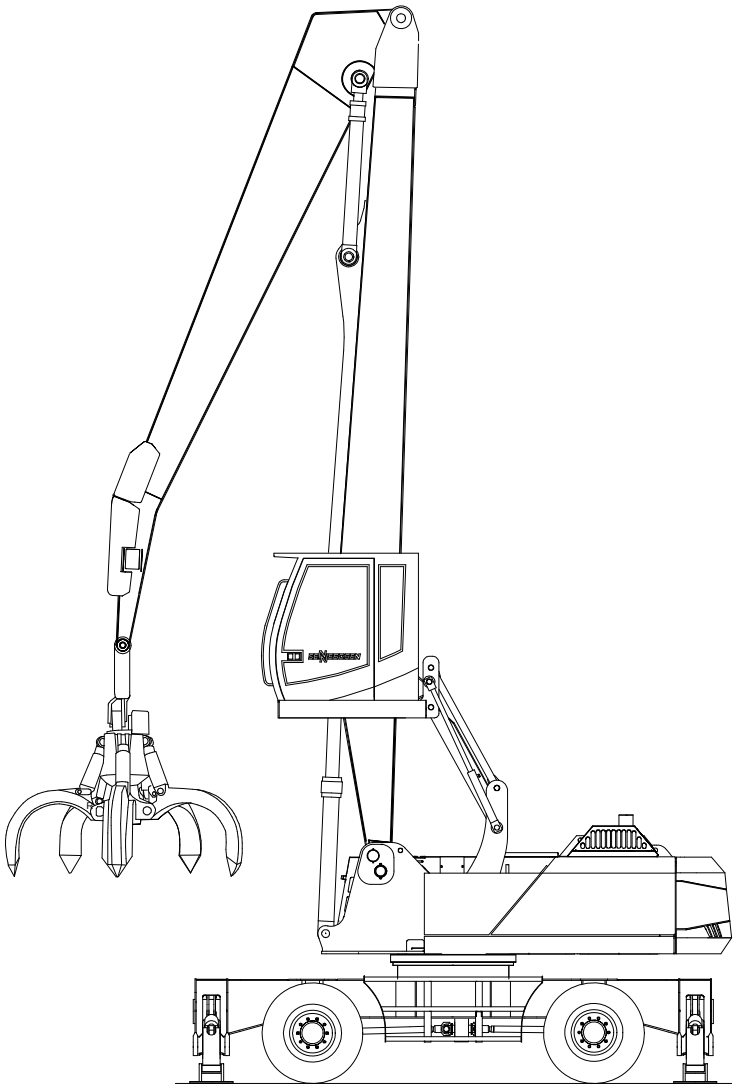
Operating instructions

835 M

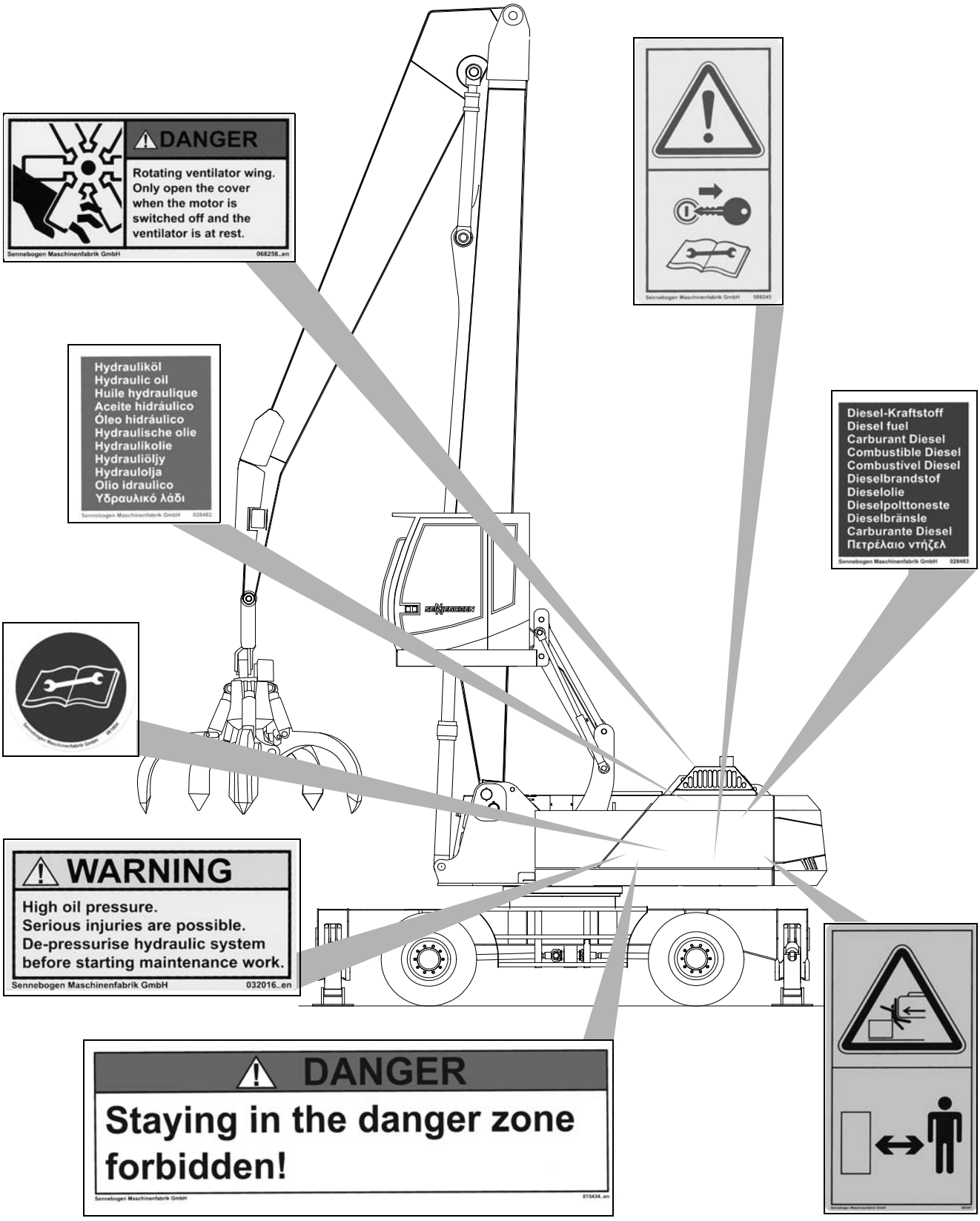


CE

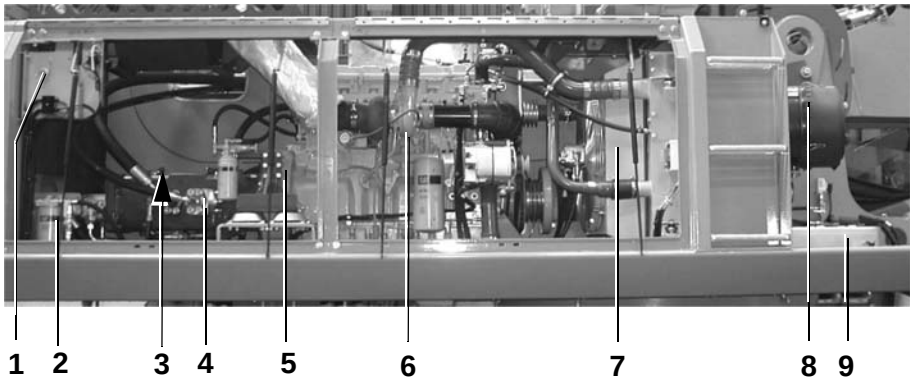
1.6.3 Operation

WARNING

- Observe Chapter 1 SAFETY.
  Before operating, carry out checks according to Section 4.3 .
- Persons working on or with the machine must be trained or instructed for that purpose.
  The operation and deployment may only be carried out by persons suitably instructed.
- Proceed with utmost caution if you override the stick end limit.
- Ensure that no persons are within the danger area.
- Maintain safety distance to overhead lines.
- Only operate the machine from the driver's seat.
- Do not transport persons with the machine.
- Consider environment conditions, e.g. poor visibility, wind speeds, etc.
- Use the safe working load tables specifically for that machine.
- Observe performance details.
- Check that anchorage points have a sufficient safe working load.
- Observe guide signals as necessary.
- Position stick in direction of travel during long journeys.
- Before leaving the driver's cab:
  - Completely lower cab if necessary
  - Position the machine on firm base, if necessary set back from the edge of the excavation
  - Lower suspended loads
  - Secure working equipment
  - Pull safety lever to the rear
  - Chock wheels/running gear
  - Switch off engine
  - Lock cab, show warning lights if necessary.


DANGER
Rotating ventilator wing.
Only open the cover
when the motor is
switched off and the
ventilator is at rest.
Sennebogen Maschinenfabrik GmbH
068258..en
Hydrauliköl
Hydraulic oil
Huile hydraulique
Aceite hidráulico
Óleo hidráulico
Hydraulische olie
Hydraulikolie
Hydrauliöljy
Hydraulolja
Olio idraulico
Υδραυλικό λάδι
Diesel-Kraftstoff
Diesel fuel
Carburant Diesel
Combustible Diesel
Combustível Diesel
Dieselbrandstof
Dieselolie
Dieselpolttoneste
Dieselbränsle
Carburante Diesel
Πετρέλαιο ντήζελ
WARNING
High oil pressure.
Serious injuries are possible.
De-pressurise hydraulic system
before starting maintenance work.
Sennebogen Maschinenfabrik GmbH
032016..en
DANGER
Staying in the danger zone
forbidden!
Sennebogen Maschinenfabrik GmbH
015434..en

2.4 Uppercarriage



Engine compartment:

1 Battery disconnecting switch (optional)

2 Water separator (optional)

3 Hydraulic tank cutoff flap

4 Pump unit

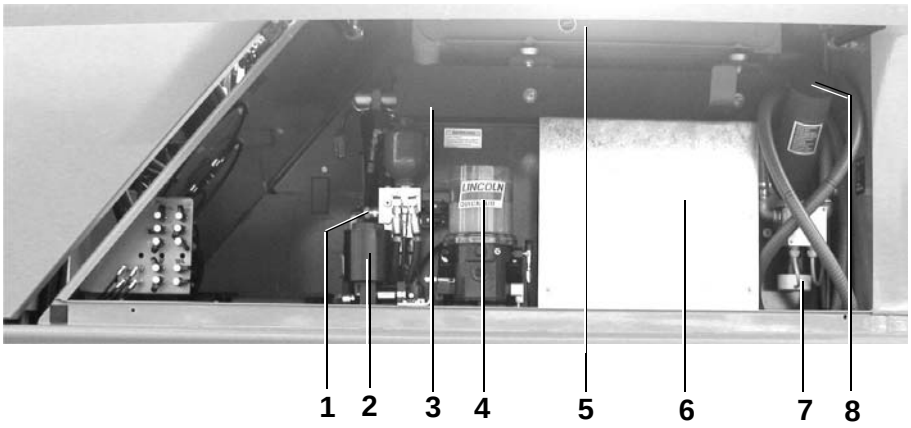
5 Gearbox

6 Drive engine

7 Combination cooler (water/ charging air)

8 Air filter

9 Batteries



Storage compartment:

1 Emergency lowering – cab

2 Slewing ring lubrication (optional)

3 Fuel tank

4 Central lubrication system (optional)

5 Hydraulic oil cooler

6 Electric switch cabinet

7 Refueling pump (optional)

8 Fuel filler strainer – fuel tank

4 Starting operation

4.1 Safety instructions

Warning

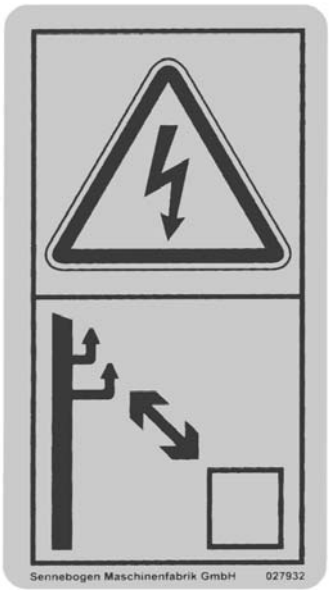
- Observe Chapter 1 SAFETY.
  Before operating, carry out checks according to Section 4.3 .
- Check that all safety devices of the machine are complete and correctly secured.
- Wear protective work clothing (safety helmet, eye protection), if working conditions necessitate.
- Take off jewelry and loose clothing.
- Secure loose items e.g. tools or other accessories.
- Agree on hand signals with guide.
- Obtain information on first aid and rescue facilities.
- Enter and exit machine only when stationary. Use the appropriate steps and ladders:
  - If necessary, clean steps and ladders before use
  - Do not hold any items when climbing up or down. Lift items of equipment onto machine using a rope or lifting gear.
  - Do not use operating elements in driver's cab as handholds.
- Ensure that no persons are within the danger area.
- Check safety devices of machine (brakes, signal and lighting devices).
- Check for correct function of operating elements and safety devices while driving slowly.

5 Operation

5.1 Safety instructions

DANGER

- Observe Chapter 1 SAFETY.
  Before operating, carry out checks according to Section 4.3 .
- Persons working on or with the machine must be trained or instructed for that purpose.
  The operation and deployment may only be carried out by persons suitably instructed.
- Proceed with utmost caution if you override the stick end limit.
- Ensure that no persons are within the danger area.
- Maintain safety distance to overhead lines.
- Only operate the machine from the driver's seat.
- Do not transport persons with the machine.
- Consider environment conditions, e.g. poor visibility, wind speeds, etc.
- Use the safe working load tables specifically for that machine.
- Observe performance details.
- Check that anchorage points have a sufficient safe working load.
- Observe guide signals as necessary.
- Position stick in direction of travel during long journeys.
- Before leaving the driver's cab:
  - Completely lower cab if necessary
  - Position the machine on firm base, if necessary set back from the edge of the excavation
  - Lower suspended loads
  - Secure working tools
  - Pull safety lever to the rear
  - Chock wheels/running gear
  - Switch off engine
  - Lock cab, show warning lights if necessary.



Grab control - Grab function on/off

When the grab is demounted (e.g. when working with the magnet) the function *grab open/close* can be switched off using this switch (the light in the switch glows not).
This enables even working motions of the equipment.

Grab-control

The pressure for *closing the grab* can be controled with *grab-control.*
This can be needed by using the work movements *closing the grab - swinging uppercarriage* or *closing the grab - stroke down/stroke up* simultaneous.

Fan reversal – combination cooler

Fan reversal is used to clean the cooling fins of the combination cooler. To do this, press and hold down the button. After about 10 seconds the direction in which the fan is turning is reversed. Air and loose dust and dirt clinging to the cooling fins will be blown out.

1	Hold the button for about 60 seconds.
2	Check the cooling finds on the combination cooler and change the direction of the fan again if necessary.

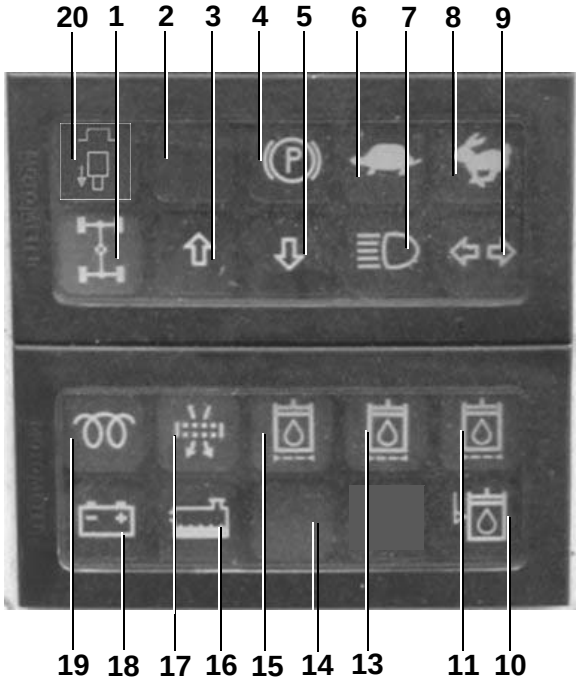
About 10 seconds after you let go of the switch, the direction in which the fan is turning changes again.

Note
To further clean the combination cooler, read supplementary documentation (see Section 10.5).

indicator and warning lights (3)

Indicator lamps inform about current operational conditions, e.g. *slewing gear parking brake applied*.

Warning lamps illuminate when immediate measures are required on the machine, e.g. *clean air filter*.



Indicator lamps:

1 Joy stick steering on/off (Optional)

3 Travel, forwards

5 Travel, backwards

6 Slow travel – off-road

7 Remote light

8 Fast travel – road travel

9 Direction indicator

14 Diagnostic lamp (CAT-engine)

19 Preheat

20 Magnet system on/off

Warning lamps:

2 Overload warning

4 Parking brake – accumulator charge pressure

10 Hydraulic oil level

11 Unused

13 Combined fault message – auxiliary hydraulic filter

15 Filter change indicator – return filter

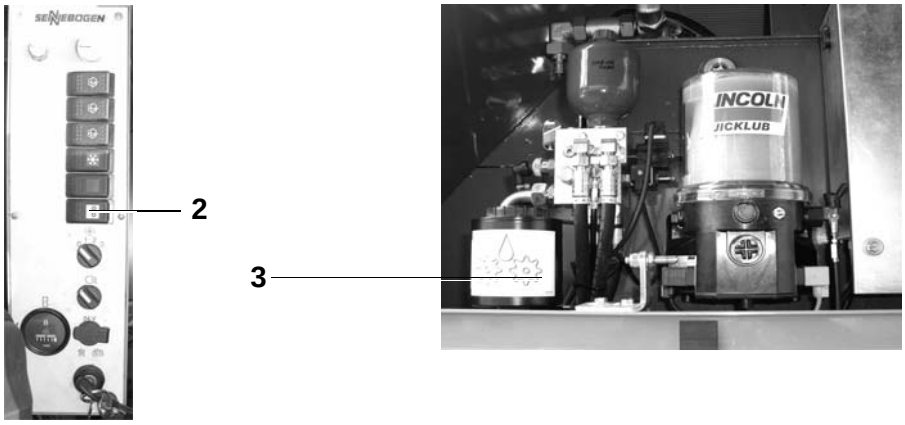
16 Coolant level

17 Air filter - contamination display

18 Battery charge

5.3.11 Slewing ring lubrication (optional)

Lubrication



2 Push button - Slewing ring lubrication

3 Lubricant container

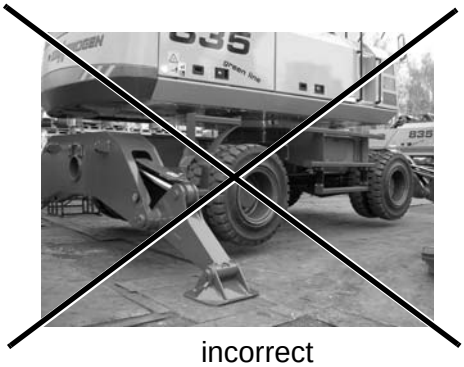
Note
Clean the lubrication point thoroughly and degrease before the first application of lubricant to ensure that the lubricant creates an unbroken film over the surface.

1	Shut down drive engine.
2	Thoroughly clean gear teeth.
3	Check gear teeth on slewing ring and slewing ring pinion for wear, exchange if necessary.
4	Start the drive engine.
5	Actuate the slewing ring lubrication: – Press the pushbutton for slewing ring lubrication on the right of the control panel and hold down. – Rotate the uppercarriage 360° to the left and to the right to distribute the lubricant evenly over the gear teeth.
6	Release the pushbutton.
7	Check to make certain a film of lubrication that stays together is present. If necessary, repeat the lubrication process.

Note
Lubricate slewing ring every 10 operating hours / daily (depending on workload)!
Check the lubrication container weekly and refill with lubricant if necessary!

DANGER
Never move the stabilizers all the way out (= to the audible stop). The weight will not be distributed evenly over the individual stabilizer plates, i.e. the maximum stability cannot be guaranteed.
If the stabilizers have been extended all the way out to the stop (audible noise), move them back in slighty!

correct



incorrect

5	Total actuation: – Push foot pedal (5) forwards until the outrigger is extended. Individual actuation (optional): – Press and hold corresponding push button on left (4) control panel. – Push foot pedal (5) forwards until the outrigger is extended.
6	Push up the drop arm (3) again. The warning signal stops.

Retracting outrigger

1	Start engine acc. to Section 4.4.2.

DANGER
Observe reduced safe working loads in unstabilized mode!

2	Push down the drop arm (3). A warning signal sounds.
3	Push foot pedal (5) back until the outrigger is retracted.
4	Push up the drop arm (3) again. The warning signal stops.

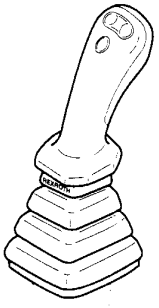
5.6.9 Grab operation

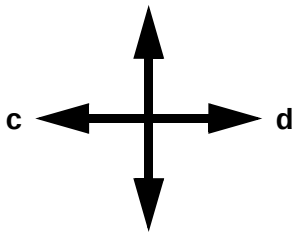
Observe the following safety notes:

WARNING

- A suspended load is an accident risk!
  Always lower the load when work is interrupted.
  Never leave the driver's cab when a load is suspended.
- Activate overload warning device.
- Do not carry out any form of work which will affect the stability of the machine!
- Attachments (e.g. grab) and load elements can swing. Proceed with utmost caution.
- Observe danger area.

The grab is opened/closed using the *right* control lever.





Movement directions:

c Close grab

d Open grab

Note

When the floating setting is actuated fill the grabber as follows:

1	Carefully lower boom with open grabber, until the grabber is lying on the loading material.
2	Lower the boom and close the grabber simultaneously. This allows filling to take place even while the lower surface is moving (e.g. ship).

Note

If joystick steering is activated the normal function of the control lever (grab open/close) is overridden.

6.2.2 Oils and lubricants

Only use oils and lubricants approved by SENNEBOGEN. These are listed in Section 10.10 LUBRICANTS TABLE. The ambient temperature range for operating the machine can be between - 20 °C and +40 °C (-4 °F ... +104 °F). If the temperature at the site lies outside this range, discuss this with SENNEBOGEN customer service before starting operation.

WARNING
Mixing oils, lubrication or operational materials of different types is not permitted!
Filling or mixing oils, lubricants or any other operational fluids (e.g. hydraulic oil, transmission oil, motor oil, coolant, etc.) of different types can lead to damage to the machine components because of chemical reactions. The result of which can cause severe damage to property and injury to personnel.

Only use the oils, lubricants and operational fluids that are approved by SENNEBOGEN.

Only mix oils, lubricants and operational fluids that are of the same type or identical (same specifications) from one manufacturer!

Oil diagnosis

A regular oil diagnosis helps to avoid unnecessary costs. A series of tests determines:

- Condition of the oil
- Amount of worn metal in the sample
- Wear rate of components

Recommended for hydraulic system.

Further information is available from SENNEBOGEN customer service.

Biologically degradable oils and lubricants

The use is expressly specified, as leakage of mineral-based oils and lubricants presents a danger to the environment. The use of environmental friendly lubricants is particularly mandatory in water or nature conservation areas.

Only synthetic, ester based bio oils may be used.

WARNING
Switching to bio oils and bio lubricants is only permitted after the agreement and written confirmation of SENNEBOGEN customer service.

6.5.2 Hydraulic cylinder

Pressure cylinders are subject to slight leakage. Remove excess leakage residue with a cloth. Dispose of oilsoaked cloth as hazardous waste.
The sliding surfaces of the piston rods are chromeplated. Heavier leakage indicates damaged sliding surfaces or defective seals.

Cleaning hydraulic cylinders:

- Do not use sharp edged tools, caustic fluids or abrasives.
- Clean the piston rods regularly with a steam cleaner. Do not point the steam jet directly at the seal components.
- Apply preservative to extended piston rods after cleaning. This protects the surface from the effects of environment and weather.

6.5.3 Screw connections

Check hydraulic screw connections and couplings regularly to make sure there are no leaks. Seal points of leakage and remove oil residue. Leaking hydraulic oil endangers the environment and presents a hazard due to danger of slipping.

Always seal opened screw connections immediately at both sides with plugs.

6.5.4 Hydraulic hose lines

Storage and service life

Even when used correctly at permissible loads, hoses and hose lines are subject to natural wear and tear. Their service life is therefore limited.

The operator is responsible for ensuring that hose lines are replaced at suitable intervals, even when there are no obvious defects to be seen in the hose line.

Hose lines must be replaced at least every six years, including a maximum of two years storage time, where applicable.

Check

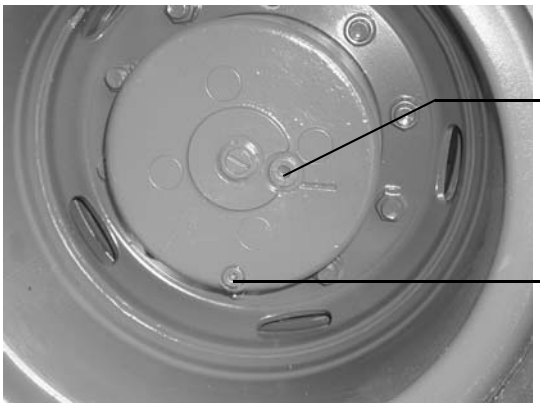
Hose lines should be inspected by a specialist technician at least once a year to ensure that they are functioning correctly.

Remedy any defects discovered immediately.

6.6.3 Tightening wheel nuts

Check all wheel nuts to make certain they are correctly seated and tight. The tightening torque is 650 Nm. Use a torque wrench.

6.6.4 Hub drive train



1 Oil filler screw

2 Oil drain screw

WARNING
Mixing oils, lubrication or operational materials of different types is not permitted!
Only mix oils, lubricants and operational fluids that are of the same type or identical (same specifications) from one manufacturer!

Checking oil level

1	Position machine horizontally.
2	Slew hub until the oil drain screw (2) is bottom (vertical position).
3	Shut down drive engine.
4	Screw out oil filler screw (1). The oil level must reach up to lower edge of filler opening, top up if necessary.

6.8 Electrical system

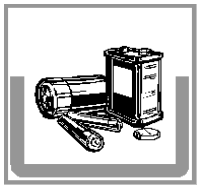
DANGER

- Work on electrical system must be carried out by trained electrical technicians.

6.8.1 Batteries

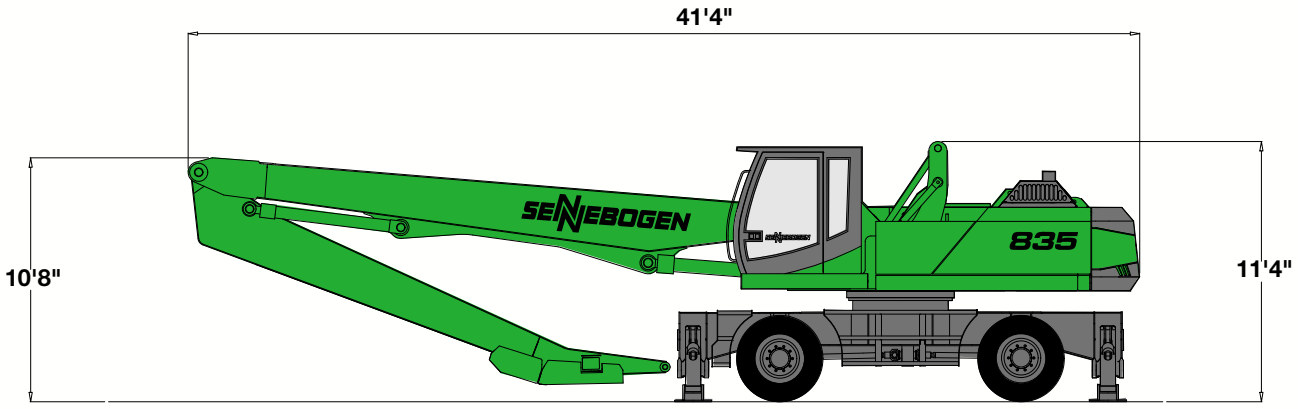
DANGER

- Danger of explosion!
  Smoking and handling of open flame is forbidden. Avoid sparks in vicinity of the battery.
- Danger of acid burns!
  Wear eye protection and gloves.
  Do not tilt battery. Battery acid is caustic and must not come into contact with eyes or skin.
- Do not lay tools on the battery.
- Disconnect the batteries before starting welding work.
- Do not interchange battery connections.
- Dispose of old batteries as hazardous waste.



Check terminals and cable connections of batteries:

1	Open the left service access door.
2	Turn off the battery disconnecting switch if applicable.
3	Remove battery cover (1).
4	Clean terminals and cable connections of batteries (2). Check for tightness and preserve with terminal grease.
5	Replace battery cover.



835 M with Loading Boom 27'10" and Grab Stick 22'

7.2.2 Weights

Note
The weight of the machine may deviate from these figures due to optional attachments.

Machine	Weight	approx 39 metric tons (86.000 lb)

with 194 kW (264 HP) diesel motor, 4-point outrigger, compact loading equipment.

8.3 Heating

No or insufficient heat output

Cause	Remedy
Water flow temperature too low	– Allow engine to warm up. – Replace thermostat (in air conditioning system).
Thermostat on vehicle defective	– Exchange vehicle thermostat.
Water valve does not open	– Check valve and valve actuation, if necessary replace. Note direction of flow.
Heat exchanger fins contaminated	– Clean heat exchanger.
Filter contaminated	– Clean filter, exchange if necessary.
No air flow	– see below.

No air flow

Cause	Remedy
Fuse defective	– Exchange fuse.
Power supply interrupted	– Check lines for loose contacts or open circuit.
Blower motor defective	– Have blower motor exchanged.
Blower switch defective	– Check switch, exchange if necessary.
Resistor defective	– Have resistor exchanged.

Heating cannot be switched off

Cause	Remedy
Bowden cable for water valve incorrectly adjusted	– Adjust Bowden cable.
Heating valve incorrectly fitted	– Check flow direction at valve, if necessary change supply and return line.
Actuation or Bowden cable defective	– Exchange actuation or Bowden cable.