

OPERATOR'S MANUAL

21D

121D

221D

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PREFACE

2913006

These operator's manual are designed to familiarize the operator with the machine and its designated use.

The instruction manual contains important information on how to operate the machine safely, properly and with maximum efficiency. Observing these instructions helps to prevent hazardous situations, to reduce repair costs and downtimes and to increase the reliability and service life of the machine.

The instruction manual must be supplemented by the respective national rules and regulations for accident prevention and environmental protection.

The operator's manual must always be available in the operator's cab of the machine.

The operator's manual must be read and put into practice by any person in charge of carrying out work with or on the machine, such as

- **operation**, including setting-up, troubleshooting in the course of work, care, evacuation of production waste and disposal of fuels and consumables.
- **maintenance** (inspection, servicing, repair) and / or
- **transport**.

In addition to the operator's manual and the mandatory rules and regulations for accident prevention and environmental protection in the user's country and at place where the machine is to be used, the generally recognized technical rules for safe and proper working must be observed.

The operator's manual are directed to the construction-machine specialist. They cannot provide basic know-how. This can be acquired, for example, in several days' instruction by one of our qualified mechanics or by attending our training course for operators or maintenance personnel.

After-Sales-Service

Our **after-sales service** will be pleased to deal with any queries you may have after reading through the operating instructions.

The operator's manual are not work instructions for carrying out major repairs. Such work is willingly done for you by our **after-sales service**.

For maintenance work which cannot be easily carried out by the Owner, please contact your Dealer where you will find trained personnel, suitable correct tools and equipment and genuine spare parts. Service personnel and technicians will be glad to provide you with all explanations and suggestions you may need ant to carry out all required specialised repair work in case of loader unsatisfactory operation. □

OPERATION - SAFETY INSTRUCTIONS



Operator's manual

Never operate the machine before having read and understood the operator's manual.

Pay special attention to:

"Fundamental Safety Instructions" and all warnings and safety instructions attached to the machine.

Familiarize yourself with the layout, the functioning and the activating devices of the control elements prior to starting up the machine.

Activate the control elements from the driver's seat only.

Keep the operator's manual with the machine at all times.

Operating personnel

The operating personnel must be fully informed of the operation and application of this or comparable machines.

The necessary know-how can be acquired in several days' instruction.

Personal protective wear and working clothing

Wear a safety helmet and working footwear with non-slip soles. Smooth soles may slip from steps and pedals, resulting in injury or incorrect operation.

Wear closely fitting working clothing when operating the machine. Loose, wide garments may result in the control lever being inadvertently activated.



Safety belt

For machines with a safety belt for operating personnel:

Check safety belt attached to driver's seat. In the event of damage or after an accident, have it replaced immediately.

Apply safety belt before starting work.

State of the machine

Operate the machine only in a safe state and only in accordance with its designated use. Always observe the safety instructions.

Always have inspection and maintenance work carried out on schedule.

Operate the machine only with the equipment and component combinations approved by us. Clear-cut data are given in the technical specifications.

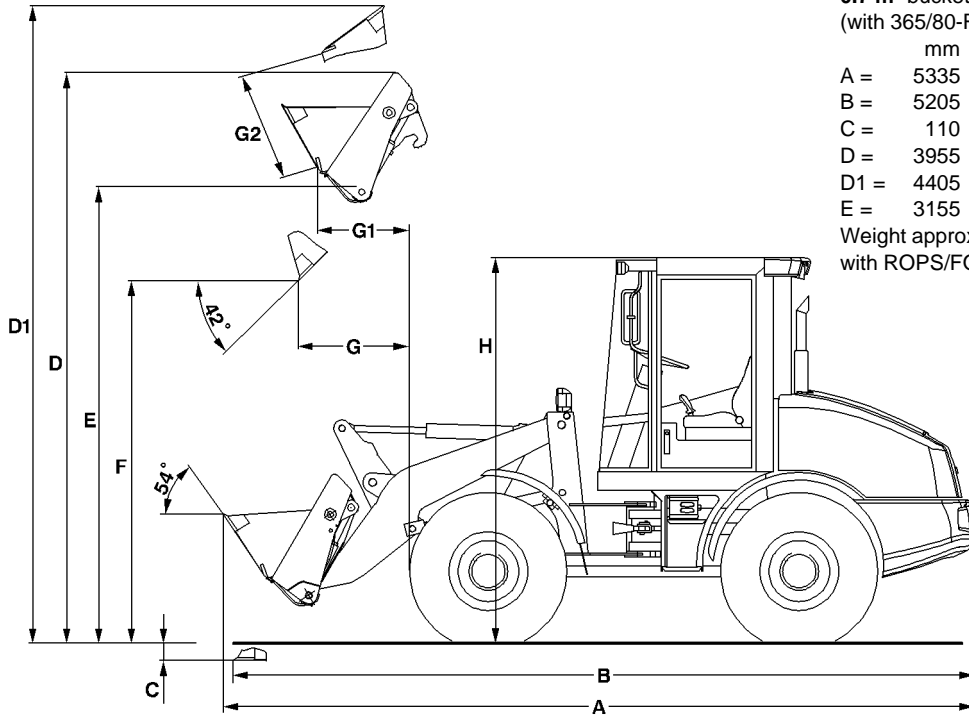
Never install and commission other equipment and component combinations without we having first inspected and approved the project.

Before starting work or travelling with the machine, check that the braking, steering, signalling and lighting systems are fully functional.

Poor visibility may result in accidents. Always clean the windows and the glass covers of all lights before starting up the machine.

Check that all warnings and safety instructions attached to the machine are present and legible.

Dimensions 121D

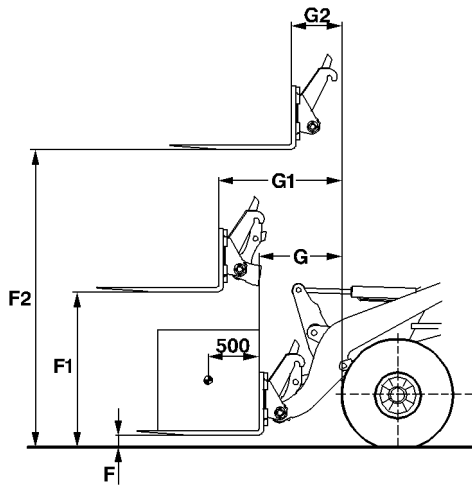


Bottom Dump Bucket
0.7 m³ bucket 2050 mm wide, 1.8 t/m
 (with 365/80-R20 tyres)

	mm	mm
A =	5335	F = 2525
B =	5205	G = 715
C =	110	G1 = 540
D =	3955	G2 = 810
D1 =	4405	H = 2765
E =	3155	

Weight approx. 5300 kg
 with ROPS/FOPS cab

444525



444417

Lifting forks with Quick-Hitch

Dimensions:	with tyres 365/80R20 mm
Lift height	F 100 F1 1715 F2 2765 G 835 G1 1205 G2 515
Width of fork carriage	1450
Tine width	100

Payload with lifting forks and load at 500 mm CoG

Payload with lifting forks and load at 500 mm CoG	
	Configuration
Fork carriage	FEM II, 1450 mm wide
Fork tine	100 x 45 x 1200 2B
Quick-hitch	standard
Tyres	365/80 R 20
Total weight	4700 kg
Tip load (articulated)	2250 kg
Safety factor	Payload
1.25	1800 kg *
1.67	1350 kg

* not applicable to full lifting height. Max payload over full lifting height: 2000 kg.

Stability factor **1.25** for tip load with loader on level ground.

Stability factor **1.67** for tip load with loader on uneven ground.

Tip loads calculated acc. to **DIN 24094**.

Warning and instruction signs

1946696

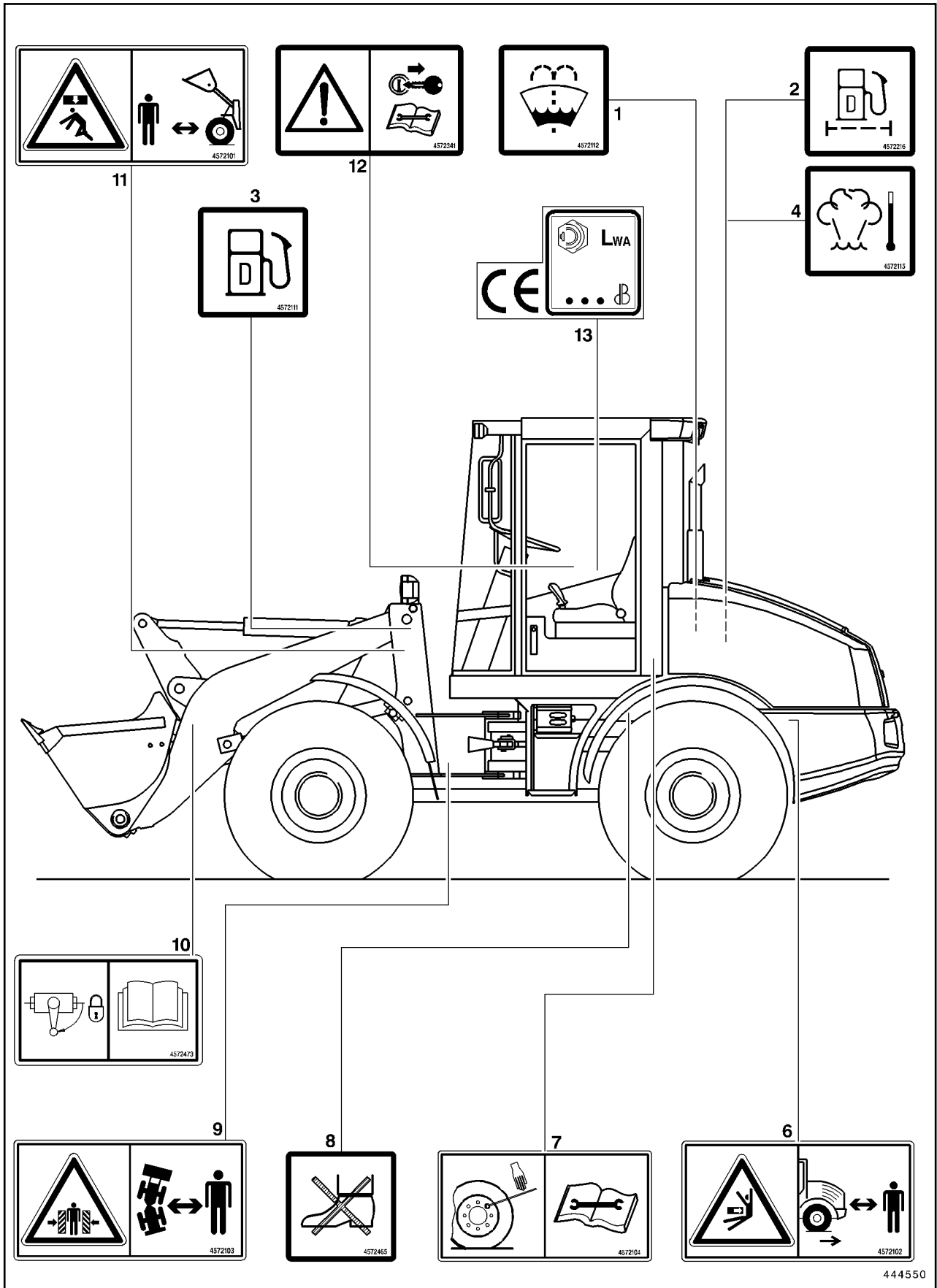
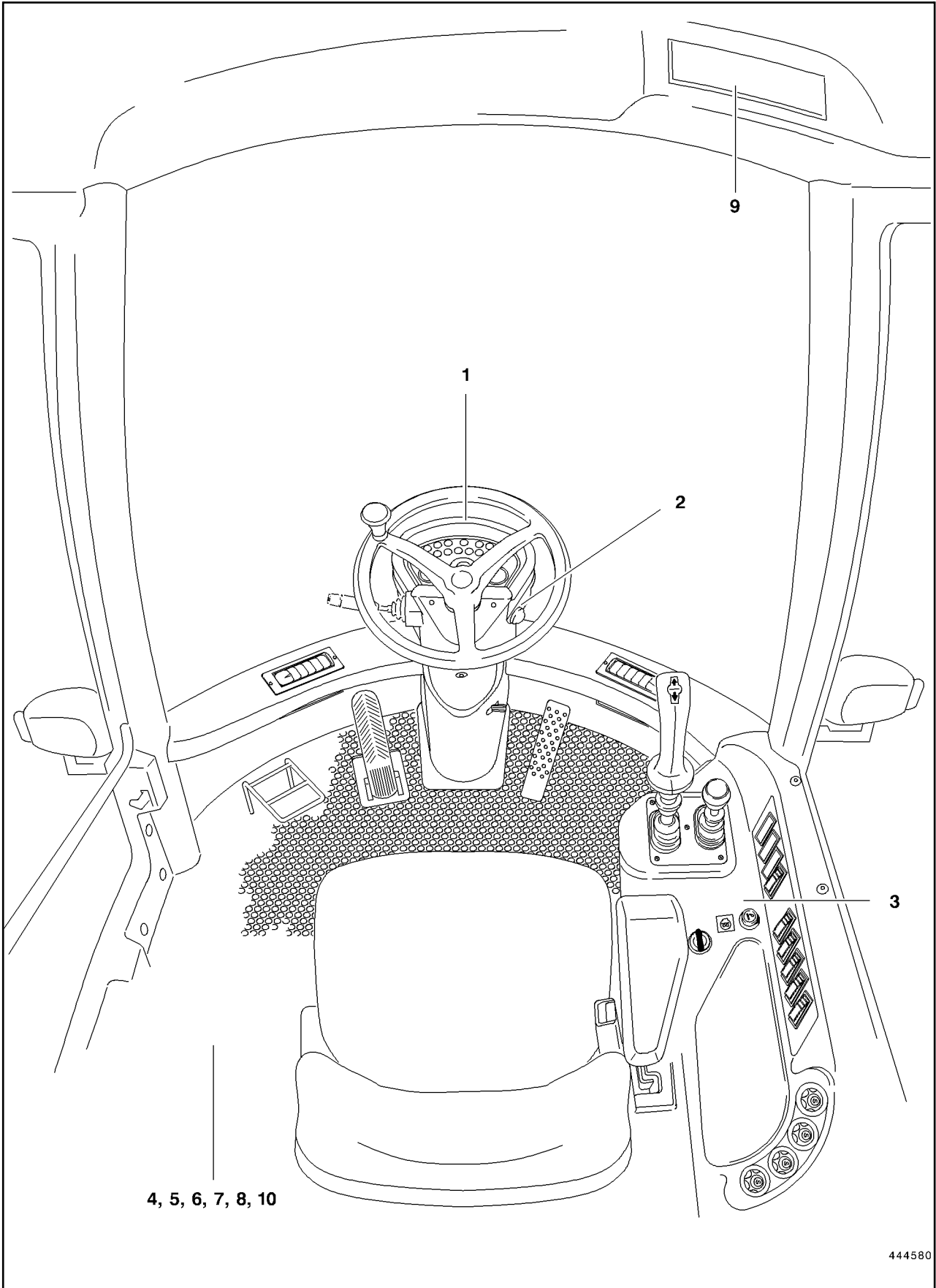


Fig. 1



444580

Fig. 1

PUTTING THE MACHINE INTO OPERATION

2913054

Before daily start-up and operation carry out works in acc. with maintenance plan T (cf. Part 3 "Inspection and servicing")

Refuelling

Refuelling - Safety instructions



Explosion hazard!

Avoid open flames and stop smoking.

Diesel fuel may cause skin injury. Therefore, wear protective gloves or use a barrier cream.

Stand working equipment on the ground.

Shut off engine.

Do not spill fuel and do not allow fuel to penetrate into the soil. Fuel pollutes the environment.

Absorb spilt fuel immediately with cleaning rags or binding agents. Fuel and cleaning material must be disposed of without polluting the environment.

Fuel accidents must be reported immediately to the user or his representative.

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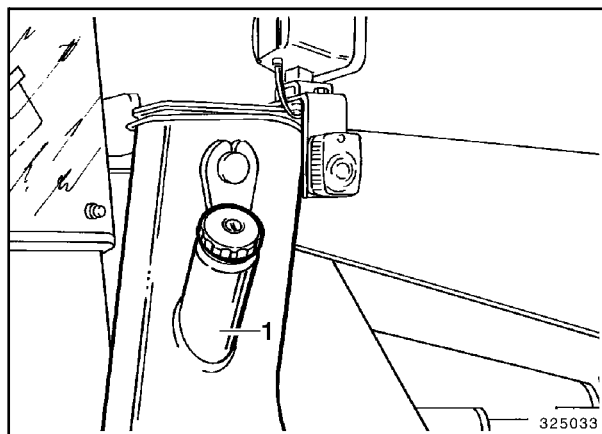


Fig. 2

Refuelling

- Unscrew cap of filler neck (1, Fig. 1 and Fig. 2).
- Fill in fuel through the filter gauze in the filler neck. Do not remove gauze.

If possible, use a microfilter in the filling line. □

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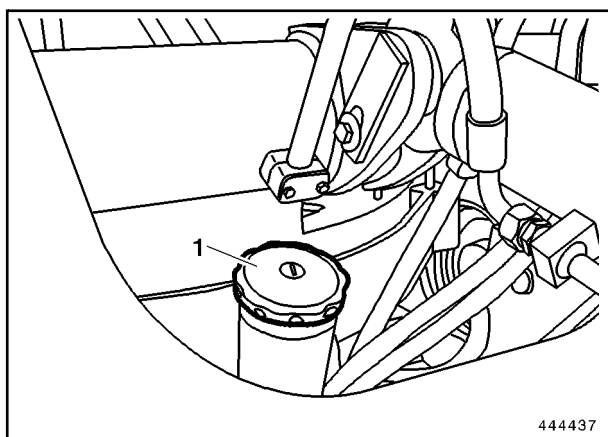


Fig. 1

DRIVING

2905157

Driving - Safety instructions



Have the working equipment raised only so far that it can still pass safely under overhead power lines.

Mount the transport securing devices.

Adjust the driver's seat, the steering column and the mirror before setting off.

Close the cab door.

The machine is equipped with a safety belt for the operator. Fasten the belt.

Warn persons in the immediate vicinity by sound the horn before setting off.

Never drive across slopes.

Take the utmost care on slippery, greasy ground.

Ensure that the wheels have sufficient grip; only then can the steering and braking system of the machine function properly.



Run the engine for ca. 2 to 3 minutes before setting off.

The engine may be operated under full load conditions only after it has reached its operating temperature.

Adjustment of steering column

2472464

Steering column - Safety instructions



Do not adjust the steering column during driving. Concentrate on the road to avoid accidents.

Before adjusting the steering column:

- Stop the machine.
- Stand working equipment on the ground.
- Set the travel direction to "0".
- Apply the parking brake.

□

- First-aid kit (1, Fig. 4) and warning triangle (2) must be stowed away on the right beside the driver's seat.

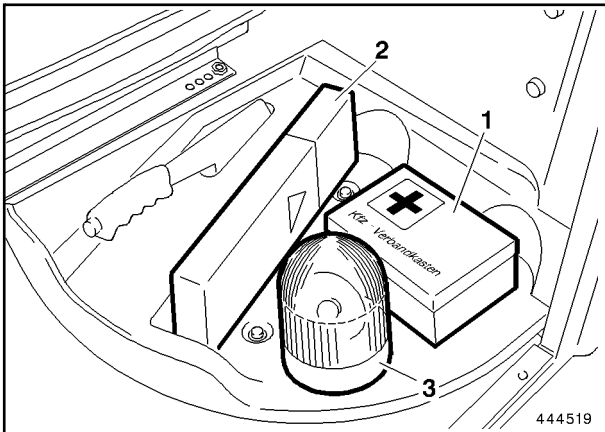


Fig. 4

- The fire extinguisher (4, Fig. 5) can be fastened with clamps to the right column of the cab structure.

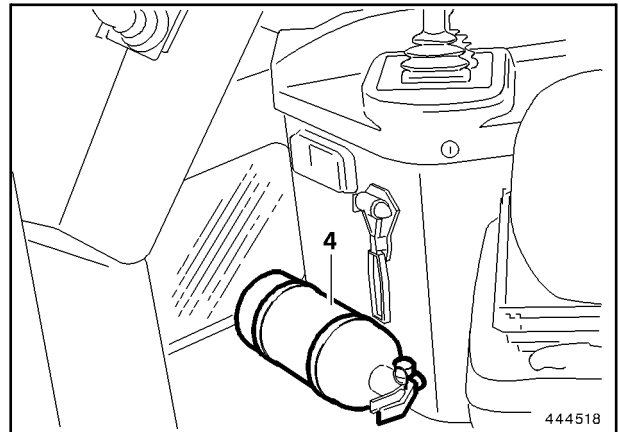


Fig. 5

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- Be careful.
Do not drink spirits (keep in proper physical conditions before and during the work).

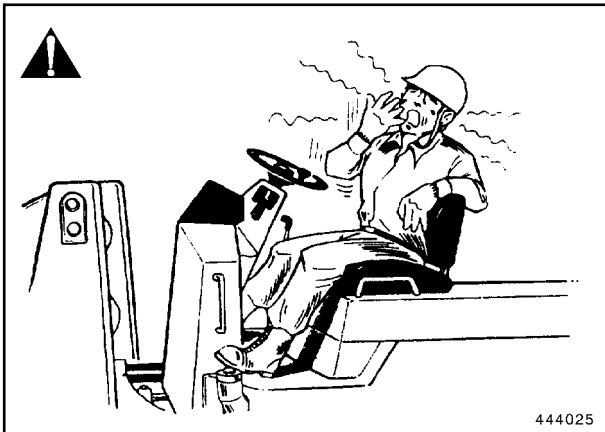


Fig. 14

- Pay great attention during transfers and while cornering in densely populated areas.

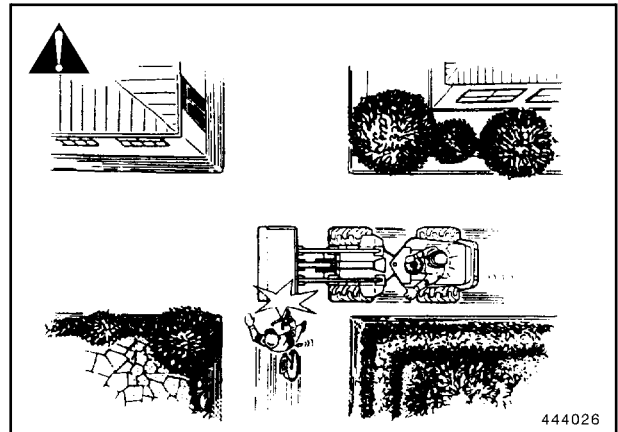


Fig. 15

- Before exiting the loader, remove the ignition key and take it with you. Otherwise, you might be liable for possible accidents caused by anyone using the loader without authorization.

When pin (2) is engaged, pull control lever (26, Fig. 5) briefly forwards (to unlock) and then push backwards to cause the lower pins (3, Fig. 4) to engage in the lifting frame as shown in Fig. 4.

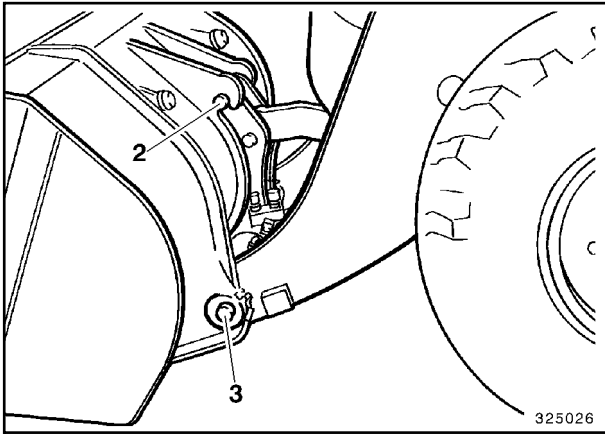


Fig. 4



Lock up control lever (26, Fig. 5) with locking device (7).

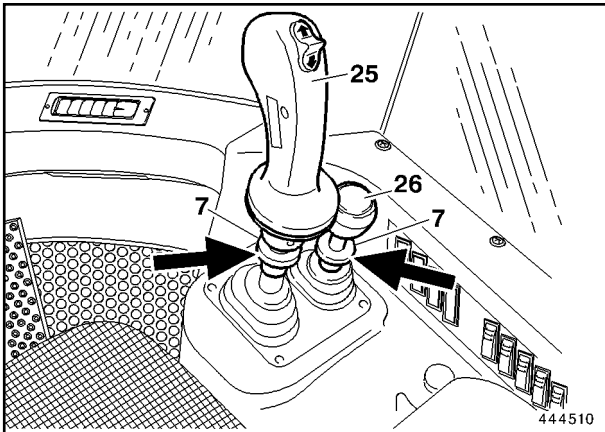


Fig. 5

Checking the bucket locking

Raise bucket slightly (transport position). When pin (3, Fig. 6) is properly locked, pins (3) are visible at the outer edges (arrow). If the pins (3) are not visible, set bucket carefully on the ground and repeat the attaching procedure.

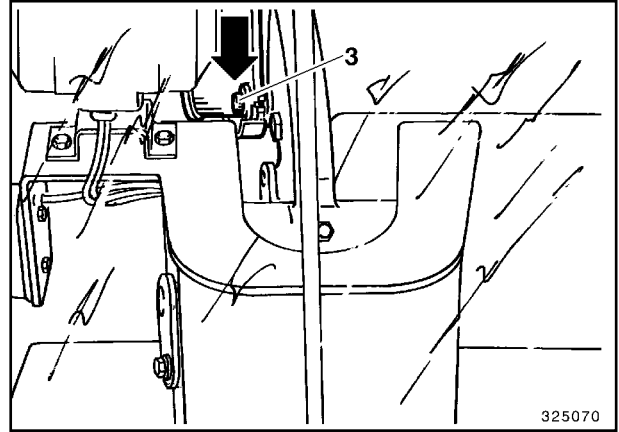


Fig. 6

Detaching the bucket



When changing the working equipment, the pins (3, Fig. 3) must be maintained in the retracted position with control lever (26, Fig. 5).

After releasing the lever, the pins (3) are extended for reasons of safety.

Set bucket on the ground and unlock control lever (26).

Unlock the quick-change device. To do so, pull control lever (26) forwards.

Tilt lifting frame in such a way that pin (2, Fig. 7) can be withdrawn from under the bucket suspension hook by reversing the loader.

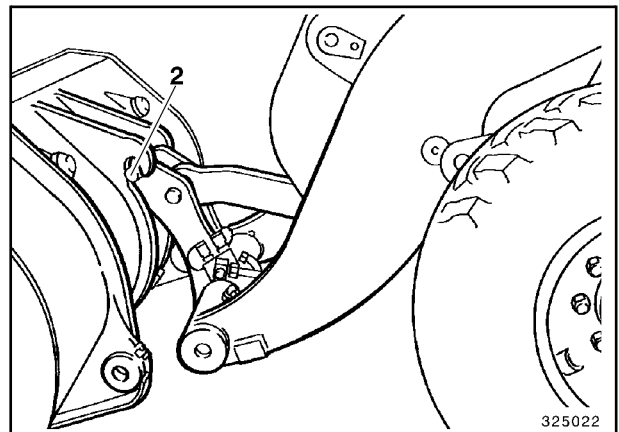


Fig. 7



Operator's manual

No inspection and servicing work may be carried out until the operator's manual has been read and understood.

Pay special attention to the:

"Fundamental Safety Instructions" and all warnings and safety instructions attached to the machine.

The operator's manual lists all jobs to be done. The descriptions of job sequences, however, provide only experienced personnel with the necessary instructions.

The operator's manual must be kept with the machine at all times.

Inspection and servicing personnel

Inspection and servicing personnel must have the necessary know-how on the inspection and servicing of this or comparable machines.

The necessary know-how can be acquired in several days' instruction.

Personal protective equipment and working clothing

Wear closely fitting working clothing when working on the machine. Loose, wide garments may catch on machine parts and result in injury.

Wear a safety helmet, safety footwear, gloves and, in the event of high noise levels, ear protectors.



Securing working equipment

Stand working equipment on the ground in such a way that no movements can be made if mechanical or hydraulic connections become detached.

When working in jointed areas, block off the joints. Remove the blocks on finishing work.

Secure any equipment or component which is to be mounted or dismantled, or whose position is to be changed, with hoists or appropriate slinging/supporting devices to prevent them from moving, slipping or falling inadvertently.

Securing the machine

Carry out servicing work only if the machine is secured as described in the section "Securing the Machine".

Climbing onto and off the machine

Use only the steps, platforms and handrails provided when climbing onto or off the machine.

Always keep steps, platforms, handles and handrails in a non-slip, safe state and remove any oil, grease, soil, clay, snow, ice and other foreign matter immediately.

Always face the machine when climbing on and off.

Check state of tools

Use only fully functional, reliable tools.

Select the right tool for the job.

Wrenches of the wrong size, for example, may slip and cause injury.

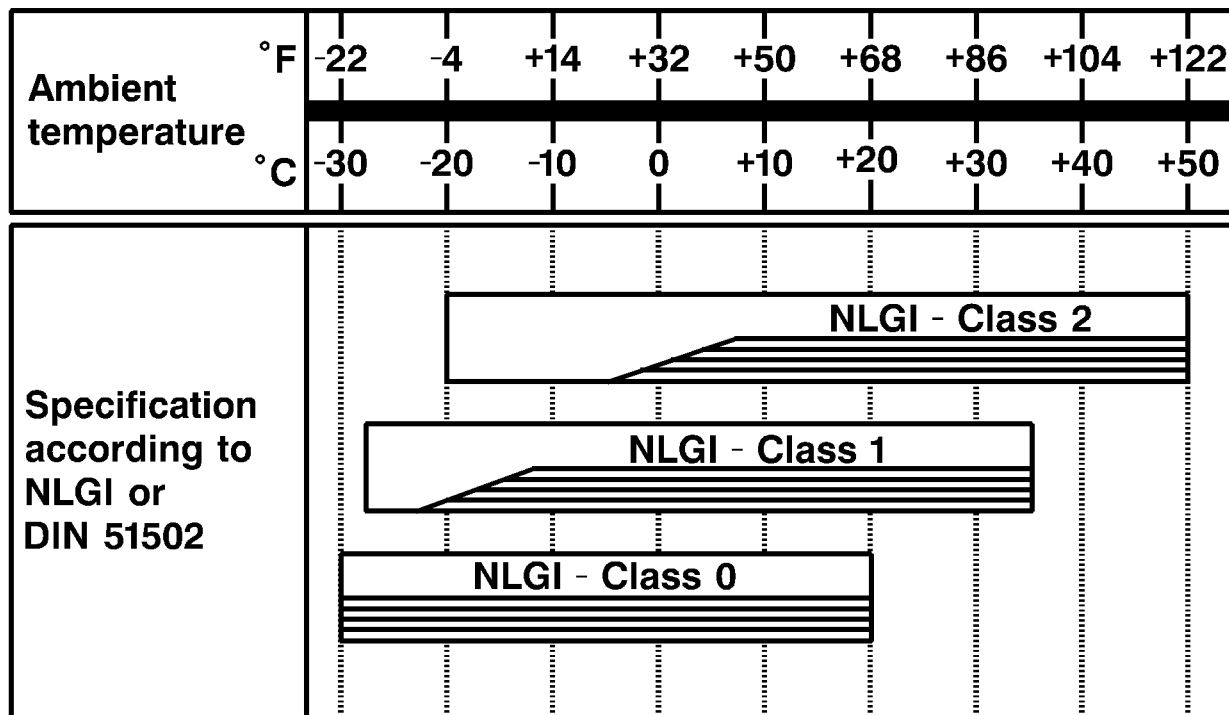
Plan T - All 10 HOURS or each working shift (whichever occurs first)

Plan W - All 50 HOURS or weekly (whichever occurs first)

Component designation	Servicing activity	Oil / Grease	Quantity/ Number	Plan T	Plan W
Equipment Tilting cylinder bearing Lifting cylinder bearing Bucket bearing Quick-change device Bottom-dump bucket	Grease in acc. with lubricating chart Grease in acc. with lubricating chart Grease in acc. with lubricating chart Grease in acc. with lubricating chart Grease in acc. with lubricating chart				● ● ● ● ●
Chassis Articulated joint	Grease in acc. with lubricating chart				●
Lifting frame Lifting arm Toggle link Connecting rod	Grease in acc. with lubricating chart Grease in acc. with lubricating chart Grease in acc. with lubricating chart				● ● ●
Steering Steering cylinder bearing	Check functioning Grease in acc. with lubricating chart				● ●

V. Greases for bearing points and slewing rings

2732723



8005701



for centralized lubricating systems and tensioning systems, e.g. driving chain

Minimum requirement

- Grease base : Lithium
- Solid lubricant content (MoS₂ or graphite) : max. 3%
- NLGI - class : see above
- Corrosion protection acc. ASTM D 17 43 (CRC) : code No. 1

FUEL SYSTEM



When working on the fuel system:

- shut off the engine
- avoid open fire
- do not smoke

Collect escaping fuel and discard without polluting the environment.

Discard used filter cartridges without polluting the environment.

Diesel fuel may cause skin injury. Wear protective gloves or use a barrier cream.

Read and observe the "Safety Instructions".

Secure the machine as described under "Securing the Machine".

- Clean the outer sides of the fuel filter (5, Fig. 1) carefully.
- Tighten screw (14).
- Hold the filter bottom (15, Fig. 2) and slacken screw (14).
- Pull filter bottom (15) down.
- Withdraw filter cartridge (5) and discard without polluting the environment.
- Clean filter head and filter bottom (15).
- Replace seals (6 and 7) and the o-ring (9, Fig. 2) and smear slightly with clean fuel.

Fuel filter



Filter cartridges delivered as spare cartridges have an internal seal (7, Fig. 2) held in place by a plastic ring.

Incorrect installation of the seals may cause damage the injection pump.

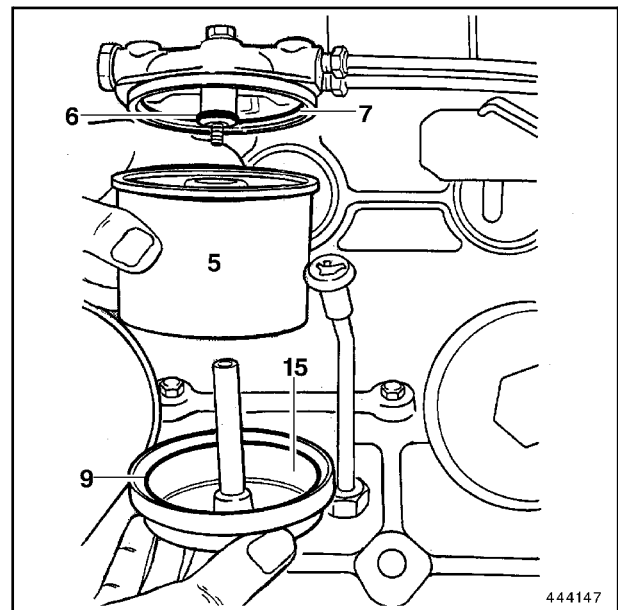


Fig. 2

- Hold filter bottom (15) under the new filter cartridge (5) and attach to the filter head. Make sure filter cartridge (5) sits properly on sealing ring (7).
- Vent the fuel system.

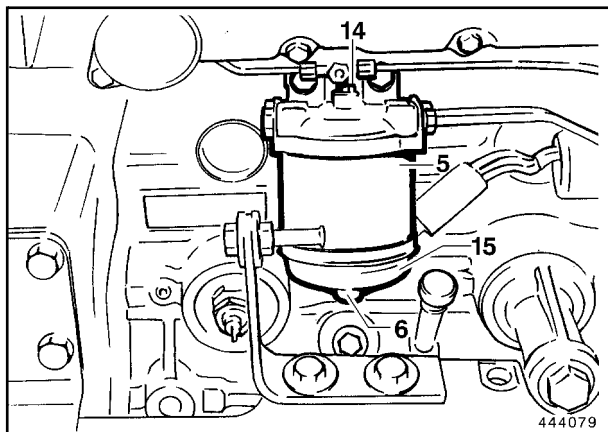


Fig. 1

OPTIONAL EQUIPMENT

Environmentally compatible hydraulic fluid (biodegradability)

Environmentally compatible hydraulic fluid, operating instructions

The hydraulic system of this machine can be filled ex works with environmentally compatible, synthetic hydraulic fluid (non-standard). Stickers with corresponding instructions are then attached to the machine.

For the initial filling, use only: **PANOLIN HLP SYNTH 46**

A change from mineral hydraulic oil to this synthetic hydraulic fluid can, however, be made at a later date.

Environmentally compatible hydraulic fluid, too, must not be simply poured away but disposed of in the same way as used oil.

If hydraulic fluid seeps into the ground, the machine owner and the competent authorities must be informed.

HLP SYNTH 46 is suitable only for hydraulic systems.

As HLP SYNTH 46 is not soluble in water, condensate may be deposited in the hydraulic oil tank.

It must therefore be drained off at regular intervals and after lengthy downtimes, then disposed of in the same way as used oil.

Use only HLP SYNTH 46 for changing or topping up the hydraulic fluid.

The hydraulic fluid must not be mixed with hydraulic oils or hydraulic fluids by other manufacturers, as this affects its biodegradability.

Operating equipment and attachments driven with mineral hydraulic oil must not be mounted until thoroughly emptied, cleaned and flushed.

The serviceability of the hydraulic fluid even beyond the normal change intervals can be determined by means of an analysis.

See: "Environmentally compatible hydraulic fluid, sampling".

Environmentally compatible hydraulic fluid, conversion



Read and note: "Inspection and Servicing, Safety Instructions".

- Bring hydraulic system to operating temperature.
- Retract all hydraulic cylinders.
- Drain off hydraulic oil (see operator's manual, section 3 "Inspection and Servicing").
- Fill hydraulic oil tank with HLP SYNTH 46 up to halfway mark.
- Activate all hydraulic functions including traveling for about 30 minutes. The hydraulic system is flushed.
- Then drain off the hydraulic fluid.
It can be used repeatedly for flushing. Otherwise it must be properly disposed of. A disposal expert must be consulted in this case, as this is a mixture of synthetic hydraulic fluid and mineral hydraulic oil.
- Change all filters in the hydraulic system.
- Fill the hydraulic oil tanks with new HLP SYNTH 46.

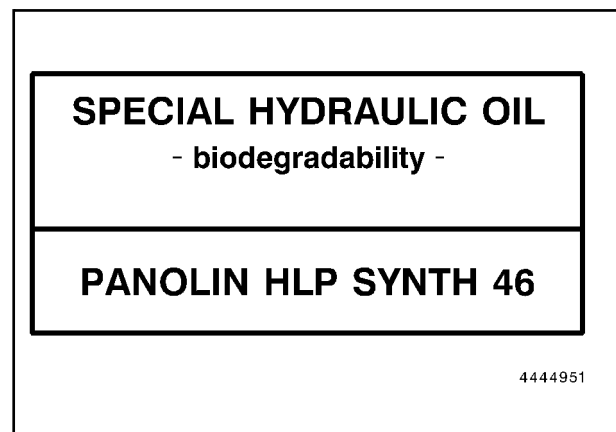


Fig. 1

Fix an instruction sticker (Fig. 1):

- in the cab,
- on the hydraulic oil tank and
- on the additional hydraulic operated equipment.

Tyre pressure - Safety instructions



Bursting tyres and parts splintering away from the rims or from the tyre itself may cause severe injury.

The following instructions must therefore be strictly observed:

- Before inflating the tyre, check the tyres, rims and rim parts for damage, penetrated foreign objects and proper fitting.
- Have all damage detected repaired by a qualified workshop.
- Check the tyre inflation pressure only when the tyres are cold. After warming up, the pressures indicated are higher than usual.
- Use filling equipment with long filling hose, self-fixing nozzle and pressure gauge.
- Inflate the tyres with compressed ambient air only. Never use inflammable gases: Risk of explosion.
- Keep away from the tyre during inflation and always stand besides the tyre tread.
- Keep an eye on the tyre and on the pressure gauge of the filling equipment when inflating the tyre. Never exceed the prescribed tyre inflation pressures.
- Place a safety cage around dismantled wheels.
- Make sure nobody is standing near the tyre when it is being inflated.



Always inflate the tyres to the prescribed pressure:

- Excessive pressures result in poor off-road handling properties and tyres may burst.
- Insufficient tyre pressures lead to increased tyre wear and to inadequate stability of the machine.

**Wheel-nuts**

Always tighten the wheel-nuts with a torque wrench. Recheck with a torque wrench for tightness after several hours of operation.

**Driving on roads**

When driving on the road check that the tyres have the prescribed minimum tread and the correct air pressure.

Always make sure that both axles are equipped with tyres of the same size and same degree of wear.

Tyres with different diameters may cause damage to the differentials.

To avoid excessive tyre wear:

- inflate to the correct air pressure,
- do not start or brake abruptly,
- take corners slowly.

Clean the tyres and the gaps between the tyres before driving on public roads. This helps to avoid putting other road users at risk from soiled traffic lanes or from lumps of soil or stones ejected from the wheels.

□

REPAIR WORK - SAFETY INSTRUCTIONS

2913029



Operator's manual

Never carry out repair work without having read and understood the operator's manual.

Pay special attention to:

"Fundamental Safety Instructions", "Inspection and servicing - safety instructions" and all warnings and safety instructions attached to the machine.

The descriptions of job sequences provide only experienced personnel with the necessary instructions.

The operator's manual must be kept with the machine at all times.

Repair personnel

Repair personnel must have know-how and experience relevant to repairing this or comparable machines.

In the absence of such know-how, meticulous training must be given by experienced repair personnel.

Blocking the articulated joint

When carrying out repair work in the pivoting range, block the articulated joint. Remove the block on completing work.



Prestressed units

Never open defective prestressed units but replace them as an entirety.

In exceptional cases, open only when the system and the operating sequence are precisely known and any special tools required are available.

The operator's manual contains no information on this point.

Dismantling components

Never dismantle while the machine is at operating temperature.

Oils, greases, brake fluid or coolants may have a high temperature and result in burning or scalding.

Leave time for the machine to cool down.

Before starting work, depressurize piping and hoses, cylinders, radiator, hydraulic tank, air-brake reservoir and other systems or units.

Replace defective components in good time to prevent major damage.

Clean the defective component carefully before dismantling it.

Mark the dismantled parts in the correct sequence to facilitate assembly.

When dismantling the component, close off exposed hose and piping connections, exposed drill holes and housing carefully to prevent any dust from penetrating.

Never remove lead seals

Never change the rated pressure of pressure relief.

Never remove lead seals from pressure relief valves and accumulators.

WELDING OPERATIONS

2913031

Welding operations - safety instructions



Never perform welding operations unless you are qualified to do so.

Observe the accident prevention regulations.

Any work on receptacles that contain or have contained substances which are

- combustible or which encourage combustion, which
- are susceptible to explosion, or which
- may develop health-hazardous gases, vapours, mist or dust during welding operations

must be carried out only under expert supervision and only by experienced persons authorized to do such work.

Should you have any problems or queries, apply to our aftersales service department.



Prior to any welding operations on the machine:

- Disconnect the battery, first the negative terminal and then at the positive terminal.
- Disconnect the positive terminal at the alternator.
- Protect the disconnected terminals and plugs from short-circuiting and soiling by covering them with foil or adhesive tape.

Apply the welding current terminals very close to the welding point.

The welding current must not flow through gearboxes, bolted or articulated joints or hydraulic cylinders.

On completion of the welding operation, restore all electrical connections.

When connecting the battery, first connect the positive terminal and then the negative terminal.

□

Operator's manual		Target group
Part 1	INTRODUCTION FUNDAMENTAL SAFETY INSTRUCTIONS	Operating personnel + Inspection and servicing personnel + Repair personnel
Part 2	OPERATION	Operating personnel The operating personnel must have know-how relevant to the operation and the application of this or comparable machines.
Part 3	INSPECTION AND SERVICING	Inspection and servicing personnel The inspection and servicing personnel must have know-how relevant to the inspection and servicing of this or comparable machines.
Part 4	REPAIR WORK	Repair personnel The repair personnel must have know-how and experience relevant to the repair of this or comparable machines.
Part 5	ANNEX	Operating personnel + Inspection and servicing personnel + Repair personnel

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