02	sb	

Option	Option code	Available?
EU chassis 03	sd	
EU chassis 04	se	
EU $\hat{=}$ Europe		

Tab. 11 Chassis

Further information For an exact description of the characteristics of the chassis and models, see chapter 4.6.8.

2.2.9 Option tb, tc, te Lighting

- Enter the fitted option as a reference.

Option	Option code	Exists?
Reflective warning triangle	tb	
EC 12 V (13-pin connector)	tc	
USA 12 V (DOT conformity)	te	

Tab. 12 Lighting

2.2.10 Option sg Pedestrian protection

- Enter the fitted option as reference.

Option	Option code	Exists?
Pedestrian protection	sg	

Tab. 13 Pedestrian protection

2.2.11 Option ua Hose reel

- Enter the fitted option as reference.

Option	Option code	Exists?
Hose reel	ua	

Tab. 14 Hose reel

2.2.12 Option sf Anti-theft device

- Enter the fitted option as reference.

Option	Option code	Exists?
Anti-theft device	sf	

Tab. 15 Anti-theft device

2.3 Machine (without options)

2.3.1 Sound emission

2.3.1.1 Sound emission

Measurement conditions

- Free-field measurement to directive 2000/14/EC
- Measuring distance: d=1 m
- Logarithmic surface ratio: Q2=16,8dB(A)

Sound emission	M43
Guaranteed sound power level [dB(A)]	98
Emission sound pressure level* [dB(A)]	81,0

* Calculated from the guaranteed sound power level (2000/14/EG Directive, Basic Noise Emission Standard ISO 3744) to EN ISO 11203:1995 number 6.2.3.d

Tab. 16 Sound emission

2.3.1.2 Sound pressure level

The sound pressure level conforms to the US EPA Standard.
 Measuring distance: 7 m

Sound pressure level	M43
Guaranties sound pressure level [dB (A)]	76

Tab. 17 Sound pressure level

2.3.2 Torques

Recommended values for hexagonal bolts of strength category 8.8

Hex-head screws							
Thread	M6	M8	M10	M12	M14	M16	M18
Torque [Nm]	9,5	23	46	80	127	195	280

Tab. 18 Torques for hex-head screws

2.3.3 Ambient conditions

Installation	Limit value
Maximum altitude AMSL* [m]	1000
Minimum ambient temperature [°C]	-10
Maximum ambient temperature [°C]	50

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

Tab. 19 Ambient conditions

2.3.4 Dimensions

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

- dimensions,
- track width,
- footprint,

see the dimensional drawings in chapter 13.3.

2.4 Chassis
2.4.1 Weights


Maximum weights are shown. Actual weights of individual machines are dependent on equipment fitted (see machine nameplate).

Feature	01	02	03	04
Chassis type	EU chassis	EU chassis	EU chassis	EU chassis
Height-adjustable towbar	x	x	–	–
Fixed height towbar	–	–	x	x
Parking brake	–	x	x	x
Service brake	–	x	–	x
Actual total weight [kg]*				
Permissible axle load [kg]	750	850	750	850

x $\hat{=}$ available, – $\hat{=}$ not available

EU $\hat{=}$ Europe

* Enter here the actual overall weight from the nameplate as reference,

Tab. 20 Machine weights

2.4.2 Tyres

Characteristic/markings	
Tyre size	145/80 R 13
Maximum and recommended tyre pressure [bar]	3,0
Wheel bolts	M 12 x 1,5

Tab. 21 Tyres

2.4.3 Wheel fixing tightening torque

Market	Fixing medium	Thread	Wrench size	Torque [Nm]
Europe	Wheel bolt	M 12 x 1,5	19	90
USA	Wheel bolt	M 12 x 1,5	13/16"	100

Tab. 22 Wheel fixing tightening torque

2.5 Compressor

2.5.1 Working pressure and FAD

Maximum working pressure [bar]	7
SIGMA airend	190
Free air delivery [m ³ /min]	4,2

Tab. 23 Working pressure and FAD

2.5.2 Compressed air outlet

Discharge valve ["]	No.
G 3/4	2
*G 1	1
*Optional	

Tab. 24 Compressed air distributor

2.5.3 Pressure relief valve

Further information Maximum working pressure: see nameplate

Maximum working pressure [bar]	7
Relief valve activating pressure* [bar]	9,5

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

Tab. 25 Relief valve activating pressure

2.5.4 Temperature

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]	115

Tab. 26 Machine temperatures

2.5.5 Cooling oil recommendation

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

Characteristic	SIGMA FLUID	
Oil grade	S-460	MOL
Classification	Silicone-free, synthetic oil	Mineral oil
Application	Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a high duty cycle.	Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a low duty cycle.
Approval	—	—
Viscosity at 40 °C	45 mm ² /s (D 445; ASTM test)	44 mm ² /s (DIN 51562-1)
Viscosity at 100 °C	7.2 mm ² /s (D 445; ASTM test)	6.8 mm ² /s (DIN 51562-1)
Flash point	238 °C (D 92; ASTM test)	220 °C (ISO 2592)
Density at 15 °C	864 kg/m ³ (ISO 12185)	—
Pour point	-46 °C (D 97; ASTM test)	-33 °C (ISO 3016)
Demulsibility at 54 °C	40/40/0/10 min (D 1401; ASTM test)	—

Tab. 27 Cooling oil recommendation

2.5.6 Cooling oil charge

Fluid volume	Value
Total charge [litres]	9,0

Tab. 28 Cooling oil charge

2.6 Engine

2.6.1 Engine data

Feature	Specification
Make/Model	Kubota V1505-T-iDi
Rated engine power [kW]	30,6
Speed under full load [rpm]	2800
Idling speed [rpm]	2200
Type of fuel	Diesel *
Fuel consumption under load [l/h]	8,0
Oil consumption related to fuel consumption [%]	approx. 0,2

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

Tab. 29 Engine specification

2.6.2 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 10 W / 40.

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

Tab. 30 Engine oil recommendation

2.6.3 Engine coolant recommendation

The engine coolant must meet the requirements of specification ASTM D4985.



Do not use a common coolant / antifreeze that meets only the requirements of ASTM D3306. Such coolants are intended only for light use in vehicles and could shorten the useful life of the engine.

The engine service manual gives further information on coolant application.

2.6.4 Fluid volumes

Name	Fluid volume [l]
Engine oil	8,0
Fuel	80
Engine coolant	6,7

Tab. 31 Engine fluid volumes

2.6.5 Battery

Feature	Value
Voltage [V]	12
Capacity [Ah]	60

Feature	Value
PTC testing current [A] (according to EN 50342)	480

Tab. 32 Battery

Further information Depending on machine equipment, a higher capacity battery may be required. See chapter 2.7.2 for low temperature equipment.

2.7 Options

2.7.1 Option ea

Tool lubricator

Name	Temperature range [°C]	Fluid volume [l]
Special road breaker lubricant	-25 – 50	2,5

Tab. 33 Road breaker lubricant recommendation

2.7.2 Option ba, bb

Low temperature equipment

2.7.2.1 Ambient conditions

Positioning	Limit value
Maximum altitude AMSL* [m]	1000
Minimum ambient temperature [°C]	-25
Maximum ambient temperature [°C]	50

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

Tab. 34 Ambient conditions

2.7.2.2 Option ba

Air lines frost protection

Antifreeze	Fluid volume [l]
Wabcothyl	0,3

Tab. 35 Antifreeze recommendation

2.7.2.3 Option bb

Coolant pre-heating

Coolant pre-heater	Value
Model	DEFA A411120
Voltage [V]	230
Power [W]	600

Tab. 36 Coolant pre-heater

3 Safety and Responsibility

3.1 Basic Information

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

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



DANGER

Disregard of these instructions can result in serious injury.

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

3.2 Specified Use

The machine is intended solely for generating compressed air for industrial use. An optional electric generator is available to generate electric power for individual consumers.

Any other use is considered incorrect. The manufacturer is not liable for any damages that may result there from. 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.
- Do not use compressed for any application that will bring it into direct contact with foodstuffs unless it is specifically treated.

3.3 Improper Use

- Never direct compressed air at persons or animals.
- Do not use untreated compressed air for breathing purposes.
- Do not allow the machine to breath 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 applied European directives and/or valid national legislation, safety and accident prevention regulations.

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

3.4.2 Defining 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 authorisation to operate vehicles and electrical and compressed air devices.

Authorised maintenance personnel possess the following qualifications:

- are of legal age,
- have read, are conversant with and adhere to the safety instructions and sections of the service manual applicable to installation and maintenance,
- are fully conversant with the safety concepts and regulations of 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.



1. DANGER!

There is danger of fatal injury caused by contact with live components.

- Only qualified electricians may work on the installation, maintenance and repair of the machine's electrical assemblies. This includes work on current-carrying components.

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

3.4.3 Adherence to inspection schedules and accident prevention regulations

The machine is subject to local inspection schedules.

Examples of German inspection schedules

- Recurring inspections according to BGR 500, chapter 2.11:
The user must ensure that the machine's safety devices are checked for function as required or at least annually.

- Oil changing according to BGR 500, chapter 2.11:
The user must ensure that the cooling oil is changed as required or at least annually and the oil change must be documented. This requirement may be waived if an oil analysis proves that the oil is still usable.
- Recurring inspections according to BGR 500, chapter 2.8:
The user is obliged to ensure that only lifting gear is used that has been expertly inspected and any deficiencies rectified.
- Keep to inspection intervals in accordance with the Ordinance on Industrial Safety and Health with maximum intervals as laid down in Para. 15.

Inspection	Inspection interval	Inspecting authority
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. 37 Inspection intervals according to Ordinance on Industrial Safety and Health

3.5 Dangers

Basic Information

Information concerning the various forms of danger that can arise during machine operation are found here.

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

Warning instructions are found before a potentially dangerous task.

3.5.1 Safely dealing with sources of danger

Information is found here concerning how to counter the various forms of danger that can arise during machine operation.

Exhaust fumes

Exhaust fumes from combustion engines contain carbon monoxide; this gas is odourless and can cause death.

- Never use the machine in enclosed spaces, only in the open.
- Do not inhale exhaust fumes.
- Direct the exhaust fumes to the open air with a pipe ($\varnothing >$ than 100 mm).

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.
- Keep fuel away from hot machine parts.

- Never top up antifreeze (option ba) unless the machine is stopped and cooled down.
- Make sure that the ambient temperature at the machine's place of use is within permissible limits.

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. When pressure has escaped, remove the filler cap completely.

Forces of compression

Escaping compressed air can cause serious injury. The following information concerns work on components that could be under pressure.

- Wait until the machine has automatically vented (check that the pressure gauge indicates 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 pressurized components (e.g. pipes and vessels) as this influences the component's resistance to pressure. The safety of the machine is then no longer ensured.

Spring force

Sudden release of spring force can cause serious energy.

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

- Do not open or dismantle any valves.

Compressed air quality

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

Rotating components

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

- Operate the machine only with closed safety guards, access doors and panels.
- Shut down the machine before opening a door or canopy.
- Wear close-fitting clothes and a hair net if necessary.
- Fit all safety devices and panels before starting the engine.

Electricity

- Allow only qualified and authorized electricians or trained personnel under the supervision of a qualified and authorized electrician to carry out work on electrical equipment according to electrical engineering regulations.
- Check regularly that all electrical connections are tight and in order.
- Only qualified and authorised electricians may carry out work on the generator or generator control box.
- Never carry out work on the generator or generator control box unless the machine is shut down.

High temperature

- Avoid contact with hot components. These include, for example, engine, compressor airend, oil and compressed air lines, coolers and oil separator tank.
- Wear protective clothing.
- 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.

Noise

- Operate the machine only with intact soundproofing.
- Open machine access doors for checks for a short period only.
- Wear hearing protection if necessary. The pressure relief valve blowing off, for example, can be particularly loud.

Operating materials

- Strictly forbid fire, open flame and smoking.
- Follow safety regulations when dealing with fuel, 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, cooling and lubricating fluids or antifreeze.
- Keep suitable fire extinguishing agents ready for use.
- Use only KAESER approved operating materials.

Unsuitable spare parts

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

Conversion or modification of the machine

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

3.5.2 Safe machine operation

Information on conduct that will help in handling the machine safely is listed here.

Transport

- Shut down and fully disconnect the machine before transporting it.
- 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.
- If the machine is towed on public roads, the local regulations regarding safe road transport must be observed.
- The maximum permissible load for the towing vehicle coupling and the maximum coupling load given for the machine must not be exceeded.
- If the towbar is not horizontal, towing instability can develop and damage to the machine occur.
- When the machine is lifted by a crane, the safety regulations relating to the crane and lifting slings must be observed.
 - Do not enter the danger zone while the machine is being lifted.
 - Never lift the machine over people or residential buildings.
 - Secondary or attached loads may not:
 - cause excessive loading on the machine's lifting point (lifting eye),
 - adversely influence the machine's centre of gravity so that it hangs out of square.
 - Use lifting slings that are suitable for the loads to which they will be subjected.
 - 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 tamper with the fixing points of the lifting eye.
 - Avoid jerking when lifting, as this may damage components.
 - Loads must be slowly lifted and carefully set down.
 - Never allow the load to hang from the crane longer than necessary.
 - Transporting by slinging beneath a helicopter is forbidden.

Positioning

- Do not position the compressor directly against a wall. A build up of heat from the exhaust can damage the machine.
- Do not operate in areas in which specific requirements regarding explosion protection are in force.
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Ensure adequate ventilation.
- Ensure that required ambient conditions are maintained with regard to:
 - ambient temperature,
 - clean inlet air with no damaging contaminants,
 - inlet air free of explosive or chemically unstable gases or vapours,
 - inlet air free of exhaust gasses from internal combustion engines,
 - inlet air free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulphide.
- Do not position the machine in warm exhaust air from other machines.
- Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
- Check the wheels to prevent unwanted movement.

Operation

- Keep the access doors closed for safety and to ensure correct cooling function.
- Carry out regular inspections:
 - for visible damage and leakage,
 - of safety devices,
 - of components needing to be monitored.
- Never operate machines without an air filter when drawing in air from the surroundings.

Maintenance

- Make sure the machine is shut down, cooled down and pressure-free before commencing any maintenance work.
- Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- 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 open or destroy removed components as some (inlet valves, for instance) are powerfully spring-loaded.

Decommissioning, storage, disposal

- Drain out fluids and dispose of according to environmental regulations.
These include, for example, fuel, engine and compressor oil, antifreeze 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. 38 Danger areas

3.6 Safety Devices

Safety devices ensure safe working with the machine.

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

Further information More information on safety devices is contained in chapter 4, section 4.5.

3.7 Safety signs

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

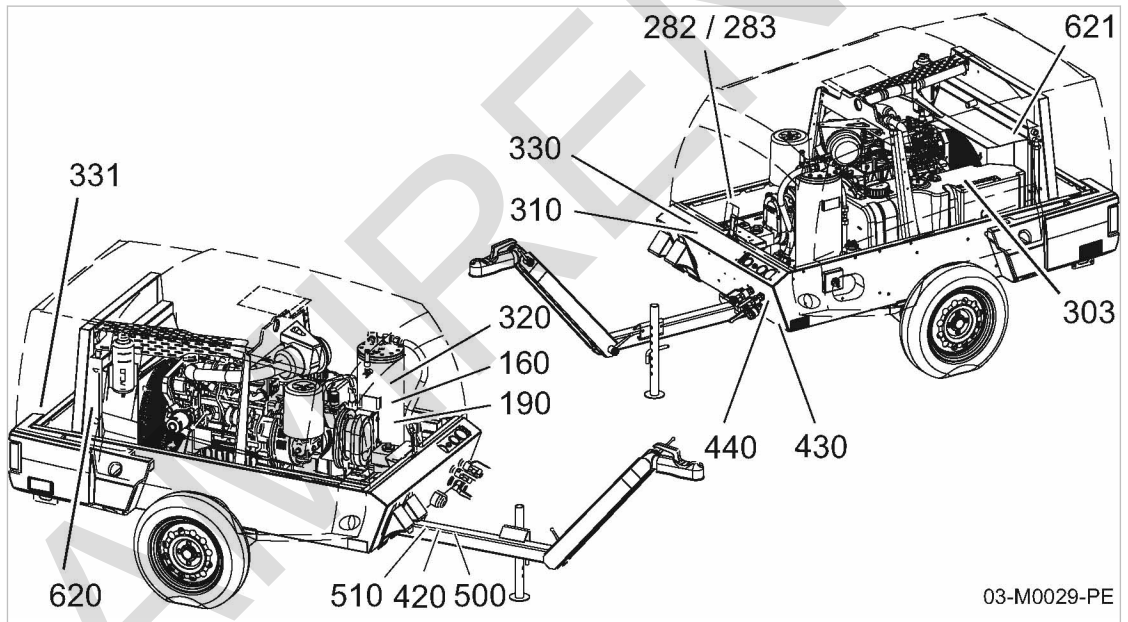










Fig. 1 Location of safety signs

Item	Sign	Meaning
310		It is forbidden to operate the machine with open doors or enclosure!
311		Injuries or damage to the machine may occur when the machine is open. <ul style="list-style-type: none"> ➤ Operate only with the enclosure fully closed. ➤ Transport only with the enclosure fully closed.

* Location within the machine
 ** Only machines with generator
 *** only mobile machines

Item	Sign	Meaning
332		Hot surfaces and dangerous gas! Burning, from contact with hot components or gasses. <ul style="list-style-type: none"> ➤ Do not touch the surface. ➤ Wear long-sleeved garments (not synthetics such as polyester) and protective gloves. ➤ Do not inhale dangerous gases.
330 331		Hot surfaces! Risk of burns caused by contact with hot components. <ul style="list-style-type: none"> ➤ Do not touch the surface. ➤ Wear long-sleeved garments (not synthetics such as polyester) and protective gloves.
620 621		Risk of serious lacerations or even severing of extremities (fingers) from rotating components. <ul style="list-style-type: none"> ➤ Operate the machine only with closed safety guards, access doors and panels. ➤ Shut down the machine before opening a door or canopy.
600*		Risk of fatal injury caused by dismantling valves (spring-loaded or under pressure) <ul style="list-style-type: none"> ➤ Do not open or dismantle valves. ➤ Call an authorized Service Technician if a fault occurs.
160*		Incorrect oil levels can cause damage to the machine or excessive oil content in the compressed air. <ul style="list-style-type: none"> ➤ Check the oil level regularly and correct as necessary.
320*		Loud noise and oil mist! Hearing damage and burning by relief valve blowoff. <ul style="list-style-type: none"> ➤ Wear hearing protectors and protective clothing. ➤ Close the canopy or doors. ➤ Work with caution.
830**		There is danger of fatal injury caused by contact with live components. <ul style="list-style-type: none"> ➤ Take protective measures.
510***		Malfunction due to deficient maintenance. Injury and machine damage possible. <ul style="list-style-type: none"> ➤ Maintain the chassis regularly. ➤ Note instructions in the service manual regarding the chassis.

* Location within the machine

** Only machines with generator

*** only mobile machines

Tab. 39 Safety signs

3.8 In Emergency

3.8.1 Correct fire fighting

Suitable extinguishing agents:

- Foam
- Carbon dioxide
- Sand or earth

Unsuitable extinguishing agents:

- Strong jet of water
1. Keep calm.
 2. Give the alarm.
 3. Shut down the machine from the instrument panel if possible.
 4. Move to safety.
 - Warn persons in danger.
 - Help incapacitated persons.
 - close the doors.
 5. Try to extinguish the fire if you have the skill to do so.

3.8.2 Contact with operating materials

The following operating materials are in the machine:

- fuel
- Engine coolant
- battery electrolyte
- lubricating oil
- compressor cooling oil
- Tool lubricant (option e)
- Antifreeze (option ba)



If necessary, request a copy of the safety data sheet for KAESER SIGMA FLUID.

- Eye contact:
rinse thoroughly with lukewarm water and seek medical assistance.
- Skin contact:
wash off immediately.

3.9 Warranty

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

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

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

In addition, we accept no warranty obligation for:

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

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

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

3.10 Environmental Protection

- Store and dispose of operating materials and replaced parts in accordance with local environmental protection regulations.
- Observe relevant national regulations.



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



- Do not allow operating materials to escape to the environment or into the sewage system.

4 Design and Function

4.1 Bodywork

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

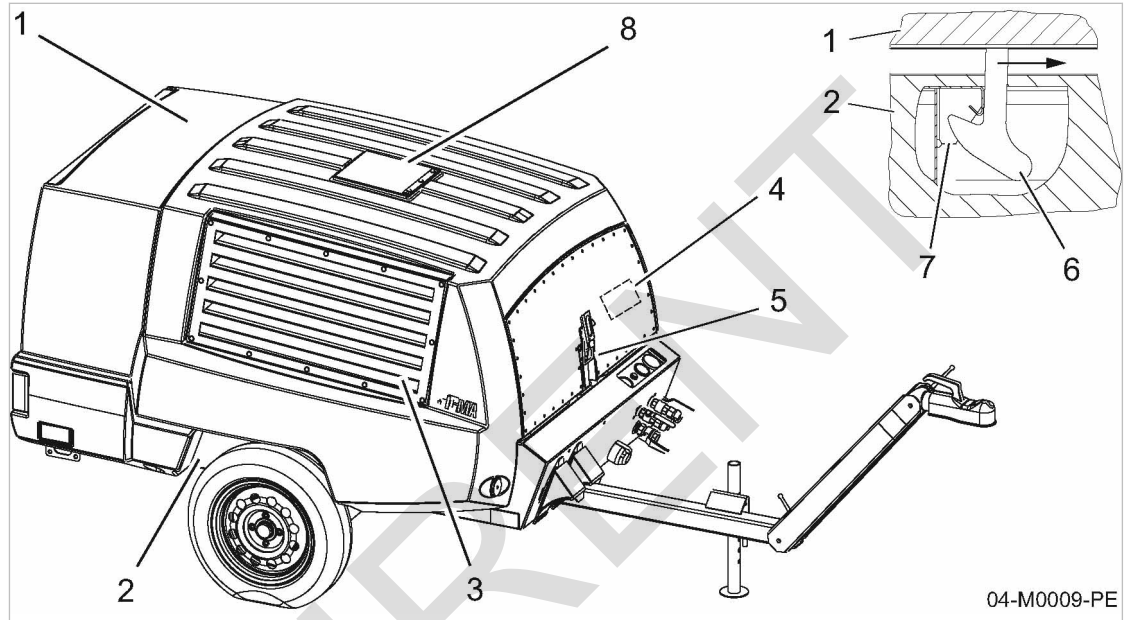


Fig. 2 Overview Bodywork

- | | |
|--------------------------------|-------------------------|
| ① Canopy | ⑤ Snap fastener |
| ② Lower body | ⑥ Canopy safety catch |
| ③ Cooling air inlet | ⑦ Lock |
| ④ Recessed grip for the canopy | ⑧ Cover for lifting eye |

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

The bodywork has several functions when it is closed:

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

The canopy ① can be opened when the snap fastener ⑤ and the canopy safety latch ⑥ are released.

The safety latch is inside the canopy on the right side, next to the handle.

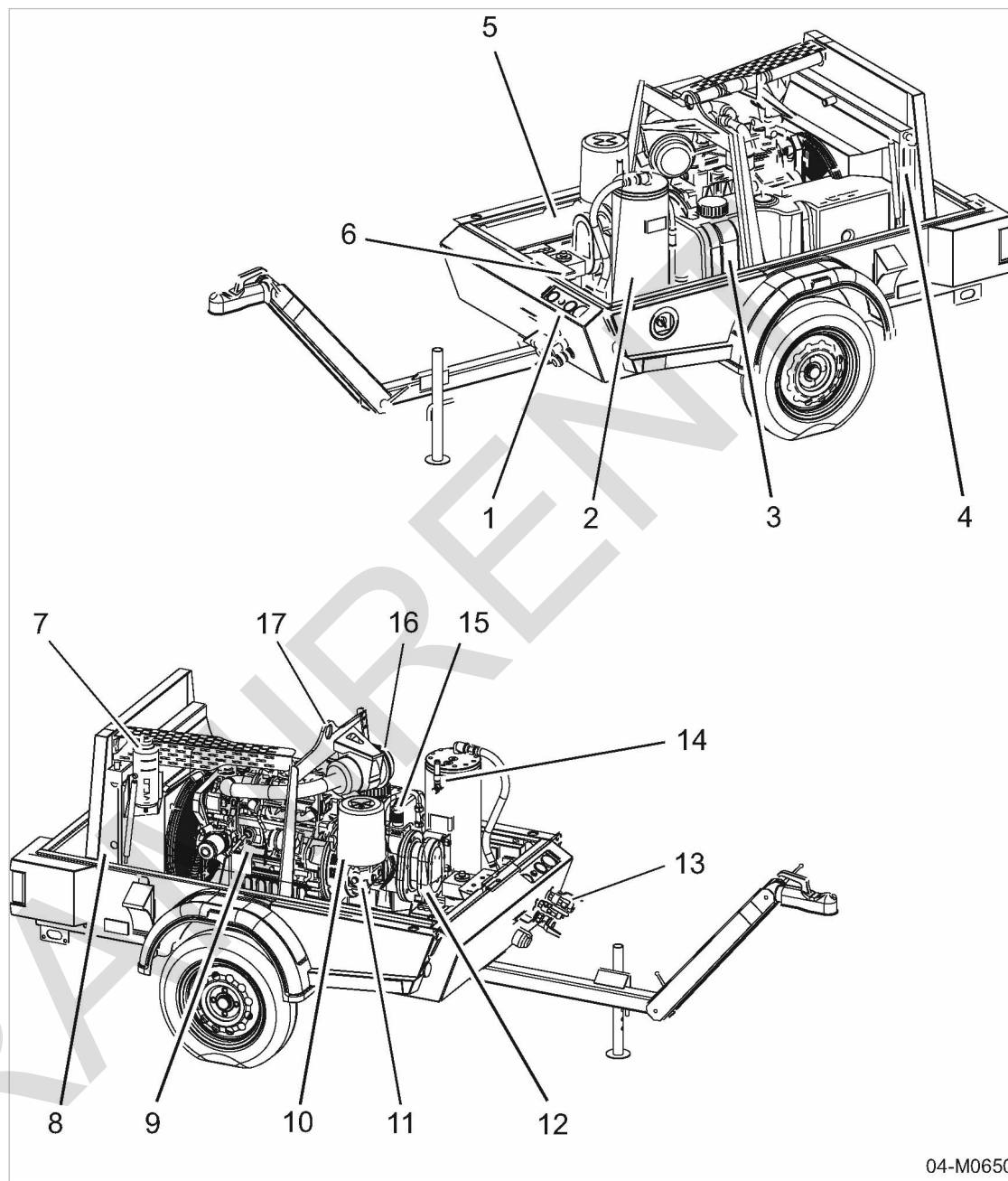
The safety latch can be seen when the snap fastener is released.

When the safety latch is released (pressed in the direction of the arrow) the canopy should open on its own.

Two spring struts hold the canopy open.

For closing the canopy, ① a recessed grip ④ is incorporated within the canopy.

4.2 Component identification



04-M0650

Fig. 3 Side view (canopy removed)

- | | |
|----------------------------|-------------------------------|
| ① Instrument 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 Pressure relief valve |
| ⑥ Canopy safety catch lock | ⑮ Thermostatic valve |
| ⑦ Coolant expansion tank | ⑯ Engine fan |
| ⑧ Radiator | ⑰ Lifting eye |
| ⑨ Engine | |

4.3 Machine function

Machine function (without options)

Item numbers correspond to the pipe and instrument flow diagram in chapter 13.2.

RAMIRENT

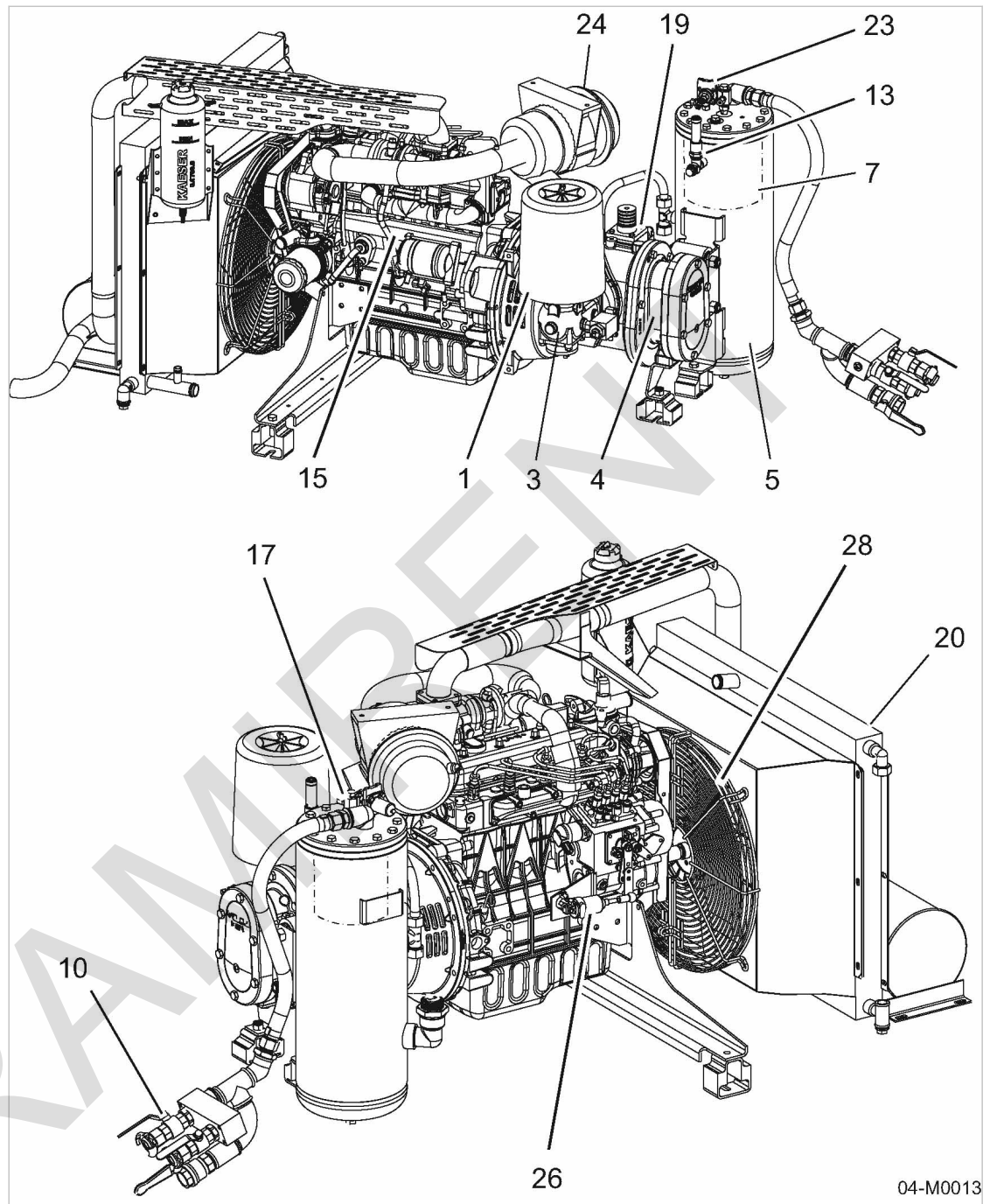


Fig. 4 General design

- | | |
|------------------------------|---|
| ① Compressor air filter | ①⑦ Dirt trap |
| ③ Inlet valve | ①⑨ Thermostatic valve (oil temperature control) |
| ④ Air end | ②① Oil cooler |
| ⑤ Oil separator tank | ②③ Proportional controller |
| ⑦ Oil separator cartridge | ②④ Engine air filter |
| ⑩ Compressed air distributor | ②⑥ Engine speed control cylinder |
| ⑬ Pressure relief valve | ②⑧ Fan |
| ⑮ Engine | |

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.

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. Pressure within the machine keeps the oil circulating. A separate pump is not necessary. A thermostatic valve (19) automatically maintains optimum cooling oil temperature.

Compressed air, freed of cooling oil in the oil separator tank (5), flows through the minimum pressure nozzle (8) into the 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 modes



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

4.4.1 Operating modes

The machine operates in the following modes:

- **LOAD**
 - The inlet valve is open.
 - The engine speed control cylinder is at maximum speed.
 - The airend provides compressed air for connected consumers.
 - The minimum pressure nozzle ensures that the pressure in the oil separator tank cannot fall below the set minimum. The minimum pressure ensures continuous circulation of cooling oil through the machine.
- **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.
 - Engine speed is also varied accordingly by the control cylinder.
 - The airend provides compressed air for connected consumers.
 - This MODULATING control ensures minimum fuel consumption during times of low demand. The load and fuel consumption of the engine rises and falls with the air demand.
 - The control valve is factory set. The setting should not be changed without consultation with KAESER SERVICE.
- **IDLE**
 - The engine speed control cylinder is at minimum speed.
 - The inlet valve is closed.
 - The minimum pressure nozzle maintains minimum internal pressure.

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 varying the volume of compressed air delivered, thereby matching 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 stepless delivery regulation minimises 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 shutdown

The following functions are monitored automatically.

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



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 Options

4.6.1 Option ea Tool lubricator

Compressed air containing lubricating oil is needed for the lubrication of certain air tools. A tool lubricator serves this purpose.



WARNING

Lubrication with tool oil.

Air tools that must not be lubricated can be damaged.

- Blow any residual oil out of the line before connecting such an air tool.

The amount of oil in the compressed air is controlled by a metering valve on the lubricator. The oil can be cut off completely by a shut-off valve.

The shut-off valve is in the air pipe.

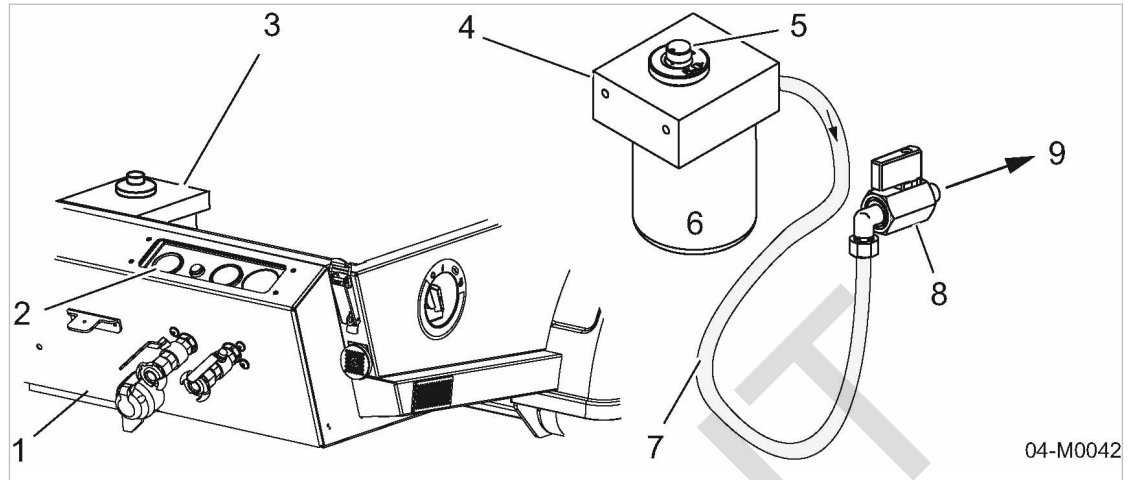


Fig. 5 Tool lubricator

- | | | | |
|---|---------------------------------|---|-------------------------|
| ① | Bodywork | ⑥ | Oil tank |
| ② | Instrument panel | ⑦ | Air line |
| ③ | Location of the tool lubricator | ⑧ | Shut-off valve (opened) |
| ④ | Tool lubricator | ⑨ | Air pipe |
| ⑤ | Metering knob | | |

Further information See chapter 8.3 for tool lubricator operation.

4.6.2 Option ba, bb Low temperature equipment

4.6.2.1 Option ba Frost protector

A frost protector is provided for operation in extremely low temperatures.

The frost protector guarantees machine operation at temperatures down to -25 °C.

The electrical equipment enables trouble-free engine starting at ambient temperatures down to -10 °C.

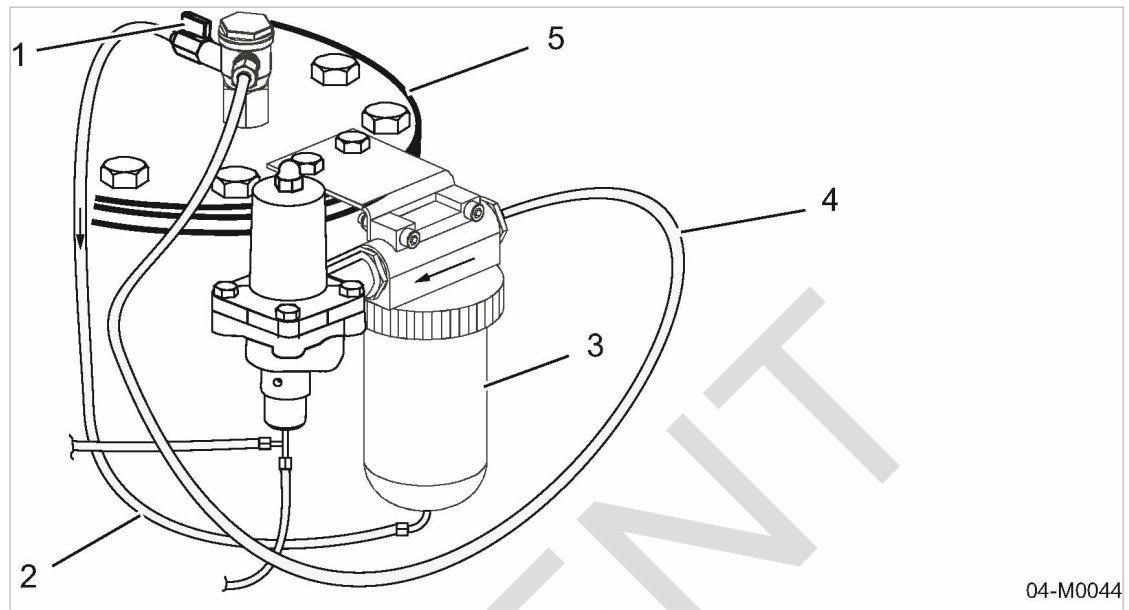


Fig. 6 Frost protector

- | | |
|-----------------------------------|------------------------------|
| ① Shut-off valve | ④ Control line (bypass line) |
| ② Control line (frost protection) | ⑤ Oil separator tank cover |
| ③ Frost protector | |

Frost protection

The frost protector comes into action when the machine is stopped in ambient temperatures below freezing. The compressed air carries antifreeze to coat and protect airlines and valves. This prevents freezing up of control and regulating components.

The heat of the machine prevents individual control components freezing up during operation.

Summer operation

At outside temperatures above 0 °C it is no longer necessary to inject the control lines in the machine with antifreeze before shutting it down.

Further information See chapter 8.4 for frost protector operation.

4.6.2.2 Option bb Coolant pre-heating

The engine coolant can be pre-heated to improve starting under cold conditions.

A separate mains power connection provides power to the coolant pre-heater. A flexible power cable joins the machine's power plug to the user's power socket.

The coolant pre-heater works according to the principle of self-circulation.

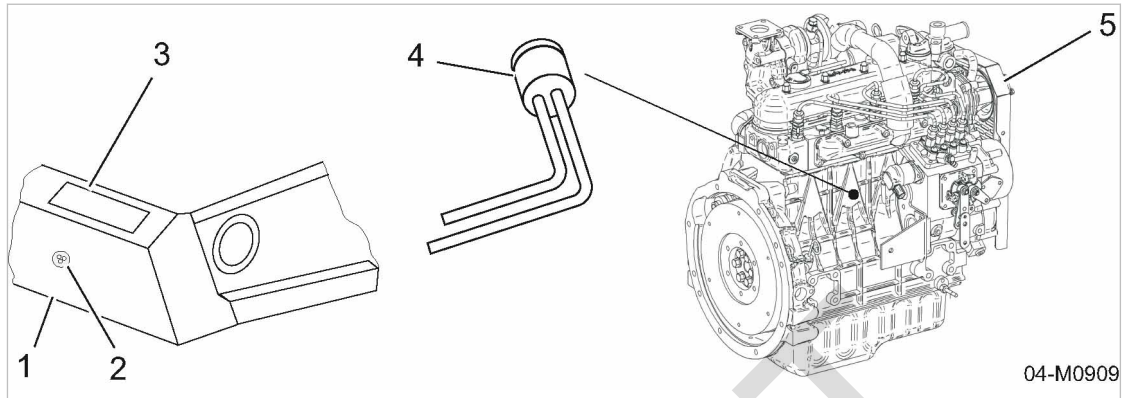


Fig. 7 Coolant pre-heating

- | | | | |
|---|---|---|---------------------|
| ① | Bodywork | ④ | Coolant pre-heating |
| ② | Connecting socket for coolant pre-heating | ⑤ | Engine |
| ③ | Instrument panel | | |

The ideal coolant pre-heating period is 2-3 hours before the machine is started. A pre-heating period of more than 3 hours is not necessary, as the maximum effect has already been achieved within this period (thermal balance).

Further information Starting the coolant pre-heating (see chapter 8.4).

4.6.3 Option oe Sealed floor pan

The sealed floor pan catches any spilt or leaking operating fluids.

These may include:

- compressor cooling oil
- engine oil
- engine coolant
- fuel
- battery electrolyte

The drains from the oil separator tank, oil cooler and engine sump are fitted with hoses that lead to shut-off valves. The shut-off valves are next to each other at a conveniently accessible location. This greatly simplifies oil changing. The shut-off valves are within the machine enclosure on the right side (facing direction of travel).

Further information See chapter 10.4.3.1 for cooling oil drainage.

Further information See chapter 10.3.4.1 for engine oil drainage.

4.6.4 Option oa Battery isolating switch

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

The «battery isolating switch» is within the bodywork on the lifting frame on the right side of the machine.



CAUTION

Danger of short circuit

Damage to the machine electrics is possible.

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

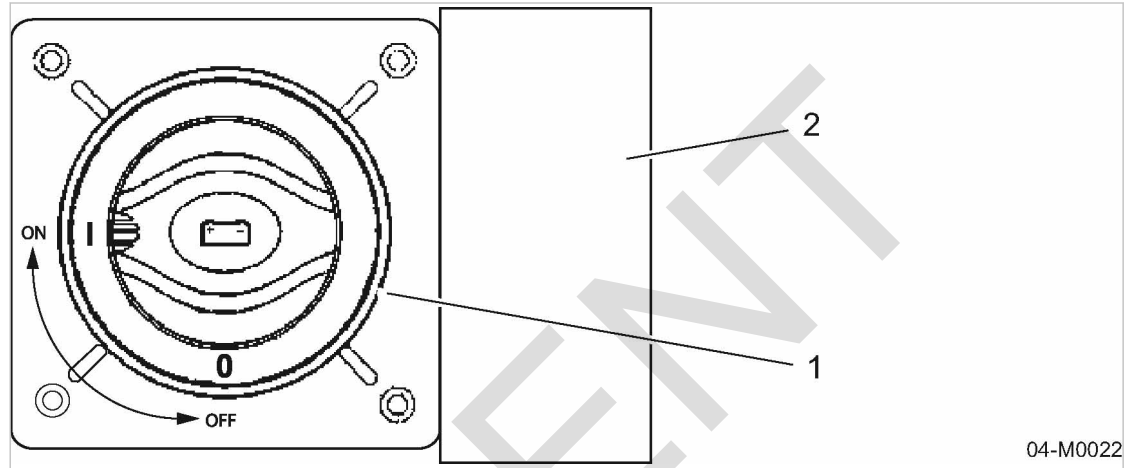


Fig. 8 Battery isolating switch

- ① «Battery isolating switch»
- ② Lifting eye

Further information See 8.2 for operating the battery isolating switch.

**4.6.5 Option ne
Fuel filter with water trap**

Diesel fuel and water have different specific gravities. Water is denser than diesel fuel. This fact is used in the water trap to separate water from the fuel. The water sinks to the bottom of the transparent trap and can be drained off.

Further information See 10.3.3.1 for draining off water and dirt particles.

4.6.6 Option for operating in fire hazard areas

**4.6.6.1 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.

Further information See 10.7.3 for spark arrestor cleaning.

4.6.6.2 Option lb
Engine air intake 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 lead to serious mechanical damage. Without appropriate preventive measures, the engine and compressor can be destroyed. Explosion or fire are also possible.

When flammable gas is drawn into the engine, shutting off the fuel supply will not stop the engine right away. Only by shutting off the air intake can the engine be brought to an immediate stop.

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

Further information See 10.7.4 for engine air intake shut-off valve maintenance.

4.6.7 Option sf
Optional anti-theft device

The machine is fitted with a security chain as theft protection.

4.6.8 Transportation option

4.6.8.1 Chassis of roadworthy machines

The chassis fitted with options *sb* and *se* are equipped with a service brake.

If the towing vehicle brakes during the towing event, the trailer presses the overrun device together to a point where the trailer is actively braked.

Function:

- The overrun device activates the relay lever.
- The relay lever pulls the brake actuating rod with the brake cable.
- The brake joint lock is twisted and spreads the brake shoes in the drum brake.
- The trailer brakes.

Option	Name	Characteristics
sa	EU chassis 01	<ul style="list-style-type: none"> ■ Single-axle ■ Axle rubber-sprung ■ Prop stand ■ Height-adjustable towbar
sb	EU chassis 02	<ul style="list-style-type: none"> ■ Single-axle ■ Axle rubber-sprung ■ Jockey wheel ■ Height-adjustable towbar ■ Service brake ■ Parking brake ■ Breakaway cable

Option	Name	Characteristics
sd	EU chassis 03	<ul style="list-style-type: none"> ■ Single-axle ■ Axle rubber-sprung ■ Jockey wheel ■ Fixed height towbar ■ Parking brake ■ Breakaway cable
se	EU chassis 04	<ul style="list-style-type: none"> ■ Single-axle ■ Axle rubber-sprung ■ Prop stand ■ Fixed height towbar ■ Service brake ■ Parking brake ■ Breakaway cable

EU \triangleq Europe

Tab. 40 Chassis - overview

Further information For adjusting the chassis, see chapter 6.3,
 for dimensional drawings of roadworthy machines, see chapter 13.3.

5 Installation and Operating Conditions

5.1 Safety

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

5.2 Installation conditions

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

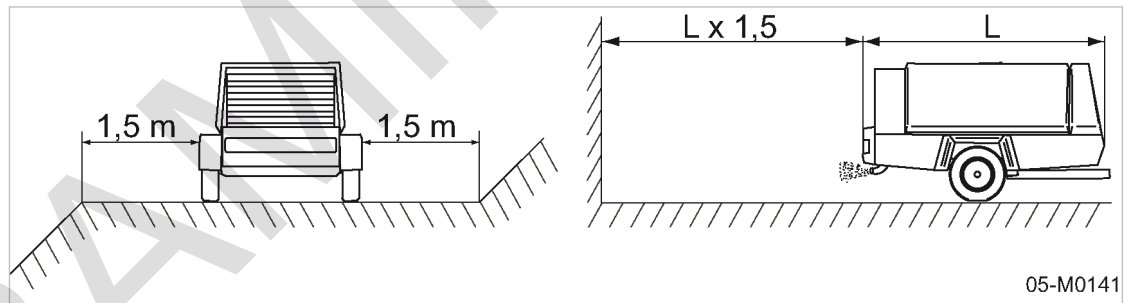


Fig. 9 Minimum distance from excavations/slopes and walls

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



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



3. Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
4. **CAUTION!**
Fire hazard from build-up of heat and hot exhaust system!
Insufficient distance from a wall may well cause heat build-up that could damage the machine.
 - Do not position the machine directly under a low roof or covering.
 - Ensure always sufficient ventilation space around the machine.
5. Ensure there is enough free space all round and above the machine.

6. Keep air inlet and outlet openings free of obstructions so that the cooling air can flow freely through the machine.
7. Do not allow wind to blow into the cooling air outlet.
8. Do not allow exhaust gases and heated cooling air to be drawn into the compressor.
9. Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.

**10. CAUTION!**

Ambient temperature too low!

Frozen condensate and highly viscous engine or compressor oil can cause damage when starting the machine.

- Use winter grade engine oil.
- Use low viscosity compressor oil.

11. At ambient temperatures below 0 °C, follow instructions in chapter 7.5.

RAMIRENT

6 Installation

6.1 Safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.

Basic safety instructions

1. Follow the instructions in chapter "Safety and Responsibility".
2. Installation work may only be carried out by authorized personnel.

Further information

Information on authorized personnel are found in chapter 3.4.2.

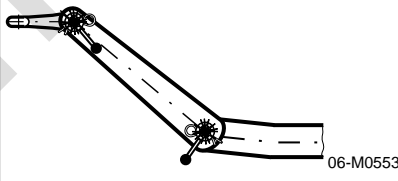
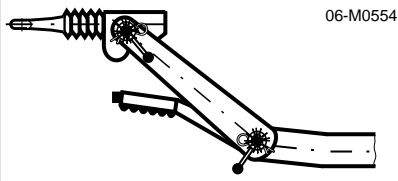
Information on dangers and their avoidance are found in chapter 3.5.

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 Adjusting the chassis

Height adjustable towbar

Option	Model	Portrayal
sa	unbraked	 06-M0553
sb	braked	 06-M0554

Tab. 41 Height adjustable towbar

Material Pliers

Hard rubber hammer

Precondition

The machine is shut down.

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

- Heed the safety instructions in chapter 3.5.

**6.3.1 Option sa
Adjusting the towbar height**

The purpose of height adjustment is to bring the towing eye, or coupling, to the correct height for the towing vehicle.

At the correct height, the towing eye or coupling should be parallel to the ground.

Height adjustment is by two serrated joints.

- Serrated joint 1: adjusts the angle of the centre piece to the towbar tube.
 - Maximum adjustment: 50° upwards.
 - Maximum adjustment: 10° downwards.
- Serrated joint 2: adjusts the angle of the eye or coupling to the centre piece.

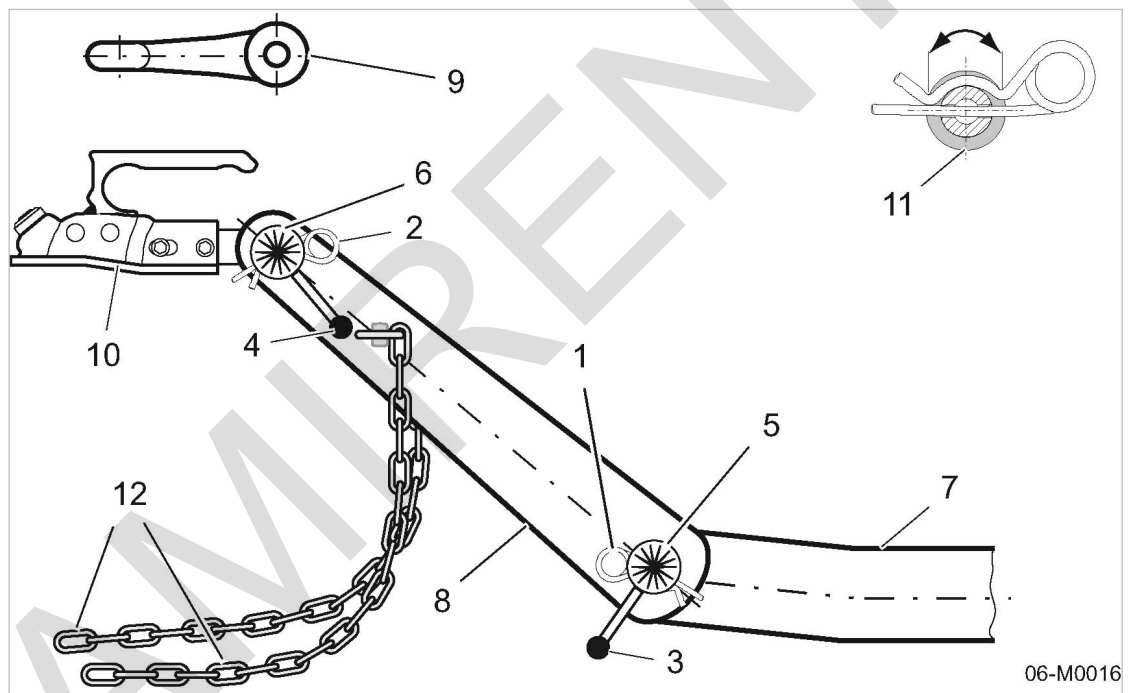


Fig. 10 Height adjustable towbar sa

- | | | | |
|-----|------------------|----|------------------------------|
| 1,2 | Split pin | 8 | Towbar centre-piece |
| 3,4 | Locking lever | 9 | Towing eye |
| 5 | Serrated joint 1 | 10 | Ball coupling |
| 6 | Serrated joint 2 | 11 | Split pin securing principle |
| 7 | Towbar tube | 12 | Safety chains |



1. **CAUTION!**
Danger of pinching!
Severe injury to fingers is possible if they become trapped in the adjusting mechanism.
 - Always wear protective gloves.
 - Work with caution.
2. Draw out the split pin 1.
3. Undo the locking lever 3 until the serrated joint 5 is disengaged.
4. Make the angle adjustment to the serrated joint 5.
5. Tighten the locking lever 3 making sure the serrations engage.

6. Draw out the split pin ②.
7. Undo the locking lever ④ until the serrated joint ⑥ is disengaged.
8. Adjust the angle of the serrated joint ⑥ to bring the towing eye or coupling parallel to the ground at the height of the towing vehicle hitch.
9. Tighten the locking lever ④ making sure the serrations engage.
10. Check that the towbar is adjusted to the correct height.

Check if:

- the towing eye ⑨ or coupling is at the right height and parallel to the ground,
- the serrated joints ⑤ and ⑥ are fully engaged,
- The locking levers ③ and ④ are tightened.

11. Make sure the locking levers ③ and ④ are tight by striking with a hard rubber hammer.

12. Insert the split pins ① and ②.

13. Check the correct position of the split pin.



The split pin must be fully inserted so that it is trapped by its bow over the axis of the locking lever (see 10.).

Check locking position ⑪.

- Split pin ① properly inserted.
- Split pin ② properly inserted.

14. Tighten the locking lever again after 50 km.



The serrations in the adjustment joint will not disengage. The serrations are corroded together.

- Free the serrations by jerking the towbar horizontally and vertically.

6.3.2 Option sb Adjusting the towbar height

The purpose of height adjustment is to bring the towing eye, or coupling, to the correct height for the towing vehicle.

At the correct height, the towing eye or coupling should be parallel to the ground.

Height adjustment is by two serrated joints.

- Serrated joint 1: adjusts the angle of the centre piece to the towbar tube.
 - Maximum adjustment: 50° upwards.
 - Maximum adjustment: 10° downwards.
- Serrated joint 2: adjusts the angle of the eye or coupling to the centre piece.

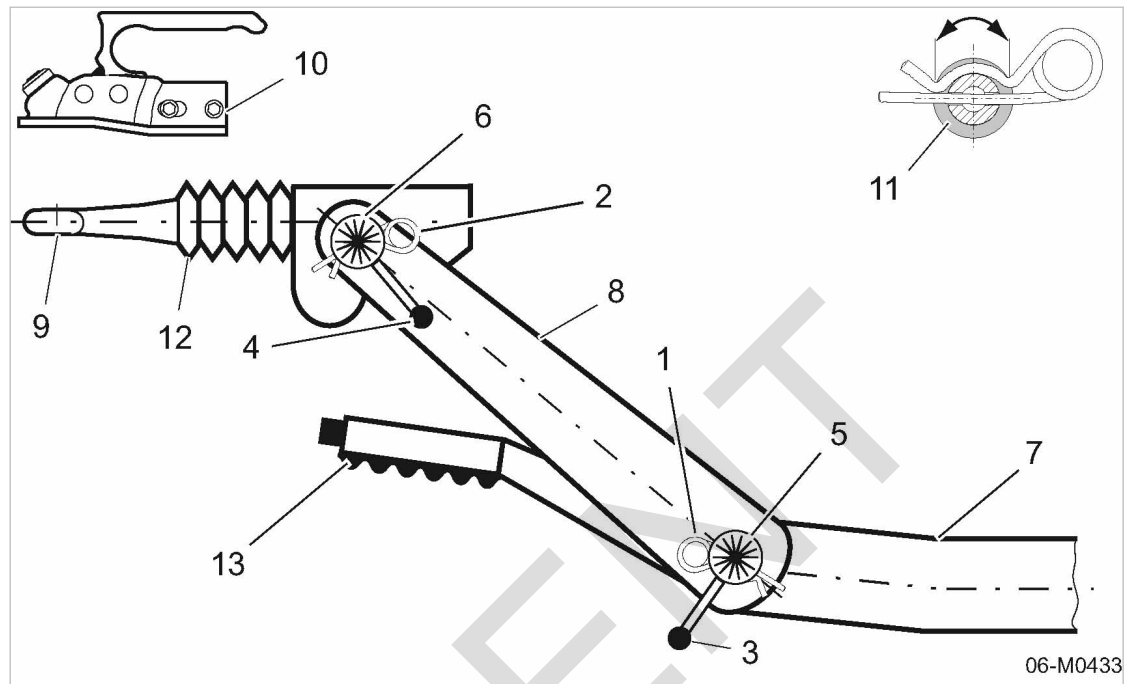


Fig. 11 Towbar height adjustment sb

- | | | | |
|-----|---------------------|---|------------------------------|
| ①,② | Split pin | ⑨ | Towing eye |
| ③,④ | Locking lever | ⑩ | Ball coupling |
| ⑤ | Serrated joint 1 | ⑪ | Split pin securing principle |
| ⑥ | Serrated joint 2 | ⑫ | Overrun damper |
| ⑦ | Towbar tube | ⑬ | Parking brake |
| ⑧ | Towbar centre-piece | | |



1. **CAUTION!**

Danger of pinching!

Severe injury to fingers is possible if they become trapped in the adjusting mechanism.

- Always wear protective gloves.
- Work with caution.

2. Draw out the split pin ①.
3. Undo the locking lever ③ until the serrated joint ⑤ is disengaged.
4. Make the angle adjustment to the serrated joint ⑤.
5. Tighten the locking lever ③ making sure the serrations engage.
6. Draw out the split pin ②.
7. Undo the locking lever ④ until the serrated joint ⑥ is disengaged.
8. Adjust the angle of the serrated joint ⑥ to bring the towing eye or coupling parallel to the ground at the height of the towing vehicle hitch.
9. Tighten the locking lever ④ making sure the serrations engage.
10. Check that the towbar is adjusted to the correct height.

Check if:

- the towing eye ⑨ or coupling is at the right height and parallel to the ground,
- the serrated joints ⑤ and ⑥ are fully engaged,
- The locking levers ③ and ④ are tightened.

11. Make sure the locking levers ③ and ④ are tight by striking with a hard rubber hammer.

12. Insert the split pins ① and ②.
13. Check the correct position of the split pin.



The split pin must be fully inserted so that it is trapped by its bow over the axis of the locking lever (see 11).

Check locking position ⑪.

- Split pin ① properly inserted.
- Split pin ② properly inserted.

14. Tighten the locking lever again after 50 km.



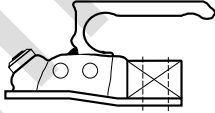
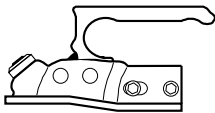


The serrations in the adjustment joint will not disengage. The serrations are corroded together.

- Free the serrations by jerking the towbar horizontally and vertically.

6.3.3 Changing the towing eye or coupling

The towbar can be fitted with various towing eyes or couplings.

Choice of ball couplings		
Option	Model	Ball coupling
sa	unbraked	
sb	braked	 06-M0556
sd	unbraked	 06-M0571
se	braked	 06-M0556

Tab. 42 Choice of ball couplings

Material Protective gloves
Hexagon wrench
Thin metal rod

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



CAUTION

Danger of pinching!

Severe injury to fingers is possible if they become trapped in the adjusting mechanism.

- Always wear protective gloves.
- Work carefully.

- Ascertain which towbar is fitted to the machine.

6.3.3.1 Option sa
Changing a height adjustable towbar from eye to ball coupling

The eye coupling on the height adjustable towbar is replaced by a ball coupling.

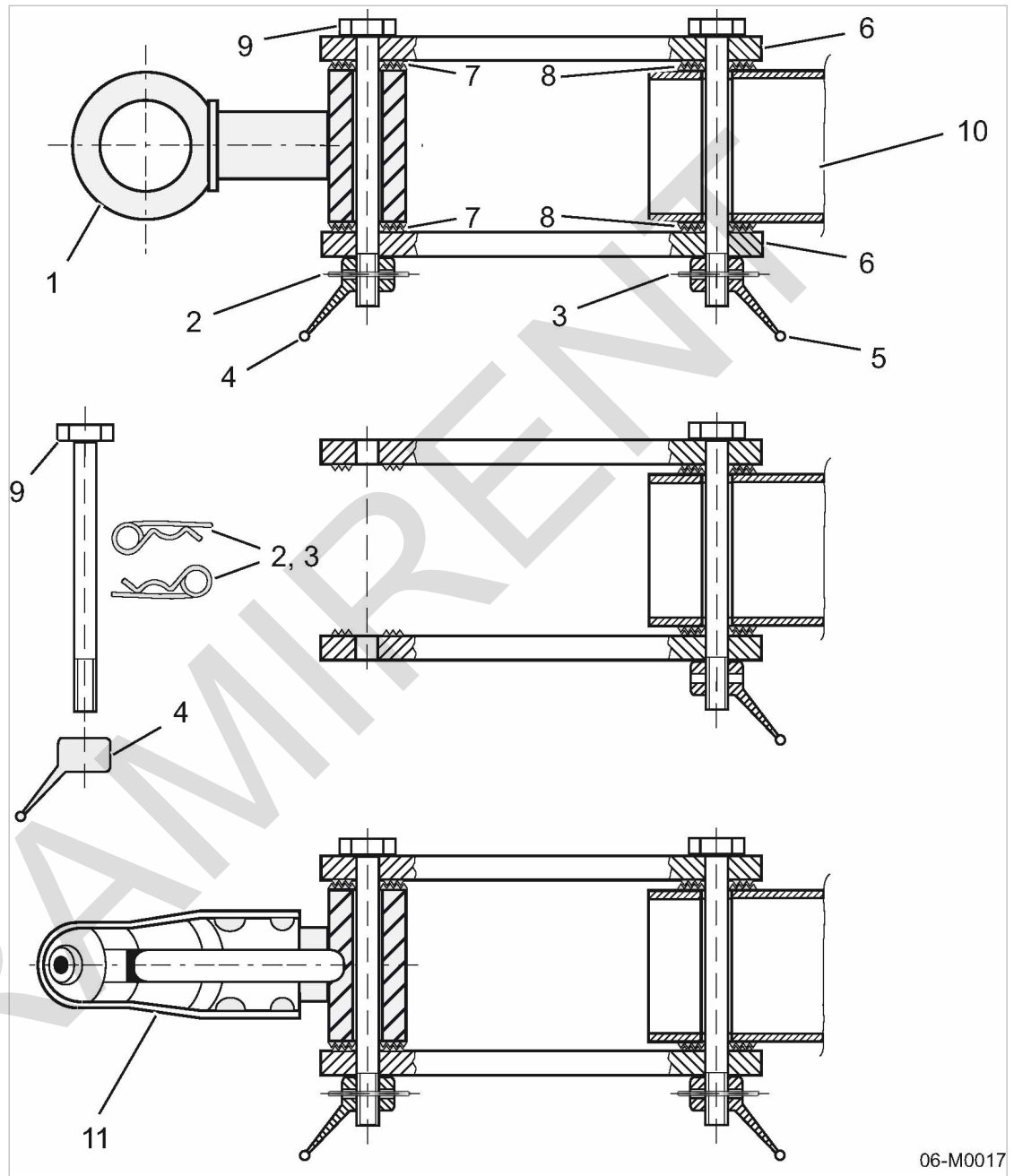


Fig. 12 Change from eye to ball coupling (height adjustable towbar)

- | | |
|--------------------|------------------|
| ① Towing eye | ⑧ Serrated joint |
| ②, ③ Split pin | ⑨ Hex-head bolt |
| ④, ⑤ Locking lever | ⑩ Towbar tube |
| ⑥ Side part | ⑪ Ball coupling |
| ⑦ Serrated joint | |

06-M0017

- Check that the ball coupling to be fitted is complete.
- Proceed as illustrated.

Removing the towing eye

1. Remove the split pins (2) and (3).
2. Loosen and remove the locking lever (4).
3. Loosen the locking lever (5) 1-2 turns.
4. Shake the side part (6) to loosen the serrated joints (7) and (8).
5. Check if:
 - The serrated joints (7) have sufficient movement
 - The serrated joints (8) have sufficient movement
6. Secure the towing eye and withdraw the hex-head bolt (9) from the side part.
7. Remove the towing eye (1).

Fitting the ball coupling

Precondition The towing eye has been removed.
The assembly condition as shown in the centre graphic in 12 has been achieved.
The complete ball coupling is to hand.

1. Position the ball coupling (11) between the two serrated joints (7) of the side parts (6).
2. Pass the hex-head bolt (9) through the side parts (6).
3. Screw the locking lever (4) onto the bolt (9).
4. Check if:
 - The serrated joints (7) and (8) engage correctly.
 - That the ball coupling (11) is horizontal.
5. Tighten the locking lever (5).
6. Tighten the locking lever (4).
7. Check if:
 - Both side parts are correctly seated.
 - The ball coupling is correctly seated.
8. Replace the split pins (3) and (2).
9. Check if:
 - The split pin (3) is correctly inserted.
 - The split pin (2) is correctly inserted.

6.3.3.2 Option sb

Changing a height adjustable towbar with overrun brake from eye to ball coupling

The eye coupling on the height adjustable towbar is replaced by a ball coupling.

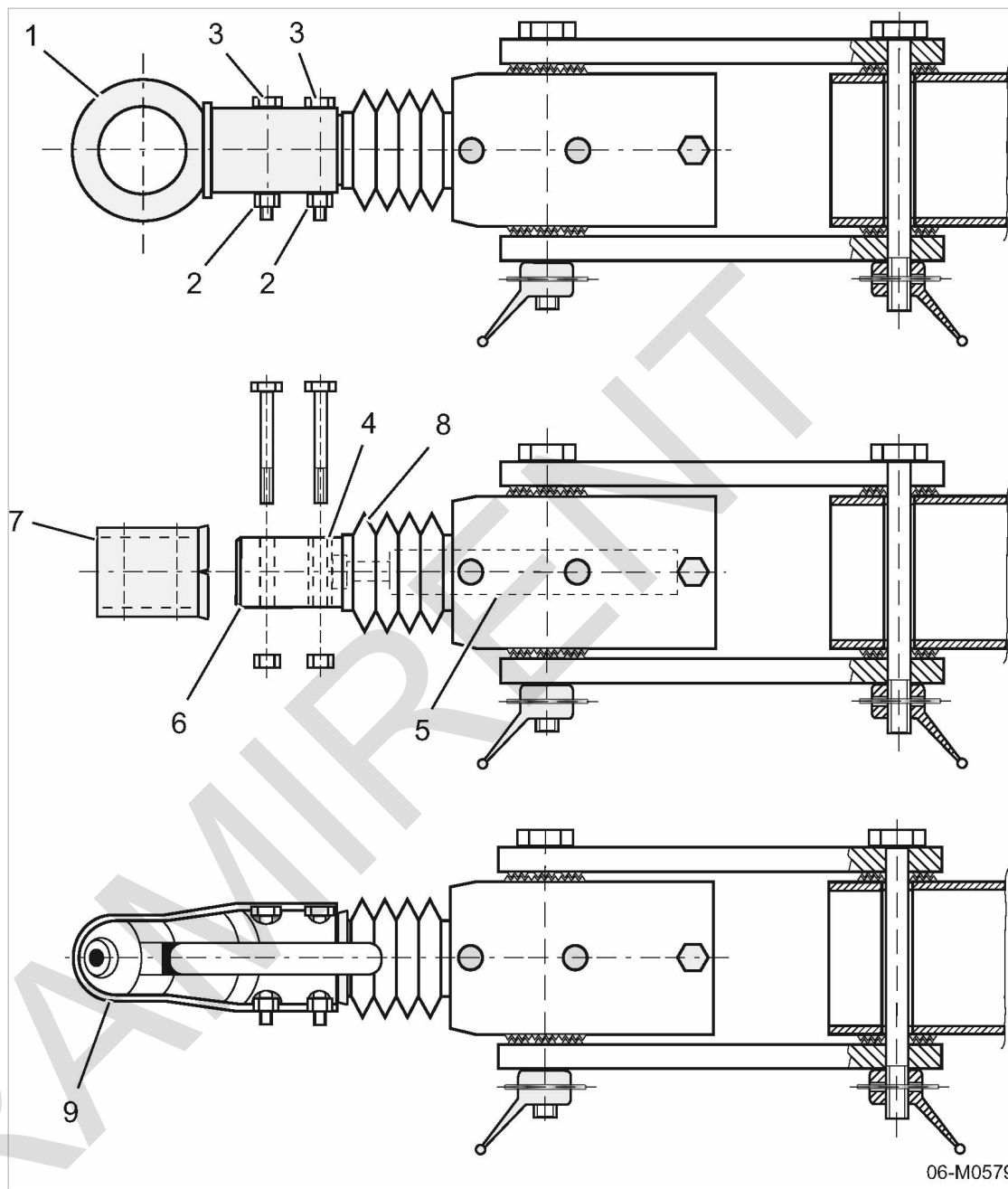


Fig. 13 Change from eye to ball coupling (height adjustable towbar with overrun brake)

- | | |
|--------------------------|---------------------|
| ① Towing eye | ⑥ Tension rod |
| ② Self-locking nut | ⑦ Saddle |
| ③ Screw | ⑧ Protective sleeve |
| ④ Bushing overrun damper | ⑨ Ball coupling |
| ⑤ Overrun damper | |

- Check that the ball coupling to be fitted is complete.
- Proceed as illustrated.

Removing the towing eye

1. Loosen and remove both nuts ②.

2. Remove both bolts ③.
3. Draw off the eye ① from the towbar ⑥.

Fitting the ball coupling

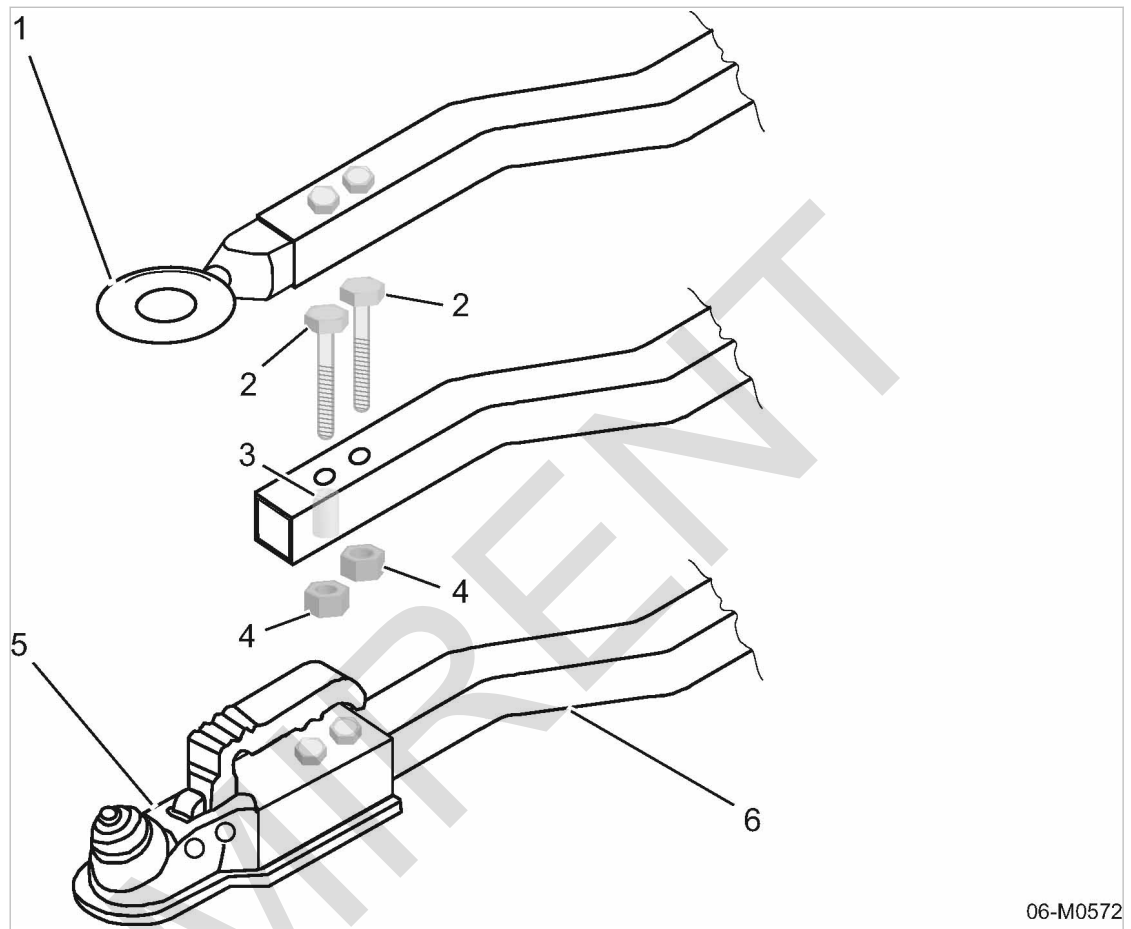
Precondition The towing eye has been removed.

The assembly condition as shown in the centre graphic in 13 has been achieved.

The ball coupling is complete with sleeve.

1. Push back the protective sleeve ⑧ if necessary.
2. Bring the bush ④ of the overrun damper ⑤ to the fixing position so holes align.
 - Push a metal rod through the towbar ⑥ and bush ④ to align the holes.
 - Withdraw the rod.
3. Press the saddle ⑦ down over the towbar ⑥.
4. Push the ball coupling ⑨ on to the towbar ⑥.
5. Align the holes for the fixing bolts ③.
6. Use a metal rod if necessary to align the holes.
7. Push the fixing bolts ③ through the holes in the coupling ⑨, the saddle ⑦, and the towbar ⑥.
8. Screw on and tighten the self-locking nuts ②.

**6.3.3.3 Option sd
Changing a fixed height towbar from eye to ball coupling**



06-M0572

Fig. 14 Change from eye to ball coupling (fixed height towbar)

- | | |
|--------------|--------------------|
| ① Towing eye | ④ Self-locking nut |
| ② Screw | ⑤ Ball coupling |
| ③ Sleeve | ⑥ Towbar tube |

- Check that the ball coupling to be fitted is complete.
- Proceed as illustrated.

Removing the towing eye

1. Loosen and remove both nuts ④.
2. Remove both bolts ②.
3. Pull off the towing eye ①.
4. Secure sleeve ③.

Fitting the ball coupling

Precondition The towing eye has been removed.
The assembly condition as shown in the centre graphic in 14 has been achieved.
The complete ball coupling is to hand.

1. Position sleeve ③ on the corresponding hole within the towbar ⑥.

2. If necessary, use a metal rod to adjust until the hole is flush with the sleeve (3).
3. Push the ball coupling (5) on to the towbar (6).
4. Check the alignment of the holes in the towbar tube (6) and coupling (5).
5. Push the fixing bolts (2) through the holes in the coupling (5) and towbar tube (6).
6. Screw on and tighten the self-locking nuts (4).

6.3.3.4 Option se

Changing a fixed height towbar with overrun brake from eye to ball coupling

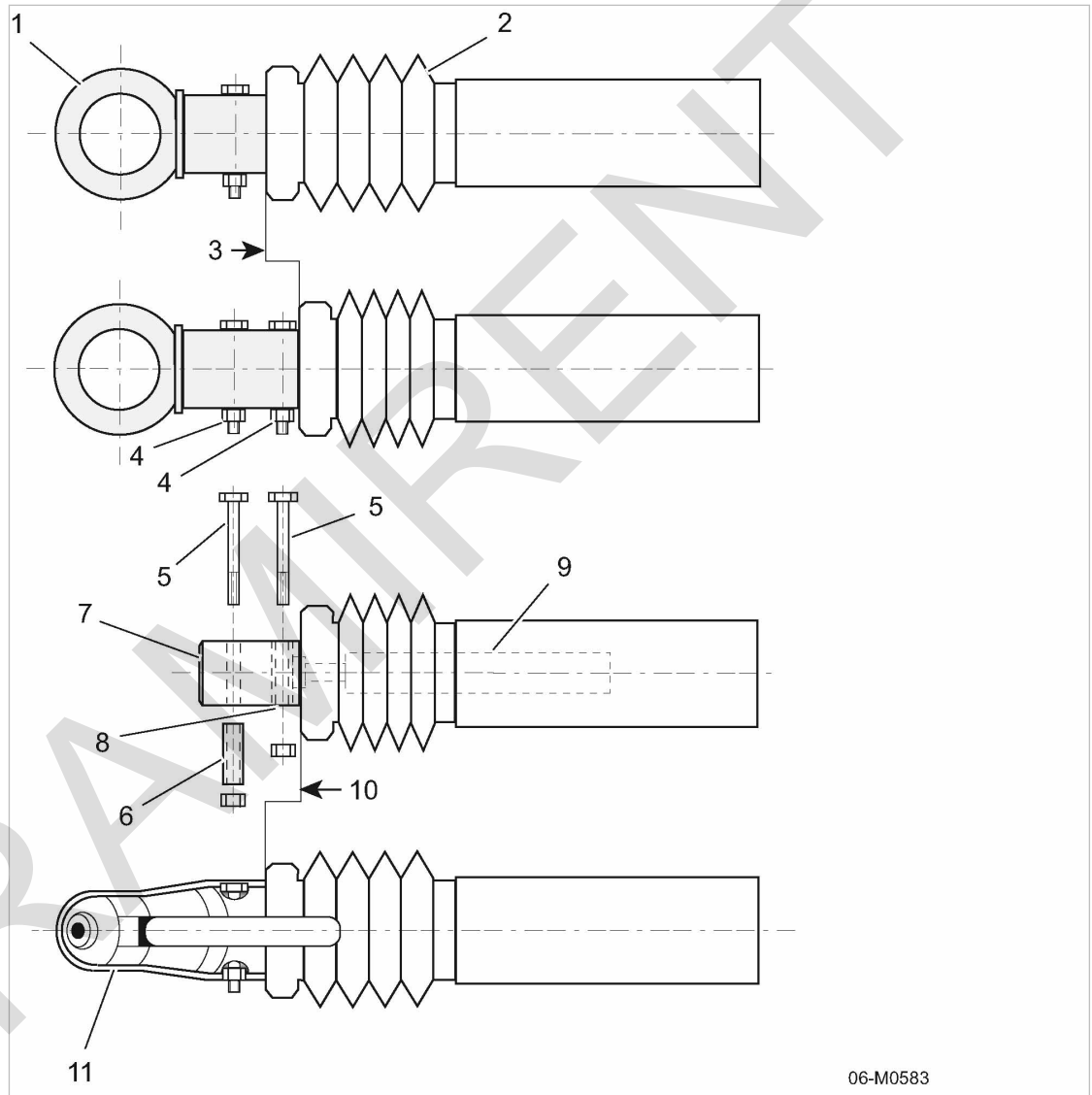


Fig. 15 Changing from eye to ball coupling (fixed height towbar with overrun brake)

- | | |
|---|--|
| ① Towing eye | ⑦ Towbar tube |
| ② Protective sleeve | ⑧ Bushing overrun damper |
| ③ Direction of arrow: to expose the bolts | ⑨ Overrun damper |
| ④ Self-locking nut | ⑩ Direction of arrow: to cover the bolts |
| ⑤ Screw | ⑪ Ball coupling |
| ⑥ Sleeve | |

- Check that the ball coupling to be fitted is complete.
- Proceed in the sequence as illustrated.

Removing the towing eye

1. Push back the protective sleeve ② to the position shown ③ to expose both bolts.
2. Loosen and remove both nuts ④.
3. Remove both bolts ⑤.
4. Remove and retain the sleeve ⑥.
5. Draw off the eye ① from the towbar tube ⑦.

Fitting the ball coupling

Precondition The towing eye has been removed.

The assembly condition as shown in the third graphic in 15 has been achieved.

The complete ball coupling is to hand (sleeve).

1. Push back the protective sleeve ② if necessary.
2. Bring the bush ⑧ of the overrun damper ⑨ to the fixing position so holes align.
 - Push a metal rod through the towbar tube ⑦ and bush ⑧ to align the holes.
 - Withdraw the rod.
3. Push the ball coupling ⑪ on to the towbar tube..
4. Align the holes for the fixing bolts ⑤.
5. Use a metal rod if necessary to align the holes.
6. Push the first bolt through the rear hole in the damper bush ⑧.
7. Push the sleeve ⑥ for the front bolt into the towbar tube ⑦ from below and hold in position.
8. Push the second bolt ⑤ through the front hole and bush ⑥.
9. Screw on and tighten the self-locking nuts ④.
10. Pull the protective sleeve ② in the direction shown ⑩ to cover the bolts.

7 Initial Start-up

7.1 Safety

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

Basic safety instructions

1. Follow the instructions in chapter "Safety and Responsibility".
2. Commissioning work may only be carried out by authorized operating and maintenance personnel.

Further information Information on authorized personnel are found in chapter 3.4.2.
Information on dangers and their avoidance are found in chapter 3.5.

7.2 Instructions to be observed before commissioning or recommissioning



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.

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

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

7.3 Checking installation and operating conditions

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

Function	See chapter	Confirmed?
➤ Are the operators fully conversant with safety regulations?	–	
➤ Have all the positioning conditions been fulfilled?	5	
➤ Is there sufficient cooling oil in the separator tank?	10.4.1	
➤ Is there sufficient oil in the engine?	Engine SM	
➤ Is the maintenance indicator on the air intake filters (engine and compressor) OK?	10.3.2, 10.4.6	
➤ Is there sufficient coolant in the coolant expansion tank?	10.3.1	
➤ Is there sufficient fuel in the fuel tank?	Engine SM	
➤ Is there sufficient tool oil in the tool lubricator? (option ea, ec)	10.7.1	
➤ Is there enough antifreeze in the frost protector? (option ba)	10.7.2	

Engine SM = engine manufacturer's service manual.

7 Initial Start-up

7.4 After storing the machine for a long period

Function	See chapter	Confirmed?
➤ Canopy closed and all panels in place?	–	
➤ Are the tyre pressures OK?	–	

Engine SM = engine manufacturer's service manual.

Tab. 43 Installation and operating conditions checklist

7.4 After storing the machine for a long period

- Carry out the following before every re-commissioning after a long period of storage.

Storage period longer than	Action
5 months	<ul style="list-style-type: none"> ➤ Remove the desiccant from the openings in the air intake filters of the engine and compressor. ➤ Check the air and oil filters. ➤ Drain the preserving oil from the separator tank. ➤ Fill with compressor oil. ➤ Drain the preserving oil from the engine. ➤ Fill up with engine oil. ➤ Check the engine coolant ➤ Check the battery charge. ➤ Re-connect the battery. ➤ Check all fuel lines, engine oil lines and compressor oil lines for leaks, loose connections, wear and damage. ➤ Clean the bodywork with a grease and dirt cleansing agent. ➤ Check the tyre pressures.
36 months	<ul style="list-style-type: none"> ➤ Have the overall technical condition checked by an authorized KAESER Service Technician.

Tab. 44 Measures for re-commissioning the compressor after a long period of storage

7.5 Low-temperature operation (winter)

The machine's electrical equipment is designed for starting at ambient temperatures as low as $-10\text{ }^{\circ}\text{C}$.

- At temperatures below $0\text{ }^{\circ}\text{C}$ use:
 - winter-grade engine oil,
 - low viscosity compressor oil
 - winter-grade diesel fuel



Use air hoses that are as short as possible under extremely cold conditions.

Machine operational state



1. **CAUTION!**
Problems with pneumatic control at low temperatures.
Damage to the machine may be caused by ice particles in the pneumatic control and feedback systems.
 - Let the machine warm up in idle to ensure trouble-free regulation.
2. Allow the machine to warm up in idle with open air outlet valves until an airend discharge temperature of +30 °C is reached. The airend discharge temperature is shown by the temperature gauge switch on the instrument panel.

7.5.1 Starting assistance

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

Material Jumper cables

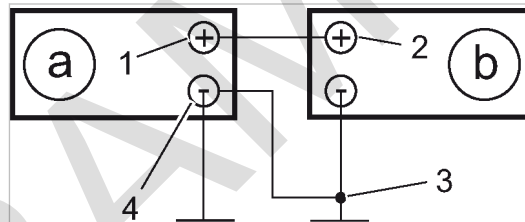
Precondition The machine is disconnected from the towing vehicle and safely parked.



DANGER

Fire and explosion hazard.
High currents caused by short-circuited battery. Shorted batteries 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. 16 Jumper cable connection diagram

- | | |
|--|--|
| <ul style="list-style-type: none"> Ⓐ Assisting vehicle battery Ⓑ Machine battery ① Positive (+) terminal of the assisting vehicle | <ul style="list-style-type: none"> ② Positive (+) terminal of the machine battery ③ Bare metal point on the engine block (earth) ④ Negative (-) terminal of assisting vehicle battery |
|--|--|

- Follow the safety rules when dealing with batteries:
 - Connect batteries of the same voltage only.
 - The assisting vehicle and machine to be started must not touch.
 - Do not bend over the battery when attaching jumper cables.
 - Only use battery jumper cables of sufficient cross-sectional area and with insulated terminal clamps.
 - Observe the instructions provided with the battery jumper cables.
 - Keep jumper cables away from rotating parts.
 - 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.

Connecting the battery jumper cables



1. Stop the engine of the assisting vehicle.
2. Switch off all power consumers.
3. Connect positive terminals ② and ①.
4. **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.
5. Connect the minus terminal of the assisting battery ④ to a bare metal point on the compressor engine to be started ③ as far away from the battery as possible.

Starting the engine

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



Let the two engines run for approximately 3 minutes.

Disconnecting the battery jumper cables

1. Stop the engine of the assisting vehicle.
2. Disconnect the jumper cables in the reverse order, first negative (-) then positive (+).



If the compressor engine stops as soon as the cables are disconnected, it can mean serious damage to the alternator or battery and it should be handed over to a specialised workshop.

**7.5.2 Option ba
Starting up low-temperature equipment**

- Use the checklist when initially starting the low-temperature equipment.

Function	See chapter	Confirmed?
Check the level of antifreeze in the frost protector.	10.7.2	

Function	See chapter	Confirmed?
Close the tap on the frost protector.	8.4	

Tab. 45 Low-temperature equipment checklist

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8 Operation

8.1 Starting and stopping

Pictograms on the instrument panel illustrate the starting and stopping procedures, see also item ① in the following illustration.

Precondition No personnel are working on the machine.

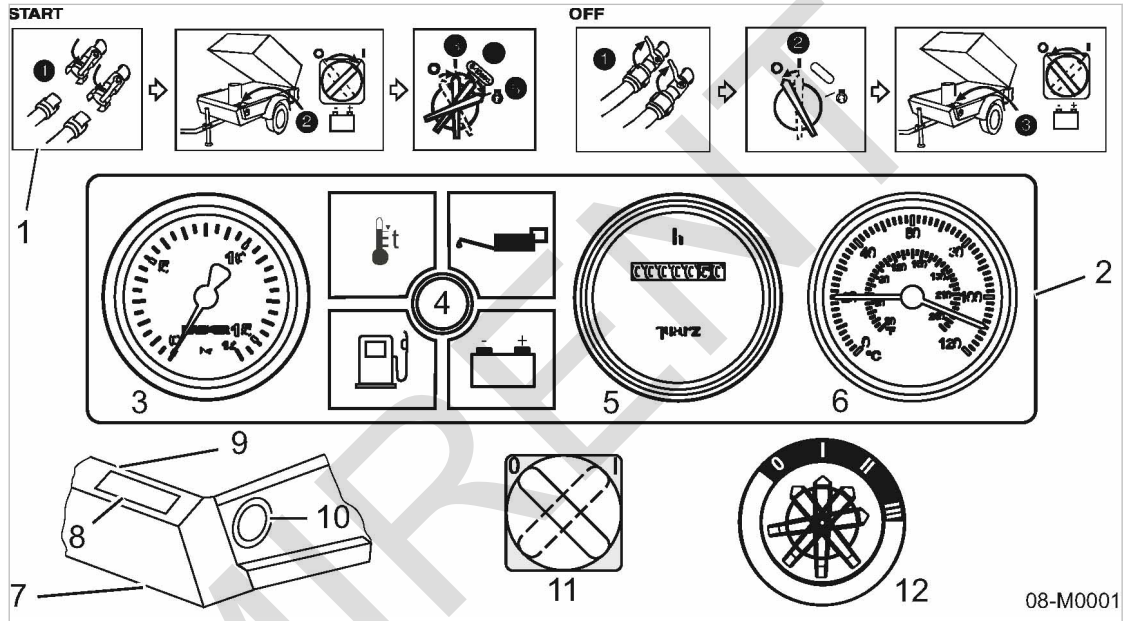


Fig. 17 Starting instruments

- | | |
|--|---|
| ① Starting and stopping pictogram | ⑨ Location of the «controller ON» switch (within the machine) |
| ② Instrument panel | ⑩ Location of the «starter switch» on the machine |
| ③ Compressed air outlet pressure gauge | ⑪ «Controller ON» switch |
| ④ Alternator indicator, group alarm lamp | ⑫ «Starter switch» |
| ⑤ Operating hours counter | 0 STOP / OFF |
| ⑥ Temperature gauge switch | I ON |
| ⑦ Bodywork | II Preheating |
| ⑧ Location of the instrument panel | III Start |

8.1.1 Starting



1. **CAUTION!**
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.



2. CAUTION!

Destruction of the starter.

Improper operation could destroy the starter.

- The starter must not operate while the engine is running.
- Do not hold the start switch in the start position for longer than 30 seconds.
- Wait for a few minutes after each attempt to start the engine.
- The starter switch must be returned to the neutral position before each start attempt (re-start protection).

3. Turn the «Controller ON» switch (11) to the "I" position.

4. Turn the «starter switch» (12) to the "I" position.

The *charging indicator lamp* (4) must light.

5. Turn the «starter switch» to "II" and hold (max. 5-10 seconds).

The engine's glow plugs are energised and the engine pre-heated.

6. Turn the «starter switch» to "III" and release it as soon as the engine starts.

The *charging indicator lamp* (4) extinguishes as soon as the engine is running.

There is a fault if the charging indicator lamp does not extinguish, see chapter 9.2.



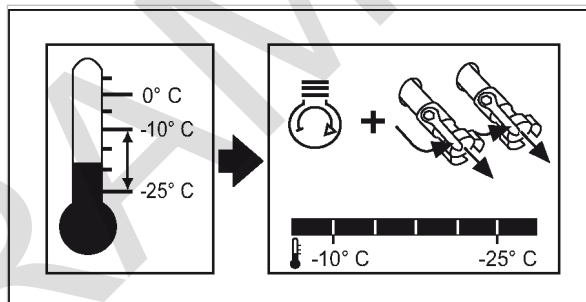
The electric fuel pump starts when the starter switch is in the "II" position. This vents the fuel line before each start.

Maximum preheating time should be 5-10 seconds.

8.1.2 Allow the machine to run up to operating temperature

To avoid unnecessary wear, the engine should be run in IDLE until the airen discharge temperature reaches +30 °C. The airen discharge temperature is shown by the temperature gauge switch on the instrument panel.

Option ba



08-M0008

Fig. 18 Warm-up period when ambient temperatures are below -10 °C

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

8.1.3 Shutting down



1. CAUTION!

Thermal overload of the turbo charger.

Damage to the turbo charger by abrupt engine shutdown after high loading.

- Run the engine a few minutes in idle before shutting down to allow the turbo charger to cool.

2. Close the «compressed air outlet valves» on the air distributor.
The engine runs in IDLE and the turbo charger can cool down.
3. Turn the «starter switch» [12] to the "0" position after 2-3 minutes.
4. Turn the «Controller ON» switch [11] to the "0" position.



Close and lock the canopy.

8.2 Option oa Operating the battery isolating switch



08-M0046

Fig. 19 Battery isolating switch

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

Start the machine

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

Shutting down the machine

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

8.3 Option ea Operating the tool lubricator

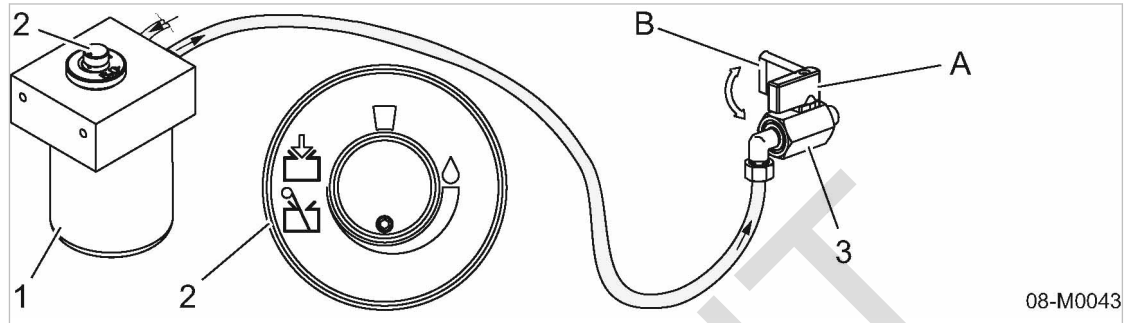


Fig. 20 Setting the tool lubricator

- ① Tool lubricator
- ② Metering knob
- ③ Ball valve
- A – open
- B – closed

Adding lubricating oil

1. Open the shut-off valve ③.
2. Set the oil flow with the adjusting knob ② on the metering valve.

Shutting off lubricating oil

- Close the shut-off valve ③.

Further information See separate tool lubricator operating instructions for operation and maintenance of the tool lubricator.

For suitable tool oil see chapter 2.7.1.

8.4 Option ba, bb Using the low-temperature equipment

- Using the frost protector
- Pre-heat the engine coolant.

8.4.1 Option ba Using the frost protector



Air flow through the frost protector is switched on just before shutting down the compressor.

Precondition Frost protector filled with antifreeze

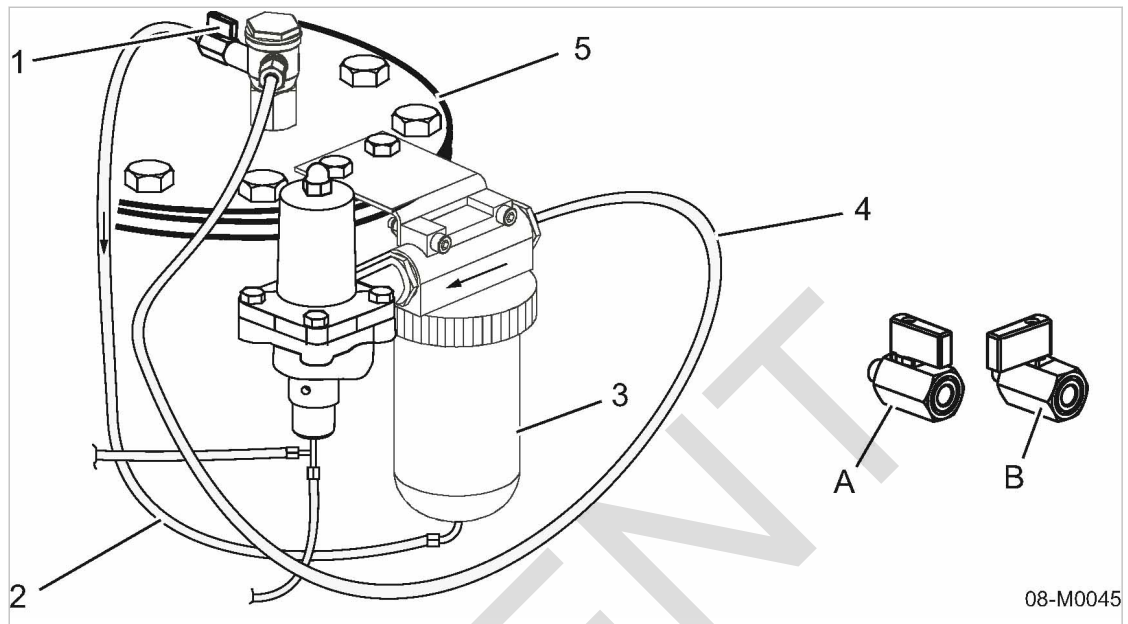


Fig. 21 Switching on the frost protector

- | | |
|---|---|
| <p>① Shut-off valve
A – open
B – closed</p> <p>② Control line (frost protection)</p> <p>③ Frost protector</p> | <p>④ Control line (bypass line)</p> <p>⑤ Oil separator tank cover</p> |
|---|---|

Running the machine with the frost protector (winter operation)

- Open the shut-off valve ① (position A) in the frost protector control line ② before shutting down the compressor.

Further information Fill the frost protector with antifreeze (see chapter 10.7.2).

Running the machine without the frost protector (summer operation)

- Keep the shut-off valve in the frost protector control line permanently closed (position B).

**8.4.2 Option bb
Coolant pre-heating**

The liquid-cooled engine is equipped with an electric coolant pre-heater.

Material Power supply cable available.

Precondition The recommended pre-heating time is 2-3 hours.

1. Prepare a power supply cable.
2. Open the connection socket protective cap and hold open.
3. Plug in the supply cable.
4. Plug in the ground conductor.

Result The engine coolant will be pre-heated.

Further information Location of the connection socket, see illustration 7.

8.5 Option ua Using the hose reel

The machine is fitted with an additional compressed air extension hose.
A hose reel is provided for safe storage of this hose.

- Check which hose reel is fitted to your machine.

8.5.1 Using the hose reel (EC version)

The hose reel is on the front of the machine.

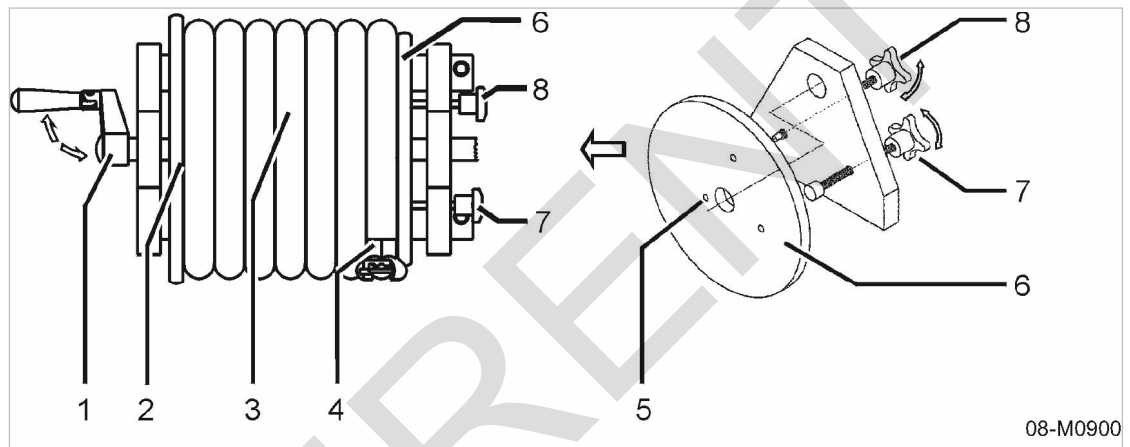


Fig. 22 Hose reel (EC design)

- | | | | |
|---|---------------------------|---|--------------------------|
| ① | Winding handle (fold out) | ⑤ | Securing holes |
| ② | Hose reel | ⑥ | Hose reel side plate |
| ③ | Hose | ⑦ | Clamping screw |
| ④ | Hose coupling | ⑧ | Transport securing screw |

8.5.1.1 Operating the machine with an extension air hose.

1. Loosen the transport securing pin ⑧ and the clamping screw ⑦.
2. Fold out the crank handle ① and reel out the required length of hose ③.
3. Tighten the clamping screw ⑦.
The reel is locked against unwanted reeling in or out.
4. Fold in the handle again ①.
5. Connect the air tool.
6. Put the machine into operation.
7. Open the compressed air shut-off valve.

8.5.1.2 Operating the machine without an extension air hose.

1. Close the compressed air shut-off valve.
2. Disconnect the air consumer.
3. Fold out the winding handle ① and reel in the hose ③ firmly and evenly.
4. Tighten the clamping screw ⑦.
The reel is locked against unwanted reeling in or out.
5. Fold in the handle again ①.

8.5.1.3 Securing the hose reel for transport

1. Check that the hose is firmly and evenly reeled in. Reel again, if necessary.
2. Locate the securing hole (5) in the reel's side plate (2) until it is aligned with the securing screw (8).
3. Engage the securing screw fully.
4. Tighten the clamping screw (7).

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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. Inform KAESER Service if the fault cannot be removed by the action suggested.

Further information Observe the instructions in chapter "Safety" and prevailing local safety regulations when rectifying faults and malfunctions.

9.2 Engine faults and alarms

Further information See also the engine service manual.

9.2.1 Engine refuses to start or comes to a stop

Possible cause	Action	Where can I get help?		
		Specialised workshop	KAESER Service	Engine service manual
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.	–	–	X
Fuel filter clogged.	Clean or replace, see chapter 10.3.3.	–	–	X
Fuel line broken.	Have changed.	X	–	–
Defective control fuse or relay.	Repair or have replaced if necessary.	X	X	–
Airend discharge temperature too high.	Have adjusted.	–	X	–
Defective temperature gauge switch giving no enable signal.	Repair or have replaced if necessary.	–	X	–
Starter switch defective.	Repair or have replaced if necessary.	–	X	–
Electrical connections and/or cables loose or broken.	Tighten connection or replace cable.	X	–	–
Defective battery or low charge.	Maintain battery, see chapter 10.6.	–	–	–
Defective alternator.	Have changed.	X	–	–
Defective alternator regulator.	Change.	X	–	–

Possible cause	Action	Where can I get help?		
		Specialised workshop	KAESER Service	Engine service manual
Oil pressure switch sensing insufficient oil pressure.	Check the engine oil level.	–	–	X
	Have the engine repaired or exchanged.	X	–	–

Tab. 46 Alarm: Engine refuses to start or comes to a stop.

9.2.2 Engine does not reach full speed.

Possible cause	Action	Where can I get help?		
		Specialised workshop	KAESER Service	Engine service manual
Airlock in the fuel line between fuel tank and injector pump.	Bleed the fuel line.	–	–	X
Fuel filter clogged.	Clean or replace, see chapter 10.3.3.	–	–	X
Fuel line broken.	Have changed.	X	–	–
Speed adjustment cylinder maladjusted or defective.	Repair or have replaced if necessary.	X	X	–

Tab. 47 Alarm: Engine does not reach full speed.

9.2.3 Indicator lamp remains on

Possible cause	Action	Where can I get help?		
		Specialised workshop	KAESER Service	Engine service manual
Electrical connections and/or cables loose or broken.	Tighten the connection or have the cable replaced.	X	–	–
Defective alternator.	Have replaced if necessary.	X	–	–
Defective alternator regulator.	Have replaced if necessary.	X	–	–
Engine oil pressure too low.	Check the engine oil level.	–	–	X
	Check the engine and have repaired if necessary.	X	–	–

Tab. 48 Indicator lamp remains on

9.3 Compressor faults and alarms

9.3.1 Working pressure too high

Possible cause	Remedy	Where can I get help?	
		Specialised workshop	KAESER Service
Proportional controller maladjusted or defective.	Check the diaphragm and clean the nozzle or replace the proportional controller if necessary.	–	X
Inlet valve not closing.	Check the controller, the control air line and the inlet valve and replace if necessary.	–	X
Pressure gauge giving false reading.	Have repaired or replaced if necessary.	–	X
Venting valve does not blow off.	Check the connections and function and have repaired or replaced as necessary.	–	X

Tab. 49 Fault: working pressure too high

9.3.2 Working pressure too low

Possible cause	Remedy	Where can I get help?	
		Specialised workshop	KAESER Service
Proportional controller maladjusted or defective.	Check the diaphragm and clean the nozzle or replace the proportional controller if necessary.	–	X
Inlet valve not opening or only opening partially.	Repair or have replaced if necessary.	–	X
Pressure gauge giving false reading.	Have repaired or replaced if necessary.	–	X
Pressure relief valve maladjusted and/or leaking.	Have replaced if necessary.	–	X
Venting valve does not close.	Check the connections and function and have repaired or replaced as necessary.	–	X
Engine not running at full speed.	See chapter 9.2.	–	–
Engine air filter and/or compressor air filter clogged.	Clean or change, see chapters 10.3.2 and 10.4.6.	–	–
Oil separator cartridge heavily clogged.	Change, see chapter 10.4.5.	–	–

Tab. 50 Fault: working pressure too low

9.3.3 Pressure relief valve blowing off

Possible cause	Remedy	Where can I get help?	
		Specialised workshop	KAESER Service
Oil separator cartridge heavily clogged.	Change, see chapter 10.4.5.	–	–
Inlet valve not closing.	Check the controller, the control air line and the inlet valve and replace if necessary.	–	X
Pressure relief valve maladjusted and/or leaking.	Adjust or have replaced if necessary.	–	X

Tab. 51 Fault: pressure relief valve blowing off

9.3.4 Machine overheating

Possible cause	Remedy	Where can I get help?	
		Specialised workshop	KAESER Service
Defective cooling fan.	Have the blades or the complete fan wheel replaced.	–	X
Oil cooler clogged.	Clean surface, see chapter 10.4.8.	–	–
Defective working element in the combination valve.	Have repaired or replaced if necessary.	–	X
Working pressure too high (proportional controller maladjusted).	Reset to the permissible value or have replaced.	–	X
Oil separator cartridge heavily clogged.	Measure the pressure differential and change the cartridge if greater than 1 bar (see chapter 10.4.5).	–	X
Compressor oil filter clogged.	Change, see chapter 10.4.4.	–	–
Compressor oil level too low.	Top up (see chapter 10.4.2).	–	–
Oil pipes leaking.	Seal leaks or have pipes changed.	X	X
Engine cooling system or cooling fan defective.	Have repaired.	X	X
Ambient temperature too high.	See installation conditions in chapter 5.2.	–	–

Tab. 52 Fault: machine overheating

9.3.5 Too much oil residue in the compressed air

Possible cause	Remedy	Where can I get help?	
		Specialised workshop	KAESER Service
Oil separator cartridge scavenge line clogged.	Clean the strainer in the separator cartridge dirt trap or have changed if necessary.	–	X
Fractured oil separator cartridge.	Change, see chapter 10.4.5.	–	–
Oil level in the oil separator tank too high.	Reduce to maximum level, see chapters 10.4.1 and 10.4.3.	–	–

Tab. 53 Fault: too much oil residue in the compressed air

9.3.6 Oil flows from the compressor air filter after shutdown

Possible cause	Remedy	Where can I get help?	
		Specialised workshop	KAESER Service
Defective non-return function of the inlet valve.	Repair or have replaced if necessary.	–	X

Tab. 54 Fault: oil flows from the compressor air filter after shutdown

10 Maintenance

10.1 Safety

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

Basic safety instructions

1. Follow the instructions in chapter 'Safety and Responsibility'.
2. Maintenance work may only be carried out by authorized personnel.
3. Before restarting the machine, make sure that:
 - no personnel are working on the machine,
 - all protective guards and cover panels are screwed back on,
 - all tools have been removed from the machine.

Working on pressure systems

1. Disconnect all air consumers.
2. Wait until the machine is automatically vented (check that the pressure gauge indicates 0 bar).
3. Open outlet valves carefully to ensure that the line between the minimum pressure/check valve and the compressed air outlet is vented.
4. Do not open or dismantle any valves.

Working on the drive system

1. The negative cable to the battery is disconnected.
2. The machine has 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 Maintenance schedules

The maintenance schedules provide an overview of the maintenance instructions for the machine.

- Read the relative section before undertaking maintenance.

10.2.1 Logging maintenance work



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

Maintenance schedules may be modified to take into account the application, the environment and the quality of maintenance.



1. **WARNING!**

Wear and machine damage through unusual applications or operating conditions.

- Maintenance tasks must be carried out more frequently when operating conditions are unfavourable (e.g. dusty atmosphere) or when the equipment is in constant use.
- Adjust the maintenance intervals with regard to local installation and operating conditions.

2. Keep a log of all properly carried out maintenance and service work.

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

Further information A prepared list is provided in chapter 10.8.

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	See chapter	Note
Engine:			
Change oil.	X	10.3.4	Engine SM
Change the oil filter.	X		Engine SM
Wheels/chassis:			
Tighten the wheel nuts.	X		

h ≙ operating hours; Engine SM ≙ engine manufacturer's service manual

Tab. 55 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
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 annually.	A2000
Every 3000 operating hours	A3000

Tab. 56 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 Maintenance schedule

➤ Carry out maintenance tasks according to the following schedule.

Component Function	Daily	A250	A500	A1000	A1500	A2000	A3000	See chapter	Note
Engine									
Check inlet air filter maintenance indicator	X							10.3.2	
Check engine oil level.	X								Engine SM
Clean the engine air filter		X						10.3.2	Engine SM
Change the engine oil		X						10.3.4	
Change the engine oil filter.		X							Engine SM
Check the engine air intake line.		X							Engine SM
Replace the engine air filter element.				X				10.3.2	
Adjust the valve clearance.				X					Engine SM SW
Have the turbocharger checked.							X		SW
Check the engine coolant level.	X							10.3.1	Engine SM
Clean the radiator.		X						10.4.8	
Check antifreeze concentration.		X						10.3.1	Engine SM
Check coolant hoses and clamps.		X							Engine SM
Change the coolant.				X				10.3.1	Engine SM
Fill up the fuel tank.	X								
Check the fuel lines and clamps.		X							Engine SM
Replace fuel lines and clamps.						X			Engine SM
Clean the fuel filter.		X							Engine SM
Change the fuel prefilter.			X					10.3.3	

Engine-SM $\hat{=}$ engine manufacturer's service manual; SW $\hat{=}$ specialized workshop; CM-SM $\hat{=}$ chassis maintenance tasks.

Component Function	Daily	A250	A500	A1000	A1500	A2000	A3000	See chapter	Note
Replace the fuel filter.			X						Engine SM
Clean the fuel tank.			X						
Clean the tank fuel strainer.			X						
Check the fuel return line for leakage and firm fixing.			X						
Have the fuel injectors checked.					X				SW
Have the fuel injector pump checked.							X		SW
Check the battery electrolyte level and connections.			X					10.3.6	
Compressor unit									
Check inlet air filter maintenance indicator.	X							10.4.6	
Check cooling oil level.	X							10.4.1	
Clean the compressor air filter.		X						10.4.6	
Clean the oil cooler.		X						10.4.8	
Have the pressure relief valve checked.			X					10.4.7	
Check/clean the oil separator tank dirt trap.			X					10.4.5.1	
Replace the air filter element.				X				10.4.6	
Change the cooling oil.				X				10.4.3	
Change the compressor oil filter.				X				10.4.4	
Change the separator cartridge in the oil separator tank.						X		10.4.5	
Chassis/bodywork									
Check the tyre pressures.		X							
Make sure the wheel fixings are tight.		X							
Carry out chassis maintenance.			X					10.5	CM-SM
Grease the ball coupling, joints and towbar.			X						CM-SM
Check wear on the brake linings.			X					10.5.5	
Have the wheel brakes adjusted.			X						SW

Engine-SM $\hat{=}$ engine manufacturer's service manual; SW $\hat{=}$ specialized workshop; CM-SM $\hat{=}$ chassis maintenance tasks.

Component Function	Daily	A250	A500	A1000	A1500	A2000	A3000	See chapter	Note
Check all screw connections, hinges, locks, catches, handles and snap fasteners for wear and secure fixing.		X							
Grease the canopy hinges.			X						
Carry out rubber sealing strip maintenance.			X					10.6	
Have the lifting eye checked.			X						SW
Other maintenance tasks									
Check all accessible fittings, pipes and clamps for wear and tightness.			X						
Check hoses for leaks and wear.			X						
Check that all electrical connections are tight.			X						
Engine-SM $\hat{=}$ engine manufacturer's service manual; SW $\hat{=}$ specialized workshop; CM-SM $\hat{=}$ chassis maintenance tasks.									

Tab. 57 Regular maintenance tasks

10.2.3.2 Maintenance schedule for options

- Carry out maintenance tasks according to the following schedule.

Option Function	Daily	A250	A500	A1000	A1500	A2000	A3000	See chapter	Note
Tool lubricator, option ea									
Check the oil level in the tool lubricator.	X							10.7.1	TL-SM
Option ba – frost protector									
Winter operation Check the level of antifreeze in the frost protector.	X							10.7.2	
Option la – spark arrestor									
Clean the spark arrestor.		X						10.7.3	
Blow out the spark arrestor with compressed air.			X						
TL-SM = Tool lubricator service manual; EL = refer to an electrician; SW = refer to a specialized workshop; KS = call KAESER Service.									

Option Function	Daily	A250	A500	A1000	A1500	A2000	A3000	See chapter	Note
Option Ib - engine air intake shut-off valve									
Clean and check the engine air intake shut-off valve		X						10.7.4	
Fuel filter with water trap, option ne									
			X					10.3.3.1	
TL-SM = Tool lubricator service manual; EL = refer to an electrician; SW = refer to a specialized workshop; KS = call KAESER Service.									

Tab. 58 Regular maintenance tasks for options

10.3 Engine

- Carry out maintenance according to the schedule in chapter 10.2.3.1.

10.3.1 Cooler maintenance

Material Coolant
Coolant tester
Receptacle
Funnel
Cleaning cloths

Precondition The machine is shut down.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
Machine cooled down.
All compressed air consumers are disconnected and the air outlet valves are open.
The negative cable to the battery is disconnected.



WARNING

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

- Allow the machine to cool down before opening the enclosure.



CAUTION

There is danger of injury 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.



CAUTION

Insufficient coolant can damage the engine.

Insufficient coolant will cause the engine to overheat. Overheating can cause serious damage to the engine.

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

Checking coolant level

Check the coolant level of the engine daily before starting.

The coolant expansion tank is located directly above the radiator. The tank is semi-transparent so the coolant level can be seen from outside. The level should be between marks **A** and **B** when the engine is cold.

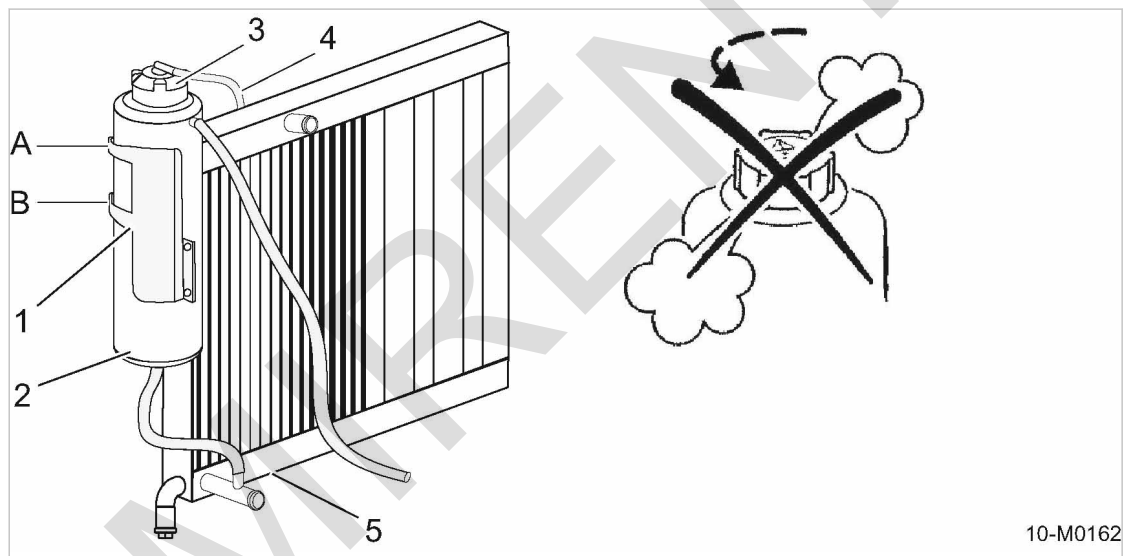


Fig. 23 Checking coolant level

- | | | | |
|---|-------------------------|---|----------------------|
| ① | Coolant level indicator | ③ | Filler neck with cap |
| A | Maximum | ④ | Overflow |
| B | Minimum | ⑤ | Radiator |
| ② | Coolant expansion tank | | |

- Check coolant level.
- Top up when the coolant level falls below the minimum level **B**.

Checking the antifreeze concentration in the engine coolant

The coolant is a mixture of clean, fresh water and antifreeze/corrosion inhibitor. For reasons of corrosion protection and the need to raise the boiling point, the coolant must remain in the cooling system throughout the year. Maximum frost protection is ensured with an antifreeze concentration of 55% volume as frost protection and heat transfer properties deteriorate beyond this point. The maximum permissible coolant life is 2 years.



1. **CAUTION!**

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.
- Top up as necessary.

2. Slowly open the cap on the coolant filler by a quarter to half of a turn to allow pressure to escape.

3. Then remove the filler cap completely.

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

Change the coolant when the concentration of antifreeze is too low.

5. Mix the concentration of antifreeze as shown in the table.

Description	Antifreeze concentration [% vol.]	Water percentage [% vol.]	Freezing point [°C]
Minimum required antifreeze concentration	40	60	-25
Minimum required antifreeze concentration for topping up	50	50	-37
Maximum permissible antifreeze concentration	55	45	-45

Tab. 59 Coolant frost protection

Topping up the coolant



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

1. Slowly open the cap on the coolant filler by a quarter to half of a turn to allow pressure to escape.

2. Then remove the filler cap completely.

3. Mix a quantity of coolant according to the table and top up to the mark.

The level should be between the marks.

4. Screw on the filler cap.

5. Reconnect the battery.

6. Start the engine and allow to idle for about 1 minute.

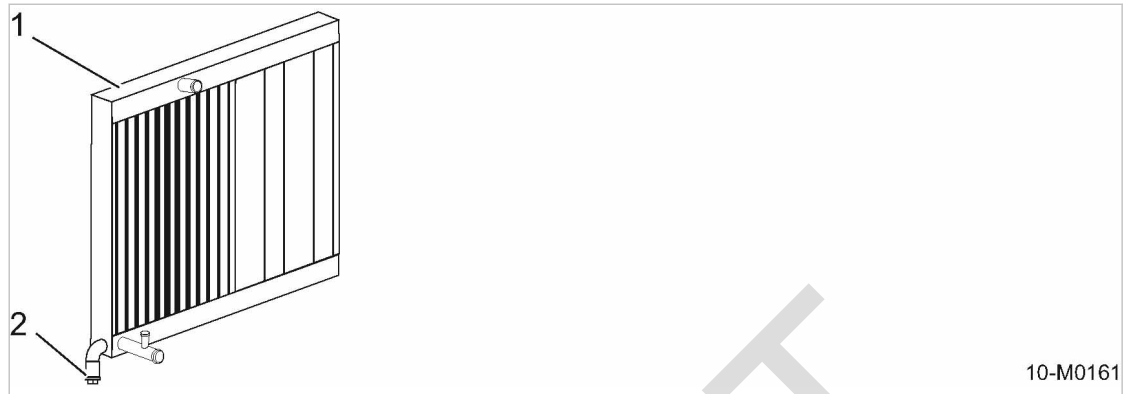
7. Stop the engine.

8. Check the coolant level.

Top up if the coolant level in the expansion tank has fallen.

Draining the coolant

The radiator drain plug (2) can be reached through a hole in the floor pan.



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Fig. 24 Draining the coolant from the radiator

- ① Radiator
- ② Radiator drain plug

1. Have a coolant receptacle ready.
2. Unscrew the expansion tank cap (see Fig. 23).
3. Loosen and remove the drain plug ②.

Result Coolant flows from the expansion tank and radiator.



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

Further information See the engine handbook for coolant draining from the engine block.

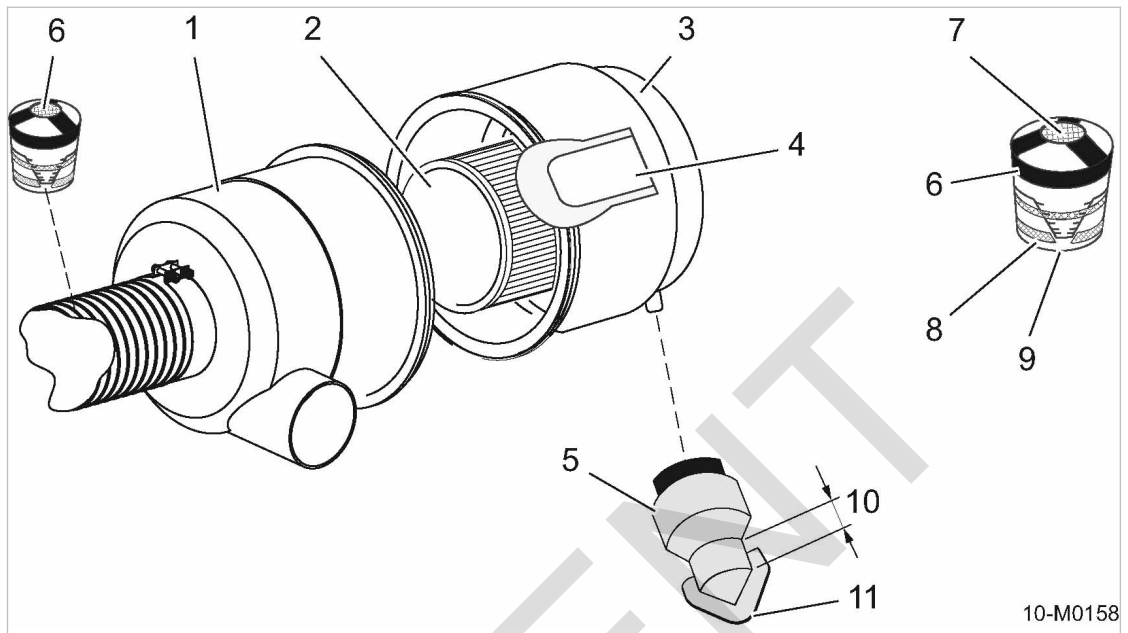
10.3.2 Air filter maintenance

The air filter must be cleaned at the latest when the corresponding maintenance indicator demands.

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

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

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.


Fig. 25 Engine air filter maintenance

- | | |
|-------------------------|--|
| ① Filter housing | ⑦ Reset knob for the maintenance indicator |
| ② Air filter element | ⑧ Red zone indicator scale |
| ③ Filter cap | ⑨ Indicating piston of the maintenance indicator |
| ④ Spring retaining flap | ⑩ Valve part |
| ⑤ Dust evacuating valve | ⑪ Drain slit |
| ⑥ Maintenance indicator | |

Checking contamination of the air filter:

Air filter maintenance is necessary when the yellow piston inside the maintenance indicator ⑥ reaches the red zone.

- Check the air filter maintenance indicator.

If the yellow piston reaches the red zone, clean or replace the filter insert ②.

Cleaning the air filter:

The dust evacuator valve ⑤ must be at the bottom. The dust evacuation valve is on the filter cap ③.

1. Press both spring retaining flaps ④ together and remove the filter cap ③.
2. Withdraw the filter element ②.
3. Clean the filter housing ①, filter cap ③ and sealing surfaces.
4. To empty the dust evacuator valve ⑤:
 - Pinch the valve part ⑩ above the drain slit ⑪ (drain slit opens).
 - Remove any dust clumps.
 - Clean the slit.

5. Clean the filter element:

Cleaning:

- by tapping to remove coarse dirt
 - some taps of the face side with the heel of the hand
- by blowing out (as required)
 - Use dry compressed air (≤ 5 bar) at an angle to blow dirt from the element from inside to outside.

6. Clean the sealing faces.

7. Insert the element in the housing.

8. Place the filter cap on the housing and press home.

9. Make sure the dust evacuator valve is at the bottom.

10. Press on the cap until the spring retaining flaps snap home.

11. Check that:

- the filter cap is properly seated,
- both spring retaining flaps are secure,
- the dust evacuator valve is at the bottom.

Resetting the maintenance indicator:

- Press the maintenance indicator reset knob  a number of times.

The yellow piston within the indicator is reset and the maintenance indicator is ready for use again.

10.3.3 Fuel system maintenance

Material Spares

Receptacle

Cleaning cloth

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!

**DANGER**

Danger of fire 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 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.

Bleeding the fuel system

The electric fuel pump is used to bleed the system. The negative battery terminal 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 engine is not started!

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

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

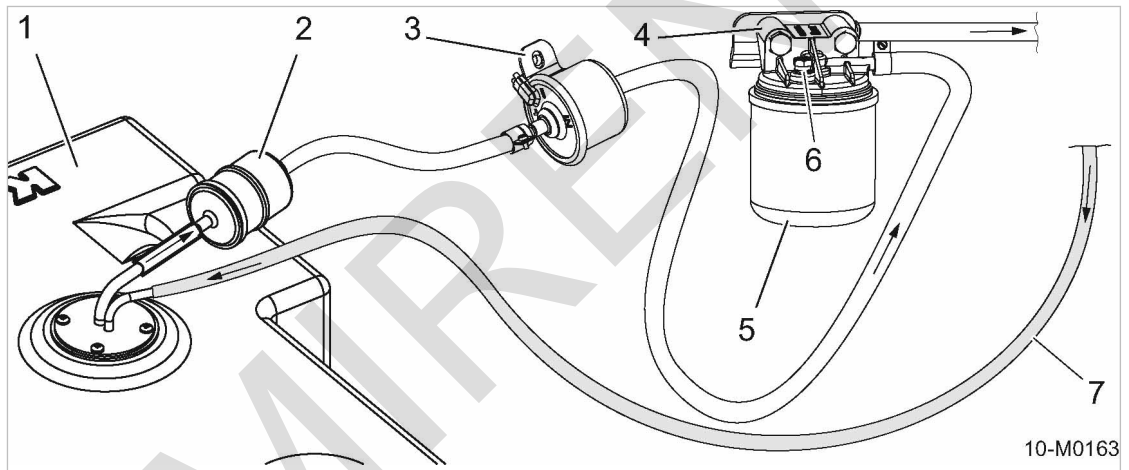


Fig. 26 Bleeding the fuel system

- | | |
|--------------------------------|--------------------------------------|
| ① Fuel tank | ⑤ Filter cartridge, main fuel filter |
| ② Fuel pre-filter | ⑥ Bleed screw, main fuel filter |
| ③ Electric fuel pump | ⑦ Fuel return line |
| ④ Upper part, main fuel filter | |

1. Reconnect the negative battery terminal.
2. Turn the starter switch to the "II" position.
The fuel system is bled.

Changing the fuel pre-filter element

The filter element should be changed according to the maintenance schedule.

Precondition The negative cable to the battery is disconnected!

1. Place the fuel receptacle under the pre-filter.
2. Loosen the hose clamp on the filter cap.
3. Pull off the fuel line.
4. Catch any fuel in the receptacle.
5. Remove the pre-filter cap.
6. Withdraw the filter element.

7. Insert the new element.
8. Replace the filter cap.
9. Connect the fuel line.
10. Tighten the hose clamp.
11. Bleed the system as described previously.



Catch any escaping fuel.
Dispose of escaped fuel, contaminated fuel and working materials and components contaminated with fuel according to environmental regulations.

Replacing the filter cartridge of the main fuel filter:

The filter cartridge of the main fuel filter should be changed according to the maintenance schedule.

Use a filter wrench to loosen the cartridge if necessary.

Precondition The negative cable to the battery is disconnected!

1. Place a receptacle under the filter cartridge [5].
2. Unscrew and remove the cartridge [5].
3. Take a new filter cartridge.
4. Smear fuel on the gasket.
5. Spin on the new oil filter by hand until the gasket is firmly seated.
6. Bleed the system as described previously.



Catch any escaping fuel.
Dispose of escaped fuel, contaminated fuel and working materials and components contaminated with fuel according to environmental regulations.

Starting the machine and performing a test run:

1. Start the machine and allow it to idle for about 1 minute.
2. Visually check the fuel system for leaks.
3. Shut down the machine.
4. Tighten all fittings.

**10.3.3.1 Option ne
Maintenance of the fuel prefilter with water trap**

A combined water trap and filter element is used to clean the fuel.

Material Spares
Wrench
Receptacle
Cleaning cloths

Precondition The machine is shut down.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
Machine cooled down.

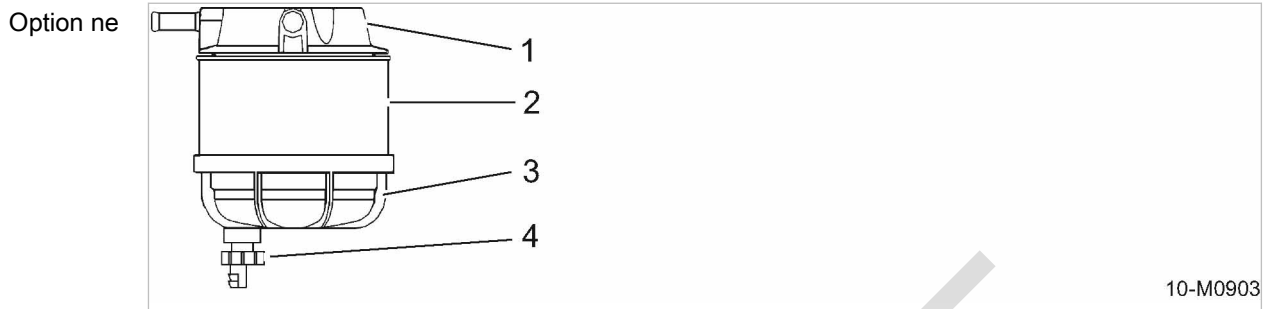


Fig. 27 Fuel filter with water trap

- | | | | |
|---|----------------|---|------------|
| ① | Filter head | ③ | Water trap |
| ② | Filter element | ④ | Drain plug |

Checking the water trap

The water trap is semi-transparent so the fuel level can be seen from outside.

- Water, being denser than diesel fuel, sinks to the bottom of the water trap.
- The presence of water can be verified by its different colour to the fuel.

A check should be made daily as to whether water and dirt has accumulated.

1. Raise the canopy.
2. Check the fuel in the water trap.
The water trap should be emptied when dirty.
3. Close the canopy.

Emptying the water trap

Precondition The negative cable to the battery is disconnected.

1. Raise the canopy.
2. Place a receptacle under the drain plug ④.
3. Unscrew the drain plug and allow water and dirt to drain out into the receptacle.
4. Catch the liquid mixture in the receptacle.
5. Tighten the drain plug ④ again.
6. Reconnect the battery.
7. Close the canopy.



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

Changing the filter element

The fuel filter element should be changed

- According to the maintenance schedule.
- If the engine cannot draw in enough fuel and loses power.

The interval between filter element changes is dependent on fuel quality and cleanliness. The fuel tank should be nearly empty when the filter element is changed.

Precondition The negative cable to the battery is disconnected.

1. Raise the canopy.
2. Empty the water trap (see above).
3. Unscrew the filter element (2) from the filter head (1) anti-clockwise.
4. Unscrew the separator bowl (3) from the filter element and clean the bowl.
5. Check the separator bowl gasket (3) for damage and good seating.
Change the gasket if defective.
6. Smear some clean fuel on the gasket.
7. Screw the separator bowl (3) onto a new filter element (2).
8. Check the filter head gasket (1) for damage and good seating.
Change the gasket if defective.
9. Smear some clean fuel on the gasket.
10. Check that the drain plug (4) under the separator bowl is tight.
Screw in the plug if it is loose.
11. Fill the filter element (2) with clean fuel.
12. Screw the filter element (2) carefully into the filter head (1).
13. Reconnect the battery.
14. Close the canopy.

Starting the machine and carrying out a trial run

1. Start the machine and allow it to idle for about 1 minute.
2. Visually check the fuel system for leaks.
3. Shut down the machine.
4. Tighten all fittings.

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 2.6.4 for engine oil filling quantity.

Receptacle

New gasket for the drain plug

Cleaning cloth

Funnel

Precondition The machine is shut down.

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.

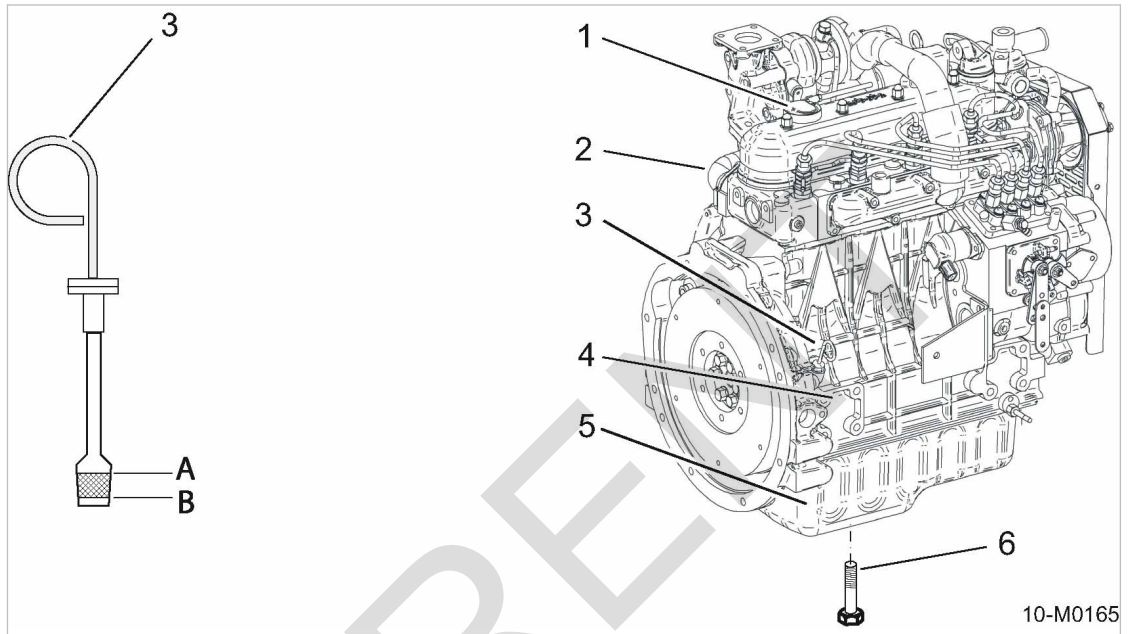


Fig. 28 Changing the engine oil

- | | |
|------------------|------------------|
| ① Oil filler cap | ④ Engine block |
| ② Oil filter | ⑤ Oil pan |
| ③ Oil dipstick | ⑥ Oil drain plug |

Draining the engine oil:

1. Place the oil receptacle below the corresponding drain hole in the floor pan.
2. Unscrew and remove the oil filler cap ①.
3. Undo and remove the oil drain plug ⑥.
All the old oil must be drained out.
4. Replace the drain plug with a new gasket and tighten.



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

Further information See engine service manual for oil change under dusty conditions.

Filling with engine oil

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

Checking the engine oil level



It takes a few minutes for oil to reach the sump.
Wait 5 minutes then use the dip stick ③ to check the oil level.
The level must be between marks A and B.

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

Starting the machine and performing a test run:

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.

**10.3.4.1 Option oe
Draining engine oil via the shut-off valve**

Material See chapter 2.6.4 for engine oil filling quantity.

Receptacle

New gasket for the drain plug

Funnel

Cleaning cloths

Precondition Machine shut down

The machine is standing level.

The machine is at operating temperature.

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

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.

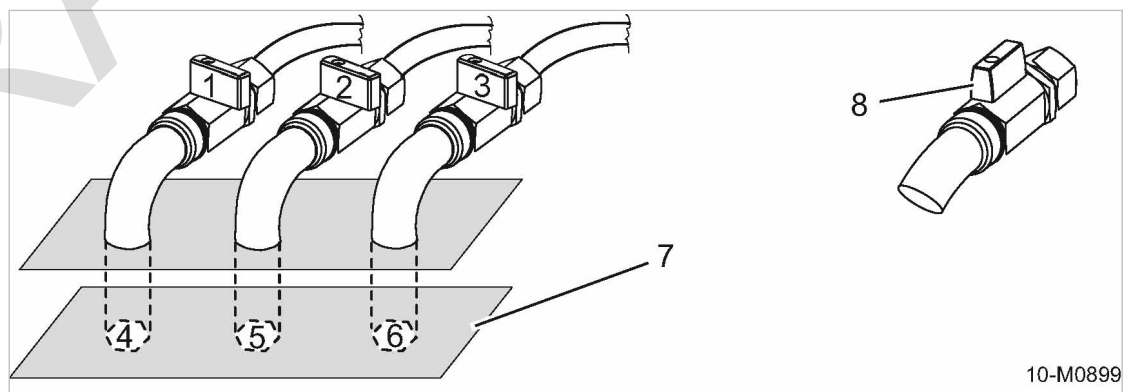


Fig. 29 Engine sump drain valve

- ② Engine sump shut-off valve
- ⑤ Engine sump drain plug

- ⑦ Lower bodywork
- ⑧ Valve open position

1. Remove the oil filler cap.

2. Position the receptacle.
3. Unscrew and remove the engine sump drain plug **5**.
4. Open the shut-off valve **2** and drain the oil into the receptacle.

10.3.4.2 Changing the engine oil filter

Material Spares
 Common tools
 Cleaning cloths
 Receptacle

Precondition The machine is shut down.
 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.

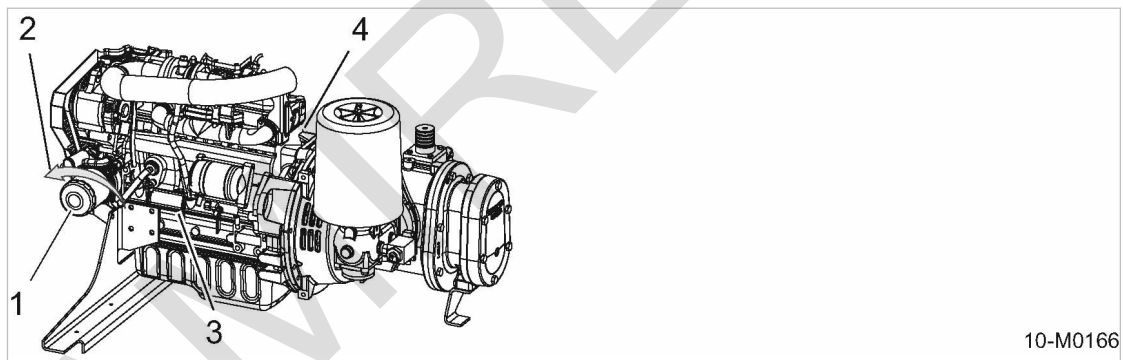


Fig. 30 Changing the engine oil filter

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

1. Raise the canopy.
2. Prepare a receptacle.
3. Note the direction of rotation **2** to unscrew the filter.
4. Unscrew the 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.
 Top up if the level is too low.
9. Close the canopy.

Further information The engine service manual gives further information on oil filter changing.



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

10.3.5 Motor belt maintenance

- See the engine service manual.

10.3.6 Battery maintenance

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

10.3.6.1 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.

Observe the following points when working on the batteries:



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Fig. 31 Warning stickers on the battery

- | | |
|---|--|
| ① Fire, sparks, open flame and smoking are forbidden. | ④ Batteries are filled with caustic electrolyte. |
| ② Wear eye and face protection. Danger of acid burn | ⑤ Observe the battery manufacturer's instructions. |
| ③ Keep children well away from batteries and acid. | ⑥ Explosion hazard |

- Take heed of any safety symbols on the battery labels.

Further instructions on working with batteries:

1. Do not remove battery terminal covers unnecessarily.
2. Do not lay tools on the battery. These can lead to short circuiting, overheating and battery bursting.
3. 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.

10.3.6.2 Battery checking and care

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

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 rags
Protective gloves

Precondition The machine is shut down.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
Machine cooled down.

1. Clean the casing and terminals.
2. Lightly grease the terminals to prevent corrosion.
3. Check that connections are tight and tighten if necessary.

Check the battery fluid 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.



If a battery casing leaks fluid, the battery must be replaced immediately.



1. **WARNING!**
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 fluid level



If the fluid level does not reach the mark -
➤ top up with distilled water.

Winter operation

Batteries are particularly stressed in winter. Only a fraction of the normal starting energy is available at low temperatures.



1. **CAUTION!**
Danger of batteries freezing.
Discharged batteries are subject to frost damage and can freeze at $-10\text{ }^{\circ}\text{C}$.
 - 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. If the machine is to be unused for a number of weeks, remove the battery and store in a frost proof room.



In extreme cases, the use of heavy-duty cold-start batteries (to DIN 75311) and/or additional batteries is recommended.

10.3.6.3 Battery removal and installation

Precondition The machine is shut down.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
Machine cooled down.



1. **WARNING!**

There is danger of batteries bursting.
If a battery is short circuited it will overheat and can burst.
Battery electrolyte will be sprayed out in such an event.

- Never short-circuit a battery (e.g. with a hand tool).
- Always wear protective gloves.



2. **CAUTION!**

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.

3. Disconnect the negative cable first, then the positive cable.
4. Unscrew the battery fixing clamp.
5. Replace in the reverse order.

Battery replacement

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

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



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

10.4 Compressor

- Carry out maintenance 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.

Material Wrench
Cleaning cloths

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.

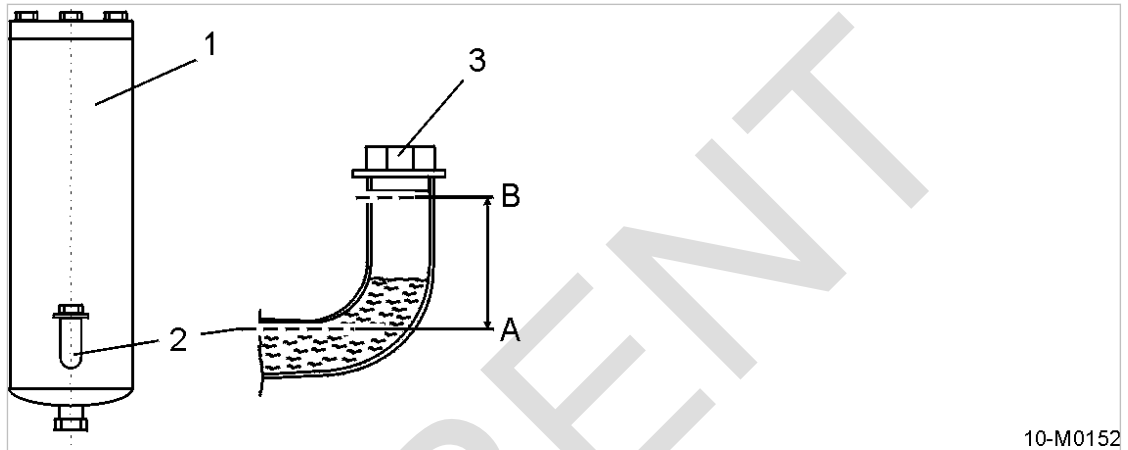


Fig. 32 Checking cooling oil level

- | | |
|----------------------|-------------------------------------|
| ① Oil separator tank | Ⓐ Mark for <i>minimum oil level</i> |
| ② Oil filler port | Ⓑ Mark for <i>maximum oil level</i> |
| ③ Screw plug | |

1. Slowly unscrew and withdraw the plug ③ from the oil filler port.
2. Check that oil is visible.
Top up if no oil is visible.
3. Replace the filler plug ③.

10.4.2 Topping up the cooling oil

Material Cooling oil
Funnel
Wrench
Cleaning cloths

Precondition The machine is shut down.
The machine is standing level.
The machine is fully vented, the pressure gauge reads 0 bar.
Machine 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. **CAUTION!**
The machine could be damaged by unsuitable oil.
 - Never mix incompatible types of oil.
 - Never top up with a different type of oil to that already used in the machine.
2. Slowly unscrew and withdraw the plug from the oil filler port.
3. Top up the cooling oil to the maximum level with the help of a funnel.
4. Check the oil level.
5. Check the filler plug gasket for damage.
Change a damaged gasket immediately.
6. Replace the plug in the filler port.
7. Reconnect the negative cable to the battery.

Starting the machine and carrying out a trial run

1. Start the machine and run in idle up to operating temperature.
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. Check the oil level after about 5 minutes.
Top up if necessary.
7. Carry out a visual check for leaks.

10.4.3 Changing the cooling oil

Drain all cooling-oil from:

- Oil separator tank
- Oil cooler
- Oil pipes

Material See chapter 2.5.6 for oil filling volume.

Receptacle

New gasket for the drain plug

Funnel

Cleaning cloths

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

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

- Wear long-sleeved clothing and gloves.

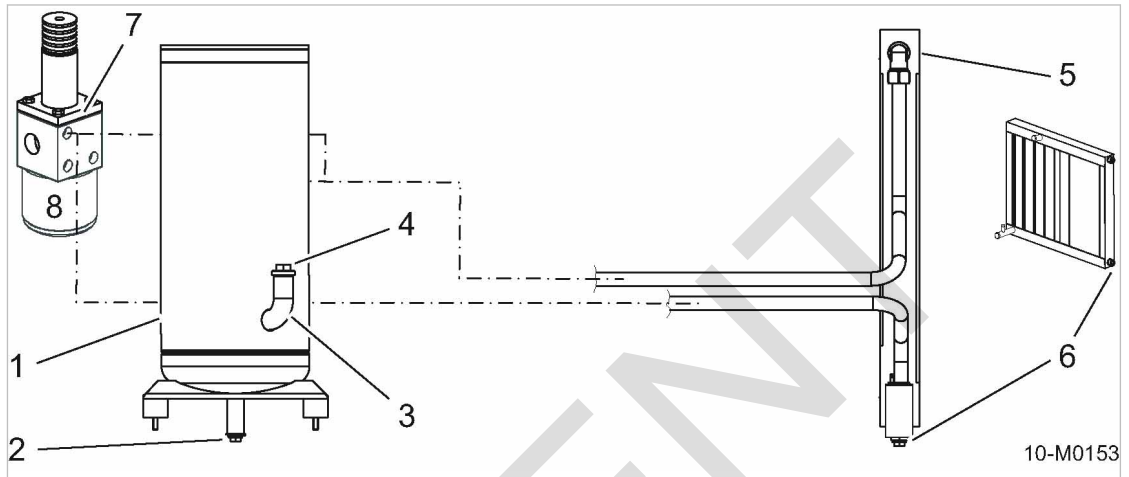


Fig. 33 Changing the cooling oil

- | | |
|---------------------------------|-------------------------|
| ① Oil separator tank | ⑤ Oil cooler |
| ② Oil separator tank drain plug | ⑥ Oil cooler drain plug |
| ③ Oil filler port | ⑦ Combination valve |
| ④ Oil filler plug | ⑧ Oil filter |

Changing the cooling oil

The separator tank and oil cooler drain plugs are accessible through holes in the floor pan.

1. Remove the plug ④ from the oil separator tank ① filling port.
2. Position the receptacle below the separator tank drain plug ②.
3. Unscrew the drain plug ② on the separator tank and allow the oil to drain into the receptacle.
4. Fit a new gasket on the drain plug ② and screw it back in again.
5. Place the receptacle beneath the oil cooler ⑤.
6. Unscrew the drain plug ⑥ and allow the cooling oil to drain into the receptacle.
7. Fit a new gasket on the drain plug ⑥ and screw it back in again.
8. Fill up the cooling oil using a funnel.
9. Check the cooling oil level.
10. Check the filler plug ④ gasket for damage.
Change a damaged gasket immediately.
11. Replace the plug ④ in the filler port ③.
12. Reconnect the negative cable to the battery.



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

Starting the machine and carrying out a trial run

1. Start the machine and run in idle up to operating temperature.
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. Check the oil level after about 5 minutes.
Top up if necessary.
7. Carry out a visual check for leaks.

**10.4.3.1 Option oe
Draining cooling oil via the shut-off valve**

Material Fresh cooling oil
Receptacle
New gasket for the drain plug
Funnel
Cleaning cloths

Precondition Machine shut down
The machine is standing level.
The machine is at operating temperature.
The machine is fully vented, the pressure gauge reads 0 bar.
All compressed air consumers are disconnected and the air outlet valves are open.
The negative cable to the battery is disconnected.



CAUTION

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

- Wear long-sleeved clothing and gloves.

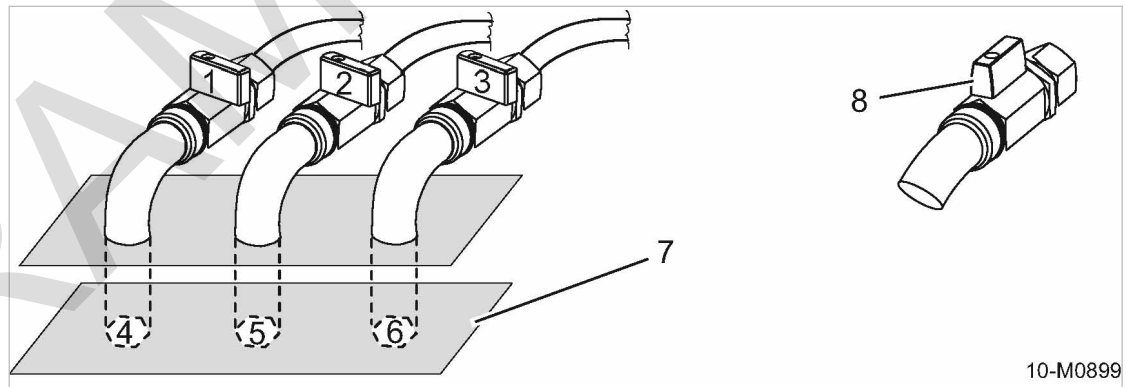


Fig. 34 Shut-off valves for oil cooler and separator tank

- | | |
|--|---------------------------------|
| ① Oil cooler shut-off valve (closed) | ⑤ Engine sump drain plug |
| ② Engine sump shut-off valve (closed) | ⑥ Oil separator tank drain plug |
| ③ Separator tank shut-off valve (closed) | ⑦ Lower bodywork |
| ④ Oil cooler drain plug | ⑧ Valve open position |

1. Unscrew the oil filler cap.
2. Position the receptacle.
3. Unscrew and remove the oil cooler drain plug ④ and oil separator tank drain plug ⑥.
4. Open the shut-off valves ① and ③ and drain the oil.

10.4.4 Changing the oil filter

Material Spares
 Receptacle
 Cleaning cloths

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



CAUTION

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

- Wear long-sleeved clothing and gloves.



Fig. 35 Changing the oil filter

- | | |
|-----------------------------------|--|
| ① Ambient temperature acquisition | ③ Oil filter |
| ② Combination valve | ④ Direction of rotation to unscrew the oil filter. |

Changing the oil filter

1. Prepare a receptacle.
2. Loosen the filter ③ by turning anticlockwise ④ and catch any escaping oil.
3. Carefully clean sealing surfaces using lint-free cloth.
4. Lightly oil the new filter's gasket.
5. Turn the oil filter clockwise by hand to tighten.
6. Check the oil level in the oil separator tank.
Top up if necessary.
7. Reconnect the negative cable to the battery.



Dispose of old cooling oil and any materials or parts contaminated with oil according to environment protection regulations.

Starting the machine and carrying out a trial run

1. Start the machine and run in idle up to operating temperature.
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. Check the oil level after about 5 minutes.
Top up if necessary.
7. Carry out a visual check for leaks.

10.4.5 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 cloths

Precondition The machine is shut down.

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

Machine cooled down.

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

The negative cable to the battery is disconnected.

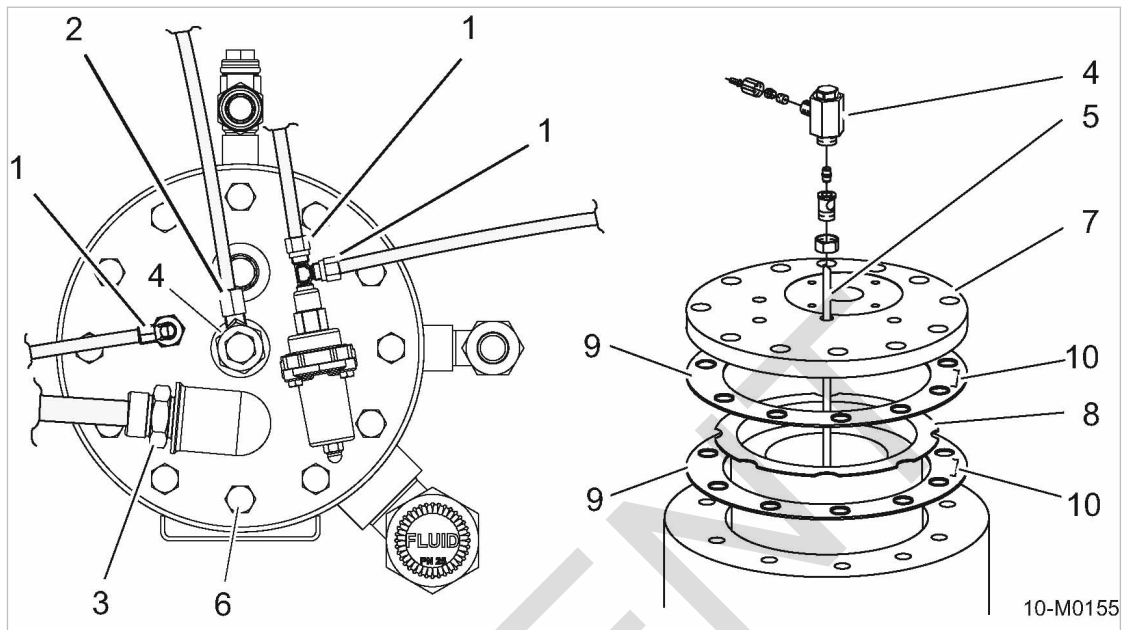


Fig. 36 Changing the oil separator cartridge

- | | |
|---------------------------------|---------------------------|
| 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 |
| ⑤ Oil scavenge pipe | ⑩ Metal clip |

Changing the oil separator cartridge



The dirt trap must be cleaned/changed when the oil separator cartridge is changed. Maintain dirt trap, (see chapter 10.4.5.1).

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.



Do not remove the metal clips!
The metal parts of the oil separator tank are electrically coupled. The gaskets ⑬ have metal clips ⑭ to make contact with the oil separator tank and the machine frame.

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.
Top up if necessary.
11. Reconnect the negative cable to the battery.



Dispose of the old separator cartridge and gaskets, along with any working materials contaminated with cooling oil, in accordance with environment protection regulations.

Option ba Changing the oil separator cartridge

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 10.7.2 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.

Starting the machine and carrying out a trial run

1. Start the machine and run in idle up to operating temperature.
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. Check the oil level after about 5 minutes.
Top up if necessary.
7. Carry out a visual check for leaks.

10.4.5.1 Dirt trap maintenance

- Material**
- Cleaning cloths
 - Wrench
 - Dirt trap maintenance kit

- Precondition**
- The machine is shut down.
 - The machine is fully vented, the pressure gauge reads 0 bar.
 - Machine cooled down.
 - All compressed air consumers are disconnected and the air outlet valves are open.
 - The negative cable to the battery is disconnected.

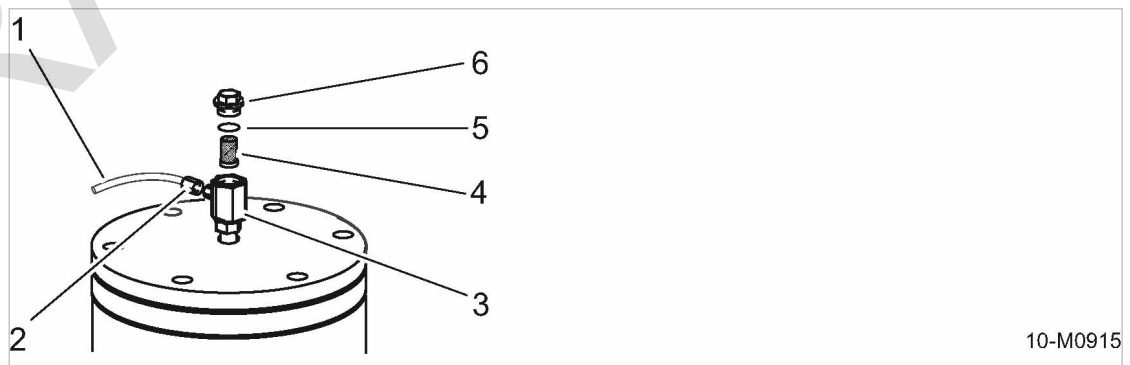


Fig. 37 Oil separator tank dirt trap maintenance

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

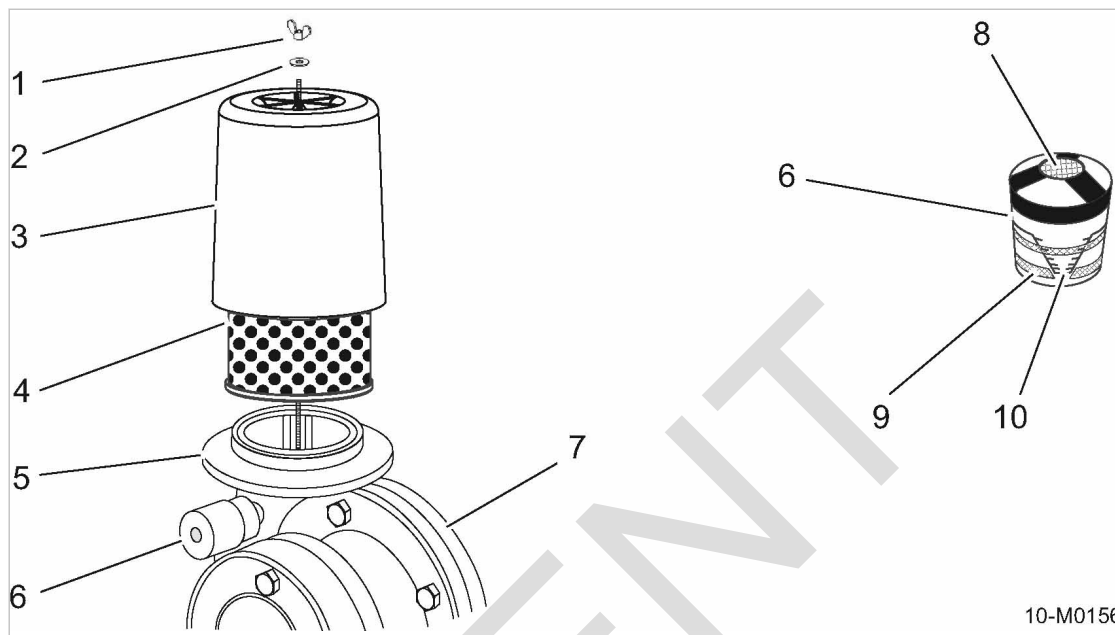
1. Raise the canopy.
2. Undo the union nut (2) and bend the oil return line (1) to one side.
3. Unscrew the dirt trap (3).
4. Remove and clean the strainer (4) and O-ring (5).
5. Check the strainer and O-ring for function and wear.
Renew if non functional.
6. Clean the housing and fitting (6).
7. Re-insert the strainer and O-ring in the housing and close with the fitting.
8. Refit the oil return line and tighten the union nut.
9. Reconnect the battery negative terminal.
10. Close the canopy.

10.4.6 Air filter maintenance

The air filter must be cleaned at the latest when the corresponding maintenance indicator demands.

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

Material	Compressed air for blowing out Spare parts (as required)
Precondition	The machine is shut down. The machine is fully vented, the pressure gauge reads 0 bar. Machine cooled down. All compressed air consumers are disconnected and the air outlet valves are open.


Fig. 38 Compressor air filter maintenance

- | | | | |
|---|--------------------|---|--|
| ① | Wing nut | ⑥ | Maintenance indicator |
| ② | Washer | ⑦ | Airend |
| ③ | Filter cap | ⑧ | Reset knob for the maintenance indicator |
| ④ | Air filter element | ⑨ | Red zone |
| ⑤ | Inlet valve | ⑩ | Indicator piston |

Checking contamination of the air filter

Air filter maintenance is necessary when the yellow piston inside the maintenance indicator ⑥ reaches the red zone ⑨.

- Check the air filter maintenance indicator.


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

Cleaning the air filter

1. Remove the wing nut ① and washer ②.
2. Remove the cover ③.
3. Take out the filter element ④.
4. Clean the cover.
5. Clean the element.
 - Cleaning:
 - by tapping to remove coarse dirt
 - Tap on the ball of the hand.
 - by blowing out (as required)
 - Use dry compressed air (≤ 5 bar) at an angle to blow dirt from the element from inside to outside.
6. Clean sealing faces.
7. Push the filter element over the threaded stud and seat it on the inlet valve ⑤.
8. Replace the cover.

9. Secure the cover with washer and wing nut.
10. Check that the cover is properly seated.

Resetting the maintenance indicator

- Press the maintenance indicator reset knob  a number of times.
The yellow piston within the indicator is reset and the maintenance indicator is ready for use again.

10.4.7 Pressure relief valve checking

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

10.4.8 Cooler/radiator cleaning

The frequency is mainly dependent on local operating conditions.
Heavy clogging of the cooler/radiator can cause oil overheating and overheating of the engine.
Check the cooler/radiator regularly for clogging.
Avoid creating dust eddies. Wear breathing protection if necessary.
Do not clean the cooler/radiator with a sharp instrument, otherwise they could be damaged.
A severely contaminated cooler/radiator should be cleaned by KAESER Service.

Material	Compressed air Water or steam jet blaster
Precondition	Machine placed over a washing point equipped with an oil separator. The machine is shut down. Machine 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. The negative cable to the battery is disconnected.

**CAUTION**

Damage to the machine can be caused by water or steam jets.
Direct water or steam jets can damage or destroy electrical components and indicating instruments.

- Cover up electrical components such as the control cabinet, alternator, starter and instruments.
- Do **not** direct water or steam jets at sensitive components such as the starter or instruments.

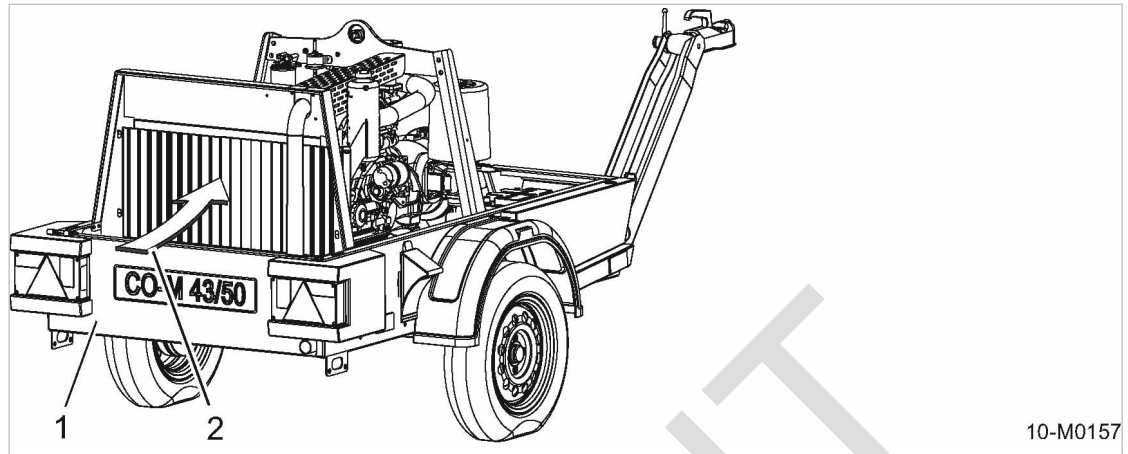


Fig. 39 Cooler/radiator cleaning

- ① Rear of the machine
- ② Direction of impacting water or steam jet (from outside to inside).

1. Seal off the air intakes of the engine and compressor air filters before starting cleaning.
2. Remove the cooler/radiator trim.
3. Clean the cooler/radiator with compressed air, water or steam jet in the opposite direction to the cooling air flow.
4. Replace the cooler/radiator trim.
5. Remove the protective coverings from the air filters.
6. Reconnect the battery.
7. Start the machine and run up to operating temperature so that excess water is evaporated.



Clean the cooler/radiator only in a washing area equipped with an oil separator.

10.5 Chassis

- Note the instructions in the separate documents:
 - "Chassis maintenance"
 - Chassis manufacturer's operating instructions

10.5.1 Wheel checks

Check the wheels and tyres after the first 50 km and after every wheel change, but at least every six months for tightness, visible damage and tyre pressures.

Material Torque wrench
 Tyre pressure gauge

Precondition The machine is switched off.

1. Wheel tightness check (see chapter 2.4.3 for torques)
2. Check the tyres for any defect.
 Replace any damaged or worn tyres.
3. Check tyre pressures (see chapter 2.4.2 for pressures).

10.5.2 Towbar maintenance

Clean and lubricate all sliding and rotating bearings as necessary but at least every 6 months.

Material Lithium enriched multi-purpose grease
Non-corroding oil
Cleaning rags

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

1. Check the towbar for correct function and movement.
Make sure the coupling is fully locked.
2. Clean and oil all sliding and rotating bearings.



The locking teeth on the towbar height adjustment joint are corroded and jammed and the towbar height cannot be adjusted.

- If necessary, free the teeth by jerking the towbar horizontally and vertically.
- Clean the locking teeth and smear with water-repellent grease.

10.5.3 Overrun braking mechanism maintenance

Check and maintain the overrun braking mechanism according to the maintenance table.

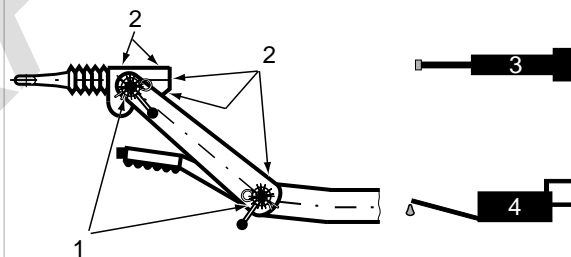
Material Lithium-enriched multi-purpose grease
Acid-free oil
Cleaning cloth

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

Overrun device greasing

Greasing points

Option	Portrayal
sb	



10-M0677

Tab. 60 Overrun brake mechanism lubricating point



Item ① is omitted in the fixed height towbar version.

1. Use a grease gun ② on all nipples ③ until grease flows from the bearing points.
2. Lubricate the serrated joints ① with an acid-free oil ④.

Further information See table 60 for oil and grease points.

Checking the overrun damper

1. Loosen the transfer cable one side.
2. Press in the damper against its damping force.
 Have the damper replaced by a specialist workshop if:
 - There is little resistance to pushing in,
 - Air has entered the device,
 - There is little resistance to pulling out the shock absorber.
 - Oil leaks out.

10.5.4 Greasing the brake rods

Grease the brake rods when necessary (stiff movement) but at least annually.

Material Lithium enriched multi-purpose grease
 Non-corroding oil
 Cleaning rags

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

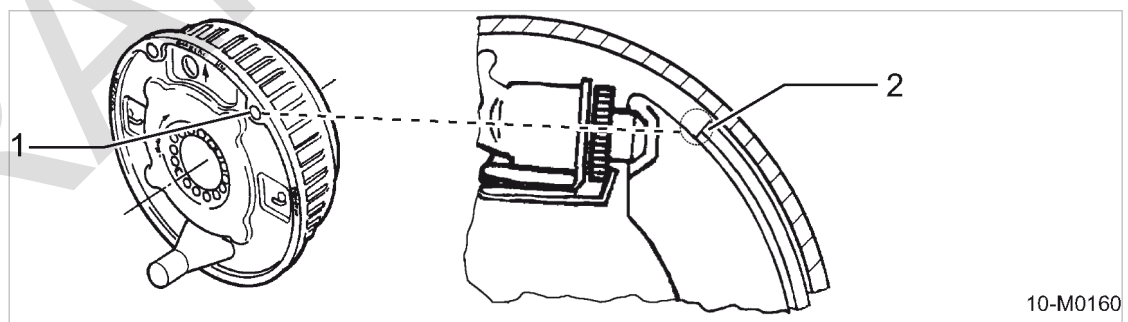
- Greasing the brake rods

10.5.5 Checking brake linings

A visual check can be made through the inspection hole in the brake anchor plate.

Material Screwdriver
 Torch

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



10-M0160

Fig. 40 Checking the brake lining thickness

- ① Inspection hole
- ② Brake linings

1. Remove the plug from the inspection hole.
2. With the aid of a torch, check the brake lining thickness.
 Have the brake linings replaced by a specialist workshop if they are less than 2 mm thick.
3. Replace the plug in the inspection hole.

10.6 Maintain rubber sealing strips

The rubber sealing strips between the lower body and the canopy serve both as a soundproofing measure and to prevent ingress of rain water.

Care of the rubber sealing strips is very necessary during the winter months to prevent the strips from sticking and tearing when the canopy is opened.

- Lubricate the rubber sealing strips regularly with silicone oil or Vaseline.

10.7 Options

- Carry out maintenance tasks in accordance with the schedules in chapter 10.2.3.2 .

10.7.1 Option ea Tool lubricator maintenance

Material Tool oil (special lubricant for road breakers),
Funnel
Cleaning cloths

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

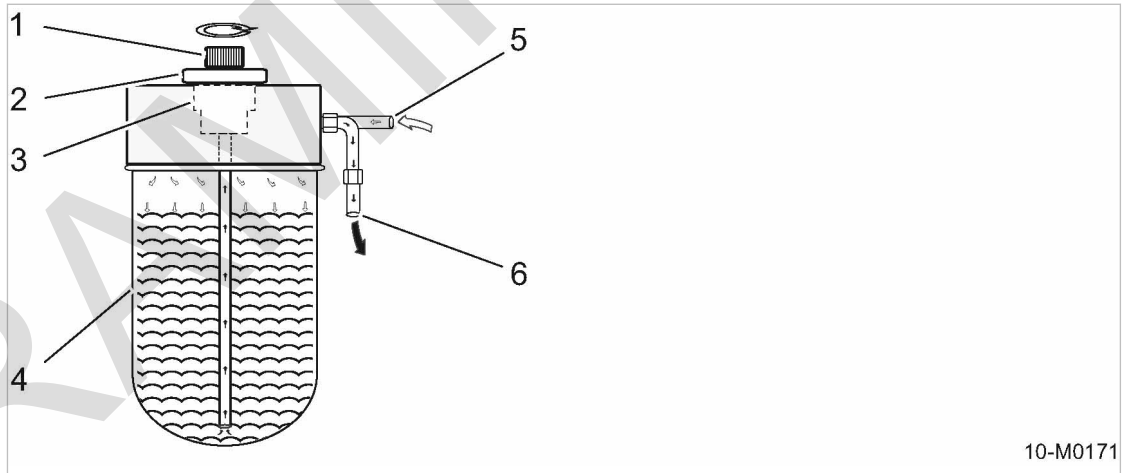



Fig. 41 Tool lubricator maintenance

- | | |
|--|-----------------------------|
| ① Metering knob | ④ Oil tank |
| ② Filler plug with dipstick and integrated riser | ⑤ Compressed air inlet tube |
| ③ Oil filler port | ⑥ Tool oil outlet |


Checking the tool lubricator oil level

Check the oil level daily.

1. Raise the canopy.

2. Slowly unscrew and withdraw the plug  from the oil filler port.
A dipstick is attached to the plug.
3. Wipe off the dipstick with a lint-free cloth or rag and screw the plug fully in again.
4. Unscrew and withdraw the plug once more and read off the oil level on the dipstick.
The oil level should be in the upper third of the dipstick. Top up if the oil does not reach this level.

Topping up with tool lubricator oil

1. Use the funnel to top up oil to 10 - 15 mm below the top of the oil tank
(see chapter 2.7.1 for oil grade and quantity).
2. Check the oil level again.
3. Check the filler plug gasket for damage.
Change a damaged gasket immediately.
4. Replace the plug  in the filler port.

**10.7.2 Option ba
Frost protector maintenance**

At temperatures under 5°C, the level of antifreeze in the protector must be checked daily before starting the compressor.

Material Antifreeze (Wabcothyl)

Cleaning cloths

Precondition The machine is shut down.

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

Machine cooled down.

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

**DANGER**

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

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

**WARNING**

Danger of injury from compressed air!

The frost protector is under pressure when operating; serious injury can result from loosening or opening components under pressure.

- Decompress the frost protector

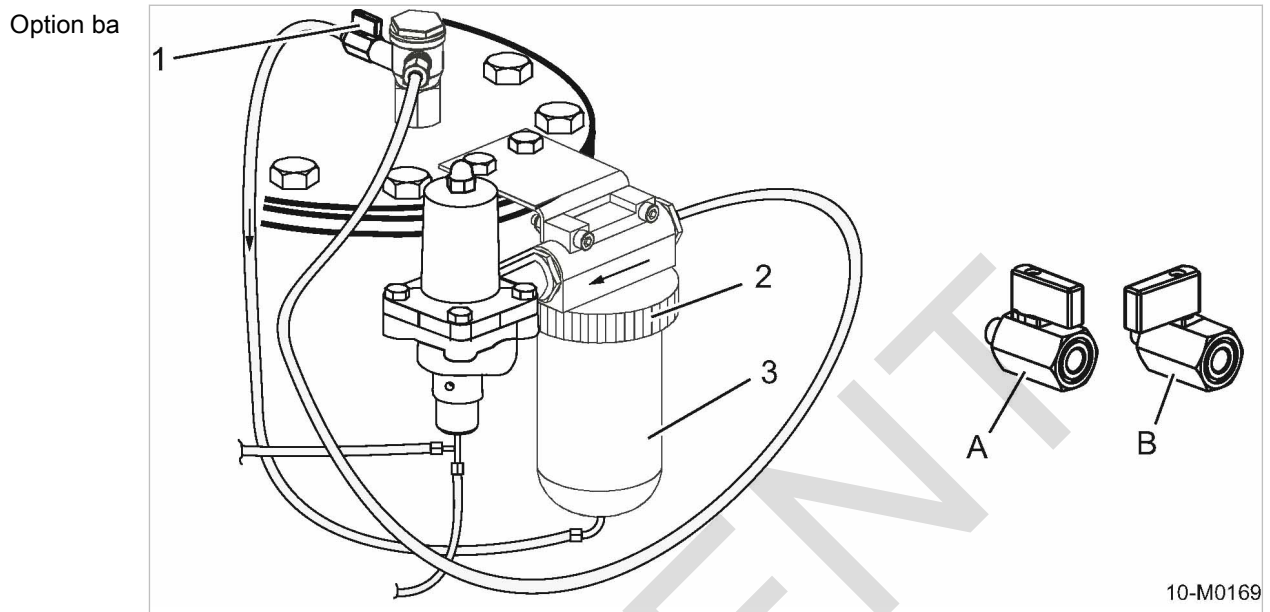


Fig. 42 Filling the frost protector

- | | | | |
|---|----------------|---|----------------------|
| ① | Shut-off valve | ② | Bowl clamp ring |
| Ⓐ | Open | ③ | Frost protector bowl |
| Ⓑ | Closed | | |

1. Open the shut-off valve (Ⓐ) and wait about 30 seconds until the frost protector is fully depressurised.
2. Unscrew the clamp ring (②) and remove the bowl (③).
3. Fill the bowl $\frac{3}{4}$ full with antifreeze.
4. Screw the bowl carefully back into place.
5. Close the shut-off valve (Ⓑ).

10.7.3 Option 1a Spark arrestor cleaning

The spark arrestor must be cleaned of any soot residue every two months to prevent the emission of glowing particles from the exhaust silencer.

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

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



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.

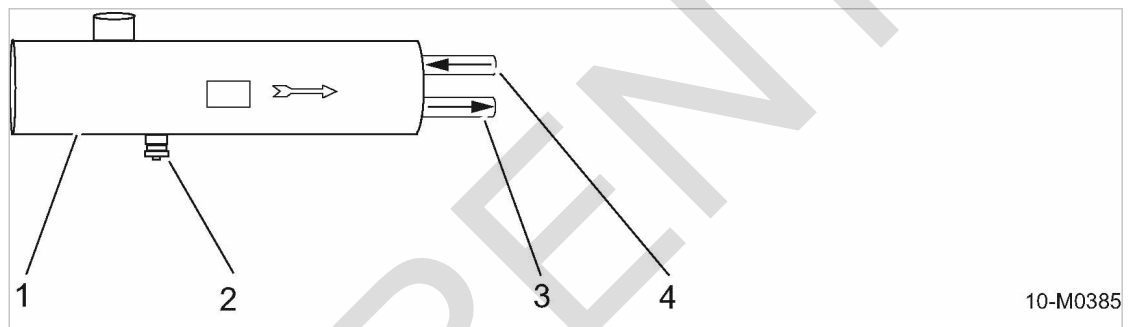


Fig. 43 Spark arrester cleaning

- | | |
|---|--------------------------|
| ① Exhaust silencer with integrated spark arrester | ③ Exhaust discharge pipe |
| ② Soot drain plug | ④ Exhaust inlet pipe |

1. Unscrew the soot drain plug ②.
2. Push one end of the hose over the drain port and place the other end in the receptacle.
3. Start the compressor engine.
4. Partially cover the exhaust discharge pipe ③ to increase pressure in the exhaust system.

Result Soot will drain through the hose into the receptacle.

1. Shut down the engine.
2. Remove the hose and replace the plug ②.



It is recommended to blow out the spark arrester with compressed air once a year.



Dispose of soot according to environment protection regulations.

**10.7.4 Option 1b
Engine air intake shut-off valve maintenance**

Material Compressed air for blowing out
Cleaning fluid or spirit
Cleaning cloths

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



WARNING

The engine air intake shut-off valve does not function.
The engine does not stop when taking in flammable gas.
Destruction of the engine and explosion or fire are possible.
The engine stops when the compressor is switched to LOAD (high speed).

- Do not move the valve adjusting screw.
- Refer any problems with the valve setting or function to a specialist workshop or KAESER Service.

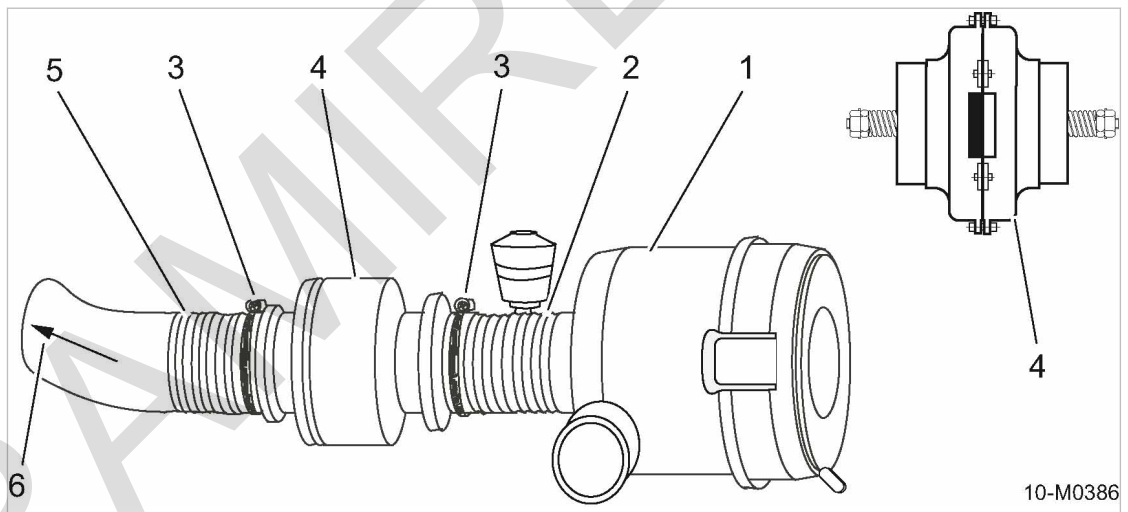


Fig. 44 Engine air intake shut-off valve maintenance

- | | |
|---------------------------------|------------------------------------|
| ① Engine air filter | ④ Engine air intake shut-off valve |
| ② Air intake hose (filter side) | ⑤ Air intake hose (engine side) |
| ③ Hose clamp | ⑥ To engine air intake |

Engine air intake shut-off valve cleaning



1. **WARNING!**
Engine air intake shut-off valve sticks.
The valve does not close completely. The engine does not stop when taking in flammable gas.
Destruction of the engine and explosion or fire are possible.
➤ Do not grease the valve, as this may cause a build up of dust and valve sticking.
2. Loosen the hose clamp ③ on the filter side of the valve ④ and turn the air intake hose ② to one side.

3. Check if the interior of the shut-off valve ④ is clean.

Blow out any dirt with compressed air.



The valve cannot be completely cleaned with a compressed air blast.

- Remove the engine air intake shut-off valve, noting its mounted position.
- Clean the valve with cleaning fluid or spirit and allow to dry.
- Refit the valve.

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

1. Check the valve for signs of excessive wear.
2. Check that the valve plate closes fully and easily.

Result Have the valve changed if it is heavily worn or malfunctions in any way.

1. Reposition the air intake hose and tighten the clamp.
2. Motor start
3. Run the machine under LOAD.

If the engine stops on switching to LOAD, have the valve adjusted by a specialist workshop or KAESER Service.

10.8 Document maintenance and service work.

Machine number:

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

Date	Maintenance task carried out	Operating hours	Signature

Tab. 61 Logged maintenance tasks

11 Spares, Operating Materials, Service

11.1 Note the Nameplate

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

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

11.2 Ordering consumable parts and operating fluids/materials

KAESER consumable parts and operating fluids/materials are all genuine KAESER parts. They are selected for use in KAESER machines.



WARNING

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

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.

- Use only original KAESER parts and operating fluids/materials.
- Have an authorized KAESER Service Technician carry out regular maintenance.

Compressor

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

Tab. 62 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
engine oil	1	1925

Tab. 63 Consumable engine parts

11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- Authorized 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 spare parts.
- Increased legal certainty as all regulations are kept to.

➤ Why not sign a KAESER AIR SERVICE maintenance agreement.

The advantages:

Lower costs and higher compressed air availability.

11.4 Service Addresses

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

11.5 Spares for service and repair

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




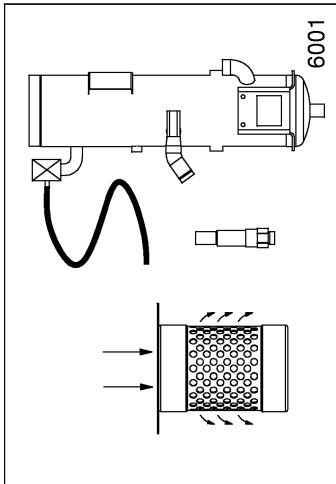
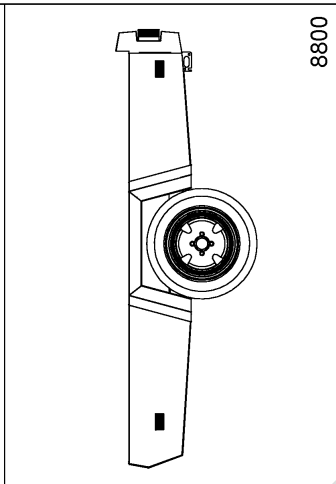
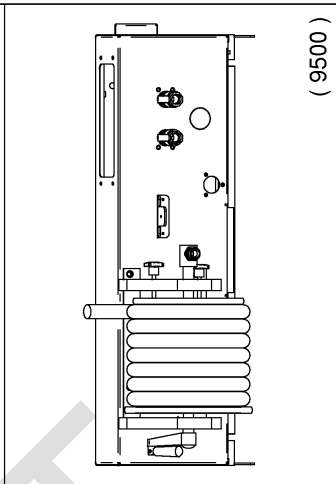

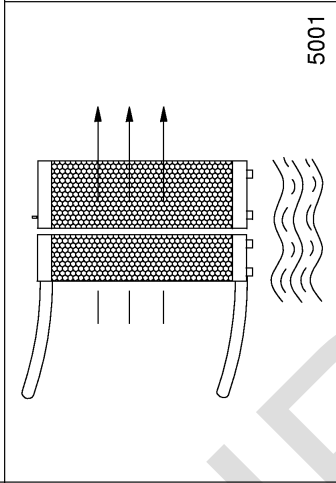
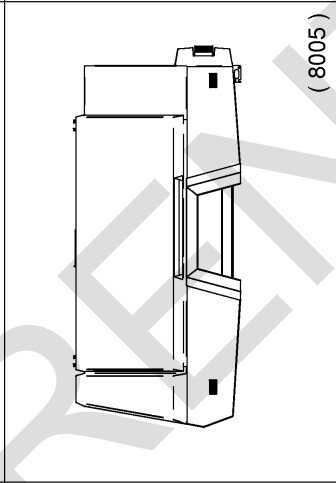
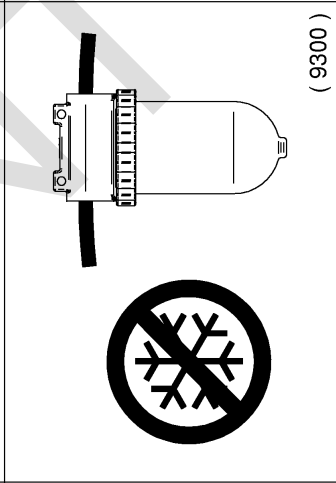
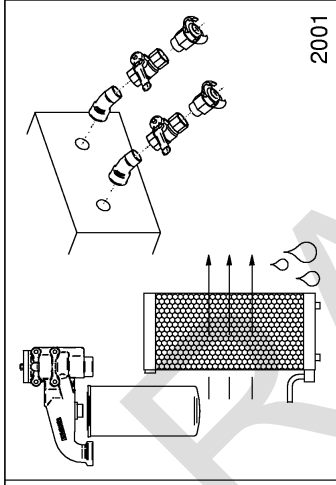
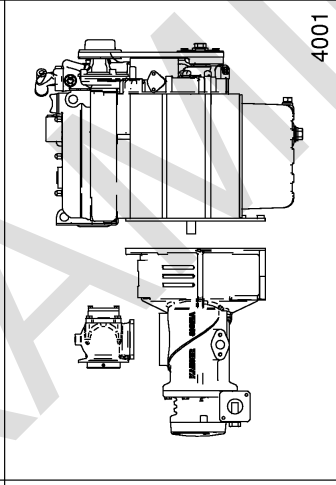
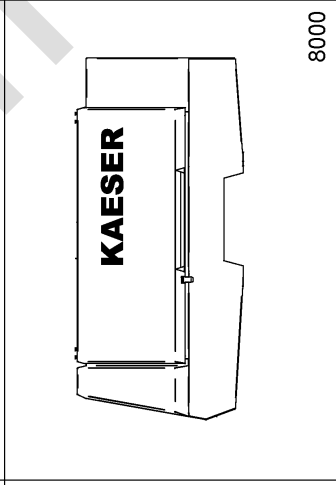
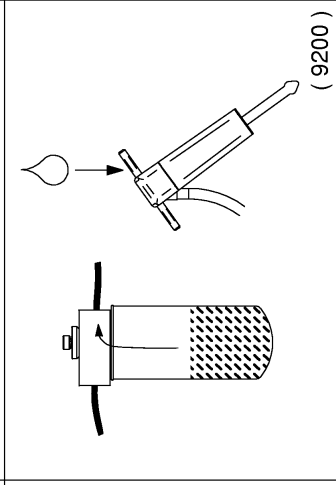
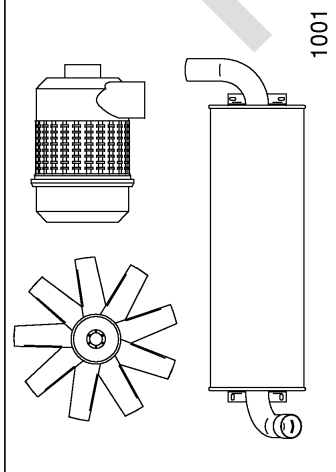
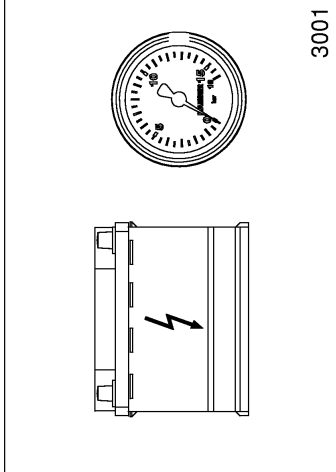
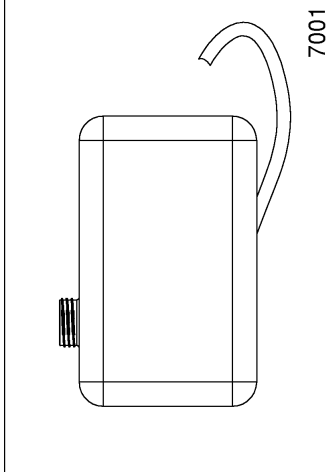
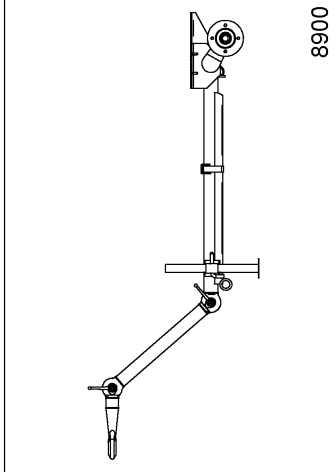
WARNING

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. Damage to the machine can also result in personal injury.

- Inspections, preventive maintenance or repair tasks not described in this manual must not be carried out by unqualified personnel.
- Other tasks, not described in this service manual, must be carried out by specialist workshops or KAESER Service.

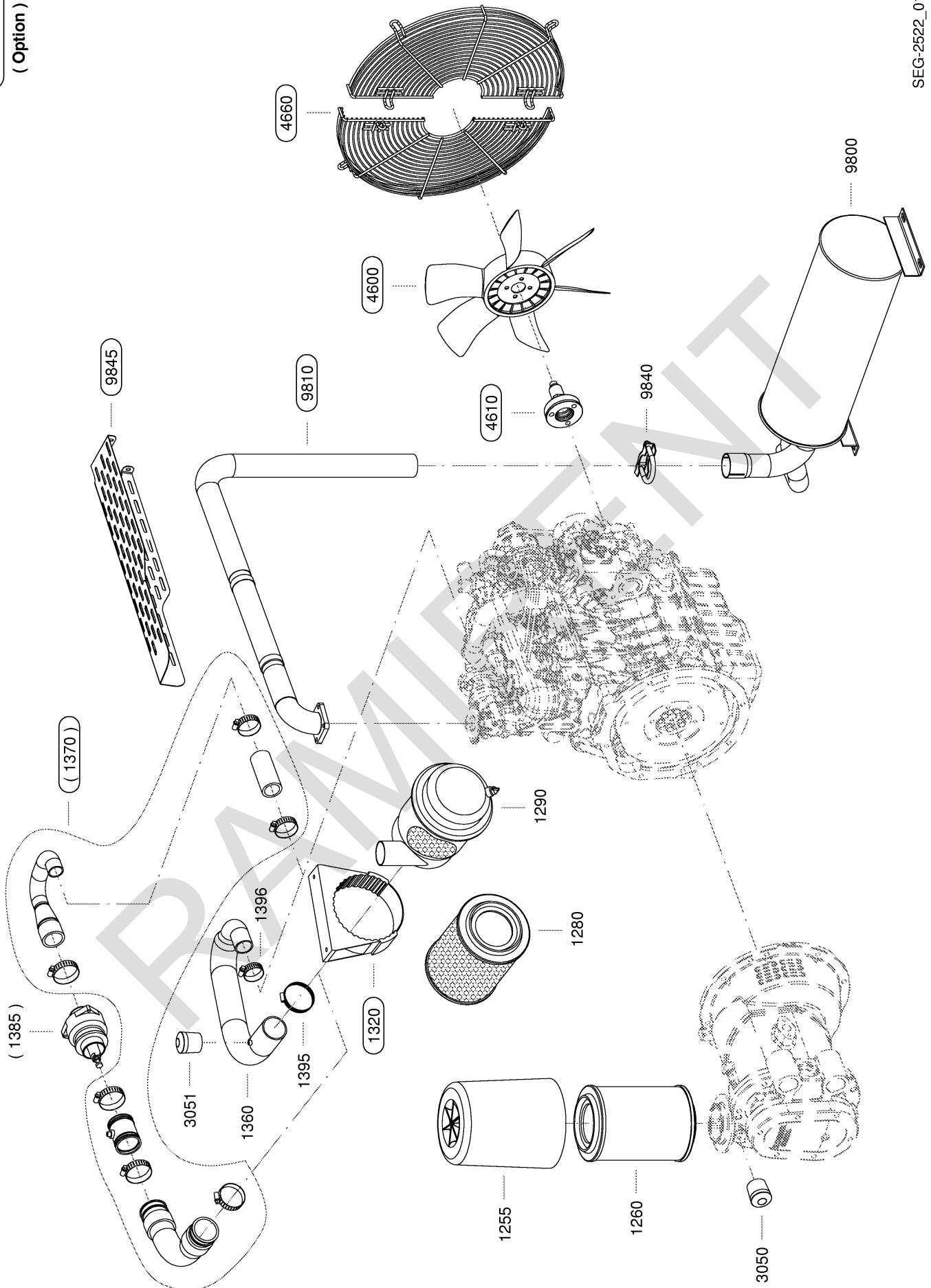
(Option)

 <p>1001</p>	 <p>2001</p>	 <p>3001</p>	 <p>4001</p>	 <p>5001</p>	 <p>6001</p>	 <p>7001</p>	 <p>8000</p>	 <p>8001</p>	 <p>8800</p>	 <p>8900</p>	 <p>(9200)</p>	 <p>(9300)</p>	 <p>(9500)</p>	 <p>(9800)</p>	 <p>(9900)</p>
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SEG-2521_01

Service-Kit
(Option)

SEG-2522_01

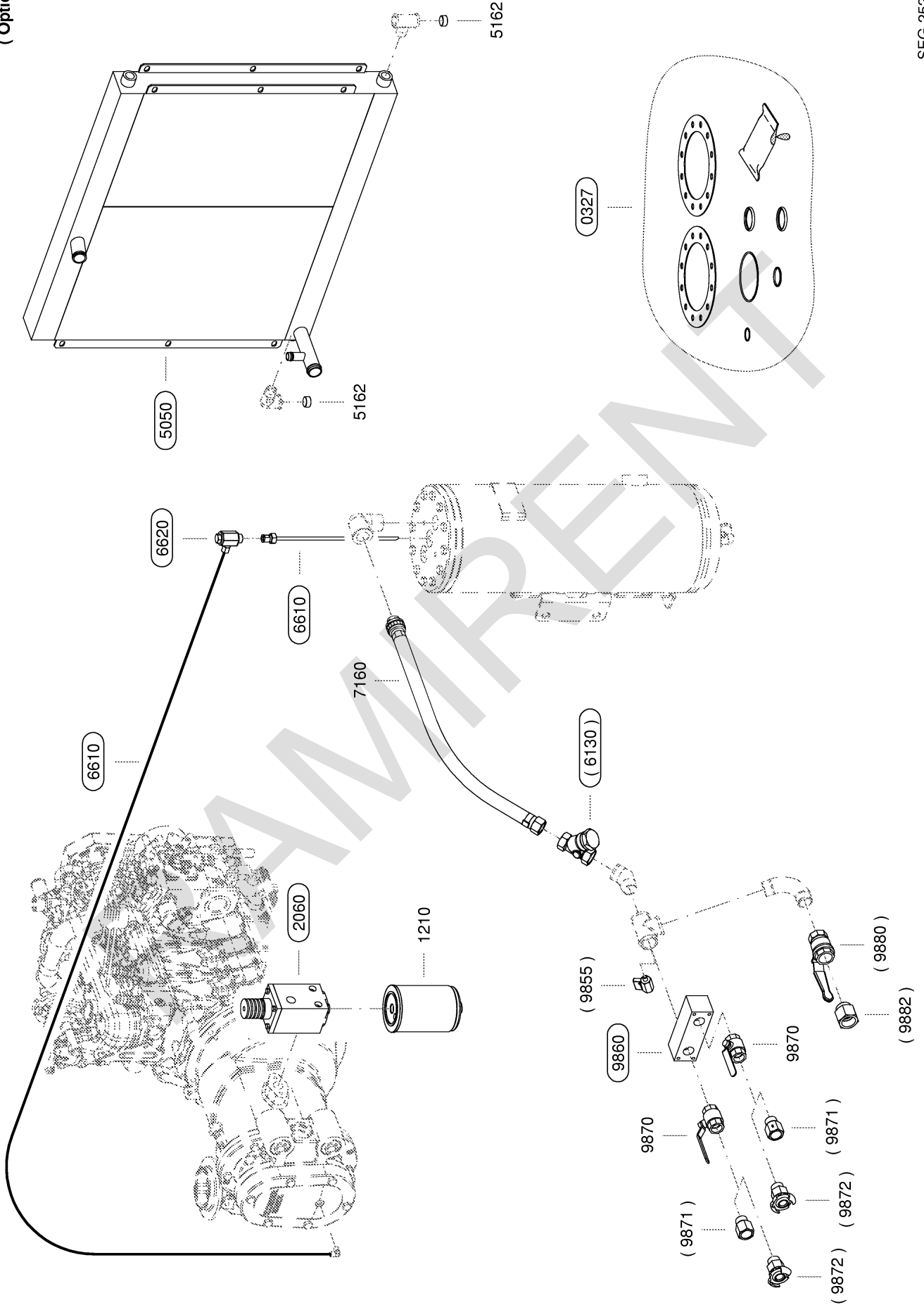


		Legend	KAESER
		Inlet air/Cooling air/Exhaust	SEL-1996_01E
Item	Description	Option	
1255	Air filter housing, compressor		
1260	Compressor air filter element		
1280	Engine air filter element		
1290	Engine air filter with housing		
1320	Air filter holder, engine		
1360	Engine air intake hose		
1370	Stop valve connection kit	X	
1385	Engine stop valve	X	
1395	Hose clamp		
1396	Hose clamp		
3050	Air filter maint. indicator		
3051	Air filter maint. indicator		
4600	Engine fan		
4610	Fan coupling		
4660	Fan cover		
9800	Exhaust silencer		
9810	Engine exhaust pipe		
9840	Exhaust pipe clamp		
9845	Guarding against touching		

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

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

Service-Kit
(Option)



SEG-2523_01

Legend	KAESER
Oil circuit/Comprsd.air outlet	SEL-1997_01E

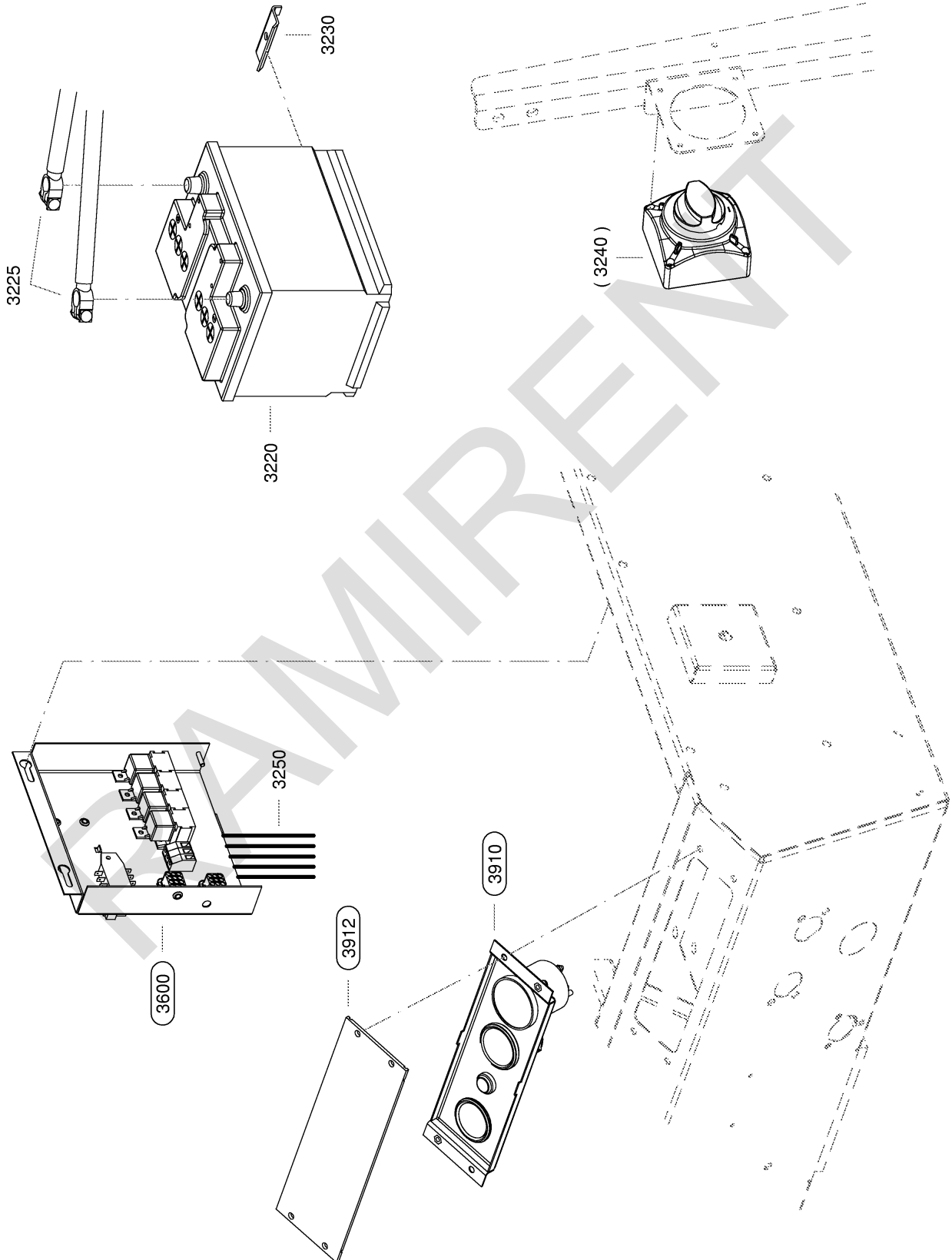
Item	Description	Option
0327	Oil/air gasket set	
1210	Compressor oil filter	
2060	Combination valve	
2062	Maintenance kit, combi. valve	
2064	Overhaul kit, combination valve	
5050	Cooler	
5162	Compressor oil cooler drain	
6130	Comp. air pipe check valve	X
2412	Check valve overhaul kit	
6610	Suction line kit	
6620	Dirt trap, oil scavenge line	
9416	Dirt trap maintenance kit	
7160	hose line	
9855	Venting valve	X
9860	Compressed air distributor	
9870	Outlet valve	
9871	Claw coupling adapter	X
9872	Claw coupling	X
9880	Large outlet valve	X
9882	Adapter	X

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

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

Service-Kit
(Option)

SEG-2524_01



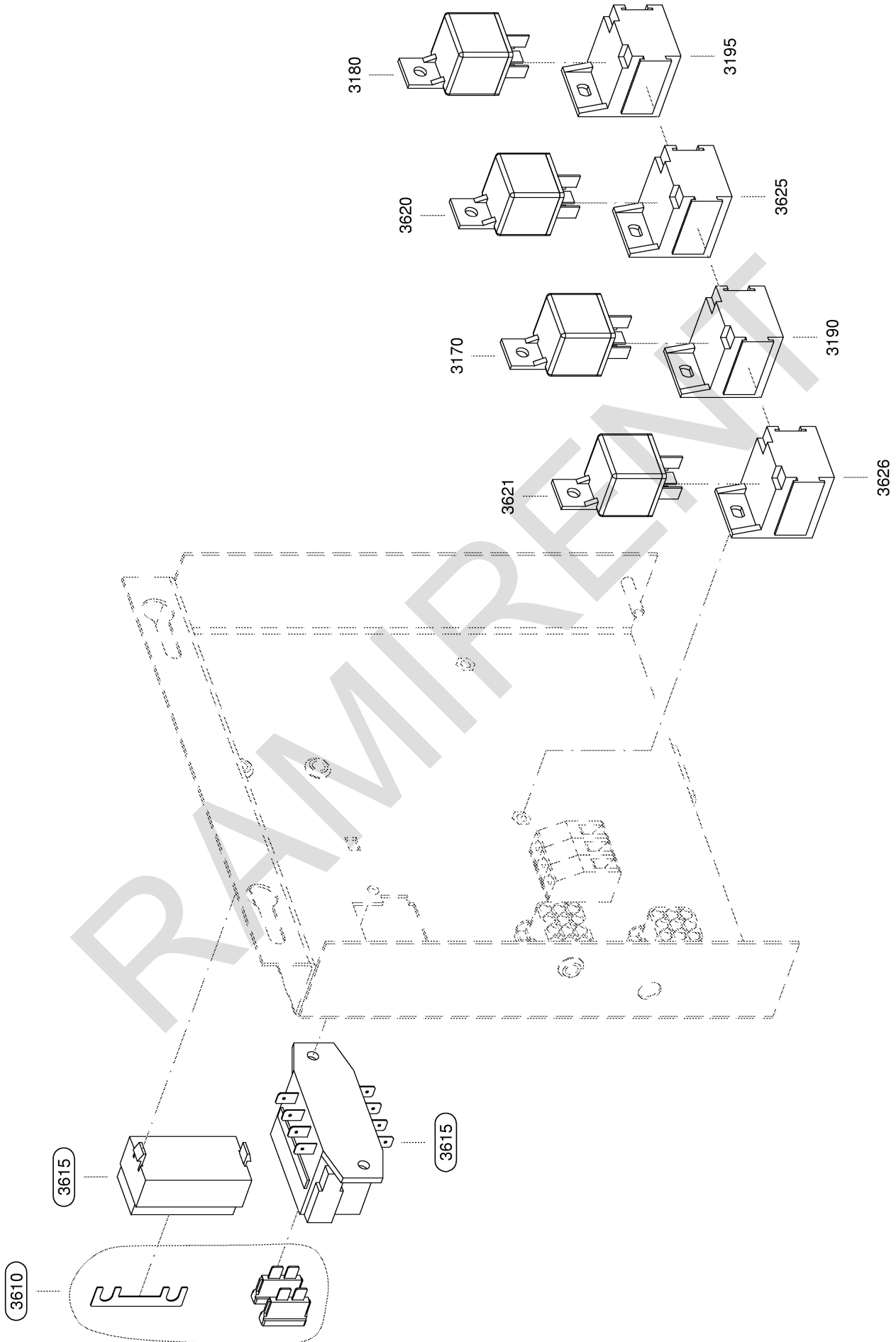
Legend	KAESER
Electrics/Instruments	SEL-1998_01E

Item	Description	Option
3220	Battery	
3225	Battery cable	
3230	Battery bracket	
3240	Battery isolating switch	X
3250	Drive motor cable set	
3600	Control cabinet	
3910	Instrument panel	
3912	Instrument panel cover	

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

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

RAMIRENT



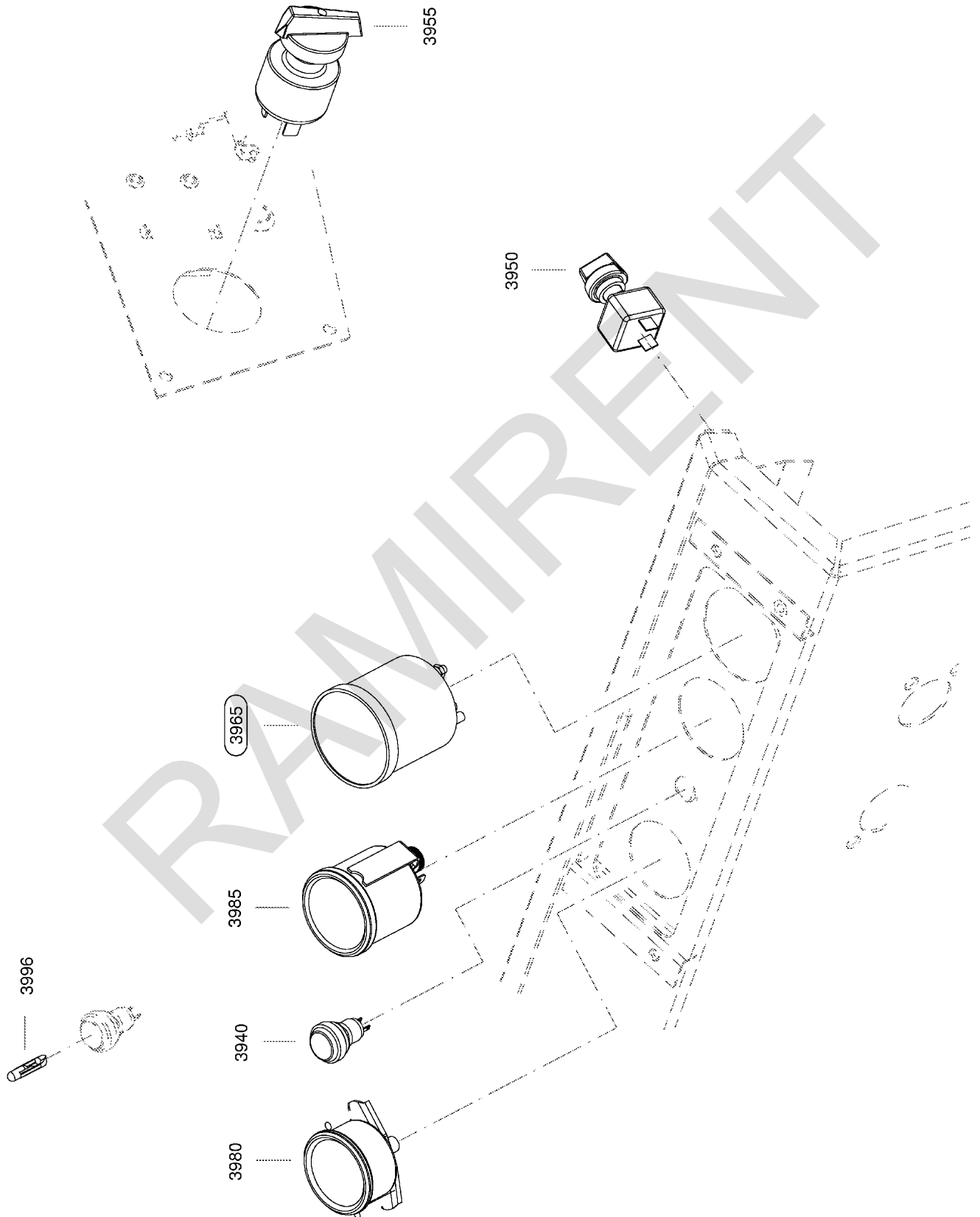
Legend	KAESER
Control cabinet	SEL-1999_01E

Item	Description	Option
3170	Starting relay	
3180	Shutdown relay	
3190	Power relay socket	
3195	Power relay socket	
3610	Control fuse set	
3615	Fuse socket	
3620	Control relay	
3621	Control relay	
3625	Control relay socket	
3626	Control relay socket	

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

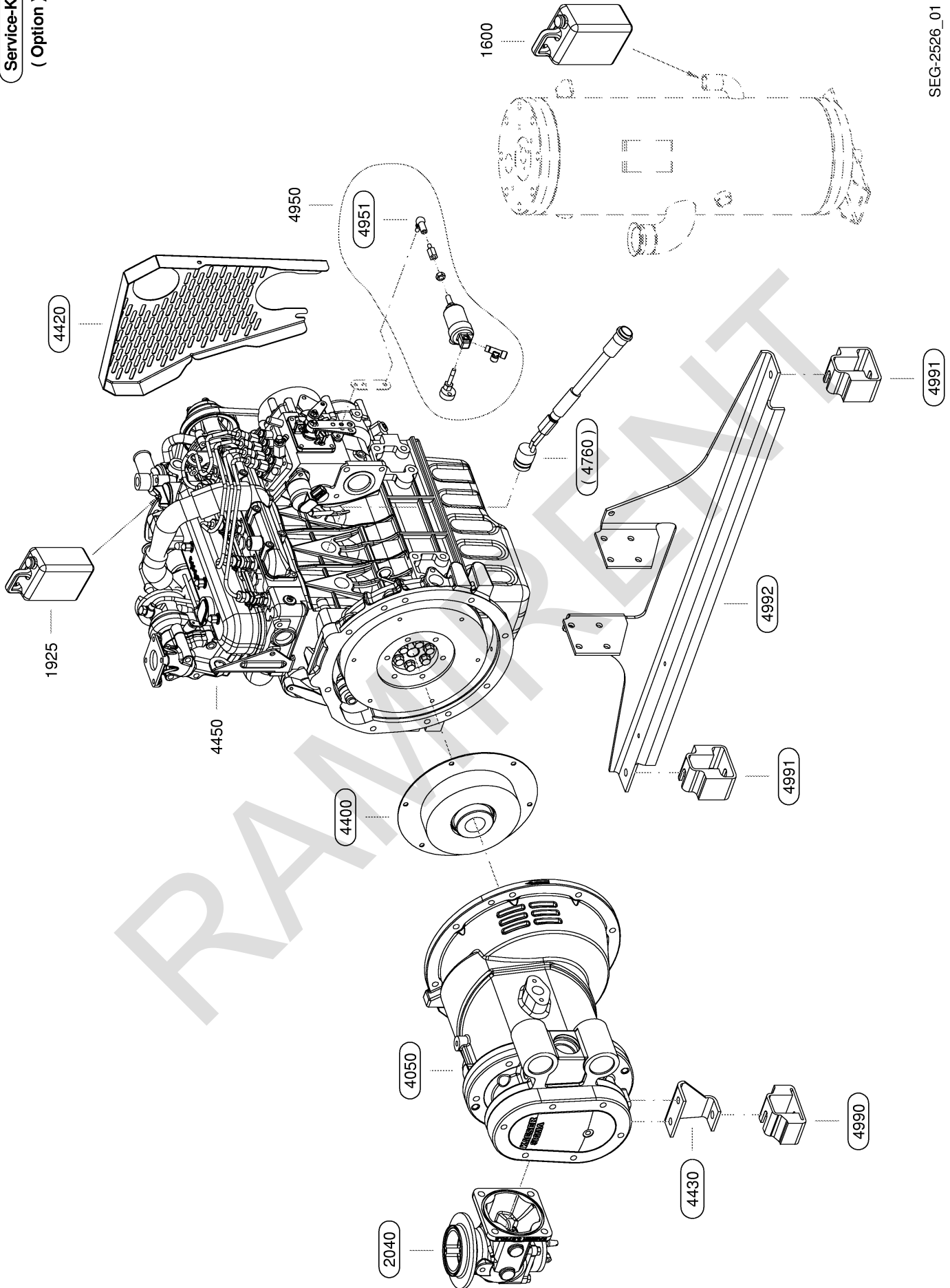
Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.

RAMIRENT



		Legend	KAESER
		Instrument panel	SEL-1989_01E
Item	Description	Option	
3940	Charging/fault indicator lamp		
3950	Main switch		
3955	Starter switch		
3965	Temperature gauge		
3980	Pressure gauge, instrument panel		
3985	Operating hours counter		
3996	Indicator lamps bulb set		

Service-Kit
(Option)



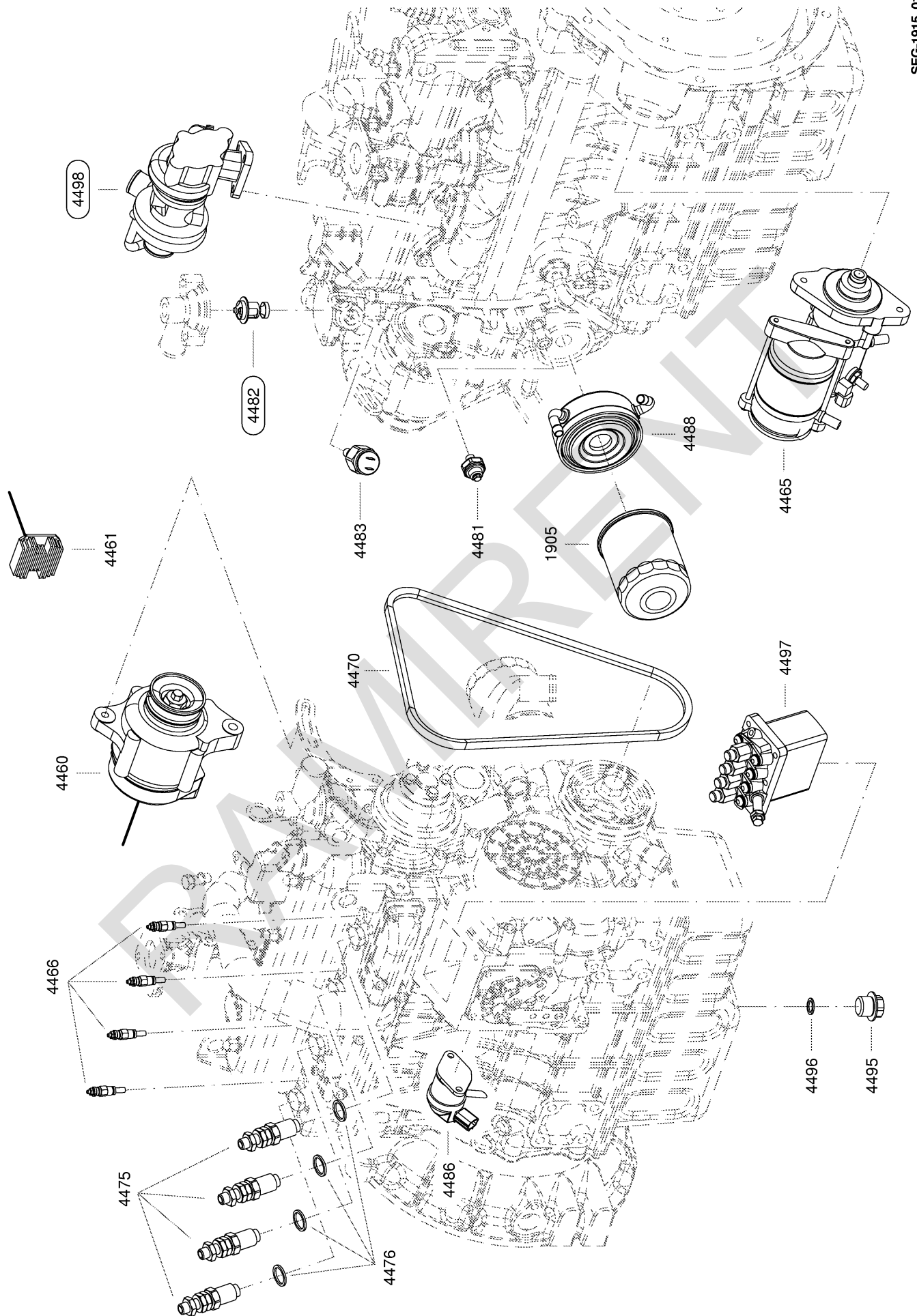
SEG-2526_01

		Legend	KAESER
		Airend/Engine/Oil-filling	SEL-2000_01E
Item	Description	Option	
1600	Sigma Fluid *)		
1925	Engine oil *		
2040	Inlet valve		
2042	Maintenance kit, inlet valve		
2044	Overhaul kit, inlet valve		
4050	SIGMA exchange airend		
4400	Drive coupling		
4420	Belt guard		
4430	Airend support rack		
4450	Drive motor		
4760	Engine preheater	X	
4950	Speed adjusting		
4951	Swivel joint		
4990	Compressor mountings		
4991	Engine mountings		
4992	Motor support rack		

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

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

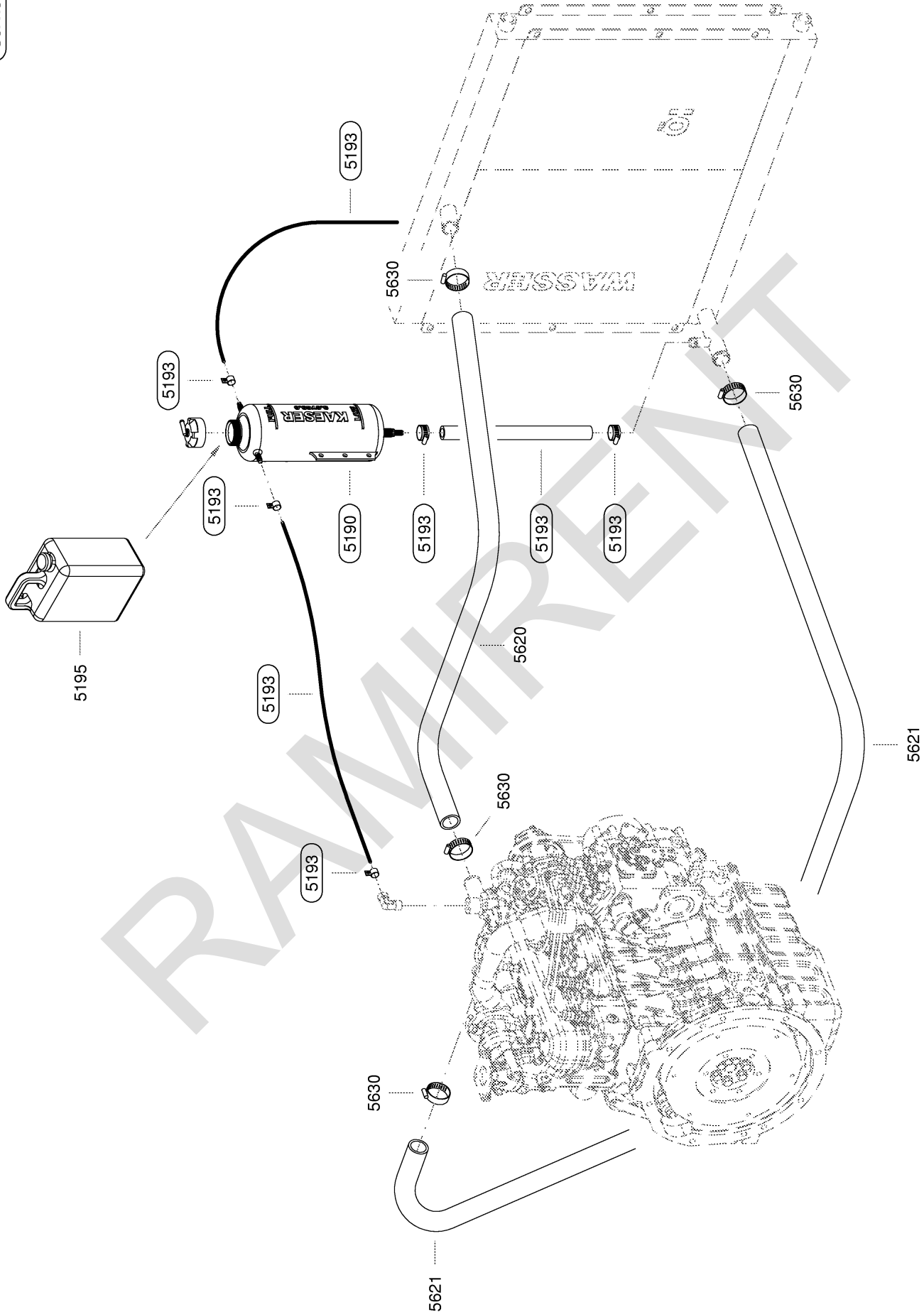
*) see cooling oil/engine oil recommendations



		Legend	KAESER
		Engine	SEL-2041_01E
Item	Description	Option	
1905	Engine oil filter element		
4460	Alternator		
4461	Alternator regulator		
4465	Starter		
4466	Glow plug		
4470	Engine V-belt		
4475	Injector nozzle		
4476	Injector nozzle seal		
4481	Oil pressure switch		
4482	Coolant thermostat		
4483	Temperature switch		
4486	Fuel cut-off		
4488	Engine oil cooler		
4495	Engine oil drain		
4496	Oil drain seal		
4497	Injection pump		
4498	Turbocharger		

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

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



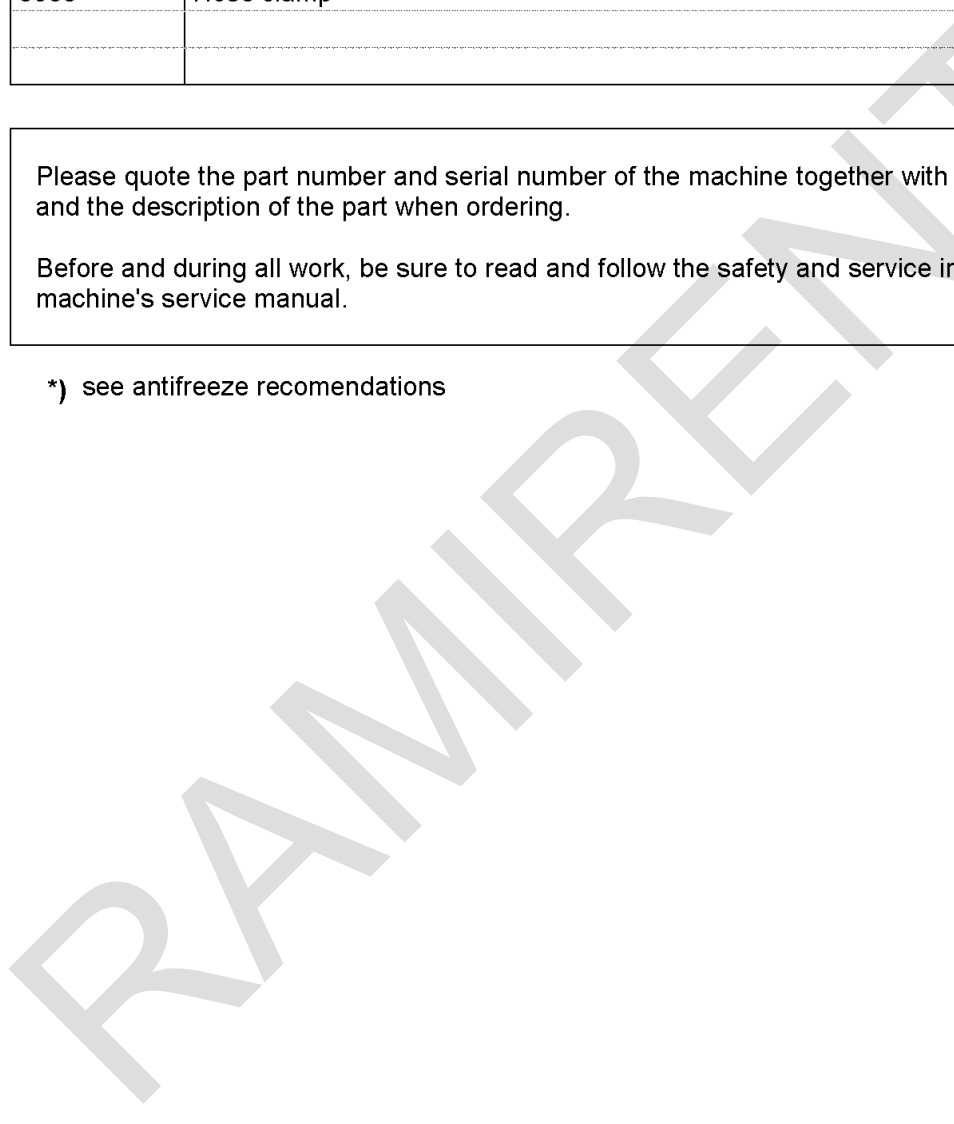
Legend	KAESER
Engine cooling	SEL-2001_01E

Item	Description	Option
5190	Expansion tank	
5193	Expansion tank pipes	
5195	Engine antifreeze *)	
5620	Coolant hose	
5621	Coolant hose	
5630	Hose clamp	

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

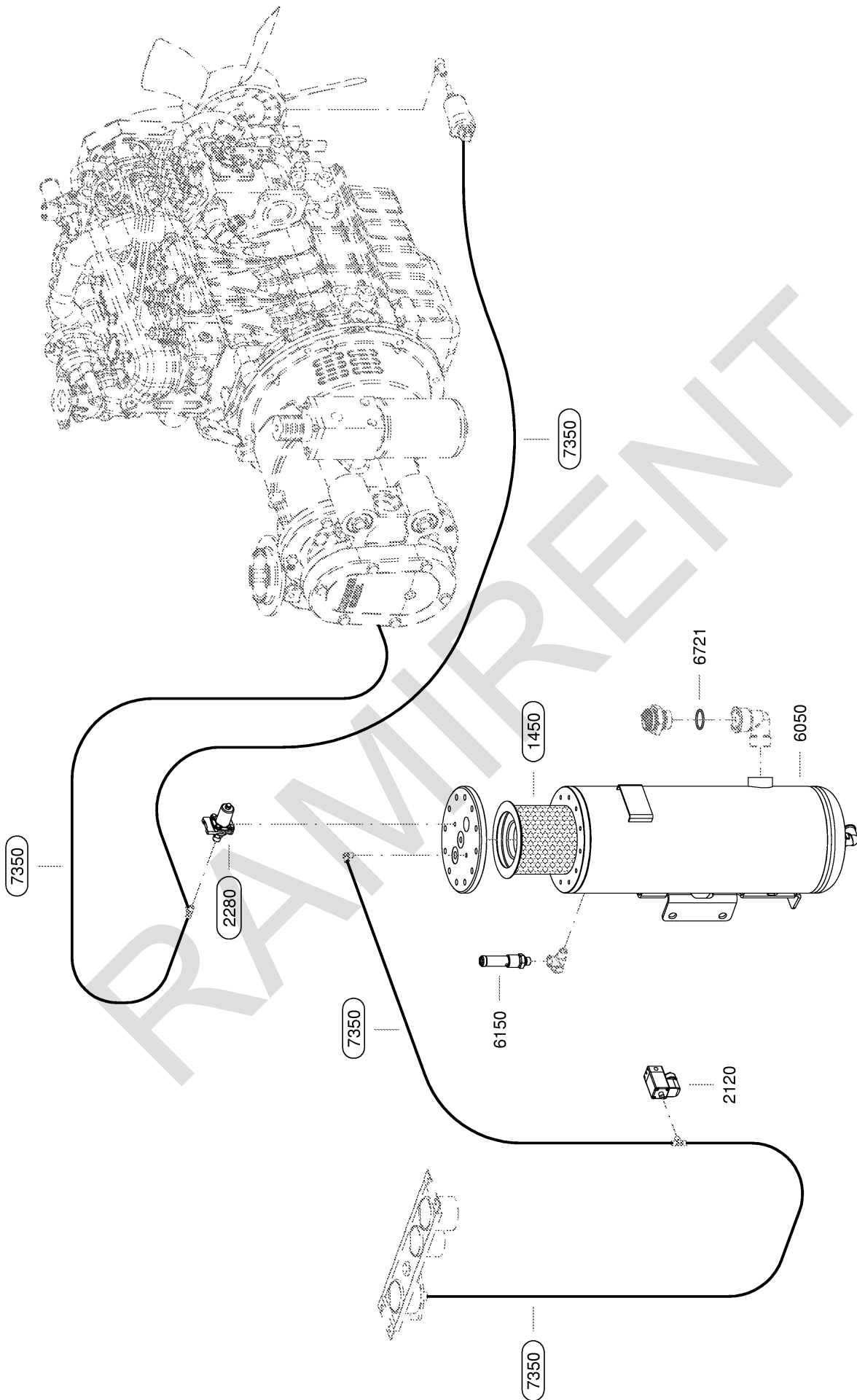
Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.

*) see antifreeze recommendations



Service-Kit

SEG-2528_01

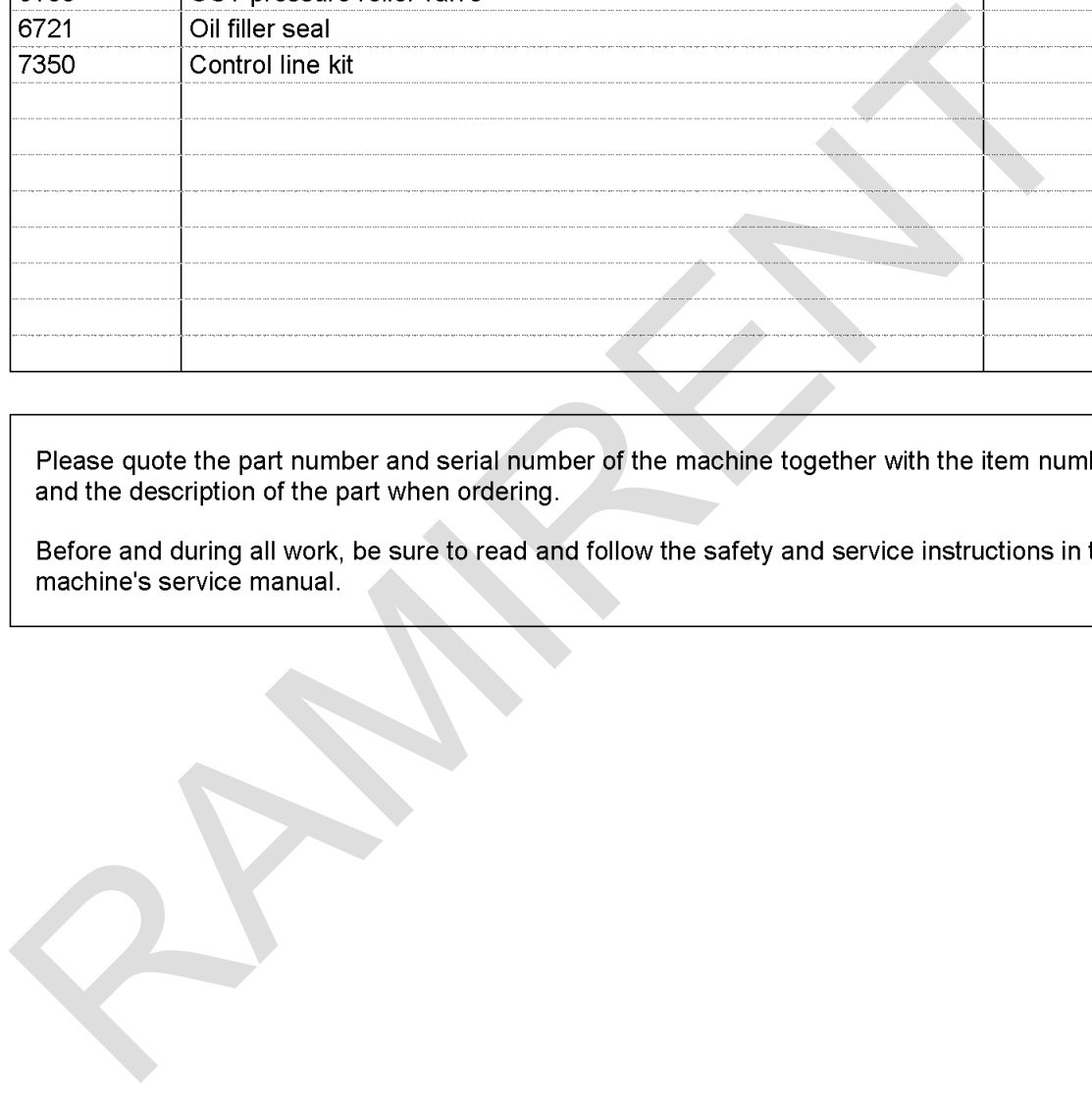


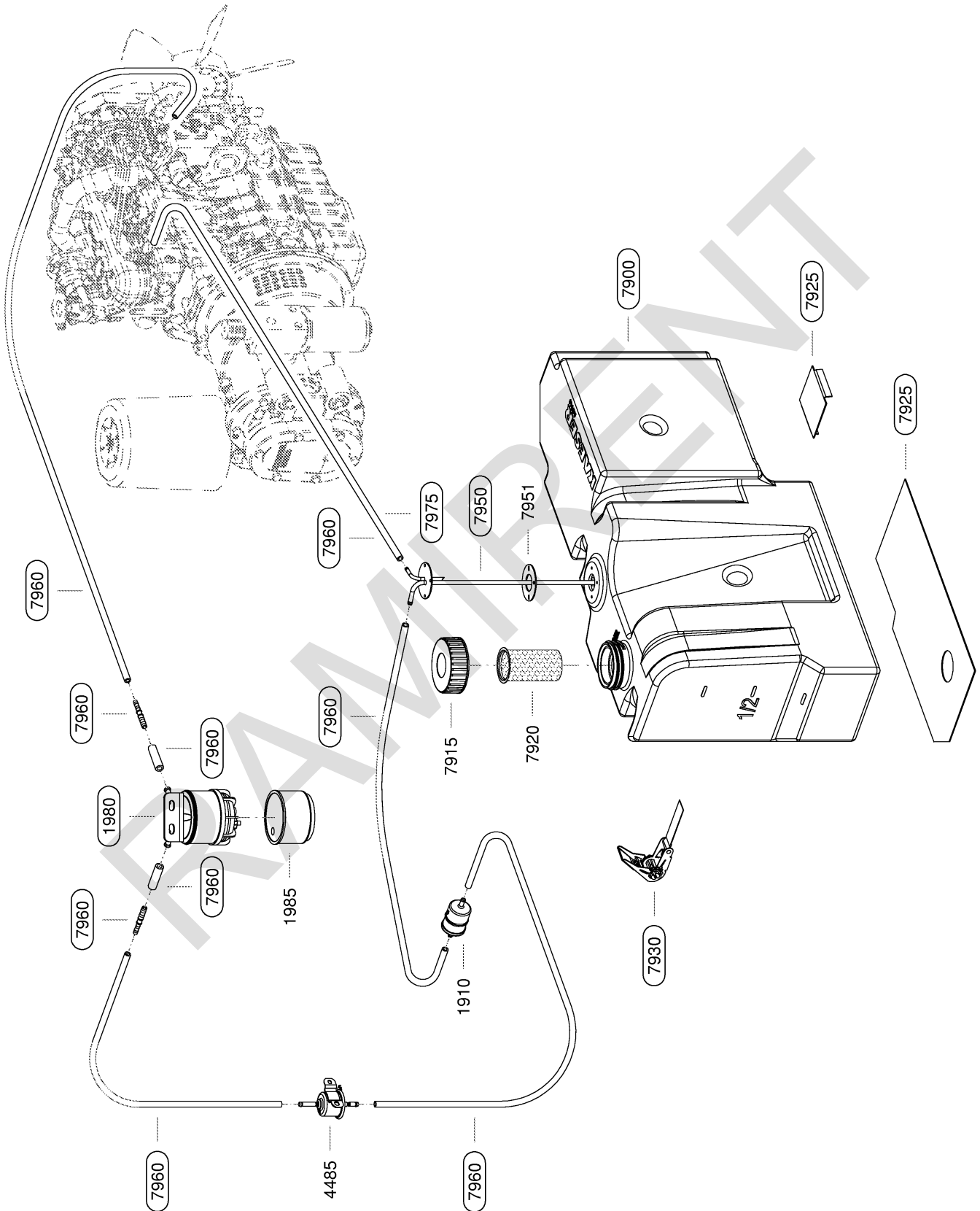
Legend	KAESER
Oil separation/control air M43	SEL-2002_01E

Item	Description	Option
1450	Oil separator cartridge	
2120	Solenoid valve	
2280	Proportional controller	
2282	Maintenance kit, prop. ctr.	
6050	Oil separator tank	
6150	OST pressure relief valve	
6721	Oil filler seal	
7350	Control line kit	

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

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





Legend	KAESER
Fuel supply	SEL-2004_01E

Item	Description	Option
1910	fuel filter.	
1980	Fuel de-watering filter	
1985	Fuel water trap insert	
4485	Fuel pump	
7900	Fuel tank	
7915	Fuel tank cap	
7920	Fuel strainer	
7925	Tank support	
7930	Tank fixing	
7950	Fuel suction line	
7951	Connection gasket	
7960	Fuel lines set	
7975	Fuel return line	

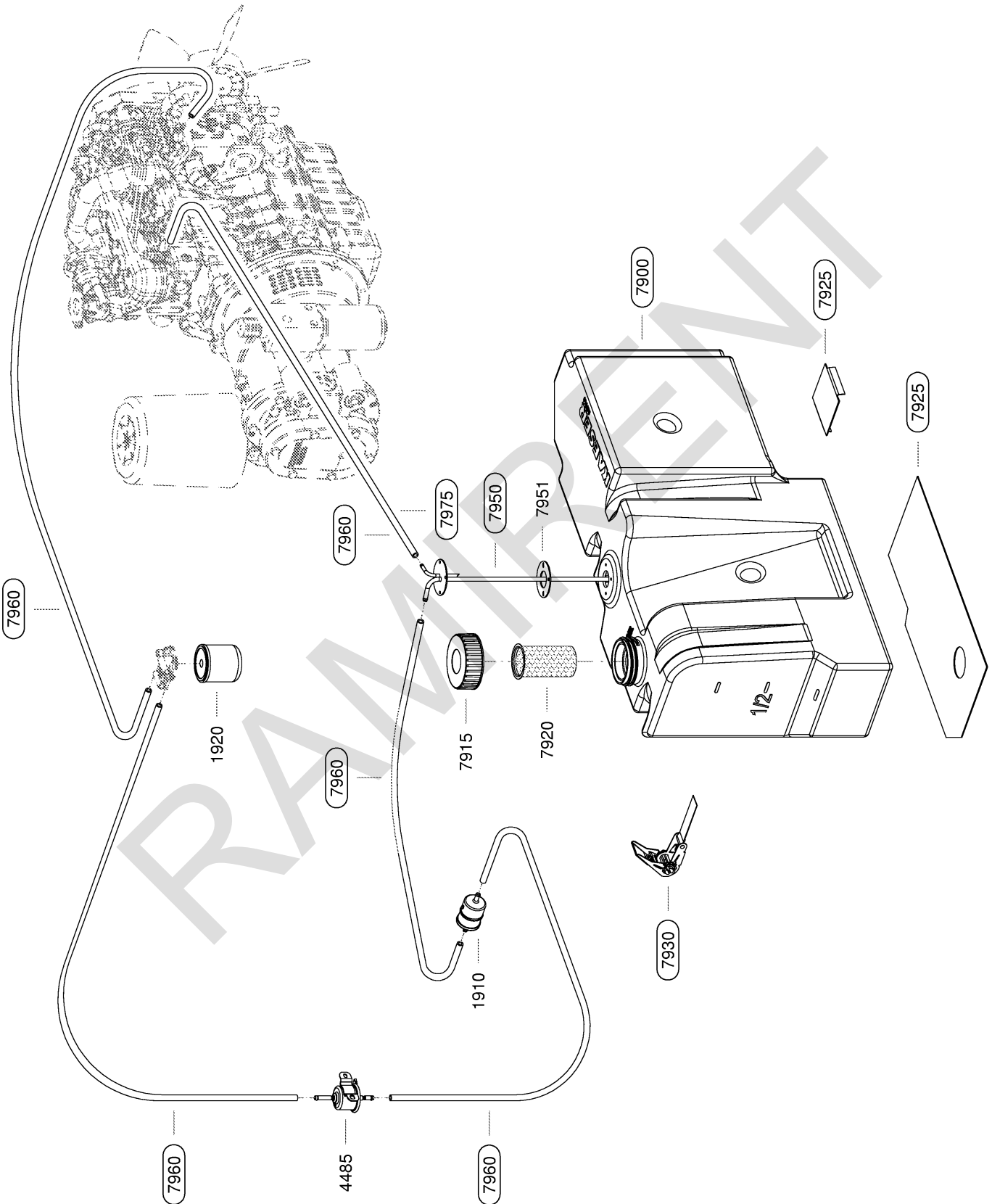
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

RAMMRENT

Service-Kit

SEG-2531_01

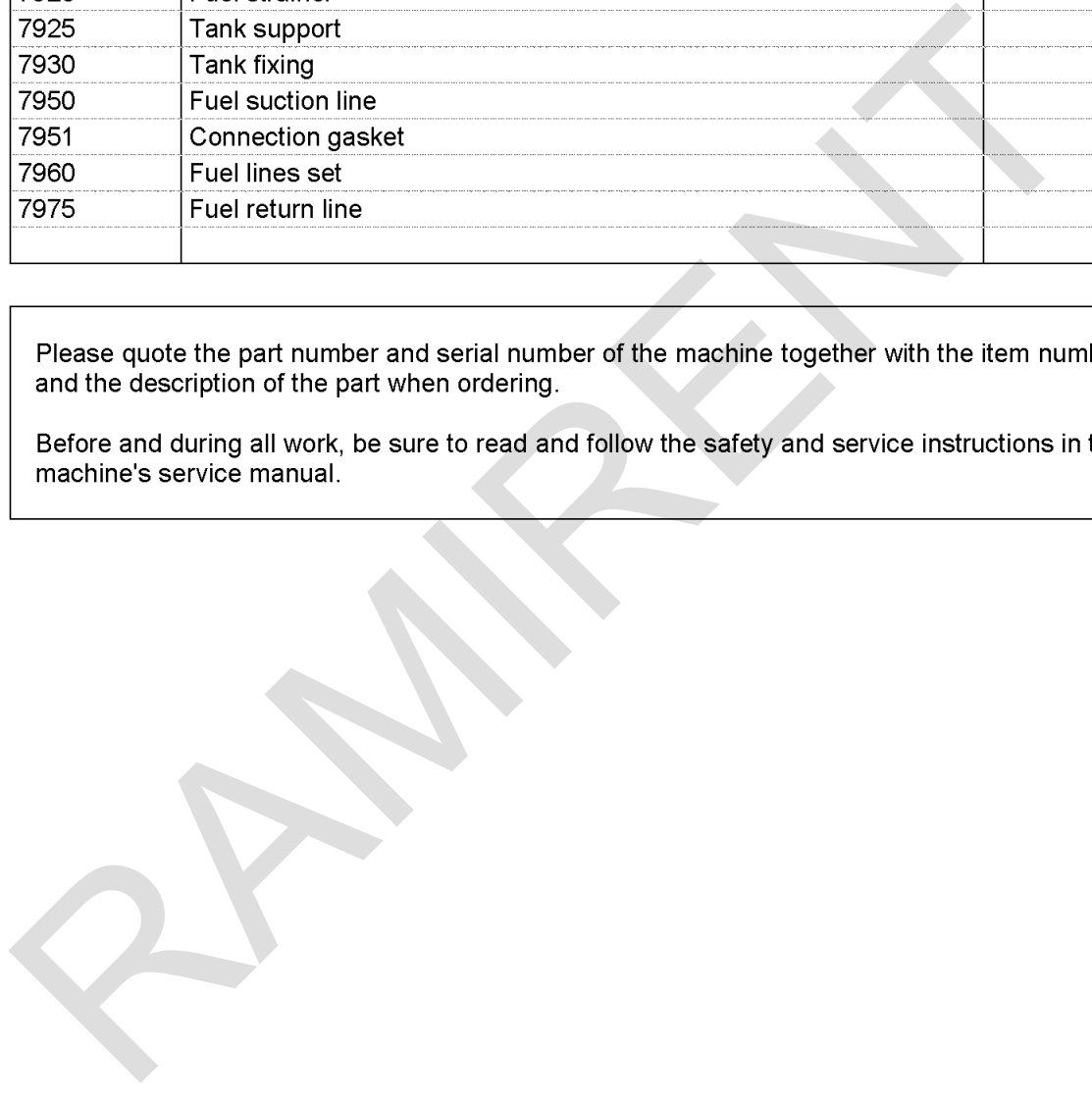


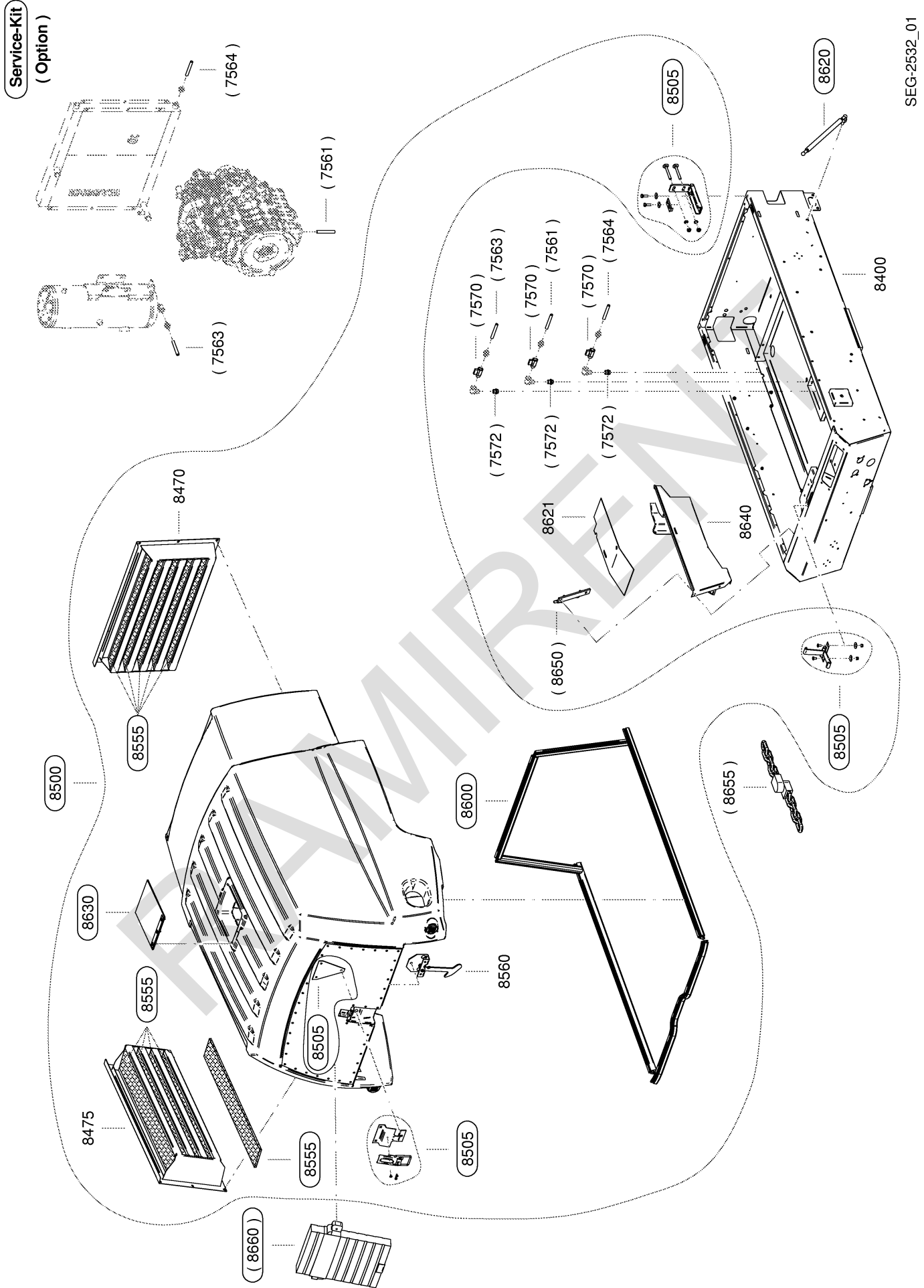
Legend	KAESER
Fuel supply	SEL-2005_01E

Item	Description	Option
1910	fuel filter.	
1920	Fuel fine filter	
4485	Fuel pump	
7900	Fuel tank	
7915	Fuel tank cap	
7920	Fuel strainer	
7925	Tank support	
7930	Tank fixing	
7950	Fuel suction line	
7951	Connection gasket	
7960	Fuel lines set	
7975	Fuel return line	

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

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



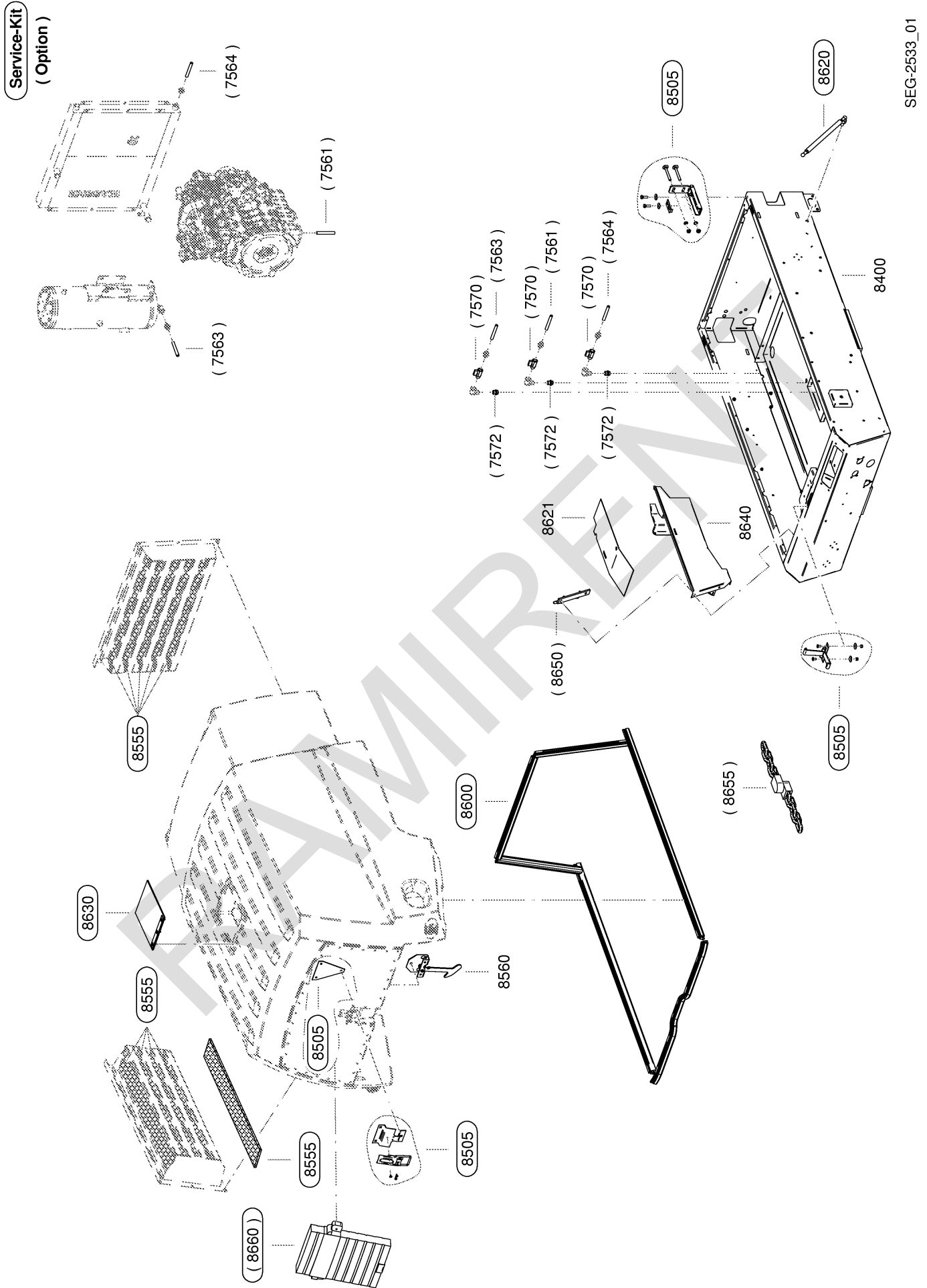


SEG-2532_01

		Legend	KAESER
		Bodywork	SEL-2006_01E
Item	Description	Option	
7561	hose line	X	
7563	hose line	X	
7564	hose line	X	
7570	Oil drain ball valve	X	
7572	Screwed drain plug	X	
8400	Lower bodywork		
8470	Exhaust air grill		
8475	Inlet air grill		
8500	Canopy		
8505	Hinge/closure set		
8555	Silencer element set		
8560	Canopy safety catch		
8600	Sealing profile		
8620	Bodywork gas spring		
8621	Rubber pad		
8630	Cover for lifting eye		
8640	Toolbox		
8650	Set theft-chain	X	
8655	Security chain	X	
8660	Document bag	X	

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

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

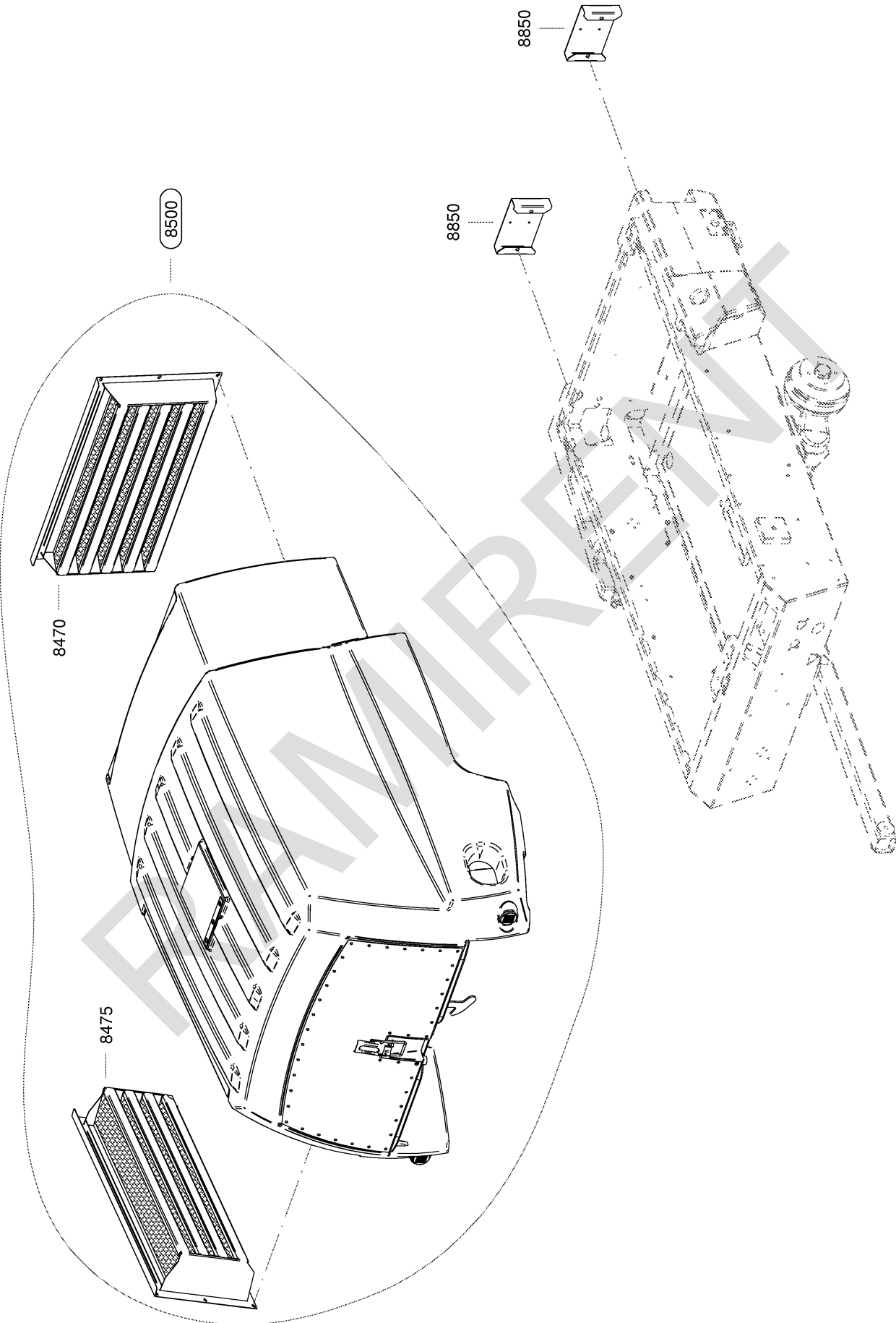


SEG-2533_01

		Legend	KAESER
		Bodywork	SEL-2007_01E
Item	Description	Option	
7561	hose line	X	
7563	hose line	X	
7564	hose line	X	
7570	Oil drain ball valve	X	
7572	Screwed drain plug	X	
8400	Lower bodywork		
8505	Hinge/closure set		
8555	Silencer element set		
8560	Canopy safety catch		
8600	Sealing profile		
8620	Bodywork gas spring		
8621	Rubber pad		
8630	Cover for lifting eye		
8640	Toolbox		
8650	Set theft-chain	X	
8655	Security chain	X	
8660	Document bag	X	

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

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



		Legend	KAESER
		Customer-specific painted part	SEL-2010_01E
Item	Description	Option	
8470	Exhaust air grill		
8475	Inlet air grill		
8500	Canopy		
8850	Lighting bracket		

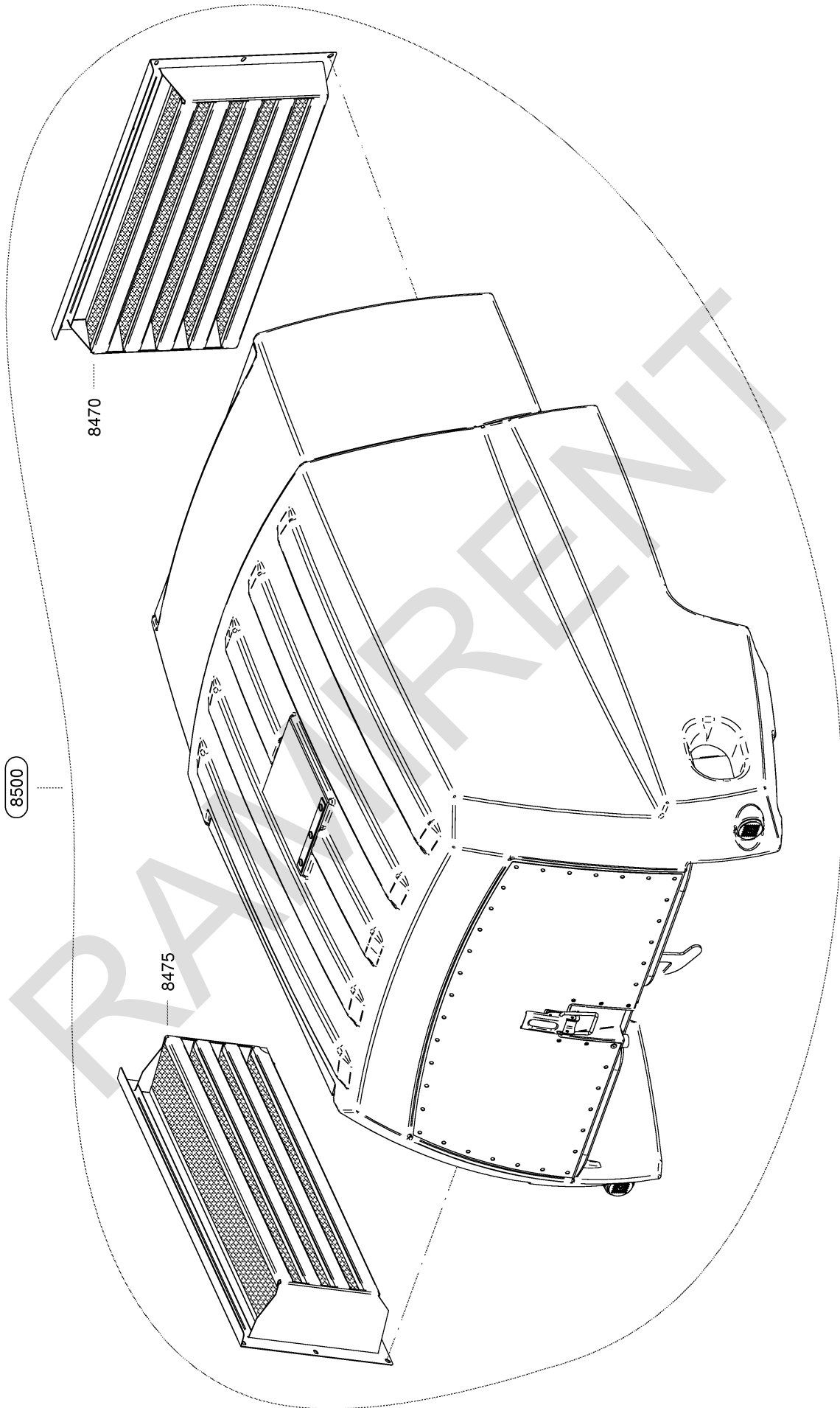
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

RAMIRENT

Service-Kit

SEG-2539_01



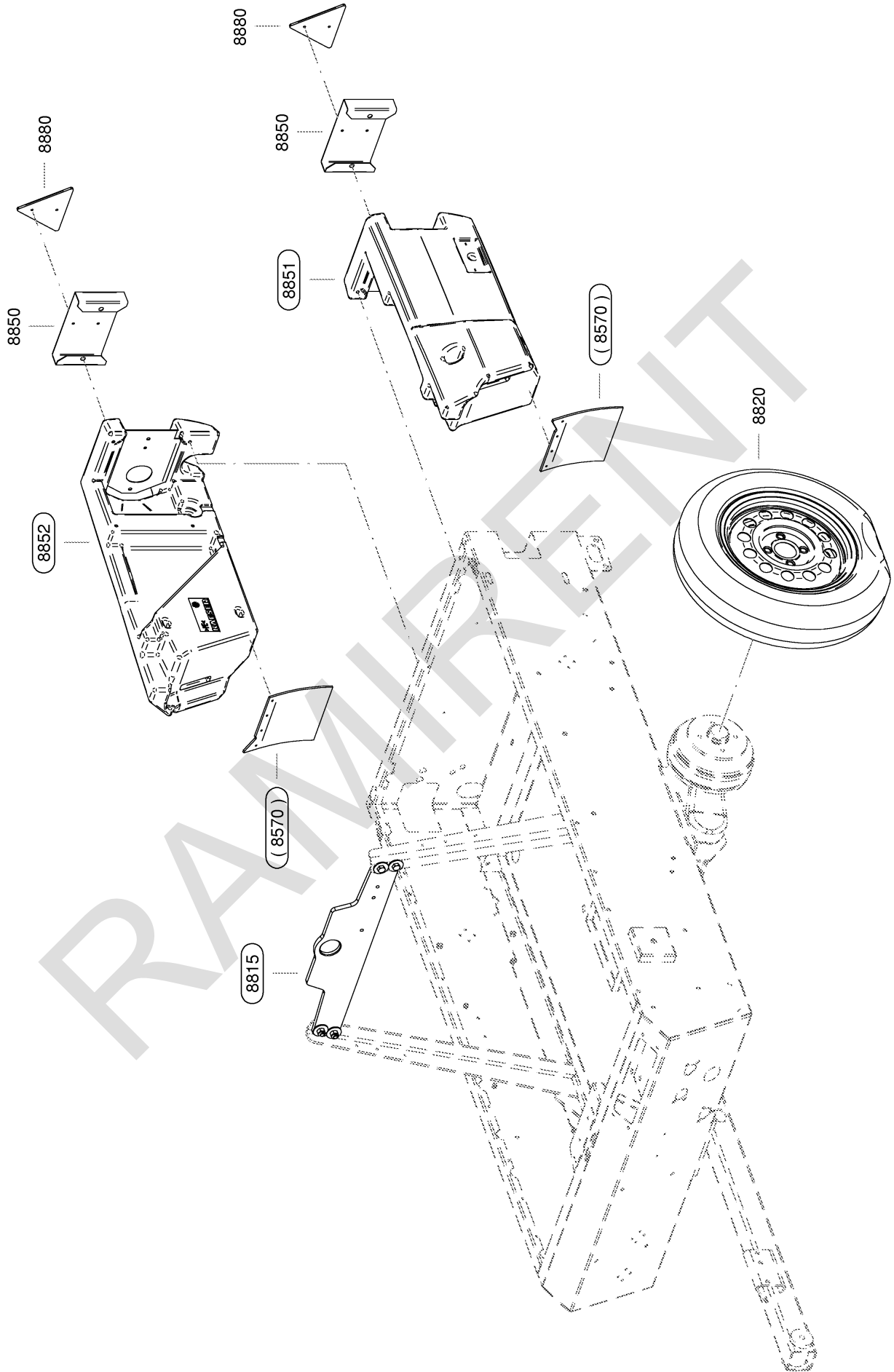
		Legend	KAESER
		Customer-specific painted part	SEL-2013_01E
Item	Description	Option	
8470	Exhaust air grill		
8475	Inlet air grill		
8500	Canopy		

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

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

RAMIRENT

Service-Kit
(Option)



SEG-2546_01

Legend	KAESER
Chassis	SEL-2020_01E

Item	Description	Option
8570	Splash guard	X
8815	Lifting eye	
8820	Wheel cpl.	
8850	Lighting bracket	
8851	Collision guard, rear-left	
8852	Collision guard, rear-right	
8880	Reflector	

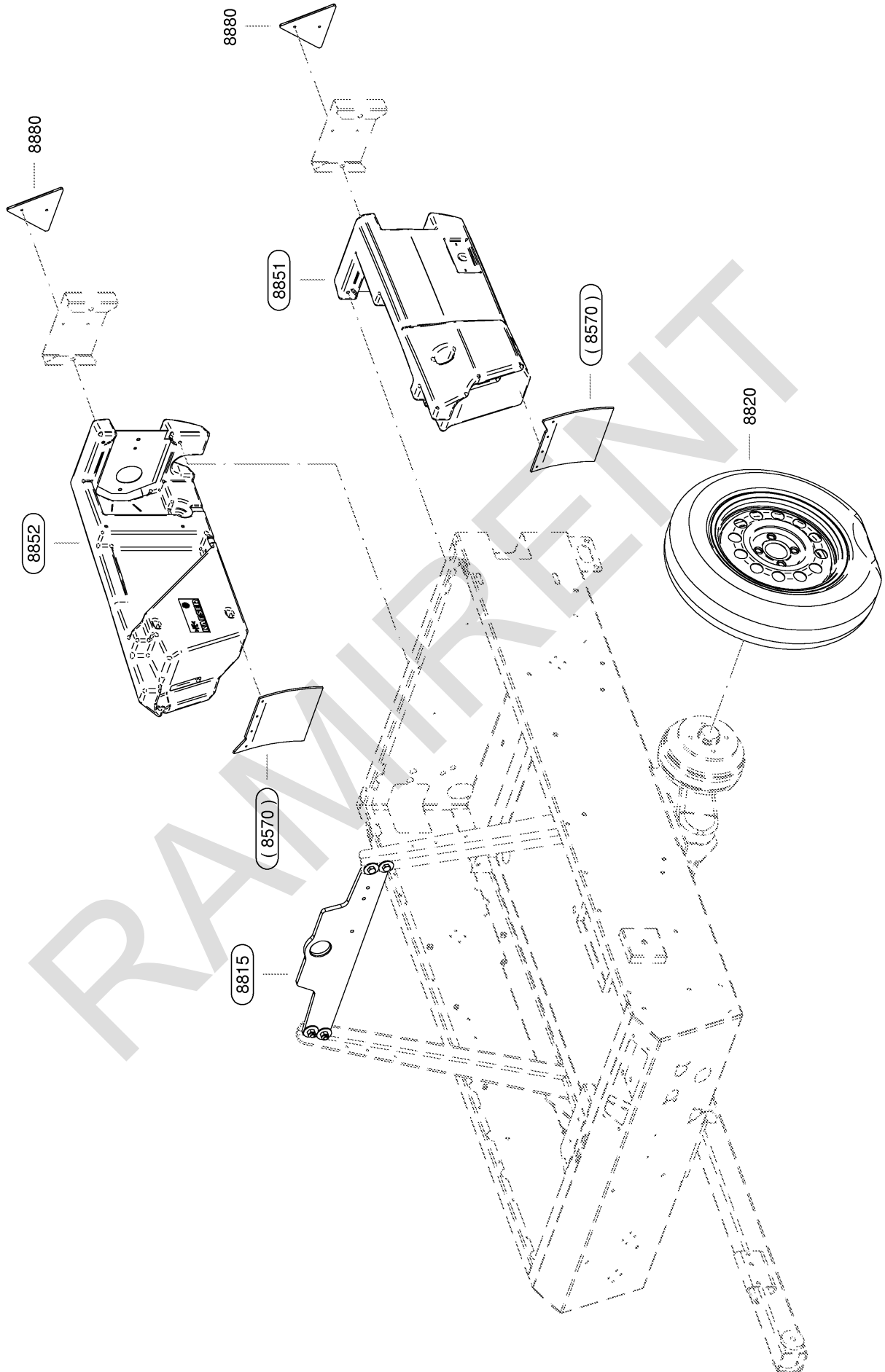
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

RAMIRENT

Service-Kit
(Option)

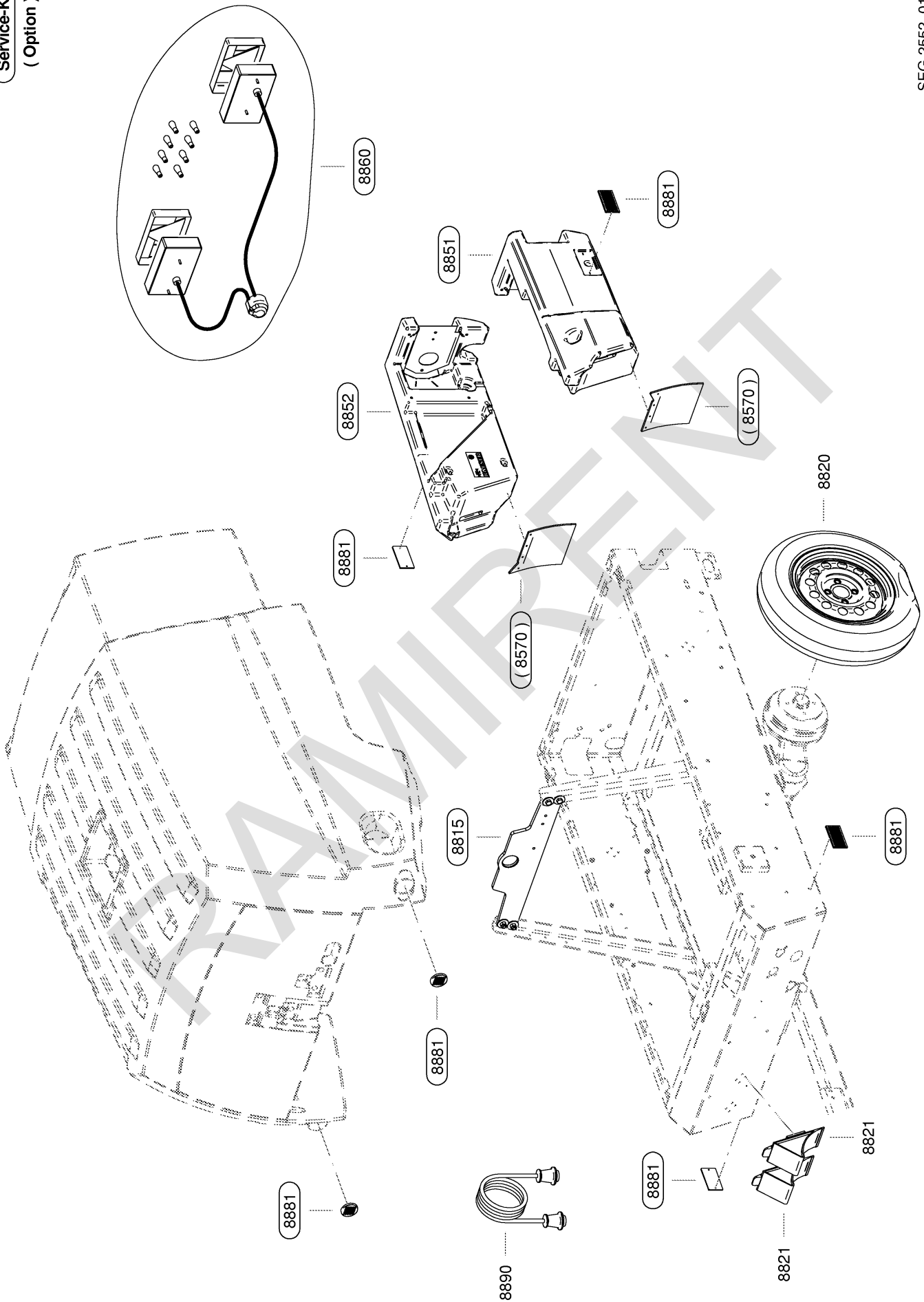
SEG-2547_01



		Legend	KAESER
		Chassis	SEL-2021_01E
Item	Description	Option	
8570	Splash guard	X	
8815	Lifting eye		
8820	Wheel cpl.		
8851	Collision guard, rear-left		
8852	Collision guard, rear-right		
8880	Reflector		

Service-Kit
(Option)

SEG-2552_01



Legend	KAESER
Chassis	SEL-2026_01E

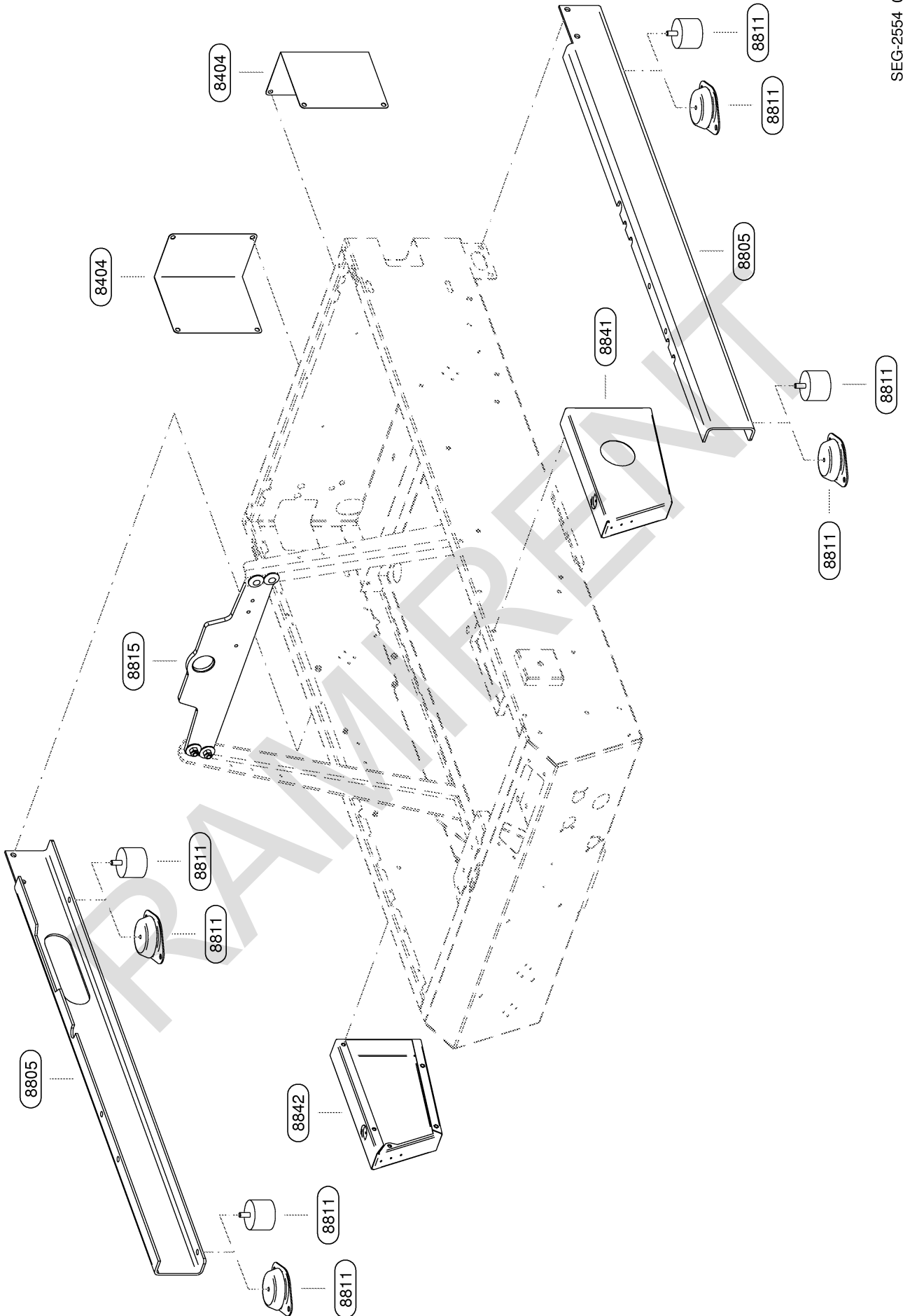
Item	Description	Option
8570	Splash guard	X
8815	Lifting eye	
8820	Wheel cpl.	
8821	Chock	
8851	Collision guard, rear-left	
8852	Collision guard, rear-right	
8860	Lighting set	
8881	Reflectors (set)	
8890	Vehicle connector cable	

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

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

RAMIRENT

Service-Kit



SEG-2554_01

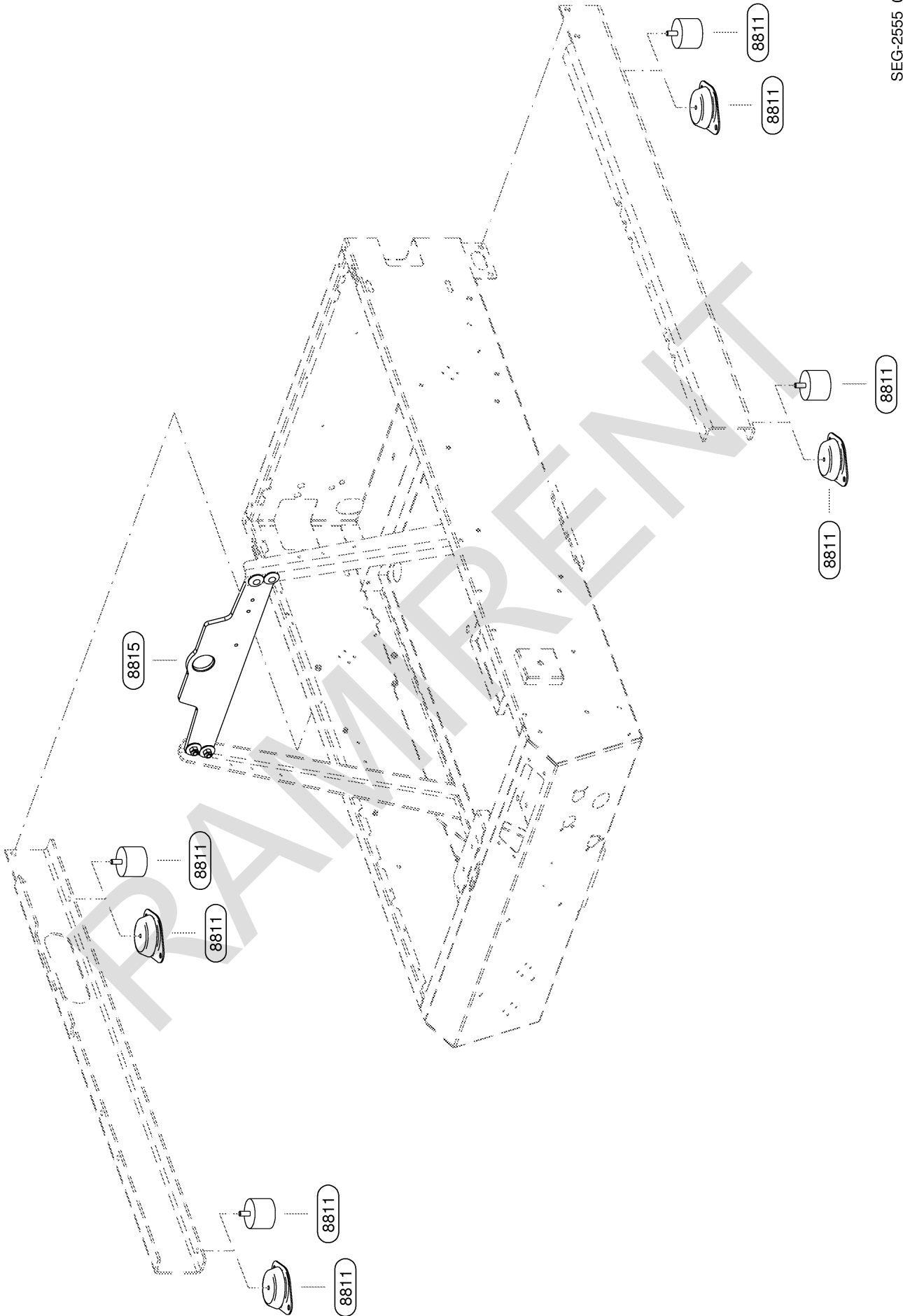
		Legend	KAESER
		Chassis (stationary base-frame versions)	SEL-2028_01E
Item	Description	Option	
8404	Lower part cover		
8805	Chassis strut		
8811	Machine foot		
8815	Lifting eye		
8841	Collision guard, front-left		
8842	Collision guard, front-right		

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

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

RAMIRENT

Service-Kit



SEG-2555_01

		Legend	KAESER
		Chassis (stationary base-frame versions)	SEL-2029_01E
Item	Description	Option	
8811	Machine foot		
8815	Lifting eye		

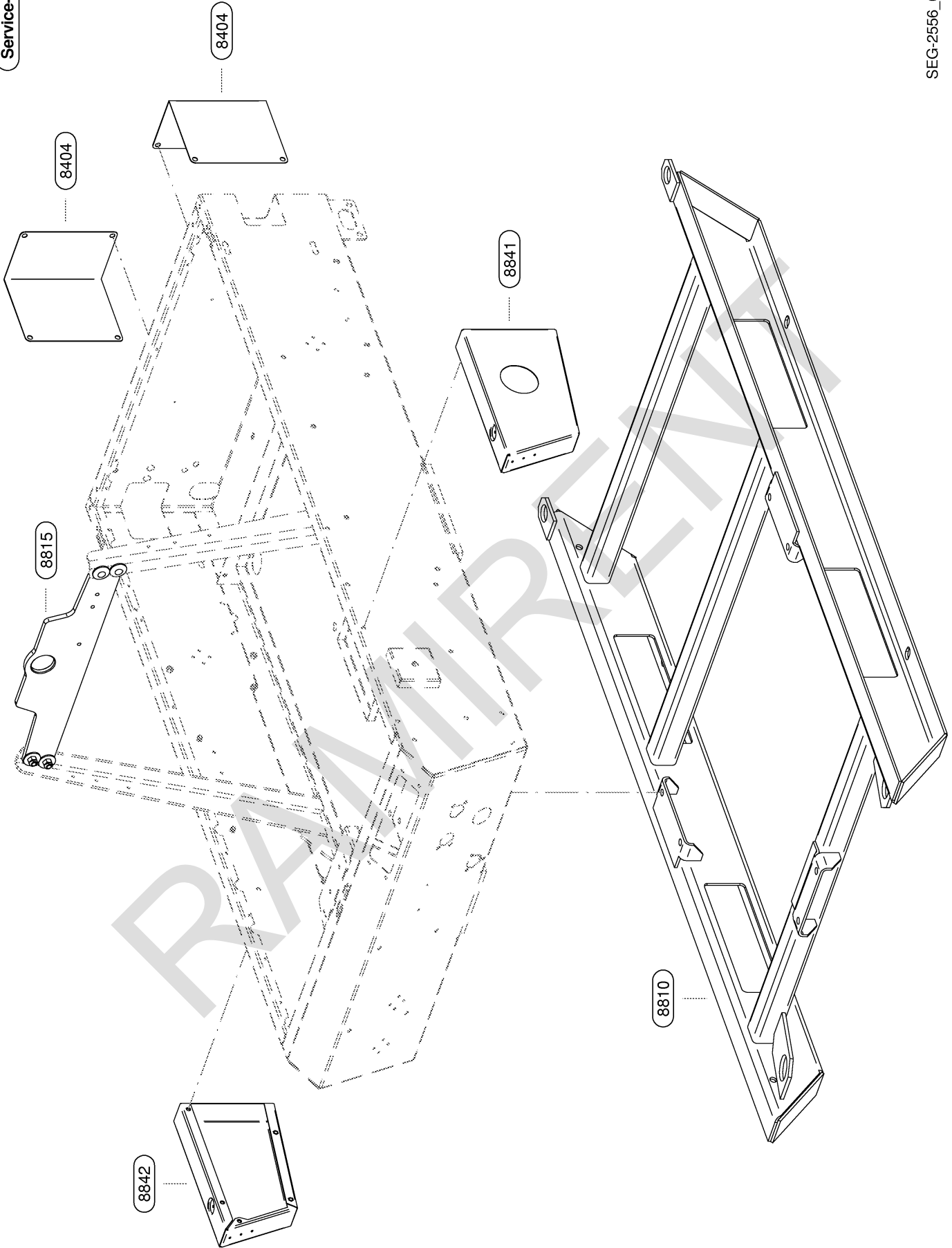
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

RAMIRENT

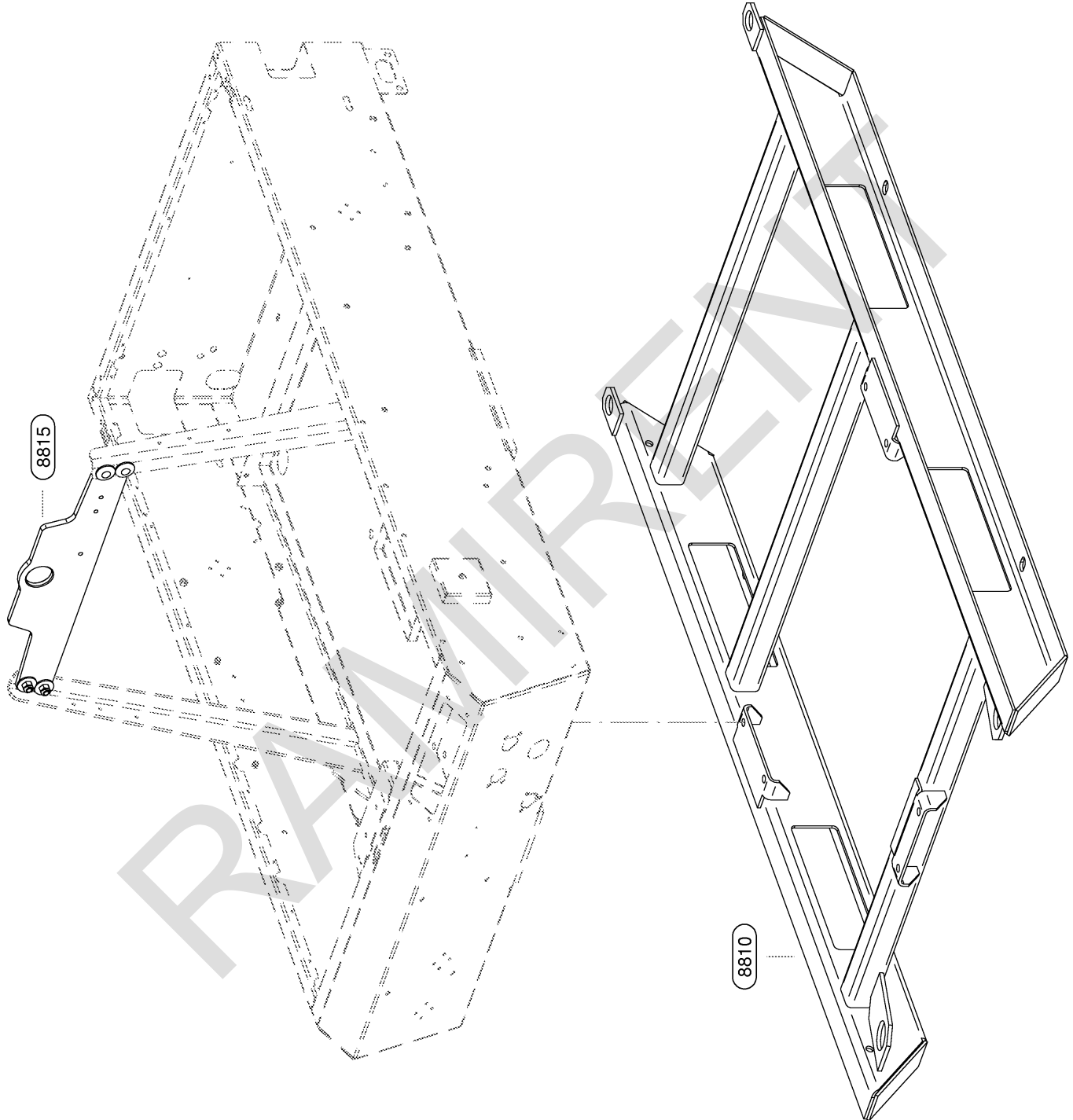
Service-Kit

SEG-2556_01



		Legend	KAESER
		Chassis (stationary skid versions)	SEL-2030_01E
Item	Description	Option	
8404	Lower part cover		
8810	Skids		
8815	Lifting eye		
8841	Collision guard, front-left		
8842	Collision guard, front-right		
<p>Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.</p> <p>Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.</p>			

RAMIRENT



		Legend	KAESER
		Chassis (stationary skid versions)	SEL-2031_01E
Item	Description	Option	
8810	Skids		
8815	Lifting eye		

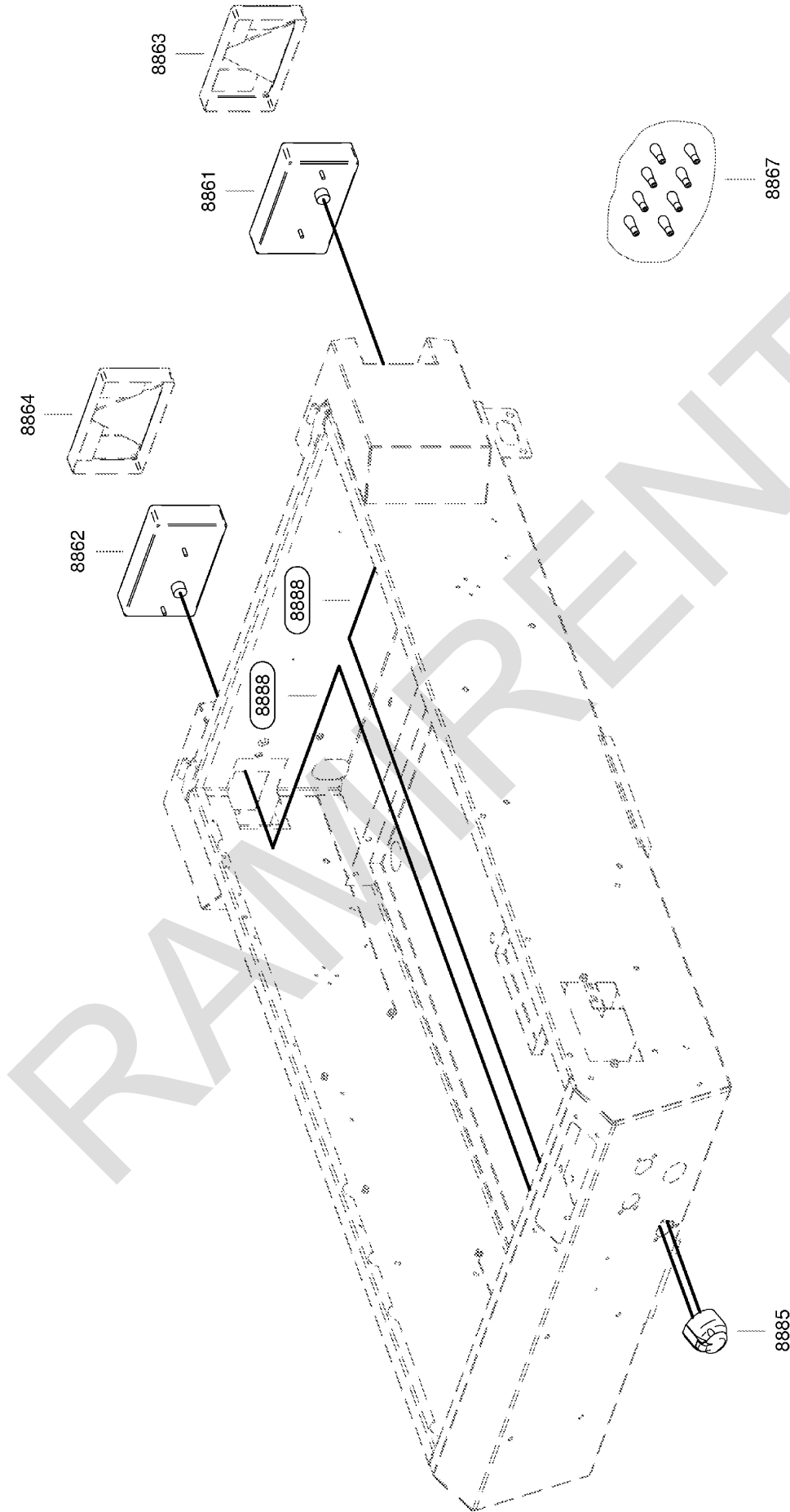
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

RAMIRENT

Service-Kit

SEG-2250_01



Legend	KAESER
Lighting set	SEL-1985_01E

Item	Name	Option
8861	Left rear light	
8862	Right rear light	
8863	Left light lens	
8864	Right light lense	
8867	Lighting bulb set	
8885	Lighting connecting socket	
8888	Connector cable	

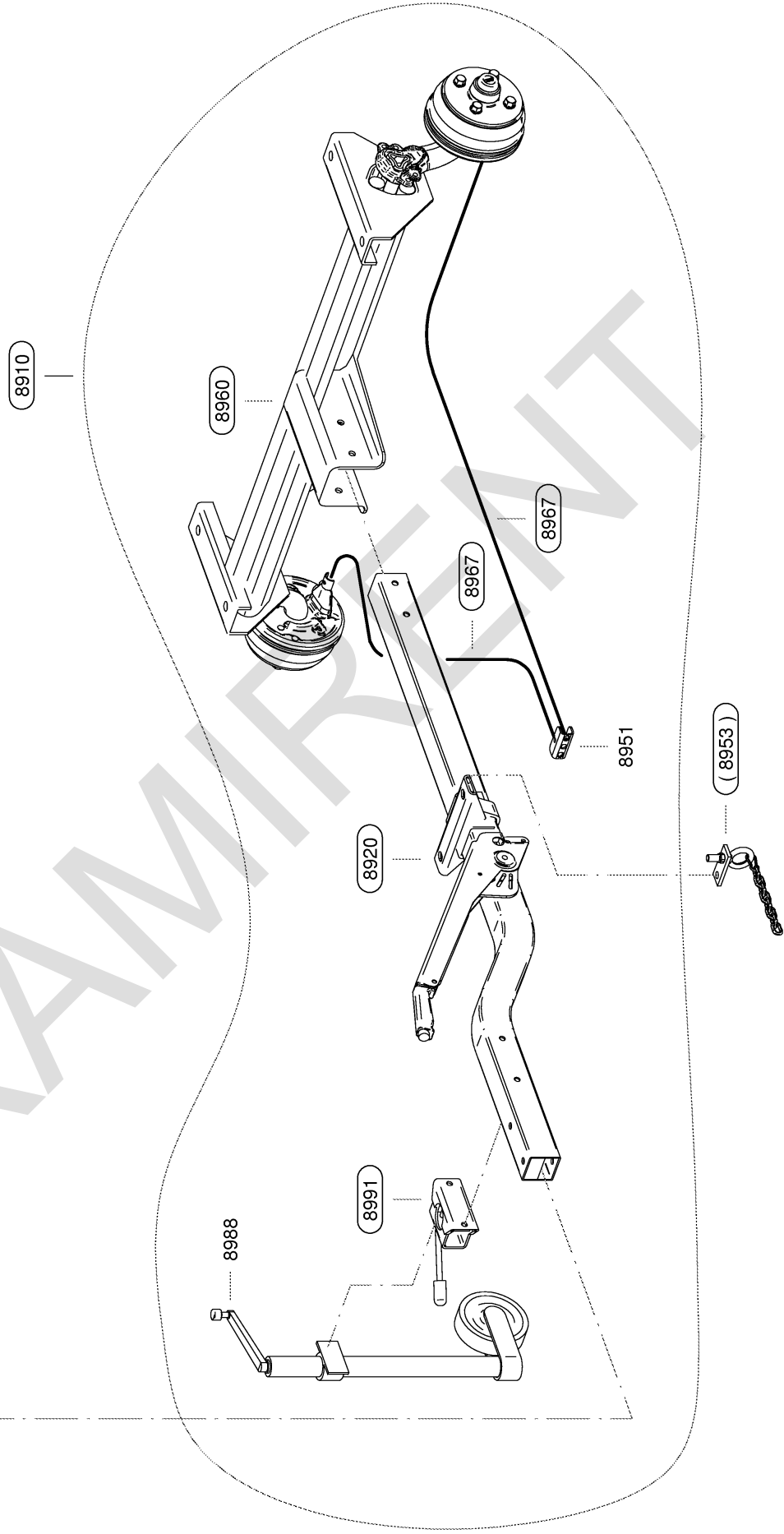
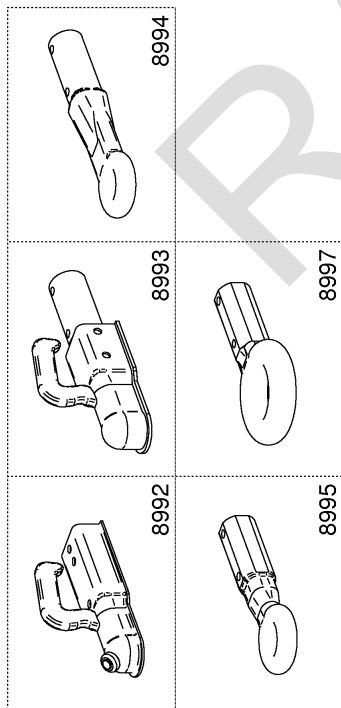
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

RAMIRENT

Service-Kit
(Option)

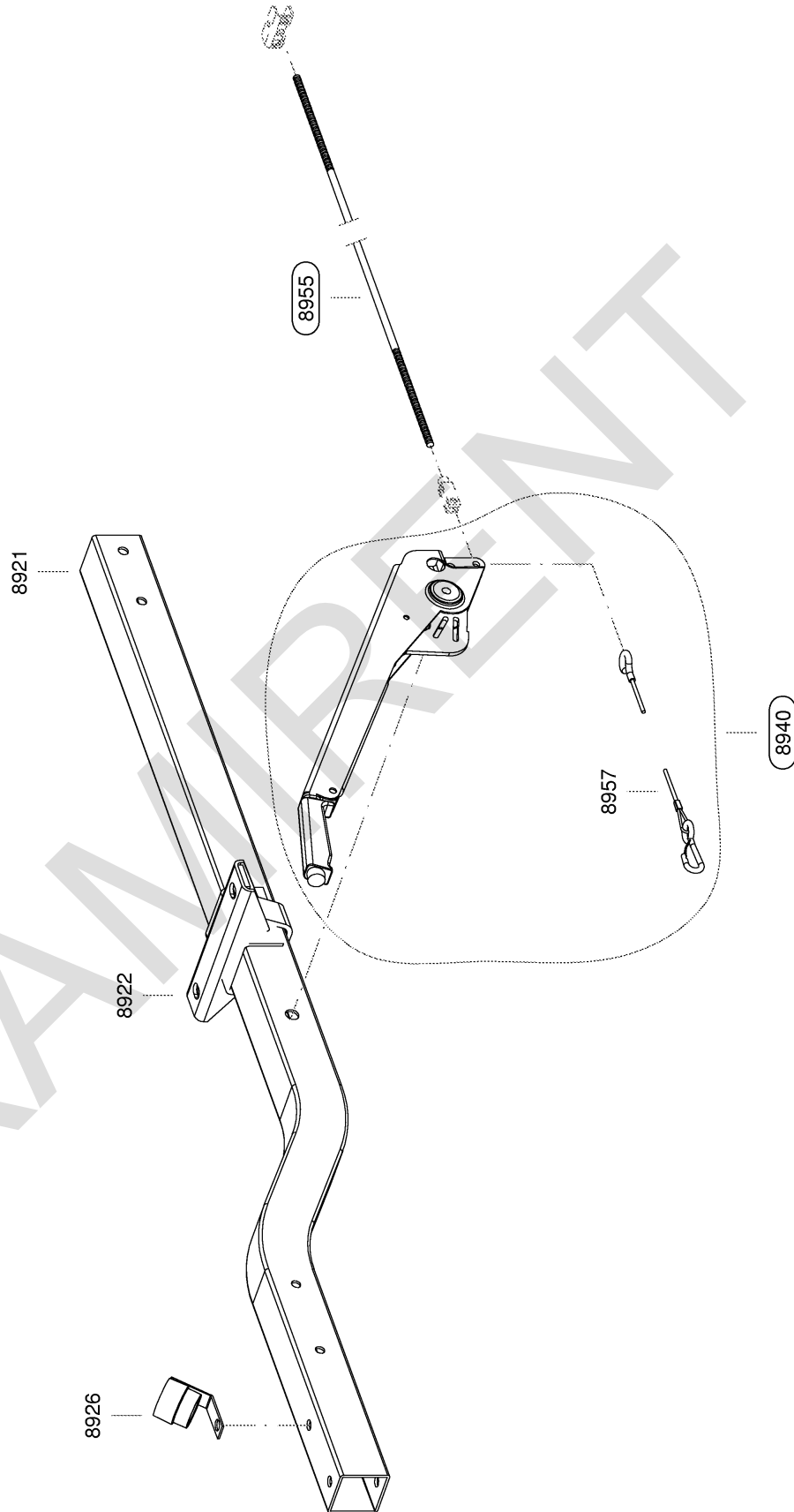
SEG-2560_01



		Legend	KAESER
		Chassis	SEL-2034_01E
Item	Description	Option	
8910	Chassis		
8920	Towbar, complete		
8951	Braking cable bracket		
8953	safety chain	X	
8960	Complete axle		
8967	Wheel brake cable		
8988	Prop with jockey wheel		
8991	Prop bracket		
8992	Ball coupling for car, ø 50 (DIN)		
8993	Ball coupling for car, ### 2"		
8994	Towing eye for HGV, ø 40 (DIN)		
8995	Towing eye (truck), ø 45		
8997	Towing eye (truck), ø 76		

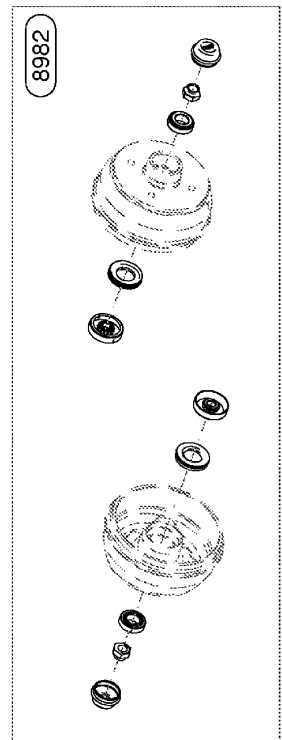
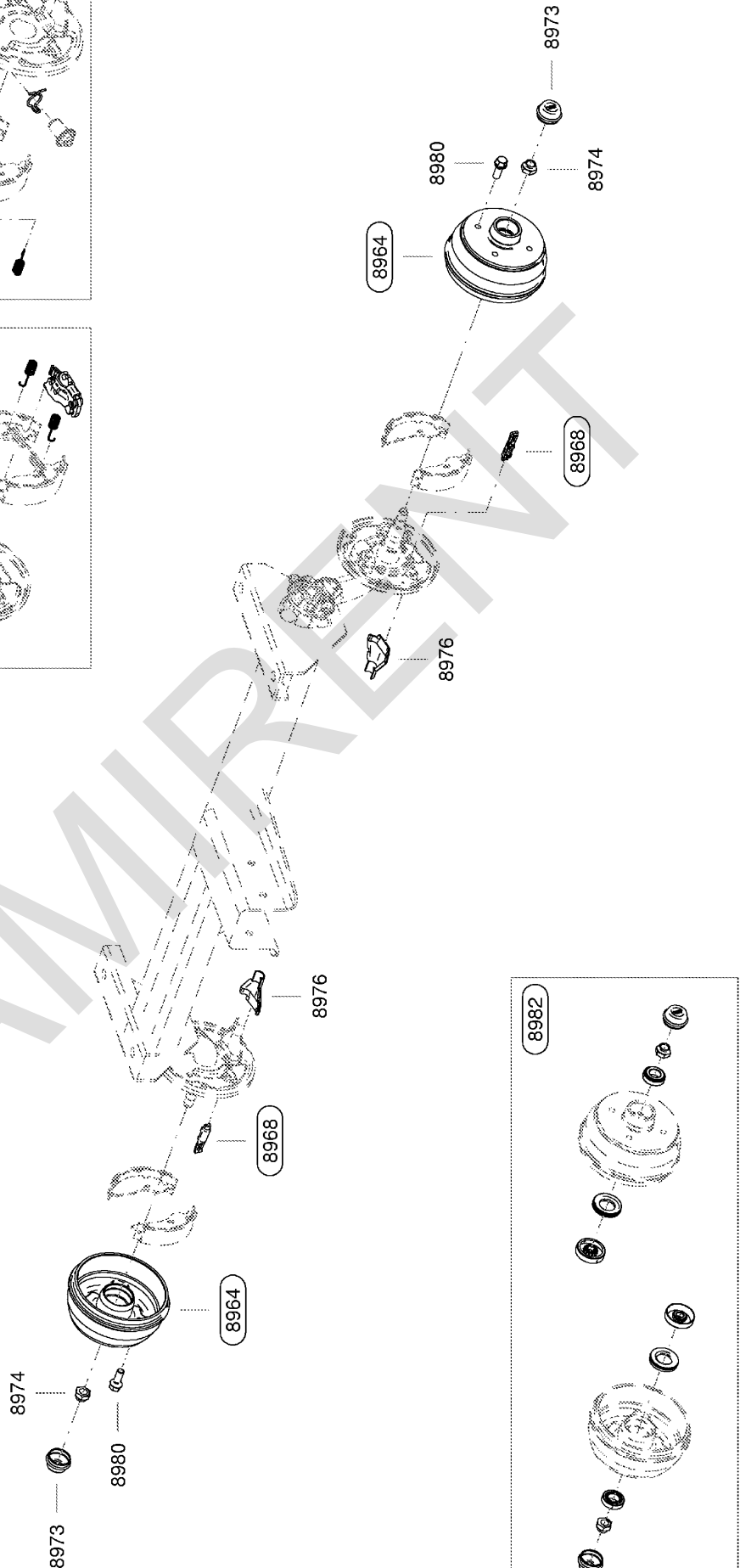
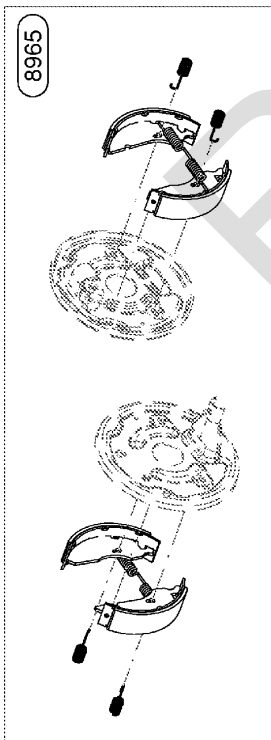
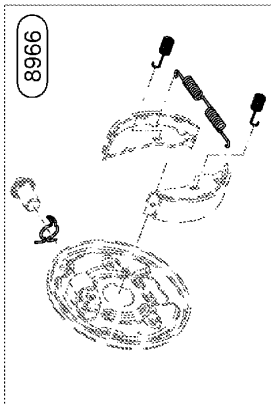
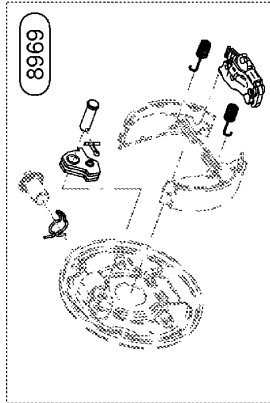
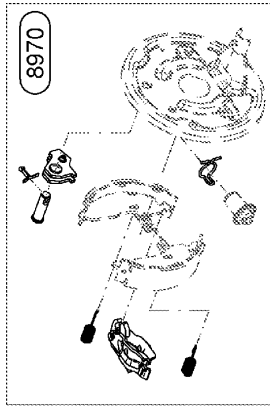
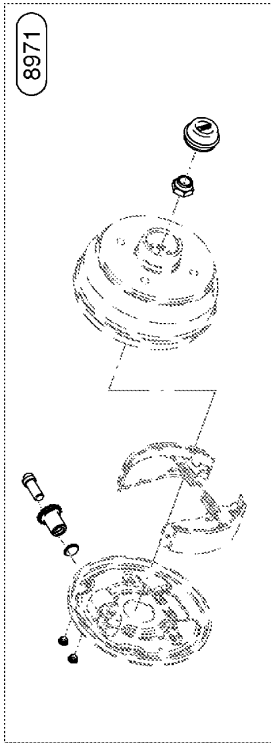
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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



		Legend	KAESER
		Tow device cpl.	SEL-1992_02E
Item	Description	Option	
8921	Towbar		
8922	Chassis mounting block		
8926	Plug support		
8940	Parking brake lever		
8955	Preset the brake rod		
8957	Breakaway cable		

RAMIRENT



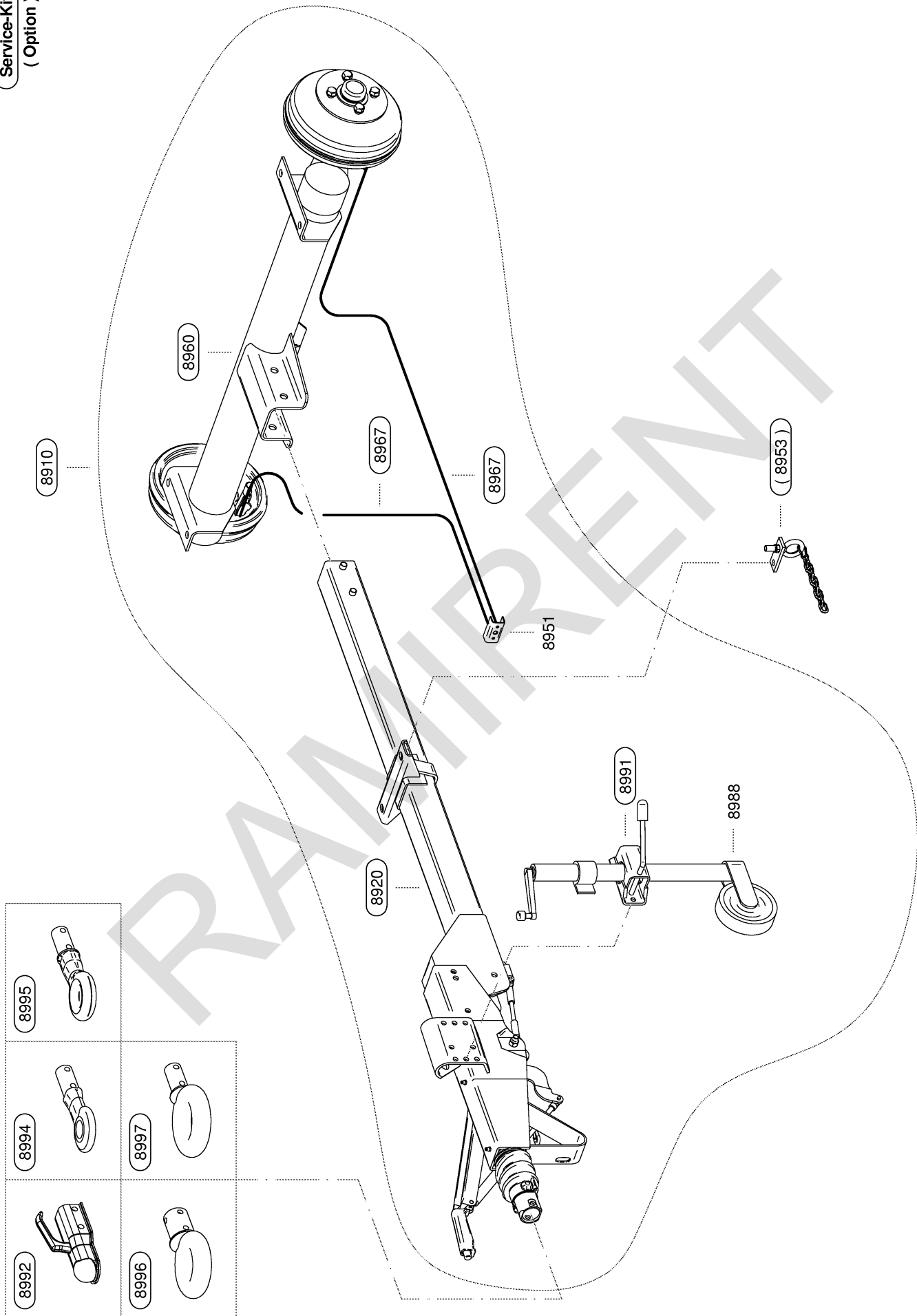
		Legend	KAESER
		Axle, complete	SEL-1993_01E
Item	Description	Option	
8963	Wheel hub		
8964	Brake drum		
8965	Brake shoe set		
8966	Brake shoe spring kit		
8968	Brake cable hook-in pin		
8969	Left brake shoe actuator kit		
8970	Right brake shoe actuator kit		
8971	Brake adjusting set		
8973	Grease cap for the brake drum		
8974	Flanged locknut, axle bearing		
8976	Protective shell, brake cable		
8980	Wheel bolt		
8982	Wheel bearing set		

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

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

Service-Kit
(Option)

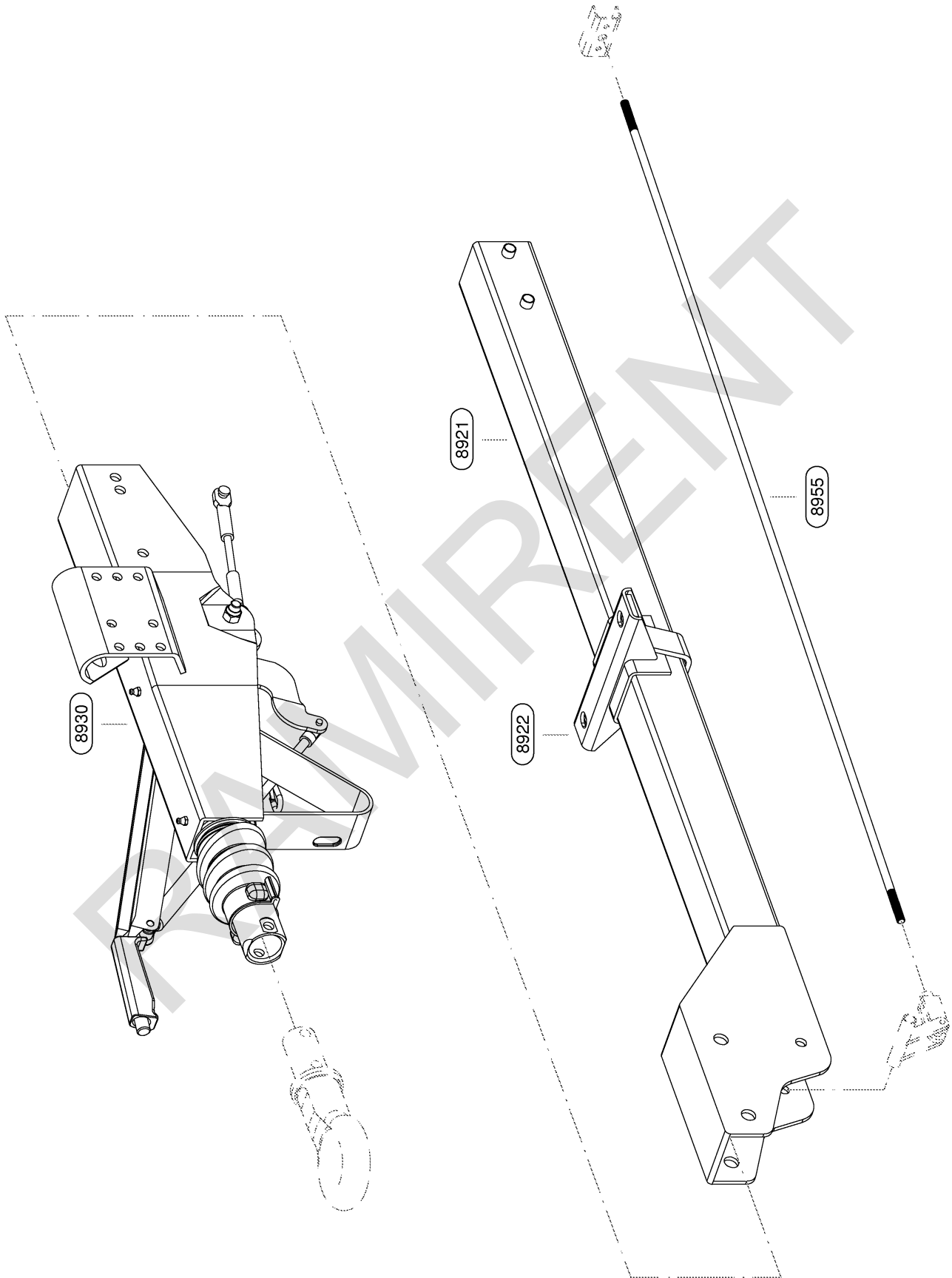
SEG-2561_01



		Legend	KAESER
		Chassis	SEL-2035_01E
Item	Description	Option	
8910	Chassis, complete		
8920	Towbar, complete		
8951	Braking cable bracket		
8953	safety chain	X	
8960	Complete axle		
8967	Wheel brake cable		
8988	Jockey wheel, complete		
8991	Prop bracket		
8992	Ball coupling for car, ø 50 (DIN)		
8994	Towing eye for HGV, ø 40 (DIN)		
8995	Towing eye (truck), ø 45		
8996	Towing eye (truck), ø 68 x 42		
8997	Towing eye (truck), ø 76		

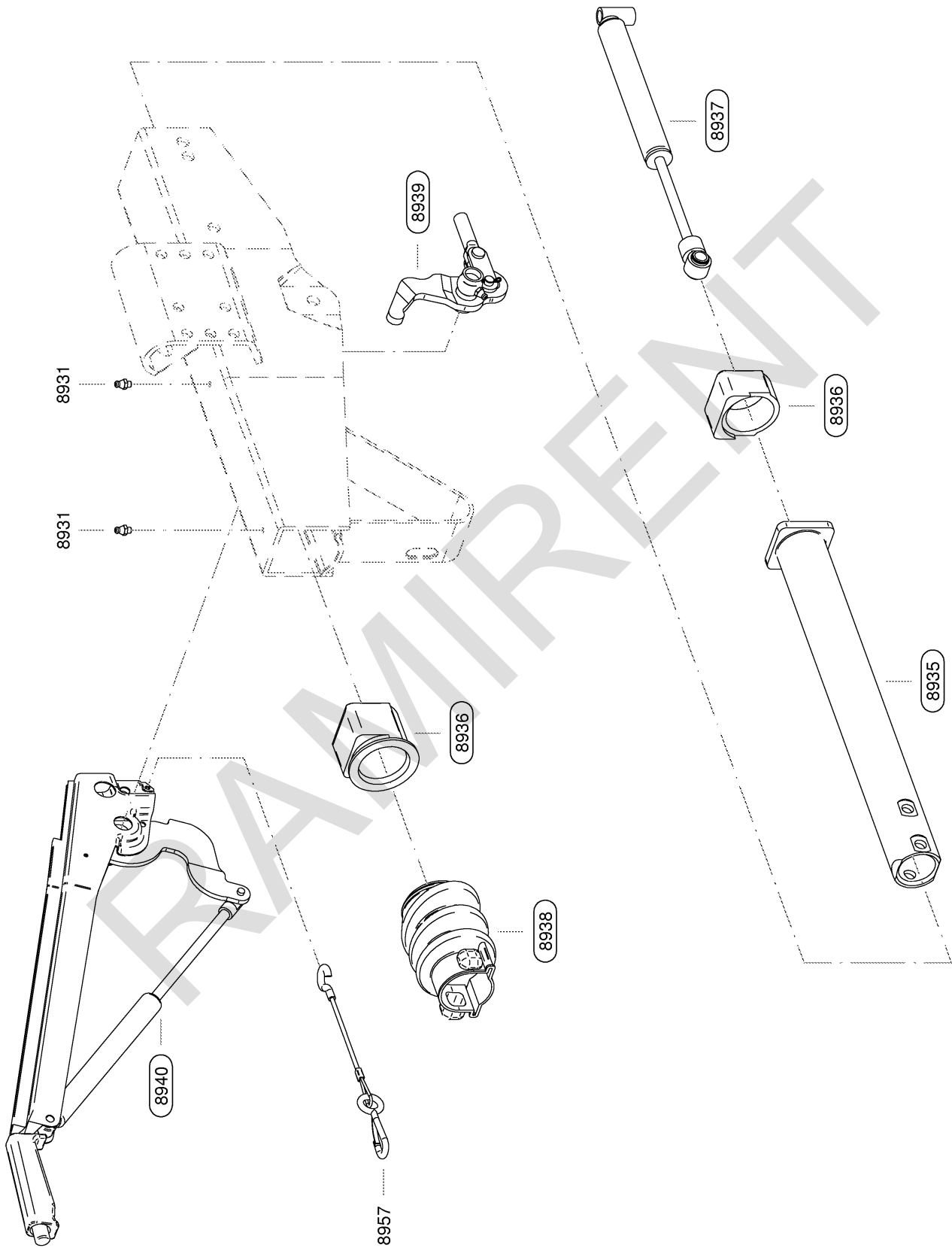
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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



		Legend	KAESER
		Tow device cpl.	SEL-1994_01E
Item	Description	Option	
8921	Towbar		
8922	Chassis mounting block		
8930	Overrun braking mechanism		
8955	Preset the brake rod		

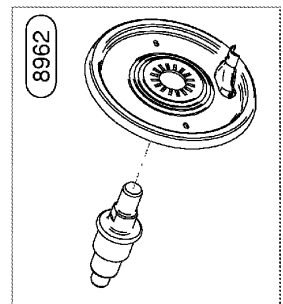
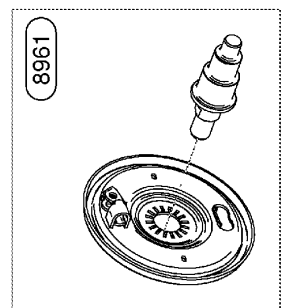
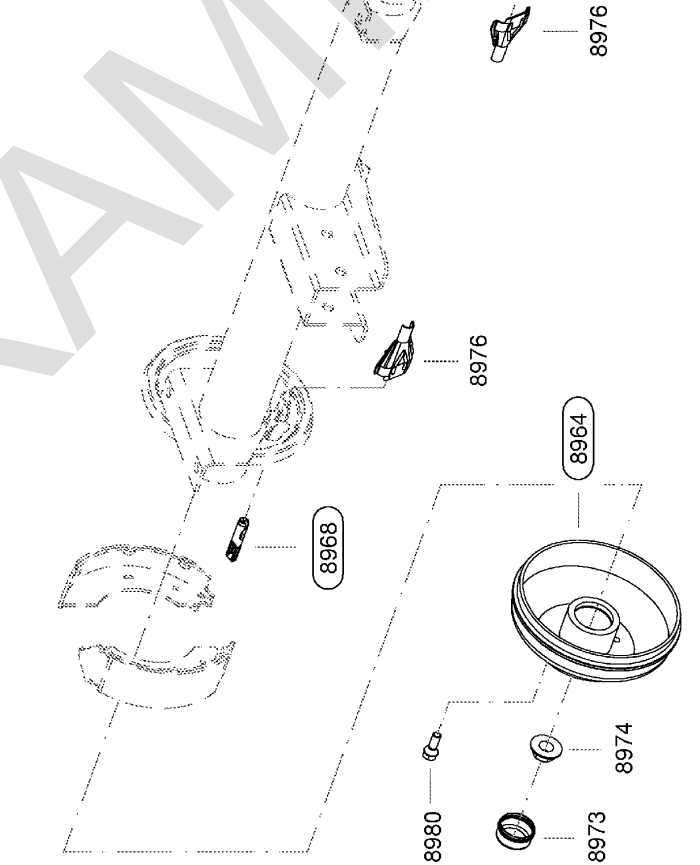
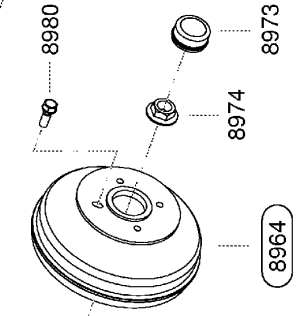
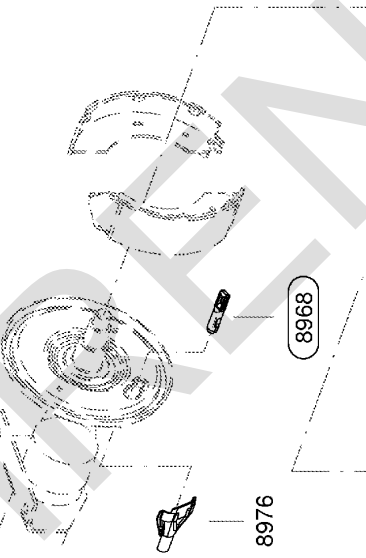
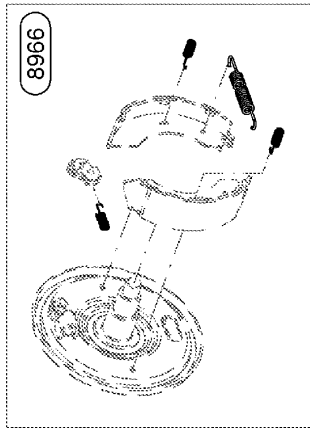
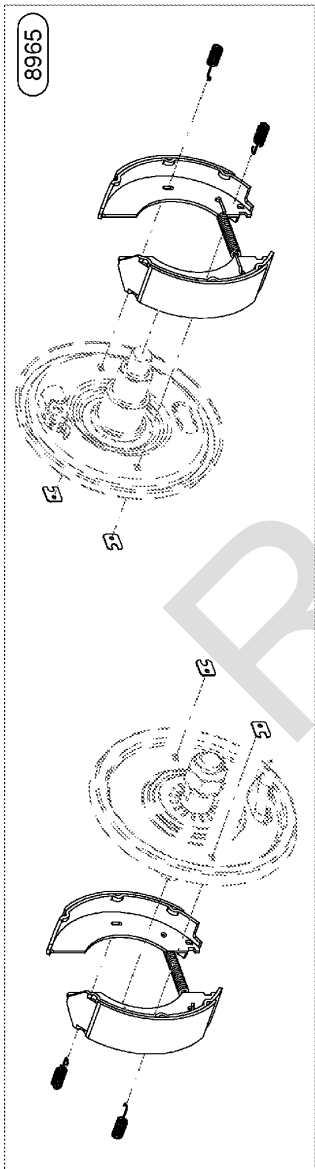
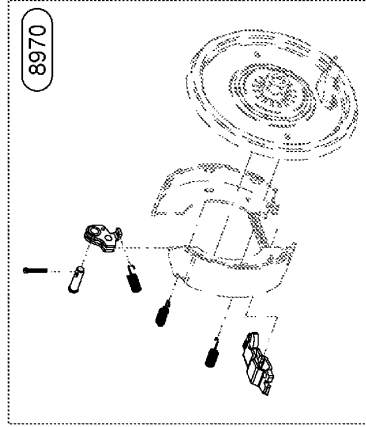
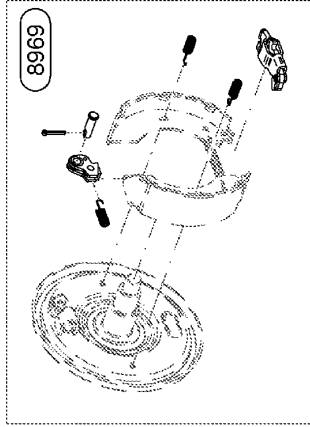
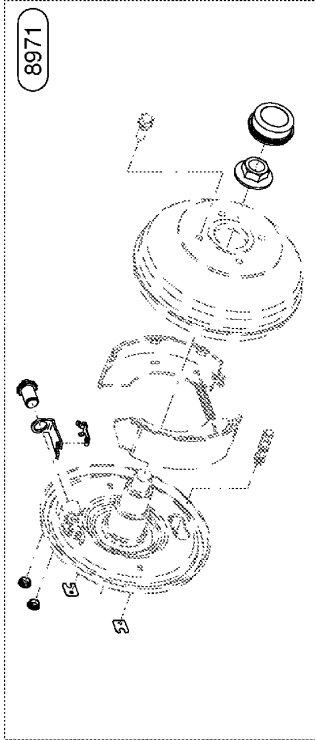
RAMIRENT



		Legend	KAESER
		Overrun braking mechanism	SEL-1995_01E
Item	Description	Option	
8931	Grease nipple for overrun head		
8935	Towbar		
8936	Towbar guide bush		
8937	Towbar shock absorber		
8938	Towbar protective sleeve		
8939	Brake transmission lever		
8940	Parking brake lever		
8957	Breakaway cable		

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

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



SEG-1914_01

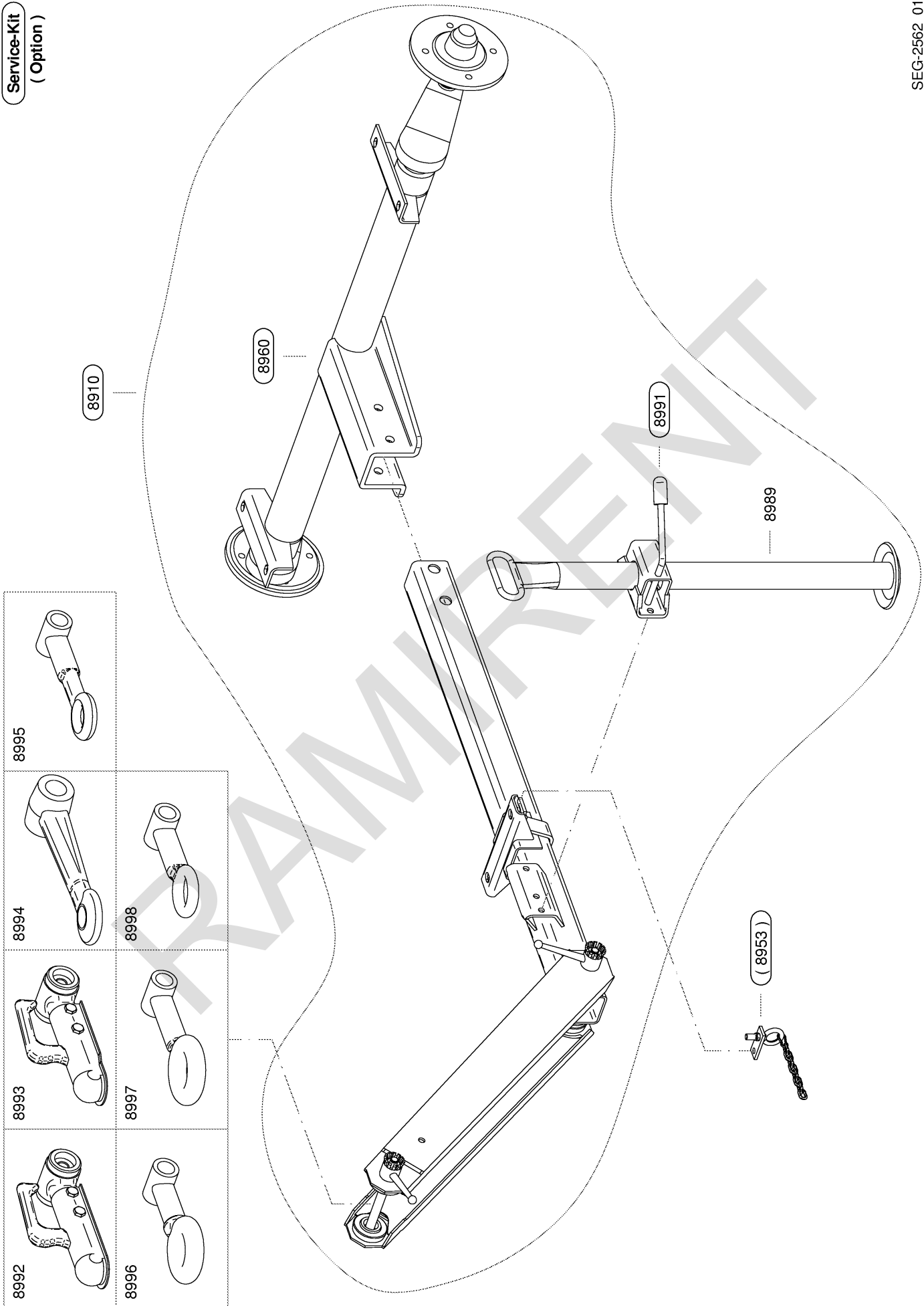
		Legend	KAESER
		Axle, complete	SEL-1859_01E
Item	Description	Option	
8961	Left brake backplate		
8962	Right brake backplate		
8964	Brake drum		
8965	Brake shoe set		
8966	Brake shoe spring set		
8968	Brake cable hook-in pin		
8969	Left brake shoe actuator kit		
8970	Right brake shoe actuator kit		
8971	Brake adjusting set		
8973	Grease cap for the brake drum		
8974	Flanged locknut, axle bearing		
8976	Protective shell, brake cable		
8980	Wheel bolt		

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

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

Service-Kit
(Option)

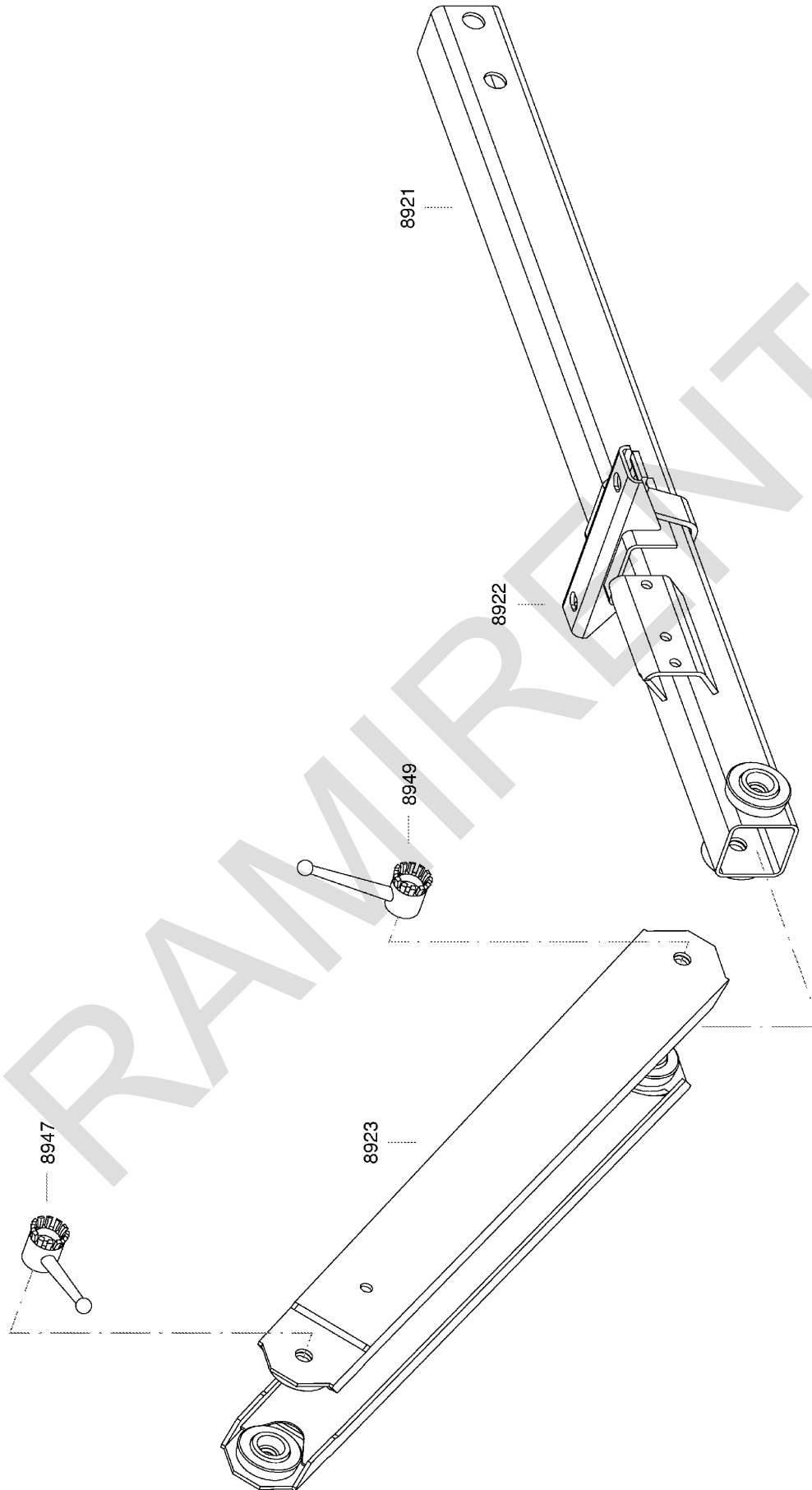
SEG-2562_01



		Legend	KAESER
		Chassis	SEL-2036_01E
Item	Description	Option	
8910	Chassis		
8920	Towbar, complete		
8953	safety chain	X	
8960	Complete axle		
8989	Prop		
8991	Prop bracket		
8992	Ball coupling for car, ø 50 (DIN)		
8993	Ball coupling for car, ### 2"		
8994	Towing eye for HGV, ø 40 (DIN)		
8995	Towing eye (truck), ø 45		
8996	Towing eye (truck), ø 68 x 25		
8997	Towing eye (truck), ø 76		
8998	Towing eye (truck), ø 68 x 25		

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

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



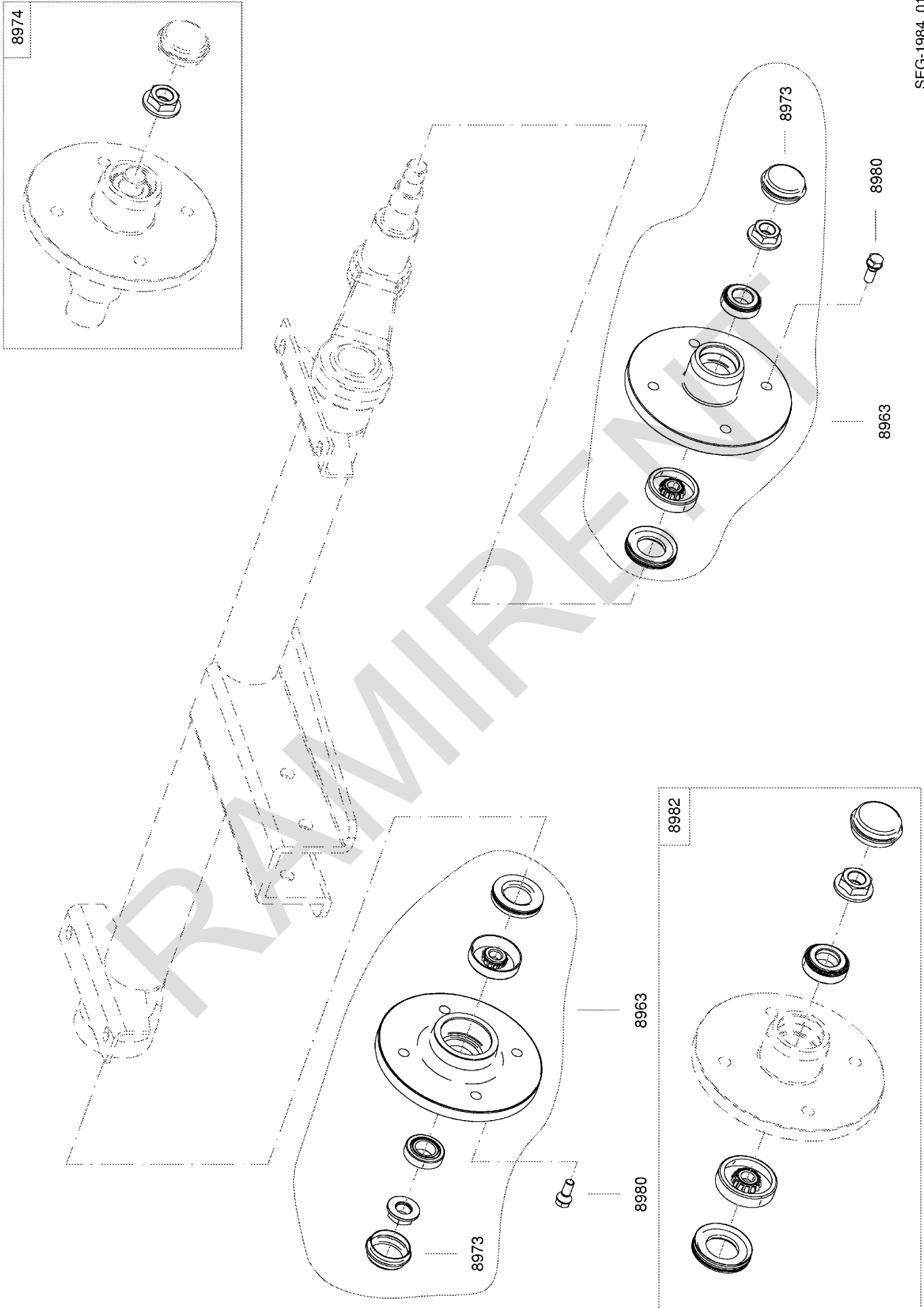
Legend	KAESER
Tow device cpl.	SEL-1869_01E

Item	Description	Option
8921	Towbar	
8922	Chassis mounting block	
8923	Height-adjustment bar	
8947	Locking toggle, upper	
8949	Locking toggle, lower	

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

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

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Legend	KAESER
Axle, complete	SEL-1871_01E

Item	Description	Option
8963	Wheel hub	
8973	Grease cap for the brake drum	
8974	Flanged locknut, axle bearing	
8980	Wheel bolt	
8982	Wheel bearing set	

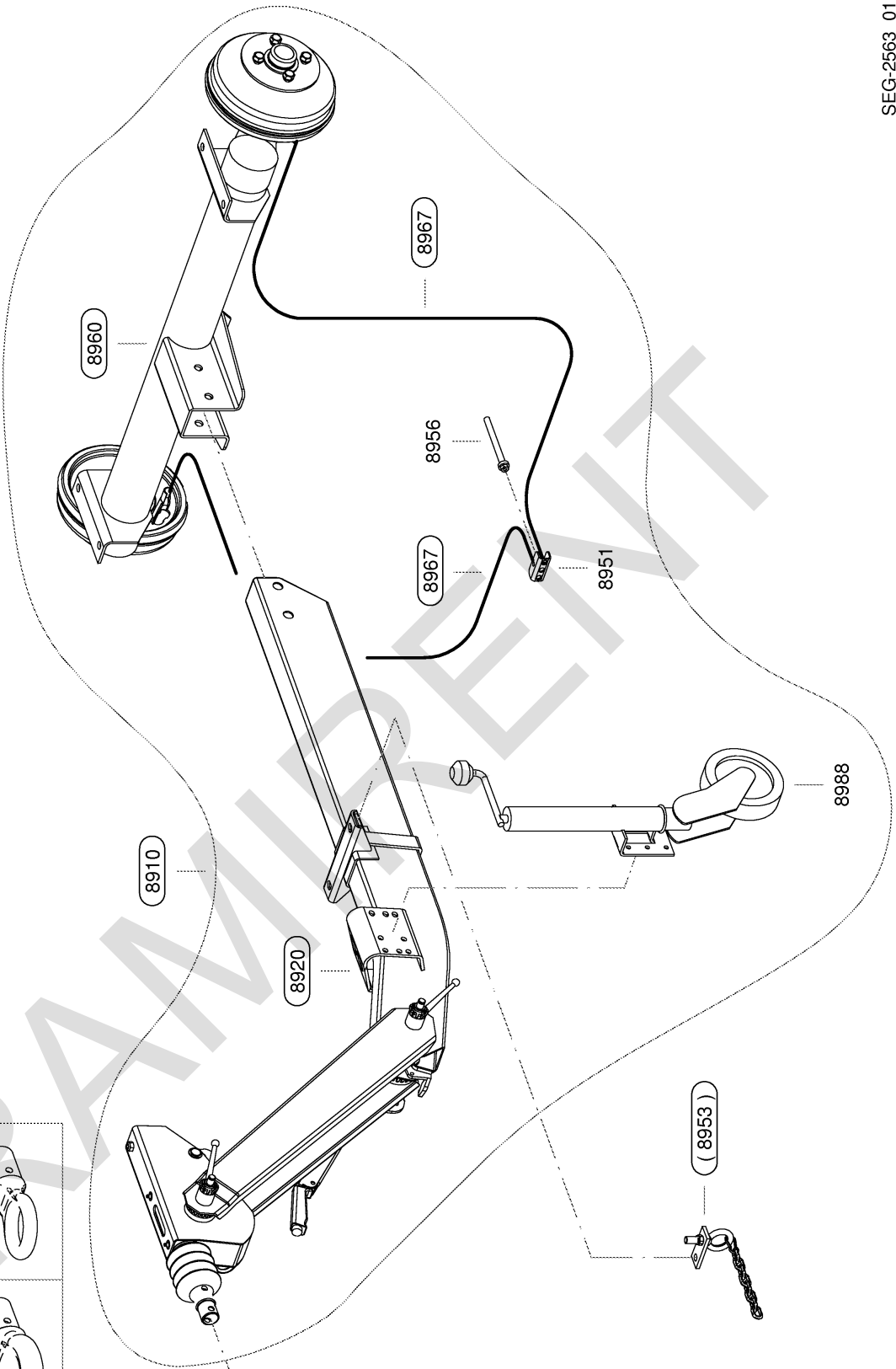
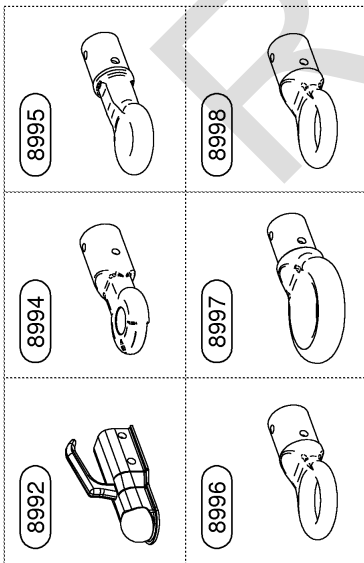
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

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Service-Kit
(Option)

SEG-2563_01



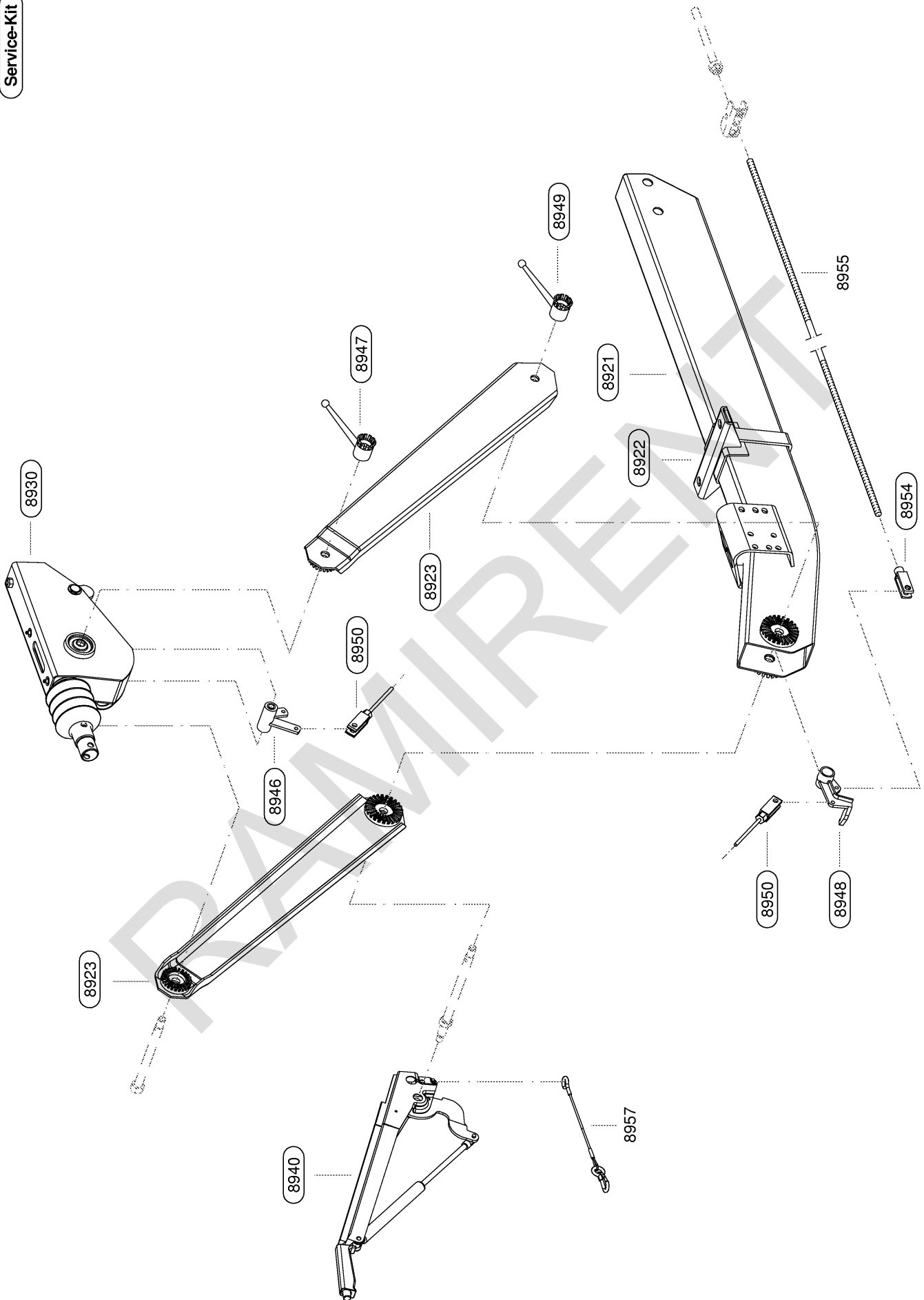
		Legend	KAESER
		Chassis	SEL-2037_01E
Item	Description	Option	
8910	Chassis, complete		
8920	Towbar, complete		
8951	Braking cable bracket		
8953	safety chain	X	
8956	Brake actuating rod bracket		
8960	Complete axle		
8967	Wheel brake cable		
8988	Jockey wheel, complete		
8992	Ball coupling for car, ø 50 (DIN)		
8994	Towing eye for HGV, ø 40 (DIN)		
8995	Towing eye (truck), ø 45		
8996	Towing eye (truck), ø 68 x 42		
8997	Towing eye (truck), ø 76		
8998	Towing eye (truck), ø 68 x 25		

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

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

Service-Kit

SEG-2843_01



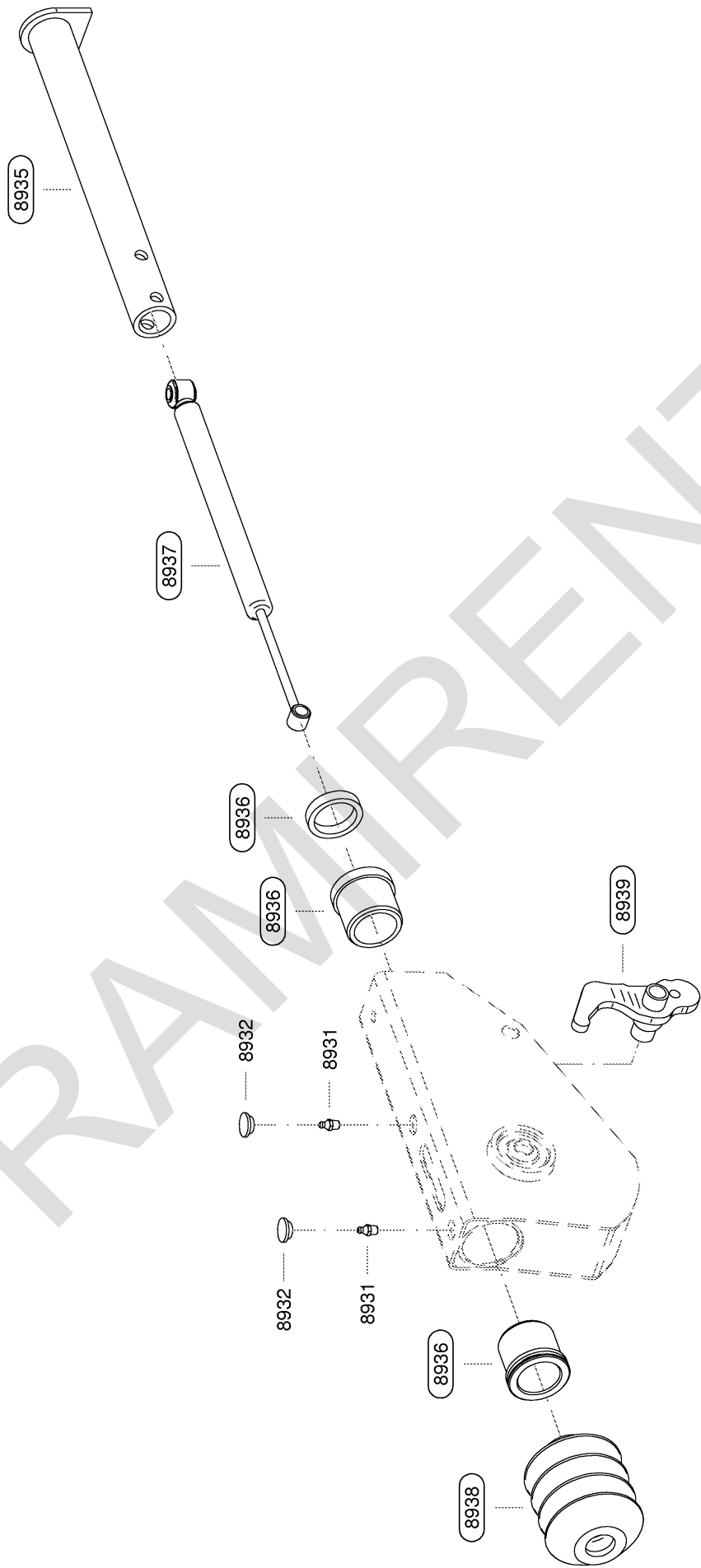
		Legend	KAESER
		Tow device cpl.	SEL-2211_01E
Item	Description	Option	
8921	Towbar		
8922	Chassis mounting block		
8923	Height-adjustment bar		
8930	Overrun braking mechanism		
8940	Parking brake lever		
8946	Upper guide bearing		
8947	Locking toggle, upper		
8948	Lower guide bearing		
8949	Locking toggle, lower		
8950	Brake transfer cable		
8954	Fork head		
8955	Preset the brake rod		
8957	Breakaway cable		

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

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

Service-Kit

SEG-2844_01



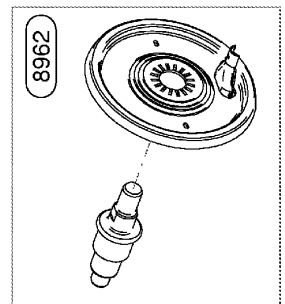
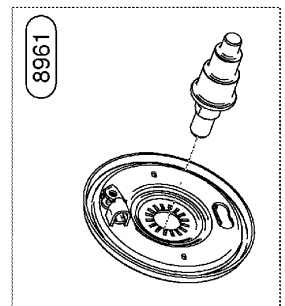
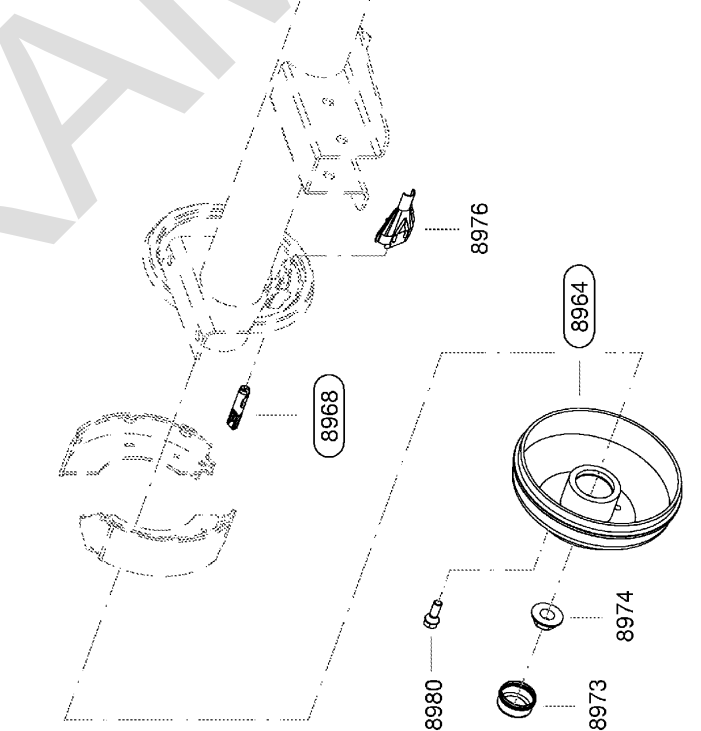
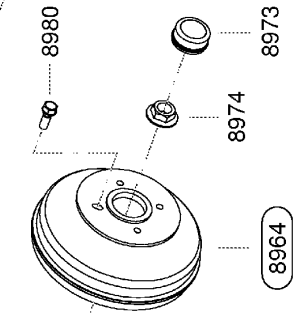
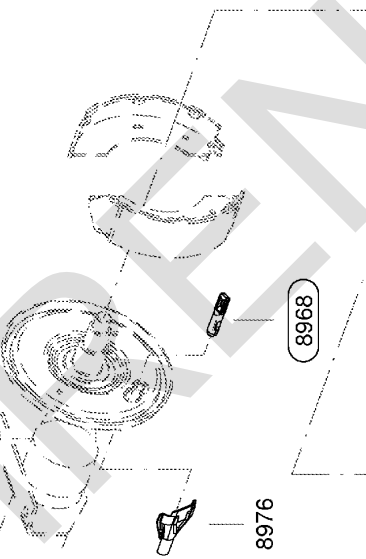
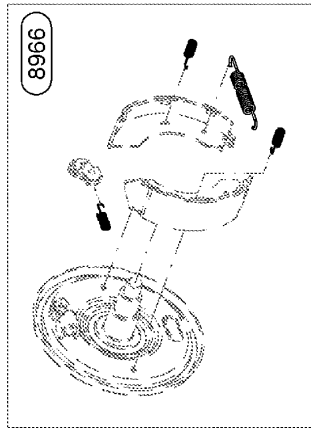
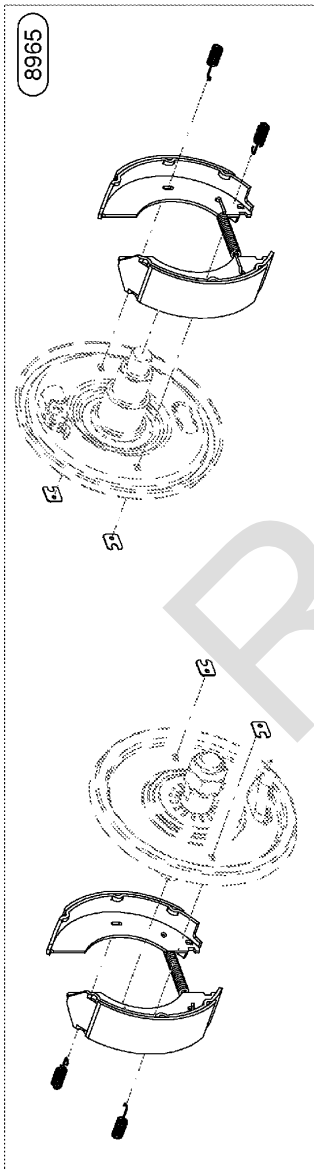
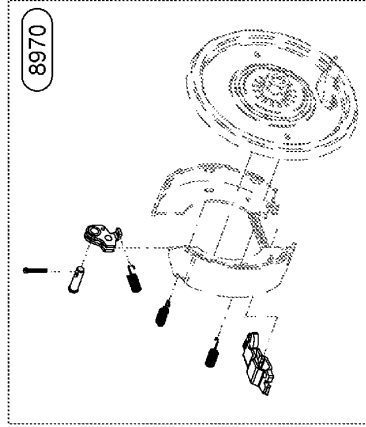
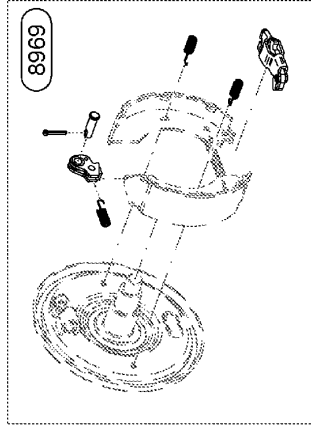
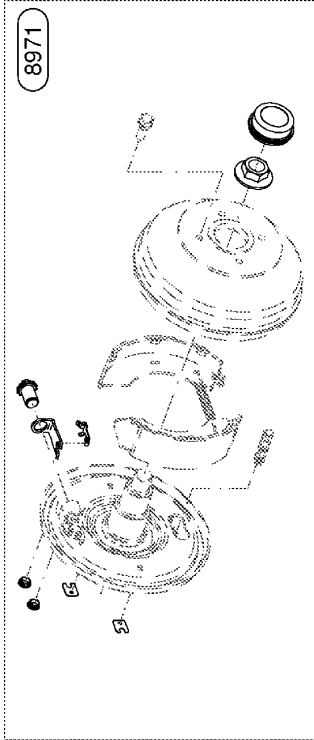
Legend	KAESER
Overrun braking mechanism	SEL-2212_01E

Item	Description	Option
8931	Grease nipple for overrun head	
8932	Overrun head cover	
8935	Towbar	
8936	Towbar guide bush	
8937	Towbar shock absorber	
8938	Towbar protective sleeve	
8939	Brake transmission lever	

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

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

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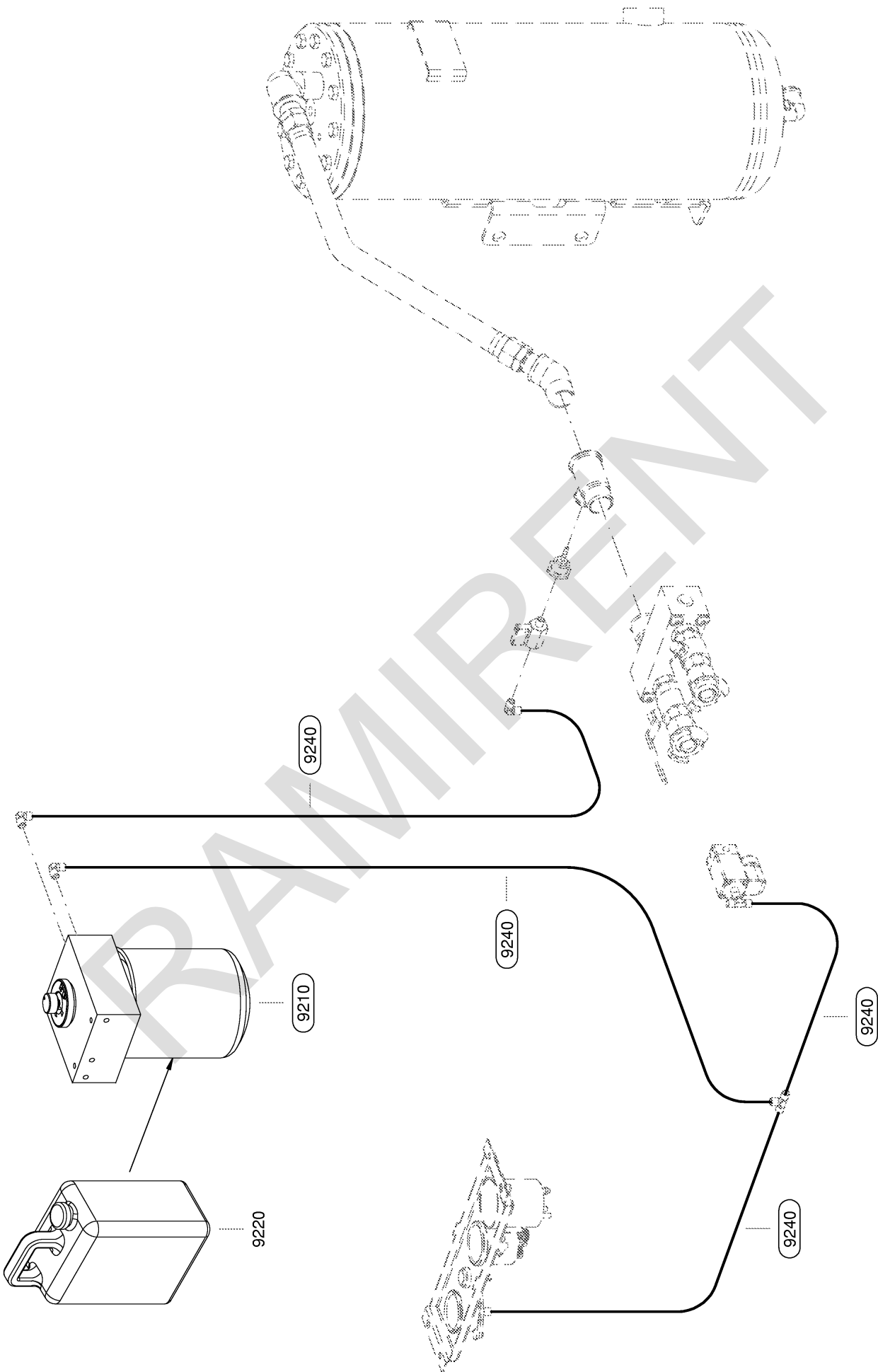
		Legend	KAESER
		Axle, complete	SEL-1859_01E
Item	Description	Option	
8961	Left brake backplate		
8962	Right brake backplate		
8964	Brake drum		
8965	Brake shoe set		
8966	Brake shoe spring set		
8968	Brake cable hook-in pin		
8969	Left brake shoe actuator kit		
8970	Right brake shoe actuator kit		
8971	Brake adjusting set		
8973	Grease cap for the brake drum		
8974	Flanged locknut, axle bearing		
8976	Protective shell, brake cable		
8980	Wheel bolt		

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

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

Service-Kit

SEG-2564_01



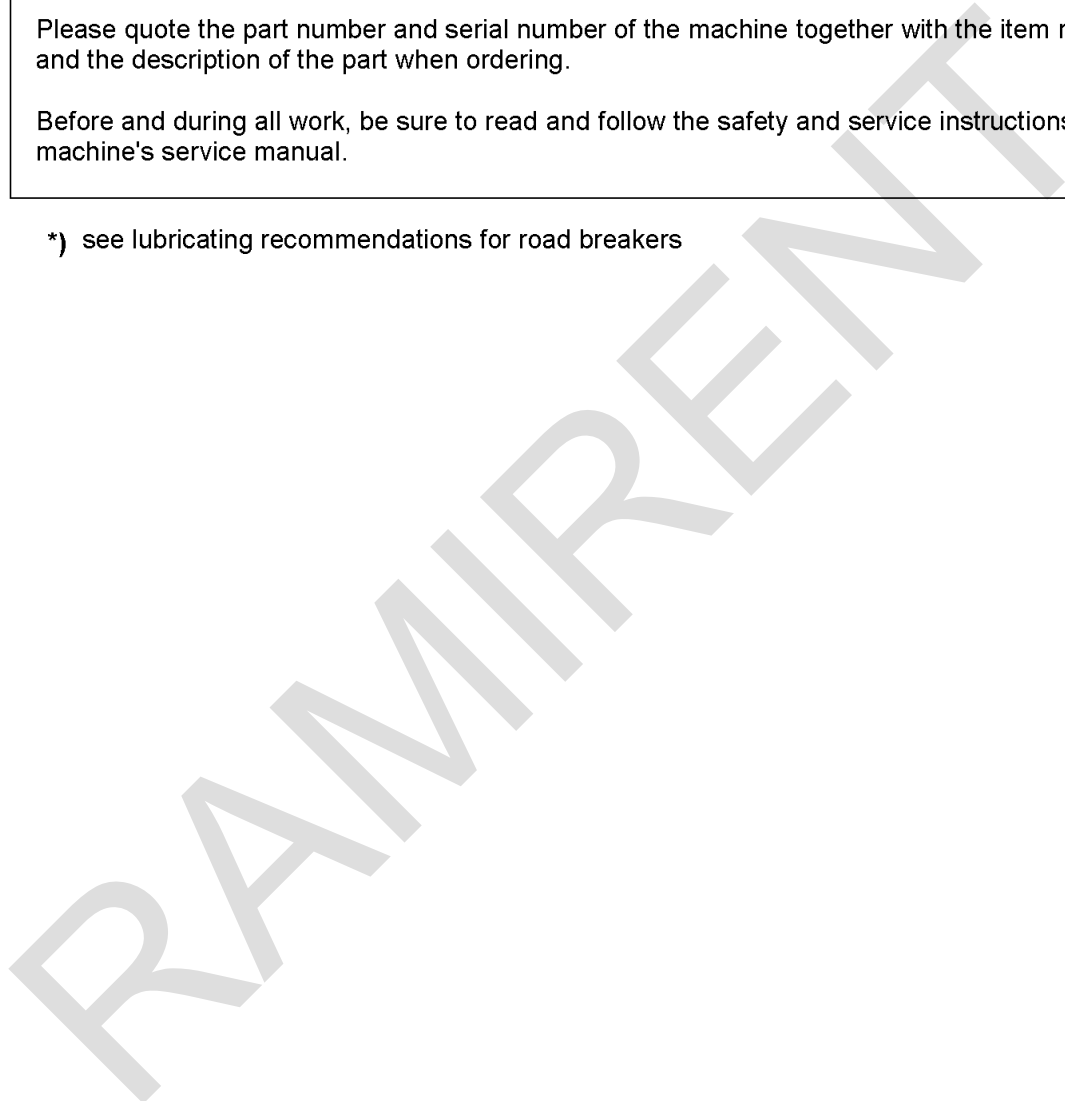
Legend	KAESER
Tool lubrication	SEL-2038_01E

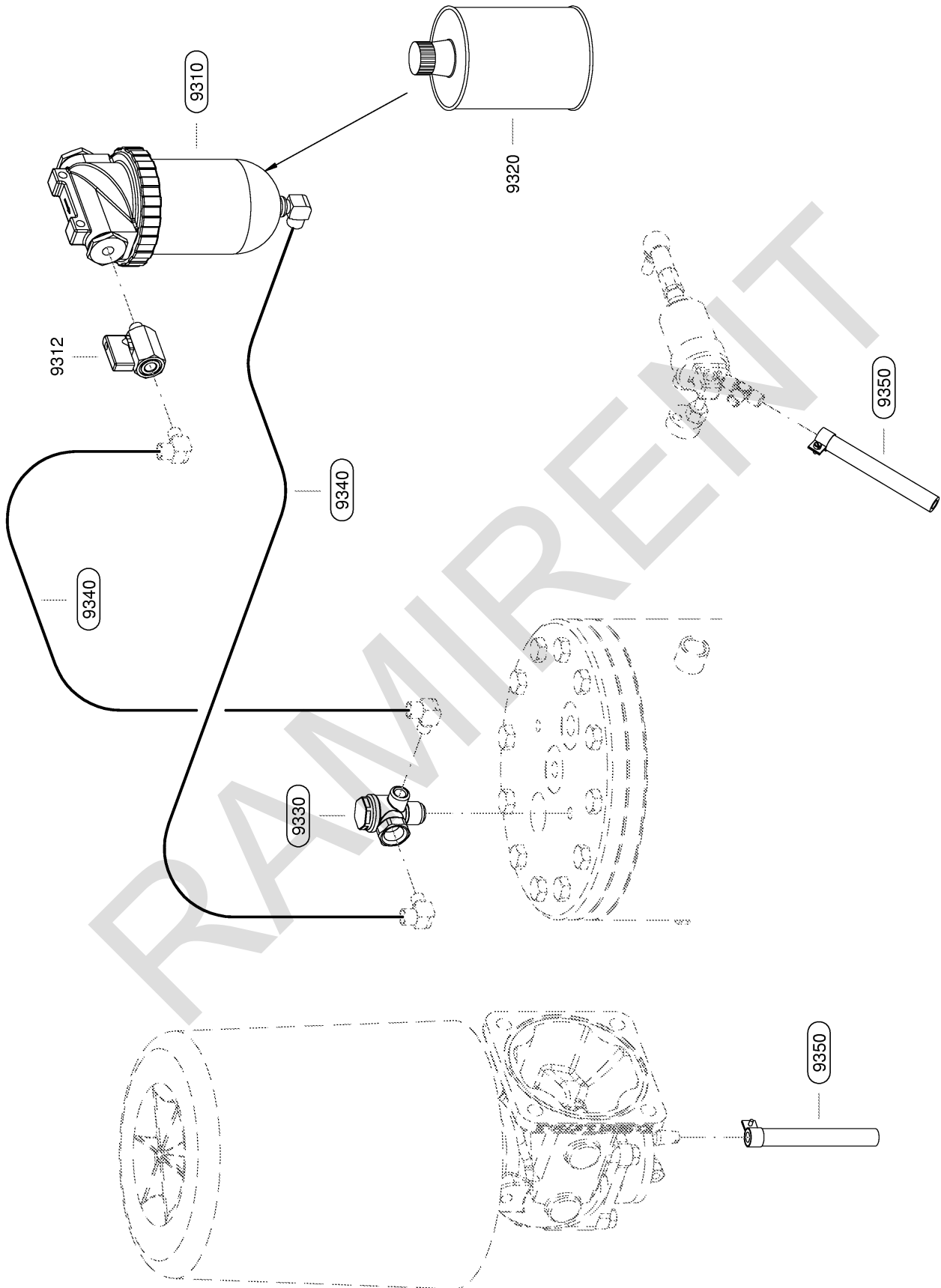
Item	Description	Option
9210	Tool lubricator	
9220	Tool oil *)*	
9240	Control line kit for tool lubricator	

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

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

*) see lubricating recommendations for road breakers





Legend	KAESER
Frost protection device	SEL-2039_01E

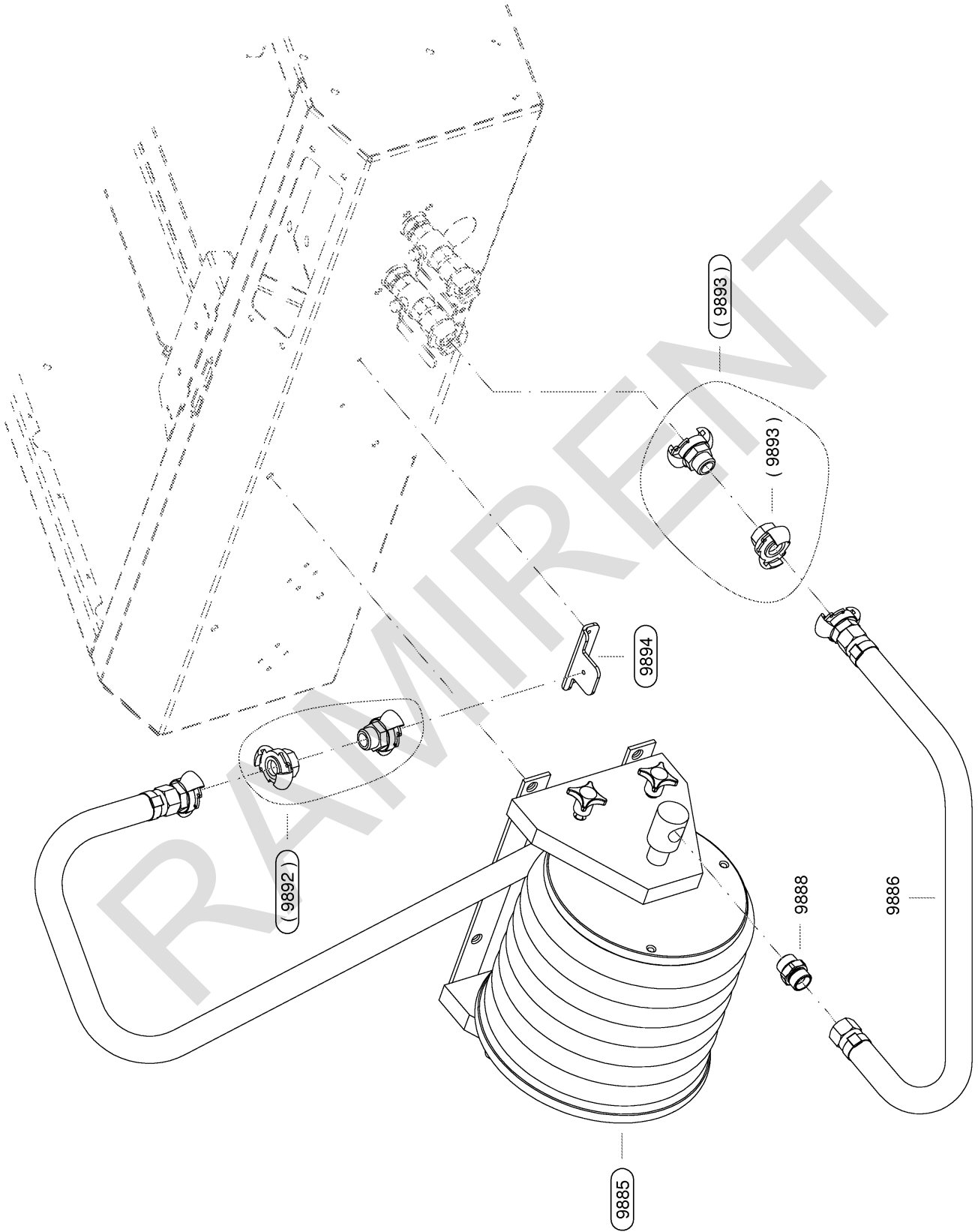
Item	Description	Option
9310	Frost protector	
9312	Shut-off valve	
9320	Frost protector antifreeze	
9330	Frost protector check valve	
2412	Check valve overhaul kit	
9340	Frost protector control lines	
9350	Antifreeze drain set	

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

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

*) see antifreeze recommendations

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Legend	KAESER
Hose reel	SEL-2040_01E

Item	Description	Option
9885	Hose reel	
9886	Consumer feed lines	
9888	Adapter	
9892	Claw coupling	X
9893	Claw coupling	X
9894	Retainer claw coupling	

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

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

RAMIRENT

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 decommissioning

Decommissioning for about 4 months.

Material Plastic foil

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

Attention!

1. The machine is temporarily decommissioned.
 2. The following machine openings have been covered:
 - Engine air inlet
 - Compressor air inlet
 - Exhaust
 3. Recommission according to service manual.
- Date / signature

Tab. 64 "Temporarily decommissioned" information notice

Decommissioning of the compressor for several weeks during severe frost



1. **CAUTION!**
Danger of batteries freezing.
Discharged batteries are subject to frost damage and can freeze at $-10\text{ }^{\circ}\text{C}$.
 - Store batteries in a frost-free place.
 - Store batteries preferably fully charged.
2. Remove the battery (batteries) and store in a frost-free room.
3. Make sure batteries are fully charged.

12.1.2 Long-term decommissioning

Decommissioning the machine for 5 months or longer.

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

➤ The following measures must be taken for long-term decommissioning.

Long-term decommissioning tasks	See chapter	Confirmed?
➤ Check engine coolant level.	10.3.1	
➤ Draining the engine oil	Engine SM	
➤ Draining the cooling oil from the separator tank and oil cooler.	10.4.3	
➤ Filling the engine and oil separator tank with preserving oil.	Engine SM 10.4.2	
➤ 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	
➤ 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.	–	
➤ Cover the following openings with plastic foil and moisture-proof adhesive tape. <ul style="list-style-type: none"> – Engine air intake – Compressor air intake – Exhaust discharge 	–	
➤ Clean the bodywork and treat with a preservative.	–	

Engine SM = engine manufacturer's service manual.

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

Engine SM = engine manufacturer's service manual.

Tab. 65 Long-term decommissioning 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 -
 - take measures for recommissioning after a long period of storage.
 - Recommission according to service manual.

Date / signature

Tab. 66 "Long-term decommissioned" information notice

- Store in a dry place with even temperature.

12.2 Transporting

Precondition Machine switched off and locked off.
 The machine is cooled down and completely depressurised (pressure gauge reads 0 bar).
 All connecting lines and hoses disconnected and removed.
 Any loose or movable parts that may fall when transporting, removed or secured.
 Allow transportation only by personnel trained in safely dealing with motor vehicles and the transporting of goods.



1. **WARNING!**
 There is danger of being run over or crushed by an overturning vehicle.
 Death or serious injury can result from being crushed or run-over by a machine under tow.
 - Riding on the machine while it is under tow is strictly forbidden.
2. Make sure the danger area is clear of personnel.

12.2.1 Towing the compressor on the road

The machine is not only a means of generating compressed air but must also be considered as a trailer.

- Machines with appropriate chassis versions and running gear are approved for towing on public roads.
- The machine is designed for a maximum towing speed of 100 km/h.
- National and local regulations must be observed when towing the machine on public highways.

Additional loading

Do not exceed the permissible loading (overall weight, coupling load, axle load). Observe national traffic laws. Any essential but excessive additional loads must be carried by the towing vehicle.

1. Check that loading the machine with tools or accessories during transport is permissible.
2. Place additional loads only in the spaces provided and secure carefully.

Additional precautions for conditions of snow and ice

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



1. **CAUTION!**
There is danger of accidents caused by snow or ice falling off the machine. Snow or ice falling from the towed machine can endanger following vehicles. Problems with driving dynamics and damage to the machine could occur. The maximum permissible axle load could be exceeded.
 - Do not tow the machine if it is covered by snow or ice.
2. Remove any snow or ice before towing.

Observe / carry out the following before towing:

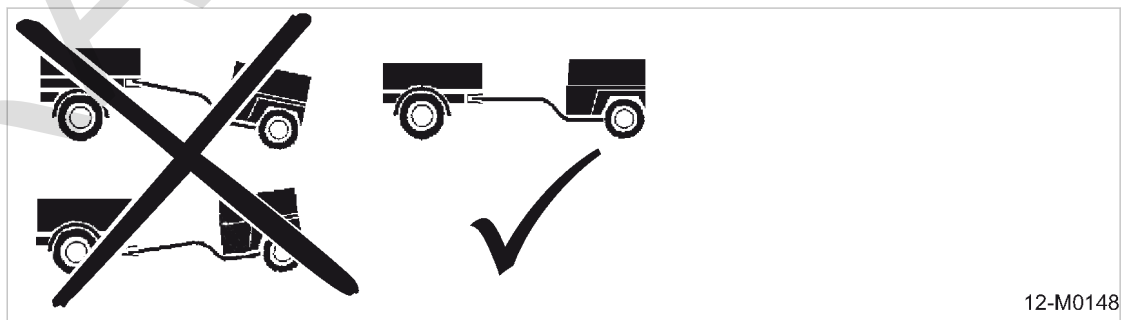
1. Make sure the towing hitch is compatible with the ball or eye coupling on the towed machine.
2. Check that the machine is shut down and secured against accidental restarting.
3. Detach all connecting lines and hoses.
4. Make sure there are no unsecured tools lying on or in the machine.
5. Close and lock the canopy.

Adjust the towbar to suit the height of the towing vehicle hitch.

When the machine is coupled up, the towbar must be parallel with the ground.



See chapter 6.3 for the height adjustment.



12-M0148

Fig. 45 Towing alignment



1. **WARNING!**
Unstable towing alignment.
Personal injury may result from towing.
Stability problems with the machine or towing vehicle.
Damage to the machine towbar or vehicle tow hitch.
 - Do not couple up the machine at an angle to the towing vehicle.
 - Ensure that the towbar is horizontal when coupled to the towing vehicle.
2. Adjust the towbar height to suit the height of the hitch on the towing vehicle.

Coupling-up

To couple up the compressor, lower the open coupling onto the ball hitch of the towing vehicle so that it clicks into place. The coupling mechanism closes automatically. The coupling release lever springs back to the horizontal position. The locking indicator shows green. If the locking indicator does not show green, try pushing the release down to the horizontal.

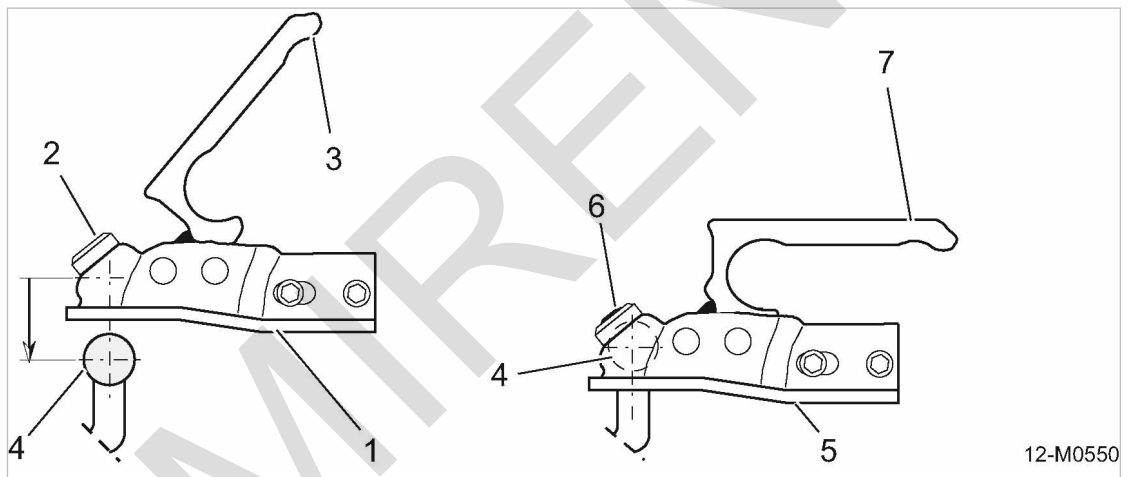


Fig. 46 Ball coupling function

- | | |
|---|---|
| ① Ball coupling (open) | ⑤ Coupling closed |
| ② Locking indicator (showing coupling open) | ⑥ Locking indicator (showing coupling closed) |
| ③ Coupling release lever (open) | ⑦ Coupling release lever (closed) |
| ④ Ball hitch (towing vehicle) | |



1. **CAUTION!**
There is considerable danger of injury caused by trapped fingers.
They can be trapped in the spring-loaded closing mechanism.
 - Never place your fingers inside an open ball coupling.
 - Always wear protective gloves.
2. Pull up the coupling release lever ③.
3. Lower the coupling ① onto the ball hitch ④.
The coupling mechanism closes automatically.
4. Check if:
 - The locking indicator ⑥ is showing green.
 - The release lever is in the closed position ⑦.

5. If the locking indicator is not visible:
 - Press down on the coupling until the closing mechanism can be heard to lock into place.
 - Press down on the release lever (7) to bring it to the horizontal position.
6. Check again that the locking indicator (6) is showing green.
The coupling is locked closed when the locking indicator shows green.

Option sa Carry out the following before starting to tow

1. Check that the coupling is properly latched onto the towing hitch.
2. Check that the towbar is adjusted to the correct height. See also chapter 6.3.
Check that:
 - The teeth in the tow bar height adjusting joints are fully engaged
 - The locking levers are tightened
 - The split pin is fully inserted.
3. Wind the support full up.
4. Check that the wheels are securely fitted and the tyres are in good condition.
5. Check the tyre pressures.
6. Connect the cable for the lighting and indicator systems and carry out a function check.
7. Remove the chocks.

Option sb Carry out the following before starting to tow

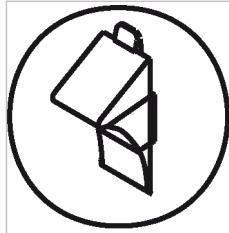
1. Check that the coupling is properly latched onto the towing hitch.
2. Check that the towbar is adjusted to the correct height. See also chapter 6.3.
Check that:
 - The teeth in the tow bar height adjusting joints are fully engaged
 - The locking levers are tightened
 - The split pin is fully inserted.
3. Wind the jockey wheel to its uppermost position.
4. Check that the wheels are securely fitted and the tyres are in good condition.
5. Check the tyre pressures.
6. Connect the cable for the lighting and indicator systems and carry out a function check.
7. Release the parking brake and remove the chocks from under the wheels.

Option sd, se Carry out the following before starting to tow

1. Check that the coupling is properly latched onto the towing hitch.
2. Wind the jockey wheel to its uppermost position.
3. Check that the wheels are securely fitted and the tyres are in good condition.
4. Check the tyre pressures.
5. Connect the cable for the lighting and indicator systems and carry out a function check.
6. Release the parking brake and remove the chocks from under the wheels.

Option sh Carry out the following before starting to tow

Option sh



12-M0393

Fig. 47 Safety signs: Secure the chocks



1. **WARNING!**

Missing chocks

Serious injury or death can result from an unsecured machine rolling away.

- Secure the chocks in the transport securing device before transporting the machine.
- Replace missing chocks immediately.

2. Check that the coupling is properly latched onto the towing hitch.
3. Wind the support to its uppermost position.
4. Check that the wheels are securely fitted and the tyres are in good condition.
5. Check the tyre pressures.
6. Attach the lighting and indicator systems and carry out a function check.
7. Remove the chocks and secure them in the transport securing device.

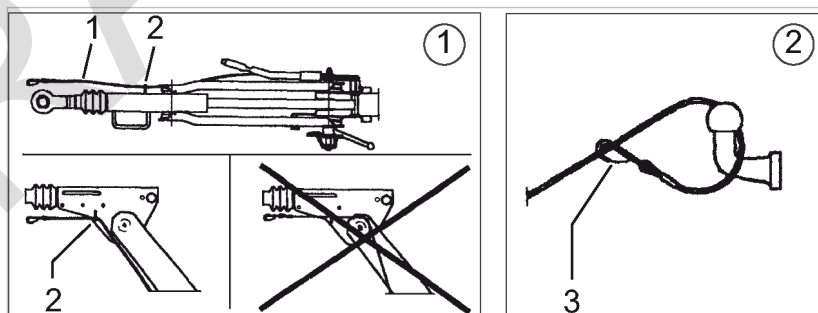


Replacement chocks can be purchased from KAESER representatives. A list is given at the end of this manual. The part number of the chock is 5.1325.0.

Option sb, sd, se **Emergency braking in the case of breakaway from the towing vehicle**

If the compressor breaks away from the towing vehicle, the cable tightens and pulls on the emergency brake (parking brake).

It is essential that the breakaway cable is threaded through its guides for correct emergency braking.



12-M0149

Fig. 48 Breakaway cable attachment

- ① Breakaway cable
- ② Breakaway cable guide (eye)
- ③ Connection (spring clip)



1. **CAUTION!**

Unintentional brake application.

If the breakaway cable is too short it can apply the brakes when rounding a curve. This imposes high wear on the braking system.

- Make sure the breakaway cable is long enough.

2. Thread the breakaway cable through the guide welded on the side of the towbar.

3. Loop the end of the cable round the towing vehicle hitch and secure with the spring clip.

Option sa Additional breakaway prevention



Safety chains are accessories.

The towbar may be provided with two safety chains as additional protection against breakaway from the towing vehicle (see 10).

If these are provided, it is essential that they be attached to the towing vehicle before towing.

1. Pick up the ends of the chains and cross the chains.
2. Loop the ends over the hooks provided on the towing vehicle.
3. If no special hooks are provided, secure the chains to the ball hitch.

12.2.2 Parking the compressor

The parking brake is not a running brake and is used only to lock the wheels when the machine is positioned.

The machine is generally only moved by being coupled to a towing vehicle. If the jockey wheel is wound too far out, the spindle can disengage and the towbar fall to the ground.



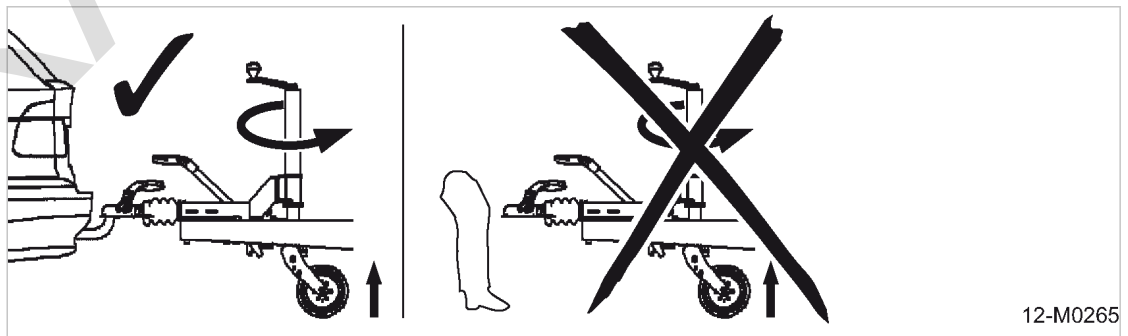
CAUTION

Injury can occur if the towbar is unsupported and allowed to fall.

A falling towbar can cause injury, especially by crushing the feet.

If the jockey wheel is wound completely out, the spindle can disengage and allow the towbar to fall to the ground.

- Do not wind the jockey wheel completely out when the machine is uncoupled from the towing vehicle.



12-M0265

Fig. 49 Injury can occur if the towbar is unsupported and allowed to fall.

Option sb, sd, se Carry out the following when parking the compressor

When parking on a slope, securely chock the machine before uncoupling.

1. Disconnect the lighting and signalling cable.

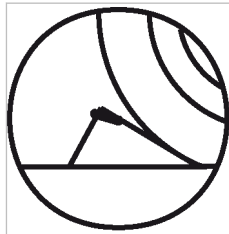
2. Pull on the parking brake.
3. Detach the breakaway cable.
4. Wind down the jockey wheel.
5. Place chocks under the wheels.
6. Pull up the parking brake to the stop.
7. Uncouple the compressor from the towing vehicle.
 - Pull up the coupling release lever.
 - Lift the coupling off the towing hitch ball.



The gas spring automatically increases parking brake force if the machine rolls backwards or when parked on a slope.

Option sa, sh Carry out the following when parking the compressor

When parking on a slope, securely chock the machine before uncoupling.



12-M0392

Fig. 50 Safety sign - secure the chocks



1. **WARNING!**
Machine without parking brake.
Serious injury or death can result from an unchocked machine rolling away.
 - Securely chock the machine before uncoupling.
 - As a general rule, the machine should always be chocked when it is not being moved.
 - The machine should not be manoeuvred by hand.
2. Wind down the jockey wheel.
3. Place chocks under the wheels.
4. Dismantle the lighting and signalling system.
5. Uncouple the compressor from the towing vehicle.
 - Pull up the coupling release lever.
 - Lift the coupling off the towing hitch ball.

12.2.2.1 Option sf Using the anti-theft device



- CAUTION**
Machine damage due to excessive static load on the axles
- Never place an excavator bucket as anti-theft protection on the machine's enclosure.

Use only the safety chain (available as option) to secure a parked machine against theft.

Precondition Safety chain present
Lock present
Key custody is decided

1. Remove the safety chain from the storage locker on the machine.
2. Loop the safety chain around a solidly anchored object.
3. Secure the chain with the lock.

Result The machine is protected against theft.

Option sf Releasing the anti-theft device prior to transport

**CAUTION**

Components may break.

- Release the chained machine.

The safety chain must be released prior to transport to prevent the destruction of machine components.

1. Open the lock.
2. Remove the safety chain from the solidly anchored object.
3. Place the safety chain in the storage locker on the machine.

Result Safety chain is released and stored.

12.2.3 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.

- Additional measures should be taken under conditions of snow or ice.
 - 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.

Carry out the following tasks before transporting the machine

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.

1. Unlock the cover from inside and lift up.
2. Position the crane hook vertically over the lifting eye.
3. Engage the hook in the eye.
4. Close and lock the access doors.
5. Lift the machine carefully.

Take care when setting down the machine



1. **CAUTION!**
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.

12.2.4 Transporting as a load

The means of transporting will determine the type of packing and load securing. Packing and securing methods must be such that, assuming proper handling, the goods arrive in perfect condition at the destination.

Consult KAESER Service for advice concerning sea or air transport.

Material Chocks
Restraints or timber bunks
Straps

Load securing devices

Use chocks, restrainers or timber bunks for securing the load.
If necessary, use straps across the chassis and the towbar.

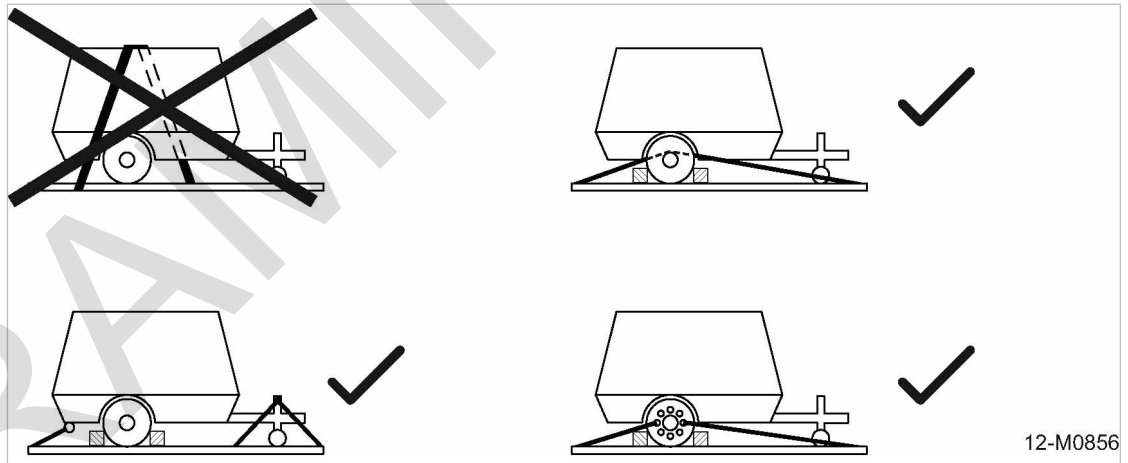


Fig. 51 Load secured by straps



1. **CAUTION!**
Straps can damage the bodywork.
Movement during transportation can damage the bodywork.
 - Do not use straps over the bodywork.
 - Use straps only over the chassis.
2. Always observe valid accident and safety regulations when transporting.
3. The loads must be secured against rolling, tipping, slipping and falling.



Contact KAESER Service with any questions regarding transporting or load securing. KAESER accepts no liability for damages arising through incorrect transport methods or insufficient or wrong securing of loads. The transport restraints on rented, hired or exhibition machines should be re-used for the return journey.

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. DANGER!**

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
- Lubricating and cooling oils in the engine and compressor unit
- Battery electrolyte

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.



Advice can be obtained from KAESER on storage and commissioning.

**CAUTION**

Moisture and frost can damage the machine.

- Prevent ingress of moisture and formation of condensation.
 - Maintain a storage temperature of >0 °C.
- Store the machine in a dry 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. Hand the machine over to an authorized disposal expert.



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

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13 Annex

13.1 Marking

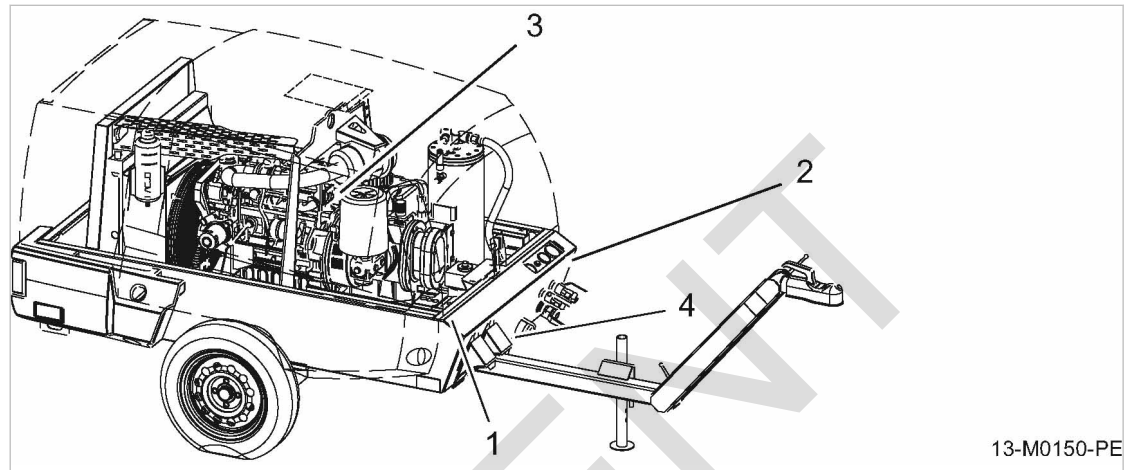
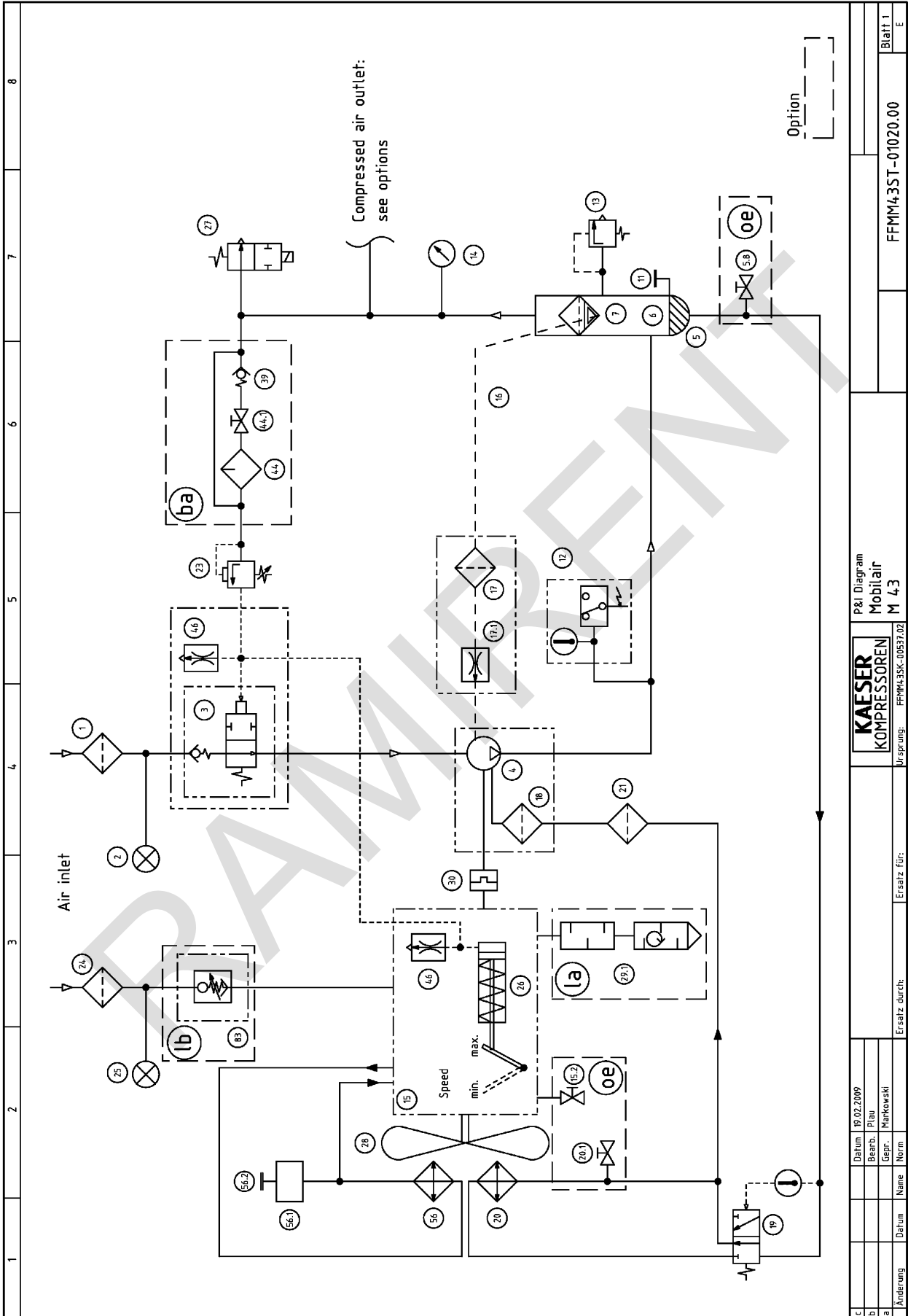


Fig. 52 Marking

- | | | | |
|---|--|---|--|
| ① | VIN *) (stamped under the reflector)
*Vehicle identity number | ③ | Engine nameplate with serial number |
| ② | Machine nameplate with serial number | ④ | Combined label for coupling loading and built-in options |

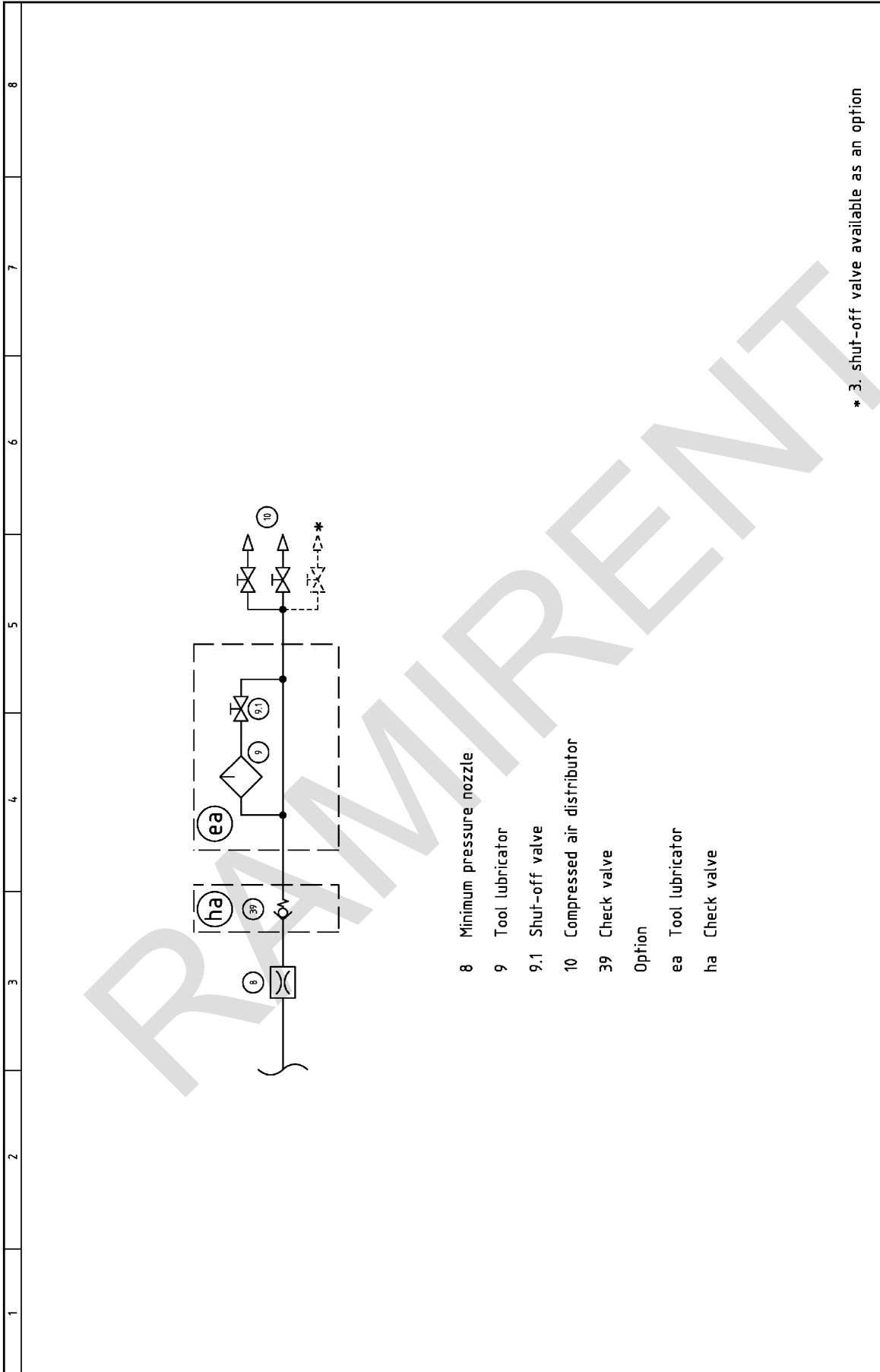
13.2 Pipeline and instrument flow diagram (P+I diagram)



Date: 19.02.2009		Date: 19.02.2009	
Drawn: Plau		Drawn: Plau	
Checked: Markowski		Checked: Markowski	
Name: Norm		Name: Norm	
Ersatz durch:		Ersatz für:	
Ursprung: FFM4-3SK-00537.02		Ursprung: FFM4-3SK-00537.02	
P&I Diagram		P&I Diagram	
Mobil air		Mobil air	
M 43		M 43	
FFM4-3ST-01020.00		FFM4-3ST-01020.00	
Blatt I		Blatt I	
E		E	

		1	2	3	4	5	6	7	8
1	Compressor – Air filter								
2	Filter maintenance indicator, Compressor –Air filter								
3	Inlet valve								
4	Airend								
5	Oil separator tank								
5.8	Shut-off valve – Oil drain								
6	Oil reserve								
7	Oil separator cartridge								
11	Oil filler with screw plug								
12	Temperature gauge switch + Indication								
13	Pressure relief valve								
14	Pressure gauge – Control panel								
15	Diesel engine								
15.2	Shut-off valve – Oil drain								
16	Oil return line								
17	Dirt trap								
17.1	Nozzle								
18	Strainer								
19	Combination valve – Oil temperature controller								
20	Oil cooler								
20.1	Shut-off valve – Oil drain								
21	Oil filter								
23	Proportional controller (option: adjustable)								
24	Motor – Air filter								
25	Filter maintenance indicator, Motor – Air filter								
26	Engine speed adjusting piston								
27	Venting valve								
28	Fan								
29.1	Exhaust silencer with integrated spark arrester								
30	Coupling								
39	Check valve								
44	Defroster								
44.1	Shut-off valve								
46	Nozzle (Secondary end Proportional controller)								
56	Water cooler								
56.1	Cooling water expansion tank								
56.2	Water filler with plug								
83	Engine air intake shut-off valve (automatic shutoff)								
	Option								
ba	Low temperature equipment								
la	Spark arrester								
lb	Engine air intake shut-off valve (automatic shutoff)								
oe	Enclosed floor pan								

Kaeser logo		P&I Diagram legend	
Mobilair		M 4.3	
Ursprung: FFM4-3SK-00537.02		Ersatz für:	
Datum: 19.02.2009		Ersatz durch:	
Bearb. Platz		Ersatz durch:	
Gepr.: Markowski		Ersatz durch:	
Name		Ersatz durch:	
Datum		Ersatz durch:	
Anderung		Ersatz durch:	
		FFM4-3ST-01020.00	
		Blatt 2	
		E	



- 8 Minimum pressure nozzle
- 9 Tool lubricator
- 9.1 Shut-off valve
- 10 Compressed air distributor
- 39 Check valve
- Option
- ea Tool lubricator
- ha Check valve

* 3. shut-off valve available as an option

c		Datum		27.01.2009	
b		Bearb. Platz			
a		Gepr.		Markowski	
Änderung		Datum		Name	
		Ersatz durch:		Ersatz für:	
				Ursprung:	
		P&I Diagram / P&I Diagram legend		Mobilair M 43	
		Compressed air outlet-options		FFMM43DLA0-01021.00	
				Blatt 1	
				E	

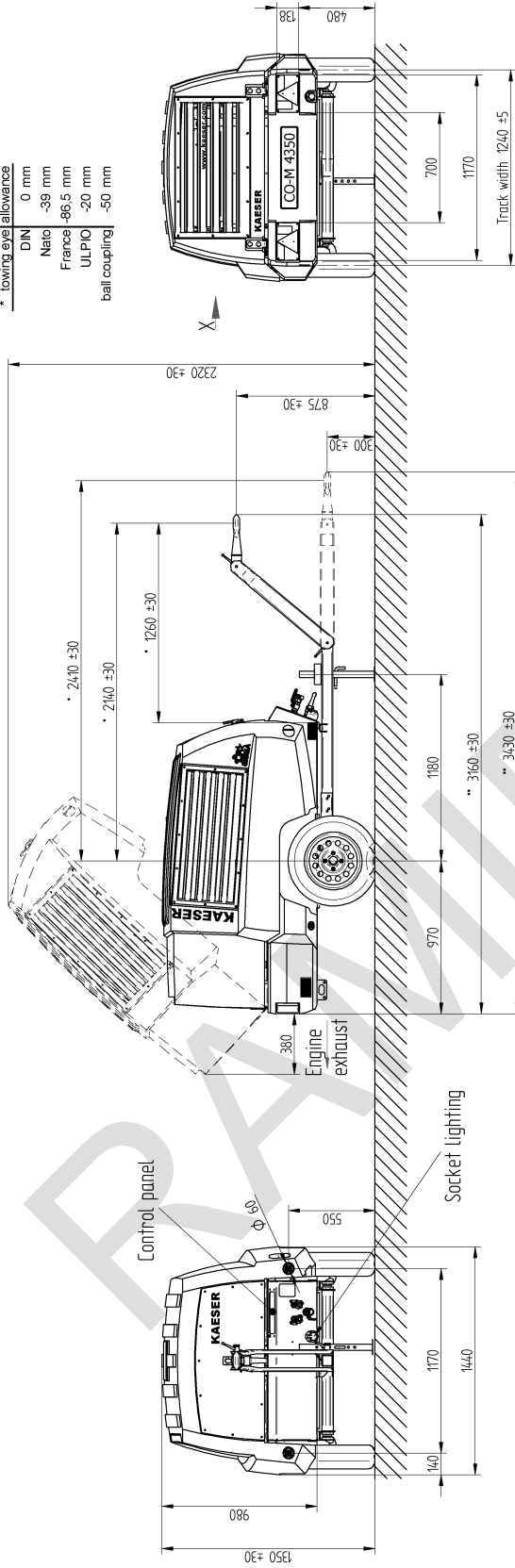
13.3 Dimensional drawings

13.3.1 Option sa

Dimensional drawing - chassis with height-adjustable tow bar

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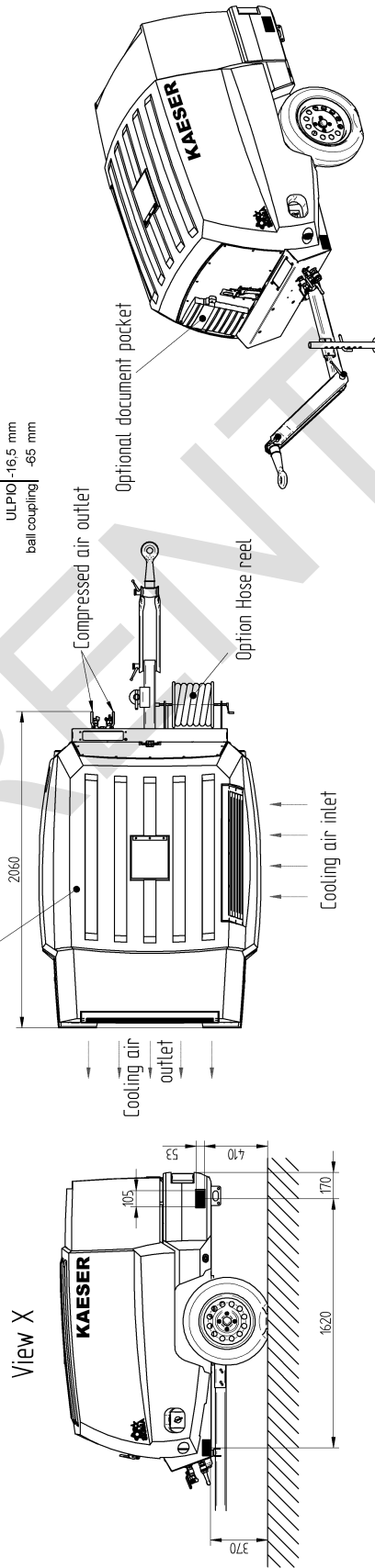
* towing eye allowance
DIN 0 mm
Nato -39 mm
France -86.5 mm
ULPIO -20 mm
ball coupling -50 mm



** towing eye allowance
DIN 0 mm
Nato -10 mm
France -77.5 mm
ULPIO -16.5 mm
ball coupling -65 mm

Area covered by the vehicle,
without towbar 2,8m²

View X



Z009		Name	
Typ	2004	Name	Gisela Fösel
Verf.	2004	Geogr.	2004
Beleg.	2004	Geogr.	Gisela Fösel
Masstab	1:20 auf A2	Erstellt für	T 11138 E
			10146451_00

Portable compressor
M 43 PE / M 50 PE unbraked

Die Zeichnung bleibt unser ausschließliches Eigentum. Sie wird nur zu dem vereinbarten Zweck anvertraut und darf zu keinem anderen Zweck verwendet werden. Kopien oder sonstige Vervielfältigungen einschließlich Speicherung, Veränderung oder Verbreitung unter Verwendung elektronischer Systeme dürfen nur zu dem vereinbarten Zweck angefertigt werden. Weiter Original noch Vervielfältigungen dürfen Dritten ausgedrückt oder in sonstiger Weise zugänglich gemacht werden. Entwicklungsbedingte Änderungen vorbehalten. Zeichnung darf nur über CAD geändert werden.

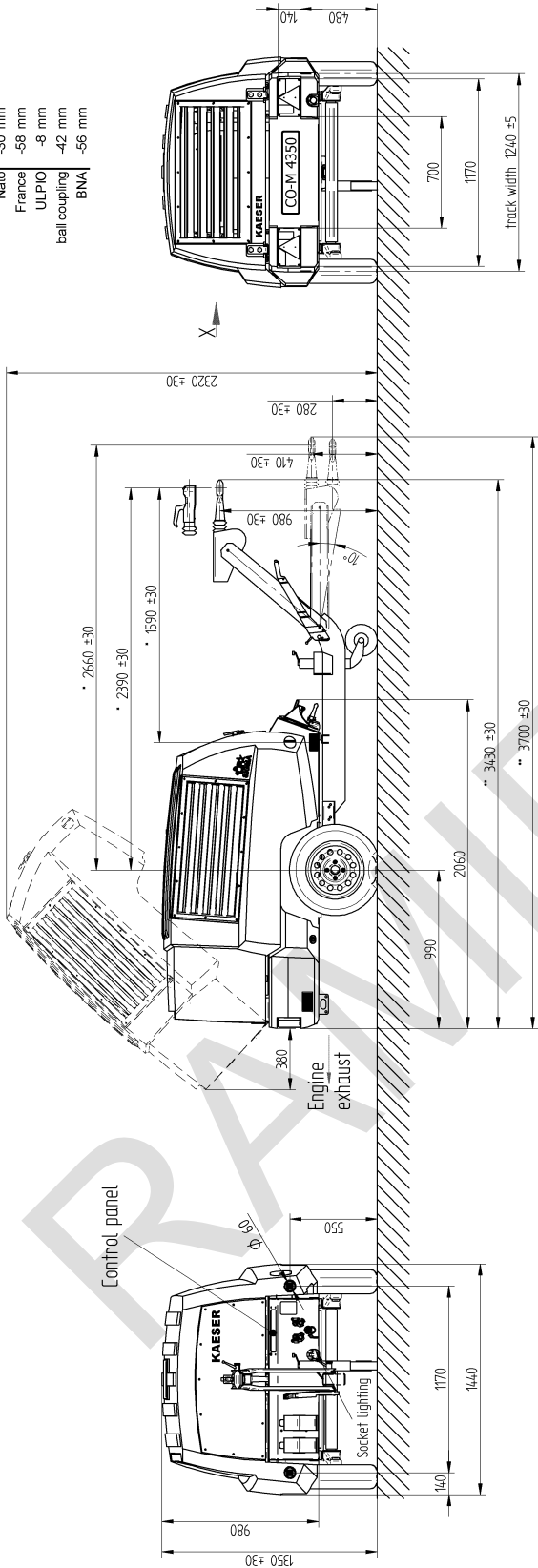
13.3.2 Option sb

Dimensional drawing - chassis with height-adjustable tow bar

RAMIRENT

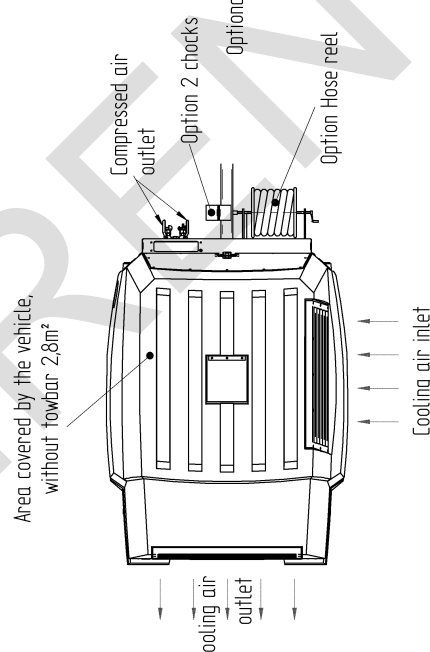
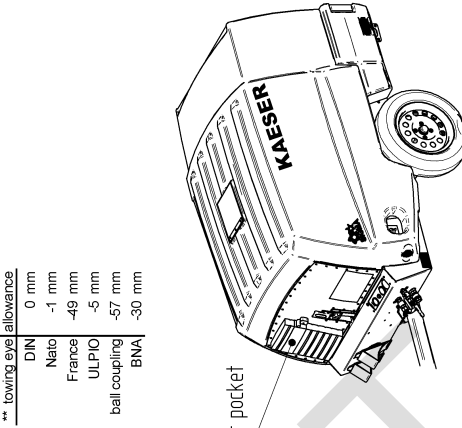
* - towing eye allowance

DIN	0 mm
Nato	-30 mm
France	-58 mm
ULPIO	-8 mm
ball coupling	-42 mm
BNA	-56 mm

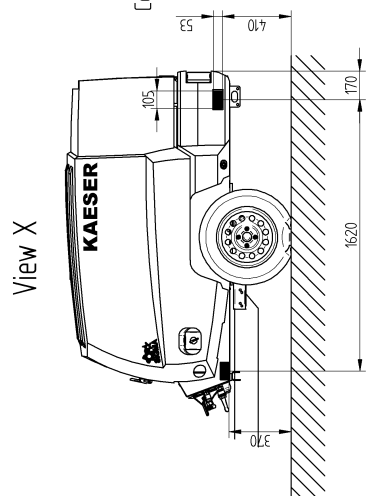


** - towing eye allowance

DIN	0 mm
Nato	-1 mm
France	-49 mm
ULPIO	-5 mm
ball coupling	-57 mm
BNA	-30 mm



Area covered by the vehicle without towbar 2,8m²



Name		Gisela Fösel	
Z010	100	1304	
Fabr.		Frisig	
Frage		Gisela Fösel	
Müllabw.		120 auf A2	
Ersatz für T 1170 Version 00 vom 11.02.2009			
A-Nr. 10150033_01			
KOMPRESSOREN			
T 111701 E			

Portable compressor
M 43 PE / M 50 PE
braked

Die Zeichnung bleibt unser ausschließliches Eigentum. Sie wird nur zu dem vereinbarten Zweck anvertraut und darf zu keinem anderen Zweck verwendet werden. Kopien oder sonstige Vervielfältigungen einschließlich Speicherung, Verbreitung oder Verbringung unter Verwendung elektronischer Systeme dürfen nur zu dem vereinbarten Zweck angefertigt werden. Weiter Original noch Vervielfältigungen dürfen Dritten ausgedrückt oder in sonstiger Weise zugänglich gemacht werden. Entwicklungsbedingte Änderungen vorbehalten. Zeichnung darf nur über CAD geändert werden.

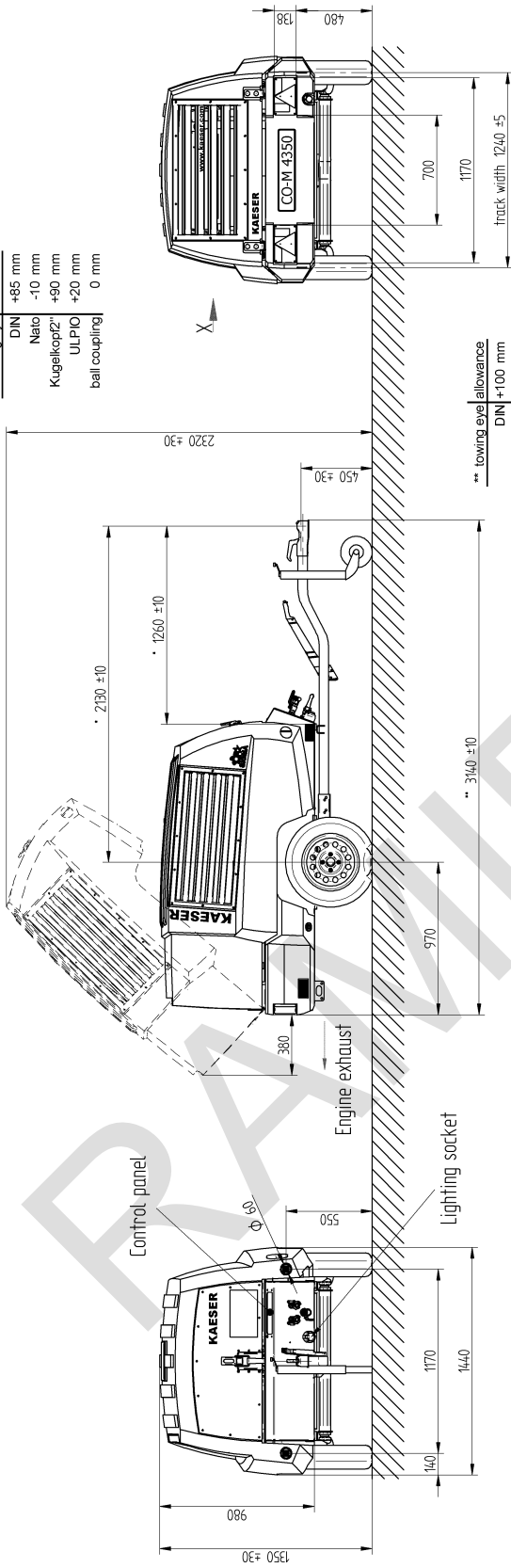
13.3.3 Option sd

Dimensional drawing - fixed height towbar and parking brake

RAMIRENT

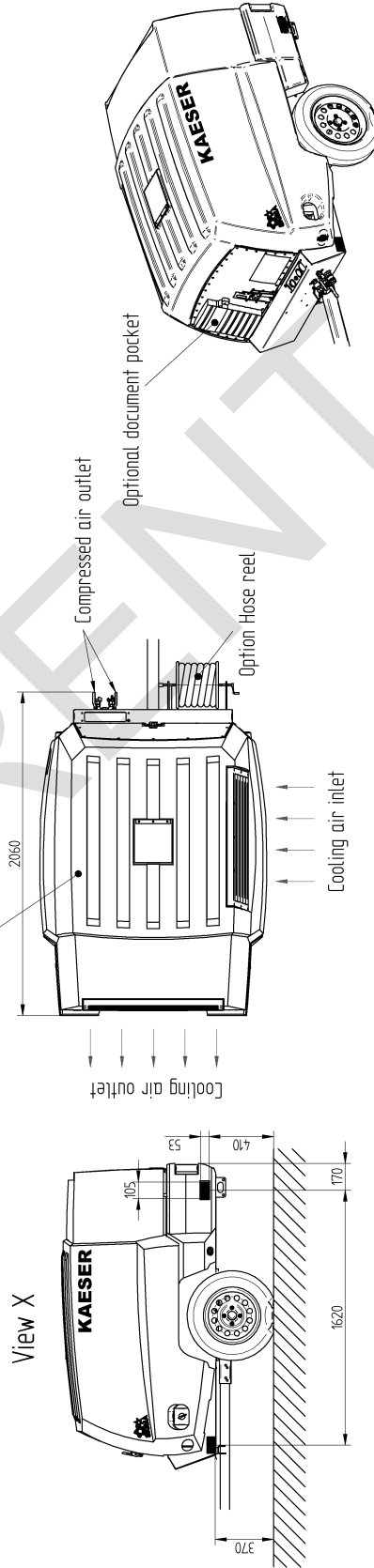
* towing eye allowance
DIN +85 mm
Nato -10 mm
Kugelkopf/2" +90 mm
ULPIO +20 mm
ball coupling 0 mm

** towing eye allowance
DIN +100 mm
Nato +34 mm
Kugelkopf/2" +90 mm
ULPIO +40 mm
ball coupling 0 mm



Area covered by the vehicle,
without towbar: 2,8 m².

View X



Z009	Typ	Name	24.03.	Isela Fösel
	Verz.			Isela Fösel
	Beleg.			Isela Fösel
	Maßstab	1:20 auf A2	Erstellt für	

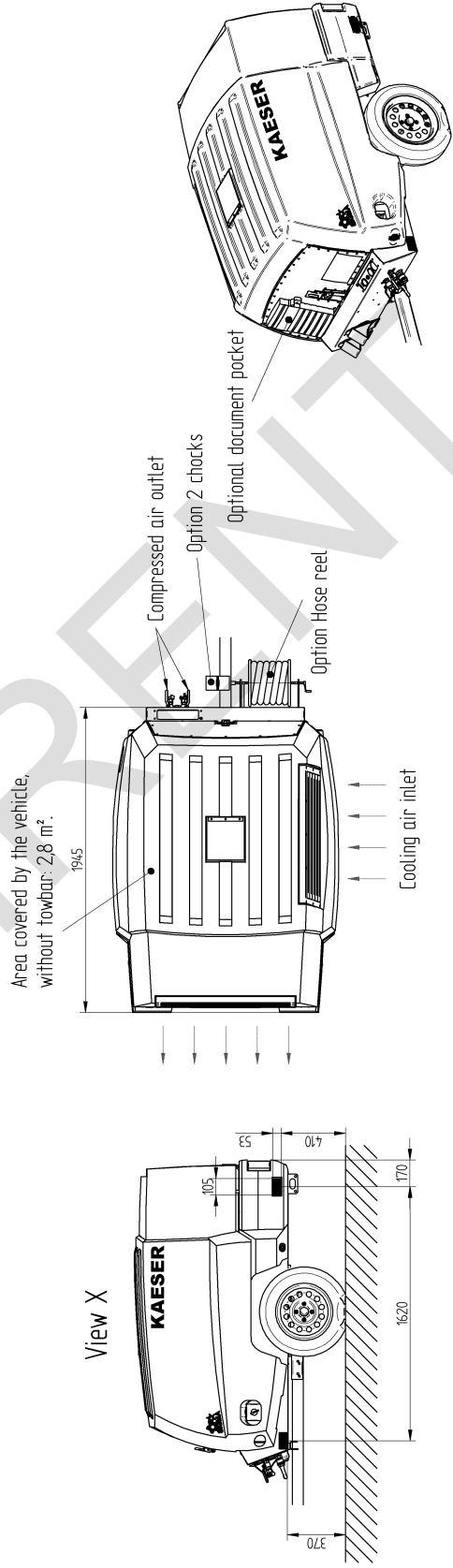
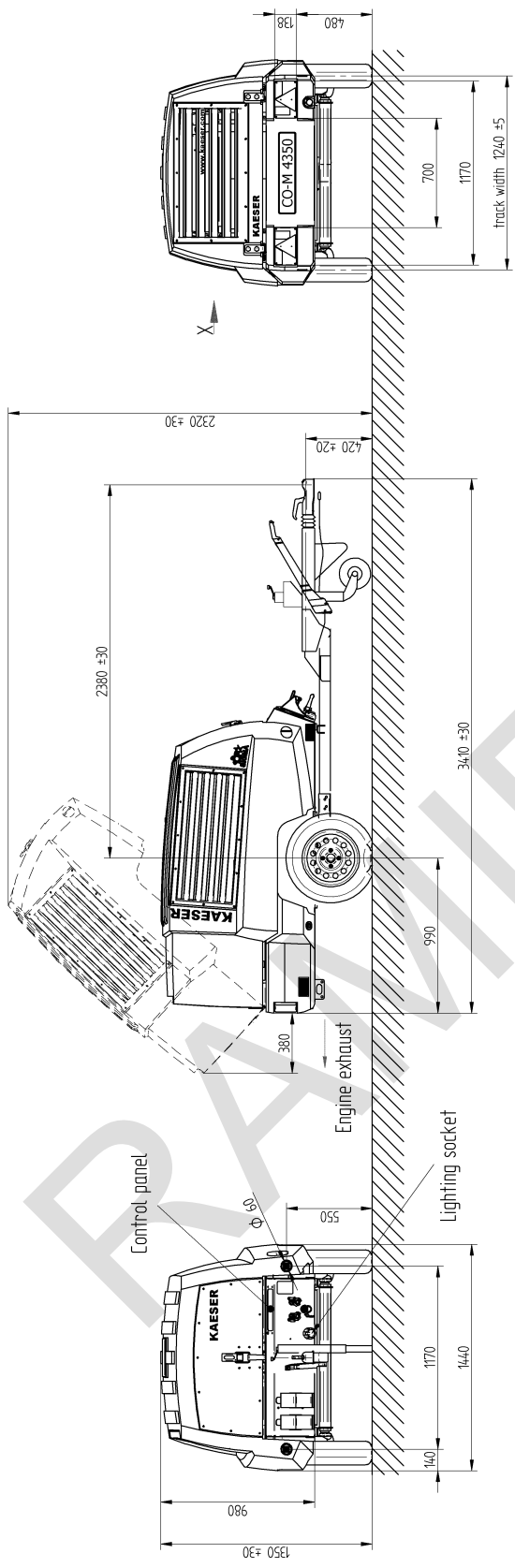
Portable compressor
M 43PE / M 50 PE
with UK chassis

T 11171 E
10150240_00

Die Zeichnung bleibt unser ausschließliches Eigentum. Sie wird nur zu dem vereinbarten Zweck anvertraut und darf zu keinem anderen Zweck verwendet werden. Kopien oder sonstige Vervielfältigungen einschließlich Speicherung, Vervielfältigung oder Verbreitung unter Verwendung elektronischer Systeme dürfen nur zu dem vereinbarten Zweck angefertigt werden. Weiteres Original noch Vervielfältigungen dürfen Dritten ausgedruckt oder in sonstiger Weise zugänglich gemacht werden.

13.3.4 Option se
Dimensional drawing - fixed height towbar and overrun brake

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KAESER KOMPRESSOREN		T 11172 E 10150282_00	
Portable compressor M 43PE / M 50 PE with UK chassis, braked			
Z009	101	Name	Liseta Fösel
Bez.	04.06.	Beleg	Liseta Fösel
Möblenr.		120 auf A2	
		Frantz für	

Die Zeichnung bleibt unser ausschließliches Eigentum. Sie wird nur zu dem vereinbarten Zweck anvertraut und darf zu keinem anderen Zweck verwendet werden. Kopien oder sonstige Vervielfältigungen einschließlich Speicherung, Vervielfältigung oder Verbreitung unter Verwendung elektronischer Systeme dürfen nur zu dem vereinbarten Zweck anvertraut werden. Weiteres Vervielfältigen durch Dritte ist ausdrücklich untersagt. Änderungen vorbehalten. Zeichnung darf nur über CAD geändert werden.

13.4 Electrical Diagram

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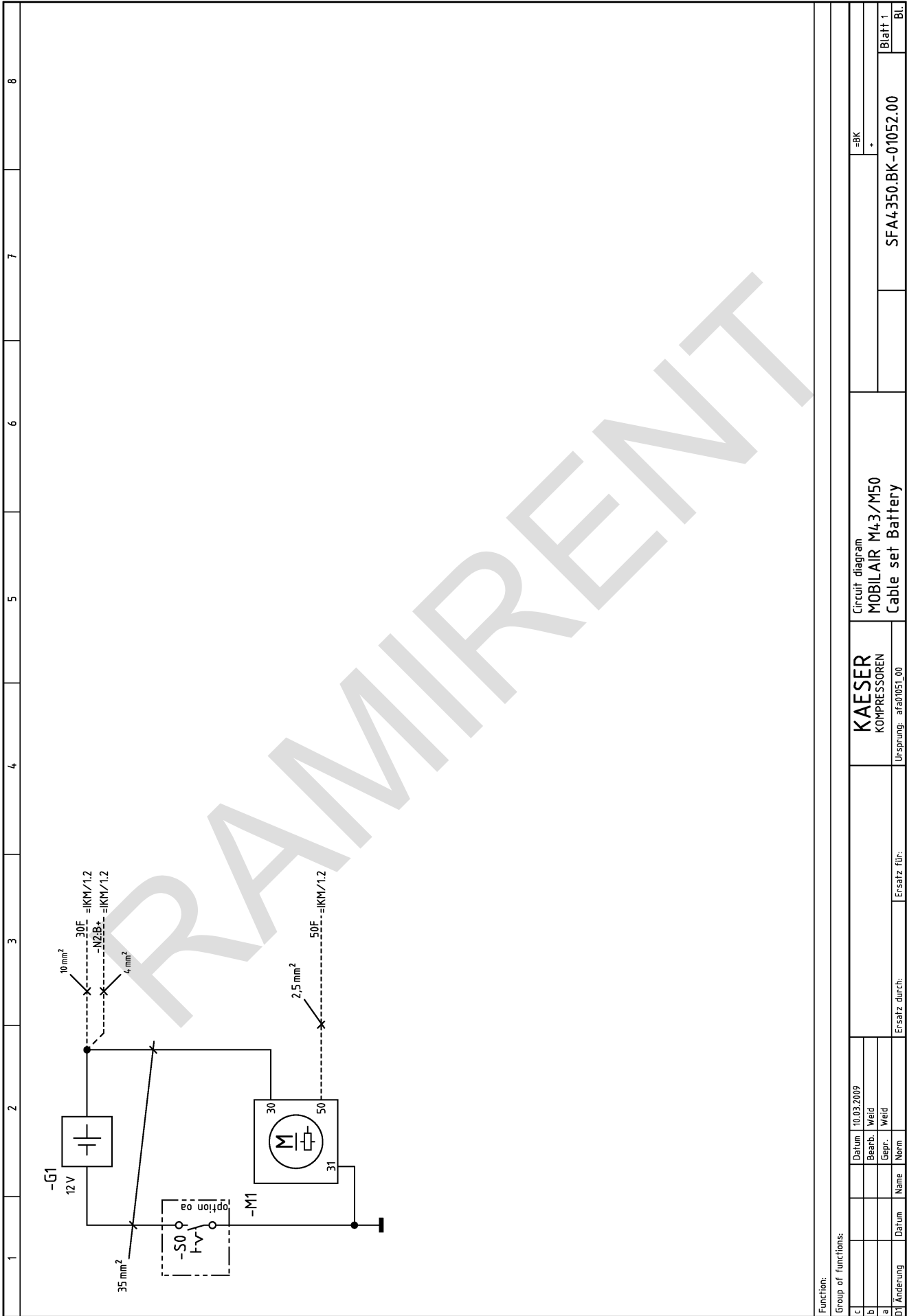
1	2	3	4	5	6	7	8	
<p>Electrical diagrams</p> <p>MOBILAIR</p> <p>M43 / M50</p> <p>KUBOTA-Motor</p>								
<p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>								
<p>RAMIRRENT</p>								
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>								
c	Datum	10.03.2009	E	Kaeser Kompressoren				Cover page
b	Bearb. / Weid			KOMPRESSOREN				MOBILAIR M43/M50
a	Gepr. / Weid			URSPRUNG: afa01051_00				DFA4.350-01052.00
A. Änderung	Datum	Name	Norm	Ersatz für:				Blatt 1
				Ersatz durch:				Bl.

Lfd. Nr. No.	Benennung Name	Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	Cover page		DFA4.350-01052.00	1	
2	List of contents		ZFA4.350-01052.00	1	
3	Block diagram		UFA4.350-01052.00	1	
4	Cross-reference		UFA4.350-01052.00	2	
5	Circuit diagram		SFA4.350.BK-01052.00	1	=BK
6	Circuit diagram		SFA4.350.IKM-01052.00	1	=IKM
7	Circuit diagram		SFA4.350.SK-01052.00	1	=SK
8	Circuit diagram		SFA4.350.BT-01052.00	1	=BT
9	Equipment parts list		GFA4.350-01052.00	1	

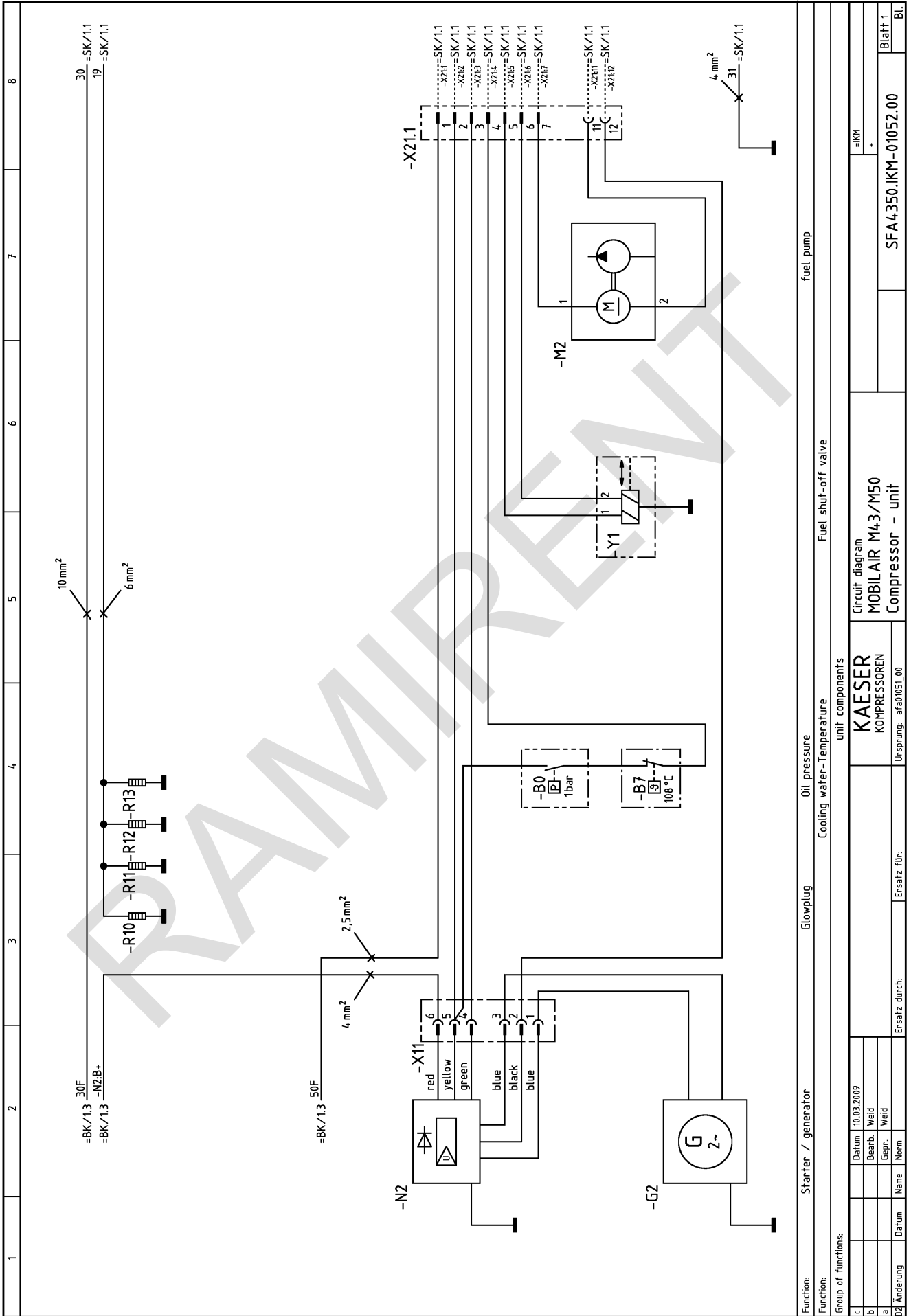
c	Datum	10.03.2009	List of contents		=
b	Bearb. / Weid		MOBILAIR M43/M50		+
a	Gepr. / Weid		KAESER KOMPRESSOREN		
B. Änderung	Datum	Name	Ersatz durch:	Ersatz für:	Ursprung: afa01051_00
					ZFA4.350-01052.00
					Blatt 1
					Bl.

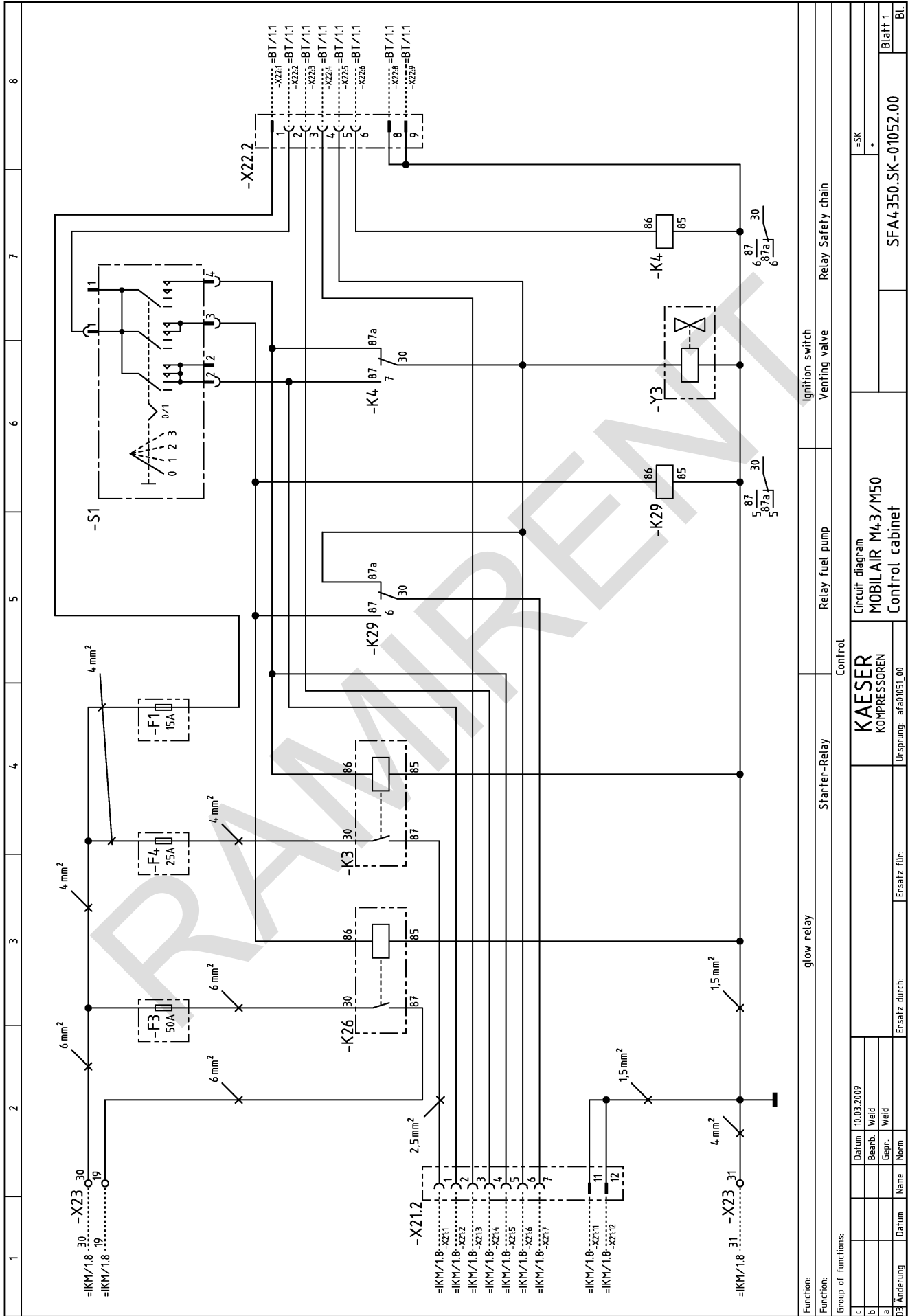
1	2	3	4	5	6	7	8
<p>general instructions Control voltage 12VDC All non-designated conductors H07V-K 1,5 mm² black</p> <p>potentials: 15 switched plus + (unit ON) 19 Preheat with glowplug 30 + terminal (Battery) 31 - terminal (Battery), earth 50 Starter-Control</p>							
<p>components unit</p> <ul style="list-style-type: none"> -G1 Battery -M1 Starter-Motor -B0 Oil pressure switch Motor -B7 Cooling water-Thermostat -B9 sensor fuel level -G2 Alternator -M2 fuel pump -N2 Regulator Alternator -R10...-R13 Glowplug -Y1 Fuel shut-off valve -X21 Plug connection, Cable set Motor 							
<p>components Control cabinet</p> <ul style="list-style-type: none"> -F1 Control fuse -F3 Fuse Glowplug -F4 Fuse Starter -K3 Starter - Relay -K4 Relay Safety chain -K26 glow relay -K29 Relay fuel pump -S1 Ignition switch <p>0 = STOP 1 = ON 2 = Preheat with glowplug 3 = START</p>							
<p>components Control panel</p> <ul style="list-style-type: none"> -B6 Distance temperature gauge Compressor airend -H0 Charging control lamp -P8 Hour meter -S01 switch "Control ON" -X25 Plug connection, Control panel 							
<p>model-dependent components</p> <ul style="list-style-type: none"> -S0 Battery isolating switch (option oa) 							
<p>Block diagram general instructions</p> <p>KAESER KOMPRESSOREN Ursprung: afa01051_00</p>							
<p>UFA4.350-01052.00</p>							
<p>Blatt 1</p>							

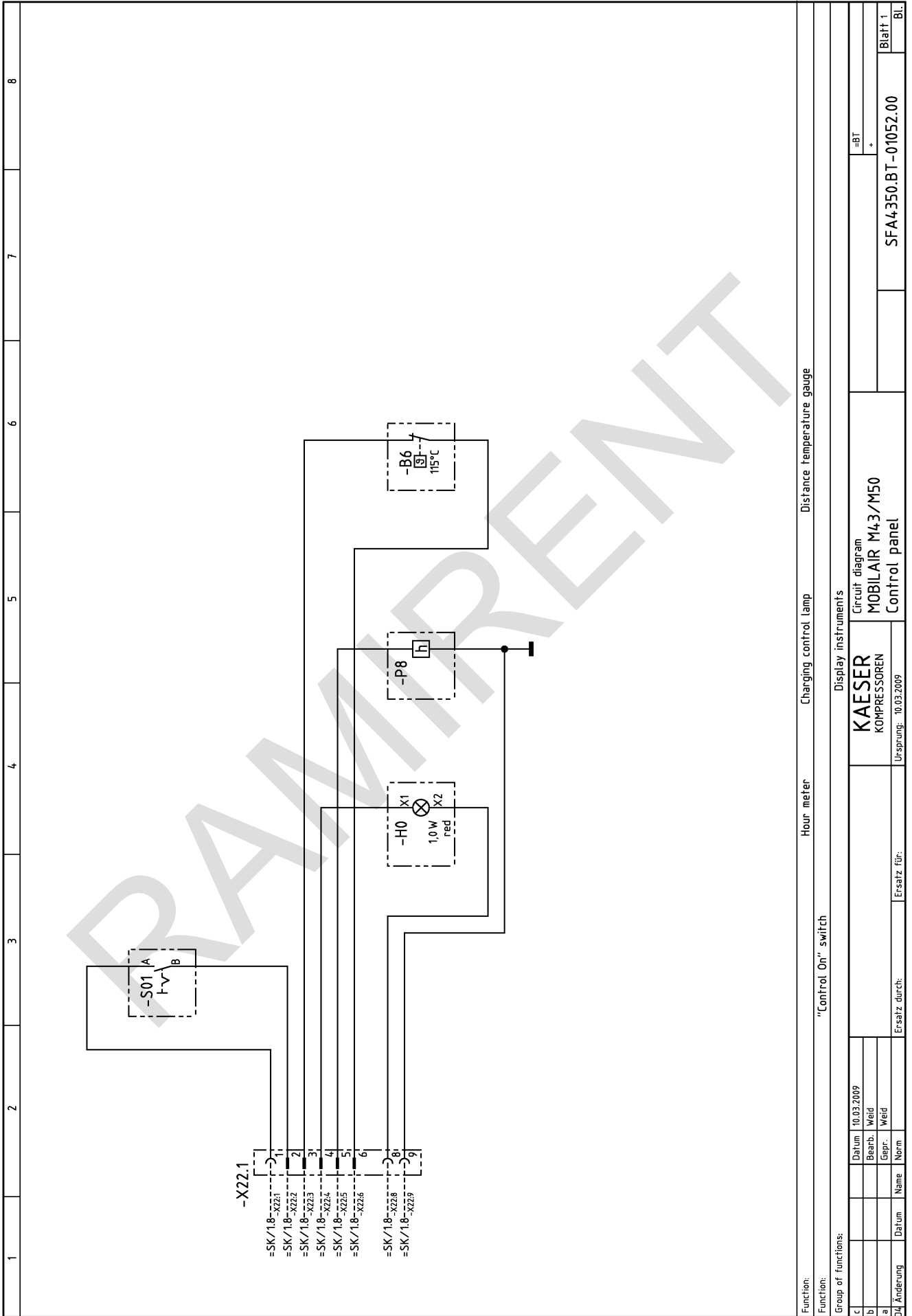
1	2	3	4	5	6	7	8
<p>general instructions This document includes a common electrical diagram, consisting of documents:</p>							
module	Electrical diagrams	Cross-reference					
Cable set: connection Battery	SFA4350.BK-01052.00	BK					
Cable set: connection Motor	SFA4350.IKM-01052.00	IKM					
cabling Control cabinet	SFA4350.SK-01052.00	SK					
cabling Control panel	SFA4350.BT-01052.00	BT					
<p>KAESER KOMPRESSOREN</p>		<p>Block diagram general instructions Cross-reference</p>		<p>UFA4350-01052.00</p>			
<p>Ursprung: afa01051_00</p>		<p>Ersatz für:</p>		<p>= +</p>			
<p>Datum 10.03.2009</p>		<p>Bearb. Weid</p>		<p>Blatt 2</p>			
<p>Gepr. Weid</p>		<p>Name Norm</p>		<p>Bl.</p>			
<p>Datum</p>		<p>Name</p>		<p>Bl.</p>			
<p>Änderung</p>		<p>Datum</p>		<p>Bl.</p>			



Function:		Group of functions:	
c	Datum	10.03.2009	
b	Bearb.	Weld	
a	Gepr.	Weld	
d1	Änderung	Datum	Name
Ersatz durch:		Ersatz für:	
Kaeser KOMPRESSOREN		MOBILAIR M43/M50	
Circuit diagram		Cable set Battery	
-BK		SFA4.350.BK-01052.00	
+		Blatt 1	
		Bl.	
Ursp. afa01051_00			







Function:		"Control On" switch		Hour meter		Charging control lamp		Distance temperature gauge	
Function:		"Control On" switch		Hour meter		Charging control lamp		Distance temperature gauge	
Group of functions:									
c	Datum	10.03.2009							
b	Bearb. / Weid								
a	Gepr. / Weid								
D4	Änderung	Datum	Name	Ersatz durch:	Ursprung:	10.03.2009			
				Ersatz für:					
				Display instruments					
				KAESER KOMPRESSOREN					
				Circuit diagram					
				MOBILAIR M43/M50					
				Control panel					
						-aBT +			
						SFA4.350.BT-01052.00		Blatt 1	
								Bl.	

1	2	3	4	5	6	7	8
A Stückzahl Qty.	B Benennung und Verwendung Description and function	C Fabrikatbezeichnung Type: notwendige Techn. Daten (z.B. Steuerspannung, Frequenz, Einstellbereich); Bestell-Nr.; Hersteller Identification data Type: basic technical data (e.g. control voltage, frequency, adjustable range); order No.; manufacturer	D Lfd. Nr. Item	E Betriebsmittel-Kennz. nach DIN 40719, Teil 2 Identifying symbol of device	F Stromlaufplan Planabschnitt Circuit diagram sheet No., section No.	G Einbauort Location	Concerns only the manufacturer Wsf.-Nr. H Schabl. Nr. I BZ-Pos. J VA (Kz. *) K Eingangs-vermerk
	components Control cabinet						
1	Ignition switch	47.14.08	7.2097.00020 KEYA	-S1			
1	Control voltage ON/OFF switch	26 00 00	12/24 V 15/71.5A 8.7045.0 MERIT	-S01			
2	KFZ-Relay	22 200 111	12 V, 1S, 70 A 8.6544.00030 WEHRLE	-K3-K26			
2	KFZ-Relay	20 201 100	12 V, 1W, 20/30 A 8.6544.0 WEHRLE	-K4-K29			
1	Relay socket	10 700 007	7.3411.00010 WEHRLE	-K26			
3	Relay socket	10 485 008	7.3411.0 WEHRLE	-K4-K8-K29			
1	Fuse socket 1-pole		7.6410.00010 L&K	-F3			
1	Fuse		7.6411.0 L&K	-F3			
1	Fuse socket 4-pole		7.6407.00010 L&K	-F1,-F4			
1	UNIVAL-Fuse		7.6411.00060 L&K	-F1			
1	UNIVAL-Fuse		7.6411.00070 L&K	-F4			
	components Control panel						
1	Indicator light red		12 V/red 7.9027.10200 SCHLEGEL	-H0			
1	Lamp	W2x4,6-12 V	12 V/1,0 W 8.7030.0 SCHLEGEL	-H0			
1	Hour meter		8.6569.0 BAUSER	-P8			
1	Distance temperature gauge	0-120°C/115°C	1W 8.7915.00020 WIEGAND	-B6			
	model-dependent components						
	option oa:						
1	Battery isolating switch	DC 24V	500 A, 2500 A 10s 7.5788.00030 HELLA	-S0			

Bei Nachbestellung von Geräten und Maschinen sind alle in den stark umrandeten Spalten B und C angegebenen Daten aufzuführen. Die Daten in den Spalten D bis G sind zusätzlich unter Nennung dieser Geräte(stücklisten-)Nummer anzugeben, soweit sie die Beantwortung technischer Rückfragen erleichtern. Für Ersatzteilbestellung ist zusätzlich die Angabe der Seriennummer erforderlich, falls diese auf dem Typenschild des Erzeugnisses genannt ist.

In Zweifelsfällen gilt die deutsche Fassung.

When reordering the equipment: all data enclosed by the heavy lines of columns B and C should be stated. In addition, the data in columns D to G should be given together, with the No. of this list of equipment, insofar as they are helpful in answering technical enquiries. When ordering spare parts, also quote the serial No. of the product if stated on the rating plate.

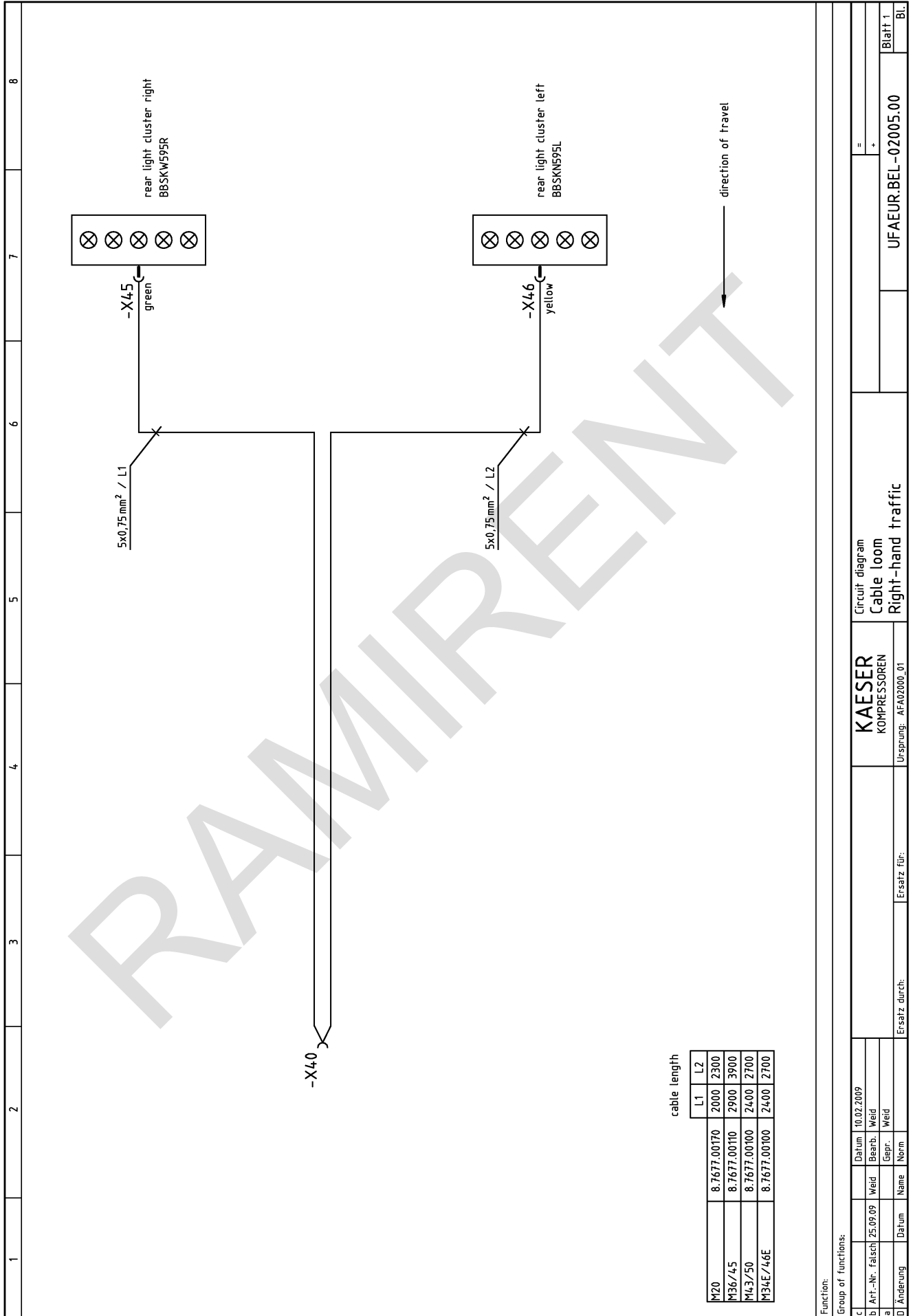
The German version applies in cases of doubt.

c	Datum	10.03.2009	Equipment parts list	MOBILAIR M43/M50	GFA4.350-01052.00	Blatt 1
b	Bearb.	Weid	KOMPRESSOREN	URSPRUNG	afa01051_00	
a	Gepr.	Weid	Ersatz durch:			
f	Datum	Norm				

13.5 Option tc
Lighting and signalling system connection

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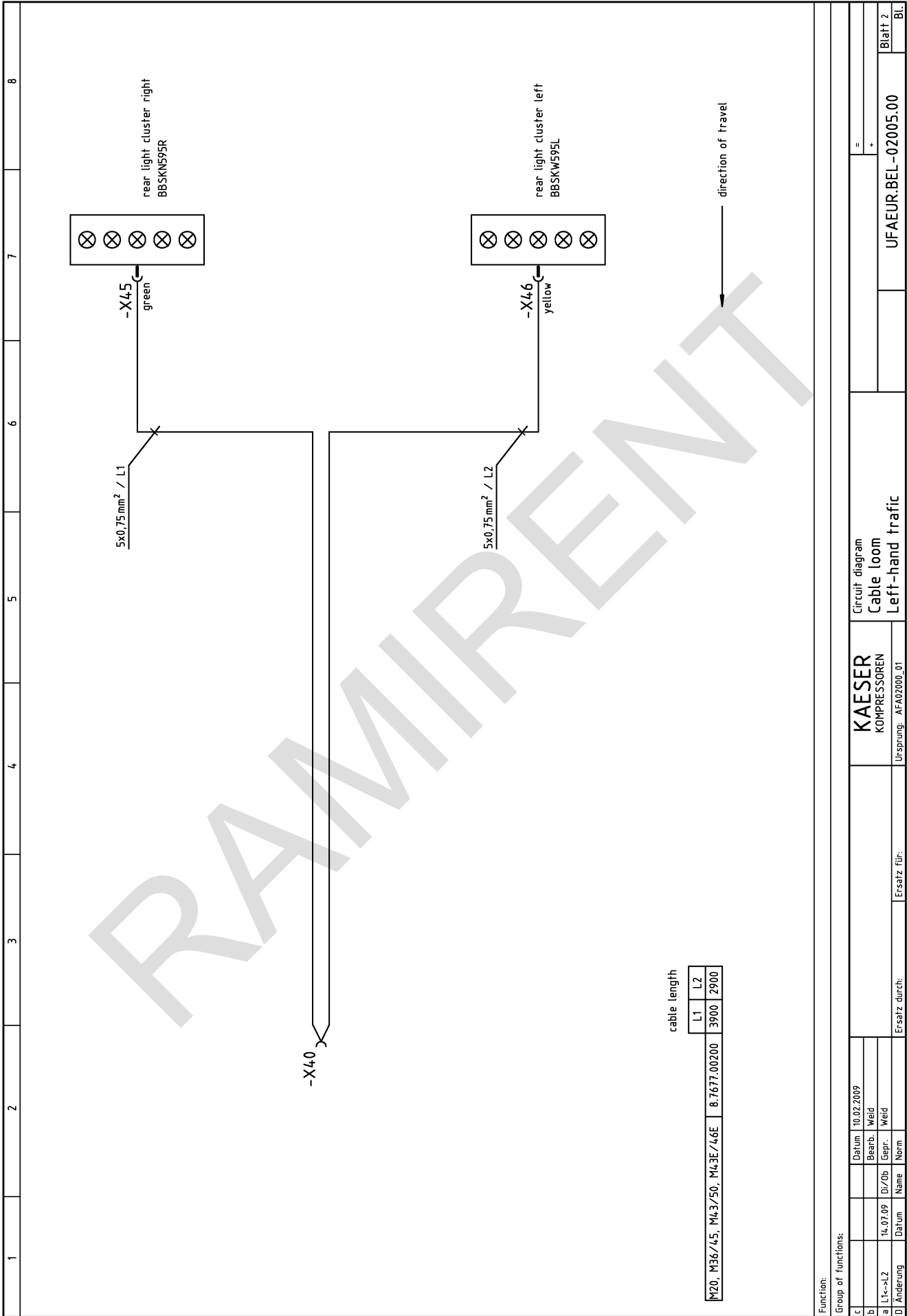
1	2	3	4	5	6	7	8	
<p>Electrical diagrams</p> <p>MOBILAIR</p> <p>Lighting equipment connection 12V/13-pole</p>								
<p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>								
<p>RAMIRRENT</p>								
<p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p>								
c	Datum	10.02.2009	E					
b	page: U1	25.09.09	Weld	Bearb.	Weld			
a	page: U2	14.07.09	Dr/Ob	Gepr.	Weld			
D	Änderung	Datum	Name	Norm	Ersatz durch:			
				Ersatz für:		KAESER KOMPRESSOREN		Cover page
				Ursprung: AFA02000_01		MOBILAIR		
						Lighting equipment		
						=		
						+		
						DFAEUR.BEL-02005.00		Blatt 1
								Bl.



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cable length	
L1	L2
M20	8.7677.00170 2000 2300
M36/45	8.7677.00110 2900 3900
M43/50	8.7677.00100 2400 2700
M34E/46E	8.7677.00100 2400 2700

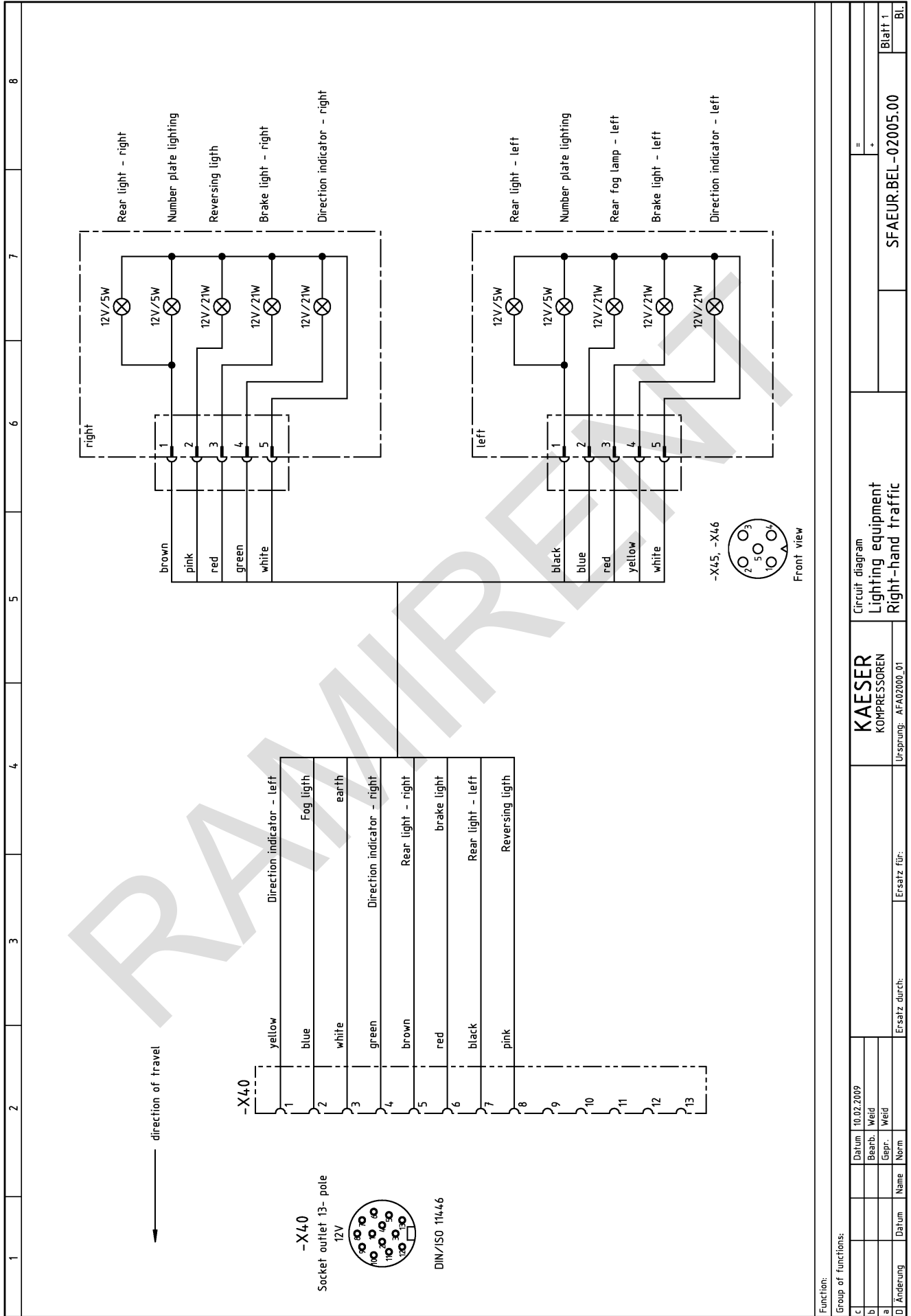
Function:		Group of functions:	
c	Art.-Nr. falsch	25.09.09	10.02.2009
b	Weld	Bearb.	Weld
a	Gepr.	Weld	Weld
d	Änderung	Datum	Name
Ersatz für:		Ersatz durch:	
Kaeser KOMPRESSOREN		Ursprung: AFA02000_01	
Circuit diagram		Cable loom	
Right-hand traffic		UF AEUR.BEL-02005.00	
Blatt 1		Bl. 1	

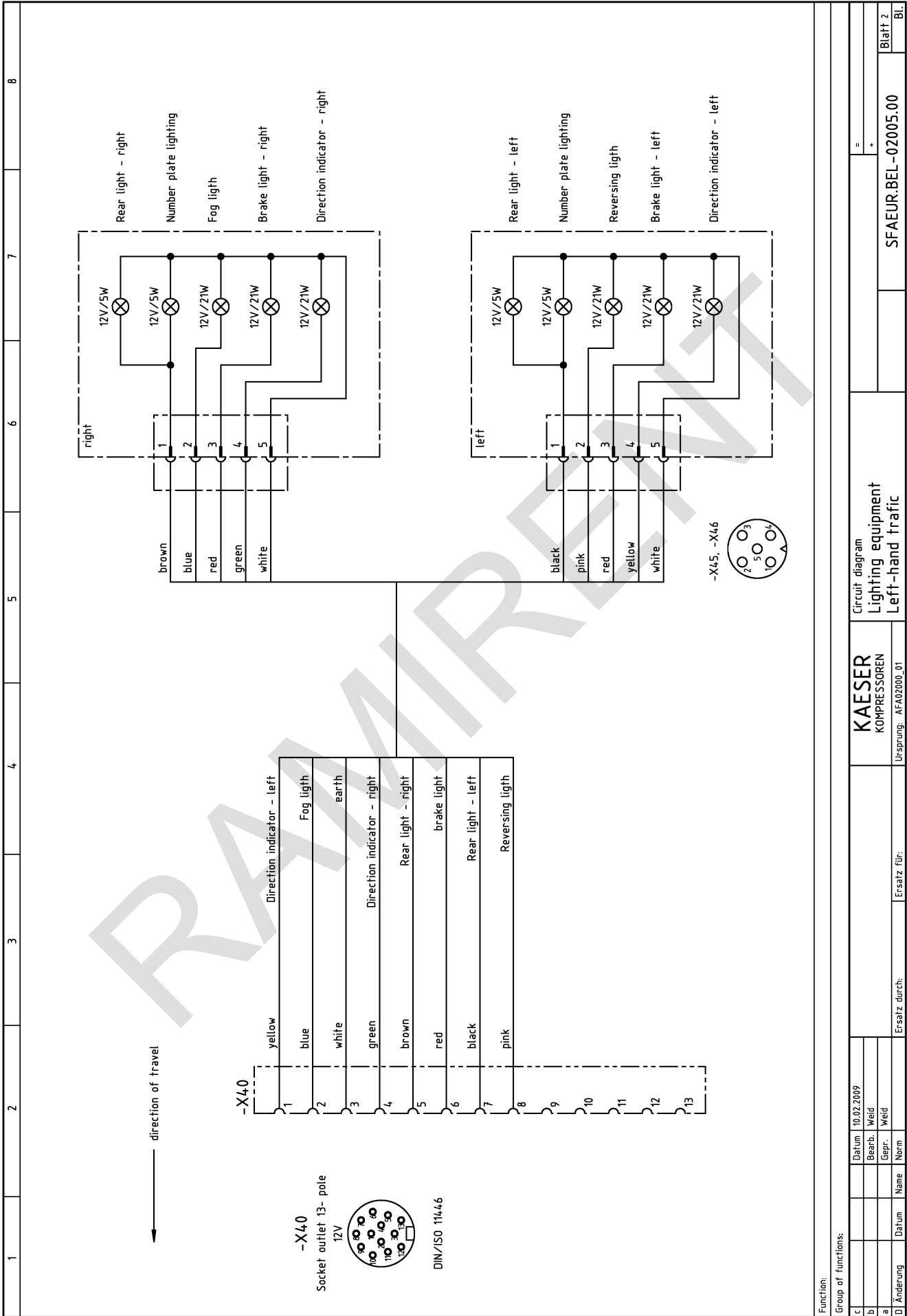


cable length

	L1	L2
M20, M36/45, M43/50, M43E/46E	8.7677.00200	3900 2900

Function:		Group of functions:	
c		Datum	10.02.2009
b		Bearb.	Weid
a	L1->L2	Di/Ob	Gepr. Weid
D	Änderung	Datum	14.07.09
		Name	
		Ersatz für:	
		Ersatz durch:	
Kaeser logo		Circuit diagram	
KOMPRESSOREN		Cable loom	
Ursprung: AFA02000_01		Left-hand traffic	
		=	
		+	
		UFAEUR.BEL-02005.00	
		Blatt 2	
		Bl.	





Function:

Group of functions:

c	Datum	10.02.2009
b	Bearb. / Weid	
a	Gepr. / Weid	
D	Änderung	Datum Name Norm
Ersatz durch:		Ersatz für:

KAESER
KOMPRESSOREN
Ursprung: AFA02000_01

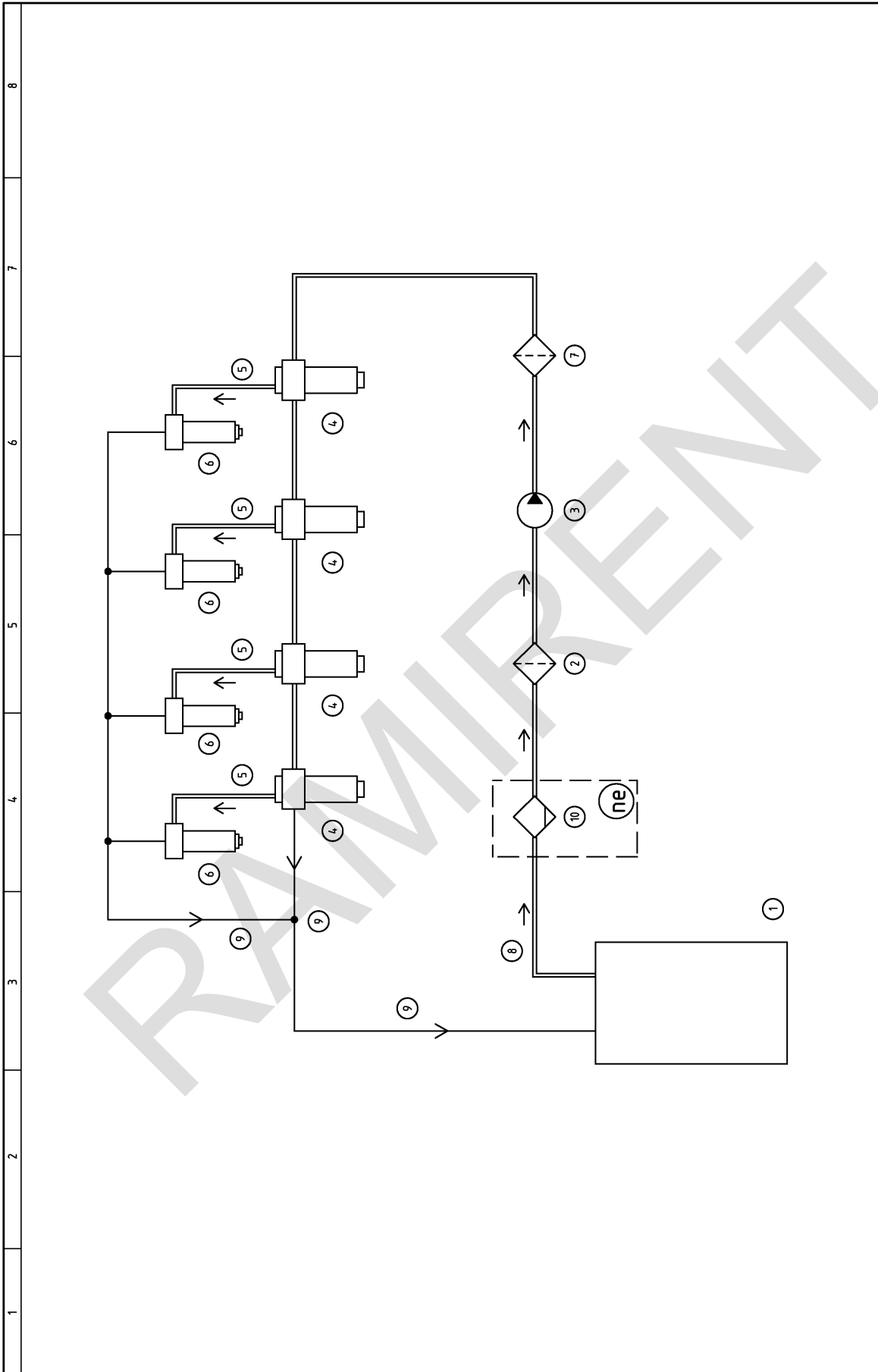
Circuit diagram
Lighting equipment
Left-hand traffic

SFAEUR.BEL-02005.00

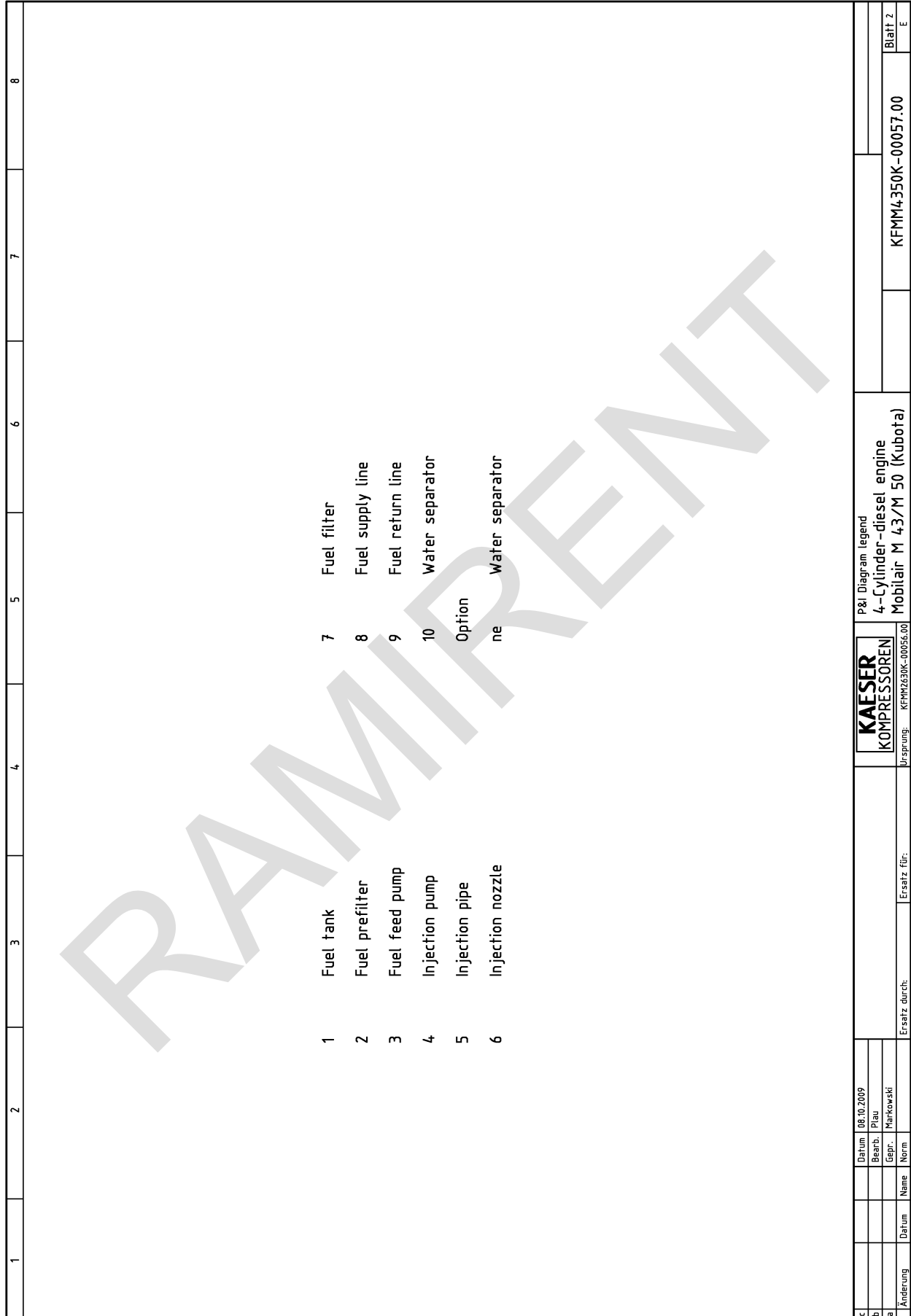
Blatt 2
Bl.

13.6 Fuel circulation diagram

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c		Datum	08.10.2009	P&I Diagram		KFMM4.350K-00057.00		Blatt 1	E
b		Bearb.	Plau	4-Cylinder-diesel engine					
a		Gepr.	Markowski	Mobilair M 43/M 50 (Kubota)					
Änderung		Datum		Ursprung: KFMM2630K-00056.00					
		Ersatz durch:		Ersatz für:					



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