

# Service manual

Portable compressor

**M 64**

No.: 9\_5898 20 E

RAMIRENT

Manufacturer:

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Original instructions  
/KKW/M64 2.00 en SBA-MOBILAIR

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# 1 Regarding this document

## 1.1 Using this document

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

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

## 1.2 Further Documents

Further documents included with this operating manual are:

- Certificate of acceptance / operating instructions for the pressure vessel
- Declaration of Conformity in accordance with the applicable directive
- 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 provide 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 labels

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

### 1.4.1 Warnings

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

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

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

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

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

# 1 Regarding this document

## 1.4 Symbols and labels



### DANGER

These show the kind of danger and its source.

The possible consequences of ignoring a warning are shown here.

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

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

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

For example,



### 1. WARNING!

These show the kind of danger and its source.

The possible consequences of ignoring a warning are shown here.

If you ignore the warning notice, the "WARNING" signal word indicates that a lethal or severe injury may occur.

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

### 2. Always read and comply with warning instructions.

## 1.4.2 Potential damage warnings

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

Warning notices for damages are identified by their signal term.

| Signal term | Meaning                                    | Consequences of ignoring the warning |
|-------------|--|--------------------------------------|
| NOTE        | Warns of a potentially dangerous situation | Damage to property is possible       |

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

For example,



### NOTICE

These show the kind of danger and its source.

Potential effects when ignoring the warning are indicated here.

- The protective measures against the damages are shown here.

- Carefully read and fully comply with warnings against damages.

## 1.4.3 Other alerts and their symbols



This symbol indicates particular important information.

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

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

- This symbol is placed by lists of actions comprising one stage of a task.

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

Result Shows the expected conclusion of the previous action.

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

➤ ... as is a solution.



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

Further information Further subjects are introduced here.

RAMIRENT

## 2 Technical Specifications

### 2.1 Nameplate

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

➤ Enter here the nameplate data as a reference:

| Feature                     | Value |
|-----------------------------|-------|
| Vehicle identity no.        |       |
| Permissible total weight    |       |
| Permissible coupling load   |       |
| Permissible axle 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. 3 Nameplate

### 2.2 Options summary

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 label 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 label.

|  |             |   |    |    |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
|--|-------------|---|----|----|----|----|---|---|---|----|---|---|----|---|----|---|---|---|---|---|---|---|----|----|---|---|---|----|----|----|---|---|----|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|----|----|----|---|----|----|---|----|----|----|---|----|----|----|----|----|----|
| M 64                                       | part number | Serial number:  |    |    |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| Here is given the specified coupling load. |             | Options fitted  |    |    |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
|  |             | <table border="1"> <tr><td>da</td><td>db</td><td>dc</td><td>dd</td><td>_</td></tr> <tr><td>_</td><td>_</td><td>ec</td><td>_</td><td>_</td></tr> <tr><td>fa</td><td>_</td><td>fc</td><td>_</td><td>_</td></tr> <tr><td>_</td><td>_</td><td>_</td><td>_</td><td>_</td></tr> <tr><td>ba</td><td>bb</td><td>_</td><td>_</td><td>_</td></tr> <tr><td>la</td><td>lb</td><td>lc</td><td>_</td><td>_</td></tr> <tr><td>ga</td><td>_</td><td>_</td><td>_</td><td>_</td></tr> <tr><td>oa</td><td>_</td><td>_</td><td>_</td><td>_</td></tr> <tr><td>_</td><td>_</td><td>_</td><td>_</td><td>_</td></tr> <tr><td>_</td><td>_</td><td>_</td><td>si</td><td>sh</td></tr> <tr><td>sa</td><td>_</td><td>sc</td><td>sd</td><td>_</td></tr> <tr><td>ta</td><td>tb</td><td>tc</td><td>_</td><td>te</td></tr> <tr><td>sf</td><td>sg</td><td>ua</td><td>pa</td><td>pb</td></tr> </table> | da | db | dc | dd | _ | _ | _ | ec | _ | _ | fa | _ | fc | _ | _ | _ | _ | _ | _ | _ | ba | bb | _ | _ | _ | la | lb | lc | _ | _ | ga | _ | _ | _ | _ | oa | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | _ | si | sh | sa | _ | sc | sd | _ | ta | tb | tc | _ | te | sf | sg | ua | pa | pb |
| da   | db          | dc  | dd | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| _  | _           | ec  | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| fa   | _           | fc  | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| _  | _           | _   | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| ba   | bb          | _   | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| la   | lb          | lc  | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| ga   | _           | _   | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| oa   | _           | _   | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| _  | _           | _   | _  | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| _  | _           | _   | si | sh |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| sa   | _           | sc  | sd | _  |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| ta   | tb          | tc  | _  | te |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
| sf   | sg          | ua  | pa | pb |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |
|  |             | 02-M0277  |    |    |    |    |   |   |   |    |   |   |    |   |    |   |   |   |   |   |   |   |    |    |   |   |   |    |    |    |   |   |    |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |    |    |    |   |    |    |   |    |    |    |   |    |    |    |    |    |    |

Tab. 4 Combined label for coupling load and options fitted.

- Take a list of fitted options from the combined coupling load / options label and enter the fitted options as reference.

**2.2.1 Option da, db, dc, dd  
Compressed air treatment devices**

| Option                            | Option code | Available? |
|-----------------------------------|-------------|------------|
| Aftercooler and cyclone separator | da          |            |
| Heat exchanger                    | db          |            |
| Fresh air filter                  | dc          |            |
| Filter combination                | dd          |            |

Tab. 5 Compressed air treatment options

**2.2.2 Option ec  
Tool lubricator**

| Option          | Option code | Available? |
|-----------------|-------------|------------|
| Tool lubricator | ec          |            |

Tab. 6 Tool lubricator option

**2.2.3 Option fa, fc  
Compressed air distributor**

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

Tab. 7 Compressed air distributor option

**2.2.4 Option ba, bb**  
**Low temperature equipment**

| Option   | Option code | Available? |
|--|-------------|------------|
| Low temperature equipment                              | ba          |            |
| Low temperature equipment + engine coolant pre-heating | bb          |            |

Tab. 8 Low temperature equipment options

**2.2.5 Option lc**  
**Diesel particulate filter**

| Option                    | Option code | Available? |
|---------------------------|-------------|------------|
| Diesel particulate filter | lc          |            |

Tab. 9 Diesel particulate filter option

**2.2.6 Option la, lb**  
**Equipment for fire hazard areas**

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

Tab. 10 Optional equipment for fire hazard areas

**2.2.7 Option ga**  
**Generator**

| Option    | Option code | Available? |
|-----------|-------------|------------|
| Generator | ga          |            |

Tab. 11 Generator option

**2.2.8 Option oa**  
**Battery isolating switch**

| Option                   | Option code | Available? |
|--------------------------|-------------|------------|
| Battery isolating switch | oa          |            |

Tab. 12 Optional battery isolating switch

**2.2.9 Option sa, sc, sd, sh, si  
Chassis**

| Option                                    | Permissible axle load [kg] | Option code | Available? |
|---|----------------------------|-------------|------------|
| Height adjustable towbar                  | 1350                       | sa          |            |
| Fixed height towbar                       | 1350                       | sd          |            |
| Fixed height towbar without parking brake | 1350                       | sh          |            |
| Stationary, on skids                      | –                          | sc          |            |
| Stationary, on a base frame               | –                          | si          |            |

Tab. 13 Chassis options

**2.2.10 Option ta, tb, tc, te  
Lighting**

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

Tab. 14 Lighting options

**2.2.11 Option ua  
Hose reels**

| Option     | Option code | Available? |
|------------|-------------|------------|
| Hose reels | ua          |            |

Tab. 15 Hose reel option

**2.2.12 Option sf  
Anti-theft device**

| Option            | Option code | Available? |
|-------------------|-------------|------------|
| Anti-theft device | sf          |            |

Tab. 16 Optional anti-theft device

**2.2.13 Option sg  
Pedestrian protection**

| Option                | Option code | Available? |
|-----------------------|-------------|------------|
| Pedestrian protection | sg          |            |

Tab. 17 Pedestrian protection option

**2.2.14 Option pa, pb  
Instrument panel cover**

| Option                      | Option code | Available? |
|-----------------------------|-------------|------------|
| Instrument panel cover      | pa          |            |
| Generator control box cover | pb          |            |

Tab. 18 Instrument panel cover options

**2.3 Machine (without options)**
**2.3.1 Sound emission**
**Guaranteed sound power level:**

| Type                                  | M 64 |
|---------------------------------------|------|
| Guaranteed sound power level* [dB(A)] | 98   |

\* To Directive 2000/14/EC

Tab. 19 Guaranteed sound power level

**Emission sound pressure level:**

| Type  | M 64 |
|---|------|
| Emission sound pressure level** [dB(A)]<br>(according to EN ISO 11203: 1995 number 6.2.3.d) | 80.5 |

Measurement distance: d = 1 m  
 Logarithmic surface ratio: Q2 = 17.3 dB(A)  
 \*\* Calculated from the guaranteed sound power level (2000/14/EC Directive, Sound Emission Standard ISO 3744)

Tab. 20 Emission 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. 21 Torques for hex-head screws

**2.3.3 Ambient conditions**

| Positioning                | Limit value |
|----------------------------|-------------|
| Maximum altitude amsl* [m] | 1000        |

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



| Positioning                      | Limit value |
|----------------------------------|-------------|
| Minimum ambient temperature [°C] | -10         |
| Maximum ambient temperature [°C] | +50         |

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

Tab. 22 Ambient conditions

### 2.3.4 Additional specifications according to the machine's operating licence

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

- dimensions,
- track width,
- footprint,

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



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

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

## 2.4 Chassis

### 2.4.1 Mass



The values given are the maximum in each case. Actual mass of individual machines are dependent on equipment fitted (see machine nameplate).

| Feature                    | Chassis |         |         | Stationary |
|----------------------------|---------|---------|---------|------------|
|                            | with    | with    | without |            |
| Overrun brake              | with    | with    | without | -          |
| Height adjustment          | with    | without | with    | -          |
| Actual total weight [kg]*  |         |         |         |            |
| Permissible axle load [kg] | 1350    | 1350    | 1350    | -          |

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

Tab. 23 Mass of the machine

### 2.4.2 Tyres

| Characteristic/markings                     | Value     |           |
|---|-----------|-----------|
|   | Europe    | USA       |
| Dekkdimensjon                               | 185 R 14C | 205/75D14 |
| Maximum and recommended tyre pressure [bar] | 4.5       | 3.5       |

| Characteristic/markings | Value      |                |
|-------------------------|------------|----------------|
|                         | Europe     | USA            |
| Wheel bolts             | M 12 x 1.5 | ½" x 2" (fine) |

Tab. 24 Tyres

### 2.4.3 Wheel nut/bolt tightening torque

| Market | Wheel bolt thread | Wrench size | Torque [Nm] |
|--------|-------------------|-------------|-------------|
| Europe | M 12 x 1.5        | SW 17       | 90          |
| USA    | ½" x 2" (fine)    | 13/16"      | 100         |

Tab. 25 Wheel nut/bolt tightening torque

### 2.4.4 Towbar tightening torque

| Components    | Thread | Strength category | Torque [Nm] |
|---------------|--------|-------------------|-------------|
| Ball coupling | M12    | 8.8               | 77          |
|               | M12    | 10.9              | 115         |
|               | M14    | 10.9              | 125         |
| Towing eye    | M12    | 10.9              | 115         |
|               | M14    | 10.9              | 180         |
| Locking lever | M20    | –                 | 250         |
|               | M28    | –                 | 400         |
|               | M36    | –                 | 650         |

Tab. 26 Towbar tightening torque

## 2.5 Compressor

### 2.5.1 Working pressure and FAD

|   |          |           |
|---|----------|-----------|
| <b>Maximum working pressure [bar]</b>   | <b>7</b> | <b>10</b> |
| SIGMA airend                            | 270      | 260       |
| Free air delivery [m <sup>3</sup> /min] | 6.4      | 5.0       |

Tab. 27 Working pressure and FAD

### 2.5.2 Compressed air outlet

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

Tab. 28 Compressed air distributor

### 2.5.3 Pressure relief valves

Maximum working pressure: see machine nameplate

| Maximum working pressure [bar] | Relief valve activating pressure [bar] |
|--------------------------------|--|
| 7                              | 10                                     |
| 10                             | 13                                     |

Tab. 29 Pressure relief valve opening pressure

### 2.5.4 Select Temperature

| Machine temperatures   | Values   |
|--|----------|
| Recommended airend discharge temperature for switching to load [°C]              | 30       |
| Typical compressor block discharge temperature during operation [°C]             | 75 – 100 |
| Maximum compressor block discharge temperature (automatic safety shut-down) [°C] | 115      |

Tab. 30 Machine temperatures

| Temperature at the compressor block discharge port |   |  |
|--|---|--|
| Ambient temperature [°C]                           | Combination valve (thermostatic valve)    |  |
|  | with ambient temperature acquisition [°C] | without ambient temperature acquisition [°C] (Option db) |
| 10   | 90  | –  |
| 20   | –   | 90   |
| 25   | 60  | –  |

Tab. 31 Compressor block discharge temperature

### 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. |

| Characteristic         | SIGMA FLUID                                  |   |
|------------------------|--|---|
| Oil grade              | S-460  | MOL                                     |
| Approval               | —  | —                                       |
| Viscosity at 40 °C     | 45 mm <sup>2</sup> /s<br>(D 445; ASTM test)  | 44 mm <sup>2</sup> /s<br>(DIN 51562-1)  |
| Viscosity at 100 °C    | 7.2 mm <sup>2</sup> /s<br>(D 445; ASTM test) | 6.8 mm <sup>2</sup> /s<br>(DIN 51562-1) |
| Flash point            | 238 °C<br>(D 92; ASTM test)                  | 220 °C<br>(ISO 2592)                    |
| Density at 15 °C       | 864 kg/m <sup>3</sup><br>(ISO 12185)         | —                                       |
| Pour point             | -46 °C<br>(D 97; ASTM test)                  | -33 °C<br>(ISO 3016)                    |
| Demulsibility at 54 °C | 40/40/0/10 min<br>(D 1401; ASTM test)        | —                                       |

Tab. 32 Cooling oil recommendation

### 2.5.6 Cooling oil charge

| Cooling oil                                     | Fluid volume [l] |
|---|------------------|
| Machine   | 15.0             |
| Compressor unit + heat exchanger<br>(option db) | 17.0             |

Tab. 33 Cooling oil charge

## 2.6 Engine

### 2.6.1 Engine data

| Feature   | Specification   |
|---|-----------------|
| Make/Model                                      | Kubota V 2403-T |
| Engine control                                  | Mechanical      |
| Fuel injection                                  | Mechanical      |
| Rated engine power [kW]                         | 43.3            |
| Speed at LOAD mode [min <sup>-1</sup> ]         | 2700            |
| speed at IDLE mode [min <sup>-1</sup> ]         | 2000            |
| Type of fuel                                    | Diesel *        |
| Fuel consumption under LOAD mode [l/h]          | 11.7            |
| Oil consumption related to fuel consumption [%] | approx. 0.2     |

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

Tab. 34 Engine data

### 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 10W-40.

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

Tab. 35 Engine oil recommendation

#### Option Ic Recommended oil for engines with diesel particulate filters

The engine oil must meet the following classification:

- ACEA, class E6
- API, class CJ-4

| Ambient temperature [°C] | Viscosity class | Approved by the manufacturer. |
|--------------------------|-----------------|-------------------------------|
| -20 ..... 40             | SAE 10W-40      | Shell Rimula Signia 10W-40 *  |

\* Use only engine with low white ash build up.

Tab. 36 Recommended oil for engines with diesel particulate filters

### 2.6.3 Recommended Cooling Fluid

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



Do not use a standard coolant / antifreeze that only meets 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

| Description | Fluid volume [litre] |
|-------------|----------------------|
| Engine oil  | 9.0                  |
| Fuel        | 105.0                |

| Description | Fluid volume [litre] |
|-------------|----------------------|
| Coolant     | 9.5                  |

Tab. 37 Fluid volumes

### 2.6.5 Batteries

| Feature  | Value |
|--|-------|
| Voltage [V]  | 12    |
| Capacity [Ah]                                      | 80    |
| PTC testing current [A]<br>(according to EN 50342) | 640   |

Tab. 38 Batteries

Further information Depending on machine equipment, a higher capacity battery may be required. See chapter 2.7.3.

## 2.7 Options

### 2.7.1 Option ec

#### Tool lubricator

| Description                    | Temperature range [°C] | Fluid volume [litre] |
|--------------------------------|------------------------|----------------------|
| Special road breaker lubricant | -25 ..... 50           | 2.5                  |

Tab. 39 Road breaker lubricant recommendation

### 2.7.2 Option dc

#### Fresh air filter

| Feature                          | Value |
|----------------------------------|-------|
| Maximum working pressure [bar]   | 16    |
| Minimum ambient temperature [°C] | 1.5   |
| Maximum ambient temperature [°C] | 30    |

Tab. 40 Fresh air filter conditions

### 2.7.3 Option ba

#### Low temperature equipment

##### 2.7.3.1 Ambient conditions

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

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

| Positioning   | Limit value |
|---|-------------|
| Maximum ambient temperature [°C]  | +50         |
| * Higher altitudes are permissible only after consultation with the manufacturer. |             |

Tab. 41 Environmental conditions, low temperature equipment

### 2.7.3.2 Compressed air line frost protection

| Antifreeze | Fluid volume [litre] |
|------------|----------------------|
| Wabcothyl  | 0.3                  |

Tab. 42 Recommended antifreeze

### 2.7.3.3 Batteries

| Feature  | Value |
|--|-------|
| Voltage [V]  | 12    |
| Capacity [Ah]                                      | 100   |
| PTC testing current [A]<br>(according to EN 50342) | 850   |

Tab. 43 Batteries, low-temperature equipment

### 2.7.3.4 Option bb Coolant pre-heating

| Coolant pre-heater | Value |
|--------------------|-------|
| Voltage [V]        | 230   |
| Power [W]          | 550   |

Tab. 44 Coolant pre-heater

### 2.7.4 Option lc Diesel particulate filter

| Feature  | Data                       |
|--|----------------------------|
| Fuel   | Diesel *                   |
| Operating voltage [V]                          | 12                         |
| Filter element                                 | SiC monolith               |
| Degree of particle separation [%]<br>(by mass) | ≥99<br>(elementary carbon) |
| Ambient temperature [°C]                       | -20 ..... 50               |
| Protection rating                              | IP 65                      |

\* Use only diesel fuel to EN 590 or ASTM D975. Consult the engine manufacturer on the use of additives.

Tab. 45 Diesel particulate filter data

**2.7.5 Option ga  
 Generator (50 Hz version)**
**Generator specification:**

| Features   | Generator<br>400V, 3-ph                               |       | Generator<br>230V, 3-ph |       | Generator<br>115V, 2-<br>phase |
|--|---|-------|-------------------------|-------|--------------------------------|
|  |   |       |                         |       |                                |
| Rated power [kVA]<br>3-phase/2-phase                     | 13.0  | 8.5   | 13.0                    | 8.5   | 7.0                            |
| Rated power [kVA]<br>single-phase                        | 7.0   | 5.0   | 7.5                     | 5.0   | 5.0                            |
| Voltage constant [%]<br>balanced load                    | ±5  |       |                         |       |                                |
| Voltage constant [%]<br>single-phase, unbalanced<br>load | +6/-10  |       |                         |       |                                |
| Rated power [kVA]<br>3-phase/2-phase                     | 18.8  | 12.3  | 32.6                    | 21.0  | 31.0                           |
| Rated current [A]<br>1-phase                             | 30.0  | 21.7  | 32.6                    | 21.0  | 45.0                           |
| Rated current [A]<br>short circuit (0.3 s/170 V)         | 300.0   | 260.0 | 330.0                   | 330.0 | 420.0                          |
| Power factor (cos j)                                     | 0.8 – 1   |       |                         |       |                                |
| Frequency [Hz]   | 50  |       |                         |       |                                |
| Speed [min <sup>-1</sup> ]                               | 3000  |       |                         |       |                                |
| Distortion factor [%]                                    | <5  |       |                         |       |                                |
| Type   | Synchronous internal pole (electronically controlled) |       |                         |       |                                |
| Protection rating  | IP 54   |       |                         |       |                                |

Tab. 46 Generator data

**Reduced FAD:**

| Features  | Generator<br>13.0 [kVA] |     | Generator<br>8.5 [kVA] |     | Generator<br>7.0 [kVA] |
|---|-------------------------|-----|------------------------|-----|------------------------|
|   |                         |     |                        |     |                        |
| Maximum working pres-<br>sure [bar]                                   | 7                       |     | 7                      | 10  | 7                      |
| SIGMA airend  | 260                     | 260 | 270                    | 260 | 260                    |
| Free air delivery [m <sup>3</sup> /min]                               | 5.0                     | 5.0 | 6.4                    | 5.0 | 5.0                    |
| FAD with simultaneous<br>generator operation<br>[m <sup>3</sup> /min] | 1.7                     | 3.9 | 3.0                    | 1.7 | 3.9                    |

Tab. 47 Delivery in generator mode



**Connections:**

| Type                | Generator<br>400V, 3-ph | Generator<br>230V, 3-ph | Generator<br>115V, 2-phase |
|---------------------|-------------------------|-------------------------|----------------------------|
| Power sockets       | Quantity:               |                         |                            |
| 16 A; 230 V/1~/N/PE | 3                       | –                       | –                          |
| 16 A; 400 V/3~/N/PE | 1                       | –                       | –                          |
| 16 A; 230 V/2~/PE   | –                       | 2                       | –                          |
| 32 A; 230 V/3~/PE   | –                       | 1                       | –                          |
| 16 A; 230 V/3~/PE   | –                       | 1                       | –                          |
| 32 A; 115 V/2~/PE   | –                       | –                       | 1                          |
| 16 A; 115 V/2~/PE   | –                       | –                       | 2                          |

Tab. 48 Connection sockets

**Overload protection switch**

| Type                             | Generator<br>400V, 3-ph | Generator<br>230V, 3-ph | Generator<br>115V, 2-phase |
|----------------------------------|-------------------------|-------------------------|----------------------------|
| Miniature circuit breaker<br>[A] | Quantity:               |                         |                            |
| 16                               | 1                       | 1                       | 2                          |
| 32                               | –                       | 1                       | 1                          |

Tab. 49 Circuit breaker

**Operating limits:**

(to EN 60034-22, page 10, table)

| Features                           | Value |
|------------------------------------|-------|
| Design category                    | G3    |
| Voltage adjustment range [%]       | ±5    |
| Static voltage deviation [%]       | 1     |
| Maximum dynamic voltage drop [%]   | –15   |
| Maximum dynamic voltage rise [%]   | 20    |
| Maximum voltage settling time [ms] | 1500  |
| Maximum voltage asymmetry [%]      | 1     |

Tab. 50 Generator operating limits

**Maximum power loading by consumers**

Resistive consumers include lamps and heaters, for example.

Electric motors and transformers are inductive consumers.

Nominal rating conditions:

- Ambient temperature: 25 °C
- Max. height above sea level at the place of use: 1000 m

**Three-phase power supply**

| Generator                 |             | 400V, 3-ph |     | 230V, 3-ph |     |
|---------------------------|-------------|------------|-----|------------|-----|
| Rated power [kVA]         |             | 13.0       | 8.5 | 13.0       | 8.5 |
| Resistive consumers [kVA] | –           | 13.0       | 8.5 | 12.7       | 8.5 |
| Inductive consumers [kW]  | Rated power | 7.5        | 5.0 | 12.7       | 8.5 |

Tab. 51 Maximum three-phase mains loading

**AC power:**

| Generator                 |                       | 400V, 3-ph |     | 230V, 3-ph |     | 115V, 2-ph |
|---------------------------|-----------------------|------------|-----|------------|-----|------------|
| Rated power [kVA]         |                       | 13.0       | 8.5 | 13.0       | 8.5 | 7.0        |
| Resistive consumers [kVA] | per phase             | 3.5        | –   | 3.5        | –   | –          |
|                           | total                 | 10.5       | 5.0 | 10.5       | 5.0 | 5.0        |
| Inductive consumers [kW]  | Rated power per phase | 3.5        | –   | 3.5        | –   | –          |
|                           | Rated power total     | 10.5       | 5.0 | 10.5       | 5.0 | 5.0        |

Tab. 52 Maximum single-phase mains loading

**Power reduction at elevated ambient temperatures:**

| Ambient temperature [°C] | Generator power                                     |
|--------------------------|---|
| ≤30                      | Full power available                                |
| >30                      | Reduction of 10% for each temperature rise of 10°C. |

Tab. 53 Power reduction at elevated ambient temperatures

**2.7.6 Option ga  
Generator (60 Hz version)**
**Generator specification:**

| Features                     | Generator<br>250V, 2-phase |     |
|------------------------------|----------------------------|-----|
| Rated power [kVA]<br>2-phase | 13.0                       | 8.0 |

| Features   | Generator<br>250V, 2-phase                            |       |
|--|---|-------|
|  | 7.0   | 5.0   |
| Rated power [kVA]<br>single-phase                        | 7.0   | 5.0   |
| Voltage [V]  | 250/125   |       |
| Voltage constant [%]<br>balanced load                    | ±5  |       |
| Voltage constant [%]<br>single-phase, unbalanced<br>load | +6/-10  |       |
| Rated current [A]<br>2-phase (230 V)                     | 56.0  | 35.0  |
| Rated current [A]<br>2-phase (115 V)                     | 56.0  | 44.0  |
| Rated current [A]<br>short circuit (0.3 s/170 V)         | 360.0   | 360.0 |
| Power factor (cos $\phi$ )                               | 0.8 – 1   |       |
| Frequency [Hz]   | 60  |       |
| Speed [min <sup>-1</sup> ]                               | 3600  |       |
| Distortion factor [%]                                    | <5  |       |
| Type   | Synchronous internal pole (electronically controlled) |       |
| Protection rating  | IP 54   |       |

Tab. 54 Generator data

**Reduced FAD:**

| Features  | Generator<br>13.0 [kVA] |     | Generator<br>8.0 [kVA] |     |
|---|-------------------------|-----|------------------------|-----|
|   | 7                       | 10  | 7                      | 10  |
| Maximum working pres-<br>sure [bar]                                   | 7                       | 10  | 7                      | 10  |
| Free air delivery [m <sup>3</sup> /min]                               | 5.4                     | 5.4 | 7.0                    | 5.4 |
| FAD with simultaneous<br>generator operation<br>[m <sup>3</sup> /min] | 1.8                     | 1.8 | 3.2                    | 1.8 |

Tab. 55 Delivery in generator mode

**Connections:**

| Power sockets     | Quantity: |
|-------------------|-----------|
| 30 A; 250 V/2~/PE | 2         |
| 20 A; 125 V/2~/PE | 2         |

Tab. 56 Connection sockets

**Overload protection switch**

| Type                             | Generator<br>250V, 2-phase | Generator<br>125V, 1-phase |
|----------------------------------|----------------------------|----------------------------|
| Miniature circuit breaker<br>[A] | Quantity:                  |                            |
| 20                               | 1                          | 1                          |

Tab. 57 Circuit breaker

**Operating limits:**

(to EN 60034-22, page 10, table)

| Features                           | Value |
|------------------------------------|-------|
| Design category                    | G3    |
| Voltage adjustment range [%]       | ±5    |
| Static voltage deviation [%]       | 1     |
| Maximum dynamic voltage drop [%]   | -15   |
| Maximum dynamic voltage rise [%]   | 20    |
| Maximum voltage settling time [ms] | 1500  |
| Maximum voltage asymmetry [%]      | 1     |

Tab. 58 Generator operating limits

**Maximum power loading by consumers**

Resistive consumers include lamps and heaters, for example.

Electric motors and transformers are inductive consumers.

Nominal rating conditions:

- Ambient temperature: 25 °C
- Max. height above MSL of the place of installation: 1,000 m

| Generator [kVA]           |             | 13.0 | 8.0 |
|---------------------------|-------------|------|-----|
| Resistive consumers [kVA] | per phase   | 6.5  | 4.0 |
|                           | total       | 13.0 | 8.0 |
| Inductive consumers [kW]  | Rated power | 5.0  | 5.0 |

Tab. 59 Maximum power supply load

**Power reduction at elevated ambient temperatures:**

| Ambient temperature<br>[°C] | Generator power                                     |
|-----------------------------|---|
| ≤30                         | Full power available                                |
| >30                         | Reduction of 10% for each temperature rise of 10°C. |

Tab. 60 Power reduction at elevated ambient temperatures

## 3 Safety and Responsibility

### 3.1 Basic instructions

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

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



Disregard of warning or safety instructions can cause serious injuries!

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

### 3.2 Specified use

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

- Keep to the specifications listed in this service manual.
- Operate the machine only within its performance limits and under the permitted ambient conditions.
- Do not use compressed air for breathing purposes unless it is specifically treated.

### 3.3 Incorrect Use

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

- Only use the machine as intended.
- Never direct compressed air at persons or animals.
- Do not use untreated compressed air for breathing purposes.
- Do not allow the machine to take in toxic, acidic, flammable or explosive gases or vapours.
- Do not operate the machine in areas in which specific requirements with regard to explosion protection are in force.

### 3.4 User's Responsibilities

#### 3.4.1 Observe statutory and universally accepted regulations

These are, for example, nationally applied European directives and/or valid national laws and safety and accident prevention regulations.

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

### 3.4.2 Determining personnel

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

Authorised operators possess the following qualifications:

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

Authorised maintenance personnel possess the following qualifications:

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

Authorised transport personnel possess the following qualifications:

- are of legal age,
- are conversant with and adhere to the safety instructions and sections of the service manual relevant to transporting,
- are trained and authorised in safe vehicle transporting,
- are conversant with the safety regulations relating to handling motor vehicles and transport goods,
- are able to recognise the possible dangers of motor vehicles and take appropriate measures to safeguard persons and property.

- Ensure that personnel entrusted with 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 operation

- Have the pre-commissioning inspection carried out according to the Ordinance on Safety and Health, paragraph 14.
- 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.

- Carry out oil changes 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. Intervals may be varied if an analysis proves that the oil is still usable.
- Keep to inspection intervals in accordance with the Ordinance on Industrial Safety and Health with maximum intervals as laid down in §15.

| Inspection           | Inspection interval                                       | Inspecting authority                                  |
|----------------------|---|---|
| Equipment inspection | Before commissioning                                      | Approved supervisory body                             |
| Internal inspection  | Every 5 years after commissioning or the last inspection  | Competent person<br>(e. g. KAESER Service Technician) |
| Strength test        | Every 10 years after commissioning or the last inspection | Competent person<br>(e. g. KAESER Service Technician) |

Tab. 61 Inspection intervals according to regulations

#### Checking the lifting point

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

- Have the lifting point checked.  
If the lifting point and fixings are not fully in order the machine may not be lifted in this way.  
Have the machine repaired immediately.

#### 3.4.4 Option Ic Complying with inspection intervals for diesel particulate filters

The machine is subject to local inspection schedules. Inspecting authority: e.g. KAESER Service.

- Have the TRGS 554 inspection carried out annually and the TÜV (or local equivalent) every two years.

### 3.5 Dangers

#### Basic instructions

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

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

Warning instructions are found before a potentially dangerous task.

#### 3.5.1 Safely dealing with sources of danger

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

#### Exhaust fumes

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

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

- Do not inhale exhaust fumes.
- Never use the machine in enclosed spaces, only in the open.
- Direct the exhaust fumes to the open air with a pipe of at least 100 mm diameter.

#### **Fire and explosion**

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

- Do not allow open flames or sparks at the place of use.
- Do not smoke while re-fueling.
- Never refuel the machine when it is running.
- Do not allow fuel to overflow.
- Wipe up spilled fuel immediately.
- Provide a fire extinguisher in the immediate vicinity.
- For the operation in combustible environment, fit the machine with an exhaust silencer (Option Ia).

#### **Hot coolant**

The cooling system of a liquid-cooled engine at running temperature is under high pressure. Coolant can spray out when the filler cap is opened causing severe burns.

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

#### **Electricity**

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

- Allow only qualified and authorised electricians or trained personnel under the supervision of a qualified and authorised electrician to carry out work on electrical equipment according to electrical engineering regulations.
- Check regularly that all electrical connections are tight and in order.
- Switch off any external power sources.  
For example, the connections to the electrical engine cooling water pre-heater.

#### **Forces of compression**

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

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

#### **Compressed air quality**

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



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

#### **Spring force**

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

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

- Do not open or dismantle any valves.

#### **Rotating components**

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

- Do not open the access doors and cover panels while the machine is running.
- Switch off and lock out the machine and check that no voltage is present before opening the access doors or canopy.
- Wear close-fitting clothes and a hair net if necessary.
- Make sure all covers and safety guards are in place and secured before starting.

#### **Temperature**

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

- Avoid contact with hot components.  
These include, for example, engine, compressor aircend, oil and compressed air lines, coolers and oil separator tank. Any objects in or near the flow of exhaust gas or discharged cooling air will become very hot.
- Wear protective clothing.
- Wear protective gloves when connecting or disconnecting compressed air hoses.
- Allow the machine to cool down before commencing any maintenance work.
- When welding is taking place on or near the machine take adequate measures to ensure that no parts of the machine or any oil vapours can ignite because of sparks or heat.

#### **Noise**

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

- Operate the machine only with closed bodywork and intact sound insulation.
- Wear hearing protection if necessary.  
The pressure relief valve blowing off can be particularly loud.

#### **Operating fluids/materials**

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

- Strictly forbid fire, open flame and smoking.

- Follow safety regulations when dealing with fuel, lubricants, antifreeze and chemical substances.
- Avoid contact with skin and eyes.
- Do not inhale fumes or vapours from fuel or oil.
- Do not eat or drink while handling fuel, cooling and lubricating fluids or antifreeze.
- Suitable fire extinguishing material must be to hand.
- Use only KAESER approved operating materials.

#### **Unsuitable spare parts**

Unsuitable spare parts compromise the safety of the machine.

- Use only spare parts approved by the manufacturer for use in this machine.
- Use only genuine KAESER replacement parts on pressure bearing parts.

#### **Conversion or modification of the machine**

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

- Do not convert or modify the machine!
- Do not fit any non-approved additional components.
- Do not make any changes to the machine that will increase its weight beyond the permissible limit and/or endanger its safe use or transportation.
- Obtain written approval by the manufacturer prior to any technical modification or expansion of the machine.

### **3.5.2 Safe machine operation**

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

#### **Personal protective equipment**

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

- Wear protective clothing as necessary.

Suitable protective clothing (examples):

- Safety workwear
- Protective gloves
- Safety boots
- Eye protection
- Ear protection

#### **3.5.2.1 Transporting**

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

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

### Transport as trailer

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

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

### Transport as trailer on public roads

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

### Transporting with a crane

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

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



The following are forbidden:

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

#### 3.5.2.2 Positioning

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

- Do not position the machine directly against a wall. A build up of heat from the exhaust can damage the machine.

- Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
- Do not operate in areas in which specific requirements with regard to explosion protection are applied.  
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Ensure adequate ventilation.
- Place the machine in such a manner that the working conditions in its environment are not impaired.
- Comply with limit values for ambient temperature and humidity.
- The intake air must not contain any damaging contaminants,

Damaging contaminants are for instance:

- Exhaust gasses from internal combustion engines,
  - flammable, explosive or chemically instable gases and vapours,
  - Acid or base forming substances such as ammonia, chlorine or hydrogen sulfide.
- Do not position the machine in warm cooling outlet air from other machines.
  - Keep suitable fire extinguishing agents ready for use.
  - Chock the wheels to prevent unwanted movement.
  - Do not place additional loads on the machine (e.g. excavator bucket as anti-theft measure).

### 3.5.2.3 Commissioning, operation and maintenance

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

- Allow maintenance work to be carried out only by authorised personnel.
- Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- Switch off the machine and lock out the supply disconnecting device.
- Wait until the compressor has automatically vented (check: The pressure gauge must read 0 bar!)
- Then open the outlet valve carefully to ensure that the line between the minimum pressure / check valve and the compressed air outlet is vented.
- Allow the machine to cool down.
- Do not open the bodywork while the machine is switched on.
- Do not open or dismantle any valves.
- Use only spare parts approved by KAESER for use in this machine.
- Carry out regular inspections:
  - for visible damage and leakage,
  - of safety devices,
  - of the EMERGENCY STOP device,
  - of parts needing monitoring.
- Pay particular attention to cleanliness during all maintenance and repair work. Cover components and openings with clean cloths, paper or tape to keep them clean.
- Do not leave any loose components, tools or cleaning rags on or in the machine.

- Components removed from the machine can still be dangerous:  
Do not attempt to open or destroy any components taken from the machine.
- Use only suitable compressed air hoses.

Compressed air hoses must meet the following requirements:

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

#### 3.5.2.4 De-commissioning, storage and disposal

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

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

#### 3.5.3 Organisational Measures

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

#### 3.5.4 Danger areas

The table gives information on areas dangerous to personnel.

Only authorized personnel may enter these areas.

| Task          | Danger area                         | Authorized personnel  |
|---------------|-------------------------------------|---|
| Transport     | Within a 3 m radius of the machine. | Operating personnel to prepare for transport.<br>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. 62 Danger areas

### 3.6 Safety devices

Various safety devices ensure safe working with the machine.

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

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

### 3.7 Safety signs

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

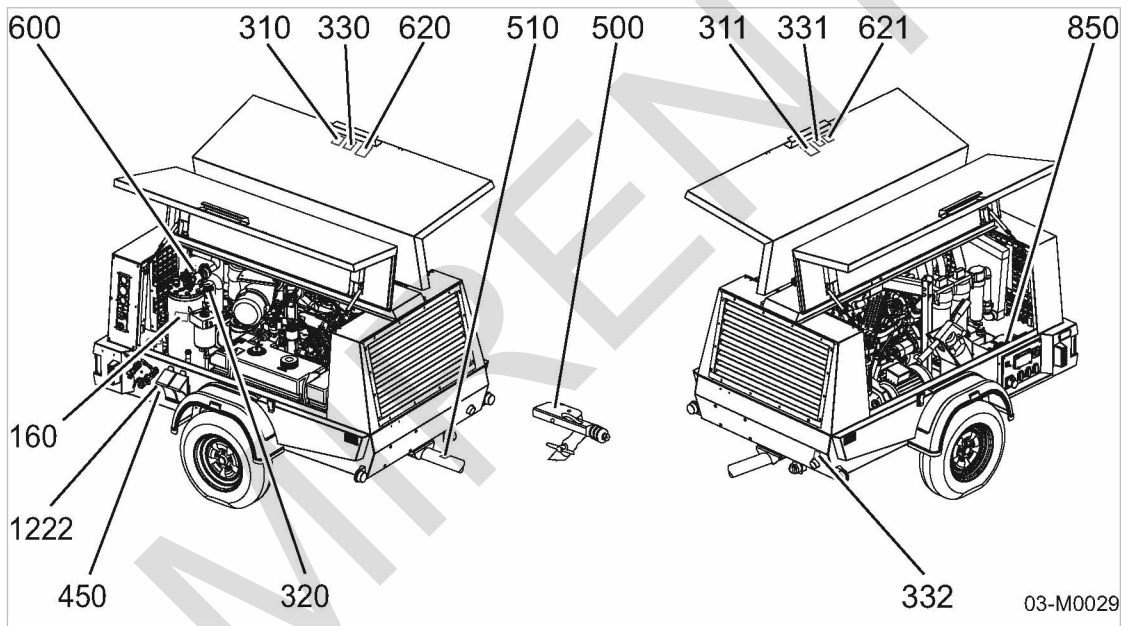










Fig. 1 Location of safety signs

| Item       | Sign | Meaning  |
|------------|------|--|
| 160*       |      | Incorrect oil levels can cause damage to the machine or excessive oil content in the compressed air!<br>➤ Check the oil level regularly and correct as necessary.  |
| 310<br>311 |      | It is forbidden to run the machine with open access doors or panels.<br>Personal injury or machine damage can result from an open machine enclosure.<br>➤ Operate only with the enclosure fully closed.<br>➤ Transport only with the enclosure fully closed. |

\* Location within the machine  
 \*\* Portable machines only  
 \*\*\* only machines with option dc  
 \*\*\*\* only machines with option ga




| Item       | Sign  | Meaning   |
|------------|---|---|
| 320*       |    | Loud noise and oil mist!<br>Hearing damage and burns from relief valve blow off. <ul style="list-style-type: none"> <li>➤ Wear hearing protectors and protective clothing.</li> <li>➤ Close the canopy or doors.</li> <li>➤ Work with caution.</li> </ul>   |
| 330<br>331 |    | Hot surface!<br>Risk of burns caused by contact with hot components! <ul style="list-style-type: none"> <li>➤ Do not touch the surface.</li> <li>➤ Wear long-sleeved garments (not synthetics such as polyester) and protective gloves.</li> </ul>  |
| 332        |    | Hot surfaces and dangerous gasses!<br>Burns from contact with hot components or gasses. <ul style="list-style-type: none"> <li>➤ Do not touch the surface.</li> <li>➤ Wear long-sleeved garments (not synthetics such as polyester) and protective gloves.</li> <li>➤ Do not inhale dangerous gases.</li> </ul> |
| 450        |   | Loud noise and compressed air blast!<br>Damage to hearing and injury if ball valve is opened without a compressed air hose being connected. <ul style="list-style-type: none"> <li>➤ Connect a compressed air hose.</li> <li>➤ Open the ball valve.</li> </ul>  |
| 500**      |  | Risk of accident from unstable towing!<br>Injury and machine damage possible. <ul style="list-style-type: none"> <li>➤ The compressor towbar must be parallel with the ground when coupled to the towing vehicle.</li> <li>➤ Note instructions in the service manual regarding transporting.</li> </ul>         |
| 510**      |  | Malfunction due to insufficient maintenance.<br>Injury and machine damage possible. <ul style="list-style-type: none"> <li>➤ Regularly maintain the chassis.</li> <li>➤ Note the instructions in the operating manual regarding the chassis.</li> </ul>   |
| 600*       |  | Risk of fatal injury caused by dismantling valves (spring-loaded or under pressure)! <ul style="list-style-type: none"> <li>➤ Do not open or dismantle valves.</li> <li>➤ Call an authorised Service Technician in the event of a fault.</li> </ul>   |
| 620<br>621 |  | Risk of serious lacerations or even severing of extremities (fingers) from rotating components! <ul style="list-style-type: none"> <li>➤ Operate the machine only with closed safety guards, access doors and panels.</li> <li>➤ Shut down the machine before opening a door or canopy.</li> </ul>              |

\* Location within the machine

\*\* Portable machines only

\*\*\* only machines with option dc

\*\*\*\* only machines with option ga

| Item    | Sign  | Meaning   |
|---------|---|---|
| 850**** |  | Risk of fatal injury caused by contact with live components!<br>➤ Take protective measures.   |
| 1222*** |  | Danger!<br>Mortal danger from CO, CO <sub>2</sub> or toxic gas.<br>➤ Draw in only surrounding air of breathing quality.   |
|         |  | Danger!<br>Danger to health from discharge of oily compressed air.<br>➤ Maintain surrounding air temperature between +1.5 °C and 30 °C.<br>➤ Check the oil indicator at least once a day. |

\* Location within the machine  
\*\* Portable machines only  
\*\*\* only machines with option dc  
\*\*\*\* only machines with option ga

Tab. 63 Safety signs

## 3.8 Option ga Generator operation

### 3.8.1 Comply with the protective measures against dangerous electric current

Protection against dangerous electric current is regulated by the "Low-voltage current generating installations" directive IEC 60364–5–551 (DIN VDE 0100–551).

The protective measure concerning "isolation, insulation monitoring and shut-down" is applied. The generator is equipped with an automatic mains cut-out with overcurrent release and insulation monitoring in accordance with this protective measure.

- Observe and follow the regulations concerning protection against dangerous electric current when using the generator.

### 3.8.2 Safe generator operation

Take note of the following to ensure the safe operation of the machine with a generator:

- Check correct function of the insulation monitoring device daily.
- Do not earth the neutral line (N) or connect it to the common protective earth/equipotential bonding (PE).
- Make sure the equipotential bonding to earth is properly carried through (mains and machine through cable to consumer).
- If the generator feeds a network (TN network), let the network's protective measures remain effective or create another protective measure that is effective.
- Adjust the protective measures accordingly if the generator feeds a different network.
- Only a qualified electrician is allowed to carry out work on the generator or generator control box. The electrician is responsible for the effectiveness of the protective measures provided.
- Do not use the generator for feeding the construction current distribution.
- A generator with insulation monitoring must not be connected to another insulation monitoring device as these monitoring devices can then have counter effects.



- Ground fault current (F1) protection switches do not function in unearthed networks (IT network such as provided by the generator). The isolation provided by the generator, however, makes a further ground fault current protection switch unnecessary.
- Follow the regulations of the local electricity supply utility and obtain any necessary permits.
- When cleaning the inside of the machine, do not direct water or steam jets directly at the generator or terminal box.
- Check regularly that all electrical connections are tight and in proper condition.

### **3.8.3 Connecting extension cables**

- When operating the generator, observe the regulations regarding the connection of extension cables.

Bear in mind:

- In IT networks, the total length of power cables may not exceed 250 m ((DIN VDE 0100, Part 728 / IEC 60364-5-551).
- Use at least H07RN-F cables to DIN VDE 0282 Part 4 (IEC 60245-4 / HD 22.4) as non-fixed extension cables.

### **3.8.4 Do not exceed the maximum supply system load**

- When operating the generator, do not exceed the maximum supply system load due to connected consumers.

Bear in mind:

- The power consumption values of simultaneous consumers are added.
- The maximum continuous power loading on the generator by the connected consumers is limited by the safety cut-out.

### **3.8.5 Perform regular generator inspections**

To ensure a safe operation, the machine must be subjected to regular inspections.

Daily inspection prior to activating the device by authorised operating personnel:

- Insulation monitor function check.

Annual inspection by trained and authorised electrician:

- Inspect the generator and generator control cubicle for mechanical damages.
- Inspect the protective conductor.
- Measure the dielectric resistance.
- Measure the substitute leakage current.
- Test the generator functionality.
- Test the proper functioning of the generator fan and clean, if required.
- Clean the cooling air openings.
- Check and tighten the screw connections at the generator and the generator control cubicle.
- Check covers and power socket caps for damage and good sealing.
- Check the completeness of labeling and warning labels.

## **3.9 Emergencies**

### **3.9.1 Correct fire fighting**

#### **Suitable measures**

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

- Keep calm.
- Give the alarm.
- Shut down the machine from the instrument panel if possible.
- Warn and move endangered personnel to safety.
- Help incapacitated persons.
- Close the doors.
- When trained accordingly: Attempt to extinguish the fire.

#### **Extinguishing substances**

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

### **3.9.2 Injury from handling operating fluids/materials**

The following operating fluids/materials are in the machine:

- fuel
- Lubricating oil
- Compressor cooling oil
- Engine coolant
- Battery electrolyte
- Tool lubricant (option e)
- Antifreeze (option ba)

#### **Eye contact**

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

- Rinse open eyes thoroughly for a few minutes.
- Seek medical advice for persistent irritation.

#### **Skin contact**

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

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

**Inhalation**

Fuel and oil vapours impair breathing.

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

**Ingestion**

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

**3.10 Warranty**

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

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

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

Furthermore, we accept no warranty obligation for:

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

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

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

**3.11 Identifying the effects of improper modifications**

The machine and various modules are designed according to applicable regulations and are submitted for approval procedures by the relevant authorities (where applicable).

Concerned modules include:

- Compressor drive motor
- Fuel supply
- Exhaust system
- Chassis (if available)
- Compressor unit
- Pressure-bearing components (e.g., valves, vessels, pipelines)

Remodeling or modifications can have the result that the interaction of the individual modules according to regulations is no longer ensured. Thus, the prerequisites required for approval by the authorities may no longer be given.

The concerned directives and regulations can be:

- Machinery directive
- Pressure vessel directive
- EMC directive
- Directive on environmental noise

In machines requiring a national road traffic permit, remodeling or modifications may adversely affect their approval for road traffic.

- Exhaust emission limits may not be met.
- The prerequisites for approval are no longer given.

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

- Warranty (if directly and originally affected by the remodeling or modification)
- Reduced replacement part supply (scope, delivery times)

### **3.12 Environment protection**

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

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

## 4 Design and Function

### 4.1 Bodywork

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

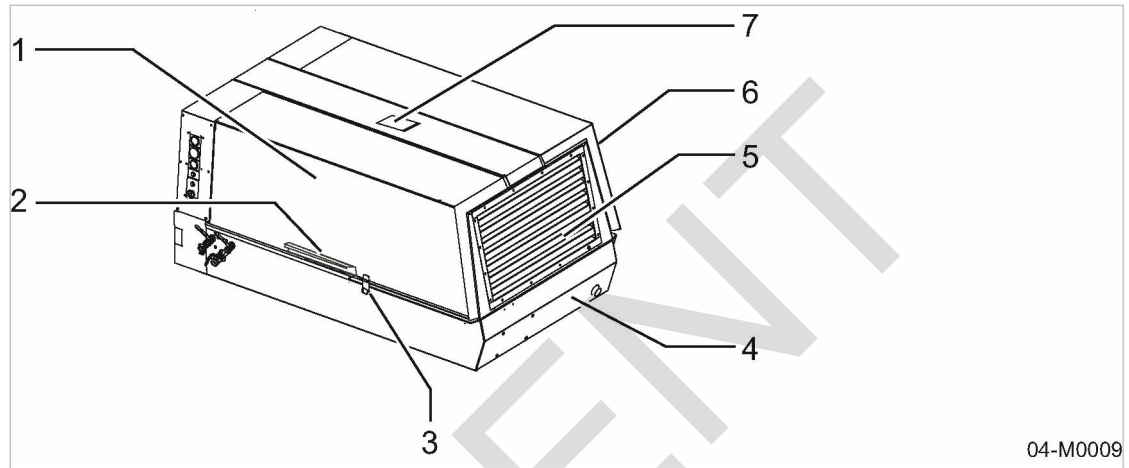


Fig. 2 Bodywork

- |                        |                                   |
|------------------------|-----------------------------------|
| ① Right-hand wing door | ⑤ Sound damping louvre for cooler |
| ② Handle               | ⑥ Left-hand wing door             |
| ③ Snap fastener        | ⑦ Cover for lifting eye           |
| ④ Lower body           |                                   |

The bodywork has several functions when it is closed:

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

The bodywork is not suitable for the following uses:

- Persons walking, standing or sitting on the machine.
- Use as resting place or storage of any kind of load.

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

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

The doors are held open by gas springs.

4.2 Machine installation

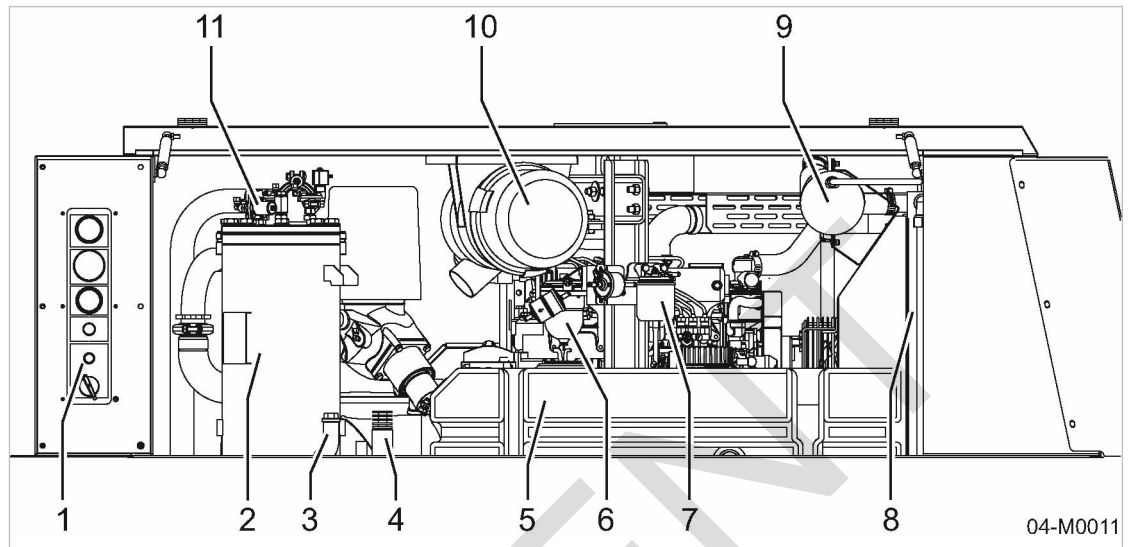


Fig. 3 Right-hand door opened

- |                                   |  |
|-----------------------------------|--|
| ① Operating panel                 | ⑦ Fuel micro-filter                          |
| ② Oil separator tank              | ⑧ Oil cooler                                 |
| ③ Oil filler port with plug       | ⑨ Coolant expansion tank                     |
| ④ Combination valve               | ⑩ Engine air filter                          |
| ⑤ Fuel tank                       | ⑪ Control valve with proportional controller |
| ⑥ Fuel pre-filter with water trap |  |

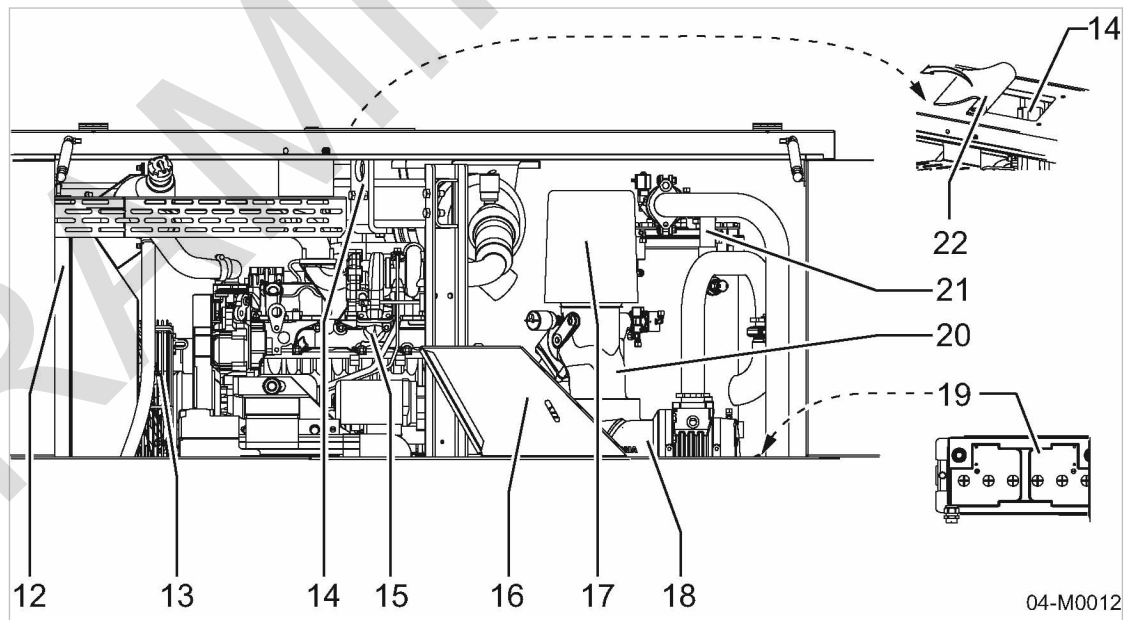


Fig. 4 Left-hand door opened

- |                                |                         |
|--------------------------------|-------------------------|
| ⑫ Water cooler                 | ⑱ Air end               |
| ⑬ Fan                          | ⑲ Battery               |
| ⑭ Lifting eye                  | ⑳ Inlet valve           |
| ⑮ Drive motor                  | ㉑ Pressure relief valve |
| ⑯ tool box provides sufficient | ㉒ Lifting eye cover     |
| ⑰ Compressor air filter        |                         |

### 4.3 Machine function

Machine function (without options)

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

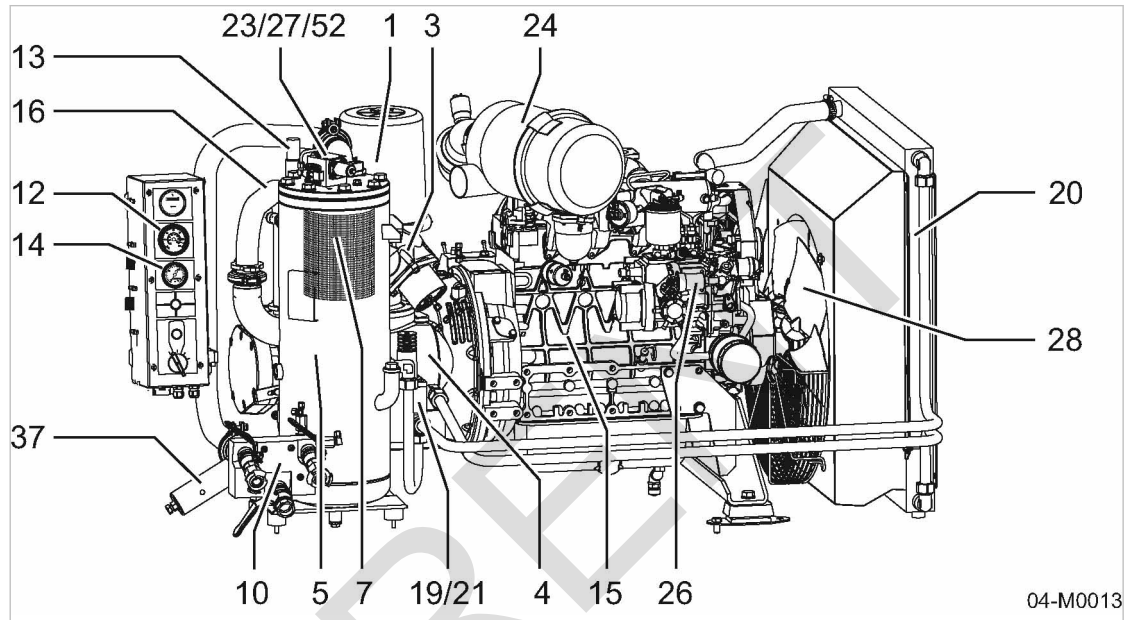


Fig. 5 Machine layout

- |                              |  |
|------------------------------|--|
| ① Compressor air filter      | ⑬ Oil return line                        |
| ③ Inlet valve                | ⑰ Combination valve (thermostatic valve) |
| ④ Airend                     | ⑳ Oil cooler                             |
| ⑤ Oil separator tank         | ㉑ Oil filter                             |
| ⑦ Oil separator cartridge    | ㉓ Proportional controller                |
| ⑩ Compressed air distributor | ㉔ Engine air filter                      |
| ⑫ Temperature gauge switch   | ㉖ Venting valve                          |
| ⑬ Pressure relief valve      | ㉘ Fan                                    |
| ⑭ Pressure gauge             | ㉚ Minimum pressure/check valve           |
| ⑮ Drive motor                | ㉜ Control valve                          |

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

The air is then compressed in the airend ④.

The airend is driven by an internal combustion engine ⑮.

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

Cooling oil recovered from the compressed air in the oil separator tank ⑤ gives up its heat in the oil cooler ⑳. The oil then flows through the oil filter ㉑ and back to the point of injection. Pressure within the machine keeps the oil circulating. A separate pump is not necessary. A thermostatic valve ⑰ automatically maintains optimum cooling oil temperature.

Compressed air, freed of cooling oil in the oil separator tank ⑤, flows through the minimum pressure / check valve ㉚ into the air distributor ⑩. The minimum pressure / check valve ensures that there is always a minimum internal pressure sufficient to maintain cooling oil circulation in the machine.

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

## 4.4 Operating modes and control modes

### 4.4.1 Operating modes

The machine operates in the following modes:

- **LOAD**
  - The inlet valve is open.
  - The engine runs at maximum speed.
  - The compressor block delivers compressed air.
- **MODULATING**
  - With the help of a control valve (the proportional controller) the degree of opening of the inlet valve is steplessly varied in response to the air demand.
  - The load and fuel consumption of the engine rises and falls with the air demand.
  - The compressor block delivers compressed air.
- **IDLE**
  - The inlet valve is closed.
  - The control valve opens, allowing pressure in the oil separator tank to be applied to the inlet valve.
  - Compressed air then flows in a closed circuit through the compressor block, the oil separator tank and the control valve.
  - The pressure in the oil separator tank remains constant.
  - The engine runs at minimum speed.
- **STANDSTILL (shut down)**
  - The inlet valve closes.
  - The venting valve opens to de-pressurise the machine.
  - The engine stops.

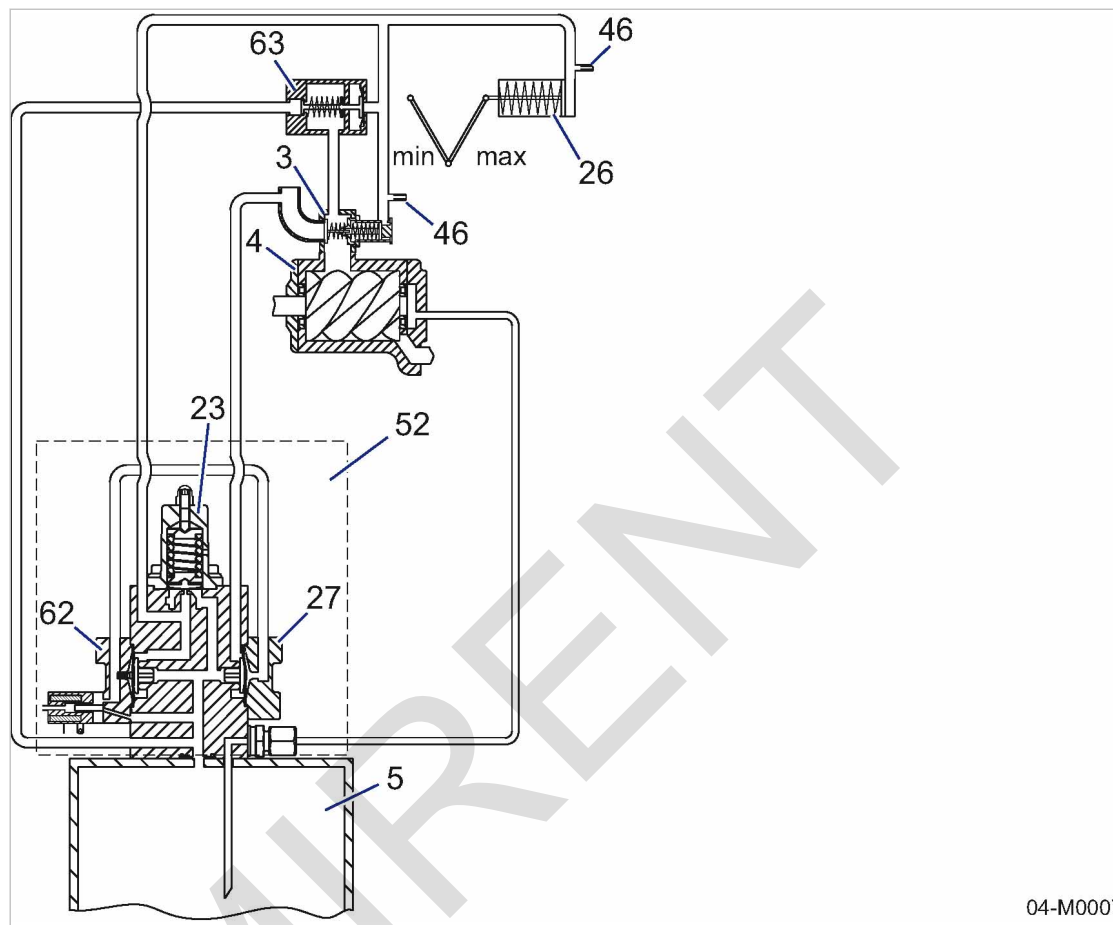
### 4.4.2 PART LOAD control

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 compressor block 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.





04-M0007

Fig. 6 Stepless regulation of FAD (standstill)

- |    |                               |    |  |
|----|-------------------------------|----|--|
| ③  | Inlet valve                   | ⑥③ | Directional valve (proportional valve)               |
| ④  | Air end                       | ⑤② | Control valve comprising the following components:   |
| ⑤  | Oil separator tank            | ②③ | Proportional controller                              |
| ②⑥ | Engine speed control cylinder | ②⑦ | Venting valve  |
| ④⑥ | Nozzle                        | ⑥② | Combined auxiliary valve (directional control valve) |

## 4.5 Safety devices

### 4.5.1 Monitoring functions with shutdown

The following functions are monitored automatically.

- Engine oil pressure
- Coolant temperature
- Air end 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 valves:  
Pressure relief valves protect the system against unacceptable pressure rise. They are factory set.
- Enclosures and guards for moving parts and electrical connections  
Protect against accidental contact.

## 4.6 Options

The options available for your machine are described below.

### 4.6.1 Option da, db, dc, dd, ec Compressed air treatment options

For some applications, the compressed air generated by this machine must be treated before use. The following describes the possible air treatment options that may be fitted to the machine.

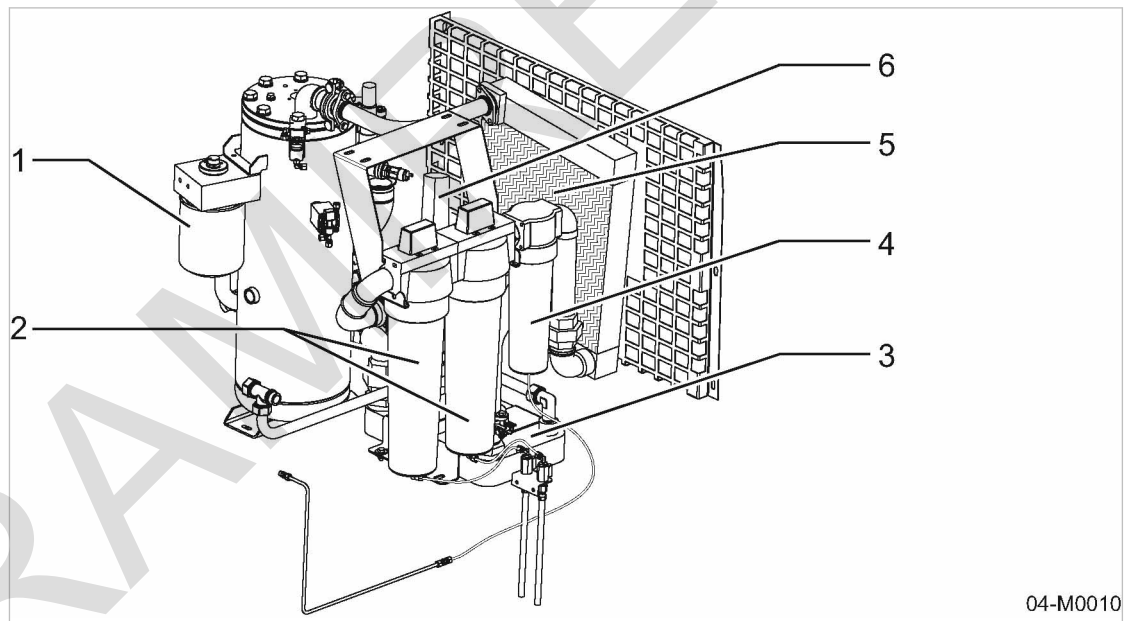


Fig. 7 Compressed air options

- |                                  |  |
|----------------------------------|--|
| ① Tool lubricator (option ec)    | ④ Cyclone separator (Option da)          |
| ② Filter combination (Option dd) | ⑤ Compressed air aftercooler (Option da) |
| ③ Heat exchanger (Option db)     | ⑥ Fresh air filter (Option dc)           |

#### 4.6.1.1 Option da Compressed air aftercooler

The aftercooler lowers the compressed air temperature to only 5 K to 10 K above ambient. Most of the moisture carried in the air is removed in the aftercooler.

**4.6.1.2 Option da**  
**Cyclone separator**

Condensate accumulating during the air cooling process is separated, fed to the exhaust gas silencer and evaporated there.

**4.6.1.3 Option db**  
**Heat exchanger**

The oil/air heat exchanger is fed with hot compressor cooling oil that warms the outgoing moisture-reduced compressed air.

This warm, dry compressed air is ideal for sand blasting, for example.

**4.6.1.4 Option dd**  
**Filter combination**

The dried compressed air passes through a pre-filter and micro-filter combination and emerges oil-free.

**4.6.1.5 Option dc**  
**Fresh air filter**

Compressed air from oil-injected compressors may not be used directly as breathing air.

The concentration of contaminants will increase during the compression of the intake ambient air and cooling oil and abraded particles can enter the compressed air. This requires a subsequent treatment of the pre-filtered compressed air.

Air must be filtered to remove all contaminants, such as fine dust and oil as well as odours, before it can be used for breathing purposes.

For this purpose, part of the compressed air output from the compressor is passed through a micro-filter and activated carbon filter combination.

The connection to air treated in this way is specially marked. It is designed as a quick-release coupling next to the outlet valves on the compressed air distributor.

**DANGER**

Danger from toxic air!

Danger of respiratory arrest because the filter does not remove CO/CO<sub>2</sub>, methane or other toxic gasses or vapours.

- Never use the machine in enclosed spaces, only in the open.
- Clean inlet air without hazardous contaminants. Engine exhaust must not be drawn into the compressor.



The treated air does not meet the local standards for 'Compressed air for breathing apparatus'. Therefore, it must not be used as pure breathing air but may be used to reinforce the flow of fresh air when working in dusty or dirty conditions such as sand blasting.

Further information See chapter 2.7.2 for ambient conditions under which the fresh air filter can be used.

**4.6.1.6 Option ec**  
**Tool lubricator**

Compressed air containing lubricating oil is needed for the lubrication of certain air tools. The tool lubricator introduces a fine oil mist into the compressed air for this purpose.

A metering valve on the lubricator regulates the amount of oil in the compressed air:

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

The oil flow can be stopped by a shut-off valve.

The oil flow adjusts automatically to changes in air demand (one or more tools/consumers on line).

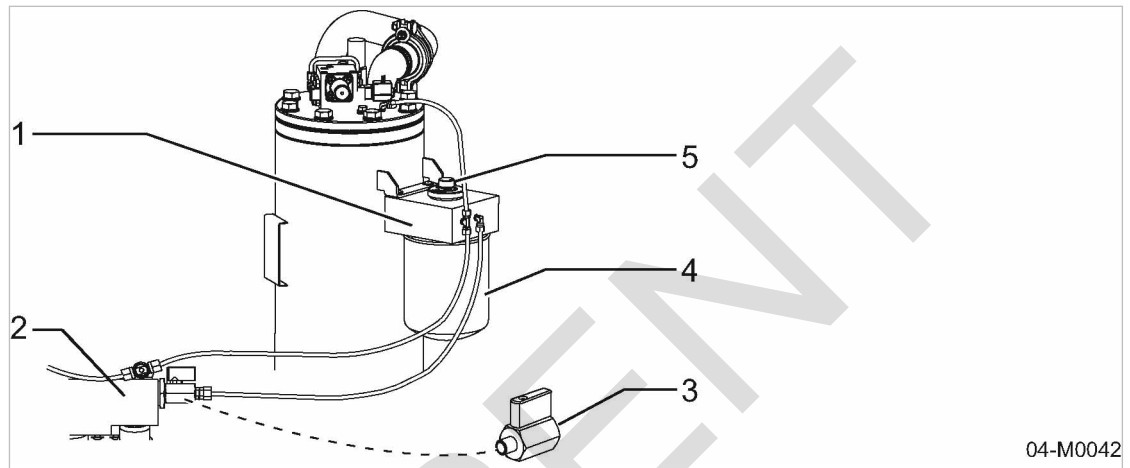


Fig. 8 Tool lubricator

- |                                     |                 |
|-------------------------------------|-----------------|
| ① Tool lubricator                   | ④ Oil tank      |
| ② Compressed air outlet distributor | ⑤ Metering knob |
| ③ Shut-off ball valve               |                 |

**Option fc Points to be observed with separate compressed air lines:**



**NOTICE**

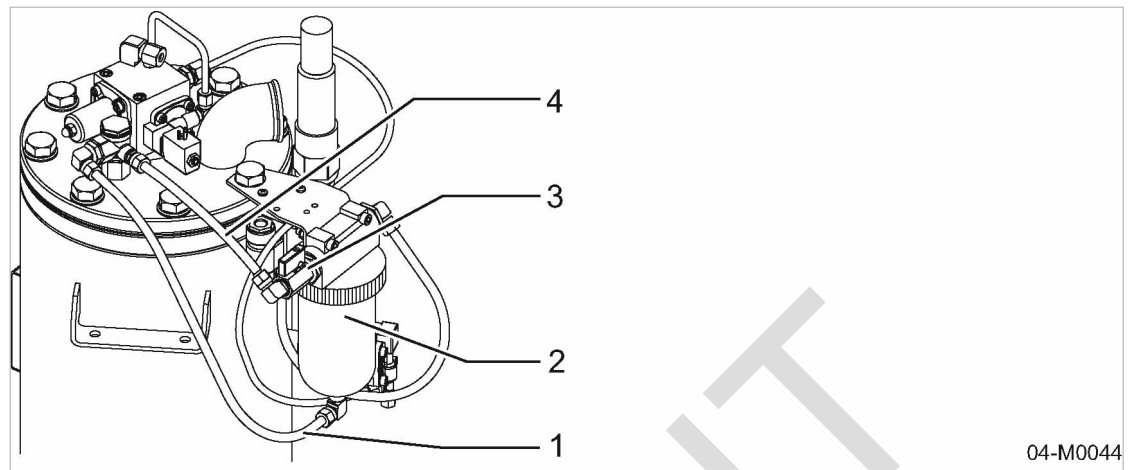
Lubrication with tool oil.  
Air tools that must not be lubricated can be damaged.  
➤ Blow any residual oil out of the line before connecting such an air tool.

**4.6.2 Option ba, bb  
Low temperature equipment options**

Special equipment is provided for operation in extremely low temperatures.  
This equipment guarantees machine operation at temperatures from -25 °C..... +50 °C .  
The electrical system enables trouble-free engine starting at ambient temperatures down to -20 °C.

**4.6.2.1 Option ba  
Frost protection**

Control air is mixed with an alcohol-based antifreeze to prevent control and regulating devices freezing. This considerably lowers the freezing point of any moisture in the air.



04-M0044

Fig. 9 Frost protector

- |                             |                              |
|-----------------------------|------------------------------|
| ① Control line (defrosting) | ③ Shut-off ball valve        |
| ② Frost protector           | ④ Control line (bypass line) |

**Operating the machine in cold temperatures:**

The frost protector is activated when the machine is started or stopped in ambient temperatures below freezing. Due to the anti-freeze in the air flow, valves and control lines in the interior are moistened preventing a freezing of the control and regulating system.

During machine operation, the generated innate heat counteracts a potential freezing of individual components.

**Machine operation in Summer:**

Anti-freeze is not required for the regulating air at ambient temperatures of more than 0 °C.

**4.6.2.2 Option bb  
Coolant pre-heating**

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

The power supply to the coolant preheater takes place via a separate network connector. A flexible power cable (supplied) connects the machine's power plug to the user's power socket.

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

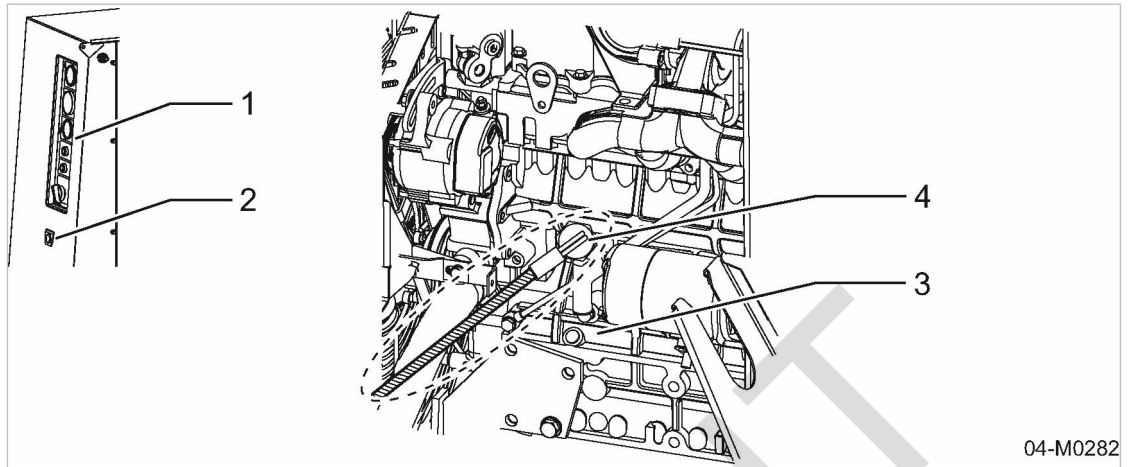


Fig. 10 Coolant pre-heating

- |   |                       |
|---|-----------------------|
| ① Operating panel                       | ③ Engine block        |
| ② Connection for the coolant pre-heater | ④ Coolant pre-heating |

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).

Continuous operation of maximum 6 hours must be followed by a rest of approximately 3 hours.

### 4.6.3 Option oa Optional battery isolating switch

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



**NOTICE**

Danger of short circuit!

Damage to the machine electrics is possible.

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

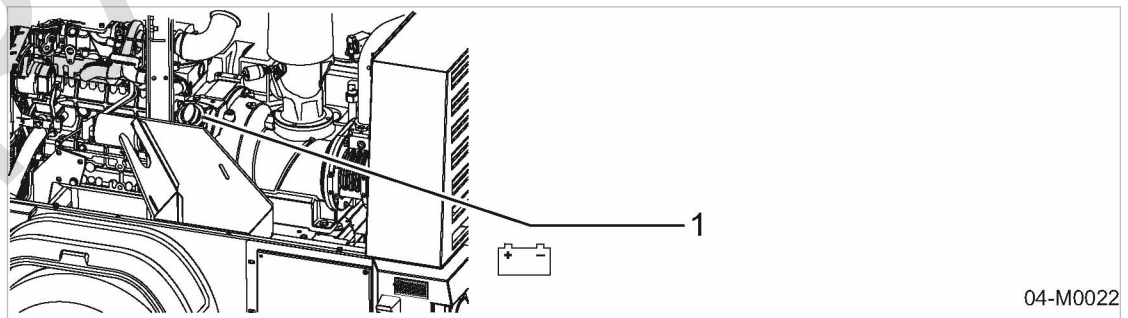


Fig. 11 Battery isolating switch

- ① «Battery isolating switch»

#### 4.6.4 Option Ia, Ib Options for operating in fire hazard areas

##### 4.6.4.1 Option Ia Spark arrester

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

##### 4.6.4.2 Option Ib 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 shuts off the engine air intake as soon as flammable gas is drawn in. This brings the engine to an immediate stop.

#### 4.6.5 Option ga Generator option

A generator is installed to provide a power supply to electrical consumers. The generator is driven from the engine by a drive belt. A tensioning device automatically ensures optimum belt tension.

##### 4.6.5.1 Operating modes

The compressor works with the normal air delivery regulation and generates electrical power at the same time.

The generator can work in two modes. These are selected by the mode switch:

- Automatic cut-in
- Continuous load

| Generator main switch | Mode selector switch                 | What is provided?                   |
|-----------------------|--------------------------------------|-------------------------------------|
| OFF                   | -                                    | Compressed air                      |
| ON                    | Position 1<br>(automatic start mode) | Compressed air and electrical power |
|                       | Position 2<br>(continuous load)      | Electrical power and compressed air |

Tab. 64 Generator/compressor operation

| Operating mode  | Automatic cut-in | Continuous load |
|-----------------|------------------|-----------------|
| Switch position | Position 1       | Position 2      |

| Operating mode | Automatic cut-in  | Continuous load                                    |
|----------------|---|--|
| Engine speed   | Electrical power input > 100 VA:<br>automatic maximum speed<br><br>Power consumption below minimum value:<br>Engine run-on time of approximately 2 minutes at maximum speed | Permanent maximum speed (engine under full load)   |
| Advantages:    | Fuel saving<br>Constant oscillation between maximum and minimum speed avoided   | Continuous generator power available without delay |

Tab. 65 Generator operating modes

#### 4.6.5.2 Operating controls

The switches, fuses and outlet sockets for electrical consumers are located on the generator control box. Individual consumers are connected only by these outlet sockets.

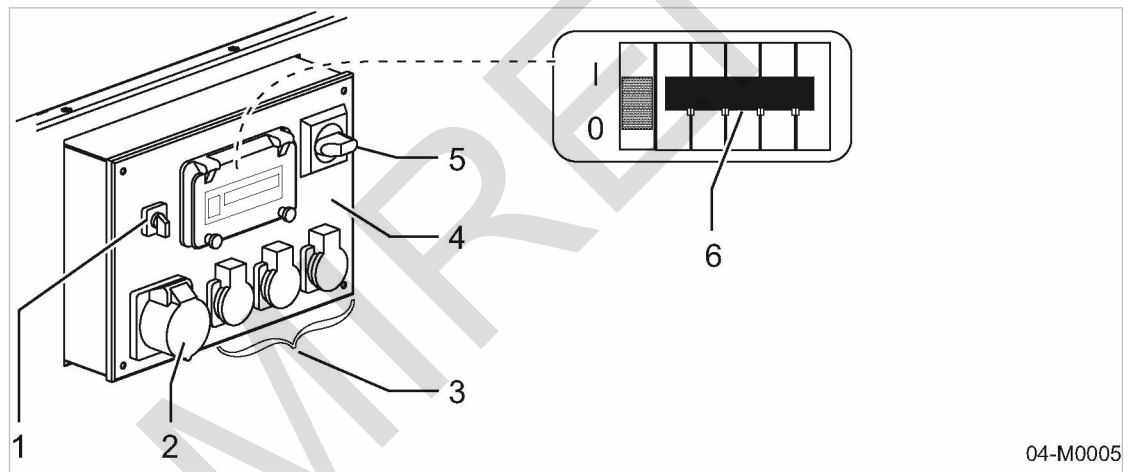


Fig. 12 Instrument panel – generator control box, 400 V AC

- |                             |   |
|-----------------------------|---|
| ① «Mode selector switch»    | ④ Generator control box                 |
| ② Three-phase power sockets | ⑤ «Generator main switch»               |
| ③ AC power sockets          | ⑥ «Safety cut-out »(with shunt release) |



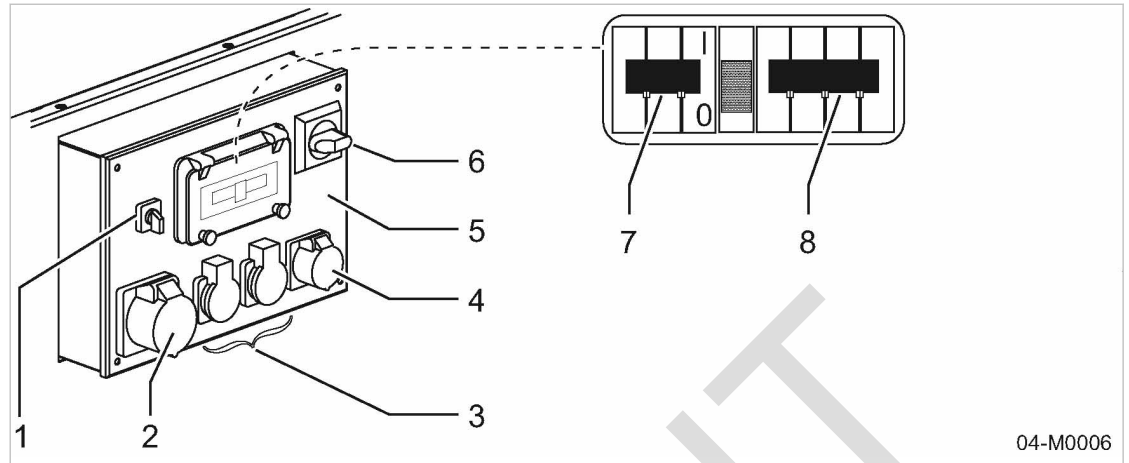


Fig. 13 Instrument panel – generator control box, 230 V AC

- |                                 |   |
|---------------------------------|---|
| ① «Mode selector switch»        | ⑤ Generator control box                 |
| ② 32 A three-phase power socket | ⑥ «Generator main switch»               |
| ③ AC power sockets              | ⑦ «Safety cut-out»                      |
| ④ 16 A three-phase power socket | ⑧ «Safety cut-out »(with shunt release) |

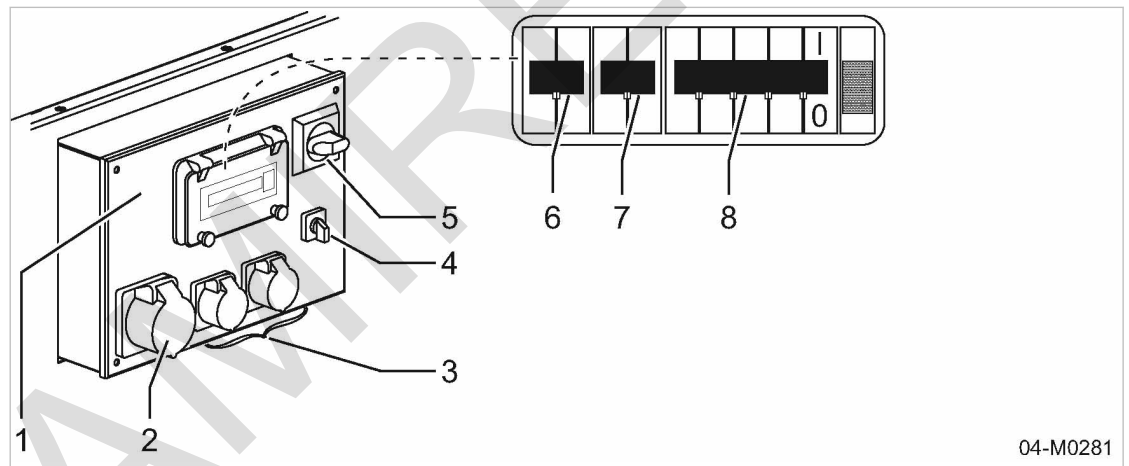


Fig. 14 Generator instrument panel - control box, 115 V, single-phase (50 Hz)

- |                                       |   |
|---------------------------------------|---|
| ① Generator control box               | ⑤ «Generator main switch»               |
| ② Single phase power socket, 32 A     | ⑥ «Safety cut-out»                      |
| ③ Single phase AC power sockets, 16 A | ⑦ «Safety cut-out»                      |
| ④ «Mode selector switch»              | ⑧ «Safety cut-out »(with shunt release) |

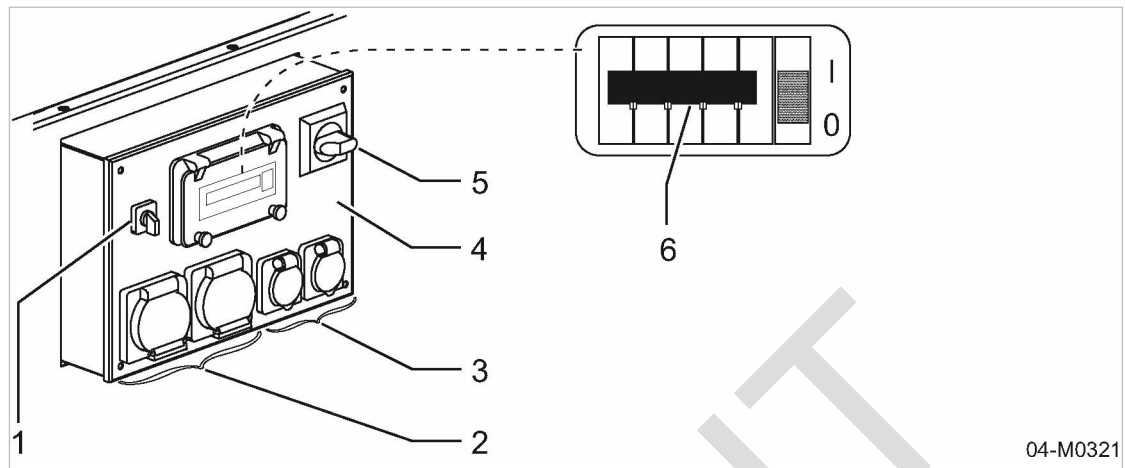


Fig. 15 Generator instrument panel - control box, 230 V, single-phase (60 Hz)

- |  |   |
|--|---|
| ① «Mode selector switch»               | ④ Generator control box                 |
| ② Single phase AC power sockets, 250 V | ⑤ «Generator main switch»               |
| ③ Single phase AC power sockets, 125 V | ⑥ «Safety cut-out »(with shunt release) |

#### 4.6.5.3 Note when operating the generator

##### Do not exceed the maximum supply system load

- When operating the generator, do not exceed the maximum supply system load due to connected consumers.

Bear in mind:

- The power consumption values of simultaneous consumers are added.
- The maximum continuous power loading on the generator by the connected consumers is limited by the safety cut-out.

##### Connect electrical consumers



##### DANGER

Devices start automatically without warning.  
 Serious injury and damage to property is possible.

- Make sure that electric consumers are switched off.

Before connecting electrical consumers, carry out the following:

- Read the technical specification for the generator before connecting voltage-sensitive equipment.
  - Check that electrical consumers and their connecting cables are in perfect condition.
  - Plug in and switch on consumers one-by-one.
  - Consumers with unfavourable on/off characteristics (e.g. high starting current) should be started first.
- Do not exceed the rated current for each outlet socket to avoid overloading the generator.

##### Switching off the generator

Before deactivating the generator, carry out the following:

- Switch off electrical consumers and unplug them one-by-one.

- Switch off consumers drawing the highest current last.
- Check that the protective covers on the power sockets are correctly closed.
- Run the engine for a further 2 minutes after switching off the generator to allow the generator to cool down.

**4.6.6 Option Ic  
Diesel particulate filter option**

The exhaust from a diesel engine contains invisible particles that are dangerous to health. The diesel particulate filter reduces the amount of particles (mostly soot), protecting human health and the environment.

The diesel particulate filter is integrated in the engine's exhaust system. The engine exhaust flows through the filter module and nearly all the damaging particles are trapped. A control unit monitors the function of the diesel particulate filter system.

When the filter medium has trapped a specific amount of soot, it is regenerated while the machine is under LOAD. The control unit initiates and monitors the regeneration process. Diesel fuel is injected into the exhaust stream. This causes a special catalyst to heat the exhaust gas to over 550 °C and the soot is burnt off the filter medium in CO<sub>2</sub>.

The machine is shut down if the back pressure in the exhaust exceeds a specific value.

**General design**

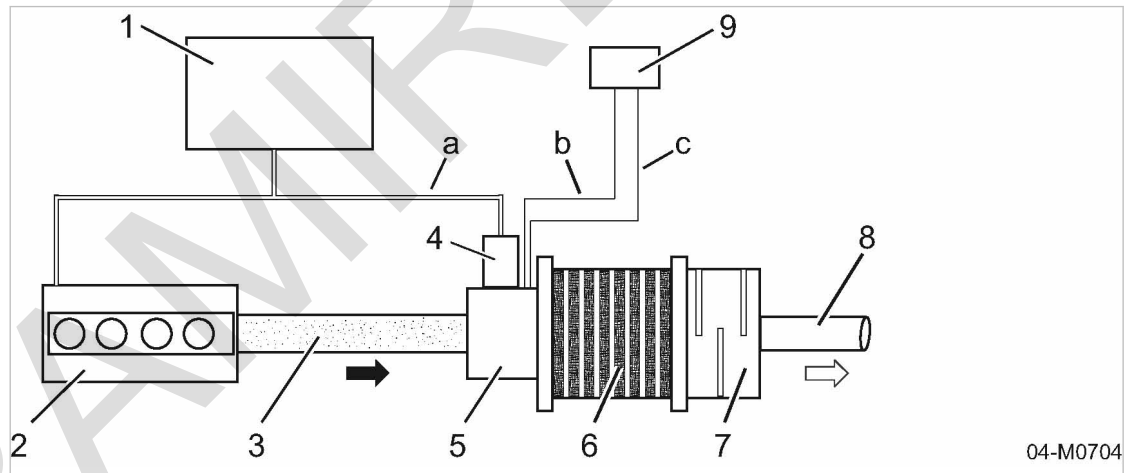


Fig. 16 General design of the diesel particulate filter system

- |   |                                   |
|---|-----------------------------------|
| ① Fuel tank                             | ⑦ Silencer module                 |
| ② Diesel engine                         | ⑧ Outlet of cleaned exhaust gas   |
| ③ Exhaust pipe with contaminated gases. | ⑨ Electronic control unit         |
| ④ Diesel injection                      | ① Fuel line                       |
| ⑤ Oxidizing catalytic converter         | ② Exhaust back pressure monitor   |
| ⑥ Filter module                         | ③ Exhaust gas temperature monitor |



The diesel particulate filter system meets the requirements of TRGS 554, TA and VERT (Switzerland).

**4.6.7 Option sa, sc, sd, sh, si**  
**Transport options****4.6.7.1 Option sa**  
**Chassis**

The chassis has the following features:

- Single-axle
- Rubber-spring axle
- Height-adjustable towbar

**4.6.7.2 Option sd**  
**Chassis**

The chassis has the following features:

- Single-axle
- Rubber-spring axle
- Fixed height towbar

**4.6.7.3 Option sh**  
**Chassis**

The chassis has the following features:

- Single-axle
- Rubber-spring axle
- Fixed height towbar
- Without parking brake

**4.6.7.4 Option sc**  
**Stationary frame**

The frame has the following features:

- Skids
- Use as stationary machine
- Mounted on truck/trailer platform

**4.6.7.5 Option si**  
**Stationary frame**

The frame has the following features:

- Frame
- Use as stationary machine
- Mounted on truck/trailer platform

**4.6.8 Option ua**  
**Hose reel option**

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

**4.6.9 Option sf**  
**Optional anti-theft device**

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

**4.6.10 Option sg**  
**Pedestrian protection option**

The machine is provided with pedestrian protection that functions both as a deflector and against pedestrians being run-over.

**4.6.11 Option pa, pb**  
**Instrument panel cover option**

To prevent unauthorised use and as protection during transport the machine is fitted with instrument panel cover(s).

- Instrument panel cover (option pa)
- Generator control box cover (option ga)

## 5 Installation and Operating Conditions

### 5.1 Ensuring safety

The conditions in which the machine is installed and operated have a decisive effect on safety. Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

#### Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Strictly forbid fire, open flame and smoking.
- If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting fuel or oil vapours or parts of the machine.
- Do not store inflammable material in the vicinity of the machine.
- The machine is not explosion-proof!  
Do not operate in areas in which specific requirements with regard to explosion protection are applied.  
For instance, the requirements of ATEX directive 94/9/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Suitable fire extinguishing material must be to hand.
- Ensure that required ambient conditions are maintained.

Required ambient conditions may be:

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

### 5.2 Installation conditions

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

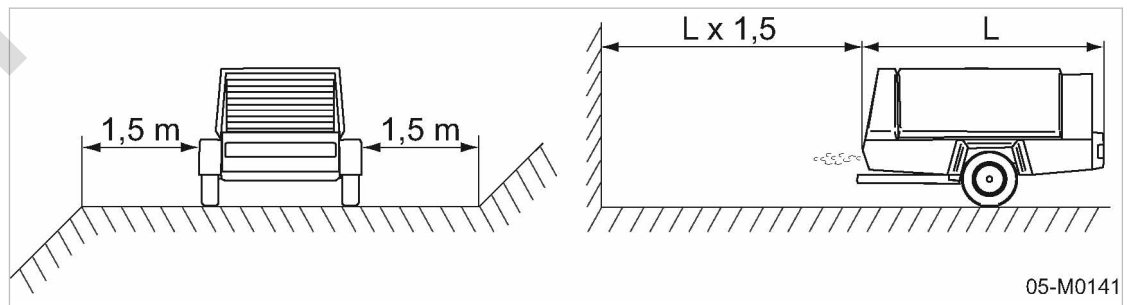


Fig. 17 Minimum distance from excavations/slopes and walls

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. **NOTICE!**

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

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

5. Position the machine as far as possible from any wall.

6. Ensure there is enough free space all round and above the machine.

7. Keep air inlet and outlet openings free of obstructions so that the cooling air can flow freely through the machine.

8. Place the machine in such a manner that

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



9. **NOTICE!**

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

- Use winter grade engine oil.
- Use low viscosity compressor cooling oil.
- Allow the machine to warm up in IDLE (low speed), see chapter 8.2.4.

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

## 6 Installation

### 6.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

#### Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Installation work may only be carried out by authorised personnel.

Further information

Details of authorised personnel are found in chapter 3.4.2.

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

### 6.2 Reporting Transport Damage

1. Check the machine for visible and hidden transport damage.
2. Inform the carrier and the manufacturer in writing of any damage found.

### 6.3 Fitting the towbar

Material

Protective gloves

Wrench

Hard rubber hammer

Appropriate tube as lever for the locking lever

Precondition

The machine is standing firm and level.

The machine is switched off.



#### CAUTION

Danger of pinching!

Severe pinching injury to fingers is possible.

- Always wear protective gloves.
- Work with caution.

#### 6.3.1 Option sa

##### Fitting the height adjustable towbar

If the machine is shipped on a transport frame, it is necessary to dismantle the towbar to save space. The overrun braking mechanism with centre piece is secured to the wooden frame next to the towbar. The locking lever is packed in the machine.

The towbar must be re-assembled before removing the transport frame.



Option sa

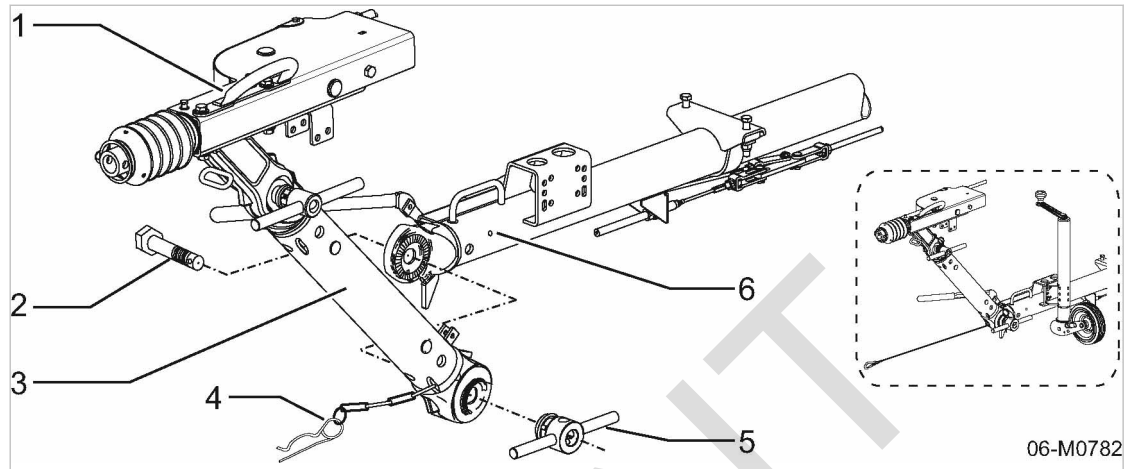


Fig. 18 Fitting the height adjustable towbar

- |   |                           |   |               |
|---|---------------------------|---|---------------|
| ① | Overrun braking mechanism | ④ | Split pin     |
| ② | Securing bolts            | ⑤ | Locking lever |
| ③ | Towbar centre-piece       | ⑥ | Towbar        |

1. Remove all transport securing items from the towbar components.
2. Take the locking lever out of the machine, remove the packing and unscrew the securing bolt.
3. Locate the teeth of the centre piece in those of the towbar and insert the securing bolt from the back. If necessary use light hammer blows to help the process.
4. Make sure the teeth engage and screw on the locking lever.
5. Tighten the locking lever. Make sure the teeth in the adjustment joint mesh together. (See chapter 2.4.4 for tightening torque).
6. Fully tighten the lever with a few hammer blows and insert the split pin.
7. Pull up the parking brake (pull the hand brake lever up).

## 6.4 Adjusting the chassis

**Material** Pliers  
Hard rubber hammer  
Appropriate tube as lever for the locking lever

**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 with caution.

6.4.1 Option sa  
Adjusting the towbar height

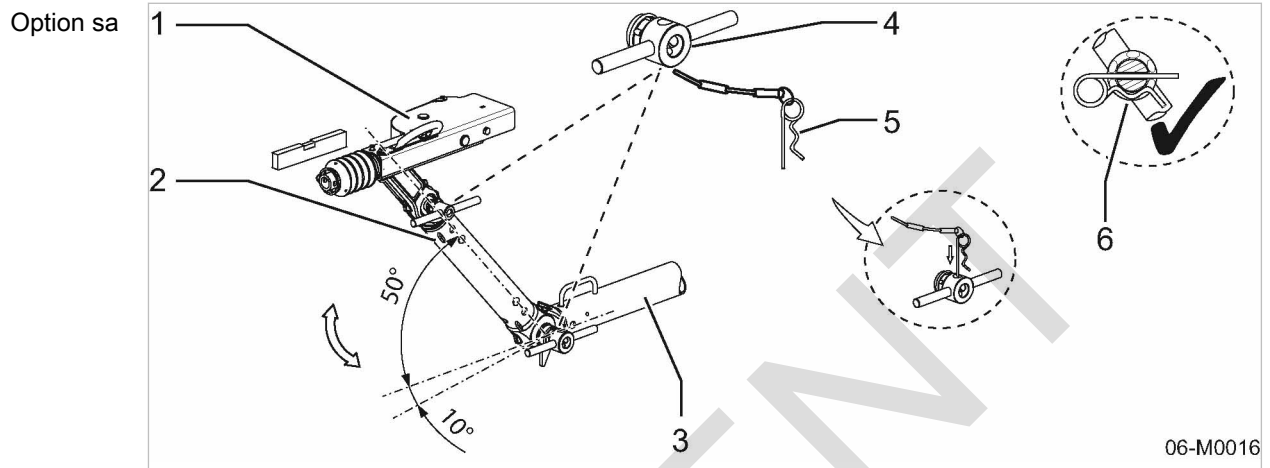


Fig. 19 Towbar height adjustment

- |   |                           |   |                             |
|---|---------------------------|---|-----------------------------|
| ① | Overrun braking mechanism | ④ | Locking lever               |
| ② | Towbar centre-piece       | ⑤ | Split pin                   |
| ③ | Towbar                    | ⑥ | Split pin properly inserted |

1. Pull out the cotter pins at both joint components and loosen the locking lever until the teeth in the height adjustment joints are no longer engaged.
2. The fixed part of the towbar must be parallel to the ground when the compressor is coupled to the towing vehicle, see illustration 19.

The centre-piece can be moved up to 49° upwards and 10° downwards for height adjustment.

3. Tighten the locking lever again and secure by striking with a hard rubber hammer.
4. Insert the cotter pin.
5. Check if:
  - the teeth in the tow bar height adjusting joints are fully engaged,
  - the locking levers are tightened,
  - the cotter pin is correctly inserted to secure the locking lever (see Pos. 6 in Fig. 19).
6. Tighten the locking lever again after 50 km.



The serrations joint will not disengage. The serrations are corroded together.  
➤ Free the teeth by jerking the towbar horizontally and vertically.

6.4.2 Option sh  
Adjusting the coupling height

The height of the towbar can be adjusted, to a degree, to suit the towing vehicle coupling height. There are three height levels.

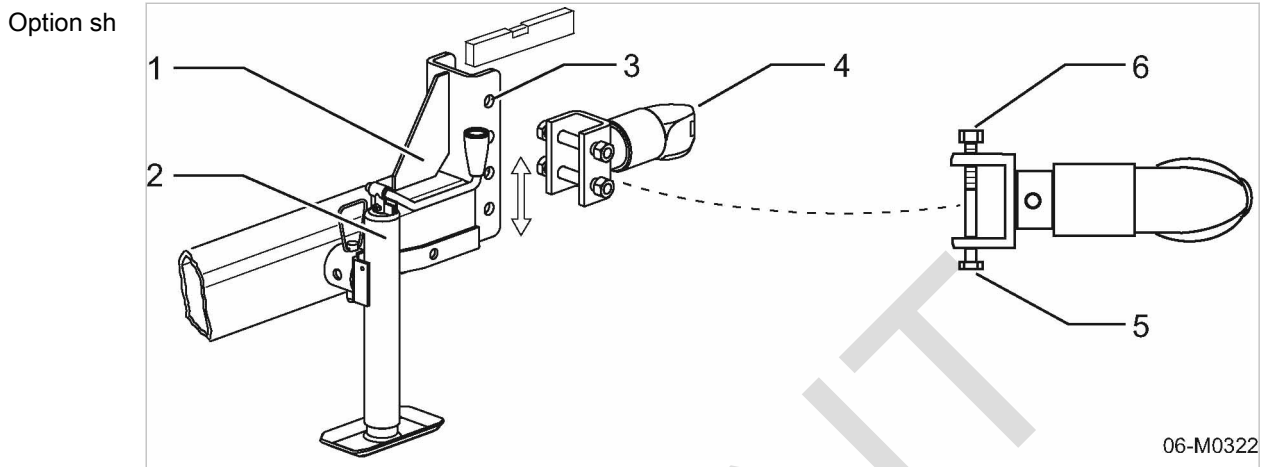


Fig. 20 Adjusting the coupling height

- |                |                  |
|----------------|------------------|
| ① Towbar       | ④ Ball coupling  |
| ② Prop stand   | ⑤ Hex-head screw |
| ③ Fixing holes | ⑥ Hexagonal nut  |

1. Position the compressor near the towing vehicle hitch and secure with chocks under the wheels.
2. Adjust the prop to bring the towbar horizontal.
3. Unscrew the nuts and withdraw the fixing bolts.
4. Adjust the vertical position of the towing coupling/eye to match the height of the towing vehicle coupling. Line up the fixing holes in the coupling/eye with those in the towbar.
5. **WARNING!**  
Risk of accident due to separation of the machine from the towing vehicle!  
Improper fastening of the ball coupling or hitch to the tow-bar can cause a separation of the trailer from the towing vehicle and thus an accident.
  - Check that the ball coupling or hitch are properly attached to the tow-bar with both cotter pins.
6. Insert the fixing bolts and tighten the nuts.
7. Tighten the nuts.



### 6.4.3 Changing the towing eye

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

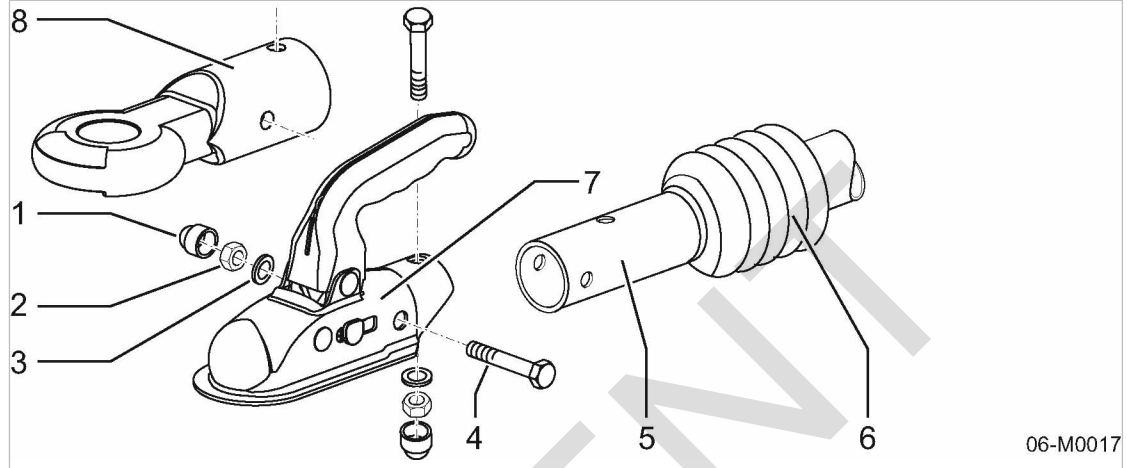
**Material** Protective gloves  
Wrench  
Hammer

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

- Ascertain which towbar is fitted to the machine.

**6.4.3.1 Option sa, sd  
Changing the towing eye (European chassis)**

Option sa, sd



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Fig. 21 Changing the ball hitch/towing eye (European chassis)

- |                  |                     |
|------------------|---------------------|
| ① Protective cap | ⑤ Towbar tube       |
| ② Hexagonal nut  | ⑥ Protective sleeve |
| ③ Washer         | ⑦ Ball coupling     |
| ④ Hex-head screw | ⑧ Towing eye        |

1. Push back the protective sleeve ⑥.
2. Remove the protective caps ① of both screw connections.
3. Remove the nuts ②, remove the washers ③ and withdraw the screws ④.
4. Remove the ball coupling ⑦ or eye ⑧ from the towbar tube ⑤.
5. Push the new ball coupling or towing eye in/in the towbar tube.
6. Adjust the position of the components till the holes in the coupling/eye line up with those in the towbar tube.
7. Insert the securing bolts ④, fit the washers ③ and nuts and tighten. Tread nuts ② on both screws and tighten with torque wrench (see chapter 2.4.4).
8. Replace the protective caps ① and slide the protective sleeve ⑥ forward.

6.4.3.2 Option sh  
Changing the towing eye (USA chassis version)

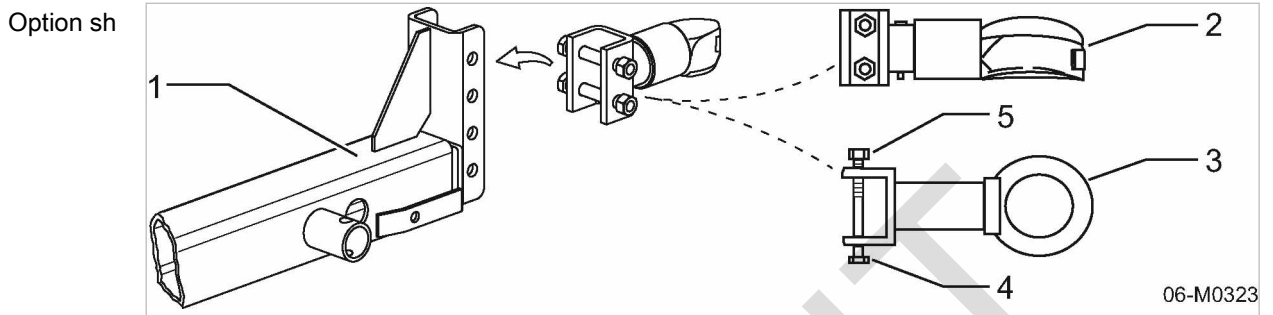


Fig. 22 Replacing the ball coupling/eye (US chassis)

- |                 |                  |
|-----------------|------------------|
| ① Towbar        | ④ Hex-head screw |
| ② Ball coupling | ⑤ Hexagonal nut  |
| ③ Towing eye    |                  |

1. Unscrew the nuts ⑤ and withdraw the fixing bolts ④.
2. Remove the coupling or eye from the towbar.
3. Place the new ball coupling or towing eye on/in the towbar and line up the fixing holes on towing eye/coupling and towbar.



4. **WARNING!**  
Risk of accident due to separation of the machine from the towing vehicle!  
Improper fastening of the ball coupling or hitch to the tow-bar can cause a separation of the trailer from the towing vehicle and thus an accident.
  - Check that the ball coupling or hitch are properly attached to the tow-bar with both cotter pins.
5. Insert the fixing bolts and tighten the nuts.
6. Tighten the nuts.

## 7 Initial Start-up

### 7.1 Ensuring safety

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



Disregard of warning instructions can cause serious injuries!

#### Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

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

Further information

Details of authorised personnel are found in chapter 3.4.2.

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

### 7.2 Before Initial Start-up (or Recommissioning)

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

#### 7.2.1 Note when commissioning



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

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

**7.2.2 Special measures for re-commissioning after storage**

- Carry out the following before every start-up after long period of storage:

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

Tab. 66 Measures for re-commissioning the compressor after a long period of storage

**7.3 Checking installation and operating conditions**

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

| Check  | 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?   | 10.3.4            |            |
| ➤ Is the maintenance indicator on the air intake filters (engine and compressor) OK? | 10.3.2,<br>10.4.7 |            |
| ➤ Is there sufficient coolant in the coolant expansion tank?                         | 10.3.1            |            |
| ➤ Is there sufficient fuel in the fuel tank?   | –                 |            |
| ➤ Is there sufficient tool oil in the tool lubricator? (Option ec)                   | 10.8.1            |            |
| ➤ Is there enough antifreeze in the frost protector? (Option ba)                     | 10.8.5            |            |
| ➤ Are the access doors closed and all body panels in place?                          | –                 |            |
| ➤ Are the tyre pressures OK?   | –                 |            |

Tab. 67 Positioning and operating conditions checklist

## 7.4 Low-temperature operation (winter)

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

- In temperatures below  $0\text{ }^{\circ}\text{C}$ , use the following operating materials/components:
  - Winter-grade engine oil,
  - low viscosity cooling oil for the compressor,
  - Winter-grade diesel fuel
  - stronger battery



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

**Allow the engine to warm up:**



1. **NOTICE!**  
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  $+30\text{ }^{\circ}\text{C}$  is reached. The airend discharge temperature is shown at the temperature gauge switch on the instrument panel.

### 7.4.1 Starting assistance

If the machine's starter battery is discharged, it 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.



#### **WARNING**

Fire and explosion hazard.

High currents can flow if the battery is short-circuited. A damaged battery can catch fire or explode.

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

- Observe the instructions provided with the 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.



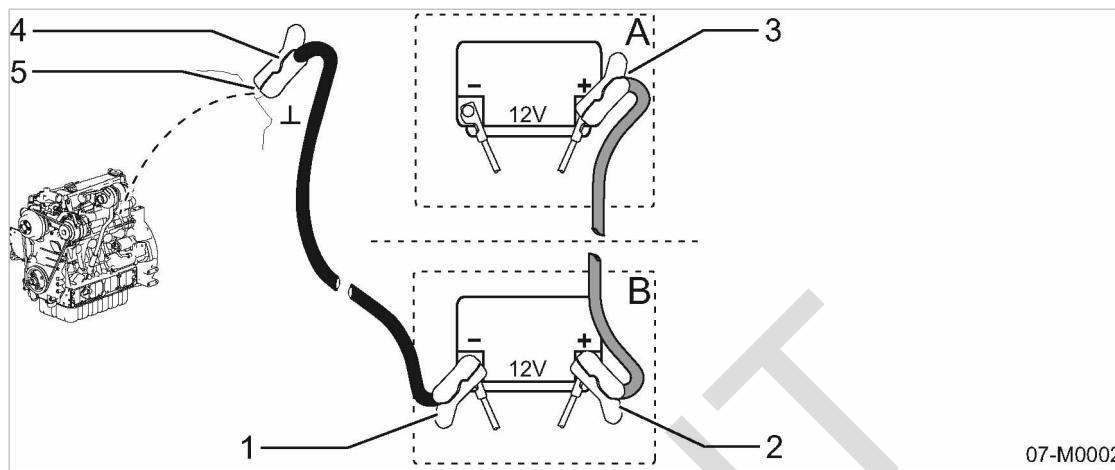


Fig. 23 Jumper cable connection diagram

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

**Observing the safety instructions:**



1. **WARNING!**  
Fault in starting aid process!
  - Connect only batteries of the same voltage.
  - Ensure that machine and assisting vehicle do not touch.
  - Switch off all consumers prior to connecting and disconnecting the batteries.
  - Only use standard jumper cables of sufficient diameter and with insulated terminal clamps.
  - Observe the instructions provided with the jumper cables.
  - Keep jumper cables away from rotating parts.
  - Avoid short-circuits due to incorrect poling and/or bridging with tools.
  - Do not bend over the batteries when attaching jumper cables.
  - Do not attempt to start the machine if its batteries are frozen. Allow the battery to thaw first.
  - Do not try to start the machine with a boost charger.
2. Comply with the safety instruction shown when using starting aids and starter batteries.

**Preparations:**

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

**Connecting the battery jumper cables**

1. Clamp the first terminal clamp ③ of the red jumper cable to the positive pole of the engine's battery.
2. Clamp the second terminal clamp ② of the red jumper cable to the positive pole of the assisting vehicle's battery.
3. **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 the pole clamps of the jumper cable.
  - Work with caution.
4. Connect the first pole clamp ④ of the black jumper cable to the engine block or a connected, solid and unpainted metal component of the engine ⑤ (as distant as possible to the batteries).
5. Clamp the second terminal clamp ① of the black jumper cable to the negative pole of the assisting vehicle's battery.

**Starting the engine**

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



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

**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 (+).
3. Place the pole caps.
4. Close the maintenance panels and/or bonnet.



A stop of the compressor engine as soon as the cables are disconnected could indicate major damage to the alternator or battery to be repaired by a specialised workshop.

**7.4.2 Option ba, bb  
Starting up low-temperature equipment**

- Ascertain which low temperature equipment is fitted to the machine.

**Option ba Operating the frost protector**

- Use the checklist when initially starting the frost protector.

| To be checked   | See chapter | Confirmed? |
|---|-------------|------------|
| Check the level of antifreeze in the frost protector. | 10.8.5      |            |
| Close the tap on the frost protector.                 | 8.5         |            |

Tab. 68 Low-temperature equipment checklist

**Option bb Operating the coolant pre-heater:**

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

The connection for the mains supply is located on the machine's instrument panel.

Option bb

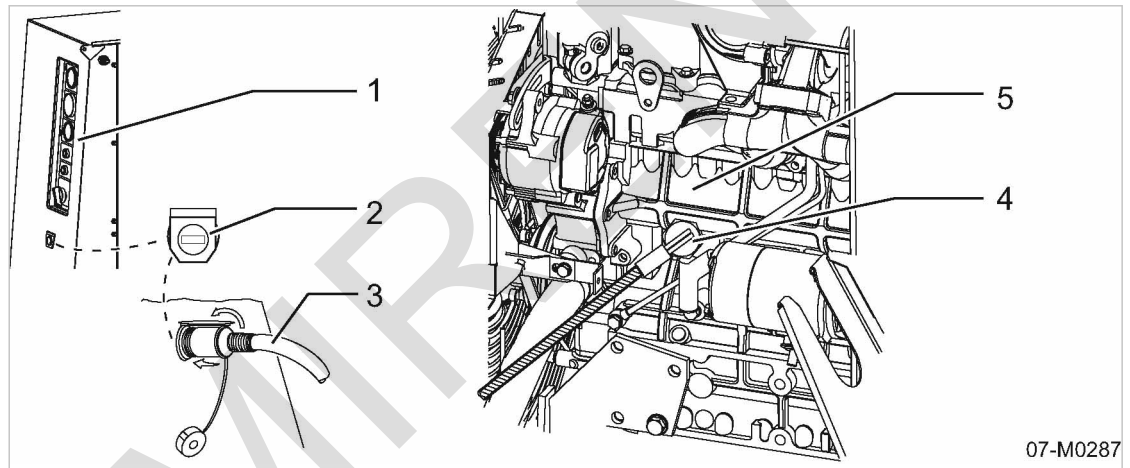


Fig. 24 Coolant pre-heating

- |   |                       |
|---|-----------------------|
| ① Operating panel                       | ④ Coolant pre-heating |
| ② Connection for the coolant pre-heater | ⑤ Engine block        |
| ③ Power cable                           |                       |



**1. DANGER!**

Danger of fatal injury from electric shock!

Serious injury or death can result from a short-circuit in the electric coolant pre-heater.

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

2. Connect the coolant pre-heater to the user's power socket with the power cable supplied.

## 7.5 Option ga Activating the generator

The generator can be operated without earthing.

Test the insulation monitoring daily with the engine running before activating the generator.

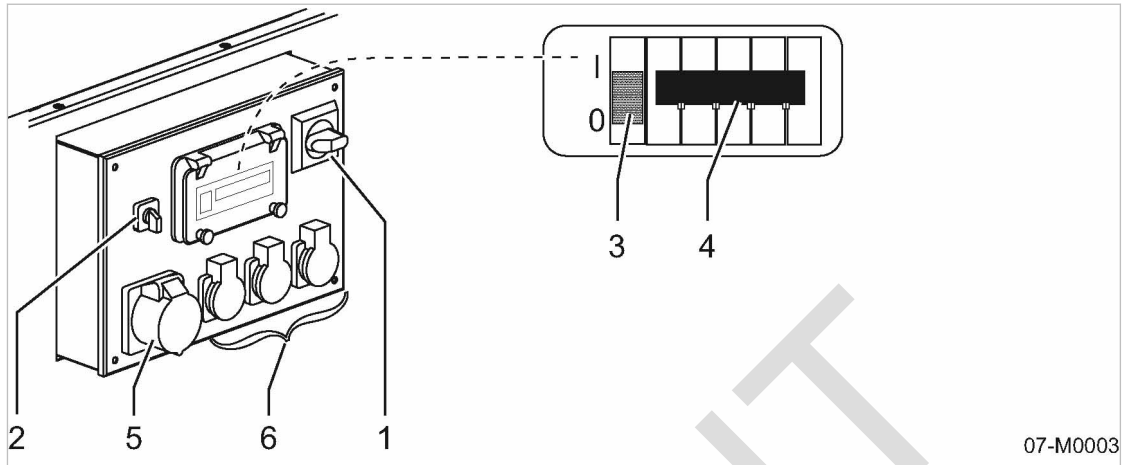


Fig. 25 Insulation monitoring - 400 V AC, 3-phase generator

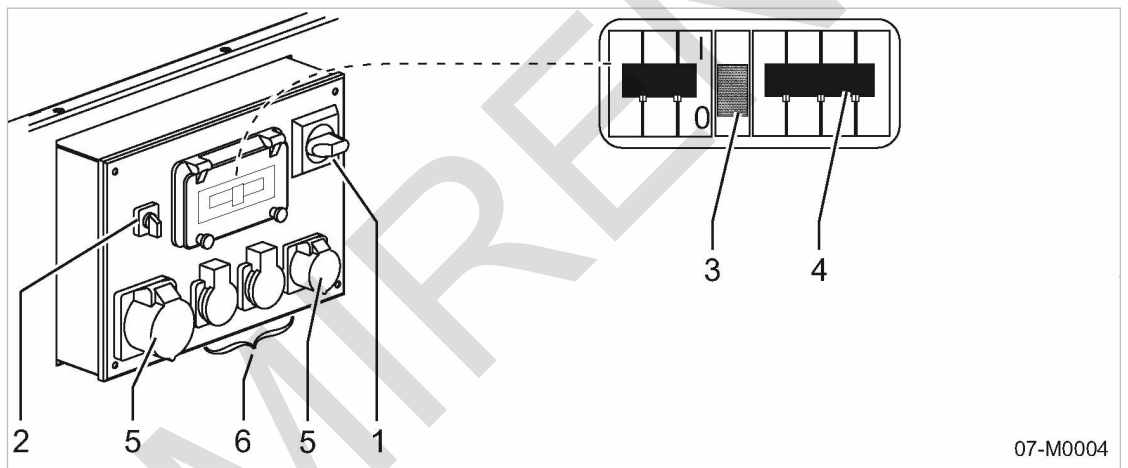


Fig. 26 Insulation monitoring - 230 V AC, 3-phase generator

- |  |  |
|--|--|
| ① «Main switch»  | ④ «Mains circuit breaker»<br>(«Circuit breaker» designed as automatic circuit-breaker with shunt trip) |
| ② «Mode selection switch»  | ⑤ AC power sockets   |
| ③ Test button «Insulation monitoring» with indicator light for <i>earth leak</i> | ⑥ AC power sockets   |

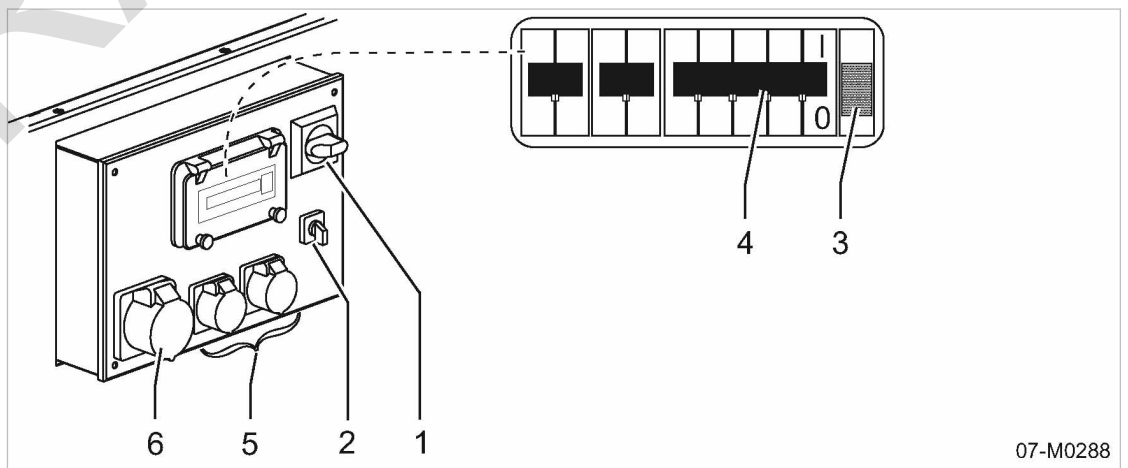


Fig. 27 insulation monitoring - 115 V, single-phase generator

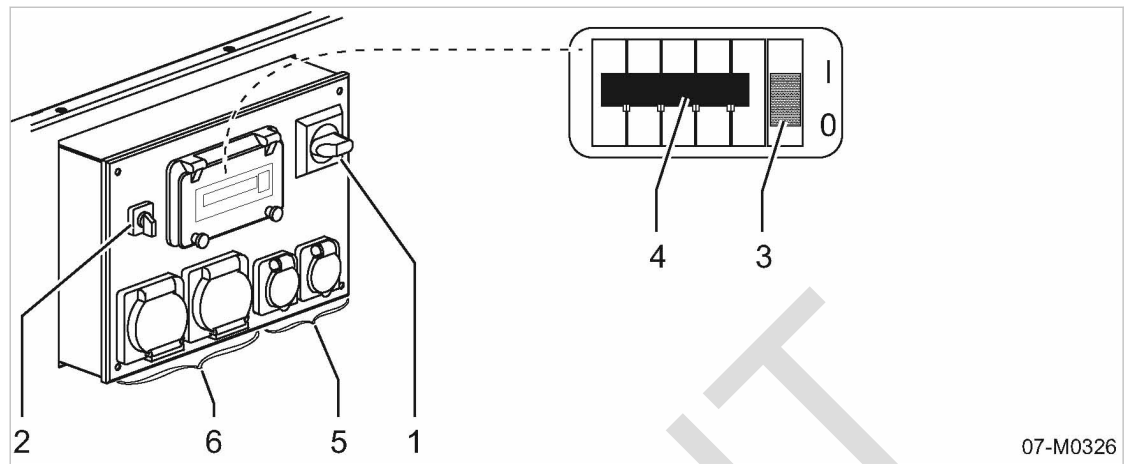


Fig. 28 insulation monitoring - 230 V, single-phase generator

- |  |   |
|--|---|
| ① «Main switch»  | ④ «Mains circuit breaker»   |
| ② «Mode selection switch»  | («Circuit breaker» designed as automatic circuit-breaker with shunt trip) |
| ③ Test button «Insulation monitoring» with indicator light for <i>earth leak</i> | ⑤/⑥ AC power sockets  |

1. Activate the machine.



2. **DANGER!**

Risk of fatal injury caused by contact with live components!

- The generator may only be used if the «circuit breaker» («mains circuit breaker») has tripped during the test!

3. Check the insulation monitor according to instructions:



Test instructions are provided on the label attached to the generator control box.

**DANGER!**

**Electrical power.**

Risk of fatal injury caused by contact with live components!

- ▶ Test the «main circuit breaker» each day while the machine is running.
- ▶ The generator may only be operated if the mains circuit breaker is functioning correctly.

Checking the «safety cut-out»:

- Turn on «mains circuit breaker» ④ for the generator.
- Press and hold the «test button» ③ for 3 seconds.

The «mains circuit breaker » ④ trips.

Problem: The «mains circuit breaker» does not trip out?

- Shut down the generator and call your authorised KAESER Service.

Tab. 69 Test instructions for a generator with an earth leak detection device.

## 8 Operation

### 8.1 Ensuring safety

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



Disregard of warning instructions can cause serious injuries!

#### Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Make sure that no one is working on the machine.



#### **WARNING**

Danger of injury from hot, rotating and electrically live components!  
Serious injury can be caused by touching such components.

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

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

### 8.2 Starting and stopping

Precondition No personnel are working on the machine.  
All doors and siding panels are closed.



#### **NOTICE**

Serious damage to engine from cold starting sprays.  
Cold-start assists, such as ether or other sprays, can cause severe engine damage.

- Do not use cold start sprays.

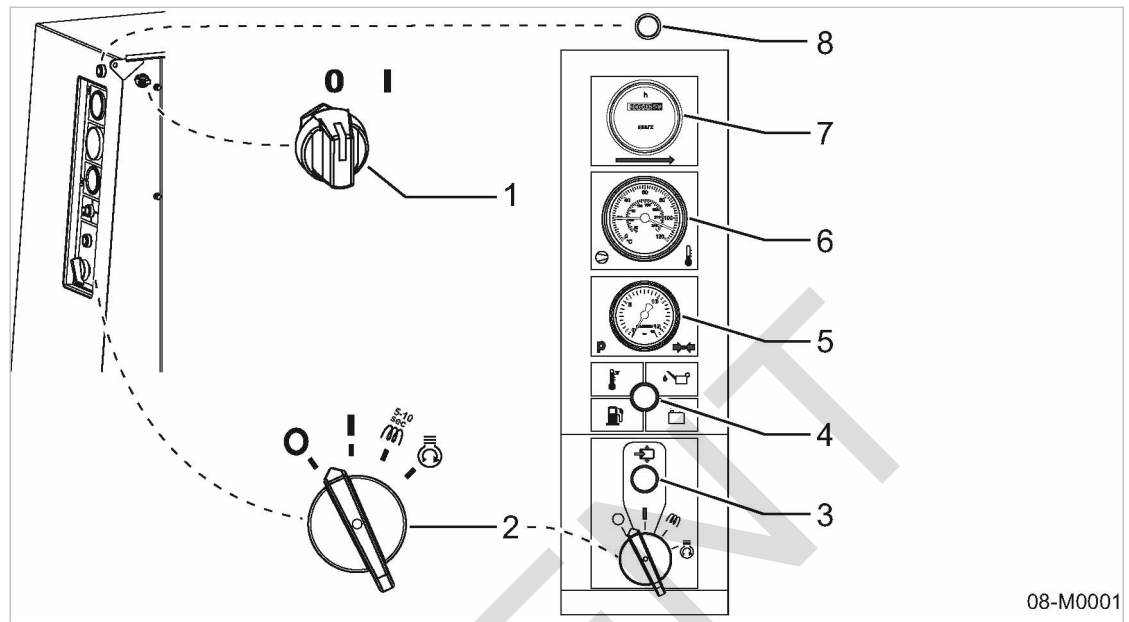


Fig. 29 Starting instruments

- |   |   |
|---|---|
| ① «Controller On» switch  | ⑤ Compressed air outlet pressure gauge  |
| ② «Starter switch »   | ⑥ Temperature gauge switch  |
| ○ – STOP/Off  | ⑦ Operating hours counter   |
| I – On  | ⑧ Indicator <i>fault on the diesel particulate filter</i><br>(Option Ic only) |
| ☰ – Preheat   |   |
| ⊕ – START   |   |
| ③ ⚡ – «Load On» key with integrated <i>LOAD mode</i> indicating light |   |
| ④ <i>Charging indicator lamp, group alarm lamp</i>                    |   |

#### Notes concerning snow and ice

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

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

#### 8.2.1 Running the machine

1. Open the right-hand access door.
2. Turn the «Controller On» switch.
3. Close the door.
4. Turn the « starter switch» to "ON".  
The *charging indicating light* must light.

#### 8.2.2 Engine pre-heating

The pre-heating period should be between 5 and a maximum of 10 seconds depending on ambient temperature. Low ambient temperatures require a longer pre-heating period.



The electric fuel pump starts automatically during pre-heating. This vents the fuel line before each start.



1. **NOTICE!**  
Destruction of the glow plug!  
Excessive pre-heating can cause severe damage to the glow plug.
  - Never allow the glow plugs to operate for longer than 10 seconds.
2. Turn the «starter switch» to the “Pre-heat” position and hold for 8 to 10 seconds.  
The engine's glow plugs are energised and the engine pre-heated.

### 8.2.3 Starting the machine



1. **NOTICE!**  
Destruction of the starter!  
Improper operation could destroy the starter.
  - As long as the engine is running, do not actuate the starter switch.
  - Do not turn and hold the starter switch for longer than 30 seconds.
  - Wait for a few minutes after each attempt to start the engine.
  - The starter switch must be returned to the neutral position before each start attempt (re-start protection).
2. Turn the «starter switch »to "START" and release it as soon as the engine starts.  
The *charging indicator lamp* extinguishes as soon as the engine is running.

#### 8.2.3.1 Option Ic

##### Note the indicator for the diesel particulate filter

Upon activating the «starter switch», the indicator light *Alarm, diesel particle filter* will light up briefly and goes out if there is no fault. The machine can be operated normally. The diesel particulate filter traps any soot emitted from the engine. When the filter module has reached capacity, the control unit switches automatically to regeneration.

- Note the indication *alarm, diesel particle filter*.

Indicating lamp dark: diesel particulate filter works normal.

Indicating lamp flashes or is lit: take measures as described in chapter 9.4 “Faults in the diesel particulate filter”.



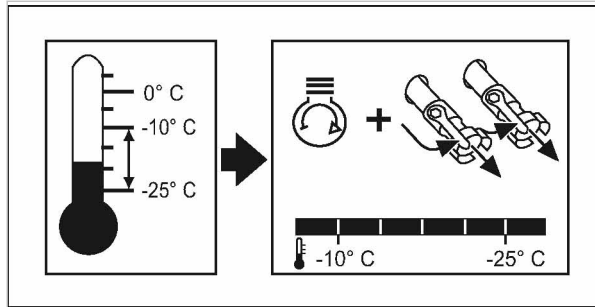
The control unit records the alarm message so it can be proven if the machine continues to be operated with an illuminated alarm indication. The manufacturer accepts no liability from consequential damage.

### 8.2.4 Allow the machine to run up to operating temperature

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



Option ba



08-M0008

Fig. 30 Label referring to the warm-up period when ambient temperatures are below -10 °C

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

### 8.2.5 Switching to LOAD

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

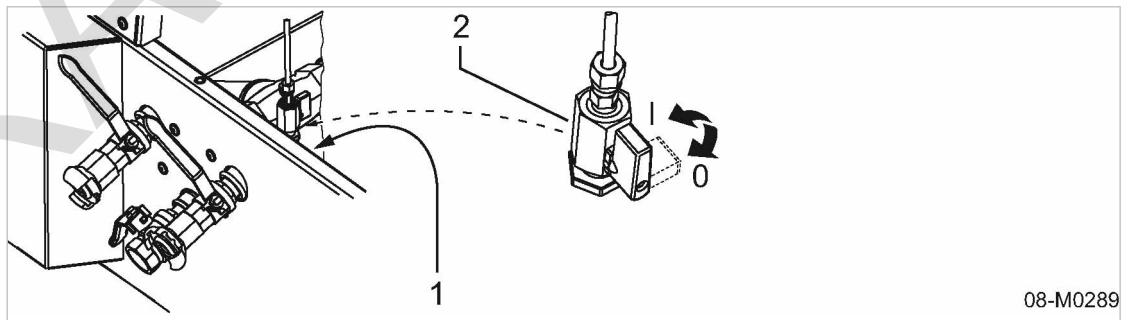


1. **WARNING!**  
Compressed air can cause serious injuries.
  - Never direct compressed air at persons or animals.
  - Make sure that no one is working on the machine.
  - Ensure that all panels are in place.
  - Ensure that all machine doors are closed.
2. Press the «Load On »button.

Result The integrated *LOAD* indicator lights and the engine accelerates to maximum speed.

### 8.2.6 Regulating the shut-off valve

To prevent users' devices from venting when the compressor shuts down and automatically vents, a shut-off valve is installed in the control air line between oil separator tank and air distributor.



08-M0289

Fig. 31 Control line shut-off valve

- ① Compressed air outlet distributor
- ② Shut-off ball valve
  - I – open
  - 0 – closed

1. Open the right-hand access door.

2. Check that the shut-off valve in the control air line is open. If not, open it.  
The machine is ready for operation.
3. Close the door.

### 8.2.7 Shutting down the machine

**NOTICE**

Thermal overload of the turbocharger!

Abrupt stopping of the engine under load can cause a fault or damage to the turbocharger.

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

#### Operating the machine in the cool-down phase

1. Close all «compressed air outlet valves» on the air distributor.  
The engine runs in IDLE and the turbocharger can cool down.
2. After approx. 2 to 3 minutes, switch the «starter switch» to the "STOP/Off" position.  
The engine turns off.

#### Make sure equipment is protected from venting

Compressed air lines to consumers should not vent when the compressor shuts down.  
A typical example would be a user's auxiliary air receiver.



The shut-off valve must remain open for any other applications!

1. Open the right-hand access door.
2. Close the shut-off valve.

Further information Close the shut-off valve in the control line (see Fig. 31).

#### Shutting down the machine:

1. Switch off the «Controller On» switch.
2. Close the door.



Secure both doors with locks as necessary.

## 8.3 Option ua Using the hose reel

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

- Check which hose reel is fitted to your machine.

### 8.3.1 Using the hose reel (EC version)

The hose reel is on the front of the machine.

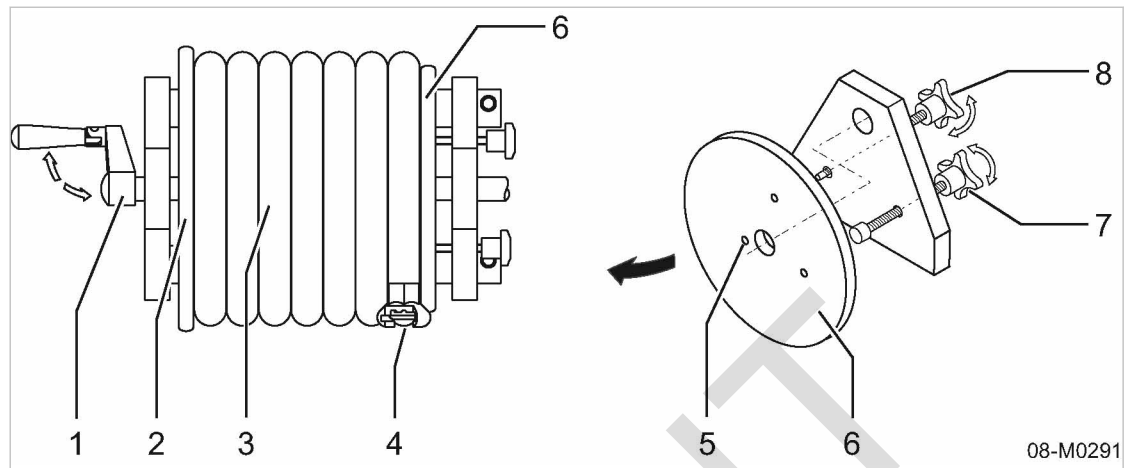


Fig. 32 Hose reel (EC design)

- |   |                           |   |                         |
|---|---------------------------|---|-------------------------|
| 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 bolt |

#### 8.3.1.1 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 knob.  
The reel is locked against unwanted reeling in or out.
4. Fold in the handle.
5. Connect the air tool.
6. Activate the machine.
7. Open the compressed air shut-off valve.

#### 8.3.1.2 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.

#### 8.3.1.3 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 ⑧ in the reel's side plate ⑤ until it is aligned with the securing screw ②.
3. Screw in the securing bolt fully.
4. Tighten the clamping screw ⑦.

**8.3.2 Using the hose reel (USA version)**

The hose reel is mounted on the towbar.

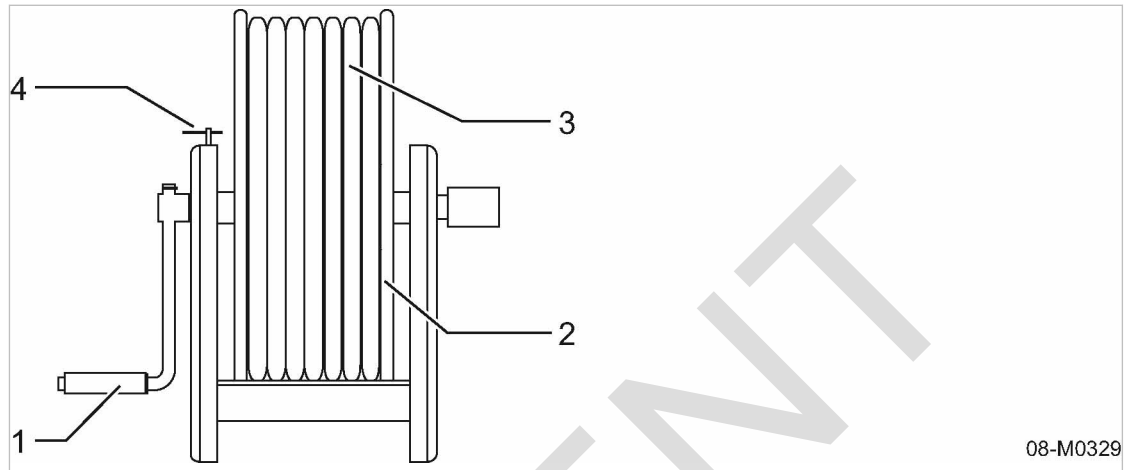


Fig. 33 Hose reel (EC design)

- |   |                |   |                |
|---|----------------|---|----------------|
| ① | Winding handle | ③ | Hose           |
| ② | Hose reel      | ④ | Clamping screw |

**8.3.2.1 Operating the machine with an extension air hose.**

1. Loosen the clamping screw ④.
2. Reel out the required length of hose ③.
3. Tighten the clamping knob.  
The reel is locked against unwanted reeling in or out.
4. Connect the air tool.
5. Activate the machine.
6. Open the compressed air shut-off valve.

**8.3.2.2 Operating the machine without an extension air hose.**

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

**8.3.2.3 Securing the hose reel for transport**

1. Check that the hose is firmly and evenly reeled in. Reel again, if necessary.
2. Tighten the clamping screw ④.  
The reel is locked against unwanted reeling in or out.

## 8.4 Option ec Operating the tool lubricator

Precondition The machine is shut down.  
Tool lubricator filled with oil

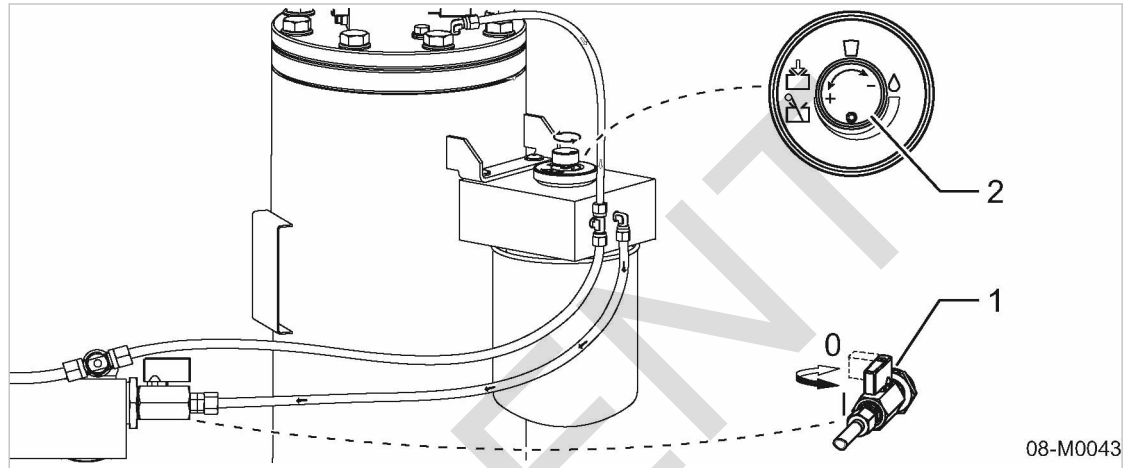


Fig. 34 Setting the tool lubricator

① Shut-off valve

I – open

0 – closed

② Metering knob

➤ Open the right-hand access door.

### Adding lubricating oil

1. Open the shut-off valve.
2. Close the door.

### Setting the oil flow

The amount of oil the compressed air should contain depends on the application and must be determined by the user. It depends on the nature of the air consumers and the supply hoses.

The metering valve controls the flow of oil into the air.

- Turning clockwise: reduces the oil flow.
- Turning counter-clockwise: increases the oil flow.

1. Set the required oil flow.
2. Close the door.

Further information Fill the tool lubricator with suitable oil (see chapter 10.8.1)

### Shutting off lubricating oil

1. Close the shut-off valve.
2. Close the door.

## 8.5 Option ba, bb Using the low-temperature equipment

- Ascertain which low temperature equipment is fitted to the machine.

### 8.5.1 Option ba Using with the frost protector switched on

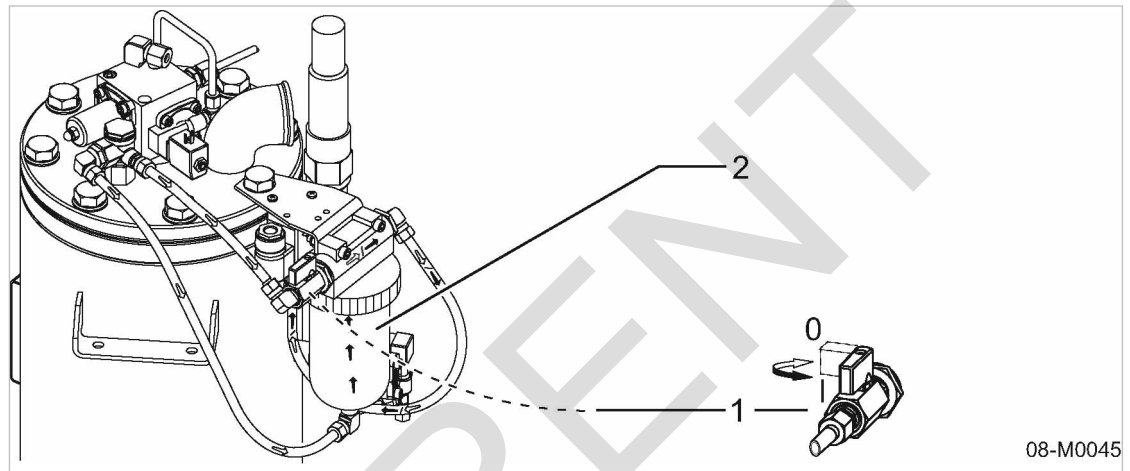


Fig. 35 Frost protector on and off

- ① Shut-off valve  
I – open  
0 – closed
- ② Frost protector tank

Precondition The machine is switched off.

- Open the right-hand access door.

#### Machine operation with activated frost protector:

Operation at temperatures below 0 °C (winter operation).

Precondition Frost protector filled with antifreeze

1. Keep the frost protector shut-off valve permanently closed (position 0).
2. Close the access door.

Result The machine is ready for winter operation.

Further information See chapter 10.8.5 for filling the frost protector with antifreeze.

#### Machine operation without activated frost protector:

Operation at temperatures above 0 °C (summer operation).

1. Leave the frost protector shut-off valve open permanently (position I).
2. Close the access door.

**8.5.2 Option bb  
Coolant pre-heating**

- Start the coolant pre-heating as described in chapter 7.4.2.

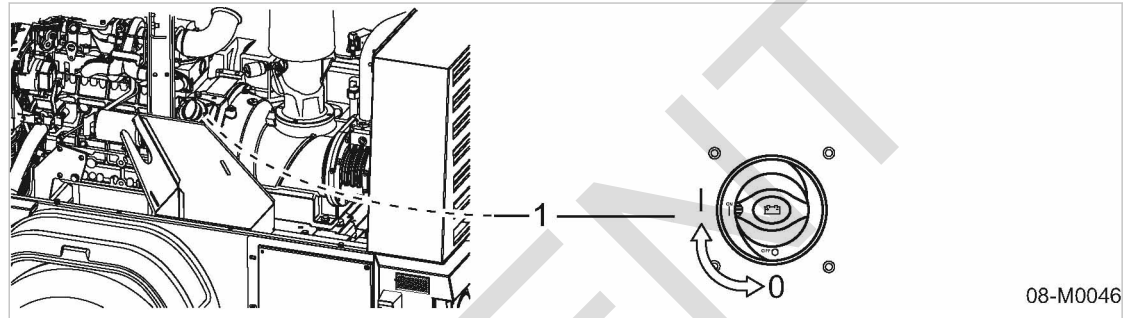
**8.6 Option oa  
Operating the battery isolating switch**


Fig. 36 Battery isolating switch

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

- Open the left-hand door.

**Start the machine**

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

**Shutting down the machine:**

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

**8.7 Option ga  
Generator operation**

**DANGER**

Risk of fatal injury caused by contact with live components!

- Check correct function of the insulation monitoring device daily (see chapter 7.5).
- Have the generator and control box checked annually by a qualified electrician (see chapter 13.9).

### 8.7.1 Switching in the generator

Precondition LOAD mode

Read and follow the instructions on generator operation in chapter 4.6.5.3.

1. Turn the «generator main switch »to the "I" position.
2. Set the «automatic circuit-breaker(s)» to the "I" position.
3. Turn the mode selector switch to the required mode of operation

Further information See chapter 4.6.5.2 for generator controls.

See chapter 4.6.5.1 for generator operating modes.

### 8.7.2 Switching off the generator

Precondition Read and follow the instructions on switching off the generator in chapter 4.6.5.3.



1. **NOTICE!**

Thermal overload of the turbo generator!

Stopping the machine abruptly after the generator has been in operation for some time can cause heat damage to the generator.

- Allow the engine to run for about 2 minutes in idle before shutting down to allow the generator to cool down.

2. Set the «automatic circuit breaker(s)» to the "0" position.
3. Turn the «generator main switch» to the "0" position.
4. Close all «compressed air outlet valves» on the air distributor.

The engine runs in IDLE and the generator can cool down.

After running about 2 minutes in IDLE, the generator has cooled down enough so that the engine can be stopped.



## 9 Fault Recognition and Rectification

### 9.1 Basic instructions

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

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

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

### 9.2 Evaluate engine faults and alarms

Further information The engine service manual gives further information.

#### 9.2.1 Engine refuses to start or does not turn over

| Possible cause  | Remedy  | Where can I get help? |                 |                       |
|---|---|-----------------------|-----------------|-----------------------|
|   |   | Specialised workshop  | KAESER -service | Engine service manual |
| Defective starter.  | Have replaced.  | X                     | –               | –                     |
| The fuel cut-off device has not opened.                       | Check the coil and electrics and have changed if necessary. | X                     | –               | –                     |
| Fuel tank empty.  | Fill up the fuel tank                                       | –                     | –               | –                     |
| Airlock in the fuel line between fuel tank and injector pump. | Bleed the fuel line (see chapter 10.3.3).                   | –                     | –               | X                     |
| Fuel filter clogged.  | Clean or replace, see chapter 10.3.3.                       | –                     | –               | X                     |
| Fuel line broken.   | Have replaced.  | X                     | X               | –                     |
| Defective control fuse or relay.                              | Have repaired or replaced if necessary.                     | X                     | X               | –                     |
| Airend discharge temperature too high.                        | Have adjusted.  | –                     | X               | –                     |
| Defective temperature gauge switch giving no enable signal.   | Have repaired or replaced if necessary.                     | –                     | X               | –                     |
| Starter switch defective.                                     | Have repaired or replaced if necessary.                     | –                     | X               | –                     |
| Electrical connections and/or cables loose or broken.         | Tighten the connection or have the cable replaced.          | X                     | X               | –                     |
| Defective battery or low charge.                              | Maintain battery, see chapter 10.3.9.                       | –                     | –               | –                     |

| Possible cause  | Remedy                                      | Where can I get help? |                 |                       |
|---|---|-----------------------|-----------------|-----------------------|
|   |   | Specialised workshop  | KAESER -service | Engine service manual |
| Defective alternator.                                     | Have repaired or replaced if necessary.     | X                     | X               | –                     |
| Defective alternator regulator.                           | Have repaired or replaced if necessary.     | X                     | X               | –                     |
| Oil pressure switch indicating insufficient oil pressure. | Check engine oil level, see chapter 10.3.4. | –                     | –               | X                     |
|   | Have the engine repaired or exchanged.      | X                     | X               | –                     |

Tab. 70 Fault: engine refuses to start or comes to a stop.

### 9.2.2 Engine does not reach full speed

| Possible cause  | Remedy                                    | 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 (see chapter 10.3.3). | –                     | –               | X                     |
| Fuel filter clogged.  | Clean or replace, see chapter 10.3.3.     | –                     | –               | X                     |
| Fuel line broken.   | Have replaced.                            | X                     | X               | –                     |
| Speed adjustment cylinder maladjusted or defective.           | Repair or have replaced if necessary.     | X                     | X               | –                     |

Tab. 71 Fault: engine does not reach full speed.

### 9.2.3 Indicator lamp remains on

| Possible cause  | Remedy   | 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                     | X               | –                     |
| Defective alternator.                                 | Have repaired or replaced if necessary.            | X                     | X               | –                     |
| Defective alternator regulator.                       | Have repaired or replaced if necessary.            | X                     | X               | –                     |

| Possible cause               | Remedy   | Where can I get help? |                |                       |
|------------------------------|--|-----------------------|----------------|-----------------------|
|                              |  | Specialised workshop  | KAESER-service | Engine service manual |
| Engine oil pressure too low. | Check engine oil level, see chapter 10.3.4.      | –                     | –              | X                     |
|                              | Check the engine and have repaired if necessary. | X                     | X              | –                     |

Tab. 72 Indicator lamp remains on

## 9.3 Evaluate 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. | Have repaired or replaced if necessary.  | –                     | X              |
| Inlet valve does not close.                       | Check the controller, the control air line and the inlet valve and replace if necessary. | –                     | X              |
| Pressure gauge indicating false pressure.         | 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. 73 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.  | Have repaired or replaced if necessary.  | –                     | X              |
| Inlet valve not opening or only opening partially. | Repair or have replaced if necessary.  | –                     | X              |
| Pressure gauge indicating false pressure.          | Have repaired or replaced if necessary.  | –                     | X              |
| Pressure relief valve maladjusted and/or leaking.  | Have repaired or replaced if necessary.  | –                     | X              |
| Venting valve does not close.                      | Check the connections and function and have repaired or replaced as necessary. | –                     | X              |

| Possible cause  | Remedy   | Where can I get help? |                |
|---|--|-----------------------|----------------|
|   |  | Specialised workshop  | KAESER-service |
| The engine runs at maximum speed (LOAD).                | See chapter 9.2.                                 | X                     | X              |
| Engine air filter and/or compressor air filter clogged. | Clean or change, see chapters 10.3.2 and 10.4.7. | –                     | –              |
| Oil separator cartridge heavily clogged.                | Change, see chapter 10.4.6.                      | –                     | –              |

Tab. 74 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 10.4.6.  | –                     | –              |
| Inlet valve does not close.                       | 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. 75 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 10.5.   | –                     | –              |
| Defective working element in the combination valve.                    | Have repaired or replaced if necessary.  | –                     | X              |
| Gauge 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 10.4.6 for changing. | –                     | X              |
| Compressor oil filter clogged.   | Change, see chapter 10.4.4.  | –                     | –              |
| Compressor cooling oil level too low.                                  | Topping up, see chapter 10.4.2.  | –                     | –              |

| Possible cause                                  | Remedy                                      | Where can I get help? |                |
|---|---|-----------------------|----------------|
|   |   | Specialised workshop  | KAESER-service |
| 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. 76 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 oil separator cartridge dirt trap or replace the strainer and nozzle if necessary. See chapter 10.4.5. | –                     | X              |
| Fractured oil separator cartridge.             | See chapter 10.4.6 for changing.   | –                     | –              |
| Oil level in the oil separator tank too high.  | Reduce to maximum level, see chapters 10.4.1 and 10.4.3.   | –                     | –              |

Tab. 77 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. 78 Fault: oil flows from the compressor air filter after shutdown

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

| Possible cause                                     | Remedy   | Where can I get help? |                |
|--|--|-----------------------|----------------|
|  |  | Specialised workshop  | KAESER-service |
| Blocked condensate drain on the cyclone separator. | Clean the cyclone separator dirt trap or replace the strainer and nozzle if necessary. See chapter 10.8.2. | –                     | X              |

Tab. 79 Fault: high moisture content in the compressed air

**9.4 Option Ic**  
**Evaluate faults in the diesel particulate filter**

A fault in the diesel particulate filter will trigger the indication *fault, diesel particulate filter*.

| Indication                                     | Meaning   | Remedy   |
|--|---|--|
| Flashes  | The exhaust temperature is too low for regenerating the filter module.<br>Regeneration of the filter module interrupted by shutting down the machine or IDLE running. | Run the machine in LOAD mode for some time.      |
| Illuminates for about 10 seconds every minute. | Maintenance due on the diesel particulate filter.   | Contact KAESER Service.                          |
| Remains illuminated                            | Fault in the diesel particulate filter system   | Disabling the machine<br>Contact KAESER Service. |

Tab. 80 Faults in the diesel particulate filter

**Blue engine exhaust**

There is unburnt lubricating oil in the engine exhaust which is partially deposited in the filter module of the diesel particulate filter and the rest escapes as blue smoke.

| Meaning  | Remedy   | Where can I get help? |                |                       |
|--|--|-----------------------|----------------|-----------------------|
|  |  | Specialised workshop  | KAESER-service | Engine service manual |
| A diesel particulate filter overburdened with oil and regenerated at too high temperature can result in damage to the ceramic filter module. | Carry out engine maintenance to avoid damage to the filter module. | X                     | X              | X                     |

Tab. 81 Fault 'blue engine exhaust'

**Grey or brownish exhaust gas**

| Meaning  | Remedy  | Where can I get help? |                |                       |
|--|---|-----------------------|----------------|-----------------------|
|  |   | Specialised workshop  | KAESER-service | Engine service manual |
| The exhaust contains residues of hydrocarbons or sulphate. | Have the fuel injection system checked.<br>Use an engine oil that produces low white ash. | X                     | X              | X                     |

Tab. 82 Grey or brownish exhaust gas

**9.5 Option ga**  
**Evaluate generator faults and alarms**
**9.5.1 There is no voltage or too low a voltage from the generator**

| Possible cause  | Remedy  | Where can I get help? |                |
|---|---|-----------------------|----------------|
|   |   | Specialised workshop  | KAESER-service |
| Defective drive belt.   | have replaced.  | X                     | X              |
| Generator / regulator defective   | Have repaired.  | X                     | X              |
| Overload protection switch triggered because of overload or defect.                   | Check the power requirement of the connected consumers and reduce if necessary; check the consumers for short circuits. | X                     | –              |
|   | Check the overload protection switch and have changed if necessary.   | X                     | X              |
| Engine speed too low.   | Have reset to rated speed.  | X                     | X              |
| Generator not switched in.  | Switch in the generator.  | –                     | –              |
| The compressor's working pressure is set too high, engine overloaded, speed drops off | Have the working pressure adjusted.   | X                     | X              |
| The engine power is reduced because of climatic conditions or other effects.          | Keep the generator and compressor load below the rated power  | –                     | –              |

Tab. 83 There is no voltage or too low a voltage from the generator

**9.5.2 Generator voltage too high**

| Possible cause                  | Remedy         | Where can I get help? |                |
|---------------------------------|----------------|-----------------------|----------------|
|                                 |                | Specialised workshop  | KAESER-service |
| Generator / regulator defective | Have repaired. | X                     | X              |

| Possible cause         | Remedy                     | Where can I get help? |                |
|------------------------|----------------------------|-----------------------|----------------|
|                        |                            | Specialised workshop  | KAESER-service |
| Engine speed too high. | Have reset to rated speed. | X                     | X              |

Tab. 84 Generator voltage too high

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## 10 Maintenance

### 10.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

#### Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Allow maintenance work to be performed by authorised personnel only.
- Make sure that no one is working on the machine.
- Ensure that all protective devices and cover panels are in place and secured.
- Ensure that all tools have been removed from the machine.
- Do not carry out any checks or maintenance while the machine is running.



The access doors are held up by gas struts.

- Check that the doors remain open.

Change any gas strut that is not able to hold the door open.

#### When working on the compressed air system

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

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

#### When working on the drive system

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

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

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

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

Option Ic Work on the diesel particulate filter



**NOTICE**

Damage of the diesel particulate filter!

- The machine must be shut down immediately if any damage or functional defect in the diesel particulate filter is noticed.
- Only authorised specialists, such as KAESER Service Technicians may carry out maintenance work on the diesel particulate filter.

## 10.2 Following the maintenance plans

### 10.2.1 Logging maintenance work



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

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

Adverse conditions are, e.g.:

- high temperatures
- much dust
- frequent use

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

- Logging all maintenance work.

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

Further information A list is given in chapter 10.9.

### 10.2.2 Maintenance tasks after commissioning

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

- Carry out maintenance tasks according to the following schedule.

| Component:<br>Task               | After the first<br>10 h | After the first<br>50 h | See chapter | Note      |
|----------------------------------|-------------------------|-------------------------|-------------|-----------|
| <b>Engine</b>                    |                         |                         |             |           |
| Change oil.                      |                         | X                       | 10.3.6      | Engine SM |
| Change the oil filter.           |                         | X                       | 10.3.7      | Engine SM |
| Check the fuel lines and clamps. |                         | X                       |             | Engine SM |

**Wheels/chassis:**

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

| Component:<br>Task  | After the first<br>10 h | After the first<br>50 h | See chapter | Note |
|---|-------------------------|-------------------------|-------------|------|
| Re-tighten the wheel nuts/bolts.                                      |                         | X                       |             |      |
| <b>Option ga, gb – generator:</b>                                     |                         |                         |             |      |
| Check the generator-drive belt tension and re-tension if necessary.   | X                       |                         | 10.8.6      |      |
| h = operating hours; Engine-SM = manufacturer's engine service manual |                         |                         |             |      |

Tab. 85 Maintenance tasks after commissioning

### 10.2.3 Regular Maintenance Work

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 every 2 years.  | A2000             |
| Every 3000 operating hours             | A3000             |
| Every 20000 operating hours            | A20000            |
| Every 36000 h, at least every 6 years. | A36000            |

Tab. 86 Maintenance intervals and regular maintenance tasks

The table below lists regular maintenance tasks.

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

#### 10.2.3.1 Machine maintenance schedule

- Carry out maintenance tasks according to the following schedule.

| Component:<br>Function   | Daily | A250 | A500 | A1000 | A1500 | A2000 | A3000 | A36000 | See chapter | Note |
|--|-------|------|------|-------|-------|-------|-------|--------|-------------|------|
| <b>Engine</b>  |       |      |      |       |       |       |       |        |             |      |
| Check inlet air filter maintenance indicator.                                | X     |      |      |       |       |       |       |        | 10.3.2      |      |
| Engine SM = engine manufacturer's service manual; SW = specialised workshop. |       |      |      |       |       |       |       |        |             |      |

| Component:<br>Function  | Daily | A250 | A500 | A1000 | A1500 | A2000 | A3000 | A36000 | See<br>chapter | Note               |
|---|-------|------|------|-------|-------|-------|-------|--------|----------------|--------------------|
| Check engine oil level.   | X     |      |      |       |       |       |       |        | 10.3.4         | Engine<br>SM       |
| Clean the engine air filter   |       | X    |      |       |       |       |       |        | 10.3.2         | Engine<br>SM       |
| Change the engine oil   |       | X    |      |       |       |       |       |        | 10.3.6         |                    |
| Replace the engine oil filter.  |       | X    |      |       |       |       |       |        | 10.3.7         | Engine<br>SM       |
| Check/adjust the drive belt tension.                                  |       | X    |      |       |       |       |       |        | 10.3.8         | Engine<br>SM       |
| Replace the drive belt.   |       |      | X    |       |       |       |       |        | 10.3.8         | Engine<br>SM       |
| Change engine air filter.   |       |      |      | X     |       |       |       |        | 10.3.2         |                    |
| Have the valve clearance adjusted.                                    |       |      |      | X     |       |       |       |        |                | SW<br>Engine<br>SM |
| Have the turbocharger checked.  |       |      |      |       |       |       | X     |        |                | SW                 |
| Check the engine coolant level.                                       | X     |      |      |       |       |       |       |        | 10.3.1         | Engine<br>SM       |
| Clean the radiator.   |       | X    |      |       |       |       |       |        | 10.5           |                    |
| Check antifreeze concentration.                                       |       | X    |      |       |       |       |       |        | 10.3.1         | Engine<br>SM       |
| Check radiator hose and hose clips, have replaced if necessary.       |       | X    |      |       |       |       |       |        |                | SW<br>Engine<br>SM |
| Replace the coolant.  |       |      |      | X     |       |       |       |        | 10.3.1         | Engine<br>SM       |
| Fill up the fuel tank   | X     |      |      |       |       |       |       |        |                |                    |
| Check/empty the water trap.   | X     |      |      |       |       |       |       |        | 10.3.3         |                    |
| Check fuel lines and hose clamping bands, have replaced if necessary. |       | X    |      |       |       |       |       |        |                | SW                 |
| Replace fuel lines and clamps.  |       |      |      |       |       | X     |       |        |                | SW                 |
| Clean the fuel micro-filter.  |       | X    |      |       |       |       |       |        | 10.3.3         | Engine<br>SM       |
| Change the fuel pre-filter.   |       |      | X    |       |       |       |       |        | 10.3.3         |                    |
| Replace the fuel micro-filter.  |       |      | X    |       |       |       |       |        | 10.3.3         | Engine<br>SM       |
| Clean the fuel tank.  |       |      | X    |       |       |       |       |        |                |                    |
| Clean the tank fuel strainer.   |       |      | X    |       |       |       |       |        |                |                    |

Engine SM = engine manufacturer's service manual; SW = specialised workshop.

| Component:<br>Function  | Daily | A250 | A500 | A1000 | A1500 | A2000 | A3000 | A36000 | See<br>chapter | Note |
|---|-------|------|------|-------|-------|-------|-------|--------|----------------|------|
| Have the fuel injectors checked.  |       |      |      |       | X     |       |       |        |                | SW   |
| Have the fuel injector pump checked.  |       |      |      |       |       |       | X     |        |                | SW   |
| Check the battery electrolyte level and connections.  |       |      | X    |       |       |       |       |        | 10.3.9         |      |
| <b>Compressor:</b>  |       |      |      |       |       |       |       |        |                |      |
| Check inlet air filter maintenance indicator.   | X     |      |      |       |       |       |       |        | 10.4.7         |      |
| Check cooling oil level.  | X     |      |      |       |       |       |       |        | 10.4.1         |      |
| Clean the compressor air filter.  |       | X    |      |       |       |       |       |        | 10.4.7         |      |
| Clean the oil cooler.   |       | X    |      |       |       |       |       |        | 10.5           |      |
| Have the pressure relief valve(s) checked.  |       |      | X    |       |       |       |       |        | 10.4.8         |      |
| Check/clean the oil separator tank dirt trap.   |       |      | X    |       |       |       |       |        | 10.4.5         |      |
| Change compressor air filter.   |       |      |      | X     |       |       |       |        | 10.4.7         |      |
| 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     |       |        | 10.4.6         |      |
| <b>Wheels/chassis/bodywork:</b>   |       |      |      |       |       |       |       |        |                |      |
| Check the tyre pressures.   |       | X    |      |       |       |       |       |        |                |      |
| Check wheel bolts and nut for tightness.  |       | X    |      |       |       |       |       |        |                |      |
| Carry out chassis maintenance.  |       |      | X    |       |       |       |       |        | 10.7           |      |
| Grease the ball coupling, joints and towbar.  |       |      | X    |       |       |       |       |        | 10.7.2         |      |
| Brake maintenance   |       |      | X    |       |       |       |       |        | 10.7.3         |      |
| Check wear on the brake linings.  |       |      | X    |       |       |       |       |        | 10.7.3.1       |      |
| Have the wheel brakes adjusted.   |       |      | X    |       |       |       |       |        |                | SW   |
| Check all screw connections, hinges, locks, handles and snap fasteners of the doors for wear and secure fixing. |       | X    |      |       |       |       |       |        |                |      |
| Grease the door hinges.   |       |      | X    |       |       |       |       |        |                |      |

Engine SM = engine manufacturer's service manual; SW = specialised workshop.

| Component:<br>Function  | Daily | A250 | A500 | A1000 | A1500 | A2000 | A3000 | A36000 | See<br>chapter | Note |
|---|-------|------|------|-------|-------|-------|-------|--------|----------------|------|
| Carry out rubber sealing strip maintenance.                                   |       |      | X    |       |       |       |       |        | 10.6           |      |
| Have the lifting point checked.   |       |      | X    |       |       |       |       |        |                | SW   |
| <b>Other maintenance tasks</b>  |       |      |      |       |       |       |       |        |                |      |
| Check all accessible screw fittings, pipes and clamps for wear and tightness. |       |      | X    |       |       |       |       |        |                |      |
| Check hoses for proper seating, leaks and wear.                               |       |      | X    |       |       |       |       |        |                |      |
| Have hose lines replaced.   |       |      |      |       |       |       |       | X      |                | SW   |
| Check that all electrical connections are tight.                              |       |      | X    |       |       |       |       |        |                |      |
| Engine SM = engine manufacturer's service manual; SW = specialised workshop.  |       |      |      |       |       |       |       |        |                |      |

Tab. 87 Regular machine maintenance tasks

**10.2.3.2 Maintenance schedule for options**

- Carry out maintenance tasks according to the following schedule.

| Option:<br>Function  | Daily | A250 | A500 | A1000 | A2000 | A20000 | See<br>chapter | Note |
|--|-------|------|------|-------|-------|--------|----------------|------|
| <b>Option ec - tool lubricator</b>                             |       |      |      |       |       |        |                |      |
| Check the oil level in the tool lubricator.                    | X     |      |      |       |       |        | 10.8.1         |      |
| <b>Options da, db, dc, dd – cyclone separator:</b>             |       |      |      |       |       |        |                |      |
| Clean and check the dirt trap.                                 |       |      | X    |       |       |        | 10.8.2         |      |
| <b>Options da, db, dc, dd – compressed air aftercooler:</b>    |       |      |      |       |       |        |                |      |
| Clean the radiator.  |       | X    |      |       |       |        | 10.5.2         |      |
| <b>Option dd – filter combination:</b>                         |       |      |      |       |       |        |                |      |
| Drain condensate.  | X     |      |      |       |       |        | 10.8.3         |      |
| Change the filter elements                                     |       |      | X    |       |       |        | 10.8.3         |      |
| <b>Option dc – fresh air filter:</b>                           |       |      |      |       |       |        |                |      |
| Drain condensate.  | X     |      |      |       |       |        | 10.8.4         |      |
| Check the oil indicator.                                       | X     |      |      |       |       |        | 10.8.4         |      |
| Change the filter elements                                     |       |      | X    |       |       |        | 10.8.4         |      |
| <b>Option ba – frost protector:</b>                            |       |      |      |       |       |        |                |      |
| SW = refer to a specialised workshop; KS = call KAESER Service |       |      |      |       |       |        |                |      |

| Option:<br>Function   | Daily | A250 | A500 | A1000 | A2000 | A20000 | See<br>chapter | Note     |
|---|-------|------|------|-------|-------|--------|----------------|----------|
| Winter operation:<br>Check the level of antifreeze in<br>the frost protector. | X     |      |      |       |       |        | 10.8.5         |          |
| <b>Engine coolant pre-heater (Option bb)</b>                                  |       |      |      |       |       |        |                |          |
| Have the coolant pre-heating<br>and associated wiring checked.                |       |      | X    |       |       |        |                | SW       |
| <b>Option la – spark arrestor:</b>  |       |      |      |       |       |        |                |          |
| Clean the spark arrestor.   |       | X    |      |       |       |        | 10.8.7         |          |
| Blow out the spark arrestor with<br>compressed air.                           |       |      | X    |       |       |        |                |          |
| <b>Option lb - engine air intake shut-off valve</b>                           |       |      |      |       |       |        |                |          |
| Clean and check the engine air<br>intake shut-off valve                       |       | X    |      |       |       |        | 10.8.8         |          |
| <b>Option ga, gb – generator:</b>   |       |      |      |       |       |        |                |          |
| Check/adjust belt tension.  |       | X    |      |       |       |        | 10.8.6         |          |
| Visually inspect the drive belt.  |       | X    |      |       |       |        | 10.8.6         |          |
| Have the generator and control<br>box checked.                                |       |      | X    |       |       |        | 13.9           | EL       |
| Replace the drive belt.   |       |      |      |       | X     |        | 10.8.6         |          |
| Have the generator bearings<br>checked.                                       |       |      |      | X     |       |        |                | SW       |
| Have the generator bearings<br>changed.                                       |       |      |      |       |       | X      |                | SW       |
| <b>Option lc – diesel particulate filter</b>                                  |       |      |      |       |       |        |                |          |
| Have the whole diesel particu-<br>late filter system serviced.                |       |      | X    |       |       |        | 3.4.4          | SW<br>KS |
| Have the diesel engine emission<br>checked according to<br>TRGS 554.          |       |      |      |       | X     |        | 3.4.4          | SW<br>KS |
| SW = refer to a specialised workshop; KS = call KAESER Service                |       |      |      |       |       |        |                |          |

Tab. 88 Regular maintenance task options

## 10.3 Engine maintenance

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

**10.3.1 Water cooler maintenance**

Material Coolant  
Coolant tester  
Receptacle  
Wrench  
Funnel  
Cleaning cloth

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

**WARNING**

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

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

**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.

**NOTICE**

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.
- Open the left-hand door.

**10.3.1.1 Checking coolant level**

Check the coolant level of the engine daily before starting.

The level is checked on the coolant expansion tank:

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



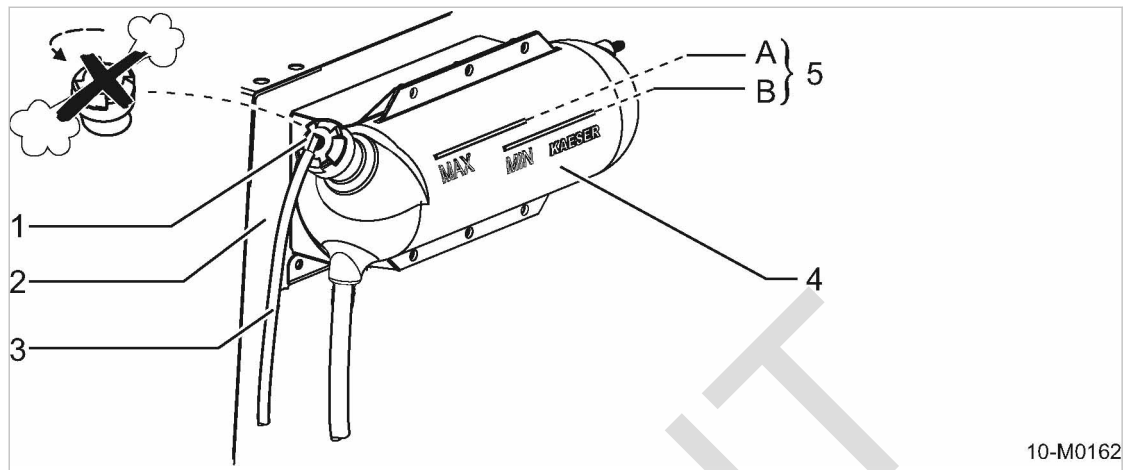


Fig. 37 Checking coolant level

- |                          |                                    |
|--------------------------|------------------------------------|
| ① Filler port with cap   | ⑤ Coolant level                    |
| ② Water cooler           | (A) <i>maximum markings</i> (FULL) |
| ③ Overflow               | (B) <i>minimum-markings</i> (LOW)  |
| ④ Coolant expansion tank |                                    |

1. Check the level of coolant in the expansion tank.  
Top up when the coolant level falls below the *minimum marking* (B).
2. Close the door.



Determine and rectify the cause of coolant loss.

### 10.3.1.2 Checking the coolant

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

Coolant quality can be determined by the following parameters:

- Visual check
  - Antifreeze concentration measurement
- Unscrew and remove the expansion tank filler cap ①.

#### Visual check

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

- Take a coolant sample and analyse.  
The coolant should be changed if it is discoloured or has floating particles.

#### Antifreeze concentration measurement

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

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



1. **NOTICE!**

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

Corrosion

Damage to the cooling system.

Engine casing fracture

- Check coolant.
- Protect the coolant against frost.
- Top up as necessary.

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

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

**Finish off the work steps:**

1. Screw on the filler cap.
2. Close the door.

**10.3.1.3 Mixing coolant**

Do not use water without coolant additive. Water alone is corrosive at engine operating temperature. Water alone does not offer sufficient protection from boiling or freezing.

The coolant is a mixture of clean, fresh water and antifreeze with 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.

The maximum permissible coolant life is 2 years.

- Follow coolant recommendations in chapter 2.6.3.

**Preparing coolant**

Precondition Coolant must meet the specification of ASTM D4985.

- The coolant should be mixed in the proportions given by the manufacturer.

KAESER coolant mixture table

| Antifreeze | Water     | Frost protection to [°C] |
|------------|-----------|--------------------------|
| 1 part     | 2 parts   | -18                      |
| 1 part     | 1.5 parts | -25                      |
| 1 part     | 1 part    | -37                      |

Tab. 89 KAESER coolant mixture table



The concentration of antifreeze should not be less than 33% for ensured corrosion protection.

**10.3.1.4 Filling and topping up the coolant**

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



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

Precondition The negative cable to the battery is disconnected.

1. Twist and remove the expansion tank filler cap.
2. Mix a quantity of coolant according to the table and top up to the mark.  
Top up until the coolant level is just below the *maximum mark* (A).
3. Screw on the filler cap.
4. Reconnect the negative battery terminal.
5. Close the door.
6. Start the engine and allow to IDLE for about 1 minute.
7. Stop the engine.
8. Open the left-hand door.
9. Check the coolant level.  
Top up if the coolant level in the expansion tank has fallen.
10. Visually inspect for leaks.
11. Close the door.



If the coolant has been changed, check the level of the new coolant frequently at first as it can decrease due to the escape of air locks in the cooling circuit.

#### 10.3.1.5 Draining the coolant

The complete volume of coolant contained in the circuit can be drained from the radiator. The water cooler is drained by a separate drain plug (accessible from underneath through the access hole in the floor pan).

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

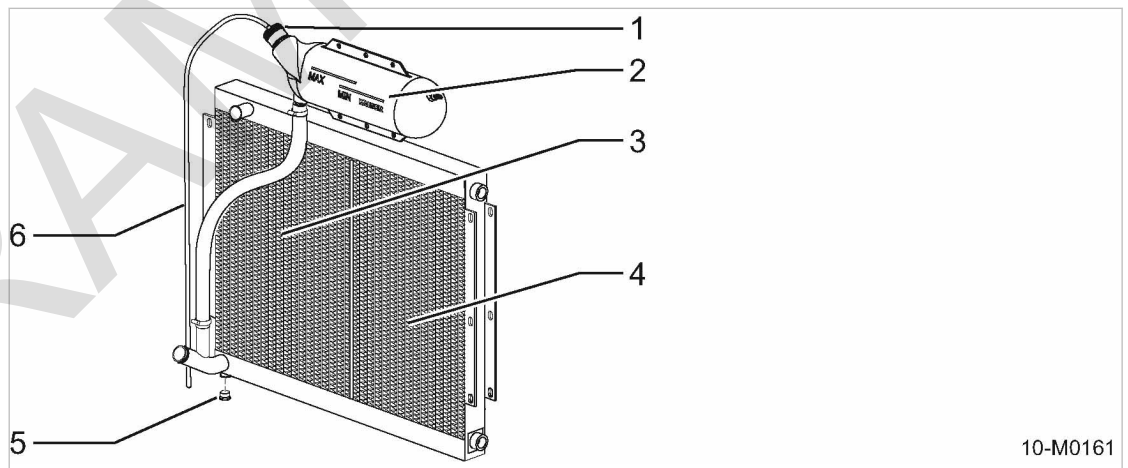



Fig. 38 Draining the coolant from the radiator

- |                          |                          |
|--------------------------|--------------------------|
| ① Filler cap             | ④ Oil cooler             |
| ② Coolant expansion tank | ⑤ Radiator drain plug    |
| ③ Water cooler           | ⑥ Coolant expansion tank |

1. Unscrew and remove the expansion tank filler cap ①.
2. Position a receptacle beneath the water cooler drain point (accessible through a hole in the floor panel).

3. Unscrew the drain plug  and allow the coolant to drain into the receptacle.
4. Fit a new gasket on the drain plug and screw it back in again.
5. Screw on the filler cap.
6. Close the door.



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

Further information

The operating manual supplied by the engine manufacturer provides further information on coolant change and cleaning the cooling system.

### 10.3.2 Engine air filter maintenance

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

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



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

Material

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

Precondition

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



**NOTICE**

Damaged air filter element.

Wear in the engine from intake of contaminated air.

- Do not try to clean the filter element by striking or knocking it.
- Do not wash the filter element.

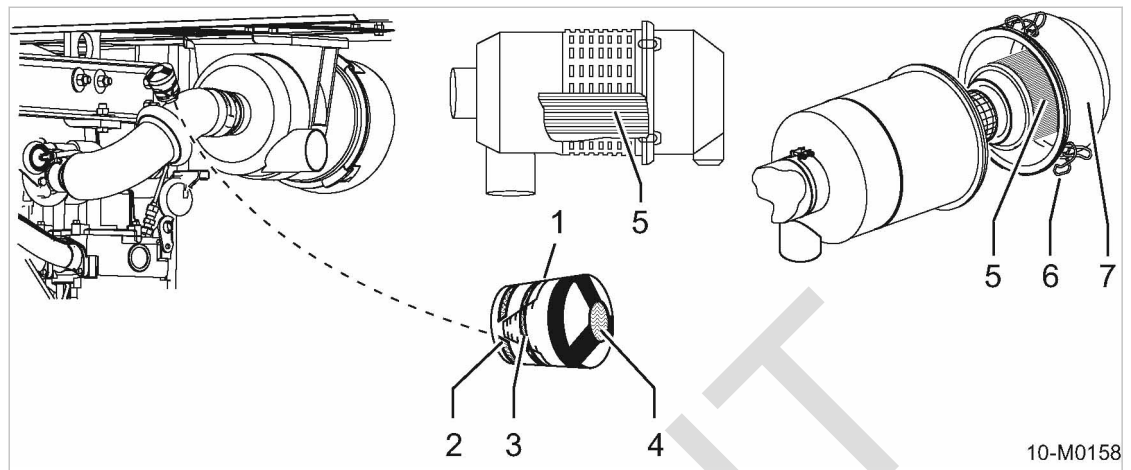


Fig. 39 Engine air filter maintenance

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

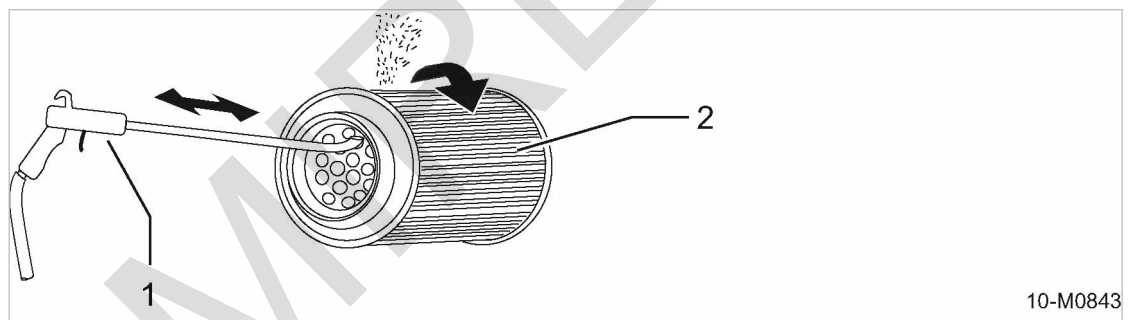


Fig. 40 Cleaning the filter element

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

**Checking contamination of the air filter:**

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

1. Open the left-hand door.
2. Check the air filter maintenance indicator.  
If the yellow piston reaches the red zone, clean or renew the filter element.
3. Close the door.

**Cleaning the air filter:**

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

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

**Resetting the maintenance indicator:**

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



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

**10.3.3 Fuel system maintenance**

Make sure no dirt enters the fuel system during maintenance. Clean components and their surroundings before dismounting.

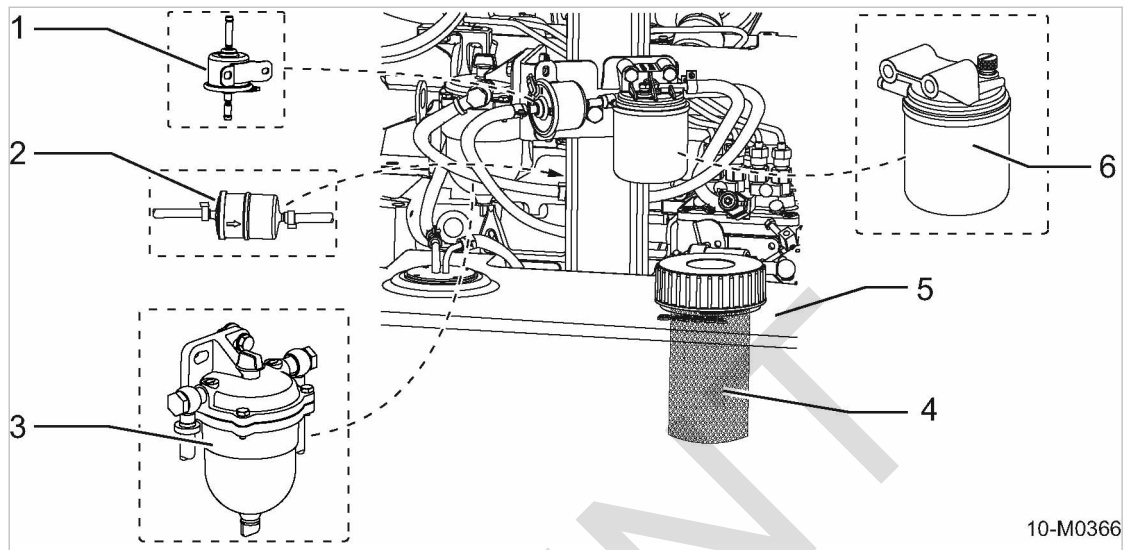
Material Spare parts  
Receptacle  
Cleaning cloth

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.
- Ensure that the maximum ambient temperature is not exceeded at the place of use.
- Stop the engine.
- Wipe up escaped fuel.
- Keep fuel away from hot machine parts.



10-M0366

Fig. 41 Fuel system maintenance

- |                               |                     |
|-------------------------------|---------------------|
| ① Fuel pump                   | ④ Fuel strainer     |
| ② Fuel pre-filter             | ⑤ Fuel tank         |
| ③ Fuel filter with water trap | ⑥ Fuel micro-filter |

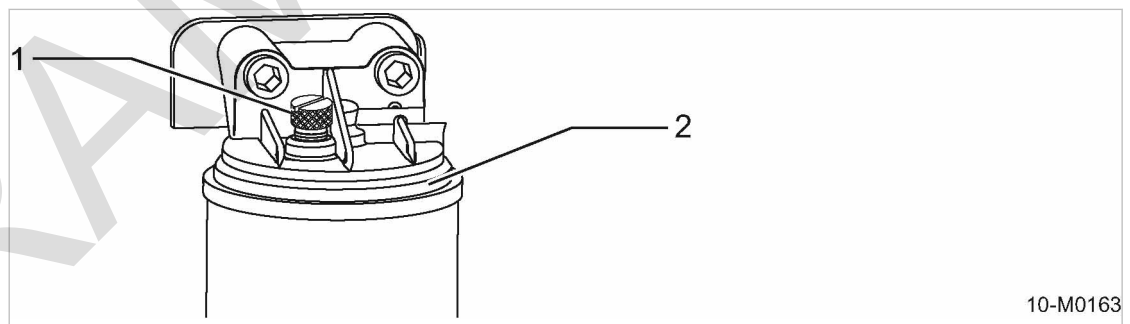
➤ Open the right-hand access door.

### 10.3.3.1 Bleeding the fuel system

Air can enter the fuel system if the fuel tank is empty after a fuel filter change or when carrying out work on the fuel lines.

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

Precondition Battery connected.



10-M0163

Fig. 42 Bleeding the fuel system

- |                     |
|---------------------|
| ① Bleed screw       |
| ② Fuel micro-filter |

1. Place a receptacle beneath the fuel fine filter housing.
2. Loosen the micro-filter bleed screw.
3. Close the door.
4. Turn the «starter switch» (operator panel) to the "On" position.  
The fuel pump runs and air is bled out of the fuel system.
5. After approx. 10 to 15 minutes, switch the «starter switch» to the "STOP/Off" position.

6. Open the right-hand access door.
7. Tighten the bleed screw again.
8. Remove the receptacle.
9. Close the door.



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

10. Open the right-hand access door.
11. Visually check the fuel system for leaks. If required, re-tighten all fittings.
12. Close the door.

### 10.3.3.2 Fuel filter with water trap maintenance

A water trap is installed between the tank and the fuel pump. The water trap is semi-transparent so the fuel level can be seen from outside.

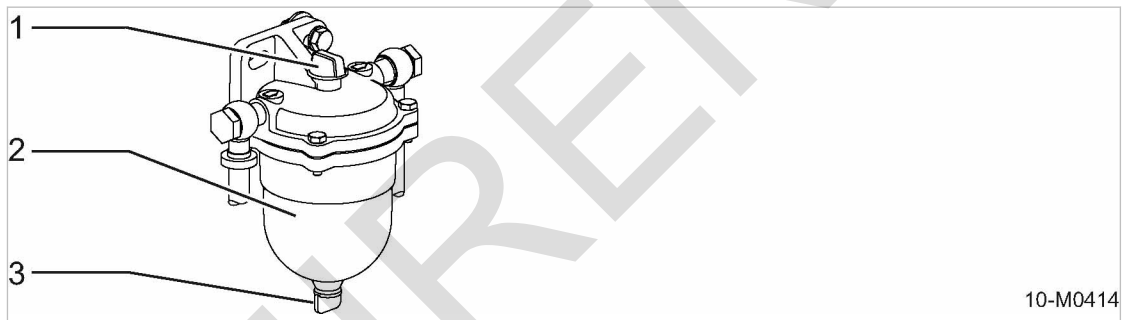


Fig. 43 Fuel filter with water trap maintenance

- ① Bleeding screw
- ② Water trap
- ③ Drain plug

#### Checking the fuel water trap

Water, being denser than diesel fuel, sinks to the bottom of the water trap. The presence of water can be verified by it having a different colour than the fuel. Check daily whether water has collected in the water trap or any dirt has accumulated.

- Check the fuel in the transparent water trap.
  - Fuel contaminated. Immediately empty the fuel water trap.

#### Emptying the fuel water trap

**Precondition** Water and/or contamination are visible in the water trap.

1. Place a receptacle beneath the fuel micro-filter housing.
2. Loosen the bleed screw ① in the filter head.
3. Loose the drain screw ③ and allow water and dirt to drain out into the receptacle.
4. Remove the receptacle.
5. Reconnect the battery.
6. Close the door.





The mixture of fuel and water and any materials contaminated with fuel must be disposed of in accordance with environment protection regulations.

10.3.3.3 Fuel filter maintenance

Changing the fuel pre-filter:

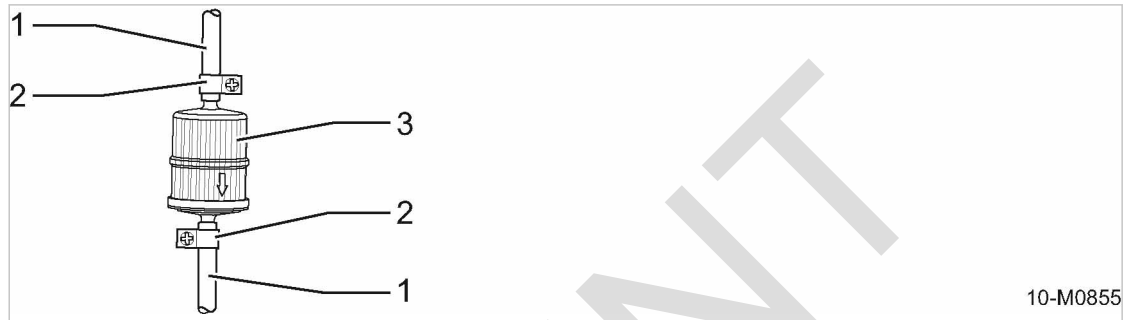


Fig. 44 Changing the fuel pre-filter

- ① Fuel hose
- ② Hose clamp
- ③ Fuel pre-filter

1. Place a receptacle beneath the fuel pre-filter housing.
2. Loosen the hose clamps, carefully pull the fuel hoses from the connection at the fuel pre-filter. Capture and wipe off any escaping fuel.
3. Install a new fuel pre-filter between the plastic hoses and secure using hose clamps, taking care the flow is in the right direction.
4. Remove the receptacle.

Replacing the fuel micro-filter:

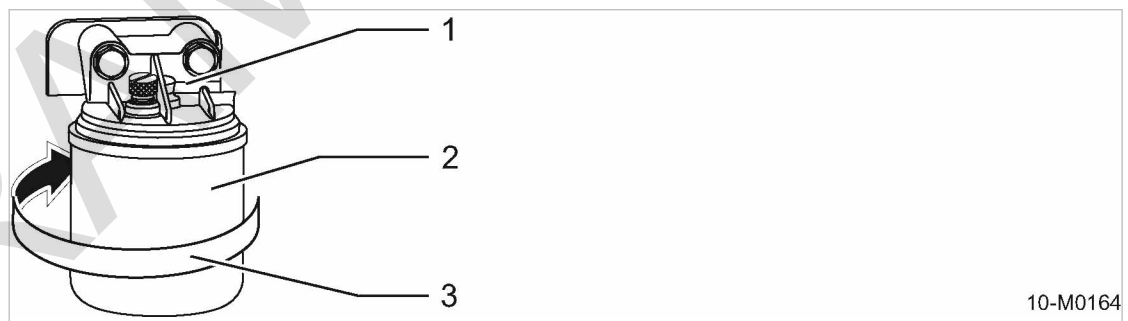


Fig. 45 Fuel micro-filter maintenance

- ① Filter holder
- ② Filter cartridge
- ③ Turn in this direction to unscrew the filter cartridge.

1. Place a receptacle beneath the fuel fine filter housing.
2. Use a filter wrench to loosen then unscrew the filter cartridge. Catch fuel in the receptacle.
3. Clean the sealing faces of the micro-filter cartridges and the opposite site of the filter mount with lint-free cloth.

4. Mount the micro-filter cartridges on the filter mount:
  - Moisten the rubber seals of the filter mount and the sealing faces of the new filter cartridge with some fuel.
  - Manually screw the filter cartridge to the filter head (clockwise), until seal is tight.
5. Reconnect the battery.
6. Close the door.



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



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

#### Starting the machine and performing a test run:

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

Further information The engine service manual provides further information on fuel system maintenance.

### 10.3.4 Checking the engine oil level

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

Material Cleaning cloth

Precondition The machine is shut down.

The machine is standing level.

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.

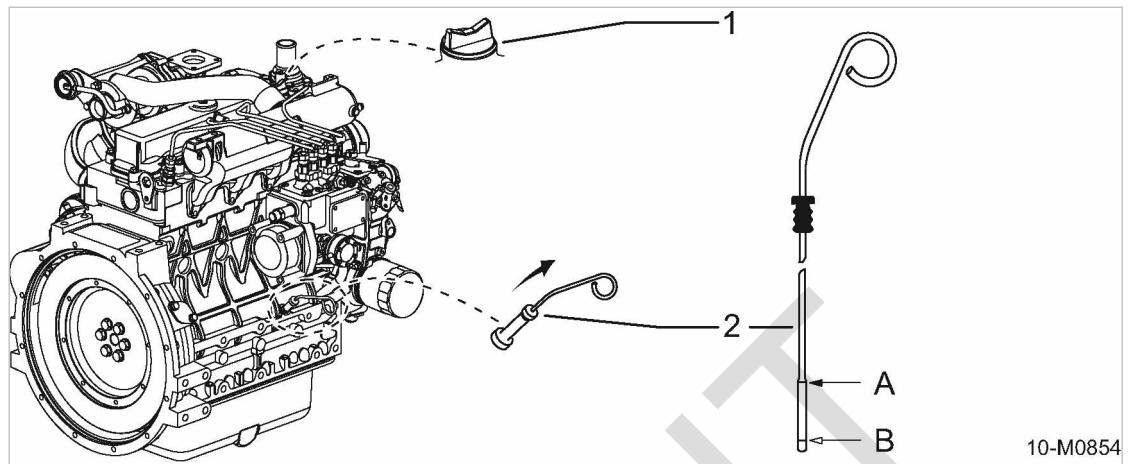


Fig. 46 Checking the engine oil level

- |   |                                   |   |                                   |
|---|-----------------------------------|---|-----------------------------------|
| ① | Oil filler neck cover, engine oil | Ⓐ | Mark for <i>maximum oil level</i> |
| ② | Dipstick                          | Ⓑ | Mark for <i>minimum oil level</i> |

1. Open the right-hand access door.
2. Withdraw the dipstick, wipe with a lint-free cloth and replace fully.
3. Withdraw the dipstick once more and read off the oil level.  
The level should be between the maximum and minimum markings.  
Top up if the level has reached or fallen below the *minimum level* mark.
4. Close the access door.



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

### 10.3.5 Engine oil filling and topping up

Material Engine oil  
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.  
All compressed air consumers are disconnected and the air outlet valves are open.  
The negative cable to the battery is disconnected.

#### Filling with engine oil



See chapter 2.6.4 for engine oil filling volume.  
The oil dipstick is marked with the «maximum oil level».

1. Open the right-hand access door.
2. Remove the filler cap and fill with fresh oil.

3. Wait 5 minutes then check the oil level.



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

Top up if the level is too low.

4. Replace the plug in the filler port.
5. Reconnect the negative battery terminal.
6. Close the door.

**Starting the machine and performing a test run:**

1. Switch the machine on and run it in IDLE mode for approx. 5 minutes.
2. Shut down the machine.
3. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
4. Open the right-hand access door.
5. Check the oil level after about 5 minutes.  
Top up if the level is too low.
6. Visually inspect for leaks.
7. Close the door.

**10.3.6 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 Engine oil  
Receptacle  
Wrench  
Cleaning cloth

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

**Draining the engine oil:**

The engine oil is drained directly at the machine's oil pan. For this purpose, a drainage outlet is provided in the floor pan.

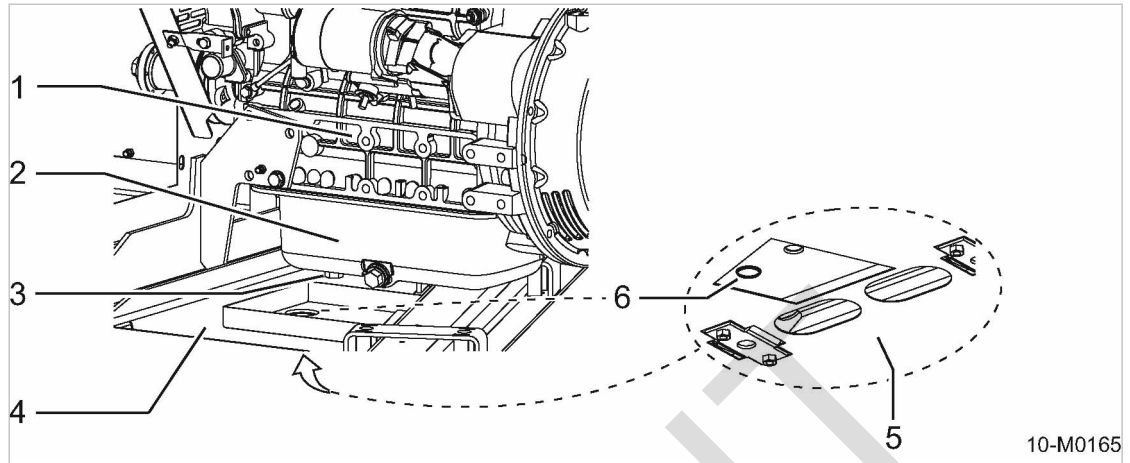


Fig. 47 Draining the engine oil

- |                         |                               |
|-------------------------|-------------------------------|
| ① Engine block          | ④ Floor pan                   |
| ② Engine oil sump       | ⑤ Underside of floor pan      |
| ③ Engine oil drain plug | ⑥ Drain hole in the floor pan |

1. Open the left-hand door.
2. Remove the oil oil filler cover.
3. Place the oil receptacle below the drain hole in the floor pan.
4. Unscrew the drain plug and allow the engine oil to drain into the receptacle.
5. Clean the drain plug and screw in with a new gasket.
6. Replace the plug in the filler port.
7. Close the door.



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

Further information See chapter 10.3.5 for oil filling.

The engine service manual gives instructions on oil changing.

### 10.3.6.1 Option ga Changing the engine oil

This is done from a oil drain valve with the aid of a separate drain hose.

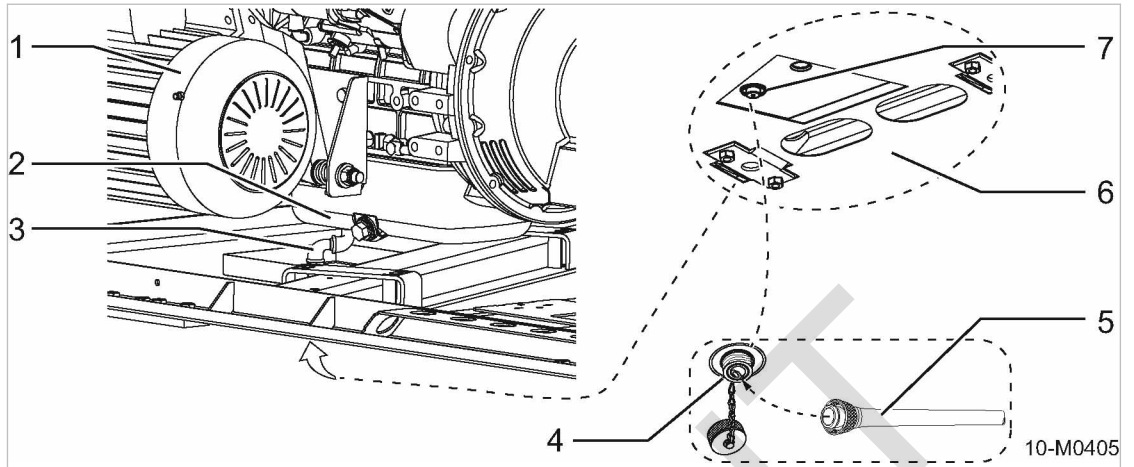


Fig. 48 Changing the engine oil

- |   |                       |   |  |
|---|-----------------------|---|--|
| ① | Generator             | ⑤ | Drain hose with rapid action hose coupling |
| ② | Engine oil sump       | ⑥ | Underside of floor pan                     |
| ③ | Engine oil drain line | ⑦ | Drain hole in the floor pan                |
| ④ | Oil drain valve       |   |  |

**Draining the engine oil:**

1. Open the left-hand door.
2. Remove the oil oil filler cover.
3. Place the oil receptacle below the drain hole in the floor pan.
4. Lay the free end of the drain hose ⑤ in the receptacle.
5. Remove the protective cap from the oil drain valve ④.
6. Screw the drain hose with rapid action hose coupling onto the oil drain valve.  
The valve opens and oil drains through the hose.
7. When all the oil has drained out, uncouple and remove the drain hose.
8. Replace the protective cap on the oil drain valve.
9. Replace the plug in the filler port.
10. Close the door.



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

Further information See chapter 10.3.5 for oil filling.

The engine service manual gives instructions on oil changing.

### 10.3.7 Replace the engine oil filter

Material Spares  
Filter wrench  
Cleaning cloth  
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.  
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.

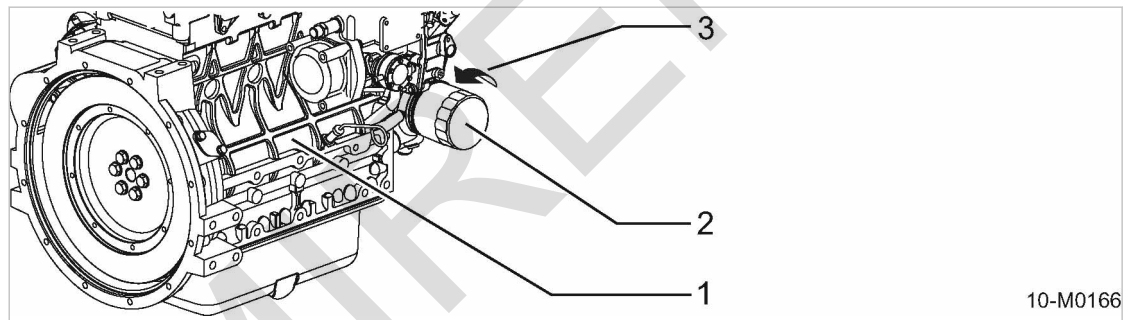


Fig. 49 Changing the oil filter

- ① Engine block
- ② Oil filter
- ③ Direction of rotation to unscrew the filter

1. Open the left-hand door.
2. Prepare a receptacle.
3. Use a filter wrench to loosen and unscrew the filter. Catch any escaping oil.
4. Carefully clean sealing surfaces using lint-free cloth.
5. Lightly oil the new filter's gasket.
6. Turn the oil filter clockwise by hand to tighten.
7. Check the engine oil level.  
Top up if the level is too low.
8. Reconnect the negative battery terminal.
9. Close the door.

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.

### 10.3.8 Drive Belt Maintenance

The lifespan of the drive belts is affected by belt tension.

- Slack belts can slip and become damaged.
- Over-tight belts stretch and fatigue quicker. Over-tight belts also place unnecessary stress on bearings and shorten their life.

Material Wrench  
suitable clamping lever (short, thin rod)  
Spares

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



**WARNING**

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

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

- Open both doors.

**Removing the belt guard:**

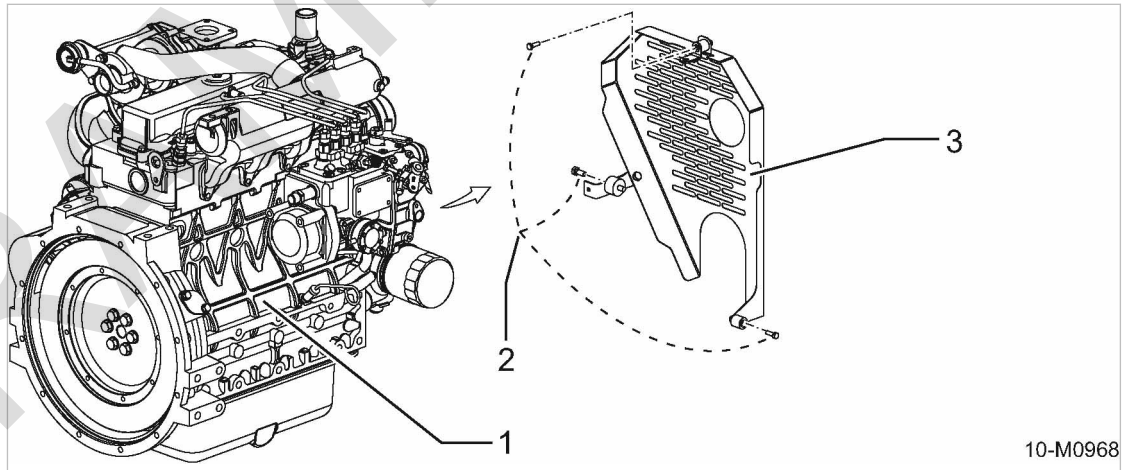


Fig. 50 Belt guard attachment

- ① Engine block
- ② Hex-head screw
- ③ Belt guard

1. Unscrew the securing screws of the belt guard and remove the belt guard.



10.3.8.1 Visual check

Carry out a visual check for damage:

- Check the belts thoroughly for cracks, fraying or stretching.  
Replace the belt immediately if any damage or wear is found.

Check the belt seating:

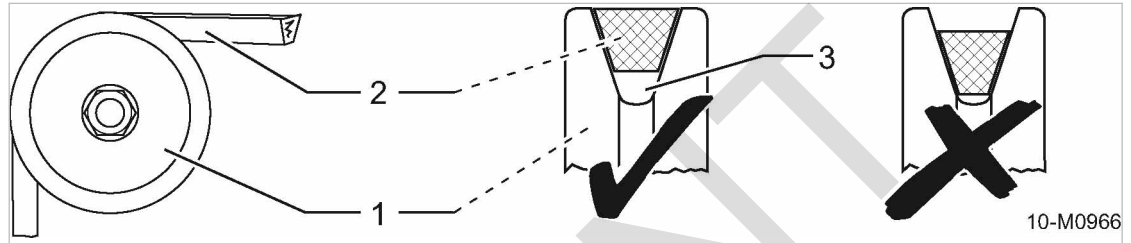


Fig. 51 Kontrollere at drivremmen sitter som den skal

- ① Belt pulley
- ② Drive belt
- ③ Pulley guidance groove

- Check the drive belt seating.  
If the belt sits too deep in the guidance groove: immediately change the drive belt.

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

10.3.8.2 Checking belt tension

Check belt tension when they are warm, not hot, to avoid length variations through temperature. The belt tension can be checked by hand: To check the tension, press the belt inwards with the thumb at the mid-point between pulleys.

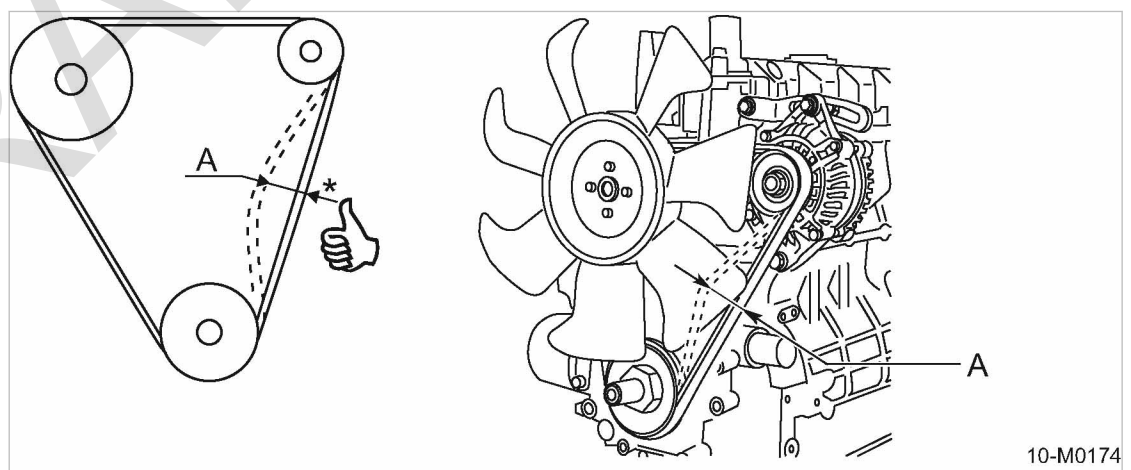


Fig. 52 Belt tension checking by hand

- Ⓐ Permissible deflection of the belt
- \* Approximate pressure exerted: 10 kg  
Permissible movement: 7–9 mm

1. Check belt tension by hand (see Fig. 52).
2. Increase the tension on a loose belt.
3. Replace the belt guard.
4. Reconnect the negative battery terminal.
5. Close the doors.

### 10.3.8.3 Changing/tensioning the drive belt

The drive belt is tensioned via the screw fastening of the alternator.

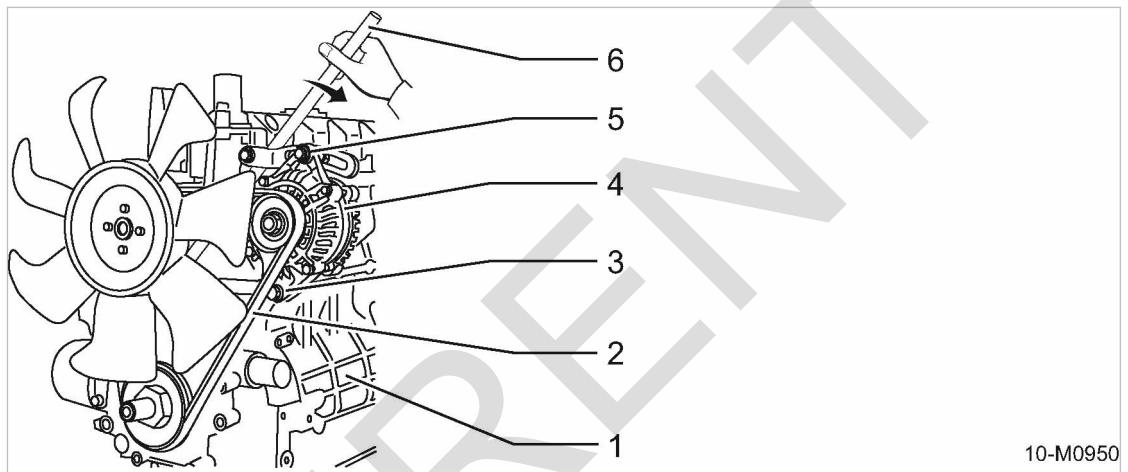


Fig. 53 Changing/tensioning the drive belt

- |                                  |                         |
|----------------------------------|-------------------------|
| ① Engine block                   | ④ Alternator            |
| ② Drive belt                     | ⑤ Hexagon nut (locknut) |
| ③ Hexagon screw (securing screw) | ⑥ Lever                 |

#### Tensioning the drive belt:

1. Loosen the alternator securing screw and clamping nut.
2. Place a suitable lever between the alternator and engine block.
3. Gently push the alternator in the direction of the arrow (outwards) using the lever until the drive belt is tensioned.
4. Re-tighten the securing screw and clamping screw.
5. Remove the lever.
6. Check the belt tension (see Fig. 52).

Belt tension too low: Push the AC generator further in the direction of the arrow.

Belt tension too high: Slightly push the AC generator opposite the arrow direction.

#### Changing the belts

1. Loosen the alternator securing screw and clamping nut until the drive belt can be taken off the pulleys.
2. Take off the belt.
3. Check the pulleys for dirt and wear.  
Clean the pulleys.  
Worn pulley: Have the pulley replaced.

4. Manually route the new drive belt over the pulleys without using force.
5. Tension the drive belt. Ensure that the drive belt is correctly positioned in its guide.



A belt that has been replaced may not be used again.  
After running for two to three hours, check the belt tension again.



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

**Making operational:**

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

Further information The operating manual of the engine manufacturer provides further information on removing, changing and tensioning drive belts.

**10.3.9 Battery maintenance**

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

**10.3.9.1 Safety**



**WARNING**

Danger of acid burns from escaping electrolyte!

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

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

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



10-M0167

Fig. 54 Safety signs - warning stickers on the battery.

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

The individual safety signs have the following meaning:

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

**Further instructions on working with batteries:**

- Do not remove battery terminal covers unnecessarily.
- Do not place tools on the battery. This can lead to short-circuiting, overheating and bursting of the battery!
- 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!

**10.3.9.2 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 cloth
  - 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 is cooled down.

- Open the left-hand door.
- 1. Clean the casing and terminals. Do not use a wire brush!
- 2. Lightly grease the terminals to prevent corrosion.
- 3. Check that the batteries and cable connections are properly seated and tighten if necessary.

**Check the battery electrolyte level**

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



Replace the battery immediately if the casing leaks.



1. **NOTICE!**

Battery destruction!

Topping up with pure acid will increase the electrolyte concentration and can destroy the battery.

- Top up only with distilled water.

2. Check the electrolyte level.



If the level does not reach the mark:

- top up with distilled water.

- Close the door.

**Winter operation:**

The battery is especially stressed during the winter. Only a fraction of the normal starting energy is available at low temperatures.



1. **NOTICE!**

Danger of batteries freezing!

A discharged battery is endangered by freezing temperatures and could freeze at a temperature of -10 °C.

- Check battery charge with a acid density tester.
- Recharge the battery.
- Clean the cable connections and apply terminal 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 a heavy-duty cold-start battery and/or an additional booster battery is recommended.

**10.3.9.3 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 is cooled down.



1. **WARNING!**

There is danger of batteries bursting!

A short circuited battery heats up quickly and can burst.

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



2. **NOTICE!**

Excessive voltage produced by the alternator.

Voltage peaks can destroy the alternator regulator and diodes.

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

3. Open the left-hand door.

4. Disconnect the negative cable first, then the positive cable.
5. Unscrew the battery fixing clamp.
6. Replace in the reverse order.
7. Make sure the battery is properly secured.
8. Close the door.

**Battery replacement:**

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

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



The old battery is hazardous waste and must be disposed of in accordance with local environment protection regulations.

## 10.4 Compressor Maintenance

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

### 10.4.1 Checking cooling oil level

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

Material Wrench  
Cleaning cloth

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

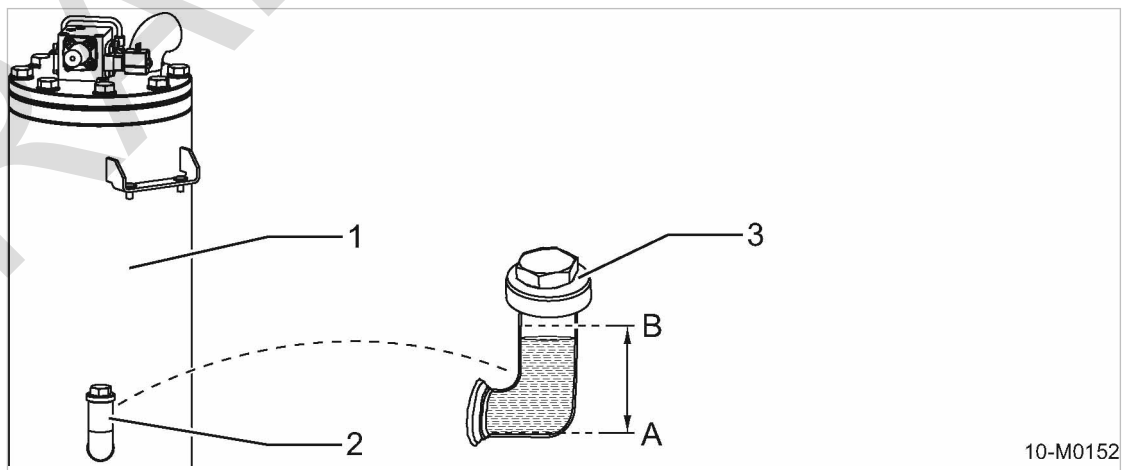


Fig. 55 Checking cooling oil level

- |                      |                 |
|----------------------|-----------------|
| ① Oil separator tank | Ⓐ Minimum level |
| ② Oil filler port    | Ⓑ Maximum level |
| ③ Filler plug        |                 |

10-M0152

1. Open the right-hand access door.
2. Slowly unscrew and withdraw the plug from the oil filler port.
3. Check the cooling oil level.  
Top up if no oil is visible.
4. Replace the plug in the filler port.
5. Close the access door.

### 10.4.2 Cooling oil filling and topping up

Material Cooling oil  
Funnel  
Cleaning cloth  
Wrench

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

#### Filling with cooling oil

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



1. **NOTICE!**  
The machine could be damaged by unsuitable oil.
  - Never mix different types of oil.
  - Never top up with a different type of oil than that already used in the machine.
2. Open the right-hand access door.
3. Slowly unscrew and withdraw the plug from the oil filler port.
4. Top up the cooling oil to the maximum level (B) with the help of a funnel.
5. Check the oil level.
6. Check the filler plug gasket for damage.  
Change a damaged gasket.
7. Replace the plug in the filler port.
8. Reconnect the negative battery terminal.
9. Close the door.

#### Starting the machine and performing a test run:

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
5. Open the outlet valves.

6. Open the right-hand access door.
7. Check the oil level after about 5 minutes.  
Top up if necessary.
8. Visually inspect for leaks.
9. Close the door.

### 10.4.3 Changing the cooling oil



Drain the oil completely from the following components:

- Oil separator tank
  - Oil cooler
  - Oil pipes
  - Heat exchanger (Option db)
- Always change the oil filter when changing the oil.

Material Cooling oil  
Receptacle  
New gasket for the drain plug  
Funnel  
Cleaning cloth

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



#### CAUTION

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

- Wear long-sleeved clothing and gloves.
- Open the right-hand access door.

#### 10.4.3.1 Draining the cooling oil

The cooling oil is drained directly at the oil separator tank and the oil cooler.



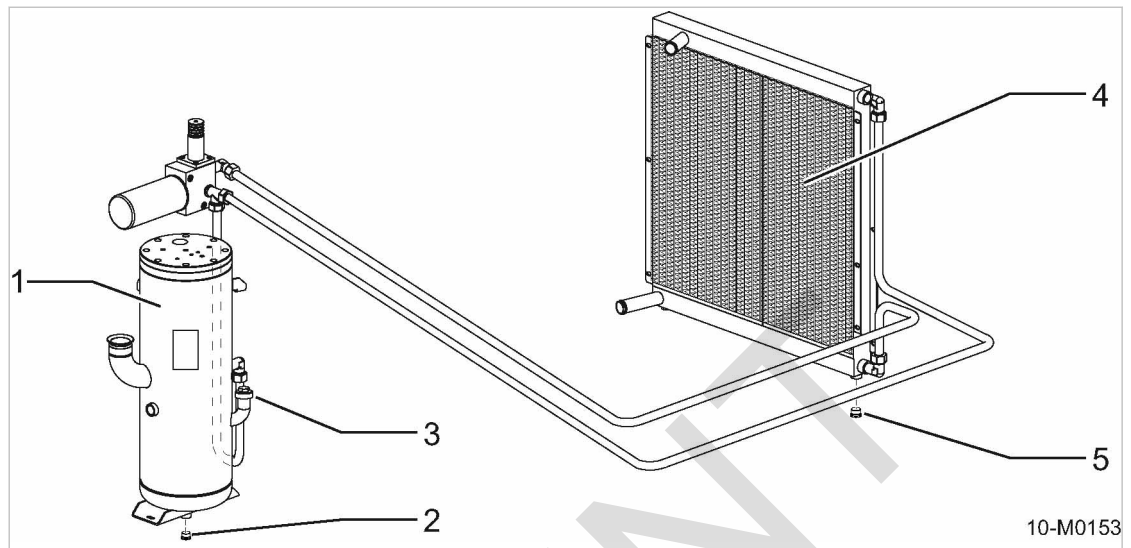


Fig. 56 Draining the compressor cooling oil

- |                                 |                         |
|---------------------------------|-------------------------|
| ① Oil separator tank            | ④ Oil cooler            |
| ② Oil separator tank drain plug | ⑤ Oil cooler drain plug |
| ③ Oil filler plug               |                         |

- Remove the plug ③ from the oil separator tank filling port.

#### Draining the cooling oil from the separator tank:

The oil separator tank can be drained by a separate oil drain plug located on the underside of the tank (accessible from underneath through the access hole in the floor pan).

1. Place the oil receptacle below the corresponding drain hole in the floor pan.
2. Unscrew the drain plug ② and allow the cooling oil to drain into the receptacle.
3. Fit a new gasket on the drain plug and screw it back in again.

#### Draining the oil from the oil cooler:

The oil cooler can be drained by a separate oil drain plug located on the underside of the oil collection box (accessible from underneath through the access hole in the floor pan).

1. Place the oil receptacle below the corresponding drain hole in the floor pan.
2. Unscrew the drain plug ⑤ and allow the cooling oil to drain into the receptacle.
3. Fit a new gasket on the drain plug and screw it back in again.

#### Option db Draining the oil from the heat exchanger:

The heat exchanger can be drained by a separate oil drain plug located on the underside of the heat exchanger (accessible from underneath through the access hole in the floor pan).

Option db

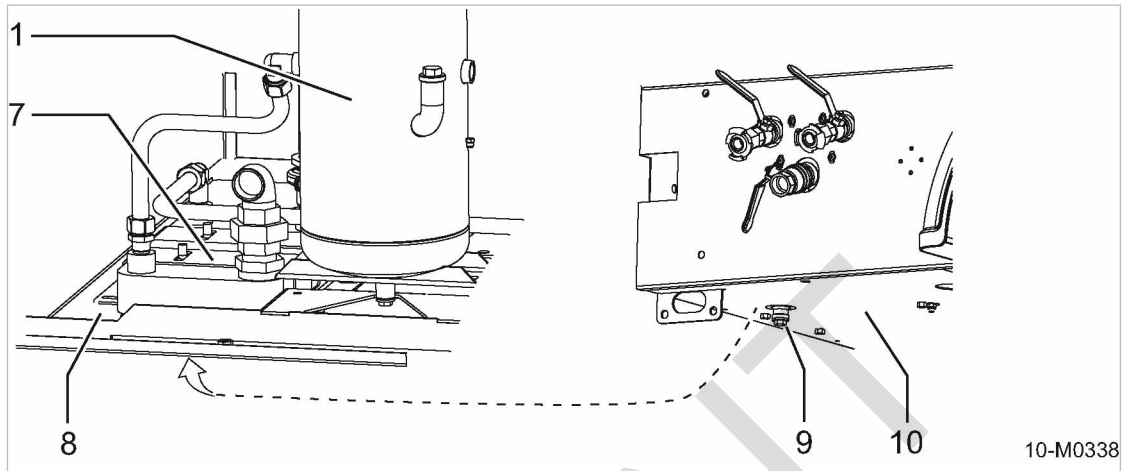


Fig. 57 Draining the oil from the heat exchanger

- |                      |                             |
|----------------------|-----------------------------|
| ① Oil separator tank | ⑨ Heat exchanger drain plug |
| ⑦ Heat exchanger     | ⑩ Underside of floor pan    |
| ⑧ Floor pan          |                             |

1. Place the oil receptacle below the corresponding drain hole in the floor pan.
2. Unscrew the drain plug ⑨ at the heat exchanger and allow the cooling oil to drain into the receptacle.
3. Fit a new gasket on the drain plug and screw it back in again.

**Finish off the work steps:**

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



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

Further information See chapter 10.4.2 for oil filling.

**10.4.4 Replace the compressor oil filter**

- Material
- Spares
  - Receptacle
  - Cleaning cloth

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



**CAUTION**

There is risk of burns from hot components and escaping oil.  
➤ Wear long-sleeved clothing and gloves.

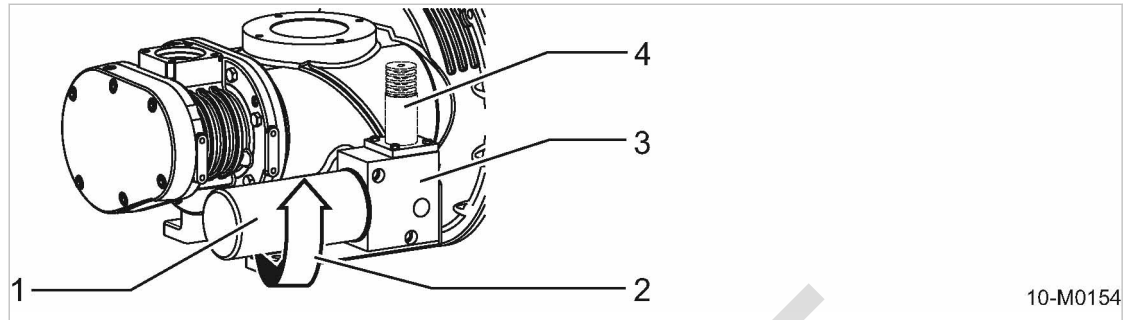


Fig. 58 Changing the oil filter

- |  |   |
|--|---|
| ① Oil filter                                       | ③ Combination valve                               |
| ② Direction of rotation to unscrew the oil filter. | ④ Ambient temperature sensor (not with Option db) |

#### Changing the oil filter:

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



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

#### Starting the machine and performing a test run:

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
5. Open the outlet valves.
6. Open the right-hand access door.
7. Check the oil level after about 5 minutes.  
Oil level too low: top up if necessary.
8. Visually inspect for leaks.
9. Close the door.

### 10.4.5 Oil separator tank dirt trap maintenance

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

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

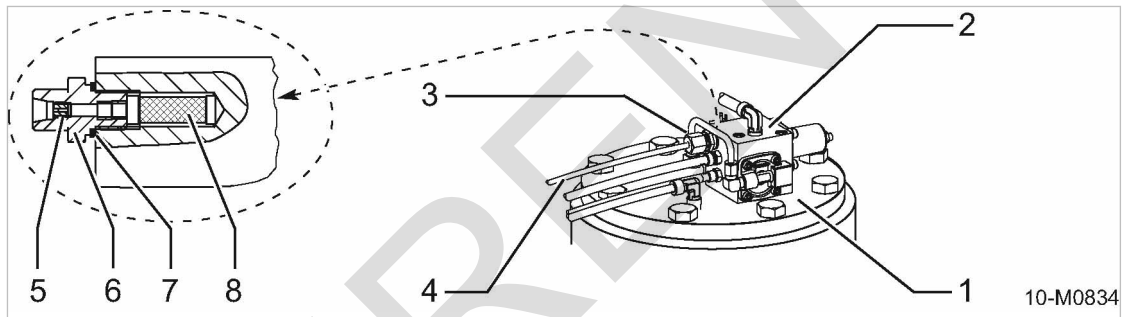


Fig. 59 Oil separator tank dirt trap maintenance

- |                            |                      |
|----------------------------|----------------------|
| ① Oil separator tank cover | ⑤ Nozzle             |
| ② Control valve            | ⑥ Screw-in connector |
| ③ Union nut                | ⑦ Gasket             |
| ④ Oil return line          | ⑧ Strainer           |

➤ Open the right-hand access door.

#### Dirt trap maintenance:

1. Undo the union nut and bend the oil return line to one side.
2. Unscrew the screw-in connector.
3. Unscrew the strainer from the screw-in connector.
4. Use a screwdriver to unscrew the nozzle from the screw-in connector.
5. Clean the housing, strainer and sealing ring with cleaning solvent or spirit.
6. Check the nozzle, strainer and sealing ring for wear.  
Replace components if they are heavily worn.
7. Fit the nozzle and strainer to the screw-in connector.
8. Screw in the connector making sure the sealing ring seats properly.
9. Refit the oil scavenge line.

#### Making operational:

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



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

**Starting the machine and performing a test run:**

1. Switch the machine on and run it in IDLE mode for approx. 5 minutes.
2. Shut down the machine.
3. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
4. Open the outlet valves.
5. Open the right-hand access door.
6. Visually inspect for leaks.
7. Shut down the machine.
8. Close the door.

**10.4.6 Changing the Oil Separator Cartridge**

The oil separator element 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 filters

Material Spares

Cleaning cloth

Wrench

Precondition The machine is shut down.

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

Machine is cooled down.

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

The negative cable to the battery is disconnected.

- Open the right-hand access door.

10.4.6.1 Changing the Oil Separator Cartridge

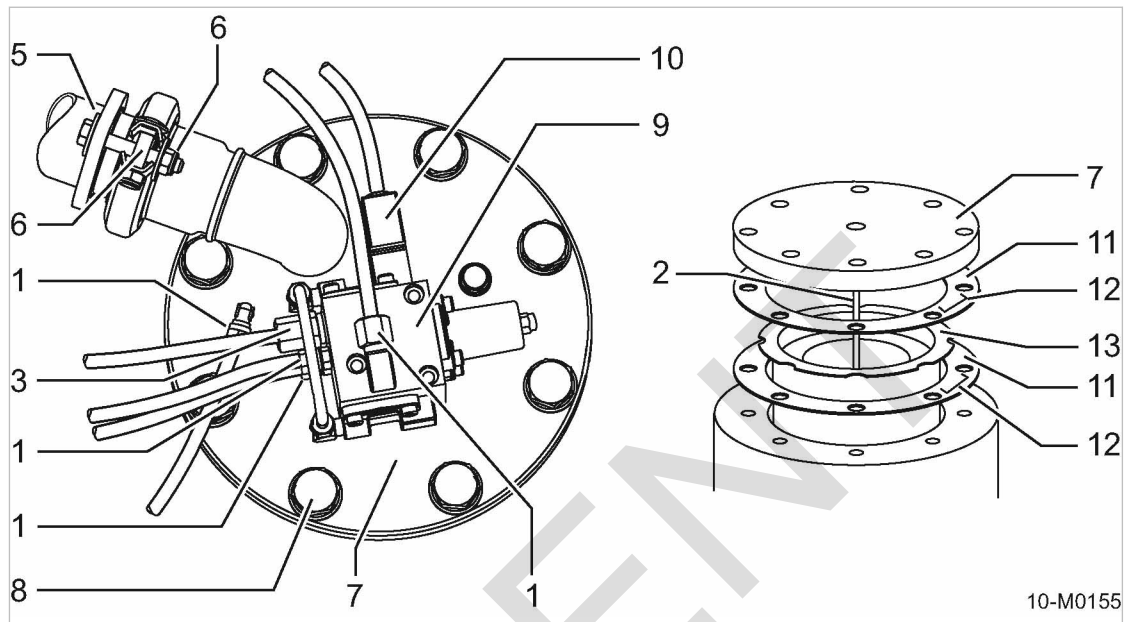


Fig. 60 Changing the Oil Separator Cartridge

- |  |                           |
|--|---------------------------|
| ① Control air line union nut                             | ⑧ Fixing screw            |
| ② Oil scavenge pipe (screwed to the cover)               | ⑨ Control valve           |
| ③ Oil scavenge pipe union nut (screwed to the dirt trap) | ⑩ Solenoid valve plug     |
| ⑤ Air pipe   | ⑪ seal                    |
| ⑥ Pipe fitting   | ⑫ Metal clip              |
| ⑦ Cover  | ⑬ Oil separator cartridge |

**Changing the oil separator cartridge**

1. Unscrew the union nuts ① and ③ and place the components with connections carefully to one side.
2. Pull out the plug to the solenoid valve ⑩ and withdraw the cable.
3. Unscrew the fitting ⑥ and turn the air pipe ⑤ to one side.
4. Remove the screws ⑧ securing the cover ⑦ to the tank.
5. Carefully lift the cover and put to one side.



Take care that the oil scavenge pipe ② screwed to the underside of the cover is not bent in the process.

6. Take out the old cartridge ⑬ and gaskets ⑪.
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 cartridge are electrically interconnected. The gaskets ⑪ are fitted with metal clips ⑫ that fulfil this requirement and provide an electrical path to the oil separator tank and to the frame of the machine.

8. Insert the new oil separator cartridge with gaskets and screw down the cover.
9. Re-position the air pipe ⑤.
10. Replace and tighten all loosened fittings.

11. Reconnect cables.
12. Check the oil level in the oil separator tank.  
Top up if necessary.



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

Further information Information on control valve dirt trap maintenance is given in chapter 10.4.5.

**Making operational:**

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



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

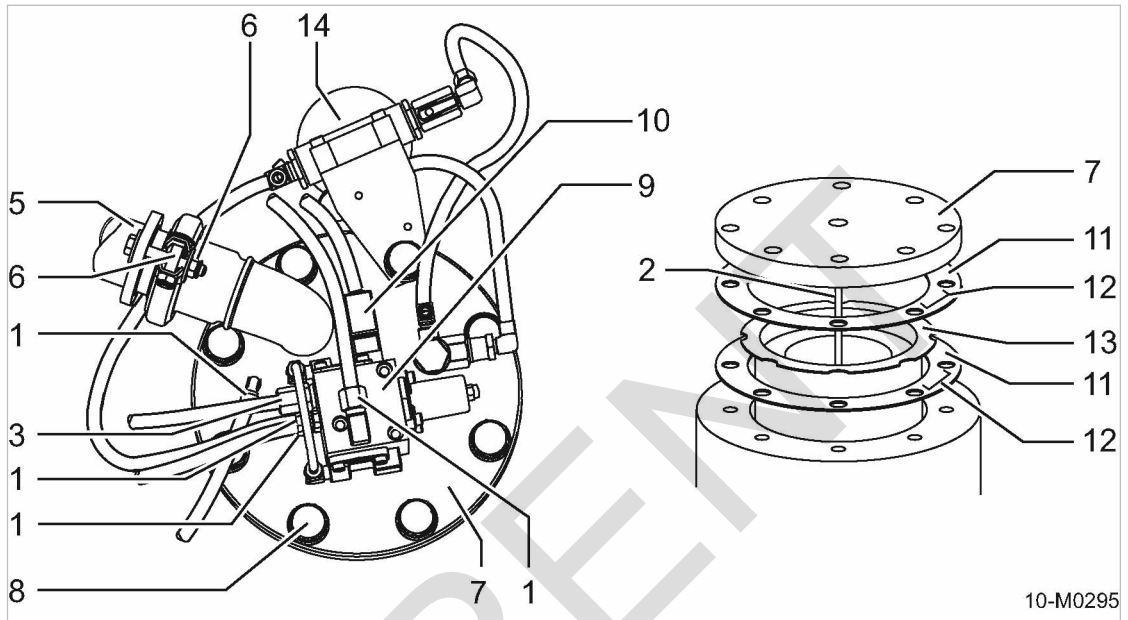
**Starting the machine and performing a test run:**

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
5. Open the outlet valves.
6. Open the right-hand access door.
7. Check the oil level after about 5 minutes.  
Top up if necessary.
8. Visually inspect for leaks.
9. Close the door.

10.4.6.2 Option ba

Changing the oil separator (machine with low-temperature equipment)

Option ba



10-M0295

Fig. 61 Changing the oil separator cartridge (Option ba)

- |  |                           |
|--|---------------------------|
| ① Control air line union nut                             | ⑨ Control valve           |
| ② Oil scavenge pipe (screwed to the cover)               | ⑩ Solenoid valve plug     |
| ③ Oil scavenge pipe union nut (screwed to the dirt trap) | ⑪ seal                    |
| ⑤ Air pipe   | ⑫ Metal clip              |
| ⑥ Pipe fitting   | ⑬ Oil separator cartridge |
| ⑦ Cover  | ⑭ Frost protector         |
| ⑧ Fixing screw   |                           |

1. Unscrew the union nuts ① and ③ and place the components with connections carefully to one side.
2. Pull out the plug to the solenoid valve ⑩ and withdraw the cable.
3. Unscrew the fitting ⑥ and turn the air pipe ⑤ to one side.
4. Loosen the frost protector clamp ring ⑭ and empty the bowl. See chapter 10.8.5 on frost protector maintenance.
5. Remove the screws ⑧ securing the cover ⑦ to the tank.
6. Carefully lift the cover and put to one side.



Take particular care with the following components:

- The frost protector ⑭ connected to the control line,
- The oil scavenge line ② screwed to the underside of the cover.

7. Take out the old cartridge ⑬ and gaskets ⑪.



8. 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 cartridge are electrically interconnected. The gaskets (11) are fitted with metal clips (12) that fulfil this requirement and provide an electrical path to the oil separator tank and to the frame of the machine.

9. Insert the new cartridge and gaskets.
10. Carefully replace the cover on the tank and the frost protector with holder on the cover.
11. Screw down the cover.
12. Re-position the air pipe (5).
13. Replace and tighten all loosened fittings.
14. Check the oil level in the oil separator tank.  
Top up if necessary.



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

Further information

Information on control valve dirt trap maintenance is given in chapter 10.4.5.

#### **Making operational:**

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



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

#### **Starting the machine and performing a test run:**

1. Start the machine and run in IDLE until the operating temperature is reached.
2. Close the outlet valves.
3. Shut down the machine.
4. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
5. Open the outlet valves.
6. Open the right-hand access door.
7. Check the oil level after about 5 minutes.  
Top up if necessary.
8. Visually inspect for leaks.
9. Close the door.

### **10.4.7 Compressor air filter maintenance**

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

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



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

**Material** Compressed air for blowing out  
Spare parts (as required)  
Wrench  
Cleaning cloth

**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.



**NOTICE**

Damaged air filter element.  
Machine damage due to contaminated intake air.

- Do not try to clean the filter element by striking or knocking it.
- Do not wash the filter element.

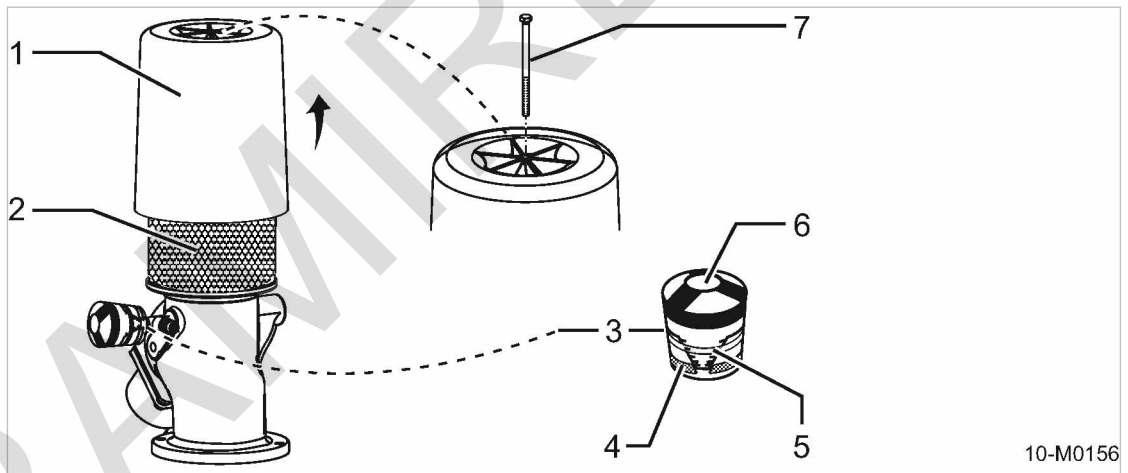
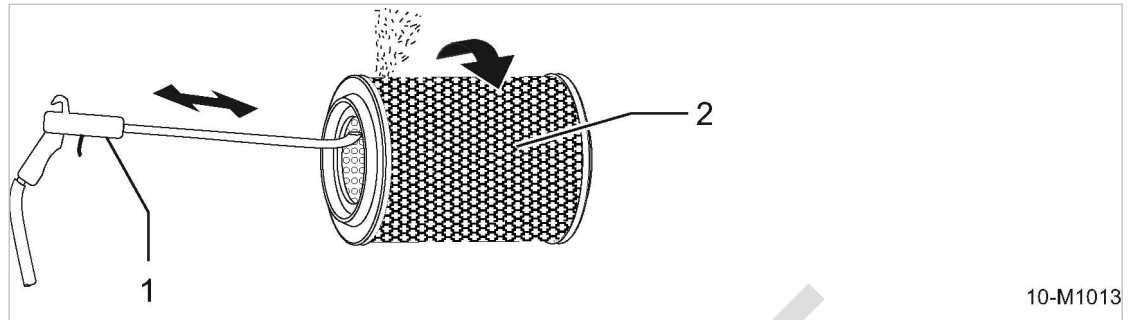


Fig. 62 Compressor air filter maintenance

- |                            |  |
|----------------------------|--|
| ① Filter cap               | ⑤ Indicating piston of the maintenance indicator |
| ② Air filters              | ⑥ Reset knob for the maintenance indicator       |
| ③ Maintenance indicator    | ⑦ Loosen the screws                              |
| ④ Red zone indicator scale |  |



10-M1013

Fig. 63 Cleaning the filter element

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

- Open the left-hand door.

#### Checking contamination of the air filter:

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

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

#### Cleaning the air filter:

1. Unscrew the hex-head screw in the filter cap.
2. Lift up the cap and remove the air filter element with a slight twisting action.
3. Clean the inside of the cap, the element holder and the sealing surfaces with a damp cloth.
4. Cleaning the filter element:
  - Use dry compressed air ( $\leq 5$  bar!) at an angle to blow dust from the element from inside to outside until no further dust develops.
  - The blast pipe must be long enough to reach the bottom of the element.
  - The tip of the blast pipe must not touch the element.
  - Cleaning sealing faces.
5. Inspect the element carefully for any damage.  
Replace any damaged filter element.
6. Insert the new or cleaned air filter element in the holder. Make sure it is properly in place and sealed by its gaskets.
7. Replace the cap and secure with the hex-head screw.

#### Resetting the maintenance indicator:

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



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

**10.4.8 Checking pressure relief valves**

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

**10.5 Clean cooler/radiator**

The frequency of cleaning 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 it could be damaged.

A severely contaminated cooler/radiator should be cleaned by KAESER Service.

Material Compressed air  
Face mask (as required)  
Water or steam jet blaster

Precondition Machine is placed over a washing station equipped with an oil separator.  
The machine is shut down.  
Machine is 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.

**NOTICE**

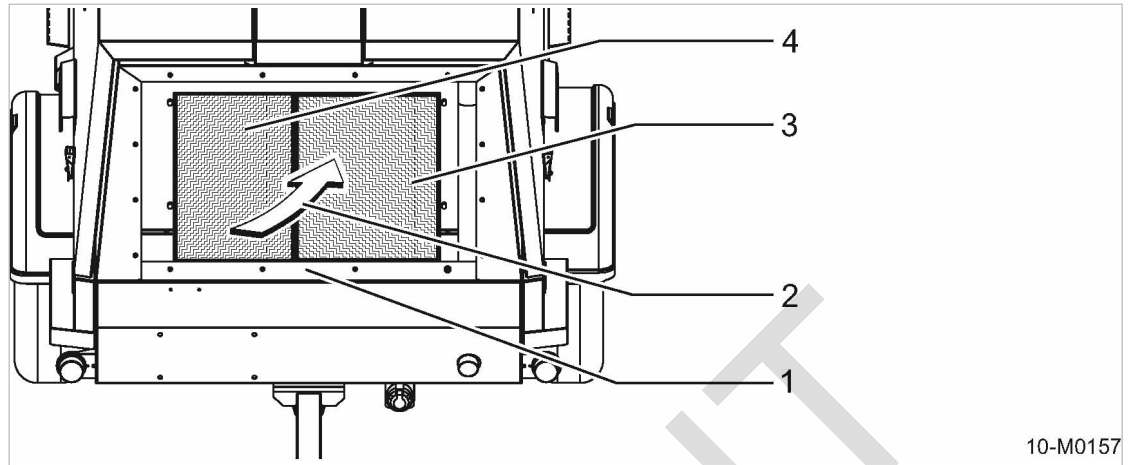
Damage to the machine can be caused by water or steam jets.

Direct water or steam jets can damage or destroy electrical components and 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 alternator, starter or indicating instruments.
  - Deploy the extension pole of the pressure washer at a distance of at least 50 cm and approximately 90° angle to the cooler/radiator surface.
- Open both doors.

**10.5.1 Cleaning the cooler/ radiator**

The compressor oil cooler and engine coolant radiator are combined in a single cooler block.



10-M0157

Fig. 64 Cleaning the cooler/ radiator

- |  |                         |
|--|-------------------------|
| ① Front end of machine, sound insulation (radiator grill) removed    | ③ Radiator (engine)     |
| ② Direction of impacting water or steam jet (from outside to inside) | ④ Compressor oil cooler |

#### Cooler cleaning

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

#### Check the cooler for leaks

1. Open both doors.
2. Visually inspect for leaks. Does oil/cooling water flow out?



Is a cooler leaking?

➤ Have the defective cooler repaired immediately by KAESER Service.

➤ Close the doors.

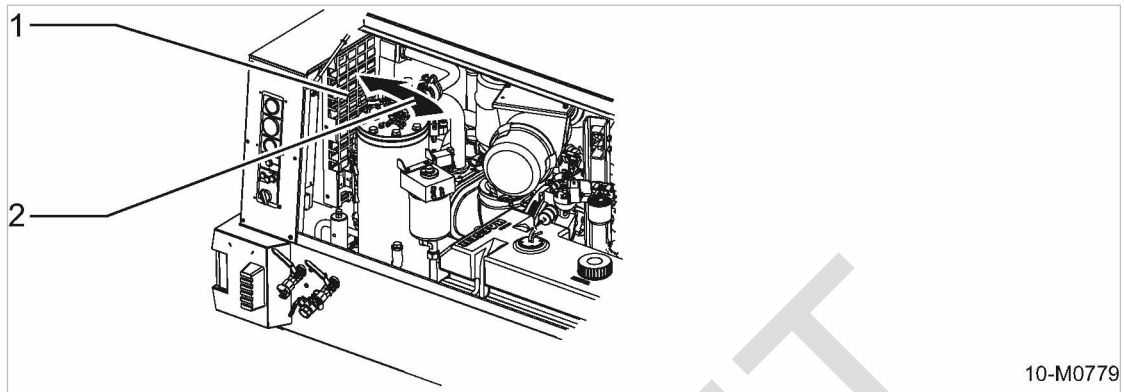


Clean the cooler/radiator only in a washing area equipped with an oil separator.

### 10.5.2 Option da, db, dc, dd Cleaning the compressed air aftercooler

The compressed air aftercooler is located near the air treatment devices.

Option da, db, dc, dd



10-M0779

Fig. 65 Cleaning the compressed air aftercooler

- ① Compressed air aftercooler
- ② Direction of impacting water or steam jet (from inside to outside).

1. Seal off the air intakes of the engine and compressor air filters before starting cleaning.
2. Clean the aftercooler with compressed air, water or steam jet in the opposite direction to the cooling air flow (from inside to outside).
3. Remove the protective coverings from the air filters.
4. Reconnect the battery.
5. Close the doors.
6. 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.

## 10.6 Maintenance of rubber sealing strips

The rubber sealing strips between the body panels and the access doors serve both as a sound-proofing measure and to prevent ingress of rain water.

Care of the rubber sealing strips is especially necessary in winter to prevent the strips from sticking and tearing when the access panels are opened.

**Material** Cleaning cloth  
Silicone or Vaseline

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

1. Open all the doors.
2. Clean the rubber sealing strips with a lint-free cloth and check for cracks, holes and other damage.  
Have any damaged gasket replaced.
3. Properly grease the rubber strips.
4. Close the doors.

## 10.7 Chassis maintenance

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

### 10.7.1 Wheel checks

Check the wheels for tightness, visible damage and tyre pressures:

- after the first 50 km
- after every wheel change
- at least every six months

Material Torque wrench  
Tyre pressure gauge

Precondition Machine shut down and secured against restarting.

1. Check/adjust for wheel fixing torques.
2. Check the tyres and wheels for any defect.  
Replace any damaged or worn tyres.
3. Check the tyre treads for sufficient depth.



According to local roadworthy regulations, at least 1.6 mm in most countries.

Profile depth too low: change tyres.

4. Check the tyre pressures.

Result Tyre pressure too low: pump tyres.

Further information See chapter 2.4.3 for wheel fixing torques.  
See chapter 2.4.2 for tyre pressures.  
A sticker is found on each wheel arch giving the recommended tyre pressure.

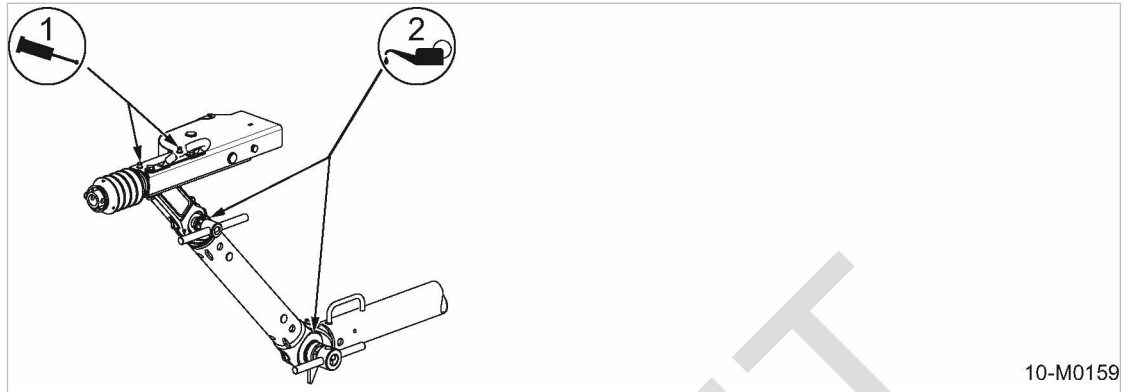
### 10.7.2 Towbar maintenance

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

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

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

Option sa



10-M0159

Fig. 66 Maintaining the height-adjustable towbar

- ① Overrun brake mechanism lubricating point
- ② Lubricating points toothed coupling

Option sd



10-M1021

Fig. 67 Maintaining the fixed-height towbar

- ① Overrun brake mechanism lubricating point

### 10.7.2.1 Check the towbar

1. Check the towbar for correct function and movement.
2. Clean and oil all sliding and rotating bearings.

#### Option sa Check the height setting of the towbar

- Check the towbar height adjustment function.



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 toothed coupling and smear with water-repellent grease.

Further information See chapter 6.4.1 for towbar height adjustment.

#### Option sa, sd Maintaining the parking brake

- Lightly lubricate the pins and adjustment joints.



10.7.2.2 Option sa, sd  
Overrun braking mechanism maintenance

Overrun braking mechanism greasing

- Pump fresh grease into the nipple until old grease is squeezed out.

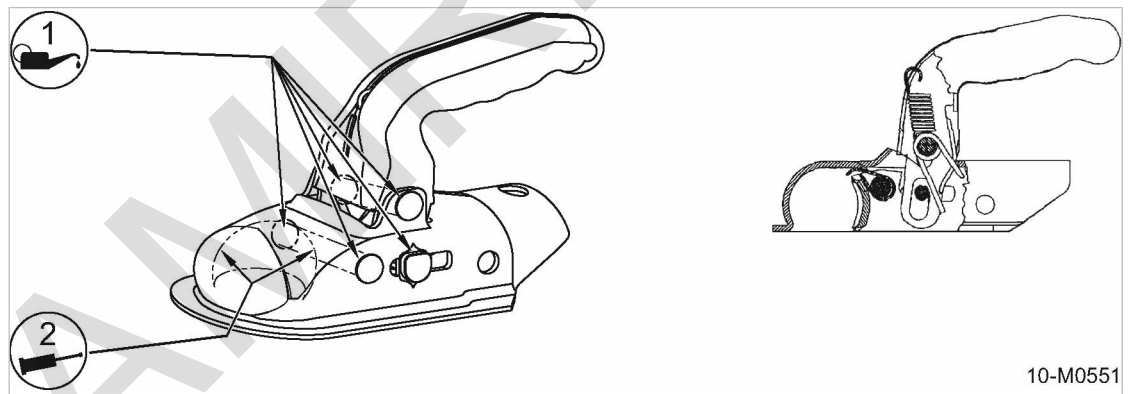
Further information Lubricating points of the height-adjustable tow mechanism (Option sa) see illustration 66.  
Lubricating points of a tow mechanism non-adjustable in height (Option sd) see illustration 67.

Checking the shock absorber

- Strongly press in the towbar against its damping force.  
The towbar must return automatically when pressure is released.  
Have the shock absorber replaced by a specialist workshop if:
  - Return of the tow bar takes more than 30 seconds
  - There is little resistance to pushing in,
  - Air has entered the device,
  - There is little resistance to pulling out the shock absorber.

10.7.2.3 Ball coupling maintenance

Option sa, sd

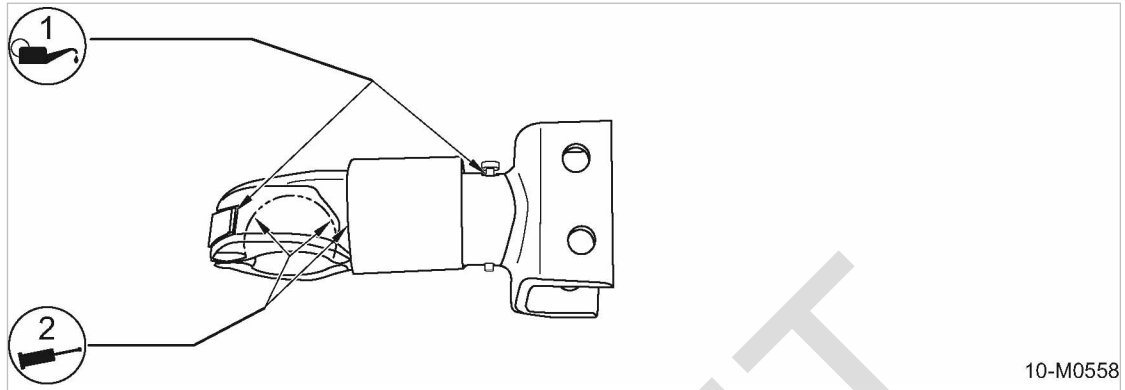


10-M0551

Fig. 68 Ball coupling (EC version)

- ① Lubricating points
- ② Lubricating points

Option sh



10-M0558

Fig. 69 Ball coupling (USA version)

- ① Lubricating points
- ② Lubricating points

1. Check the ball coupling for correct function and movement.
2. Clean the ball coupling. Grease or oil the ball cup, joints and bearings.

### 10.7.3 Brake system maintenance

The brake adjusting procedure ensures even wear on the brake linings by adjusting the brake shoes.

The following points must be observed:

- Carry out the adjustment procedure on all wheel brakes, one after the other.
- During adjustment, turn the wheel in the 'forward' direction only.

Material Screwdriver  
Wrench  
Torch  
Lithium-enriched multi-purpose grease

Precondition The machine is switched off.

1. Jack up the machine and lower it onto supports.
2. Release the parking brake and completely pull out the overrun braking mechanism.  
The brake cables are not tensioned.

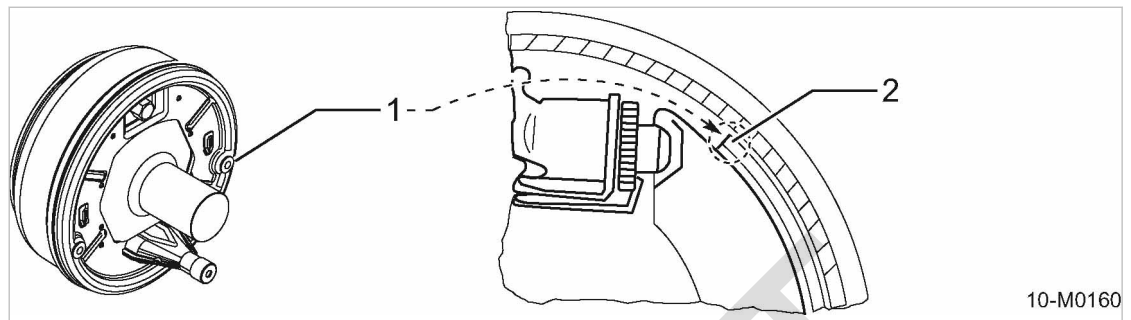
**10.7.3.1 Checking wheel brake lining wear**

Fig. 70 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.  
Brake linings of less than 2 mm thickness should be replaced by a specialist workshop.
3. Replace the plug in the inspection hole.

**10.7.3.2 Checking the brake system settings**

1. Check the free running of the wheels with released brake.  
Adjust the brake if the wheels do not turn freely.
2. Slightly tighten the parking brake.
3. Turn the wheels in the forward direction.
4. Check that there is the same braking resistance on both wheels.  
Adjust the braking system if the resistance is not the same.
5. Release the parking brake.

**10.7.3.3 Brake system adjustment**

Carry out the adjustment procedure on all wheel brakes, one after the other.



Never adjust the brakes at the brake rods!

Precondition Wheel and brake drum taken down

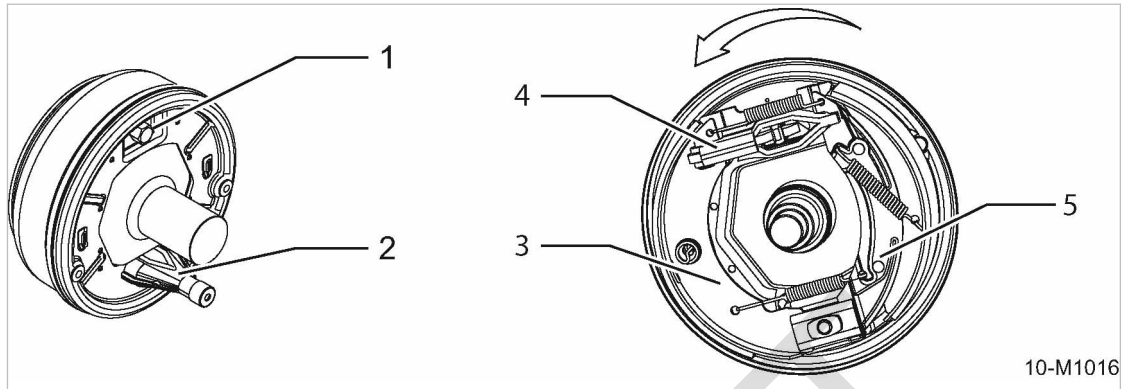


Fig. 71 Adjusting the wheel brake

- |   |                 |   |   |
|---|-----------------|---|---|
| ① | Adjusting screw | ④ | Expander lock   |
| ② | Cable entry     | ⑤ | Brake shoe, complete (brake shoe holder with brake pad) |
| ③ | Brake shoe      |   |   |

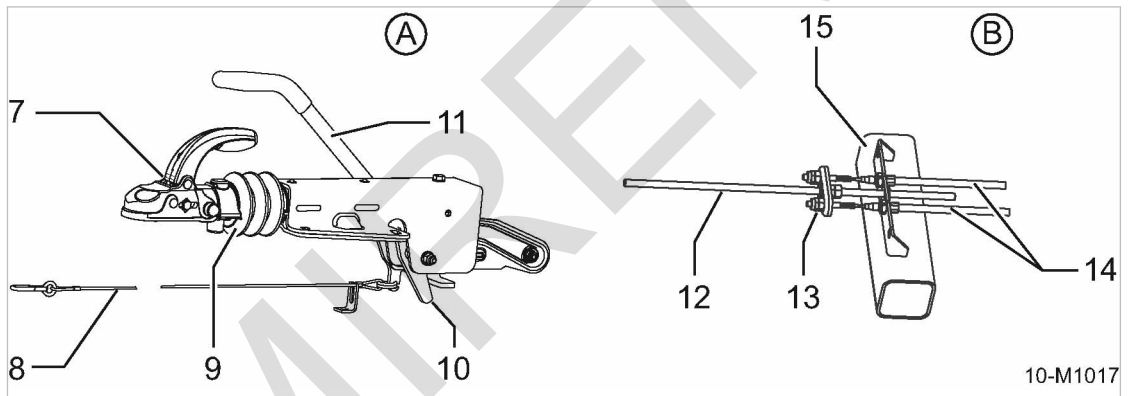


Fig. 72 Brake rod adjustment

- |   |                                    |   |                                    |   |  |
|---|------------------------------------|---|------------------------------------|---|--|
| Ⓐ | Overrun brake:                     | Ⓑ | Ball coupling                      | ⓑ | Transmission mechanism/brake equalisation: |
| ⑦ | Ball coupling                      | ⑧ | Brake cable                        | ⑫ | Brake rod                                  |
| ⑧ | Brake cable                        | ⑨ | Towbar tube with expansion bellows | ⑬ | Equaliser                                  |
| ⑨ | Towbar tube with expansion bellows | ⑩ | Relay lever                        | ⑭ | Pull wire                                  |
| ⑩ | Relay lever                        | ⑪ | Hand brake lever, parking brake    | ⑮ | Axle                                       |

1. Check the smooth running of the expander lock ④ and actuating cable ⑭.  
When stiff, loosen brake rods ⑫ at the equaliser ⑬ (brake equalisation).
2. Turn the adjusting screw outside on ① the brake anchor plate clockwise, until the wheel can be turned only with difficulty or not at all.
3. Loosen the adjustment screw counterclockwise (approximately 1/2 turn) until the wheel is running freely.



A light rubbing sound when the wheels turn is permissible if it does not affect free turning.  
When the brake is adjusted accurately, the pedal travel is 4 - 6 mm approximately.

**Controlling the brake equalisation:**

1. Preset the brake rod ⑫ in its length (some play at the relay lever ⑩ permitted).
2. Apply the parking brake ⑪ a number of times to centralize the brake linings.

3. Check the position of the equaliser (13) on the brake rod (12).

The equaliser is in perpendicular position to the brake rods: identical play of the wheel brakes.  
If the equaliser is oblique to the brake rods, correct the position of the equaliser.

**Checking the parking brake:**

- Pull parking brake lever strongly upwards and beyond the noticeable "dead point zone".  
The brake is adjusted correctly, if resistance is felt approximately 10 - 15 mm beyond the "dead point".



Adjust the brake if major deviations are noticed.

**Brake rod adjustment:**

1. To loosen the braking rod (12) undo the nut on the equaliser (13).
2. Grease the brake rod threads.
3. Adjust the rod so there is no play or tension.  
Equaliser is perpendicular to the brake rods.
4. Tighten the nut.
5. Tighten all counter nuts.

**Performing a test drive:**

1. Reinstall brake drums and wheels.
2. Remove the jacks from the machine and couple it with the towing vehicle.
3. Test by applying the brake a number of times.  
If necessary, readjust brakes.

**10.7.3.4 Greasing the brake rods**

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

Precondition The machine is shut down.

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

- Clean and grease the brake rods sliding and adjustment joints.

**10.8 Maintenance of Optional Items**

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

**10.8.1 Option ec  
Tool lubricator maintenance**

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

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

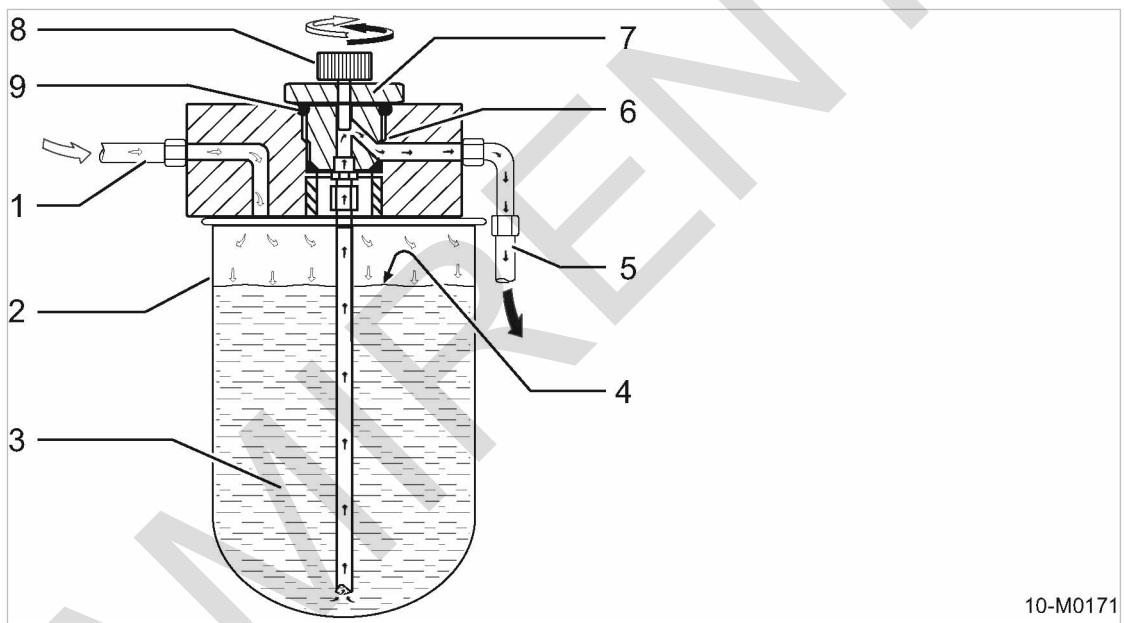


Fig. 73 Tool lubricator maintenance

- |                        |   |
|------------------------|---|
| ① Compressed air inlet | ⑥ Tool lubricator upper part with oil filling port    |
| ② Oil tank             | ⑦ Filler plug with dipstick and integrated riser tube |
| ③ Oil volume           | ⑧ Metering knob                                       |
| ④ Oil surface          | ⑨ O-ring  |
| ⑤ Tool oil outlet      |   |

➤ Open the right-hand access door.

**Checking the tool lubricator oil level**

Check the oil level daily.

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

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

1. Slowly unscrew and withdraw the oil filler plug.
2. Wipe off the dipstick with a lint-free cloth or rag and screw the plug fully in again.

3. Unscrew and withdraw the plug once more and read off the oil level on the dipstick.  
Oil level at the upper third of the dip stick: OK.  
Top up if the oil does not reach this level.
4. Close the door.

**Filling and topping up with tool lubricator oil**

1. Slowly unscrew and withdraw the oil filler plug.
2. Use a funnel to pour in the oil to the maximum level (10 – 15 mm below the top of the tank).
3. Check the oil level.
4. Check the filler plug O-ring for external damage.  
Change a damaged O-ring.
5. Insert the plug in the filler port.
6. Close the door.

Further information See chapter 2.7.1 for suitable oil grade and volume.

**10.8.2 Option da, db, dc, dd  
Cyclone separator maintenance**

Clean the cyclone separator dirt trap if the moisture content in the compressed air is too high.

Material Cleaning cloth  
Wrench  
Small screwdriver  
Dirt trap maintenance kit  
Petroleum ether or spirit

Precondition The machine is shut down.  
Machine is 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.

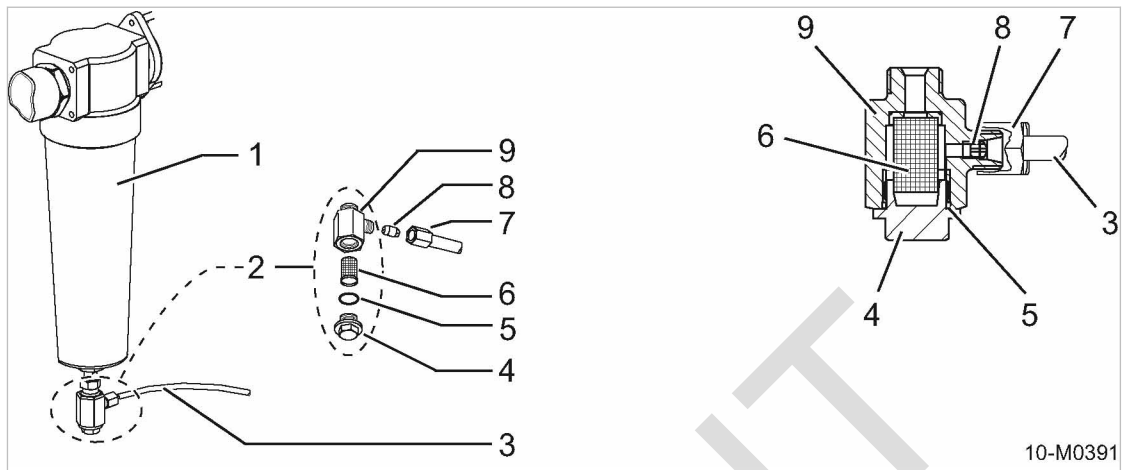


Fig. 74 Cleaning the dirt trap

- |                         |                                   |
|-------------------------|-----------------------------------|
| ① Cyclone separator     | ⑥ Strainer                        |
| ② Dirt trap             | ⑦ Condensate drain hose union nut |
| ③ Condensate drain hose | ⑧ Nozzle                          |
| ④ Screw plug            | ⑨ Dirt trap housing               |
| ⑤ O-ring                |                                   |

➤ Open the left-hand door.

#### Cleaning the dirt trap:

1. Unscrew the plug ④ and remove the strainer.
2. Loosen the union nut ⑦ and detach the condensate drain hose ③ from the dirt trap.
3. Use the small screwdriver to unscrew the nozzle ⑧ from the dirt trap housing.
4. Clean the nozzle, strainer, screw plug, O-ring ⑤ and dirt trap housing ⑨ with cleaning solvent or spirit.
5. Check the nozzle, strainer and O-ring for wear.  
Replace components if they are heavily worn.
6. Place the strainer on the screw plug.
7. Screw in the plug making sure the O-ring seats properly.
8. Screw in the nozzle and re-attach the condensate drain hose.

#### Making operational:

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

#### Starting the machine and performing a test run:

1. Switch the machine on and run it in IDLE mode for approx. 5 minutes.
2. Shut down the machine.
3. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
4. Open the outlet valves.
5. Open the left-hand door.



6. Check the cyclone separator housing and hose line for leaks.
7. Close the door.

### 10.8.3 Option dd Combination filter maintenance

**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.



**WARNING**

Danger of injury from compressed air!

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

- Wait until the machine is completely vented (check that the pressure gauge indicates 0 bar).
- De-pressurise the combination filter.

Option dd

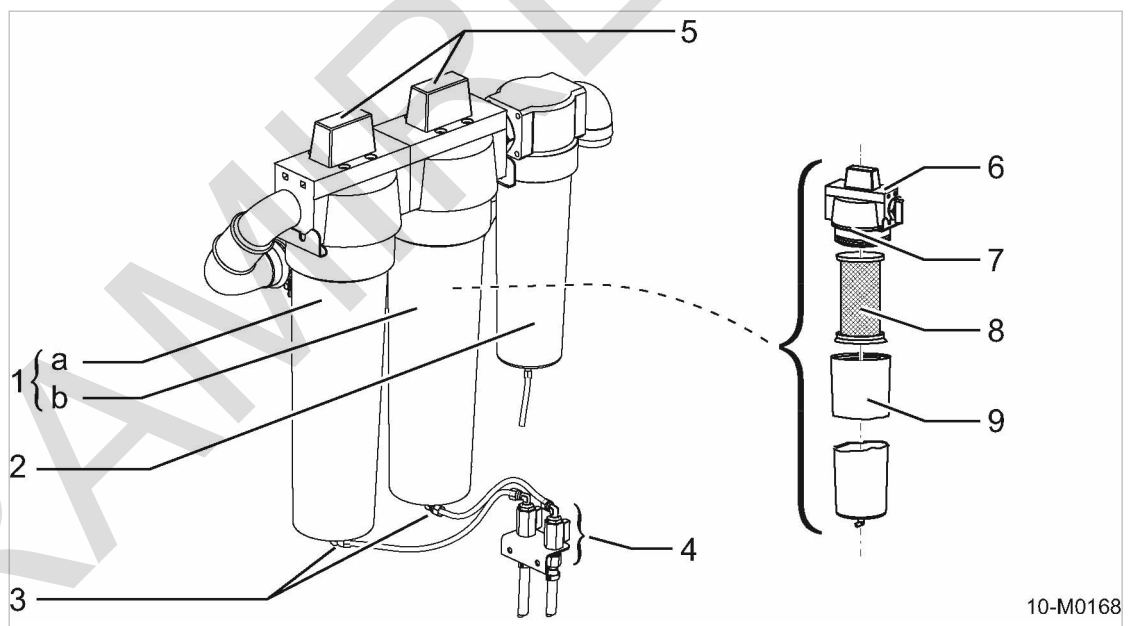


Fig. 75 Combination filter maintenance

- |   |  |
|---|--|
| ① Filter combination                          | ⑤ Pressure differential gauge (check fittings for Service personnel) |
| ② Pre-filter                                  | ⑥ Filter head  |
| ③ Micro-filter                                | ⑦ Casing gasket  |
| ④ Cyclone separator                           | ⑧ Filter element   |
| ⑤ Condensate drain hose fittings              | ⑨ Filter housing   |
| ⑥ Shut-off ball valve for condensate drainage |  |

- Open the left-hand door.

**10.8.3.1 Draining condensate**

Material Receptacle  
Cleaning cloth

1. Place the receptacle under the combination filter hose lines.
2. Open the pre-filter and micro-filter condensate drain shut off valves.
3. Close the door.
4. Start up the machine and run in IDLE.  
The condensate collecting in the filter housings is blown out.
5. Stop the compressor as soon as air escapes.
6. Open the left-hand door.
7. Close the shut-off valve.
8. Close the door.



Condensate must be stored in suitable containers and disposed of in accordance with local environmental regulations.

**10.8.3.2 Changing the filter elements**

The pre-filter and microfilter contain different elements and these must be changed as a pair. Note location!



Using the combination filter without an element installed is not permitted.  
Handle new filter elements only with clean fabric gloves. Do not touch the new filter elements with bare fingers – Contamination risk!

Material Spare parts  
Filter wrench  
Wrench  
Cleaning cloth  
Clean fabric gloves

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

**Ensure that the combination filter is not under pressure.**

- Slowly open the pre-filter and micro-filter condensate drain shut off valves.  
Remaining pressure escapes.

**Changing the pre-filter element:**

1. Unscrew and remove the drain hose from the filter housing.
2. Unscrew the filter housing counter-clockwise.
3. Draw the filter element down and out.
4. Clean the filter head, housing and sealing surface with a lint-free cloth.
5. Check the housing gasket.  
When damaged, replace the housing gasket.

6. Insert the new filter element.



Wear gloves!

7. Screw on the filter housing clockwise.
8. Screw on the condensate drain hose.

**Changing the micro-filter element:**

1. Unscrew and remove the drain hose from the filter housing.
2. Unscrew the filter housing counter-clockwise.
3. Draw the filter element down and out.
4. Clean the filter head, housing and sealing surface with a lint-free cloth.
5. Check the housing gasket.  
When damaged, replace the housing gasket.
6. Insert the new filter element.



Wear gloves!

7. Screw on the filter housing clockwise.
8. Screw on the condensate drain hose.

**Making operational:**

1. Close the condensate drain shut-off valves.
2. Tighten the filter combination fittings.
3. Reconnect the negative battery terminal.
4. Close the door.



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

Further information

Further information on changing elements can be found in the filter instructions in chapter 13.6.

**Starting the machine and performing a test run:**

1. Switch the machine on and run it in IDLE mode for approx. 5 minutes.
2. Shut down the machine.
3. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
4. Open the outlet valves.
5. Open the left-hand door.
6. Check the combination filter housing and hose lines for leaks.
7. Close the door.

**10.8.4 Option dc  
Fresh air filter maintenance**

Before commencing work on the fresh air filter, read and understand the operating instructions given in chapter 13.7.

- 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.

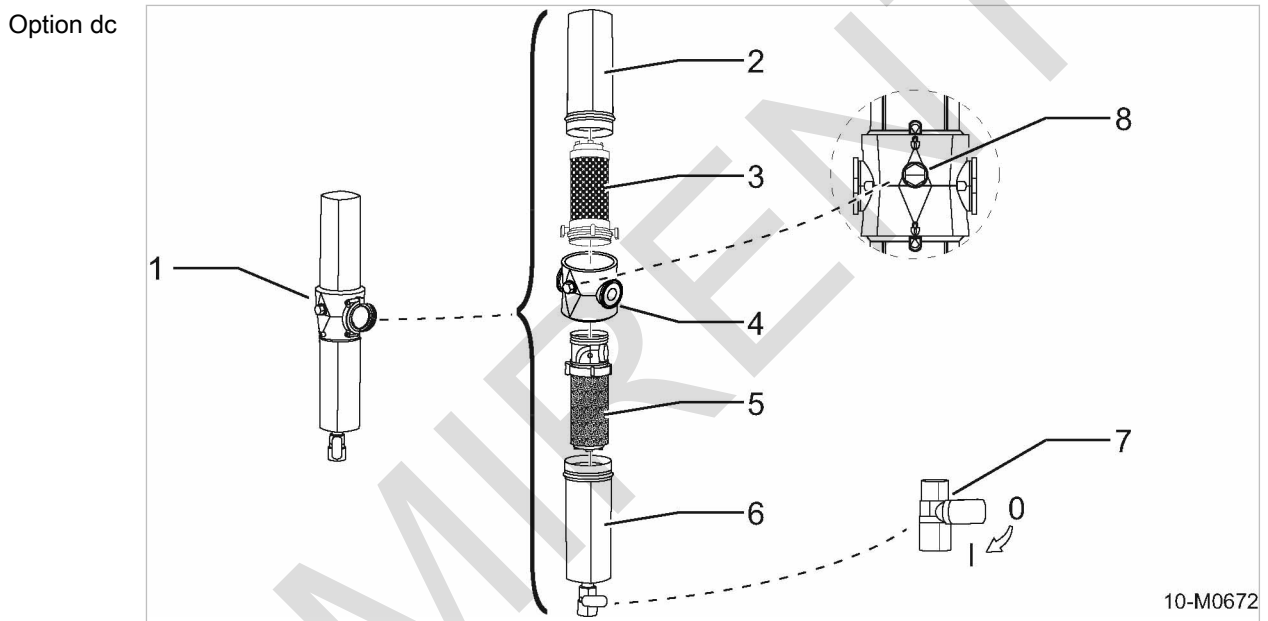


Fig. 76 Fresh air filter maintenance

- |                                      |  |
|--------------------------------------|--|
| ① Fresh air filter                   | ⑤ Lower filter element (high capacity element)                         |
| ② Upper housing                      | ⑥ Lower housing  |
| ③ Upper element (adsorption element) | ⑦ Condensate drain (tap for manual draining)<br>0 - closed<br>I - open |
| ④ Body                               | ⑧ Oil indicator  |

➤ Open both doors.

**10.8.4.1 Draining condensate**

- Material Receptacle  
Cleaning cloth

1. Place the receptacle below the fresh air filter condensate drain point.
2. Open the condensate drain valve.
3. Close the doors.
4. Switch the machine on and run it in IDLE mode for approx. 2 minutes.  
The condensate collecting in the filter housings is blown out.

5. Shut down the machine.
6. Open both doors.
7. Close the drain valve.
8. Carefully remove the receptacle.
9. Close the doors.



Condensate must be stored in suitable containers and disposed of in accordance with local environmental regulations.

#### 10.8.4.2 Check the oil indicator

The fresh air filter is fitted with an oil indicator. When the indicator is blue, the filtration function can no longer be ensured and the filter must not be used. Both filter elements and the oil indicator must be changed (regardless of the maintenance schedule).

The oil indicator must be checked at least once daily.



The oil indicator does not give information on the filter element changing interval.

- Check the oil indicator.  
Indicator blue - change both filter elements and the indicator.

#### 10.8.4.3 Changing consumable parts

The fresh air filter contains two different elements which must be changed as a pair. Note location!



Using the fresh air filter without an element installed is not permitted.

Handle new filter elements only with clean fabric gloves. Do not touch the new filter elements with bare fingers – Contamination risk!

Material Spare parts  
Filter wrench  
Wrench  
Cleaning cloth  
Clean fabric gloves

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

#### Ensuring the fresh air filter is depressurized:

- Open the fresh air filter drain tap to release any remaining pressure.

#### Change the lower filter element (high performance element)

1. Unscrew the lower housing counter-clockwise.
2. Draw the filter element down and out.
3. Clean the lower housing and sealing surface with a lint-free cloth.
4. Check the housing gasket.  
When damaged, replace the housing gasket.

5. Insert a new lower filter element.



Wear gloves!

6. Screw on the lower housing clockwise.

**Changing the upper filter element (adsorption insert):**

1. Unscrew the upper housing counter-clockwise.
2. Draw the filter element up and out.
3. Clean the lower housing and sealing surface with a lint-free cloth.
4. Check the housing gasket.  
When damaged, replace the housing gasket.
5. Insert a new filter element.



Wear gloves!

6. Screw on the upper housing clockwise.

**Change the oil indicator:**

1. Unscrew the oil indicator.
2. Clean the housing and sealing surface with a lint-free cloth.
3. Screw in the new oil indicator.

**Making operational:**

1. Close the drain valve.
2. Reconnect the negative battery terminal.
3. Close the doors.



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

**Further information** Further information on changing elements can be found in the operating instructions for pressurised air filters (fresh air filters) in chapter 13.7.

**Starting the machine and performing a test run:**

1. Switch the machine on and run it in IDLE mode for approx. 5 minutes.
2. Shut down the machine.
3. Wait until the machine has automatically vented.  
Pressure gauge reads 0 bar.
4. Open the outlet valves.
5. Open both doors.
6. Check the fresh air filter housing and hose line for leaks.
7. Close the doors.

**10.8.5 Option ba  
Frost protector maintenance**

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

Material Antifreeze (Wabcothyl)  
Cleaning cloth

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.



**DANGER**

Spontaneous ignition of antifreeze!

Danger of fire or explosion caused by the spontaneous ignition can result in serious injury.

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



**WARNING**

Compressed air!

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

- De-pressurise the frost protector

Option ba

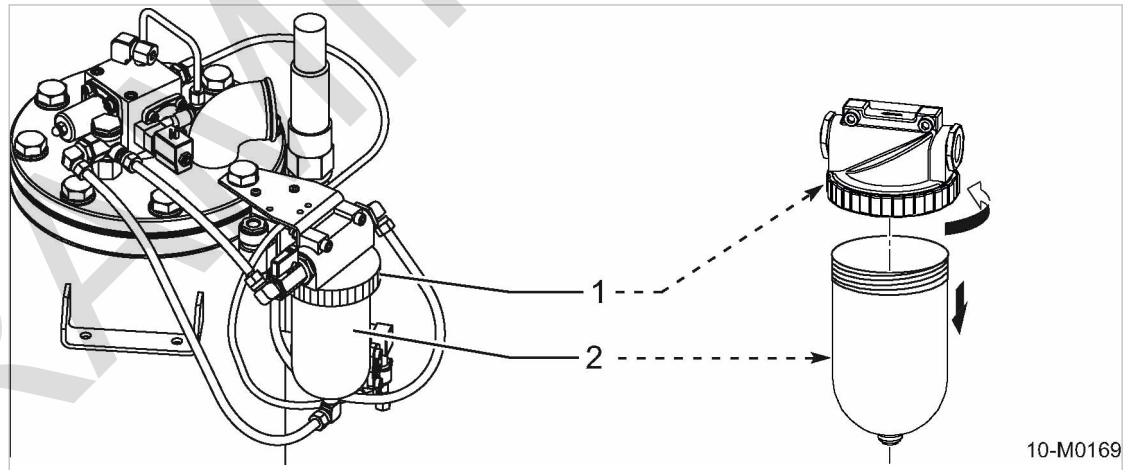


Fig. 77 Filling the frost protector

- ① Defroster fitting
- ② Defroster lower part

1. Open the right-hand access door.
2. Unscrew the clamp ring and remove the bowl.
3. Fill the bowl ¾ full with antifreeze.
4. Carefully screw the bowl back into place.
5. Close the access door.

### 10.8.6 Option ga Generator drive belt maintenance

Correct belt tension is extremely important for the function of the generator and the operational life of the belts themselves. The lifespan of the drive belts is affected by belt tension.

- Slack V-belts can cause belt slip and damage to the belts.
- Over-tight belts stretch and fatigue quicker. Over-tight belts also place unnecessary stress on bearings and shorten their life.

Material Spare parts (if required)  
Wrench  
V-belt tension measuring device  
Liquid thread lock

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



#### WARNING

Beware of rotating pulleys and moving belts.  
Touching the moving drive belt may result in severe bruising or even loss of limb or extremities.

- Check the belt only when the compressor is shut down.
- Never run the machine without a belt guard.
- Open the left-hand door.



Remove the safety screen and the belt guard:

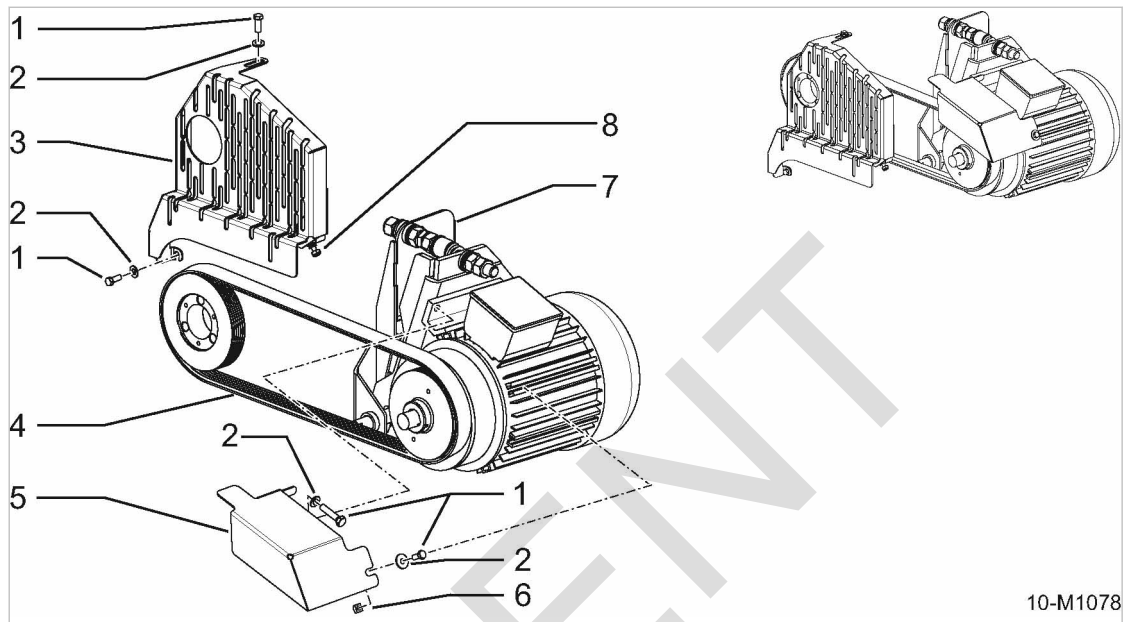


Fig. 78 Securing the belt guard at the generator

- |                  |                              |
|------------------|------------------------------|
| ① Hex-head screw | ⑤ Belt guard                 |
| ② Washer         | ⑥ Square nut                 |
| ③ Safety screen  | ⑦ Support for belt tensioner |
| ④ Generator belt | ⑧ Hexagonal nut              |

➤ Loosen the bolts on safety screen and belt guard and remove both protective devices.

#### 10.8.6.1 Visual check for belt damage

1. Turn the pulley by hand and inspect the full length of the belt for splits, frays or any sign of stretching.  
Change the belt immediately if any damage or wear is found.
2. Re-attach the safety screen and the belt guard.
3. Reconnect the negative battery terminal.
4. Close the door.

#### 10.8.6.2 Checking belt tension



Check belts when it is warm, not hot, to avoid length variations through temperature.

#### Checking belt tension on the drive belt:

A belt tension measuring device may be used to verify the belt tension. See the manufacturer's instructions for operation.

The belt tension may also be checked manually if no tension measuring device is available.

| Generator | Checking with an instrument. | Checking by hand             |                       |
|-----------|------------------------------|------------------------------|-----------------------|
|           | Rated power [kVA]            | Permissible belt tension [N] | Compressive force [N] |
| 7.0 – 8.5 | 420 – 520                    | 80                           | 8                     |
| 13.0      | 580 – 680                    | 100                          | 8.5                   |

Tab. 90 Belt tension values

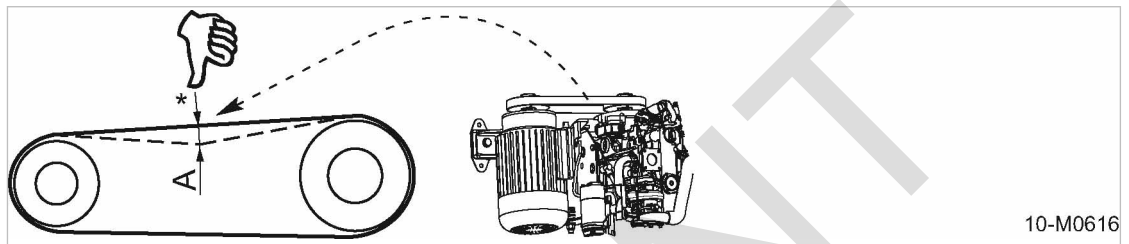


Fig. 79 Belt tension checking by hand

- Ⓐ Permissible deflection of the belt
- \* Force approximately 8 – 10 kg

➤ Checking belt tension with a measuring device or by hand according to the following instructions:

| Checking belt tension with tension measuring device   | Belt tension checking by hand   |
|---|---|
| Use a measuring device to check belt tension.<br>1. Check belt tension with the tension measuring device.<br>2. Increase the tension on a loose belt. | Press the belts in with the thumb at the mid-point between pulleys.<br>1. Check belt tension by hand (see Fig. 79).<br>2. Increase the tension on a loose belt. |

#### Checking belt tension on the tensioner:

Belt tension can be also checked using the belt tensioner, in alternative to the check directly at the drive belt.

See chapter 10.8.6.3; Figure 81.

To determine if the belt needs tensioning, the tensioner (6) should be loosened from the tensioning frame (4).

1. Loosen the locking nuts (24) and (8).
2. Check if there is a gap between the sleeve (11) and the two adjacent washers and whether the spherical seat washer (10) and /or washer (20) are present.

Tension the belts if a gap can be seen.

3. Tighten the nut (8) against the tensioning frame (4) and lock with the locknut (24).

#### Making operational:

1. Re-attach the safety screen and the belt guard.
2. Reconnect the negative battery terminal.
3. Close the door.

10.8.6.3 Belt tensioning

(see figure 81 for location).

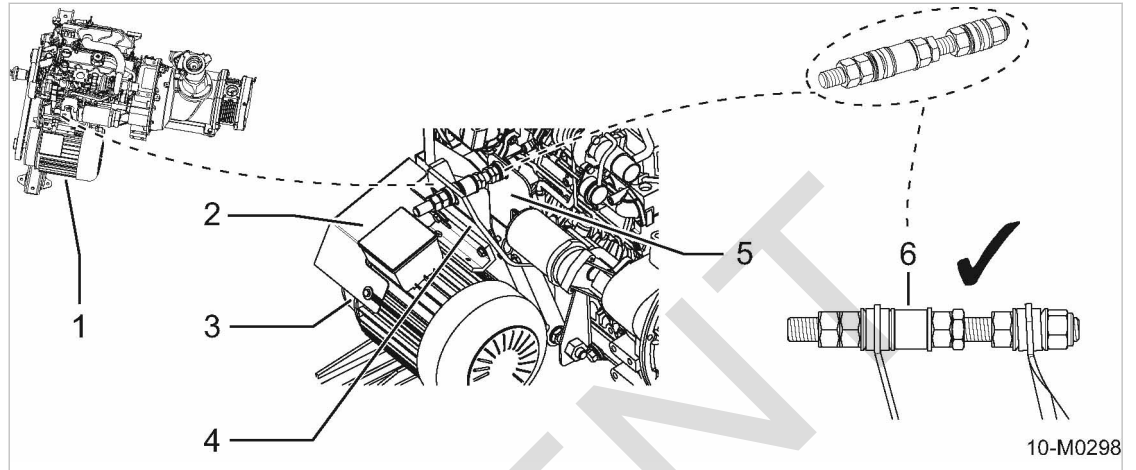


Fig. 80 Generator belt tensioning

- |   |            |   |                                  |
|---|------------|---|----------------------------------|
| ① | Generator  | ④ | Tensioning frame                 |
| ② | Belt guard | ⑤ | Tensioning spindle fixed bracket |
| ③ | Drive belt | ⑥ | Tensioning spindle               |

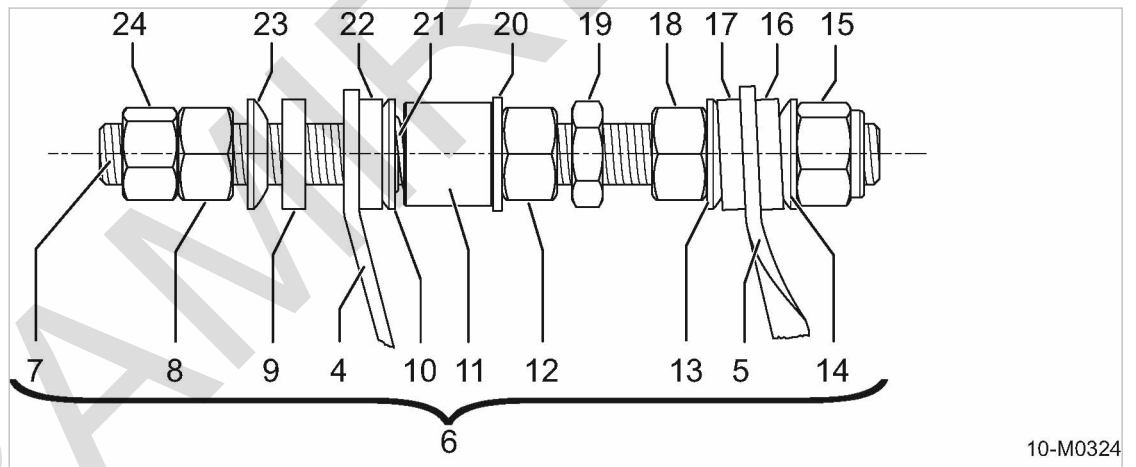


Fig. 81 Generator belt tensioner

- |   |                              |   |                       |
|---|------------------------------|---|-----------------------|
| ⑦ | Threaded rod                 | ⑩ | Spherical seat washer |
| ⑧ | Hexagonal nut                | ⑪ | Sleeve                |
| ⑨ | Conical seat washer          | ⑫ | Hexagonal nut         |
| ⑬ | Spherical seat washer        | ⑭ | Spherical seat washer |
| ⑮ | Hexagonal nut (self-locking) | ⑯ | Spherical seat washer |
|   |                              | ⑰ | Hexagonal nut         |
|   |                              | ⑱ | Locknut (low)         |
|   |                              | ⑲ | Locknut (low)         |
|   |                              | ⑳ | Washer                |
|   |                              | ㉑ | Compression spring    |
|   |                              | ㉒ | Conical seat washer   |
|   |                              | ㉓ | Spherical seat washer |
|   |                              | ㉔ | Locknut               |

**Tensioning the drive belt:**

1. Loosen the locknut ⑳ and nuts ⑧, ⑱ and ⑫.

2. Turn the nut (12) by hand until there is no gap between the sleeve (11) and spherical seat washer (10) and/or washer (20).
3. Lock the nut (19) with the nut (12).
4. Tighten the nut (8) against the side of the tensioning frame (4). The conical seat washer (9) and the spherical seat washer (23) must lay in the tensioning frame.
5. Lock the nut (24) with the nut (8).

**Making operational:**

1. Re-attach the safety screen and the belt guard.
2. Reconnect the negative battery terminal.
3. Close the door.

**10.8.6.4 Changing the belt**

1. Remove the tensioning device (see Fig. 81).
  - Loosen nuts (24) and (8) and lock together at the end of the threaded rod (7).
  - Loosen nuts (19) and (12) on the tensioning frame (4) until the belt is completely slack.
  - Loosen the locking nut (18).
  - With the help of the nut (6), unscrew the tensioning device (8) from the locknut (15).
  - Remove the tensioning device (6) from the tensioning frame (4) and belt tensioner holder (5).
2. Changing the belts
  - Remove the belts from the pulleys.
  - Check the pulleys for dirt and wear.
    - Clean the pulleys.
    - Slitt remskive: Skift ut remskiven.
  - Check that the pulleys are lined up.
    - If the pulleys are not lined up, adjust the position of the generator until they are.
  - Without using force, place the new belt over the engine and generator pulleys.
3. Mount the tensioning device (see Fig. 81).
  - Mount the tension device (6) in the tensioner holder (5) and tensioning frame (4) as illustrated.
  - Lock the nut (8) to the nut (24).
  - Tighten the tensioning device (6) to the side of the motor with the nut (15). For this, the tensioning device must be screwed into the locknut (15).
  - Use a wrench to fixate the nut (18). Use another wrench to turn nut (8) counter-clockwise. Secure the nut (18) with a drop of liquid thread lock to prevent a potential loosening due to vibration stresses.
  - Tension the belt as described in chapter 10.8.6.3.



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



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

**Making operational:**

1. Re-attach the safety screen and the belt guard.

2. Reconnect the negative battery terminal.
3. Close the door.

**Performing a test run:**

1. Run the compressor under LOAD operation for 15–20 minutes.
2. Open the left-hand door.
3. Remove the belt guard.
4. Check the belts again and re-tension if necessary.
5. Close the door.



Check the belt again after a further 2 operating hours.

**10.8.6.5 Aligning the generator**

The engine and generator pulleys must be in line.

Misaligned pulleys cause:

- a belt that does not run true and may jump off the pulleys,
- high wear on one side of the belt,
- excessive noise.

Material Alignment ruler  
Wrench  
Liquid thread lock

1. Open the left-hand door.
2. Remove the safety screen and the belt guard.

**Checking the alignment:**

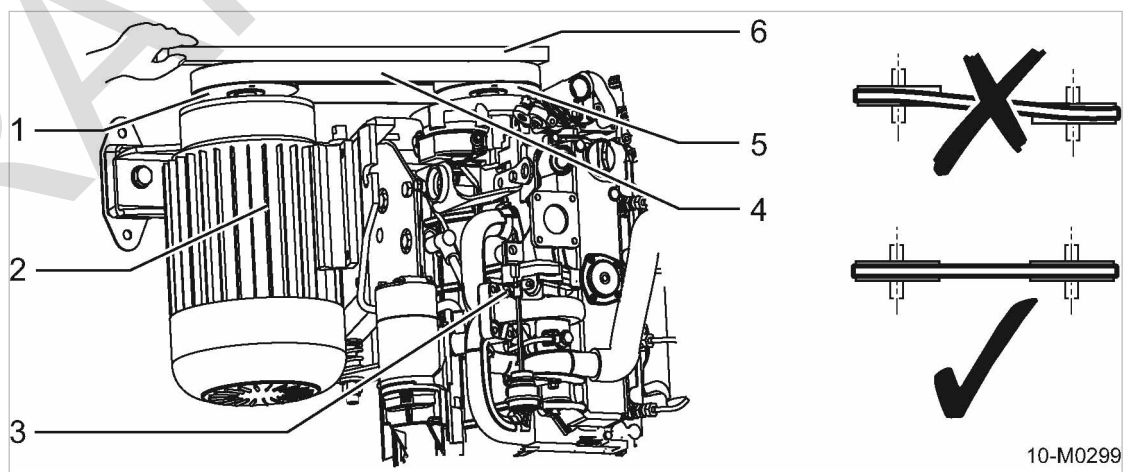


Fig. 82 Checking the pulley alignment

- |                          |                   |
|--------------------------|-------------------|
| ① Generator drive pulley | ④ Drive belt      |
| ② Generator              | ⑤ Engine pulley   |
| ③ Engine                 | ⑥ Alignment ruler |

1. Lay the alignment ruler against the engine and generator pulleys.  
If the pulleys are offset, adjust the position of the generator.
2. Re-attach the safety screen and the belt guard.
3. Reconnect the negative battery terminal.
4. Close the door.

**Aligning the generator:**

The generator is aligned by turning the tensioning nut on the swing frame pivot axis. This moves the generator around its axis.

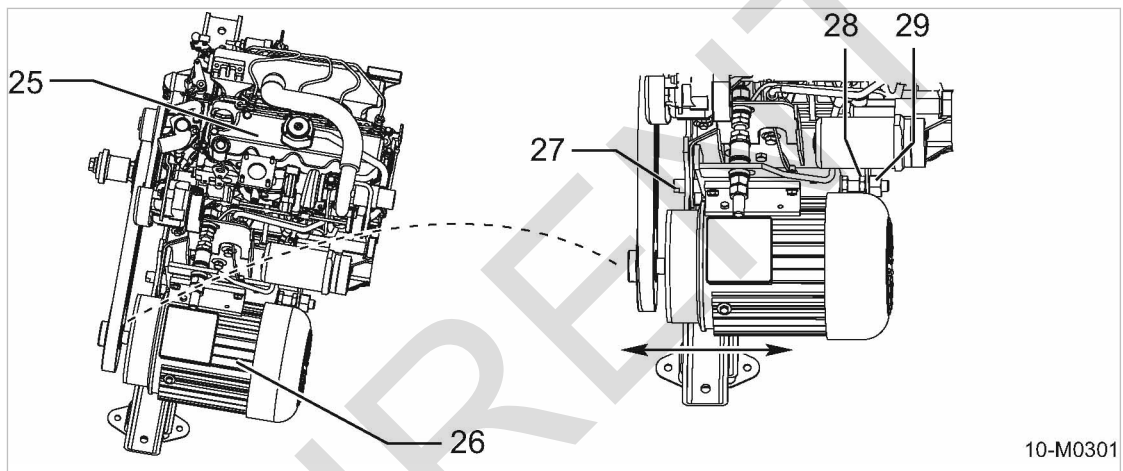


Fig. 83 Aligning the generator

- |  |  |
|--|--|
| <b>25</b> Engine   | <b>28</b> Hexagonal nut                          |
| <b>26</b> Generator  | <b>29</b> Tensioning nut (hexagon, self-locking) |
| <b>27</b> Tensioning frame pivot axle head with flats for a wrench |  |

1. Remove the tensioning device (see chapter 10.8.6.4).
2. Using a suitable wrench, steady hold the tensioning frame axle head **27**.
3. Loosen the hexagon nut **28**.
4. Align the generator pulley with the engine pulley by turning the tensioning nut **29**.
5. Check the pulley alignment with the alignment ruler.
6. Tighten the nut **28** using non-permanent liquid thread lock to prevent a potential loosening due to vibration stresses.
7. Replace the tensioning device (see chapter 10.8.6.4).
8. Tension the belt as described in chapter 10.8.6.3.
9. Re-attach the safety screen and the belt guard.
10. Reconnect the negative battery terminal.
11. Close the door.

### 10.8.7 Option Ia 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 cloth  
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 is 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.

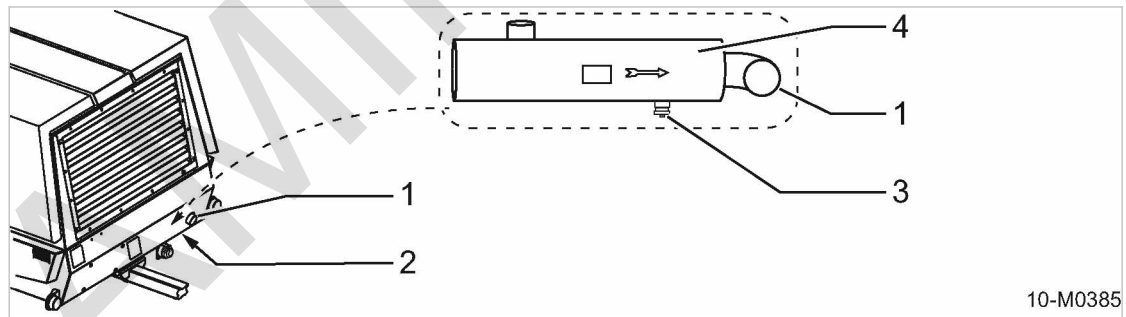


Fig. 84 Spark arrester cleaning

- |   |   |
|---|---|
| ① Exhaust silencer end pipe                   | ③ Soot drain port with plug                       |
| ② Opening in floor panel to access drain port | ④ Exhaust silencer with integrated spark arrester |

1. Unscrew the soot drain plug.
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. In order to increase the pressure in the exhaust system, partially cover the exhaust discharge pipe with a fire-proof object.  
Soot will drain through the hose into the receptacle.
5. Shut down the engine.
6. Remove the hose and replace the plug.



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



Dispose of soot according to environment protection regulations.

### 10.8.8 Option 1b Engine air intake shut-off valve maintenance

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

**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.



**NOTICE**

Engine air intake shut-off valve

The engine air intake shut-off valve does not close when flammable gas is drawn into the engine:

The machine does not shut down? Destruction of the engine and explosion and/or fire are possible!

- Do not move the valve adjusting screw.
- Have the valve set by a specialist workshop or KAESER Service.

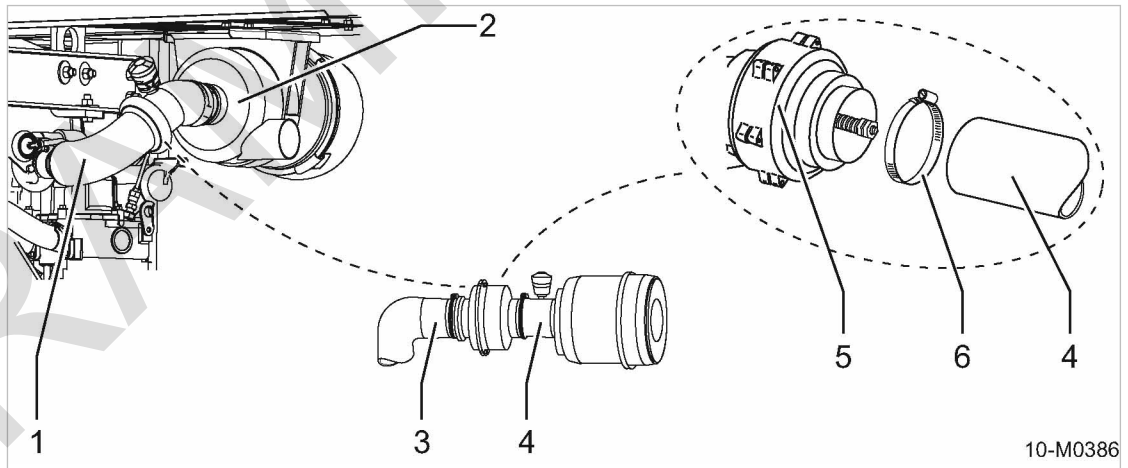


Fig. 85 Engine air intake shut-off valve maintenance

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

- Open both doors.



**Cleaning the engine air intake shut-off valve:****1. NOTICE!**

The engine air intake shut-off valve does not close fully.

The machine does not shut down? Destruction of the engine and explosion and/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 on the filter side of the valve and turn the air intake hose to one side.

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

Blow out any dirt with compressed air.



If necessary, clean the valve with petroleum ether or spirit and allow to dry.

Refer to a specialised workshop or KAESER Service if dirt cannot be removed.

**Checking 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. Close the doors.

3. Start the machine and switch to LOAD.

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



# 11 Spares, Operating Materials, Service

## 11.1 Note the Nameplate

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

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

## 11.2 Ordering consumable parts and operating fluids/materials

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

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

Damage to the machine can also result in personal injury.



### WARNING

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

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

### Compressor unit

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

Tab. 92 Compressor consumables

### Kubota engine parts

| Name                        | Quantity | Number |
|-----------------------------|----------|--------|
| Air filter element          | 1        | 1280   |
| Fuel prefilter              | 1        | 1910   |
| Fuel filter cartridge       | 1        | 1920   |
| Fuel filter with water trap | 1        | 1980   |
| Oil filter cartridge        | 1        | 1905   |
| Oil drain plug sealing ring | 1        | 4496   |
| Injector                    | 1        | 4475   |
| Injector nozzle gasket      | 1        | 4476   |
| V-belts                     | 1        | 4470   |
| Glow plug                   | 1        | 4466   |

| Name       | Quantity | Number |
|------------|----------|--------|
| Engine oil | 1        | 1925   |

Tab. 93 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.

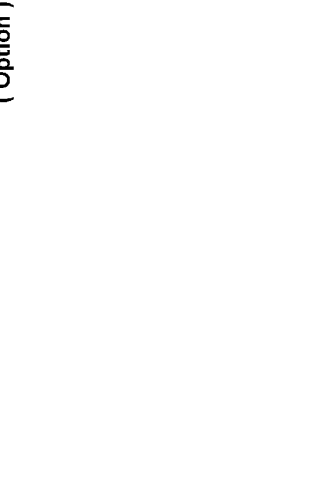
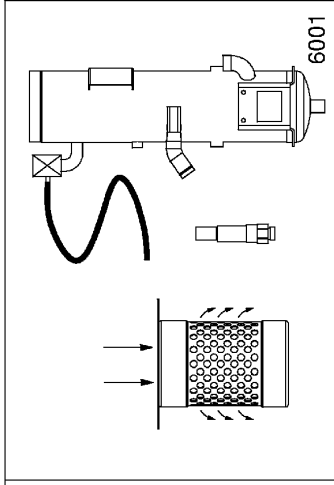
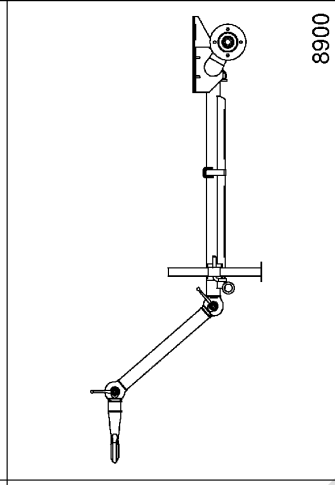
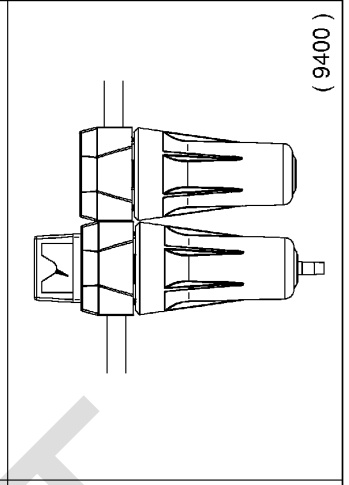

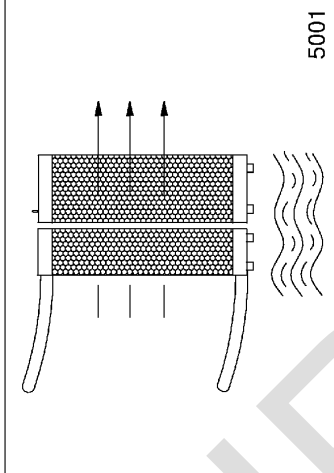
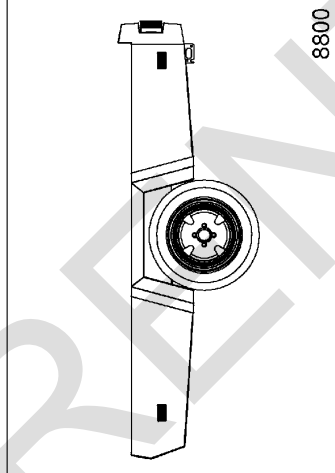
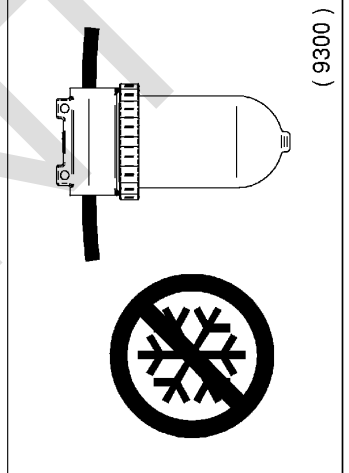
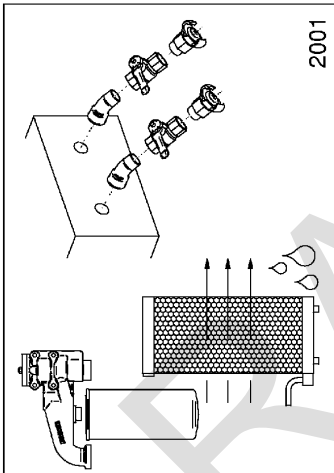
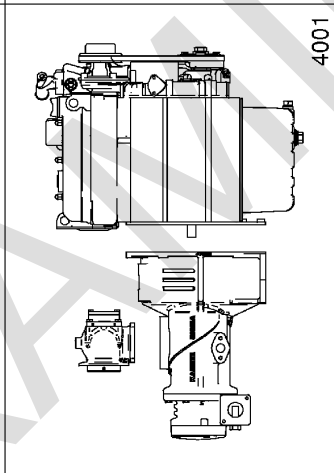
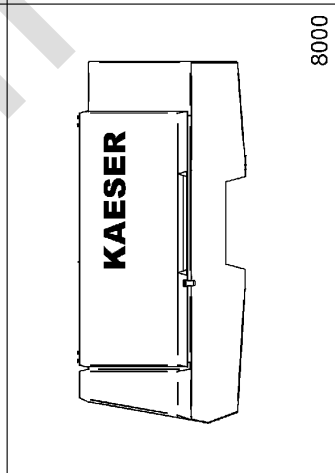
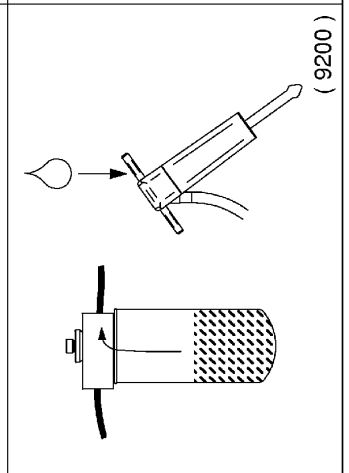
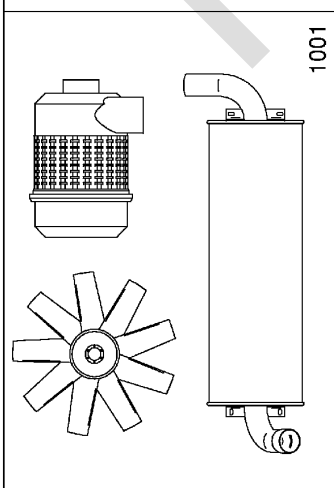
## 11.5 Spares for service and repair

With the help of this parts list you can plan your material requirement according to operating conditions and order the spare parts you need.



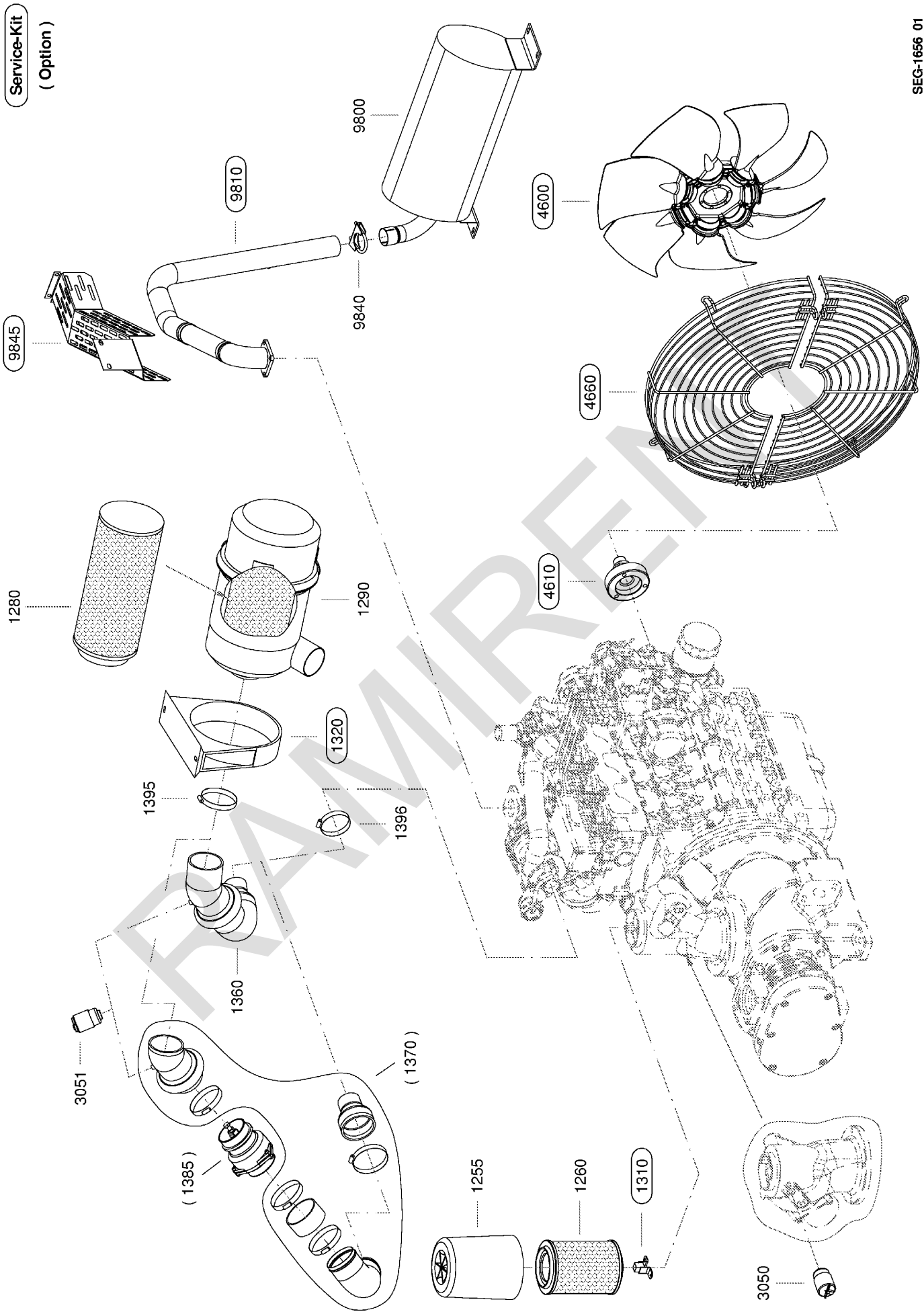
- Make sure that any service or repair tasks not described in this manual are carried out by an authorised KAESER Service Technician.

( Option )

|  |   |  |   |
|--|---|--|---|
|  <p>1001</p>                        |  <p>2001</p>       |  <p>5001</p>       |  <p>6001</p>       |
|  <p>3001</p>                       |  <p>4001</p>      |  <p>8000</p>      |  <p>8900</p>      |
|  <p>7001</p>                      |  <p>( 9300 )</p> |  <p>( 9400 )</p> |  <p>( 9200 )</p> |
|  <p>SIGMA GEN</p> <p>( 9100 )</p> |   |  |   |

SEG-1674\_01

Service-Kit  
( Option )

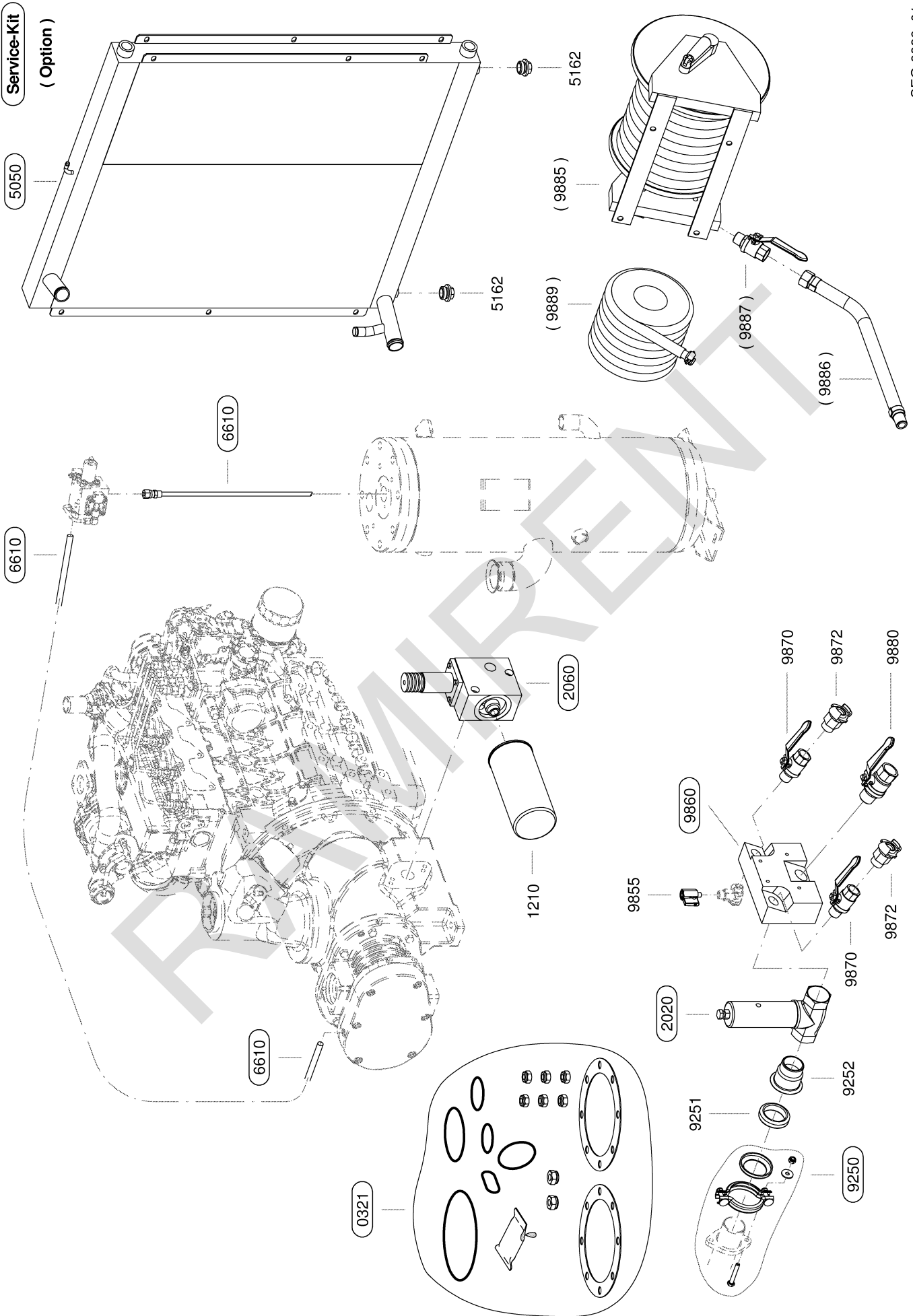


SEG-1656\_01

|             |   | <b>Legend</b>                 | <b>KAESER</b> |
|-------------|---|-------------------------------|---------------|
|             |   | Inlet air/Cooling air/Exhaust | SEL-1579_01E  |
| <b>Item</b> | <b>Name</b>                                 | <b>Option</b>                 |               |
| 1255        | Compressor air filter housing               |                               |               |
| 1260        | Compressor air filter element               |                               |               |
| 1280        | Engine air filter element                   |                               |               |
| 1290        | Engine air filter, complete                 |                               |               |
| 1310        | Compressor air filter holder                |                               |               |
| 1320        | Engine air filter holder                    |                               |               |
| 1360        | Engine air intake hose                      |                               |               |
| 1370        | Connection-Kit chalwyn-valve                | X                             |               |
| 1385        | Engine stop valve                           | X                             |               |
| 1395        | Hose clamp                                  |                               |               |
| 1396        | Hose clamp                                  |                               |               |
| 3050        | Air filter maint. indicator                 |                               |               |
| 3051        | Maintenance indicator for engine air filter |                               |               |
| 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.



SEG-3329\_01

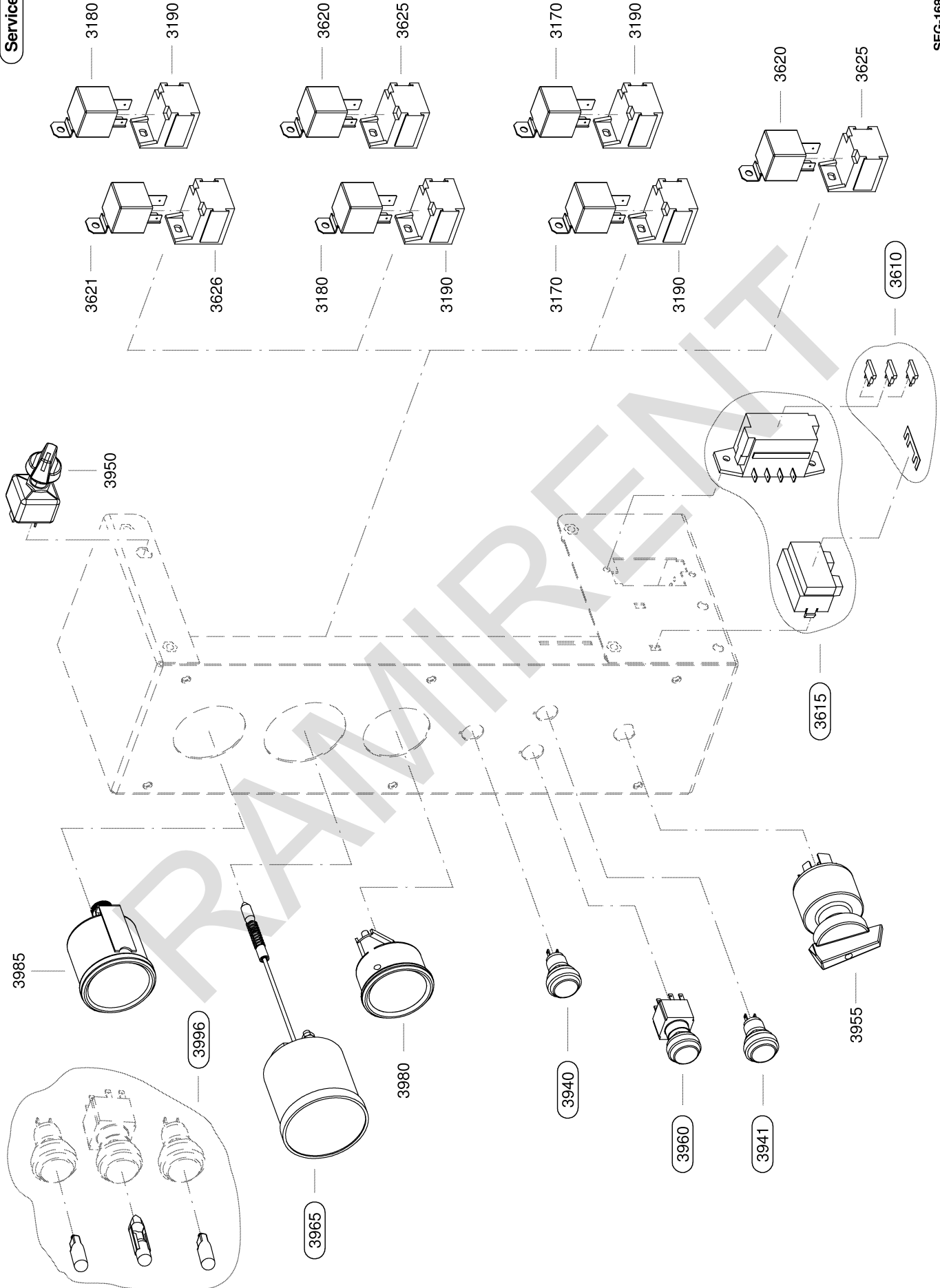


|             |                                 | <b>Legend</b>                  | <b>KAESER</b> |
|-------------|---------------------------------|--------------------------------|---------------|
|             |                                 | Oil circuit/Comprsd.air outlet | SEL-2506_01E  |
| <b>Item</b> | <b>Description</b>              | <b>Option</b>                  |               |
| 0321        | Oil/air gasket set              |                                |               |
| 1210        | Compressor oil filter element   |                                |               |
| 2020        | Minimum pressure/check valve    |                                |               |
| 2022        | Maintenance kit, MP/CV          |                                |               |
| 2024        | Overhaul kit, MP/CV             |                                |               |
| 2060        | Combination valve               |                                |               |
| 2062        | Maintenance kit, combi. valve   |                                |               |
| 2064        | Overhaul kit, combination valve |                                |               |
| 5050        | Radiator                        |                                |               |
| 5162        | Compressor oil cooler drain     |                                |               |
| 6610        | Oil scavenge line               |                                |               |
| 9416        | Dirt trap maintenance kit       |                                |               |
| 7561        | Hose line                       |                                |               |
| 9250        | Pipe clamp element              |                                |               |
| 9251        | Pipe connection seal            |                                |               |
| 9252        | Pipe adapter                    |                                |               |
| 9855        | Venting valve                   |                                |               |
| 9860        | Compressed air distributor      |                                |               |
| 9870        | Outlet valve                    |                                |               |
| 9872        | Claw coupling                   | X                              |               |
| 9880        | Large outlet valve              |                                |               |
| 9885        | Hose reel                       | X                              |               |
| 9886        | Consumer feed lines             | X                              |               |
| 9887        | Hose reel ball valve            | X                              |               |
| 9889        | Spare part hose line            | 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



SEG-1687\_01

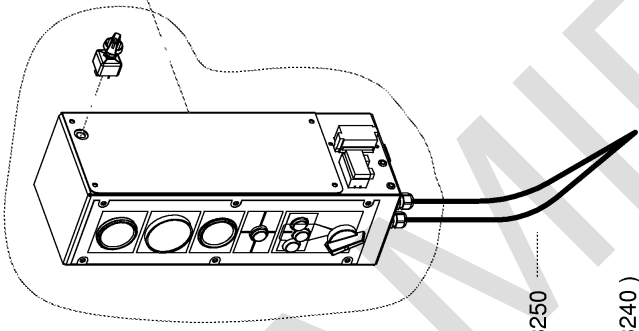
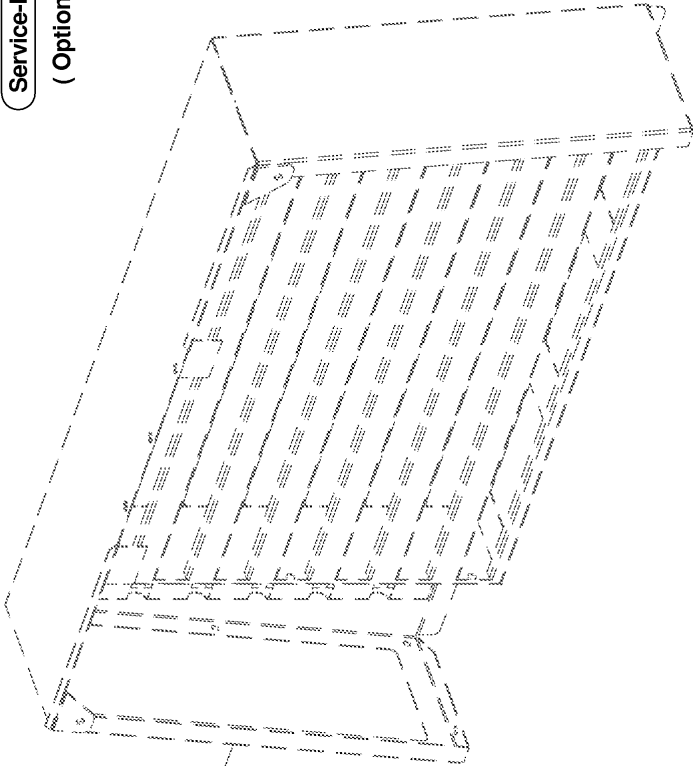
|             |                                  | <b>Legend</b>    | <b>KAESER</b> |
|-------------|----------------------------------|------------------|---------------|
|             |                                  | Instrument panel | SEL-1627_01E  |
| <b>Item</b> | <b>Description</b>               | <b>Option</b>    |               |
| 3170        | Starting relay                   |                  |               |
| 3180        | Shutdown relay                   |                  |               |
| 3190        | Power relay socket               |                  |               |
| 3610        | Control fuse set                 |                  |               |
| 3615        | Fuse socket (set)                |                  |               |
| 3620        | Control relay                    |                  |               |
| 3621        | Glow plug relay                  |                  |               |
| 3625        | Control relay socket             |                  |               |
| 3626        | Socket for glow plug relay       |                  |               |
| 3940        | Charging/fault indicator lamp    |                  |               |
| 3941        | Back-pressure indicator          |                  |               |
| 3950        | Main switch                      |                  |               |
| 3955        | Starter switch                   |                  |               |
| 3960        | Changeover switch full load mode |                  |               |
| 3965        | Temperature gauge                |                  |               |
| 3980        | Pressure gauge, instrument panel |                  |               |
| 3985        | Operating hours counter          |                  |               |
| 3996        | Instrument lamp 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.

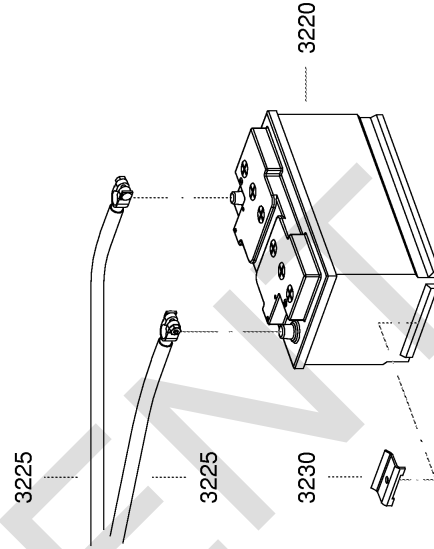
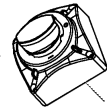
Service-Kit  
( Option )



3910

3250

( 3240 )



3220

3225

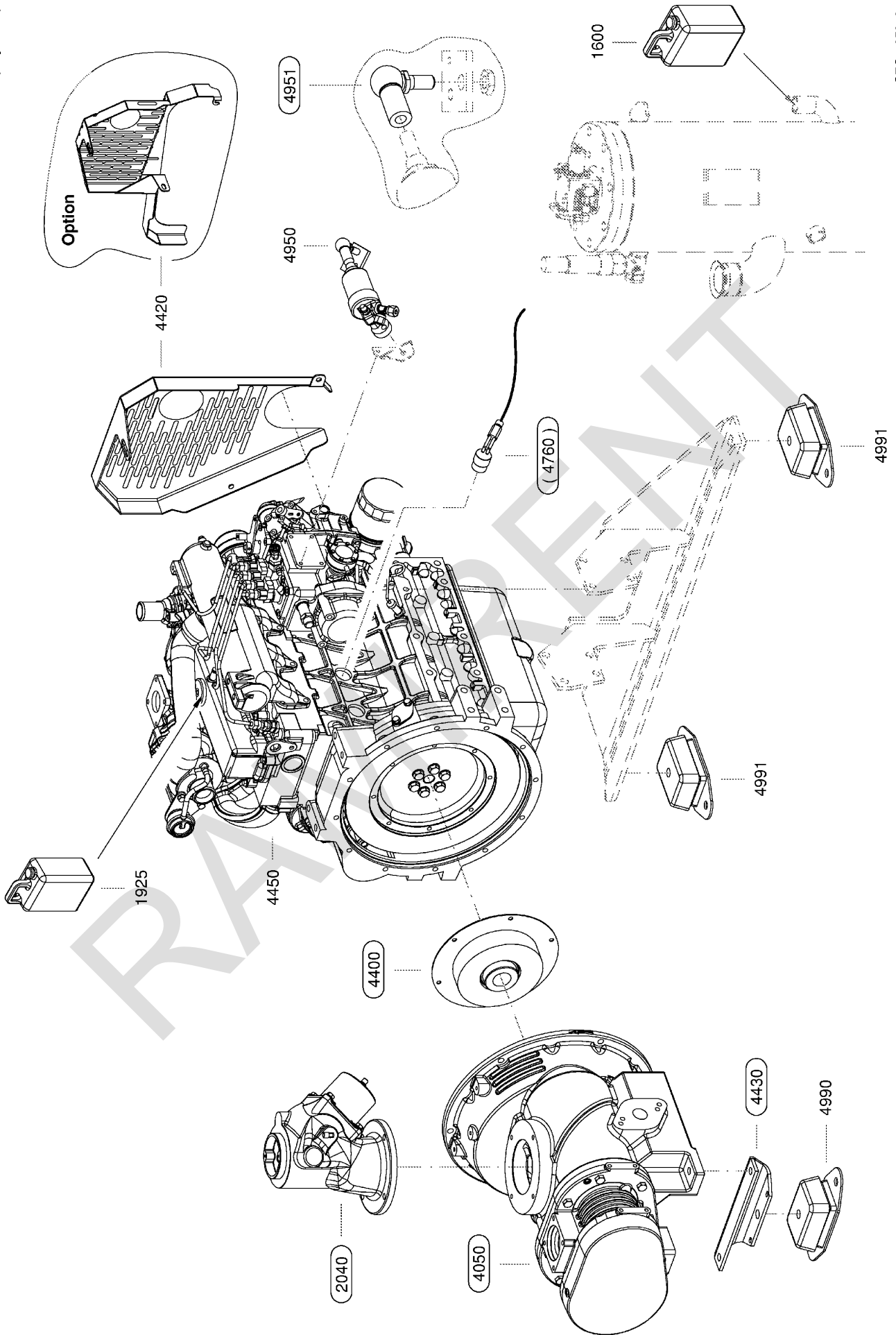
3225

3230

|      |                          | <b>Legend</b>         | <b>KAESER</b> |
|------|--------------------------|-----------------------|---------------|
|      |                          | Electrics/Instruments | SEL-1975_01D  |
| Item | Description              | Option                |               |
| 3220 | Battery                  |                       |               |
| 3225 | Battery cable            |                       |               |
| 3230 | Battery bracket          |                       |               |
| 3240 | Battery isolating switch | X                     |               |
| 3250 | Mains supply cable set   |                       |               |
| 3910 | Instrument panel         |                       |               |

Service-Kit  
( Option )

SEG-1659\_01

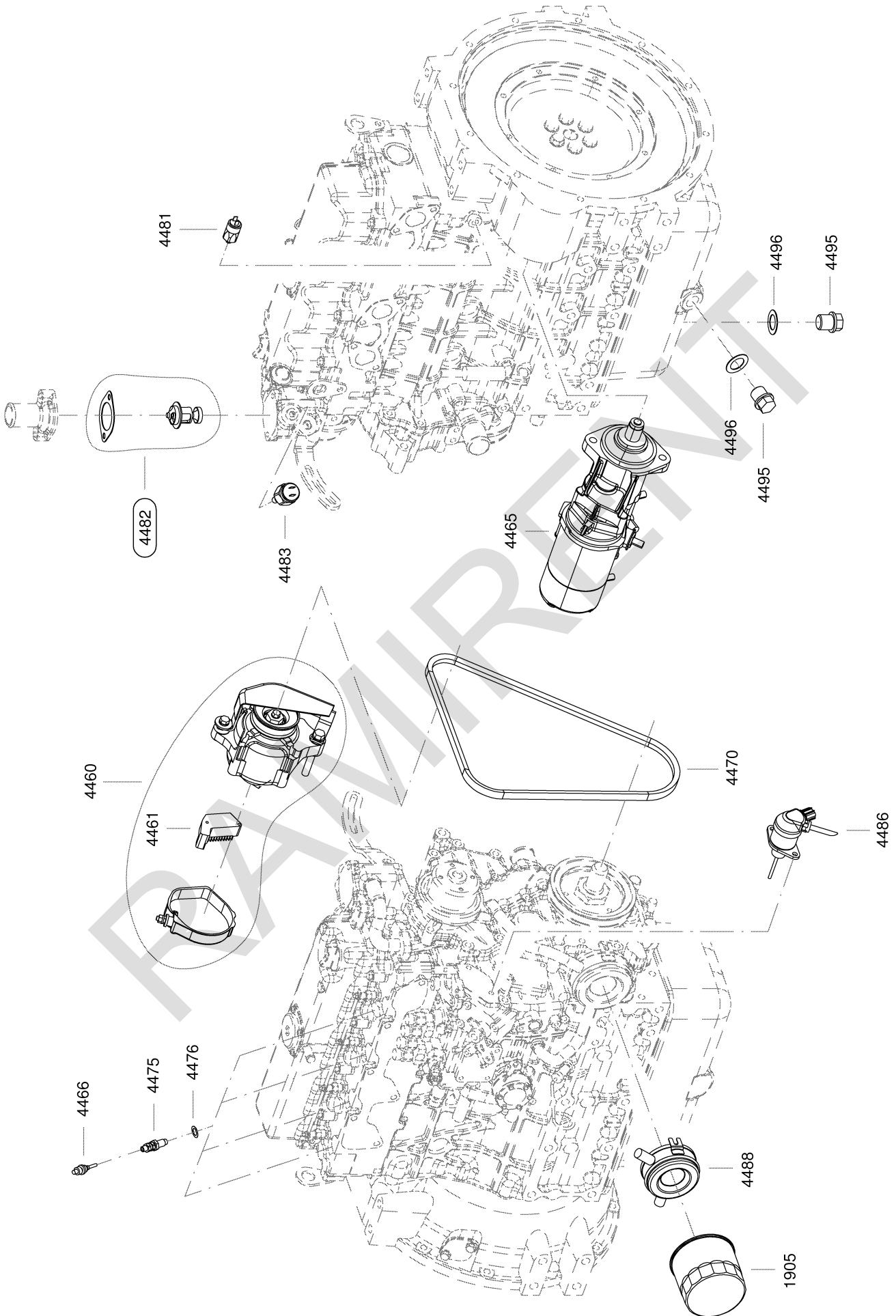


|      |                                  | <b>Legend</b> | <b>KAESER</b> |
|------|----------------------------------|---------------|---------------|
|      |                                  | Airend/engine | SEL-1585_01E  |
| Item | Description                      | Option        |               |
| 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 | Mounting bracket for airend base |               |               |
| 4450 | Drive motor                      |               |               |
| 4760 | Engine preheater                 |               | X             |
| 4950 | Speed adjusting cylinder         |               |               |
| 4951 | Swivel joint                     |               |               |
| 4990 | Compressor mountings             |               |               |
| 4991 | Engine mountings                 |               |               |

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





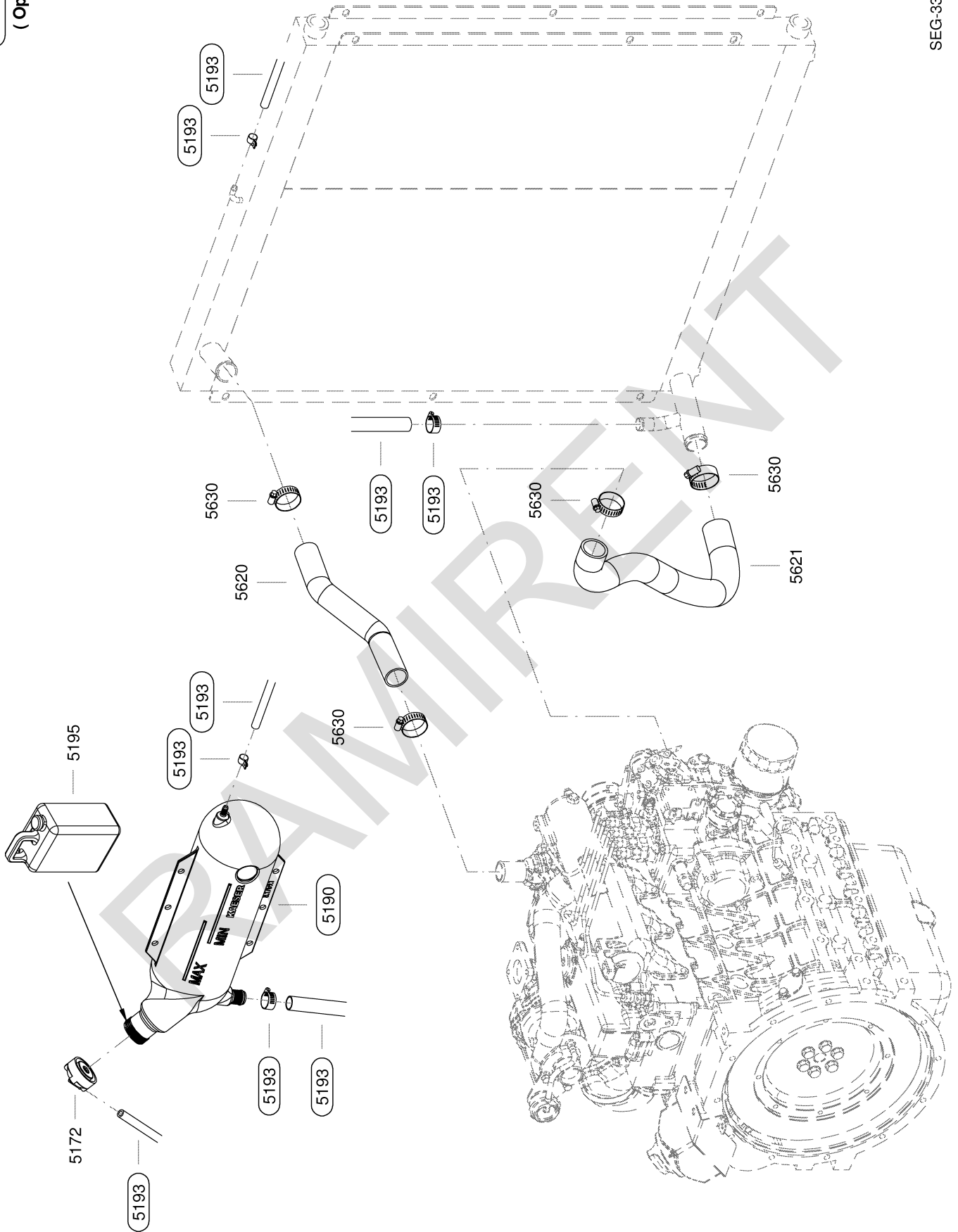
|             |                           | <b>Legend</b>      | <b>KAESER</b>       |
|-------------|---------------------------|--------------------|---------------------|
|             |                           | <b>Drive motor</b> | <b>SEL-1629_01E</b> |
| <b>Item</b> | <b>Description</b>        | <b>Option</b>      |                     |
| 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            |                    |                     |
|             |                           |                    |                     |

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-3330\_01



|                |               |
|----------------|---------------|
| <b>Legend</b>  | <b>KAESER</b> |
| Engine cooling | SEL-2507_01E  |

| Item | Description          | Option |
|------|----------------------|--------|
| 5172 | Engine radiator cap  |        |
| 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.

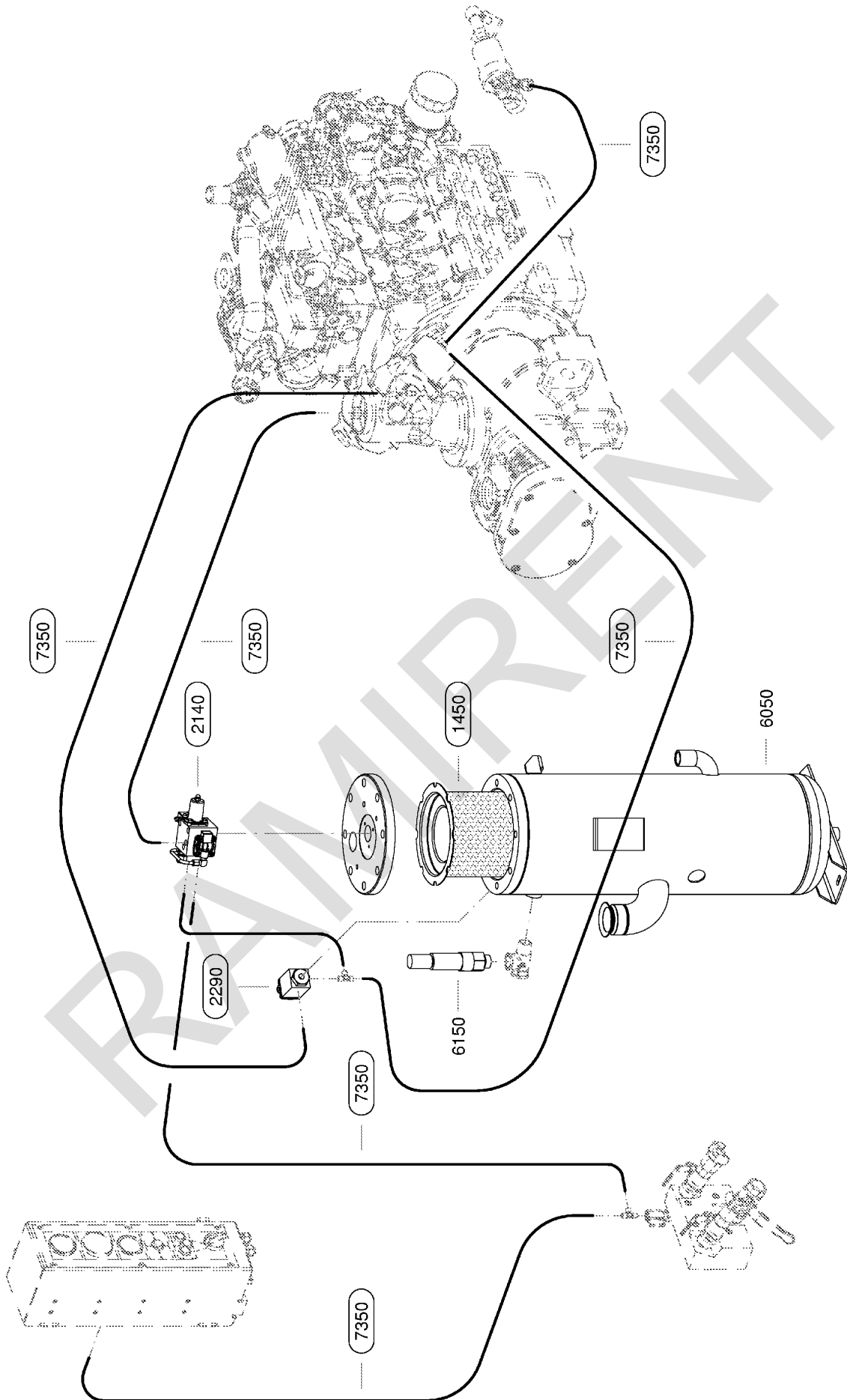
Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.

\*) see antifreeze recommendations

RAMIRENT

Service-Kit  
( Option )

SEG-1662\_01

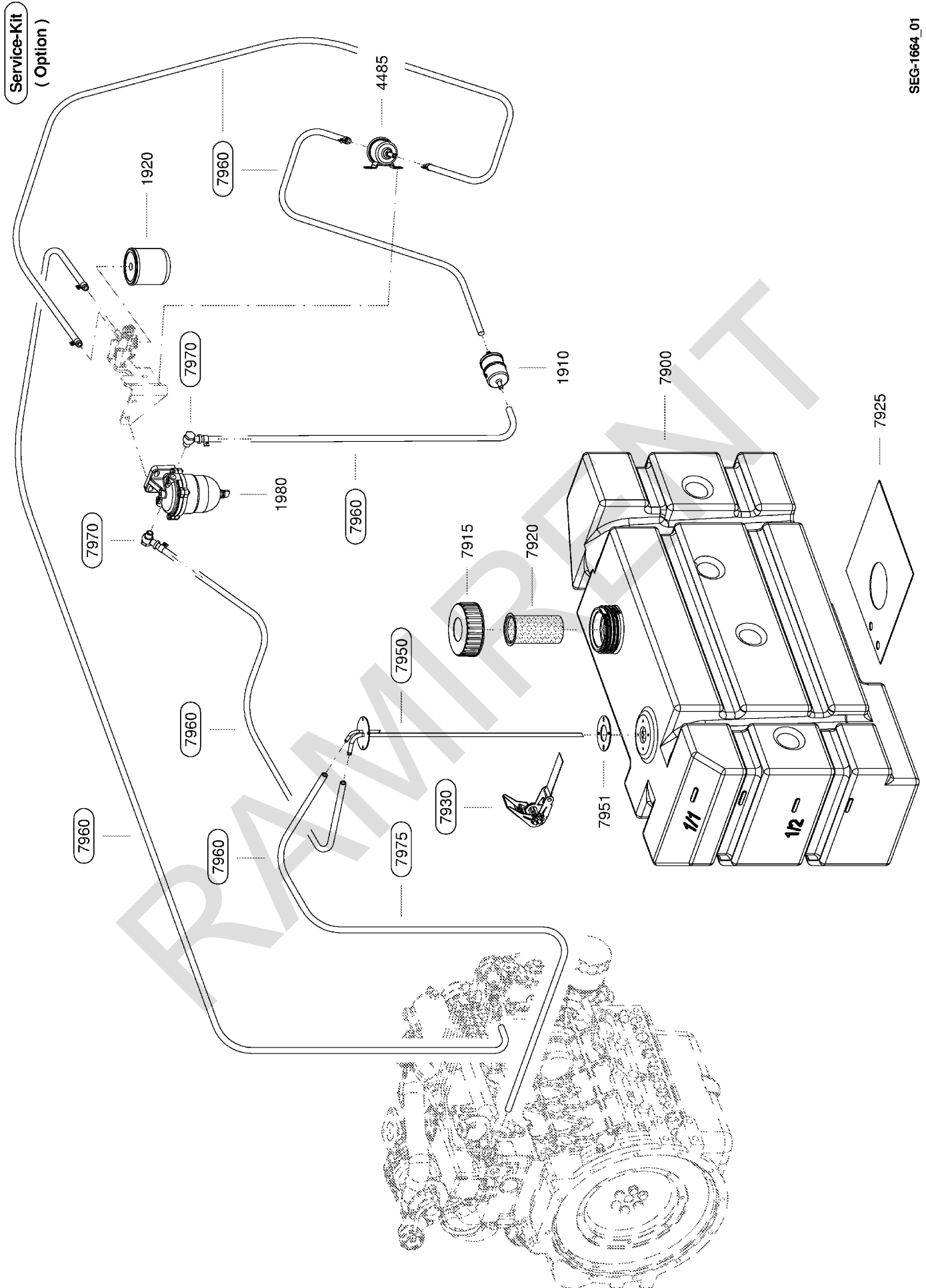


|                            |               |
|----------------------------|---------------|
| <b>Legend</b>              | <b>KAESER</b> |
| Oil separation/control air | SEL-1589_01E  |

| Item | Description                                  | Option |
|------|--|--------|
| 1450 | Oil separator cartridge                      |        |
| 2140 | Control valve                                |        |
| 2142 | Maintenance kit, control valve               |        |
| 2144 | Overhaul kit, control valve                  |        |
| 2290 | Directional control valve                    |        |
| 2292 | Directional valve maint. kit                 |        |
| 6050 | Oil separator tank                           |        |
| 6150 | Pressure relief valve for oil separator tank |        |
| 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.

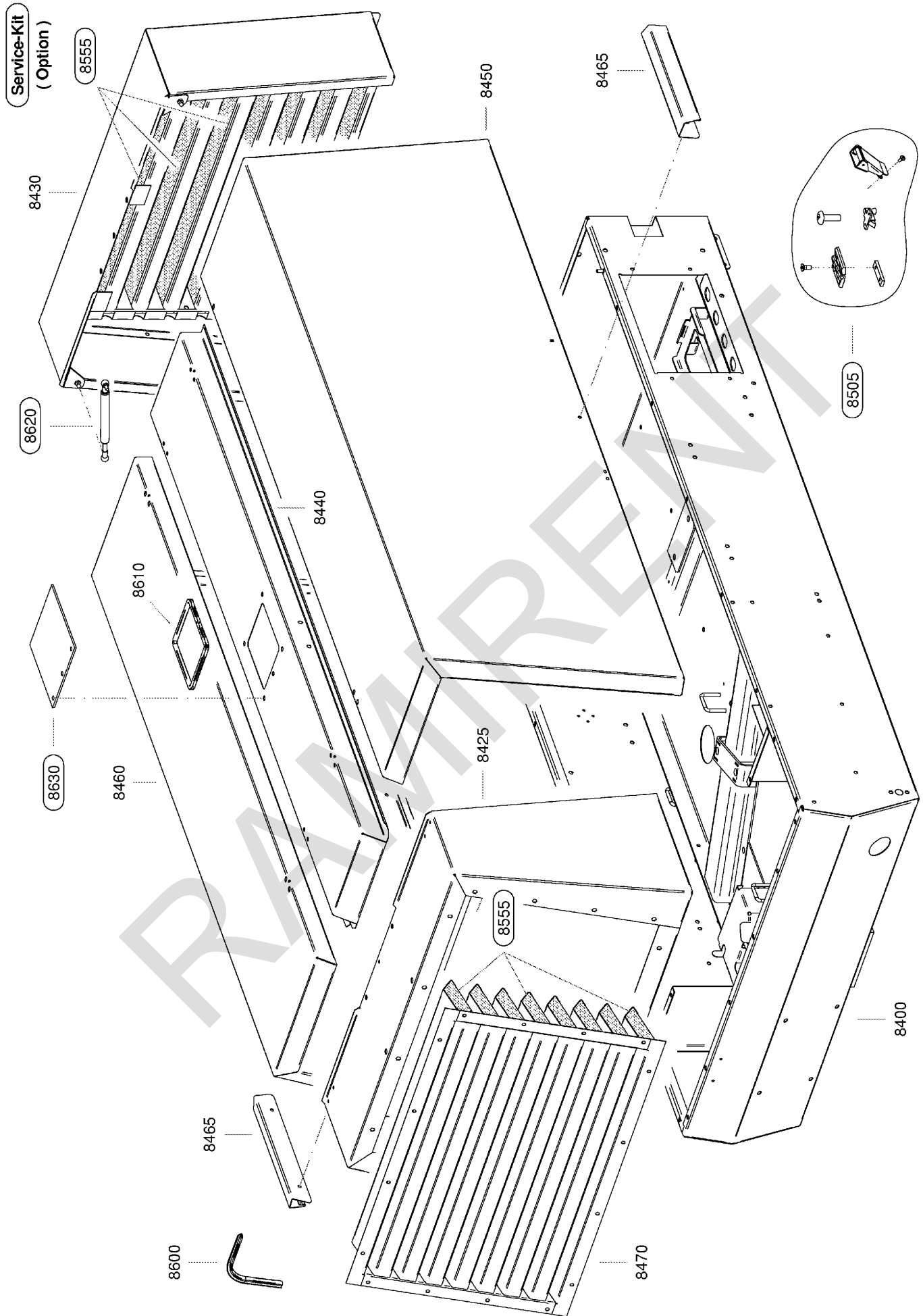


|               |               |
|---------------|---------------|
| <b>Legend</b> | <b>KAESER</b> |
| Fuel supply   | SEL-1591_01E  |

| Item | Name                     | Option |
|------|--------------------------|--------|
| 1910 | Fuel prefilter           |        |
| 1920 | Fuel fine filter element |        |
| 1980 | Fuel de-watering filter  |        |
| 4485 | Fuel pump                |        |
| 7900 | Fuel tank                |        |
| 7915 | Fuel tank cap            |        |
| 7920 | Fuel strainer            |        |
| 7925 | Tank support             |        |
| 7930 | Tank fixing              |        |
| 7950 | Fuel suction pipe        |        |
| 7951 | Connection gasket        |        |
| 7960 | Fuel lines               |        |
| 7970 | Fuel hose connection     |        |
| 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-1665\_01



|             |                          | <b>Legend</b>   | <b>KAESER</b>       |
|-------------|--------------------------|-----------------|---------------------|
|             |                          | <b>Bodywork</b> | <b>SEL-1593_01E</b> |
| <b>Item</b> | <b>Description</b>       | <b>Option</b>   |                     |
| 8400        | Lower bodywork           |                 |                     |
| 8425        | Canopy front             |                 |                     |
| 8430        | Canopy rear              |                 |                     |
| 8440        | Canopy, upper-centre     |                 |                     |
| 8450        | Left-hand wing door      |                 |                     |
| 8460        | Right-hand wing door     |                 |                     |
| 8465        | Door handle              |                 |                     |
| 8470        | Exhaust air grill        |                 |                     |
| 8505        | Hinge/closure set        |                 |                     |
| 8555        | Sound damping louver kit |                 |                     |
| 8600        | Sealing profile          |                 |                     |
| 8610        | Edge protecting strip    |                 |                     |
| 8620        | Gas strut                |                 |                     |
| 8630        | Cover for lifting eye    |                 |                     |

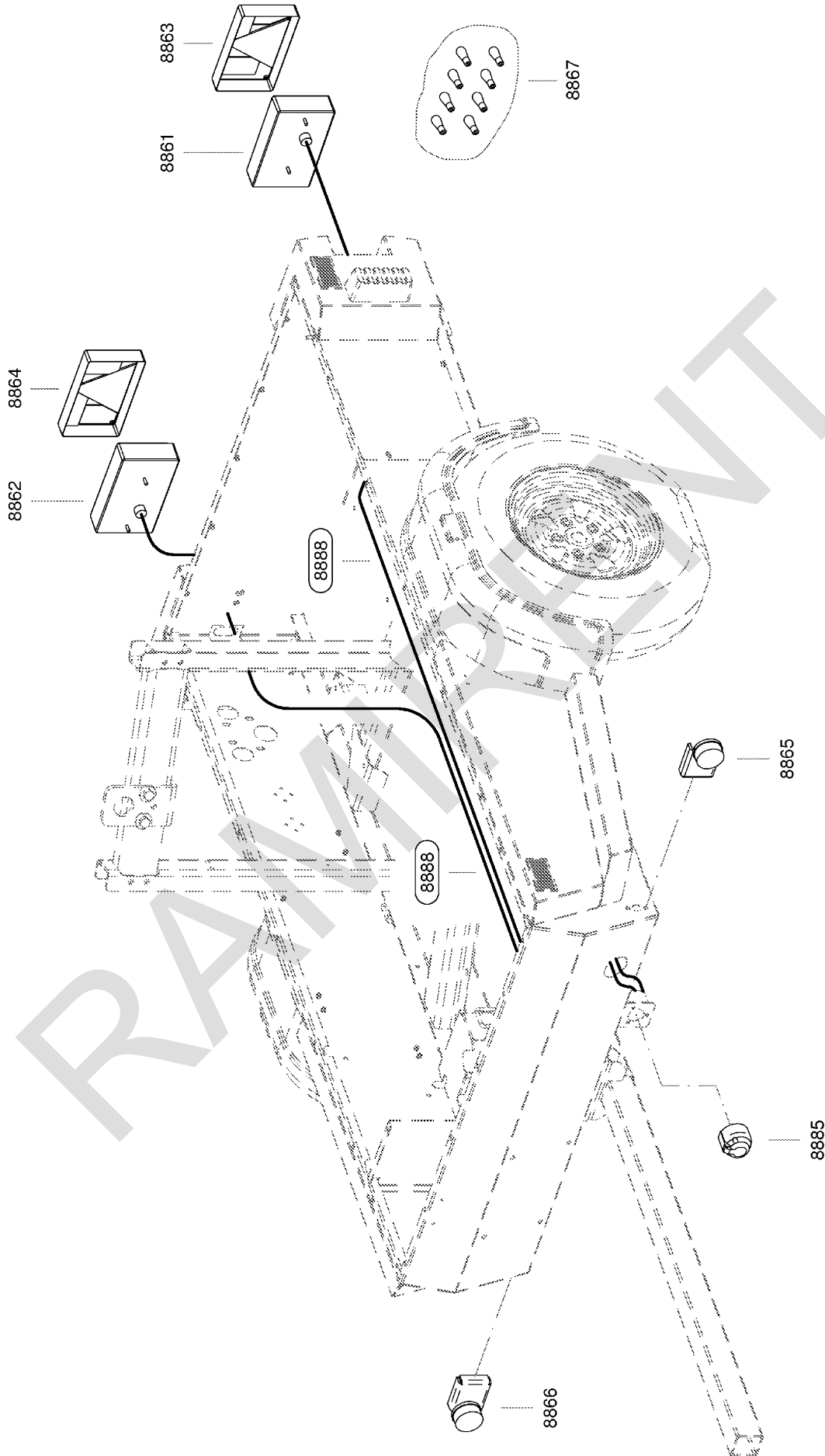
  

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

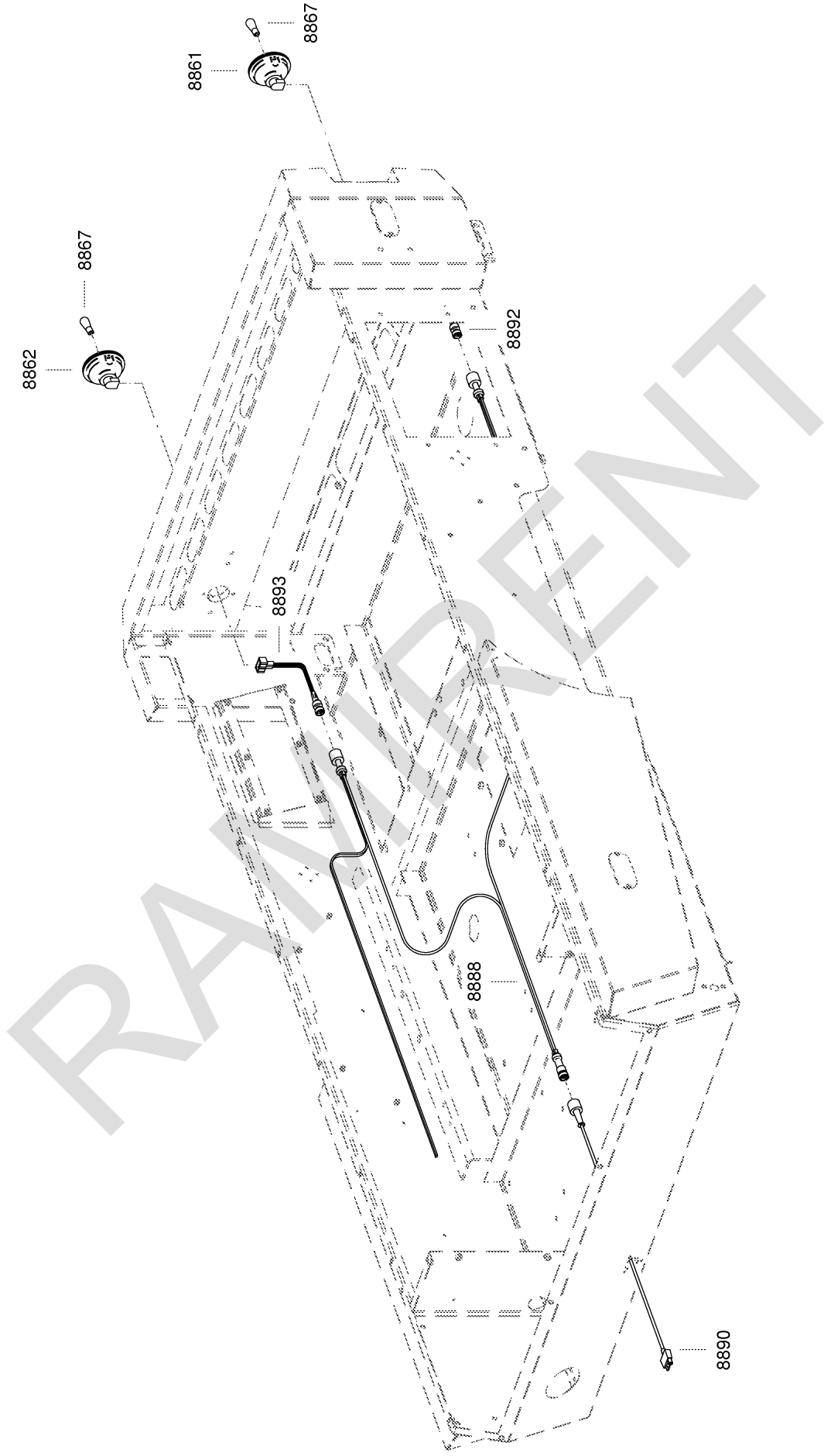
Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.

Service-Kit

SEG-1676\_01



|             |                            | <b>Legend</b> | <b>KAESER</b> |
|-------------|----------------------------|---------------|---------------|
|             |                            | Lighting set  | SEL-1605_01E  |
| <b>Item</b> | <b>Name</b>                | <b>Option</b> |               |
| 8861        | Left rear light            |               |               |
| 8862        | Right rear light           |               |               |
| 8863        | Left light lens            |               |               |
| 8864        | Right light lense          |               |               |
| 8865        | Left side light            |               |               |
| 8866        | Right side light           |               |               |
| 8867        | Lighting bulb set          |               |               |
| 8885        | Lighting connecting socket |               |               |
| 8888        | Connector cable            |               |               |



|                  |               |
|------------------|---------------|
| <b>Legend</b>    | <b>KAESER</b> |
| Lighting set USA | SEL-1959_01E  |

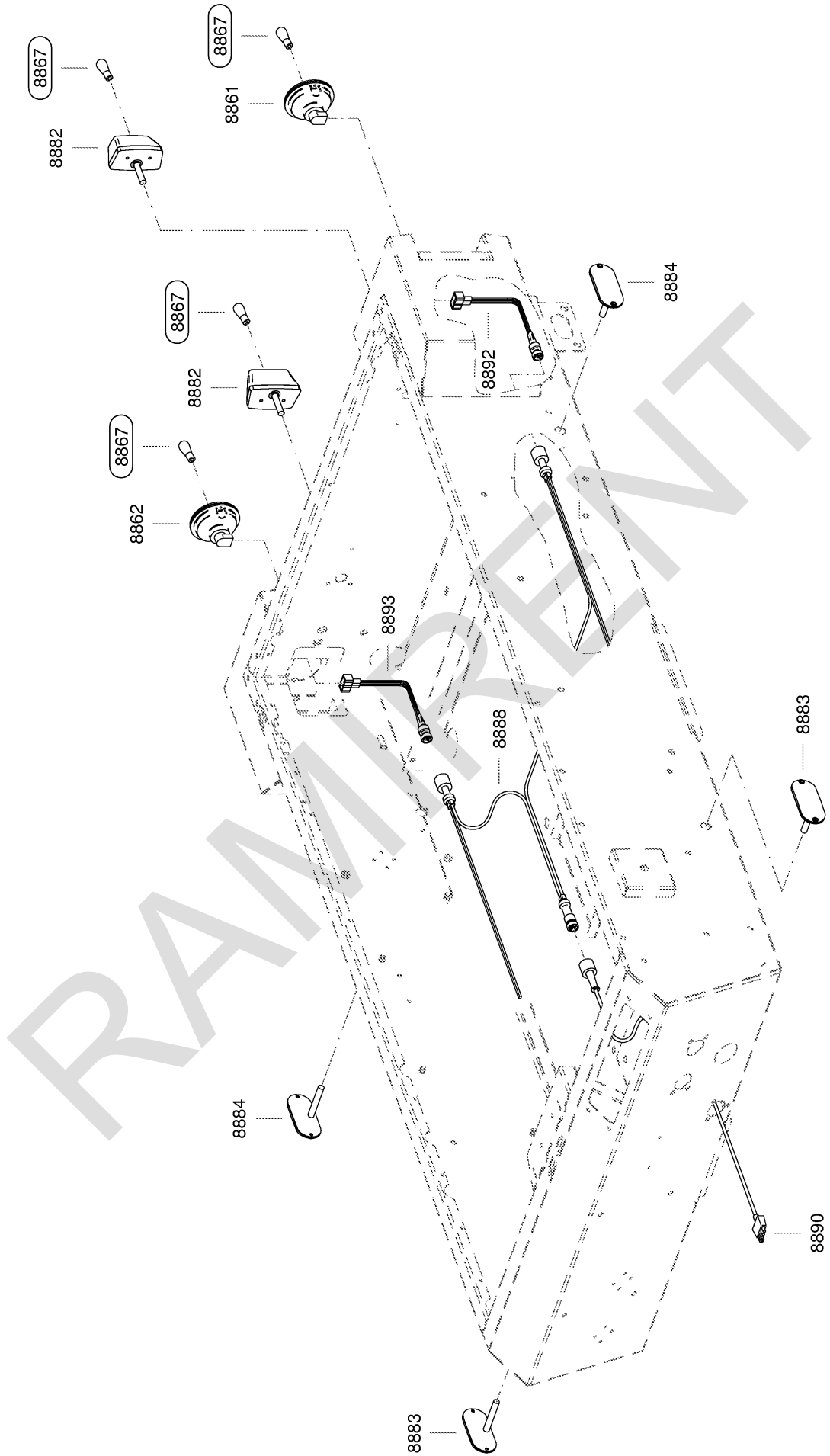
| Item | Description                   | Option |
|------|-------------------------------|--------|
| 8861 | Left rear light               |        |
| 8862 | Right rear light              |        |
| 8867 | Lighting bulb set             |        |
| 8888 | Connector cable               |        |
| 8890 | Connector cable, vehicle      |        |
| 8892 | Connecting cable left ( blue) |        |
| 8893 | Connecting cable right (red)  |        |
|      |                               |        |

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-2558\_01

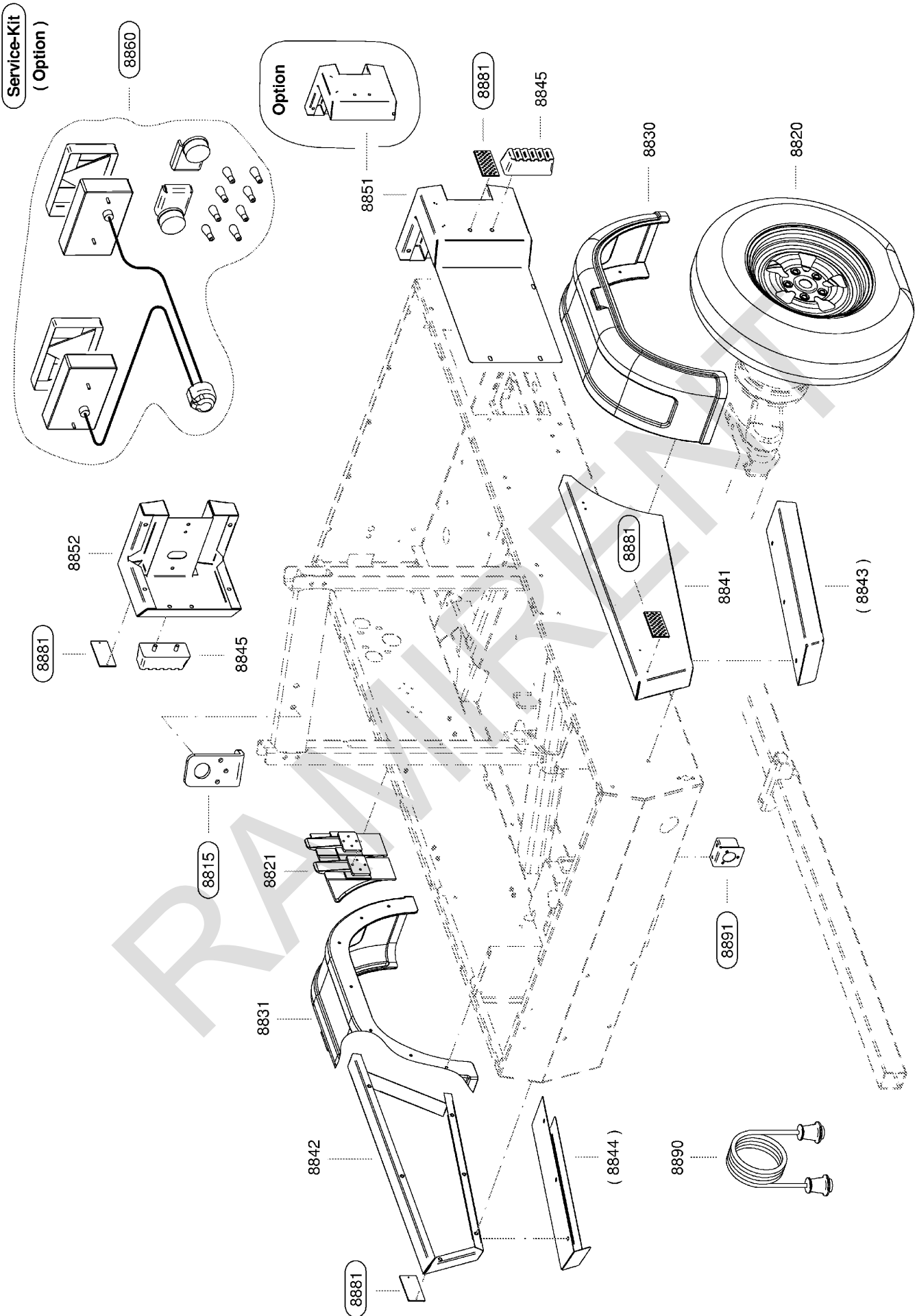
|               |               |
|---------------|---------------|
| <b>Legend</b> | <b>KAESER</b> |
| Lighting set  | SEL-2032_01E  |

| Item | Description                  | Option |
|------|------------------------------|--------|
| 8861 | Left rear light              |        |
| 8862 | Right rear light             |        |
| 8867 | Lighting bulb set            |        |
| 8882 | Number plate lamp            |        |
| 8883 | Side marker lamp yellow      |        |
| 8884 | Side marker lamp red         |        |
| 8888 | Connector cable              |        |
| 8890 | Vehicle connector cable      |        |
| 8892 | Left connecting cable (blue) |        |
| 8893 | Right connecting cable (red) |        |

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

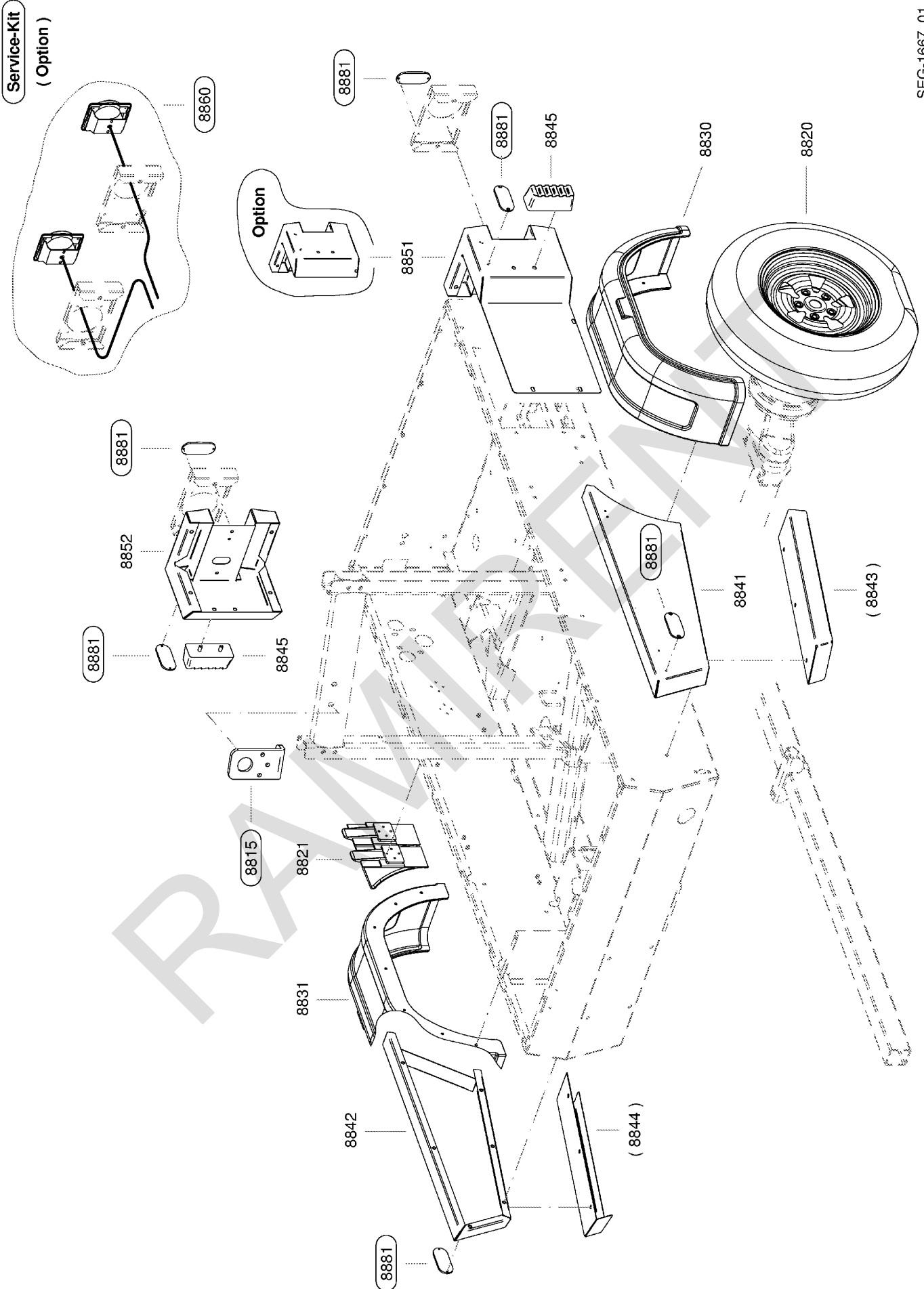




|             |                                 | <b>Legend</b>  | <b>KAESER</b>       |
|-------------|---------------------------------|----------------|---------------------|
|             |                                 | <b>Chassis</b> | <b>SEL-1595_01E</b> |
| <b>Item</b> | <b>Description</b>              | <b>Option</b>  |                     |
| 8815        | Lifting eye                     |                |                     |
| 8820        | Wheel                           |                |                     |
| 8821        | Chock                           |                |                     |
| 8830        | Left mudguard                   |                |                     |
| 8831        | Right mudguard                  |                |                     |
| 8841        | Collision guard, front-left     |                |                     |
| 8842        | Collision guard, front-right    |                |                     |
| 8843        | Pedestrian protection, left     | X              |                     |
| 8844        | Pedestrian protection, right    | X              |                     |
| 8845        | Collision guard, rear           |                |                     |
| 8851        | Left light cluster holder       |                |                     |
| 8852        | Right light cluster holder      |                |                     |
| 8860        | Lighting set                    |                |                     |
| 8881        | Reflectors (set)                |                |                     |
| 8890        | Connector cable                 |                |                     |
| 8891        | Bracket for 12V male pin 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.



SEG-1667\_01

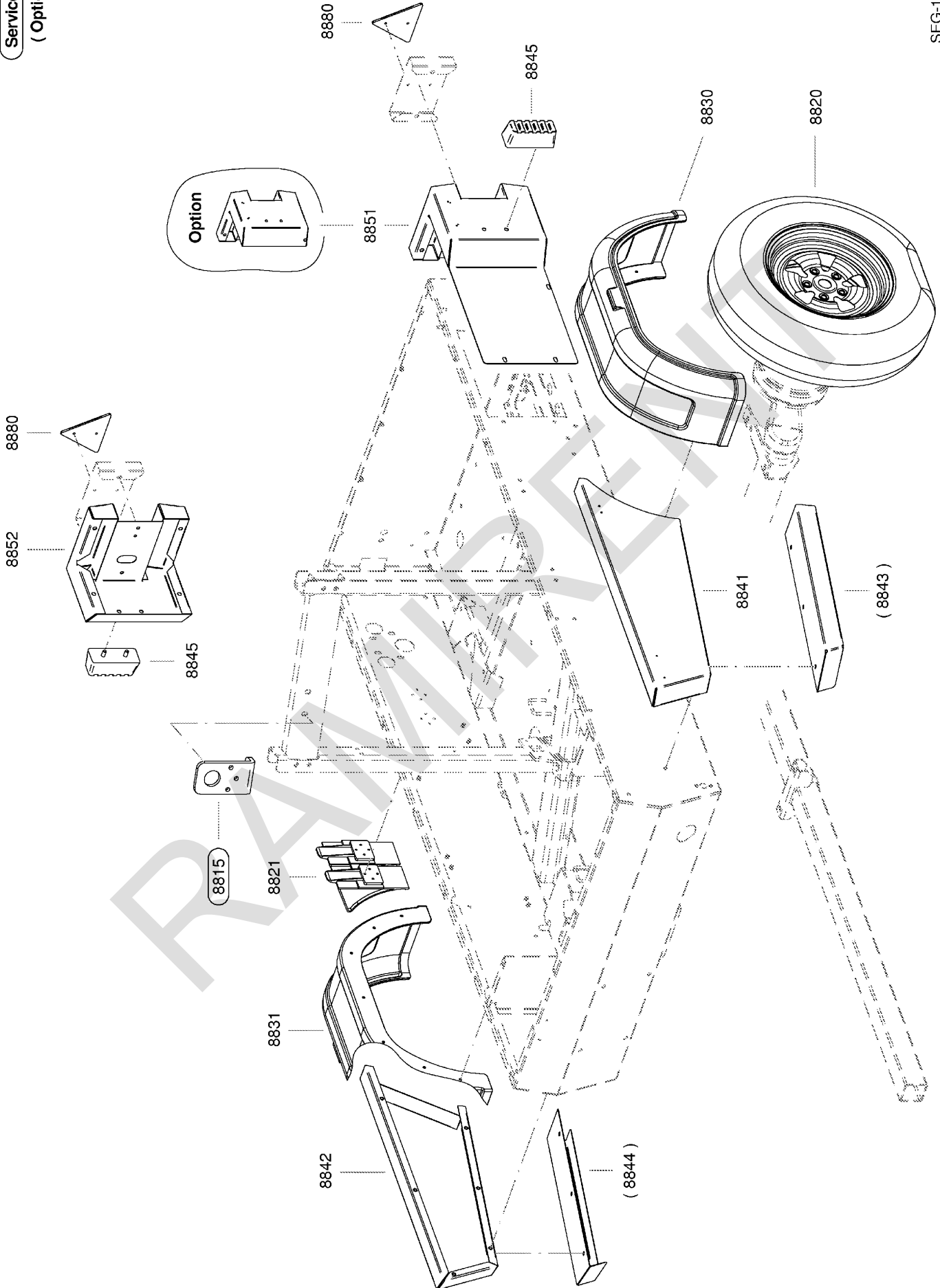
|             |                              | <b>Legend</b>  | <b>KAESER</b>       |
|-------------|------------------------------|----------------|---------------------|
|             |                              | <b>Chassis</b> | <b>SEL-1597_01E</b> |
| <b>Item</b> | <b>Description</b>           | <b>Option</b>  |                     |
| 8815        | Lifting eye                  |                |                     |
| 8820        | Wheel                        |                |                     |
| 8821        | Chock                        |                |                     |
| 8830        | Left mudguard                |                |                     |
| 8831        | Right mudguard               |                |                     |
| 8841        | Collision guard, front-left  |                |                     |
| 8842        | Collision guard, front-right |                |                     |
| 8843        | Pedestrian protection, left  | X              |                     |
| 8844        | Pedestrian protection, right | X              |                     |
| 8845        | Collision guard, rear        |                |                     |
| 8851        | Left light cluster holder    |                |                     |
| 8852        | Right light cluster holder   |                |                     |
| 8860        | Lighting set                 |                |                     |
| 8881        | Reflectors (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-1668\_01

|             |                              | <b>Legend</b>  | <b>KAESER</b>       |
|-------------|------------------------------|----------------|---------------------|
|             |                              | <b>Chassis</b> | <b>SEL-1599_01E</b> |
| <b>Item</b> | <b>Description</b>           | <b>Option</b>  |                     |
| 8815        | Lifting eye                  |                |                     |
| 8820        | Wheel                        |                |                     |
| 8821        | Chock                        |                |                     |
| 8830        | Left mudguard                |                |                     |
| 8831        | Right mudguard               |                |                     |
| 8841        | Collision guard, front-left  |                |                     |
| 8842        | Collision guard, front-right |                |                     |
| 8843        | Pedestrian protection, left  | X              |                     |
| 8844        | Pedestrian protection, right | X              |                     |
| 8845        | Collision guard, rear        |                |                     |
| 8851        | Left light cluster holder    |                |                     |
| 8852        | Right light cluster holder   |                |                     |
| 8880        | Reflector                    |                |                     |

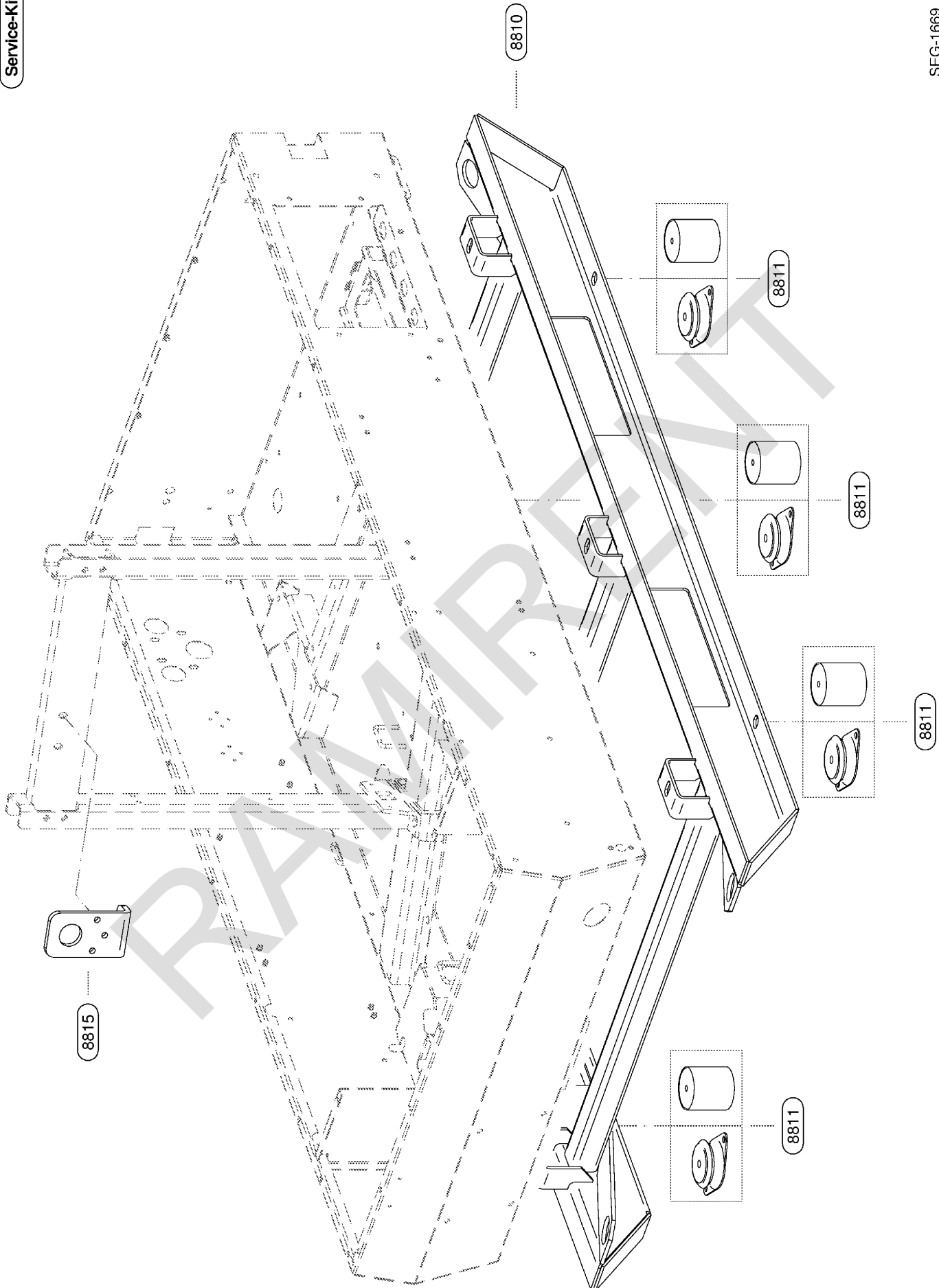
  

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

Service-Kit

SEG-1669\_01



|             |                             | <b>Legend</b>                      | <b>KAESER</b> |
|-------------|-----------------------------|------------------------------------|---------------|
|             |                             | Chassis (stationary skid versions) | SEL-1601_01E  |
| <b>Item</b> | <b>Description</b>          | <b>Option</b>                      |               |
| 8810        | Skids                       |                                    |               |
| 8811        | Machine mounts for the skid |                                    |               |
| 8815        | Lifting eye                 |                                    |               |
|             |                             |                                    |               |

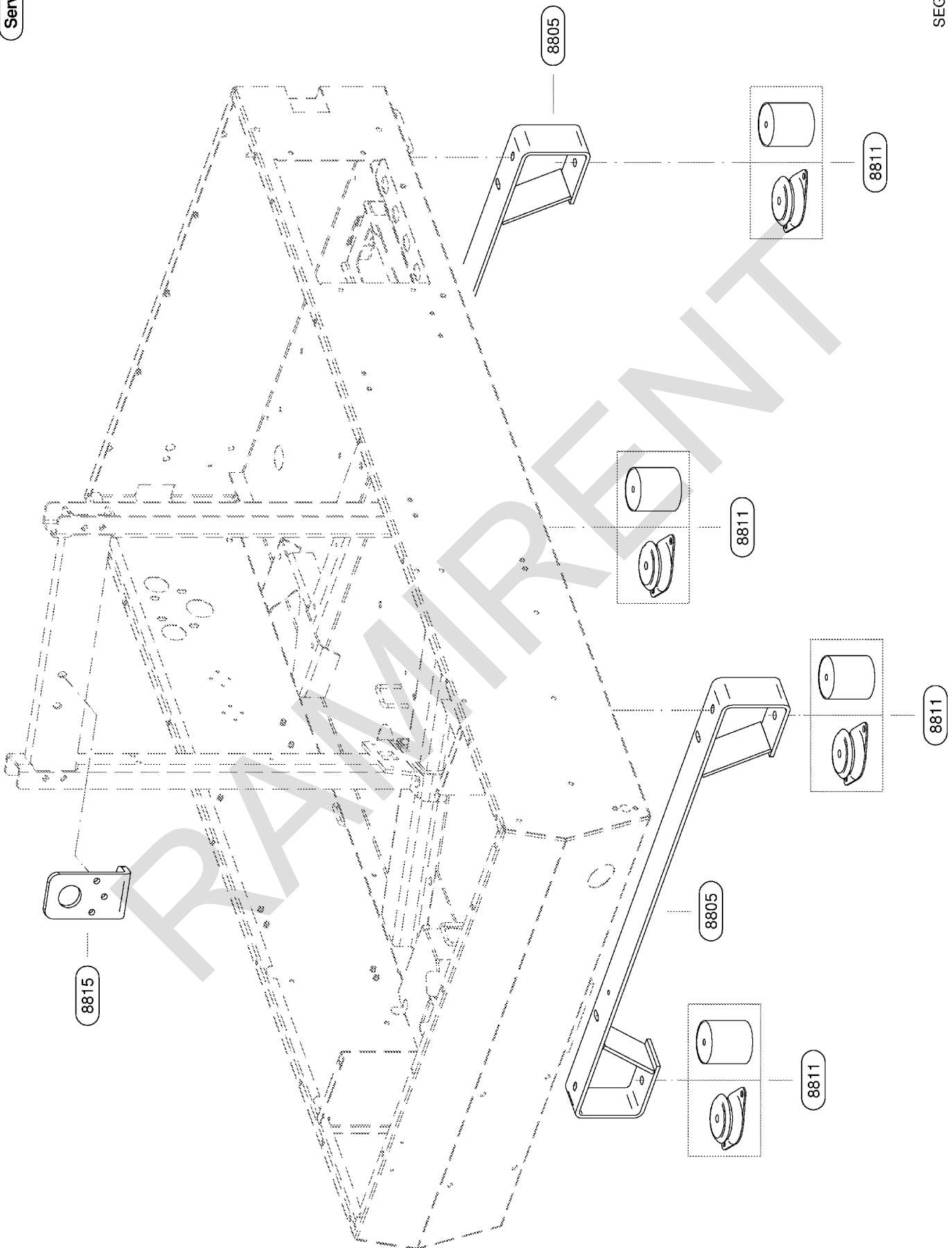
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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-1675\_01





|  |               |
|--|---------------|
| <b>Legend</b>                            | <b>KAESER</b> |
| Chassis (stationary base-frame versions) | SEL-1603_01E  |

| Item | Description                 | Option |
|------|-----------------------------|--------|
| 8805 | Chassis strut               |        |
| 8811 | Machine mounts for the skid |        |
| 8815 | Lifting eye                 |        |
|      |                             |        |

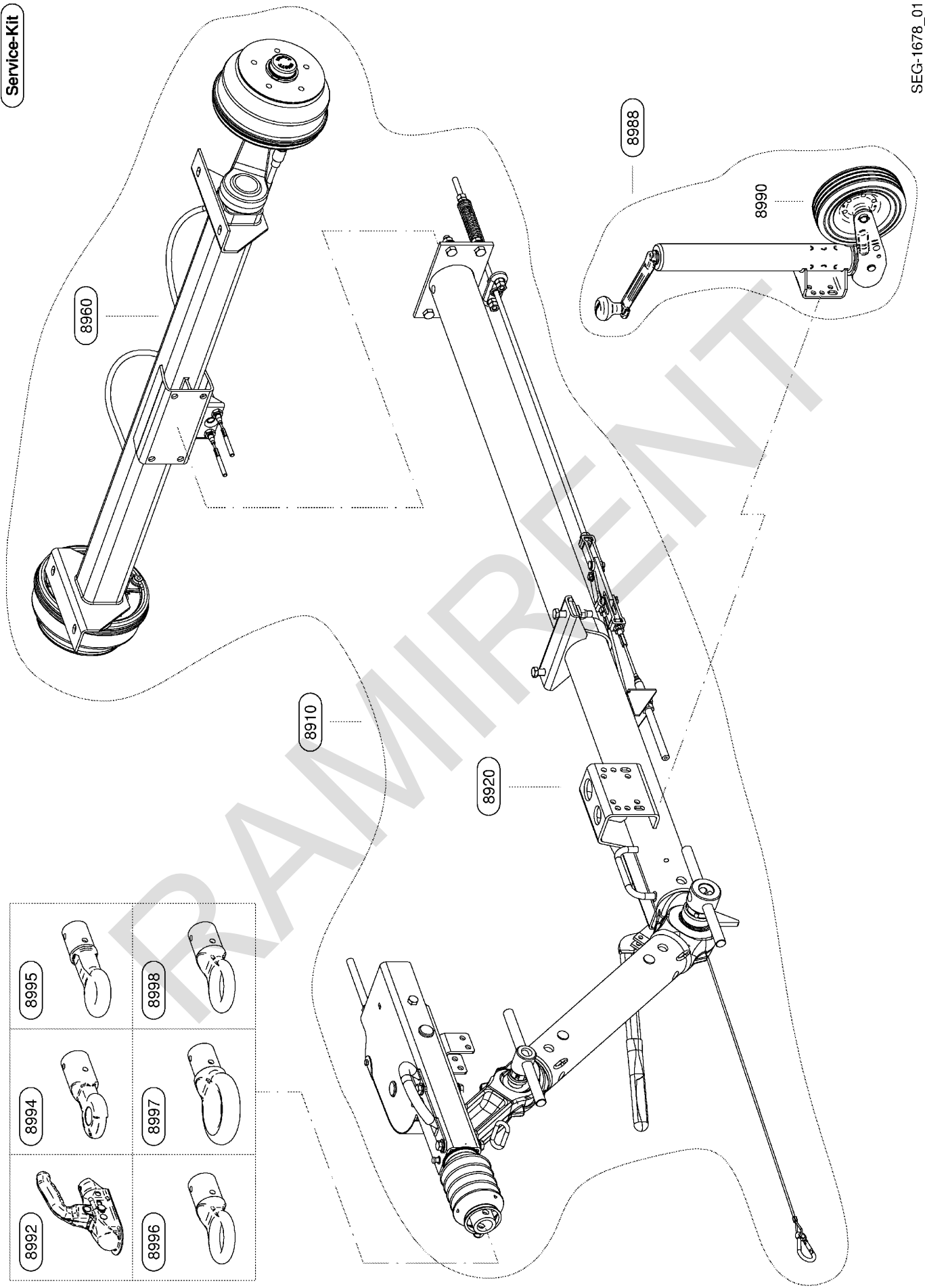
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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-1678\_01



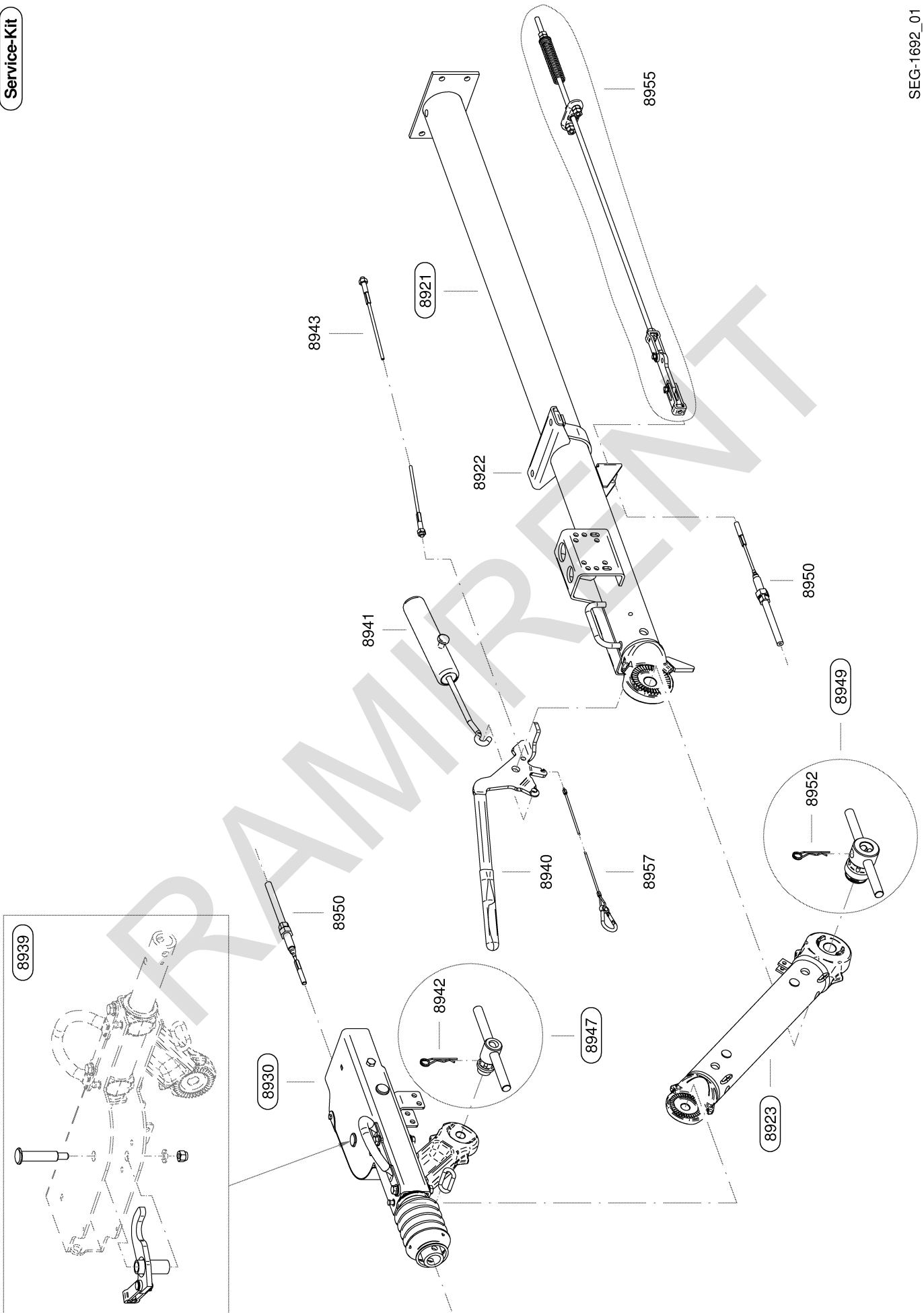
|             |                                   | <b>Legend</b>    | <b>KAESER</b> |
|-------------|-----------------------------------|------------------|---------------|
|             |                                   | Chassis, cpl. EU | SEL-1617_01E  |
| <b>Item</b> | <b>Description</b>                | <b>Option</b>    |               |
| 8910        | Chassis, complete                 |                  |               |
| 8920        | Drawbar, complete                 |                  |               |
| 8960        | Complete axle                     |                  |               |
| 8988        | Jockey wheel, complete            |                  |               |
| 8990        | Jockey wheel                      |                  |               |
| 8992        | Ball coupling for car, ø 50 (DIN) |                  |               |
| 8994        | Towing eye for HGV, ø 40 (DIN)    |                  |               |
| 8995        | Towing eye for HGV, ø 45          |                  |               |
| 8996        | Towing eye for HGV, ø 68 x 25     |                  |               |
| 8997        | Towing eye for HGV, ø 76          |                  |               |
| 8998        | Towing eye for HGV, ø 68 x 42     |                  |               |
|             |                                   |                  |               |

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-1692\_01



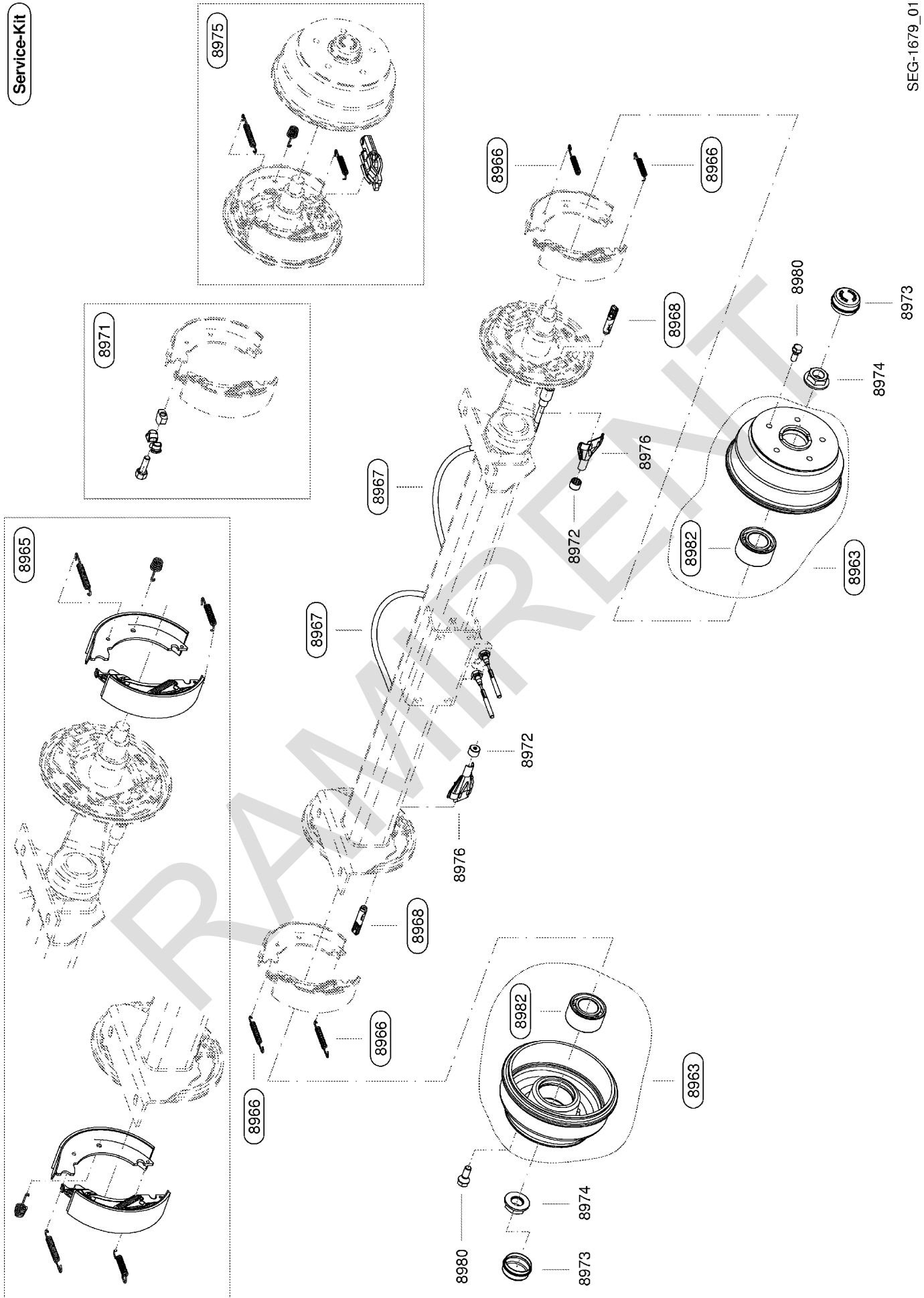
|                 |               |
|-----------------|---------------|
| <b>Legend</b>   | <b>KAESER</b> |
| Towbar, cpl. EU | SEL-1625_01E  |

| Item | Description               | Option |
|------|---------------------------|--------|
| 8921 | Towbar                    |        |
| 8922 | Chassis mounting block    |        |
| 8923 | Height-adjustment bar     |        |
| 8930 | Overrun braking mechanism |        |
| 8939 | Brake transmission lever  |        |
| 8940 | Parking brake lever       |        |
| 8941 | Parking brake gas spring  |        |
| 8942 | Securing pin              |        |
| 8943 | Parking brake cable       |        |
| 8947 | Locking toggle, upper     |        |
| 8949 | Locking toggle, lower     |        |
| 8950 | Brake transfer cable      |        |
| 8952 | Securing pin              |        |
| 8955 | 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-1679\_01

|             |                                      | <b>Legend</b>                 | <b>KAESER</b>       |
|-------------|--------------------------------------|-------------------------------|---------------------|
|             |                                      | <b>Axle, complete, braked</b> | <b>SEL-1615_01E</b> |
| <b>Item</b> | <b>Description</b>                   | <b>Option</b>                 |                     |
| 8963        | Wheel hub                            |                               |                     |
| 8965        | Brake shoe set                       |                               |                     |
| 8966        | Brake shoe spring set                |                               |                     |
| 8967        | Wheel brake cable                    |                               |                     |
| 8968        | Brake cable hook-in pin              |                               |                     |
| 8971        | Brake adjusting set                  |                               |                     |
| 8972        | Sealing cap for the brake backplate  |                               |                     |
| 8973        | Grease cap for the brake drum        |                               |                     |
| 8974        | Flanged locknut for the axle bearing |                               |                     |
| 8975        | Brake actuating kit                  |                               |                     |
| 8976        | Protective shell for brake cable     |                               |                     |
| 8980        | Wheel bolt                           |                               |                     |
| 8982        | Wheel bearing set                    |                               |                     |

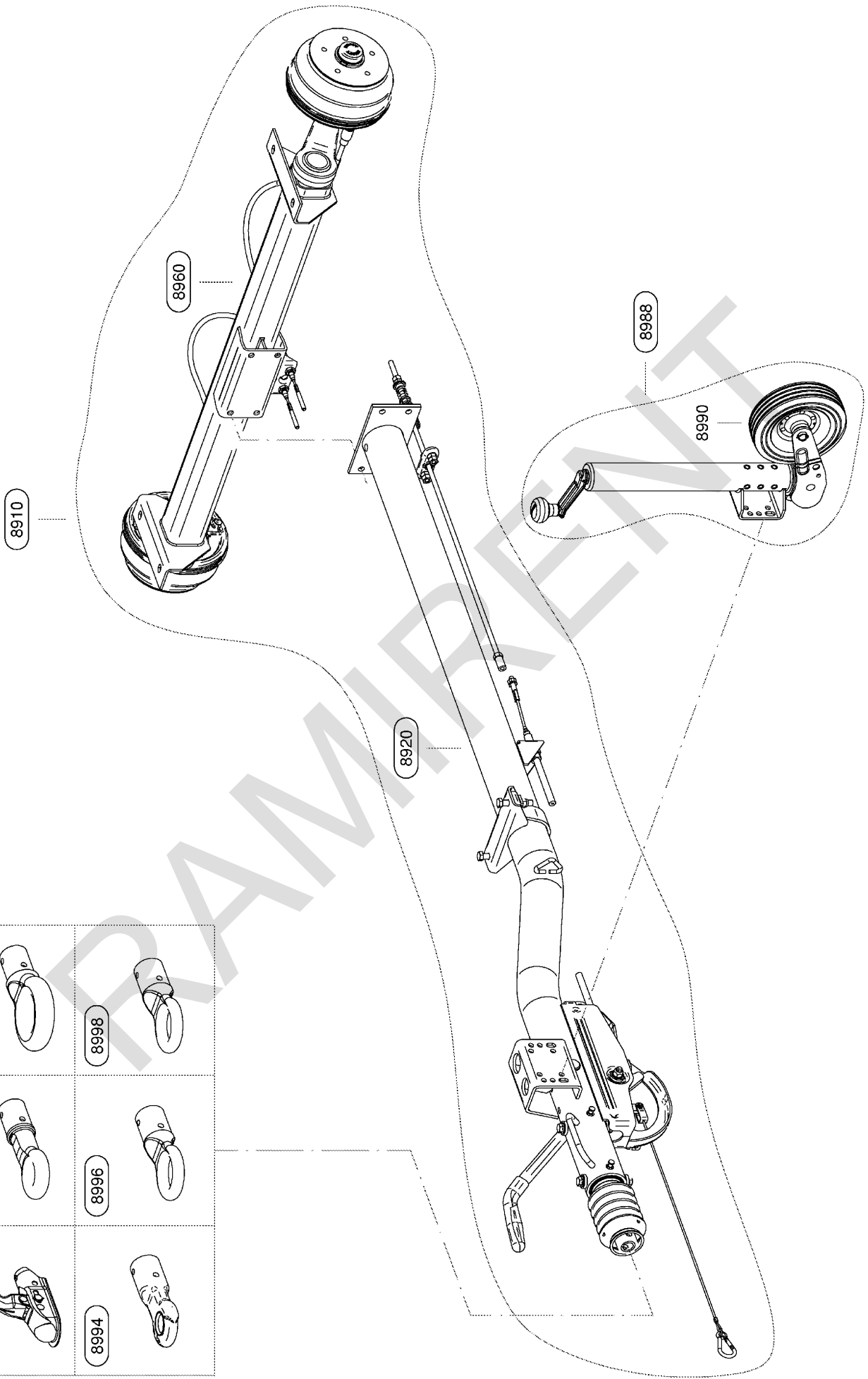
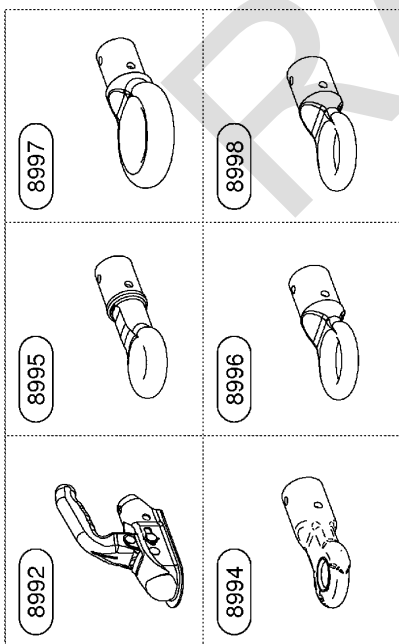
  

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

Service-Kit

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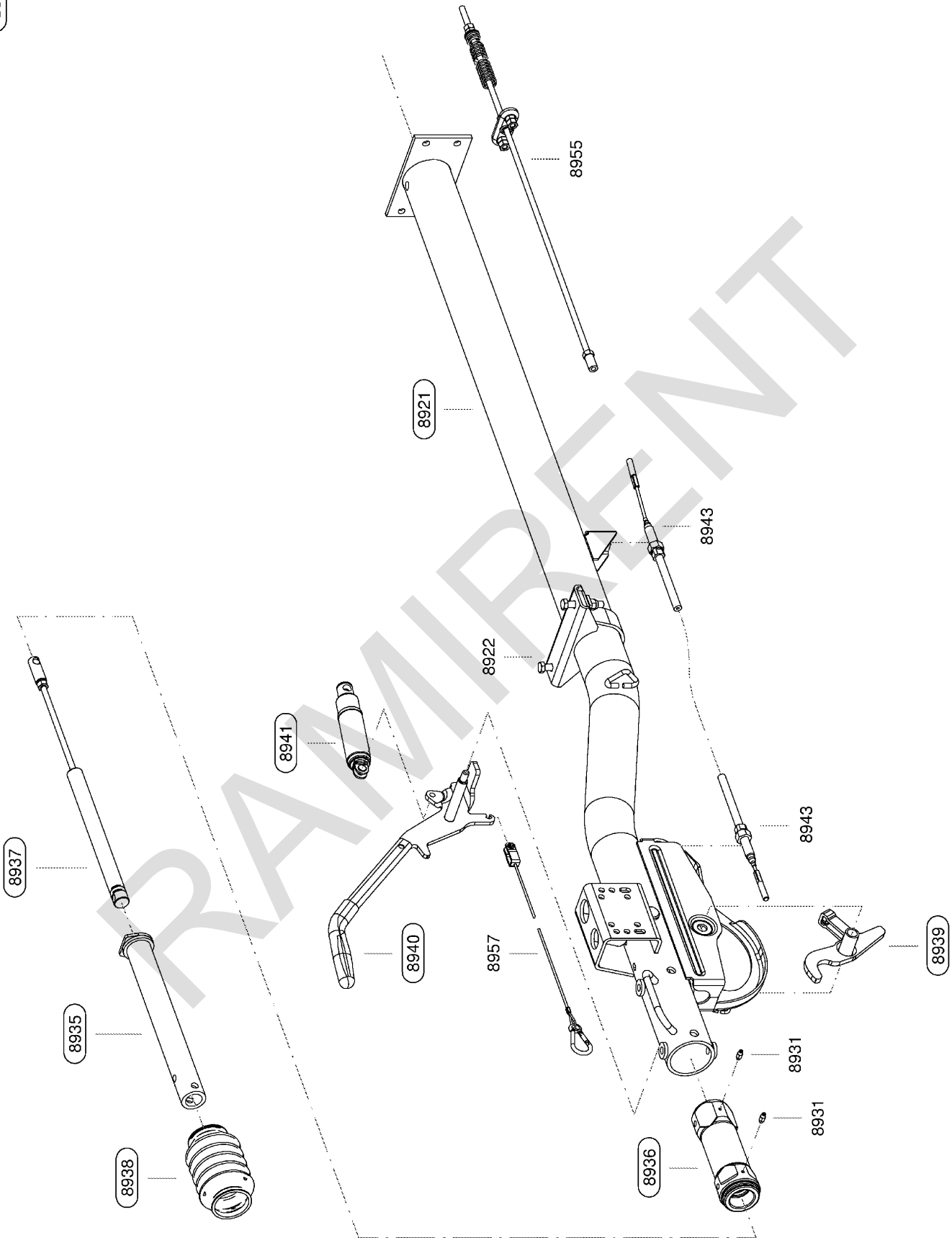




|             |   | <b>Legend</b>     | <b>KAESER</b>       |
|-------------|---|-------------------|---------------------|
|             |   | <b>GB chassis</b> | <b>SEL-1611_01E</b> |
| <b>Item</b> | <b>Description</b>                            | <b>Option</b>     |                     |
| 8910        | Chassis, complete                             |                   |                     |
| 8920        | Drawbar, complete                             |                   |                     |
| 8960        | Complete axle                                 |                   |                     |
| 8988        | Jockey wheel, complete                        |                   |                     |
| 8990        | Jockey wheel                                  |                   |                     |
| 8992        | Ball coupling for car, $\varnothing$ 50 (DIN) |                   |                     |
| 8994        | Towing eye for HGV, $\varnothing$ 40 (DIN)    |                   |                     |
| 8995        | Towing eye for HGV, $\varnothing$ 45          |                   |                     |
| 8996        | Towing eye for HGV, $\varnothing$ 68 x 25     |                   |                     |
| 8997        | Towing eye for HGV, $\varnothing$ 76          |                   |                     |
| 8998        | Towing eye for HGV, $\varnothing$ 68 x 42     |                   |                     |
|             |   |                   |                     |

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.

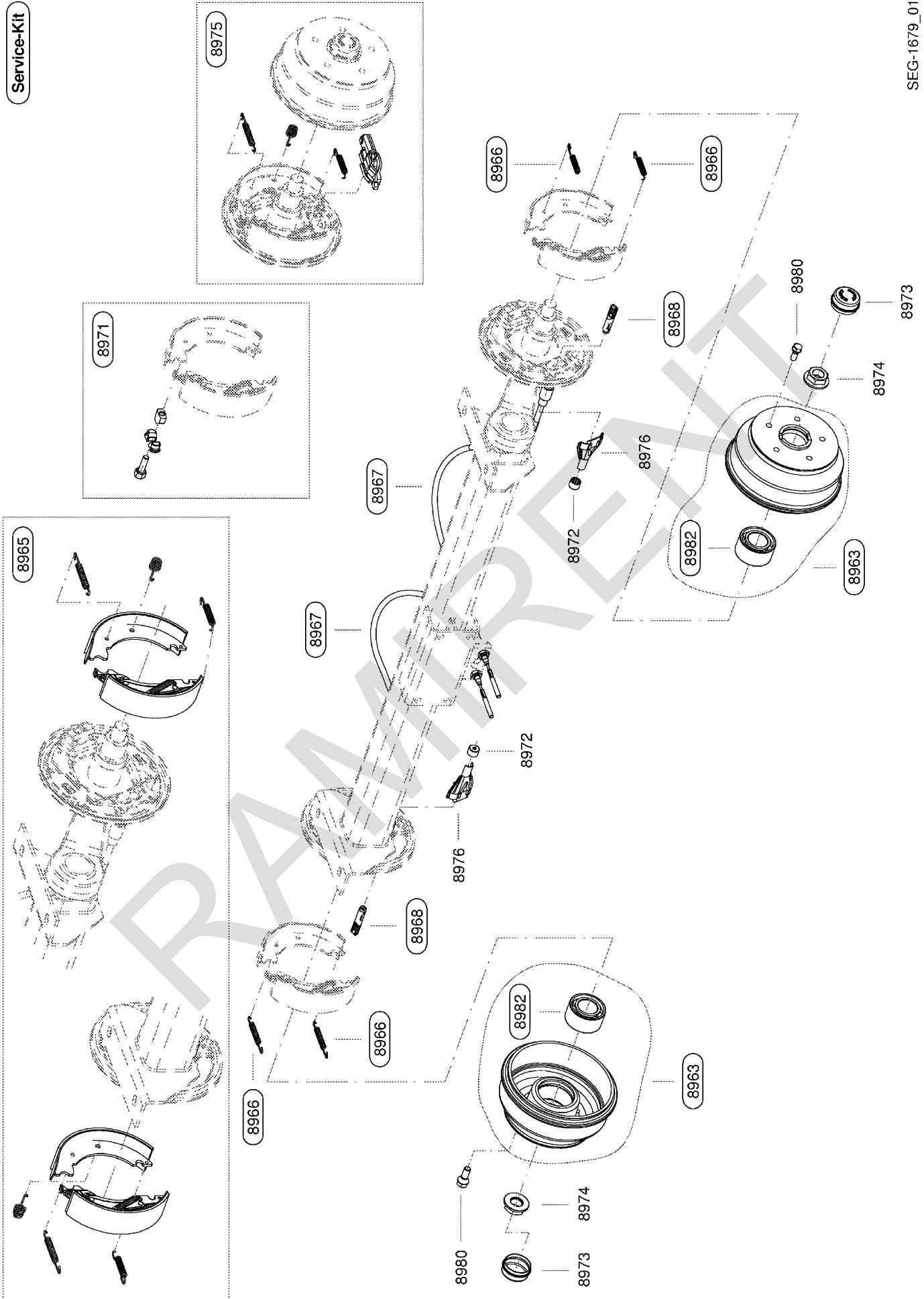


|             |                                | <b>Legend</b>   | <b>KAESER</b> |
|-------------|--------------------------------|-----------------|---------------|
|             |                                | Drawbar cpl. GB | SEL-1623_01E  |
| <b>Item</b> | <b>Description</b>             | <b>Option</b>   |               |
| 8921        | Towbar                         |                 |               |
| 8922        | Chassis mounting block         |                 |               |
| 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            |                 |               |
| 8941        | Parking brake gas spring       |                 |               |
| 8943        | Parking brake cable            |                 |               |
| 8955        | Brake actuating 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



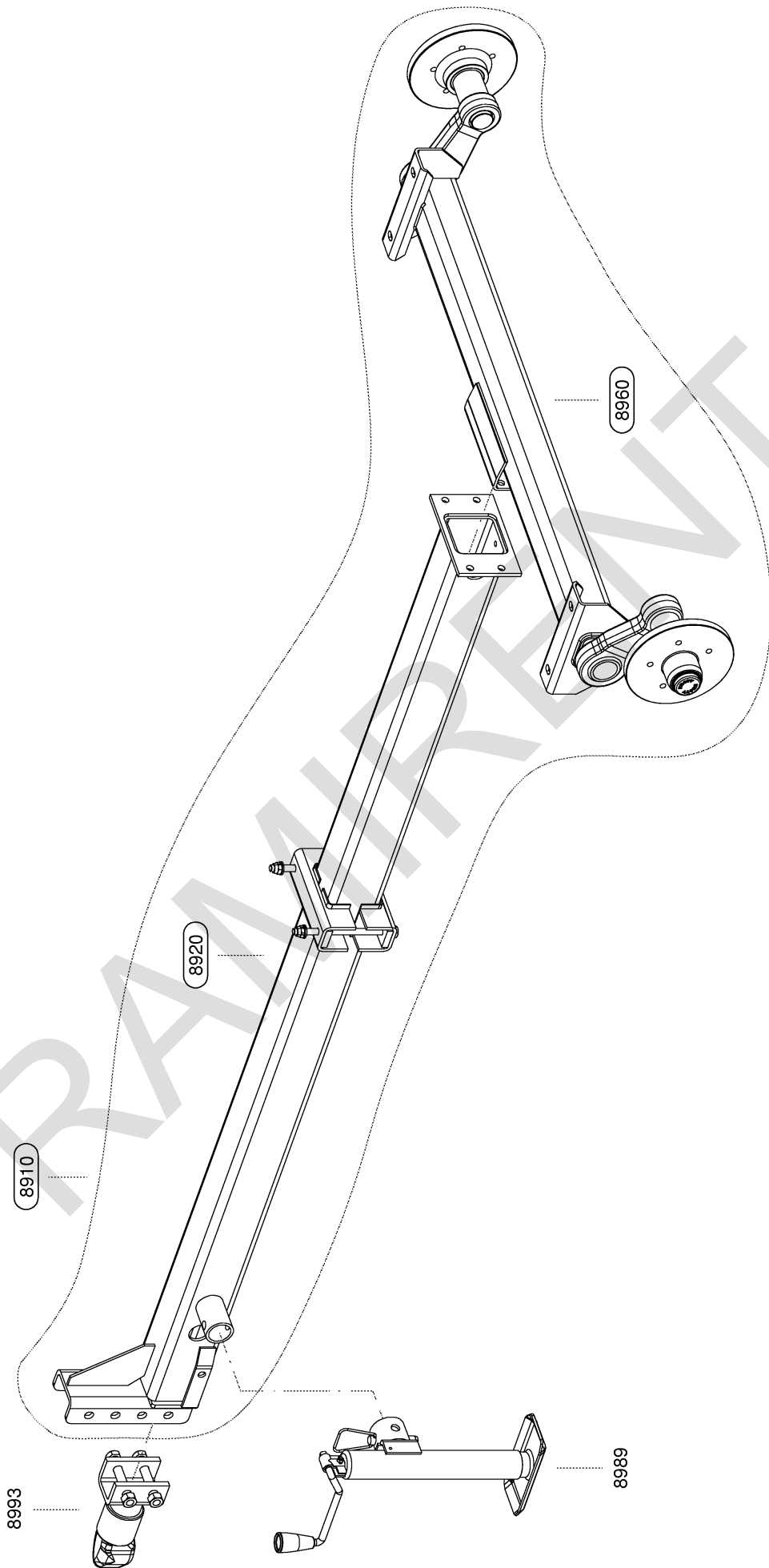
SEG-1679\_01

|             |                                      | <b>Legend</b>                 | <b>KAESER</b>       |
|-------------|--------------------------------------|-------------------------------|---------------------|
|             |                                      | <b>Axle, complete, braked</b> | <b>SEL-1615_01E</b> |
| <b>Item</b> | <b>Description</b>                   | <b>Option</b>                 |                     |
| 8963        | Wheel hub                            |                               |                     |
| 8965        | Brake shoe set                       |                               |                     |
| 8966        | Brake shoe spring set                |                               |                     |
| 8967        | Wheel brake cable                    |                               |                     |
| 8968        | Brake cable hook-in pin              |                               |                     |
| 8971        | Brake adjusting set                  |                               |                     |
| 8972        | Sealing cap for the brake backplate  |                               |                     |
| 8973        | Grease cap for the brake drum        |                               |                     |
| 8974        | Flanged locknut for the axle bearing |                               |                     |
| 8975        | Brake actuating kit                  |                               |                     |
| 8976        | Protective shell for 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.

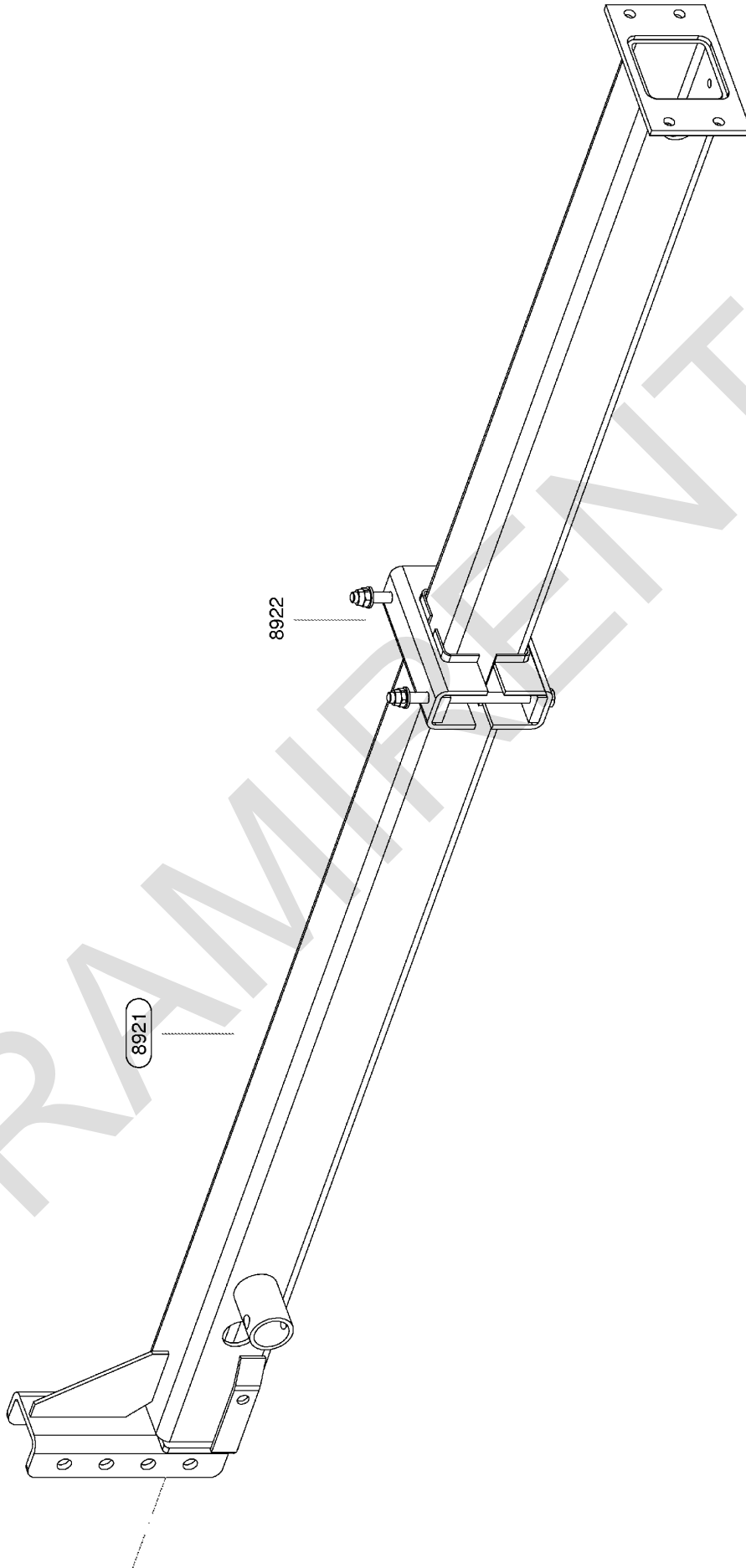
Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual.



|             |                             | <b>Legend</b> | <b>KAESER</b> |
|-------------|-----------------------------|---------------|---------------|
|             |                             | Chassis       | SEL-1607_01E  |
| <b>Item</b> | <b>Description</b>          | <b>Option</b> |               |
| 8910        | Chassis, complete           |               |               |
| 8920        | Drawbar, complete           |               |               |
| 8960        | Complete axle               |               |               |
| 8989        | Prop                        |               |               |
| 8993        | Ball coupling for car, ø 2" |               |               |

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.





|                 |               |
|-----------------|---------------|
| <b>Legend</b>   | <b>KAESER</b> |
| Drawbar cpl. US | SEL-1619_01E  |

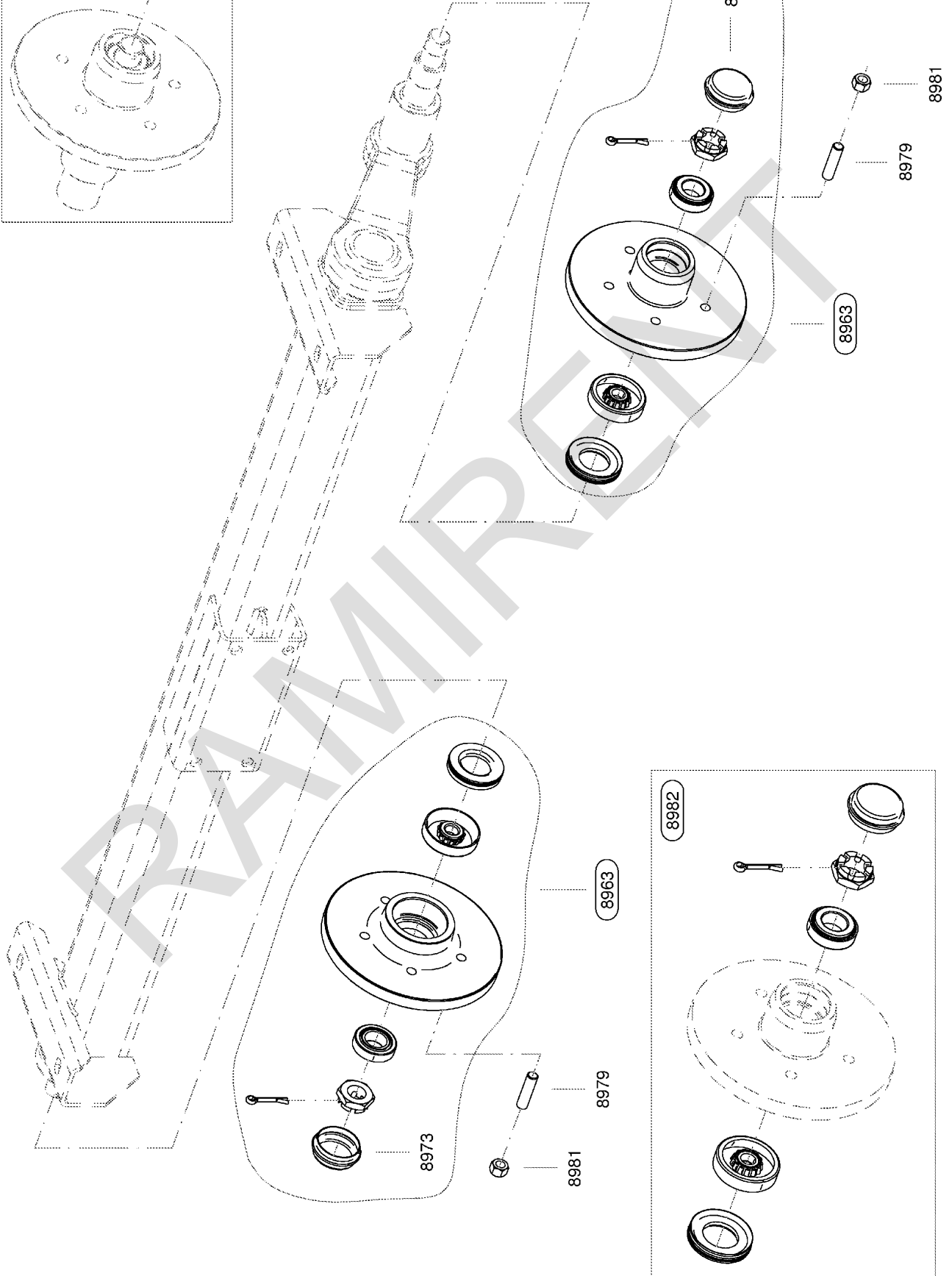
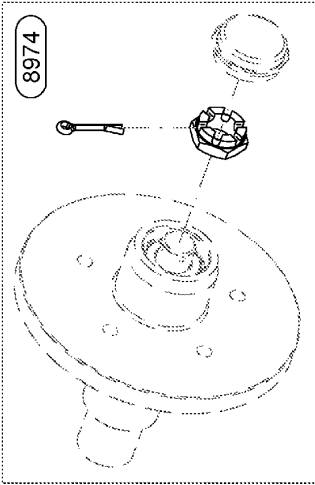
| Item | Description            | Option |
|------|------------------------|--------|
| 8921 | Towbar                 |        |
| 8922 | Chassis mounting block |        |

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



SEG-1682\_01

|                            |               |
|----------------------------|---------------|
| <b>Legend</b>              | <b>KAESER</b> |
| Axle, complete, non-braked | SEL-1609_01E  |

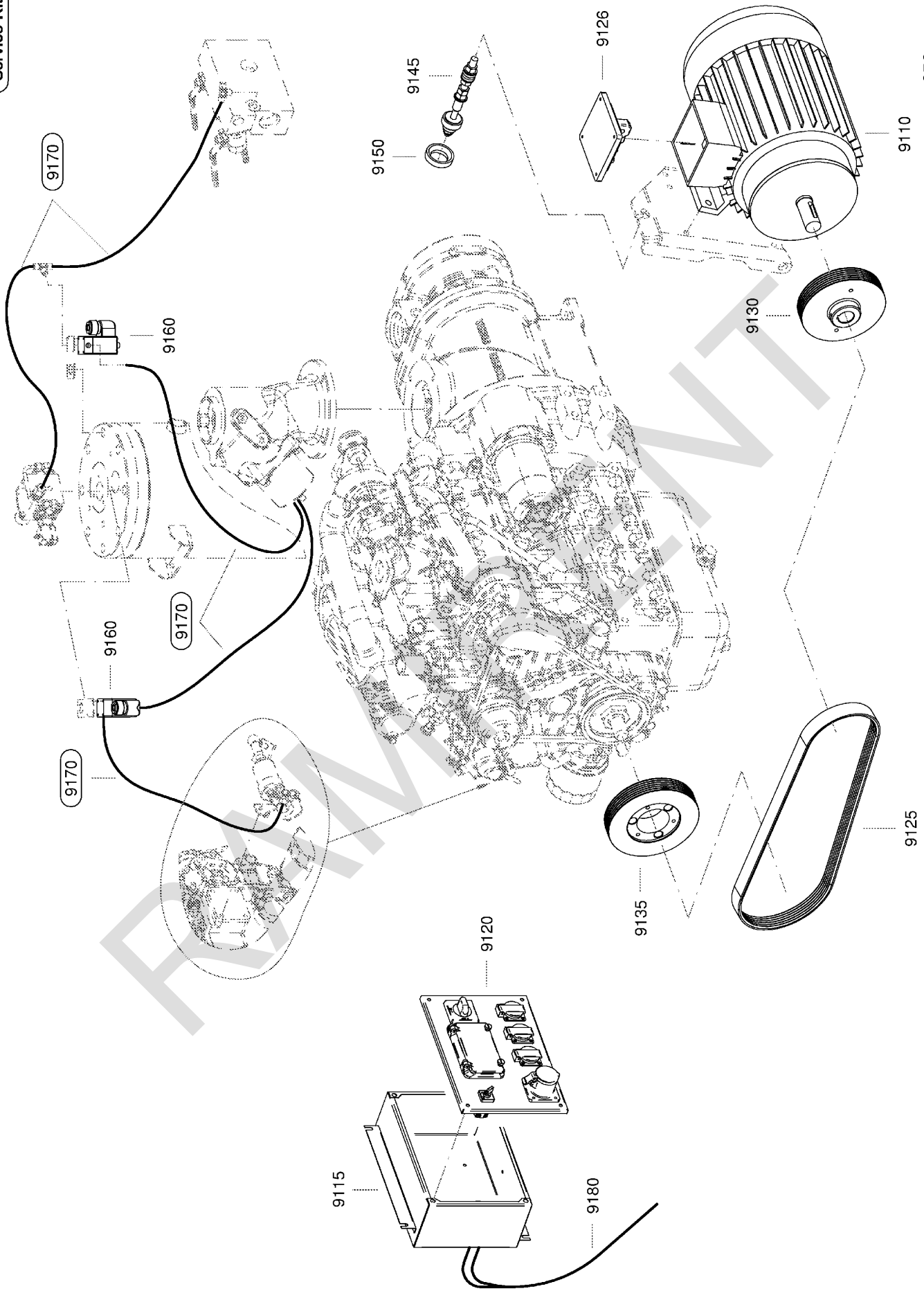
| Item | Description                          | Option |
|------|--------------------------------------|--------|
| 8963 | Wheel hub                            |        |
| 8973 | Grease cap for the brake drum        |        |
| 8974 | Flanged locknut for the axle bearing |        |
| 8979 | Wheelbolts                           |        |
| 8981 | Wheel nut                            |        |
| 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



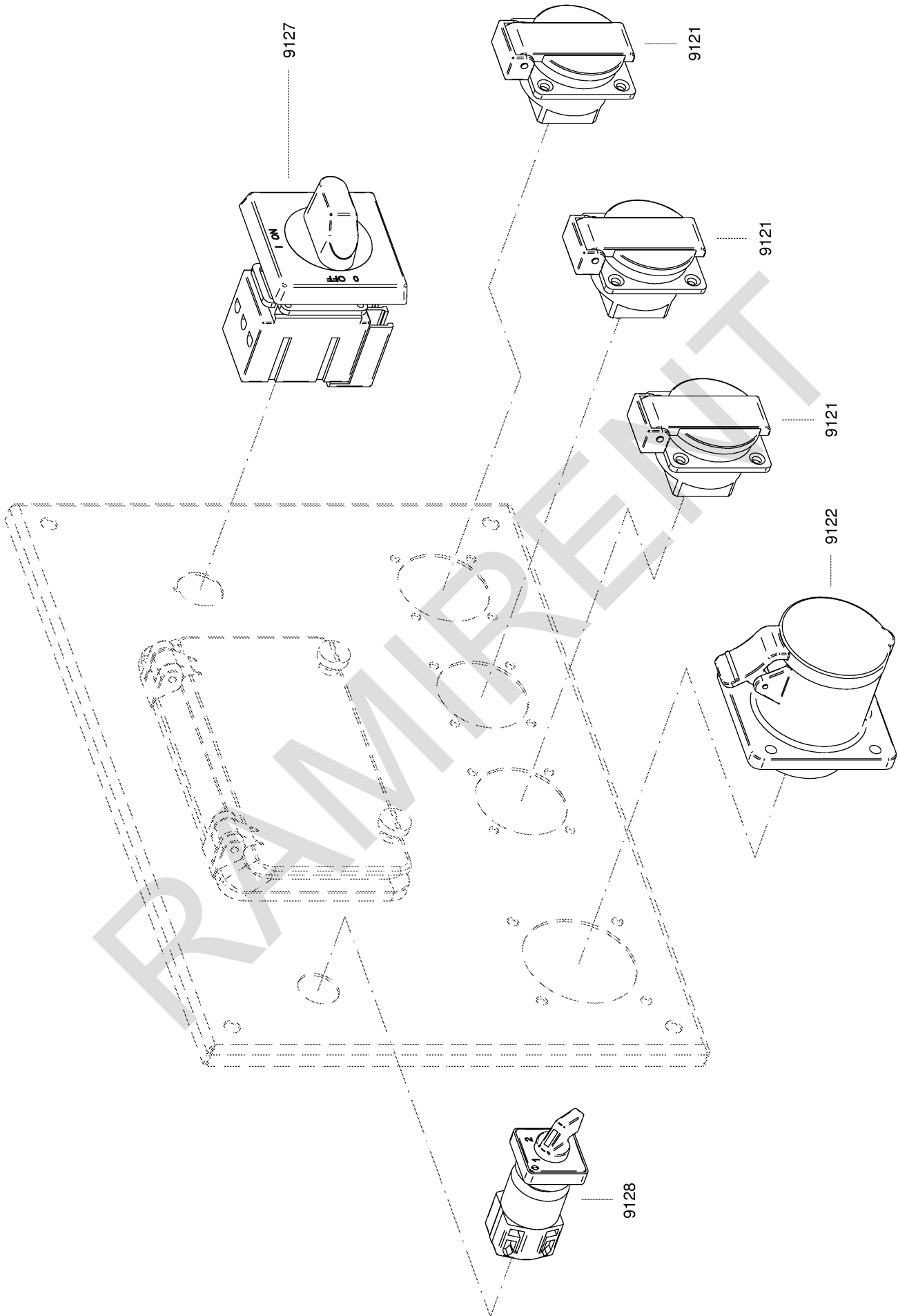
SEG-1670\_01

|                  |               |
|------------------|---------------|
| <b>Legend</b>    | <b>KAESER</b> |
| Power generation | SEL-1637_01E  |

| Item | Name                           | Option |
|------|--------------------------------|--------|
| 9110 | Generator                      |        |
| 9115 | Generator cabinet              |        |
| 9120 | Generator panel                |        |
| 9125 | Generator drive belt           |        |
| 9126 | Generator regulator            |        |
| 9130 | Generator drive pulley         |        |
| 9135 | Engine drive pulley            |        |
| 9145 | Belt adjustment                |        |
| 9150 | Socket joint                   |        |
| 9160 | Control valve for generator    |        |
| 9170 | Control line kit for generator |        |
| 9180 | Generator cable 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.



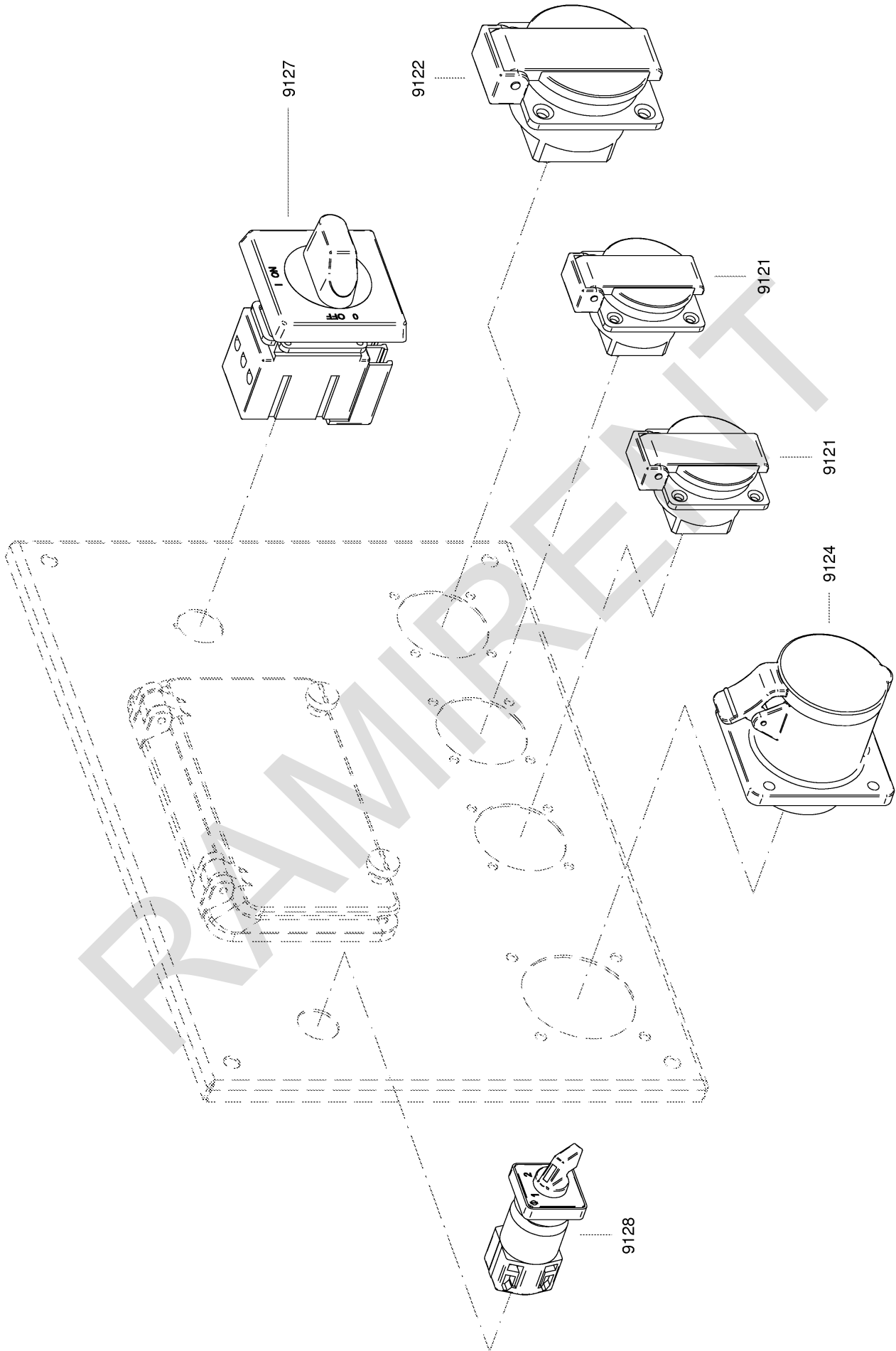
|                       |               |
|-----------------------|---------------|
| <b>Legend</b>         | <b>KAESER</b> |
| Generator panel, 400V | SEL-1563_01E  |

| Item | Description                    | Option |
|------|--------------------------------|--------|
| 9121 | Single phase power socket, 16A |        |
| 9122 | 16A three-phase power socket   |        |
| 9127 | Generator main switch          |        |
| 9128 | Mode selector switch           |        |

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





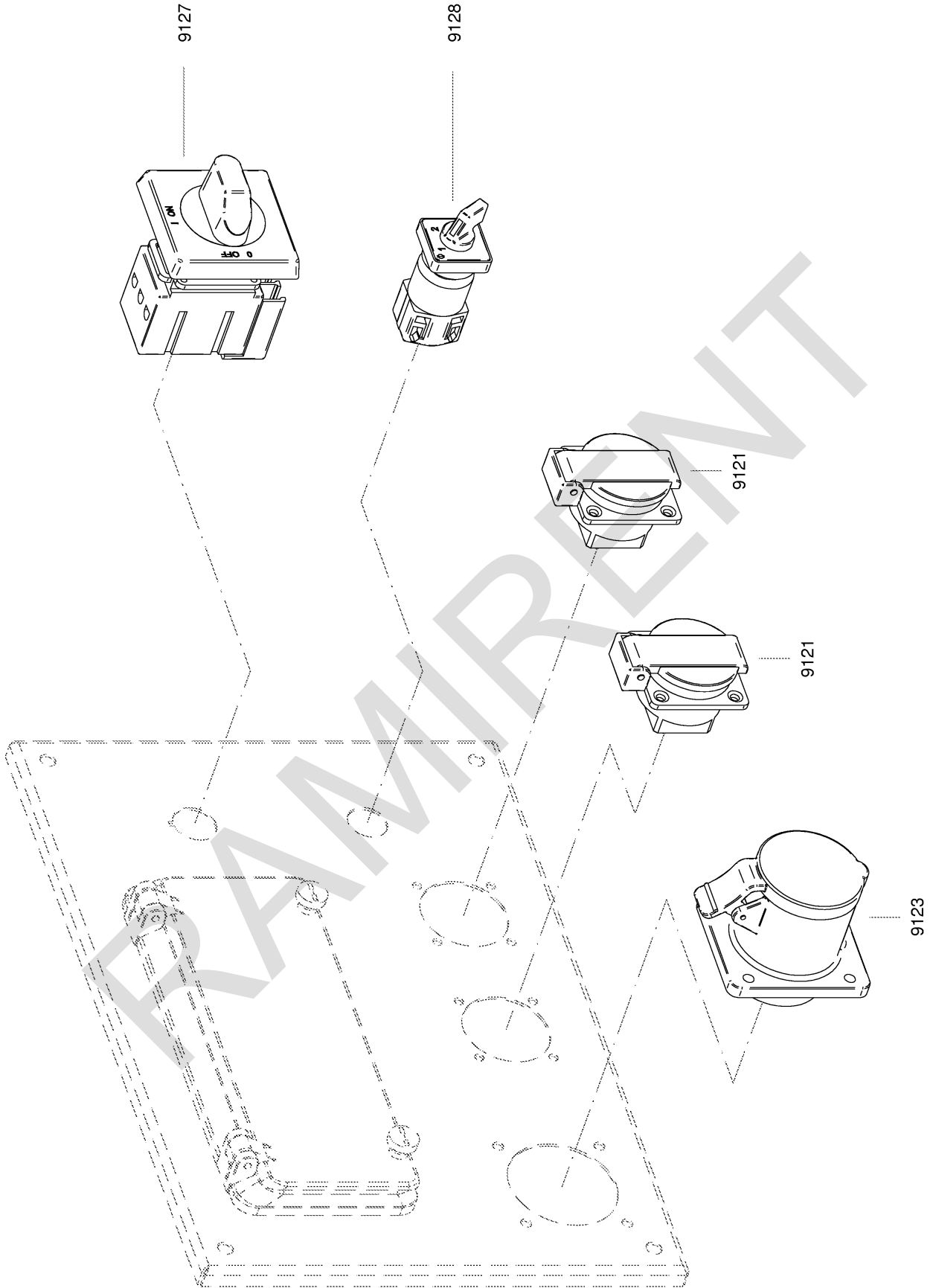
|                       |               |
|-----------------------|---------------|
| <b>Legend</b>         | <b>KAESER</b> |
| Generator panel, 230V | SEL-1561_01E  |

| Item | Description                    | Option |
|------|--------------------------------|--------|
| 9121 | Single phase power socket, 16A |        |
| 9122 | DC power socket, 16A           |        |
| 9124 | DC power socket, 32A           |        |
| 9127 | Generator main switch          |        |
| 9128 | Mode selector switch           |        |

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



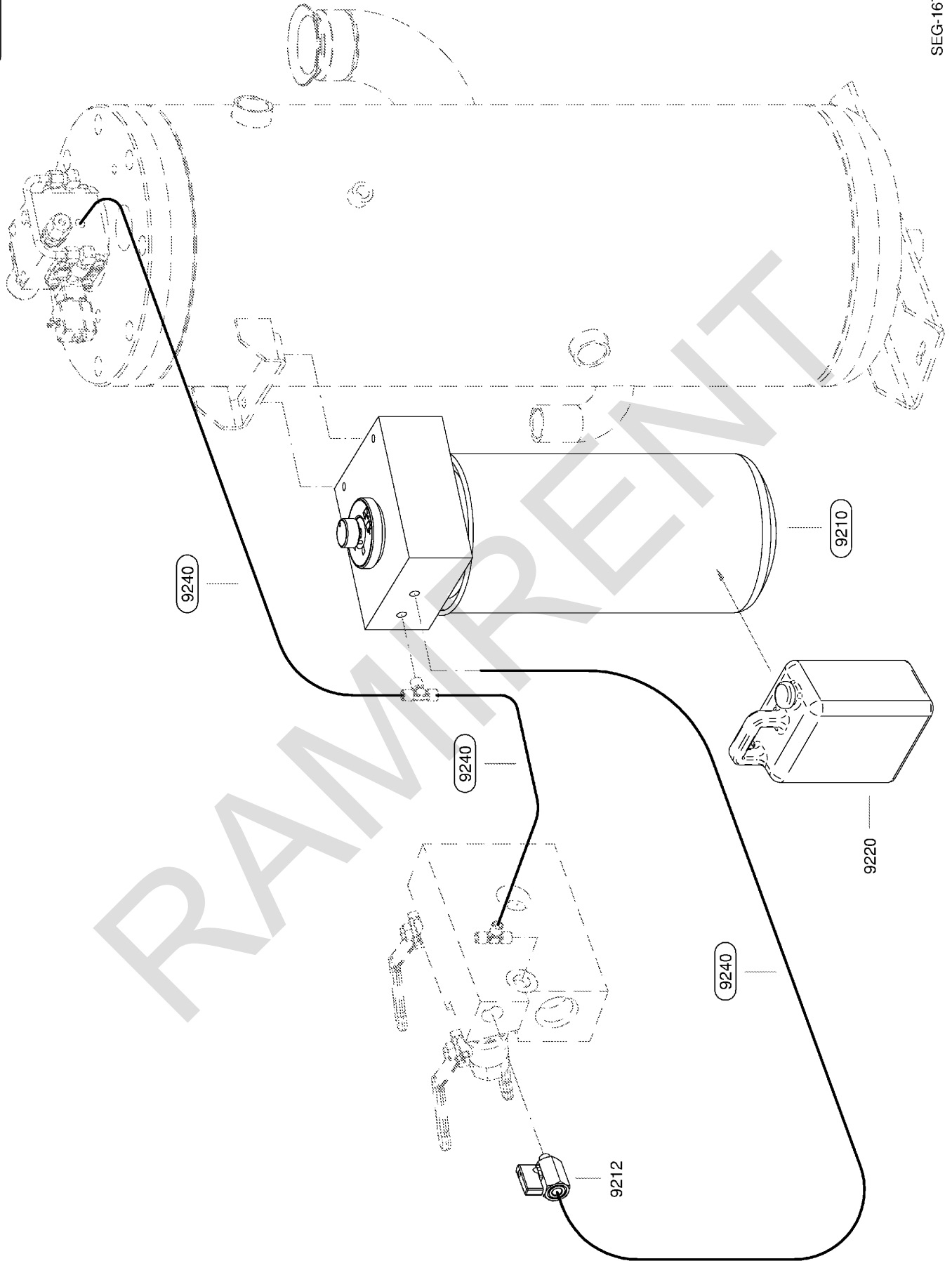
|                       |               |
|-----------------------|---------------|
| <b>Legend</b>         | <b>KAESER</b> |
| Generator panel, 115V | SEL-1665_01E  |

| Item | Description                    | Option |
|------|--------------------------------|--------|
| 9121 | Single phase power socket, 16A |        |
| 9123 | Single phase power socket, 32A |        |
| 9127 | Generator main switch          |        |
| 9128 | Mode selector switch           |        |

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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|                  |               |
|------------------|---------------|
| <b>Legend</b>    | <b>KAESER</b> |
| Tool lubrication | SEL-1639_01E  |

| Item | Description                          | Option |
|------|--------------------------------------|--------|
| 9210 | Tool lubricator                      |        |
| 9212 | Tool lubricator shut-off valve       |        |
| 9220 | Tool oil *)                          |        |
| 9240 | Control line kit for tool lubricator |        |

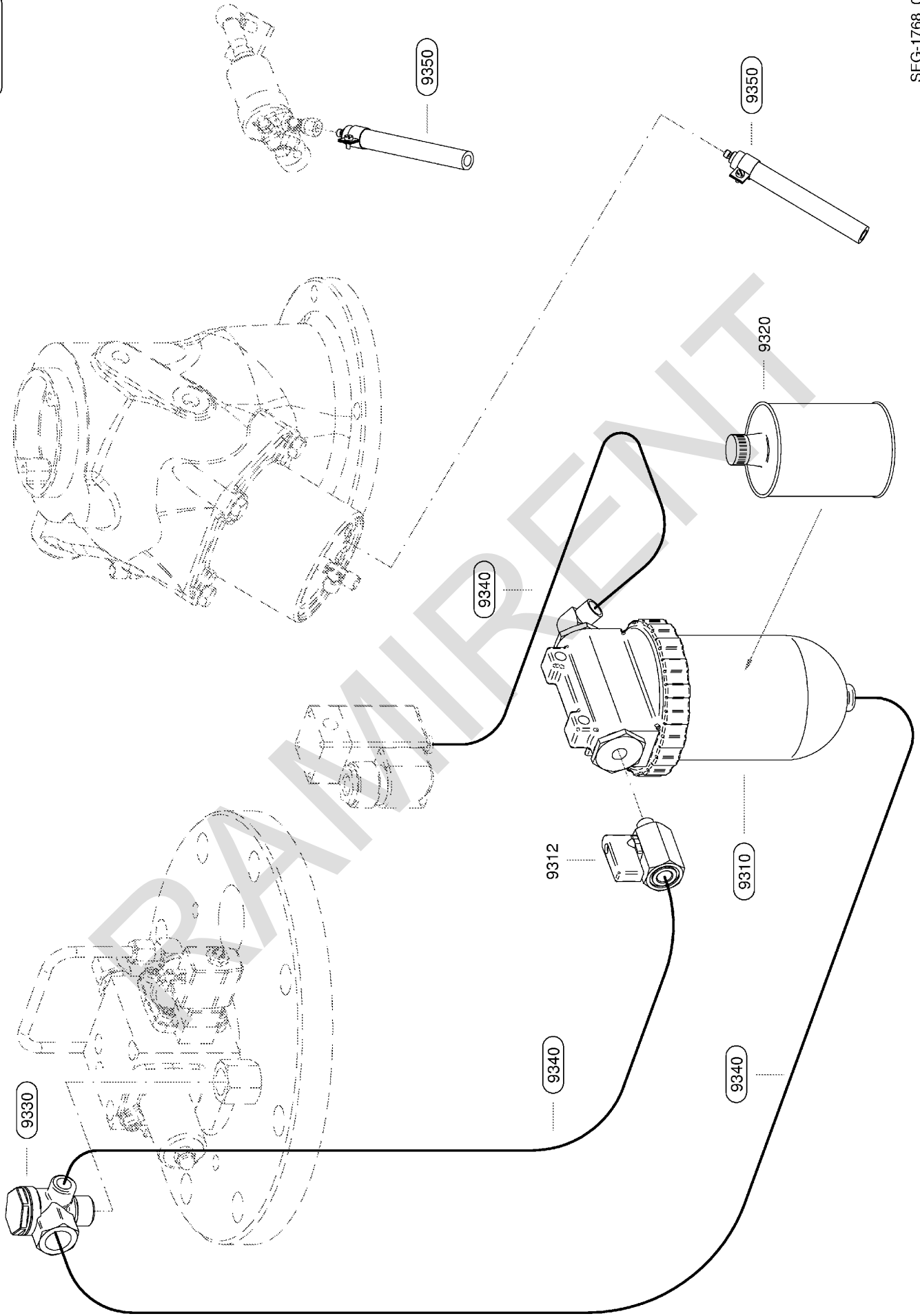
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

Service-Kit

SEG-1768\_01



|                         |               |
|-------------------------|---------------|
| <b>Legend</b>           | <b>KAESER</b> |
| Frost protection device | SEL-1667_01E  |

| Item | Description                                  | Option |
|------|--|--------|
| 9310 | Antifreeze injector                          |        |
| 9312 | Shut-off valve                               |        |
| 9320 | Antifreeze for the frost protection device*) |        |
| 9330 | Antifreeze injector check valve              |        |
| 2412 | Check valve overhaul kit                     |        |
| 9340 | Antifreeze inj. control lines                |        |
| 9350 | Antifreeze drainage kit                      |        |

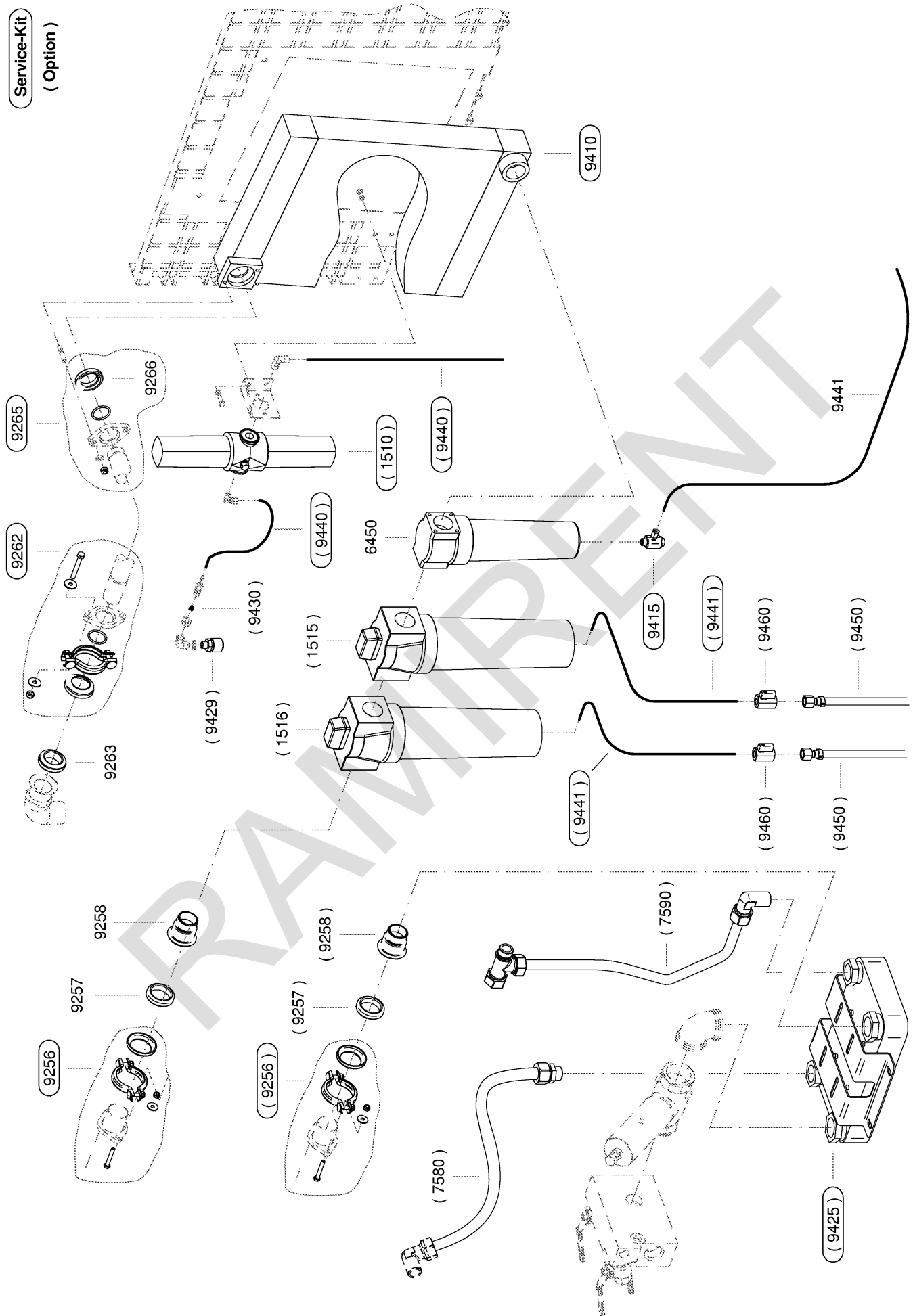
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

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

\*) see antifreeze recommendations

RAMIRENT

Service-Kit  
( Option )



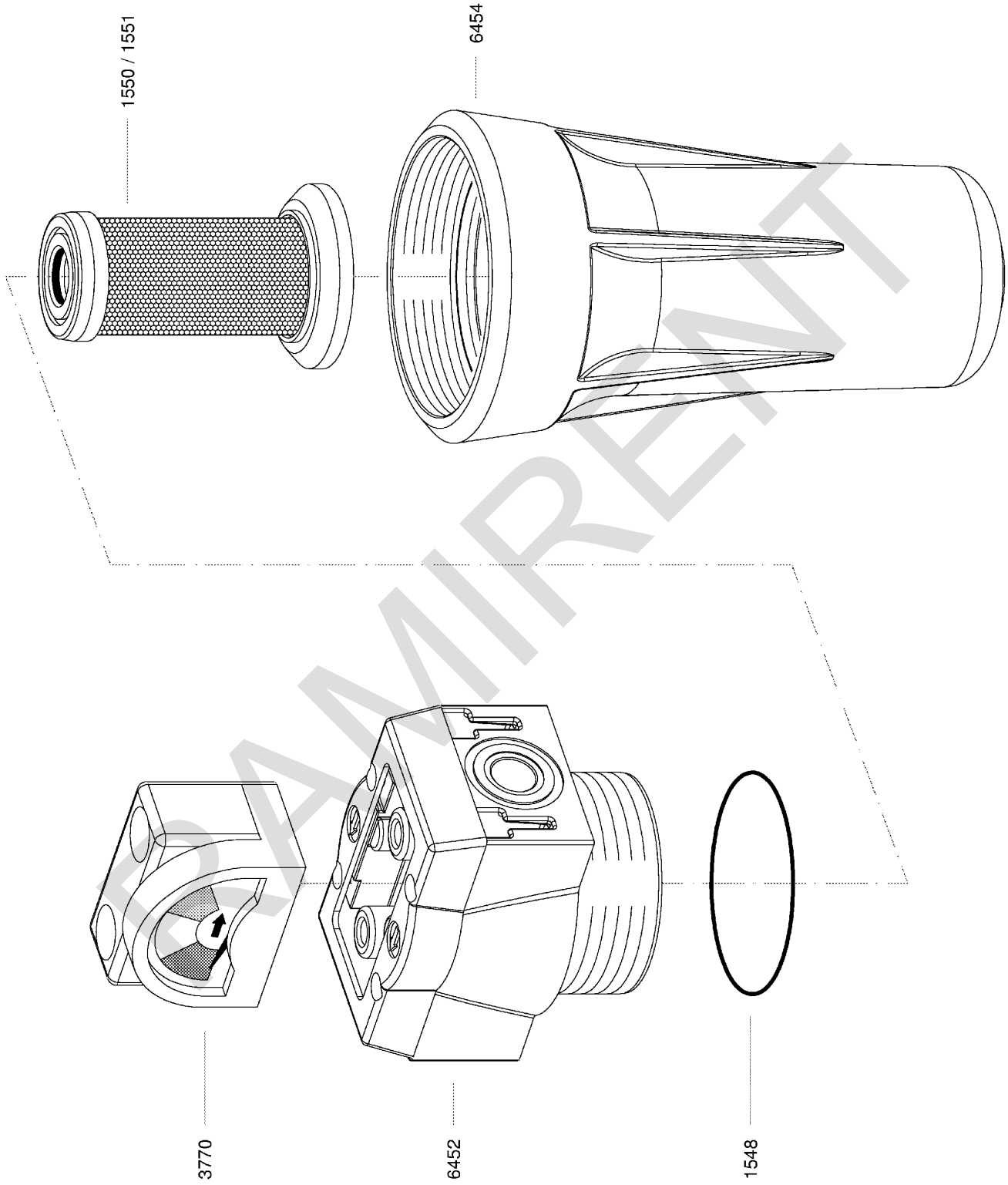
SEG-1673\_02



|      |                                   | <b>Legend</b>            | <b>KAESER</b> |
|------|-----------------------------------|--------------------------|---------------|
|      |                                   | Compressed air treatment | SEL-1621_02E  |
| Item | Description                       | Option                   |               |
| 1510 | Fresh air filter                  | X                        |               |
| 1515 | Pre-filter for compressed air     | X                        |               |
| 1516 | Fine filter for compressed air    | X                        |               |
| 6450 | Condensate separator              |                          |               |
| 7580 | Hose line                         | X                        |               |
| 7590 | Hose line                         | X                        |               |
| 9262 | Pipe clamp element                | X                        |               |
| 9263 | Pipe connection seal              | X                        |               |
| 9265 | Pipe clamp element                | X                        |               |
| 9266 | Pipe connection seal              | X                        |               |
| 9256 | Pipe clamp element                |                          |               |
| 9257 | Pipe connection seal              |                          |               |
| 9258 | Pipe adapter                      |                          |               |
| 9410 | Compressed air after-cooler       |                          |               |
| 9415 | Separator dirt trap               |                          |               |
| 9416 | Dirt trap maintenance kit         |                          |               |
| 9425 | Compressed air re-heater          | X                        |               |
| 9429 | Outlet coupling for breathing air | X                        |               |
| 9430 | Air regulator for breathing air   | X                        |               |
| 9440 | Outlet pipe kit for breathing air | X                        |               |
| 9441 | Condensate drain line             |                          |               |
| 9450 | Condensate drain hose             | X                        |               |
| 9460 | Compr.air filter shut-off vlv.    | 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.



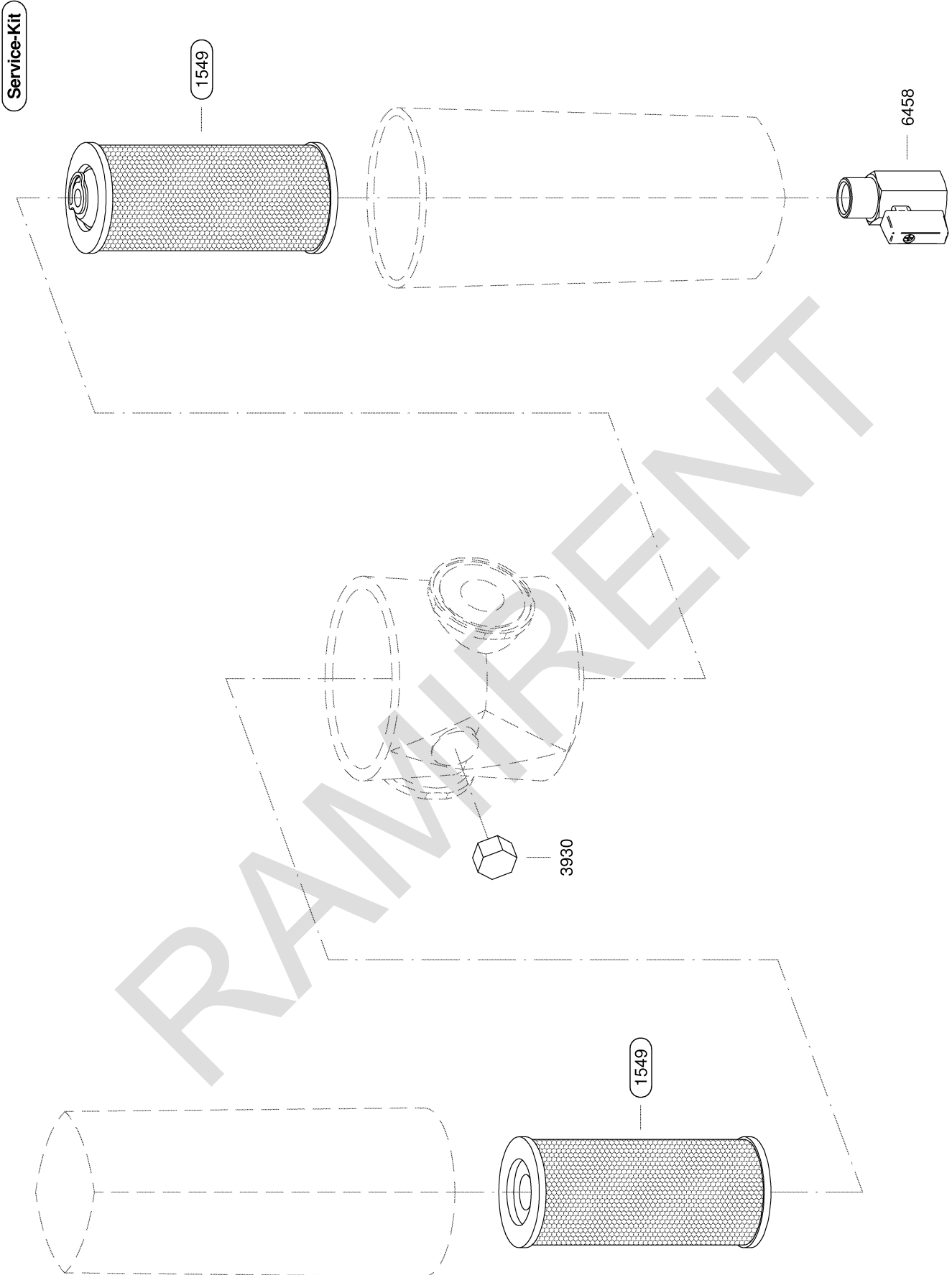
|                             |               |
|-----------------------------|---------------|
| <b>Legend</b>               | <b>KAESER</b> |
| Compressed air filter comb. | SEL-1641_01E  |

| Item | Description                     | Option |
|------|---------------------------------|--------|
| 1548 | Body gasket                     |        |
| 1550 | Filter element for prefilter    |        |
| 1551 | Filter element for microfilter  |        |
| 3770 | Pressure differential indicator |        |
| 6452 | Separator upper part            |        |
| 6454 | Separator lower part            |        |

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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SEG-2482\_02

|                  |               |
|------------------|---------------|
| <b>Legend</b>    | <b>KAESER</b> |
| Fresh air filter | SEL-2292_01E  |

| Item | Description              | Option |
|------|--------------------------|--------|
| 1549 | Fresh air filter element |        |
| 3930 | Indicator insert         |        |
| 6458 | Shut-off valve           |        |
|      |                          |        |

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 de-commissioning

Decommissioning for about 4 months.

Material Plastic sheeting

Moisture-resistant adhesive tape

1. Disconnect the battery (the minus terminal first and then the plus terminal).
2. Close off the following openings with plastic foil and moisture-resistant adhesive tape.
  - Engine air inlet
  - Compressor air inlet
  - Exhaust silencer
3. Attach the following notice on the instrument panel showing the decommissioning measures taken.

**Attention!**

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

Date / signature

Tab. 94 "Temporarily decommissioned" information notice

**Decommissioning of the compressor for several weeks during severe frost**



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

**12.1.2 Long-term de-commissioning and storage**

De-commissioning the machine for 5 months or longer.

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

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

| Long-term decommissioning and storage tasks  | See chapter      | Confirmed? |
|--|------------------|------------|
| ➤ Check engine coolant.  | 10.3.1           |            |
| ➤ Drain the engine oil.  | 10.3.6           |            |
| ➤ Drain the oil from the oil separator tank and the oil cooler.  | 10.4.3           |            |
| ➤ Drain oil from the heat exchanger (Option db).   | 10.4.3           |            |
| ➤ Fill the separator tank and engine with preserving oil.  | 10.4.2<br>10.3.5 |            |
| ➤ 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.  | –                |            |
| ➤ Use plastic sheeting and moisture-resistant adhesive tape to seal off the following openings: <ul style="list-style-type: none"> <li>■ Engine air inlet</li> <li>■ Compressor air inlet</li> <li>■ Exhaust silencer</li> </ul> | –                |            |
| ➤ Clean the bodywork and treat with preservative.  | –                |            |

| Long-term decommissioning and storage tasks  | See chapter | Confirmed? |
|--|-------------|------------|
| ➤ Feste et skilt på betjeningspanelet med angivelse av utførte tiltak fordi maskinen satt ut av drift. | –           |            |

Tab. 95 "Long-term decommissioning and storage" checklist

- Attach the following notice on the instrument panel showing the decommissioning measures taken.

**Attention!**

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

Date / signature

Tab. 96 Text for the "long-term decommissioned and storage" information notice

- Store in a dry place with even temperature.

## 12.2 Transport

- Precondition Machine switched off and locked off.  
The machine is fully vented, the pressure gauge reads 0 bar.  
Machine is cooled down.  
All compressed air consumers are disconnected.  
All connecting lines and hoses disconnected and removed.  
Any loose or movable parts that may fall when transporting are removed or secured.

### 12.2.1 Safety



Allow transportation only by personnel trained in safely dealing with motor vehicles and the transporting of goods.



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

### 12.2.2 Towing the compressor on the road

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.





1. **WARNING!**  
Risk of accident when towing the unilluminated machine on public roads.  
Death or severe injury possible due to accidents with unilluminated trailer.
  - Do not tow machines without illumination on public roads.
2. Observe the safety instructions in chapter 3.5.2 "Safe machine operation".

### 12.2.2.1 Preparing for transport

#### Stowing payload:

Do not exceed the permissible loading (overall weight, coupling load, axle load).  
Observe national traffic laws. If additional loading is not permitted, the additional load must be stowed in 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 (if available) and secure carefully.

#### Additional precautions for a very dirty machine:

The machine can become very dirty after prolonged use on a construction site. A machine in such condition is not suitable for towing on public roads.

1. Clean the machine, particularly the chassis, running gear, the lights and direction indicators.
2. Check the function of wheels, brakes, lights and signalling equipment.  
Functional defects must be repaired prior to transport.

#### Additional precautions for conditions of snow and ice:

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



1. **CAUTION!**  
Risk of accidents caused by snow and/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 coated in snow or ice.
2. Remove any snow or ice before towing.

#### Perform the following tasks prior to transporting the machine:

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 access doors.

#### Option sa Adjust the tow bar to suit the height of the towing vehicle hitch:

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

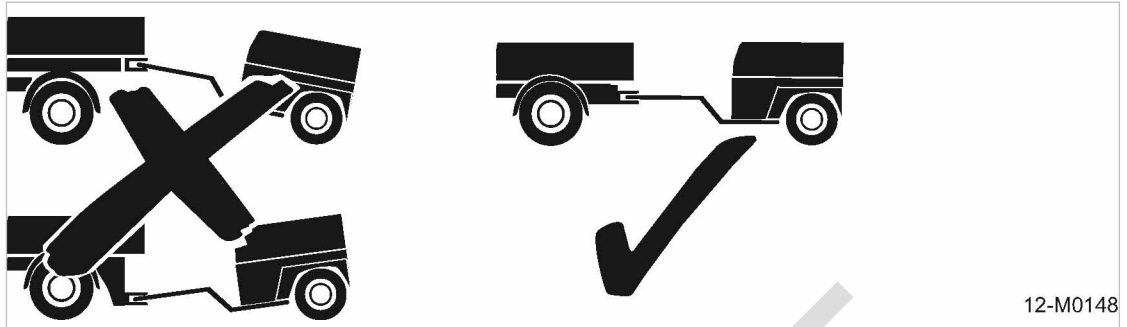


Fig. 86 Towing alignment



1. **WARNING!**

Danger from problematic driving dynamics!  
The permissible loading range may be exceeded or undercut.  
Personal injury may result from towing.  
Damage to the machine and/or towing vehicle is possible.

- 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 drawbar height to suit the height of the hitch on the towing vehicle.

Further information See chapter 6.4.1 for tow bar height adjustment.

12.2.2.2 Coupling-up

Option sa, sd Coupling machine with ball coupling (EC version):

To hitch up the machine, lower the open coupling onto the ball of the towing vehicle so that it clicks into place. The indicator of the safety control display will jump to the green zone of the marking identified with a "+", if the ball hitch has engaged correctly.

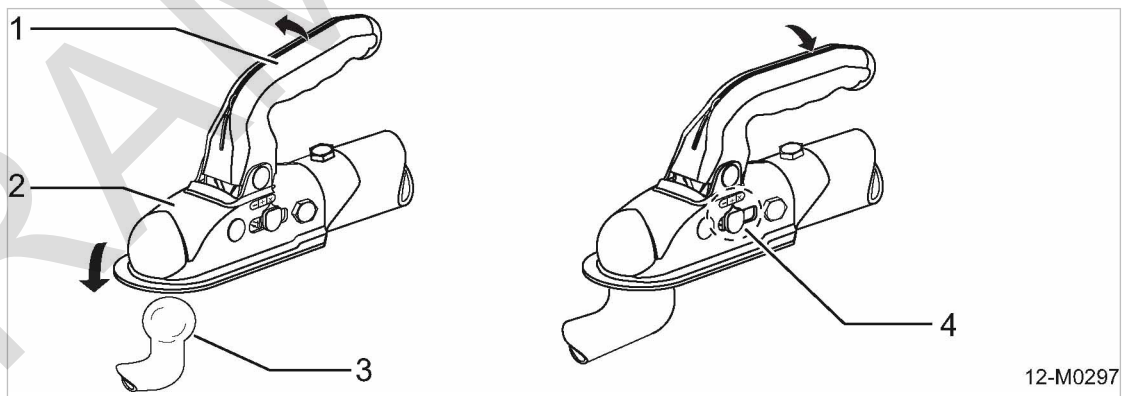


Fig. 87 Ball coupling (KNOTT-EU)

- |                   |                             |
|-------------------|-----------------------------|
| ① Coupling handle | ③ Towing vehicle ball hitch |
| ② Ball coupling   | ④ Safety indicator          |



1. **NOTICE!**

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 the handle of the ball coupling upwards and turn forwards.  
The ball coupling is opened and will remain in the opened position and the indicator of the safety control display is in the red "X" area.



3. **WARNING!**  
Risk of accident due to unhitching of the ball coupling during transport!  
If the coupling is not fully closed the compressor can become uncoupled from the towing vehicle and cause an accident.

➤ Check correct coupling.

4. Place the open coupling over the towing vehicle ball hitch.  
The weight on the coupling will cause it to audibly latch. The coupling locks automatically.

5. Push the handle down to be certain of locking.  
The coupling is fully locked when the handle is fully down and can be pushed no further.

6. Check correct coupling.
  - Check that the coupling handle cannot be pushed further down.
  - Check whether the indicator of the safety control display is in the green "+" zone.



The indicator of the safety control display is in the red zone ("X" or "-" position).  
The coupling is open or not fully closed.

- Lift the handle and uncouple.
- Place the coupling back onto the vehicle ball hitch of the towed vehicle and forcibly push down at the coupling handle until it audibly latches.

**Option sa, sd Checking the ball coupling wear indicator (EU version):**

The ball hitch is equipped with a safety control display.

The safety control display indicates:

- Wear on the ball hitch.
- Wear on the coupling.
- Open ball hitch.

Option sa, sd

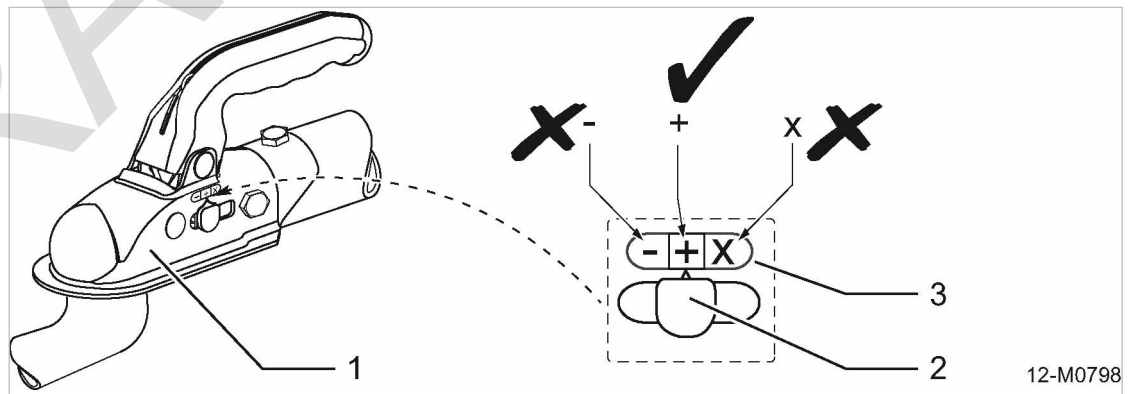


Fig. 88 Safety control display ball hitch KNOTT-EU

- |   |                  |   |                                    |
|---|------------------|---|------------------------------------|
| ① | Ball coupling    | + | Green zone (OK)                    |
| ② | Pointer          | - | Red zone (wear tolerance exceeded) |
| ③ | Safety indicator | X | Red zone (ball hitch open)         |



1. **WARNING!**  
Danger of accident from worn coupling!  
The machine may detach from the towing vehicle.
  - Do not tow the machine.
  - Have the ball coupling and ball hitch checked.
  - Worn parts must be replaced.
2. Hitch the machine to the towing vehicle.
3. Read and interpret the safety control display as follows:

| Safety indicator       | Meaning  |
|------------------------|--|
| Green zone showing (+) | <ul style="list-style-type: none"> <li>■ Coupling in new condition.</li> <li>■ Towing vehicle ball hitch wear within acceptable limits.</li> <li>➤ No action necessary.</li> </ul>   |
| Red zone (-) showing   | <ul style="list-style-type: none"> <li>■ Ball hitch wear at acceptable limit, ball coupling unworn.</li> <li>■ Ball hitch in new condition; ball coupling showing increased wear.</li> <li>■ Both ball and coupling showing increased wear.</li> <li>■ Ball coupling damaged.</li> <li>➤ Have the ball coupling and ball hitch checked by a specialist workshop.</li> <li>➤ Worn parts must be replaced.</li> <li>■ Ball hitch not properly latched on coupling ball.</li> <li>➤ Reposition ball hitch on coupling ball until it audibly latches.</li> </ul> |
| Red zone showing (X)   | <ul style="list-style-type: none"> <li>■ Ball hitch not closed, coupling rests only loosely on the coupling ball.</li> <li>➤ Reposition ball hitch on coupling ball until it audibly latches.</li> </ul>   |

Tab. 97 Safety control display ball hitch

**Option sh Coupling machine with ball coupling (US version):**

To couple up the compressor, lower the open coupling onto the ball hitch of the towing vehicle so that it clicks into place.

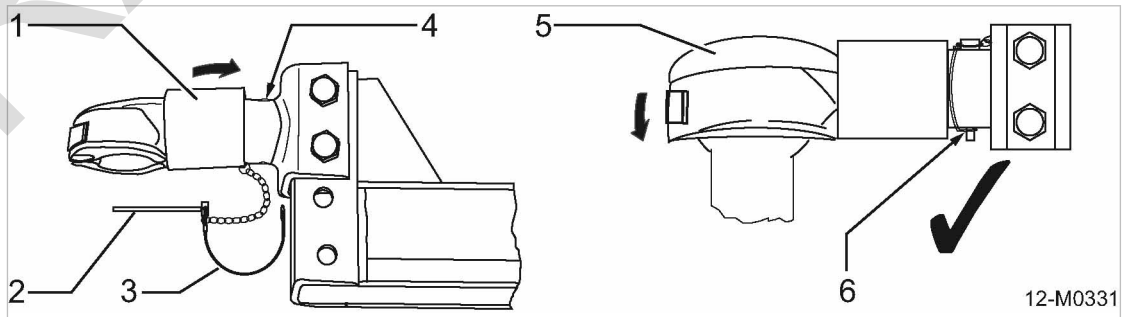


Fig. 89 Ball coupling (USA version):

- |                   |                                    |
|-------------------|------------------------------------|
| ① Spreader sleeve | ④ Fixing hole for the security pin |
| ② Safety pin      | ⑤ Coupling head                    |
| ③ Clip            | ⑥ Ball coupling properly secured   |



1. **NOTICE!**  
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. Release the clip (3), swivel to one side and pull out the safety pin (2).
3. **WARNING!**  
Risk of accident due to unhitching of the ball coupling during transport! If the coupling is not fully closed the compressor can become uncoupled from the towing vehicle and cause an accident.
  - Check correct coupling.
  - Check correct location of the security pin.
4. Lower the ball coupling onto the ball hitch of the towing vehicle and pull back the spreader sleeve (1) to its end stop.  
The ball coupling opens and the coupling head (5) encloses the ball hitch of the towed vehicle.
5. Lift the ball coupling off the ball hitch and carefully allow the spreader sleeve (1) to snap back to its initial position.
6. Replace the safety pin (2) in the fixing holes in the ball coupling and secure with the clip (3).

### 12.2.2.3 Ensure transport readiness of the coupled machine.

#### Option sa Prepare the machine with adjustable chassis for transport:

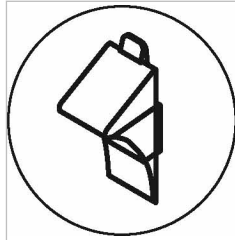
1. Check that the tow bar is adjusted to the correct height. (see also chapter 6.4.1)  
Check if:
  - The teeth in the tow bar height adjusting joints are fully engaged.
  - The locking levers are tightened
  - the safety pins are properly inserted
2. Wind the jockey wheel to its uppermost position.
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 sd Prepare the machine with fixed chassis with parking brake) for transport:

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

Option sh Prepare the machine with fixed chassis (without parking brake) for transport:

Option sh



12-M0393

Fig. 90 Safety sign - 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.

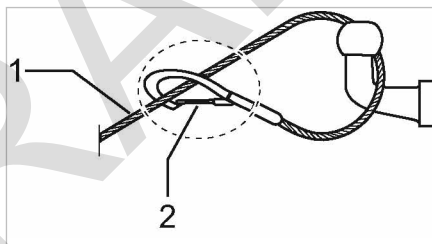
2. Pull up the prop and secure in the upper position.
3. Attach the safety chain to the towing vehicle.
4. Check that the wheels are securely fitted and the tyres are in good condition.
5. Check the tyre pressures.
6. Attach the lighting and indicator systems and carry out a function check.
7. Remove 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.

**Ensure 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).



12-M0149

Fig. 91 Breakaway cable attachment

- ① Breakaway cable
- ② Connection (spring clip)



1. **NOTICE!**

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

### 12.2.3 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.



#### 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 raised completely, 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.

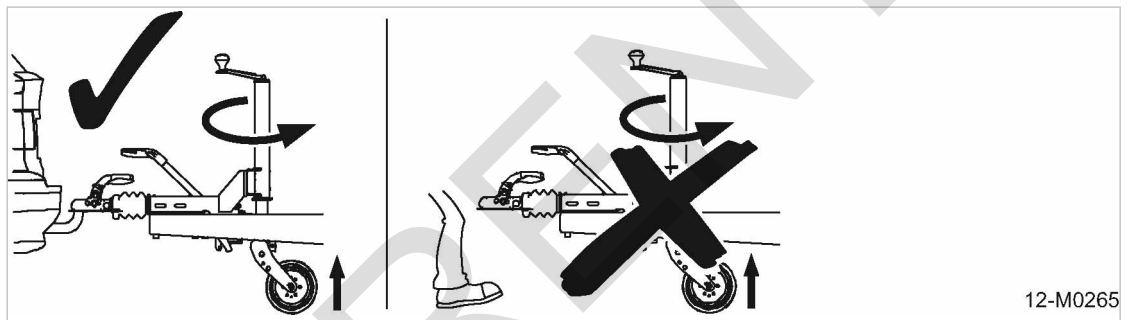


Fig. 92 Injury can occur if the towbar is unsupported and allowed to fall.

#### Option sa, sd Parking the machine (EC version with parking brake):

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

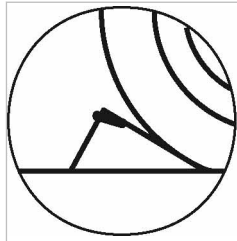
1. Disconnect the lighting and signalling cable.
2. Pull on the parking brake.
3. Detach the breakaway cable.
4. Wind down the jockey wheel.
5. Place chocks under the wheels.
6. Pull up the parking brake to the stop.  
The gas spring holds the brake under tension.
7. Uncouple the compressor from the towing vehicle:
  - Pull the handle of the ball coupling upwards and turn forwards.  
The ball coupling will remain in the opened position and the indicator if the safety control display is in the red "X" area.
  - 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 sh Parking the machine (USA version, without parking brake):

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



12-M0392

Fig. 93 Safety sign - secure the chocks


**1. WARNING!**

Machine without parking brake.

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

- Securely chock the machine before uncoupling.
- As a general rule, the machine should always be blocked with chocks when it is not being moved.
- The machine should not be manoeuvred by hand.

2. Lower and lock the prop stand.

3. Place chocks under the wheels.

4. Remove the safety chain from the towing vehicle.

5. Dismantle the lighting and signaling system.

6. Uncouple the compressor from the towing vehicle (see Fig 89).

- Release the clip (3), swivel to one side and pull out the safety pin (2).
- Pull back the spreader sleeve (1).
- Lift the ball coupling off the towing vehicle ball hitch and carefully allow the spreader sleeve to snap back to its original position.
- Replace the safety pin (4) in the fixing holes in the ball coupling and secure with the clip.

### 12.2.4 Transport with a crane

#### Additional precautions for conditions of snow and ice:

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

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

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

➤ Perform the following tasks in snow and ice conditions:

- Remove any snow and ice from the machine before lifting by a crane.
- Make sure the lifting eye cover plate is freely accessible and can be opened.

#### Perform the following tasks prior to moving the machine by crane:

A lifting eye is provided for transporting with a crane. The lifting eye is located beneath a lift-up cover in the centre of the canopy.

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. **NOTICE!**  
Incorrect setting down can damage the machine.  
Machine components, particularly the chassis, can be damaged by incorrectly setting down.
  - Set the machine down carefully.
  - Do not set down unevenly.
2. Set the machine down slowly and carefully.

**12.2.5 Option sc  
Transporting with a forklift truck**

Precondition The machine is shut down.  
All connecting lines and hoses disconnected and removed.



- CAUTION**  
Damage to the machine by incorrect lifting with a fork truck.  
The machine may fall or be damaged by the forks.
- Do not use a fork truck to lift towable machines.
  - Only stationary machines with skids may be transported with a fork truck.
  - Pick up the machine only from the side with the forks through the lifting lugs.

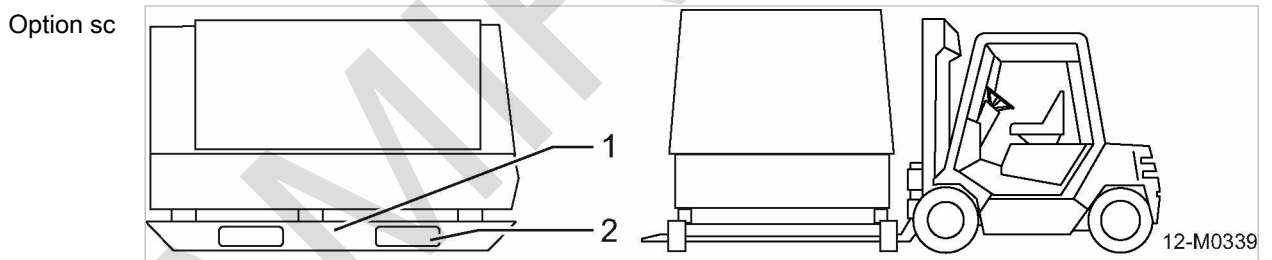


Fig. 94 Transport using a forklift truck

- ① Skids
- ② Lifting lugs

1. Close and lock the access doors or canopy.
2. Position the fork truck to the side of the machine with the forks lined up with the lifting lugs.
3. Drive the forks fully through the lifting lugs as far as possible.  
The forks are fully under the machine.
4. Lift the machine carefully.

**12.2.6 Transporting as a load**

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

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

Material Chocks  
Restraints or timber bunks  
Straps

**Carry out a freight securing:**



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

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

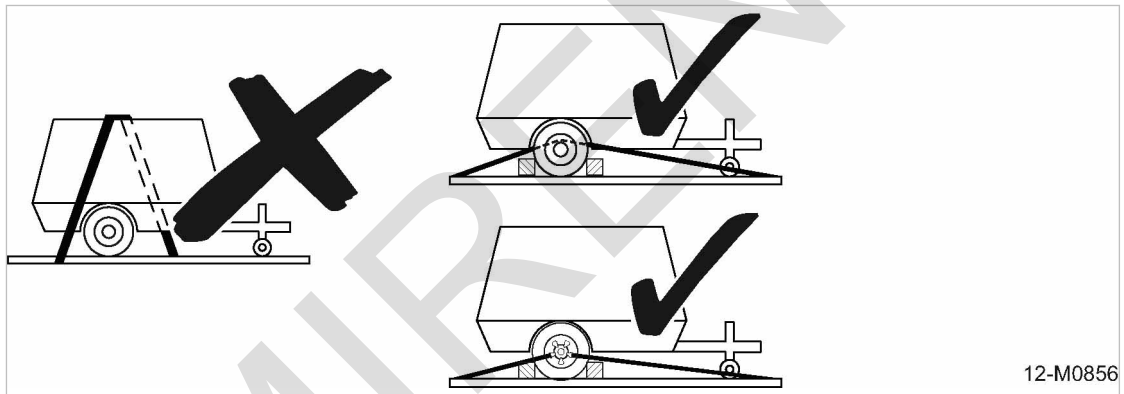


Fig. 95 Load secured by strapping



1. **NOTICE!**  
Vehicle body damage due to guys!  
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 and provides no guarantee for damage arising from incorrect transport or insufficient or incorrect load securing provisions.  
For hire, rental and trade fair plant, any transport safety devices used for the delivery must also be used for the return transport.

**Before shipment as air freight**

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

**1. WARNING!**

Fire and explosion risk arising from operating supplies!  
The machine incorporates an internal combustion engine.

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

**2. All hazardous materials must be removed.**

These include:

- Residues of fuel or fuel vapours
- Lubricating and cooling oils in the engine and compressor unit
- Electrolyte charges in rechargeable batteries.
- Residual quantities of tool oil in the lubricator (Option ec).
- Residual quantities of antifreeze in the frost protector (Option ba)

**12.3 Storage**

Moisture can lead to corrosion, particularly in the engine, aircend and oil separator tank.

Frozen moisture can damage components, valve diaphragms and gaskets.

The following measures also apply to machines not yet commissioned.



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

**NOTICE**

Moisture and frost can damage the machine!

- Prevent ingress of moisture and formation of condensation.
  - Maintain a storage temperature of  $>0$  °C.
- Store the machine in a dry place, free from frost if possible.

**12.4 Disposal**

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

Precondition The machine is decommissioned.

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



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

## 13 Annex

### 13.1 Identification

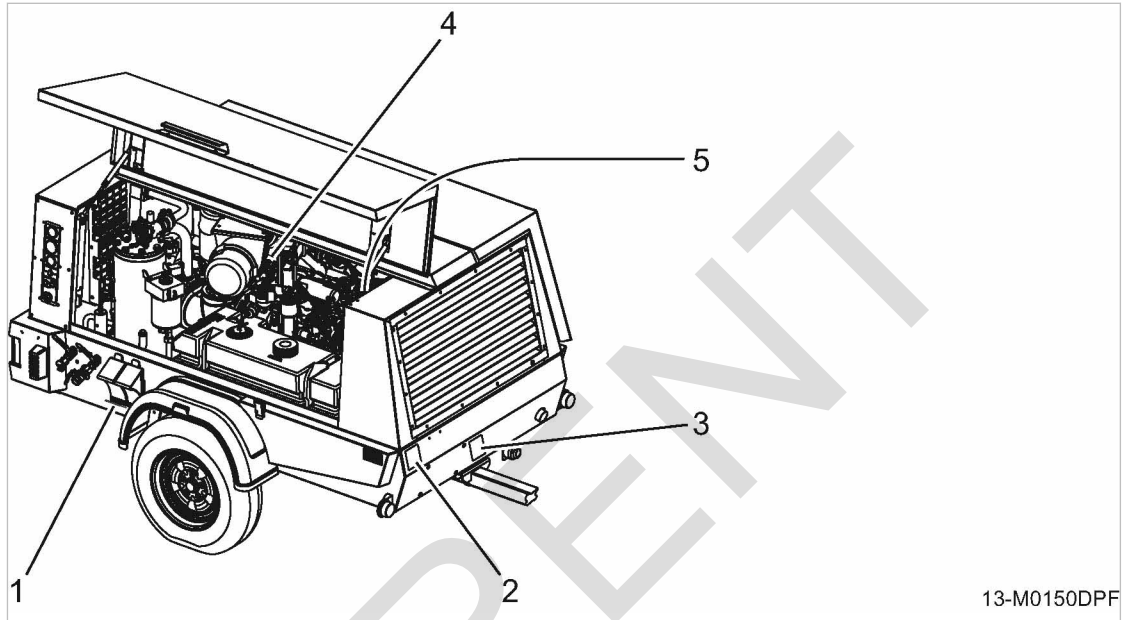
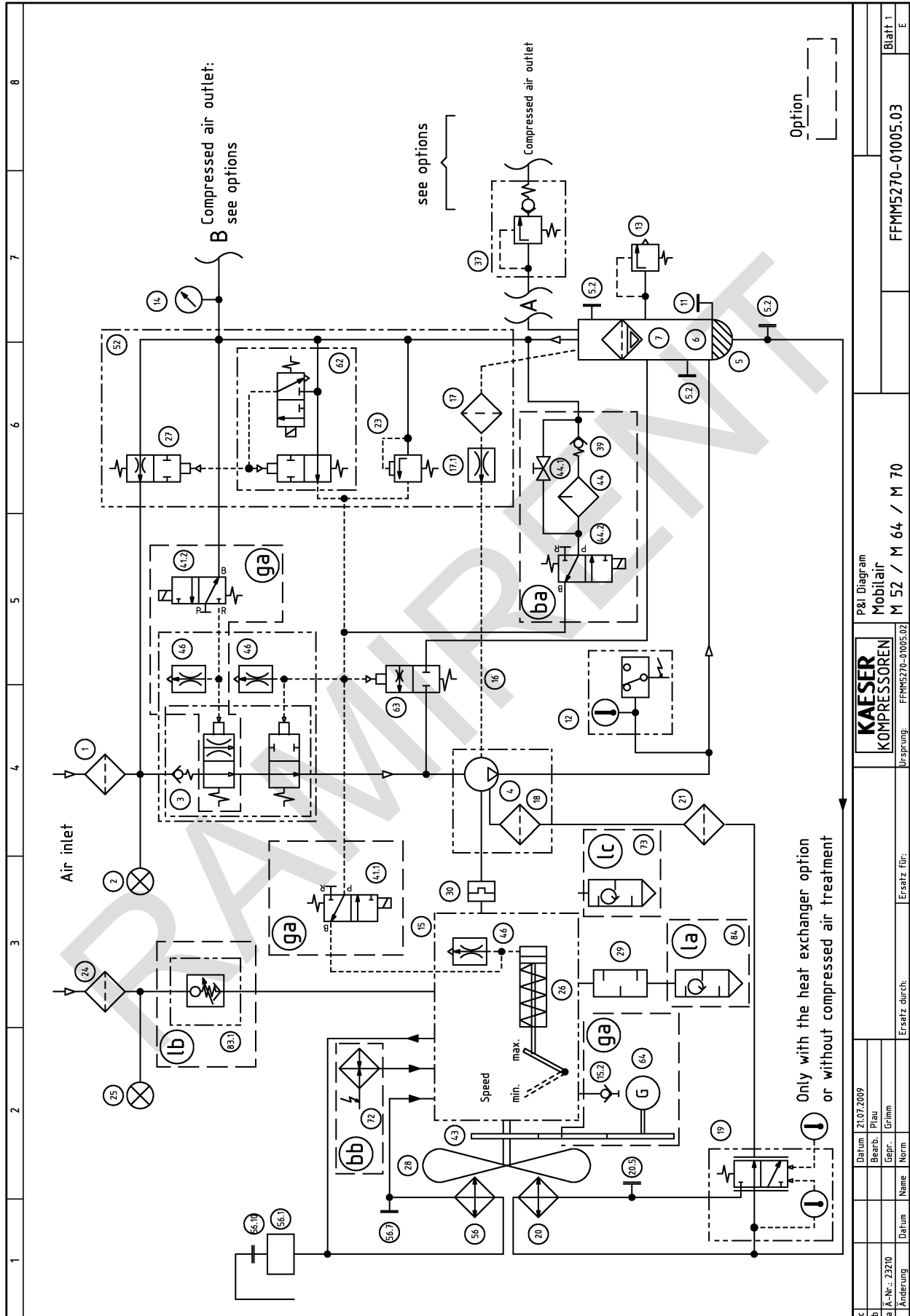


Fig. 96 Identification

- |   |   |
|---|---|
| <p>① VIN *) (stamped in the bodywork)<br/>* Vehicle identity number</p> <p>② Machine nameplate with serial number</p> <p>③ Combined label for coupling loading and built-in options</p> | <p>④ Engine nameplate with serial number</p> <p>⑤ Option Ic only:<br/>Inspection label for the diesel particle filter (on fan casing)</p> |
|---|---|

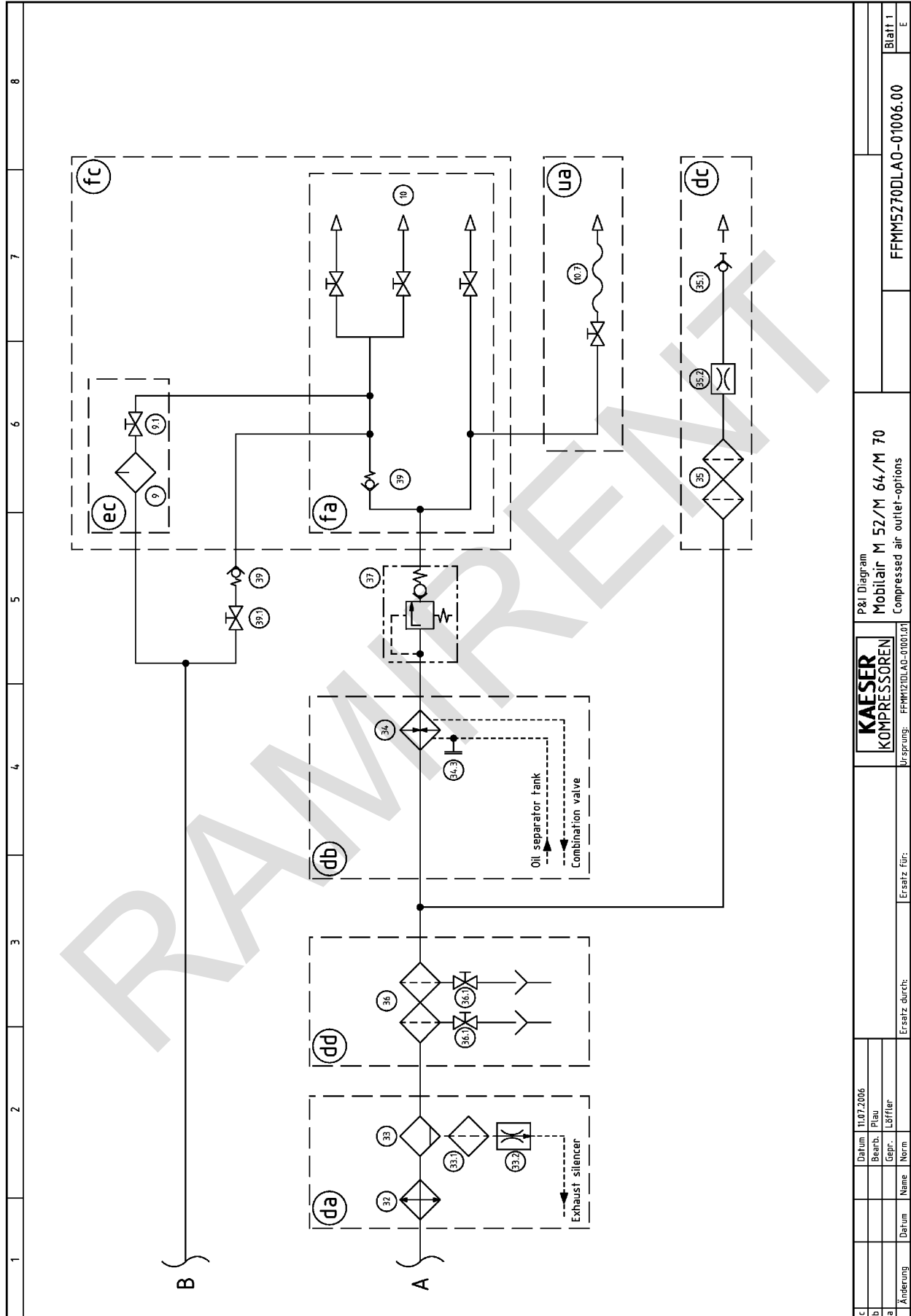
### 13.2 Pipeline and instrument flow diagram (P+I diagram)



|                   |  |               |  |                  |  |         |  |   |  |
|-------------------|--|---------------|--|------------------|--|---------|--|---|--|
| Datum: 21.07.2009 |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Bearb.: Plau      |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Dep.: Gfint       |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Name: Gfint       |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Norm:             |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Anderung:         |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Datum: 21.07.2009 |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Bearb.: Plau      |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Dep.: Gfint       |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Name: Gfint       |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Norm:             |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | E |  |
| Anderung:         |  | Ersatz durch: |  | FFM5270-01005.03 |  | Blatt 1 |  | 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                                     |   |   |   |   |   |   |
| 5.2   | Screw plug   |   |   |   |   |   |   |
| 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  | Hose coupling - Oil drain                              |   |   |   |   |   |   |
| 16    | Oil return line  |   |   |   |   |   |   |
| 17    | Dirt trap  |   |   |   |   |   |   |
| 17.1  | Nozzle   |   |   |   |   |   |   |
| 18    | Strainer   |   |   |   |   |   |   |
| 19    | Combination valve - Oil temperature controller         |   |   |   |   |   |   |
| 20    | Oil cooler   |   |   |   |   |   |   |
| 20.5  | Screw plug - Oil drain                                 |   |   |   |   |   |   |
| 21    | Oil filter   |   |   |   |   |   |   |
| 23    | Proportional controller                                |   |   |   |   |   |   |
| 24    | Motor - Air filter                                     |   |   |   |   |   |   |
| 25    | Filter maintenance indicator, Motor - Air filter       |   |   |   |   |   |   |
| 26    | Engine speed adjusting piston                          |   |   |   |   |   |   |
| 27    | Venting valve  |   |   |   |   |   |   |
| 28    | Fan  |   |   |   |   |   |   |
| 29    | Exhaust silencer                                       |   |   |   |   |   |   |
| 30    | Coupling   |   |   |   |   |   |   |
| 37    | Minimum pressure / check valve (without air treatment) |   |   |   |   |   |   |
| 39    | Check valve  |   |   |   |   |   |   |
| 41.1  | Solenoid valve - Full load control                     |   |   |   |   |   |   |
| 41.2  | Solenoid valve - Inlet control                         |   |   |   |   |   |   |
| 43    | V-belt   |   |   |   |   |   |   |
| 44    | Defroster  |   |   |   |   |   |   |
| 44.1  | Shut-off valve   |   |   |   |   |   |   |
| 44.2  | Solenoid valve   |   |   |   |   |   |   |
| 46    | Nozzle (Secondary end Proportional controller)         |   |   |   |   |   |   |
| 52    | Control valve  |   |   |   |   |   |   |
| 56    | Water cooler   |   |   |   |   |   |   |
| 56.1  | Cooling water expansion tank                           |   |   |   |   |   |   |
| 56.7  | Screw plug - Water drain                               |   |   |   |   |   |   |
| 56.10 | Water filling port with plug and pressure relief valve |   |   |   |   |   |   |
| 62    | Combined control valve                                 |   |   |   |   |   |   |
| 63    | Control valve (Air circulation valve)                  |   |   |   |   |   |   |
| 64    | Generator  |   |   |   |   |   |   |
| 72    | Fail-safe heat exchanger                               |   |   |   |   |   |   |
| 73    | Exhaust silencer with particulate filter               |   |   |   |   |   |   |
| 83.1  | Engine air intake shut-off valve (automatic shutoff)   |   |   |   |   |   |   |
| 84    | Spark arrestor   |   |   |   |   |   |   |
|       | Option   |   |   |   |   |   |   |
|       | ba   |   |   |   |   |   |   |
|       | bb   |   |   |   |   |   |   |
|       | ga   |   |   |   |   |   |   |
|       | la   |   |   |   |   |   |   |
|       | lb   |   |   |   |   |   |   |
|       | lc   |   |   |   |   |   |   |

|                   |  |                    |  |
|-------------------|--|--------------------|--|
| Kaeser logo       |  | P&I Diagram legend |  |
| Mobilair          |  | M 52 / M 64 / M 70 |  |
| FFMM5270-01005.03 |  | Blatt 2            |  |
| E                 |  | E                  |  |



|          |  |        |            |                               |               |                       |  |
|----------|--|--------|------------|-------------------------------|---------------|-----------------------|--|
| c        |  | Datum  | 11.07.2006 | P&I Diagram                   |               | FFMM5270DLA0-01001.01 |  |
| b        |  | Bearb. | Plau       | Mobilair M 52/M 64/M 70       |               | FFMM5270DLA0-01006.00 |  |
| a        |  | Gepr.  | Löffler    | Compressed air outlet-options |               | Blatt I               |  |
| Änderung |  | Datum  | Name       | Norm                          | Ersatz durch: | E                     |  |

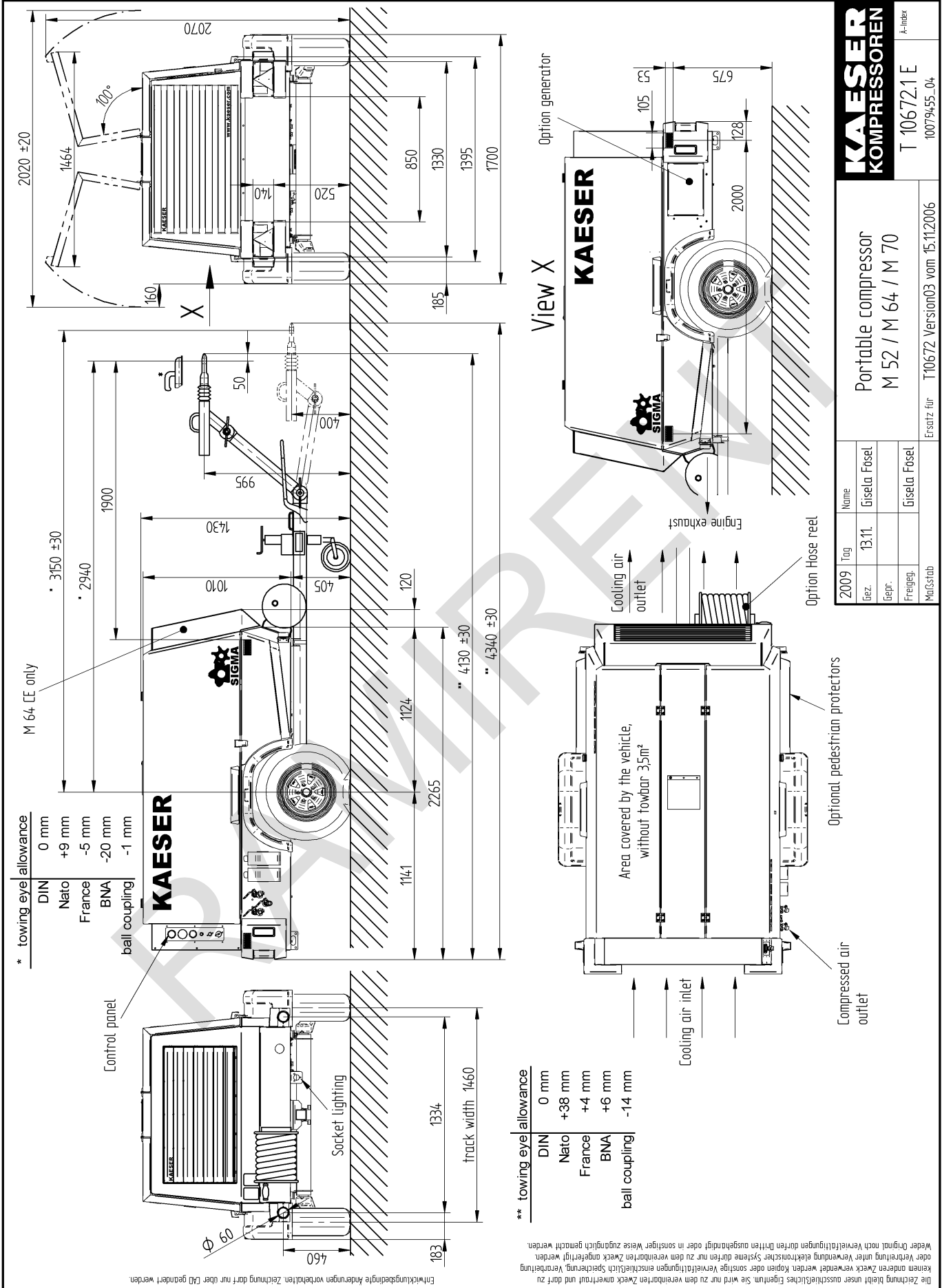
|  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
|--|----------------------|--------------------|----------------------|---|-------------|-------------------------------|-------------|---|--|---|--|-----------|----------------------|--|--|--|--|--------------------|------------|-------------------------|--|-------------------------------|--|---|--|---|--|-----------|----------------------|---|--|--|--|--------------------|--|-------------------------|--|-------------------------------|--|---|--|----------------------|--|---------|---|
| 1  | 2                    | 3                  | 4                    | 5                                       | 6           | 7                             | 8           |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 9 Tool lubricator  |                      |                    |                      | Option                                  |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 9.1 Shut-off valve   |                      |                    |                      | da Aftercooler + Centrifugal separator  |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 10 Compressed air distributor  |                      |                    |                      | db Heat exchanger                       |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 10.7 Hose line   |                      |                    |                      | dc Breathing air filter                 |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 32 Air cooler  |                      |                    |                      | dd Filter combination                   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 33 Centrifugal separator   |                      |                    |                      | ec tool lubricator, with option fc      |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 33.1 Dirt trap   |                      |                    |                      | fa Direct air flow                      |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 33.2 Nozzle  |                      |                    |                      | fc Air flow split downstream of options |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 34 Heat exchanger  |                      |                    |                      | ua Hose reel                            |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 34.3 Shut-off valve - Oil drain  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 35 Breathing air filter  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 35.1 Hose coupling   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 35.2 Nozzle  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 36 Filter combination  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 36.1 Shut-off valve for condensate drain   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 37 Minimum pressure / check valve (with air treatment)   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 39 Check valve   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| 39.1 Shut-off valve  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| <b>RAMIRENT</b>  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| <table border="1"> <tr> <td>Änderung</td> <td>Datum</td> <td>Name</td> <td>Norm</td> <td>Ersatz durch:</td> <td>Ersatz für:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> |                      | Änderung           | Datum                | Name                                    | Norm        | Ersatz durch:                 | Ersatz für: |   |  |   |  |           |                      | <table border="1"> <tr> <td colspan="2"> <table border="1"> <tr> <td>Datum</td> <td>11.07.2006</td> </tr> <tr> <td>Bearb. Plau</td> <td></td> </tr> <tr> <td>Gepr. LbFler</td> <td></td> </tr> </table> </td> <td colspan="2"> <table border="1"> <tr> <td colspan="2"> <table border="1"> <tr> <td>Ursprung:</td> <td>FFM5270DLA0-01001.01</td> </tr> </table> </td> </tr> </table> </td> <td colspan="2"> <table border="1"> <tr> <td colspan="2"> <table border="1"> <tr> <td>P&amp;I Diagram legend</td> <td></td> </tr> <tr> <td>Mobilair M 52/M 64/M 70</td> <td></td> </tr> <tr> <td>Compressed air outlet-options</td> <td></td> </tr> </table> </td> <td colspan="2"> <table border="1"> <tr> <td colspan="2">FFM5270DLA0-01006.00</td> </tr> <tr> <td>Blatt 2</td> <td>E</td> </tr> </table> </td> </tr> </table> </td> </tr> </table> |  | <table border="1"> <tr> <td>Datum</td> <td>11.07.2006</td> </tr> <tr> <td>Bearb. Plau</td> <td></td> </tr> <tr> <td>Gepr. LbFler</td> <td></td> </tr> </table>                                     |  | Datum              | 11.07.2006 | Bearb. Plau             |  | Gepr. LbFler                  |  | <table border="1"> <tr> <td colspan="2"> <table border="1"> <tr> <td>Ursprung:</td> <td>FFM5270DLA0-01001.01</td> </tr> </table> </td> </tr> </table> |  | <table border="1"> <tr> <td>Ursprung:</td> <td>FFM5270DLA0-01001.01</td> </tr> </table> |  | Ursprung: | FFM5270DLA0-01001.01 | <table border="1"> <tr> <td colspan="2"> <table border="1"> <tr> <td>P&amp;I Diagram legend</td> <td></td> </tr> <tr> <td>Mobilair M 52/M 64/M 70</td> <td></td> </tr> <tr> <td>Compressed air outlet-options</td> <td></td> </tr> </table> </td> <td colspan="2"> <table border="1"> <tr> <td colspan="2">FFM5270DLA0-01006.00</td> </tr> <tr> <td>Blatt 2</td> <td>E</td> </tr> </table> </td> </tr> </table> |  | <table border="1"> <tr> <td>P&amp;I Diagram legend</td> <td></td> </tr> <tr> <td>Mobilair M 52/M 64/M 70</td> <td></td> </tr> <tr> <td>Compressed air outlet-options</td> <td></td> </tr> </table> |  | P&I Diagram legend |  | Mobilair M 52/M 64/M 70 |  | Compressed air outlet-options |  | <table border="1"> <tr> <td colspan="2">FFM5270DLA0-01006.00</td> </tr> <tr> <td>Blatt 2</td> <td>E</td> </tr> </table> |  | FFM5270DLA0-01006.00 |  | Blatt 2 | E |
| Änderung   | Datum                | Name               | Norm                 | Ersatz durch:                           | Ersatz für: |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
|  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
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| Datum  | 11.07.2006           |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| Bearb. Plau  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| Gepr. LbFler   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
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| Ursprung:  | FFM5270DLA0-01001.01 |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| <table border="1"> <tr> <td>P&amp;I Diagram legend</td> <td></td> </tr> <tr> <td>Mobilair M 52/M 64/M 70</td> <td></td> </tr> <tr> <td>Compressed air outlet-options</td> <td></td> </tr> </table>                     |                      | P&I Diagram legend |                      | Mobilair M 52/M 64/M 70                 |             | Compressed air outlet-options |             | <table border="1"> <tr> <td colspan="2">FFM5270DLA0-01006.00</td> </tr> <tr> <td>Blatt 2</td> <td>E</td> </tr> </table>                               |  | FFM5270DLA0-01006.00  |  | Blatt 2   | E                    |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| P&I Diagram legend   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| Mobilair M 52/M 64/M 70  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| Compressed air outlet-options  |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| FFM5270DLA0-01006.00   |                      |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |
| Blatt 2  | E                    |                    |                      |   |             |                               |             |   |  |   |  |           |                      |  |  |  |  |                    |            |                         |  |                               |  |   |  |   |  |           |                      |   |  |  |  |                    |  |                         |  |                               |  |   |  |                      |  |         |   |



### 13.3 Dimensional drawings

#### 13.3.1 Option sa Dimensional drawing - chassis with height-adjustable tow bar

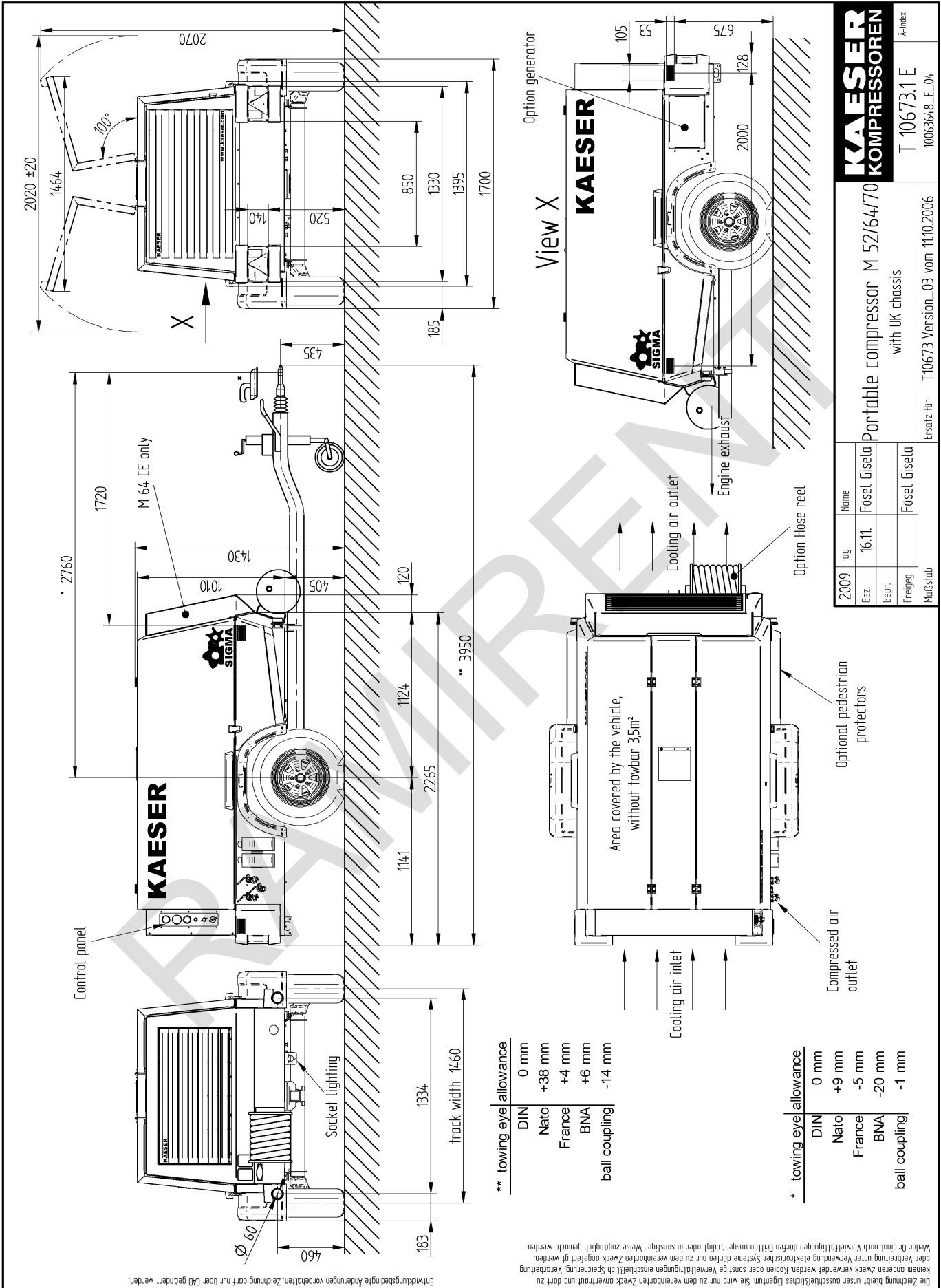
RAMIRENT



|                               |              |  |  |
|-------------------------------|--------------|--|--|
| <b>KAESER</b><br>KOMPRESSOREN |              | A-Index<br>T 10672.1 E<br>100794.55_04     |  |
| 2009                          |              | Ersatz für T10672 Version03 vom 15.11.2006 |  |
| Tag                           | Name         | Portable compressor<br>M 52 / M 64 / M 70  |  |
| 13.11                         | Gisela Fösel |  |  |
| Bepr.                         | Gisela Fösel |  |  |
| Freigegeben                   |              |  |  |
| Maßstab                       |              |  |  |

13.3.2 Option sd  
Dimensional drawing, chassis with fixed height tow bar

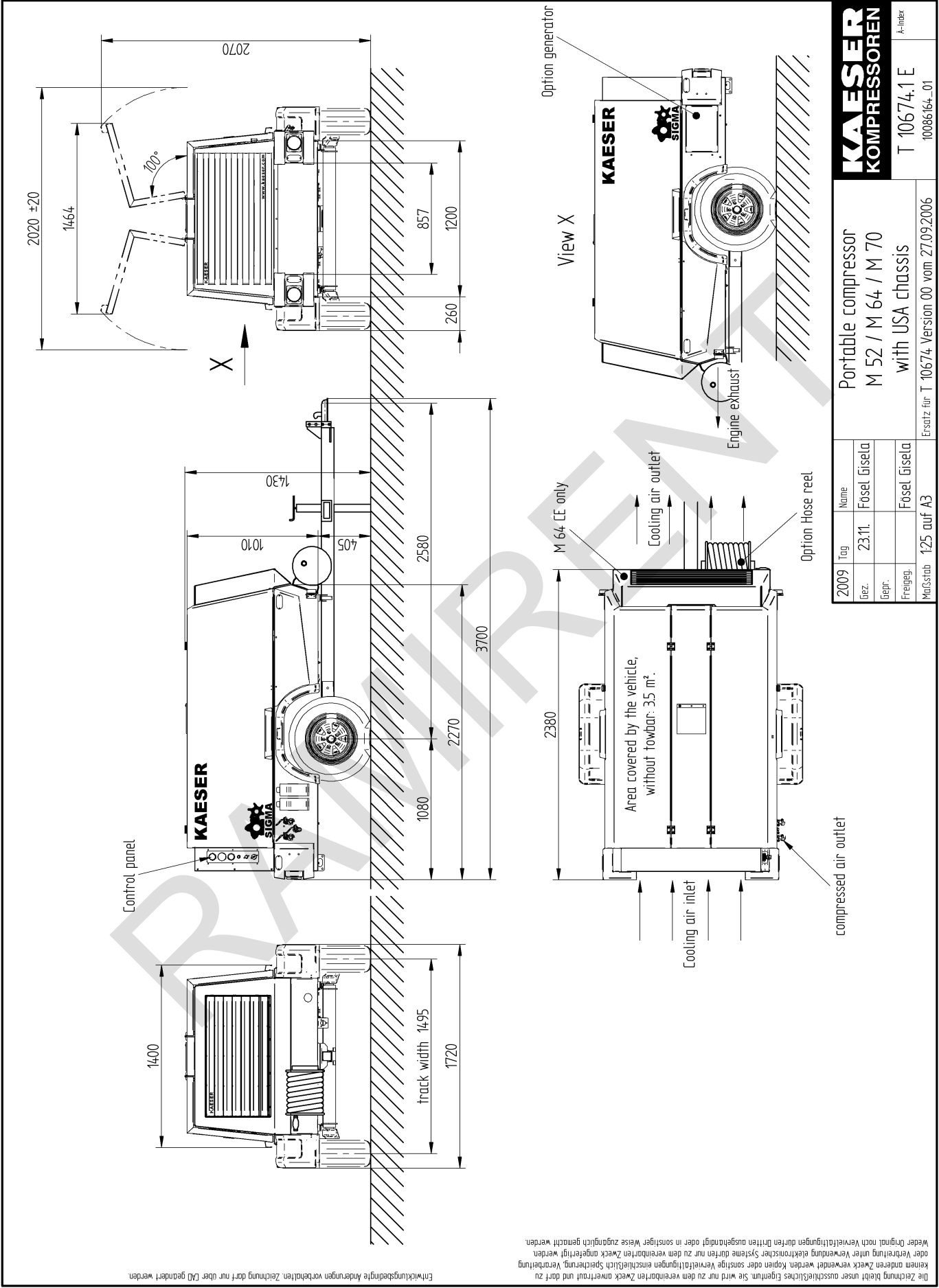
RAMIRENT



|         |          |  |               |                                   |
|---------|----------|--|---------------|-----------------------------------|
| 2009    | Tag      | Name   | Füssel Gisela |                                   |
| 16.11   | Bez.     | Portable compressor M 52/64/70 with UK chassis |               |                                   |
|         | Bepr.    | Füssel Gisela                                  |               |                                   |
|         | Freigez. |  |               |                                   |
| Maßstab |          | Ersatz für                                     |               | T 10673 Version_03 vom 11.10.2006 |
|         |          | A-Index  |               | T 10673.1 E                       |
|         |          |  |               | 10063648_E_04                     |

13.3.3 Option sh  
Dimensional drawing, chassis without parking brake

RAMIRENT



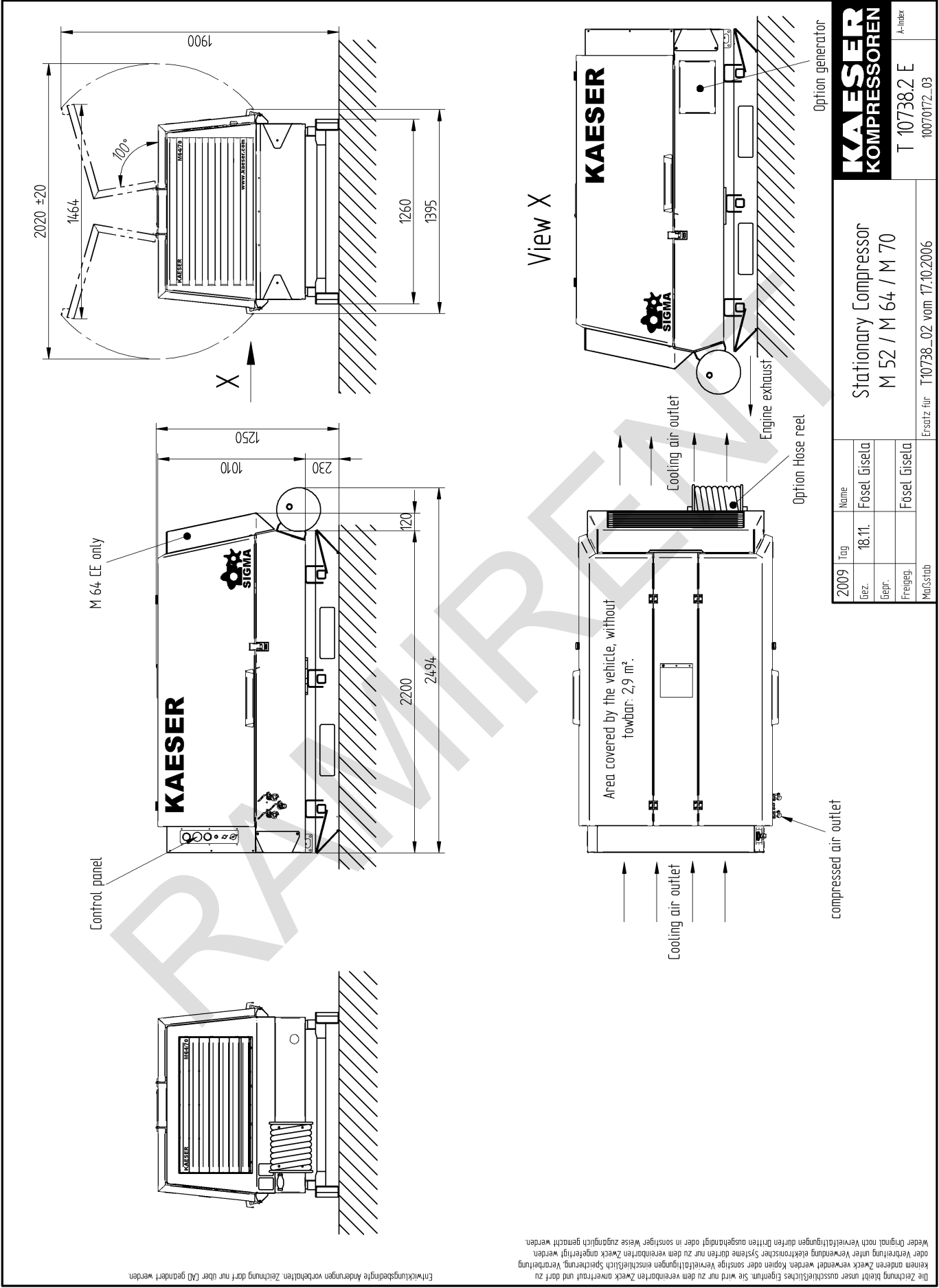
Entwicklungsbedingte Änderungen vorbehalten. Zeichnung darf nur über CAD geändert werden.

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, Verarbeitung oder Verbreitung unter Verwendung elektronischer Systeme dürfen nur zu dem vereinbarten Zweck angefertigt werden. Weiter Original noch Vervielfältigungen dürfen Dritten ausgehändigt oder in sonstiger Weise zugänglich gemacht werden.

|                     |       |             |                        |  |  |
|---------------------|-------|-------------|------------------------|--|--|
| 2009                |       | Name        |                        | Fösel Gisela                                 |  |
| Tag                 | 23.11 | Bepr.       |                        | Freigeig.                                    |  |
| Maßstab             |       | 1:25 auf A3 |                        | Ersatz für T 10674 Version 00 vom 27.09.2006 |  |
| Portable compressor |       |             | M 52 / M 64 / M 70     |  |  |
| with USA chassis    |       |             | T 10674.1 E            |  |  |
|                     |       |             | A-Index<br>10086164_01 |  |  |

13.3.4 Option sc  
Dimensional drawings of stationary machine (skids)

RAMIRENT

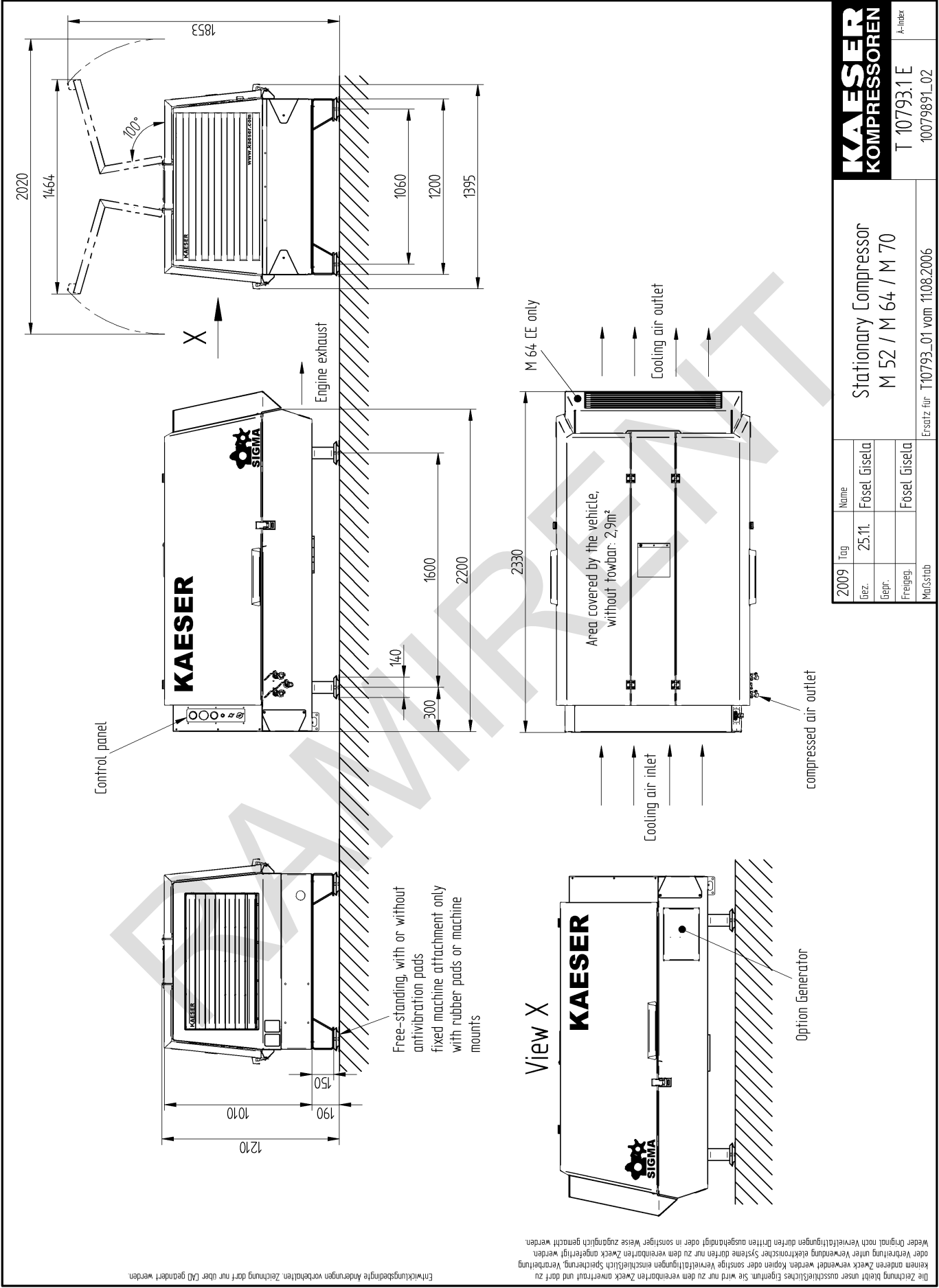


|       |           |              |   |                         |
|-------|-----------|--------------|---|-------------------------|
| 2009  | Tag       | Name         | Stationary Compressor<br>M 52 / M 64 / M 70 |                         |
| 18.11 | Dez.      | Fösel Gisela |   |                         |
|       | Bepr.     |              |   |                         |
|       | Freigeig. | Fösel Gisela |   |                         |
|       | Maßstab   |              | Ersatz für T10738_02 vom 17.10.2006         |                         |
|       |           |              | T 10738.2 E                                 | A-Index<br>1007/0172_03 |



13.3.5 Option si  
Dimensional drawings of stationary machine (base frame)

RAMIRENT



|       |  |               |  |               |  |
|-------|--|---------------|--|---------------|--|
| 2009  |  | Tag           |  | Name          |  |
| 25.11 |  | Fösel Gaisela |  | Fösel Gaisela |  |
|       |  | Bepr.         |  | Fösel Gaisela |  |
|       |  | Freigegeben   |  | Maßstab       |  |

Stationary Compressor  
M 52 / M 64 / M 70

T 10793,1 E  
A-Index  
10079891\_02

Ersatz für T10793\_01 vom 11.08.2006

13.4 Wiring diagrams

13.4.1 Electrical Diagram

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|  |               |            |      |      |                       |   |   |                         |
|--|---------------|------------|------|------|-----------------------|---|---|-------------------------|
| 1  | 2             | 3          | 4    | 5    | 6                     | 7 | 8 |                         |
| <p>Electrical diagrams</p> <p>MOBILAIR</p> <p>M57, M52/M64/M70</p> <p>KUBOTA-Motor</p>   |               |            |      |      |                       |   |   |                         |
| <p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>   |               |            |      |      |                       |   |   |                         |
| <p><b>RAMIRRENT</b></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         | 13.02.2009 | E    |      |                       |   |   | Cover page              |
| b  | Bearb. / Weid |            |      |      |                       |   |   | MOBILAIR M57, M52/64/70 |
| a  | Gepr. / Weid  |            |      |      |                       |   |   | =                       |
| A  | Änderung      | Datum      | Name | Norm | Ersatz durch:         |   |   | +                       |
|  |               |            |      |      | Ersatz für:           |   |   | DFA5764-01071.00        |
|  |               |            |      |      | Kaeser Kompressoren   |   |   | Blatt 1                 |
|  |               |            |      |      | URSPRUNG: AFA01070_01 |   |   | Bl.                     |

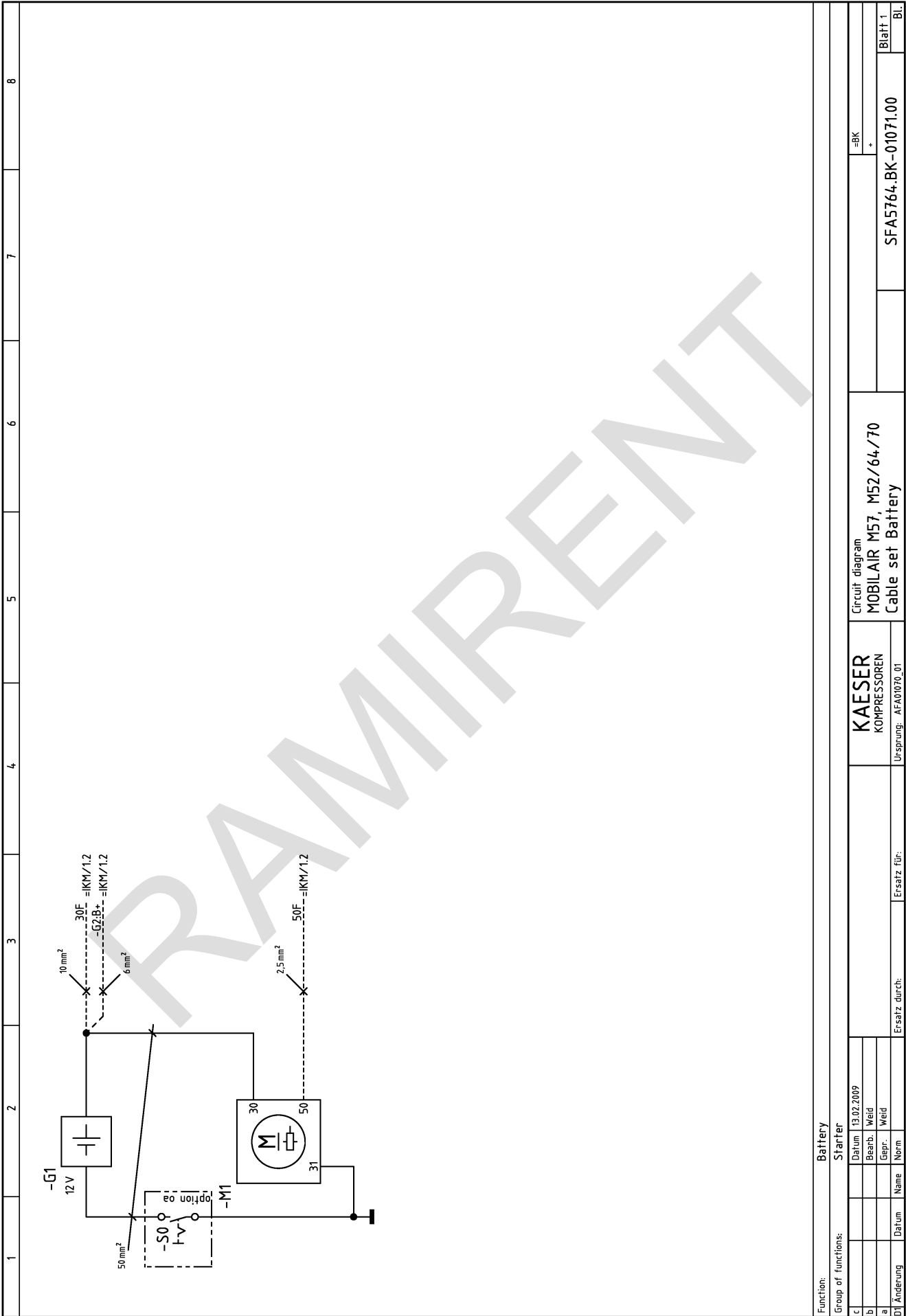
| Lfd. Nr.<br>No. | Benennung<br>Name   | Zeichnungsnummer (Kunde)<br>Drawing No. (customer) | Zeichnungsnummer (Hersteller)<br>Drawing No. (manufacturer) | Blatt<br>Page | Anlagenkennzeichen<br>Unit designation |
|-----------------|---|--|---|---------------|--|
| 1               | Cover page  |  | DFA5764-01071.00  | 1             |  |
| 2               | List of contents  |  | ZFA5764-01071.00  | 1             |  |
| 3               | Block diagram   |  | UFA5764-01071.00  | 1             |  |
| 4               | Circuit diagram<br>Cross-reference<br>Cable set Battery                                 |  | UFA5764-01071.00  | 2             |  |
| 5               | Circuit diagram<br>Compressor - unit<br>Control   |  | SFA5764.BK-01071.00   | 1             | =BK                                    |
| 6               | Circuit diagram<br>Control  |  | SFA5764.IKM-01071.00  | 1             | =IKM                                   |
| 7               | Circuit diagram<br>Control  |  | SFA5764.BT-01071.00   | 1             | =BT                                    |
| 8               | Circuit diagram<br>Cable set Control  |  | SFA5764.BT-01071.00   | 2             | =BT                                    |
| 9               | Circuit diagram<br>Cable set generator<br>low temperature equipment                     |  | SFA5764.IK1-01071.00  | 1             | =IK1                                   |
| 10              | Electrical equipment identification<br>Cable set generator<br>low temperature equipment |  | SFA5764.IK2-01071.00  | 1             | =IK2                                   |
| 11              | Circuit diagram<br>Equipment parts list   |  | SFA5764.IK3-01071.00  | 1             | =IK3                                   |
| 12              | Equipment parts list  |  | GFA5764-01071.00  | 1             |  |

|               |  |                         |  |
|---------------|--|-------------------------|--|
| Kaeser        |  | List of contents        |  |
| KOMPRESSOREN  |  | MOBILAIR M57, M52/64/70 |  |
| Ersatz für:   |  | ZFA5764-01071.00        |  |
| Ersatz durch: |  | =                       |  |
| Ersatz durch: |  | +                       |  |
| Ersatz durch: |  | Blatt 1                 |  |
| Ersatz durch: |  | Bl.                     |  |

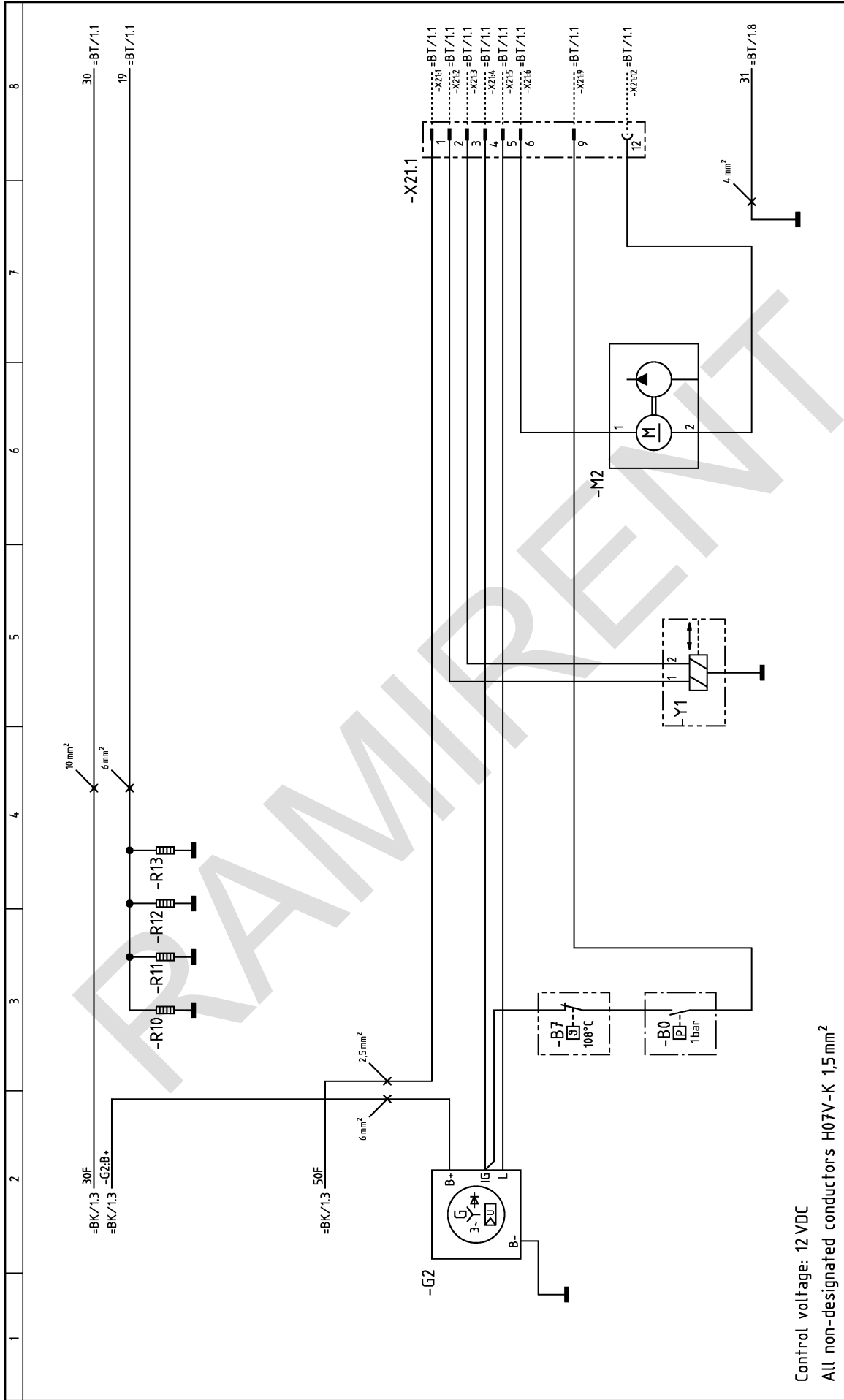
|  |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|
| 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| <p><b>general instructions</b><br/>Control voltage 12VDC<br/>All non-designated conductors H07V-K 1,5 mm<sup>2</sup> black</p> <p>potentials: 15 switched plus + (unit ON)<br/>19 Preheat with glowplug + terminal (Battery)<br/>30 - terminal (Battery), earth<br/>31 Starter-Control<br/>50</p>  |   |   |   |   |   |   |   |
| <p><b>components unit</b></p> <ul style="list-style-type: none"> <li>-G1 Battery</li> <li>-M1 Starter-Motor</li> <li>-B0 Oil pressure switch Motor</li> <li>-B7 Cooling water-Thermostat</li> <li>-G2 Alternator</li> <li>-M2 fuel pump</li> <li>-R10 heating flange</li> <li>-Y1 Fuel shut-off valve</li> <li>-Y3 Valve Full load operation, Venting</li> </ul>   |   |   |   |   |   |   |   |
| <p><b>components Control panel</b></p> <ul style="list-style-type: none"> <li>-B6 Distance temperature gauge Compressor aircend</li> <li>-F1 Control fuse</li> <li>-F3 Fuse Glowplug</li> <li>-F4 Fuse Starter</li> <li>-H0 Charging control lamp</li> <li>-H8 Indicator light Back pressure</li> <li>-K3 Starter - Relay</li> <li>-K4 Relay Safety chain</li> <li>-K9 Relay Full load operation</li> <li>-K26 glow relay</li> <li>-K29 Relay fuel pump</li> <li>-P8 Hour meter</li> <li>-S01 switch "Control ON"</li> <li>-S1 Ignition switch</li> </ul> <p>0 = STOP<br/>1 = ON<br/>2 = Preheat with glowplug<br/>3 = START</p> |   |   |   |   |   |   |   |
| <p><b>model-dependent components</b></p> <ul style="list-style-type: none"> <li>-S0 Battery isolating switch (option oa)</li> <li>-Y5 option generator: Valve FAD limitation</li> <li>-Y6 option generator:</li> <li>Valve for the motor speed</li> <li>full load control</li> <li>-Y10 option: Valve defroster</li> <li>-X42 Plug connection, Generator control box</li> </ul>  |   |   |   |   |   |   |   |
| <p><b>Block diagram general instructions</b></p> <ul style="list-style-type: none"> <li>-S7/-H7 Illuminated pushbutton</li> <li>-X21,-X24, Preselection Full load operation</li> <li>-X25,-X27 Plug connection, Control panel</li> <li>-X23 Terminal strip, Control panel</li> </ul>   |   |   |   |   |   |   |   |
| <p>UFA5764-01071.00</p>  |   |   |   |   |   |   |   |
| <p>Blatt 1</p>   |   |   |   |   |   |   |   |

|   |                      |   |      |                         |   |                        |   |
|---|----------------------|---|------|-------------------------|---|------------------------|---|
| 1   | 2                    | 3   | 4    | 5                       | 6 | 7                      | 8 |
| <p><b>general instructions</b><br/>This document includes a common electrical diagram, consisting of documents:</p> |                      |   |      |                         |   |                        |   |
| module  | Electrical diagrams  | Cross-reference   |      |                         |   |                        |   |
| Cable set: connection Battery   | SFA5764.BK-01071.00  | BK  |      |                         |   |                        |   |
| Cable set: connection Motor   | SFA5764.IKM-01071.00 | IKM   |      |                         |   |                        |   |
| cabbling Control panel  | SFA5764.BT-01071.00  | BT  |      |                         |   |                        |   |
| cabbling unit components 1  | SFA5764.IK1-01071.00 | IK1   |      |                         |   |                        |   |
| cabbling unit components 2  | SFA5764.IK2-01071.00 | IK2   |      |                         |   |                        |   |
| cabbling unit components 3  | SFA5764.IK3-01071.00 | IK3   |      |                         |   |                        |   |
| <p><b>KAESER</b><br/>KOMPRESSOREN</p>   |                      | <p>Block diagram<br/>general instructions<br/>Cross-reference</p> |      | <p>UFA5764-01071.00</p> |   | <p>Blatt 2<br/>Bl.</p> |   |
| c   | Datum                | 13.02.2009  |      |                         |   |                        |   |
| b   | Bearb. / Weid        |   |      |                         |   |                        |   |
| a   | Gepr. / Weid         |   |      |                         |   |                        |   |
| z   | Änderung             | Datum   | Name | Ersatz durch:           |   |                        |   |
|   |                      |   |      | Ersatz für:             |   |                        |   |



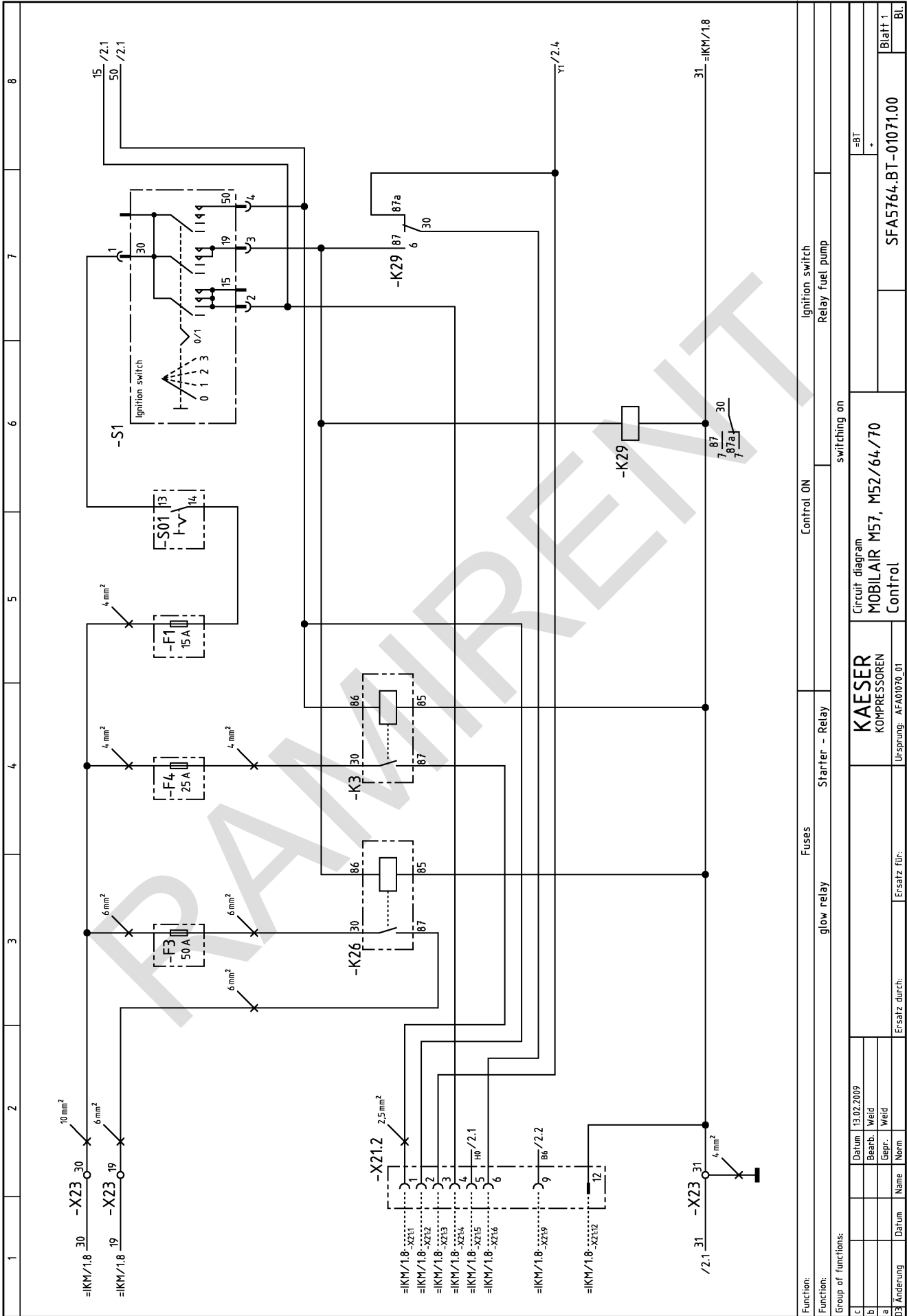
|                       |          |                         |      |
|-----------------------|----------|-------------------------|------|
| Function: Battery     |          | Starter                 |      |
| Group of functions:   |          |                         |      |
| c                     | Datum    | 13.02.2009              |      |
| b                     | Bearb.   | Weld                    |      |
| a                     | Gepr.    | Weld                    |      |
| d                     | Änderung | Datum                   | Name |
| Ersatz durch:         |          | Ersatz für:             |      |
| Kaeser KOMPRESSOREN   |          | MOBILAIR M57, M52/64/70 |      |
| Circuit diagram       |          | Cable set Battery       |      |
| SFA5764.BK-01071.00   |          | -BK +                   |      |
| Blatt 1               |          | Bl. 1                   |      |
| Ursprung: AFA01070_01 |          |                         |      |





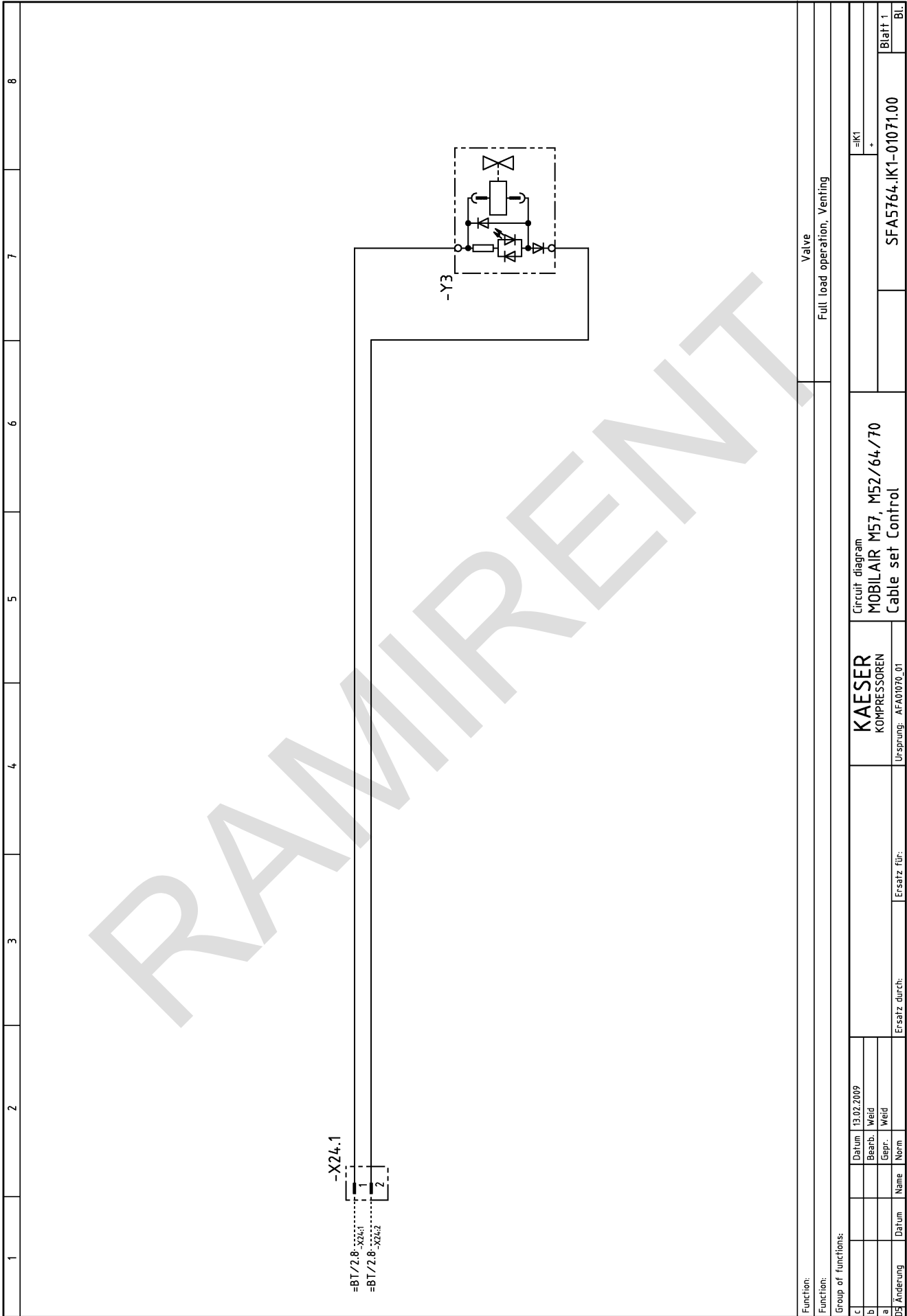
Control voltage: 12 VDC  
All non-designated conductors H07V-K 1,5mm<sup>2</sup>

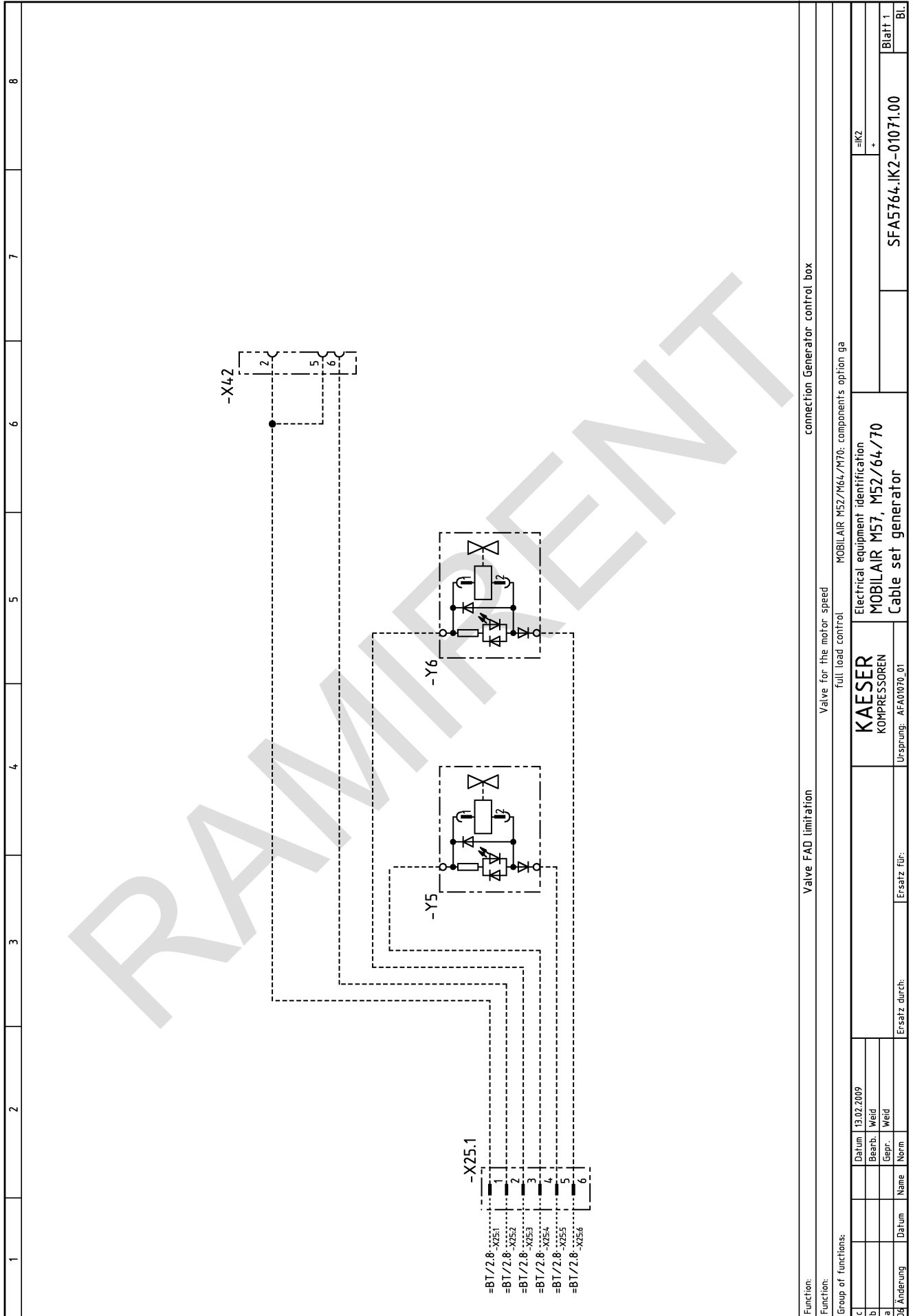
|                     |          |           |            |                            |  |                         |  |                      |  |
|---------------------|----------|-----------|------------|----------------------------|--|-------------------------|--|----------------------|--|
| Function:           |          | generator |            | Cooling water- Temperature |  | Fuel shut-off valve     |  | fuel pump            |  |
| Function:           |          | generator |            | Oil pressure               |  | Fuel shut-off valve     |  | fuel pump            |  |
| Group of functions: |          | generator |            | Oil pressure               |  | Fuel shut-off valve     |  | fuel pump            |  |
| c                   |          | Datum     | 13.02.2009 | unit components            |  | MOBILAIR M57, M52/64/70 |  | =IKM +               |  |
| b                   |          | Bearb.    | Weld       | KAESER                     |  | Compressor - unit       |  | SFA5764-IKM-01071.00 |  |
| a                   |          | Gepr.     | Weld       | KOMPRESSOREN               |  | Compressor - unit       |  | Blatt 1              |  |
| 12                  | Änderung | Datum     |            | Ursprung: AFA01070_01      |  | Compressor - unit       |  | Bl.                  |  |



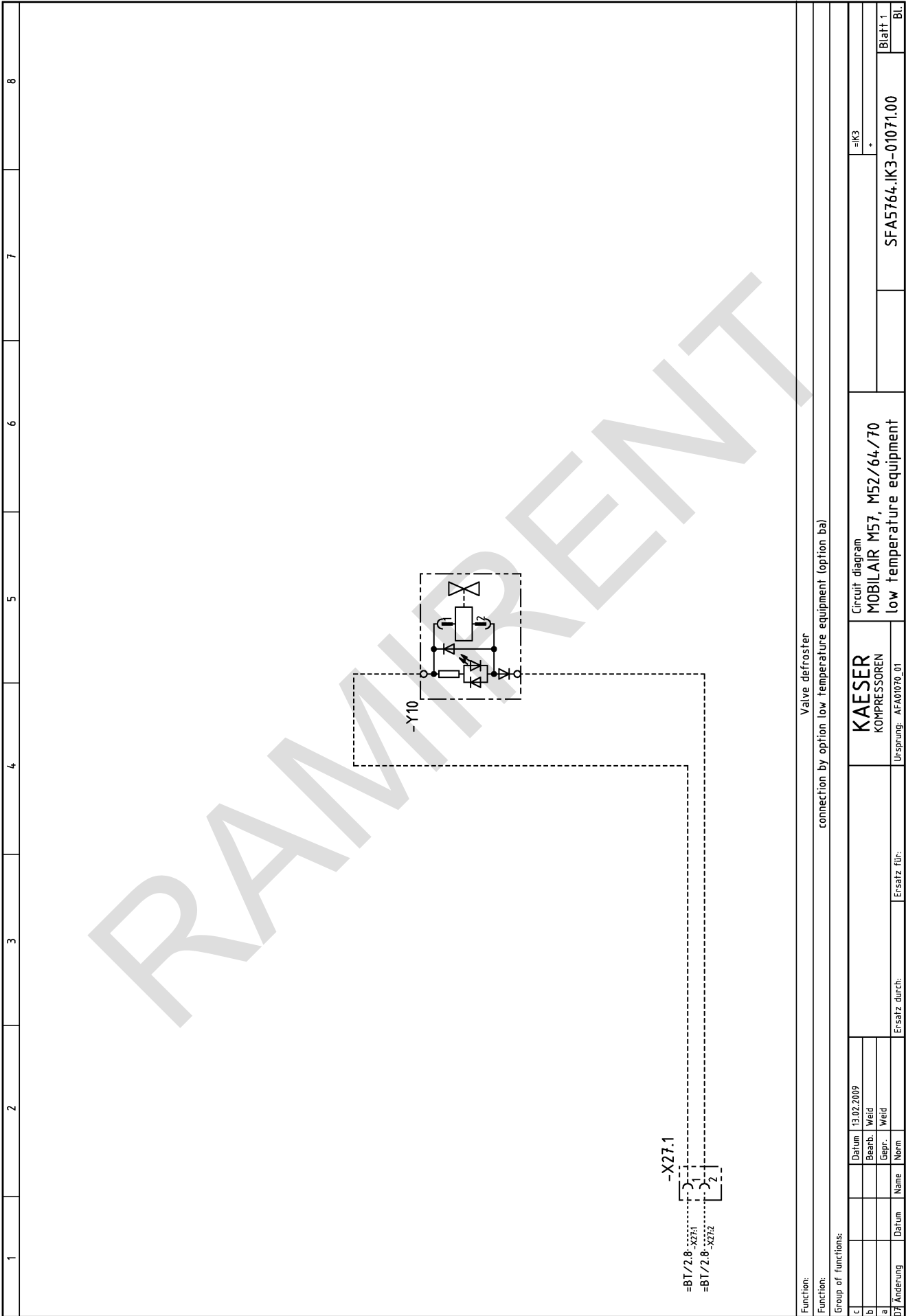
|                     |  |                       |  |                         |  |
|---------------------|--|-----------------------|--|-------------------------|--|
| Function:           |  | Control ON            |  | Ignition switch         |  |
| Function:           |  | Starter - Relay       |  | Relay fuel pump         |  |
| Group of functions: |  | Fuses                 |  | switching on            |  |
|                     |  | glow relay            |  |                         |  |
|                     |  | Starter - Relay       |  |                         |  |
|                     |  | Kaeser                |  | MOBILAIR M57, M52/64/70 |  |
|                     |  | KOMPRESSOREN          |  | Control                 |  |
|                     |  | Ersatz für:           |  | SFA5764.BT - 01071.00   |  |
|                     |  | Ersatz durch:         |  | Blatt 1                 |  |
|                     |  | Datum                 |  | =BT                     |  |
|                     |  | 13.02.2009            |  | +                       |  |
|                     |  | Bearb. Weid           |  |                         |  |
|                     |  | Gepr. Weid            |  |                         |  |
|                     |  | Datum                 |  |                         |  |
|                     |  | Name                  |  |                         |  |
|                     |  | Norm                  |  |                         |  |
|                     |  | Ersatz durch:         |  |                         |  |
|                     |  | Ersatz für:           |  |                         |  |
|                     |  | Ursprung: AFA01070_01 |  |                         |  |







|  |               |  |      |                                  |                       |
|--|---------------|--|------|----------------------------------|-----------------------|
| Function:                                  |               | Valve FAD limitation                       |      | connection Generator control box |                       |
| Function:                                  |               | Valve for the motor speed                  |      | full load control                |                       |
| Group of functions:                        |               | MOBILAIR M5Z/M64/M70; components option ga |      |                                  |                       |
| c  | Datum         | 13.02.2009                                 |      |                                  |                       |
| b  | Bearb. / Weid |  |      |                                  |                       |
| a  | Gepr. / Weid  |  |      |                                  |                       |
| D4   | Änderung      | Datum                                      | Name | Ersatz durch:                    | Ursprung: AFA01070_01 |
| Electrical equipment identification        |               | MOBILAIR M57, M52/64/70                    |      | Cable set generator              |                       |
| MOBILAIR M5Z/M64/M70; components option ga |               |  |      | =IKZ +                           |                       |
| Blatt 1                                    |               | SFA5764.IK2-01071.00                       |      |                                  |                       |
| Bl.  |               |  |      |                                  |                       |



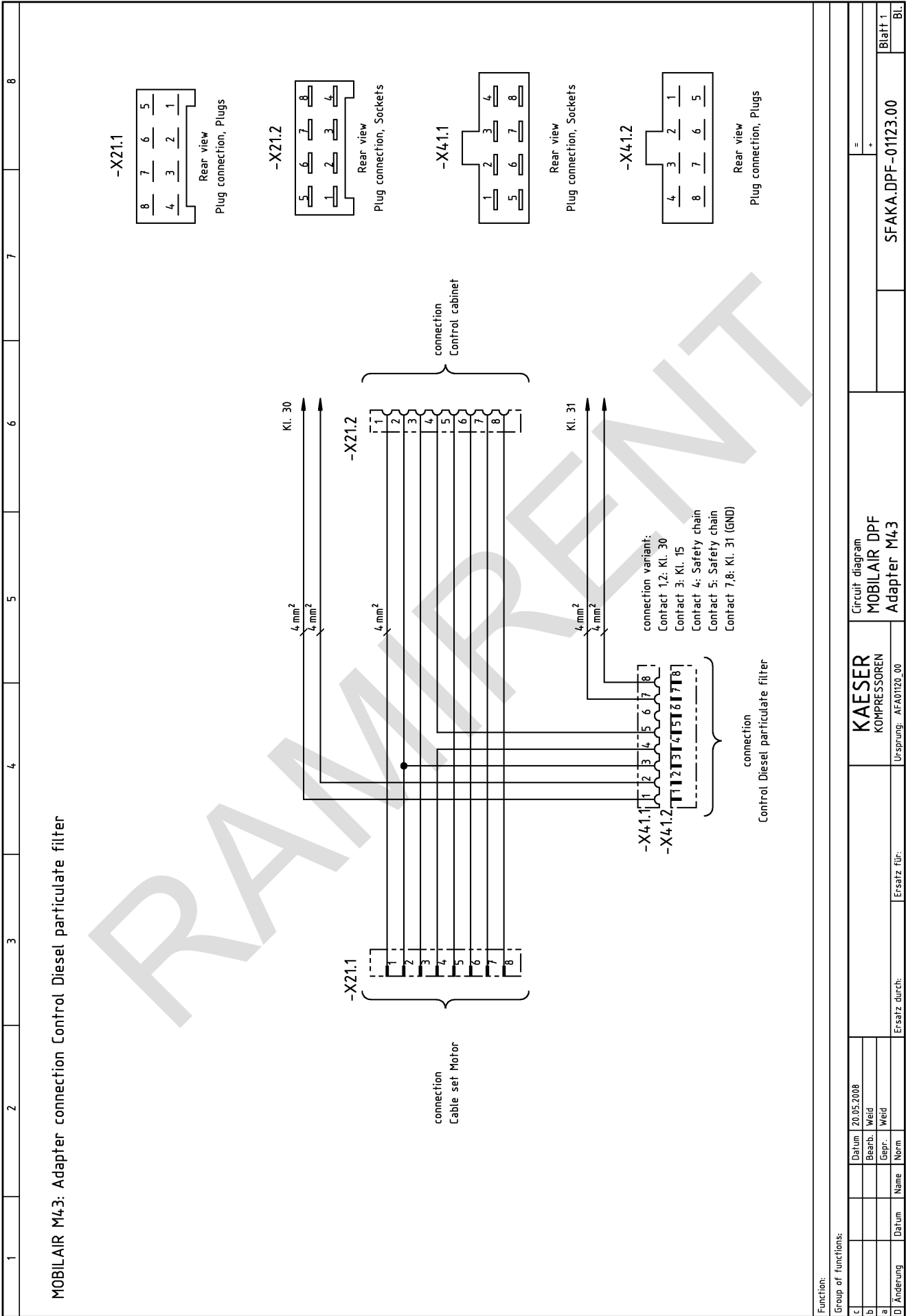


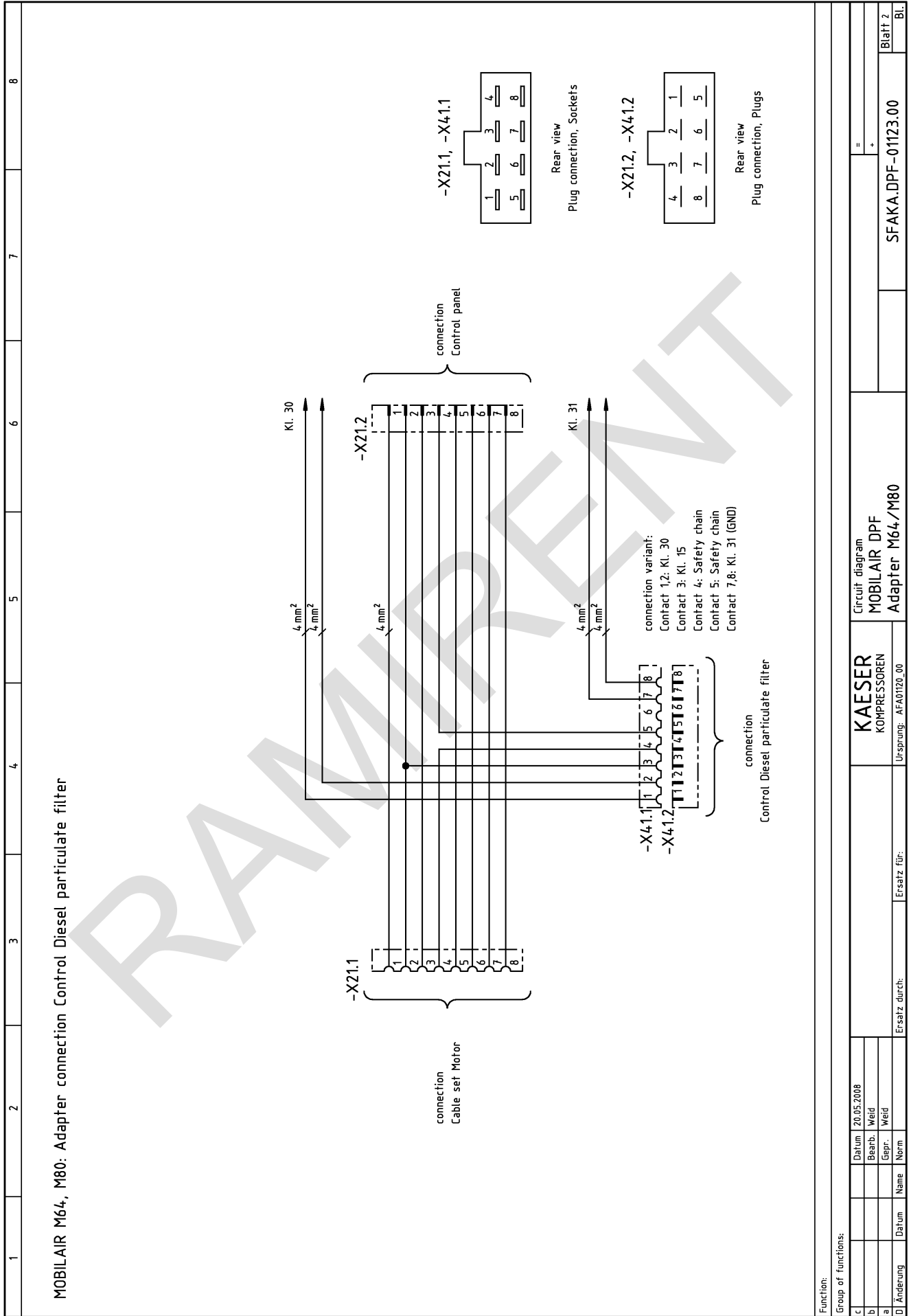
13.4.2 Option Ic  
Connection adapter for the diesel particulate filter

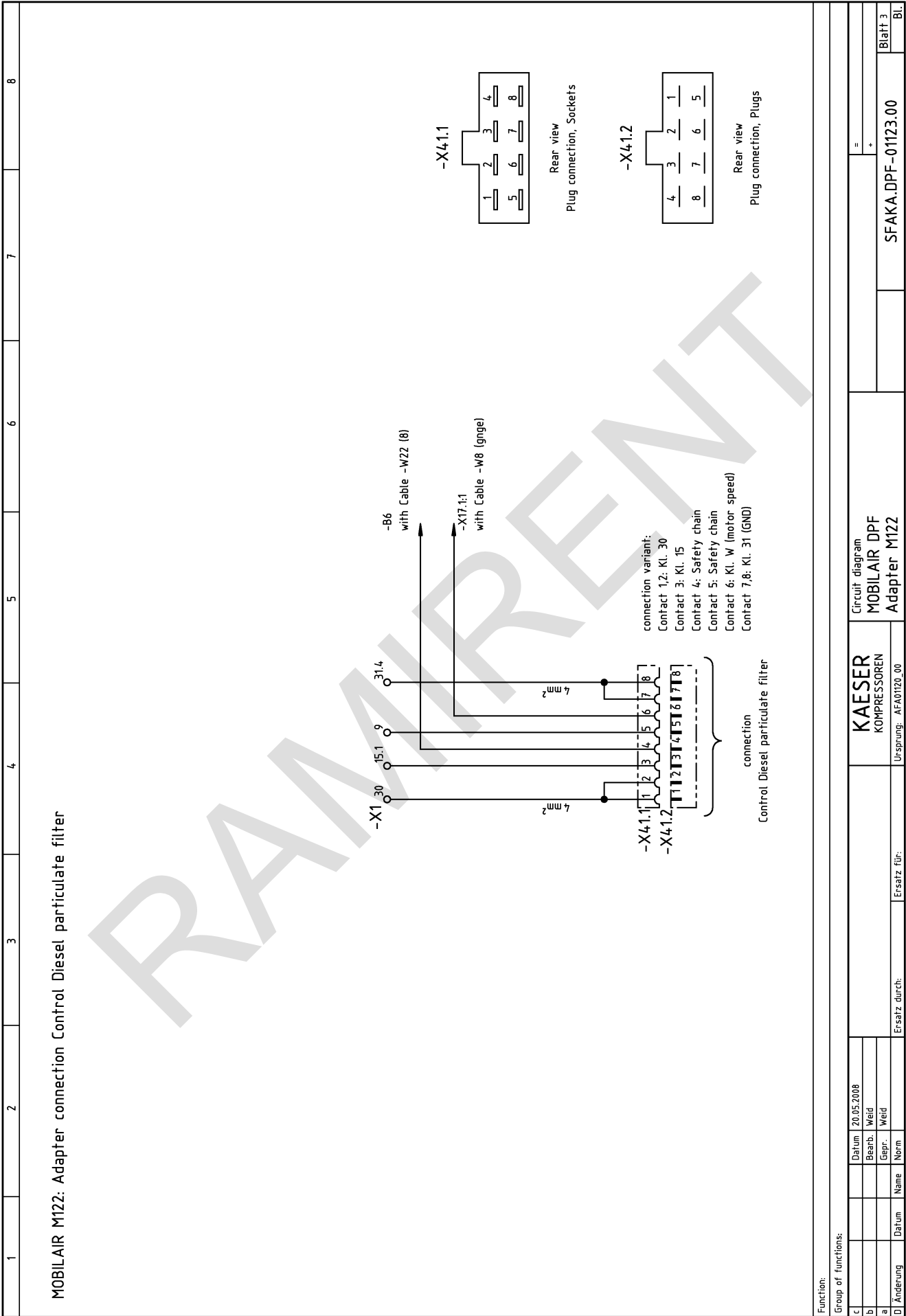
RAMIRENT



|  |               |            |               |   |                       |   |   |     |
|--|---------------|------------|---------------|---|-----------------------|---|---|-----|
| 1  | 2             | 3          | 4             | 5 | 6                     | 7 | 8 |     |
| <p>Electrical diagrams</p> <p>MOBILAIR</p> <p>connection - Adapter</p> <p>Control Diesel particulate filter</p>  |               |            |               |   |                       |   |   |     |
| <p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>   |               |            |               |   |                       |   |   |     |
| <p><b>RAMIRRENT</b></p>  |               |            |               |   |                       |   |   |     |
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| c  | Datum         | 20.05.2008 | E             |   | Cover page            |   |   | =   |
| b  | Bearb. / Weid |            |               |   | MOBILAIR DPF          |   |   | +   |
| a  | Gepr. / Weid  |            |               |   | DFAKA.DPF-01123.00    |   |   |     |
| A, Änderung  | Datum         | Name       | Ersatz durch: |   | Blatt 1               |   |   | Bl. |
|  |               |            | Ersatz für:   |   | DFAKA.DPF-01123.00    |   |   |     |
|  |               |            |               |   | KOMPRESSOREN          |   |   |     |
|  |               |            |               |   | URSPRUNG: AFA01T20_00 |   |   |     |



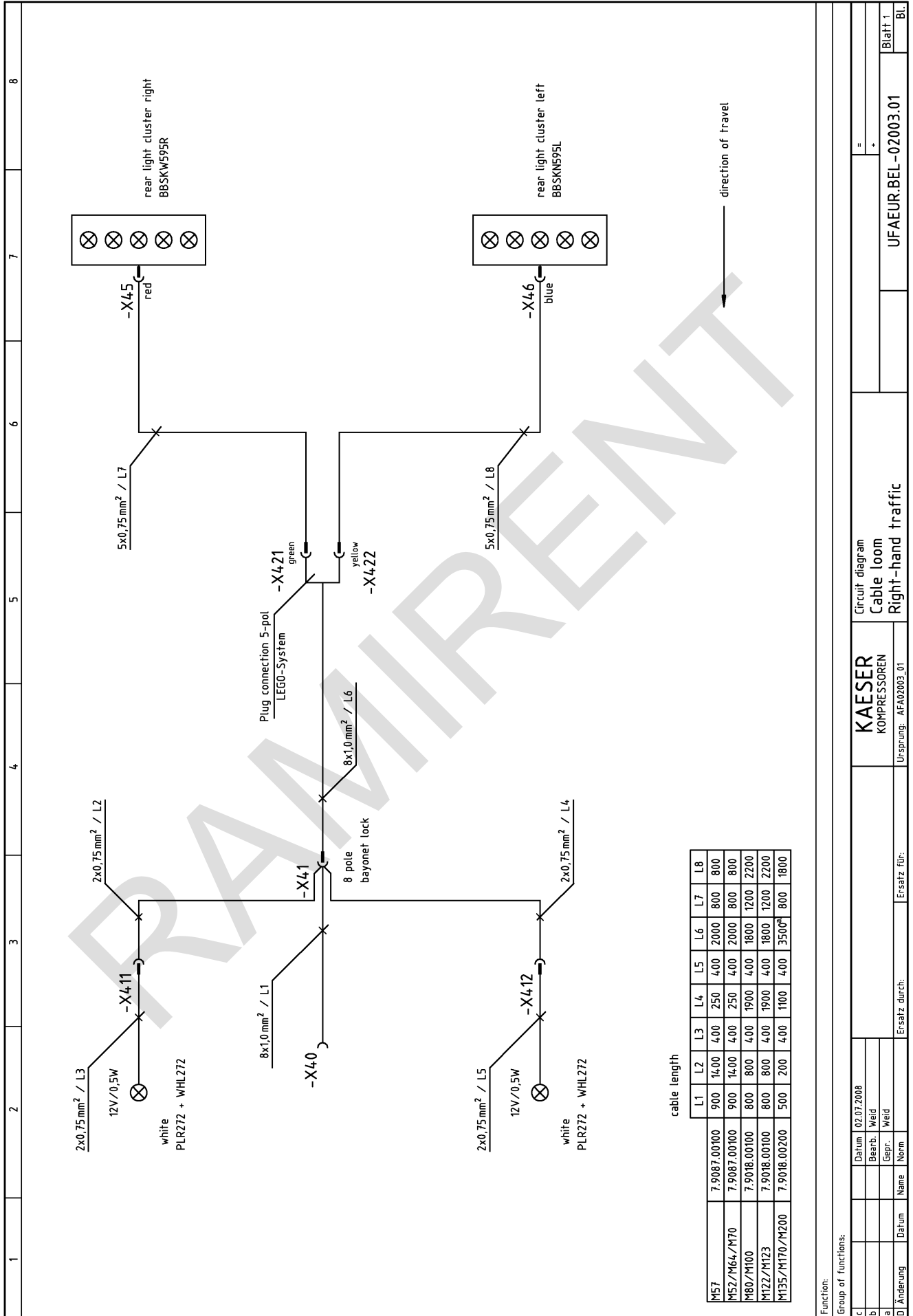




13.4.3 Option tc  
Lighting and signalling system connection

RAMIRENT

|  |               |            |      |                       |   |   |   |                     |
|--|---------------|------------|------|-----------------------|---|---|---|---------------------|
| 1  | 2             | 3          | 4    | 5                     | 6 | 7 | 8 |                     |
| <p>Electrical diagrams<br/>                 MOBILAIR<br/>                 Lighting equipment<br/>                 connection 12V/13-pole</p> <p>Manufacturer: Kaeser Kompressoren GmbH<br/>                 Postfach 2143<br/>                 96410 Coburg</p>  |               |            |      |                       |   |   |   |                     |
| <p><b>RAMIRENT</b></p>   |               |            |      |                       |   |   |   |                     |
| <p>The drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproductions, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions must be forwarded or otherwise made accessible to third parties.</p> |               |            |      |                       |   |   |   |                     |
| c  | Datum         | 02.07.2008 | E    | Kaeser Kompressoren   |   |   |   | Cover page          |
| b  | Bearb. / Weid |            |      | KOMPRESSOREN          |   |   |   | MOBILAIR            |
| a  | Gepr. / Weid  |            |      | URSPRUNG: AFA02003_01 |   |   |   | Lighting equipment  |
| d  | Änderung      | Datum      | Name | Ersatz für:           |   |   |   | Blatt 1             |
|  |               |            |      | Ersatz durch:         |   |   |   | Bl.                 |
|  |               |            |      | =                     |   |   |   |                     |
|  |               |            |      | +                     |   |   |   | DFAEUR.BEL-02003.01 |



Function:  
Group of functions:

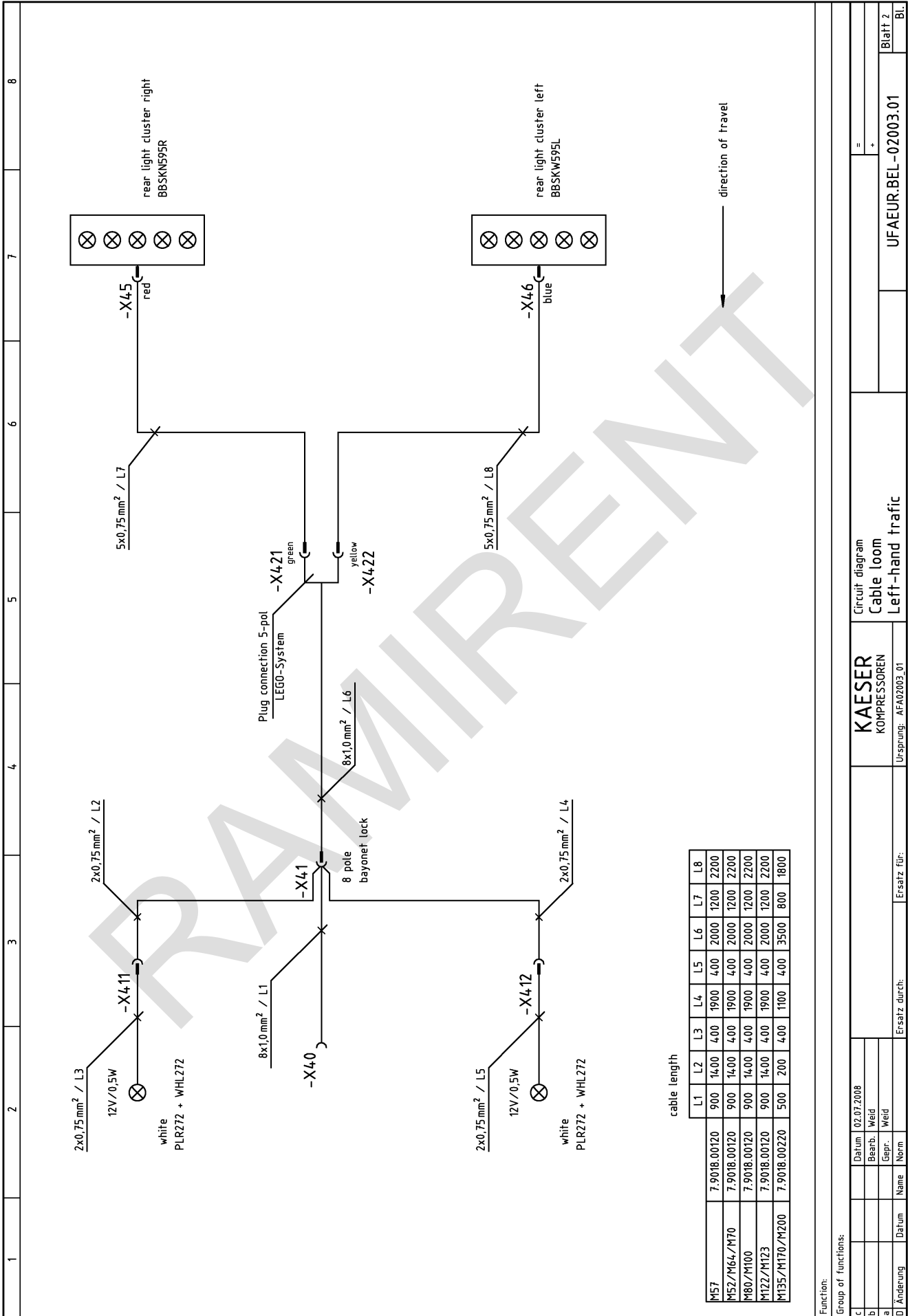
|               |            |
|---------------|------------|
| Datum         | 02.07.2008 |
| Bearb.        | Weld       |
| Gepr.         | Weld       |
| Norm          |            |
| Ersatz durch: |            |
| Ersatz für:   |            |

**KAESER**  
KOMPRESSOREN  
Ursprung: AFA02003\_01

Circuit diagram  
Cable loom  
Right-hand traffic

UFAEUR.BEL-02003.01

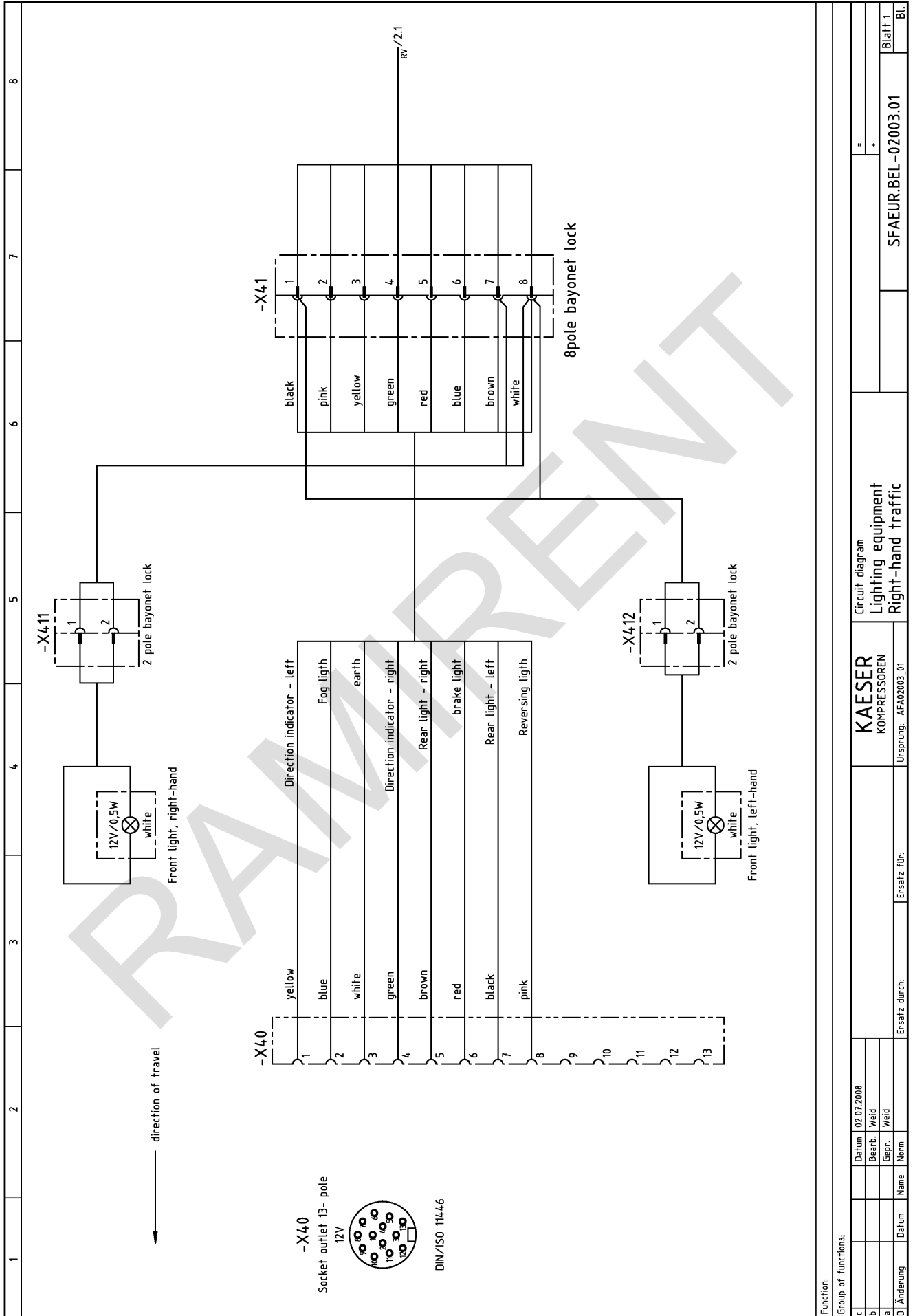
Blatt 1  
Bl.

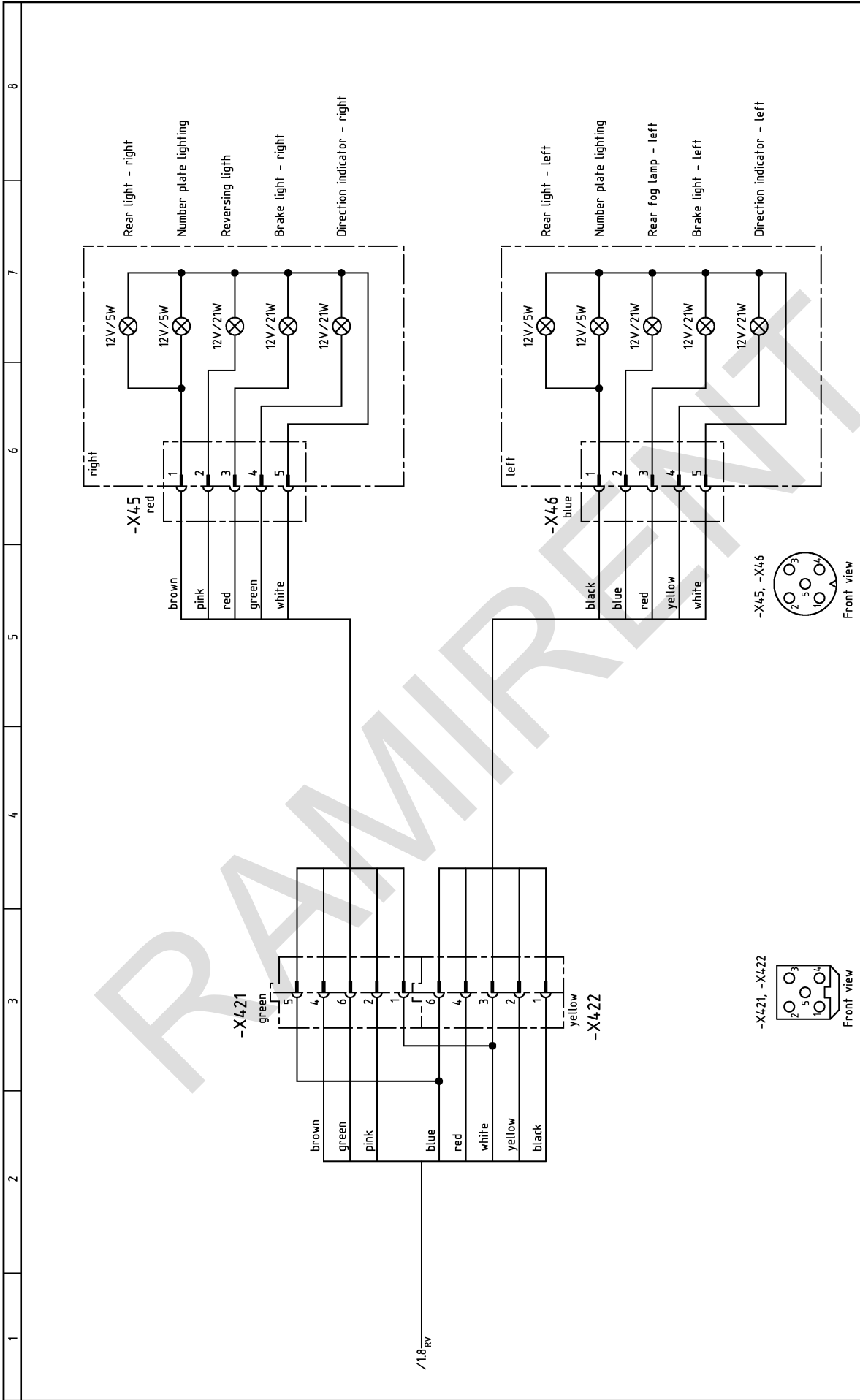


Function:  
Group of functions:

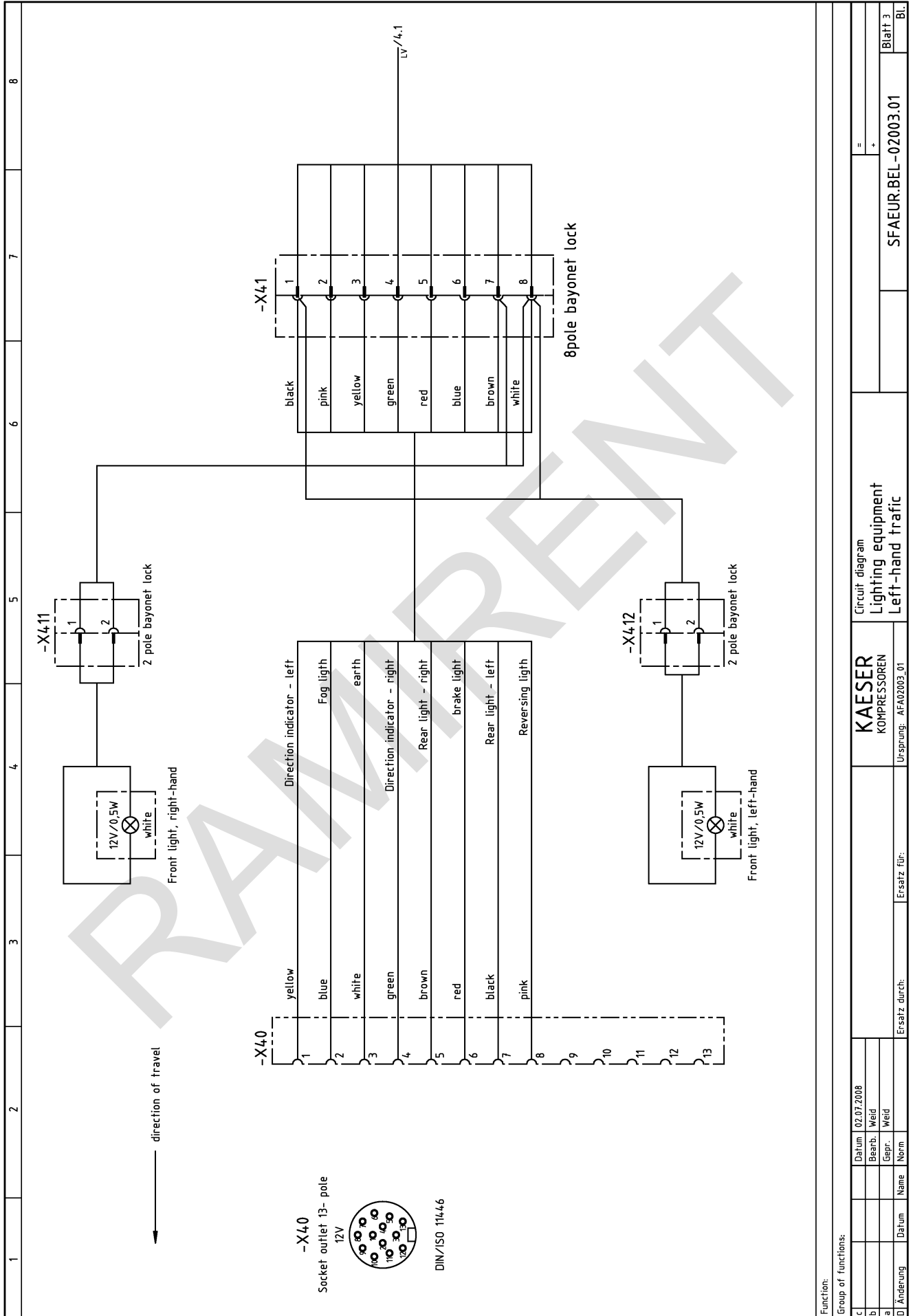
|                  |  |                        |  |                  |  |                   |  |                     |  |                  |  |
|------------------|--|------------------------|--|------------------|--|-------------------|--|---------------------|--|------------------|--|
| Kaeser logo      |  | Circuit diagram        |  | Cable loom       |  | Left-hand traffic |  | UFAEUR.BEL-02003.01 |  | Blatt 2          |  |
| KOMPRESSOREN     |  | URSPRUNG: AIFA02003_01 |  | Ersatz durch:    |  | Ersatz für:       |  | UFAEUR.BEL-02003.01 |  | Bl. 2            |  |
| Date: 02.07.2008 |  | Date: 02.07.2008       |  | Date: 02.07.2008 |  | Date: 02.07.2008  |  | Date: 02.07.2008    |  | Date: 02.07.2008 |  |
| Bearb. Weid      |  | Bearb. Weid            |  | Bearb. Weid      |  | Bearb. Weid       |  | Bearb. Weid         |  | Bearb. Weid      |  |
| Gepr. Weid       |  | Gepr. Weid             |  | Gepr. Weid       |  | Gepr. Weid        |  | Gepr. Weid          |  | Gepr. Weid       |  |
| Norm             |  | Norm                   |  | Norm             |  | Norm              |  | Norm                |  | Norm             |  |







|                     |        |                     |  |
|---------------------|--------|---------------------|--|
| Function:           |        | Circuit diagram     |  |
| Group of functions: |        | Lighting equipment  |  |
|                     |        | Right-hand traffic  |  |
| a                   | Datum  | 02.07.2008          |  |
| b                   | Bearb. | Weid                |  |
| c                   | Gepr.  | Weid                |  |
| d                   | Norm   |                     |  |
| Ersatz durch:       |        | Ersatz für:         |  |
|                     |        | SFAEUR.BEL-02003.01 |  |
|                     |        | Blatt 2             |  |
|                     |        | Bl.                 |  |



Function:  
Group of functions:

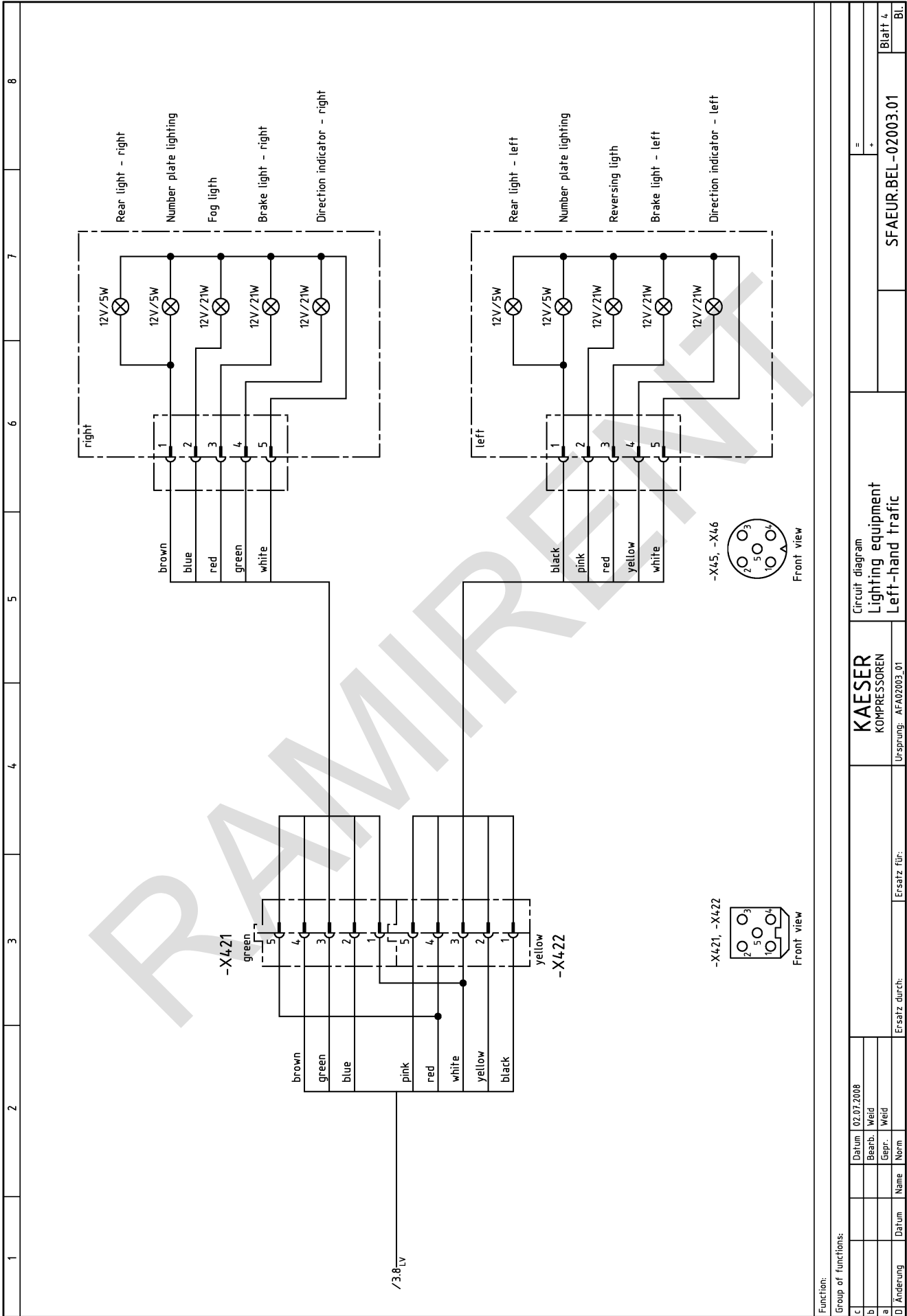
|   |               |                 |
|---|---------------|-----------------|
| c | Datum         | 02.07.2008      |
| b | Bearb. / Weid |                 |
| a | Gepr. / Weid  |                 |
| D | Änderung      | Datum Name Norm |

KAESER  
KOMPRESSOREN  
Ursprung: AFA02003\_01

Circuit diagram  
Lighting equipment  
Left-hand traffic

SFAEUR.BEL-02003.01

Blatt 3  
Bl.



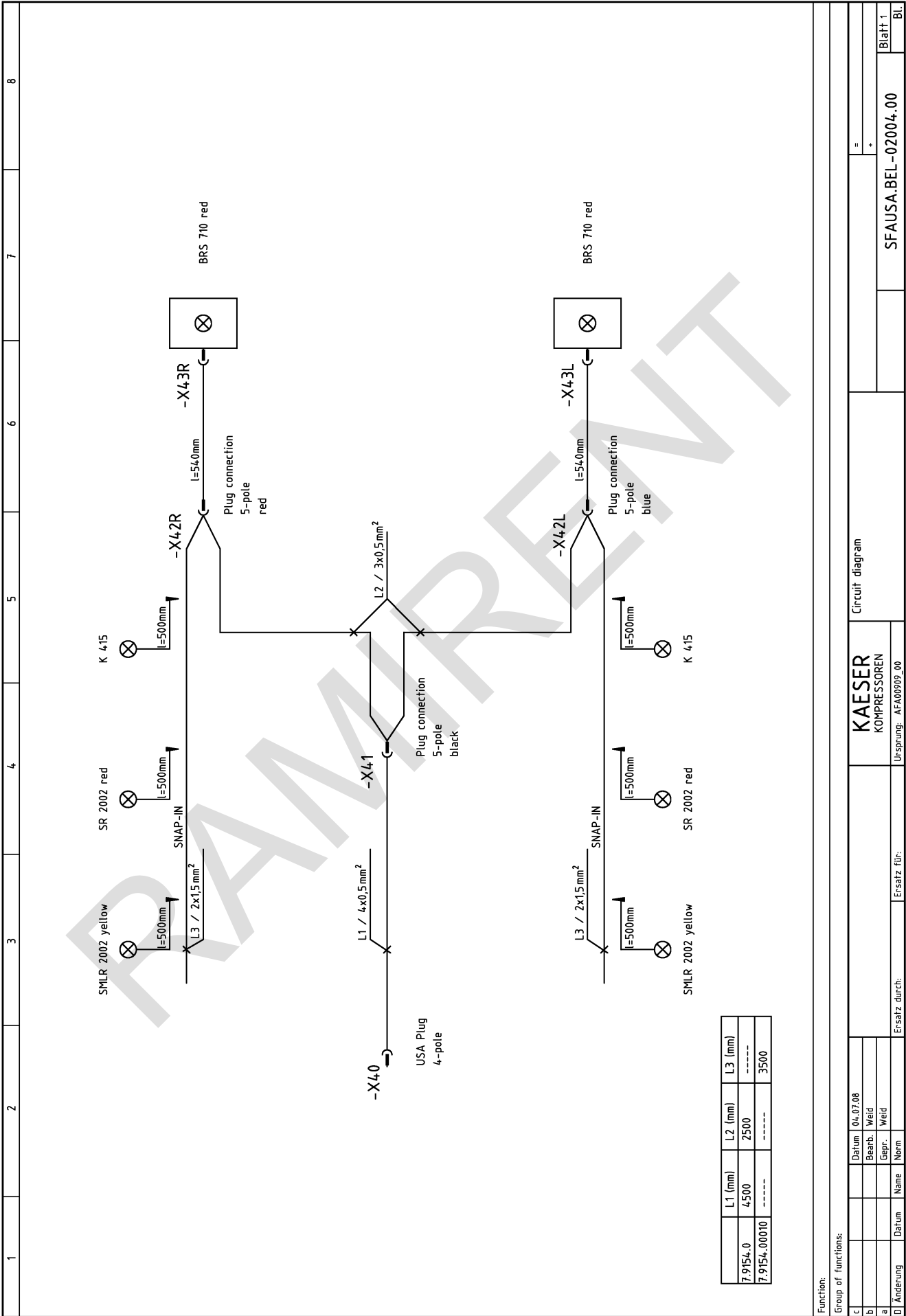
Function:  
Group of functions:

|   |          |            |                    |               |             |                     |         |
|---|----------|------------|--------------------|---------------|-------------|---------------------|---------|
| c | Datum    | 02.07.2008 | Circuit diagram    |               | =           |                     | Blatt 4 |
| b | Bearb.   | Weld       | Lighting equipment |               | +           |                     |         |
| a | Gepr.    | Weld       | Left-hand traffic  |               |             |                     |         |
| D | Änderung | Datum      | Name               | Norm          | Ersatz für: |                     |         |
|   |          |            |                    | Ersatz durch: |             | SFAEUR.BEL-02003.01 |         |

13.4.4 Option te  
Lighting and signalling system connection

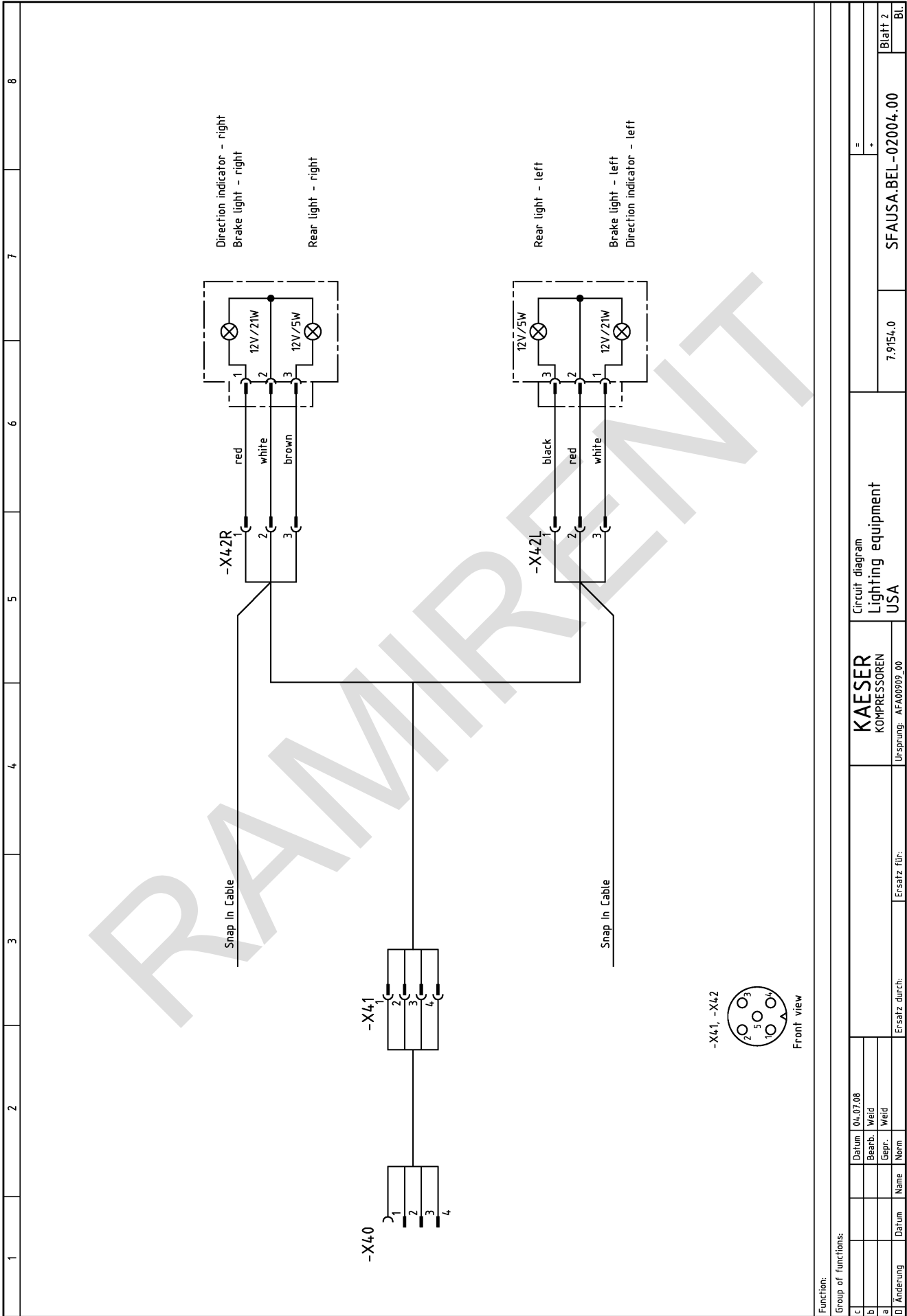
RAMIRENT

|  |          |          |      |                        |   |  |         |  |
|--|----------|----------|------|------------------------|---|--|---------|--|
| 1  | 2        | 3        | 4    | 5                      | 6 | 7  | 8       |  |
| <p>Electrical diagrams<br/>                 MOBILAIR<br/>                 Lighting equipment<br/>                 for USA / CAN</p> <p>Manufacturer: Kaeser Kompressoren GmbH<br/>                 Postfach 2143<br/>                 96410 Coburg</p>   |          |          |      |                        |   |  |         |  |
| <p><b>RAMIRRENT</b></p>  |          |          |      |                        |   |  |         |  |
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| c  | Datum    | 04.07.08 | E    |                        |   |  |         |  |
| b  | Bearb.   | Weid     |      |                        |   |  |         |  |
| a  | Gepr.    | Weid     |      |                        |   |  |         |  |
| d  | Norm     |          |      |                        |   |  |         |  |
| D  | Änderung | Datum    | Name | Ersatz durch:          |   | Ersatz für:                                  |         |  |
|  |          |          |      | KAESER<br>KOMPRESSOREN |   | Cover page<br>MOBILAIR<br>Lighting equipment |         |  |
|  |          |          |      | Ursprung: AFA00902_00  |   | = +<br>DFAUSA.BEL-02004.00                   |         |  |
|  |          |          |      |                        |   |  | Blatt 1 |  |
|  |          |          |      |                        |   |  | Bl.     |  |



|              |         |         |
|--------------|---------|---------|
| L1 (mm)      | L2 (mm) | L3 (mm) |
| 7.9154.0     | 2500    | -----   |
| 7.9154.00010 | -----   | 3500    |

|                     |  |                     |  |
|---------------------|--|---------------------|--|
| Funktion:           |  | Circuit diagram     |  |
| Group of functions: |  | KAESER KOMPRESSOREN |  |
| Date:               |  | 04.07.08            |  |
| Prepared:           |  | Weid                |  |
| Checked:            |  | Weid                |  |
| Name:               |  | Ersatz für:         |  |
| Date:               |  | Ersatz durch:       |  |
| Norm:               |  | SFAUSA.BEL-02004.00 |  |
| Blatt 1             |  | Bl.                 |  |







13.4.5 Option ga  
Generator electrical diagram, 400 V, 3-ph

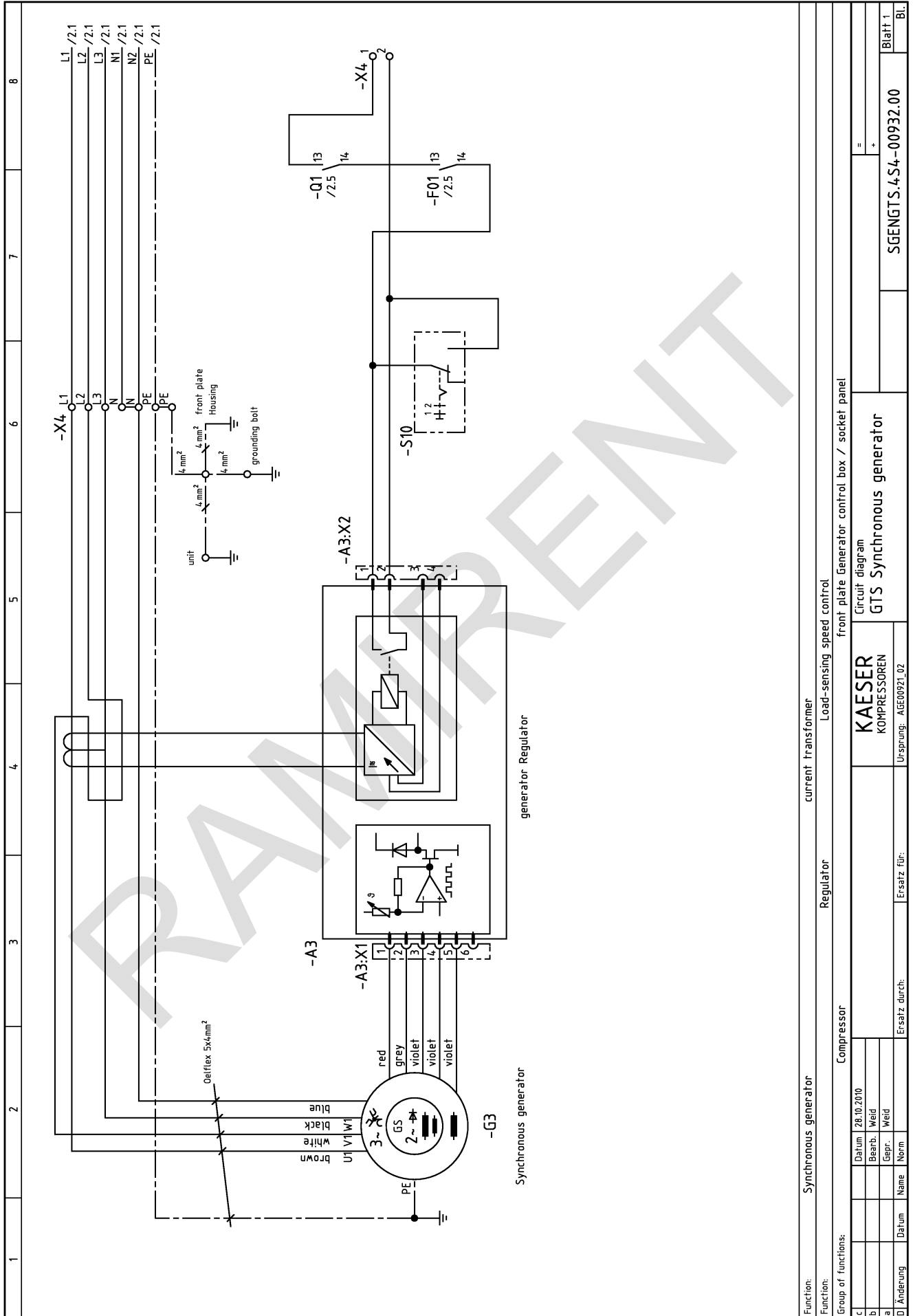
RAMIRENT

|  |        |            |      |                           |   |   |   |
|--|--------|------------|------|---------------------------|---|---|---|
| 1  | 2      | 3          | 4    | 5                         | 6 | 7 | 8 |
| <p><b>Electrical diagrams</b></p> <p><b>Synchronous generator</b></p> <p><b>400V/3~/50Hz, 8,5/13 kVA</b></p> <p><b>with Insulation monitoring</b></p>  |        |            |      |                           |   |   |   |
| <p><b>Manufacturer: Kaeser Kompressoren GmbH</b></p> <p><b>Postfach 2143</b></p> <p><b>96410 Coburg</b></p>  |        |            |      |                           |   |   |   |
| <p><b>RAMIRENT</b></p>   |        |            |      |                           |   |   |   |
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| c  | Datum  | 28.10.2010 | E    |                           |   |   |   |
| b  | Bearb. | Weid       |      |                           |   |   |   |
| a  | Gepr.  | Weid       |      |                           |   |   |   |
| A, Änderung  | Datum  | Name       | Norm | Ersatz durch:             |   |   |   |
|  |        |            |      | Ersatz für:               |   |   |   |
| <b>KAESER</b><br>KOMPRESSOREN  |        |            |      | Cover page                |   |   |   |
|  |        |            |      | GTS Synchronous generator |   |   |   |
|  |        |            |      | =                         |   |   |   |
|  |        |            |      | +                         |   |   |   |
|  |        |            |      | DGENGTS.4.S4-00932.00     |   |   |   |
|  |        |            |      | Blatt 1                   |   |   |   |
|  |        |            |      | Bl.                       |   |   |   |

| Lfd. Nr. No. | Benennung Name   | Zeichnungsnummer (Kunde) Drawing No. (customer) | Zeichnungsnummer (Hersteller) Drawing No. (manufacturer) | Blatt Page | Anlagenkennzeichen Unit designation |
|--------------|--|---|--|------------|-------------------------------------|
| 1            | Cover page   |   | DGENGTS.4.S4-00932.00                                    | 1          |                                     |
| 2            | List of contents   |   | ZGENGTS.4.S4-00932.00                                    | 1          |                                     |
| 3            | Circuit diagram  |   | SGENGTS.4.S4-00932.00                                    | 1          |                                     |
| 4            | Circuit diagram<br>Insulation monitoring<br>socket panel |   | SGENGTS.4.S4-00932.00                                    | 2          |                                     |
| 5            | Circuit diagram  |   | SGENGTS.4.S4-00932.00                                    | 4          |                                     |
| 6            | Electrical equipment identification                      |   | SGENGTS.4.S4-00932.00                                    | 01         |                                     |
| 7            | Circuit diagram  |   | GGENGTS.4.S4-00932.00                                    | 1          |                                     |
| 8            | Component layout<br>front plate                          |   | AGENGTS.4.S4-00932.00                                    | 1          |                                     |

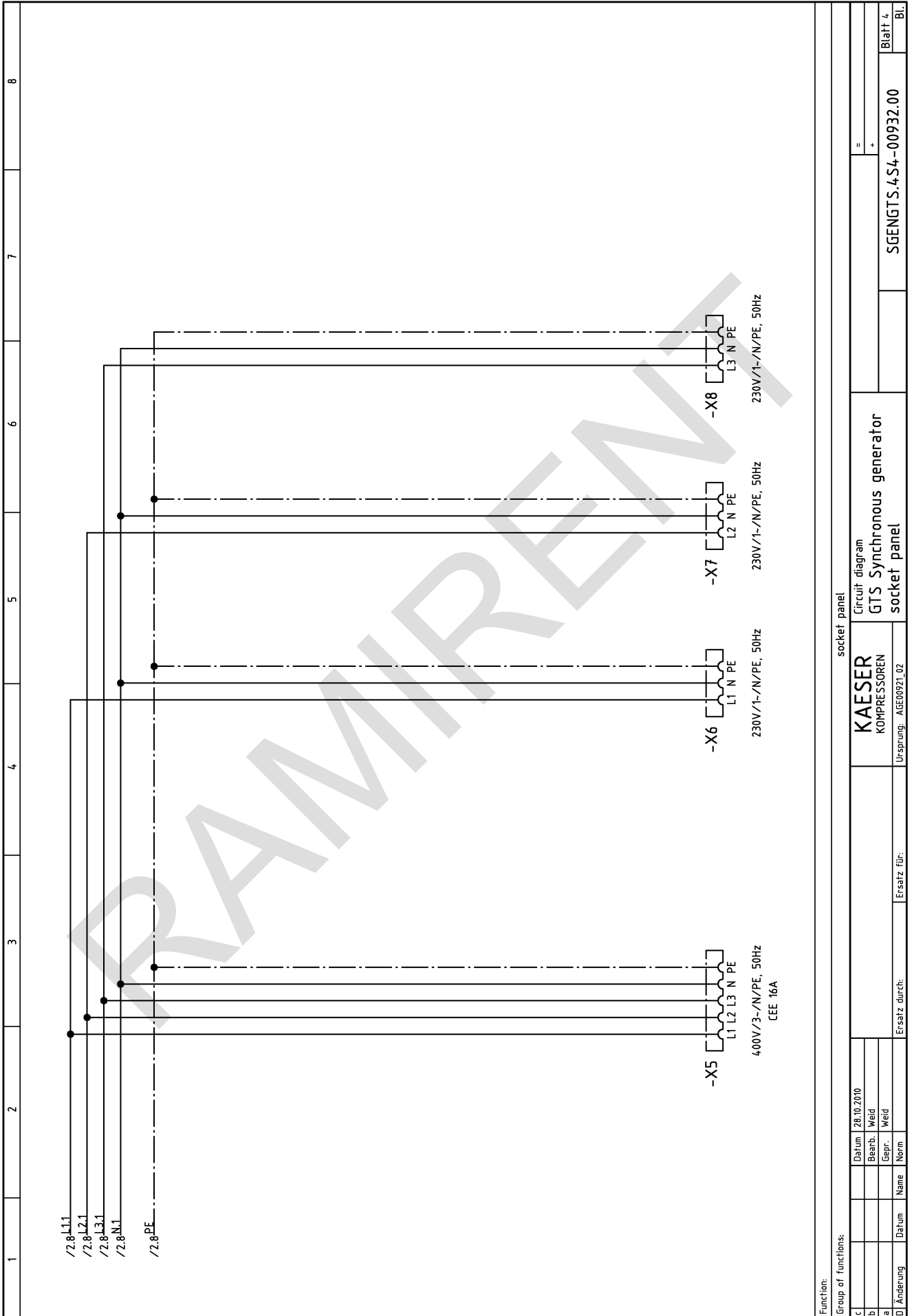
  

|             |       |                  |                        |                       |   |                       |
|-------------|-------|------------------|------------------------|-----------------------|---|-----------------------|
| c           |       | Datum 28.10.2010 | List of contents       |                       | = |                       |
| b           |       | Bearb. Weid      | KAESER<br>KOMPRESSOREN |                       | + |                       |
| a           |       | Gepr. Weid       | List of contents       |                       |   |                       |
| B) Änderung | Datum | Name             | Ersatz für:            | Ursprung: AGE00921_02 |   | Blatt 1               |
|             |       |                  |                        |                       |   | ZGENGTS.4.S4-00932.00 |
|             |       |                  |                        |                       |   | Bl.                   |



|                     |          |                       |      |                       |  |                            |  |  |  |
|---------------------|----------|-----------------------|------|-----------------------|--|----------------------------|--|--|--|
| Function:           |          | Synchronous generator |      | current transformer   |  | Load-sensing speed control |  | front plate generator control box / socket panel |  |
| Function:           |          | Compressor            |      | Regulator             |  | Compressor                 |  | Circuit diagram                                  |  |
| Group of functions: |          | Compressor            |      | Regulator             |  | Compressor                 |  | GTS Synchronous generator                        |  |
| c                   | Datum    | 28.10.2010            |      | KAESER KOMPRESSOREN   |  | SGENGT S.4.S4-00932.00     |  | Blatt 1  |  |
| b                   | Bearb.   | Weld                  |      | URSPRUNG: AGE00921_02 |  |                            |  |  |  |
| a                   | Gepr.    | Weld                  |      | Ersatz für:           |  |                            |  |  |  |
| D                   | Änderung | Datum                 | Name | Ersatz durch:         |  |                            |  |  |  |

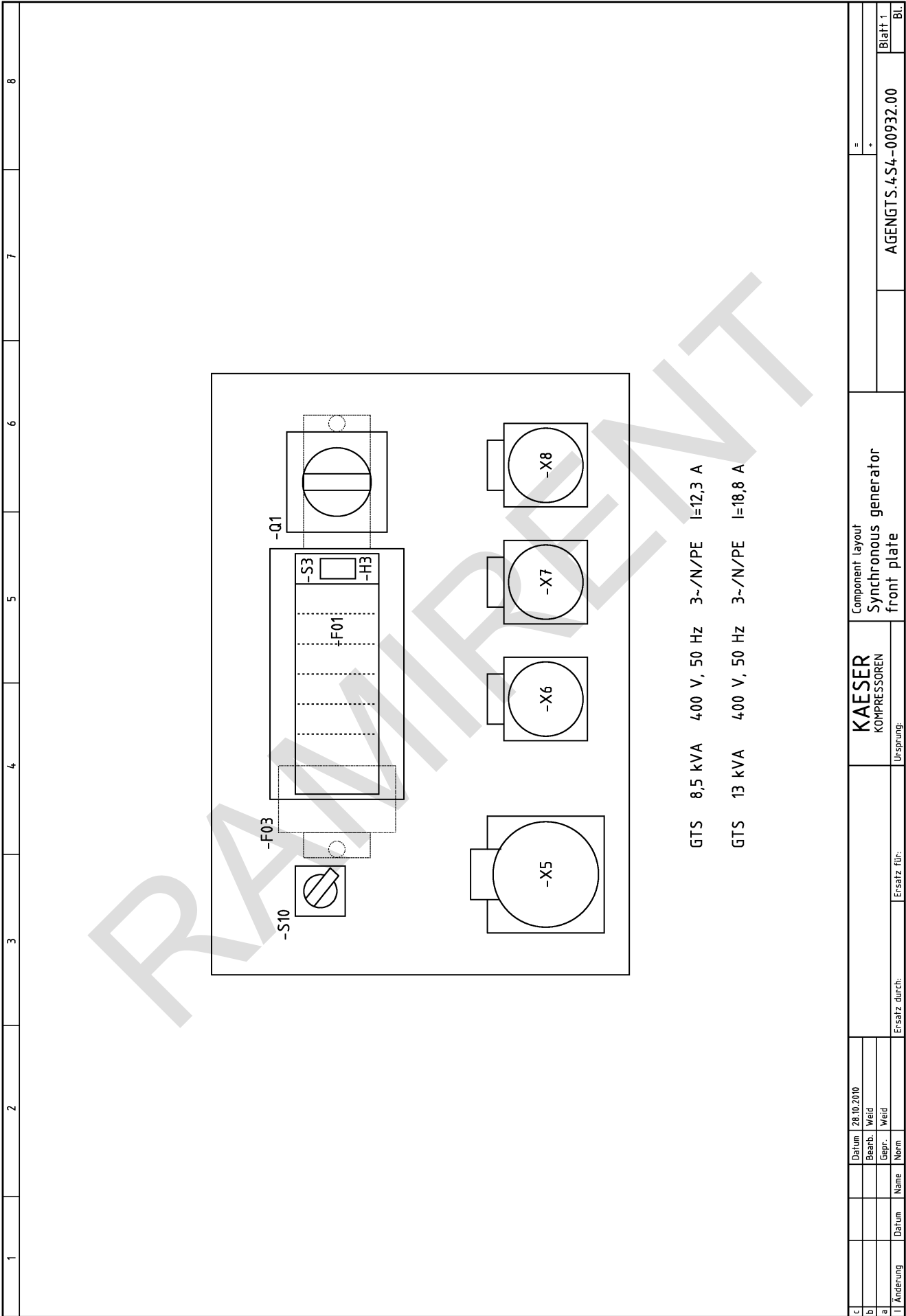




|   |               |   |                                     |                       |   |   |   |          |
|---|---------------|---|-------------------------------------|-----------------------|---|---|---|----------|
| 1 | 2             | 3   | 4                                   | 5                     | 6 | 7 | 8 |          |
|   |               | -A3 generator-Regulator                             |                                     |                       |   |   |   |          |
|   |               | -F01 Cut-out with overcurrent release               |                                     |                       |   |   |   |          |
|   |               | -F03 Insulation monitoring                          |                                     |                       |   |   |   |          |
|   |               | -G3 generator                                       |                                     |                       |   |   |   |          |
|   |               | -H03 Earth leak lamp                                |                                     |                       |   |   |   |          |
|   |               | -Q1 Main switch                                     |                                     |                       |   |   |   |          |
|   |               | -S3 Test button, Insulation monitoring              |                                     |                       |   |   |   |          |
|   |               | -S10 Selector switch                                |                                     |                       |   |   |   |          |
|   |               | -X4 connection generator                            |                                     |                       |   |   |   |          |
|   |               | -X5 Socket outlet 400V/3~/N/PE, 50Hz                |                                     |                       |   |   |   |          |
|   |               | -X6,-X7,-X8 Socket outlet 230V/1~/N/PE,50Hz         |                                     |                       |   |   |   |          |
|   |               | -X42 Terminal strip, Valve interference suppression |                                     |                       |   |   |   |          |
| c | Datum         | 28.10.2010  | Electrical equipment identification |                       |   |   |   |          |
| b | Bearb. / Weid |   | GTS Synchronous generator           |                       |   |   |   |          |
| a | Gepr. / Weid  |   | SGENGT S.4.S4-00932.00              |                       |   |   |   | Blatt 01 |
| E | Änderung      | Datum   | Name                                | Ersatz durch:         |   |   |   | Bl.      |
|   |               |   |                                     | Ursprung: AGE00921_02 |   |   |   |          |







13.4.6 Option ga  
Generator electrical diagram, 230 V, 3-ph

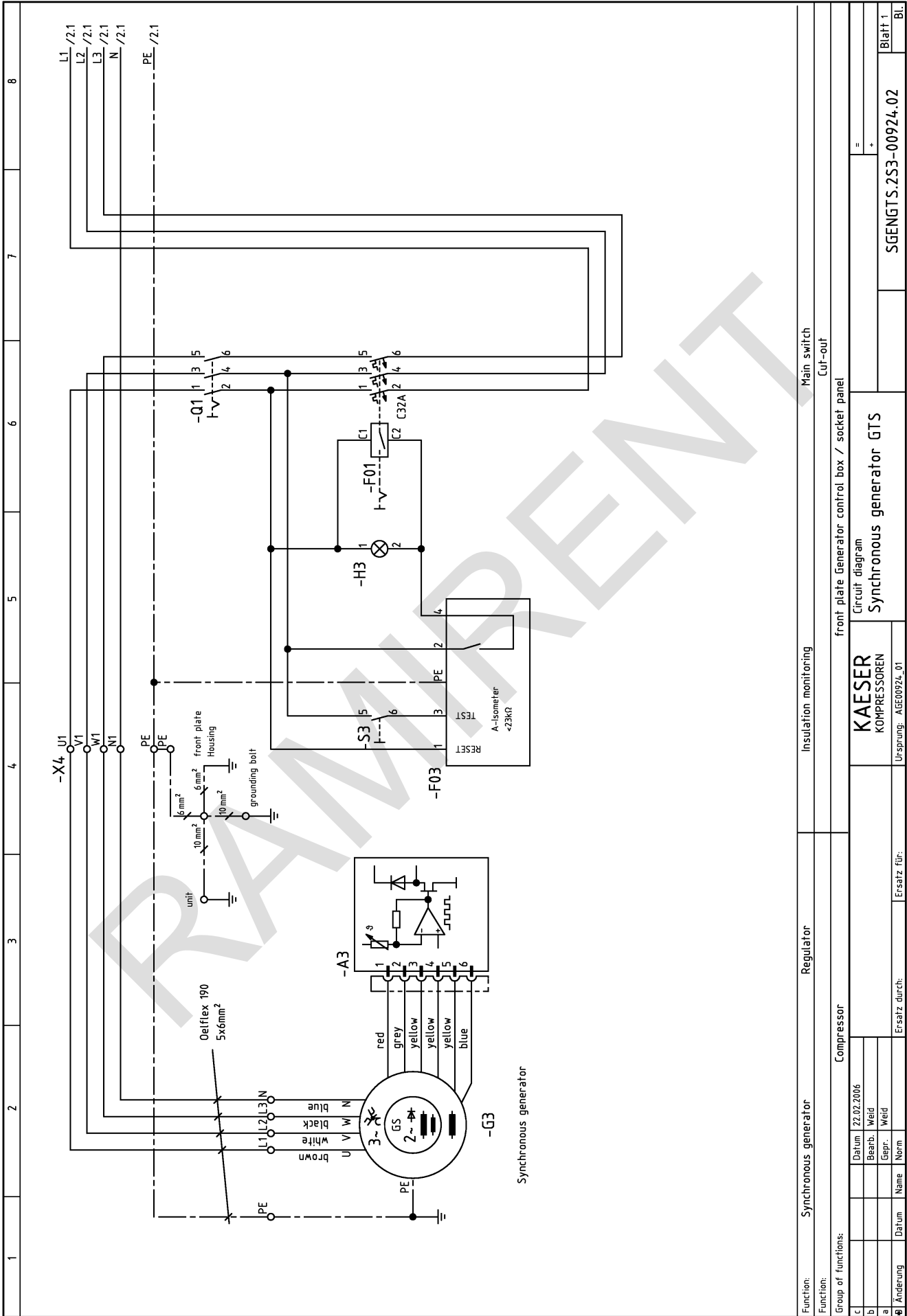
RAMIRENT

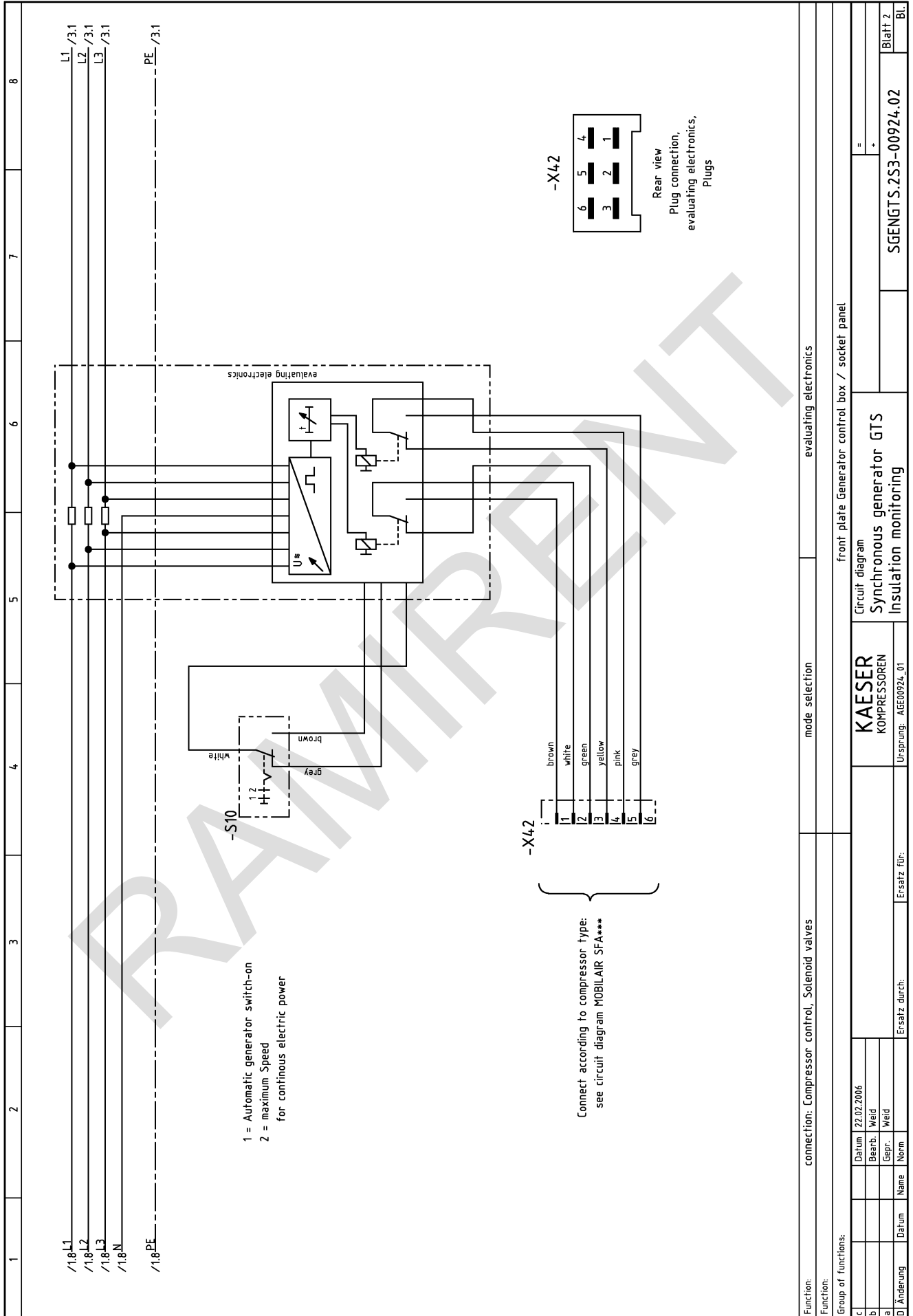
|  |               |            |      |                       |               |   |         |                           |
|--|---------------|------------|------|-----------------------|---------------|---|---------|---------------------------|
| 1  | 2             | 3          | 4    | 5                     | 6             | 7 | 8       |                           |
| <p>Electrical diagrams</p> <p>Synchronous generator</p> <p>230V/3~/50Hz, 8,5/13kVA</p> <p>with Insulation monitoring</p>   |               |            |      |                       |               |   |         |                           |
| <p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>   |               |            |      |                       |               |   |         |                           |
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| c  | Datum         | 22.02.2006 | E    | Kaeser Kompressoren   |               |   |         | Cover page                |
| b  | Bearb. / Weid |            |      | KOMPRESSOREN          |               |   |         | Synchronous generator GTS |
| a  | Gepr. / Weid  |            |      | URSPRUNG: AGE00924_01 |               |   |         | DGENGTS.ZS3-00924.02      |
| A  | Änderung      | Datum      | Name | Norm                  | Ersatz durch: |   | Blatt 1 |                           |
|  |               |            |      |                       |               |   | Bl.     |                           |

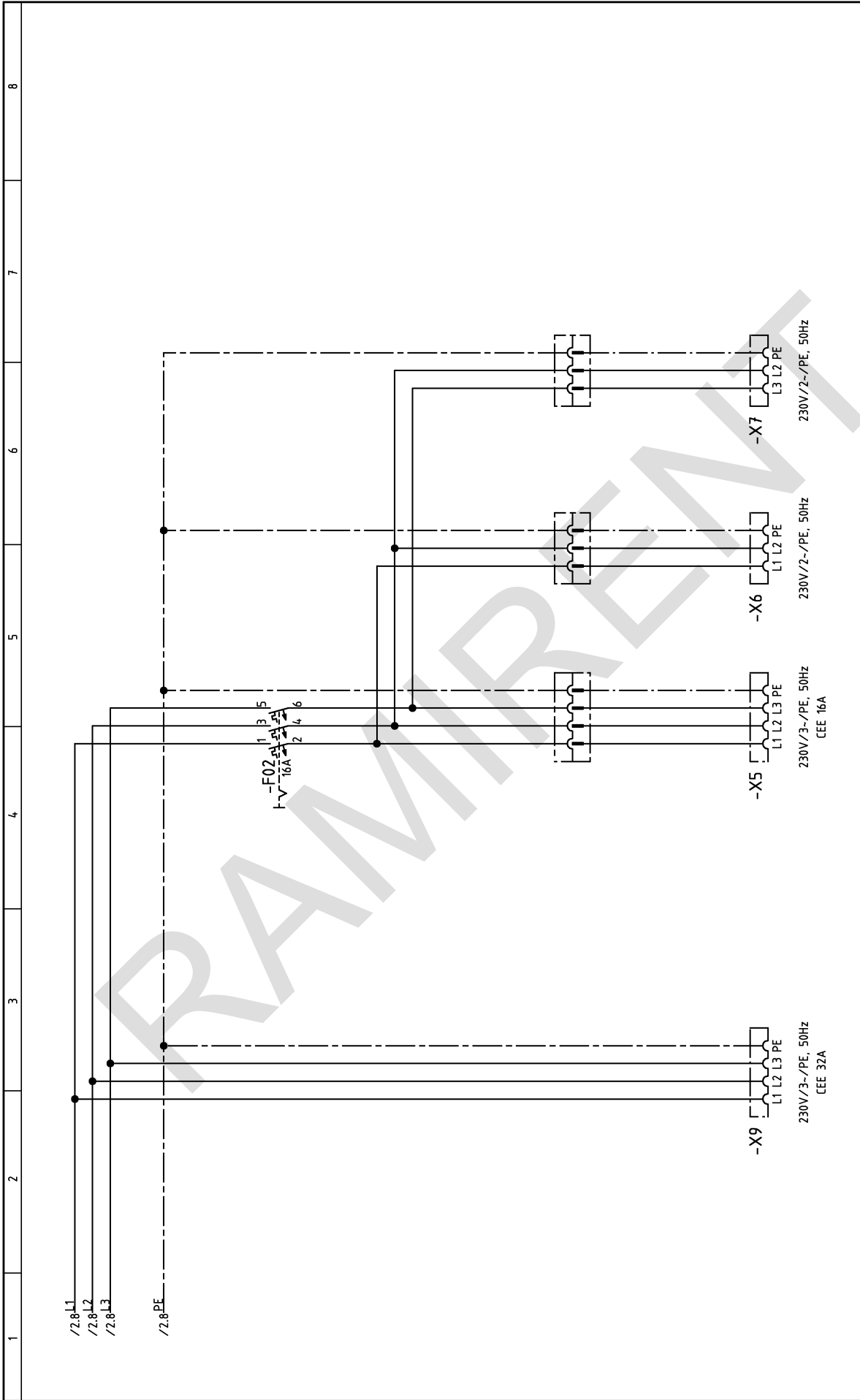
| Lfd. Nr. No. | Benennung Name                      | Zeichnungsnummer (Kunde) Drawing No. (customer) | Zeichnungsnummer (Hersteller) Drawing No. (manufacturer) | Blatt Page | Anlagenkennzeichen Unit designation |
|--------------|-------------------------------------|---|--|------------|-------------------------------------|
| 1            | Cover page                          |   | DGENGTS.Z53-00924.02                                     | 1          |                                     |
| 2            | List of contents                    |   | ZGENGTS.Z53-00924.02                                     | 1          |                                     |
| 3            | Circuit diagram                     |   | SGENGTS.Z53-00924.02                                     | 1          |                                     |
| 4            | Circuit diagram                     | Insulation monitoring                           | SGENGTS.Z53-00924.02                                     | 2          |                                     |
| 5            | Circuit diagram                     | socket panel                                    | SGENGTS.Z53-00924.02                                     | 3          |                                     |
| 6            | Electrical equipment identification |   | SGENGTS.Z53-00924.02                                     | 01         |                                     |
| 7            | Equipment parts list                |   | GGENGTS.Z53-00924.02                                     | 1          |                                     |
| 8            | Component layout                    | front plate                                     | AGENGTS.Z53-00924.02                                     | 1          |                                     |

|             |               |            |                           |  |               |   |                       |         |
|-------------|---------------|------------|---------------------------|--|---------------|---|-----------------------|---------|
| c           | Datum         | 22.02.2006 | List of contents          |  | =             | + | ZGENGTS.Z53-00924.02  | Blatt 1 |
| b           | Bearb. / Weid |            | GTS Synchronous generator |  |               |   |                       |         |
| a           | Gepr. / Weid  |            | KAESER KOMPRESSOREN       |  |               |   |                       |         |
| B. Änderung | Datum         | Name       | Ersatz für:               |  | Ersatz durch: |   | Ursprung: AGE00924_01 |         |





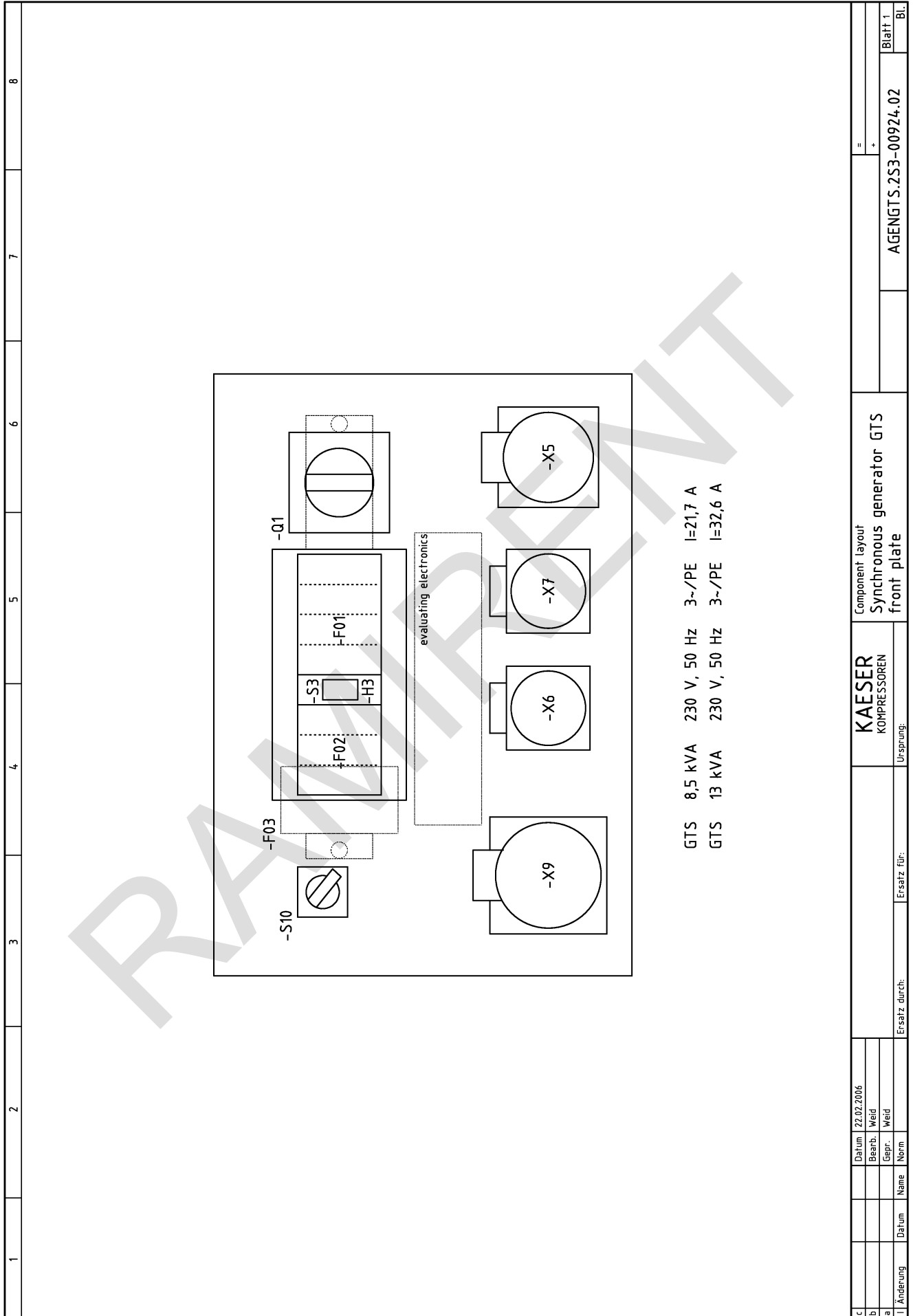


|                       |          |                           |      |
|-----------------------|----------|---------------------------|------|
| Function:             |          | socket panel              |      |
| Group of functions:   |          | socket panel              |      |
| c                     | Datum    | 22.02.2006                |      |
| b                     | Bearb.   | Weid                      |      |
| a                     | Gepr.    | Weid                      |      |
| D                     | Änderung | Datum                     | Name |
| Ersatz durch:         |          | Ersatz für:               |      |
| Kaeser                |          | Kaeser                    |      |
| KOMPRESSOREN          |          | KOMPRESSOREN              |      |
| Circuit diagram       |          | Synchronous generator GTS |      |
| socket panel          |          | socket panel              |      |
| SGENGT.S.ZS3-00924.02 |          | SGENGT.S.ZS3-00924.02     |      |
| Blatt 3               |          | Blatt 3                   |      |



|   |          |   |                       |               |                                     |   |   |  |
|---|----------|---|-----------------------|---------------|-------------------------------------|---|---|--|
| 1 | 2        | 3   | 4                     | 5             | 6                                   | 7 | 8 |  |
|   |          | -A3 generator-Regulator                               |                       |               |                                     |   |   |  |
|   |          | -F01 Cut-out with overcurrent release                 |                       |               |                                     |   |   |  |
|   |          | -F02 Cut-out  |                       |               |                                     |   |   |  |
|   |          | -F03 Insulation monitoring                            |                       |               |                                     |   |   |  |
|   |          | -G3 generator   |                       |               |                                     |   |   |  |
|   |          | -H03 Earth leak lamp                                  |                       |               |                                     |   |   |  |
|   |          | -Q1 Main switch                                       |                       |               |                                     |   |   |  |
|   |          | -S3 Test button, Insulation monitoring                |                       |               |                                     |   |   |  |
|   |          | -S10 Selector switch                                  |                       |               |                                     |   |   |  |
|   |          | -X4 Generator terminals                               |                       |               |                                     |   |   |  |
|   |          | -X5 Socket outlet 230V/3~/PE, 50Hz 16A                |                       |               |                                     |   |   |  |
|   |          | -X6,-X7 Socket outlet 230V/2~/PE, 50Hz 16A            |                       |               |                                     |   |   |  |
|   |          | -X9 Socket outlet 230V/3~/PE, 50Hz 32A                |                       |               |                                     |   |   |  |
|   |          | -X4.2 Plug connection, Valve interference suppression |                       |               |                                     |   |   |  |
| c | Datum    | 22.02.2006  |                       |               |                                     |   |   |  |
| b | Bearb.   | Weld  |                       |               |                                     |   |   |  |
| a | Gepr.    | Weld  |                       |               |                                     |   |   |  |
| E | Änderung | Datum   | Name                  | Ersatz durch: |                                     |   |   |  |
|   |          |   | Kaeser                |               | Electrical equipment identification |   |   |  |
|   |          |   | KOMPRESSOREN          |               | Synchronous generator GTS           |   |   |  |
|   |          |   | Ursprung: AGE00924_01 |               | SGENGT.S.ZS3-00924.02               |   |   |  |
|   |          |   |                       |               | =                                   |   |   |  |
|   |          |   |                       |               | +                                   |   |   |  |
|   |          |   |                       |               | Blatt 01                            |   |   |  |
|   |          |   |                       |               | Bl.                                 |   |   |  |





13.4.7 Option ga  
Generator electrical diagram, 115 V, 2-ph

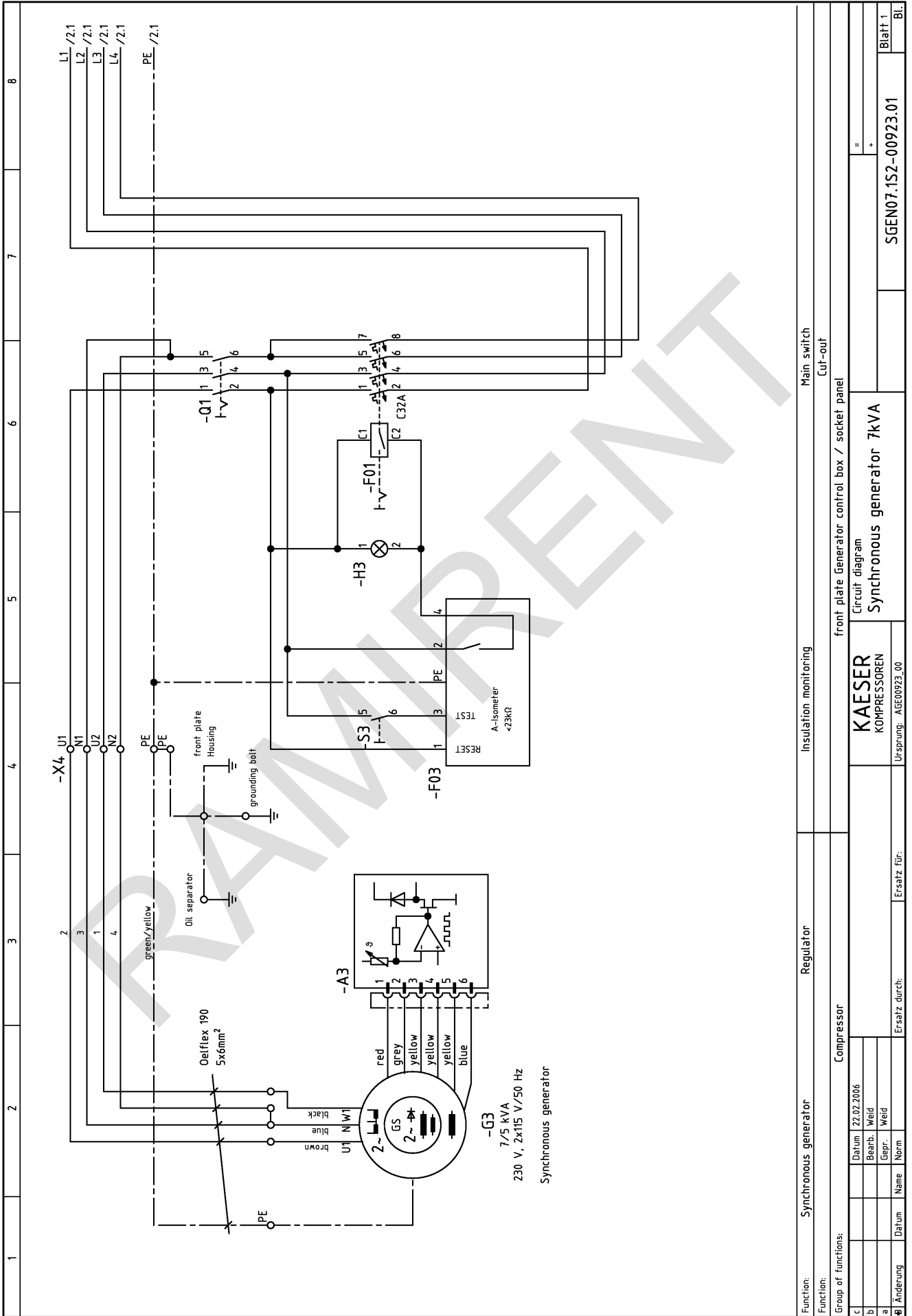
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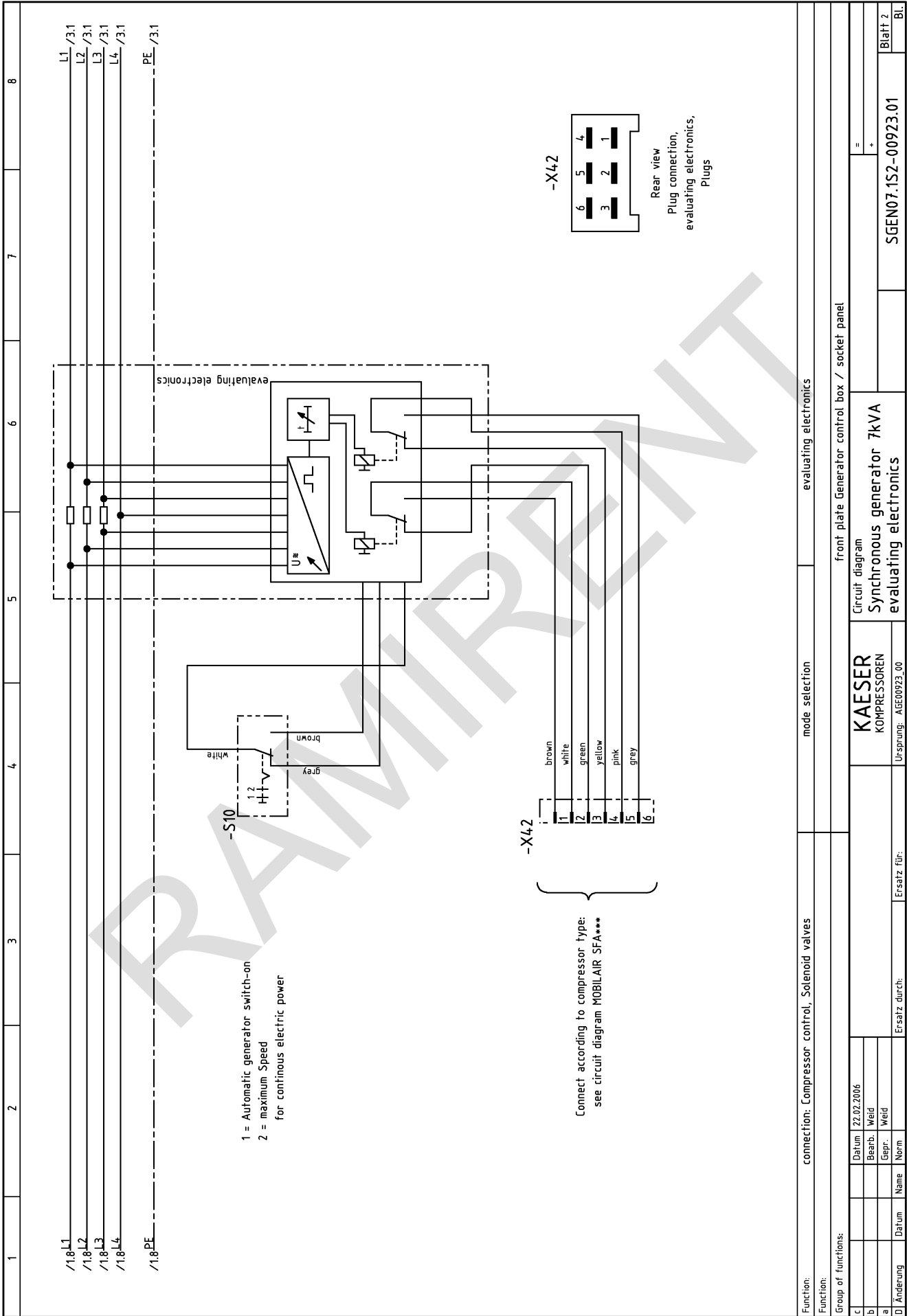
|  |               |            |      |               |                       |                     |   |                       |
|--|---------------|------------|------|---------------|-----------------------|---------------------|---|-----------------------|
| 1  | 2             | 3          | 4    | 5             | 6                     | 7                   | 8 |                       |
| <p>Electrical diagrams</p> <p>Synchronous generator GTS</p> <p>7/5 kVA, 115 V 50Hz</p> <p>with Insulation monitoring</p>   |               |            |      |               |                       |                     |   |                       |
| <p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>   |               |            |      |               |                       |                     |   |                       |
| <p><b>RAMIRRENT</b></p>  |               |            |      |               |                       |                     |   |                       |
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| c  | Datum         | 22.02.2006 | E    |               | Kaeser Kompressoren   |                     |   | Cover page            |
| b  | Bearb. / Weid |            |      |               | KOMPRESSOREN          |                     |   | Portable Compressor   |
| a  | Gepr. / Weid  |            |      |               | URSPRUNG: AGE00923_00 |                     |   | Synchronous generator |
| A, Änderung  | Datum         | Name       | Norm | Ersatz durch: |                       | Ersatz für:         |   |                       |
|  |               |            |      |               |                       | DGEN07.1S2-00923.01 |   |                       |
|  |               |            |      |               |                       | Blatt 1             |   |                       |
|  |               |            |      |               |                       | Bl.                 |   |                       |

| Lfd. Nr. No. | Benennung Name                      | Zeichnungsnummer (Kunde) Drawing No. (customer) | Zeichnungsnummer (Hersteller) Drawing No. (manufacturer) | Blatt Page | Anlagenkennzeichen Unit designation |
|--------------|-------------------------------------|---|--|------------|-------------------------------------|
| 1            | Cover page                          |   | DGEN07.1S2-00923.01                                      | 1          |                                     |
| 2            | List of contents                    |   | ZGEN07.1S2-00923.01                                      | 1          |                                     |
| 3            | Circuit diagram                     |   | SGEN07.1S2-00923.01                                      | 1          |                                     |
| 4            | Circuit diagram                     |   | SGEN07.1S2-00923.01                                      | 2          |                                     |
| 5            | Circuit diagram                     |   | SGEN07.1S2-00923.01                                      | 3          |                                     |
| 6            | Electrical equipment identification |   | SGEN07.1S2-00923.01                                      | 01         |                                     |
| 7            | Circuit diagram                     |   | GGEN07.1S2-00923.01                                      | 1          |                                     |
| 8            | Component layout                    |   | AGEN07.1S2-00923.01                                      | 1          |                                     |

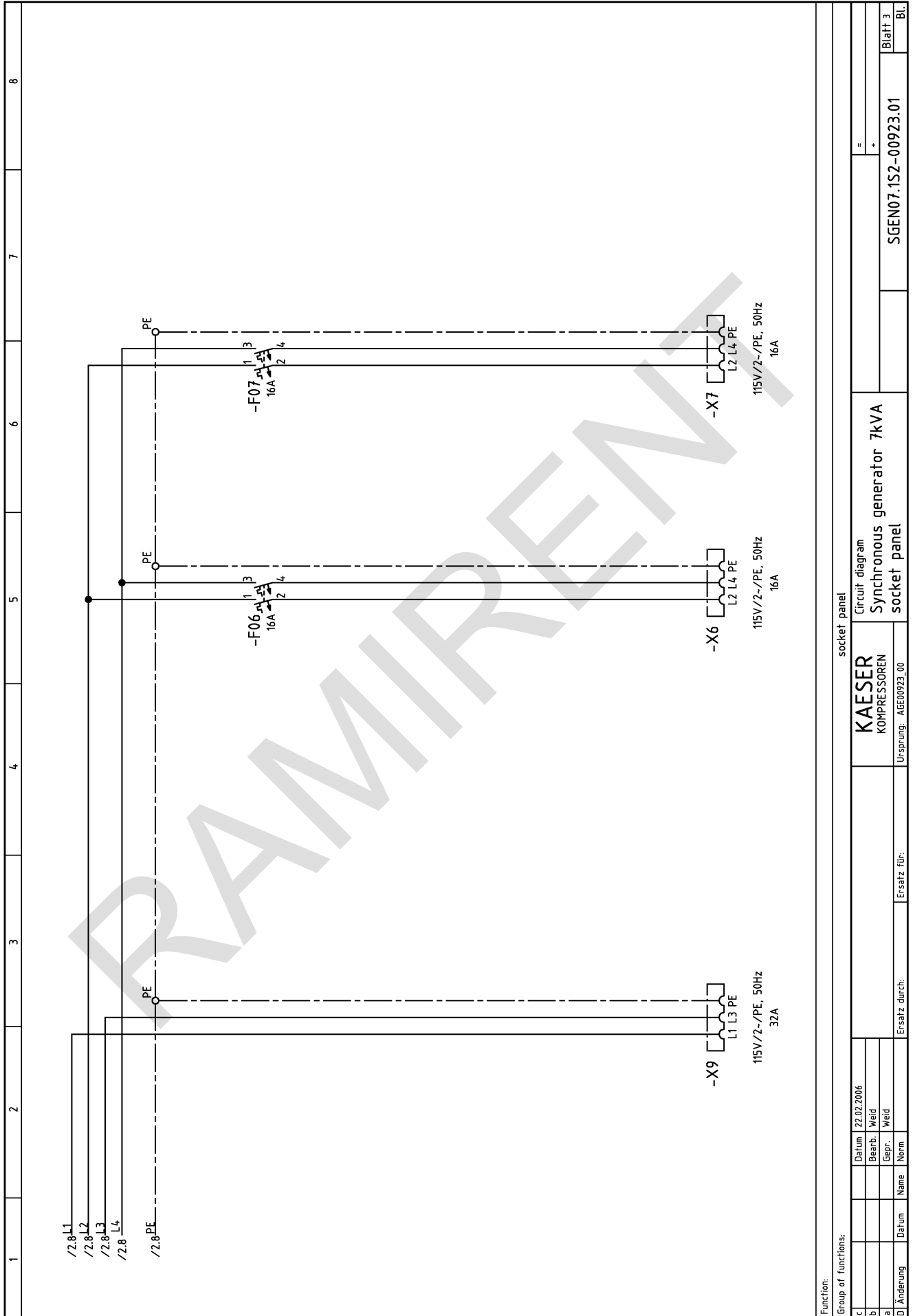
  

|                           |  |                           |  |                           |  |
|---------------------------|--|---------------------------|--|---------------------------|--|
| List of contents          |  | List of contents          |  | List of contents          |  |
| GTS Synchronous generator |  | GTS Synchronous generator |  | GTS Synchronous generator |  |
| KAESER KOMPRESSOREN       |  | KAESER KOMPRESSOREN       |  | KAESER KOMPRESSOREN       |  |
| Ursprung: AGE00923_00     |  | Ursprung: AGE00923_00     |  | Ursprung: AGE00923_00     |  |
| Ersatz für:               |  | Ersatz für:               |  | Ersatz für:               |  |
| Datum 22.02.2006          |  | Datum 22.02.2006          |  | Datum 22.02.2006          |  |
| Bearb. Weid               |  | Bearb. Weid               |  | Bearb. Weid               |  |
| Gepr. Weid                |  | Gepr. Weid                |  | Gepr. Weid                |  |
| Datum                     |  | Datum                     |  | Datum                     |  |
| Name                      |  | Name                      |  | Name                      |  |
| Norm                      |  | Norm                      |  | Norm                      |  |
| Ersatz durch:             |  | Ersatz durch:             |  | Ersatz durch:             |  |
| Blatt 1                   |  | Blatt 1                   |  | Blatt 1                   |  |
| ZGEN07.1S2-00923.01       |  | ZGEN07.1S2-00923.01       |  | ZGEN07.1S2-00923.01       |  |
| Bl.                       |  | Bl.                       |  | Bl.                       |  |



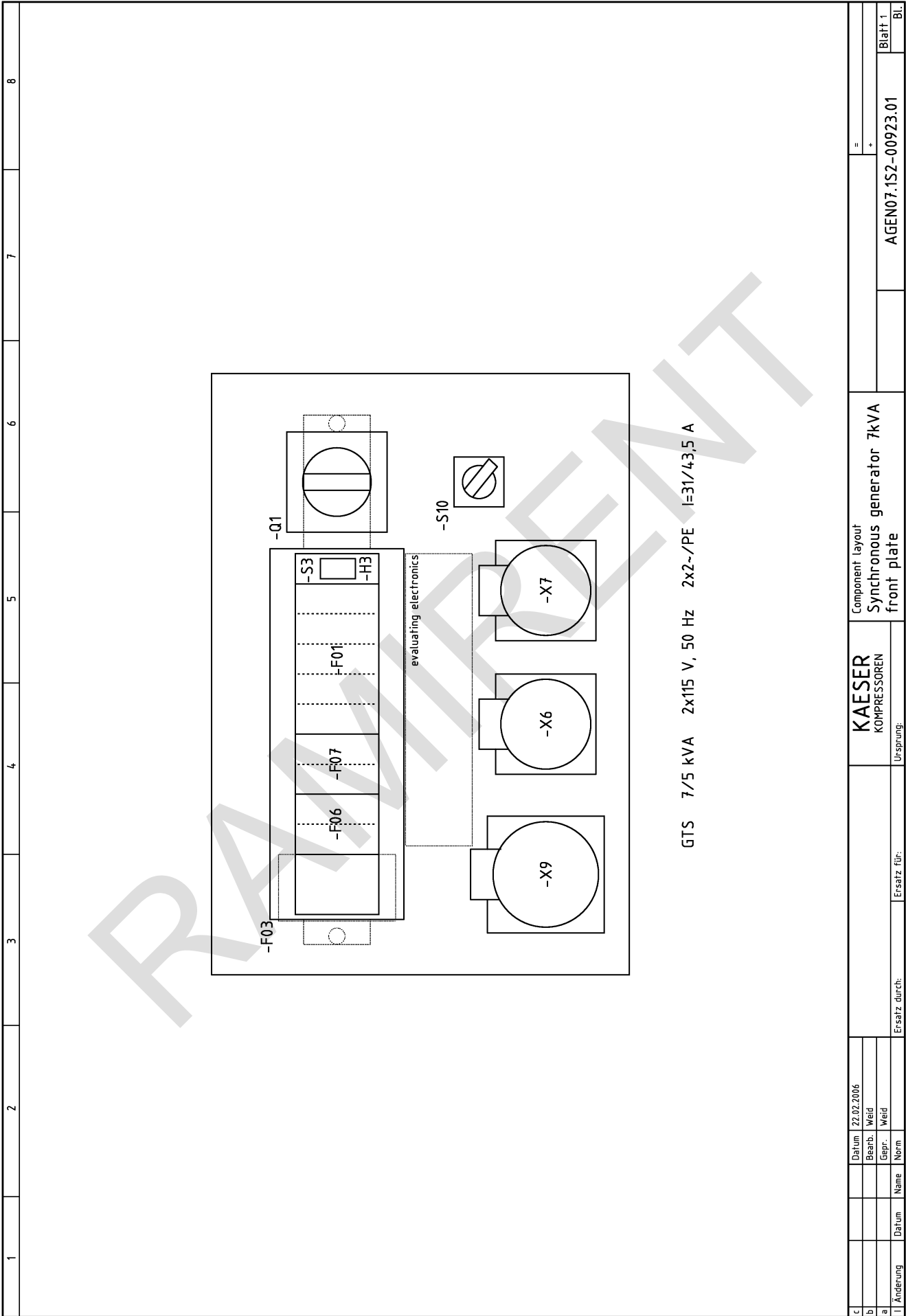






|              |               |  |                                     |   |   |   |   |                     |
|--------------|---------------|--|-------------------------------------|---|---|---|---|---------------------|
| 1            | 2             | 3  | 4                                   | 5 | 6 | 7 | 8 |                     |
|              |               | -A3 generator-Regulator                              |                                     |   |   |   |   |                     |
|              |               | -F01 Cut-out with overcurrent release                |                                     |   |   |   |   |                     |
|              |               | -F06,-F07 Cut-out                                    |                                     |   |   |   |   |                     |
|              |               | -F03 Insulation monitoring                           |                                     |   |   |   |   |                     |
|              |               | -G3 generator  |                                     |   |   |   |   |                     |
|              |               | -H3 Earth leak lamp                                  |                                     |   |   |   |   |                     |
|              |               | -Q1 Main switch                                      |                                     |   |   |   |   |                     |
|              |               | -S3 Test button, Insulation monitoring               |                                     |   |   |   |   |                     |
|              |               | -S10 Selector switch                                 |                                     |   |   |   |   |                     |
|              |               | -X4 Generator terminals                              |                                     |   |   |   |   |                     |
|              |               | -X6,-X7 Socket outlet 115V/2~/PE, 50Hz 16A           |                                     |   |   |   |   |                     |
|              |               | -X9 Socket outlet 115V/2~/PE, 50Hz 32A               |                                     |   |   |   |   |                     |
|              |               | -X42 Plug connection, Valve interference suppression |                                     |   |   |   |   |                     |
| c            | Datum         | 22.02.2006   | Electrical equipment identification |   |   |   |   | =                   |
| b            | Bearb. / Weid |  | Synchronous generator GTS           |   |   |   |   | +                   |
| a            | Gepr. / Weid  |  | Electrical equipment identification |   |   |   |   | SGEN07.1S2-00923.01 |
| E / Änderung | Datum         | Name   | Ersatz für:                         |   |   |   |   | Blatt 01            |
|              |               |  | Ursprung: AGE00923_00               |   |   |   |   | Bl.                 |





|                               |          |            |   |             |               |
|-------------------------------|----------|------------|---|-------------|---------------|
| c                             | Datum    | 22.02.2006 | =   |             |               |
| b                             | Bearb.   | Weid       | +   |             |               |
| a                             | Gepr.    | Weid       |   |             |               |
| l                             | Änderung | Datum      | Name  | Norm        | Ersatz durch: |
|                               |          |            |   | Ersatz für: |               |
|                               |          |            | Ursprung:   |             |               |
| <b>KAESER</b><br>KOMPRESSOREN |          |            | Component layout<br>Synchronous generator 7kVA<br>front plate |             |               |
|                               |          |            | AGEN07.1S2-00923.01   |             |               |
|                               |          |            | Blatt 1   |             |               |
|                               |          |            | Bl.   |             |               |

13.4.8 Option ga  
Generator electrical diagram, 230 V, 2-ph

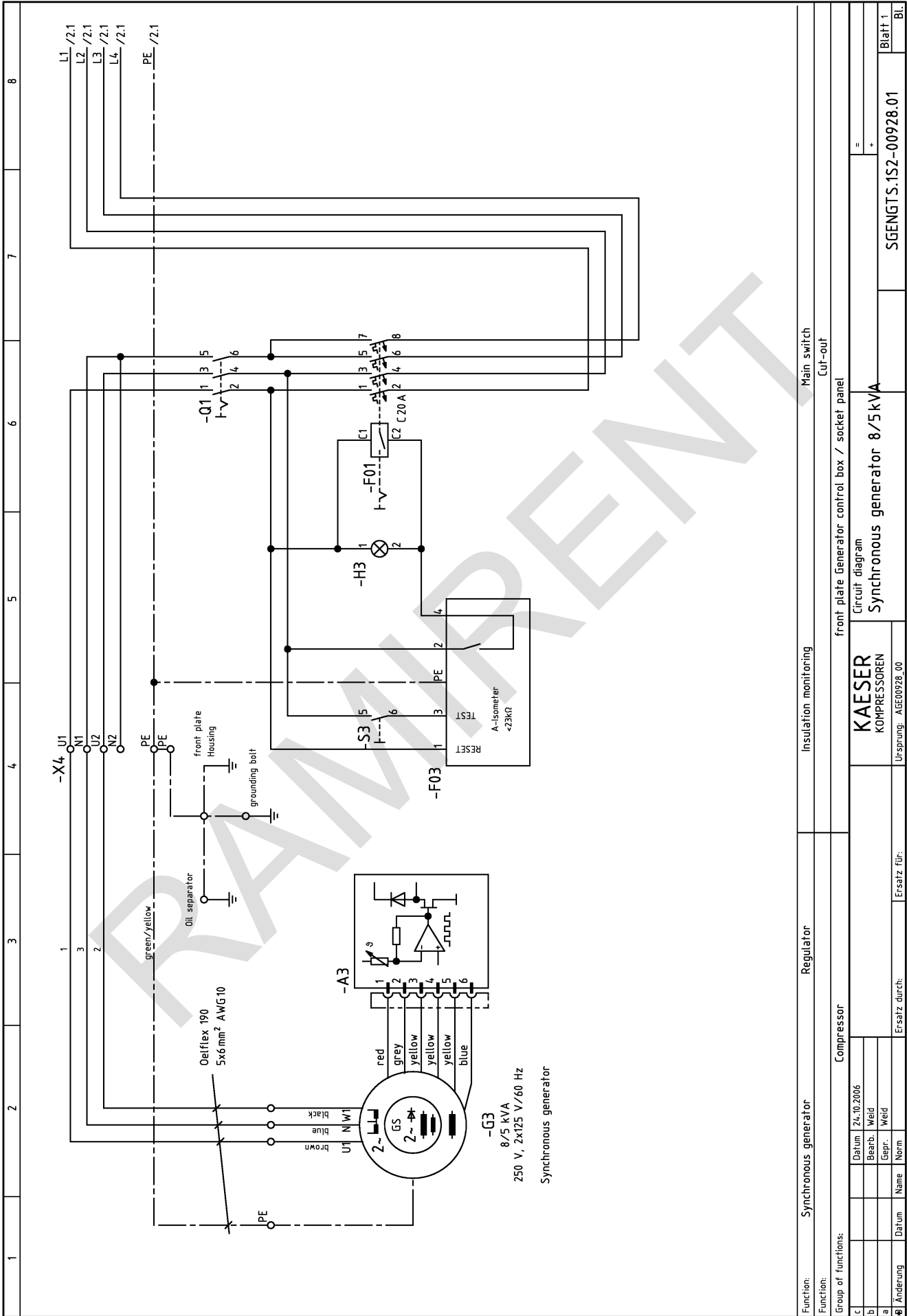
RAMIRENT

|  |               |            |      |      |                       |                       |                     |         |
|--|---------------|------------|------|------|-----------------------|-----------------------|---------------------|---------|
| 1  | 2             | 3          | 4    | 5    | 6                     | 7                     | 8                   |         |
| <p>Electrical diagrams</p> <p>Synchronous generator GTS</p> <p>8/5 kVA, 125/250 V 60Hz</p> <p>with Insulation monitoring</p>   |               |            |      |      |                       |                       |                     |         |
| <p>Manufacturer: Kaeser Kompressoren GmbH</p> <p>Postfach 2143</p> <p>96410 Coburg</p>   |               |            |      |      |                       |                       |                     |         |
| <p><b>RAMIRRENT</b></p>  |               |            |      |      |                       |                       |                     |         |
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| c  | Datum         | 24.10.2006 | E    |      | Cover page            |                       |                     | =       |
| b  | Bearb. / Weid |            |      |      | MOBILAIR              |                       |                     | +       |
| a  | Gepr. / Weid  |            |      |      | Synchronous generator |                       |                     |         |
| A  | Änderung      | Datum      | Name | Norm | Ersatz für:           | Ursprung: AGE00928_00 | DGNGTS.1S2-00928.01 | Blatt 1 |
|  |               |            |      |      |                       |                       |                     | Bl.     |

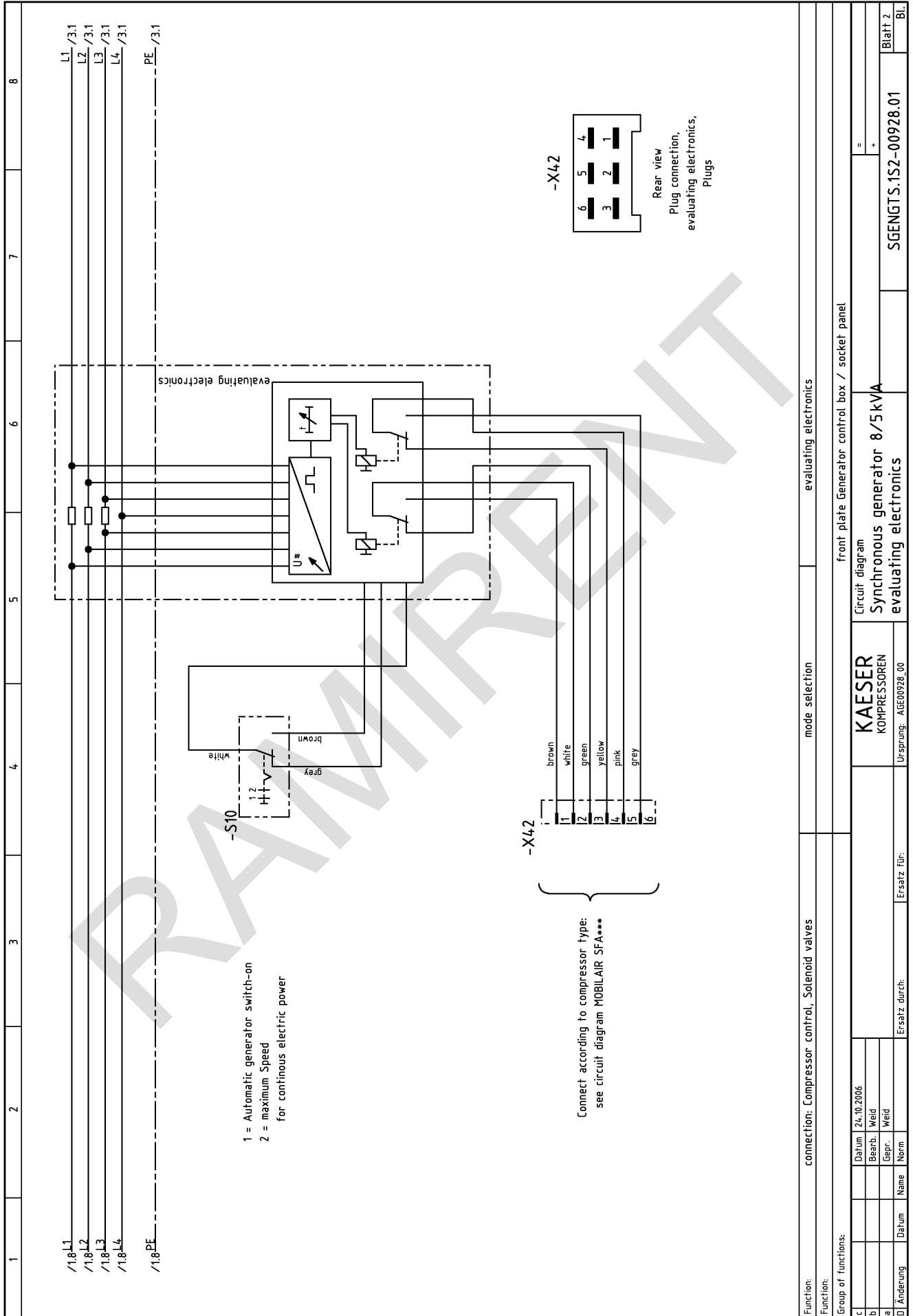
| Lfd. Nr. No. | Benennung Name                      | Zeichnungsnummer (Kunde) Drawing No. (customer) | Zeichnungsnummer (Hersteller) Drawing No. (manufacturer) | Blatt Page | Anlagenkennzeichen Unit designation |
|--------------|-------------------------------------|---|--|------------|-------------------------------------|
| 1            | Cover page                          | Synchronous generator                           | DGENGTS.IS2-00928.01                                     | 1          |                                     |
| 2            | List of contents                    |   | ZGENGTS.IS2-00928.01                                     | 1          |                                     |
| 3            | Circuit diagram                     |   | SGENGTS.IS2-00928.01                                     | 1          |                                     |
| 4            | Circuit diagram                     | evaluating electronics                          | SGENGTS.IS2-00928.01                                     | 2          |                                     |
| 5            | Circuit diagram                     | socket panel                                    | SGENGTS.IS2-00928.01                                     | 3          |                                     |
| 6            | Electrical equipment identification | Electrical equipment identification             | SGENGTS.IS2-00928.01                                     | 01         |                                     |
| 7            | Circuit diagram                     |   | GGENGTS.IS2-00928.01                                     | 1          |                                     |
| 8            | Component layout                    | front plate                                     | AGENGTS.IS2-00928.01                                     | 1          |                                     |

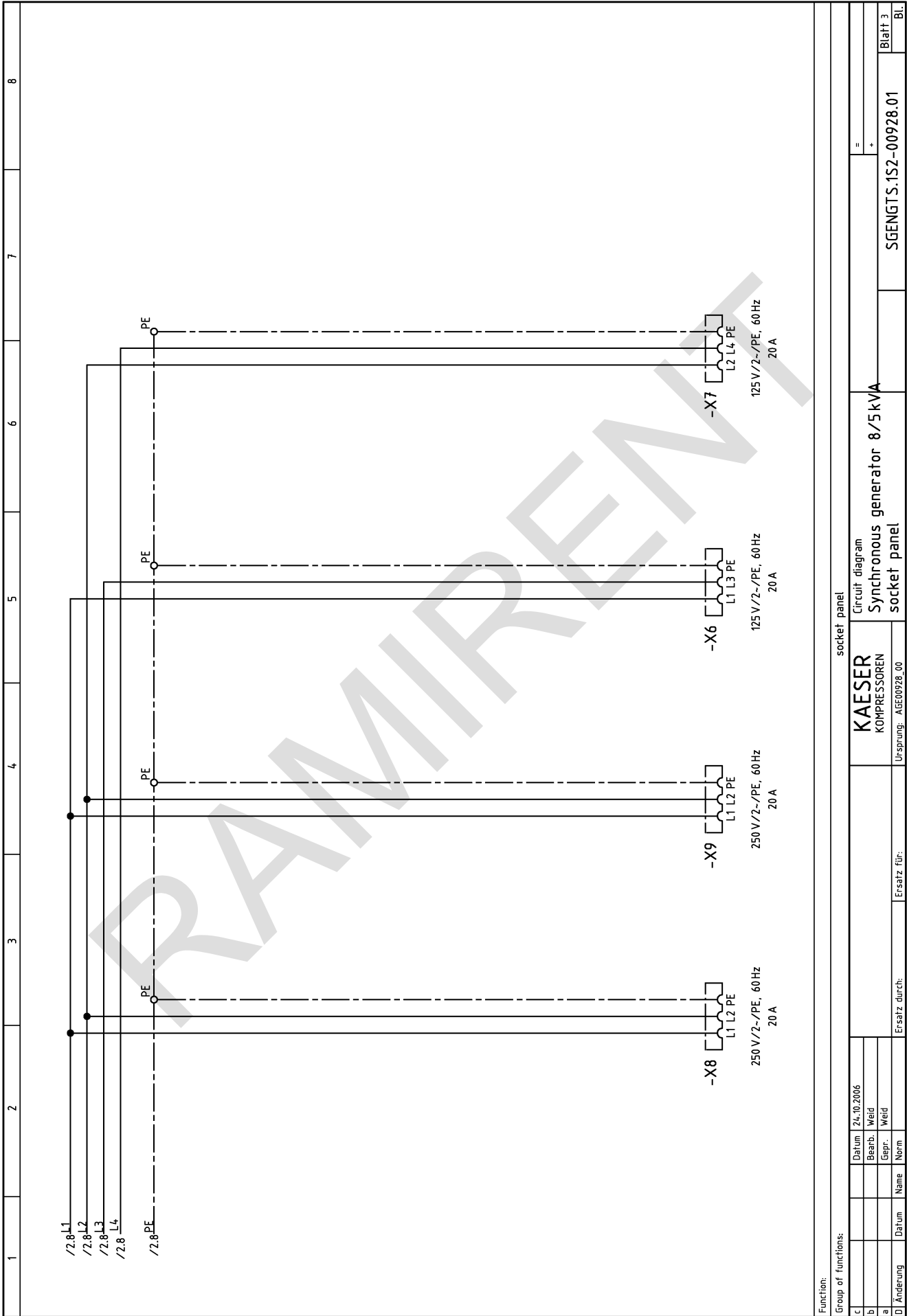
  

|             |               |            |                  |             |                      |
|-------------|---------------|------------|------------------|-------------|----------------------|
| c           | Datum         | 24.10.2006 | List of contents |             | =                    |
| b           | Bearb. / Weid |            |                  |             | +                    |
| a           | Gepr. / Weid  |            |                  |             |                      |
| B. Änderung | Datum         | Name       | Ersatz durch:    | Ersatz für: | Blatt 1              |
|             |               |            |                  |             | ZGENGTS.IS2-00928.01 |
|             |               |            |                  |             | Bl.                  |



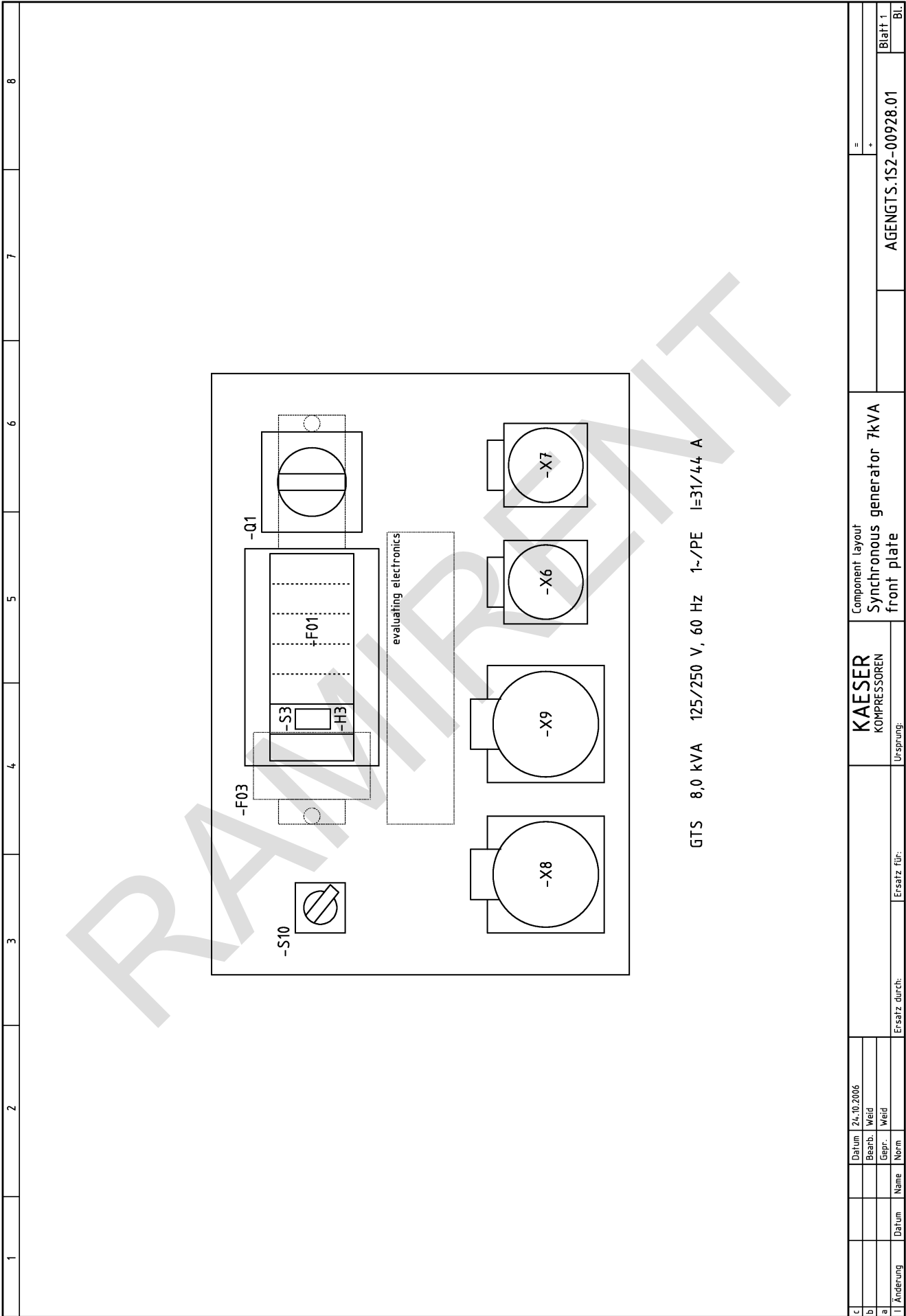






|             |        |  |               |   |                       |   |          |                                     |
|-------------|--------|--|---------------|---|-----------------------|---|----------|-------------------------------------|
| 1           | 2      | 3  | 4             | 5 | 6                     | 7 | 8        |                                     |
|             |        | -A3 generator-Regulator                              |               |   |                       |   |          |                                     |
|             |        | -F01 Cut-out with overcurrent release                |               |   |                       |   |          |                                     |
|             |        | -F06,-F07 Cut-out                                    |               |   |                       |   |          |                                     |
|             |        | -F03 Insulation monitoring                           |               |   |                       |   |          |                                     |
|             |        | -G3 generator  |               |   |                       |   |          |                                     |
|             |        | -H3 Earth leak lamp                                  |               |   |                       |   |          |                                     |
|             |        | -Q1 Main switch                                      |               |   |                       |   |          |                                     |
|             |        | -S3 Test button, Insulation monitoring               |               |   |                       |   |          |                                     |
|             |        | -S10 Selector switch                                 |               |   |                       |   |          |                                     |
|             |        | -X4 Generator terminals                              |               |   |                       |   |          |                                     |
|             |        | -X6,-X7 Socket outlet 125V/2~/PE, 60 Hz 20 A         |               |   |                       |   |          |                                     |
|             |        | -X8,-X9 Socket outlet 250V/2~/PE, 60 Hz 20 A         |               |   |                       |   |          |                                     |
|             |        | -X42 Plug connection, Valve interference suppression |               |   |                       |   |          |                                     |
| c           | Datum  | 24.10.2006   |               |   |                       |   |          | Electrical equipment identification |
| b           | Bearb. | Weid   |               |   |                       |   |          | Synchronous generator GTS           |
| a           | Gepr.  | Weid   |               |   |                       |   |          | Electrical equipment identification |
| E, Änderung | Datum  | Name   | Ersatz durch: |   | Ersatz für:           |   | Blatt 01 |                                     |
|             |        |  |               |   |                       |   | Bl.      |                                     |
|             |        |  |               |   | SGENGT.S/IS2-00928.01 |   | = +      |                                     |

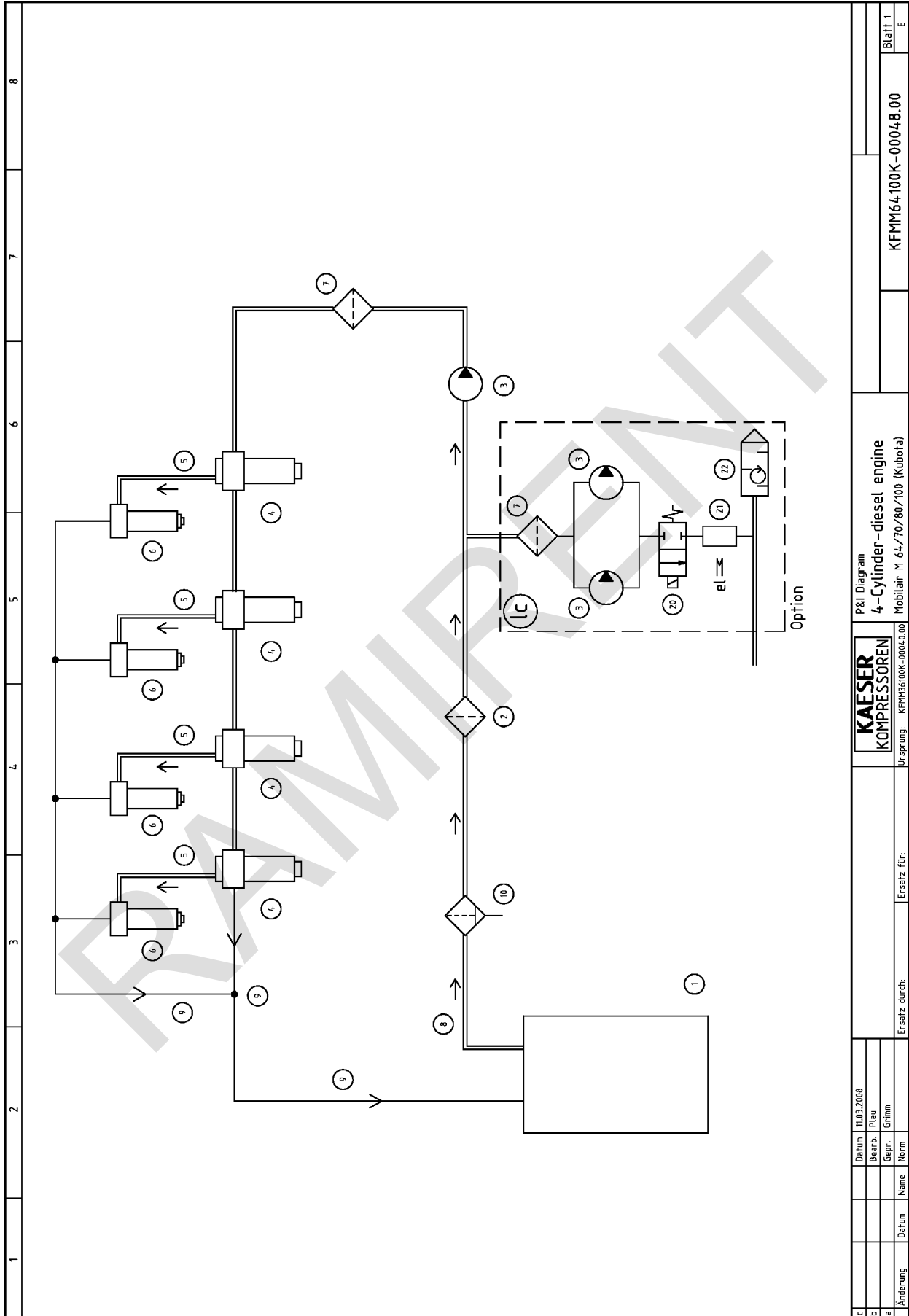




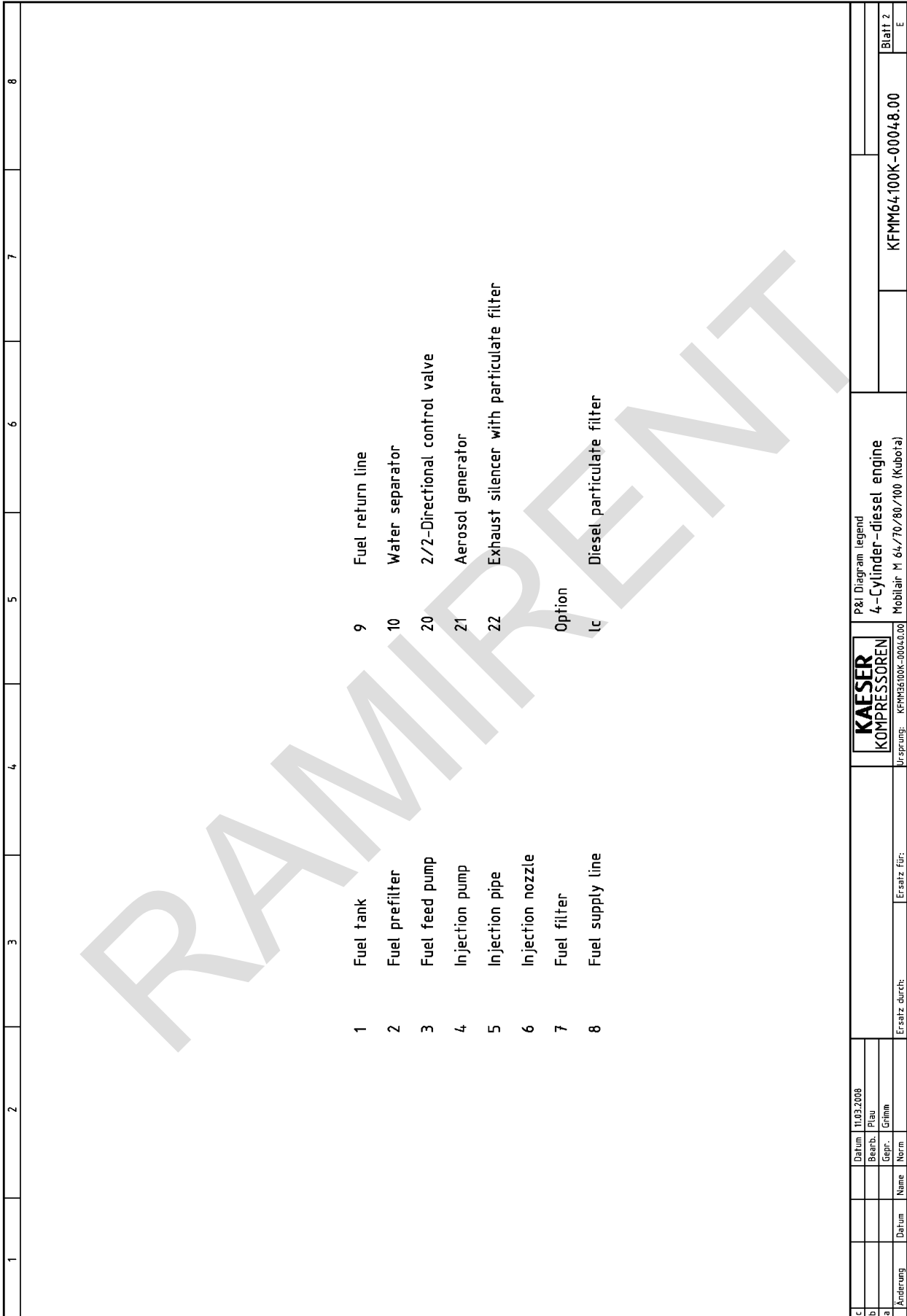
|   |          |                        |      |                            |  |                      |         |
|---|----------|------------------------|------|----------------------------|--|----------------------|---------|
| c | Datum    | 24.10.2006             |      |                            |  |                      |         |
| b | Bearb.   | Weid                   |      |                            |  |                      |         |
| a | Gepr.    | Weid                   |      |                            |  |                      |         |
| l | Änderung | Name                   | Norm |                            |  |                      |         |
|   |          | Ersatz durch:          |      |                            |  |                      |         |
|   |          | Ersatz für:            |      | Ursprung:                  |  |                      |         |
|   |          | KAESER<br>KOMPRESSOREN |      | Component layout           |  |                      |         |
|   |          |                        |      | Synchronous generator 7kVA |  |                      |         |
|   |          |                        |      | front plate                |  |                      |         |
|   |          |                        |      |                            |  | AGENGTS.IS2-00928.01 | Blatt 1 |
|   |          |                        |      |                            |  |                      | Bl.     |

## 13.5 Fuel circulation diagram

RAMIRENT



|              |  |   |  |
|--------------|--|---|--|
| Date         |  | 11.03.2008  |  |
| Author       |  | Plau  |  |
| Editor       |  | Gihm  |  |
| Name         |  | Ersatz für:   |  |
| Date         |  | Ersatz durch:   |  |
| Original     |  | KFM35100K-0004.00   |  |
| Title        |  | P&I Diagram<br>4-Cylinder-diesel engine<br>Mobilair M 64/70/80/100 (Kubota) |  |
| Part No.     |  | KFM64-100K-0004.8.00  |  |
| Sheet No.    |  | Blatt 1   |  |
| Total Sheets |  | E   |  |





13.6 Option dd

Operating instructions for compressed air filter (combination filter)

RAMIRENT

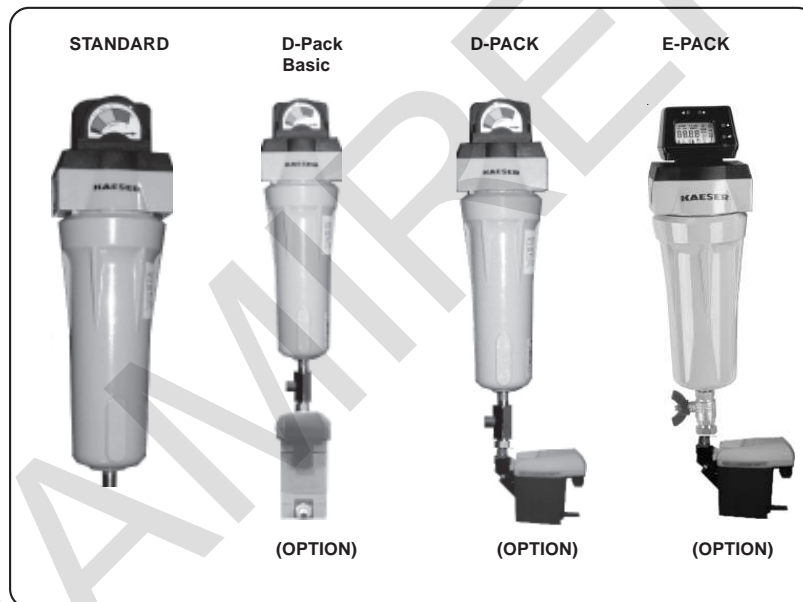
## Bedienungsanleitung Instruction Manual

Hochleistungs - Druckluftfilter

Compressed-air filters

Serie / Series

FA (D), FB (D&E), FC (D&E), FD (E), FE (D&E), FF (D&E), FG



Kaeser Kompressoren GmbH  
Postfach 2143  
96410 Coburg  
Tel.: 09561/640-0  
Fax: 09561/640130  
<http://www.kaeser.com>

**KAESER**

gültig ab 01.04.2007

D

GB

|                                    |          |        |
|------------------------------------|----------|--------|
| A Kap. 9.2, 9.3 Wartungsintervalle | 04.12.08 | SK     |
| Änd. Mittlg.                       | Datum    | Bearb. |

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

FI HANK-MOB\_02 D E

**Materialkennzeichnung**

**Sign of material**

| Filter: Standard |          | Filter: D-Pack |              | Filter: Element/Cartridge |          |
|------------------|----------|----------------|--------------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type       | Nr./No.      | Typ/Type                  | Nr./No.  |
| FA-6             | 9.4600.0 | FA-6 D         | 9.4600.00110 | E-A-6                     | 9.4800.0 |
| FA-10            | 9.4601.0 | FA-10 D        | 9.4601.00110 | E-A-10                    | 9.4801.0 |
| FA-18            | 9.4602.0 | FA-18 D        | 9.4602.00110 | E-A-18                    | 9.4802.0 |
| FA-28            | 9.4603.0 | FA-28 D        | 9.4603.00110 | E-A-28                    | 9.4803.0 |
| FA-48            | 9.4604.0 | FA-48 D        | 9.4604.00010 | E-A-48                    | 9.4804.0 |
| FA-71            | 9.4605.0 | FA-71 D        | 9.4605.00010 | E-A-71                    | 9.4805.0 |
| FA-107           | 9.4606.0 | FA-107 D       | 9.4606.00010 | E-A-107                   | 9.4806.0 |
| FA-138           | 9.4607.0 | FA-138 D       | 9.4607.00010 | E-A-138                   | 9.4807.0 |
| FA-177           | 9.4608.0 | FA-177 D       | 9.4608.00010 | E-A-177                   | 9.4808.0 |
| FA-221           | 9.4609.0 | FA-221 D       | 9.4609.00010 | E-A-221                   | 9.4809.0 |
| FA-185           | 9.4610.0 | FA-185 D       | 9.4610.00010 | E-A-185                   | 9.4810.0 |
| FA-283           | 9.4611.0 | FA-283 D       | 9.4611.00010 | E-A-283                   | 9.4811.0 |
| FA-354           | 9.4612.0 | FA-354 D       | 9.4612.00010 | E-A-185                   | 9.4810.0 |
| FA-526           | 9.4613.0 | FA-526 D       | 9.4613.00010 | E-A-185                   | 9.4810.0 |
| FA-708           | 9.4614.0 | FA-708 D       | 9.4614.00010 | E-A-185                   | 9.4810.0 |
| FA-885           | 9.4615.0 | FA-885 D       | 9.4615.00010 | E-A-185                   | 9.4810.0 |
| FA-1420          | 9.4616.0 | FA-1420 D      | 9.4616.00010 | E-A-185                   | 9.4810.0 |
| FA-1950          | 9.4617.0 | FA-1950 D      | 9.4617.00010 | E-A-185                   | 9.4810.0 |
| FA-2480          | 9.4618.0 | FA-2480 D      | 9.4618.00010 | E-A-185                   | 9.4810.0 |

D-Pack: Filter mit ECO-DRAIN /

D-Pack: Filter with ECO-DRAIN

| Filter: Standard |          | Filter: D-Pack Basic |              | Filter: D-Pack |              | Filter: E-Pack |          | Filter: Element/Cartridge |          |
|------------------|----------|----------------------|--------------|----------------|--------------|----------------|----------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type             | Nr./No.      | Typ/Type       | Nr./No.      | Typ/Type       | Typ/Type | Typ/Type                  | Nr./No.  |
| FB-6             | 9.4620.0 | FB-6 B               | 9.4620.00110 | FB-6 D         | 9.4620.00120 | FB-6 E         | E-B-6    | E-B-6                     | 9.4812.0 |
| FB-10            | 9.4621.0 | FB-10 B              | 9.4621.00110 | FB-10 D        | 9.4621.00120 | FB-10 E        | E-B-10   | E-B-10                    | 9.4813.0 |
| FB-18            | 9.4622.0 | FB-18 B              | 9.4622.00110 | FB-18 D        | 9.4622.00120 | FB-18 E        | E-B-18   | E-B-18                    | 9.4814.0 |
| FB-28            | 9.4623.0 | FB-28 B              | 9.4623.00110 | FB-28 D        | 9.4623.00120 | FB-28 E        | E-B-28   | E-B-28                    | 9.4815.0 |
| FB-48            | 9.4624.0 | FB-48 B              | 9.4624.00110 | FB-48 D        | 9.4624.00120 | FB-48 E        | E-B-48   | E-B-48                    | 9.4816.0 |
| FB-71            | 9.4625.0 | FB-71 B              | 9.4625.00110 | FB-71 D        | 9.4625.00120 | FB-71 E        | E-B-71   | E-B-71                    | 9.4817.0 |
| FB-107           | 9.4626.0 | FB-107 B             | 9.4626.00110 | FB-107 D       | 9.4626.00120 | FB-107 E       | E-B-107  | E-B-107                   | 9.4818.0 |
| FB-138           | 9.4627.0 | FB-138 B             | 9.4627.00110 | FB-138 D       | 9.4627.00120 | FB-138 E       | E-B-138  | E-B-138                   | 9.4819.0 |
| FB-177           | 9.4628.0 | FB-177 B             | 9.4628.00110 | FB-177 D       | 9.4628.00120 | FB-177 E       | E-B-177  | E-B-177                   | 9.4820.0 |
| FB-221           | 9.4629.0 | FB-221 B             | 9.4629.00110 | FB-221 D       | 9.4629.00120 | FB-221 E       | E-B-221  | E-B-221                   | 9.4821.0 |
| FB-185           | 9.4630.0 | -                    | -            | FB-185 D       | 9.4630.00120 | FB-185 E       | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-283           | 9.4631.0 | -                    | -            | FB-283 D       | 9.4631.00120 | FB-283 E       | E-B-283  | E-B-283                   | 9.4823.0 |
| FB-354           | 9.4632.0 | -                    | -            | FB-354 D       | 9.4632.00120 | FB-354 E       | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-526           | 9.4633.0 | -                    | -            | FB-526 D       | 9.4633.00120 | FB-526 E       | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-708           | 9.4634.0 | -                    | -            | FB-708 D       | 9.4634.00120 | FB-708 E       | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-885           | 9.4635.0 | -                    | -            | FB-885 D       | 9.4635.00120 | FB-885 E       | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-1420          | 9.4636.0 | -                    | -            | FB-1420 D      | 9.4636.00020 | FB-1420 E      | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-1950          | 9.4637.0 | -                    | -            | FB-1950 D      | 9.4637.00020 | FB-1950 E      | E-B-185  | E-B-185                   | 9.4822.0 |
| FB-2480          | 9.4638.0 | -                    | -            | FB-2480 D      | 9.4638.00020 | FB-2480 E      | E-B-185  | E-B-185                   | 9.4822.0 |

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

- 2 -

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

FI HANK-MOB\_02 D E

**Materialkennzeichnung**

**Sign of material**

| Filter: Standard |          | Filter: D-Pack Basic |              | Filter: D-Pack |              | Filter: E-Pack |          | Filter: Element/Cartridge |          |
|------------------|----------|----------------------|--------------|----------------|--------------|----------------|----------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type             | Nr./No.      | Typ/Type       | Nr./No.      | Typ/Type       | Typ/Type | Nr./No.                   | Nr./No.  |
| FC-6             | 9.4640.0 | FC-6 B               | 9.4640.00110 | FC-6 D         | 9.4640.00120 | FC-6 E         | E-C-6    |                           | 9.4824.0 |
| FC-10            | 9.4641.0 | FC-10 B              | 9.4641.00110 | FC-10 D        | 9.4641.00120 | FC-10 E        | E-C-10   |                           | 9.4825.0 |
| FC-18            | 9.4642.0 | FC-18 B              | 9.4642.00110 | FC-18 D        | 9.4642.00120 | FC-18 E        | E-C-18   |                           | 9.4826.0 |
| FC-28            | 9.4643.0 | FC-28 B              | 9.4643.00110 | FC-28 D        | 9.4643.00120 | FC-28 E        | E-C-28   |                           | 9.4827.0 |
| FC-48            | 9.4644.0 | FC-48 B              | 9.4644.00110 | FC-48 D        | 9.4644.00120 | FC-48 E        | E-C-48   |                           | 9.4828.0 |
| FC-71            | 9.4645.0 | FC-71 B              | 9.4645.00110 | FC-71 D        | 9.4645.00120 | FC-71 E        | E-C-71   |                           | 9.4829.0 |
| FC-107           | 9.4646.0 | FC-107 B             | 9.4646.00110 | FC-107 D       | 9.4646.00120 | FC-107 E       | E-C-107  |                           | 9.4830.0 |
| FC-138           | 9.4647.0 | FC-138 B             | 9.4647.00110 | FC-138 D       | 9.4647.00120 | FC-138 E       | E-C-138  |                           | 9.4831.0 |
| FC-177           | 9.4648.0 | FC-177 B             | 9.4648.00110 | FC-177 D       | 9.4648.00120 | FC-177 E       | E-C-177  |                           | 9.4832.0 |
| FC-221           | 9.4649.0 | FC-221 B             | 9.4649.00110 | FC-221 D       | 9.4649.00120 | FC-221 E       | E-C-221  |                           | 9.4833.0 |
| FC-185           | 9.4650.0 | -                    | -            | FC-185 D       | 9.4650.00120 | FC-185 E       | E-C-185  |                           | 9.4834.0 |
| FC-283           | 9.4651.0 | -                    | -            | FC-283 D       | 9.4651.00120 | FC-283 E       | E-C-283  |                           | 9.4835.0 |
| FC-354           | 9.4652.0 | -                    | -            | FC-354 D       | 9.4652.00120 | FC-354 E       | E-C-185  |                           | 9.4834.0 |
| FC-526           | 9.4653.0 | -                    | -            | FC-526 D       | 9.4653.00120 | FC-526 E       | E-C-185  |                           | 9.4834.0 |
| FC-708           | 9.4654.0 | -                    | -            | FC-708 D       | 9.4654.00120 | FC-708 E       | E-C-185  |                           | 9.4834.0 |
| FC-885           | 9.4655.0 | -                    | -            | FC-885 D       | 9.4655.00120 | FC-885 E       | E-C-185  |                           | 9.4834.0 |
| FC-1420          | 9.4656.0 | -                    | -            | FC-1420 D      | 9.4656.00020 | FC-1420 E      | E-C-185  |                           | 9.4834.0 |
| FC-1950          | 9.4657.0 | -                    | -            | FC-1950 D      | 9.4657.00020 | FC-1950 E      | E-C-185  |                           | 9.4834.0 |
| FC-2480          | 9.4658.0 | -                    | -            | FC-2480 D      | 9.4658.00020 | FC-2480 E      | E-C-185  |                           | 9.4834.0 |

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

| Filter: Standard |          | Filter: E-Pack |          | Filter: Element/Cartridge |          |
|------------------|----------|----------------|----------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type       | Typ/Type | Typ/Type                  | Nr./No.  |
| FD-6             | 9.4660.0 | FD-6 E         |          | E-D-6                     | 9.4836.0 |
| FD-10            | 9.4661.0 | FD-10 E        |          | E-D-10                    | 9.4837.0 |
| FD-18            | 9.4662.0 | FD-18 E        |          | E-D-18                    | 9.4838.0 |
| FD-28            | 9.4663.0 | FD-28 E        |          | E-D-28                    | 9.4839.0 |
| FD-48            | 9.4664.0 | FD-48 E        |          | E-D-48                    | 9.4840.0 |
| FD-71            | 9.4665.0 | FD-71 E        |          | E-D-71                    | 9.4841.0 |
| FD-107           | 9.4666.0 | FD-107 E       |          | E-D-107                   | 9.4842.0 |
| FD-138           | 9.4667.0 | FD-138 E       |          | E-D-138                   | 9.4843.0 |
| FD-177           | 9.4668.0 | FD-177 E       |          | E-D-177                   | 9.4844.0 |
| FD-221           | 9.4669.0 | FD-221 E       |          | E-D-221                   | 9.4845.0 |
| FD-185           | 9.4670.0 | FD-185 E       |          | E-D-185                   | 9.4846.0 |
| FD-283           | 9.4671.0 | FD-283 E       |          | E-D-283                   | 9.4847.0 |
| FD-354           | 9.4672.0 | FD-354 E       |          | E-D-185                   | 9.4846.0 |
| FD-526           | 9.4673.0 | FD-526 E       |          | E-D-185                   | 9.4846.0 |
| FD-708           | 9.4674.0 | FD-708 E       |          | E-D-185                   | 9.4846.0 |
| FD-885           | 9.4675.0 | FD-885 E       |          | E-D-185                   | 9.4846.0 |
| FD-1420          | 9.4676.0 | FD-1420 E      |          | E-D-185                   | 9.4846.0 |
| FD-1950          | 9.4677.0 | FD-1950 E      |          | E-D-185                   | 9.4846.0 |
| FD-2480          | 9.4678.0 | FD-2480 E      |          | E-D-185                   | 9.4846.0 |

E-Pack: Filter mit Filtermonitor

E-Pack: Filter with filtermonitor

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**Materialkennzeichnung**

**Sign of material**

| Filter: Standard |          | Filter: D-Pack Basic |              | Filter: D-Pack |              | Filter: E-Pack | Filter: Element/Cartridge |          |
|------------------|----------|----------------------|--------------|----------------|--------------|----------------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type             | Nr./No.      | Typ/Type       | Nr./No.      | Typ/Type       | Typ/Type                  | Nr./No.  |
| FE-6             | 9.4700.0 | FE-6 B               | 9.4700.00110 | FE-6 D         | 9.4700.00120 | FE-6 E         | E-E-6                     | 9.4860.0 |
| FE-10            | 9.4701.0 | FE-10 B              | 9.4701.00110 | FE-10 D        | 9.4701.00120 | FE-10 E        | E-E-10                    | 9.4861.0 |
| FE-18            | 9.4702.0 | FE-18 B              | 9.4702.00110 | FE-18 D        | 9.4702.00120 | FE-18 E        | E-E-18                    | 9.4862.0 |
| FE-28            | 9.4703.0 | FE-28 B              | 9.4703.00110 | FE-28 D        | 9.4703.00120 | FE-28 E        | E-E-28                    | 9.4863.0 |
| FE-48            | 9.4704.0 | FE-48 B              | 9.4704.00110 | FE-48 D        | 9.4704.00120 | FE-48 E        | E-E-48                    | 9.4864.0 |
| FE-71            | 9.4705.0 | FE-71 B              | 9.4705.00110 | FE-71 D        | 9.4705.00120 | FE-71 E        | E-E-71                    | 9.4865.0 |
| FE-107           | 9.4706.0 | FE-107 B             | 9.4706.00110 | FE-107 D       | 9.4706.00120 | FE-107 E       | E-E-107                   | 9.4866.0 |
| FE-138           | 9.4707.0 | FE-138 B             | 9.4707.00110 | FE-138 D       | 9.4707.00120 | FE-138 E       | E-E-138                   | 9.4867.0 |
| FE-177           | 9.4708.0 | FE-177 B             | 9.4708.00110 | FE-177 D       | 9.4708.00120 | FE-177 E       | E-E-177                   | 9.4868.0 |
| FE-221           | 9.4709.0 | FE-221 B             | 9.4709.00110 | FE-221 D       | 9.4709.00120 | FE-221 E       | E-E-221                   | 9.4869.0 |
| FE-185           | 9.4710.0 | -                    | -            | FE-185 D       | 9.4710.00120 | FE-185 E       | E-E-185                   | 9.4870.0 |
| FE-283           | 9.4711.0 | -                    | -            | FE-283 D       | 9.4711.00120 | FE-283 E       | E-E-283                   | 9.4871.0 |
| FE-354           | 9.4712.0 | -                    | -            | FE-354 D       | 9.4712.00120 | FE-354 E       | E-E-185                   | 9.4870.0 |
| FE-526           | 9.4713.0 | -                    | -            | FE-526 D       | 9.4713.00120 | FE-526 E       | E-E-185                   | 9.4870.0 |
| FE-708           | 9.4714.0 | -                    | -            | FE-708 D       | 9.4714.00120 | FE-708 E       | E-E-185                   | 9.4870.0 |
| FE-885           | 9.4715.0 | -                    | -            | FE-885 D       | 9.4715.00120 | FE-885 E       | E-E-185                   | 9.4870.0 |
| FE-1420          | 9.4716.0 | -                    | -            | FE-1420 D      | 9.4716.00020 | FE-1420 E      | E-E-185                   | 9.4870.0 |
| FE-1950          | 9.4717.0 | -                    | -            | FE-1950 D      | 9.4717.00020 | FE-1950 E      | E-E-185                   | 9.4870.0 |
| FE-2480          | 9.4718.0 | -                    | -            | FE-2480 D      | 9.4718.00020 | FE-2480 E      | E-E-185                   | 9.4870.0 |

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

| Filter: Standard |          | Filter: D-Pack Basic |              | Filter: D-Pack |              | Filter: E-Pack | Filter: Element/Cartridge |          |
|------------------|----------|----------------------|--------------|----------------|--------------|----------------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type             | Nr./No.      | Typ/Type       | Nr./No.      | Typ/Type       | Typ/Type                  | Nr./No.  |
| FF-6             | 9.4720.0 | FF-6 B               | 9.4720.00110 | FF-6 D         | 9.4720.00120 | FF-6 E         | E-F-6                     | 9.4872.0 |
| FF-10            | 9.4721.0 | FF-10 B              | 9.4721.00110 | FF-10 D        | 9.4721.00120 | FF-10 E        | E-F-10                    | 9.4873.0 |
| FF-18            | 9.4722.0 | FF-18 B              | 9.4722.00110 | FF-18 D        | 9.4722.00120 | FF-18 E        | E-F-18                    | 9.4874.0 |
| FF-28            | 9.4723.0 | FF-28 B              | 9.4723.00110 | FF-28 D        | 9.4723.00120 | FF-28 E        | E-F-28                    | 9.4875.0 |
| FF-48            | 9.4724.0 | FF-48 B              | 9.4724.00110 | FF-48 D        | 9.4724.00120 | FF-48 E        | E-F-48                    | 9.4876.0 |
| FF-71            | 9.4725.0 | FF-71 B              | 9.4725.00110 | FF-71 D        | 9.4725.00120 | FF-71 E        | E-F-71                    | 9.4877.0 |
| FF-107           | 9.4726.0 | FF-107 B             | 9.4726.00110 | FF-107 D       | 9.4726.00120 | FF-107 E       | E-F-107                   | 9.4878.0 |
| FF-138           | 9.4727.0 | FF-138 B             | 9.4727.00110 | FF-138 D       | 9.4727.00120 | FF-138 E       | E-F-138                   | 9.4879.0 |
| FF-177           | 9.4728.0 | FF-177 B             | 9.4728.00110 | FF-177 D       | 9.4728.00120 | FF-177 E       | E-F-177                   | 9.4880.0 |
| FF-221           | 9.4729.0 | FF-221 B             | 9.4729.00110 | FF-221 D       | 9.4729.00120 | FF-221 E       | E-F-221                   | 9.4881.0 |
| FF-185           | 9.4730.0 | -                    | -            | FF-185 D       | 9.4730.00120 | FF-185 E       | E-F-185                   | 9.4882.0 |
| FF-283           | 9.4731.0 | -                    | -            | FF-283 D       | 9.4731.00120 | FF-283 E       | E-F-283                   | 9.4883.0 |
| FF-354           | 9.4732.0 | -                    | -            | FF-354 D       | 9.4732.00120 | FF-354 E       | E-F-185                   | 9.4882.0 |
| FF-526           | 9.4733.0 | -                    | -            | FF-526 D       | 9.4733.00120 | FF-526 E       | E-F-185                   | 9.4882.0 |
| FF-708           | 9.4734.0 | -                    | -            | FF-708 D       | 9.4734.00120 | FF-708 E       | E-F-185                   | 9.4882.0 |
| FF-885           | 9.4735.0 | -                    | -            | FF-885 D       | 9.4735.00120 | FF-885 E       | E-F-185                   | 9.4882.0 |
| FF-1420          | 9.4736.0 | -                    | -            | FF-1420 D      | 9.4736.00020 | FF-1420 E      | E-F-185                   | 9.4882.0 |
| FF-1950          | 9.4737.0 | -                    | -            | FF-1950 D      | 9.4737.00020 | FF-1950 E      | E-F-185                   | 9.4882.0 |
| FF-2480          | 9.4738.0 | -                    | -            | FF-2480 D      | 9.4738.00020 | FF-2480 E      | E-F-185                   | 9.4882.0 |

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter mit Filtermonitor und ECO-DRAIN

E-pack: Filter with filtermonitor and ECO-DRAIN

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

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|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

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**Materialkennzeichnung**

| Filter: Standard |          | Filter: Element/Cartridge |          |
|------------------|----------|---------------------------|----------|
| Typ/Type         | Nr./No.  | Typ/Type                  | Nr./No.  |
| FG-6             | 9.4740.0 | E-G-6                     | 9.4884.0 |
| FG-10            | 9.4741.0 | E-G-10                    | 9.4885.0 |
| FG-18            | 9.4742.0 | E-G-18                    | 9.4886.0 |
| FG-28            | 9.4743.0 | E-G-28                    | 9.4887.0 |
| FG-48            | 9.4744.0 | E-G-48                    | 9.4888.0 |
| FG-71            | 9.4745.0 | E-G-71                    | 9.4889.0 |
| FG-107           | 9.4746.0 | E-G-107                   | 9.4890.0 |
| FG-138           | 9.4747.0 | E-G-138                   | 9.4891.0 |
| FG-177           | 9.4748.0 | E-G-177                   | 9.4892.0 |
| FG-221           | 9.4749.0 | E-G-221                   | 9.4893.0 |
| FG-185           | 9.4750.0 | E-G-185                   | 9.4894.0 |
| FG-283           | 9.4751.0 | E-G-283                   | 9.4895.0 |
| FG-354           | 9.4752.0 | E-G-185                   | 9.4894.0 |
| FG-526           | 9.4753.0 | E-G-185                   | 9.4894.0 |
| FG-708           | 9.4754.0 | E-G-185                   | 9.4894.0 |
| FG-885           | 9.4755.0 | E-G-185                   | 9.4894.0 |
| FG-1420          | 9.4756.0 | E-G-185                   | 9.4894.0 |
| FG-1950          | 9.4757.0 | E-G-185                   | 9.4894.0 |
| FG-2480          | 9.4758.0 | E-G-185                   | 9.4894.0 |

**Sign of material**

| Filter: Standard |          | Filter: D-Pack Basic |              | Filter: D-Pack |              | Filter: E-Pack |
|------------------|----------|----------------------|--------------|----------------|--------------|----------------|
| Typ/Type         | Nr./No.  | Typ/Type             | Nr./No.      | Typ/Type       | Nr./No.      | Typ/Type       |
| FFG-6            | 9.4760.0 | FFG-6 B              | 9.4760.00110 | FFG-6 D        | 9.4760.00120 | FFG-6 E        |
| FFG-10           | 9.4761.0 | FFG-10 B             | 9.4761.00110 | FFG-10 D       | 9.4761.00120 | FFG-10 E       |
| FFG-18           | 9.4762.0 | FFG-18 B             | 9.4762.00110 | FFG-18 D       | 9.4762.00120 | FFG-18 E       |
| FFG-28           | 9.4763.0 | FFG-28 B             | 9.4763.00110 | FFG-28 D       | 9.4763.00120 | FFG-28 E       |
| FFG-48           | 9.4764.0 | FFG-48 B             | 9.4764.00110 | FFG-48 D       | 9.4764.00120 | FFG-48 E       |
| FFG-71           | 9.4765.0 | FFG-71 B             | 9.4765.00110 | FFG-71 D       | 9.4765.00120 | FFG-71 E       |
| FFG-107          | 9.4766.0 | FFG-107 B            | 9.4766.00110 | FFG-107 D      | 9.4766.00120 | FFG-107 E      |
| FFG-138          | 9.4767.0 | FFG-138 B            | 9.4767.00110 | FFG-138 D      | 9.4767.00120 | FFG-138 E      |
| FFG-177          | 9.4768.0 | FFG-177 B            | 9.4768.00110 | FFG-177 D      | 9.4768.00120 | FFG-177 E      |
| FFG-221          | 9.4769.0 | FFG-221 B            | 9.4769.00110 | FFG-221 D      | 9.4769.00120 | FFG-221 E      |
| FFG-185          | 9.4770.0 | -                    | -            | FFG-185 D      | 9.4770.00120 | FFG-185 E      |
| FFG-283          | 9.4771.0 | -                    | -            | FFG-283 D      | 9.4771.00120 | FFG-283 E      |
| FFG-354          | 9.4772.0 | -                    | -            | FFG-354 D      | 9.4772.00120 | FFG-354 E      |
| FFG-526          | 9.4773.0 | -                    | -            | FFG-526 D      | 9.4773.00120 | FFG-526 E      |
| FFG-708          | 9.4774.0 | -                    | -            | FFG-708 D      | 9.4774.00120 | FFG-708 E      |
| FFG-885          | 9.4775.0 | -                    | -            | FFG-885 D      | 9.4775.00120 | FFG-885 E      |
| FFG-1420         | 9.4776.0 | -                    | -            | FFG-1420 D     | 9.4776.00020 | FFG-1420 E     |
| FFG-1950         | 9.4777.0 | -                    | -            | FFG-1950 D     | 9.4777.00020 | FFG-1950 E     |
| FFG-2480         | 9.4778.0 | -                    | -            | FFG-2480 D     | 9.4778.00020 | FFG-2480 E     |

Filterkombination bestehend aus Serie FF &amp; FG

Filter combination consist of series FF &amp; FG

D-Pack: Filter mit Differenzdruckmanometer und ECO-DRAIN

D-pack: Filter with differential pressure gauge and ECO-DRAIN

D-Pack-Basic: Filter mit Differenzdruckmanometer und ECO-DRAIN 30

D-pack-basic: Filter with differential pressure gauge and ECO-DRAIN 30

E-Pack: Filter Serie FF mit Filtermonitor und ECO-DRAIN

E-pack: Filter series FF with filtermonitor and ECO-DRAIN

Anzahl Filterelemente siehe Kapitel 3. „Technische Daten“.

Quantity of filter cartridges see chapter 3. „Technical data“.

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|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

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Wir haben den Inhalt der Bedienungsanleitung auf Übereinstimmung mit dem beschriebenen Gerät geprüft. Dennoch können Abweichungen nicht ausgeschlossen werden, so daß wir für die vollständige Übereinstimmung keine Gewähr übernehmen.

We have examined the content of the operating instructions for conformity with the appliance described. Inconsistencies cannot be ruled out, however, with the result that we do not guarantee complete conformity

Technische Änderungen vorbehalten.

We reserve the right to alter the specifications without prior notice

|        |          |      |          |      |            |            |
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**1. Einleitung**

**1.1 Allgemeines**

Die in dieser Betriebsanleitung dokumentierten Druckluftfilter erfüllen alle Anforderungen, die an moderne Filtersysteme gestellt werden.


Um Sie optimal nutzen zu können, benötigt der Anwender ausführliche Informationen.

In der vorliegenden Betriebsanleitung haben wir diese Informationen möglichst vollständig und in entsprechende Kapitel gegliedert zusammengestellt.

Lesen und beachten Sie diese Informationen. Sie helfen Ihnen auch Unfälle zu vermeiden.


**1.2 Erklärung der Symbole in der Bedienungsanleitung**

- Aufzählungen werden mit diesem Punkt oder Sternchen \* gekennzeichnet.


 Mit diesem Symbol werden Textstellen gekennzeichnet, die unbedingt zu beachten sind.

- Wichtige Sicherheitshinweise
- Wichtige Bedienungs-/Wartungshinweise
- Warnung vor möglichen Fehlbedienungen
- Warnung vor Gefahren

 Elektrisches Gefahrensymbol

 Ausführende Tätigkeit.  
Vom Bediener auszuführende Bedienschritte.

**1.3 Erklärung der Symbole am Gerät**

 Automatischer Kondensatablaß / Automatic Condensate Drain

 Elektroanschluß / Electrical Supply

**1. Introduction**

**1.1 General remarks**

The compressed air filters documented in these instruction manual has all requirements that can be expected from a modern filter/ -system.

In order to obtain maximum benefit from using the filters/ -system the user should have sufficient information.

These instruction manual gave the user this information which has been divided into separate sections for easy reference.


Please read carefully before installing and operating the filter/ -system.

**1.2 Explanation to the symbols in the instruction manual**

- Technical data or instructions.  
\*


 Parts that require absolute attention


- Vital safety instructions
- Essential operation and maintenance instructions
- Warnings on handling or moving the dryer
- Danger areas

 Electrical danger symbol

 Changes sequence of operation

**1.3 Symbols used in the filter**

 Drucklufteintritt / Compressed Air Inlet

 Druckluftaustritt / Compressed Air Outlet

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |



**2. Sicherheitsregeln,  
Warnhinweise**

**2. Safety rules,  
warnings**

**2.1 Bestimmungsgemäßer Gebrauch**

**2.1 Use of filter/ -system**

**⚠ Achtung!**

- Die Filter dürfen nur für die in dieser Bedienungsanleitung vorgesehenen Einsatzfälle zur Aufbereitung von Druckluft verwendet werden.
- Der einwandfreie und sichere Betrieb der Produkte erfordert sachgerechten Transport, Lagerung, Aufstellung und Montage, sowie sorgfältige Bedienung und Instandhaltung.

**⚠ Achtung!**

- The filter must only be used for the purpose as designated in the instruction manual to upgrading the compressed air.
- To obtain maximum efficiency and operation of the filter/ -system ensure all sections of the manual are read carefully.

**2.2 Sicherheitsregeln**

**2.2 Safety rules**

**⚠ Warnung!**

- Die Filter dürfen nur von qualifiziertem Personal genutzt, bedient, gewartet oder instandgesetzt werden.
- Qualifiziertes Personal im Sinne der sicherheitsbezogenen Hinweise in dieser Dokumentation oder auf dem Produkt selbst, ist Personal das:
  - \* im Umgang mit Einrichtungen der Druckluft vertraut und unterwiesen sowie über die damit verbundenen Gefahren unterrichtet ist.
  - \* Den auf die Bedienung bezogenen Inhalt dieser Dokumentation kennt.
  - \* Es besitzt als solches eine zur Inbetriebnahme und Wartung derartiger Einrichtungen befähigende Ausbildung bzw. Berechtigung.

**⚠ Warning!**

- The filter/ -system must only be used, operated, inspected and repaired by trained personnel.
- Trained personnel are defined as follows:
  - \* Operating staff who are skilled in the field of compressed air engineering and who are familiar with the filter/ -system and possible dangers in unauthorised operation or service.
  - \* Who can interpret and action the contents of this operation instruction manual.
  - \* Who have had the appropriate training and qualified as being competent in these fields.

|        |          |      |          |      |            |            |
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**2. Sicherheitsregeln,  
Warnhinweise**

**2. Safety rules,  
warnings**

**2.3 Warnhinweise**

**2.3 Security-warnings**

 **Warnung!**

Das (die) Filter beinhalten unter erhöhtem Druck stehende Systeme.  
Vor Servicearbeiten sind sie drucklos zu machen.

 **Warning!**

The filter/ -system contains components under high pressure.  
Before starting any service work turn off compressed air supply to the dryer and depressurise the system.

 **Warnung!**

Filtersysteme mit elektrisch gesteuerten Kondensatableitern enthalten unter elektrischer Spannung stehende Bauteile.  
Vor Servicearbeiten sind diese allpolig vom elektrischen Spannungsversorgungsnetz zu trennen.  
(Netzstecker ziehen, Hauptschalter ausschalten)

 **Warning!**

The filter/ -systems with electrical condensate discharger contains components that are electrically live and which can cause danger to life.  
Before starting any service work ensure all power is isolated from the filter/ -system, mains isolator to be off, mains plug if fitted to be removed.

**ACHTUNG!**  
Alle Arbeiten am elektrischen System dürfen nur von elektrotechnisch geschultem Fachpersonal, oder unter Aufsicht von diesem, durch Unterwiesene ausgeführt werden.

**ATTENTION!**  
Any electrical work on the dryer must only be carried out by skilled staff - qualified electricians, or persons under supervision of qualified staff.

 **Hinweis!**

Die Filter sind ausschließlich zur Aufbereitung von Druckluft einzusetzen.

 **Remark!**

Use filter for compressed air applications only.

**ACHTUNG!**  
Die Verwendung in Verbindung mit brennbaren Gasen ist verboten!

**Attention!**  
The use of combustible gases is prohibited.

 **ACHTUNG!**

Filter/ -systeme zur Aufbereitung von Atemluft dürfen nur nach Genehmigung des Herstellers der Filter/ -systeme eingesetzt und betrieben werden.

 **ATTENTION!**

Filter/ -systems for breathing air applications must be approved from manufacturer.

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

3. Technische Daten

3. Technical data

| MODELL BEZEICHNUNG /<br>MODEL DESIGNATION  |                                 | Volumenstrom<br>Capacity<br>[m³/min] | Anschluß<br>Connection<br>[ ] | Betriebsdruck<br>Working<br>Pressure<br>[max] | Abmessungen<br>Dimensions |                           | Gewicht<br>Weight<br>[kg] | AUSTAUSCH-FILTERELEMENTE<br>FILTER REPLACEMENT CARTRIDGE |                                 |                    |
|--|---------------------------------|--------------------------------------|-------------------------------|---|---------------------------|---------------------------|---------------------------|--|---------------------------------|--------------------|
| FILTER-<br>GRAD / GRADE                    | FILTER-<br>GEHÄUSE /<br>HOUSING |                                      |                               |   | Höhe /<br>Height<br>[mm]  | Breite /<br>Width<br>[mm] |                           | FILTER-<br>GRAD / GRADE                                  | FILTER-<br>GEHÄUSE /<br>HOUSING | Anzahl<br>Quantity |
| <b>MODUL-BAUWEISE / MODULAR SYSTEM</b>     |                                 |                                      |                               |   |                           |                           |                           |  |                                 |                    |
| -6   |                                 | 0,58                                 | 3/8"                          | 16  | 105                       |                           |                           |  | -6                              | 1                  |
| -10  |                                 | 1,00                                 | 1/2"                          | 16  | 105                       | siehe<br>Kapitel          | siehe Kapitel             |  | -10                             | 1                  |
| -18  |                                 | 1,75                                 | 1/2"                          | 16  | 105                       |                           |                           |  | -18                             | 1                  |
| -28  |                                 | 2,83                                 | 3/4"                          | 16  | 133                       | „Maßzeich-<br>nung“       | „Maßzeichnung“            |  | -28                             | 1                  |
| -48  |                                 | 4,83                                 | 1"                            | 16  | 133                       |                           |                           |  | -48                             | 1                  |
| -71  |                                 | 7,10                                 | 1-1/2"                        | 16  | 164                       |                           | see chapter               |  | -71                             | 1                  |
| -107                                       |                                 | 10,7                                 | 1-1/2"                        | 16  | 164                       | see chapter               | „dimensional<br>drawing“  |  | -107                            | 1                  |
| -138                                       |                                 | 13,8                                 | 2                             | 16  | 194                       |                           |                           |  | -138                            | 1                  |
| -177                                       |                                 | 17,7                                 | 2-1/2"                        | 16  | 194                       |                           |                           |  | -177                            | 1                  |
| -221                                       |                                 | 22,1                                 | 2-1/2"                        | 13  | 194                       |                           |                           |  | -221                            | 1                  |
| <b>BEHÄLTER-BAUWEISE / PRESSURE VESSEL</b> |                                 |                                      |                               |   |                           |                           |                           |  |                                 |                    |
| -185                                       |                                 | 18,5                                 | DN80                          | 16  | 1025                      |                           | siehe Kapitel             |  | -185                            | 1                  |
| -283                                       |                                 | 28,3                                 | DN80                          | 16  | 1045                      |                           |                           |  | -283                            | 2                  |
| -354                                       |                                 | 35,4                                 | DN80                          | 16  | 1045                      |                           | „Maßzeichnung“            |  | -354                            | 2                  |
| -526                                       |                                 | 52,6                                 | DN100                         | 16  | 1085                      |                           |                           |  | -526                            | 3                  |
| -708                                       |                                 | 70,8                                 | DN100                         | 16  | 1105                      |                           | see chapter               |  | -708                            | 4                  |
| -885                                       |                                 | 88,5                                 | DN100                         | 16  | 1105                      |                           | „dimensional<br>drawing“  |  | -885                            | 5                  |
| -1420                                      |                                 | 142                                  | DN150                         | 16  | 1215                      |                           |                           |  | -1420                           | 8                  |
| -1950                                      |                                 | 195                                  | DN150                         | 16  | 1245                      |                           |                           |  | -1950                           | 11                 |
| -2480                                      |                                 | 248                                  | DN150                         | 16  | 1245                      |                           |                           |  | -2480                           | 14                 |

- Volumenstrom m³/h bezogen auf +20°C und 1 bar absolut, bei Betriebsüberdruck 7 bar / Air flow m³/h based on +20°C and 1 bar absolute, at working pressure 7 bar
- Größere Betriebsdrücke auf Anfrage / Contact factory for dryers with a higher working pressure
- Filtergehäuse F-185 – F-2480: Konstruktion der Behälter entspricht der EG-Richtlinie 87/404/EEC für einfache Druckbehälter und ist mit CE-Zeichen versehen / Filter bowls F-185 – F-2480: Vessel construction complies with directive 87/404/EEC, simple pressure vessels, and is marked with the EC symbol

Volumenstrom - Korrekturtabelle / Sizing

| Minimaler Betriebsdruck / Minimum working pressure<br>bar | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15 | 16   |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|----|------|
| Korrekturfaktor / Correction factor                       | 0,38 | 0,52 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,26 | 1,38 | 1,52 | 1,65 | 1,76 | 1,87 | 2  | 2,14 |

Auslegung

Bei Drücken abweichend von 7 bar berechnet sich der max. Volumenstrom wie folgt:

Based on

To find the maximum flow at pressures other than 7 bar:

multiply the flow (from table above) by the correction factor corresponding to the minimum working pressure of the filter.

multiply the flow (from table above) by the correction factor corresponding to the minimum working pressure of the filter.

Betriebsbedingungen:

Min. Betriebstemperatur: +1°C  
Max. Betriebstemperatur: 66°C.

Min. Betriebsdruck mit automatischem Kondensatableiter: 2,0 bar

Working conditions:

Min. Working temperature: +1°C  
Max. Working temperature: 66°C

Min. working pressure with automatic condensate drain: 2.0 bar

|        |          |      |          |      |            |
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**4. Funktionsbeschreibung**

**4. Description of operation**

**4.3 Serie FC**

**4.3 Series FC**

**1-MIKRON-COALESCEING-FILTER**

**1-MICRON-COALESCEING-FILTER**

- Zweistufige Tiefenfiltration bewirkt hervorragende Leistung und höhere Standzeiten des Filterelementes
- Entfernt 100% des Kondensats
- Entfernt Feststoffpartikel bis herunter zu 1 Mikron
- Restölgehalt < 1 ppm w/w
- Automatischer Kondensatableiter
- Differenzdruckanzeige am Filtergehäuse
- max. Flüssigkeitsbelastung: 2g/m<sup>3</sup>

- Two in-depth filter beds offer superior performance and extended cartridge life
- Removes 100% of liquid water
- Removes solid particles down to 1 micron
- Oil content < 1 ppm w/w
- Automatic condensate drain
- Differential pressure indicator at the filter housing
- max. liquid load: 2g/m<sup>3</sup>

**Anwendungen:**

**Application:**

- Allgemeine Filter für Werkstattluft
- Vorfilter für Hochleistungsfilter
- Nachfilter für Adsorptionstrockner
- Endstellenfiltration bei Einsatz von Nachkühlern oder Trocknern

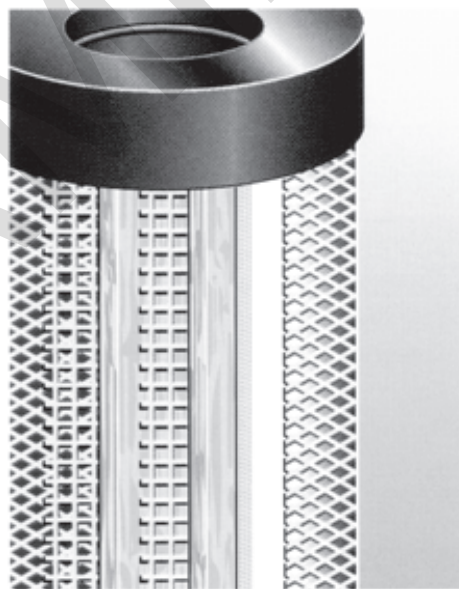
- General filter for shop air
- Prefilter for high efficiency filters
- Afterfilter for pressure-swing desiccant dryers
- Point-of-use filter on systems utilising aftercoolers or dryers

**Funktion:**

**Operation:**

Die Luft tritt von oben in das Filterelement FC ein und strömt radial durch den perforierten inneren Stützmantel zur 1. Filtrationsstufe. Diese Stufe besteht aus mehreren Lagen Glasfaser und einer stützenden Glasfasermatte. Größere Feststoffteilchen werden hier zurückgehalten. Die Luft gelangt nun in die 2. Filtrationsstufe, bestehend aus einer mehrlagigen Mischung von imprägnierten Glasfasern und Mikrofibern. In beiden Stufen werden Feststoffpartikel und Flüssigkeiten nach dem Prinzip der Tiefenfiltration sowie des Coalescings ausgefiltert. Die Luft tritt durch den perforierten äußeren Stützmantel aus.

Air enters the inside of the cartridge FC and flows outwardly through two in-depth beds of glass fibres. Larger particles are collected in the first bed while all remaining particles one micron and larger are collected in the second bed. A combination of large void areas and stabilized media allows heavy particulate loading and low pressure drop resulting in a long service life for the cartridge. Throughout both stages, liquid aerosols are captured and coalesced. The coalesced liquids then drain to the bottom of the cartridge for removal.



|        |          |      |          |      |            |            |
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**4. Funktionsbeschreibung**

**4. Description of operation**

**4.5 Serie FE**

**4.5 Series FE**

**0,01-MIKRON-COALESCEING-FILTER**  
(bei 0,01 ppm w/w max. Ölgehalt)

**0,01-MICRON-COALESCEING-FILTER**  
(at 0,01 ppm w/w max. oil content)

DUO-System Abscheidung

DUO-system separation

1. Stufe: flüssige Bestandteile
2. Stufe: Ölbestandteile

1. Stage: liquid particles
2. Stage: oil particles

- Entfernt mehr als 99,99% der Öl-Aerosole
- Entfernt Feststoffpartikel bis herunter zu 0,01 Mikron
- Restölgehalt < 0,01 ppm w/w
- Automatischer Kondensatableiter
- Differenzdruckanzeige am Filtergehäuse
- max. Flüssigkeitsbelastung: 1g/m<sup>3</sup>

- Removes more than 99,99% of oil aerosols
- Removes solid particles down to 0,01 microns
- Oil content < 0,01 ppm w/w
- Automatic condensate drain
- Differential pressure indicator at the filter housing
- max. liquid load: 1g/m<sup>3</sup>

**Anwendungen:**

**Application:**

- Vorfilter für Membrantrockner
- Vorfilter für Adsorptionstrockner
- Endstellenfiltration (falls geringfügige Feuchtigkeit vorhanden ist)

- Prefilter for membrane dryers
- Prefilter for pressure-swing desiccant dryers
- Point-of-use filter (may be used if light liquid load is present)

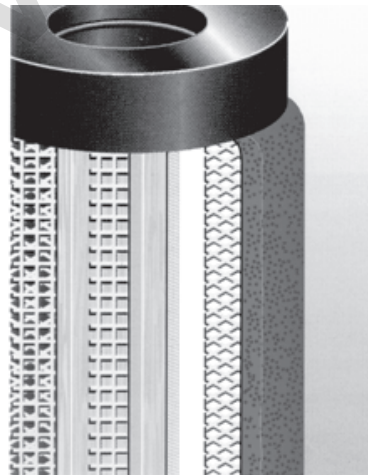
**Funktion:**

**Operation:**

Die Luft tritt von oben in das Filterelement FE ein und strömt durch den inneren Stützmantel, radial durch verschiedenartige Lagen Fiberglas. Dann strömt die Luft durch ein weiteres Sieb. In dieser 1. Filtrationsstufe werden größere Partikel entfernt. In der zweiten Filtrationsstufe werden Aerosole und feste Bestandteile durch eine Mehrschicht-Membranwand aus epoxidharz verstärktem Fiberglas gefiltert, daß speziell für feinste Aerosole geeignet ist. Das Filtermedium ist ein Bett aus submikrofeinen Glasfasern und wirkt nach dem Prinzip des Coalescings sowie der Tiefenfiltration. Der innere Schaumstoffmantel gleicht Luftschwankungen und Aerosolkonzentrationen aus und gewährleistet eine gleichmäßige Verteilung. Im äußeren Schaumstoffmantel werden die Öltröpfchen gesammelt, fließen durch Schwerkraft in den unteren Teil des Filters und tropfen dann in den Filterbehälter ab.

Air enters the inside of the cartridge FE and flows through an inner foam sleeve, radially outward through various layers of glass fibers. Then the air flows through another screen. In the first stage filter section the larger solid particles are trapped. In the second stage filter section aerosols and solid particles are trapped using a multi-layered membrane wall made of epoxy resin-reinforced glass fibres which was especially designed for the finest aerosols.

The filter media is a bed of submicronic glass fibers and works to the principle of coalescing and in-depth filtration. The inner foam sleeve compensates air cycling and aerosol concentrations and maintains uniform distribution. The outer foam sleeve collects the coalesced oil droplets which then, due to gravity, travel downstream to the bottom of the sleeve and drain to the bottom of the filter bowl.



|        |          |      |          |      |            |            |
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**7. Montage**

**7. Mounting**

**7.1 Montageort**

Das Filter/ -system sollte in einem trockenen, frostfreien Innenraum installiert werden.  
Zur Wartung ist genügend Freiraum vorzusehen.

**7.1 Location of mounting**

The filter/ -system should be installed in a dry and frost-proof room indoors.  
Ample free, space should be allowed for the maintenance.

**7.2 Montage**

Das Filter/ -system ist senkrecht so zu montieren, daß der Druckluft-ein- und austritt waagrecht erfolgt.

**7.2 Mounting**

Mount the filter/ -system so that inlet and outlet connections are horizontal (filter bowl vertical).

Im Filtergehäuse eingebaute Filterelemente können sich während des Transportes lösen.  
Prüfen Sie den richtigen Sitz der Filterelemente vor der Inbetriebnahme.

Cartridges installed in the filter housing may become dislodged during transport.  
Make sure that the cartridge is correctly installed before use.

**⚠ ACHTUNG!**  
Achten Sie bei der Montage darauf, daß keine Zug- und Druckkräfte auf die Geräteanschlüsse übertragen werden.

**⚠ ATTENTION!**  
When installing the filter/ -system ensure all connections are even and no pressure is placed on inlet and outlet connections.

**⚠ Hinweis!**  
Bei den Standard-Filtern FB, FC, FE und FF der Größe -185 & -283 ... -2480, den D-Pack-Basic-Filtern FB, FC, FE und FF, sowie den E-Pack-Filtern FA, FB, FC, FE und FF sind die Kondensatableiter beige packt und müssen wie in Kapitel 11. „Maßzeichnung“ angebaut werden.

**⚠ Remark!**  
By the standard-filter FB,FC,FE and FF with the size -185 & -283 ... -2480, by the D-pack-basic-filter FB, FC, FE, FF and by the E-pack-filter FA, FB, FC, FE and FF the condensate drains are attached and must mount as shown in chapter 11. „Dimensional drawing“.

**7.3 Anschluß an das Druckluftnetz**

Die Druckluftein- und -austrittsleitung sollte für Servicezwecke mit einem Bypass versehen werden.  
Die Dimensionierung der Anschlüsse entnehmen Sie bitte dem Kapitel 3. „Technische Daten“.

**7.3 Connection to the compressed air system**

The compressed air inlet and outlet line should be equipped with a by-pass system for the maintenance.  
For the sizing of the connections please see chapter 3. „Technical data“.

**⚠ ACHTUNG!**  
Durchflußrichtung beachten.  
Druckluftein- und austritt dürfen nicht vertauscht werden.

**⚠ ATTENTION!**  
Pay attention to the flow direction.  
Do not exchange the compressed air inlet and outlet.

**7.4 Kondensatableitung**

Für die automatische Kondensatableitung ist bei den Filtern (FA, FB, FC, FE, FF) ein Anschluß vorhanden.  
Die Dimensionierung des Anschlusses entnehmen Sie bitte Kapitel 5. „Kondensatableiter“.

**7.4 Condensate drain**

The filters (FA, FB, FC, FE, FF) are equipped with one connection for the automatically condensate drain.  
For the sizing of the connection please see chapter 5. „Condensate discharger“.

**⚠ Achten Sie bei der Montage der Kondensatableitung darauf, daß das abgeschiedene Kondensat ungehindert abfließen kann.**

**⚠ When fitting the drains please see to it, that the condensate separated is drained off into a system that does not create a back pressure.**

**⚠ HINWEIS!**  
Bei der Entsorgung des Kondensats ist der Schmutzanteil zu berücksichtigen.  
Beachten Sie die jeweils geltenden gesetzlichen Vorschriften.

**⚠ Instruction!**  
When disposing of the condensate the amount of pollution has to be taken into consideration. Please act according to the prevailing regulations of law.

Bei den Filtern FD, FG entfällt der Kondensatableitungsanschluß.

Condensate drain does not exist in filters FD, FG.


|        |          |      |          |      |            |            |
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |


**8. Inbetriebnahme, Betrieb**

**8. Start-up, operation**

**8.1 Bereitschaft zur Inbetriebnahme**





**8.1 Preconditions for starting the dryer**





-  **Druckluftfilter/ -systeme sind bereit zur Inbetriebnahme, wenn:**
- Der auf dem Typenschild angegebene Druck dem maximalen Betriebsdruck entspricht.
  - Sie entsprechend Kapitel 7. „Montage“ installiert wurden.
  - Alle Zu- und Ableitungen sachgerecht angeschlossen sind.
  - Die erforderlichen Energien (Druckluft) verfügbar sind.
  - Absperrorgane (z.B. Ventil, Kugelhahn) in der Druckluftein- und austrittsleitung geschlossen sind.
  - Kondensat durch die Kondensatableitung ungehindert abfließen kann.
  - Der elektrisch gesteuerte Kondensatableiter an das elektrische Spannungsversorgungsnetz mit der richtigen Betriebsspannung angeschlossen ist. (Nur bei elektrisch gesteuerten Kondensatableitern)
  - Das Filter/ -system mit den richtigen Filterelementen ausgerüstet ist.

-  **The filter/ -system is ready for starting when:**
- Check unit serial number tag to verify working pressure.
  - They has been installed in accordance with section 7. „Mounting“.
  - All inlet and outlet lines have been correctly connected.
  - The required forms of energy (compressed-air) are available.
  - The shut-off devices (e.g. ball valve) in the compressed-air inlet and outlet lines are closed.
  - The condensate is able to flow through the condensate discharger without obstruction.
  - The electrical condensate drain has been connected to the electric power supply system with the correct operating voltage (only electrical condensate drains).
  - The filter/ -system is equipped with the right cartridges.

**8.2 Inbetriebnahme, Betrieb**

**8.2 Start up, operation**

-  **Vor der Inbetriebnahme ist sicherzustellen, daß alle Bedingungen des Abschnittes 8.1 „Bereitschaft zur Inbetriebnahme“ erfüllt sind.**
-  Setzen Sie das Filter/ -system durch langsames Öffnen der Drucklufteintritts- und austrittsleitung unter Druck.
-  Schließen Sie das Absperrorgan im Bypass (falls vorhanden).
-  **Das Filter/ -system ist nun in BETRIEB.**

-  **Before starting the dryer, ensure that all the requirements specified in section 8.1 „Preconditions for starting the dryer“ have been fulfilled.**
-  Place filter/ -system under pressure gradually by slowly opening the compressed air inlet/outlet.
-  Close the shut-off device in the bypass (if installed).
-  **The filter/ -system is now OPERATIVE.**

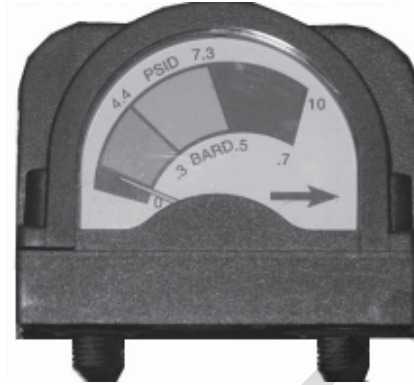
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**8. Inbetriebnahme, Betrieb**

**8. Start-up, operation**

**8.3 Differenzdruckanzeige-Standard und D-Pack (OPTION)**

**8.3 Differential pressure indicator-standard and D-Pack (OPTION)**



Die Differenzdruckanzeige informiert als Störanzeige über eine atypische Verschmutzung.

The differential pressure indicator indicates atypical contamination.

⚠ **Unabhängig von der Differenzdruckanzeige müssen die Filterelemente gemäß der Wartungsintervalle gewechselt werden. (Siehe Kapitel 9)**

⚠ **We recommend installing a new filter cartridge according to the maintenance periods. (See chapter 9)**

⚠ **Das Filter FG benötigt keine Differenzdruckanzeige.**

⚠ **The FG filter does not require a differential pressure gauge.**

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |



**9. Wartung  
Austausch der Filterelemente**

**9. Servicing, filter cartridge replacement**

**9.1 Standzeit der Filterelemente**

**9.1 Serviceable life of cartridge**

Die Standzeit der Filterelemente ist abhängig von der Beladung. Mit steigender Beladung der Elemente erhöht sich der Differenzdruck über den Filter.  
Die Filterelemente müssen gemäß unten stehender Tabelle gewechselt werden.

The cartridge's serviceable life depends upon the degree of contamination. As the cartridge becomes more contaminated, the differential pressure above the filter increases.  
The filterelements must be changed according to the table below.

**9.2 Austausch der Filterelemente**

**9.2 Replacing the cartridge**

**Filtergehäuse -6 bis -221**

**Filter housing -6 to -221**

Anzahl der Filterelemente siehe Kapitel 4. „Technische Daten“.


Number of cartridges see chapter 4. „Technical data“.


**⚠️ WARNUNG!**

**⚠️ CAUTION!**


- Verwenden Sie keine Werkzeuge! (Filtergehäuse -6 bis -48)
- Öffnen und Schließen Sie das Filter nicht mit Gewalt.
- Das (die) Filter beinhaltet(n) unter erhöhtem Druck stehende Systeme.  
Vor Servicearbeiten sind sie drucklos zu machen.


- Do not use any tools (filter housings -6 to -48)
- Do not force the filter open or closed.
- The filter(s) contain(s) systems under high pressure.  
All pressure must be let off before servicing.


 Absperrvorrichtung im Druckluftein- und -austritt schließen.

 Close the shut-off device in the compressed air inlet/outlet.

 Kondensatableitungsschlauch an (1) lösen.  
(Nur bei FB, FC, FE, FF).

 Loosen condensate drain hose at (1) (only on FB, FC, FE, FF models).

 Rändelschraube (1) langsam im Uhrzeigersinn lösen.  
Das Filtergehäuse wird entlüftet.

 Slowly turn the knurled screw (1) clockwise. This will release the air from the housing.

**Wartungsintervalle / Maintenance-intervals**


| Wartungsteil<br>Part of maintenance     | Type                                  | Anwendung<br>Application                | Wartungs-Intervall<br>Maintenance-interval                         |
|---|---------------------------------------|---|--|
| Filter-Elemente /<br>filter cartridges  | FB, FC                                | Vorfilter<br>Pre-filter                 | 6.000 Bh, max. 1 Jahr /<br>6.000 Bh, max. 1 year                   |
|   | FE, FF                                | Microfilter                             | 3.000 Bh, max. 1 Jahr/<br>3.000 Bh, max. 1 year                    |
|   | FEG                                   | Filterkombination<br>Filter combination | 3.000 Bh, max. 1 Jahr (Type FE)<br>3.000 Bh, max. 1 year Type (FE) |
|   |                                       |   | 1.000 Bh, max. 1 Jahr (Type FG)<br>1.000 Bh, max. 1 year Type (FG) |
|   | FFG                                   |   | 1.000 Bh, max. 1 Jahr/<br>1.000 Bh, max. 1 year                    |
|   | FD                                    | Nachfilter<br>After-filter              | 6.000 Bh, max. 1 Jahr/<br>6.000 Bh, max. 1 year                    |
| FG                                      | Aktivkohlefilter<br>Act.carbon filter | 1.000 Bh                                |  |
| Kondensatableiter /<br>condensate drain | Service-unit                          | Vorfilter<br>Pre-filter                 | 6.000 Bh   |
|   | Service-unit                          | Microfilter                             | 6.000 Bh   |
|   | Service-unit                          | Filterkombination<br>Filter combination | 6.000 Bh   |

Bh = Kompressor-Betriebsstunden / Working hours




|        |          |      |          |      |            |            |
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| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |


**9. Wartung  
Austausch der Filterelemente**


 Filtergehäuse entfernen.

- **Filtergehäuse -6 bis -48 (Bajonett-Verschluss)**
  - \* Das Filtergehäuse nach oben, gegen den Filterkopf drücken.
  - \* Dann das Filtergehäuse im Uhrzeigersinn langsam gegen den Anschlag drehen (etwa 1/8 Drehung) und nach unten abziehen.
- **Filtergehäuse -71 bis -221 (Gewinde-Verschluss)**
  - \* Schrauben Sie das Filtergehäuse gegen den Uhrzeigersinn (per Hand oder mit Hilfe eines Filterschlüssels) auf.

 Filterelement gemäß unten stehender Skizze abziehen, bzw. wechseln.

**Hinweis:** Die Schaumstoffummantelung der Filterelemente Serie FE, FF und FG dürfen nicht mit den Fingern angefaßt werden.

 Filtergehäuse in umgekehrter Reihenfolge zusammenbauen.

 Filter durch langsames Öffnen der Absperrvorrichtung wieder mit Druck beaufschlagen.




**Filtergehäuse -185 bis -2480**

Anzahl der Filterelemente siehe Kapitel 3. „Technische Daten“.


 **WARNUNG!**

- Das (die) Filter beinhaltet(n) unter erhöhtem Druck stehende Systeme.  
Vor Servicearbeiten sind sie drucklos zu machen.


**9. Servicing, filter cartridge replacement**

 Remove housing.

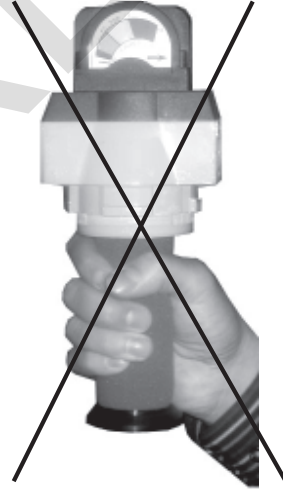
- **Housing -6 to -48 (bayonet-style head)**
  - \* Push housing upwards against the filter head.
  - \* Then slowly turn the housing clockwise to the stop (about 1/8 of a turn) and remove by pulling downwards.
- **Housing -71 to -221 (threaded head)**
  - \* Screw off the housing counter-clockwise (by hand or using a filter wrench).

 Remove and replace cartridge as shown below.

**Please note:** Do not touch the foam sleeves of the cartridges from the FE, FF and FG series with your fingers.


 Re-assemble the housing in the reverse order.

 Place filter under pressure again by slowly opening the shut-off device.



**Housing -185 to -2480**










Number of cartridges see chapter 3. „Technical data“.

 **CAUTION!**










- The filter(s) contain(s) systems under high pressure.  
Alle pressure must be let off before servicing

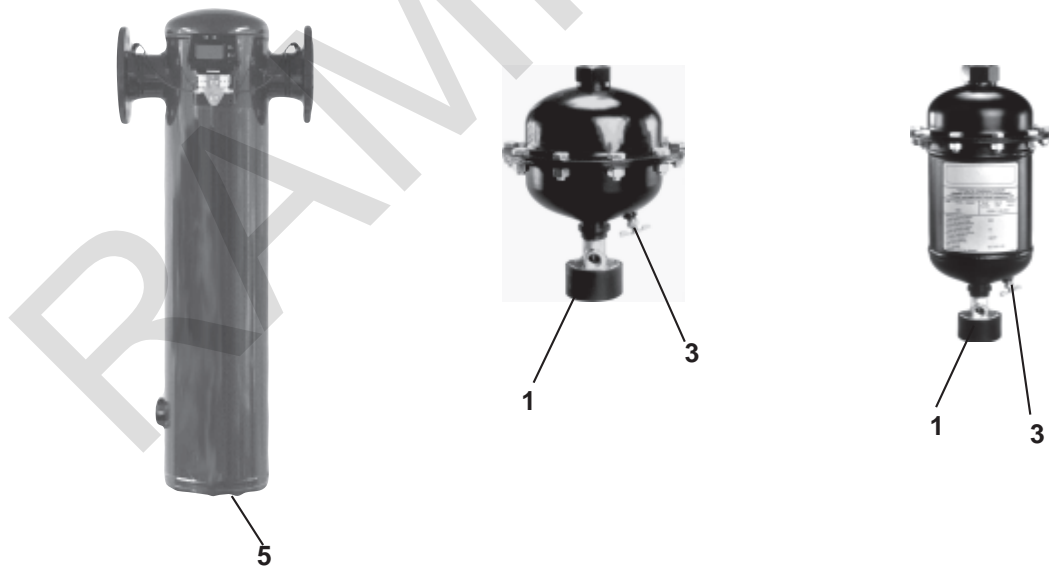
|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**9. Wartung  
Austausch der Filterelemente**

-  Absperrvorrichtung im Druckluftein- und -austritt schließen.
  -  Kondensatableitungsschlauch an (1) lösen. (Nur bei FB, FC, FE, FF).
  -  Um das Filtergehäuse zu entlüften müssen Sie beim:  
- Kondensatableiter Nr. 30505 und Nr. 30506 die Entlüftungsschraube (3) entgegen dem Uhrzeigersinn lösen.  
- FG den Kugelhahn (5) öffnen.
  -  Schrauben der Flanschverbindung am Boden des Filtergehäuses vorsichtig lösen, da evtl. noch ein geringer Restdruck im System vorhanden ist.
  -  Schrauben bis auf eine entfernen und Flansch zur Seite schwenken.
  -  Filterelemente entgegen dem Uhrzeigersinn herausdrehen.
  -  Neue Filterelemente ohne Werkzeug „fingerfest“ einschrauben.
- Hinweis:** Die Schaumstoffummantelung der Filterelemente Serie FE, FF, FG dürfen nicht mit den Fingern angefaßt werden.
-  Filtergehäuse in umgekehrter Reihenfolge schließen.
  -  Filter durch langsames Öffnen der Absperrvorrichtungen wieder mit Druck beaufschlagen.

**9. Servicing, filter cartridge replacement**

-  Close shut-off device in compressed air inlet/outlet.
  -  Loosen condensate drain hose at (1) (only on FB, FC, FE, FF models).
  -  Follow these steps to release the air from the housing:  
- for condensate drain no. 30505 and no. 30506, loosen the bleed screw (3) in counter-clockwise direction.  
- on FG models, open the ball valve (5).
  -  Gently loosen the screws at the bottom flange of the housing. Caution is necessary as the system may still be under slight residual pressure.
  -  Remove all screws except one and swing flange to the side.
  -  Screw out cartridge counter-clockwise.
  -  Screw in new cartridge by hand until „handtight“. Do not use a wrench.
- Please note:** Do not touch the foam sleeves of the cartridges from the FE, FF, FG series with your fingers.
-  Close housing in reverse order.
  -  Place filter under pressure again by slowly opening the shut-off device.



|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**9. Wartung  
Austausch der Filterelemente**

**9. Servicing, filter cartridge  
replacement**

**9.3 Austausch der**

**Schwimmerableiter /  
ECO-DRAIN Service-unit /  
ECO-DRAIN Membransätze**

**9.3 Changing of**

**Float drain /  
ECO-DRAIN Service-unit /  
ECO-DRAIN membrane set**

Die Kondensatableiter / Wartungspakete sind gemäß unten aufgeführter Tabelle regelmäßig zu wechseln.

The condensate drains / service packages must be changed according to the table below.

| Wartungsteil<br>Part of maintenance  | Wartungs-Intervall<br>Maintenance-interval |
|--|--|
| Schwimmer-Kondensatableiter/<br>Float drain  | 3.000 Bh                                   |
| Service-Unit<br>(ECO DRAIN 30/31)  | 6.000 Bh                                   |
| ECO DRAIN Verschleißteilsatz<br>(ECO DRAIN 13/14)<br>ECO DRAIN wearing part set<br>(ECO DRAIN 13/14) | 6.000 Bh                                   |

Nähere Informationen finden Sie auch im Anhang ECO DRAIN.

For more details please see annexe ECO DRAIN.

|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

**10. Garantiebedingungen**

**10. Guarantee conditions**

**10.1 Allgemeines**

Die Garantie erstreckt sich, im Rahmen unserer allgemeinen Lieferbedingungen, auf das gelieferte Filter/-system.

**10.1 General**

The guarantee covers the delivered device with regard to our general terms of delivery.

**10.2 Garantieausschluß**

Garantieansprüche bestehen nicht,

- wenn das Filter/ -system durch Einfluß höherer Gewalt oder durch Umwelteinflüsse beschädigt oder zerstört wird.
- bei Schäden, die durch unsachgemäße Behandlung, insbesondere Nichtbeachtung der Betriebs- und Wartungsanleitung aufgetreten sind (regelmäßige Kontrolle des Kondensatableiters / regelmäßiger Wechsel der Filterelemente).
- falls das Filter/ -system nicht seinen Bestimmungen entsprechend eingesetzt war (siehe Kapitel 3. „Technische Daten“).
- falls das Filter/ -system durch nicht hierfür autorisierte Werkstätten oder andere Personen unsachgemäß geöffnet oder repariert wurde und/oder mechanische Beschädigungen irgendwelcher Art aufweist.

**10.2 Exclusion from guarantee coverage**

No guarantee claims shall be assertible,

- if the filter/ -system is damaged or destroyed due to force majeure or environmental effects.
- for damage resulting from incorrect handling, in particular failure to comply with the operating and maintenance instructions (regular inspection of the condensate discharger, regular change of the filter cartridges).
- if the filter/ -system has not been used in accordance with its specifications (see section 3. „Technical data“).
- if the filter/ -system has been opened or repaired by workshops or other persons unauthorised for this purpose and/or reveals any type of mechanical damage.

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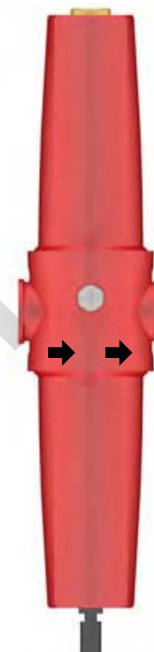
|        |          |      |          |      |            |            |
|--------|----------|------|----------|------|------------|------------|
| F0507  | 05.03.07 | KC   | 05.03.07 | KC   | F0412      |            |
| D-Name | erstellt | Name | gepr.    | Name | ersetzt f. | ersetzt d. |

13.7 Option dc  
Operating instructions for compressed air filter (fresh air filter)

RAMIRENT



**domnick hunter**



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**OIL-X**  
EVOLUTION

Original Language (EN) **OIL VAPOUR & ODOUR REMOVAL FILTERS**

|  |   |
|--|---|
| (NL) OLIEDAMP & GEUR VERWIJDERINGSFILTERS                      | (DE) FILTER ZUM ENTFERNEN VON ÖLNEBEL UND GERÜCHEN    |
| (FR) FILTRES D'ÉLIMINATION DES ODEURS ET DES VAPEURS D'HUILE   | (FI) ÖLJYHÖYRYN JA HAJUN POISTOSUODATTIMET            |
| (SV) FILTER FÖR AVLÄGSNING AV OLJEÅNGOR OCH LUKT               | (NO) OLJEDAMP- OG OLJELUKTFJERNINGSFILTRE             |
| (DA) FILTER FÖR AVLÄGSNING AV OLJEÅNGOR OCH LUKT               | (EL) ΦΙΛΤΡΑ ΑΦΑΙΡΕΣΗΣ ΑΤΜΩΝ & ΟΣΜΩΝ ΛΑΔΙΟΥ            |
| (ES) FILTROS DE ELIMINACIÓN DE OLORES Y VAPORES DE ACEITE      | (PT) VAPOR DO ÓLEO E FILTROS DE REMOÇÃO DOS CHEIROS   |
| (IT) FILTRI PER L'ELIMINAZIONE DEGLI ODORI E DEI VAPORI D'OLIO | (PL) FILTRY DO USUWANIA OPARÓW I ZAPACHU OLEJU        |
| (SK) FILTRE NA ODSTRAŇOVANIE OLEJOVÝCH VÝPAROV A ZÁPACHU       | (CS) OLEJOVÉ A PROTIPACHOVÉ FILTRY                    |
| (ET) ÕLISUDU JA -HAISU EEMALDUSFILTRID                         | (HU) OLAJGŐZ- ÉS SZAGELTÁVOLÍTÓ SZŰRŐK                |
| (LV) EĻĻAS TVAIKU UN AROMĀTA NOVĒRŠANAS FILTRI                 | (LT) ALYVOS GARŲ IR KVAPO ŠALINIMO FILTRAI            |
| (RU) ФИЛЬТРЫ ДЛЯ УСТРАНЕНИЯ ЗАПАХА И ПАРОВ МАСЛА               | (SL) FILTRI ZA ODSTRANJEVANJE OLJNIH HLAPOV IN VONJAV |
| (TR) YAĞ BUHARI VE KOKUSU GİDERİCİ FİLTRELER                   | (MT) FILTRI LI JNEHHU L-FWAR TAŻ-ŻJUT U L-IRWEJJAĦ    |

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Warning

- Highlights actions or procedures, which if not performed correctly, may lead to personal injury or death.
- Benadrukt de acties of procedures die, indien niet juist uitgevoerd, lichamelijk letsel of de dood kunnen veroorzaken.
- Weist auf Aktionen oder Verfahren hin, die bei fehlerhafter Durchführung zu Verletzungen und tödlichen Unfällen führen können.
- Met en relief les actions ou procédures qui, si elles ne sont pas exécutées correctement, peuvent entraîner des dommages corporels ou la mort.
- Osoittaa toimenpiteitä tai menettelytapoja, jotka väärin suoritettuina saattavat aiheuttaa henkilövahingon tai kuoleman.
- Anger åtgärder och metoder som kan orsaka personskador eller dödsfall om de inte utförs korrekt.
- Fremhæver handlinger eller prosedyrer som kan føre til personskade eller dødsfall hvis de ikke utføres på korrekt måte.
- Fremhæver handlinger eller fremgangsmåder, som kan medføre personskade eller dødsfald, hvis de ikke udføres korrekt.
- Επισημαίνει τις ενέργειες ή τις διαδικασίες, οι οποίες αν δεν πραγματοποιηθούν σωστά, μπορεί να οδηγήσουν σε τραυματισμό προσωπικού ή σε θάνατο
- Destaca acciones o procedimientos que, de no realizarse correctamente, pueden ocasionar daños personales o la muerte.
- Realça as acções ou procedimentos que, se não forem executados correctamente, poderão provocar danos pessoais ou morte.
- Segnala azioni o procedure che, se non eseguite correttamente, comportano il rischio di infortuni o morte.
- Wskazuje działania i procedury, które w razie niewłaściwego wykonania mogą prowadzić do obrażeń ciała lub śmierci.
- Zvýrazňuje činnosti alebo postupy, ktoré môžu v prípade nesprávneho vykonania viesť zraneniu alebo usmrteniu.
- Upozornění na činnosti nebo postupy, jejichž nesprávné provádění může vést ke zranění nebo usmrcení osob.
- Tóstab esile toimingud või protseduurid, mis väärte teostamisel korral võivad põhjustada kehavigastusi või surma.
- Olyan műveleteket vagy eljárásokat jelöl, amelyek nem megfelelő módon történő végrehajtása súlyos vagy végzetes személyi sérülést okozhat.
- Uzsvēr darbības vai procedūras, kuru rezultātā, ja tās neveic pareizi, var izraisīt ievainojumus vai nāvi.
- Zymí veiksmus ar procedūras, kuriuos atlikus neteisingai, galima susižeisti ar mirtį.
- Указывает на действия, ненадлежащее выполнение которых может привести к нанесению вреда здоровью или смерти
- Označuje dejanja ali postopke, ki lahko ob nepravilnem izvajanju poškodujejo človeka ali povzročijo smrt.
- Doğru bir şekilde yerine getirilmediği takdirde bu ürüne hasar verebilecek işlem ve süreçleri vurgular.
- Tissottolinea l-azzjonijiet jew il-proċeduri, li jekk ma jsirux kif suppost, jista' jkun hemm korrimint jew mewt



Caution

- Highlights actions or procedures, which if not performed correctly, may lead to damage to this product.
- Benadrukt de acties of procedures die, indien niet juist uitgevoerd, schade kunnen berokkenen aan dit product.
- Weist auf Aktionen oder Verfahren hin, die bei fehlerhafter Durchführung zu Schäden am Gerät führen können.
- Met en relief les actions ou procédures qui, si elles ne sont pas exécutées correctement, peuvent endommager ce produit.
- Osoittaa toimenpiteitä tai menettelytapoja, jotka väärin suoritettuina saattavat vaurioittaa tätä laitetta.
- Anger åtgärder och metoder som kan orsaka skador på den här produkten om de inte utförs korrekt.
- Fremhæver handlinger eller prosedyrer som kan føre til skade på produktet hvis de ikke utføres på korrekt måte.
- Fremhæver handlinger eller fremgangsmåder, som kan medføre beskadigelse af dette produkt, hvis de ikke udføres korrekt.
- Επισημαίνει τις ενέργειες ή τις διαδικασίες, οι οποίες αν δεν πραγματοποιηθούν σωστά, μπορεί να προκαλέσουν ζημιά στο προϊόν αυτό
- Destaca acciones o procedimientos que, de no realizarse correctamente, pueden ocasionar el deterioro del producto.
- Realça as acções ou procedimentos que, se não forem executados correctamente, poderão danificar este produto.
- Segnala azioni o procedure che, se non eseguite correttamente, comportano il rischio di danneggiare il prodotto.
- Wskazuje działania i procedury, które w razie niewłaściwego wykonania mogą powodować uszkodzenie produktu.
- Zvýrazňuje činnosti alebo postupy, ktoré v prípade nesprávneho vykonania môžu viesť k poškodeniu tohto výrobku.
- Upozornění na činnosti nebo postupy, jejichž nesprávné provádění může vést k poškození tohoto výrobku.
- Tóstab esile toimingud või protseduurid, mis väärte teostamisel korral võivad kaesolevat toodet kahjustada.
- Olyan műveleteket vagy eljárásokat jelöl, amelyek nem megfelelő módon történő végrehajtása a termék károsodásához vezethet.
- Uzsvēr darbības vai procedūras, kuru rezultātā, ja tās neveic pareizi, var sabojāt šo izstrādājumu.
- Zymí veiksmus ar procedūras, kuriuos atlikus neteisingai, galima sugadinti šį gaminį.
- Указывает на действия, ненадлежащее выполнение которых может привести к повреждениям данного изделия
- Označuje dejanja ali postopke, ki lahko ob nepravilnem izvajanju poškodujejo izdelek.
- Doğru bir şekilde yerine getirilmediği takdirde yaralanma ya da ölçüme yol açabilecek işlem ve süreçleri vurgular
- Tissottolinea l-azzjonijiet jew il-proċeduri, li jekk ma jsirux kif suppost, tista' ssir hsara lil dan il prodott










- Suitable gloves must be worn.
- Geeignete Schutzhandschuhe tragen.
- Käytettävä asianmukaisia käsineitä.
- Bruk egnete hansker.
- Απαιτείται να φοράτε κατάλληλα γάντια
- Devem ser utilizadas luvas adequadas.
- Należy zakładać odpowiednie rękawice
- Kohustuslik kanda sobivaid kaitsekindaid
- Jävalkä piemēroti cimdi.
- Работы должны проводиться в соответствующих перчатках
- Uyğun eldiven giymelidir
- Altijd geschikte handschoenen dragen.
- Le port de gants adaptés est obligatoire.
- Använd lämpliga handskar.
- Der skal anvendes egnete handsker.
- Se deben llevar puestos guantes apropiados.
- Indossare guanti di protezione.
- Je nutné použít vhodné rukavice.
- Viseljen megfelelő védőkesztyűt.
- Reikia mūvēti tinkamas pirštines.
- Uporabiti je treba ustrezne rokavice.
- Ghandhom jintlibsu ingwanti adatti



- Highlights the requirements for disposing of used parts and waste.
- Benadrukt de vereisten voor het weggooiën van gebruikte onderdelen en afval.
- Weist auf die Anforderungen zur Entsorgung gebrauchter Teile und Abfall hin.
- Met en relief les consignes de mise au rebut des pièces usagées et des déchets.
- Osoittaa käytettyjen osien ja jätteen hävittämistä koskevia vaatimuksia.
- Anger de krav som ställs på bortskaflande av gamla delar och avfall.
- Fremhæver kravene for avhending av brukte deler og avfall.
- Fremhæver kravene til bortskaflelse af udjente dele og affald.
- Επισημαίνει τις απαιτήσεις απόρριψης των χρησιμοποιημένων εξαρτημάτων και των απορριμμάτων
- Destaca los requisitos para desechar las piezas usadas y los residuos.
- Realça os requisitos para eliminar as peças utilizadas e os desperdícios.
- Segnala i criteri per lo smaltimento di componenti usati e rifiuti.
- Wskazuje wymagania dotyczące usuwania zużytych części i odpadów.
- Zvýrazňuje požiadavky pre zneškodňovanie použitých dielov a odpadu.
- Upozornění na požadavky týkající se likvidace použitých dílů a odpadu.
- Tóstab esile kasutatud osade ja jääkide utiliseerimisele esitatavad nõuded
- A használt alkatrészek és a hulladék megfelelő módon történő elhelyezésére hívja fel a figyelmet.
- Uzsvēr prasības tam, kā atbrīvoties no lietotajām detaļām un atkritumiem.
- Zymí panaudotų dalių ir atliekų išmetimo reikalavimus.
- Указывает на требования по уничтожению использованных деталей и отходов
- Označuje zahteve za odlaganje rabljenih delov in odpadkov.
- Kullanihmis parçaların ve atıkların atılmasına ilişkin gereklilikleri vurgular
- Tissottolinea l-kundizzjonijiet biex wiehed jarmi l-partijiet uzati u l-iskart

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|   |   |  |  |   |
|---|---|--|--|---|
|    | <ul style="list-style-type: none"> <li>• Pressure.</li> <li>• Paine.</li> <li>• Πίεση</li> <li>• Ciśnienie</li> <li>• Nyomás alatt.</li> <li>• Tlak</li> </ul>  | <ul style="list-style-type: none"> <li>• Druk</li> <li>• Trykk</li> <li>• Presión.</li> <li>• Tlak.</li> <li>• Spiediensi.</li> <li>• Basınc</li> </ul>  | <ul style="list-style-type: none"> <li>• Druck.</li> <li>• Trykk</li> <li>• Pressão.</li> <li>• Tlak.</li> <li>• Slégis.</li> <li>• Pressjoni</li> </ul>   | <ul style="list-style-type: none"> <li>• Pression.</li> <li>• Tryk</li> <li>• Pressione.</li> <li>• Surve.</li> <li>• Давление</li> </ul> |
|    | <ul style="list-style-type: none"> <li>• Release Pressure.</li> <li>• Evacuation de pression.</li> <li>• Avlast trykk</li> <li>• Despresurizar.</li> <li>• Ciśnienie spustowe</li> <li>• Surve väljalase</li> <li>• Ísleiskite sléji.</li> <li>• Basıncı Kaldırın</li> </ul>  | <ul style="list-style-type: none"> <li>• Druk aflaten.</li> <li>• Vapauta paine.</li> <li>• Aflast tryk</li> <li>• Liberta Pressão.</li> <li>• Uvolnite tlak.</li> <li>• Engedje ki a nyomást.</li> <li>• Стравить давление</li> <li>• Nehhi l-pressjoni</li> </ul>  | <ul style="list-style-type: none"> <li>• Druck ablassen.</li> <li>• Tryckutsläpp.</li> <li>• Εκτόνωση πίεσης</li> <li>• Scaricare la pressione.</li> <li>• Uvolnění tlaku.</li> <li>• Pazeminiet spiedienu.</li> <li>• Sprostitev tlaka.</li> </ul>                                |   |
|    | <ul style="list-style-type: none"> <li>• Replace every year</li> <li>• Remplacer tous les ans.</li> <li>• Skift ut hvert år</li> <li>• Sustituir anualmente</li> <li>• Należy wymieniać raz w roku</li> <li>• Asendage igal aastal</li> <li>• Keiskite kartta per metus</li> <li>• Her yıl değiştirin</li> </ul>  | <ul style="list-style-type: none"> <li>• Elk jaar vervangen</li> <li>• Vaihda vuosittain.</li> <li>• Udskift en gang om året</li> <li>• Substituir todos os anos</li> <li>• Každý rok vyměňajte</li> <li>• Evente cserélje</li> <li>• Заменять каждый год.</li> <li>• İbdel kull sena</li> </ul>   | <ul style="list-style-type: none"> <li>• Jährlich austauschen</li> <li>• Byt varje år</li> <li>• Αντικατάσταση κάθε χρόνο</li> <li>• Sostituire ogni anno</li> <li>• Nutná výměna každý rok.</li> <li>• Nomainiet reizi gadā</li> <li>• Zamenjajte vsako leto.</li> </ul>          |   |
|    | <ul style="list-style-type: none"> <li>• Filter housing / Model</li> <li>• Logement du filtre/modèle.</li> <li>• Filterhus/-modell</li> <li>• Caja de filtro/modelo.</li> <li>• Obudowa filtra / model.</li> <li>• Filtri korpus/mudel</li> <li>• Filtró korpusas / modelis</li> <li>• Filtrre muhafazası / Model</li> </ul>  | <ul style="list-style-type: none"> <li>• Filterhuis / Model</li> <li>• Suodatinkotelo/-malli</li> <li>• Filterhus/modell</li> <li>• Caixa / Modelo do filtro</li> <li>• Kryt filtra / Model</li> <li>• Szűrőház / típus</li> <li>• Корпус фильтра / модель</li> <li>• Kontenitur tal-filtru - Mudell</li> </ul>  | <ul style="list-style-type: none"> <li>• Filtergehäuse / Modell</li> <li>• Filterhus/modell</li> <li>• Υπόδοξη/μοντέλο φίλτρου</li> <li>• Corpo del filtro / Modello</li> <li>• Kryt filtru / Model</li> <li>• Filtra korpus / modelis</li> <li>• Ohišje filtra / Model</li> </ul> |   |
|    | <ul style="list-style-type: none"> <li>• High efficiency filter element</li> <li>• Hochleistungsfilterelement</li> <li>• Tehokas suodatinelementti</li> <li>• Høyeffektivt filterelement</li> <li>• Φίλτρο υψηλής απόδοσης</li> <li>• Elemento do filtro de elevado rendimento</li> <li>• Wysokowydajny wkład filtra</li> <li>• Vysoce účinný filtrační prvek</li> <li>• Nagy hatékonyságú szűrőelem</li> <li>• Labai efektyvus filtravimo elementas</li> <li>• Visoko učinkovit filtrirni element</li> <li>• Element tal-filtru b'effiċjenza kbira</li> </ul>  | <ul style="list-style-type: none"> <li>• Zeer efficiënt filterelement</li> <li>• Cartouche filtrante haute efficacité.</li> <li>• Høgeffektivt filterelement</li> <li>• Høgeffektivt filterelement</li> <li>• Elemento filtrante de gran eficiencia.</li> <li>• Elemento filtrante ad alta efficienza</li> <li>• Vysoko účinný filtračný článok</li> <li>• Kõrgtootlik filterelement</li> <li>• Augstas produktivitātes filtra elements</li> <li>• Высокоэффективный фильтрующий элемент</li> <li>• Yüksek etkinlikli filtre ögesi</li> </ul>  |  |   |
|  | <ul style="list-style-type: none"> <li>• Adsorption filter cartridge - Granular carbon</li> <li>• Adsorptionsfiltereinsatz - Granulatkohle</li> <li>• Adsorptiosuodatinelementti - rakeinen hiili</li> <li>• Adsorpsjonsfilterpatron - Karbon i kornform</li> <li>• Φυσιγγίο φίλτρου προσρόφησης - Κοκκώδης άνθρακας</li> <li>• Cartucho do filtro de absorção - Carvão granular</li> <li>• Adsorpcyjny wkład filtrujący z węgla ziamistego</li> <li>• Adsorpcni filtrační prvek - granulovaný uhlik</li> <li>• Adsorpciószűrőbetét - granulált szén</li> <li>• Adsorbicinio filtro kasetė - anglies granulės</li> </ul>  | <ul style="list-style-type: none"> <li>• Adsorptiefilter cartridge - korrelvormige actieve kool</li> <li>• Cartouche filtrante d'adsorption - Charbon en granules.</li> <li>• Adsorptionsfilterkassett - Kornigt kol</li> <li>• Adsorptionsfilterkassett - Kornigt kol</li> <li>• Cartucho filtrante de adsorción, granulos de carbón.</li> <li>• Filtro a cartuccia ad adsorbimento - granuli di carbone</li> <li>• Adsorpcná filtračná kazeta - Granulovaný uhlík</li> <li>• Adsorpciofilteri kassett - teraline süsi</li> <li>• Absorbėjoša filtra kasetne - graudains ogleklis</li> <li>• Адсорбционный фильтрующий элемент - гранулированный уголь</li> <li>• Adsorpsiyon filtersi kartuşu - Taneli karbon</li> </ul> |  |   |
|  | <ul style="list-style-type: none"> <li>• Adsorption filter element - Wrapped carbon cloth</li> <li>• Adsorptie filterelement - gewikkelde koolstofdoek</li> <li>• Adsorptionsfilterelement - eingewickeltes Filtertuch aus Kohlenstoff</li> <li>• Cartouche filtrante d'adsorption - Charbon entouré de tissu.</li> <li>• Adsorptiosuodatinelementti - kääritty hiilikangas</li> <li>• Adsorptionsfilterelement - Veckad kolfiberduk</li> <li>• Adsorpsjonsfilterelement - Innpakket karbonstoff</li> <li>• Adsorptionsfilterelement - Veckad kolfiberduk</li> <li>• Φίλτρο προσρόφησης - Τυλιγμένο ύφασμα άνθρακα</li> <li>• Elemento filtrante de adsorción, capas de tejido de carbón.</li> <li>• Elemento do filtro de absorção - Pano revestido de carvão</li> <li>• Elemento filtrante ad adsorbimento - tessuto al carbone con struttura ad avvolgimento</li> <li>• Wkład adsorpcyjny filtra ze zwijanej tkaniny z włókna węglowego</li> <li>• Adsorpcný filtračný článok - Zabalená uhlíková tkanina</li> <li>• Adsorpcni filtrační prvek - zabalená uhlíková tkanina</li> <li>• Adsorpciofilteri element - isoleeritud süsinikriie</li> <li>• Adsorpciószűrőelem - göngyölt szénszövet</li> <li>• Absorbėjošs filtra elements - saīta oglekļa drāniņa</li> <li>• Adsorbicinis filtravimo elementas - susuktas anglies audinys</li> <li>• Адсорбционный фильтрующий элемент - ткань из углеродистого волокна</li> <li>• Adsorpcijski filtrirni element - navita ogljikova krpa</li> <li>• Adsorpsiyon filtersi ögesi - Sarılı karbon kumaş</li> <li>• Element tal-filtru li jassorbixxi - Xoqqa tal-karbonju mgeżwra</li> </ul> | <ul style="list-style-type: none"> <li>• Stellen Sie sicher, dass Sie das richtige Werkzeug verwenden.</li> <li>• Käytettävä oikeaa työkalua</li> <li>• Pass på at korrekt verktøy brukes</li> <li>• Βεβαιωθείτε ότι χρησιμοποιείται το σωστό εργαλείο</li> <li>• Certifique-se de que é utilizada a ferramenta correcta</li> <li>• Należy używać odpowiedniego narzędzia.</li> <li>• Zkontrolujte použití správného nástroje</li> <li>• Mindig a célnak megfelelő szerszámot használja</li> <li>• Isitinkite, kad naudojamais reikiamas įrankis</li> <li>• Poskrbite, da boste uporabili ustrezno orodje</li> <li>• Kun žgur li tintuza l-ghodda t-tajba</li> </ul>   |  |   |
|  | <ul style="list-style-type: none"> <li>• Ensure correct tool is used</li> <li>• Zorg dat het juiste gereedschap wordt gebruik</li> <li>• Vérifier que les outils adéquats sont utilisés.</li> <li>• Se till att rätt verktyg används.</li> <li>• Sørg for at benytte korrekt værktøj</li> <li>• Asegúrese de que se utiliza la herramienta adecuada</li> <li>• Assicurarsi di utilizzare l'utensile corretto</li> <li>• Uistite sa, že používate správny nástroj</li> <li>• Tagage öge tööriista kasutamine</li> <li>• Izmantojiet tikai atbilstošus darbarīkus</li> <li>• Убедитесь, что используется правильный инструмент</li> <li>• Doğru alet kullanımlarını sağlayın</li> </ul>   |  |  |   |

AC010 - AC030

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**Warning!**

This product must be installed and maintained by competent and authorised personnel only, under strict observance of these operating instructions, any relevant standards and legal requirements where appropriate.

**Retain this user guide for future reference**

**Waarschuwing!**

Dit product mag alleen geïnstalleerd en onderhouden worden door deskundig en bevoegd personeel met strikte inachtneming van deze bedieningsinstructies en de betreffende normen en wettelijke vereisten indien van toepassing.

**Bewaar deze handleiding als naslag.**

**Warnung!**

Das Produkt darf ausschließlich von autorisiertem Fachpersonal unter strikter Befolgung dieser Betriebsanleitung, ggf. relevanter Normen sowie gesetzlicher Vorschriften installiert und gewartet werden.

**Bewahren Sie die Bedienungsanleitung zu Referenzzwecken auf.**

**Attention !**

Ce produit doit être installé et entretenu exclusivement par un personnel compétent et autorisé, dans le respect le plus strict de ce mode d'emploi et des normes applicables et exigences légales éventuelles.

**Conserver ce guide de l'utilisateur à titre de référence future**

**Varoitus!**

Tämän tuotteen saa asentaa ja huoltaa vain pätevä ja valtuutettu henkilöstö, noudattaen tarkasti näitä käyttöohjeita, kaikkia asiaankuuluvia normeja ja tarpeen vaatiessa lain asettamia vaatimuksia.

**Säilytä tämä käyttöohje tulevaa tarvetta varten.**

**Varning!**

Produkten får endast installeras och underhållas av utbildad och behörig personal, som följer denna bruksanvisning och eventuella tillämpliga normer och lagföreskrifter noga i förekommande fall.

**Behåll denna användarhandbok som referens**

**Advarsel!**

Dette produktet må bare installeres og vedlikeholdes av kompetent og autorisert personale, i streng overholdelse av disse betjeningsanvisningene, alle relevante standarder og rettslige krav der det passer.

**Ta vare på denne brukerveiledningen for senere bruk**

**Advarsel!**

Dette produkt må kun installeres og vedligeholdes af autoriseret personale, under nøje overholdelse af disse driftsinstruktioner, relevante standarder og lovgivningsmæssige krav, hvor dette er aktuelt.

**Gem denne vejledning til senere reference.**

**Προειδοποίηση!**

Η εγκατάσταση και συντήρηση αυτού του προϊόντος πρέπει να γίνεται μόνο από κατάλληλα εκπαιδευμένο και εξουσιοδοτημένο προσωπικό, με αυστηρή τήρηση των οδηγιών χειρισμού, των εφαρμοζόμενων προτύπων και των νομικών απαιτήσεων όπου απαιτείται.

**Φυλάξτε αυτό το εγχειρίδιο χρήσης για μελλοντική αναφορά**

**Advertencia**

La instalación y mantenimiento de este producto debe ser efectuada únicamente por personal competente y autorizado, respetándose de forma estricta estas instrucciones de funcionamiento, así como cualquier norma y requerimiento legal que sean aplicables.

**Conserve esta guía del usuario para poder consultarla en el futuro.**

**Advertência!**

A instalação e a manutenção deste produto só deve ser realizada por pessoal autorizado e competente, sob estrita observância destas instruções de utilização e de quaisquer normas e requisitos legais relevantes, quando adequado.

**Conserve este guia do utilizador para referência futura**

AC010 - AC030

(MT)

**Rakkomandazzjonijiet għall-Installazzjoni**

Nirrakkomandaw li l-arja kumpressata tiġi trattata qabel ma tidhol fis-sistema ta' distribuzzjoni kif ukoll fil-punti ċ l-applikazzjonijiet kritiċi ta' l-użu.

L-installazzjoni ta' taghmir li jnixxef l-arja kumpressata fuq sistema li kienet imxarba jista' jirriżulta f'aktar taghbija ta' hmieg għall-filtri li jintużaw f'punt wiehed, għall-perjodu sakemm is-sistema ta' distribuzzjoni tinxej. L-elementi tal-filtri jista' jkollhom bżonn li jinbidlu aktar spiss matul dan il-perjodu.

Għal installazzjonijiet fejn jintużaw kumpressuri minghajr żejt, xorta jkun hemm prezenti ajrusols u partijiet ta' l-ilma, għalhekk xorta għandhom jintużaw gradi bi skop ġenerali u b'effiċjenza kbira.

Filtru għal skopijiet ġenerali għandu dejjem jiġi installat biex jiproteġi l-filtru ta' effiċjenza kbira mill-volum kbir ta' ajrusols likwidi u partijiet solidi.

Installa taghmir ta' purifikazzjoni fl-aktar temperatura baxxa possibbli imma b'mod li ma jkunx hemm iffriżar, preferibbilment aktar 'l isfel mill-aftercoolers u mir-riċevituri ta' l-arja.

Taghmir tal-purifikazzjoni fil-punt ta' l-użu għandu jiġi installat kemm jista' jkun qrib tal-post fejn għandu japplika.

It-taghmir ta' purifikazzjoni m'għandux jiġi installat aktar 'l isfel mill-valvs li jifflu malajr u għandu jkun protett minn possibbiltà ta' fluss b'lura jew kundizzjonijiet oħra stressanti.

Naddaf il-pajps kollha li jwasslu għat-taghmir ta' purifikazzjoni qabel tinstalla u l-pajps kollha wara li tinstalla t-taghmir ta' purifikazzjoni u qabel ma tqabbad ma' l-applikazzjoni finali.

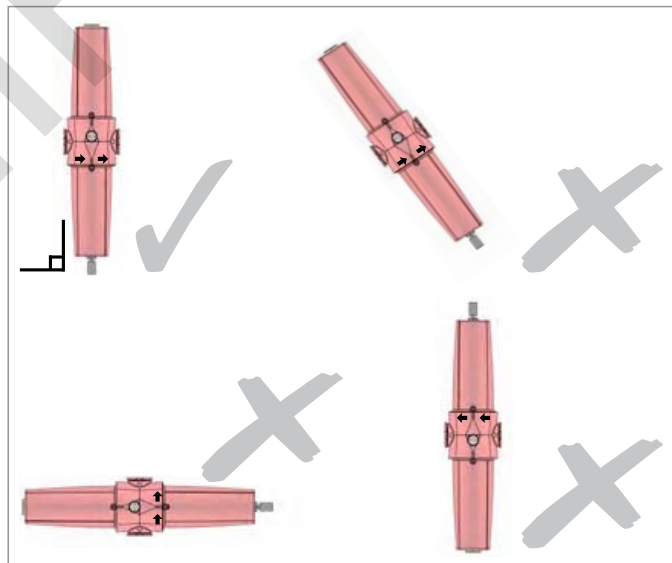
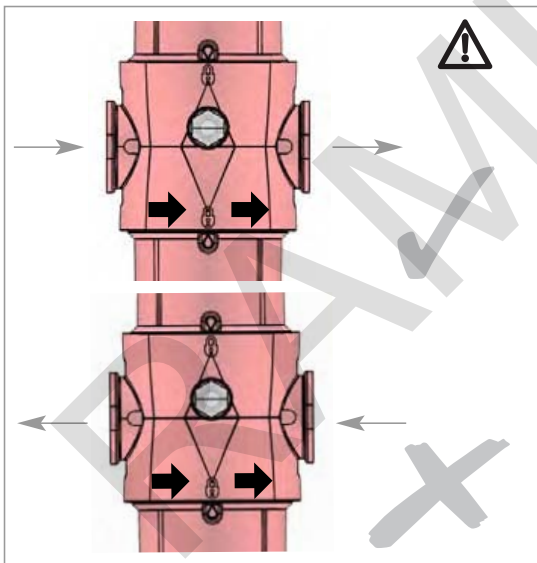
Jekk tiffittja linji ta' by-pass madwar it-taghmir ta' purifikazzjoni, kun żgur li hemm biżżejjed filtrazzjoni f'fittjata mal-linja tal-by-pass biex ma thallix li jkun hemm kontaminazzjoni tas-sistema aktar 'l isfel.

Ipprovdni faċilità biex tiddrejnja l-likwidi li jingabru mit-taghmir tal-purifikazzjoni. Il-likwidi li jingabru għandhom jiġu trattati u mormija b'mod responsabbli.

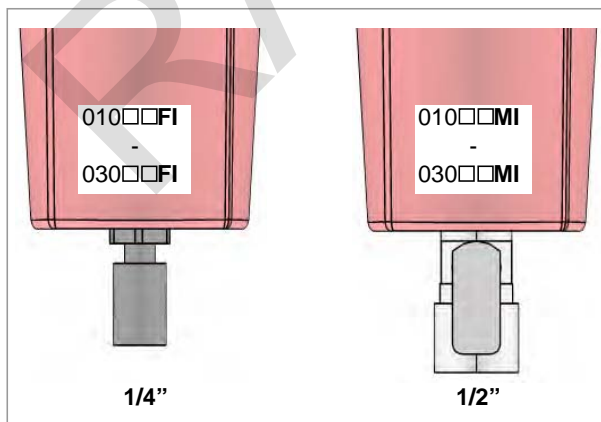
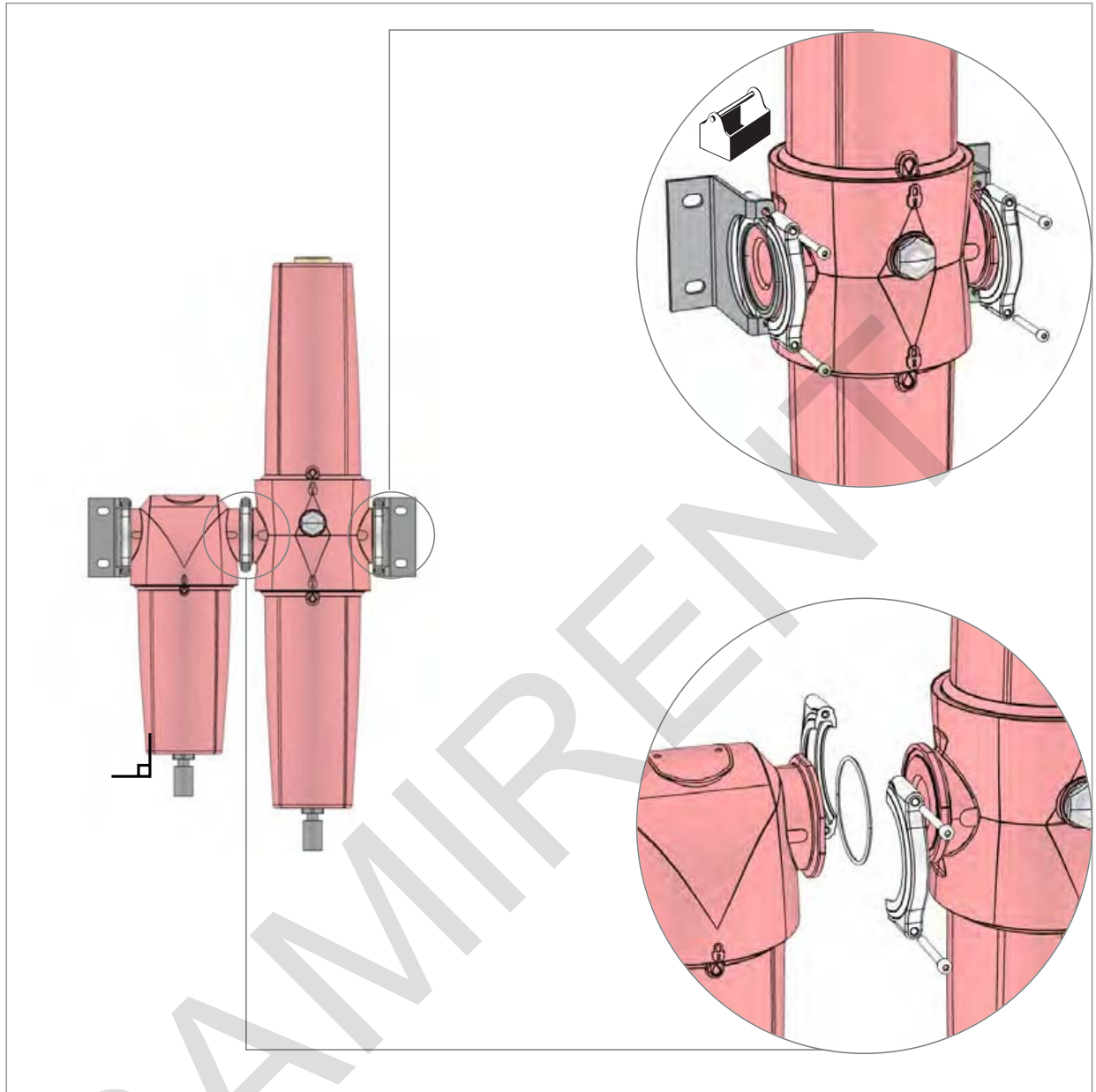
Iż-żmien kemm idumu jersvu l-elementi tal-filtru li jneħhi l-fwar taż-żjut huwa affettwat mill-koncentrazzjoni taż-żejt tad-dhul, l-umdità relattiva u t-temperatura tas-sistema ta' l-arja kumpressata. L-elementi li jneħhu l-fwar taż-żjut ikollhom bżonn jinbidlu aktar ta' sikwit mill-element shih ekwivalenti.

Mudelli AC010□□□□ - AC030□□□□ huma f'fittjati b'indikatur tal-volum taż-żejt. Kemm l-elementi tal-filtru kif ukoll l-indikatur għandhom jinbidlu jekk l-indikatur isir ta' kulur blu.

**Jekk Joghġbok Innota - Dan hu indikatur tal-volum taż-żejt u ma jindikax iż-żmien li jdum iservi l-element tal-filtru.**



AC010 - AC030



6

FILTER-DH-OIL-XEVOLUTION 01


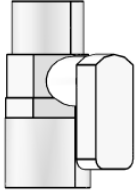
21





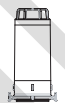


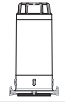




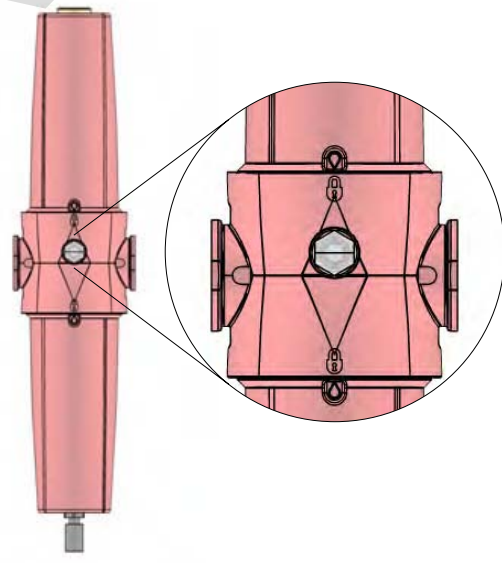
AC010 - AC030

**5. Spare Parts (Service Kits)**

Reserve-onderdelen (servicekits) • Ersatzteile (Service-Kits) • Pièces de rechange (nécessaires d'entretien) • Varaosat (Huoltopakkaukset) • Reservdelar (servicesatser) • Reservedeler (service-sett) • Reservedele (Servicekit) • Ανταλλακτικά (Πακέτα τεχνικής υποστήριξης) • Piezas de repuesto (kits de mantenimiento) • Peças Sobressalentes (Kit de Reparação) • Ricambi (kit per l'assistenza) • Części zamienne (zestawy serwisowe) • Náhradné diely (Servisná súprava) • Náhradní díly (Sady pro údržbu) • Varuosad (hooldekomplektid) • Pótalkatrészek (szervizkészletek) • Rezerwes części (apkopes komplekti) • Atsarginės dalys (priežiros detalių komplektai) • Запасные части (ЗИП) • Nadomestni deli (servisni kompleti) • Yedek parça (Servis kiti) • Partijiet Ghat-Tibdil (Kitts tas-Servizz)

|  |  |  |  |
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| <br>EF1 | <ul style="list-style-type: none"> <li>• AUTOMATIC DRAIN</li> <li>• AUTOMATISCHER ABLAUF</li> <li>• VIDANGE AUTOMATIQUE</li> <li>• AUTOMISCHAFTAPPEN</li> <li>• DRENAJE AUTOMATICO</li> <li>• SCARIO AUTOMATICO</li> <li>• AUTOMATISK AFLØB</li> <li>• DRENO AUTOMÁTICO</li> <li>• ΑΥΤΟΜΑΤΗ ΑΠΟΣΤΡΑΓΓΙΣΗ</li> <li>• AUTOMATDRÄNERING</li> <li>• AUTOMAATTINEN</li> <li>• TYHJENNYSKAPPALE</li> <li>• DREN AUTOMATYCZNY</li> <li>• AUTOMATICKÉ VYSUŠENIE</li> <li>• AUTOMATICKÉ VYPOUŠTĚNÍ</li> <li>• AUTOMAATNE VÄLJALASE</li> <li>• AUTOMATIKUS LEERESZTÉS</li> <li>• AUTOMÁTISKA IZTECINĀŠANA</li> <li>• AUTOMATINIS IŠLEIDIMAS</li> <li>• АВТОМАТИЧЕСКИЙ ДРЕНАЖ</li> <li>• SAMODEJNI ODTOK</li> <li>• OTOMATİK SÜZDÜRÜCÜ</li> <li>• DREJN AWTOMATIKU</li> </ul> | <br>EM1 | <ul style="list-style-type: none"> <li>• MANUAL DRAIN</li> <li>• MANUELLER ABLAUF</li> <li>• VIDANGE MANUELLE</li> <li>• MANUEEL AFTAPPEN</li> <li>• DRENAJE MANUAL</li> <li>• SCARIO MANUALE</li> <li>• MANUELT AFLØB</li> <li>• DRENO MANUAL</li> <li>• ΧΕΙΡΟΚΙΝΗΤΗ ΑΠΟΣΤΡΑΓΓΙΣΗ</li> <li>• MANUELL DRÄNERING</li> <li>• ΚΑΣΙΚΑΥΤΤΟΙΝΕΝ</li> <li>• TYHJENNYSKAPPALE</li> <li>• DREN RĘCZNY</li> <li>• RUCNÉ VYSUŠENIE</li> <li>• RUCNÍ VYPOUŠTĚNÍ</li> <li>• KÄSITSI VÄLJALASE</li> <li>• KÉZI LEERESZTÉS</li> <li>• MANUĀLA IZTECINĀŠANA</li> <li>• RANKINIS IŠLEIDIMAS</li> <li>• ДРЕНАЖ ВРУЧНЮЮ</li> <li>• ROČNI ODTOK</li> <li>• ELLE KULLANILACAK SÜZDÜRÜCÜ</li> <li>• DREJN MANWALI</li> </ul> |
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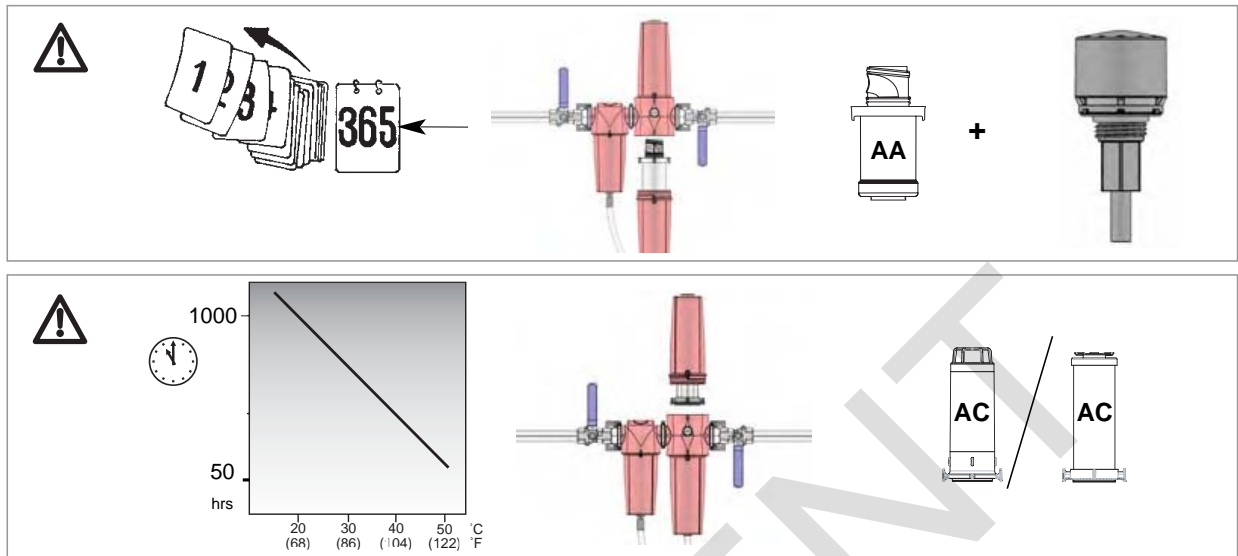
|   |   |   |   |
|---|---|---|---|
|  | <br>AA | <br>AC | <br>AC |
| 010 A   | 010AA   | 010AC   |        |
| 010 B   |   |   |   |
| 010 C   |   |   |   |
| 015 B   | 015AA   | 015AC   |        |
| 015 C   |   |   |   |
| 020 C   |   |   |   |
| 020 D   | 020AA   | 020AC   |        |
| 020 E   |   |   |   |
| 025 D   | 025AA   | 025DAC  |        |
| 025 E   | 025AA   | 025EAC  |        |
| 030 E   |   |   |   |
| 030 F   | 030AA   | 030AC   |        |
| 030 G   |   |   |   |



BOIE1  
AC010 □□□ I - AC030 □□□ I

**AC010 - AC030**
**6. Maintenance**

**Onderhoud • Wartung • Entretien • Kunnossapito • Underhåll • Vedlikehold • Vedligeholdelse • Συντήρηση • Mantenimento • Manutenção • Manutenzione • Konserwacja • Údržba • Údržba • Hooldus • Karbantartás • Tehniskā apkope • Techninė priežiūra • Обслуживание • Vzdrževanja • Bakım • Manutenzjoni**



Models AC010□□□I - AC030□□□I are fitted with a bulk oil indicator. Both filter elements and indicator should be changed if indicator is blue in colour.

**Please Note - This is a bulk oil indicator, it does not indicate filter element life.**

Modellen AC010□□□I - AC030□□□I zijn uitgerust met een bulk olie indicator. Zowel de filterelementen als de indicator moeten vervangen worden als de indicator blauw van kleur is.

**N.B. - Dit is een bulk olie indicator, het is geen indicator voor de levensduur van het filterelement.**

Die Modelle AC010□□□I - AC030□□□I sind mit einer Ölanzeige ausgestattet. Sowohl die Filterelemente also auch die Anzeige sollte ausgetauscht werden, wenn sich die Anzeige blau färbt.

**Bitte beachten - Es handelt sich hier um eine Ölanzeige. Diese gibt keinen Hinweis auf die Lebensdauer des Filterelements.**

Les modèles AC010□□□I - AC030□□□I sont fournis avec un indicateur de présence massive d'huile. Lorsque l'indicateur est bleu, il est nécessaire de remplacer les cartouches et l'indicateur.

**Remarque : Il s'agit d'un indicateur de présence massive d'huile, et non pas de la durée de vie des cartouches.**

Malleissa AC010□□□I - AC030□□□I on öljynilmais. Sekä suodatinelementit että ilmaisin on vaihdettava, jos ilmaisin on sininen.

**Huomautus - Tämä on öljynilmais. Se ei ilmaise suodatinelementin ikää.**

Modell AC010□□□I - AC030□□□I har en indikator för större mängder olja. Både filterelement och indikator ska bytas om indikatorn har blå färg.

**Observera — indikatorn visar oljeförekomst, den indikerar inte filterelementets livslängd.**

Modell AC010□□□I - AC030□□□I er monteret med bulkvolum oljeindikator. Både filterelementer og indikator skal skiftes når indikatorn er blå.

**Merk - Dette er en bulkvolum oljeindikator, den indikerer ikke filterelementets levetid.**

Modell AC010□□□I - AC030□□□I har en indikator för större mängder olja. Både filterelement och indikator ska bytas om indikatorn har blå färg.

**Observera — indikatorn visar oljeförekomst, den indikerar inte filterelementets livslängd.**

Τα μοντέλα AC010□□□I - AC030□□□I διαθέτουν ένα δείκτη παρουσίας λαδιού. Όταν ο δείκτης είναι μπλε πρέπει να αλλάζονται τόσο τα φίλτρα όσο και οι δείκτες.

**Παρακαλούμε σημειώστε ότι - Αυτός είναι ένας δείκτης παρουσίας λαδιού, δεν υποδεικνύει τη διάρκεια ζωής του φίλτρου.**

Los modelos AC010□□□I - AC030□□□I disponen de un indicador de presencia de aceite. Si el indicador se vuelve azul deben cambiarse tanto los elementos filtrantes como el indicador.

**Nota importante: se trata de un indicador de presencia de aceite. No indica la vida del elemento filtrante.**

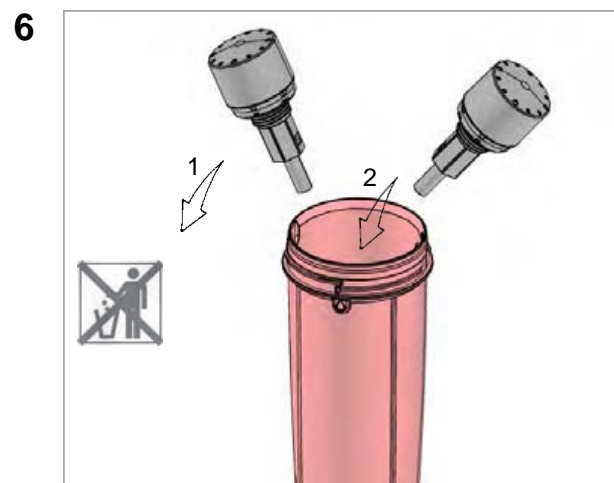
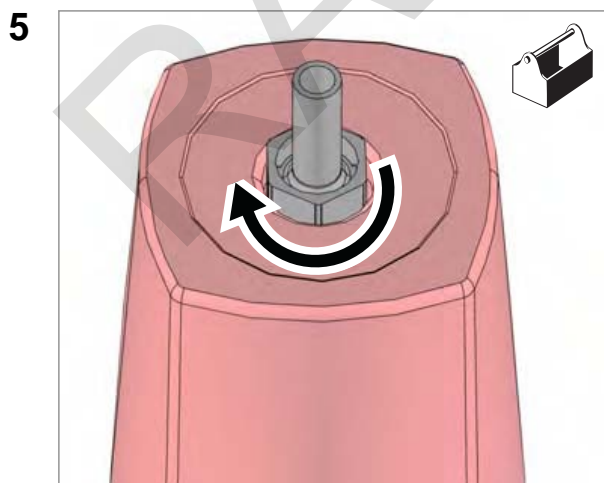
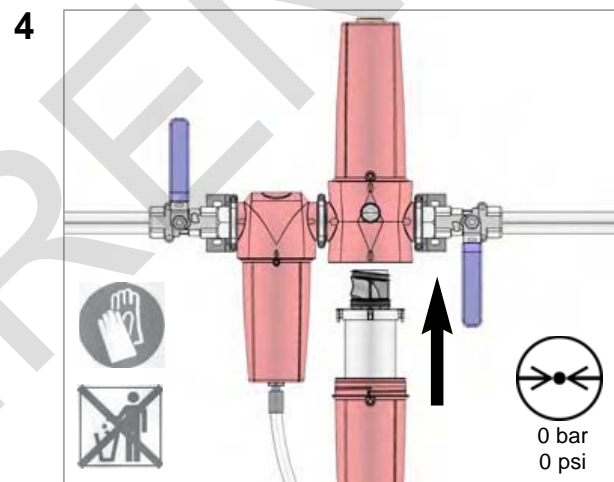
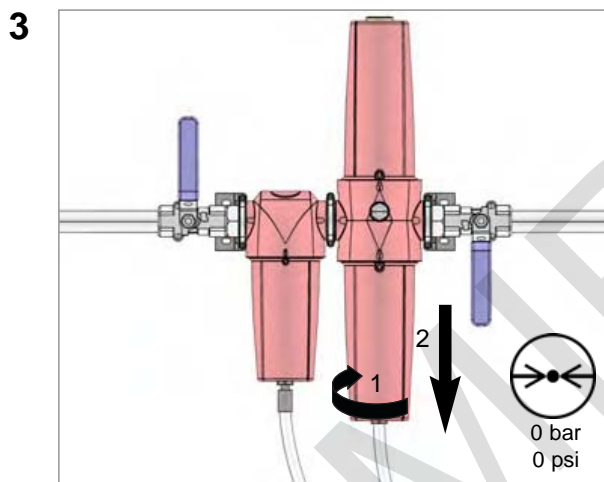
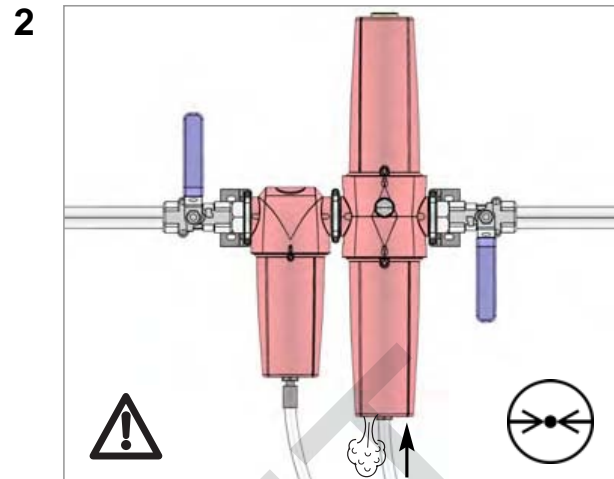
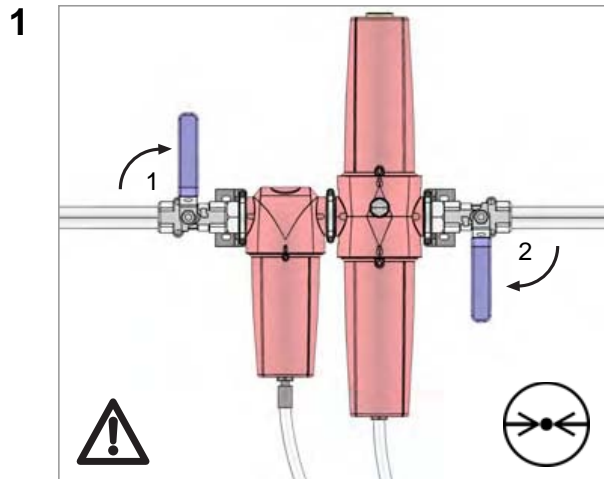
Modelos AC010□□□I - AC030□□□I são instalados com um indicador do óleo em bruto. Ambos os elementos do filtro e o indicador deverão ser mudados se o indicador estiver azul.

**Nota - Este é um indicador do óleo em bruto, não indica a vida útil do elemento do filtro.**

I modelli AC010□□□I - AC030□□□I sono provvisti di un indicatore degli oli misti. Sostituire gli elementi filtranti e l'indicatore quando il secondo assume una colorazione blu.

**Nota - L'indicatore segnala la presenza di oli misti, ma non la durata dell'elemento filtrante.**

AC010 - AC030

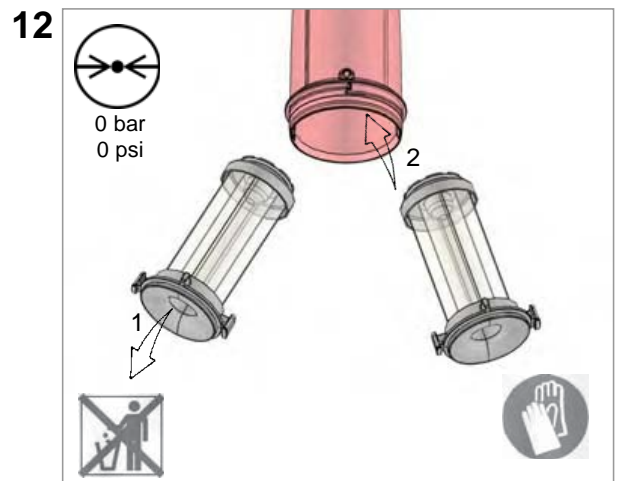
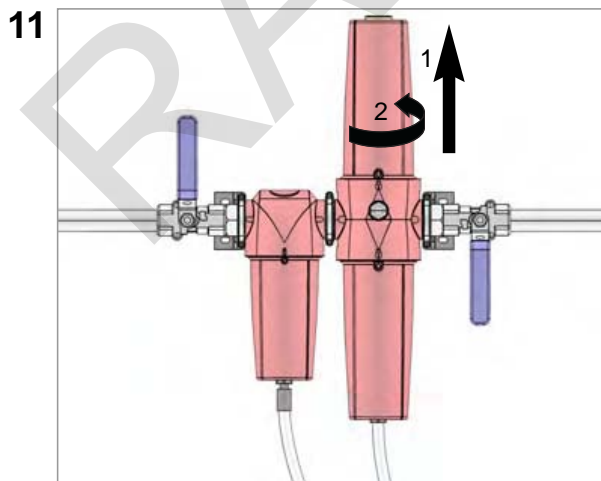
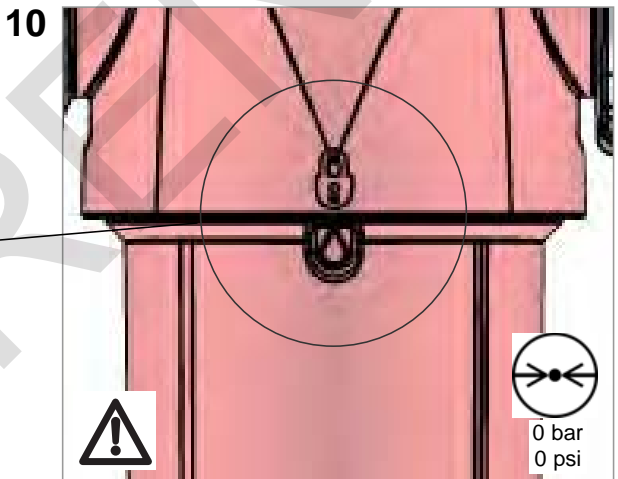
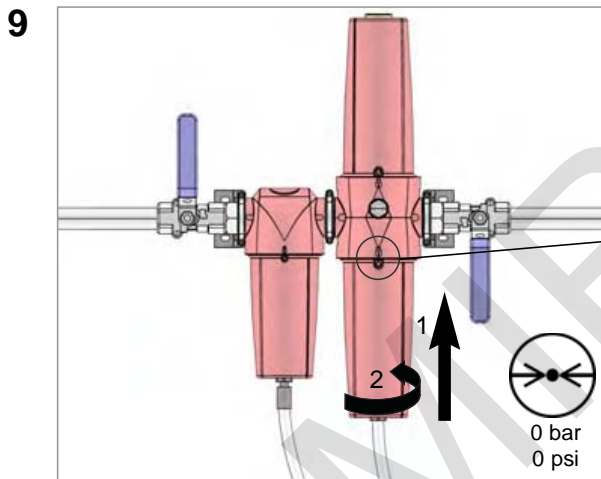
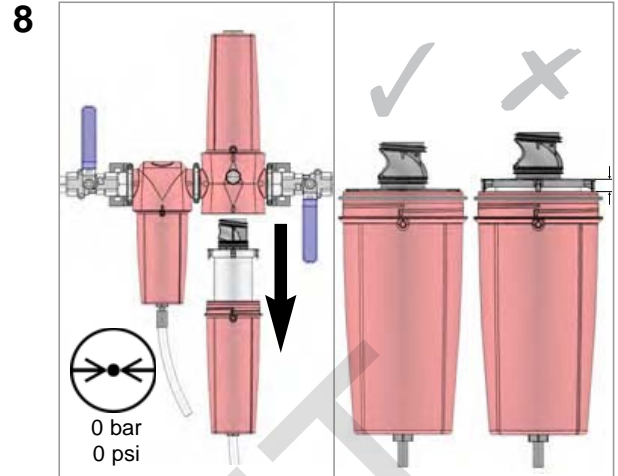
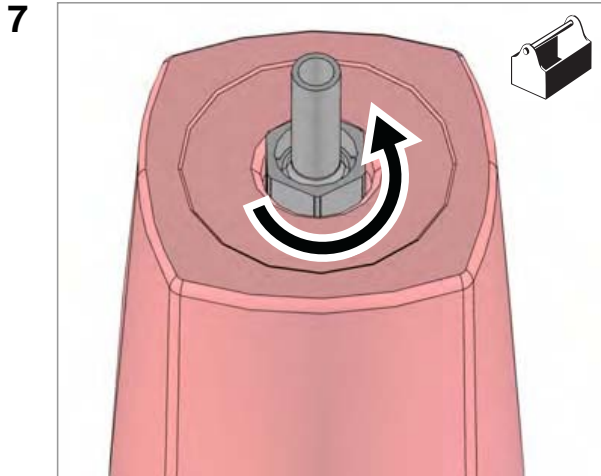


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FILTER-DH-OIL-XEVOLUTION 01



AC010 - AC030

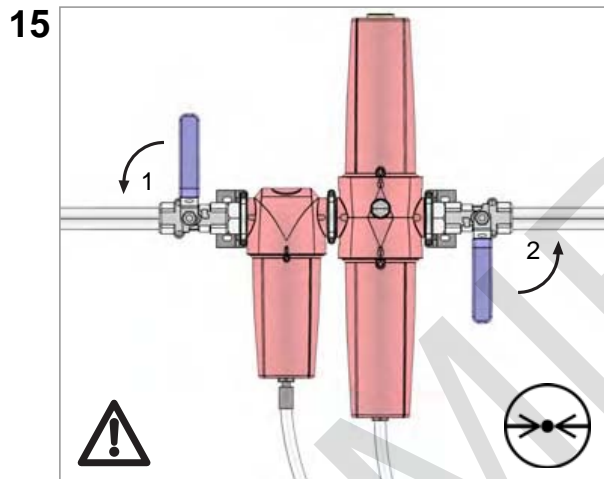
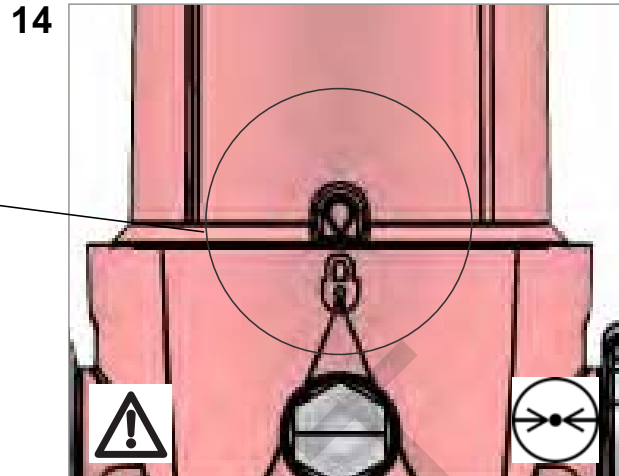
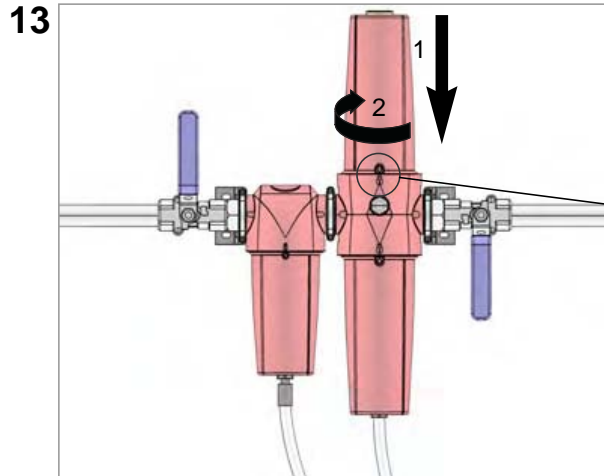


10

FILTER-DH-OIL-XEVOLUTION 01

30

AC010 - AC030



#### AC010 - AC030

| EN   | NL   | DE   |
|--|--|--|
| <p><b>Declaration of Conformity</b></p> <p>domnick hunter<br/>Dukesway, TVTE, Gateshead, Tyne &amp; Wear, NE11 0PZ UK<br/>AC010, 015, 020 025, 030<br/>97/23/EC.</p> <p>Generally in accordance with ASMEV11 Div 1 : 2004.</p> <p>Article 3.3 (AC 010, 015, 020, 025) Module A (AC 030)</p> <p>N/A</p> <p>N/A</p> <p>Barry Wade<br/>Business Systems Improvement Manager<br/>domnick hunter ltd</p> <p><b>Declaration</b></p> <p>I declare that as the authorised representative, the above information in relation to the supply / manufacture of this product, is in conformity with the standards and other related documents following the provisions of the above Directives.</p> <p><b>Signature:</b> <i>Barry Wade</i> <b>Date:</b> 28 / 09 / 05<br/><b>Declaration Number:</b> 0001/280905</p>                     | <p><b>Verklaring van Conformiteit</b></p> <p>domnick hunter<br/>Dukesway, TVTE, Gateshead, Tyne &amp; Wear, NE11 0PZ, GB<br/>AC010, 015, 020 025, 030<br/>97/23/EC.</p> <p>Gewoonlijk volgens ASMEV11 Div 1 : 2004.</p> <p>Artikel 3.3 (AC 010, 015, 020, 025) Module A (AC 030)</p> <p>N/A</p> <p>N/A</p> <p>Barry Wade<br/>Manager Bedrijfsysteemverbetering<br/>domnick hunter ltd</p> <p><b>Verklaring</b></p> <p>Als bevoegde vertegenwoordiger verklaar ik dat bovenstaande informatie met betrekking tot de levering / vervaardiging van dit product overeenstemt met de normen en andere bijbehorende documentatie volgens de bepalingen van bovengenoemde richtlijnen.</p> <p><b>Handtekening:</b> <i>Barry Wade</i> <b>Datum:</b> 28 / 09 / 05<br/><b>Verklaringnummer:</b> 0001/280905</p>  | <p><b>Konformitätserklärung</b></p> <p>domnick hunter<br/>Dukesway, TVTE, Gateshead, Tyne &amp; Wear NE11 0PZ GROSSBRITANNIEN<br/>AC010, 015, 020 025, 030<br/>97/23/EC.</p> <p>Allgemein in Übereinstimmung mit ASMEV11 Div 1 : 2004.</p> <p>Artikel 3.3 (AC 010, 015, 020, 025) Modul A (AC030)</p> <p>N/A</p> <p>N/A</p> <p>Barry Wade<br/>Business Systems Improvement Manager<br/>domnick hunter ltd</p> <p><b>Erklärung</b></p> <p>Hiermit erkläre ich als bevollmächtigter Vertreter die Konformität der oben aufgeführten Informationen in Bezug auf die Lieferung/Herstellung dieses Produkts mit den Normen und anderen zugehörigen Dokumenten gemäß den Bestimmungen der oben genannten Richtlinien.</p> <p><b>Unterschrift:</b> <i>Barry Wade</i> <b>Datum:</b> 28 / 09 / 05<br/><b>Numer der Erklärung:</b> 0001/280905</p> |
| <p><b>FR</b></p> <p><b>Déclaration de conformité</b></p> <p>domnick hunter<br/>Dukesway, TVTE, Gateshead, Tyne &amp; Wear, NE11 0PZ GB<br/>AC010, 015, 020 025, 030<br/>97/23/EC.</p> <p>Générallement conforme à ASMEV11 div. 1 : 2004.</p> <p>Article 3.3 (AC010, 015, 020, 025, 030) Module A (AC030)</p> <p>N/A</p> <p>N/A</p> <p>Barry Wade<br/>Business Systems Improvement Manager<br/>domnick hunter ltd</p> <p><b>Déclaration</b></p> <p>Je déclare à titre de représentant agréé que les informations ci-dessus liées à la fourniture/fabrication de ce produit sont en conformité avec les normes et autres documents liés déclarés selon les dispositions des directives susmentionnées.</p> <p><b>Signature :</b> <i>Barry Wade</i> <b>Date :</b> 28 / 09 / 05<br/><b>N° de déclaration :</b> 0001/280905</p> | <p><b>Fi</b></p> <p><b>Vaatimustenmukaisuusvakuutus</b></p> <p>domnick hunter<br/>Dukesway, TVTE, Gateshead, Tyne &amp; Wear NE11 0PZ ISO-BRITANNIA<br/>AC010, 015, 020 025, 030<br/>97/23/EC.</p> <p>Yleensä seuraavaan standardin mukaisesti: ASMEV11 Div 1, 2004.</p> <p>Artikla 3.3 (AC010, 015, 020, 025, 030) Moduul A (AC030)</p> <p>N/A</p> <p>N/A</p> <p>Barry Wade<br/>Yhtisjärjestelmien kehittäjäosasto<br/>domnick hunter ltd</p> <p><b>Vakuutus</b></p> <p>Vakuutuksena edustajana vakuutan, että yllä olevat tiedot, jotka liittyvät tämän tuotteen toimittamiseen tai valmistamiseen, ovat standardien ja muiden asiaan liittyvien asiakirjojen mukaisia ja noudattavat yllä mainittuja direktiivejä.</p> <p><b>Allekirjoitus:</b> <i>Barry Wade</i> <b>Päiväys:</b> 28 / 09 / 05<br/><b>Vakuutuksen numero:</b> 0001 / 280905</p> | <p><b>SV</b></p> <p><b>Försäkran om överensstämmelse</b></p> <p>domnick hunter<br/>Dukesway, TVTE, Gateshead, Tyne &amp; Wear, NE11 0PZ, Storbritannien<br/>AC010, 015, 020 025, 030<br/>97/23/EC.</p> <p>Generellt i enlighet med ASMEV11 Div 1: 2004.</p> <p>Artikel 3.3 (AC010, 015, 020, 025, 030) Modul A (AC030)</p> <p>N/A</p> <p>N/A</p> <p>Barry Wade<br/>Business Systems Improvement Manager<br/>domnick hunter ltd</p> <p><b>Försäkran</b></p> <p>Jag försäkrar, i egenskap av auktoriserad representant, att ovanstående information avseende leverans/fabrikering av denna produkt överensstämmer med standarder och övriga relevanta dokument enligt Villkoren i ovanstående direktiv.</p> <p><b>Underskrift:</b> <i>Barry Wade</i> <b>Datum:</b> 28 / 09 / 05<br/><b>Försäkran nummer:</b> 0001/280905</p>               |

## 13.8 Option Ic

### Service tasks on the diesel particulate filter

To ensure the proper functioning of the diesel particulate filter, an authorised service technician must perform annual maintenance.

Have the following tasks performed by a specialist shop or the KAESER Service:

- Pressure lines:
  - Check for tight joints, wear and leaks.
- Solenoid valve
  - Check that all electrical connections are tight.
  - Undo fittings and hoses and clean the inside of the valve.
  - Check for leaks.
- Fuel pump(s)
  - Make a visual and auditory check.
  - Check that all electrical connections are tight.
  - Check fuel hoses for leaks.
- Aerosol generator
  - Check that all electrical connections are tight.
  - Check fuel connection for leaks.
  - Clean the injector nozzle.
- Filter module
  - Visually inspect for damage, inside and outside.
  - Check monoliths for cracks/soot emissions.
  - Remove dirt with industrial vacuum cleaner.
  - Check tightness of straps and/or clamps.

## 13.9 Option ga

### Service tasks - Generator

In order to ensure a safe operation of the machine, the generator must be inspected once every year by a trained and authorised electrician.

Have the following tasks performed by a specialist electrician or the KAESER Service:

- Inspection of the generator and generator control cubicle for mechanical damages.
- Inspection of the protective conductor.
- Measurement of the dielectric resistance.
- Measurement of the substitute leakage current.
- Inspection of generator functionality.
- Inspection of the proper functioning of the generator fan and cleaning, if required.
- Cleaning the cooling air apertures.
- Check all screwed connections on the generator and control box and tighten if necessary.
- Check covers and power socket caps for damage and good sealing.
- Check that all warning and other labels are complete and undamaged.