# Content

☑ **Operating Instructions**

☐ **Maintenance Manual**

☐ **Additional documentation**

**Condition of extradition:**

| | |
|---|---|
| Model: | 835 R |
| Driving engine: | Cummins 6.7-C173 |
| Equipment: | K15, KA 8,5m ST 7,0m |
| Undercarriage: | T41/380 |

Machine number: **830.5.1232 us**

**How to contact us**

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**Note**
The addresses of the SENNEBOGEN Sales and service partners can be found on our Homepage on the Internet.

**Current when going to press**

Ongoing development ensures the advanced technology and the high level of quality in our machines. This may result in deviations between these instructions and your machine. Errors can also not be ruled out. Please understand, that no legal claims can be derived from the specifications, illustrations and descriptions within these instructions.

**Copyright**

## 1.3 Potential instances of misuse

The following apply as potential instances of misuse:

- Exceeding the permitted load capacities.
- Using non-Sennebogen parts
- Use in inadmissible ambient conditions.
- Misuse by untrained and uninstructed personnel.
- Inadequate equipment for the application (e.g. protecting the cab against falling objects with guard grill).
- Operating on insufficiently firm base.
- Neglect of necessary inspection and maintenance work.
- Neglecting to lower suspended loads and boom if necessary when shutting the machine down (e.g. work stoppages - over night).
- etc.

## 1.7 Responsibilities of the operator

**WARNING**
The operator is obliged to supply operating instructions when working with hazardous machines or materials.

The necessary information is contained in

- EC directives on safety at work
- National laws on safety at work
- Accident prevention regulations and
- these operating instructions.

**Routine checks**

**Specialist testing, required for crane or backhoe operation**

The machine must be thoroughly checked by a specialist.

- before initial operation and before operating the machine after significant modifications
- at least once yearly
- intermediate depending to operating and company conditions.

A specialist in this context is a person who

- has extensive knowledge of this machine and the relevant regulations and guidelines thanks to specialist training and
- through special instructions of SENNEBOGEN

and can assess the safe working condition of the machine.

**Specialist testing, only required for crane operation**

The following cranes must be tested by a specialist every 4 years:

- Fuel driven mobile crane
- Location changing fuel driven derrick crane
- Lorry attachment cranes

The specialist inspection is to be performed in the 13th year of operation and annually thereafter.

Faults that are detected in recurring inspections must be eliminated within a suitable time-frame depending on how serious a threat they pose to safety.

**Personnel selection and -qualifications**

The machine must only be operated and maintained by qualified personnel.

- Employ only trained and instructed personnel.
- Define responsibility for operation and maintenance.

**Coolant for CUMMINS**

The CUMMINS drive motors can be recognized by the ratings plate.

**Note**

The CUMMINS drive motors are filled with coolant

- **ES Compleat™**

in the factory. Use this coolant only for the CUMMINS drive motors! SENNEBOGEN will accept no responsibility and will provide no warranty or make any guarantees for the use of any other coolants. The antifreeze is sufficient to - 36 °C (- 33 °F).

**Note**

Observe the coolant label in the cooler area.

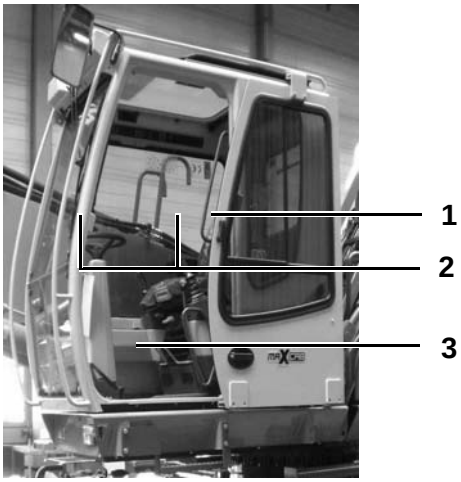

**CAUTION**

Observe the notes in the operating instructions of the engine manufacturer. These are for the operational safety of the machine.

### 1.9.3 Safe entry and exit

- If necessary, clean steps and ladders prior to use.
- Enter or exit machine only when stationary and after the cab has been lowered completely - never - during any motion.
- Do not carry any items when climbing up or down.
- When entering or exiting, always ensure that you have *three points of contact* on the steps, ladders and grips. (e.g. two hands and one foot or two feet and one hand)
- lift items of equipment onto machine using cable or lifting gear.
- Do not use operating elements as handholds in driver's cab.
- Use only the appropriate, provided steps and/or ladders.
- When the cab is raised, access to the gallery is not permitted.
- At working heights of 2.00 m or more, SENNEBOGEN recommends the use of safety equipment to prevent falling. At working heights above 3.00 m, using a safety harness is required legally. Suspension eyelets are marked.

**Cab without platform**

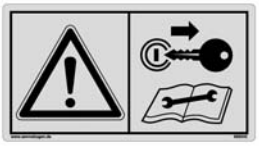



| | |
|---|---|
| 1 | Open the sliding door (1) from the ground. |
| 2 | Hold onto the holding grips (2) and use your feed to step on the steps (3) and climb into the cab. |
| 3 | Close the sliding door. |

### 1.9.10 Maintenance

**DANGER**
Risk of fatality!
There is a risk of serious injury or even death to persons using the machine or in its vicinity if it moves suddenly or is started unintentionally. Observe the following:

- Place the machine on a firm base (level, solid, flat), if necessary set back from the edge of the excavation.
- Lower suspended loads and booms to the ground.
- Apply the brake.
- Pull the safety lever to the rear (all hydraulic functions are inactive).
- Switch off the machine and secure against unauthorized switching on again before beginning any work.
- Place warning sign on operating elements.
- Secure the machine from rolling away and use a chock if necessary.



Additional measures:

- Allow the machine to cool. If this is not possible, be aware that hot fluids and components can cause burns.
- De-pressurize the hydraulic system to avoid dangers.

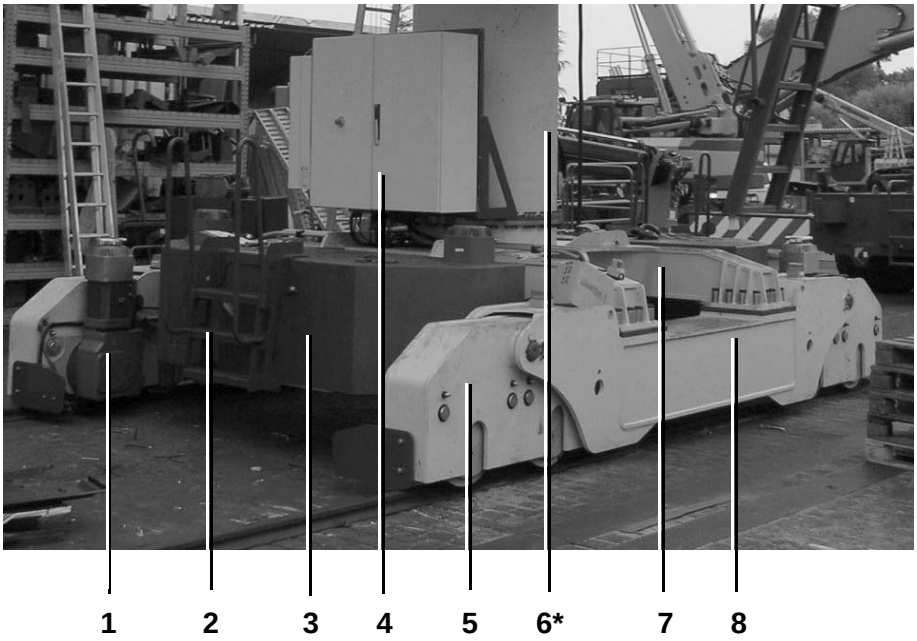
**WARNING**

- Observe all signs and safety stickers on the machine as well as those in the instructions. They contain important information about maintenance procedures.
- The work performed may only be completed by trained professionals.
- Wear personal protection equipment (e.g. safety helmet, ear protection, protective gloves, safety boots) where working conditions require. At working heights of 2.00 m or more, SENNEBOGEN recommends the use of safety equipment to prevent falling. At working heights above 3.00 m, using a safety harness is required legally.
  Suspension eyelets are marked.
- Only use genuine SENNEBOGEN spare parts.
- Use only oils and lubricants listed in the lubricant table.
- Collect lubricants and other consumables in suitable containers and dispose of them properly.
- Observe statutory accident prevention and safety regulations.
- Observe any additional documentation (e.g. engine, etc.) during


**Close grab**

Hold arm horizontal with closed hand to the side.

## 2.2.4 Rails




**1** Geared motor
**2** Access steps
**3** Counterweight
**4** Electrical control cabinet
**5** Drive unit
**6*** Pylon
**7** Middle bridge
**8** Track wheel carrier

*: Optional model / special function

# 3 Customer-specific models and functions

This section contains information that applies specifically to your machine and/or clearly deviates from the illustrations described in these operating instructions.

Section3.2 provides the load capacities of the machine.

**Note**
Detailed descriptions are in the following chapters.

## 3.1 Basic machine configuration

**Serienummer:** 830.0.1232

**Model:** 830 R

**Undercarriage:** T41/380

**Driving engine:** Cummins QSB 6.7 - C173

**Equipment:** K 15

# 4 Technical data

**Note**
The following values are guidelines. The level specified on the corresponding components is authoritative (upper mark on dipstick)

## 4.1 General information

**Electrical system** 24 V

**Note**
Ensure that the available output power of the alternator is not exceeded when installing additional current consumers (e.g. lights).

**Ambient temperature range**

| | |
|---|---|
| Operation / Operation under load | approx. - 20 °C (- 4 °F)... approx. + 40 °C (+ 104 °F) |

**Note**

When running a machine in environmental temperatures outside the specified temperature range, special temperature packages are available (optional!).

Please contact SENNEBOGEN customer service if you have any other questions.

**Hydraulics** Operating pressure, max. 350 bar

**Slewing drive**

| | |
|---|---|
| Slewing speed | 0 - 8 rpm, continuously variable |

**Limitations during wind**

| Wind speed | | |
|---|---|---|
| 25 m/s | 90 km/h | 10 Beaufort |

**Note**
Machine operation is generally possible - without any attachments - at wind speeds of up to 25 m/second.
The decision concerning when operation is to be shut down is to be made by the machine operator and depends on the attachment being used.
Different attachments react differently to wind and may affect the stability of the machine. These are to be determined by the operator and the machine is to be shut down accordingly.

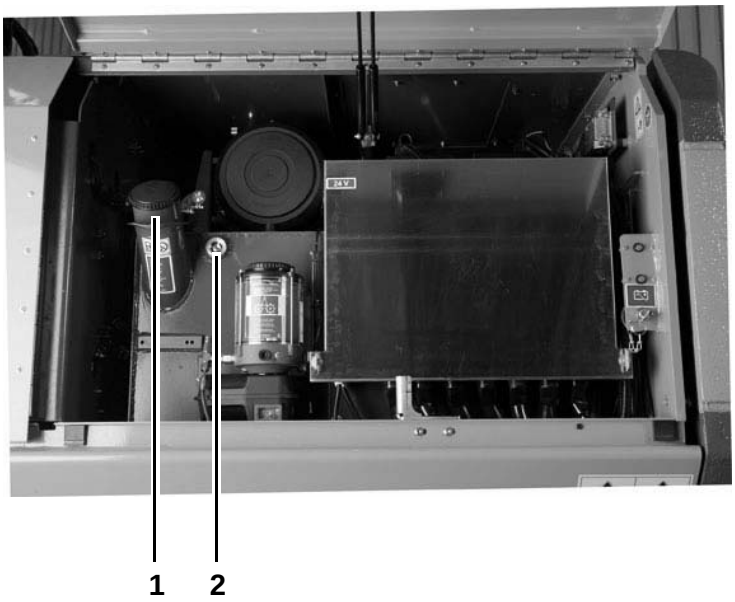
## 4.6 Wind speed

| **Wind strength** | | **Wind speed** | | **Effect** |
|---|---|---|---|---|
| Beau-fort scale | Designation | m/s | km/h | Inland |
| 0 | Calm | 0-0,2 | 1 | Calm, smoke rises straight up |
| 1 | Light draft | 0.3-1.5 | 1-5 | Direction of wind is displayed by direction of smoke, but not by a weather vane |
| 2 | Light breeze | 1.6-3.3 | 6-11 | Wind is felt on face, leaves rustle, weather vane moves |
| 3 | Weak breeze | 3.4-5.4 | 12-19 | Leaves and thin twigs move, wind stretches a flag |
| 4 | Moderate breeze | 5.5-7.9 | 20-28 | Lifts dust and loose paper, moves twigs and thin branches |
| 5 | Fresh breeze | 8.0-10.7 | 29-38 | Small deciduous trees start to sway, breaker foam forms on lake surface |
| 6 | Strong wind | 10.8-13.8 | 39-49 | Strong branches are moving, whistling in power lines, umbrellas difficult to use |
| 7 | Stiff wind | 13.9-17.1 | 50-61 | Whole trees are moving |
| 8 | Stormy wind | 17.2-20.7 | 62-74 | Branches are broken off trees, walking outdoors is made very difficult |
| 9 | Storm | 20.8-24.4 | 75-88 | Slight damage to houses (chimney hoods and tiles are blown off) |
| 10 | Heavy storm | 24.5-28.4 | 89-102 | Uproots trees, considerable damage to houses |
| 11 | Hurricane type storm | 28.5-32.6 | 103-117 | Extensive storm damages (rarely in inland) |
| 12 | Hurricane | 32.7-36.9 | 118-133 | Severe devastation |

### 5.5.2 Check fuel level

**Note**
The fuel fill level can be determined with two different ways:

- with the indicator on the right next to the filler neck (rough indication)
- with the SENNEBOGEN diagnostics system in the initial mask, see Section6.3.16




**1** Filler strainer

**2** Control displays

**Note**
Fill the tank with the specified grade of fuel. Clean fuel is essential for trouble-free operation of the diesel engine.

**Notes on quality and fuel selection**
Observe the notes in the operating instructions of the engine manufacturer.

| | |
|---|---|
| 6 | Close the cap on the expansion tank. |
| 7 | Close the service access door at the left, rear. |


# 5.11 Switch on machine - Electric motor

## 5.11.1 Safety instructions

Observe the safety notes before starting machine.

**DANGER**

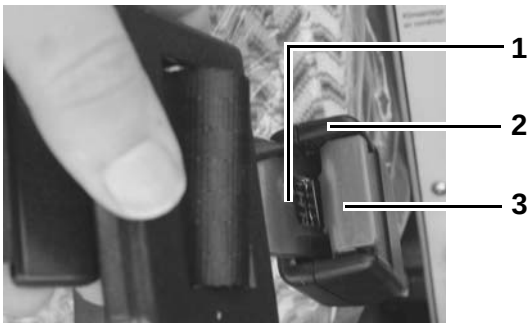
- Danger of injury!
  Keep cab door and service access doors closed.
- Before starting the engine, ensure that there is no one within the danger area.
- Do not start engine if a warning sign is present on the operating elements.
- Adjust driver's seat, steering column and mirror to the correct position.
- Fit restraint belt correctly.
- Close the cab doors.

## 5.11.2 Restraint belt


The machine is equipped with a lap belt. The belt complies with standards SAE J 386 (USA) and FMVSS 209 (EU).

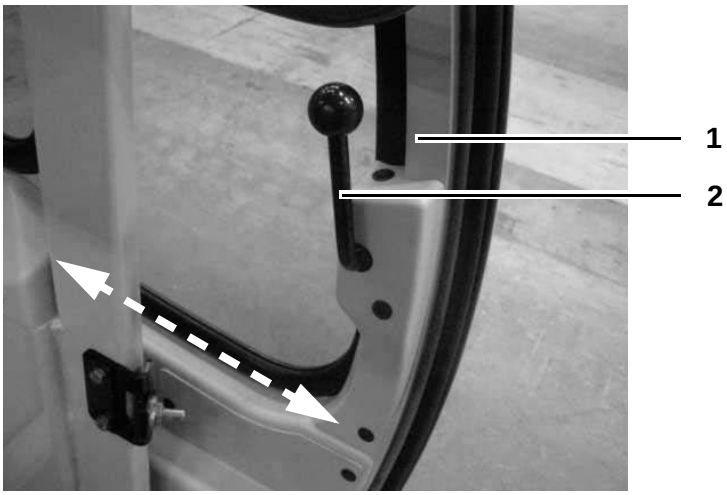
**WARNING**

- Check belt for signs of wear before starting to operate the machine. Immediately exchange a damaged belt.
- Clean dirty belt using water.
- Do not twist belt when fastening.
- Pass belt as low as possible around the hips, not around the stomach.



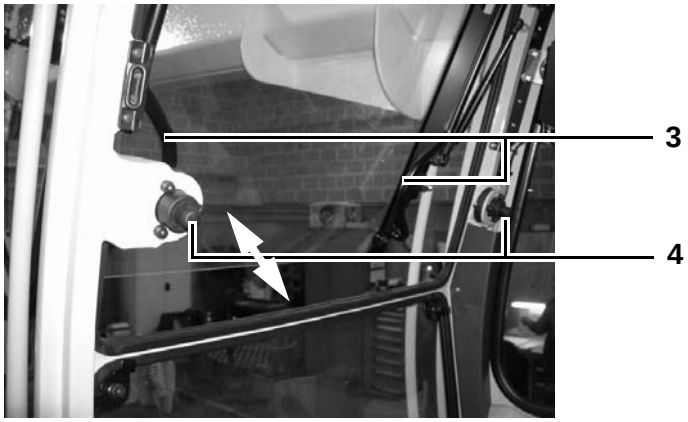

| | |
|---|---|
| 1 | Push metal catch (1) into belt buckle (2).<br>An audible click indicates that the belt has engaged. |
| 2 | To release belt, press red button (3) on belt buckle (2). |

### Sliding door




The sliding door (1) can be latched in the open position on the side panel of the cab. You can release the latch by pulling on the release lever (2) on the inside of the door.

### Front windshield




Opening front windshield: Tip forwards. The top window wiper pivots ahead with the window. Press on both buttons (4) and tip the window ahead. The two shock absorbers hold it in position. Pull the two handles (3) on the window frame inward to close it. Ensure that the front window latches in place again.

### 6.3.4 Safety lever

The safety lever (1) serves as a safety device.

**Safety lever released (pushed forward)**


When safety lever is released (see illustration)

- all hydraulic functions are available.
- all work maneuvers can be carried out.

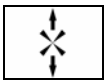
**Note**
The slewing gear holding brake remains open after releasing the safety lever (pushed ahead), if the "right" switch has previously been actuated in the right control panel.

Activate the slewing gear holding brake by pressing the "left" switch in the right-hand control panel (see Section6.5.9).

**Safety lever actuated (pulled back)**


**Note**
All hydraulic functions are deactivated with the safety lever actuated.

**Reverse fan status indicator lamp**



| Switch setting | Indicator lamp |
|---|---|
| 1 (right, single fan reversal) | flashes |
| 0 (middle, no fan reversal) | not illuminated |
| 2 (left, fan reversal every 60 min.) | always illuminated |

**Note**

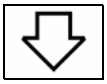
The fan reversal indicator lamp (3) provides information on the status of the fan drive controller and on faults in the fan system. A fault is indicated with a flashing code. Contact SENNEBOGEN service in this case.

In reversal operation, the indicator lamp flashes once per second.

**Travel forwards**

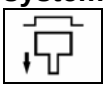
Lamp illuminated with selected travel direction - Forward.

**Travel reverse**



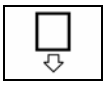
Lamp illuminated with selected travel direction - Reverse.

**Magnet system**



Illuminated with magnet system switched on.

**Switch steering direction**



Illuminated with activated floating axle control if the superstructure is in 0°- or 180°-position (+/- 5°) to the undercarriage.

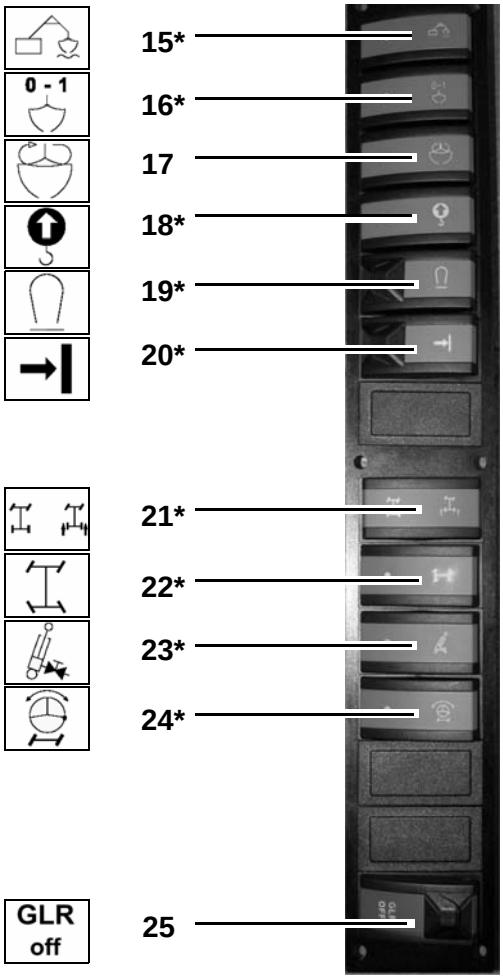
**180° displacement**

Illuminated with active steering direction reversal if the boom is in the area above the rear axle (90°-270° - position (+/- 7.5°)).

**High beam**

Illuminated when headlight lit.

**Rear part**




**15***Floating boom setting

**16***Grabber function Off/On

**17** Grabber control Off/On

**18***Overload Off/On

**19***unlock - Magnet system Off/ On

**20***unlock- Auxiliary limiting main boom Off/On

**21***Normal steering control - 0° position rear axle

**22***All-wheel steering switch

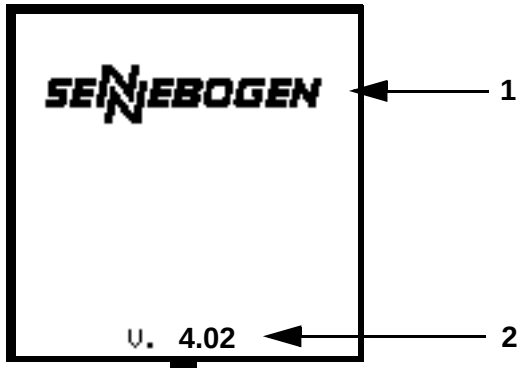
**23***Boom suspension system

**24***Steering direction reversal

**25** Load limit sensing control (GLR)

*: Optional model / special function

**Start-up mask**



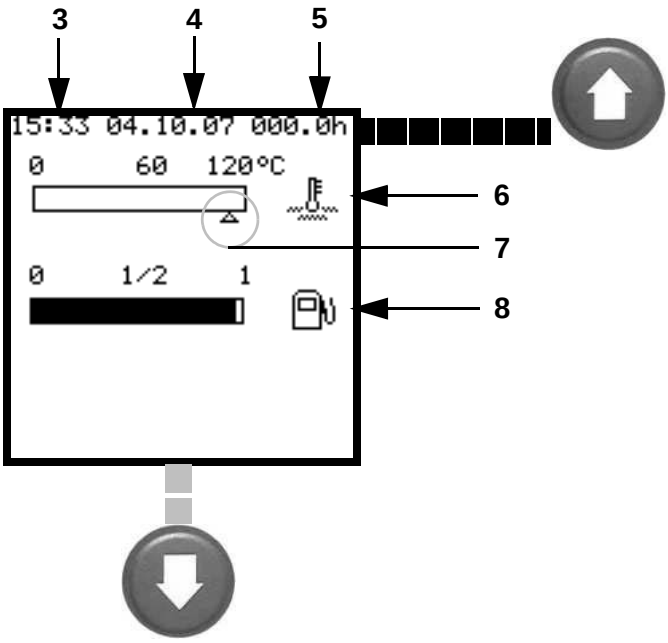

**Automatic change after 4 seconds**

**to screen 7**

**Screen 1**

**Coolant temperature**

**Fill level - Diesel fuel**




**1** SENNEBOGEN logo

**2** Software version (E.g.)

**3** Time

**4** Date

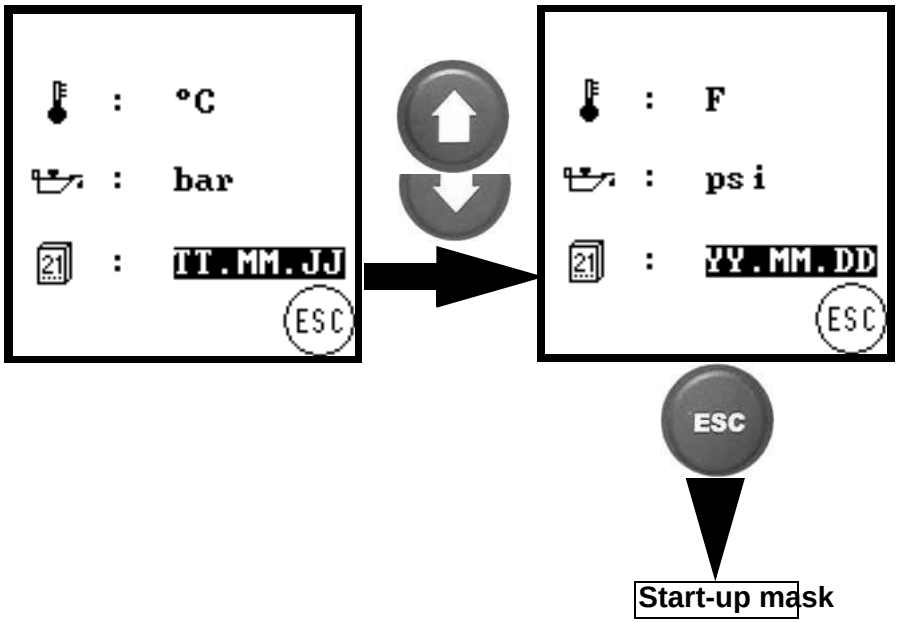
**5** Daily hours of operation

**6** Coolant temperature

**7** Warning threshold *Coolant temperature too high*

**8** Fill level - Diesel fuel

**Date**



### 6.4.4 Auxiliary heating / Water heater

The machine is equipped with an engine-independent water heater for engine-heating and cab-pre-heating.

The electric water heater is set up in the factory and is controlled along with the automatic air conditioning (see Section6.3.13).

**Note**
The battery power can be used by operating the water heater.


**1** Control element for water heater

**Note**
More information can be found in Chapter 10.

**Cab extend/retract (optional)**

| | |
|---|---|
| 1 | Press safety lever (see Section6.3.4) forwards. |
| 2 | Switch the machine on as described in Section5.7. |
| 3 | Press rocker switch (3*).<br>The cab is extended (Cab out). |
| 4 | Press rocker switch (4*).<br>The cab is retracted (Cab in). |

## 6.5.6 Driving machine - Crawler

**DANGER**
Risk of accident through incorrect use!
If the boom is positioned above the rear axle, the driving actions of the machine are reversed. Proceed with extreme caution whenever you wish to work or maneuver over the rear axle.

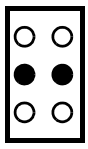
**Driving with suspended load**

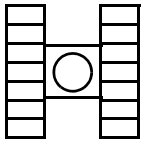
Please note the following points when driving with a suspended load:

- Danger of tipping!
  Keep loads as close as possible to the ground when moving.
- Always position stick lengthwise to undercarriage.
- Only carry 50 % of the permitted safe working load.
- Only drive on even ground with sufficient load-bearing capacity.
- Lock the floating axle.
- Reduce pendulum movements of load by sensitive driving.
- Negotiate corners with as wide a radius as possible.

**Stop machine**

*Setting driving pedal/manual lever:* *Travel gear movement:*

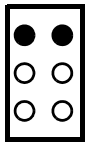


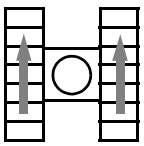


release driving pedal/hand lever:
The driving pedals/hand levers automatically return to the middle setting (neutral).

**Forwards – travel in a straight line**

*Setting driving pedal/manual lever:* *Travel gear movement:*





Push both driving pedals/hand levers forwards.

**Reverse – travel in a straight line**

**Note**
In order to rotate the superstructure, the ignition must be switched on, the safety lever must be released (pressed ahead) and the slewing gear holding brake switch "right" must be pressed.

If only one of these criteria is not met, rotation is impossible.

**Slewing speed**

The slewing speed is dependent on the:

- speed of the driving engine
- Distance the left control lever is moved.

**DANGER**
No persons, buildings or machines may be within the slewing range of the upper structure (danger area).

**Rotation stop (braking)**

| | |
|---|---|
| 1 | Place the left control lever in the neutral position (0-position). The upper structure is hydraulically braked. The slewing maneuver gradually stops. Note: Moving the control lever in the opposite direction intensifies the braking action.<br>**OR optional:**<br>Actuate the slewing gear holding brake pedal (2). The upper structure is braked hydro-dynamically. |

**Slewing gear holding**

the slewing gear holding brake is not an operational brake for braking the superstructure. The slewing gear holding brake serves exclusively as a parking and holding brake when the superstructure is at rest.

The superstructure must have stopped rotating completely before the slewing gear holding brake is applied.

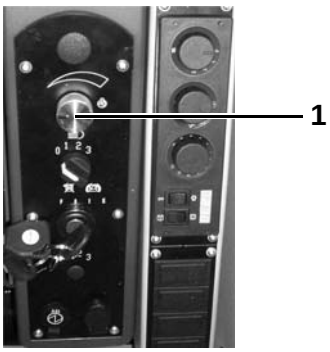
**WARNING**
If the slewing gear holding brake is used to stop the upper structure, serious damage will be caused to the brake and/or the slewing gear. This damage can be of the following nature:

- Diminished braking effect due to clutch plate damage
- Irreparable damage to the brake or other components
- Irreparable damage to the slewing gear

This damage is excluded from the terms of warranty issued by SENNEBOGEN Maschinenfabrik GmbH

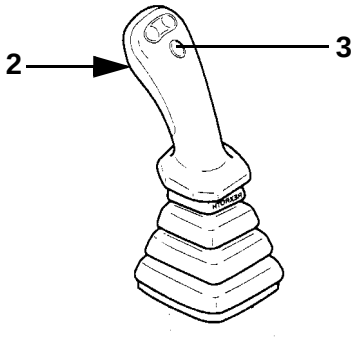
The operator of the machine alone is liable for such damage as well as any consequential damage - for instance, that resulting from reduced braking action!

## Operation




| | |
|---|---|
| 1 | Start engine acc. to Section5.7.3. |
| 2 | Set the speed (rpm) selector (1) on the right rear control panel to maximum. |
| 3 | Set the magnet according to the load material. |

**WARNING**
Ensure that the permitted load limits are not exceeded.




| | |
|---|---|
| 4 | Switching on the magnetic equipment:<br>– Actuate the switch on the upper right control panel.<br>– Press the front pushbutton (2) on the right control lever. |
| 5 | Dropping the load:<br>– Press pushbutton (2) or *(3).<br>* Customer-specific switch allocation! |
| 6 | Switching off the magnetic equipment.<br>– Actuate the switch on the control panel: |

**CAUTION**
If the magnet system is not switched off after use, the entire system (generator and magnet plate) can overheat.

**Note**

## 6.7 Refueling machine

The machine can be refueled in two ways:

- Manually
- using a refueling pump

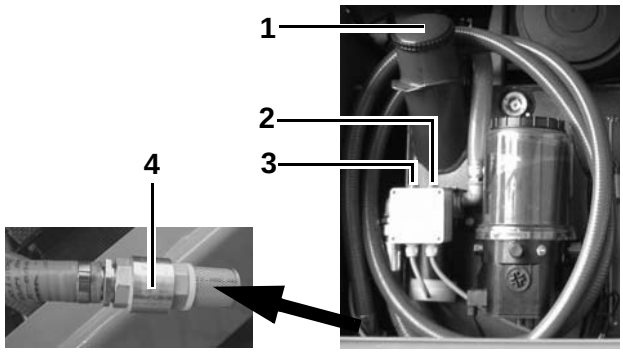
**DANGER**

- Fuel is damaging to health and easily inflammable.
  Smoking and working near an open flame is strictly forbidden.
- Position the machine on a firm, even surface.
- Only refuel when engine is shut down!
- Fuel must not ingress ground or waterways.
  Always ensure that fuel does not overflow when refueling.
- Before filling, the fluid level in the tank must be determined - the amount of fuel that the tank can taken on.
- When refuelling from a tank-truck or trailer, the following applies:
  Filling speed of max. 200 l/min. (52 U.S.GPM) , since otherwise the fuel will overflow.
- The filling procedure must be monitored at all times - no matter how the filling is done.

**Note**
Observe the notes in the operating instructions of the engine manufacturer.

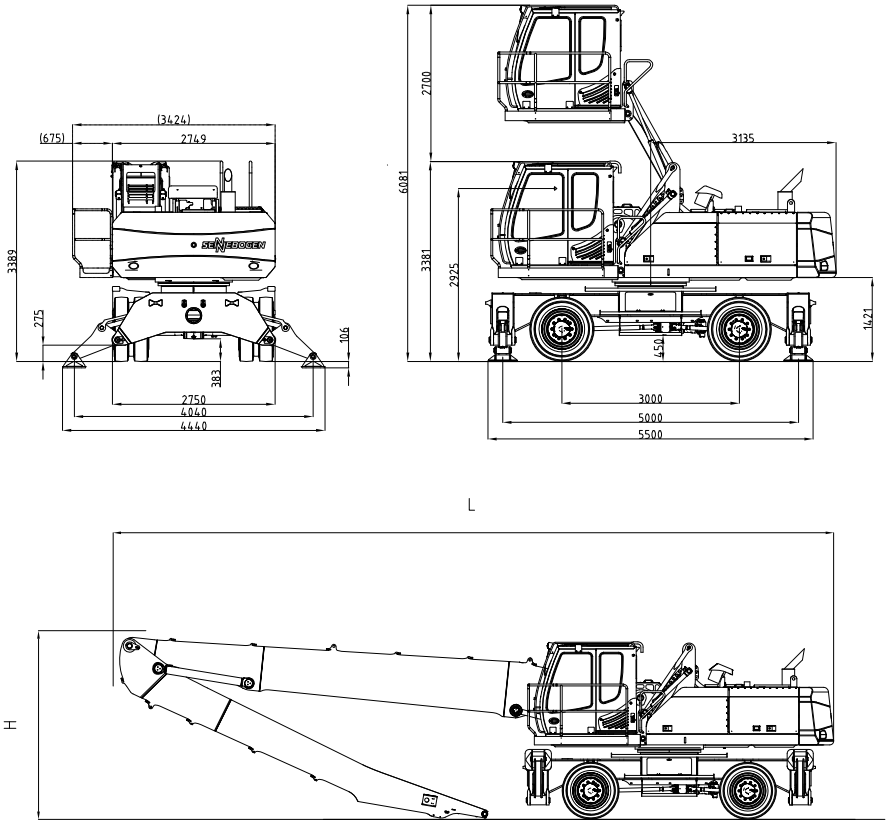
**Manually**

| | |
|---|---|
| 1 | Lower suspended loads and stick to the ground. |
| 2 | Shut down engine. |



**Type MP 30 D (Optional)**

## 7.2.2 Mobile




Measurement information [mm]

| | Load boom | Grab arm | Transport length (L) | Transport height (H) |
|---|---|---|---|---|
| **K15** | 8.5 m | 7.0 m | 12.45 m | 3.40 m |
| **K17** | 9.8 m | 7.5 m | 13.75 m | 3.60 m |
| **B16** | 9.4 m | 7.0 m | 13.40 m | 3.55 m |
| **K14 ULM** | 8.5 m | 6.0 m | 12.45 m | 3.45 m |

# 8 Troubleshooting

**WARNING**

- Read Chapter 1 SICHERHEIT.
- The personnel for maintenance, inspection and troubleshooting must have the appropriate qualifications for this work.
- For work not described in detail, please notify SENNEBOGEN Customer Service Desk.

## 8.1 Driving engine

**Engine does not start**

| Cause | Remedy |
|---|---|
| Battery power too low | – Check fluid level of batteries.<br>– Recharge or replace battery.<br>– Start machine using auxiliary battery. |
| Fuel tank empty | – Refuel machine. |

**Engine performance**

| Cause | Remedy |
|---|---|
| Suction resistance too high | – Exchange filter element in water separator. |

**Machine does not move**

| Cause | Remedy |
|---|---|
| Parking brake actuated | – Release parking brake. |
| Transmission defective | – Have fault remedied. |

**Oil or fuel leaks from engine**

| Cause | Remedy |
|---|---|
| Hose connections loose | – Tighten hose connections. |
| Hoses or seals damaged | – Exchange hoses or seals. |

**Note**

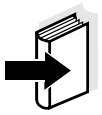
Also observe the notes in the operating instructions of the engine manufacturer.

# 9 Setup work

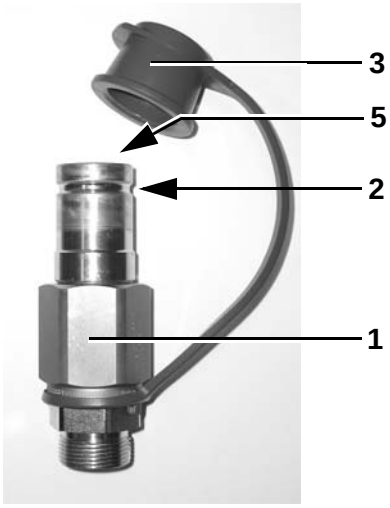
## 9.1 Safety instructions

**DANGER**

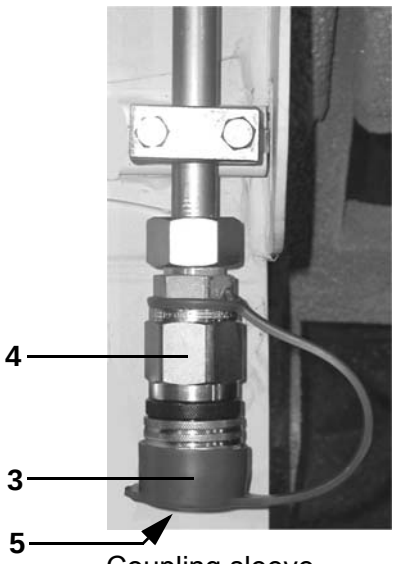
- The work performed may only be completed by trained professionals.
- Wear personal protection equipment (e.g. safety helmet, ear protection, protective gloves, safety boots) where working conditions require. At working heights of 2.00 m or more, SENNEBOGEN recommends the use of safety equipment to prevent falling.
- The following applies for all set-up work:
  Only carry out the work if the work area is level and solid enough.
- Ensure that there is no one in the danger zone.
  - While setting up – before completing all tightening – no persons are allowed in the hazardous area in which loads could fall or under hanging loads.
  - During the set-up procedure keep a sufficient safety-margin from areas of unavoidable cutting or pinching/crushing danger.
- Observe the relevant accident prevention directives for working with load suspension equipment.
- When dismantling components or equipment, always use load suspension equipment with a sufficient load bearing capacity.
- Suspend components only with the designated lifting brackets.
- Do not step on equipment that is not designed for it (e.g. parts of the boom or the counterweights), hanging on a crane.
- Carry out all set-up steps in turn. Never carry out more than one set-up task at a time.



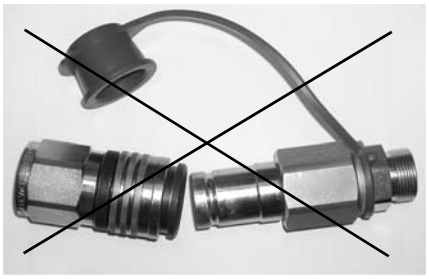
**Note**
The setup works to be carried out depend on the operating tools that have been selected. Observe the notes in the operating instructions of the tool manufacturer.




Coupling insert




Coupling sleeve



incorrec

correct

| | |
|---|---|
| 5 | Lay the end surfaces (5) of the coupling insert (1) and the coupling sleeve (4) flat against one another. |
| 6 | Insert the coupling insert (1) into the coupling sleeve (4) until you hear the coupling insert (1) engage. |