



Diesel truck

Linde Material Handling

Linde

Original instructions

H40D, H45D, H50D

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Linde – Your Partner



With over 100,000 fork lift trucks and warehouse machines sold annually, Linde is one of the world's leading manufacturers of material handling equipment. There are many reasons for this success: Linde products are renowned not only for their innovative, cutting-edge technology, but also for their low energy and operating costs, which are up to 40 per cent lower than those of their competitors.

The high quality of Linde products is also matched by the quality of our service. With ten production plants worldwide and an extensive network of sales partners, we are at your service round the clock and around the world.

Your local Linde partner can offer you a complete package from a single source; ranging from expert advice on all aspects of sales and service through, of course, to appropriate finance options. Our leasing, hire or lease-purchase agreements provide you with the flexibility to tailor decision-making to your individual business requirements.

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Introduction

Your forklift truck

offers optimum economic efficiency, safety and driving comfort. It is primarily down to you to maintain these characteristics for a long time and take advantage of the resulting benefits.

During manufacture:

- all safety requirements of the relevant EC directives were observed
- all conformity assessment procedures stipulated in the applicable directives were carried out

This is attested by the CE mark shown on the nameplate.

These operating instructions contain everything you need to know about commissioning, driving and maintenance.

The attachment operating instructions are enclosed for trucks that are delivered from the factory with an attachment. Before commissioning a truck with an attachment, you must check that loads are handled securely. Depending on the type of attachment, it may be necessary to make adjustments, e.g. pressure settings or adjusting stops and operating speeds. See the attachment operating instructions for the corresponding instructions. The instructions for operation of the attachment must also be observed.

Carry out the specified work regularly, at the due times and using the consumables envisaged for this purpose in accordance with the inspection and maintenance overview. Please make sure you record the work performed in the registration document for the industrial truck; this is essential for any warranty claims.

The designations used in the text (front, back, left, right) always refer to the installation position of the parts described, with forwards as the drive direction for the truck (fork arms forwards).

Servicing work not described here will require specialist knowledge, measuring devices and frequently also special tools. Please ask your authorised dealer to carry out this work.

Servicing should only be carried out by qualified personnel approved by Linde (specialists).

With orders for parts, please specify the following along with the parts numbers:

Truck model:	
Chassis number/year of manufacture:	
Handover date:	

The production number must also be specified for parts from the following units: engine, lift mast, hydraulic variable displacement pump, drive axle and steering axle.

Engine number:	
Lift mast number:	
Lift mast lift:	
Hydraulic variable displacement pump number:	
Drive axle number:	
Steering axle number:	

When taking over the truck, this data should be copied from the identification plates of the units into these operating instructions.

NOTE

In the event of repairs, only use genuine Linde spare parts. This is the only way to guarantee that your truck remains in the same technical condition as at the time of reception.

Please address all queries and orders for spare parts relating to your truck only to your authorised dealer, stating your mailing address.

Linde is constantly engaged in the further development of its products. We ask for your understanding that figures and technical data are subject to technical modification in terms of

Description of use and climatic conditions

form, equipment and expertise in the interest of progress.

For this reason, no claims can be asserted on the basis of the following data, figures and descriptions in these operating instructions.

Proper use

The truck is used for moving and lifting the loads indicated on the capacity rating plate.

Please pay particular attention to:

- The VDMA brochure on "Rules for proper use of industrial trucks", supplied with these operating instructions
- Regulations for driving on public roads, as well as any country-specific restrictions on winter road conditions
- Specific measures for using the industrial truck in operating areas with magnetic fields

These operating instructions must not be reproduced, translated or made accessible to third parties—including as excerpts—except with the express written approval of the manufacturer.

that have magnetic flux densities greater than 5 mT

- Other specific national regulations.

It is essential that operating personnel and repair personnel observe the rules for the proper use of industrial trucks.

Modifications, in particular attachments or conversions, are not permitted to be made to the industrial truck without the manufacturer's approval.

The user, and not the manufacturer, is liable for any hazards caused by improper use.

Impermissible use

The operating company or driver, and not the manufacturer, is liable if the truck is used in a manner that is not permitted.

It is not permitted to use the truck:

- for taking passengers
- in areas where there is a risk of fire or explosion

- for stacking/unstacking operations on slopes
- For stepping onto the fork arms when the lift mast is raised
- If the maximum load capacity is exceeded

Description of use and climatic conditions

Normal use

- Indoor and outdoor use
- Ambient temperature in tropical and Nordic regions ranging from -15 °C to 50 °C
- Start capability at -15 °C to 50 °C
- Maximum start time of 20 seconds
- Use at up to 2000 metres above sea level.

Special use (partly with special measures)

- Use, e.g. in the event of abrasive dust (such as AL203), lint, acid, leach, salt, corundum, incombustible substances
- Ambient temperature in tropical regions up to 55 °C
- Start capability to -25 °C
- Use at up to 3500 metres above sea level.

Symbols used

The terms DANGER, WARNING, CAUTION, NOTE and ENVIRONMENT NOTE are used in these operating instructions for notes on particular hazards or for unusual information that needs to be highlighted:

DANGER

Means that failure to comply can cause risk to life and/or major damage to property.

WARNING

Means that failure to comply can cause risk of serious injury and/or major damage to property.

CAUTION

Means that failure to comply can cause risk of material damage or destruction.

NOTE

Means that particular attention is drawn to combinations of technical factors which may not be evident even to a specialist.

ENVIRONMENT NOTE

The instructions listed here must be complied with as otherwise environmental damage may result.



CAUTION

This label is found on the truck in the areas where particular care and attention are required.

You should refer to the appropriate section in these operating instructions.

For your safety, additional symbols are also used. Please heed the various symbols.

Technical description

The forklift trucks in the 394 series allow loading and palletising to be performed for loads up to 4 t with H 40, up to 4.5 t with H 45 and up to 5 t with H 50-500, at a load distance of 500 mm.

Details on the exact lift-height-specific maximum loads are available in the load capacity diagram.

The trucks are eco-friendly and their quiet operational noise and low emission levels benefit both the driver and the environment. Their distinguishing features are the compact design and small turning radius. For this reason, the trucks are particularly well-suited to narrow entrances and operational areas where space is at a premium.

Engine

The drive engine is a 4-cylinder, four-stroke diesel engine with turbocharging and state-of-

the-art pump injection technology. It powers the truck's hydraulic pumps and varies its speed depending on the load. The engine is cooled by means of a closed coolant circuit with expansion tank.

Forced circulation lubrication with an oil pump in the oil sump is used for engine lubrication. The combustion air is cleaned by means of a dry air filter with a paper insert. Diesel engines with state-of-the-art engine technology are used for:

- High torque
- Low fuel consumption
- Low exhaust emissions
- Low particulate emissions
- Low noise levels

Hydraulic system

The drive unit consists of a hydraulic variable displacement pump, two hydraulic fixed

displacement wheel motors (assembled as a drive axle unit), as well as a hydraulic pump (fixed displacement pump) for the working and steering hydraulics. Drive direction and driving speed are regulated by means of two accelerator pedals via the hydraulic variable displacement pump.

The hydraulic fixed displacement wheel motors in the drive axle are supplied by the hydraulic variable displacement pump and are used to power the drive wheels via two side gearboxes.

Operation

One accelerator pedal each for forward travel and reverse travel (dual pedal operation) is used to simultaneously regulate the hydraulic variable displacement pump and the engine speed. The hydrostatic drive enables the driving speed to be continuously varied in both directions, ranging from standstill to the maximum speed. The dual-pedal control means that operation of the truck is simple, safe, non-fatiguing and efficient.

The driver always has both hands free for steering and controlling operational movements. This results in fast reversing and efficient stacking.

An optional version is also available whereby the driving speed is regulated by an accelerator pedal (single pedal operation) and the drive direction controlled by means of a drive direction switch.

To control the operational movements of lifting, lowering and tilting, there is only one actuating lever (joystick). Another joystick is fitted for actuation of additional attachments. Operational movements can also be controlled using two or four joysticks (single lever operation version).

Linde Load Control

The truck's Linde Load Control (LLC) control electronics system enables:

- Millimetre-precise and secure load handling
- Effortless finger-tip control of all lift mast functions
- Drive and lifting functions are entirely separate.

Linde Truck Control

The truck's Linde Truck Control control electronics system (LTC) offers:

- Reliable control unit
- A high level of safety thanks to multiple monitoring systems
- Automatic, load-dependent control of engine speed
- Protection from dust and dirt through use of a fully enclosed housing.

Brakes

The hydrostatic drive is used as the service brake. This means that the service brake is maintenance-free. Two multi-disc brakes incorporated in the wheel motors are used as the parking brake. When the engine is switched off, the multi-disc brakes engage, meaning that the truck has an automatic brake function. Always apply the parking brake when parking the truck.

Steering

The steering is a hydrostatic steering system, under which the steering wheel acts on the steering cylinder to actuate the rear wheels. If the power applied to the steering wheel is increased, the steering can also be operated when the engine has been switched off.

Lift mast

The free-view lift mast enables:

- Ideal visibility due to slim lift mast profiles
- Full load capacity up to maximum lift heights
- Enormous residual load capacity

Receiving the industrial truck

- Maintenance-free storage of the lift mast and tilt cylinder via rubber-cushioned linkage points
- Electric tilt angle limitation.

Electrical system

The electrical system is powered by the three-phase alternator with 12 V DC voltage. A 12 V battery with 88 Ah is installed for starting the engine. It is located under the driver's seat in the engine compartment.

Truck operation when using a shovel

When operating the truck with a shovel, stall protection can be activated by your authorised dealer.

In this case, extreme loading of the drive engine due to the associated engine speed decrease leads to a slight delay in executing the working hydraulics.



For a period of extended loading of the engine, the joystick must be switched to the zero position in order to release the working hydraulics again.

Receiving the industrial truck

Before the industrial truck leaves our factory, it undergoes a thorough inspection process in order to guarantee that it is in perfect condition and that it contains all of the equipment specified in the order.

In order to prevent complaints from occurring further down the line, the exact condition of the industrial truck and the integrity of the equipment are checked and the proper handover/acceptance of the truck is confirmed by the dealer.



In trucks that leave our factory without a lift mast, an additional stop screw for speed limitation is located under the reverse accelerator pedal (dual-pedal operation) or under the

*accelerator pedal (single-pedal operation). This must be removed **after installing the lift mast**; see the section entitled Driving without a lift mast.*

The following technical documents belong to each industrial truck:

- Operating instructions for the truck
- Operating instructions for the attachment (only applies to trucks delivered from the factory with an attachment)
- EC declaration of compliance
- Safety rules for the use of industrial trucks (VDMA)
- Registration document for the industrial truck, which is issued by authorised dealers as part of the handover.

Legal requirements for marketing

Declaration

Linde Material Handling GmbH
Carl-von-Linde-Platz
D-63743 Aschaffenburg, Germany

We declare that the machine

Industrial truck **according to these operating instructions**

Model **according to these operating instructions**

complies with the most recent version of machinery directive 2006/42/EC.

Personnel authorised to compile the technical documents:

see EC declaration of conformity

Linde Material Handling GmbH

EC declaration of conformity

The manufacturer declares that the truck complies with the requirements of the EC machinery directive and any other EC directives, if applicable, that are valid at the time of marketing. This is confirmed by the EC declaration of conformity and by the CE labelling on the nameplate.

The EC declaration of conformity document is delivered with the truck. The declaration

shown explains the conformity with the requirements of the EC machinery directive.

An independent structural change or addition to the truck can compromise safety, thus invalidating the EC declaration of conformity.

The EC declaration of conformity must be carefully stored and made available to the responsible authorities if applicable. It must also be handed over to the new owner if the truck is sold on.

1 Introduction

Legal requirements for marketing

2

Safety

2 Safety

Safety guidelines

Safety guidelines

It is essential that operating personnel and repair personnel observe the "rules for the proper use of industrial trucks" enclosed with these operating instructions.

Examples of those listed are:

- Operating industrial trucks
- Driving licence
- Driveways and working areas
- Rights, duties and rules of behaviour for the driver
- Special operating areas
- Information regarding setting off, driving and braking
- Information for maintenance and repair
- Regular tests
- Disposal of greases, oils and batteries

The operating company or the person it has commissioned must ensure that the driver understands all safety information and that all guidelines and safety regulations are observed.

During training, the driver must familiarise themselves with the following:

- The operating conditions of the working areas
- The specific technical characteristics of the industrial truck
- The operation of attachments

Practise driving, control and steering operations with an unloaded truck until they are completely mastered. Only then can a loaded industrial truck be used for practice.

Safety information

DANGER

The industrial truck must not be used by unauthorised persons.

Only trained persons and those authorised for operation may have access to the industrial truck.

DANGER

In operating areas with magnetic fields that have a magnetic flux density greater than 5 mT, unintentional truck and lift mast movements cannot be entirely excluded under unfavourable circumstances.

For magnetic fields with magnetic flux densities greater than 5 mT, components developed especially for this purpose must be used.

Contact your authorised dealer.

DANGER

Safety systems (e.g. the seat switch) are there for safety.

Safety systems must never be disabled, regardless of the kind.

DANGER

Any additional bores or welding to the overhead guard will compromise its rigidity.

It is therefore strictly prohibited to drill holes in the overhead guard or to weld to it.

CAUTION

Welding operations on other parts of the vehicle can cause damage to the electronics.

Therefore, before performing any welding, always disconnect the battery and all connections to the electronic control units.

CAUTION

Different functions are supported by gas springs. Gas springs are under a high internal pressure of up to 300 bar.

They must only be removed when not under compression and must not be opened without instructions. Any kind of damage, lateral forces, buckling, temperatures in excess of 80° C and heavy contamination must be avoided under all circumstances.

Damaged or defective gas springs must be replaced immediately.

Contact your authorised dealer.

⚠ WARNING

In trucks with an accumulator, serious injuries can occur if the accumulator is not properly handled.

Before starting work on the accumulator it must be depressurised.

Contact your authorised dealer.


⚠ WARNING

Depending on the duration of use and operating time, components carrying exhaust gases and exhaust air may become hot.

Protective equipment must therefore be worn.

⚠ WARNING

The truck working area must be sufficiently lit.

If it is insufficiently lit, working spotlights must be installed to ensure that the driver can see properly.

⚠ CAUTION

Various pieces of special equipment are connected to the special "speed reduction" function. This is simply an assistance function, on which the driver must not solely rely during operation.

The driver is always responsible for safe operation.

⚠ CAUTION

If drivers have active medical equipment, e. g. pace makers or hearing aids, these may be impaired.

Check with a doctor or the medical equipment manufacturer whether the equipment is sufficiently protected against electromagnetic interference.


NOTE

If your truck is equipped with a fire extinguisher, make sure that you familiarise yourself with it in case of an emergency. Handling information is provided on the fire extinguisher.

Residual risks

Despite careful work and compliance with all applicable standards and regulations, the possibility of other dangers when using the industrial truck cannot be entirely excluded.

The industrial truck and its possible attachments comply with current safety regulations. Nevertheless, even when the truck is used for its proper purpose and all instructions are followed, some residual risk cannot be excluded.

Even beyond the narrow danger areas of the industrial truck itself, a residual risk cannot be excluded. Persons in the area around the industrial truck must exercise a heightened degree of awareness, so that they can react immediately in the event of any malfunction, incident or breakdown.

⚠ DANGER

Persons in the vicinity of the industrial truck must be instructed with regard to the dangers that arise through use of the truck.

These operating instructions also contain additional safety regulations.

Residual dangers can include:

- Escape of consumables due to leakages or the rupture of lines, hoses or containers,
- Risk of accident when driving over difficult ground such as gradients, smooth or irregular surfaces, or with poor visibility,
- Risk of falling, tripping, slipping etc. during movement of the industrial truck, especially in the wet, with leaking consumables or on icy surfaces,
- Risk of fire and explosion due to the battery and electrical voltages,
- Human error,
- Disregarding the safety regulations,
- Risk caused by unrepaired damage,

Handling consumables

- Risk caused by insufficient maintenance or testing,
- Risk caused by using the wrong consumables.

Stability

Stability is guaranteed if your industrial truck is used according to its intended purpose.

Stability will not be guaranteed in the event of:

- cornering at excessive speeds,
- moving with the load raised,
- moving with a load that is protruding to the side (e.g. sideshift),
- turning and driving diagonally across descents or ascents,
- driving on descents or ascents with the load on the downhill side,
- loads that are too wide,
- driving with a swinging load,
- ramp edges or steps.

In the case of tip-over



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- Stay buckled up
- Don't jump
- Hold on tight
- Brace feet
- Lean away

The stability of your industrial truck is ensured if used properly and as intended. Should the industrial truck tip over during an unapproved application or due to incorrect operation, always follow the instructions depicted above.

Handling consumables



ENVIRONMENT NOTE

Consumables must be handled properly and in accordance with the manufacturer's instructions.

- Consumables should only be stored in containers complying with applicable regulations and at the locations stipulated.
- Do not bring flammable consumables into contact with hot objects or a naked flame.
- When topping up consumables, use only clean containers.
- Observe the manufacturer's instructions relating to safety and disposal.
- Avoid spilling.
- Remove any spilled fluid immediately with a suitable binder and dispose of it according to applicable regulations.
- Old and contaminated operating materials should be disposed of according to the regulations.
- Comply with the statutory provisions.
- Before performing greasing, filter changes or any work on the hydraulic system,

carefully clean the area around the part involved.

- Dispose of used spare parts in an environmentally friendly manner.

⚠ WARNING

The penetration of pressurised hydraulic fluid into the skin, e.g. due to leakage, is hazardous. If an injury of this type occurs, always consult a doctor.

Protective equipment must be worn.

⚠ WARNING

The improper handling of coolant and coolant additives presents a risk to health and the environment.

Observe the manufacturer's instructions without fail.

Competent person

A competent person is a specialist in the field of industrial trucks who has:

- Successfully completed training, as at least a service engineer for industrial trucks
- Many years of professional experience with industrial trucks
- Knowledge of the accident prevention regulations
- Knowledge of the relevant national technical regulations

The competent person is able to assess the condition of industrial trucks in terms of health and safety.

Regulations

Periodic safety inspection

Periodic safety inspections are required in order to maintain the function and security of the industrial truck.

Comply with the national regulations for your country.

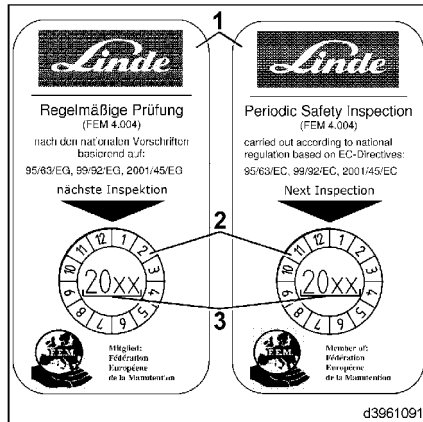
In Europe, the national laws are based on the directives 95/63/EC, 99/92/EC and 2001/45/EC. These stipulate that periodic safety inspections of the industrial truck must be carried out by competent personnel, in order to ensure proper condition.

2 Safety

Instructions for fitting attachments

There is a recommendation setting out the scope of the periodic safety inspection —FEM 4.004 of the European Industrial Truck Association— which defines a test log to document the current safety inspection and an inspection sticker for the next safety inspection. The next safety inspection date is shown by the year number (3) on an adhesive label (2), which changes colour every year and is found on a label (1).

The scope of the safety inspection is added by the manufacturer in accordance with the specific truck type. Please ask your authorised dealer to carry out this work.



Diesel engine emissions

Diesel engine emissions include carcinogenic hazardous materials. These should not be allowed to infiltrate the air in workplaces.

If trucks with diesel engines are used in fully or partially enclosed spaces, this must first be reported to the relevant occupational health and safety authorities. Operating instructions must be displayed in the working areas.

The national regulations must be observed without fail.

Checking the particle filter system

Particle filter systems must be maintained and tested every 6 months by a competent person. The test results must be recorded and enclosed with the report book. Observe the national regulations for your country.

Instructions for fitting attachments

To depressurise the oil in the lines **before** fitting an attachment, the hydraulic system for the auxiliary hydraulics can be connected using an accumulator (Special equipment) depressurised

See the section entitled "Depressurisation".

⚠ WARNING

Improper handling of the accumulator may lead to serious injuries.

Before starting work on the accumulator, it must be depressurised. Contact your authorised dealer.

Fork carriage emergency lowering

If there is a malfunction, the fork carriage can be lowered manually.

- Remove floormat.



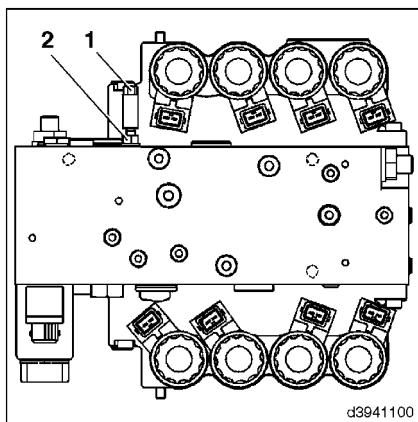
⚠ DANGER

Risk of accident or danger to life when lowering the fork carriage with fork arms.

People are not allowed to stand in the vicinity of the fork arms when they are being lowered.

During lowering, leave the socket wrench on the threaded stud (1) on the valve block (3) to enable lowering to be interrupted at any time.

- Insert the 8 mm WAF socket wrench through the opening in the bottom plate.
- Using the socket wrench slowly rotate the threaded stud (1) approx. 3 turns anti-clockwise until the fork carriage has been completely lowered.
- Open the bonnet.
- Open the bottom plate and secure it in place.
- Undo the self-locking nut (2) about 2 turns.



2 Safety

Emergency exit with attached rear window

- Screw the threaded stud (1) back in clockwise. Otherwise it will not be possible to lift the fork carriage using the joystick.

Tightening torque 10 Nm.

- Retighten the self locking nut (2).

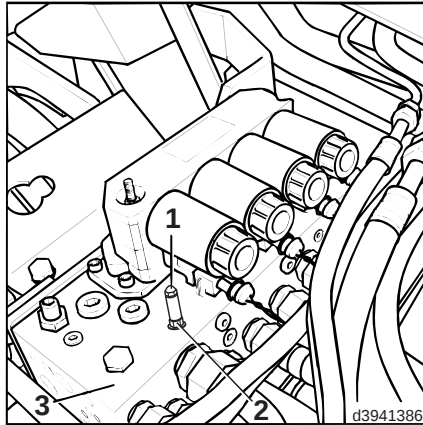
Tightening torque 9.5 Nm



NOTE

After emergency lowering has been performed three times, a new threaded stud with self locking nut must be used.

- Close the bottom plate and bonnet.
- Insert the floor mat.



Emergency exit with attached rear window

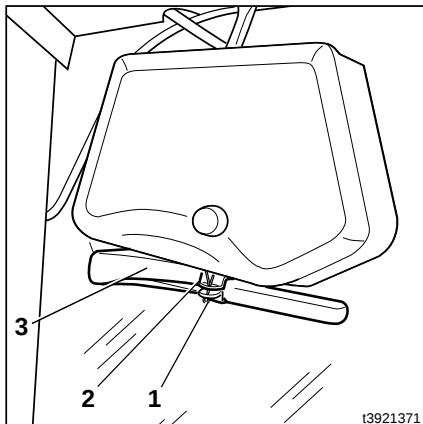
If a truck with an attached front and rear window breaks down in a narrow aisle, the driver may possibly be unable to exit the truck at the side. In the event of acute danger, the driver can exit the truck via the rear window. For this purpose, the rear window must be broken with an emergency hammer.

- Bend open split pin (1) from the support mounting (2) under the rear wiper motor.

WARNING

Glass splinters may cause injuries.
Remove glass splinters carefully.

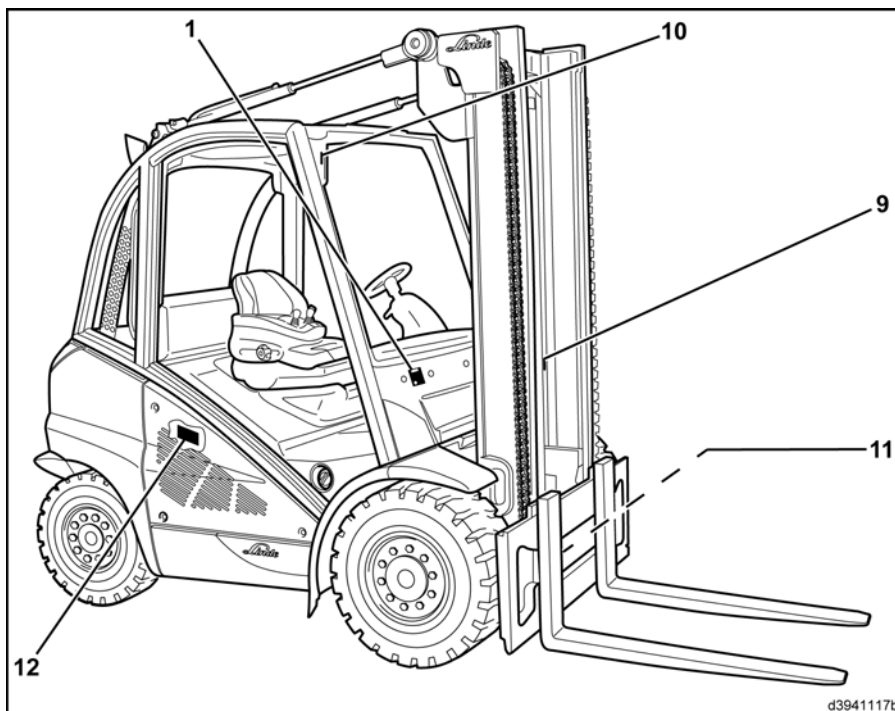
- Take the emergency hammer (3) out of the support mounting and carefully break the rear window.
- Climb out carefully.



Overview

Identification plates

Identification plates



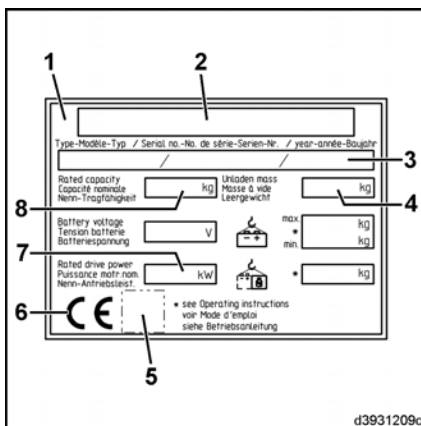
- 1 Nameplate
- 9 Lift mast number (adhesive label)
- 10 Serial number (stamped into the front right of the junction plate on the overhead guard)
- 11 Drive axle identification plate
- 12 Engine identification plate

Nameplate

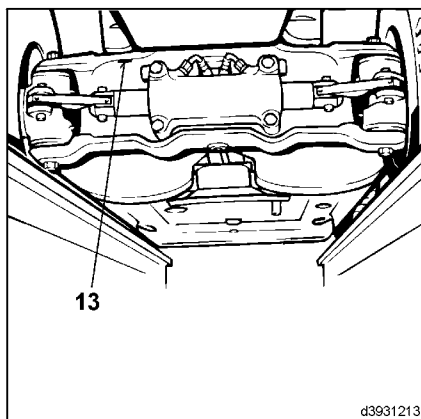
- 1 Nameplate
- 2 Manufacturer
- 3 Type/chassis number/year of manufacture
- 4 Tare weight
- 5 Placeholder for "data-matrix code"
- 6 CE mark
- 7 Rated driving power
- 8 Rated load capacity

**NOTE**

The CE mark confirms compliance with the EC machinery directive and with all regulations applicable to the truck.

**Steering axle identification plate**

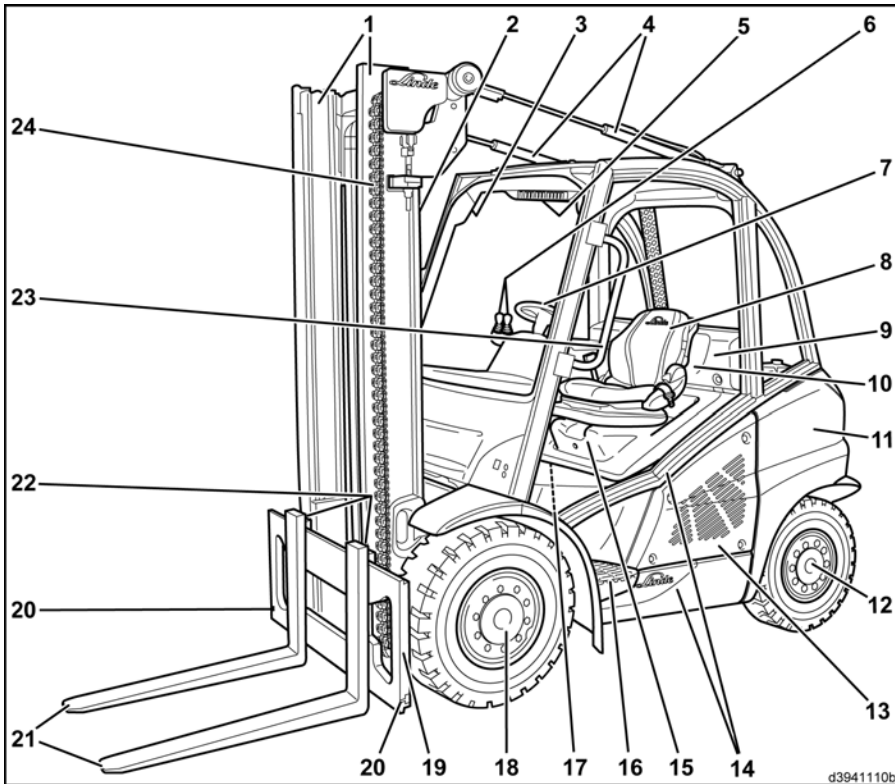
- 13 Steering axle identification plate



3 Overview

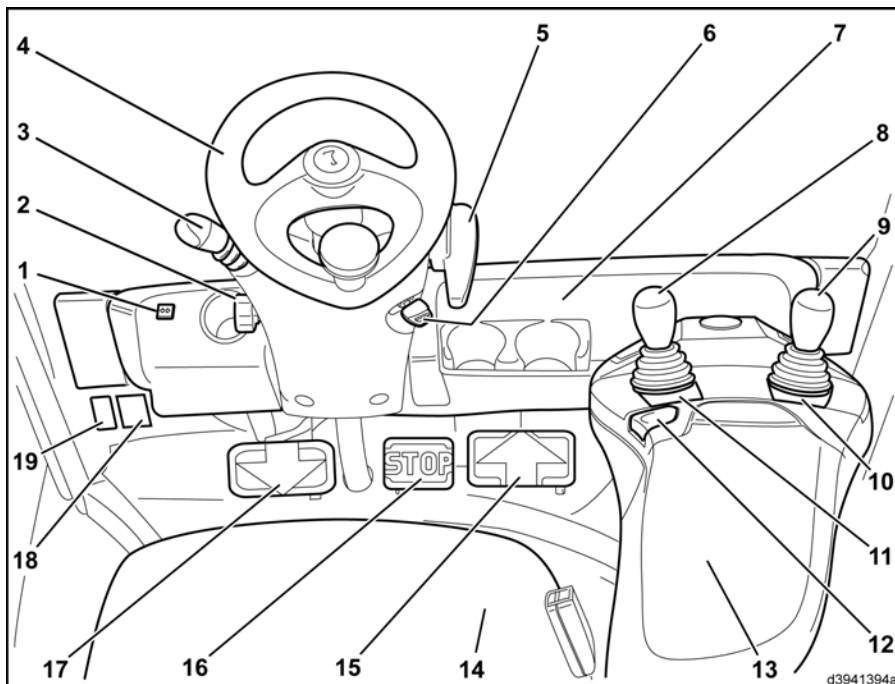
General view

General view



- | | | | |
|----|--|----|---|
| 1 | Lift mast | 13 | Access cover |
| 2 | Lift cylinder | 14 | Chassis and overhead guard |
| 3 | Composite instrument | 15 | Bonnet |
| 4 | Tilt cylinders | 16 | Step for mounting and dismounting |
| 5 | Switch panel for toggle switch (special equipment) | 17 | Fuses (in the engine compartment) |
| 6 | Joystick | 18 | Left drive unit |
| 7 | Steering wheel/hydrostatic power steering | 19 | Fork carriage |
| 8 | Operator's seat | 20 | Fork quick-releases |
| 9 | Electrical system cover | 21 | Forks |
| 10 | Fuses (behind the electrical system cover) | 22 | Fork stops |
| 11 | Counterweight | 23 | Handhold for entering and exiting the truck (special equipment) |
| 12 | Steering axle | 24 | Lift mast chain |

Operating devices

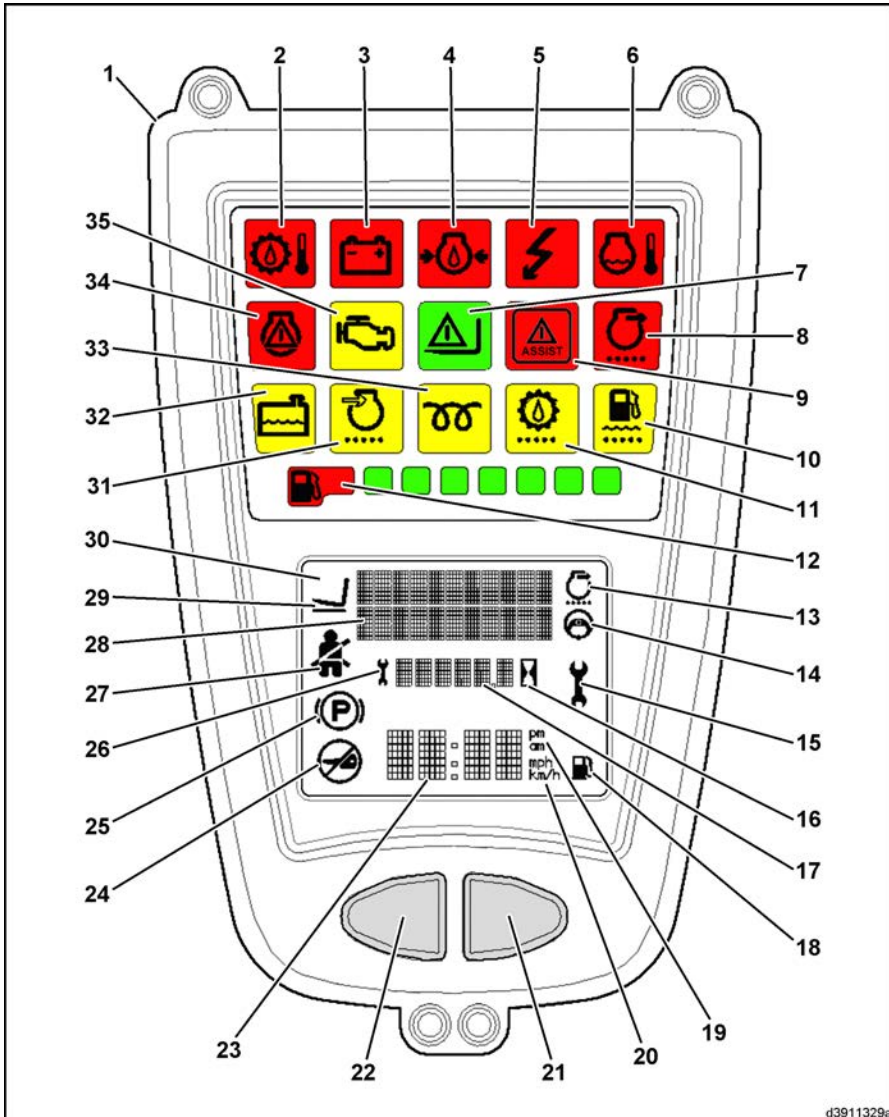


- | | | | |
|---|--|----|--|
| 1 | Indicator light for turn indicator and hazard warning system (green) (special equipment) | 10 | Symbol label for auxiliary hydraulics (attachments) (special equipment) |
| 2 | Clamping screw for adjusting the steering column | 11 | Symbol label for working hydraulics |
| 3 | Multifunction lever for wiper/washer system and turn indicator (special equipment) | 12 | Signal button |
| 4 | Steering wheel / hydrostatic steering | 13 | Armrest on driver's seat |
| 5 | Parking brake lever | 14 | Driver's seat |
| 6 | Starting switch with switch key | 15 | Forward travel accelerator pedal |
| 7 | Compartment | 16 | Stop pedal |
| 8 | Joystick for working hydraulics | 17 | Reverse travel accelerator pedal |
| 9 | Joystick for auxiliary hydraulics (attachments) (special equipment) | 18 | "Guaranteed sound power level" label |
| | | 19 | "Truck configuration" sign (for description, see "truck configuration sign") |

3 Overview

Display unit

Display unit



d3911329a

1	Display unit	20	Symbol without function
2	Hydraulic oil temperature indicator	21	Function key
3	Charging indicator	22	Reset button
4	Engine oil pressure indicator / engine oil level indicator (special equipment)	23	Time display
5	Electrical controller fault	24	"Do not start the engine" symbol
6	Engine coolant temperature indicator	25	Symbol for "Parking brake applied"
7	Joystick display electronically unlocked	26	Symbol for "Operating hours until the next service" (shown for only 5 sec in the display (17))
8	Particle filter warning	27	Symbol for "Seat belt not fastened" (special equipment)
9	Symbol without function	28	Text field
10	Water in the fuel filter (special equipment)	29	"Lift mast positioning" symbol active (special equipment)
11	Hydraulic oil microfilter indicator (special equipment)	30	Display
12	Level display for diesel tank, LPG tank / replacement cylinders or CNG tank	31	Air filter vacuum indicator
13	Symbol for "Particle filter"	32	Coolant level indicator
14	Symbol without function	33	Preheating indicator (function only available on diesel trucks)
15	Symbol for "Service interval exceeded"	34	Gas system error light (function only available on LPG trucks)
16	Operating hours symbol	35	Engine malfunction warning light
17	Operating hours display		
18	Symbol without function		
19	Symbol for "Clock display (am/pm)"		

The display unit (1) is mounted to the top right on the overhead guard. It is positioned within the driver's field of vision and provides centralised information about all functions of the truck. After the key switch has been switched on, a self-test of the display unit is then performed. During the self-test, all indicator lights and the displays are activated.

Display element	Function	Possible malfunctions Remedy
(2) Hydraulic oil temperature indicator (red)	- Lights up if the maximum permissible temperature is reached. A buzzer also sounds if the temperature limit is exceeded. When the "Engine protection"* function is activated): - Truck moves at creep speed (approx. 2 km/h) Display in the text field (28): - Error code X205	Insufficient oil in the hydraulic circuit
		Incorrect oil used
		Oil filter clogged
		Oil cooler contaminated
		Switch off the buzzer with the reset button (22)

3 Overview

Display unit

Display element	Function	Possible malfunctions Remedy
(3) Charging indicator (red)	- Lights up if there are generator malfunctions.	V-ribbed belt split or v-ribbed belt tension too slack
		V-ribbed belt tensioner faulty
		Cable faulty
		Alternator faulty
		Charging controller or cut-out relay faulty
		Short circuit at output D+ of the display unit
(4) Engine oil pressure indicator/engine oil level indicator (red)	- Lights up and buzzer sounds when the oil pressure is too low. - If the text field (28) also shows Oil with a double arrow pointing downwards, the engine oil level is too low. (special equipment) When the "Engine protection"* function is activated): - Truck moves at creep speed (approx. 2 km/h) Display in the text field (28): - Error code X202 if the oil pressure is too low - Error code X201 and Oil with double arrow pointing down, if the oil level is too low.	Insufficient oil in the crankcase
		Engine too hot
		Incorrect oil used
		Internal leakage in the lubricating oil circuit
		Top up with engine oil
		Switch off the buzzer with the reset button (22)
(5) Electrical controller fault (red)	- Lights up when an electrical fault is present. Error code is displayed in the text field (28).	
(6) Engine coolant temperature indicator (red)	- Lights up if the maximum permissible temperature is reached. A buzzer also sounds if the temperature limit is exceeded. When the "Engine protection"* function is activated): - Truck moves at creep speed (approx. 2 km/h) Display in the text field (28): - Error code X204	Fan motor faulty
		Thermal switch faulty
		Water cooler contaminated
		Leakage in the cooling circuit
		Coolant level too low
		Switch off the buzzer with the reset button (22)
(7) Joystick display electronically unlocked (green)	- Lights up when the "Joystick unlocked" function is activated.	

Display element	Function	Possible malfunctions Remedy
(8) Particle filter error (red)	- Lights up when the particle filter control system is activated, if the load period of the particle filter exceeds 8.5 h - Additionally, a buzzer sounds and an error code appears in the text field (28) in the event of an error in the particle filter control system. The truck moves only at creep speed (approx. 2 km/h).	Regenerate the particle filter immediately
		Error in the particle filter control system
(9) Symbol without function		
(10) Water in the fuel filter (yellow) (special equipment)	- Lights up if water has collected in the fuel filter - Additionally, a buzzer sounds if the warning light is activated for more than 5 seconds	Drain water from the fuel filter
		Switch off the buzzer with the reset button (22)
(11) Hydraulic oil microfilter indicator (yellow) (special equipment)	- Lights up if the pressure filters require maintenance work.	Microfilter clogged, change it
(12) Level display for diesel tank, LPG tank/replacement cylinders or CNG tank (green or red depending on the fuel level)	Shows the current fuel level in the diesel tank, the current level in the LPG tank/replacement cylinders or the current level in the CNG tank.	
(13) Symbol for "Particle filter"	- Lights up if the particle filter control system is active.	
(14) Symbol without function		
(15) "Service interval exceeded" symbol	If the number of operating hours until the next service is less than or equal to zero, the symbol flashes for 10 seconds every time the truck is started, and then lights up continuously.	The display can only be reset using the diagnostic program.
(16) Operating hours symbol	Flashes when operating hours are being counted (only when the ignition is on and the engine speed exceeds 300 rpm).	

3 Overview

Display unit

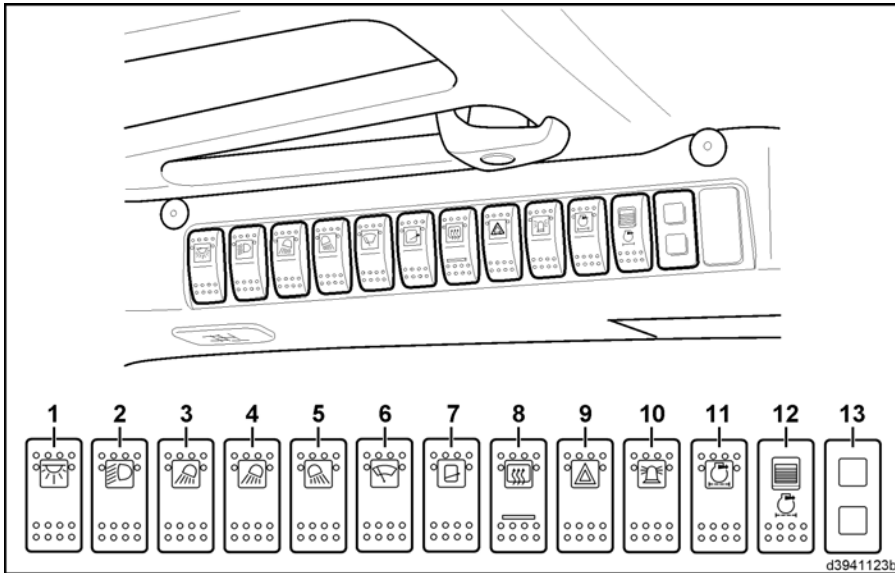
Display element	Function	Possible malfunctions Remedy
(17) Operating hours display	Indicates the operating hours of the truck. This display is evidence of the truck's operating time and of the inspection and maintenance work to be performed.	If a faulty display unit is replaced, the operating hours up to that point must be recorded. Affix the data on an embossed strip near the display unit. There is also the option of updating the new display unit at a later time.
(18) Symbol without function		
(19) Clock display (am/pm)	For 12-hour format: am = morning pm = afternoon	The diagnostic program can be used to reset the display to a 12-hour clock.
(20) Symbol without function		
(21) Function key	- Adjusting the time - Scrolling through error messages	
(22) Reset button	- Adjusting the time - Scrolling through error messages - Turning off the warning sound	
(23) Time display	24-hour clock display. Adjustable using the (21) and (22) push buttons.	The diagnostic program can be used to reset the display to a 12-hour clock.
(24) "Do not start the engine" symbol	- Lights up when the engine has stalled. (A block against repeat starting is active and the engine cannot be started).	Always leave the ignition switched on until the symbol goes out. Then repeat the start attempt.
(25) "Parking brake" symbol	- Lights up if the parking brake is activated	
(26) "Operating hours until the next service" symbol	After the ignition has been switched on, display field (17) shows the operating hours until the next service (counting backwards). Symbol (26) lights up. After 5 seconds, symbol (26) goes out and display (17) switches automatically to the truck's operating hours; the operating hours symbol (16) flashes.	
(27) Symbol for "Seat belt not fastened" (special equipment)	- Lights up if seat belt was not fastened	Fasten the seat belt

Display element	Function	Possible malfunctions Remedy
Text field (28)	Serves as display field for error code display and charge status display for the particle filter (in line 1).	Charge status display: - 0 symbols blacked out => particle filter empty - 11 symbols blacked out => particle filter full
(29)"Lift mast positioning" symbol (special equipment)	- Lights up when the "Lift mast positioning" function is activated	
Display (30)	Serves as a text display and symbol display	
(31) Air filter vacuum indicator (yellow)	- Lights up when the air filter is excessively clogged.	Air filter clogged, change it.
(32) Coolant level indicator (yellow)	- Lights up when the coolant level is below the minimum When the "Engine protection"* function is activated): - Truck moves at creep speed (approx. 2 km/h) Display in the text field (28): - Error code X203	Top up the coolant.
(33) Glow plug indicator (yellow)	Function only available on diesel trucks: - Lights up whilst the glow plugs are preheating, then goes out - Flashes when a malfunction exists in the engine or in the engine control unit.	Identify the error using the diagnostic program.
(34) Gas system error light (red)	Function only available on LPG trucks: - Lights up if an error is detected in the gas system.	Identify the error using the diagnostic program.
(35) Engine malfunction warning light (yellow)	- Lights up if an error is detected by the engine control unit.	Identify the error using the diagnostic program.
*) The "Engine protection" function (special equipment) can be disabled using the diagnostic program. Contact your authorised dealer.		

3 Overview

Switch panel

Switch panel



The switch panel is mounted at the top right of the overhead guard.

- | | | | |
|---|---|----|--|
| 1 | Interior lighting | 7 | Roof panel wiper - intermittent mode or continuous operation on/off (washer system is activated) |
| 2 | Standard or higher lighting | 8 | Rear window heating |
| 3 | Working spotlight position 1/2 | 9 | Hazard warning light |
| 4 | Working spotlight position 3/4 or working spotlight position 5/6 | 10 | Rotating beacon or flashing beacon |
| 5 | Working spotlight position 7/8 | 11 | Particle filter starting switch |
| 6 | Front windscreen wiper and rear window wiper — continuous operation on/off (inter-) | 12 | Particle filter stop/reset switch |
| | | 13 | Changing particle filter system error light |



NOTE

The configuration of the switch panel and arrangement of individual switches may vary, depending on the version. Observe the switch symbols.

4

Operation

Service plan before initial commissioning

	Carried out	
	✓	✗
Engine		
Fill up with fuel		
Check the engine oil level		
Checking the coolant level		
Regenerate the particle filter		
Chassis frame		
Tighten wheel fastenings		
Check the tyre pressure		
Checking the brake system		
Check steering system.		
Electrics / Electronics		
Battery: check condition, acid level and acid density		
Hydraulics		
Hydraulic system: Check the oil level.		
Check lifting system and attachments.		

Running-in instructions

The truck can be operated quickly immediately. Avoid high sustained loads on the working hydraulics and on the travel drive in the first 50 hours. The wheel fasteners must be tightened before the commissioning and after each wheel change. Then after 100 service

hours minimum. Tighten opposite wheel fasteners to a torque of

Front: 425 Nm

Rear: 640 Nm

Pre-shift-checks

	Carried out	
	✓	✗
Engine		
Check the fuel level		
Check the engine oil level		
Checking the coolant level		
Chassis frame		
Check the tyre pressure		
Check the condition of the antistatic belt (only when using tyres that are not antistatic)		
Hydraulics		
Hydraulic system: Check the oil level.		

4 Operation

Standard equipment

Standard equipment

Entering and exiting the truck

WARNING

Entering and exiting the truck can result in injuries to the feet or back.

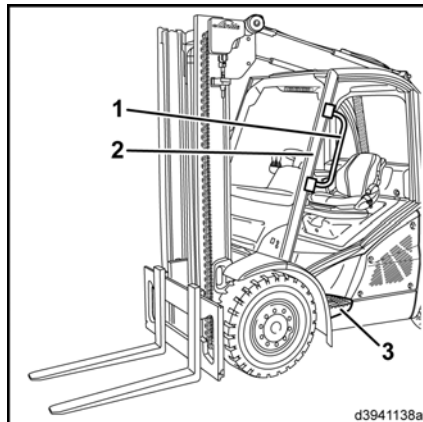
Always face the truck when you enter or exit the truck.



NOTE

Do not use the steering wheel or the actuating levers as an aid to get in or out.

- Use handle (1) (special equipment) or longitudinal member (2) and step (3).



Adjusting the standard driver's seat and comfort driver's seat

WARNING

If the seat is not adjusted correctly, this may cause injury to the driver's back. The adjustment controls for the driver's seat should not be used during operation.

Before starting the truck and whenever changing drivers, adjust the seat to correspond to the driver's weight and make sure that the settings have all engaged properly. Do not place any objects in the driver's rotation range.

i NOTE

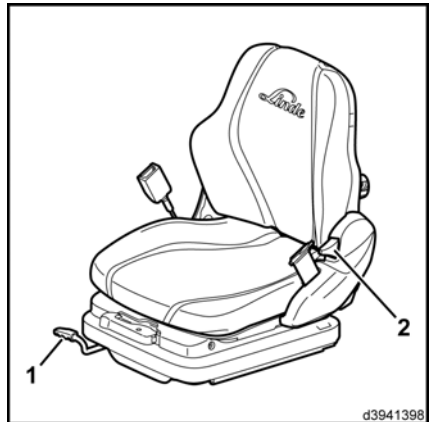
Sitting for long periods of time puts a lot of pressure on the spine. Try to compensate for this by performing regular simple gymnastic movements.

Longitudinal adjustment

- Pull lever (1) upwards.
- Move the driver's seat backwards or forwards on the runners to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.
- Allow lever (1) to snap into place.

Adjusting the seat backrest

- Push lever (2) upwards and hold in place.
- Move the seat backrest forwards or backwards until a comfortable seating position for the driver is found.
- Release lever (2).

**Setting the driver's weight****i NOTE**

The individual driver's weight must be set when the driver's seat is under load.

- Check the weight setting in the inspection window (4).

The correct driver's weight has been set when the arrow is in the centre position in the inspection window (4).

Adjust the driver's weight as necessary.

- Pull out the lever (3).
- Move the lever (3) upwards for a heavier weight.
- Move the lever (3) downwards for a lighter weight.



4 Operation

Standard equipment

Adjusting the lumbar support (only with a comfort driver's seat) ▷

NOTE

The lumbar support enables optimum configuration of the seat back contour to the driver's body.

➤ Turn knob (5) to the left or right.

The extent to which the lower and upper areas of the backrest are curved is adjusted individually.



Adjusting the height-adjustable comfort driver's seat

WARNING

If the seat is not adjusted correctly, this may cause injury to the driver's back. The adjustment controls for the driver's seat should not be used during operation.

Before starting the truck and whenever changing drivers, adjust the seat to correspond to the driver's weight and make sure that the settings have all engaged properly. Do not place any objects in the driver's rotation range.

NOTE

Sitting for long periods of time puts a lot of pressure on the spine. Try to compensate for this by performing regular simple gymnastic movements.

Longitudinal adjustment

- Pull lever (1) upwards.
- Move the driver's seat backwards or forwards on the runners to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.
- Allow lever (1) to snap into place.

Adjusting the seat backrest

- Push lever (2) upwards and hold in place.
- Move the seat backrest forwards or backwards until a comfortable seating position for the driver is found.
- Release lever (2).



d3941400

Setting the driver's weight



NOTE

The individual driver's weight must be set when the driver's seat is under load.

- Check the weight setting in the inspection window (4).

The correct driver's weight has been set when the arrow is in the centre position in the inspection window (4).

Adjust the driver's weight as necessary.

- Pulling the lever (3) upwards signifies a higher weight.
- Pushing the lever (3) downwards signifies a lower weight.



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4 Operation

Standard equipment

Adjusting the lumbar support



NOTE

The lumbar support enables optimum configuration of the seat back contour to the driver's body.

- Turn knob (5) to the left or right.

The extent to which the lower and upper areas of the backrest are curved is adjusted individually.



Adjusting the seat height

Adjust the seat height as required.

- Pulling the lever (3) upwards means that the seat moves upwards.
- Pushing the lever (3) downwards means that the seat moves downwards.



NOTE

After making the adjustment, the arrow in the inspection window (4) may deviate somewhat from the centre position.



Adjusting the luxury driver's seat



WARNING

If the seat is not adjusted correctly, this may cause injury to the driver's back. The adjustment controls for the driver's seat should not be used during operation.

Before starting the truck and whenever changing drivers, adjust the seat to correspond to the driver's weight and make sure that the settings have all engaged properly. Do not place any objects in the driver's rotation range.

i NOTE

Sitting for long periods of time puts a lot of pressure on the spine. Try to compensate for this by performing regular simple gymnastic movements.

Longitudinal adjustment

- Pull lever (1) upwards.
- Move the driver's seat backwards or forwards on the runners to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.
- Allow lever (1) to snap into place.

Adjusting the seat backrest

- Push lever (2) upwards and hold in place.
- Move the seat backrest forwards or backwards until a comfortable seating position for the driver is found.
- Release lever (2).

**Setting the driver's weight**

The correct driver's weight will be set automatically if the ignition is switched on and the driver's seat is occupied.

4 Operation

Standard equipment

Adjusting the seat angle

- Pull lever (3) upwards.

The seat surface is moved to the desired position by applying pressure to the seat surface or removing pressure from it.

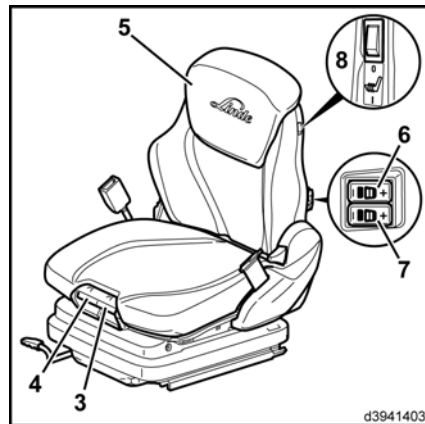
Adjusting the seat depth

- Pull lever (4) upwards.

The seat surface can be moved to the desired position by sliding the seat surface forwards or backwards.

Adjusting the backrest extension

- Push backrest extension (5) in or pull it out for individual adjustment.



Adjusting the lumbar support



NOTE

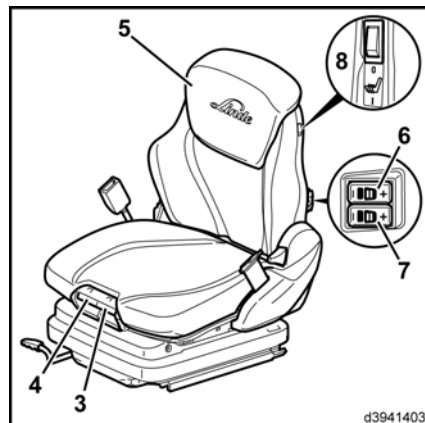
The lumbar support enables optimum configuration of the seat back contour to the driver's body.

- Press button (6).

The extent to which the upper area of the backrest is curved is adjusted individually.

- Press button (7).

The extent to which the lower area of the backrest is curved is adjusted individually.



Activating the seat heater (luxury driver's seat)

- Push the switch (8) downwards to activate the seat heater.
- Push the switch (8) upwards to deactivate the seat heater.



NOTE

The maximum temperature is predefined.

Adjusting the luxury active driver's seat

The luxury active driver's seat is operated in exactly the same way as the luxury driver's seat. Only the activation of the seat heater is different.

Activating the seat heater (luxury active driver's seat)

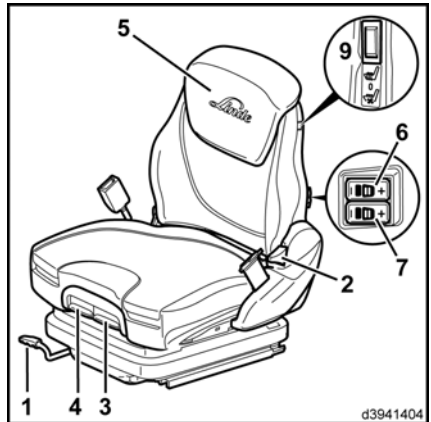
- Push the switch (9) upwards to activate the seat heater.
- Push the switch (9) to the centre position to deactivate the seat heater.

Activating the seat air-conditioning (luxury active seat)

- Push the switch (9) downwards to activate the seat air-conditioning.
- Push the switch (9) to the centre position to deactivate the seat air conditioning.

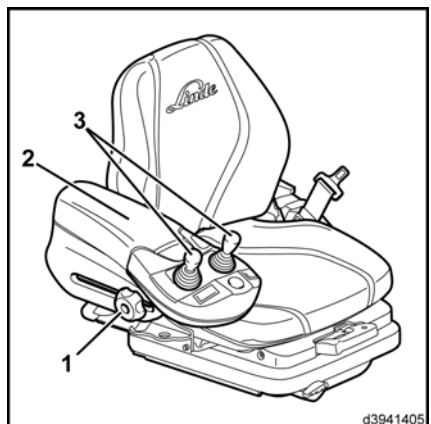
NOTE

The maximum temperature is predefined.



Adjusting the armrest

- Sit on the driver's seat and release clamping screw (1).
- Move armrest (2) upwards/downwards and forwards/backwards until the arm is comfortably supported and the joysticks (3) can be easily reached.
- Tighten clamping screw (1).



Adjusting the steering column

⚠ DANGER

Safe driving is not guaranteed with the clamping screw open.

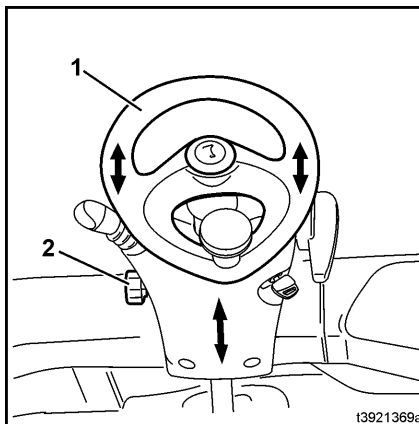
Only adjust the steering column when the vehicle is stationary.

Angle adjustment

- Undo the clamping screw (2) anticlockwise. ▷
- Move the steering wheel (1) into the required position.
- Tighten the clamping screw (2) clockwise.

Height adjustment (special equipment)

- Undo the clamping screw (2) anticlockwise.
- Move the steering wheel (1) into the required position by pulling it upwards or pushing it downwards.
- Tighten the clamping screw (2) clockwise.



Setting the clock

i NOTE

The time is displayed in 24-hour format. It is possible to change to 12-hour format using the diagnostic device. Please contact your authorised dealer.

- Press both push buttons (2) and (3) simultaneously for 3 seconds. ➤

The hour readout in the time display (1) blinks.

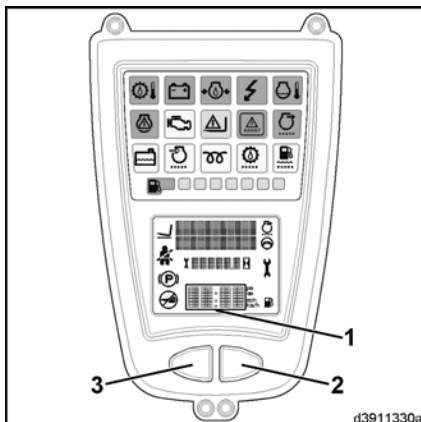
NOTE

The hours or minutes can be adjusted gradually by pressing push button (2) or quickly by holding down the push button.

- Depress button (2) to set the hours.
- Depress button (3) to confirm the hour setting.

Now the minute readout blinks.

- Depress button (2) to set the minutes
- Depress button (3) to confirm the setting of the minutes.



Seat belt



DANGER

There is a risk to life if the driver leaves the vehicle in an uncontrolled manner.

For this reason, the seat belt must always be worn when operating the truck! The seat belt should only be worn by one person.

WARNING

The seat belt must function perfectly.

For this reason, the belt should not become twisted, trapped or tangled. The belt buckle and belt retractor should be protected from foreign bodies, damage and dirt.

NOTE

Driver's cabs with fixed closed doors or bracket doors meet the safety requirements for driver restraint systems. The seat belt may also be used. It must, however, be fastened when driving with doors that are open or have been removed. PVC doors do not constitute a driver restraint system. For trucks with the

4 Operation

Standard equipment

"speed reduction" special function, the seat belt must be worn even at the reduced speed.

The automatic blocking mechanism prevents the belt from being extended whenever the industrial truck is on a steep slope. It is then not possible to pull the belt any further out of the retractor. To release the automatic blocking mechanism, carefully move the industrial truck so that it is no longer positioned on a slope.

While using the truck (e.g. driving, operating lift mast etc.), adopt a sitting position as far back as possible so that the driver's back rests against the seat backrest. The belt retractor automatic blocking mechanism offers sufficient freedom of movement on the seat for normal use of the truck.

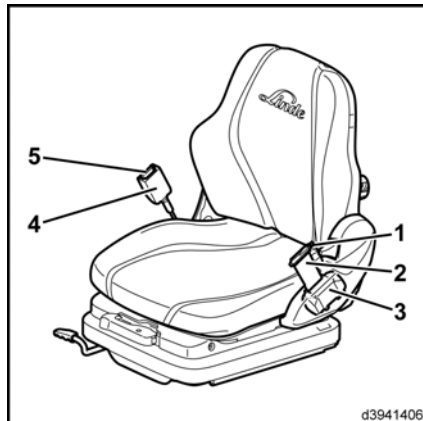
Fastening the seat belt

- Pull the seat belt (2) smoothly out of the retractor to the left.
- Position belt over the lap, not over the stomach.
- Snap the buckle guide (1) into place in the buckle (4).
- Check seat belt tension.

The belt must fit close to the body.

Unfastening the seat belt

- Push the red button (5) on the buckle (4).
- Manually feed the buckle guide (1) back into the retractor (3).



NOTE

The automatic blocking mechanism may be triggered if the web belt runs in too quickly and the buckle guide strikes the housing. The web belt cannot be pulled out with the usual force.

Drive engine (dual-pedal operation)

Starting the engine



⚠ DANGER

Risk of poisoning!

Do not allow the engine to run in unventilated areas.



NOTE

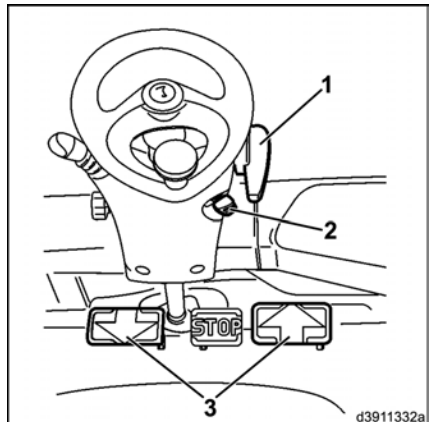
Where possible, avoid frequently starting and stopping the engine over short periods of time, since this prevents the internal combustion engine from reaching its operating temperature. Frequent cold starts increase wear.

- The actuating lever (joystick) must be in the neutral position.
- Sit down on the driver's seat.
- Fasten the seat belt.
- Place both feet on the accelerator pedals (3).
- Turn the parking brake lever (1) in a clockwise direction until it engages.

The parking brake is actuated (it is only possible to start the engine with the parking brake actuated).

- Insert the switch key (2) into the ignition and starting switch and turn from the zero position to position "I".

The electrical system is switched on.



4 Operation

Standard equipment

- Look at the display unit (4).



NOTE

After the ignition has been switched on, the display unit will perform a self-test. The displays all light up for approx. 2 seconds and the operating hours until the next service are displayed for 5 seconds in the display unit (4) display field (10). During this time the symbol (13) remains lit. After 5 seconds the display reverts automatically to the operating hours. If the buzzer sounds (particle filter system fault), check the lights (see Malfunctions, Causes and Remedies — diesel engine). If the buzzer continues to sound, please contact your local authorised dealer. If the symbol (9) flashes or lights up, the set service interval has been exceeded. The maintenance work that is due must be performed. Please contact your authorised dealer.

The following indicators light up:

- Parking brake applied symbol (12)
- Engine oil pressure indicator (6)
- Charging indicator (5)
- Glow plug indicator (14)
- Particle filter symbol (7) (only if particle filter is present).

- Wait until the glow plug indicator (14) goes out

- Turn switch key to position "II".

As soon as the engine starts:

- Release the switch key.

Symbol (8) flashes.

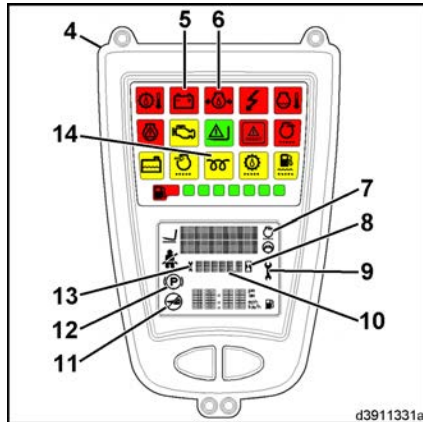
⚠ CAUTION

Only in trucks with a particle filter system. If the exhaust continues to be very smoky, switch off the truck. Please contact your authorised dealer.

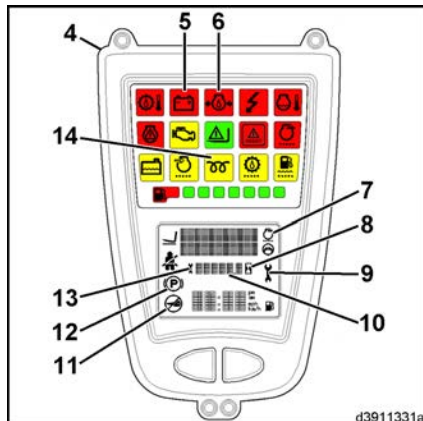
Every time the engine is started, watch the exhaust port for about 5 seconds.

If the engine fails to start:

- After the glow plugs have heated up, keep turning the starter motor until the engine runs at idle speed. Depending on the truck,



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temperature and altitude, this may take more than 1 minute.

If the engine stalls, the "Do not start the engine" symbol will appear (11).

 NOTE

A block against repeat starting is active and the engine cannot be started.

- Always leave the ignition switched on until the symbol goes out.
- Then try to restart.

Leave a break of at least 1 minute between each engine start to protect the battery. If the engine still does not start at the third attempt, see: Malfunctions, Causes and Remedies.

The charging and engine oil pressure indicators must go out as soon as the engine is running smoothly.

The engine speed is controlled automatically, depending on the load on the engine.

 NOTE

Do not allow the engine to warm up at idle speed. When under load, drive the truck at a brisk speed. The engine will quickly reach its operating temperature.

Switching off the engine

 CAUTION

For engines with a turbocharger, the high speed of the turbocharger shaft (approx. 100,000 rpm at full load) could cause the shaft bearing to run dry through lack of lubrication, thus damaging it.

Do not switch off the engine when under full load, instead allow it to run on for a few minutes at low speed.

4 Operation

Standard equipment

- Take your feet off the accelerator pedals (3).
- Turn the switch key (2) to the zero position.



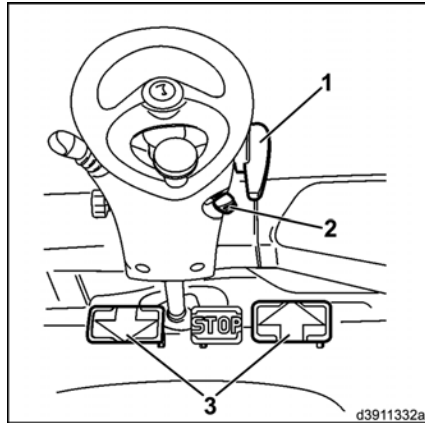
NOTE

The brake is applied when the engine is switched off.

- Turn the parking brake lever (1) in a clockwise direction until it engages.

The parking brake is now applied.

- Remove the switch key (2) when leaving the truck.



Driving (dual-pedal operation)

⚠ WARNING

It is generally not permitted to drive on long gradients over 15% due to specified minimum braking and stability values. Please contact your authorised dealer before driving on larger gradients. The climbing capability values given in the type sheet have been determined from the pulling force and only apply when overcoming obstacles on the roadway and for small height differences.

You should always adapt your driving to the conditions of the route used (unevenness etc.), especially hazardous work areas and your load.

⚠ WARNING

When using mirrors, remember that the rear-view mirror is only designed for monitoring the area behind the vehicle.

Reverse travel is therefore only permitted when looking directly behind you.

⚠ CAUTION

Any side doors attached must be protected from damage when driving.

Please therefore ensure that both side doors are closed and locked before setting off.

i NOTE

The forklift truck can only be driven with the driver's seat under load.

- Start the engine.
- Slightly raise fork arms and tilt lift mast back.
- Release the parking brake (unlock the parking brake lever (1) and move it downwards as far as the stop).

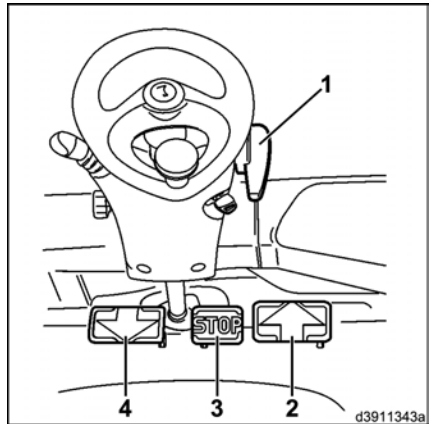
Forwards travel

- Carefully operate the right accelerator pedal (2).

The driving speed of the truck increases as the actuation distance of the pedal increases.

i NOTE

Pressing down the accelerator pedal hard is to no advantage as the maximum acceleration rate is controlled automatically.

**Reverse travel**

- Carefully operate the left accelerator pedal (4).

The truck will reverse slowly or quickly depending on the accelerator pedal position.

Changing direction of travel

- Release accelerator pedal pressed.

The hydrostatic drive will act as a service brake.

- Press the accelerator pedal for the opposite direction of travel.

The forklift truck will now accelerate in the specified direction.

- Both feet should be left on the accelerator pedals so that the truck is easily controlled in every driving movement.

The accelerator pedals can be switched over directly. The hydrostatic drive brakes the truck until it comes to a standstill and then accelerates in the opposite drive direction.

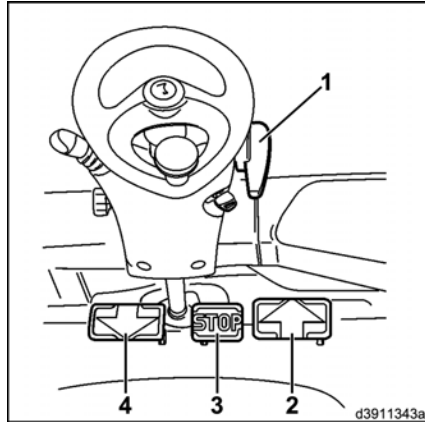
4 Operation

Standard equipment

Approaching gradients

- Press the stop pedal (3) all the way down. ▷
- Release the parking brake lever (1) and move it downwards as far as the stop.
- Take your foot half way off the stop pedal.
- Actuate accelerator pedal (2) or (4).
- Slowly take your foot completely off the stop pedal.

The brake has been released and the truck will now move without rolling backwards.

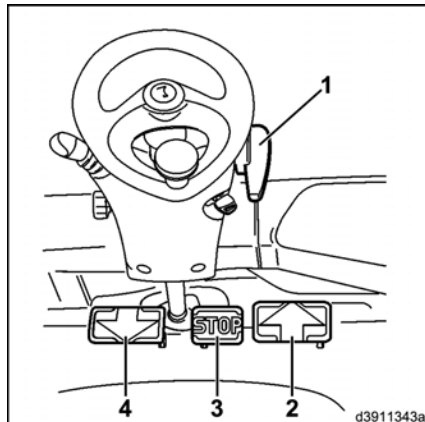


Stopping

- Slowly release the accelerator pedal after pressing it.

The hydrostatic drive will act as a service brake.

- When stopping on inclines, leave both feet on the pedals and press the pedal in the "uphill" drive direction down slightly to counterbalance the slip of the drive. This slip is caused by technical factors.
- If stopping for an extended period of time, press the stop pedal (3). ▷
- If you ever have to leave the truck with the engine still running, e.g. to do minor jobs in the direct vicinity of the truck (opening doors, disconnecting trailers etc.), it is essential to activate the parking brake (turn the parking brake lever (1) in a clockwise direction until it engages), and unlatch the seat belt. If you are leaving the truck for a longer period of time, switch off the engine and activate the parking brake.
- When leaving the truck, remove the ignition key.



Drive engine (single-pedal operation)

Starting the engine



DANGER

Risk of poisoning!

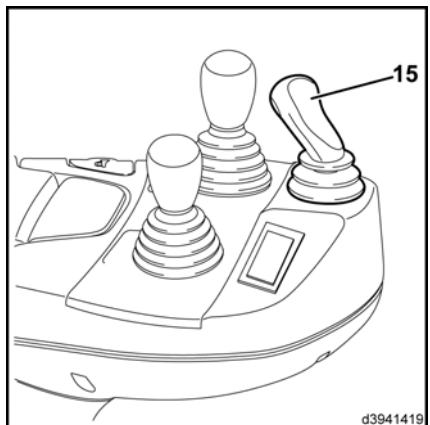
Do not allow the engine to run in unventilated areas.



NOTE

Where possible, avoid frequently starting and stopping the engine over short periods of time, since this prevents the internal combustion engine from reaching its operating temperature. Frequent cold starts increase wear.

- Sit down on the driver's seat.
- Fasten the seat belt.
- Move the actuating lever (joystick and drive direction (15)) into the neutral position. ➤



4 Operation

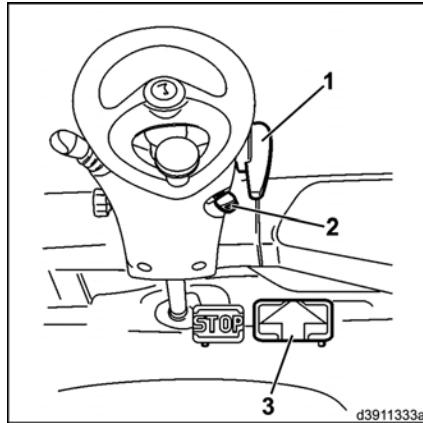
Standard equipment

- Place your foot on accelerator pedal (3).
- Turn the parking brake lever (1) in a clockwise direction until it engages.

The parking brake is actuated (it is only possible to start the engine with the parking brake actuated).

- Insert the switch key (2) into the ignition and starting switch and turn from the zero position to position "I".

The electrical system is switched on.



- Look at the display unit (4).

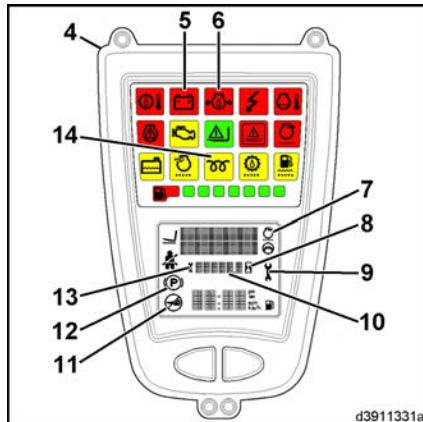


NOTE

After the ignition has been switched on, the display unit will perform a self-test. The display all light up for approx. 2 seconds and the operating hours until the next service are displayed for 5 seconds in the display unit (4) display field (10). During this time the symbol (13) remains lit. After 5 seconds the display reverts automatically to the operating hours. If the buzzer sounds (particle filter system fault), check the lights (see Malfunctions, Causes and Remedies — diesel engine). If the buzzer continues to sound, please contact your local authorised dealer. If the symbol (9) flashes or lights up, the set service interval has been exceeded. The maintenance work that is due must be performed. Please contact your authorised dealer.

The following indicators light up:

- Parking brake applied symbol (12)
- Engine oil pressure indicator (6)
- Charging indicator (5)
- Glow plug indicator (14)
- Particle filter symbol (7) (only if particle filter is present).



- Wait until the glow plug indicator (14) goes out

- Turn switch key to position "II".

As soon as the engine starts:

- Release the switch key.

Symbol (8) flashes.

⚠ CAUTION

Only in trucks with a particle filter system. If the exhaust continues to be very smoky, switch off the truck. Please contact your authorised dealer.

Every time the engine is started, watch the exhaust port for about 5 seconds.

If the engine fails to start:

- After the glow plugs have heated up, keep turning the starter motor until the engine runs at idle speed. Depending on the truck, temperature and altitude, this may take more than 1 minute.

If the engine stalls, the "Do not start the engine" symbol will appear (11).



NOTE

A block against repeat starting is active and the engine cannot be started.

- Always leave the ignition switched on until the symbol goes out.
- Then try to restart.

Leave a break of at least 1 minute between each engine start to protect the battery. If the engine still does not start at the third attempt, see: Malfunctions, Causes and Remedies.

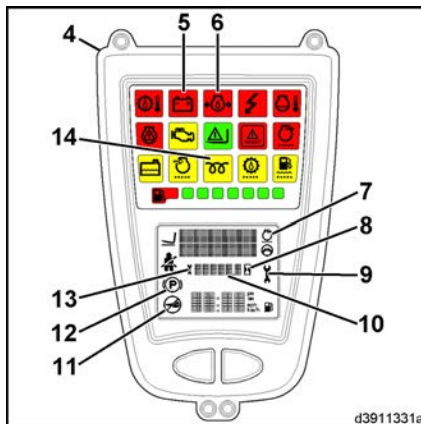
The charging and engine oil pressure indicators must go out as soon as the engine is running smoothly.

The engine speed is controlled automatically, depending on the load on the engine.



NOTE

Do not allow the engine to warm up at idle speed. When under load, drive the truck at a



brisk speed. The engine will quickly reach its operating temperature.

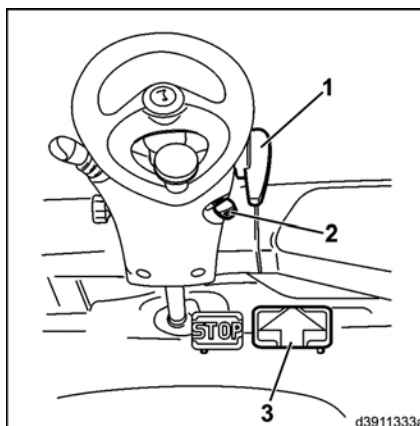
Switching off the engine

⚠ CAUTION

For engines with a turbocharger, the high speed of the turbocharger shaft (approx. 100,000 rpm at full load) could cause the shaft bearing to run dry through lack of lubrication, thus damaging it.

Do not switch off the engine when under full load, instead allow it to run on for a few minutes at low speed.

- Remove foot from accelerator pedal (3).



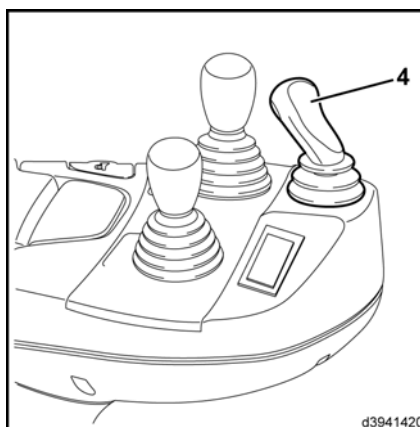
- Move the direction selection lever (4) into the neutral position.
- Turn the switch key (2) to the zero position.



NOTE

The brake is applied when the engine is switched off.

- Turn the parking brake lever (1) in a clockwise direction until it engages.
- Remove the switch key (2) when leaving the truck.



Driving (single-pedal operation)

WARNING

It is generally not permitted to drive on long gradients over 15% due to specified minimum braking and stability values. Please contact your authorised dealer before driving on larger gradients. The climbing capability values given in the type sheet have been determined from the pulling force and only apply when overcoming obstacles on the roadway and for small height differences.

You should always adapt your driving to the conditions of the route used (unevenness etc.), especially hazardous work areas and your load.

WARNING

When using mirrors, remember that the rear-view mirror is only designed for monitoring the area behind the vehicle.

Reverse travel is therefore only permitted when looking directly behind you.

CAUTION

Any side doors attached must be protected from damage when driving.

Please therefore ensure that both side doors are closed and locked before setting off.



NOTE

The forklift truck can only be driven with the driver's seat under load.

- Start the engine.
- Slightly raise fork arms and tilt lift mast back.

4 Operation

Standard equipment

- Release the parking brake (unlock the parking brake lever (1) and move it downwards as far as the stop).

Forwards travel

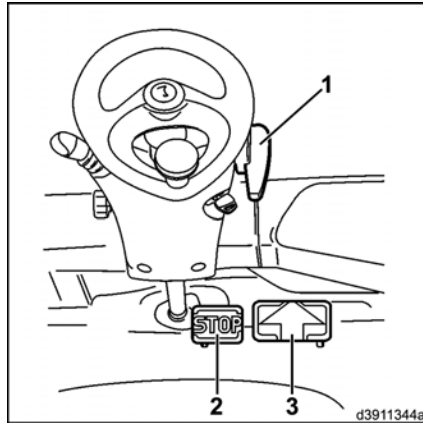
- Move the direction of travel lever (4) forwards.
- Press the accelerator pedal (3) carefully.

The driving speed of the truck increases as the actuation distance of the pedal increases.



NOTE

Pressing down the accelerator pedal hard is to no advantage as the maximum acceleration rate is controlled automatically.



Reverse travel

- Move the direction of travel lever (4) backwards.
- Press the accelerator pedal (3) carefully.

The truck will reverse slowly or quickly depending on the accelerator pedal position.

Changing direction of travel

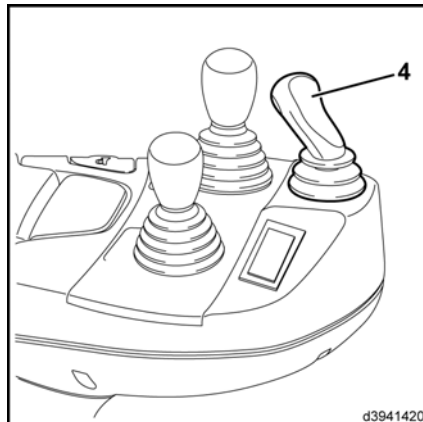
- Release accelerator pedal.

The hydrostatic drive will act as a service brake.

- Operate direction selection lever (4) for the opposite drive direction.

The forklift truck will now accelerate in the specified direction.

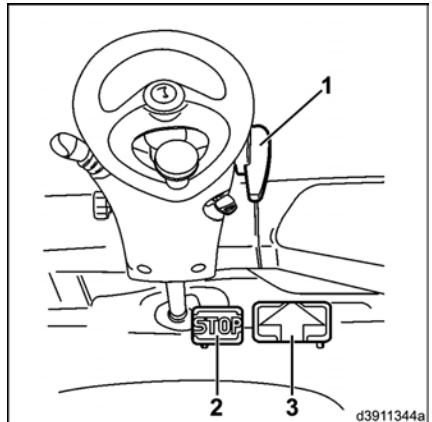
The direction selection lever can be switched over directly. The hydrostatic drive brakes the truck until it comes to a standstill and then accelerates in the opposite drive direction.



Approaching gradients

- Press the stop pedal (2) all the way down.
- Release the parking brake lever (1) and move it downwards as far as the stop.
- Take your foot half way off the stop pedal.
- Press accelerator pedal (3).
- Slowly take your foot completely off the stop pedal.

The brake has been released and the truck will now move without rolling backwards.

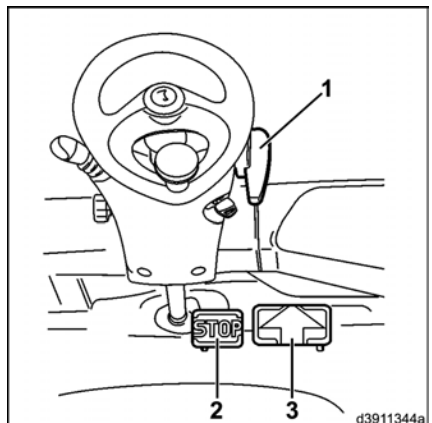


Stopping

- Slowly release the accelerator pedal.

The hydrostatic drive will act as a service brake.

- When stopping on inclines, leave your foot on the accelerator pedal, switch the direction selection lever (4) to "uphill" drive direction and press the pedal down slightly to counterbalance the slip of the drive. This slip is caused by technical factors.
- If stopping for an extended period of time, press the stop pedal (2).
- If you ever have to leave the truck with the engine still running, e.g. to do minor jobs in the direct vicinity of the truck (opening doors, disconnecting trailers etc.), it is essential to activate the parking brake (turn the parking brake lever (1) in a clockwise direction until it engages), and unlatch the seat belt. If you are leaving the truck for a longer period of time, switch off the engine and activate the parking brake.
- When leaving the truck, remove the ignition key.



4 Operation

Standard equipment

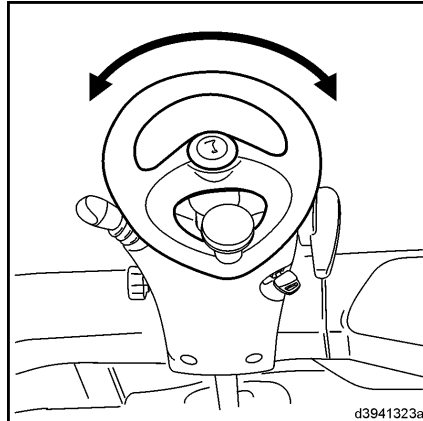
Steering system

Steering

The hydrostatic steering system means that very little effort is required for the steering wheel turning movement. This is particularly advantageous when palletising in narrow aisles.

- Starting and driving.
- Turn the steering wheel to the left and right as far as it will go.

The steering wheel can be moved beyond the stop if sufficient force is applied, without the position of the wheels changing on the steering axle.



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DANGER

The forklift truck must not be driven if the steering system is defective.

If the steering is stiff or has too much play, contact your authorised dealer.

Brake system

Service brake

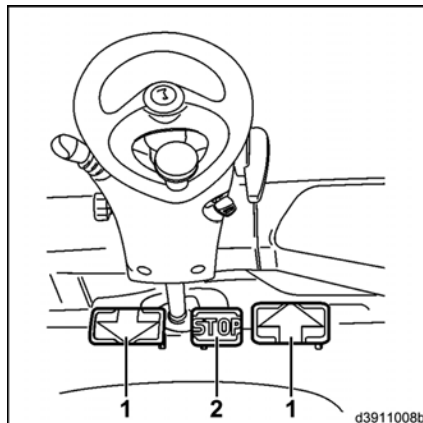
- Allow accelerator pedals (1) to move to the neutral position. 

The hydrostatic drive will act as a service brake. Slow or quick release of the accelerator pedals to the neutral position allows the braking effect to be sensitively controlled, from gentle to hard braking.



NOTE

For emergency braking, press the stop pedal (2) positioned between the accelerator pedals. This will result in full application of the brake.



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Stop pedal

The stop pedal (2) is not a sensitive service brake but a sharply applied parking brake. Its use should be avoided whilst driving, because this can cause the drive wheels to lock and, in

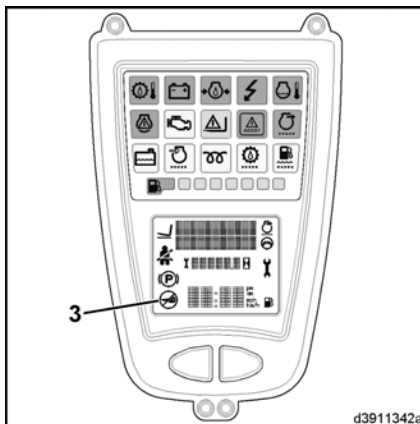
certain circumstances, can cause the load to slip from the fork arms.

In unfavourable situations, the engine can also stall; as a result the "Do not start the engine" symbol (3) appears in the display unit. A block against repeat starting is active and the engine cannot be started. Always leave the ignition switched on until the "Do not start the engine" symbol (3) goes out. In this time, the variable displacement pump of the drive unit swivels to the neutral position. Afterwards, the engine can be started again.



NOTE

It is recommended that drivers familiarise themselves with the function and effect of this brake when there is no load on the truck. For this purpose they should choose a route with no other traffic, travelling at a low speed.



Parking brake

The multi-disc brakes are used as the parking brake of the fork-lift truck.

Operating the parking brake

- Turn the parking brake lever (2) in a clockwise direction to the stop.

The interlock (1) engages and the symbol in the display unit lights up.

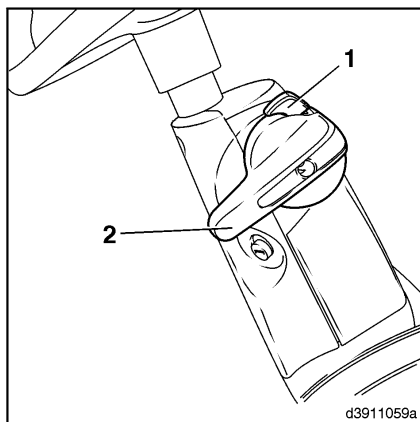
Releasing the parking brake



NOTE

The multi-disc brake will release only if the engine is running.

- Turn the parking brake lever (2) gently in a clockwise direction to release the interlock.



4 Operation

Standard equipment

- Press the button (1).

The parking brake is unlocked.

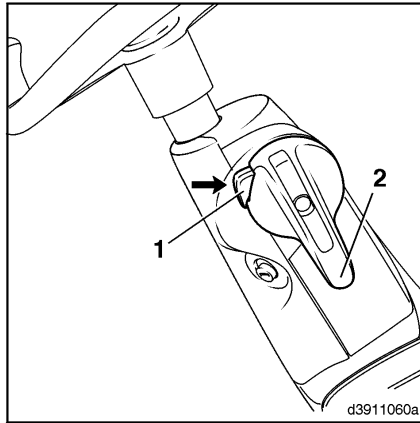
- Move the parking brake (2) down as far as the stop.

The symbol on the indicator unit will go out.

DANGER

The forklift truck must not be driven if the braking system is defective.

Should there be any defects or wear apparent in the brake system, please contact your authorised dealer at once.

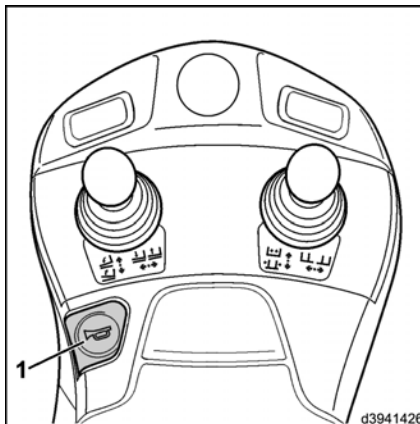


Signal horn

Operating the horn

The horn is used as a warning signal, e.g. at blind spots and junctions.

- Push in the horn button (1) on the armrest until the horn sounds.



Joystick with central lever operation



⚠ WARNING

There is a risk of becoming trapped between parts due to the moving lift mast or the attachment.

Therefore, never reach into or enter the lift mast or the area between the lift mast and the truck.

The lifting system and attachments should only ever be used for their proper purpose.

Drivers must be instructed in the handling of the lifting system and attachments.

Bear the maximum lift height in mind.

i NOTE

When working with a shovel, see "Using the truck during shovel operation".

Operating the lift and tilt attachments

i NOTE

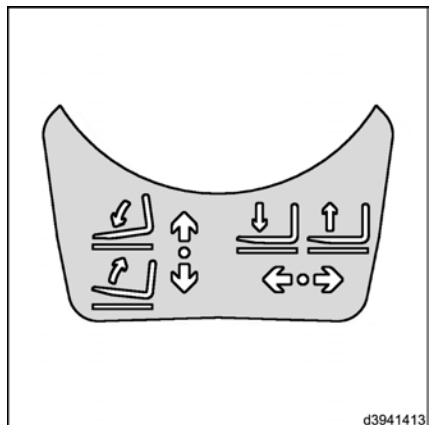
On the version with central lever operation, moving the joystick to an intermediate position (approx. 45°) will activate both functions at the same time (e.g. lifting and tilting).

- Take note of the switching symbols with arrows.

The joystick must always be operated gently, never jerkily. Moving the joystick determines the lifting, lowering and tilt speed. After the joystick is released, it automatically returns to its initial position.

i NOTE

The joysticks only function when the engine is running and the driver is sitting in the driver's seat.



4 Operation

Standard equipment

Lifting the fork carriage

DANGER

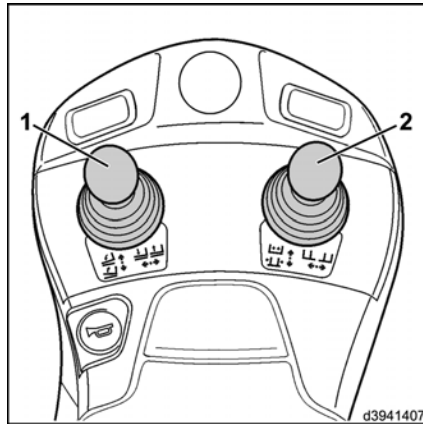
There is an increased risk of falling and crushing when lifting the lift mast.

For this reason, it is not permitted to step onto the raised fork arms.

- Push joystick (1) to the right.

Lowering the fork carriage

- Push joystick (1) to the left.

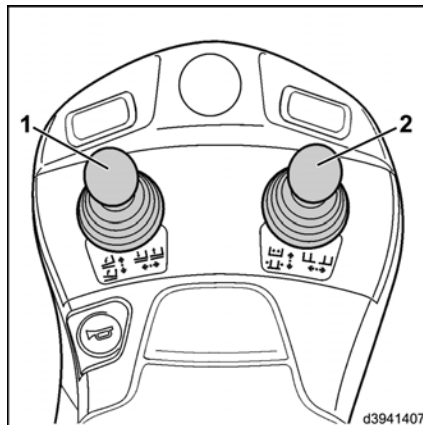


Tilting the lift mast forwards

- Push the joystick (1) forwards.

Tilting the lift mast back

- Pull the joystick (1) backwards.



Operating the attachments

Attachments can be fitted to the truck as special equipment (e.g. sideshift, fork prong positioner, clamp etc.). Refer to the working pressure and operating instructions for the attachment. An additional joystick (cross lever) is attached for operation.



NOTE

Before fitting an attachment, depressurisation (special equipment) can be performed to depressurise the hydraulic system for the auxiliary hydraulics so that the connection on the attachment can be affixed to the connection on the fork carriage (see "Depressurisation" under special equipment).

⚠ CAUTION

Attachments affect the load capacity and stability of the truck.

Attachments that are not supplied with the truck should only be used if the authorised dealer has checked that the arrangement in terms of load capacity and stability ensures safe operation.

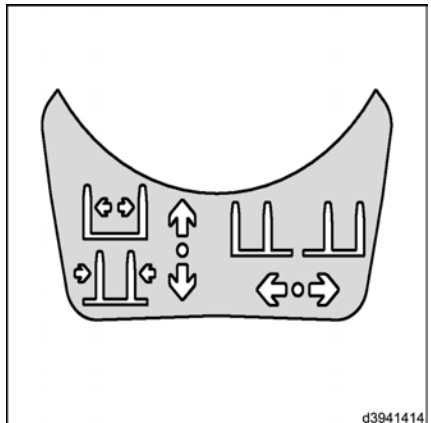
i NOTE

The methods of attachment operation described here are examples. The configuration of the joystick may vary depending on your truck's equipment.

- Take note of the switching symbols with arrows.

i NOTE

For every attachment, a label stating the load capacity of the truck plus attachment (for a description, see "Additional capacity rating plate for attachments") must be affixed within the driver's range of vision and a symbol label for the relevant attachment must be affixed behind the joystick.

**Operating the sideshift****i NOTE**

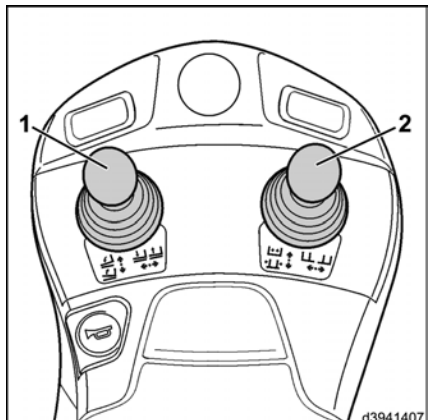
In order to prevent damage, do not activate the sideshift when the fork arms are on the ground.

- Push joystick (2) to the left.

Sideshift moves to the left.

- Push joystick (2) to the right.

Sideshift moves to the right.



4 Operation

Standard equipment

Operating the fork prong positioner

NOTE

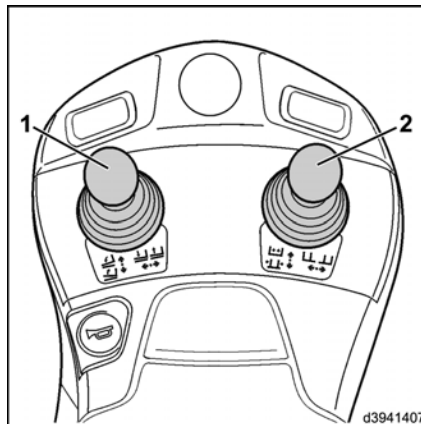
In order to prevent damage, do not activate the fork prong positioner with a load, or with the fork arms on the ground. Do not use the fork prong positioner as a clamp.

➤ Push the joystick (2) forwards.

Fork arms move outwards.

➤ Pull the joystick (2) backwards.

Fork arms move inwards.



Operating the clamp

DANGER

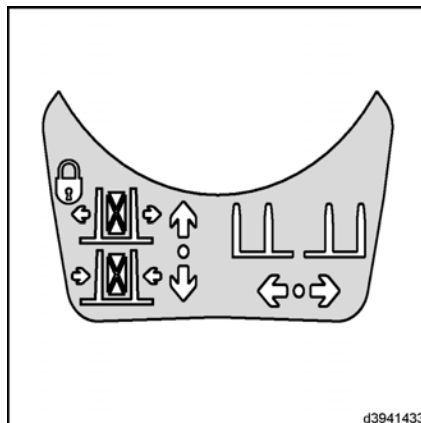
Increased risk of accident from a falling load.

For attachments that perform a clamping function (e.g. a bale clamp), a lockable joystick must be used.

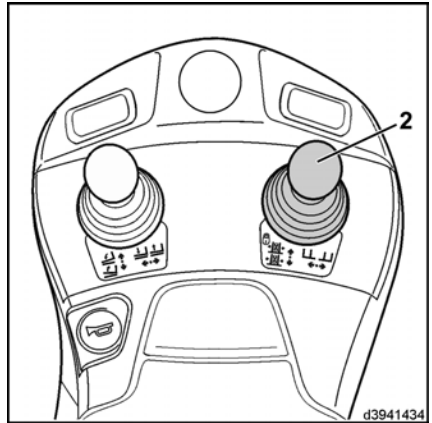
If your truck is not fitted with this equipment, please contact your authorised dealer.

Version 1: Electronically locked

➤ Take note of the switching symbols with arrows.



- Push joystick (2) forwards by at least 40% and then move to the zero position.



Joystick is unlocked for approx. one second and the display (3) lights up in the display unit.



i NOTE

If the joystick is not moved forwards within this time period, it is locked again.

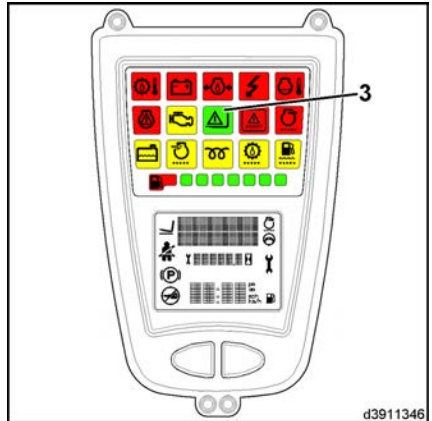
- Push the joystick (2) forwards.

Clamp opens.

Once the joystick has been released, it is locked again within one second.

- Pull the joystick (2) backwards.

Clamp closes.



Version 2: Mechanically locked

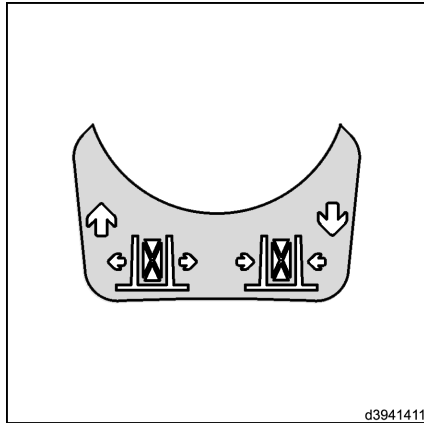
i NOTE

The joystick (single lever) is recognisable by the somewhat wider design of the bellows.

4 Operation

Standard equipment

- Take note of the switching symbols with arrows.



- Unlock the joystick (4) (depending on the version) by pressing the knob downwards.



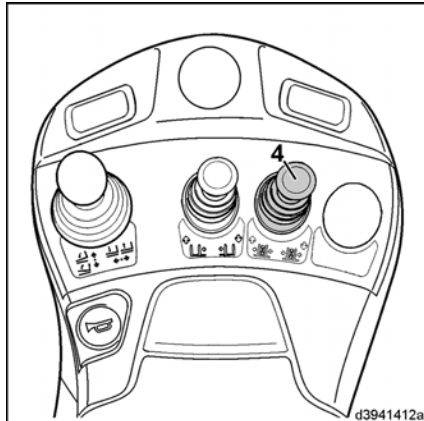
- Push the joystick (4) forwards.

Clamp opens.

- Pull the joystick (4) backwards.

Clamp closes.

Once the joystick has been released, it is locked again.



Joystick with single lever operation



⚠ WARNING

There is a risk of becoming trapped between parts due to the moving lift mast or the attachment.

Therefore, never reach into or enter the lift mast or the area between the lift mast and the truck.

The lifting system and attachments should only ever be used for their proper purpose.

Drivers must be instructed in the handling of the lifting system and attachments.

Bear the maximum lift height in mind.

i NOTE

When working with a shovel, see "Using the truck during shovel operation".

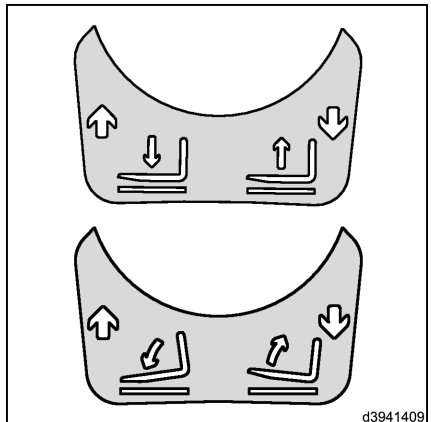
Operating the lift and tilt attachments

- Take note of the switching symbols with arrows.

The joystick must always be operated gently, never jerkily. Moving the joystick determines the lifting, lowering and tilt speed. After the joystick is released, it automatically returns to its initial position.

i NOTE

The joysticks only function when the engine is running and the driver is sitting in the driver's seat.



d3941409

4 Operation

Standard equipment

Lifting the fork carriage

DANGER

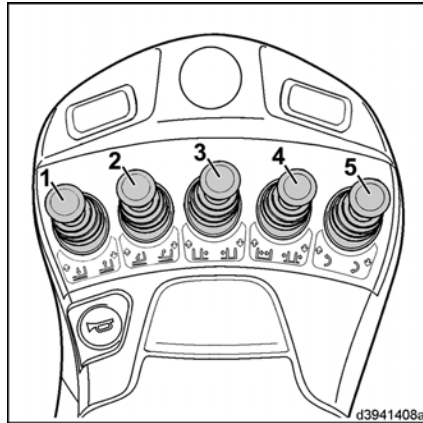
There is an increased risk of falling and crushing when lifting the lift mast.

For this reason, it is not permitted to step onto the raised fork arms.

- Pull the joystick (1) backwards.

Lowering the fork carriage

- Push the joystick (1) forwards.

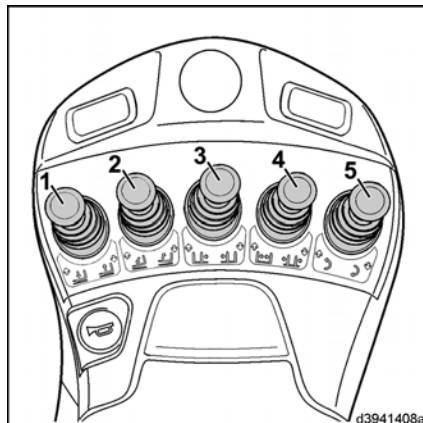


Tilting the lift mast forwards

- Push the joystick (2) forwards.

Tilting the lift mast back

- Pull the joystick (2) backwards.



Operating the attachments

Attachments can be fitted to the truck as special equipment (e.g. sideshift, fork prong positioner, rotator, clamp etc.). Refer to the working pressure and operating instructions for the attachment. Further joysticks are fitted to the truck for the operation of the attachments.



NOTE

Before fitting an attachment, depressurisation (special equipment) can be performed to depressurise the hydraulic system for the auxiliary hydraulics so that the connection on the attachment can be affixed to the connection on the fork carriage (see "Depressurisation" under special equipment).

⚠ CAUTION

Attachments affect the load capacity and stability of the truck.

Attachments that are not supplied with the truck should only be used if the authorised dealer has checked that the arrangement in terms of load capacity and stability ensures safe operation.

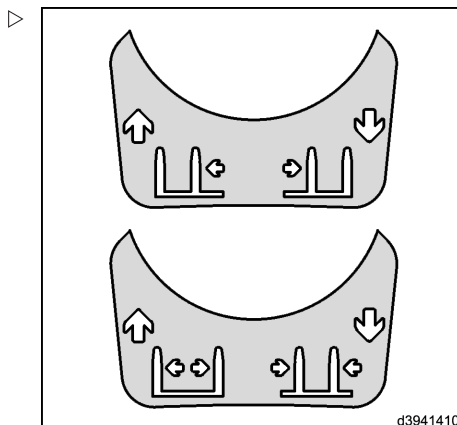
i NOTE

The methods of attachment operation described here are examples. The configuration of the joystick may vary depending on your truck's equipment.

- Take note of the switching symbols with arrows.

i NOTE

For every attachment, a label stating the load capacity of the truck plus attachment (for a description, see "Additional capacity rating plate for attachments") must be affixed within the driver's range of vision and a symbol label for the relevant attachment must be affixed behind the joystick.



d3941410

Operating the sideshift**i NOTE**

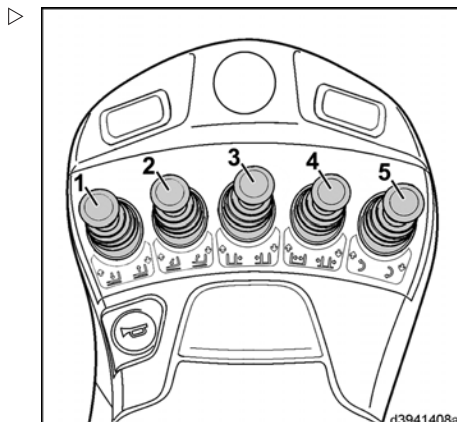
In order to prevent damage, do not activate the sideshift when the fork arms are on the ground.

- Push the joystick (3) forwards.

Sideshift moves to the left.

- Pull the joystick (3) backwards.

Sideshift moves to the right.



d3941408a

4 Operation

Standard equipment

Operating the fork prong positioner

NOTE

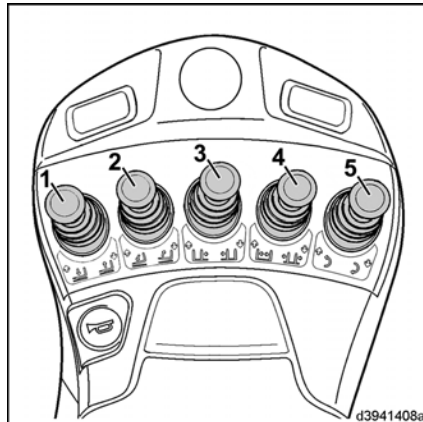
In order to prevent damage, do not activate the fork prong positioner with a load, or with the fork arms on the ground. Do not use the fork prong positioner as a clamp.

➤ Push the joystick (4) forwards.

Fork arms move outwards.

➤ Pull the joystick (4) backwards.

Fork arms move inwards.



Operating the rotator

NOTE

Ensure that there is sufficient distance when the rotator is turning, in order to prevent damage occurring.

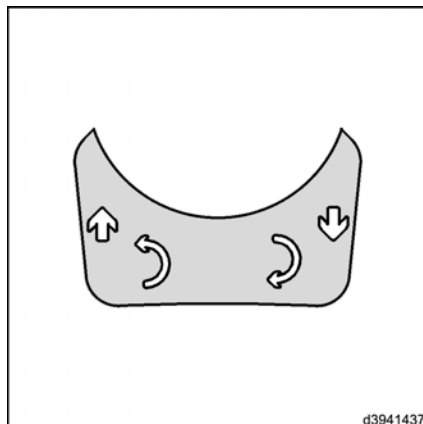
➤ Take note of the switching symbols with arrows.

➤ Push the joystick (5) forwards.

Unit moves anticlockwise.

➤ Pull the joystick (5) backwards.

Unit moves clockwise.



Operating the clamp

DANGER

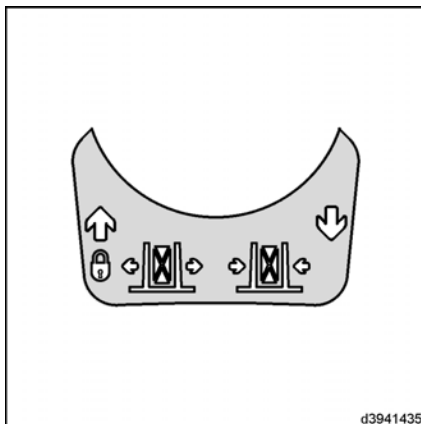
Increased risk of accident from a falling load.

For attachments that perform a clamping function (e.g. a bale clamp), a lockable joystick must be used.

If your truck is not fitted with this equipment, please contact your authorised dealer.

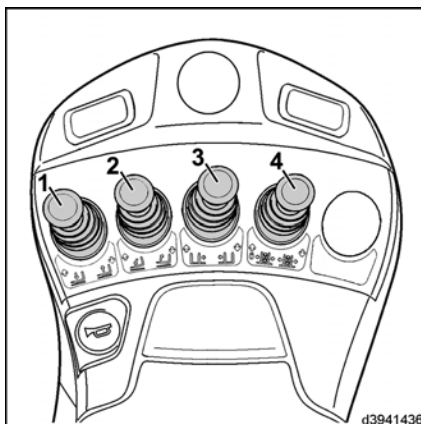
Version 1: Electronically locked

- Take note of the switching symbols with arrows.



d3941435

- Push joystick (4) (depending on the version) forwards by at least 40% and then move to the zero position.



d3941436

4 Operation

Standard equipment

Joystick is unlocked for approx. one second and the display (6) lights up in the display unit. ▷

NOTE

If the joystick is not moved forwards within this time period, it is locked again.

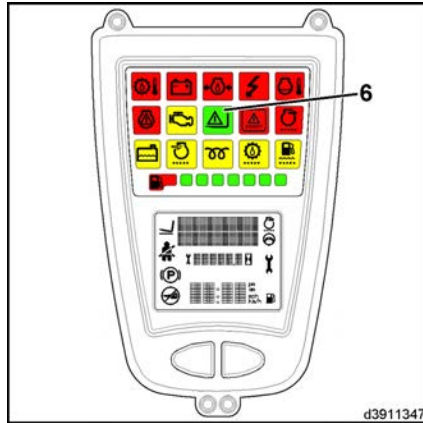
➤ Push the joystick (4) forwards.

Clamp opens.

Once the joystick has been released, it is locked again within one second.

➤ Pull the joystick (4) backwards.

Clamp closes.

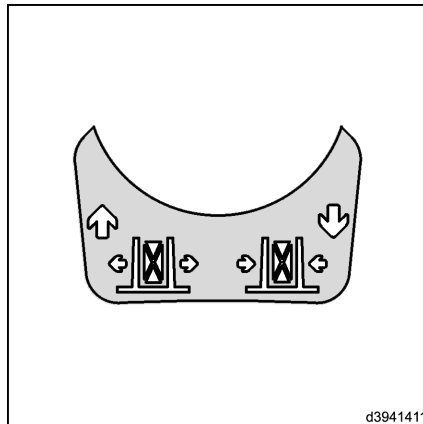


Version 2: Mechanically locked

NOTE

The joystick is recognisable by the somewhat wider design of the bellows.

➤ Take note of the switching symbols with arrows. ▷



➤ Unlock the joystick (4) (depending on the version) by pressing the knob downwards.

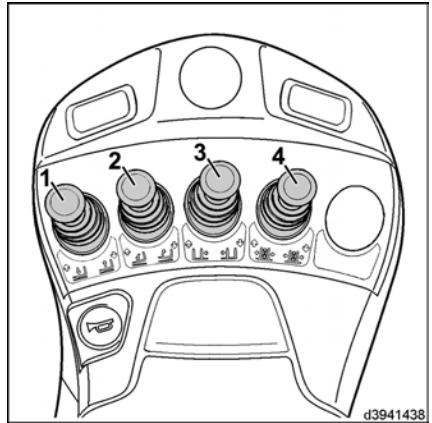
➤ Push the joystick (4) forwards.

Clamp opens.

➤ Pull the joystick (4) backwards.

Clamp closes.

Once the joystick has been released, it is locked again.



Special equipment

Depressurisation

When replacing hydraulic components or connecting operating equipment to the quick-release couplings of the working hydraulics, the hydraulic system must be depressurised.

- Switch off the engine.
- Switch on the ignition.
- Actuate the joystick of the corresponding auxiliary hydraulics repeatedly.
- Unscrew the union nuts on the fork carriage.
- Screw on the lines from the attachment or connect the plug connectors.

4 Operation

Special equipment

Driver's cab

Opening the cab door

- Push handle (4) upwards.
- Open driver's door outwards.

Closing the cab door



To make it easier to close the door, open the side window slightly.

- Grip the rod (5) and pull the door towards you until the interlock engages.

Opening/closing the front side window

- Press the interlock (3) upwards.
- Keep the interlock pressed, slide the side window into the desired position until it engages in one of the grooves (2).

Follow a similar procedure to close the side window.

Opening/closing the rear side window

- Press the interlock (1) upwards.
- Keep the interlock pressed, slide the side window into the desired position until it engages in one of the grooves (2).

Follow a similar procedure to close the side window.



d3921126

Lighting



The arrangement of the individual switches on the overhead console on the upper right-hand side of the overhead guard may vary, depending on the version. Observe the switch symbols.

Switching on the interior lighting

- Press toggle switch (1).

**Switching on the lighting.**

- Move toggle switch (2) to centre position.
The sidelights and licence plate light are switched on.
- Switch toggle switch (2) as far as it will go.
The dipped beams, sidelights and licence plate lights are switched on.

Switching on the working spotlights.

- Press toggle switch (3) or (4) (depending on the version).

Switching on the hazard warning system

- Press toggle switch (5).

Switch on rotating flashing light

Depending on the equipment there are two different versions.

**Version 1 (single stage switch):**

- Press toggle switch (6).

The rotating flashing light is always switched on.

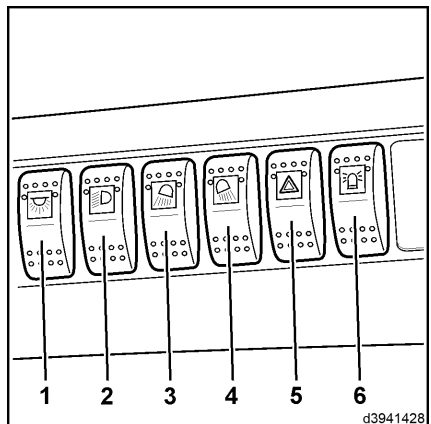
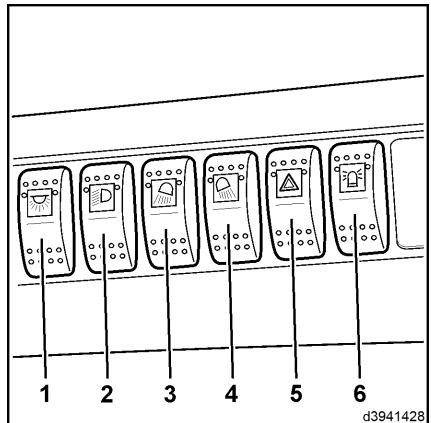
Version 2 (two stage switch):

- Move toggle switch (6) to centre position.

The rotating flashing light is switched on only when reversing.

- Switch toggle switch (6) as far as it will go.

The rotating flashing light is always switched on.



4 Operation

Special equipment

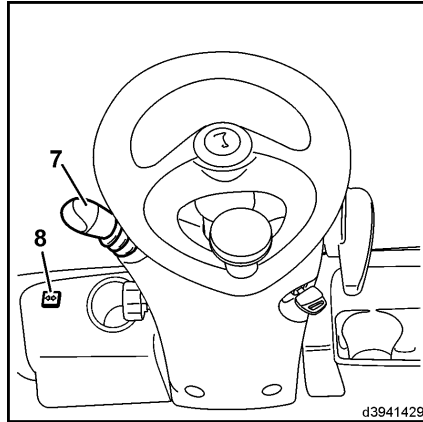
Switching on the direction indicators

- Move operating lever (7) on steering wheel forwards. ▷

The flashing lights flash on the right. Indicator lamp (8) flashes.

- Move operating lever (7) on steering wheel backwards.

The flashing lights flash on the left. Indicator lamp (8) flashes.



Windscreen wiper



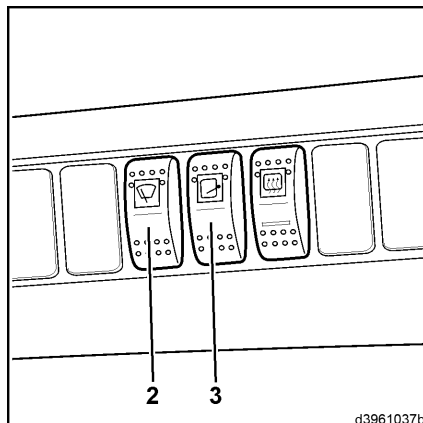
NOTE

The various wiper functions can be turned both on and off using the central actuating lever (1) depending on what has been preselected at the relevant toggle switches (2, 3); it is different for forwards and reverse travel.

Switching on the front windscreen wiper

Truck at a standstill or in forwards travel:

- Switch toggle switch (2) and (3) to the zero position. ▷



- Move the actuating lever (1) on the steering wheel upwards from the centre position. ➤

The front windscreen wiper remains in intermittent mode as long as the lever is actuated.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The front windscreen wiper is in intermittent mode.

Switching on the rear window wiper

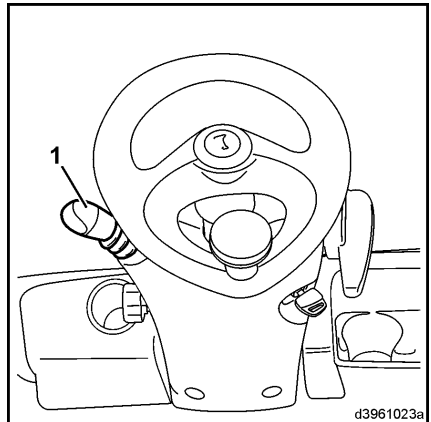
Truck in reverse travel:

- Switch toggle switch (2) and (3) to the zero position.
- Move the actuating lever (1) on the steering wheel upwards from the centre position.

The rear window wiper remains in intermittent mode as long as the lever is actuated.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The rear window wiper is in intermittent mode.



Switching on the front windscreen wiper and rear window wiper

- Move toggle switch (2) to centre position. ➤

Truck at a standstill or in forwards travel:

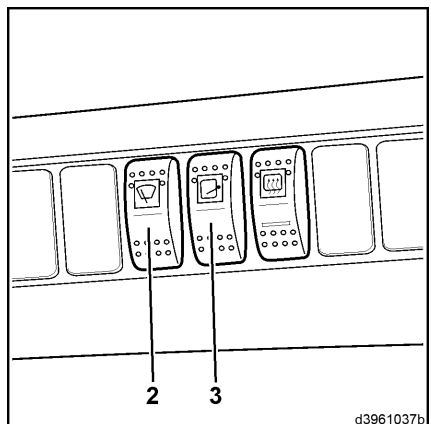
- Move the actuating lever (1) on the steering wheel upwards from the centre position.

As long as the lever is actuated, the front windscreen wiper remains in continuous mode and the rear window wiper remains in intermittent mode.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The front windscreen wiper is in continuous mode and the rear window wiper is in intermittent mode.

Truck in reverse travel:



4 Operation

Special equipment

- Move the actuating lever (1) on the steering wheel upwards from the centre position. ▷

As long as the lever is actuated, the front windscreen wiper remains in intermittent mode and the rear window wiper remains in continuous mode.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The front windscreen wiper is in intermittent mode and the rear window wiper is in continuous mode.

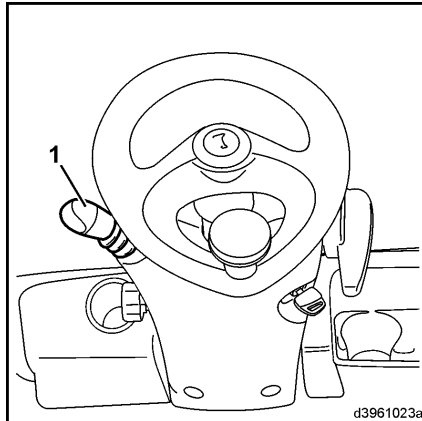
Truck at a standstill or in forwards/reverse travel:

- Switch toggle switch (2) as far as it will go.
- Move the actuating lever (1) on the steering wheel upwards from the centre position.

As long as the lever is actuated, the front windscreen wiper and rear window wiper remain in continuous mode.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The front windscreen wiper and rear window wiper are in continuous mode.



Switching on the front windscreen wiper and roof panel wiper

- Move toggle switch (3) to centre position. ▷
- Move the actuating lever (1) on the steering wheel upwards from the centre position.

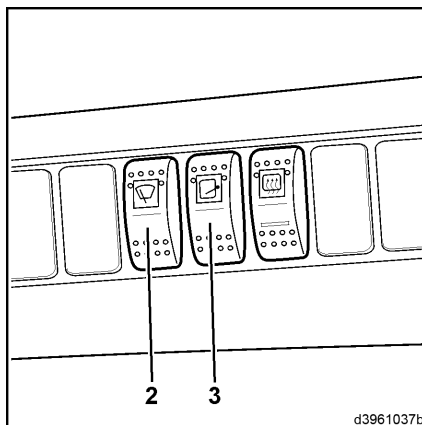
As long as the lever is actuated, the front windscreen wiper and roof panel wiper remain in intermittent mode.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The front windscreen wiper and roof panel wiper are in intermittent mode.

- Switch toggle switch (3) as far as it will go.
- Move the actuating lever (1) on the steering wheel upwards from the centre position.

As long as the lever is actuated, the front windscreen wiper remains in intermittent



mode and the roof panel wiper remains in continuous mode.

- Press the actuating lever (1) on the steering wheel downwards from the centre position.

The front windscreen wiper is in intermittent mode and the roof panel wiper is in continuous mode.

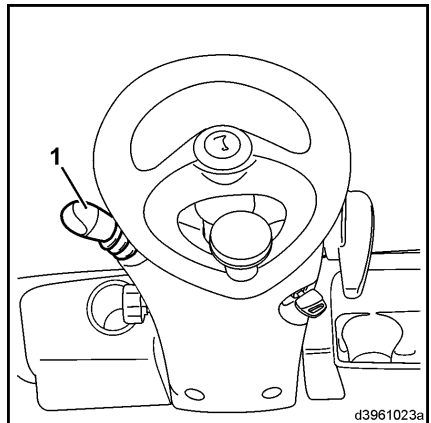
Switching on the wiper/washer system

- Press the actuating lever (1) fully in.

The wiper/washer system is activated for the windscreen and rear window as long as the lever is pressed.

- Switch on the toggle switch (3).

The wiper/washer system is activated for the windscreen, rear window and roof panel as long as the lever is pressed.



Window heater

Switching on the rear window heating

- Press push button (1).

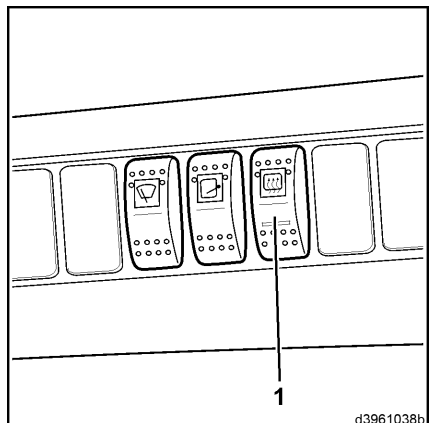
The rear window heating is in operation for 15 minutes.

- Actuate push button (1) during the heating operation.

The rear window heating is switched off.

- Briefly actuate push button (1) 2x during the heating operation.

The rear window heating is in operation for a further 15 minutes.



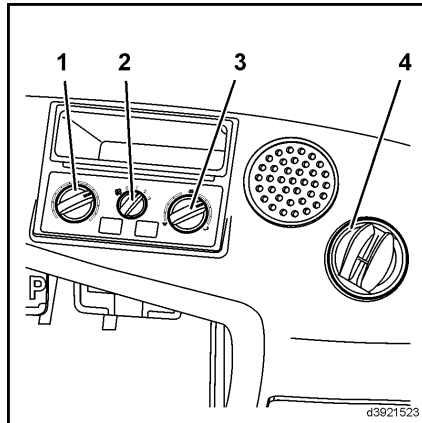
4 Operation

Special equipment

Heating system, air conditioning

Heating system operating devices

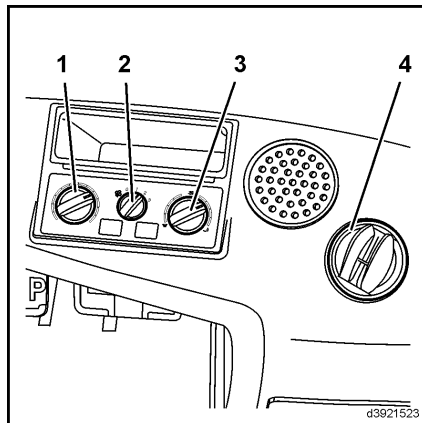
- Turning knob (1) for temperature control
- Turning knob (2) for setting the blower positions
- Rotary switch (3) for setting the vent positions for windscreen defrosting / footwell ventilation
- Cab air vents (4)



Switching on the heating system

- Turn switch (2).

The blower is switched on and there are three air flow settings.



Defrosting the windows

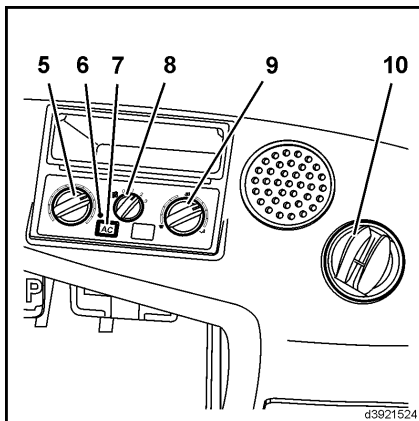
- For maximum defrosting, set the
 - Turning knob (1) to the far right position
 - Turning knob (3) to the windscreen defrosting position (far left position)
 - Rotary switch (2) to level 3
 - Cab air vents (4) to open, fins forwards

For normal heating operation, the following rules apply:

- Select the temperature using turning knob (1) (far left → cold / far right → hot)
- Use the blower switch (2) (level 1 to 3), air distribution vent (turning knob (3)) and cab air vents (4) to select the temperature and temperature distribution

Air conditioning operating devices

- Turning knob (5) for temperature control
- Function display (6)
- Push-button (7) for switching the air conditioning on
- Rotary switch (8) for setting the blower positions
- Turning knob (9) for setting the vent positions for windscreen defrosting / footwell ventilation
- Cab air vents (10)



Switching on the air conditioning

CAUTION

The moving parts must be lubricated and the compressor prevented from seizing.

Therefore switch on the air conditioning briefly every 3 months. In addition, the air conditioning must be serviced once a year by your authorised dealer, preferably before the season starts, and a record must be kept of the servicing. Otherwise, the warranty will be void.

NOTE

It is normal for condensation water to build up in the hoses and under the truck when the air conditioning is in operation.

- Turn switch (8).

The blower is switched on and there are three air flow settings.

NOTE

The air conditioning only works when the engine is running and the blower switch is switched on (setting 1, 2 or 3). The fans in the roof switch on when necessary. They can come to a standstill from time to time.

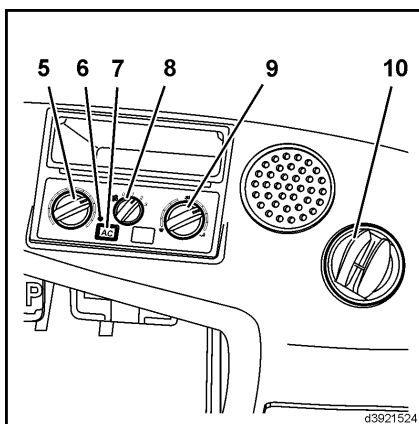
- Switch on push-button (7).

The function display (6) lights up green.

To raise the temperature in the cab:

- Rotate turning knob (5) clockwise and reduce the blower speed using switch (8).

To lower the temperature in the cab:



4 Operation

Special equipment

- Close windows and doors, rotate turning knob (5) anti-clockwise and increase the blower speed using switch (8).



NOTE

To achieve maximum cooling in the cab:

- *the air conditioning must be switched on,*
- *the turning knob (5) must be fully turned to the left stop,*
- *the blower must be set to its highest blower position,*
- *the windows and doors must be closed.*



NOTE

On cool, humid days, the heater and air conditioning can be used to dehumidify the air in the cab (operate the heating system and air conditioning simultaneously). The truck heating system counteracts the cooling effect. This ensures a pleasant temperature inside the cab and reduces fogging on the windows.

Linde Forklift Data Management (LFM)

Truck data acquisition

The truck data acquisition (FDE) input device (1) is located in the armrest console (3).

The input device has a 12-digit keypad (2).

With the standard setting, a 5-digit PIN is allocated to the respective driver to ensure that the truck can only be operated by authorised personnel.

The truck can only be started after entering this PIN and possibly a status code (depending on the setting).

NOTE

The PIN can be extended from 5 to 8 digits. Before entering the PIN, please contact your fleet manager to check the number of digits in the PIN and to find out about the truck settings.

Status code

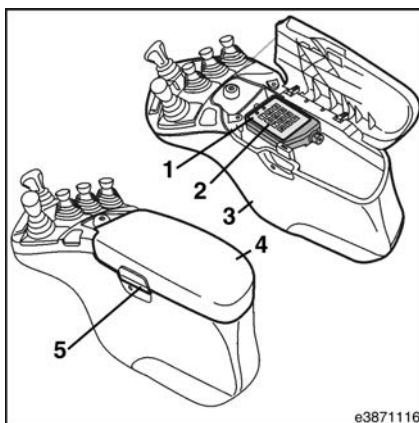
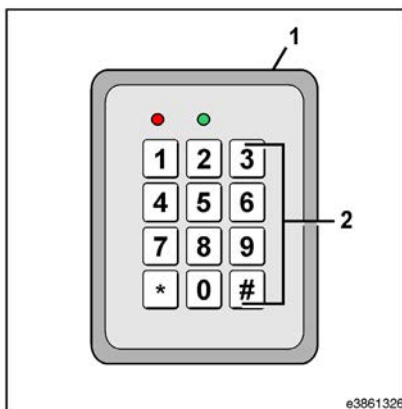
NOTE

The code indicates the status of the truck.

The following codes are available:

- **0** = Truck OK
- **1** = Request service (truck will not start)
- **2** = Request maintenance (truck starts)
- **3** = Problem with driving
- **4** = Problem with lifting
- **5** = Problem with steering
- **6** = Accident damage
- **7** = User-defined
- **8** = User-defined
- **9** = User-defined

The status messages **7**, **8** and **9** can be defined individually by the user. Please contact your fleet manager to find out the definition of these status messages.



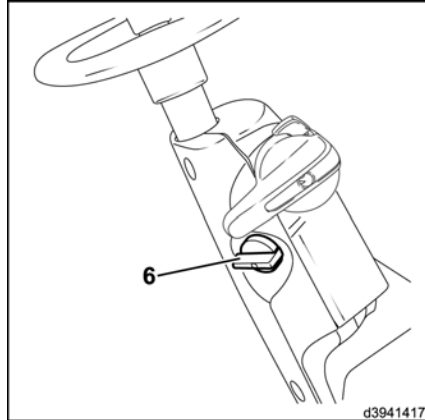
4 Operation

Special equipment

NOTE

If you only notice one of these statuses (such as a problem with driving) after you have input the status code  (truck OK), you have to log off.

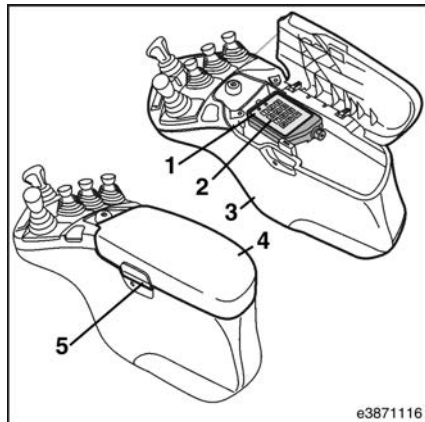
- Rotate the turning knob (6) anticlockwise to the stop. ➤
- Log in again with status message  (problem with driving)



Truck data acquisition — standard setting (PIN and status code) ➤

Logging on and starting the truck:

- Apply the parking brake.
- Flip up the armrest support (4) on the side to the right via opening (5).



- Press the **4** button to start the input device.

The green LED (2) flashes.

- Enter personal PIN (factory setting = **0 0 0 0 0**) and status code.

Therefore, for a properly set-up truck, the PIN should be as follows: **0 0 0 0 0 0**.



NOTE

*If the PIN was input incorrectly, press the **4** button (4) and enter the correct PIN.*

- Confirm the entry with the **#** button (3).

The green LED (2) lights up with a steady light.



NOTE

*If the red LED (1) lights up, an incorrect PIN was entered. Press the **4** button (4) and enter it again. If more than three incorrect entries are made (factory setting), the red LED (1) lights up and the green LED (2) flashes. The input of a valid PIN is blocked for 10 minutes. The blocking time can be interrupted by inputting a special PIN. Please contact your fleet manager.*

- Rotate the turning knob (6) clockwise to the stop and start the truck.



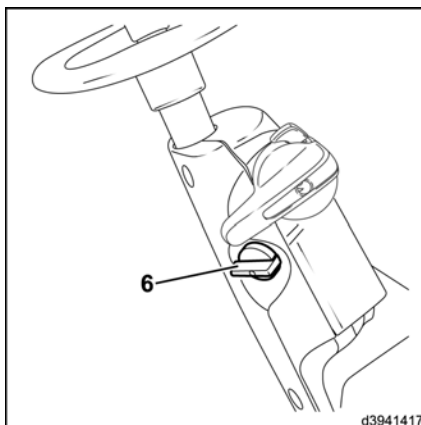
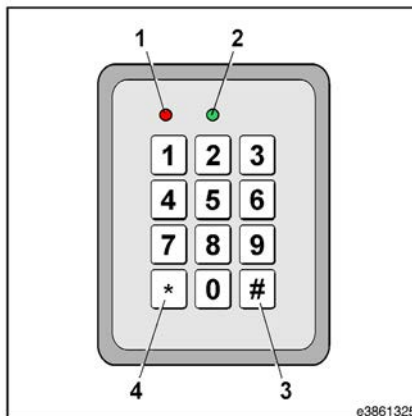
NOTE

If the truck does not start properly the first time, the starting procedure can be repeated until the turning knob (6) is returned to the zero position, and the PIN is discarded after expiry of the delay time.



NOTE

If the green (2) and red (1) LEDs both light up as steady lights, the data must be read out. Please inform your fleet manager at once.



4 Operation

Special equipment

Switch off the truck and log off:

- Rotate the turning knob (6) anticlockwise to the stop.

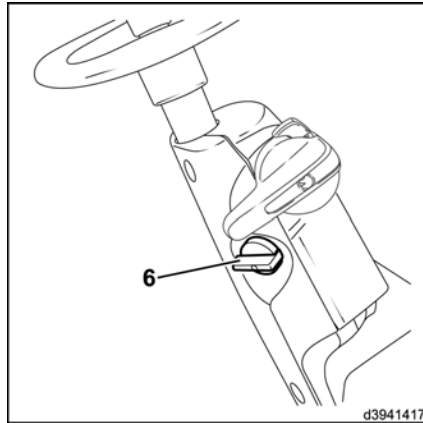
The engine is turned off.



NOTE

After a delay time (factory setting = 10 seconds) the red LED (1) lights up briefly, and the green (2) and red (1) LEDs then flash for approx. 3 seconds. During this period, the truck can be started at any time. The LEDs then go out, and the PIN is discarded. The delay time can be set to between 10 seconds and 10 minutes using the diagnostic device. Please contact your authorised dealer.

Pressing the  button (3) after switching off the engine terminates the delay time immediately and the PIN is deleted.

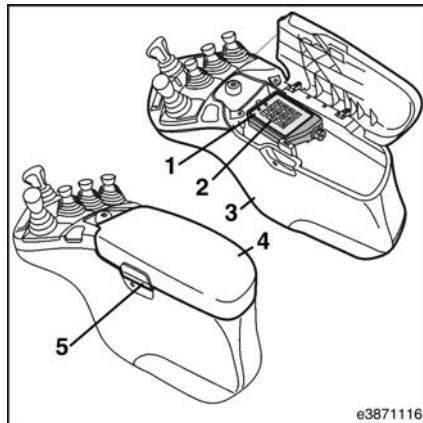


Truck data acquisition — special setting (PIN)



Logging on and starting the truck:

- Apply the parking brake.
- Flip up the armrest support (4) on the side to the right via opening (5).



- Press the  (4) button to start the input device.

The green LED (2) flashes.

- Enter personal PIN (factory setting =    ).



NOTE

If the PIN was input incorrectly, press the  button (4) and enter the correct PIN.

- Confirm the entry with the  button (3).

The green LED (2) lights up with a steady light.



NOTE

If the red LED (1) lights up, an incorrect PIN was entered. Press the  button (4) and enter it again. If more than three incorrect entries are made (factory setting), the red LED (1) lights up and the green LED (2) flashes. The input of a valid PIN is blocked for 10 minutes. The blocking time can be interrupted by inputting a special PIN. Please contact your fleet manager.

- Rotate the turning knob (6) clockwise to the stop and start the truck.



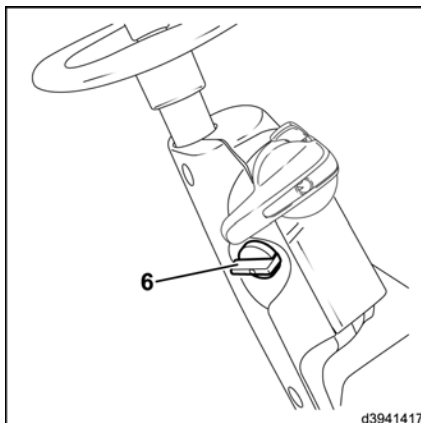
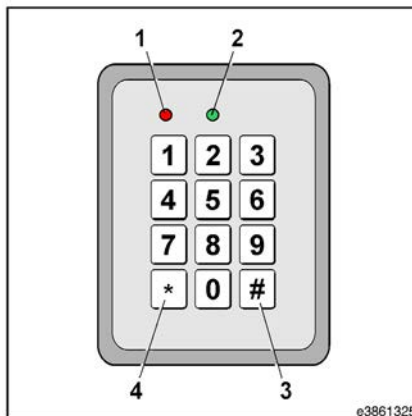
NOTE

If the truck does not start properly the first time, the starting procedure can be repeated until the turning knob (6) is returned to the zero position, and the PIN is discarded after expiry of the delay time.



NOTE

If the green (2) and red (1) LEDs both light up as steady lights, the data must be read out. Please inform your fleet manager at once.



4 Operation

Special equipment

Switch off the truck and log off: ▷

- Rotate the turning knob (6) anticlockwise to the stop.

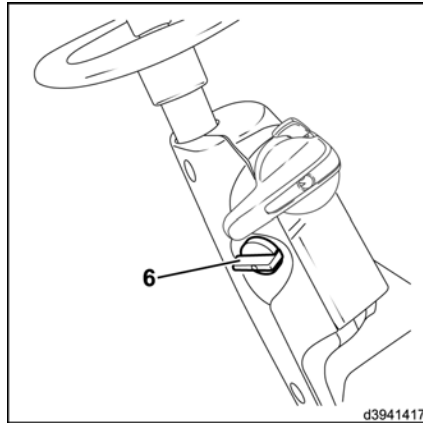
The engine is turned off.



NOTE

After a delay time (factory setting = 10 seconds) the red LED (1) lights up briefly, and the green (2) and red (1) LEDs then flash for approx. 3 seconds. During this period, the truck can be started at any time. The LEDs then go out, and the PIN is discarded. The delay time can be set to between 10 seconds and 10 minutes using the diagnostic device. Please contact your authorised dealer.

Pressing the  button (3) after switching off the engine terminates the delay time immediately and the PIN is deleted.

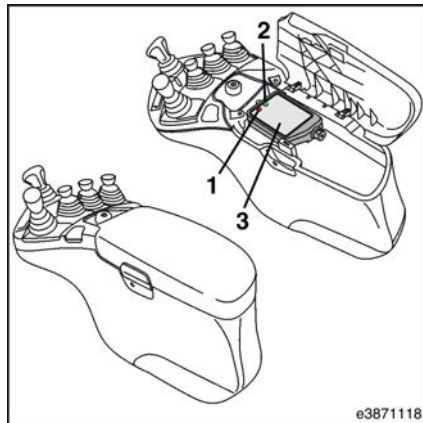


Truck data acquisition with a transponder (chip or magnetic strip card) ▷



NOTE

The input device has a field (3) onto which the corresponding transponder (chip or magnetic strip card) must be placed. Only then can the truck be started.



Logging on and starting the truck:

- Apply the parking brake.
- Fold open the armrest support on the side to the right.
- Place the valid transponder on the field (3).

Data is read in and the green LED (2) lights up with a steady light.

- Remove transponder.

**NOTE**

If the red LED (1) lights up, the transponder is invalid or there was a reading error. The input device is reactivated automatically when a valid transponder is used and read in.

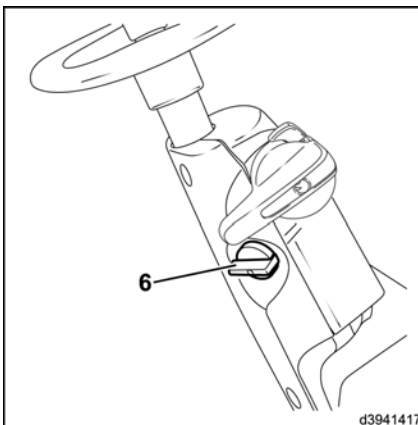
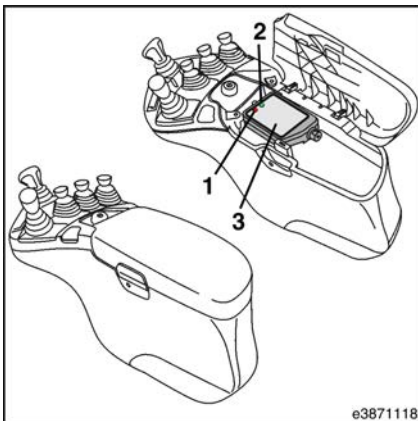
- Rotate the turning knob (6) clockwise to the stop and start the truck.

**NOTE**

If the truck does not start properly the first time, the starting procedure can be repeated until the turning knob (6) is returned to the zero position.

**NOTE**

If the green (2) and red (1) LEDs both light up as steady lights, the data must be read out. Please inform your fleet manager at once.



4 Operation

Special equipment

Switch off the truck and log off:

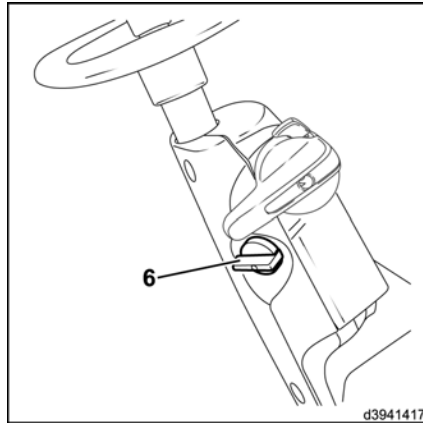
- Rotate the turning knob (6) anticlockwise to the stop.

The engine is turned off.



NOTE

After a delay time (factory setting = 10 seconds) the red LED (1) lights up briefly, and the green (2) and red (1) LEDs then flash for approx. 3 seconds. During this period, the truck can be started at any time. The LEDs then go out, and the PIN is discarded. The delay time can be set to between 10 seconds and 10 minutes using the diagnostic device. Please contact your authorised dealer.



Adjusting the driver's seat with rotating device

⚠ CAUTION

The driver's seat must not rotate while the truck is in use.

It should therefore be ensured that the rotating device is locked.

The driver's seat with rotating device offers better rear visibility during reverse travel over long distances.

When driving forwards over long distances, it is recommended that you return the seat to the straight-ahead position.

The rotating device is maintenance free.

- Pull locking lever (1) backwards.

The rotating device is enabled and allows the seat to be rotated 17° to the right. It can be locked at 0° and at 17°.

- Allow the locking bolt to audibly snap into place.

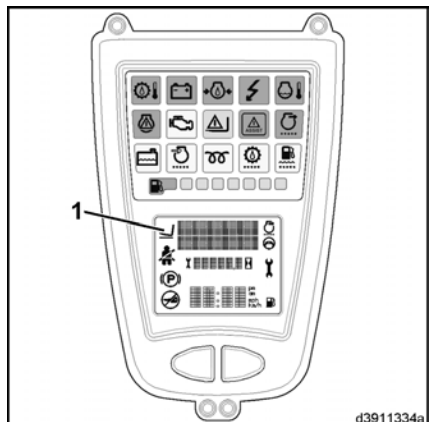


Lift mast positioning

Programming

The tilt angle sensor system allows a specific lift mast tilt angle to be programmed. When this function is enabled, symbol (1) lights up in the display unit.

- Tilt lift mast to required angle.



4 Operation

Special equipment

- Press the push button (2) at the front left-hand side of the armrest for longer than 2 seconds.

The tilt angle is now permanently stored. As confirmation, a double acoustic signal sounds from the display unit and the light in the button (2) flashes briefly several times.

The lift mast tilt angle is stored in relation to the truck. The lift mast tilt angle in relation to the ground depends on a variety of influencing factors, such as the tyre wear, the tyre pressure of pneumatic tyres, the load, and the unevenness and gradient of the ground.



Operation



NOTE

The lift mast positioning function is designed to aid the driver and is purely a comfort feature. The responsibility and control for activating the required mast position always lie with the driver.

- Briefly press button (2) at the front left-hand side of the armrest. The lamp in the button lights up and the lift mast positioning detection is switched on.
- Operate the joystick and move to the stored tilt angle. (For safety reasons, tilting is permitted only in the direction of the stored tilt angle, and must be reactivated with each lift mast positioning).

When the stored lift mast position has been reached, the lift mast remains stationary and an acoustic signal sounds in the display unit.



- Release the joystick or press button (2) again briefly. The light in the push button goes out, and the lift mast positioning is switched off.
- The lift mast can now be operated normally using the joystick.
- Briefly press push button (2) again. Lift mast position identification is switched on again.

Working under load

Before taking up a load

Before taking up a load, check the load capacity diagram above the switch console on the top right in the overhead guard.

- 1 Max. weight of permissible loads in kg
- 2 Height of lift in mm
- 3 Series designation of truck with max. load capacity and lift mast series
- 4 Distance between load centre of gravity and fork back in mm

⚠ DANGER

The residual load capacity of a truck is determined by the lift mast type (standard, duplex, triplex), the lift height of the installed mast, the tyres on the front axle, the use of attachments or additional equipment and the backwards tilt restriction. If one of these parameters is changed, this can have a considerable effect on the residual load capacity.

For some conversions, the new residual load capacity of the truck must be determined and the load capacity diagram must be changed as necessary. Contact your authorised dealer.

The max. permissible load is determined by the distance between the load centre of gravity and the back of the fork arms, and the lift height.

⚠ DANGER

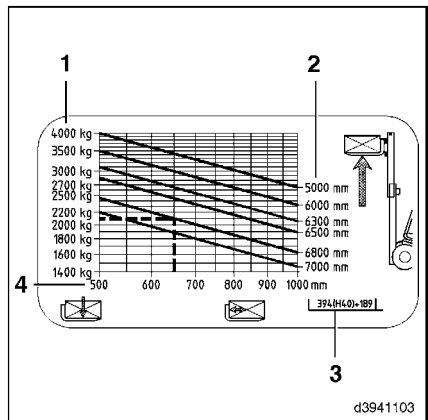
The values specified in the load capacity diagram and capacity rating plate apply to compact homogeneous loads and must not be exceeded, as this will impair the stability of the truck and the rigidity of the fork arms and lift mast.

When using attachments, observe the capacity rating plate for each attachment.

i NOTE

Observe the load restriction and consult your authorised dealer.

- before transporting off-centre or swinging loads
- Before transporting loads with the lift mast tilted forward or the load not close to the ground



4 Operation

Working under load

- *loads involving a large centre of gravity distance*
- *Before transporting loads in a wind force of 6 and upwards*

Example

Load centre of gravity distance: 650 mm

Load height to be lifted: 6800 mm

- Trace a vertical line from a load distance of 650 mm to its point of intersection with the line for a lift height of 6800 mm.
- Read the max. permissible load to the left of the point of intersection with the horizontal line.

The maximum load in this example is 2100 kg.

Use the same procedure for other lift heights and centre of gravity distances. The determined values refer to both fork arms and evenly distributed loads.

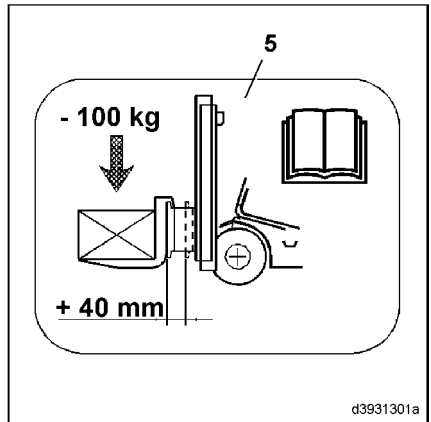
Wheel-slide protection chains

CAUTION

Mounting wheel-slide protection chains alters the wheel freedom and the load capacity of the truck

Before wheel-slide protection chains are mounted, the standard fork carriage must be replaced with a special fork carriage that is installed 40 mm further forward. All residual load capacity specifications in the basic load capacity diagram and on the additional capacity rating plate must be reduced by 100 kg. This reduction in load capacity is still necessary even if wheel-slide protection chains are not fitted.

- In addition, affix the label (5) next to the basic load capacity diagram.



Adjusting the fork spread



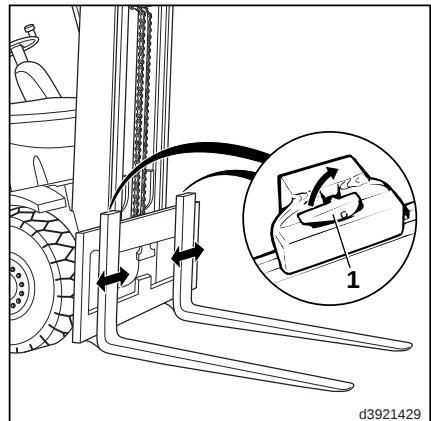
NOTE

The load centre should be in the centre between the forks.

- Raise the fork quick-release levers(1).
- Move the forks further apart or closer together depending to the size of the load to be lifted.

Make sure that both forks are equally distant from the truck centre.

- Allow the quick-release levers to engage in a notch on the fork carriage.



4 Operation

Working under load

Taking up load



DANGER

Danger of a falling load. Standing or walking in the vicinity of an elevated mast is extremely dangerous.

During stacking and de-stacking operations do not allow people to stand or walk in the working area of the truck.

Trucks should only be driven with the load lowered and tilted back. Look out for people.



DANGER

Risk of falling and crushing.

Never allow people to be lifted on either the forks, or on a pallet placed on the forks.

If the truck is to be used for lifting people then it must be fitted with a purposely designed working platform. Ensure that the platform, platform securing method and platform interlocks have been approved for the truck.

Please contact your local distributor.

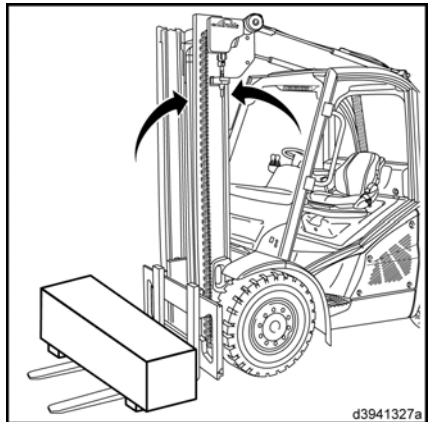
DANGER

Loads should be arranged so that they do not project beyond the edge of the truck loading surface and cannot slip, topple over or fall off.

If necessary, use a load guard (special equipment).

- Approach the load to be taken up carefully and as accurately as possible.

- Set lift mast to vertical.
- Lift or lower the fork carriage to the necessary height.
- Carefully steer the truck forks beneath the centre of the load to be taken up, where possible so the load touches the fork back, taking account of adjacent loads.
- Lift fork carriage until the load is no longer in contact with the supporting surface.
- Reverse the truck until the load is free.
- Tilt the lift mast backwards.



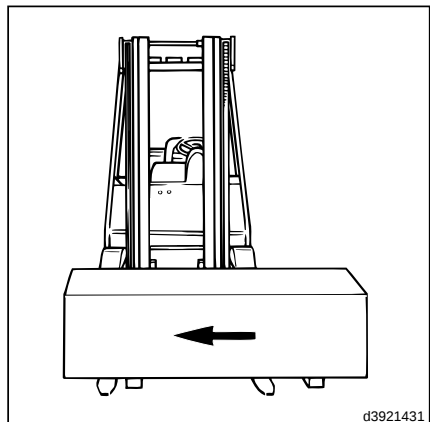
Travelling with load



NOTE

When transporting cargo, the sender must ensure that the goods are safely loaded for transportation and secured if necessary. Please therefore make sure that goods are properly stacked and there is no damage to packaging, pallets etc. The carrier must ensure safe loading.

- Do not transport loads if they are shifted to the side (e.g. with sideshift).
- Transport loads close to the floor.
- On ascending/descending routes, always travel with the load facing uphill; never travel diagonally or turn around.
- If visibility is poor, instructions should be provided by a second person.
- If the load to be transported is stacked so high as to obstruct visibility in the direction of travel, the truck must only be driven in reverse.



Working under load

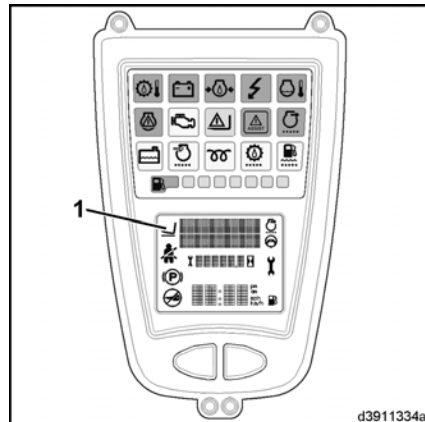
Setting down loads

DANGER

Never stop and leave the vehicle with the load still raised.

Let down the fork carriage until the fork arms touch the ground.

- Carefully move the forklift truck to the load / storage area.
- Lift the fork carriage to the necessary height.
- Position the lift mast vertically (load horizontal).
- Observe the lift mast positioning identification symbol (1) on the display unit if the truck is equipped with automatic lift mast positioning.
- Carefully move the load over the load / storage area.
- Carefully lower the load until the fork arms are clear.
- Back the forklift truck away.



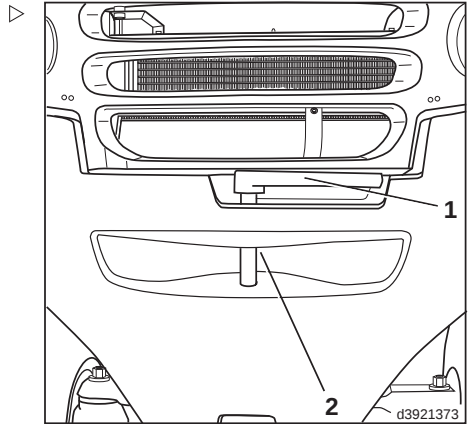
Tow coupling

NOTE

The towing device is only used to tow light trolleys on the factory premises. The national regulations for the use of unbraked trailers on industrial trucks must be observed.

Before leaving the lift truck unattended

- Turn the handle (1) of the towing pin 90° towards the rear and lift it up.
- Place the drawbar eye into the coupling sleeve (2).
- Push the towing pin down against the spring pressure, turn 90° and allow it to snap into place in the catch.

**Before leaving the lift truck unattended****Before leaving the truck**

- Set down load / lower fork carriage.
- Tilt the lift mast forwards slightly.

The fork arms must touch the ground.

**⚠ CAUTION**

The tractor must be secured against rolling away.

Apply the parking brake.

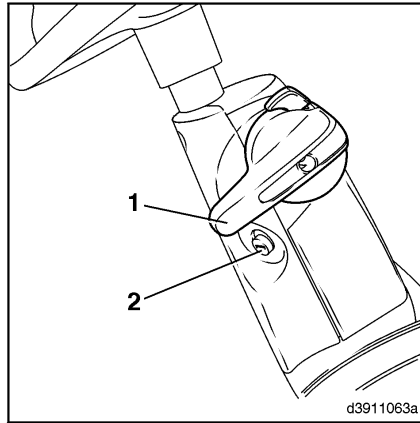
4 Operation

Loading / Transporting

- Rotate the parking brake lever (1) in a clockwise direction until it engages.

The parking brake is now applied.

- Switch off the engine.
- Remove the ignition key (2).



Loading / Transporting

Securing the hose pulley against rolling up

When fitting single auxiliary hydraulics, a hose pulley (1) is located beneath the floorplate (with double auxiliary hydraulics, a second hose pulley (5) is fitted in mirror image).



WARNING

The hose pulleys are spring-biased.

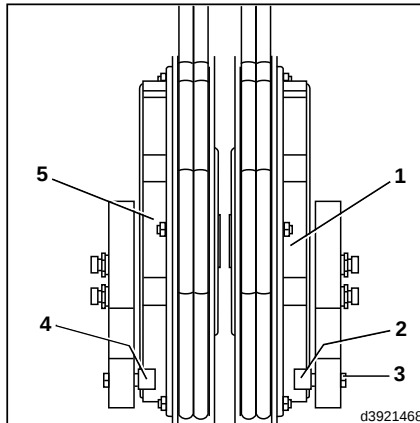
For this reason, they must always be secured against rolling up:

- Before disconnecting the hose line screw joints at the lift mast connection point (e.g. to remove the lift mast or remove the hose pulley itself).
- For all other work on the hose pulleys in the truck.

WARNING

The roll-up protection must not be opened on the removed hose pulley.

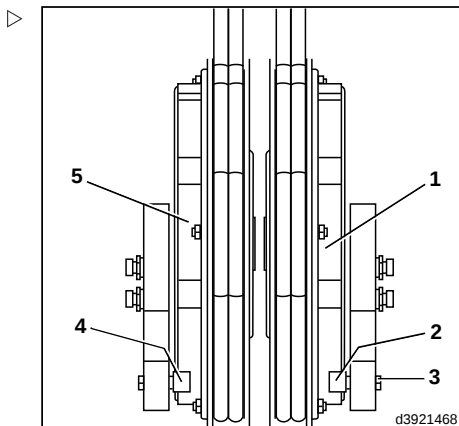
If this cannot be avoided, reduce the spring tension to 0 beforehand. Contact your authorised dealer.



- Open the bonnet.
- Open floor plate and secure it.

- Turn the hexagon head screw (3) on the hose pulley (1) in the direction of travel (right) with a wrench (SW 10) to the stop in the secure position (6).

The safety catch (2) points against the direction of travel and the slotted spring pin (8) is visible; the hose pulley is secured against rolling up.

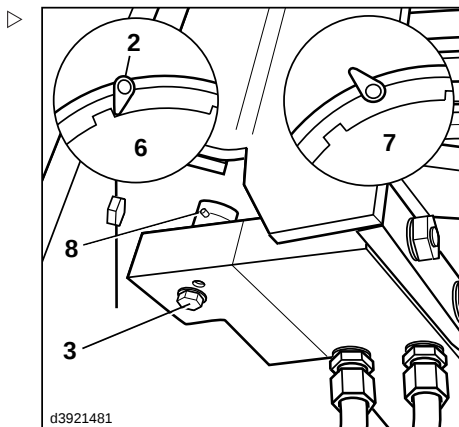


- For double auxiliary hydraulics, turn the safety catch (4) of the second hose pulley (5) to the secure position (6) as well.
- Disconnect hoses to remove the lift mast.

⚠ CAUTION

If the lift mast is extended with the roll-up protection closed, the hose lines cannot be damaged (ratchet effect). However, when the lift mast is then retracted, the hose lines are no longer rolled up and may therefore be damaged.

The roll-up protection may only be released once the lift mast has been refitted (hoses reconnected). To do so, return the safety catch(es) to the free-wheel setting (7) (safety catch visible).



Removing the lift mast



NOTE

Specialist knowledge and special tools are required to remove the lift mast. Contact your authorised dealer.

Driving without the lift mast

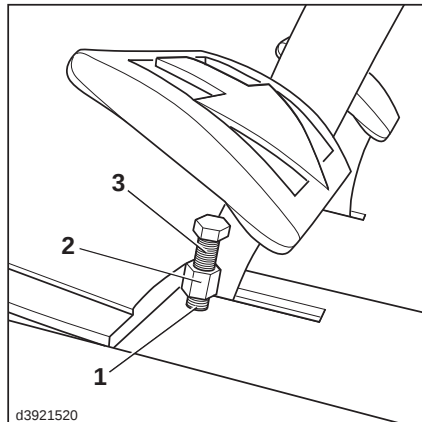
⚠ CAUTION

When driving without the lift mast, the speed of the truck must be reduced for safety reasons.

Therefore, before removing the lift mast, an additional stop screw must be fitted under the reverse travel accelerator pedal (dual-pedal operation) or accelerator pedal (single-pedal operation) to restrict the speed.

- Switch off the engine.
- Screw the hexagon head screw M8 x 20 (3) half-way into hexagon nut M8 (2) (DIN 6330, 6331, 6334). ▷
- Screw the hexagon nut (2) onto the existing hexagon head screw M8 (1) until one hexagon head screw (3) hits the other hexagon head screw (1).
- Lock them into the hexagonal nut (2).
- Remove the lift mast.

After reattaching the lift mast, the additional stop must be removed.



Loading

Crane lifting



⚠ DANGER

When using a crane to load the truck, be particularly careful to ensure that no-one is in the working area of the crane! Observe loading weight according to nameplate.

Do not walk under suspended loads!
Only use round slings and a loading crane with a sufficient load capacity.

⚠ WARNING

Crane loading may cause damage to the tilt cylinders and the cover sheet on the counterweight.

Retract the lift mast, retract the tilt cylinders as far as the stop and lift the truck in such a way that it hangs at an angle towards the front.

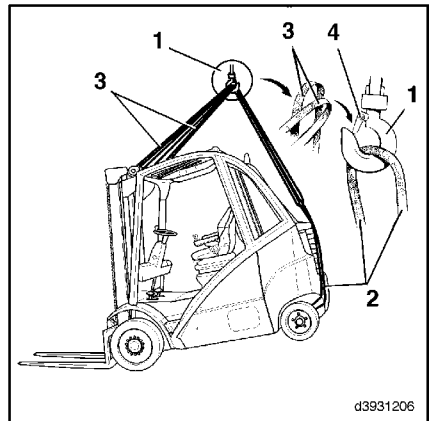
- Attach round slings to the suspension points.

There is no special marking for the suspension positions on the truck.

- Place the round sling (2) (min. load capacity: 4000 kg) around the bottom of the counterweight.
- Use edge protectors as a safeguard from sharp edges on traverse.
- Place the round sling (3) (min. load capacity: 4000 kg) around the bridge piece on the outer mast of the lift mast.
- Insert all ends into crane hook (1).
- Make sure that the safety lock (4) is closed.

**NOTE**

During lifting, the lifting gear should not touch the overhead guard, the cover sheet on the counterweight and any additional equipment attached.

**Crane loading with lifting eyes****⚠ CAUTION**

If the crane lifts pulling at an angle, the crane eyes may break off.

Crane loading with lifting eyes should only be carried out with the appropriate lifting gear (3), whereby the chains (2, 6) lead up vertically from the lifting eyes (1, 7).

4 Operation

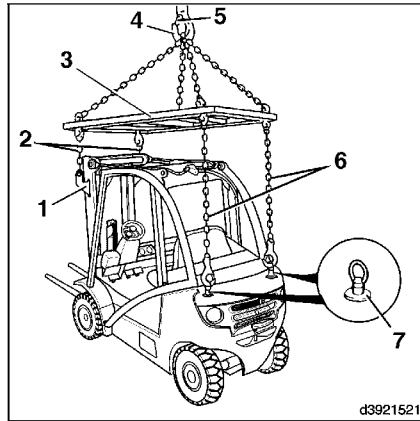
Loading / Transporting

- Attach chains (6) (min. load capacity: 4000 kg) to the lifting eyes (7) on the counterweight.
- Attach chains (2) (min. load capacity: 4000 kg) to the lifting eyes (1) on the lift mast.
- Make sure that the safety lock (5) is closed.



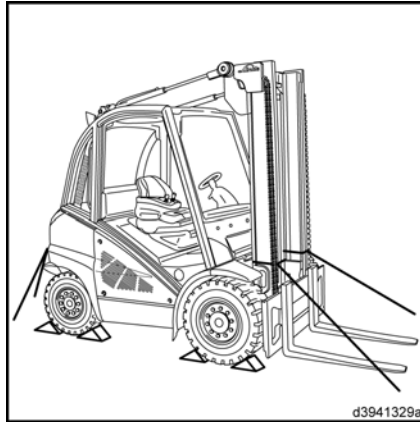
NOTE

During lifting, the lifting gear should not touch the overhead guard, the cover sheet on the counterweight and any additional equipment attached.



Transportation by lorry or low loading trucks

- Lower lift mast.
- Engage the parking brake.
- Place chocks behind the wheels.
- Lash down the truck.



Maintenance

General information

General information

Your forklift truck will only remain in a state ready for use at all times if you perform a small number of maintenance and inspection tasks according to the information in the registration document for the industrial truck and the data or instructions in the operating manual at regular intervals. Servicing may be performed only by qualified persons authorised by the manufacturer. You can agree to have this work performed on the basis of a maintenance contract with your authorised dealer.

If you wish to perform this work yourself, we recommend having at least the first three customer service checks carried out by the dealer's service technician in the presence of your workshop representative so your own workshop staff can be instructed accordingly.

Whenever performing maintenance, the forklift truck should be parked on a flat surface and secured so that it cannot roll away. The engine must be switched off and the ignition key removed.

When working with the fork carriage and/or lift mast raised, make sure they are secured against accidental dropping.

Whenever work is carried out at the front of the forklift truck, the lift mast must be secured to prevent it tilting backwards.

No modifications, in particular attachment or conversion, should be made to your forklift truck without the manufacturer's approval.

All servicing work on the forklift truck should be followed by a functional check and a test run.

 WARNING

Any side doors fitted could fall shut during maintenance work and trap staff.

For this reason, both doors must be opened and secured in place during servicing.

 CAUTION

The truck must always be properly labelled.

Missing or damaged identification plates and/or adhesive labels must be replaced. For the warehouse or order number, please consult the spare parts catalogue.

**ENVIRONMENT NOTE**

Observe information regarding working with consumables.

**NOTE**

When using forklift trucks in extreme conditions (e.g. extreme heat or cold, high levels of dust etc.), the time periods specified in the maintenance overview must be reduced accordingly.

Maintenance intervals

Under certain conditions, there is the possibility of changing the intervals of some service operations listed in the maintenance overview. Please use the prescribed consumables, engine oil and coolant. The qualities required in this regard are described in the section "Recommendations for consumables". The inspection and maintenance intervals depend on the operating and application conditions of the truck. For more difficult conditions we recommend shorter intervals. Please contact your authorised dealer.

Inspection and maintenance data

Unit	Devices / Consumables	Filling quantity / Set values
Engine	Engine oil	approx. 4.5 l
Fuel tank	Diesel	approx. 70.0 l
Cooling system	Coolant additive / drinking water	with heating system / air conditioning: approx. 10.0 l
		without heating system / air conditioning: approx. 8.5 l
Hydraulic system	Hydraulic oil	approx. 27.8 l
Battery	Distilled water	As required
Tyres	Pneumatic	See sticker on inside of overhead guard
Wheel fastenings	Tighten	front: 425 Nm
		rear: 640 Nm
Load chains / Lift mast channels	Linde chain spray	As required
Air conditioning	Refrigerant	1600 grams

Recommendations for consumables

Diesel fuel

Only diesel fuels to EN 590 with a cetane number (CN) not lower than 51 may be used. The fuel sulphur content must not exceed 350 mg/kg.

If the only diesel fuel available has a sulphur content of more than 350 mg/kg, the engine oil change intervals must be reduced as follows:

- At a sulphur content more than 350 mg/kg and less than 2000 mg/kg = engine oil change interval 300 operating hours.
- At a sulphur content more than 2000 mg/kg = engine oil change interval 150 operating hours.



NOTE

As the ambient temperature falls, the fluidity of the diesel fuel is reduced due to paraffin segregation. If "summer" diesel fuels are used at low ambient temperatures, this can lead to

malfunctions. For this reason, cold-resistant "winter" diesel fuel is available during the colder part of the year, which can reliably be used at temperatures down to about -22°C.

In winter, use only winter diesel fuel, so that the fuel lines do not become blocked by segregated paraffin. At very low temperatures even winter diesel fuel can suffer from this problem of segregation. Please contact your authorised dealer.

CAUTION

Several important points must be observed for the use of bio-diesel fuel (RME according to EN 14214). Please contact your authorised dealer.

Hydraulic oil



NOTE

The working temperature is the critical factor to be considered when selecting the correct oil

Recommendations for consumables

for hydrostatic drive units. The recommendations for oils given below can only be taken as guide values.

Hydraulic oil recommendations for **normal** use:

Hydraulic oil **ISO - L - HM 68 to ISO 6743 - 4 or HLP ISO VG 68** in accordance with DIN 51524, T.2 (factory filling) average constant oil temperature 60°C–80°C.

Hydraulic oil recommendations for **heavy-duty** use:

Hydraulic oil **ISO - L - HM 100 to ISO 6743 - 4 or HLP ISO VG 100** in accordance with DIN 51524, T.2 for heavy-duty and multi-shift use, operation in hot climate zones or at high ambient temperatures, average constant oil temperature over 80 °C.

Hydraulic oil recommendations for normal and heavy-duty use:

Hydraulic oil ISO - L - HV 68 to ISO 6743 - 4 or HVLP ISO VG 68 to DIN 51524, T.3 (multi-grade oil)

Bio-hydraulic oil

Highly biodegradable hydraulic fluid

Aral Forbex SE 46

⚠ CAUTION

Bio-oils must not be mixed with mineral oils.
No recommendations for other fluids from other manufacturers can be made at the present time.

 NOTE

If in doubt, we recommend obtaining the advice of your authorised dealer. Recommendations made by representatives from the mineral oil industry should also be agreed with your authorised dealer. Manufacturer's approval has been granted only for the oils listed above. Mixing or using with other hydraulic fluids may result in highly expensive damage.

Lubricating grease

Linde heavy-duty grease, lithium-saponified with EP active ingredients and MOS₂. Designation as per DIN 51825-KPF 2N-20 (order no. see spare parts catalogue).

Mixing lubricating grease types with a soap basis other than lithium-saponified is not permitted.

Coolant

⚠ CAUTION

Refer to the coolant specifications!
In trucks with pump injection engines, coolant additive according to VVW standard TL 774-F (factory filling) must be used.

This additive must be mixed with water (total hardness of water must not be more than 20° according to German hardness standards). A maximum of 60% coolant additive can be used.

Temperature	Coolant additive	Drinking water
-25°C	40%	60%
-30°C	45%	55%
-35°C	50%	50%
-40°C	60%	40%

Refrigerant for air conditioning

R 134a

Battery grease

Acid-free lubricating grease (battery grease).

Chain spray

Linde chain spray (order no.: see spare parts catalogue).

Engine oil

When the engine is running, not only is some of the engine oil for piston lubrication burnt

off ("consumed"), but the temperature stress and the fuel combustion products that enter the oil lead to "wear", affecting especially the chemical "additives" in the oil. For this reason, the entire filling of engine oil must be renewed at specified intervals.

Since this "oil wear" depends on the operating conditions, the fuel quality and the oil quality (the performance characteristics of the oil), oil change intervals vary.

The longest time a filling of lubricating oil may remain in the engine is 12 months. Irrespective of the change intervals, the lubricating oil must be changed at intervals no less than every 12 months.

Engine oils that are approved for the pump injection engine must comply with:

- VW standard 505 01,
- VW standard 506 01 with viscosity SAE 0W-30
- VW standard 507 00 with viscosity SAE 5W-30 (factory filling).

Depending on the oil quality, oil change intervals may vary.

Engine oil according to VW standard 506 01 or 507 00

- Oil change every 1000 operating hours.

Engine oil according to VW standard 505 01

- Oil change every 500 operating hours.



NOTE

Please note that the engine oil change intervals must be reduced if diesel fuel with an increased sulphur content is used.



NOTE

API or ACEA oils are only permitted if they fulfil the VW standards (referred to above) for the pump injection engine.

For trucks with particulate filter systems, use only low-ash oil. The residues of combustion of oil additives (ash) cannot be regenerated.

- When topping up, the various oils may be mixed with each other, however the oil change interval is then determined by the oil of the lowest quality.

Since a good engine oil is a pre-requisite for problem-free operation and a long service life for the engine, use only good quality engine oil even when topping up and also during oil change. Due to their limited viscosity range, single-grade oils should generally not be used all-year-round. These oils should be used only in extreme climate zones.



NOTE

No additional lubricants of any sort should be mixed in with the lubricating oils.



ENVIRONMENT NOTE

Used oil must be kept away from children until disposed of according to the regulations. Under no circumstances should oil be allowed to penetrate the mains drainage or the ground.

Because of the problems of disposal and the special tools and knowledge required, engine oil and filter changes should only be performed by your authorised dealer.

Inspection and maintenance overview

Service plan as required

	Carried out	
	✓	✗
Engine		
Clean the fuel tank ventilation hose		
Drain water from the fuel filter		
Change the air filter cartridge (after no longer than 1000 operating hours)		
Change the safety cartridge in the air filter (after no longer than 3000 operating hours)		
Check the dust discharge valve		
Change the oil bath air filter oil		
Clean the prefilter		
Clean the water cooler and hydraulic oil cooler, and check them for leaks		
Regenerate the particle filter		
Drain water from the water trap at the changing particle filter		
Chassis, bodywork and fittings		
Clean the truck		
Service the heating system and air conditioning		
Check condition and correct operation of the seat belt		
Washer system: Top up the water tank		
Chassis frame		
Wheel change		
Clean and grease the steering axle (after no longer than 1000 operating hours)		
Check tyres for damage and foreign bodies		
Tighten wheel fastenings (after each maintenance or repair, after no longer than 100 operating hours)		
Load lift system		
Clean and adjust the lift mast chain and apply chain spray.		
Clean and grease the sideshift, check the mounting		

1000 h service plan

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000			
16000		17000		19000		20000					
										✓	*
Information on service plan											
Dependent on the consumables used, the driving style and the operating conditions, but at least every 12 months. Refer also to the recommendation for consumables.											
Preparations											
Clean the truck (if necessary)											
Read out error memory and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Renew the engine oil											
Change the engine oil filters											
Change the fuel filter											
Check condition and secure positioning of engine support and engine mount											
Check condition of V-ribbed belt											
Check condition and tension of toothed belt											
Clean water cooler and hydraulic oil cooler											
Check coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the breather filter for charge air regulation											
Clean the oil bath air filter											
Check intake and exhaust pipes for leaks											
Check the particle filter system											
Clean the pressure control device at the changing particle filter											
Clean the water trap at the changing particle filter											
Gearbox											
Axle clamps and wheel motors: check the mountings											
Drive axle: check the side stops											
Chassis, bodywork and fittings											

Inspection and maintenance overview

At operating hours									Carried out	
1000		2000		4000		5000		7000		
8000		10000		11000		13000		14000		
16000		17000		19000		20000			✓	✗
Chassis, tilt cylinders and steering axle: check the mountings										
Check and grease other bearings and joints										
Chassis frame										
Check the parking brake for correct operation										
Clean and grease steering axle										
Steering cylinder and steering pivot pin: check the mountings										
Controls										
Check and oil the pedals										
Electrics										
Check the condition and secure positioning of electric cables, cable connectors and connections										
Battery: Check condition, acid level and acid density (even for maintenance-free batteries)										
Hydraulics										
Hydraulic system: Check the oil level.										
Check the bleeder valve on the hydraulic oil tank for correct operation										
Check the hydraulic system for leaks										
Double hoses: check the pre-load										
Load lift system										
Check the condition, secure mounting and function of the lift mast, lift mast chain, lift cylinder and end stops										
Adjust lift mast chain and spray with chain spray										
Check fork arms and arm safety devices										
Clean and grease the sideshift, check the mounting										
Subsequent tasks										
Carry out functional test and test drive										
Attach maintenance sticker										

3000 h service plan

At operating hours										Carried out	
3000		15000								✓	✗
Information on service plan											
Dependent on the consumables used, the driving style and the operating conditions, but at least every two years. Refer also to the recommendation for consumables.											
Preparations											
Clean the truck (if necessary)											
Read out error memory and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Renew the engine oil											
Change the engine oil filters											
Change the fuel filter											
Check condition and secure positioning of engine support and engine mount											
Change V-ribbed belt											
Change toothed belt and tensioning pulley (at latest after 5 years)											
Clean water cooler and hydraulic oil cooler											
Check coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the safety cartridge in the air filter											
Change the breather filter for charge air regulation											
Clean the oil bath air filter											
Check intake and exhaust pipes for leaks											
Check the particle filter system											
Clean the pressure control device at the changing particle filter											
Clean the water trap at the changing particle filter											
Gearbox											
Axle clamps and wheel motors: check the mountings											
Drive axle: check the side stops											
Drive axle: check the bearing for wear											

Inspection and maintenance overview

At operating hours									Carried out	
3000		15000							✓	✗
Hydraulic pump on engine: check the mountings										
Chassis, bodywork and fittings										
Chassis, tilt cylinders and steering axle: check the mountings										
Check and grease other bearings and joints										
Chassis frame										
Check the parking brake for correct operation										
Clean and grease steering axle										
Steering cylinder and steering pivot pin: check the mountings										
Controls										
Check and oil the pedals										
Check the bellows at the actuating lever										
Electrics										
Check the condition and secure positioning of electric cables, cable connectors and connections										
Battery: Check condition, acid level and acid density (even for maintenance-free batteries)										
Hydraulics										
Hydraulic system: Check the oil level.										
Check the bleeder valve on the hydraulic oil tank for correct operation										
Change feed/pressure/suction filter and breather filter of the hydraulic system										
Check the hydraulic system for leaks										
Check tilt cylinder bearing for wear										
Double hoses: check the pre-load										
Load lift system										
Check the condition, secure mounting and function of the lift mast, lift mast chain, lift cylinder and end stops										
Adjust lift mast chain and spray with chain spray										
Check fork arms and arm safety devices										
Clean and grease the sideshift, check the mounting										
Check slide guides on sideshift for wear										
Subsequent tasks										

Inspection and maintenance overview

At operating hours									Carried out	
3000		15000							✓	✗
Carry out functional test and test drive										
Attach maintenance sticker										

Inspection and maintenance overview

6000 h service plan

At operating hours										Carried out	
6000		12000								✓	✗
Information on service plan											
Dependent on the consumables used, the driving style and the operating conditions, but at least every three years. Refer also to the recommendation for consumables.											
Preparations											
Clean the truck if necessary											
Read out error memory and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Renew the engine oil											
Change the engine oil filters											
Drain the fuel filter											
Check condition and secure positioning of engine support and engine mount											
Change V-ribbed belt											
Change toothed belt and tensioning pulley (at latest after 5 years)											
Clean water cooler and hydraulic oil cooler											
Check coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the safety cartridge in the air filter											
Change the breather filter for charge air regulation											
Clean the oil bath air filter											
Check intake and exhaust pipes for leaks											
Check the particle filter system											
Clean the pressure control device at the changing particle filter											
Clean the water trap at the changing particle filter											
Gearbox											
Axle clamps and wheel motors: check the mountings											
Drive axle: check the side stops											
Drive axle: check bearing for wear											

At operating hours										Carried out	
6000		12000								✓	✗
Hydraulic pump on engine: check the mountings											
Chassis, bodywork and fittings											
Chassis, tilt cylinders and steering axle: check the mountings											
Check and grease other bearings and joints											
Chassis frame											
Check the parking brake for correct operation											
Clean and grease steering axle											
Steering cylinder and steering pivot pin: check the mountings											
Controls											
Check and oil the pedals											
Check the bellows at the actuating lever											
Electrics											
Check the condition and secure positioning of electric cables, cable connectors and connections											
Battery: Check condition, acid level and acid density (even for maintenance-free batteries)											
Hydraulics											
Change hydraulic oil											
Check the bleeder valve on the hydraulic oil tank for correct operation											
Change feed/pressure/suction filter and breather filter of the hydraulic system											
Check the hydraulic system for leaks											
Check tilt cylinder bearing for wear											
Double hoses: check the pre-load											
Load lift system											
Check the condition, secure mounting and function of the lift mast, lift mast chain, lift cylinder and end stops											
Adjust lift mast chain and spray with chain spray											
Check fork arms and arm safety devices											
Clean and grease the sideshift, check the mounting											
Check slide guides on sideshift for wear											
Subsequent tasks											

5 Maintenance

Inspection and maintenance overview

At operating hours										Carried out	
6000		12000								✓	✗
Carry out functional test and test drive											
Attach maintenance sticker											

9000 h Service plan

At operating hours										Carried out	
9000		18000								✓	✗
Information on service plan											
Dependent on the consumables used, the driving style and the operating conditions, but at least every four years. Refer also to the recommendation for consumables.											
Preparations											
Clean the truck (if necessary)											
Read out error memory and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Renew the engine oil											
Change the engine oil filters											
Change the fuel filter											
Check condition and secure positioning of engine support and engine mount											
Change V-ribbed belt											
Change toothed belt and tensioning pulley (at latest after 5 years)											
Change the water pump											
Clean the water cooler and hydraulic oil cooler											
Change the coolant											
Check coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the safety cartridge in the air filter											
Change the breather filter for charge air regulation											
Clean the oil bath air filter											
Check intake and exhaust pipes for leaks											
Check the particle filter system											
Clean the pressure control device at the changing particle filter											
Clean the water trap at the changing particle filter											
Gearbox											
Axle clamps and wheel motors: check the mountings											

Inspection and maintenance overview

At operating hours									Carried out	
9000		18000							✓	✗
Drive axle: check the side stops										
Drive axle: check the bearing for wear										
Hydraulic pump on engine: check the mountings										
Chassis, bodywork and fittings										
Chassis, tilt cylinders and steering axle: check the mountings										
Check and grease other bearings and joints										
Chassis frame										
Check the parking brake for correct operation										
Clean and grease steering axle										
Steering cylinder and steering pivot pin: check the mountings										
Controls										
Check and oil the pedals										
Check the bellows at the actuating lever										
Electrics										
Check the condition and secure positioning of electric cables, cable connectors and connections										
Battery: Check condition, acid level and acid density (even for maintenance-free batteries)										
Hydraulics										
Change the hydraulic oil (omitted for 9000 operating hours)										
Hydraulic system: Check the oil level.										
Check the bleeder valve on the hydraulic oil tank for correct operation										
Change feed/pressure/suction filter and breather filter of the hydraulic system										
Check the hydraulic system for leaks										
Check tilt cylinder bearing for wear										
Double hoses: check the pre-load										
Load lift system										
Check the condition, secure mounting and function of the lift mast, lift mast chain, lift cylinder and end stops										
Adjust lift mast chain and spray with chain spray										
Check fork arms and arm safety devices										
Clean and grease the sideshift, check the mounting										

At operating hours										Carried out	
9000		18000								✓	✗
Check slide guides on sideshift for wear											
Subsequent tasks											
Carry out functional test and test drive											
Attach maintenance sticker											

Engine

Engine

Checking the engine oil level

**ENVIRONMENT NOTE**

Observe information regarding working with consumables

**WARNING**

When topping up the oil, no oil should drip on to hot engine parts — Risk of fire!

Fill carefully.

CAUTION

Different oil specifications.
Observe the recommendations for consumables.

CAUTION

The oil level should never be above the upper mark.
Drain engine oil if necessary.

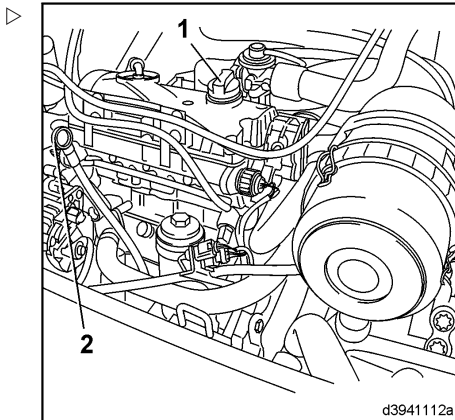
- Park the forklift truck on level ground.
- Open the bonnet.
- Take the oil dipstick (2) out of the engine.
- Wipe the oil dipstick with a clean cloth.
- Push the oil dipstick fully back in and remove it again.

Oil level should be between the marks.

- If necessary, pour in engine oil through the filling opening until it reaches the upper dipstick mark.
- To do so, remove filler cap (1) from the filling opening.

Difference in quantity between max. and min. marks: 1.0 l.

- Fit filler cap and turn to tighten.
- Close the bonnet.



Change engine oil

(at the latest after 12 months)

CAUTION

Different oil grades result in different maintenance intervals.

Recommendations for consumables must always be observed.

Draining the engine oil



WARNING

Risk of scalding when draining hot engine oil!

Protective equipment must be worn.



ENVIRONMENT NOTE

Observe information regarding working with consumables.



NOTE

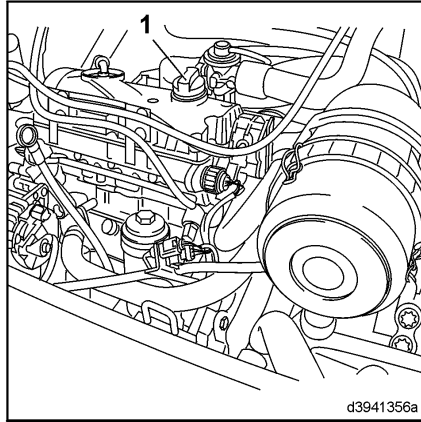
Only change engine oil when the engine is at operating temperature.

- Drive truck over pit.
- Switch off the engine.
- Place a collection vessel under vehicle chassis.
- Open the bonnet.

5 Maintenance

Engine

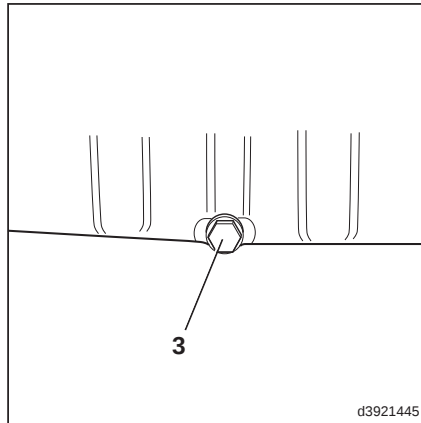
- Remove the filler cap (1) from the filling opening. ▷
- Remove cover on floor of frame.
- Unscrew the engine oil drain plug (3) underneath from the oil sump.
- Allow all oil to drain off into collection vessel.



- Fit the drain plug (3) with a new sealing ring. ▷
- Tightening torque: 30 Nm
- Refit the cover (1).

Top up with motor oil

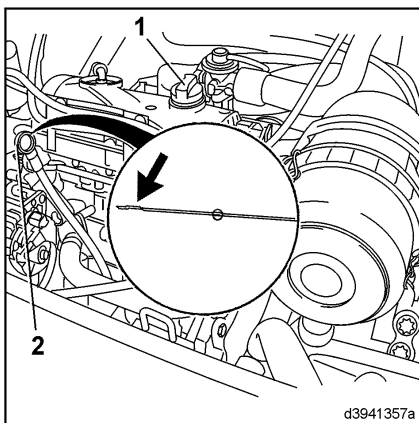
- Switch off ignition.



- Open the filler cap (1) of the filling opening.
- Pour new engine oil into the filling opening according to the recommendations for consumables.

Fill quantity with filter change: max. 4.5 l

- Using the dipstick (2), check the engine oil level after adding oil and top up to max. mark.
- Fit filler cap (1) and turn to tighten.



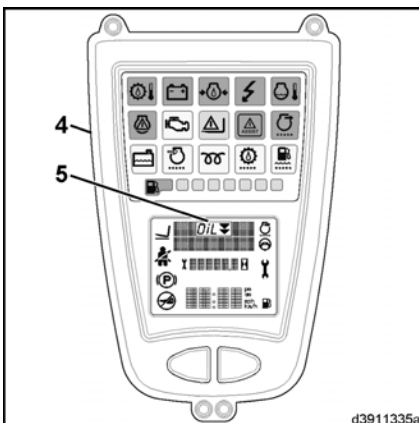
- Check the indicator unit (4).

The Oil display (5) (special equipment) in the display unit must go out. The oil level will not be displayed reliably in the display unit until approx. 10 minutes after the oil is added.



NOTE

After changing the oil and the filter, carry out an engine test run, checking the oil pressure display and the tightness of the oil drain plug and oil filter. For an accurate oil level check, especially after changing the oil filter, it is necessary to switch off the engine again and then carry out an oil level check after approx. one minute.



Changing the engine oil filter



WARNING

Risk of scalding with hot engine oil!
Wear protective equipment.



ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Open the bonnet.

5 Maintenance

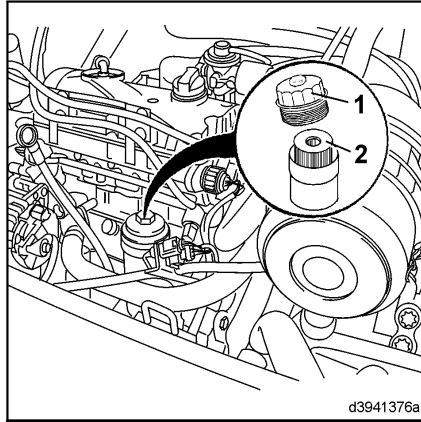
Engine

- Release the cap (1) from the engine oil filter (2) with a 32 AF open-ended spanner and unscrew by hand. ➤
- Collect oil that escapes from the oil filter and dispose of it and the oil filter in an environmentally friendly manner.
- Insert new oil filter insert.
- Replace O-ring of cap.
- Screw on cap by hand until O-ring is seated.
- Tighten to 25 Nm.
- Close the bonnet.



NOTE

After changing the oil and the filter, carry out an engine test run, checking the oil pressure indicator and the tightness of the oil drain plug and oil filter. For an accurate oil level check, especially after changing the oil filter, it is necessary to switch off the engine again and then carry out an oil level check after approx. one minute.



Fuel

Check the fuel level



ENVIRONMENT NOTE

Observe information regarding working with consumables.

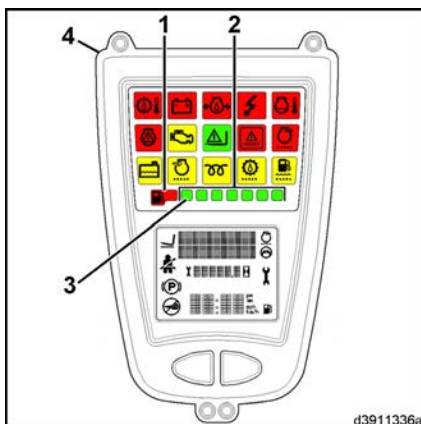
- Switch on the ignition.

The fuel tank level display on the display unit (4) shows the current fuel level. ▷

The tank is full when all 7 LEDs (2) and the petrol pump illuminated field (1) light up green.

As the fuel tank empties, the LEDs are extinguished, starting from the right. Once the reserve is reached, the petrol pump illuminated field (1) turns red and the LEDs (3) light up green. There is only approx. 5.0 litres of fuel left in the tank and more fuel must be added.

If only the petrol pump illuminated field (1) is lit up red, the tank is empty.



⚠ CAUTION

Air intake can cause operational faults in the fuel injection system.

Therefore, never empty the fuel tank completely.

Filling up with fuel

⚠ WARNING

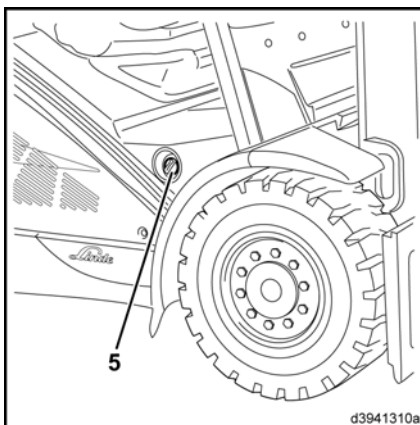
Carelessness when refuelling can cause fires, explosions or environmental damage.

- Do not smoke or use an open flame,
- Do not spill any fuel on the ground or on hot parts,
- Comply with regulations on handling diesel fuel.

- Open the filler cap (5) on the fuel tank and add clean diesel fuel. ▷

Max. fill quantity: 70 l

- Fit lid and turn to tighten.



Draining water from the fuel filter.



ENVIRONMENT NOTE

Observe information regarding working with consumables.

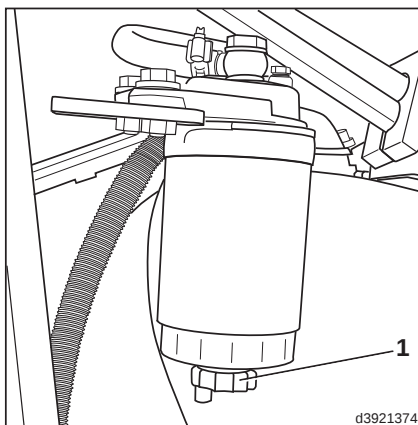
- Unscrew 3 screws from the maintenance cover on the right side of the forklift truck.
- Remove the maintenance cover.
- Open the drainage screw (1) on the fuel filter and drain approx. 100 cm³ into a container until clean fuel emerges. ▷



ENVIRONMENT NOTE

Dispose of the liquid in an environmentally friendly manner.

- Tighten the drainage screw again.
- Refit the maintenance cover.



Changing the fuel filter

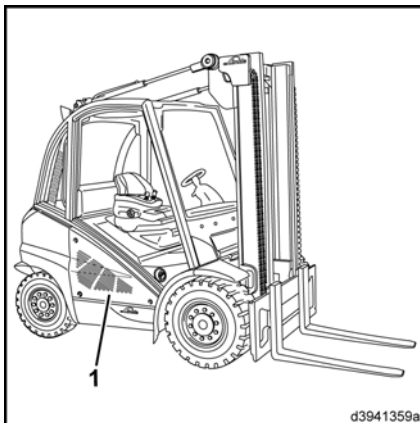
(at the latest after 12 months)



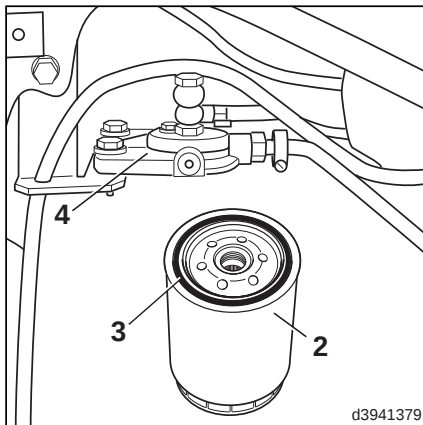
ENVIRONMENT NOTE

Observe information about working materials.

- Unscrew 3 screws from the maintenance cover (1) on the right side of the forklift truck.
- Remove the maintenance cover.



- Place a collection vessel under the fuel filter (2).
- Clean the outside of the fuel filter.
- Unscrew the old filter and dispose of it in an environmentally friendly manner.
- Clean the sealing face of the filter top (4).
- Top up the new filter with clean fuel
- Lightly wet a new sealing ring (3) with fuel.
- Tighten the new filter (2) until the sealing ring (3) touches the filter top (4).
- Fully tighten the filter by hand.
- Start the engine and check for leaks.



If necessary, tighten the filter further by hand.

- Attach the maintenance cover.

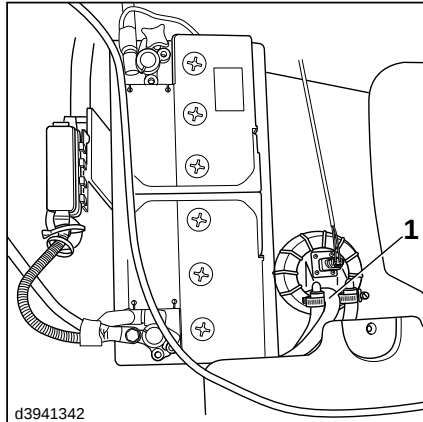
Clean the fuel tank ventilation hose

When operating the truck in dusty and dirty conditions, the ventilation hose (1) to the fuel tank can become blocked. It must therefore be cleaned at regular intervals, depending on how much it is used.

5 Maintenance

Engine

- Disconnect the hose (1) from the pipe union at the fuel signal transmitter and blow dry compressed air through it.
- Slide the hose (1) onto the pipe union as far as the stop.



Checking the coolant level

ENVIRONMENT NOTE

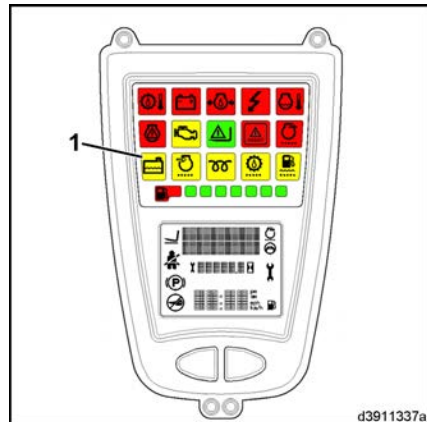
Observe information regarding working with consumables.

NOTE

If the display (1) lights up (special equipment), the coolant level is too low and the coolant must be topped up. If the coolant continues to fall below the min. mark, the truck only moves at creep speed.

NOTE

For models without a display, (1) the coolant level can be checked at the inspection window (2).

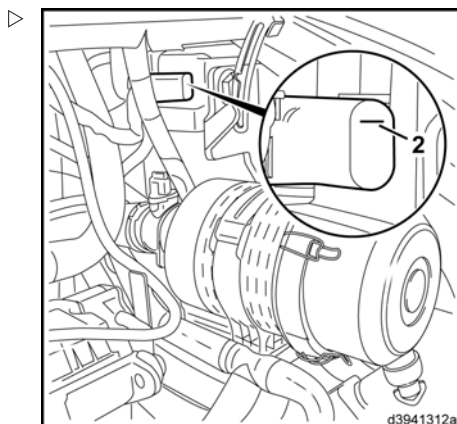


CAUTION

Only use an approved coolant.
Observe the recommendations for consumables.

- Open the bonnet.

The coolant level should not be below the mark at the inspection window (2).



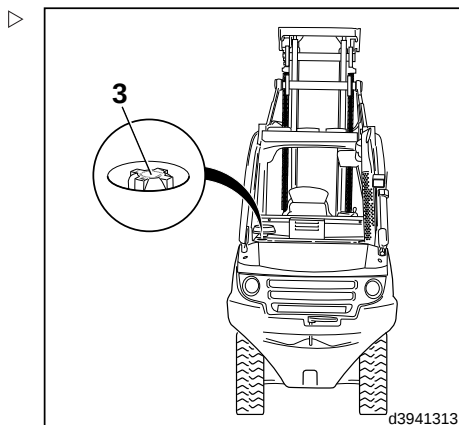
- If necessary, top up the coolant. To do this, twist and remove the filler cap (3) at the counterweight.



⚠ WARNING

The expansion reservoir is under pressure! Risk of scalding due to hot coolant.

Unscrew the filler cap (3) slowly, and only if the expansion reservoir is not hot.



- Fit filler cap and turn to tighten.
- Close the bonnet.

Changing the coolant

The cooling system must be filled all-year-round with a mixture of water and phosphate-free, glycol-based coolant additive with anti-corrosion additives to prevent lime scale deposits and damage caused by frost and corrosion, and to raise the boiling temperature.

5 Maintenance

Engine



⚠ WARNING

Never open the filler cap (2) when the engine is hot. Risk of scalding!

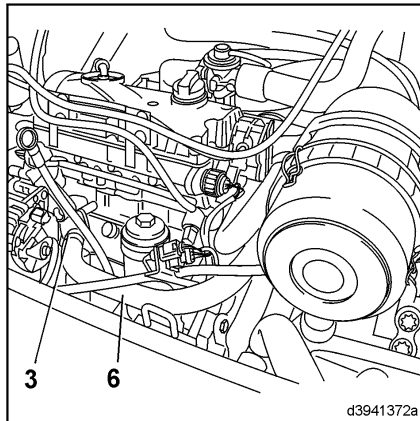
Wait until the coolant has cooled down.



ENVIRONMENT NOTE

Observe information regarding working with consumables.

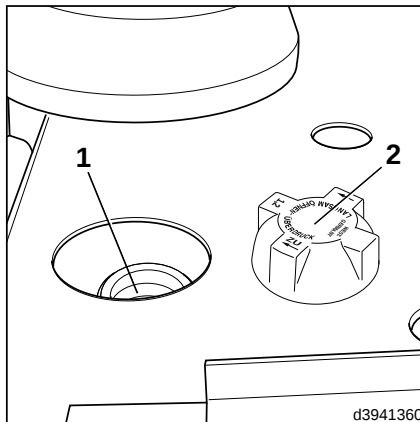
- Open the bonnet.
- Place a collection container under the coolant hose (6).
- Release the clip (3) on the coolant hose.
- Remove the hose.
- Drain off all coolant. Dispose of coolant in an environmentally friendly manner.
- Refit the coolant hose (6) and secure with the clip (3).



- Add new coolant through the filling opening (1).



Coolant level must be between min. and max. marks on the filler neck.



➤ Read off the filling level in filler neck.

- Min. marking is the edge (4) of the lower step.
- Max. marking is the edge (5) of the upper step.

Difference in quantity between min. and max.:
approx. 0.75 l

Filling quantity in cooling system

without heating system and air conditioning:
8.5 l

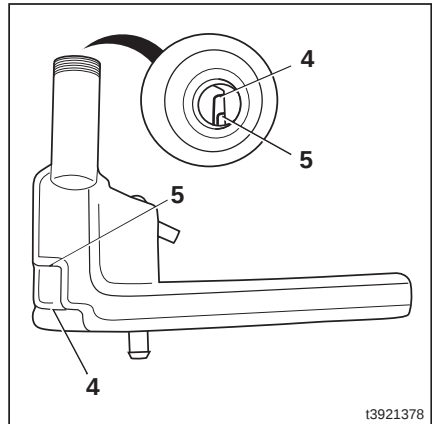
with heating system and air conditioning:
10.0 l

The frost protection should be sufficient for temperatures down to -25 °C. The mixture ratio required here is 40 % coolant additive and 60 % drinking water.

Mixture ratio for lower temperatures:

Temperature	Coolant additive	Drinking water
-30 °C	45 %	55 %
-35 °C	50 %	50 %
-40 °C	60 %	40 %

- Run engine until cooling system has been bled of air.
- Check coolant level.
- Fit filler cap (2) and turn to tighten.
- Close the bonnet.



Checking the coolant concentration

The cooling system must be filled all-year-round with a mixture of water and phosphate-free, glycol-based coolant additive with anti-corrosion additives to prevent lime scale deposits and damage caused by frost and corrosion, and to raise the boiling temperature.

5 Maintenance

Engine



⚠ WARNING

Never open the filler cap (2) when the engine is hot. Risk of scalding!

Wait until the coolant has cooled down.



ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Check the coolant concentration at the filling opening (1).

The frost protection should be sufficient for temperatures down to -25°C. The mixture ratio required here is 40% coolant additive and 60% drinking water.

Mixture ratio for lower temperatures:

Temperature	Coolant additive	Drinking water
-30° C	45%	55%
-35° C	50%	50%
-40° C	60%	40%

If coolant additive level is too low:

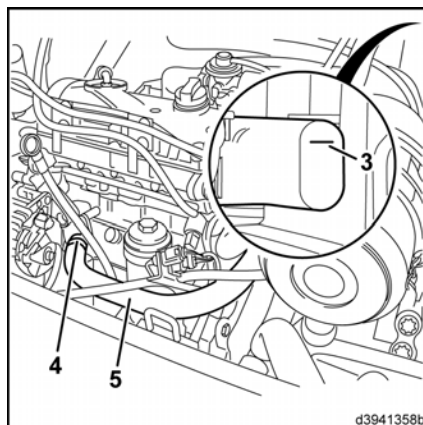
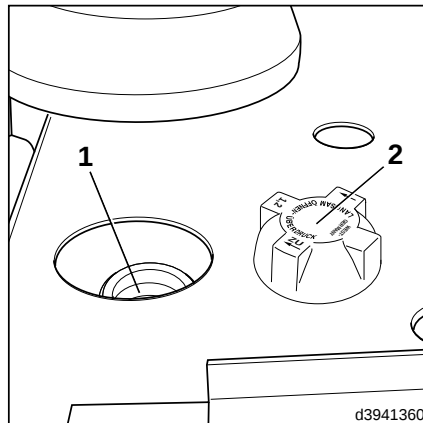
- Open the bonnet.
- Place a collection container under the coolant hose (5).
- Release clip (4) on the coolant hose.
- Remove the hose and drain off some of the coolant.
- Attach the coolant hose again.



ENVIRONMENT NOTE

Dispose of removed coolant in an environmentally friendly manner.

- Add coolant additive to the filling opening (1) until the correct mixture ratio is achieved.
- Check the coolant level in the inspection window (3).
- Fit filler cap (2) and turn to tighten.



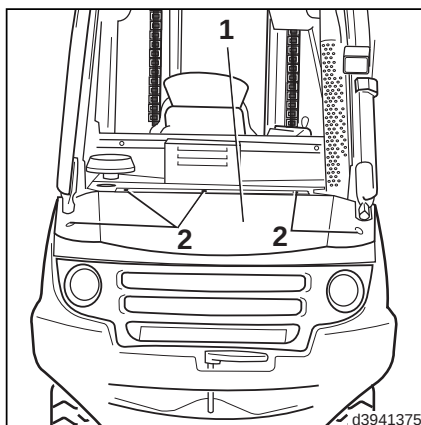
- Close the bonnet.

Cleaning the water cooler and hydraulic oil cooler, and checking them for leaks

NOTE

Only clean the water cooler and hydraulic oil cooler when the engine is switched off and has cooled down.

- Open the bonnet.
- Release the 5 screws (2).
- Remove the cover sheet (1) from the rear.



Engine

Cleaning with compressed air

- Blow out the cooler (3) from the engine side using compressed air. ▷
- Rinse out the released dirt using a water jet.

Cleaning with cleaner solvent

⚠ CAUTION

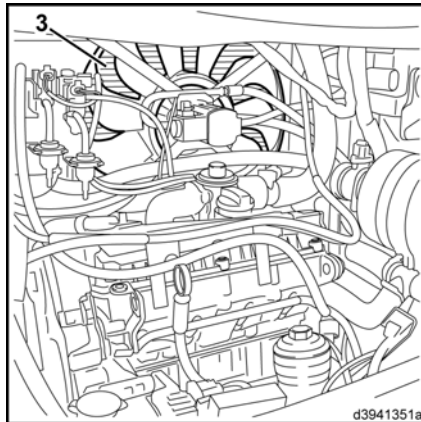
Humidity must not penetrate the three-phase alternator.

Therefore, protect it from direct contact with the water jet.

- Spray the cooler (3) with a conventional cleaner solvent and leave it to work for approx 10 minutes.
- Spray the cooler from the engine side with a direct jet of water until it is clean.
- Warm up the engine.

This evaporates the water residue to prevent the formation of rust.

- Check the connection screw joints, cooling hoses and the pipes on the water cooler and hydraulic cooler for leaks.
- Replace porous hoses. Re-tighten hose clips if necessary.
- Refit the cover sheet (1).



Checking the condition and secure positioning of the engine support and engine mounting

The elastic bearings used for the engine suspension are subjected to high loads. Their service life is limited by the operating conditions.

- Check rubber elements for cracks and severe deformation; if necessary, exchange them.

Please contact your authorised dealer.

- Check all screws and nuts in the engine support and engine mounts for damage. Check that they are securely attached.

Tightening torques of the mounting screws and nuts:

Engine, right:

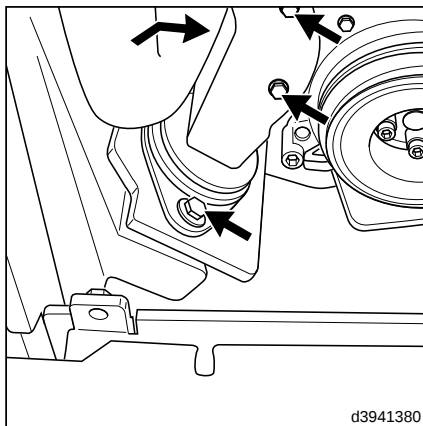
1 SKS M 8 (rear)	23 Nm
2 ZS M 10 (rear)	46 Nm
2 ZS M 10 (side)	46 Nm
1 SKM M 12 (bottom)	110 Nm
2 SKS M 12 (spring element)	80 Nm

Engine, left:

1 SKS M 12 (spring element)	80 Nm
1 SKM M 12 (bottom)	110 Nm

Engine, top middle:

1 spherical collar nut A 14 (rod)	110 Nm
2 SKS M 12 (spring element)	80 Nm



Check condition of the ribbed vee belt



WARNING

Do not touch rotating parts!
Switch off the engine and take the key out of the ignition switch.



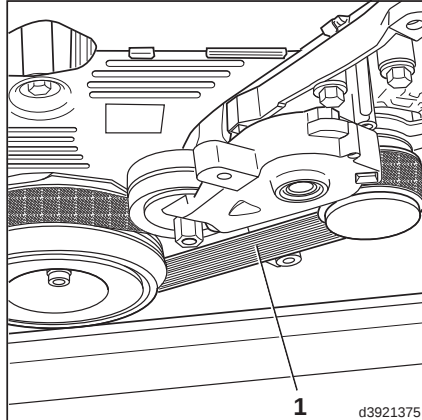
NOTE

A defective or loose ribbed vee belt will cause the vehicle electrical voltage to be too low.

5 Maintenance

Engine

- Open the bonnet.
- Remove the maintenance cover on the right hand side.
- Check the ribbed V-belt (1) for signs of excessive wear, frayed edges, cracks across the belt and traces of oil.
- Exchange the ribbed vee belt if it is damaged.
- Fit maintenance panel again.
- Close the bonnet.



Replacing ribbed V-belt



WARNING

Do not touch rotating parts.
Switch off the engine and remove ignition key.



NOTE

On trucks without air conditioning, first disconnect the ribbed V-belt from the alternator and when reassembling, replace it last. On trucks with air conditioning, first disconnect the ribbed V-belt from the guide pulley and when reassembling, replace it last. Note the running direction of the ribbed V-belt.

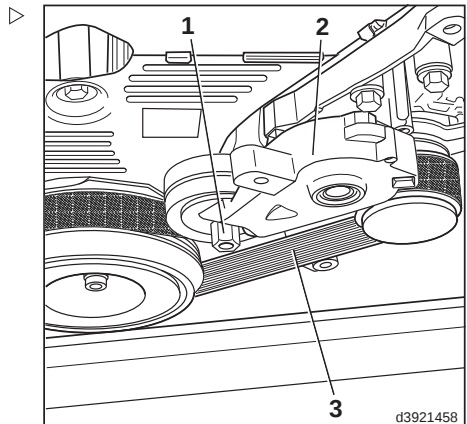
- Open the bonnet.
- Remove the maintenance cover on the right-hand side.

- Mark the running direction of the ribbed V-belt (3).
- Swing away (2) the tensioner pulley, (1) using a flat 16 AF ring spanner at the tensioning lever.

i NOTE

Observe the running direction of the ribbed V-belt (3).

- Replace the ribbed V-belt.
- Refit the side maintenance cover.
- Close the bonnet.



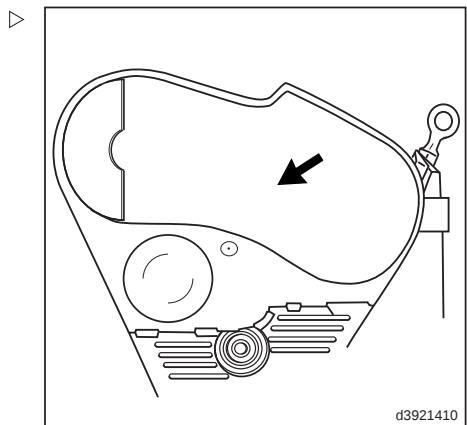
Checking the condition and tension of toothed belt



⚠ WARNING

Do not touch rotating parts!
Switch off the engine and remove ignition key.

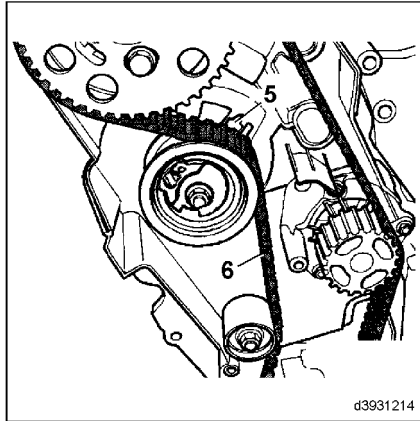
- Remove the maintenance cover on the right-hand side.
- Take off the engine cover.
- Check the toothed belt for excessive wear, frayed edges, damaged teeth, cracks across the belt and traces of oil.



5 Maintenance

Engine

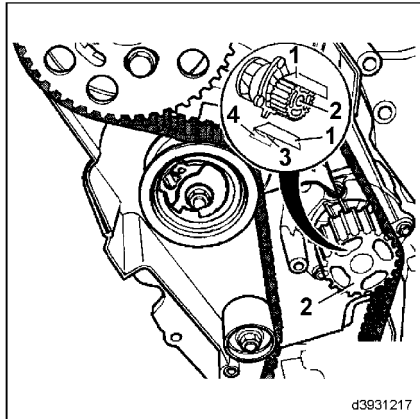
- Check that the pointer (5) is positioned centrally in front of the gap in the baseplate.
- To readjust or change the toothed belt, please contact your authorised dealer



- Check the water pump gear (2) for wear.
- Place a knife edge (1) on the tooth (4) and use a feeler gauge (3) to establish the thinning (3) over the length of the tooth.

If the wastage is more than 0.3 mm the coolant pump together with the crankshaft pinion gear and the toothed belt must be exchanged. Please contact your authorised dealer.

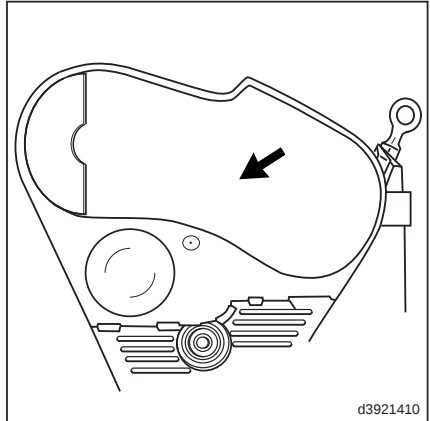
- Refit the engine cover.
- Refit the side maintenance cover.



Renew the toothed belt and idler pulley

NOTE

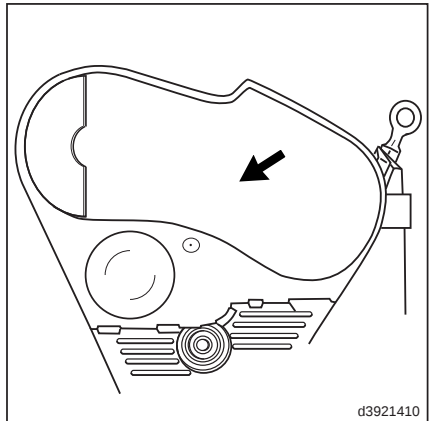
Special know-how and tools are required for the renewal of the toothed belt and idler pulley. Please contact your authorised dealer for this service.



Change the water pump

NOTE

Changing the water pump requires specialist knowledge and special tools. Please contact your authorised dealer.



Changing the air filter cartridge, checking the vacuum-operated switch

(After 1000 operating hours at the latest)

NOTE

The air filter cartridge must not be cleaned. The air filter cartridge must be changed when the vacuum display (1) lights up in the display unit.

5 Maintenance

Engine

- Open the bonnet.
- Open the 3 fasteners (2) and remove the air filter cover (3).
- Pull out the air filter cartridge.

CAUTION

Clean the inside of the air filter housing thoroughly. Do not blow it out with compressed air.

Wipe the housing clean with a clean cloth.

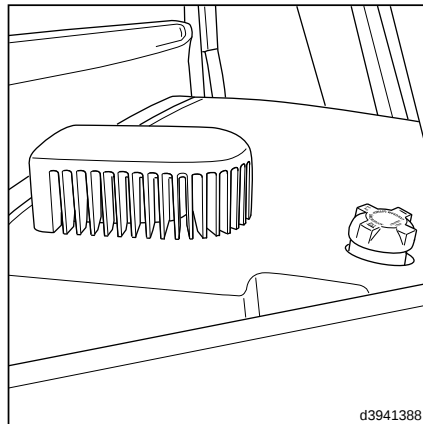
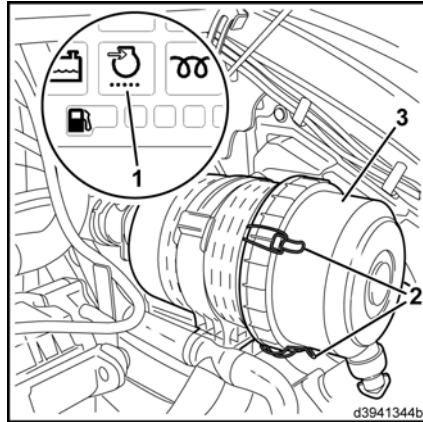
- Insert the new air filter cartridge back into the housing.

When installing, ensure that the air filter cartridge is not damaged and that the seal on the filter housing is securely in place.

- Fit the air filter cover.

- With the engine running, slowly close the air filter intake opening by covering it (e.g. with a board or a plate) until the air filter indicator light (1) illuminates in the display unit.

In order to avoid damage, the intake opening must not be closed further after the indicator light has illuminated. If the air filter indicator light does not illuminate, contact your authorised dealer.



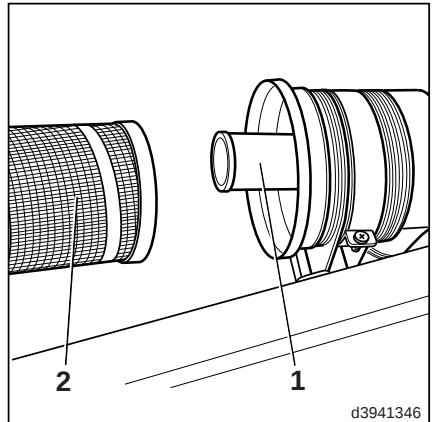
Changing the air filter safety cartridge

- Change the safety cartridge (1):
 - Two years after it has entered operation at the latest.
 - If the air filter vacuum display lights up again immediately after the air filter cartridge has been serviced.
 - If you have a defective air filter cartridge.

⚠ CAUTION

Safety cartridges must not be cleaned or reused. Do not start the engine without an air filter cartridge.

The function of the safety cartridge is to prevent dust penetration while the main cartridge is being changed or if a damaged main cartridge is accidentally used.



d3941346

- Switch off the engine.
- Open the bonnet.
- Take off the air filter cover and remove the air filter cartridge (2).
- Pull out the safety cartridge.
- Insert the new safety cartridge.
- Fit the air filter cartridge and attach the air filter cover.
- Close the bonnet.

Check the dust discharge valve

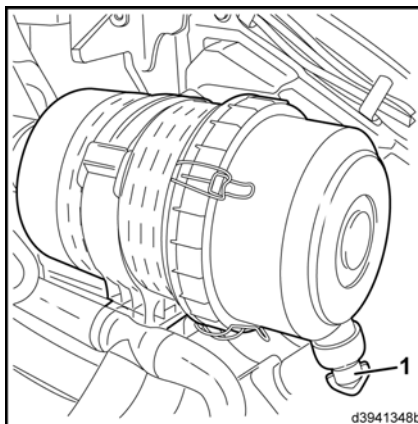
The dust discharge valve (1) is largely maintenance-free.

- Open the bonnet.

5 Maintenance

Engine

- Compress the valve (1) and remove the remaining dust.
- If the valve is damaged, replace it.
- Close the bonnet.



Changing the breather filter for the charge air pressure regulator



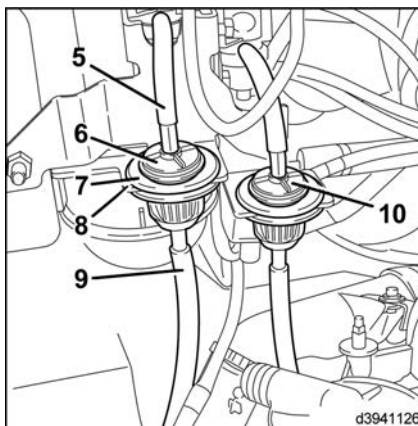
ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Open the bonnet.

Both filters are located at the back right-hand side next to the engine.

- Detach hoses (5) and (9) from the filter.
- Pull the filter (6) upwards out of the rubber grommet (7) in the support (8).
- Dispose of filter in an environmentally friendly manner.
- Insert the new filter into the support up to the stop.
- Slide on the hose (5) from above as far as the stop.
- Slide on the hose (9) from below as far as the stop.
- Check that the filter is properly seated.
- Change the second filter (10) in the same way.

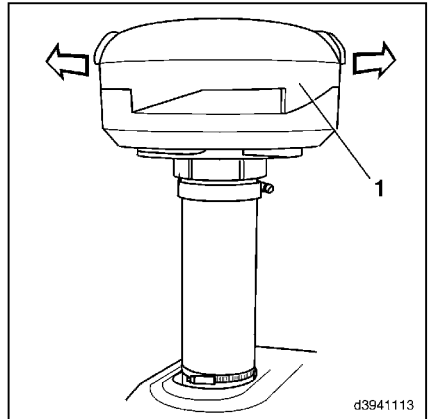


Cleaning the prefilter (special equipment)

NOTE

The dust collecting tank must never be more than half full with dust. If there is a heavy accumulation of dust, the tank must be emptied every day.

- Open the dust collecting tank (1) by turning to the right (clockwise).
- Lift out the dust collecting tank and empty.
- Replace the dust collecting tank and secure by turning to the left (anti-clockwise).



Cleaning the oil bath air filter (special equipment)

ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Switch off the engine.

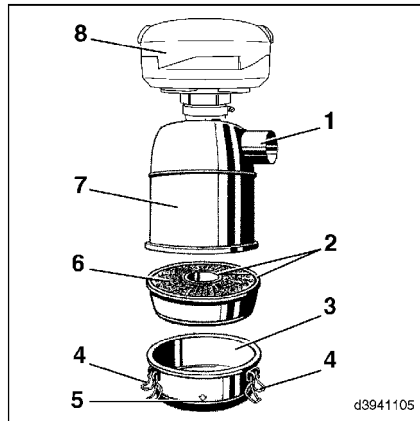
5 Maintenance

Engine

- Open fasteners (4) on oil tank (3).
- Remove oil tank (downwards), then empty and clean.
- Clean and check seals (2) and change if damaged.
- Loosen the air hose clip on the clean air connection (1) and remove the hose.
- Detach and clean dust collecting tank (8).
- Detach upper part of filter (7) on overhead guard.
- Wash out upper part of filter and filter insert with diesel fuel.

The filter and knotted steel inserts can be cleaned with a steam jet.

- Thoroughly dry the cleaned filter.
- Fit upper part of filter and secure air hose with hose clip.
- Fit the dust collecting tank (8).
- Fill the oil tank (3) with engine oil as far as mark (5).
- Fit oil tank (3) to upper part of filter (7), ensuring that it is correctly positioned, then secure with fasteners (4).



Change the oil in the oil bath air cleaner (Optional)



NOTE

An oil change is necessary when the dirt sediments have reached half of the oil filling, and at least whenever the filter element is renewed. Do not add oil between the oil change intervals.

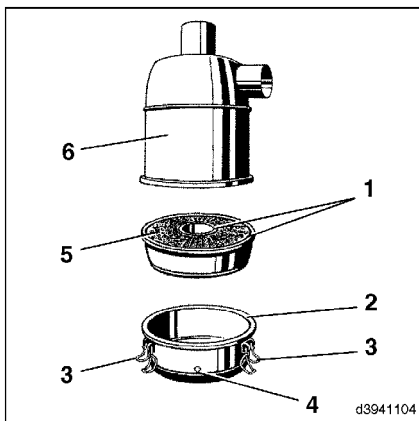


ENVIRONMENT NOTE

Follow the precautions for handling fluids and lubricants.

- Shut the engine off.

- Open the clamps (3) on the oil bowl (2).
- Remove the oil bowl downwards, empty and clean it.
- Clean and check ((1)) the seals, renew if damaged.
- Check the filter element ((5)) and clean if dirty. Fill the oil bowl (2) with engine oil up to the mark(4).
- Place the oil bowl (2) on the filter head (6), check for correct seating and fasten with the clamps (3).



Check suction and exhaust pipes for leaks

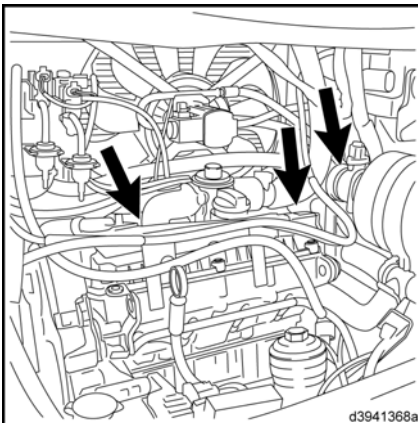
- Check the condition and tightness of the suction air tubes on the air filter.

If you discover leaks, re-tighten the hose clips or change the porous pipes.

- Check the inlet and exhaust manifold on the cylinder head for leaks.

If you discover leaks, re-tighten the fixing screws or change the seals.

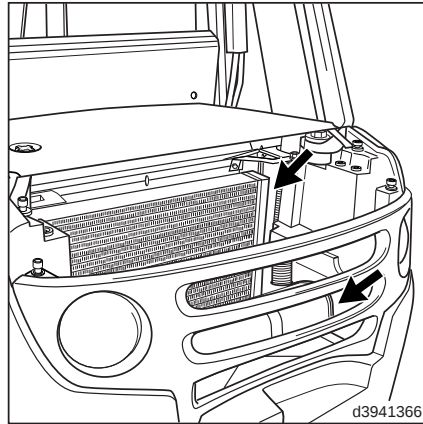
- Check the exhaust pipe connection on the manifold for leaks. If necessary, re-tighten the fixing screws or change the seal.



5 Maintenance

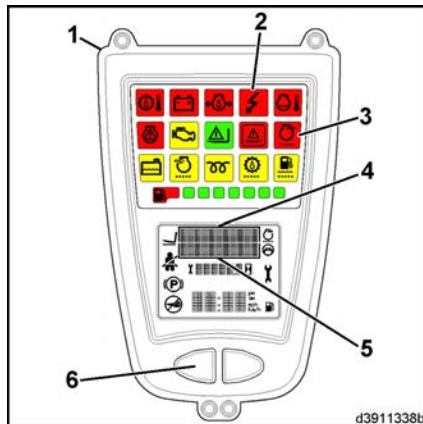
Engine

- Remove the cover on the counterweight.
- Check the connections of the exhaust pipe in the counterweight, and ensure that it is securely fastened and there are no leaks. Re-tighten the fixing screws if necessary.
- Refit the covering on the counterweight.



Regenerating the particle filter

The particle filter must be regenerated after a maximum of 8.5 h engine operation. After 8.0 h of operation, the load indicator (4) flashes in the text field of the display unit (1) to give a visual warning, and a buzzer sounds at intervals. The filter must be regenerated within the next 30 minutes.



If this time period is exceeded, the load indicator (4) continues to flash and the particle filter alarm (3) lights up on the display unit (1). In addition, a buzzer sounds continuously and the engine speed is reduced so that the truck moves only at creep speed. In this case, switch off the truck engine as quickly as possible and perform filter regeneration. Regeneration can also be triggered before the maximum loading time.

DANGER

Do not handle fuel while regeneration is in progress.

In particular do not fill up the truck with fuel during regeneration.



WARNING

During regeneration, high temperatures occur in the particle filter, the exhaust system and in their vicinity. For reasons of fire safety do not allow the regeneration exhaust gases to be drawn into a fume extraction system.

Perform regeneration only in the open air with the engine at operating temperature and away from combustible materials. Do not touch - risk of burns.

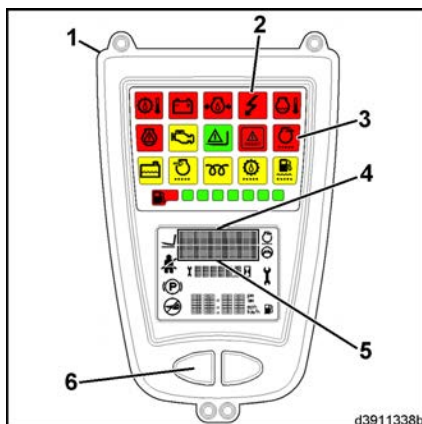
NOTE

Regeneration can be performed only when the engine is stopped and the glow plug starting switch is in the zero position (ignition off).

Regeneration is carried out automatically. Once regeneration has been completed, the switch illumination (operating display) goes out and the truck can be operated again.

- Clean the exhaust air duct thoroughly.
- If more than 30 minutes have elapsed since the engine was switched off, move the glow plug starting switch briefly to position I and then back to the zero position (ignition briefly switched on, then off again).

The particle filter control system will remain active for a further 30 minutes and regener-



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5 Maintenance Engine

ation can be started at any time within this period.

- Press the starting switch (7) in the switch panel downwards and hold for approx. 3 seconds until the integrated yellow switch illumination (operating display) lights up. The particle filter alarm (3) goes out in the display unit.

The operation indicator stays lit up until the end of the regeneration process (approx. 23 minutes).

If the particle alarm was activated before regeneration is restarted, it remains active. In this case, a full regeneration must be performed immediately.

⚠ CAUTION

The engine cannot be started during regeneration. If the truck has to be moved from a safety area or regeneration has to be interrupted for safety reasons, the stop/reset switch (8) must be unlocked and pressed. The regeneration process will immediately be terminated, and the truck can be started. If the regeneration process has been interrupted, the particle filter will not have been regenerated!

Regeneration should only be interrupted in an emergency as this may lead to system damage.

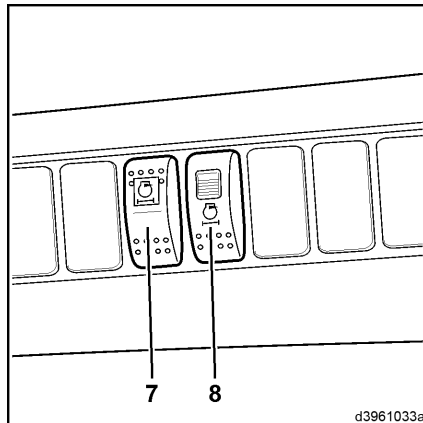
- In the event of an emergency, unlock and press the stop/reset switch (8) in the switch panel.

In the event of an error occurring during regeneration, the error light (2) or the particle filter alarm (3) lights up and an error code appears in the text field (5) of the display unit (1).

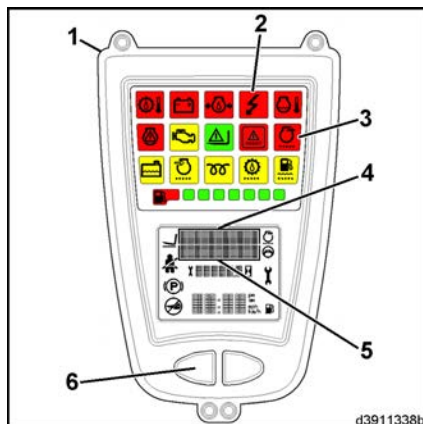
Start regeneration again. If the malfunction still persists, switch off the truck. Please contact your authorised dealer.

NOTE

To switch off the buzzer, press the reset button (6). If the buzzer continues to sound, please contact your authorised dealer. Whilst driving, the glow plug of the regeneration system is cleaned after 1.75 hours by intermediate heating.



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Regenerating the changing particle filter

The particle filter must be regenerated after a maximum of 8.5 h engine operation. After 8.0 hours, the orange indicator light (1) illuminates in the switch panel at the top-right as an optical display, and a buzzer sounds. The clogged up filter must be changed for a regenerated filter within the next 30 minutes. If the exhaust gas back pressure exceeds the admissible level before the 8 hours are up, this is also shown by the orange indicator light and the buzzer. In this case, the filter must also be changed within 30 minutes.

CAUTION

In the event of a power failure (e.g. disconnected battery), the loading time and filter capacity can be exceeded.

Therefore, in the interest of safety, regenerate the particle filter immediately.

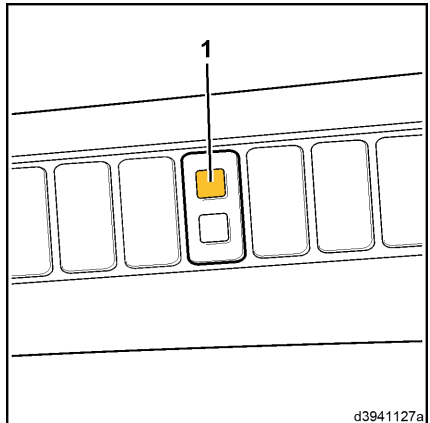


NOTE

Select an appropriate location to assemble the regeneration system. Do not introduce regeneration exhaust gases into suction systems or work areas.

Removing the particle filter

- Drive to the regeneration station.
- Switch off the engine.



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5 Maintenance

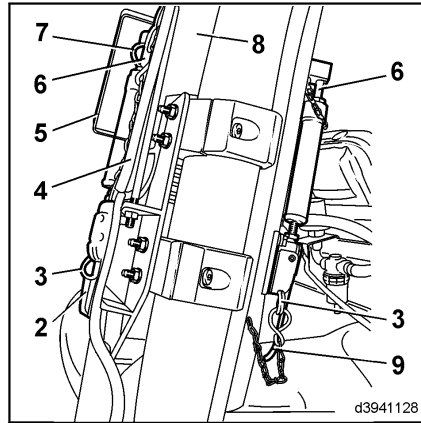
Engine

- Remove the retaining split pin (3) from the quick-locking mechanisms. ➤
- Release quick-locking mechanisms (2) and (9) and disconnect the rod (6) at the top at the filter.
- Remove the retaining split pin (7) at the contact protection.
- Fold out the contact protection (4). Use the bracket (5) to do this.



⚠ WARNING

Danger of burns.
Use protective gloves.



- Remove the particle filter (8), avoiding impact stress.

Cleaning the particle filter

- Insert the particle filter (8) into the regeneration system (10). ➤
- Switch on the regeneration system (10) using the "ON" push-button (15).
- The operating display (12) lights up.

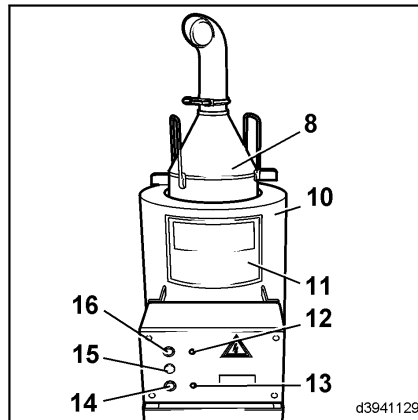
Regeneration is complete once the operating display has gone out by itself.

Regeneration time: approx. 50 minutes.



NOTE

The duration of regeneration is fixed and depends on the size of the filter. The duration of the regeneration procedure is not influenced by the amount of particulate on the filter. An exchange filter can be burnt out when both partially and fully covered with particulate.



⚠ WARNING

Danger of burns.
Observe the decal information (11).

Press the STOP switch (15) in the event of danger.

Only press the STOP switch in an emergency!
The filter must then be fully regenerated again.

An indicator light (13) will illuminate if there is a malfunction during regeneration. Press the acknowledgement button (14). If the error persists, please contact your authorised dealer.

- Remove the particle filter from the regenerator.
- Reattach the particle filter to the truck.

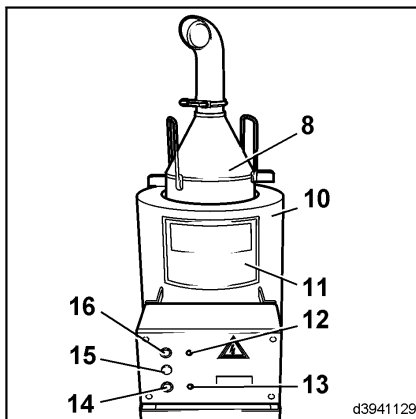
The opening of the tailpipe must point to the right.

- Check the filter is securely in place.



NOTE

When closing the quick-locking mechanism (9), an end limit switch automatically sets the built-in hour meter to zero.



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Checking the particle filter system (special equipment)

- Check electric contacts for secure positioning, corrosion and damage.
- Check the combustion air ducts for damage, leaks and secure positioning.
- Check the fuel-conducting lines and parts for damage, leaks and secure positioning.
- Check that the system functions correctly (alarm, buzzer, regeneration).
- Check burner fastenings for leaks, deformation and secure positioning.
- Clean the corrugated hose and the connection angle (fan to the burner).
- Check that the filter suspension points are securely fitted.
- Check the exhaust-gas-conducting parts for leaks.
- Clean the air intake pipe on the burner.

Engine

To do so, release the olive screw joint and remove particulate deposits using a round steel brush.

- Check that the screws on the filter housing and the exhaust-gas-conducting parts are securely fitted.
- Check the glow plug coil for serious deformation and coking.

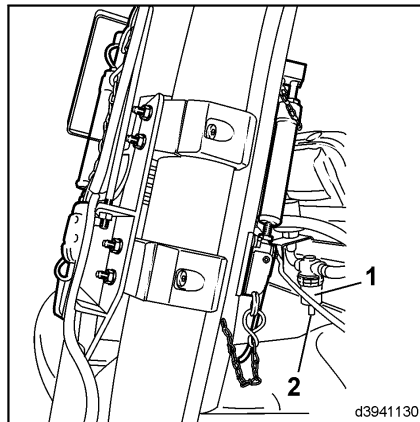
When performing maintenance work, please consult your authorised dealer.

Draining water from the water trap at the changing particle filter (special equipment)

NOTE

Only for particle filters with a changing particle filter system.

- Press in the pin (2) on the bottom of the water trap inspection glass (1) until the water has completely drained out.



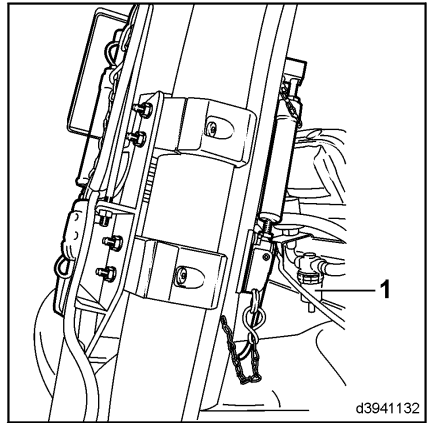
Cleaning the water trap at the changing particle filter (special equipment)

NOTE

Only for particle filters with a changing particle filter system.

- Unscrew the sight glass (1) and wipe out with a clean cloth.

If necessary, completely dismantle the water trap and blow out with compressed air.



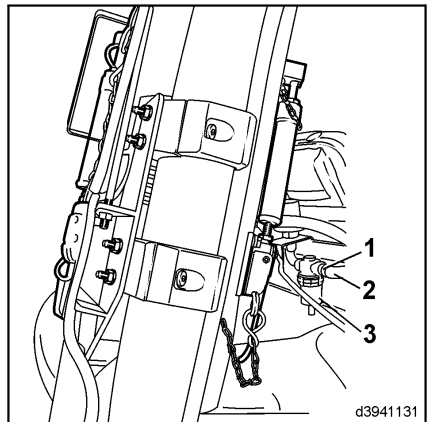
Cleaning the pressure control device at the changing particle filter (special equipment)



NOTE

Only for particle filters with a changing particle filter system.

- Remove the hose clip (1).
- Remove the hose (2) from the water trap (3).
- Blow dry compressed air through the hose and cooling coil towards the filter entrance chamber.
- Reattach the hose and secure with the hose clip.



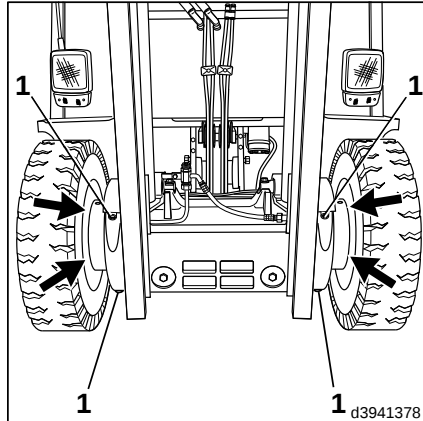
Gearbox

Gearbox

Axle clamps and wheel motors: checking the mountings

- Check that the 4 mountings screws (M20) (1) of the axle clamps have a tightening torque of 540 Nm.
- Check that the mountings screws (M16) (arrows) of the wheel motors have a tightening torque of 275 Nm.

To do so, the drive wheels must be removed beforehand.



Checking and adjusting the side stops on the drive axle

- Check the air gap (1) between the stop (2) and chassis (3).

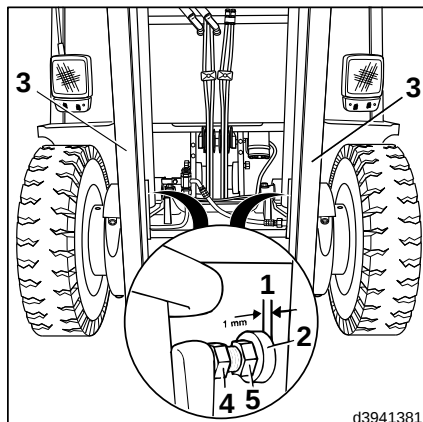
The air gap should not be larger than 1 mm. Check the air gap on the left and right of the axle.

If the air gap is larger, adjust the stop.

- Slacken the hexagon nut (4).
- Adjust the stop with the hexagon nut (5) until the air gap is 1 mm.

If it is no longer possible to adjust the air gap, the axle spring element is worn. The spring element must be changed. Please advise your authorised dealer.

- Tighten the hexagon nut (4).



Checking the drive axle bearings for wear



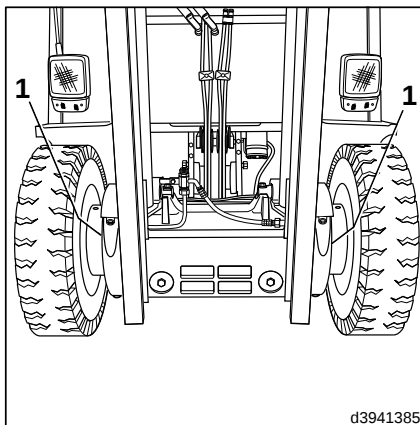
NOTE

The drive axle is installed in the chassis with rubber spring elements on both sides.

- Remove the drive wheels.
- Using a lamp, check the state of the rubber spring elements (1) between the axle, chassis and plastic stops.

The rubber spring elements must be checked on both the left and right of the axle. If the axle spring elements or the plastic stops are worn, these must be changed. Please contact your authorised dealer.

- Attach the drive wheels.



Checking the hydraulic pump's mounting on the engine

- Open the bonnet.
- Tighten the 3 hexagon head screws to the specified tightening torque of 110 Nm.
- Close the bonnet.

Chassis, bodywork and fittings

Chassis, bodywork and fittings

Cleaning the truck

Cleaning requirements depend on the use of the truck. For operations with highly abrasive materials, e.g. salt water, fertiliser, chemicals, cement etc., thorough cleaning should be carried out after the task is complete.

Hot steam or cleaning materials with a powerful degreasing effect should only be used with great caution as they will affect the grease filling of bearings with lifetime lubrication, causing it to escape. As relubrication is not possible, the bearings will be irreparably damaged.

Switch off the engine and wait for it to cool down before cleaning the truck.

Deposits/accumulations of combustible materials, especially on or in the vicinity of parts with high temperatures (e.g. exhaust pipes) must be removed regularly.

CAUTION

When cleaning with a water jet (high-pressure or steam cleaner etc.), it should not be applied directly to the electric and electronic components, plug connectors, air duct plastic pipes, any of the hydraulic and coolant hoses or the area with hose clips. Water should not be used for cleaning in the area of the central electrical system and switch console.

If this cannot be avoided, the affected parts must be covered in advance or only cleaned using a dry cloth or clean compressed air

When using high-pressure cleaners, the minimum distance between the steel pipe and the truck should be approx. 300 mm.

When using compressed air for cleaning, remove stubborn contamination with a cleaner solvent.

Pay particular attention to cleaning the oil filling openings, their surroundings and the lubricating nipples before lubricating.

Bonnet

Opening the bonnet

WARNING

Always observe the following when opening the bonnet with the engine running: The hydraulic drive and a temperature-dependent circuit may cause the fan to suddenly switch on automatically.

Allow engine to cool down.



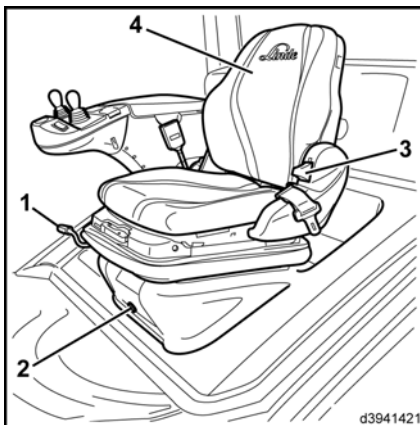
WARNING

Remember that parts of the engine and exhaust will be hot.

Wear protective equipment.

- Move steering column all the way forward and clamp in place.

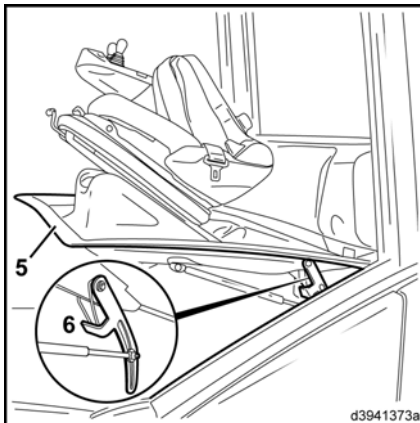
- Pull the lever (1) upwards and push the driver's seat forwards as far as it will go.
- Release the lever (1) and allow the seat to engage.
- If a rear window is installed, push the lever (3) upwards and hold, fold the seat backrest (4) all the way forwards and release the lever (3).
- Push your finger into bore (2) to release the bonnet catch; whilst doing so, release the pressure on the bonnet catch by pressing the bonnet downwards.



- Open bonnet (5) to the stop of the support mounting (6).

**NOTE**

The bonnet can be opened further for specific maintenance work. To open the bonnet in this way, the armrest must firstly be moved all the way down.

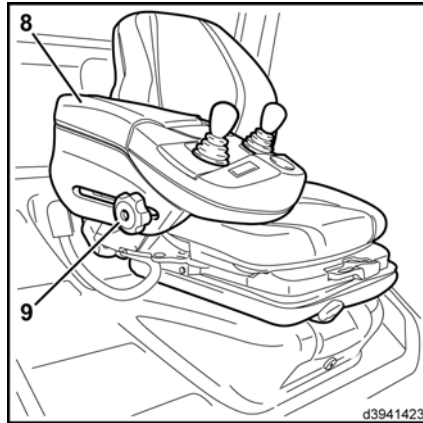


5 Maintenance

Chassis, bodywork and fittings

- Undo the clamping screw (9) in the armrest (8) and push the armrest fully downwards. ▷
- Retighten clamping screw (9).

If a rear window is installed, the armrest fore/aft adjustment must also be pushed all the way forwards. To do so, release the clamping screw (9), and push the armrest (8) all the way forwards. Retighten clamping screw (9).



- Release the support mounting (6) by pushing it backwards. ▷
- Open bonnet (5) all the way.

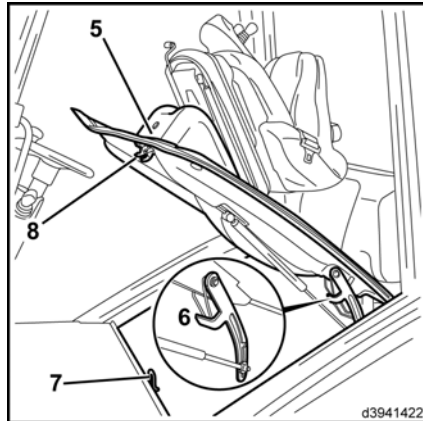


NOTE

The bonnet is held in both open positions by gas springs.

Closing the bonnet

- Release the support mounting (6) by pushing it backwards.
- Close the bonnet (5), then press on it until the locking lever (8) engages with the fastener (7).



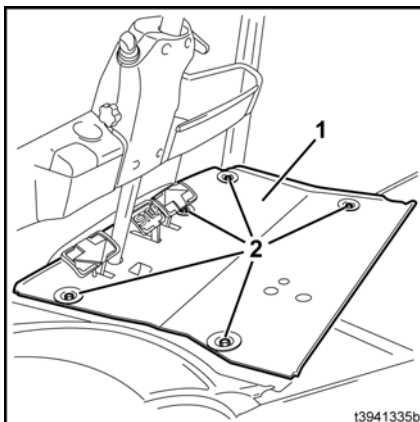
Floorplate

Opening the floorplate

Some maintenance operations require that the floorplate is lifted.

- Open the bonnet.

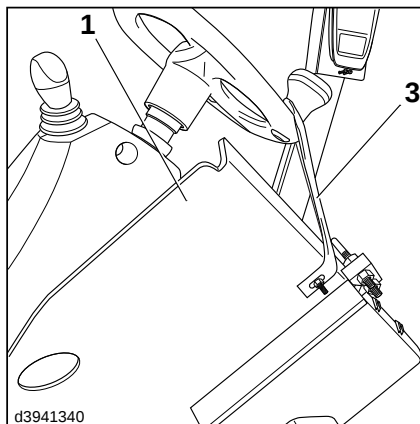
- Remove the rubber covering from the floorplate (1).
- Unscrew the fixing screws (2) from the floorplate.
- Swing the floorplate up.



- Place restraint strap (3) around the knob on the steering wheel. ▷

Closing the floorplate

- Lift up the floorplate.
- Detach the restraint strap.
- Close the floorplate.
- Secure the floorplate with the fastening screws.
- Replace the rubber covering on the floorplate.
- Close the bonnet.



Maintaining the heating system and air conditioning (special equipment)

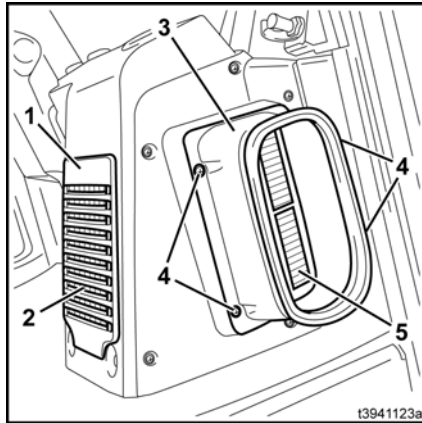
Maintaining the heating system and air conditioning console

- Open the right-hand driver's doors and secure in place.

5 Maintenance

Chassis, bodywork and fittings

- Remove the cover (1).
- Remove the filter (2) and clean or replace.
- Reinsert the filter and fit the cover.
- Unscrew the screws (4).
- Remove the air duct (3).
- Remove the filter (5) and clean or replace.
- Reinsert the filter and attach the air duct with screws.



Servicing the air conditioning

The following maintenance work must be carried out at the beginning, middle and end of a season:

- Clean the condenser (6).



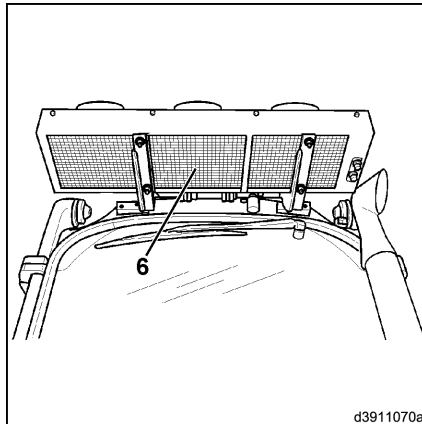
The condenser fins must be cleaned gently without any high pressure being applied. Otherwise, they will be damaged and impair the air flow.

- Check the belt tension on the compressor, and check for good condition.



NOTE

Specialist knowledge and special tools are required for carrying out further maintenance work. Please contact your authorised dealer.



Checking the condition and correct function of the seat belt

DANGER

Risk of accident or danger to life if the restraint system is faulty

Do not operate the industrial truck if the restraint system is faulty.

i NOTE

For safety reasons, check the restraint system regularly (once a month) for function and good condition.

Screw connections should be checked regularly to make sure that they are secure.

The seat belt must be replaced after an accident.

The driver's seat and the driver's seat mounting must also be checked after an accident by authorised technicians.

If you notice any irregularities in the functioning of the seat (e.g. seat suspension) or the seat belt, contact your authorised dealer immediately to eliminate the cause.

i NOTE

In extreme conditions, the restraint system must be checked for correct function and perfect condition daily prior to the truck being commissioned.

- Pull belt (1) right out and check for fraying and torn stitching.
- Check that the buckle (3) functions correctly and that the belt retracts properly.
- Check the covers and attachment points for damage.

Check the automatic lock.

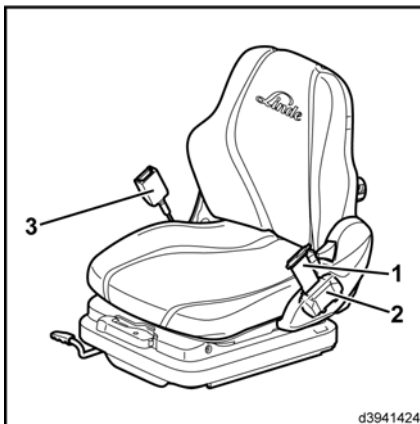
- Park the truck on level ground.
- Jerk out the belt.

The automatic mechanism should block extension of the belt from the belt retractor (2).

- Slide the seat fully forward.
- Tilt the backrest fully forward.

i NOTE

When opening the bonnet, watch out for a possibly installed rear windscreen.

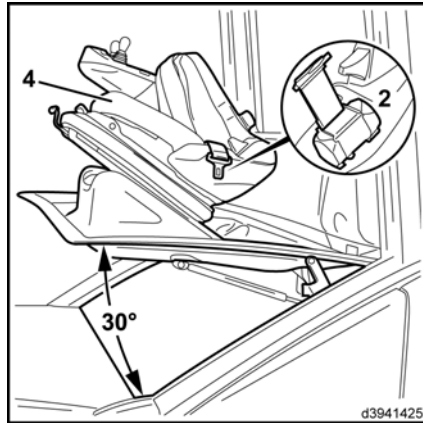


5 Maintenance

Chassis, bodywork and fittings

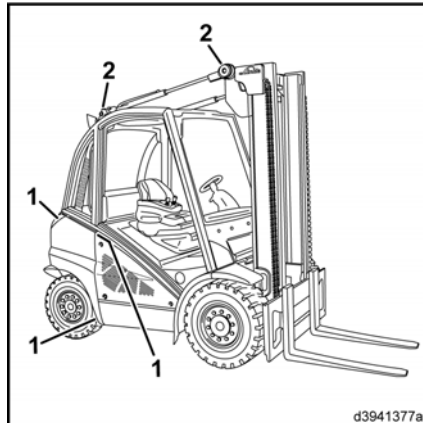
- Open the bonnet with driver's seat (4) by approx. 30°.

The automatic mechanism should block extension of the belt from the belt retractor (2).



Check fastening for frame, tilt cylinders and steering axle

- Check 6 fastening bolts (M 30) (1) of frame have a tightening torque of 1350 Nm.
- Check 4 fastening bolts (M16) (2) of tilt cylinders have a tightening torque of 275 Nm.
- Check the fastening bolts (M16) on the steering axle have a tightening torque of 195 Nm.



Checking and oiling other bearing points and joints



ENVIRONMENT NOTE

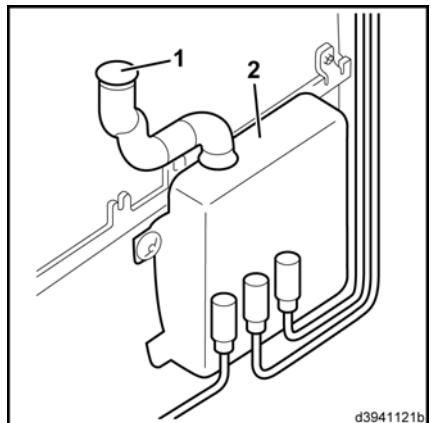
Follow the precautions for handling fluids and lubricants.

- Inspect and oil the pivots and mountings of:

- Seat guide
- Bonnet pivot pin
- Wiper mounting (option)
- Cab door hinges and locks (option)
- Grease the bonnet latch.

Topping up the washer system water tank (special equipment)

- Open the bonnet.
- Remove the filler cap (1) from the water tank (2) at the right-hand side of the engine compartment.
- Fill up with water until it is visible in the filling neck.
- Close the filler cap (1).
- Close the bonnet.



Chassis frame

Chassis frame

Changing a wheel

⚠ WARNING

Note the tare weight of the truck.

Only use jacks with a load capacity of at least 3600 kg.

⚠ CAUTION

When using wheels that are not antistatic, pay attention to the antistatic belt.

When changing wheels that are not antistatic, the truck must be equipped with an antistatic belt as these wheels are not electroconductive.

The antistatic belt must always be in contact with the ground.

Contact your authorised dealer.

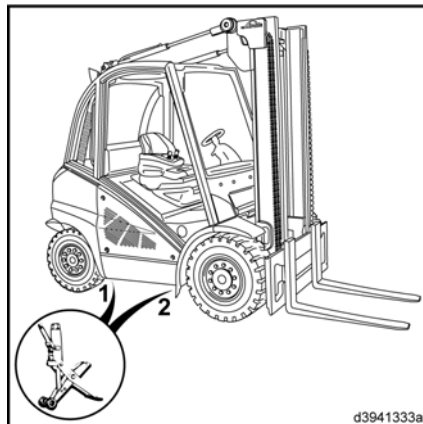
- Position the jack at the front edge of the chassis (2) on the left or right, or beneath the counterweight (1).

The truck may only be raised at these lifting points on the left and right side.

- Release the wheel fastenings on the wheel in question.
- Raise truck with jack until wheels are off the ground.
- Prop up securely using square timber supports at the chassis or counterweight.
- Unscrew the wheel fastenings.
- Change the wheel.
- Position wheel fastenings and tighten them manually.
- Lower truck.
- Tighten wheel fastenings

Front 425 Nm

Rear 640 Nm



Tighten the wheel nuts

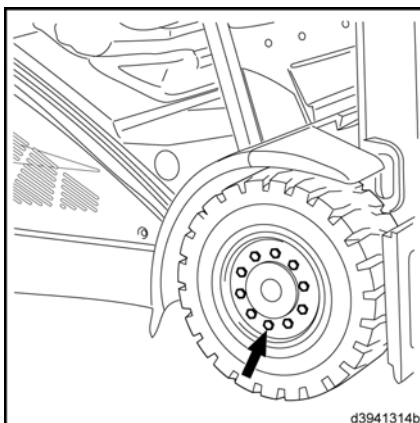
The wheel fasteners must be tightened before the commissioning and after each wheel change and repair.

Then after 100 service hours minimum.

Tighten opposite wheel fasteners to a torque of:

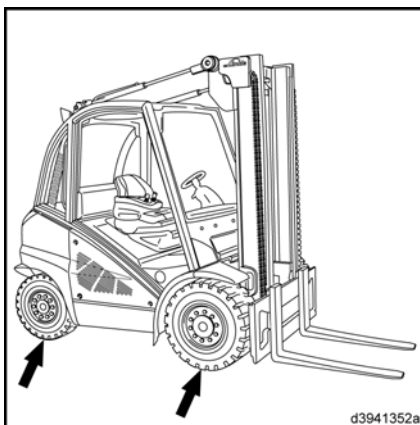
front 425 Nm

rear 640 Nm



Check the tyres for damage and foreign objects

- Secure the truck against rolling (apply parking brake).
- Chock a wheel that is not to be jacked up.
- Raise the truck with a jack until the wheels are clear of the ground.
- Secure the truck with wood blocks.
- Check the wheels for ease of rotation and remove anything hindering their free movement.
- Replace worn or damaged tyres.



5 Maintenance

Chassis frame

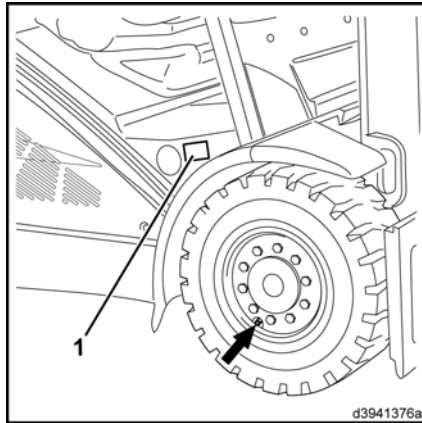
Checking the tyre pressure

⚠ CAUTION

If the air pressure is too low, the tyres' service life will be reduced and the stability of the truck will be compromised.

Therefore, regularly check tyre pressures.

- Check that the tyres are at the correct pressure.
- If necessary, adjust the tyre pressures in accordance with the information on the adhesive label (1) on the right-hand side of the truck next to the drive wheel:

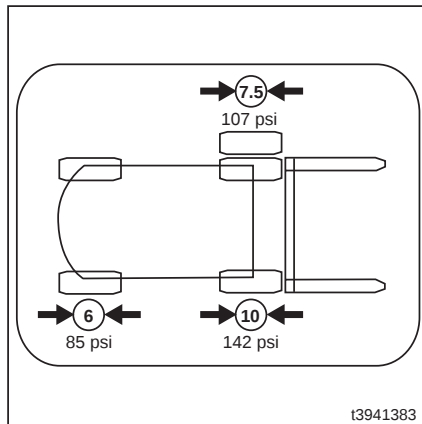


Example:

Tyre pressure sticker (1)

Drive axle	
Single tyre	10.0 bar
Twin tyres	7.5 bar

Steering axle	
Single tyre	6.0 bar



Checking the condition of the antistatic belt

NOTE

Under certain circumstances the truck may become electrostatically charged.

- *The charging level depends on a number of factors such as type of tyre, air humidity, floor covering etc.*
- *Excessive electrostatic charging is noticed when the electrostatic charge is discharged to the ground via the body of a person who touches the truck (electric shock) or when a spark passes from the truck to an earthed part (e.g. a metal shelf).*
- *With standard types of tyre (black pneumatic or solid rubber tyres), the high graphite content means that electrostatic charging is relatively rare.*
- *However, if non-scrubbing tyres (light-coloured tyres) are used and the truck is*

driven into an area with a sealed floor, the electrostatic charging effect occurs very often.

- *Non-scrubbing tyres are identified by the safety information on the tyre wall.*

For this case, an antistatic belt is fitted to the underside of the truck and is connected to the truck chassis.

- **Check that the antistatic belt is securely seated on the frame floor and check for wear.**
- **Change the antistatic belt if it is damaged.**

NOTE

The antistatic belt must always be in contact with the ground.

Cleaning and greasing the steering axle

ENVIRONMENT NOTE

Observe information regarding working with consumables.

When used indoors in clean, dry conditions, it is generally sufficient to perform maintenance every 1000 operating hours. It is advisable to halve these lubrication intervals if the vehicle is used both indoors and outdoors.

If used in areas with constant exposure to dust, dirt, water, road salt or chemicals, weekly lubrication will considerably lengthen the service life of the spherical bearings.

NOTE

It is better to apply a little grease to the bearings frequently than a lot of grease infrequently.

5 Maintenance

Chassis frame

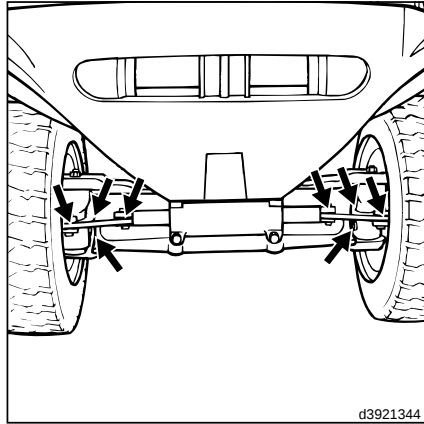
- Clean steering axle with water or cleaner solvent.



NOTE

Lubricating grease should be used for greasing in accordance with consumables recommendations. First grease the axle stub bearings on top, then underneath.

- Grease the tie rod and axle stubs at the lubricating nipples (see arrows) using lubricating grease.
- Grease with grease gun until fresh lubricating grease escapes at bearings.



Checking the mountings of the steering cylinder and steering pivot pin

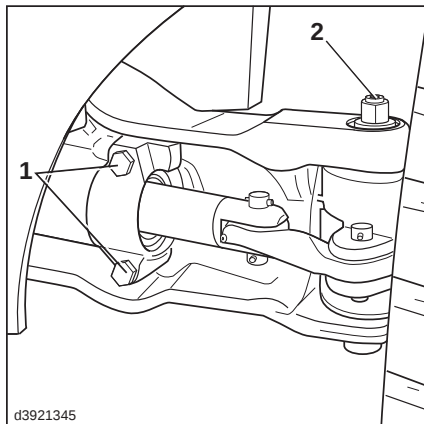
- Check that the 4 mounting screws (1) are secure.



Tightening torque: 295 Nm

- Check that the nut (2) on the steering pivot pin is securely attached.

Tightening torque: 310 Nm



Controls

Checking the parking brake for correct operation

- Drive the fork lift truck, carrying its maximum load, up a gradient of 15 %.
- Place the parking brake (2) in a horizontal position. ➤

The vehicle must remain stationary.

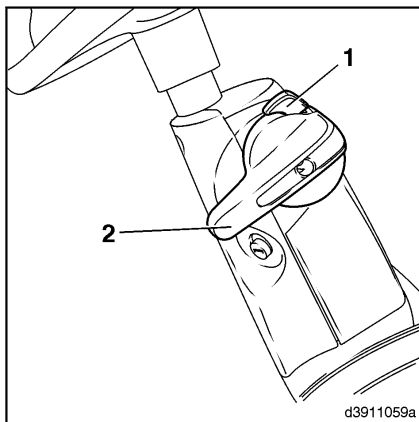
- Switch off the engine.
- Press the button (1) and unlock the parking brake lever (2).
- Move the parking brake 90° downwards.

The vehicle must remain stationary.



NOTE

If the parking brake fails this test, contact your authorised dealer.



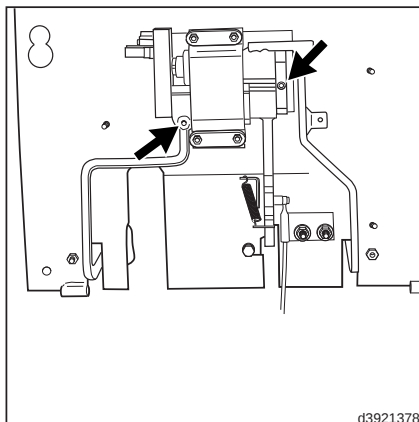
Checking the pedals



ENVIRONMENT NOTE

Observe information regarding working with consumables.

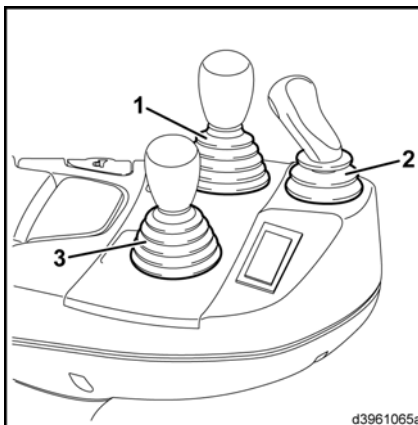
- Lift up the floorplate and secure in place. ➤
- Unscrew the 4 nuts of the pedal box.
- Check pedals for smooth action.
- If necessary, grease the bearings slightly.
- Re-attach the pedal box.



Controls

Checking the bellows at the actuating lever

- Check that the bellows (1), (2) and (3) (depending on the version) are securely positioned and show no signs of damage. Change if necessary.



d3961065a

Electrics

Check the condition and secure positioning of electric cables, cable connectors and connections

NOTE

Oxidised connections and brittle cables lead to voltage drops and thus to difficulties during start-up and operation.

- Check cable terminals for secure attachment and oxidation residues.
- Check earth wire for secure attachment.
- Check electric wiring for scuffing and secure attachment.
- Remove oxidation residues and replace brittle cables.

Battery: Check condition, level and density of acid

When handling starter batteries, the following should be taken into account:

- Wear industrial goggles and a protection suit.
- Before touching the battery, first grasp conductive parts of the frame to discharge any static charge.
- Avoid producing sparks when connecting/disconnecting.
- When recharging new batteries, ensure good degassing (unscrew any plugs present).
- After charging the battery, leave it standing for at least 8 hours before reconnecting, if possible.
- When filling up or recharging, remove any packaging film beforehand to ensure gas venting.
- Do not use plastic adhesive tape, in particular on the battery lid and the ventilation openings of the plugs.

5 Maintenance

Electrics

- Before recharging, first check battery without electric load to make sure that only intact batteries undergo charging.
- During electrical charging, batteries produce hydrogen and oxygen gas which under certain conditions may result in an explosive mixture. Battery should only be filled and charged in well ventilated rooms.
- Avoid rubbing textiles against the battery.
- The electrolyte level must always be maintained between max. and min. markers (to avoid large gas volumes).
- Due to the possibility of static charges, do not rub batteries with dry cloths. Use damp cloths instead.



WARNING

Battery acid is highly corrosive. Contact with battery acid should therefore always be avoided. If the clothing, skin or eyes have come into contact with battery acid, the affected areas should be rinsed with water immediately. In the event of contact with the eyes, please consult a doctor at once! Any spilt battery acid should be neutralised straight away!

Wear protective equipment.



NOTE

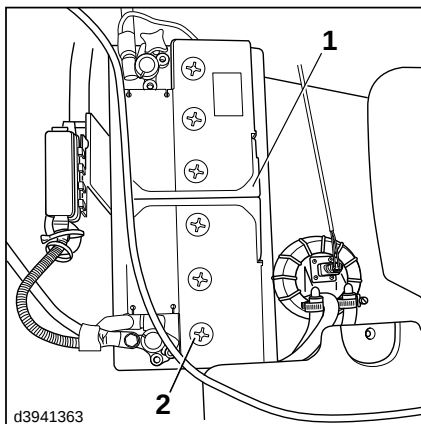
Even in the case of maintenance-free batteries, it is necessary to check the condition and acid density/level.

- Open the bonnet.

- Inspect battery (1) for cracked housing, raised plates and acid leaks.
- Unscrew sealing plugs (2) and check acid level.

In the case of batteries with level checking inserts, the fluid must reach the bottom of the insert, and for batteries without level checking inserts, it must lie 10–15 mm above the lead plates.

- Any lack of fluid should only be made up with distilled water.
- Remove any oxidation residues on the battery terminals and then apply acid-free grease.
- Retighten battery-terminal clips firmly.
- Check acid density with an acid siphon. The density value must be 1.24-1.28 kg/l.
- Screw sealing plugs (2) back in.
- Close the bonnet.



Hydraulics

Hydraulics

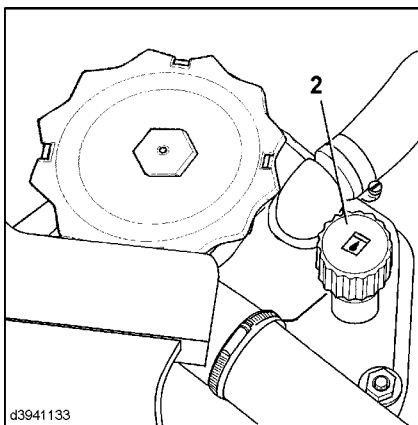
Change hydraulic oil

Drain hydraulic oil

**ENVIRONMENT NOTE**

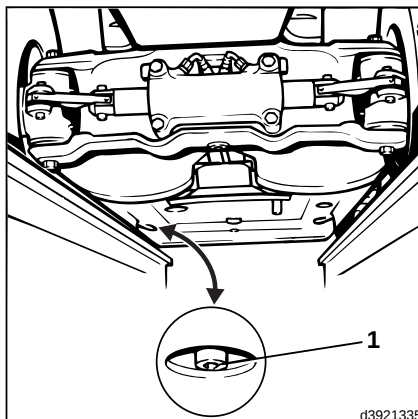
Observe information regarding working with consumables.

- Drive truck over pit.
- Fully lower fork carriage and lift mast.
- Place a collection vessel under the left side of the truck floor.
- Open the bonnet. Unscrew the breather (2) with dipstick (3).



- Unscrew hydraulic oil drain plug (1) on hydraulic oil tank.
- Allow all oil to drain off.
- Clean area around oil drainage location thoroughly.
- Refit drain plug.

Tightening torque: 25 Nm



Refill/top up hydraulic oil

- Add hydraulic oil to filling port.

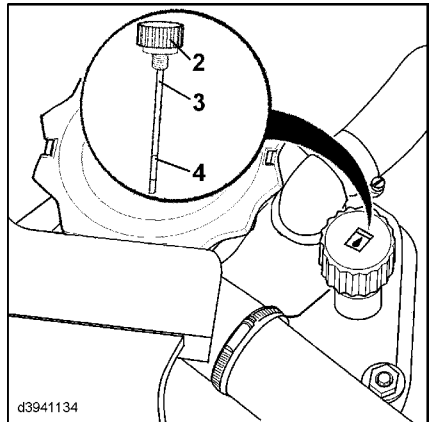
Total fill quantity: approx. 27.8 l

- Check oil level with dipstick (3) and top up further until upper marking (4) is reached on dipstick.
 - Allow engine to idle for 3 minutes in upper range (parking brake applied and accelerator pedal depressed).
 - Check oil level again (do not drive).
- Only then should the suction filter be changed.
- Close the bonnet.



NOTE

The hydraulic system will bleed itself when the engine is running.



Hydraulic system: Check the oil level.



ENVIRONMENT NOTE

Observe information regarding working with consumables.



NOTE

Oil specifications: see Recommendations for working materials

- Fully lower the fork carriage.

5 Maintenance

Hydraulics

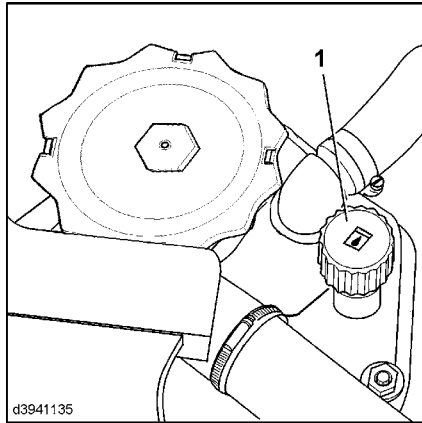
- Unscrew the breather filter (1) with oil dipstick on the left side of the vehicle.



NOTE

Tank under low pressure. A small amount of air will escape.

- Wipe the oil dipstick with a clean cloth.

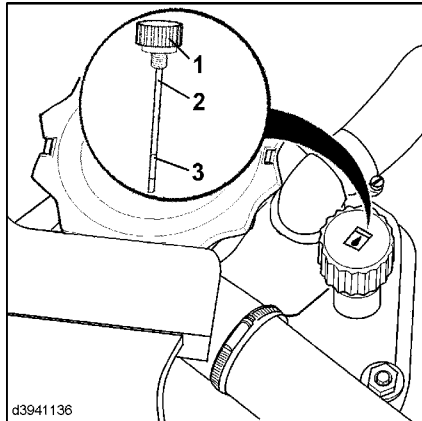


- Screw the breather with dipstick (2) in completely and then unscrew it again.

The oil level should be between the two marks (3) on the dipstick (2).

- Top up the hydraulic oil to the upper mark if necessary.

Difference in quantity between max. and min. marks: approx. 3 l



Hydraulic system: changing the filter

Feed and pressure filter



ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Unscrew the side maintenance cover on the left.

- Lower the lift mast. Slacken the lower mounting screw (2) and the upper mounting screw (1) on the filter carrier.
- Swing out the filter carrier.
- Place a collection vessel underneath.
- Slacken the pressure filter housing (3) and the feed filter housing (4) at the hexagonal section.
- Unscrew the filter housing manually and remove the filter cartridges from the base.



ENVIRONMENT NOTE

Dispose of the filter cartridges in an environmentally friendly manner.

- Apply oil to the seals on the new filter cartridges.
- Attach the filter cartridges to the base on the filter top.
- Screw on the filter housing and tighten it hand-tight.

Tightening torque: 10^{+5} Nm; then slacken it back $\frac{1}{4}$ turn.

- Fold the filter carrier up and tighten it
- Check the filter flange for leaks during a test run.
- Mount the side maintenance cover.

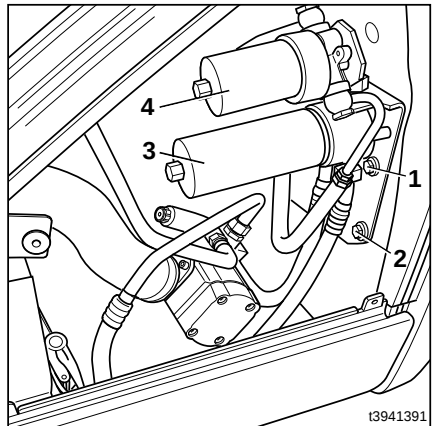
Suction filter

CAUTION

The oil must have an optimal purity level at all times.

When servicing the device after 6,000 operating hours, it is therefore absolutely essential to change the hydraulic oil before changing the suction filter.

- Open the bonnet.



5 Maintenance

Hydraulics

- Open the breather filter (5).

This allows the air to escape so that the oil will not overflow when the filter cartridge is inserted.

- Turn the filter cover (6) in an anti-clockwise direction and unscrew it.
- Slowly remove the filter cartridge.

This will allow the oil to flow back into the container.

- Pull filter cartridge out entirely.
- Carefully insert a new filter cartridge into the filter cover.

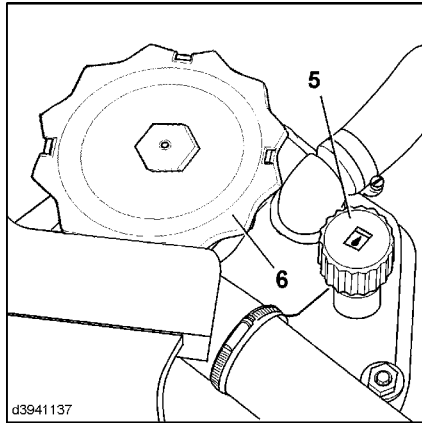
Ensure that it is correctly centred in the filter end.

- Clean seal of filter cover and wet with oil.
- Refit the filter cover (6) and turn it in a clockwise direction.
- Tighten the filter cover to 25 Nm.

The hydraulic system will bleed itself automatically when the engine is running.

Screw the breather filter on.

- Check the tightness of the filter cover during the test run.
- Close the bonnet.



Breather filter

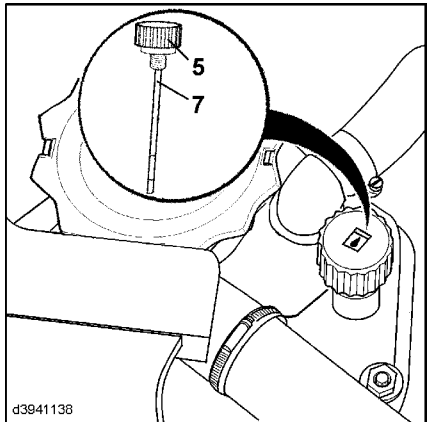


NOTE

If there is a heavy accumulation of dust, it may be necessary to change the filter earlier.

- Open the bonnet.

- Unscrew the filter (5) for the hydraulic oil tank from the filler neck.
- Remove the dipstick (7) from the breather filter and attach it to the new filter.
- Screw in the filter and tighten it.
- Close the bonnet.



Check the bleeder valve on the hydraulic oil tank for correct operation



NOTE

The breather filter on the hydraulic oil tank is fitted with a breather valve, which causes the tank to be at a slight positive pressure.

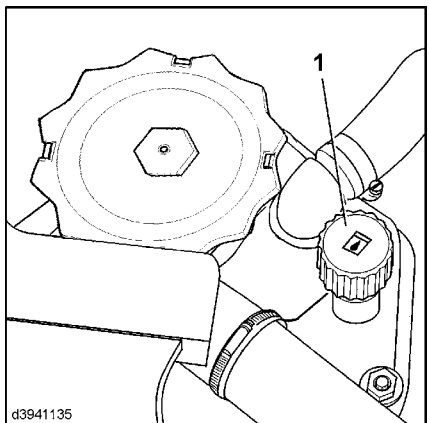


ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Close the breather filter (1) and check whether the breather filter is seated correctly.
- Start the engine.
- Extend lift mast several times to the stop and let it return.
- Switch off the engine. Open the breather filter (1) on the hydraulic oil tank.

Air must be heard to escape from the tank. If no noise of air escaping is audible, replace the breather filter.



Check the hydraulic system for leaks

- Open the bonnet.
- Raise and secure the floor plate.
- Check all connections between the oil tank, drive motors, pumps and control valves for leaks.
- Tighten connections if necessary.
- Check the lift, tilt and steering cylinders for leaks.
- Replace any porous hoses.
- Inspect the lines for chafing and replace, if necessary.
- Close the floor plate.
- Close the bonnet.

Check tilt cylinder bearings for wear



NOTE

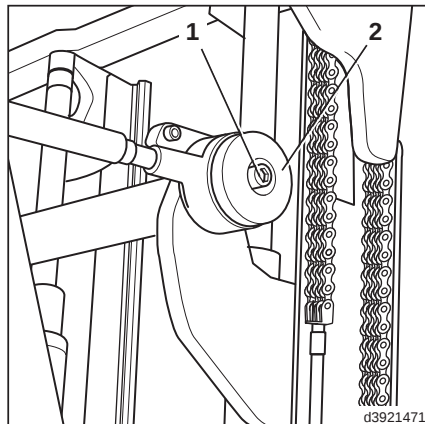
The tilt cylinders are mounted in rubber bearings at both ends.

- Remove the screw (1) at the disc (2).
- Make a visual inspection of the rubber bearings for cracks.

The rubber should not have any cracks.

- Check the rubber bearing at the front and rear of each tilt cylinder.

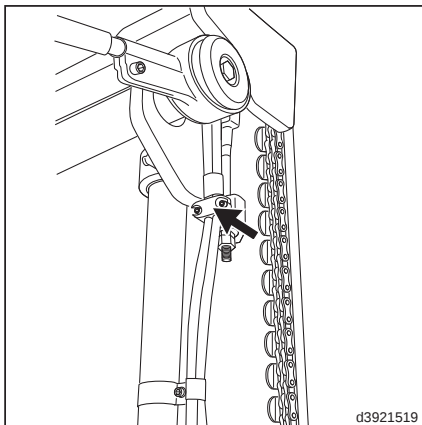
When a rubber bearing is worn or damaged, renew it. Please contact your authorised dealer.



Check the tension of double hoses

The tension of the double hoses should be 5-10 mm per metre, depending upon the original length.

- Adjust the tension of the hoses to the specified dimension by sliding them in the clamps.



Load lift system

Load lift system

Working on the lift mast and at the front of the truck

DANGER

When working on the lift mast, there is a risk of becoming trapped and/or the lift mast accidentally lowering.

If the lift mast or fork carriage is raised, no work must be performed on the lift mast or at the front of the forklift truck without observing the following safety measures! These safety precautions are sufficient only for general maintenance on the truck (inspection and greasing). For repairs (e.g. changing chains, dismantling lift cylinders), additional safety precautions must be taken. Contact your authorised dealer.

Securing against tilting back

The lift mast must be secured against accidentally tilting backwards

- Tilt the lift mast all the way back.
- Switch off the engine.
- Remove the ignition and stop key.
- Apply the parking brake.

Standard lift mast

FUNCTION: When lifting the inner mast, the chain rollers are moved up with the chains so that the fork carriage is lifted with a transmission ratio of 2:1, due to the chain deflection.

Securing the raised standard lift mast

DANGER

Check chain load!

Select the safety chain with sufficient load-bearing capacity for the respective lift mast. Take the maximum lift height into account.

- Extend the lift mast.

- Connect the chain over the cross beam of the outer mast (1) and under the cross beam of the inner mast (2).
- Lower the inner mast until it reaches the chain.

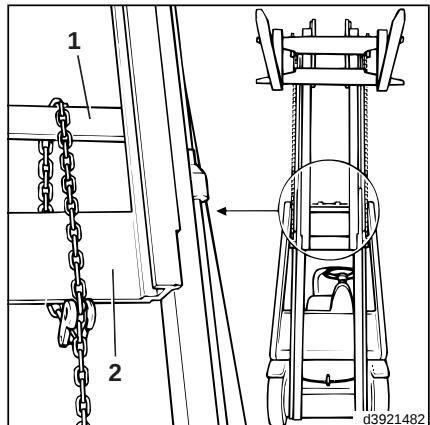
Duplex lift mast



NOTE

The advantage of this version is that full advantage is taken of the special free lift height even in very low rooms (cellars, wagons, ships).

FUNCTION: The fork carriage is lifted to the special free lift height via the chain guide pulley of the centre cylinder. Here it moves twice as fast as the centre cylinder. The inner mast is then lifted via the two outer cylinders, taking the fork carriage with it. The centre cylinder is positioned on the extendable inner mast.



Securing the raised duplex lift mast

⚠ DANGER

Check chain load!

Select the safety chain with sufficient load-bearing capacity for the respective lift mast. Take the maximum lift height into account.

- Extend the lift mast.

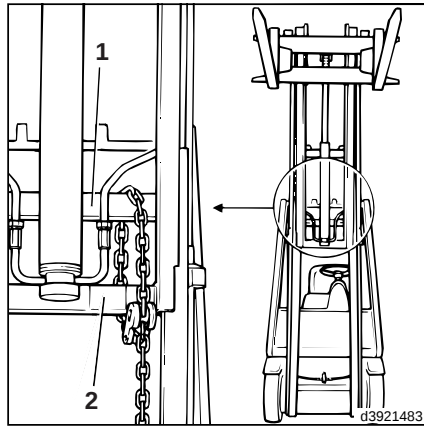
5 Maintenance

Load lift system

- Connect the chain over the cross beam of the outer mast (1) and under the cross beam of the inner mast (2).
- Lower the lift mast until the end of the chain.
- Lower fork carriage as far as it will go.

Triplex lift mast

FUNCTION: The fork carriage is lifted to the special free lift height via the chain guide pulley of the centre cylinder. Two lift cylinders then lift the inner mast. Once the inner mast is fully extended, two additional lift cylinders lift the centre mast, which is lifted together with the inner mast and the fork carriage. The centre cylinder is positioned on the extendable inner mast.



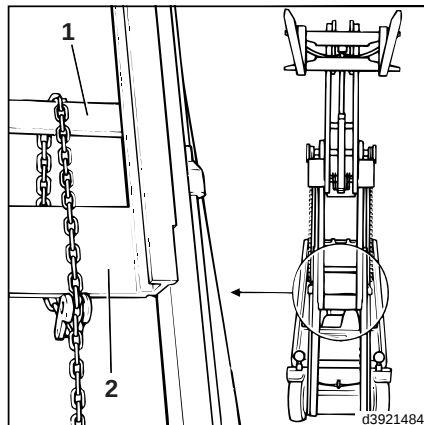
Securing the raised triplex lift mast

DANGER

Check chain load!

Select the safety chain with sufficient load-bearing capacity for the respective lift mast. Take the maximum lift height into account.

- Extend the lift mast.
- Connect the chain over the cross beam of the outer mast (1) and under the cross beam of the middle mast (2).
- Lower the lift mast until the end of the chain.
- Lower fork carriage as far as it will go.



Cleaning and spraying the lift mast chain

DANGER

Lift mast chains are safety elements. Incorrect cleaning materials may cause direct damage to chains.

Do not use cleaner solvent, chemical cleaners or fluids that are corrosive or contain acid or chlorine.

If the lift mast chain is so dusty that penetration of the lubricating oil is not ensured, the chain must be cleaned.

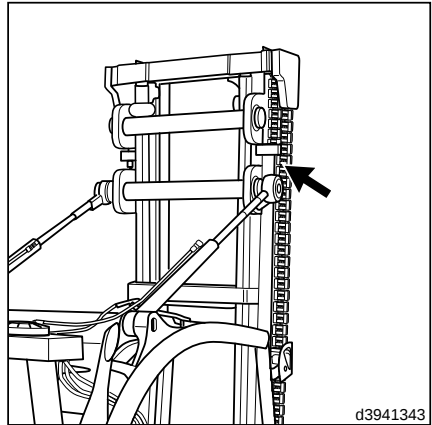
- Place a collection container under the lift mast.
- Clean lift mast chain with paraffin derivatives, such as benzene.

Take note of the manufacturer's safety information. When cleaning with a steam jet, do not use additives.

- After cleaning, immediately use compressed air to remove any water remaining on the surface of the chain and in the chain joints.

The chain should be moved several times during this process.

- Immediately apply Linde chain spray to chain, moving chain while doing so.



Lift mast, lift mast chains, lift cylinder and end stops: Check mounting, condition and function

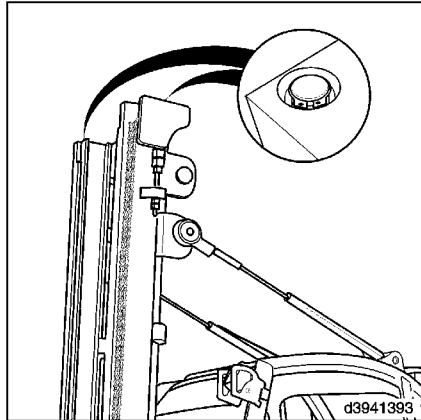
- Clean lift mast guides and chain.
- Check chain for condition and wear, especially at guide pulleys.
- Check that the chain is attached securely to the chain anchor.
- Replace damaged chains.



NOTE

Individual plastic links that are damaged or missing do not impair function or service life.

- Check the condition and mounting of the lift mast, guide surfaces and rollers.
- Check stops for condition, security and proper operation.
- Check the lift cylinders for security.
- Check that the locking ring of the piston rod mounting to the top of the lift mast is seated correctly.



Adjusting the lift mast chain

Standard lift mast



NOTE

The lift mast chain stretches over time during operation and therefore has to be readjusted on the right and left sides.

- Lower lift mast completely.

- Loosen locknut (1).
- Adjust chain at adjustment nut (2) of chain anchor.

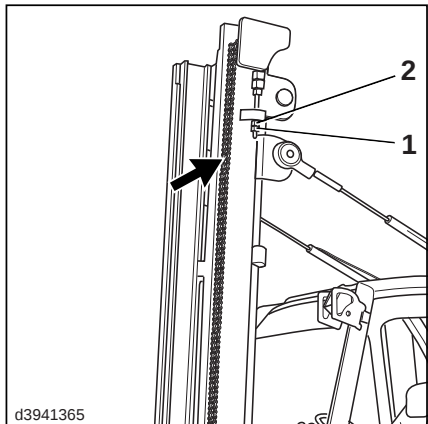
The lower guide roller on the fork carriage may only protrude max. 30 mm from the inner lift mast guide rail.

- Tighten the locknut (1).
- Also adjust second chain.

⚠ CAUTION

When extending the lift mast, it must not touch the end stops.

Fully extend the lift mast and check clearance to end stops.



Apply chain spray.

i NOTE

In the case of trucks that are used in the food production sector, chain spray should not be used. Instead, use a low-viscosity oil licensed for use in the food industry.

- Apply Linde chain spray to guide surfaces and chain.

Duplex lift mast or triplex lift mast

i NOTE

The lift mast chain stretches over time during operation and therefore has to be readjusted.

- Lower the lift mast and fork carriage completely.

5 Maintenance

Load lift system

- Loosen lock nut (4). Adjust chain at adjustment nut (3) of chain anchor. ▷

The lower guide roller on the fork carriage may only protrude max. 30 mm from the inner lift mast guide rail.

- Tighten the locknut (4).

CAUTION

When extending the lift mast, it must not touch the end stops.

Fully extend the lift mast and check clearance to end stops.

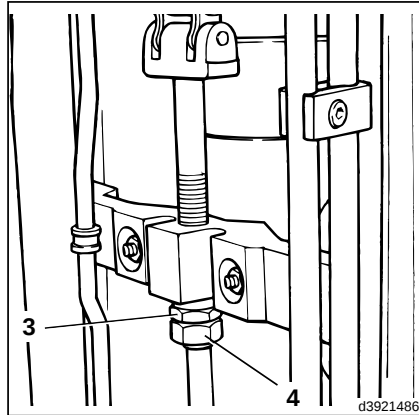
Apply chain spray.



NOTE

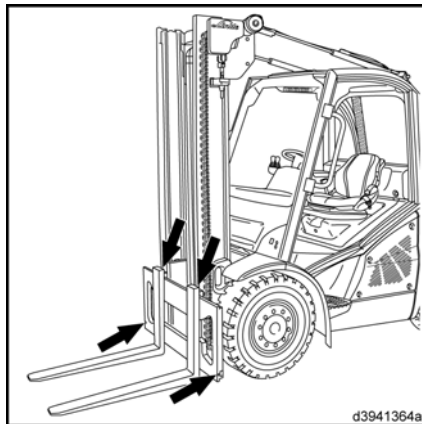
In the case of trucks that are used in the food production sector, chain spray should not be used. Instead, use a low-viscosity oil licensed for use in the food industry.

- Apply Linde chain spray to guide surfaces and chain.



Check the forks and fork quick-releases

- Check the forks for visible deformations, wear and damages. ▷
- Check the bolts of the fork stops and fork quick-releases for correct seating and damage.
- Replace any defective parts.



Clean sideshift (special equipment) and grease, check fastening



ENVIRONMENT NOTE

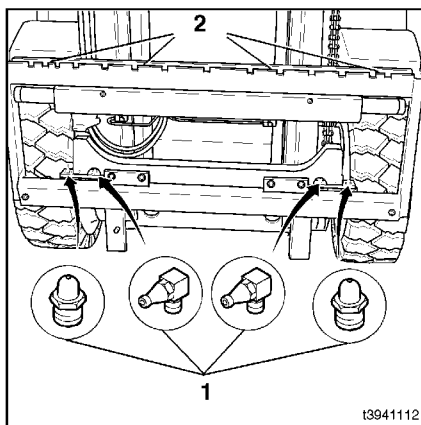
Observe information about working materials.



NOTE

The sideshift should be greased whenever the truck is washed. Use lubricating grease complying with the recommendations for working materials.

- Clean sideshift with steam jet.
- Check hydraulic lines for scuffing and replace if necessary.
- Check hydraulic connections and fastening elements for secure positioning and wear and tighten/replace if necessary.
- Check cylinders for leaks.
- Check piston rods for damage.
- Adjust the fork arms so that the 4 lubricating nipples (1) are accessible.
- Let down sideshift until fork arms touch the ground.
- Apply lubricating grease to lubricating nipples (1) of support rollers on fork carriage until grease escapes at the side.
- Apply lubricating grease to lubricating nipples (2) of wear strips on fork carriage at top until grease escapes at the side.

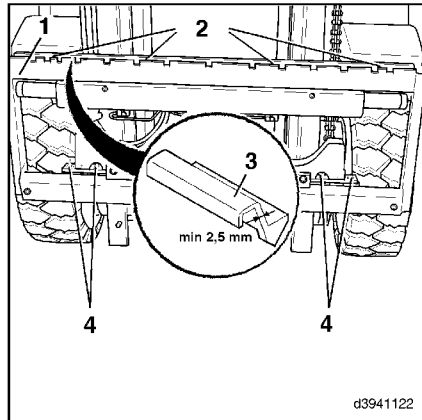


Checking the slide guides on the sideshift (special equipment) for wear

- Dismantle sideshift.
- Clean sideshift.
- Remove the slide guides from the upper guide (1).
- Measure the wall thickness of the slide guide (3).

If wall thickness is less than 2.5 mm, change the slide guides.

- Lubricate slide guides.
- Reassemble sideshift.
- Tilt the lift mast forwards and lower the fork arms until they touch the ground, so that sideshift frame is relieved of the weight of forks.
- Lubricate the sideshift at lubricating nipples (2) and (4).

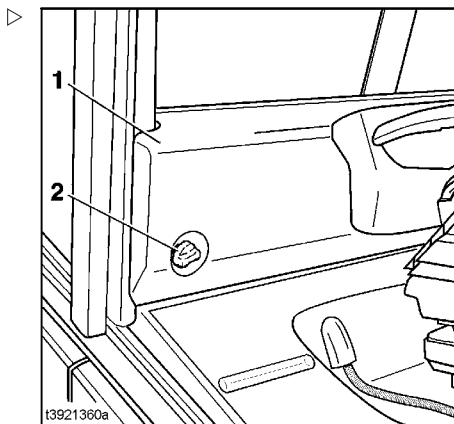


Self-help

Opening the cover to the electrical system

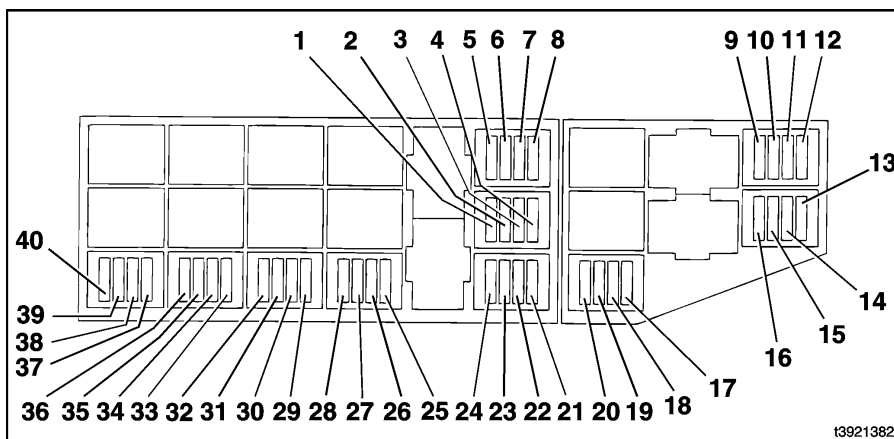
Depending on the set-up, up to 40 fuses may be installed in the electrical system in order to protect it. The fuse box can be accessed after removing the cover of the electrical system.

- Unscrew both handles(2).
- Take off the cover (1).
- Take off the fuse box cover.



Fuses for basic and special equipment

Checking and changing fuses



1	12 V socket (9F10)*, 15 A	21	Blower toothed belt sealing (0F1)*, 10 A or
2	Heating/air conditioning (9F9)*, 20 A		Time-delayed lighting off (F17)*, 2 A
3	Seat heater (9F6)*, 20 A	22	Particle filter (7F3)*, 30 A
4	Warning light and rotating beacon (4F3)*, 7.5 A	23	Particle filter (7F2)*, 20 A
5	Working spotlight positions 3, 4 (5F2)*, 15 A	24	Particle filter (7F1)*, 5 A
6	Working spotlight positions 5, 6 (5F3)*, 15 A (with one 7.5 A headlight fitted)	25	Forklift Data Management (6F1)*, 5 A
7	Working spotlight positions 7, 8 (5F4)*, 15 A (with one 7.5 A headlight fitted)	26	Reverse travel (4F1)*, 10 A
8	Rear window heating (9F5)*, 20 A	27	Radio terminal 58 (9F8)*, 10 A
9	Display unit (terminal 30) (F5), 5 A	28	Radio terminal 30 (9F7)*, 5 A
10	Display unit (terminal 15) (F6), 5 A	29	Washer pumps (9F4)*, 10 A
11	Signal horn (F7), 15 A	30	Windscreen wiper rear and roof (9F3)*, 10 A
12	Traction-lift control (terminal 15) (F8), 5 A	31	Front windscreen wiper (9F2)*, 10 A
13	Engine control unit (F12), 5 A	32	Windscreen wiper (9F1)*, 5 A
14	Engine control unit (F11), 20 A	33	Interior light (5F12)*, 5 A
15	Not assigned	34	Brake light (5F7)*, 5 A
16	Traction-lift control (terminal 30) (F9), 15 A	35	Warning lights (5F6/5F13)*, 10 A
17	3rd auxiliary hydraulics (F16)*, 7.5 A	36	Lighting/working spotlight positions 1, 2 (5F5/5F1)*, 15 A
18	Terminal 15 (F15), 10 A	37	Right sidelights (5F11)*, 5 A
19	Terminal 58 (F14), 5 A	38	Left sidelights (5F10)*, 5 A
20	Terminal 30 (F13), max. 15 A	39	Right headlight (5F9)*, 7.5 A
		40	Left headlight (5F8)*, 7.5 A

* Special equipment

Main fuses in engine compartment

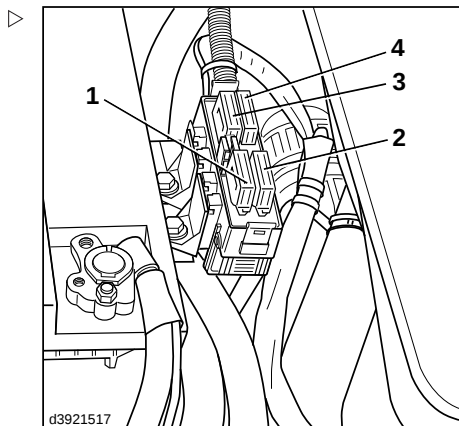
Checking and changing fuses

➤ Open the bonnet.

- Open the covering of the fuse box.

In the engine compartment, MTA fuses protect the following circuits:

- Fuse (F1) (1) for glow and fuel system, 50 A
- Main fuse (F2) (2) for complete electrical system, 40 A
- Main fuse (F3) (3) for complete special equipment, 70 A
- Fuse (F4) (4) for air conditioning, 30 A

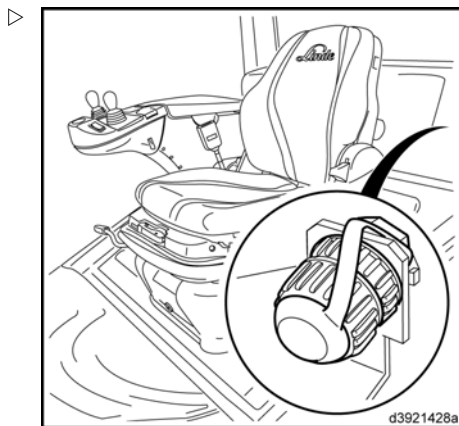


Diagnostic connector

The diagnostic connector can be found under the cladding on the left behind the driver's seat.

- When troubleshooting, connect the diagnostic device to the diagnostic plug, using the appropriate diagnostic software. In addition, truck data can be read in and out, adjustments made and maintenance intervals reset or amended.

Please contact your authorised dealer.



5 Maintenance

Self-help

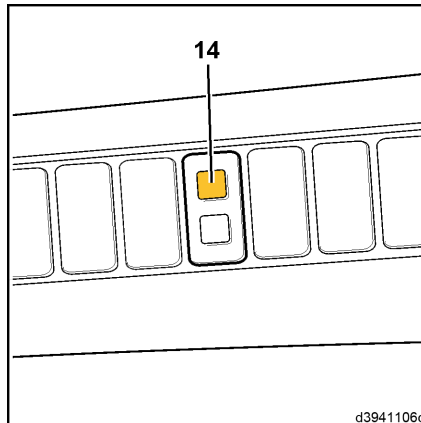
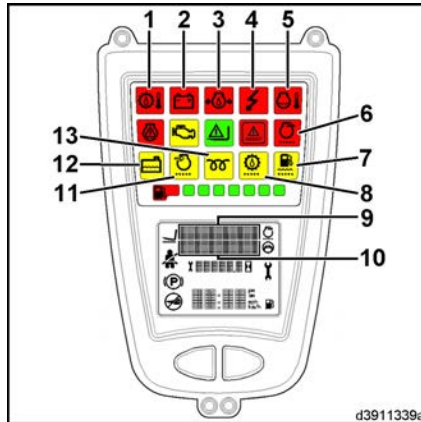
Malfunctions during operation

⚠ CAUTION

If one of the following indicator lights illuminates in the display unit and the buzzer sounds during operation, a malfunction has occurred.

The engine must be shut down immediately and the malfunction dealt with. (See: Malfunctions, Causes and Remedy)

- Hydraulic oil temperature indicator (1) and buzzer
- Charging indicator (2)
- Engine oil pressure indicator (3) and/or engine oil level indicator (special equipment) and buzzer
- Indicator light: error in electrical controller (4)
- Engine coolant temperature indicator (5) and buzzer
- Particle filter warning indicator light (6)
- Water in the fuel filter (7) (special equipment)
- Hydraulic oil microfilter indicator (8) (special equipment)
- Air filter vacuum indicator (11)
- Coolant level indicator (12) (special equipment)
- Engine or engine control unit fault indicator light (13)
- Change particle filter and buzzer indicator light (14)



⚠ CAUTION

Only if a particle filter system is fitted: If the build-up indicator (9) flashes and the red particle filter alarm (6) lights up and a buzzer sounds, the filter is clogged.

The particle filter must be regenerated immediately.



NOTE

- *Only if a particle filter is fitted: If the particle filter build-up indicator (9) flashes and a buzzer sounds at intervals, the filter must be regenerated within the next 30 minutes.*
- *Only if a particle filter is fitted: If the red particle filter alarm (6) lights up and an error code*

appears in the text field (10) of the display unit, a fault occurred during regeneration. Restart regeneration procedure.

- *Only if a changing particle filter is fitted: If the orange indicator light (14) lights up in the switch panel in the top right and a buzzer sounds, the filter must be changed or regenerated within the next 30 minutes.*
- *If the indicator light (4) flashes, there is an error in the electrical controller. Depending on the setting and error, it may only be possible to drive the truck at low speed or not at all. Each error is indicated by a numerical code or symbols in the text field (10). Contact your authorised dealer.*
- *If the indicator light (13) flashes, there is an error in the engine or the engine control unit. Switch off the engine. Contact your authorised dealer.*
- *If the air filter vacuum indicator (11) lights up on the display unit, maintenance must be performed on the air filter.*

Malfunctions, Causes and Remedies (diesel engine)

Engine will not start	
Possible cause	Remedy
Fuel tank empty.	Fill up the tank.
Fuel filter clogged, caused in winter by paraffin segregation.	Change the filter. Use winter fuel.
Water in the fuel filter.	Drain water from the fuel filter.
Fuel shut-off valve does not open.	Check with test lamp whether power present; if not, check the fuse and the valve.
Immobiliser active.	Contact your authorised dealer.
Leak in fuel line.	Check all fuel line connectors for leaks and tighten screw joints.
The display unit does not light up.	Tighten connecting terminals at the battery, check line connectors.
Preheating system defective.	Check the current entry, lines and connections on the glow plug starting switch. If the fault cannot be remedied, please contact your authorised dealer.
Pump/nozzle unit defective. Engine idle speed incorrect.	These faults should be checked and remedied only by a trained technician. Please contact your authorised dealer.

Indicator light is illuminated: "Electrical controller fault".	
Possible cause	Remedy
Fault in the electrical controller	Fault can be determined using the diagnostic device. Contact your authorised dealer.

Engine starting performance is poor	
Possible cause	Remedy
Battery power too low Battery terminals loose or oxidised, causing the starter motor to turn only slowly.	Have the battery checked, clean the connecting terminals, tighten them and smear them with acid-free grease.
Fuel supply insufficient. Blockages or air locks in the fuel system, caused in winter by paraffin segregation.	Change fuel filter, check fuel line connectors for leaks and tighten screw joints. In cold climates, use winter fuel.
Especially in winter: engine oil used is too viscous.	Use engine oil appropriate to the outside temperature.

Particle filter system warning lamp flashes and buzzer sounds when ignition is switched on.

Possible cause	Remedy
Switch illumination in the start switch and emergency stop switch for the particle filter system is defective.	Check the lamp: switch on the glow plug starting switch using the switch key. Both switch illuminations briefly light up once; if not, change the indicator light. (Regeneration can still be performed even though the lamp is defective; acknowledge by pressing the start switch).
Malfunction in particle filter system.	Please contact your authorised dealer.

"Particle filter alarm" indicator light illuminates and the truck only moves at creep speed.

Possible cause	Remedy
Load period of the particle filter exceeds 8.5 h.	Regenerate the particle filter immediately.

Engine does not run smoothly and loses power.

Possible cause	Remedy
Fuel supply insufficient. Blockages or air locks in the fuel system, caused in winter by paraffin segregation.	Change fuel filter, check fuel line connectors for leaks and tighten screw joints. In cold climates, use winter fuel.
Pump/nozzle unit is not operating correctly.	Contact your authorised dealer.
Engine oil level too high.	Drain oil until oil level is at upper dipstick mark.

Very smoky exhaust.

Possible cause	Remedy
Bad sealing by coked or broken piston rings.	Contact your authorised dealer.

Irregular idling.

Possible cause	Remedy
Fuel supply problems.	Drain water from or change fuel filter. Check fuel lines or fuel injection lines for leaks.
Engine speed incorrectly set.	This setting should only be made by a trained technician. Contact your authorised dealer.

Engine overheating, red indicator light in the display unit lights up. Switch off engine immediately.

Possible cause	Remedy
Insufficient coolant in cooling system.	Check the cooling system for leakages, seal them as required. Top up the coolant.
Coolant pump defective.	Contact your authorised dealer.
Water cooler radiator fins partially clogged by dirt or foreign bodies.	Clean the water cooler and the hydraulic oil cooler.

Self-help

Engine oil pressure too low. Switch off engine immediately.

Possible cause	Remedy
Leakages in the lubricating system.	Contact your authorised dealer.
Oil level too low	Top up with engine oil

Charging current indicator lamp lights up during operation.

Possible cause	Remedy
Three-phase alternator speed too low.	Check V-ribbed belt tension.
Three-phase alternator fails to charge the battery, three-phase alternator or cut-out relay defective.	Contact your authorised dealer

Truck only moves at creep speed, the buzzer sounds and error code X201 is displayed in the text field of the display unit.

Possible cause	Remedy
Engine oil level too low.	Top up engine oil.

Truck only moves at creep speed, the buzzer sounds and error code X202 is displayed in the text field of the display unit.

Possible cause	Remedy
Engine oil pressure too low.	Top up engine oil, if the error persists, contact your authorised dealer.

Truck only moves at creep speed, the buzzer sounds and error code X203 is displayed in the text field of the display unit.

Possible cause	Remedy
Coolant level too low.	Top up coolant.

The truck only moves at creep speed and the level display lights up in the display unit.

Possible cause	Remedy
Coolant level too low.	Top up coolant.

Truck only moves at creep speed, the buzzer sounds and error code X204 is displayed in the text field of the display unit.

Possible cause	Remedy
Engine temperature too high.	Top up coolant. Water pump defective. Clean the water cooler. Adjust the fuel injection system.

Malfunctions, causes and remedies (hydraulic system)

Abnormal noise.	
Possible cause	Remedy
Clogged suction filter.	Change the filter.
Leaking suction lines, oil foams.	Seal the lines. Check the hydraulic oil, top up if necessary.
Hydraulic pump or engine damage, faulty seals, causing air intake.	Have the hydraulic unit checked by your authorised dealer.
Incorrect oil viscosity, too little oil in the tank or hydraulic pump.	Change the hydraulic oil, observe the prescribed viscosity. Top up hydraulic oil.

No pressure or too little pressure in the system.	
Possible cause	Remedy
Suction disrupted, noises.	Change the hydraulic oil, top up the hydraulic oil.
Pump faulty, leakage loss, pressure valves will not shut, valve seat damaged.	Contact your authorised dealer.
Pipe line broken or leaking.	Change the line or seal.
Oil too thin causing high leakage loss.	Change the hydraulic oil, observe the prescribed viscosity.
Oil temperature warning is displayed.	Check the hydraulic oil level, clean the hydraulic oil cooler.

Oil pressure fluctuation.	
Possible cause	Remedy
See abnormal noise for cause.	See abnormal noise.
Pressure relief valve or feed pressure valves are seizing.	Contact your authorised dealer.
Lift and tilt cylinders show friction points.	Contact your authorised dealer.
Lift mast does not extend fully or sinks slightly.	Top up hydraulic oil. Bleed the cylinder.

No or too little supply flow.	
Possible cause	Remedy
Clogged filter (if noise is also heard at the same time).	Clean or change filter.
Pump faulty, leakage loss, pressure valves will not shut, valve seat damaged.	Contact your authorised dealer.
Pipe line broken or leaking.	Change the line or seal.

Self-help

No or too little supply flow.	
Possible cause	Remedy
Valves clogged.	Contact your authorised dealer.
Hydraulic system overheated.	Check hydraulic oil level, use prescribed hydraulic oil, if any, clean the hydraulic oil cooler.

Hydraulic oil temperature too high.	
Possible cause	Remedy
Pump damaged, valves leaking.	Contact your authorised dealer.
Too little oil in the tank or oil cooler clogged.	Check the hydraulic oil level, top up the hydraulic oil if necessary. Clean the hydraulic oil cooler and check for leaks; if faults are found, contact your authorised dealer.

Truck only moves at crawling speed, the buzzer sounds and fault code X205 is displayed in the text field of the display unit.	
Possible cause	Remedy
Hydraulic oil temperature too high.	Check the hydraulic oil level Clean the hydraulic oil cooler.

Jump start

NOTE

When the truck battery is discharged, a jump-start battery can be used with a jumper cable to start the truck. The following must be taken into consideration when doing this:

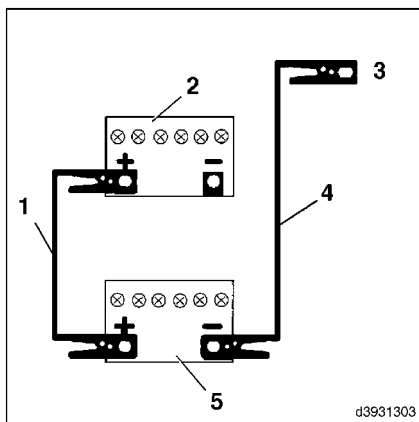
- Both batteries must have the same nominal voltage.
- The capacity (Ah) of the current-giving battery must not be significantly lower than the capacity of the discharged battery.
- Use a jumper cable with a sufficient cross-section and insulated pole clips.

WARNING

A discharged battery can freeze at temperatures below 0°C. There is then a risk of explosion.

Before connecting the jumper cable, it is essential that a frozen battery is thawed.

- Switch off all current consumers (heater, air conditioning, lighting).
- Open the engine bonnet.
- Connect one end of the positive cable (1) to the positive terminal (+) of the discharged truck battery (2).
- Connect the other end of the positive cable (1) to the positive terminal (+) of the current-giving battery (5).
- Connect one end of the negative cable (4) to the negative terminal (-) of the current-giving battery (5).
- Connect the other end of the negative cable (4) as far away as possible from the discharged truck battery (2) to a massive metal component securely connected to the engine block or to the engine block itself (3).



NOTE

If the jump-start battery is housed in another vehicle, start the vehicle's engine and allow to idle.

- Start the engine.

Self-help

If the engine does not start straightaway, abort the starting process after 10 seconds and try again after around 30 seconds.

- Once the engine is running, first disconnect the negative cable (4) from the engine block (3), and then from the current-giving battery (5).
- First disconnect the positive cable (1) from the current-giving battery (5), then from the discharged battery (2).

Towing

If the truck needs to be towed away in an emergency, the towing unit can:

- short-circuiting of hydraulic oil circuit
- Release the multi-disc brakes in the drive axle via the brake valve the and stop pedal.

WARNING

It is no longer possible to brake the truck. The parking brake does not operate either.

To tow the forklift truck, a towing vehicle with sufficient pulling and braking force for the unbraked towed load is required. It is only permitted to tow the truck using a fixed connection (towing bar).

Towing process

- Lower the load so far that the fork arms do not scrape on the ground while towing.
- Remove load.
- Attach towing vehicle (ensure sufficient pulling and braking force) to the truck's towing pin using the towing bar.

Opening the hydraulic system shorting plunger

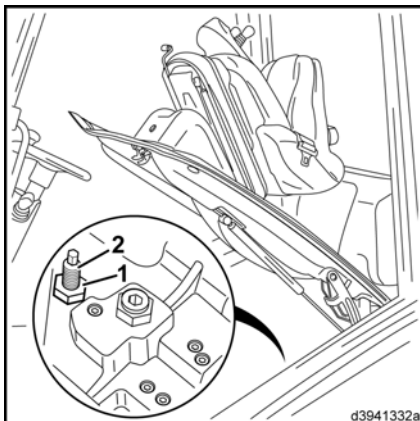
- Open the bonnet.

- Use a socket to release the self-locking nut (1) (AF 19 mm) on the left-hand side of the variable displacement pump housing.
- Unscrew threaded stud (2) (AF 8 mm) 2 turns using the socket.
- Lock the threaded stud with the self-locking nut (1), and tighten to 50 Nm.
- Close the bonnet.

Release multi-disc brake

The brake valve is located under the bottom plate on the left-hand side of the truck chassis.

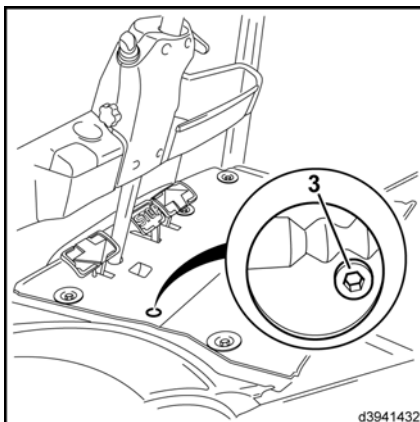
- Remove floor mat.



- Insert hexagon socket wrench (AF 5 mm) through the bore in the bottom plate and unscrew socket head screw (3) by approx. 8 turns.
- Sit on driver's seat.
- Press down handle of parking brake.

The symbol on the indicator unit will go out.

- Move the stop pedal several times in and out of easy-movement range until resistance is felt (pump) and until the brake is released.



After towing

- Place chocks underneath on side facing downhill.
- Open the bonnet.
- Loosen sealing collar nut (1) on variable pump.
- Screw in threaded stud (2) (AF 8 mm), and tighten to 20⁺⁵ Nm.
- Lock threaded stud with sealing collar nut (1).
- Tighten nut to 50 Nm.

Establishing braking readiness

- Insert socket head screw (3) until stop in valve block.

Self-help

- Replace floor mat and close bonnet.

DANGER

The forklift truck must not be driven if the braking system is defective.

After repairs to the brake system, check for correct operation. If there are any defects in the brake system, contact your authorised dealer.

Shutting down

Shutting down the truck

Measures before shutdown

If the truck is to be shut down for more than two months, e.g. for operational reasons, it must only be stored in a well ventilated, clean and dry room that is frost-protected. The following measures must be implemented.

- Clean forklift truck thoroughly.
- Raise fork carriage to the end stop repeatedly, tilt the lift mast forwards and backwards repeatedly and actuate the attachment repeatedly, as is necessary.
- Lower the fork carriage to a supporting surface until the chains are relieved of load.
- Check the hydraulic oil level and top up if necessary.
- Fill up with fuel.
- Coat all unpainted mechanical components with a thin film of oil or grease.
- Grease vehicle.
- Disconnect the battery.
- Check battery condition and density of acid.
- Lubricate battery terminals with acid-free grease. (Follow the battery manufacturer's instructions.)
- Apply a suitable contact spray to all exposed electrical contacts.
- Jack up the vehicle so all wheels are off the ground.

This will prevent permanent deformation of the tyres.

NOTE

Do not cover with plastic foil, as this will encourage condensation water to form and collect.

NOTE

If the truck is to be shut down for more than six months, further measures must be agreed with your authorised dealer.

Returning to service after being shut-down

- Clean forklift truck thoroughly.
- Lubricate the forklift truck.
- Connect the battery.
- Clean the battery and lubricate battery terminals with acid-free grease
- Check battery condition and specific gravity of acid and recharge if necessary.
- Check engine oil for condensed water, change if necessary. Check hydraulic oil for condensation water, change if necessary.
- Perform maintenance as before initial commissioning.
- Put forklift truck into service.

Shutting down

Disposal of old trucks

The disposal of old trucks is regulated in directive 2000/53/EC from the European Parliament and Council.

We therefore recommend having this work carried out in an approved recycling plant. If you would like to carry out this work yourself, you must obtain approval from the relevant authorities as per articles 9, 10 and 11 of directive 75/442/EEC.

The following minimum requirements must also be observed:

- The locations in which old trucks are stored before treatment must be areas suited to this task with impervious surfaces. These areas are also to be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials
- The locations for treatment must be areas suited to this task with impervious surfaces. These areas are also to be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials. Suitable storage areas must be

available for disassembled and partially oil-smeared parts, as well as for tyres including fire protection measures. Suitable storage tanks for fluids such as fuel, engine oil, hydraulic oil, coolant and fluids from air conditioning systems must also be provided.

- In order to dispose of harmful substances from the old trucks, the batteries and LPG container must be removed. The following must also be removed, collected and stored separately: fuel, engine oil, coolant, hydraulic oil and fluids from air conditioning systems
- The following parts are to be collected separately and recycled: catalytic converters, metal components containing copper and aluminium, tyres, large plastic components (consoles, fluid containers) and glass

 NOTE

The operating company is responsible for adherence to the directives as well as additional country-specific regulations.

Technical data

Type sheet H 40, as at 07/2011

All data refers to standard equipment with a standard 3000 mm lift mast.
Please note the following:

1 Characteristics

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 40 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	4000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	483
1.9	Wheelbase	y [mm]	1998

2 Weight

2.1	Net weight	kg	5785
2.2	Axle load with front/rear load	kg	8608/1177
2.3	Axle load without front/rear load	kg	2640/3145

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		250–15
3.3	Rear tyre size		250–15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{1/2}
3.6	Front track width	b ₁₀ [mm]	1221 ²
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/9.0 ³
4.2	Lowered mast height	h ₁ [mm]	2370 ⁴
4.3	Free lift	h ₂ [mm]	150

¹ Bracketed value for twin tyres.

² The track width may deviate from the indicated value, depending on the tyre variant.

³ Lift height and equipment may change the backwards tilt.

⁴ With 150 mm free lift on standard lift mast.

4 Basic dimensions

4.4	Lift	h ₃ [mm]	3000
4.5	Raised mast height	h ₄ [mm]	3795
4.7	Overhead guard height (cab)	h ₆ [mm]	2383
4.8	Seat height, min./max.	h ₇ [mm]	1226
4.12	Coupling height	h ₁₀ [mm]	703
4.19	Total length	l ₁ [mm]	3984
4.20	Length including fork back	l ₂ [mm]	2984
4.21	Total width	b ₁ /b ₂ [mm]	1446/1423 ⁵
4.22	Fork arm dimensions	s/e/l [mm]	50 x 120 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ⁶
4.31	Ground clearance at mast	m ₁ [mm]	158
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	201
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4355
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4555
4.35	Turning radius	W _a [mm]	2672
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data

5.1	Driving speed with/without load	km/h	21/21
5.2	Lifting speed with/without load	m/s	0.53/0.57
5.3	Lowering speed with/without load	m/s	0.52/0.57
5.5	Pulling force with/without load	N	28541/20570
5.7	Climbing capability with/without load	%	29.0/34.0
5.9	Acceleration with/without load	s	5.5/4.8
5.10	Service brake		Hydrostatic

7 Drive/engine

7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

⁵ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

⁶ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

7 Drive/engine

7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.2

8 Miscellaneous

8.1	Traction controller type		Hydrostatic / continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in forklift driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 45, as at 07/2011

**All data refers to standard equipment with a standard 3000 mm lift mast.
Please note the following:**

1 Characteristics

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 45 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	4500
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	525
1.9	Wheelbase	y [mm]	2038

2 Weight

2.1	Net weight	kg	6295
2.2	Axle load with front/rear load	kg	9555/1240
2.3	Axle load without front/rear load	kg	2790/3505

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		300-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{7/2}
3.6	Front track width	b ₁₀ [mm]	1190 ⁸
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/9.0 ⁹
4.2	Lowered mast height	h ₁ [mm]	2421 ¹⁰
4.3	Free lift	h ₂ [mm]	150

⁷ Bracketed value for twin tyres.

⁸ The track width may deviate from the indicated value, depending on the tyre variant.

⁹ Lift height and equipment may change the backwards tilt.

¹⁰ With 150 mm free lift on standard lift mast.

4 Basic dimensions			
4.4	Lift	h ₃ [mm]	3000
4.5	Raised mast height	h ₄ [mm]	3916
4.7	Overhead guard height (cab)	h ₆ [mm]	2416
4.8	Seat height, min./max.	h ₇ [mm]	1264
4.12	Coupling height	h ₁₀ [mm]	726
4.19	Total length	l ₁ [mm]	4066
4.20	Length including fork back	l ₂ [mm]	3066
4.21	Total width	b ₁ /b ₂ [mm]	1448/1423 ¹¹
4.22	Fork arm dimensions	s/e/l [mm]	50 x 120 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ¹²
4.31	Ground clearance at mast	m ₁ [mm]	205
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	236
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4433
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4633
4.35	Turning radius	W _a [mm]	2708
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data			
5.1	Driving speed with/without load	km/h	24/24
5.2	Lifting speed with/without load	m/s	0.53/0.57
5.3	Lowering speed with/without load	m/s	0.52/0.57
5.5	Pulling force with/without load	N	25285/21841
5.7	Climbing capability with/without load	%	22.0/32.0
5.9	Acceleration with/without load	s	5.6/4.9
5.10	Service brake		Hydrostatic

7 Drive/engine			
7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

¹¹ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

¹² The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

7 Drive/engine

7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.4

8 Miscellaneous

8.1	Traction controller type		hydrostatic / continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in forklift driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 50/500, as at 07/2011

All data refers to standard equipment with a standard 3000 mm lift mast.
Please note the following:

1 Characteristics

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 50 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	5000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	535
1.9	Wheelbase	y [mm]	2078

2 Weight

2.1	Net weight	kg	6580
2.2	Axle load with front/rear load	kg	10370/1210
2.3	Axle load without front/rear load	kg	2880/3700

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		300-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{13/2}
3.6	Front track width	b ₁₀ [mm]	1190 ¹⁴
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/9.0 ¹⁵
4.2	Lowered mast height	h ₁ [mm]	2421 ¹⁶
4.3	Free lift	h ₂ [mm]	150

¹³ Bracketed value for twin tyres.

¹⁴ The track width may deviate from the indicated value, depending on the tyre variant.

¹⁵ Lift height and equipment may change the backwards tilt.

¹⁶ With 150 mm free lift on standard lift mast.

4 Basic dimensions

4.4	Lift	h ₃ [mm]	3000
4.5	Raised mast height	h ₄ [mm]	3916
4.7	Overhead guard height (cab)	h ₆ [mm]	2416
4.8	Seat height, min./max.	h ₇ [mm]	1264
4.12	Coupling height	h ₁₀ [mm]	719
4.19	Total length	l ₁ [mm]	4116
4.20	Length including fork back	l ₂ [mm]	3116
4.21	Total width	b ₁ /b ₂ [mm]	1448/1423 ¹⁷
4.22	Fork arm dimensions	s/e/l [mm]	60 x 130 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ¹⁸
4.31	Ground clearance at mast	m ₁ [mm]	203
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	235
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4480
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4680
4.35	Turning radius	W _a [mm]	2745
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data

5.1	Driving speed with/without load	km/h	24/24
5.2	Lifting speed with/without load	m/s	0.49/0.51
5.3	Lowering speed with/without load	m/s	0.50/0.56
5.5	Pulling force with/without load	N	25285/22375
5.7	Climbing capability with/without load	%	21.0/32.0
5.9	Acceleration with/without load	s	5.7/5.0
5.10	Service brake		Hydrostatic

7 Drive/engine

7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

¹⁷ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

¹⁸ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

7 Drive/engine

7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.6

8 Miscellaneous

8.1	Traction controller type		Hydrostatic / continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in forklift driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 50/600, as at 07/2011

**All data refers to standard equipment with a standard 2800 mm lift mast.
Please note the following:**

1 Characteristics

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 50 D/600
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	5000
1.6	Load centre of gravity	c [mm]	600
1.8	Load distance	x [mm]	535
1.9	Wheelbase	y [mm]	2078

2 Weight

2.1	Net weight	Kg	6947
2.2	Axle load with front/rear load	Kg	10,620/1327
2.3	Axle load without front/rear load	Kg	2889/4058

3 Wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		300-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{19/2}
3.6	Front track width	b ₁₀ [mm]	1190 ²⁰
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/9.0 ²¹
4.2	Lowered mast height	h ₁ [mm]	2421 ²²
4.3	Free lift	h ₂ [mm]	150

¹⁹ Bracketed value for twin tyres.

²⁰ The track width may deviate from the indicated value, depending on the tyre variant.

²¹ Lift height and equipment may change the backwards tilt.

²² With 150 mm free lift on standard lift mast.

6 Technical data

Type sheet H 50/600, as at 07/2011

4 Basic dimensions			
4.4	Lift	h ₃ [mm]	2800
4.5	Raised mast height	h ₄ [mm]	3816
4.7	Overhead guard height (cab)	h ₆ [mm]	2416
4.8	Seat height, min./max.	h ₇ [mm]	1264
4.12	Coupling height	h ₁₀ [mm]	718
4.19	Total length	l ₁ [mm]	4396
4.20	Length including fork back	l ₂ [mm]	3196
4.21	Total width	b ₁ /b ₂ [mm]	1448/1423 ²³
4.22	Fork arm dimensions	s/e/l [mm]	60 x 130 x 1200
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ²⁴
4.31	Ground clearance at mast	m ₁ [mm]	203
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	234
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4560
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4760
4.35	Turning radius	W _a [mm]	2825
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data			
5.1	Driving speed with/without load	km/h	24/24
5.2	Lifting speed with/without load	m/s	0.49/0.51
5.3	Lowering speed with/without load	m/s	0.50/0.56
5.5	Pulling force with/without load	N	25285/22673
5.7	Climbing capability with/without load	%	20.0/30.0
5.9	Acceleration with/without load	s	5.8/5.1
5.10	Service brake		Hydrostatic

7 Drive/engine			
7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

²³ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

²⁴ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

7 Drive/engine

7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.7

8 Miscellaneous

8.1	Traction controller type		hydrostatic /continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in forklift driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 40 elevated driver's compartment, as at 07/2011

All data refers to standard equipment with standard 3900 mm lift mast.
Please observe the following:

1 Identification

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 40 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	4000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	483
1.9	Wheelbase	y [mm]	1998

2 Weight

2.1	Net weight	kg	5995
2.2	Axle load with front/rear load	kg	8766/1229
2.3	Axle load without front/rear load	kg	2798/3197

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		250-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{25/2}
3.6	Front track width	b ₁₀ [mm]	1221 ²⁶
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	4.0/9.0 ²⁷
4.2	Lowered mast height	h ₁ [mm]	2820 ²⁸
4.3	Free lift	h ₂ [mm]	150

²⁵ Bracketed value for twin tyres.

²⁶ The track width may deviate from the indicated value, depending on the tyre variant.

²⁷ Lift height and equipment may change the backwards tilt.

²⁸ With 150 mm free lift on standard lift mast.

Type sheet H 40 elevated driver's compartment, as at 07/2011**4 Basic dimensions**

4.4	Lift	h ₃ [mm]	3900
4.5	Raised mast height	h ₄ [mm]	4695
4.7	Overhead guard height (cab)	h ₆ [mm]	2783
4.8	Seat height, min./max.	h ₇ [mm]	1626
4.12	Coupling height	h ₁₀ [mm]	703
4.19	Total length	l ₁ [mm]	3984
4.20	Length including fork back	l ₂ [mm]	2984
4.21	Total width	b ₁ /b ₂ [mm]	1446/1423 ²⁹
4.22	Fork arm dimensions	s/e/l [mm]	50 x 120 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ³⁰
4.31	Ground clearance at mast	m ₁ [mm]	158
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	201
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4355
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4555
4.35	Turning radius	W _a [mm]	2672
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data

5.1	Driving speed with/without load	km/h	21/21
5.2	Lifting speed with/without load	m/s	0.53/0.57
5.3	Lowering speed with/without load	m/s	0.52/0.57
5.5	Pulling force with/without load	N	28650/21959
5.7	Climbing capability with/without load	%	30.0/37.0
5.9	Acceleration with/without load	s	5.5/4.8
5.10	Service brake		Hydrostatic

7 Drive/engine

7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

²⁹ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.³⁰ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

Type sheet H 40 elevated driver's compartment, as at 07/2011

7 Drive/engine			
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.2

8 Miscellaneous			
8.1	Traction controller type		hydrostatic/continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 45 elevated driver's compartment, as at 07/2011

**All data refers to standard equipment with standard 3800 mm lift mast.
Please observe the following:**

1 Identification

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 45 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	4500
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	525
1.9	Wheelbase	y [mm]	2038

2 Weight

2.1	Net weight	kg	6505
2.2	Axle load with front/rear load	kg	9713/1292
2.3	Axle load without front/rear load	kg	2950/3555

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		300-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{31/2}
3.6	Front track width	b ₁₀ [mm]	1190 ³²
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	4.0/9.0 ³³
4.2	Lowered mast height	h ₁ [mm]	2776 ³⁴
4.3	Free lift	h ₂ [mm]	150

³¹ Bracketed value for twin tyres.

³² The track width may deviate from the indicated value, depending on the tyre variant.

³³ Lift height and equipment may change the backwards tilt.

³⁴ With 150 mm free lift on standard lift mast.

4 Basic dimensions			
4.4	Lift	h ₃ [mm]	3800
4.5	Raised mast height	h ₄ [mm]	4716
4.7	Overhead guard height (cab)	h ₆ [mm]	2816
4.8	Seat height, min./max.	h ₇ [mm]	1664
4.12	Coupling height	h ₁₀ [mm]	726
4.19	Total length	l ₁ [mm]	4066
4.20	Length including fork back	l ₂ [mm]	3066
4.21	Total width	b ₁ /b ₂ [mm]	1448/1423 ³⁵
4.22	Fork arm dimensions	s/e/l [mm]	50 x 120 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ³⁶
4.31	Ground clearance at mast	m ₁ [mm]	205
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	236
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4433
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4633
4.35	Turning radius	W _a [mm]	2708
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data			
5.1	Driving speed with/without load	km/h	24/24
5.2	Lifting speed with/without load	m/s	0.53/0.57
5.3	Lowering speed with/without load	m/s	0.52/0.57
5.5	Pulling force with/without load	N	25064/23152
5.7	Climbing capability with/without load	%	24.0/36.0
5.9	Acceleration with/without load	s	5.6/4.9
5.10	Service brake		Hydrostatic

7 Drive/engine			
7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

³⁵ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

³⁶ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

Type sheet H 45 elevated driver's compartment, as at 07/2011

7 Drive/engine			
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.4

8 Miscellaneous			
8.1	Traction controller type		hydrostatic/continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 50/500 elevated driver's compartment, as at 07/2011

Type sheet H 50/500 elevated driver's compartment, as at 07/2011

All data refers to standard equipment with standard 3800 mm lift mast.
Please observe the following:

1 Identification

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 50 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	5000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	535
1.9	Wheelbase	y [mm]	2078

2 Weight

2.1	Net weight	kg	6790
2.2	Axle load with front/rear load	kg	10531/1259
2.3	Axle load without front/rear load	kg	3041/3749

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		300-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x (4x) ^{37/2}
3.6	Front track width	b ₁₀ [mm]	1190 ³⁸
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	4.0/9.0 ³⁹
4.2	Lowered mast height	h ₁ [mm]	2776 ⁴⁰

³⁷ Bracketed value for twin tyres.

³⁸ The track width may deviate from the indicated value, depending on the tyre variant.

³⁹ Lift height and equipment may change the backwards tilt.

⁴⁰ With 150 mm free lift on standard lift mast.

4 Basic dimensions

4.3	Free lift	h ₂ [mm]	150
4.4	Lift	h ₃ [mm]	3800
4.5	Raised mast height	h ₄ [mm]	4716
4.7	Overhead guard height (cab)	h ₆ [mm]	2816
4.8	Seat height, min./max.	h ₇ [mm]	1664
4.12	Coupling height	h ₁₀ [mm]	719
4.19	Total length	l ₁ [mm]	4116
4.20	Length including fork back	l ₂ [mm]	3116
4.21	Total width	b ₁ /b ₂ [mm]	1448/1423 ⁴¹
4.22	Fork arm dimensions	s/e/l [mm]	60 x 130 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ⁴²
4.31	Ground clearance at mast	m ₁ [mm]	203
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	235
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4480
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4680
4.35	Turning radius	W _a [mm]	2745
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data

5.1	Driving speed with/without load	km/h	24/24
5.2	Lifting speed with/without load	m/s	0.49/0.51
5.3	Lowering speed with/without load	m/s	0.50/0.56
5.5	Pulling force with/without load	N	25064/23866
5.7	Climbing capability with/without load	%	22.0/36.0
5.9	Acceleration with/without load	s	5.7/5.0
5.10	Service brake		Hydrostatic

7 Drive/engine

7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55

⁴¹ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.⁴² The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

6 Technical data

Type sheet H 50/500 elevated driver's compartment, as at 07/2011

7 Drive/engine

7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.6

8 Miscellaneous

8.1	Traction controller type		hydrostatic/continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 40 container, as at 07/2011

**All data refers to standard equipment with triplex 4075 mm lift mast.
Please observe the following:**

1 Identification

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 40 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	4000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	483
1.9	Wheelbase	y [mm]	1998

2 Weight

2.1	Net weight	kg	5936
2.2	Axle load with front/rear load	kg	8788/1148
2.3	Axle load without front/rear load	kg	2820/3116

3 wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		28x12.5–15
3.3	Rear tyre size		250–15
3.5	Number of wheels, front/rear (x = driven)		2x/2
3.6	Front track width	b ₁₀ [mm]	1190 ⁴³
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/7.5 ⁴⁴
4.2	Lowered mast height	h ₁ [mm]	2161
4.3	Free lift	h ₂ [mm]	1414
4.4	Lift	h ₃ [mm]	4075
4.5	Raised mast height	h ₄ [mm]	4822

⁴³ The track width may deviate from the indicated value, depending on the tyre variant.

⁴⁴ Lift height and equipment may change the backwards tilt.

6 Technical data

Type sheet H 40 container, as at 07/2011

4 Basic dimensions			
4.7	Overhead guard height (cab)	h ₆ [mm]	2220
4.8	Seat height, min./max.	h ₇ [mm]	1151
4.12	Coupling height	h ₁₀ [mm]	732
4.19	Total length	l ₁ [mm]	3984
4.20	Length including fork back	l ₂ [mm]	2984
4.21	Total width	b ₁ /b ₂ [mm]	1487/1423 ⁴⁵
4.22	Fork arm dimensions	s/e/l [mm]	50 x 120 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ⁴⁶
4.31	Ground clearance at mast	m ₁ [mm]	148
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	195
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4355
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4555
4.35	Turning radius	W _a [mm]	2672
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data			
5.1	Driving speed with/without load	km/h	20/20
5.2	Lifting speed with/without load	m/s	0.53/0.57
5.3	Lowering speed with/without load	m/s	0.52/0.57
5.5	Pulling force with/without load	N	30202/22131
5.7	Climbing capability with/without load	%	33.0/38.0
5.9	Acceleration with/without load	s	5.5/5.0
5.10	Service brake		Hydrostatic

7 Drive/engine			
7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.1

⁴⁵ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

⁴⁶ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

8 Miscellaneous

8.1	Traction controller type		hydrostatic /continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 45 container, as at 07/2011

All data refers to standard equipment with triplex 4045 mm lift mast.
Please observe the following:

1 Identification

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 45 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	4500
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	483
1.9	Wheelbase	y [mm]	2038

2 Weight

2.1	Net weight	kg	6355
2.2	Axle load with front/rear load	kg	9527/1328
2.3	Axle load without front/rear load	kg	2856/3499

3 Wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		28x12.5-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x/2
3.6	Front track width	b ₁₀ [mm]	1190 ⁴⁷
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/7.5 ⁴⁸
4.2	Lowered mast height	h ₁ [mm]	2160
4.3	Free lift	h ₂ [mm]	1310
4.4	Lift	h ₃ [mm]	4045
4.5	Raised mast height	h ₄ [mm]	4895

⁴⁷ The track width may deviate from the indicated value, depending on the tyre variant.

⁴⁸ Lift height and equipment may change the backwards tilt.

4 Basic dimensions

4.7	Overhead guard height (cab)	h ₆ [mm]	2220
4.8	Seat height, min./max.	h ₇ [mm]	1151
4.12	Coupling height	h ₁₀ [mm]	732
4.19	Total length	l ₁ [mm]	4024
4.20	Length including fork back	l ₂ [mm]	3024
4.21	Overall width	b ₁ /b ₂ [mm]	1487/1423 ⁴⁹
4.22	Fork arm dimensions	s/e/l [mm]	50 x 120 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ⁵⁰
4.31	Ground clearance at mast	m ₁ [mm]	147
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	207
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4391
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4591
4.35	Turning radius	W _a [mm]	2708
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data

5.1	Driving speed with/without load	km/h	20/20
5.2	Lifting speed with/without load	m/s	0.53/0.57
5.3	Lowering speed with/without load	m/s	0.52/0.57
5.5	Pulling force with/without load	N	30202/22414
5.7	Climbing capability with/without load	%	30.0/36.0
5.9	Acceleration with/without load	s	5.7/5.0
5.10	Service brake		Hydrostatic

7 Drive/engine

7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.3

⁴⁹ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

⁵⁰ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

6 Technical data

Type sheet H 45 container, as at 07/2011

8 Miscellaneous

8.1	Traction controller type		hydrostatic /continuously variable
8.2	Working pressure for equipment	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 50/500 container, as at 07/2011

**All data refers to standard equipment with triplex 4045 mm lift mast.
Please observe the following:**

1 Identification

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 50 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	5000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	493
1.9	Wheelbase	y [mm]	2078

2 Weight

2.1	Net weight	kg	6640
2.2	Axle load with front/rear load	kg	10335/1305
2.3	Axle load without front/rear load	kg	2946/3694

3 Wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		28x12.5–15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x/2
3.6	Front track width	b ₁₀ [mm]	1190 ⁵¹
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/7.5 ⁵²
4.2	Lowered mast height	h ₁ [mm]	2160
4.3	Free lift	h ₂ [mm]	1310
4.4	Lift	h ₃ [mm]	4045
4.5	Raised mast height	h ₄ [mm]	4895

⁵¹ The track width may deviate from the indicated value, depending on the tyre variant.

⁵² Lift height and equipment may change the backwards tilt.

6 Technical data

Type sheet H 50/500 container, as at 07/2011

4 Basic dimensions			
4.7	Overhead guard height (cab)	h ₆ [mm]	2220
4.8	Seat height, min./max.	h ₇ [mm]	1151
4.12	Coupling height	h ₁₀ [mm]	733
4.19	Total length	l ₁ [mm]	4074
4.20	Length including fork back	l ₂ [mm]	3074
4.21	Overall width	b ₁ /b ₂ [mm]	1487/1423 ⁵³
4.22	Fork arm dimensions	s/e/l [mm]	60 x 130 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ⁵⁴
4.31	Ground clearance at mast	m ₁ [mm]	146
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	207
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4438
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4638
4.35	Turning radius	W _a [mm]	2745
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data			
5.1	Driving speed with/without load	km/h	20/20
5.2	Lifting speed with/without load	m/s	0.49/0.51
5.3	Lowering speed with/without load	m/s	0.50/0.56
5.5	Pulling force with/without load	N	30202/23120
5.7	Climbing capability with/without load	%	28.0/36.0
5.9	Acceleration with/without load	s	5.8/5.1
5.10	Service brake		Hydrostatic

7 Drive/engine			
7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.5

⁵³ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

⁵⁴ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

8 Miscellaneous

8.1	Traction controller type		hydrostatic /continuously variable
8.2	Working pressure for equipment	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

Type sheet H 50/600 container, as at 07/2011

All data refers to standard equipment with triplex 3745 mm lift mast.
Please note the following:

1 Characteristics

1.1	Manufacturer		Linde
1.2	Manufacturer's type designation		H 50 D/600
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity/load	Q [kg]	5000
1.6	Load centre of gravity	c [mm]	600
1.8	Load distance	x [mm]	493
1.9	Wheelbase	y [mm]	2078

2 Weight

2.1	Net weight	Kg	7007
2.2	Axle load with front/rear load	Kg	10585/1422
2.3	Axle load without front/rear load	Kg	2955/4052

3 Wheels, chassis frame

3.1	Front/rear tyres: polyurethane, rubber		SE (P)
3.2	Front tyre size		28x12.5-15
3.3	Rear tyre size		250-15
3.5	Number of wheels, front/rear (x = driven)		2x/2
3.6	Front track width	b ₁₀ [mm]	1190 ⁵⁵
3.7	Rear track width	b ₁₁ [mm]	1122

4 Basic dimensions

4.1	Forward/backward fork tilt	α/β (°)	5.0/7.5 ⁵⁶
4.2	Lowered mast height	h ₁ [mm]	2160
4.3	Free lift	h ₂ [mm]	1210
4.4	Lift	h ₃ [mm]	3745
4.5	Raised mast height	h ₄ [mm]	4695

⁵⁵ The track width may deviate from the indicated value, depending on the tyre variant.

⁵⁶ Lift height and equipment may change the backwards tilt.

4 Basic dimensions

4.7	Overhead guard height (cab)	h ₆ [mm]	2220
4.8	Seat height, min./max.	h ₇ [mm]	1151
4.12	Coupling height	h ₁₀ [mm]	733
4.19	Total length	l ₁ [mm]	4354
4.20	Length including fork back	l ₂ [mm]	3154
4.21	Total width	b ₁ /b ₂ [mm]	1487/1423 ⁵⁷
4.22	Fork arm dimensions	s/e/l [mm]	60 x 130 x 1200
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b ₃ [mm]	1350 ⁵⁸
4.31	Ground clearance at mast	m ₁ [mm]	146
4.32	Ground clearance at centre of wheelbase	m ₂ [mm]	207
4.33	Aisle width for pallet 1000 x 1200 crosswise	A _{st} [mm]	4518
4.34	Aisle width for pallet 800 x 1200 longitudinal	A _{st} [mm]	4718
4.35	Turning radius	W _a [mm]	2825
4.36	Smallest pivot point distance	b ₁₃ [mm]	700

5 Performance data

5.1	Driving speed with/without load	km/h	20/20
5.2	Lifting speed with/without load	m/s	0.49/0.51
5.3	Lowering speed with/without load	m/s	0.50/0.56
5.5	Pulling force with/without load	N	30202/23428
5.7	Climbing capability with/without load	%	27.0/34.0
5.9	Acceleration with/without load	s	5.9/5.2
5.10	Service brake		Hydrostatic

7 Drive/engine

7.1	Engine manufacturer/model		VW/CBJB
7.2	Engine power rating as per ISO 1585	kW	55
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders/displacement	cm ³	4/1968
7.5	Fuel consumption in accordance with VDI cycle	l/h	4.6

⁵⁷ The total width may deviate from the indicated value, depending on the tyre variant and fork carriage variant.

⁵⁸ The fork carriage width may deviate from the indicated value, depending on the fork carriage variant.

6 Technical data

Type sheet H 50/600 container, as at 07/2011

8 Miscellaneous

8.1	Traction controller type		hydrostatic /continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	48
8.4	Noise level in forklift driver's ear	dB (A)	79
8.5	Towing hook, type/model DIN		15170-H

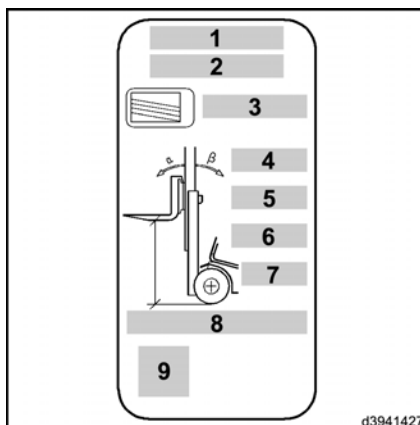
Truck configuration

"Truck configuration" sign



NOTE

If attachments and conversions are required, please contact your authorised dealer. A new "truck configuration" sign must then be created and attached to the truck by the authorised dealer.



- 1 Frame number
- 2 Lift mast number or identification: "CO"*
- 3 Capacity rating plate number
- 4 Maximum permissible forwards/backwards tilt angle
- 5 Attachment:
"GTR/FC/PF" means fork carriage
"ISS/ISS/TI" means integrated sideshift
"IZVG/IFP/IPF" means integrated fork prong positioner
"CO/CO/CO" means customer-specific option (without attachment)
- 6 Lift mast series/version:
"St" means standard lift mast
"Du" means duplex lift mast
"Tr" means triplex lift mast
"CO"*
- 7 Lift height in mm or identification: "CO"*
- 8 Front tyres:
"SE/SE/SE" means solid rubber tyres
"SE Zw./SE tw./SE jum." means solid rubber dual tyres
"Luft/Pneu./Gonf." means pneumatic tyres
"Luft Zw./Pneu. tw./Gonf. jum." means pneumatic dual tyres
"Bandage/Cushion/Bandage" means bandage tyres
- 9 Placeholder for "data-matrix code"
"CO"* means customer-specific option (without lift mast or with released non-original lift mast)

Tyre variants and rim sizes

Tyre variants and rim sizes

Tyre variants

Single tyre on the drive axle					
	SE solid rubber tyres			Pneumatic tyres	
H 40	250–15	SE		250-15/18 PR	10.0 bar
				250 R15-XZM	10.0 bar
				250/70 R15/18 PR	10.0 bar
H 40/45/50-500	28x12.5–15 (container handler)	SE			
H 45/50-500	300-15	SE		300-15/22 PR	10.0 bar
	355/65-15	SE		300 R15-XZM	10.0 bar
	28x10x22	Binding		315/70 R15	10.0 bar

Dual tyres on the drive axle					
	SE solid rubber tyres			Pneumatic tyres	
H 40	250–15	SE		250-15/18 PR	7.5 bar
				250 R15-XZM	7.5 bar
				250/70 R15/18 PR	7.5 bar
H 45/50-500	8.25-15	SE		8.25-15/18 PR	7.5 bar
				8.25 R15-XZM	7.5 bar
				8.25 R15	7.5 bar

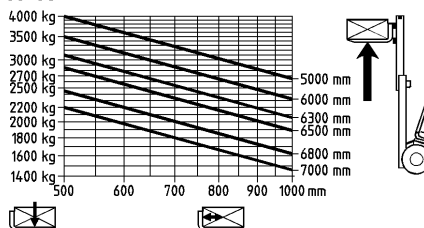
Steering axle tyres					
	SE solid rubber tyres			Pneumatic tyres	
H 40/45/50-500	250–15	SE		250-15/18 PR	6.0 bar
				250 R15-XZM	6.0 bar
				250/70 R15/18 PR	6.0 bar

Rim sizes

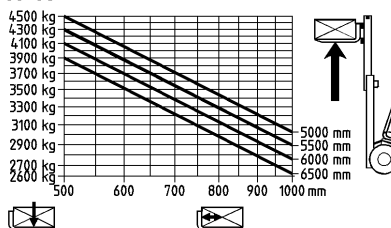
Rim size	Tyre size
6.50-15	8.25-15 (SE)
7.00-15	250-15 and 8.25-15 (air)
8.00-15	300-15 and 315-15
9.75-15	28x12.5-15 and 355/65-15
559	28x10x22

Load capacity diagrams

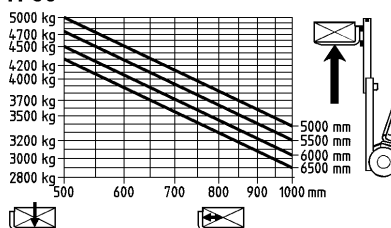
H 40



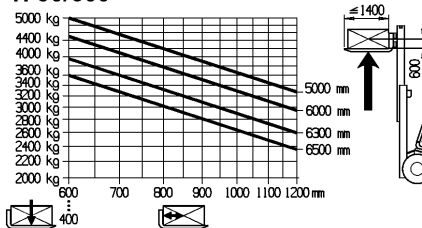
H 45



H 50



H 50/600



d3941116c

The load capacity diagrams apply to Standard and Duplex lift masts with solid rubber tyres and a fork carriage.

Lift mast data

The lift mast data applies to standard equipment with solid rubber tyres and a fork carriage.

Standard lift mast (in mm)										
Overall heights when retracted with specified free lift	h 1	H 40	2370	2420	2470	2720	2920	3070	3370	3570
		H 45/50	2421	2471	2521	2771	2971	3121	3421	3621
		H 50/600	2421	2471	2621	2871	3071	3221	3521	-
Free lift	h 2	H 40-50	150	150	150	150	150	150	150	150
Lift	h 3	H 40-50	3000	3100	3200	3700	4100	4400	5000	5400
		H 50/600	2800	2900	3200	3700	4100	4400	5000	-
Overall height when extended	h 4	H 40	3795	3895	3995	4495	4895	5195	5795	6195
		H 45/50	3916	4016	4116	4616	5016	5316	5916	6316
		H 50/600	3816	3916	4216	4716	5116	5416	6016	-

Load capacity diagrams and lift mast data as at 07/2011

Duplex lift mast (in mm)						
Overall heights when retracted with specified free lift	h 1	H 40	2325	2375	2425	2675
		H 45/50	2376	2426	2476	2726
		H 50/600	-	-	-	-
Free lift	h 2	H 40	1561	1611	1661	1911
		H 45/50	1460	1510	1560	1810
		H 50/600	-	-	-	-
Lift	h 3	H 40-50	3030	3130	3230	3730
		H 50/600	-	-	-	-
Overall height when extended	h 4	H 40	3794	3894	3994	4494
		H 45/50	3946	4046	4146	5046
		H 50/600	-	-	-	-

Triplex lift mast (in mm)						
Overall heights when retracted with specified free lift	h 1	H 40	2325	2375	2625	2875
		H 45/50	2376	2426	2676	3026
		H 50/600	2376	2426	2676	3026
Free lift	h 2	H 40	1564	1614	1864	2214
		H 45/50	1460	1510	1760	2110
		H 50/600	1360	1410	1660	2010
Lift	h 3	H 40-50	4525	4675	5365	5865
		H 50/600	4225	4375	5065	5565
Overall height when extended	h 4	H 40	5286	5436	6126	6626
		H 45/50	5441	5591	6281	6781
		H 50/600	5241	5391	6081	6581

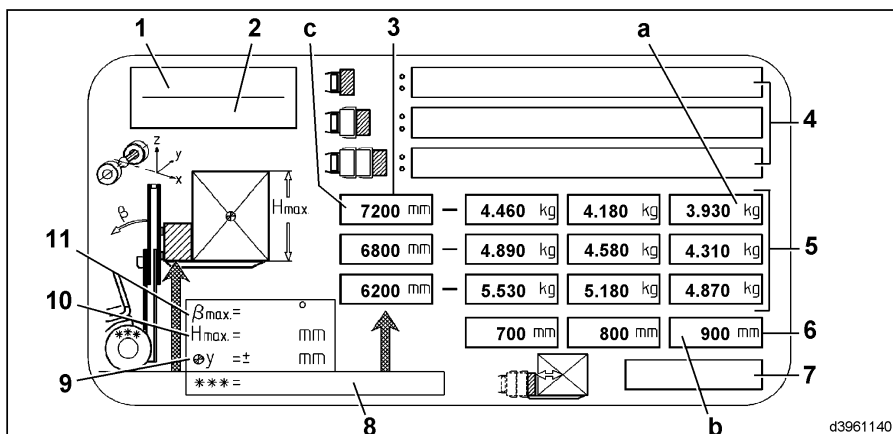
Additional capacity rating plate for attachments

⚠ DANGER

The entries in the following capacity rating plates are examples. The information will vary depending on the truck series, lift mast series, truck equipment and attachment. If an attachment is fitted, an additional capacity rating plate must be attached to your truck within the driver's field of vision.

If the plate is missing or the information about the truck equipment, attachments, load data etc. is not accurate, please contact your authorised dealer, who will calculate the data using a program authorised by Linde.

Additional capacity rating plate for attachments with loads that are not clamped



- | | | | |
|---|---|----|--|
| 1 | Truck series (year of manufacture, from - to) | 7 | Reference number and note about person calculating the load capacity |
| 2 | Lift mast type (series) | 8 | Front tyres |
| 3 | Lift heights | 9 | Maximum permissible centre offset of load |
| 4 | Attachments | 10 | Maximum permissible load height |
| 5 | Load capacities | 11 | Maximum permissible backward tilt of lift mast |
| 6 | Load centres of gravity | | |

i NOTE

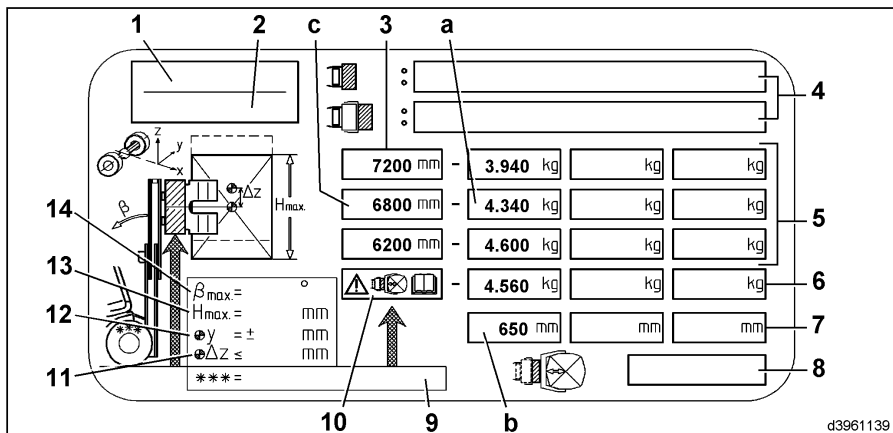
Example for reading the load capacity:

- $a = 3930 \text{ kg}$ at load centre of gravity $b = 900 \text{ mm}$ to lift height $c = 7200 \text{ mm}$.

6 Technical data

Noise emission values

Additional capacity rating plate for attachments with loads that are fixed or clamped



- 1 Truck series (year of manufacture, from - to)
- 2 Lift mast type (series)
- 3 Lift heights
- 4 Attachments
- 5 Load capacities
- 6 Reduced load capacities
- 7 Load centres of gravity
- 8 Reference number and note about person calculating the load capacity
- 9 Front tyres
- 10 Note — If there is sufficient visibility for forwards travel when transporting loads, we recommend that the calculated residual load capacity based on the roller height / load height (value = maximum permissible load height (13)) is limited to the following in order to achieve a more dynamic driving

- 11 behaviour: at a load centre of gravity 650 mm = 4,560 kg. Specifies in mm how much the load centre of gravity is offset vertically upwards to the centre of the attachment (e.g. roller / bale taken off). Also applicable for attachments with a rotate function: The actual centre of gravity of the load during rotation must not lie outside the pivot point by more than 100 mm (truck rated capacity ≤ 6300 kg) or 150 mm (truck rated capacity > 6300 kg and ≤ 10,000 kg)!
- 12 Maximum permissible centre offset of load
- 13 Maximum permissible load height
- 14 Maximum permissible backward tilt of lift mast



NOTE

Example for reading the load capacity:

- *a = 4340 kg at load centre of gravity b = 650 mm to lift height c = 6800 mm.*

Noise emission values

Calculated in the test cycle in accordance with EN 12053 from the weighted values for the TRACTION, LIFT and IDLING modes.

Acoustic pressure level in the driver's compartment

H 40, H 45, H 50-500	L _{PAZ}	=	79 dB (A)
in LIFT mode	L _{Pa}	=	82 dB (A)
in IDLING mode	L _{Pb}	=	70 dB (A)
in DRIVE mode	L _{Pc}	=	83 dB (A)
Uncertainty	K _{PA}	=	4 dB (A)

Sound power level

H 40, H 45, H 50-500	L _{WAZ}	=	94 dB (A)
in LIFT mode	L _{WA}	=	97 dB (A)
in IDLING mode	L _{Wb}	=	85 dB (A)
in DRIVE mode	L _{Wc}	=	98 dB (A)
Uncertainty	K _{WA}	=	2 dB (A)

Guaranteed sound power level

in accordance with 200/14/EC Directive	L _{WA}	=	99 dB (A)
--	-----------------	---	-----------

Under the terms of the directive, it is a statutory requirement to provide this information. The value is calculated from the sound power levels of the "Lift" and "Drive" modes. It can only be used as a comparative value for different forklift trucks. The value is less suitable for determining real environmental impact levels, as it is not representative for normal operation, which includes "Idling" mode.

** NOTE**

Lower or higher noise values may occur when using industrial trucks due to the method of operation, factors in the surrounding area and other noise sources.

Vibration characteristic values for bodily vibrations

The values were determined according to EN 13059 using trucks with standard equipment according to the data sheet (driving over test course with humps).

Specified vibration characteristic in accordance with EN 12096

Measured vibration characteristic	a _{w,ZS}	< 0.5 m/s ²
-----------------------------------	-------------------	------------------------

Specified vibration characteristic for hand-arm vibrations

Vibration characteristic	< 2.5 m/s ²
--------------------------	------------------------

** NOTE**

The vibration characteristic for bodily vibrations cannot be used to determine the actual load level of vibrations during operation. This depends on the operating conditions (state of pathway, method of operation etc.) and should therefore be determined on site, where appropriate. It is mandatory to specify the hand-arm vibrations even where the values do not indicate any hazard, as in this case.



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Transportation by lorry or low loading trucks	102	Type sheet H 50/600 container	238
Triplex lift mast	184	Tyre variants	242
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Truck configuration sign	241	Vibration characteristic values for bodily vibrations	249
Truck data acquisition	81	W	
Transponder (chip or magnetic strip card)	86	Warnings	4
Truck data acquisition — special setting		Water cooler	
PIN	84	Checking for leaks	133
Truck data acquisition — standard setting		Cleaning	133
PIN and status code	82	Water trap at the changing particle filter	
Truck operation when using a shovel	6	Cleaning	152
Type sheet H 40	208	Draining water	152
Type sheet H 40 container	229	Wheel-slide protection chains	92
Type sheet H 40 elevated driver's compartment	220	Windscreen wiper	74
Type sheet H 45	211	Windscreen wipers	
Type sheet H 45 container	232	Switching on at the front	74
Type sheet H 45 elevated driver's compartment	223	Switching on at the front and on the roof	76
Type sheet H 50/500	214	Switching on at the front and rear	75
Type sheet H 50/500 container	235	Switching on at the rear	75
Type sheet H 50/500 elevated driver's compartment	226	Working on the lift mast and at the front of the truck	182
Type sheet H 50/600	217	Y	
		ylinders FrameCheck fastenings	162



Diesel truck



Original instructions

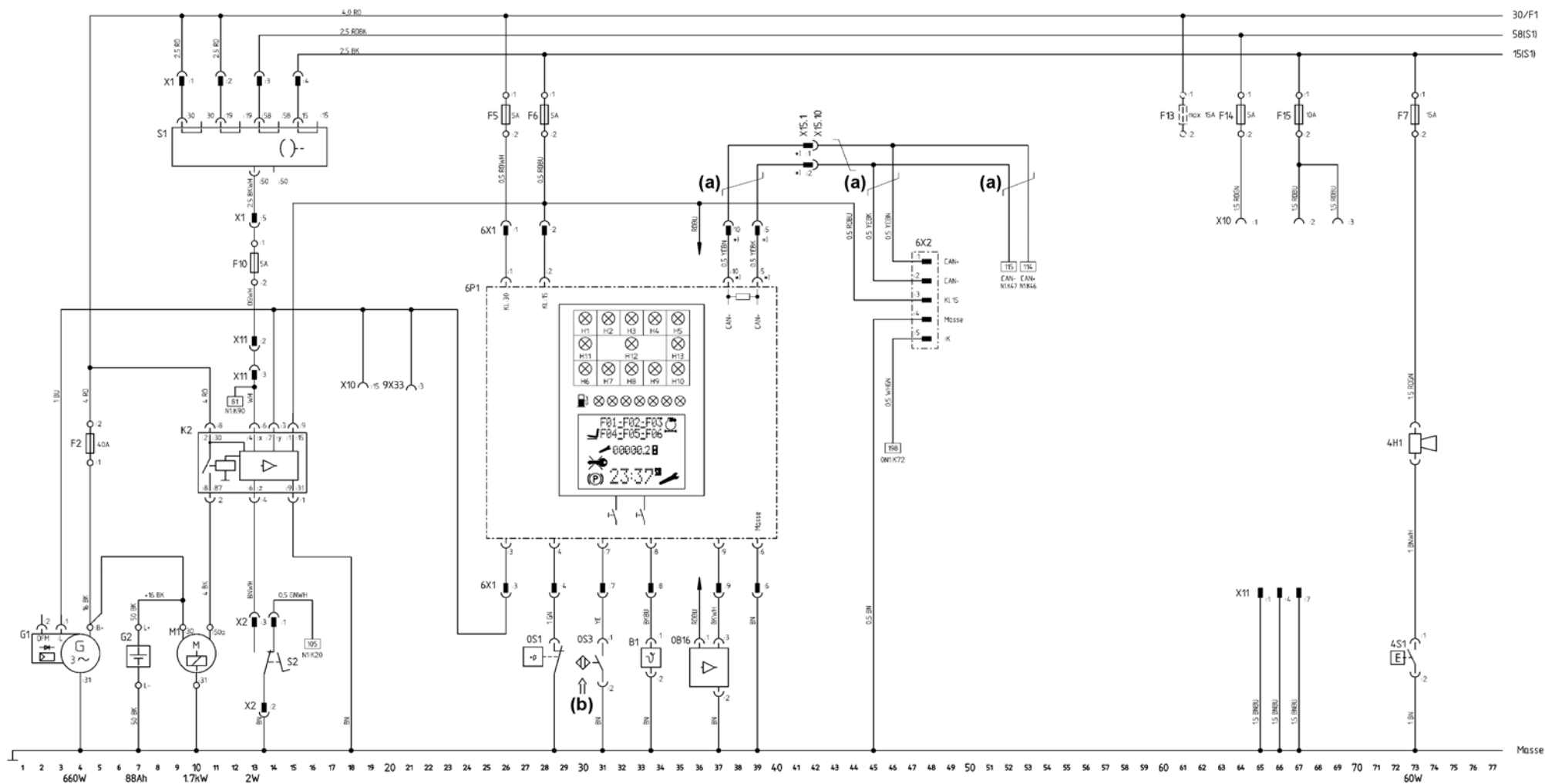
Annex

H40D, H45D, H50D

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Wiring diagram

Basic equipment for diesel with pump injection engine — Sheet 01

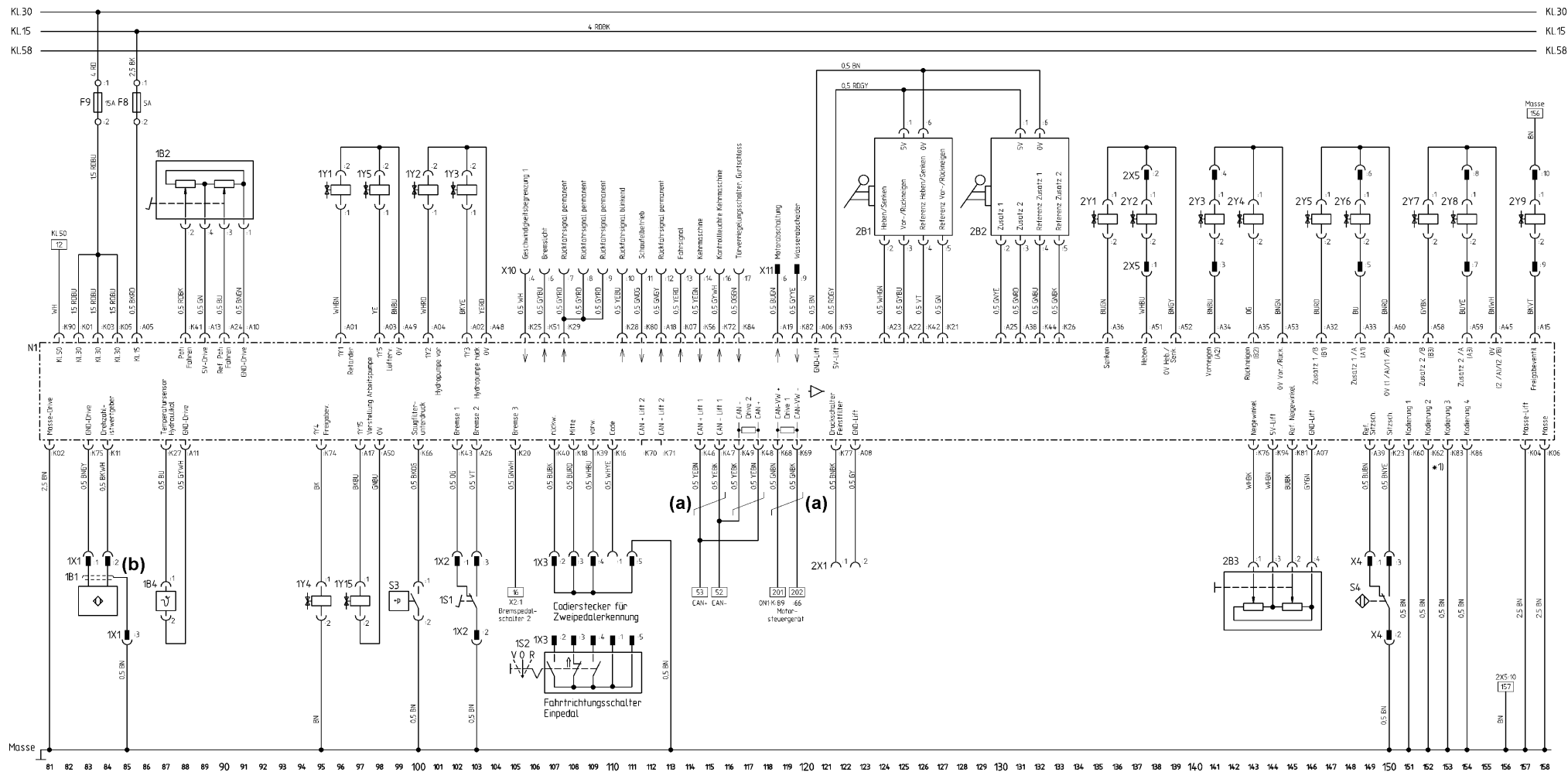


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Legend

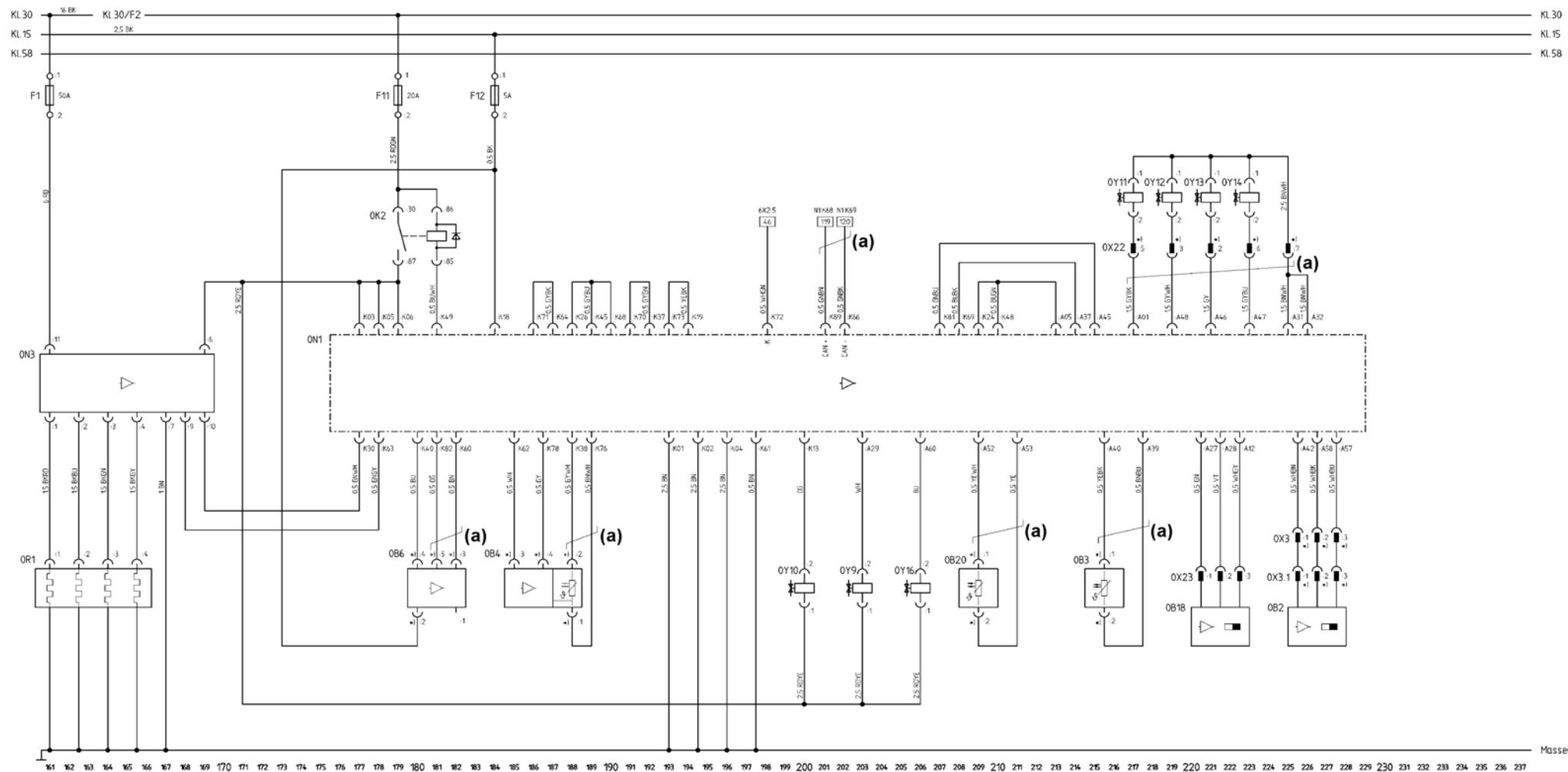
B1	Tank transmitter, 33	4H1	60 W signal horn, 73	X2	3-pin plug connector (S2), 13–14	GY	Grey
0B16	Oil level sensor, 36–37	K2	Electronic starter relay, 11–15	X10	18-pin plug connector (central electrical system), 19, 64–69	OG	Orange
F2	40 A fuse, 4	M1	1.7 kW starter motor, 9–11	X11	9-pin plug connector (central electrical system), 13, 65–67	RD	Red
F5	5 A fuse, 26	6P1	Display unit, 25–40	X15	2-pin plug connector (CAN), 41	VT	Violet
F6	5 A fuse, 28		:1 – Terminal 30	6X1	10-pin plug connector (display unit), 26–39	WH	White
F7	15 A fuse, 73		:2 – Terminal 15	6X2	4-pin plug connector (diagnostics), 47	YE	Yellow
F10	5 A fuse, 13		:6 – Earth	9x33	4-pin plug connector (air conditioning), 21		The number in front of the wire colour refers to the wire cross-section.
F13	Fuse (max. 15 A), 61	S1	Ignition and starting switch (9–16)				Wires with unspecified cross-section = 0.75 mm ²
F14	5 A fuse, 64	S2	Brake pedal switch 2 (start-up prevention), 13–14	Wire colours		Notes	
F15	10 A fuse, 67	0S1	Oil pressure switch, 28	BK	Black	(a)	Wires twisted together
G1	660 W three-phase alternator with regulator, 1–5	0S3	Coolant level switch, 31	BN	Brown	(b)	Switch shown in "Coolant level OK" position
G2	88 Ah battery, 7	4S1	Horn activation, 73	BU	Blue	*)	Gold-plated contacts
		X1	6-pin plug connector (S1), 9–15	GN	Green		

Basic equipment for diesel with pump injection engine — sheet 02



Legend		
1B1	Speed actual-value transmitter, 82–85	
1B2	Accelerator dual potentiometer, 87–92	
1B4	Hydraulic oil temperature sensor, 87	
2B1	Joystick, basic functions, 122–127	
	:1 – 5 V	
	:2 – Lift/lower	
	:3 – Tilt forwards/back	
	:4 – Lift/lower reference	
	:5 – Tilt forwards/back reference	
	:6 – 0 V	
2B2	Joystick, additional functions, 128–133	
	:1 – 5 V	
	:2 – Auxiliary 1	
	:3 – Auxiliary 2	
	:4 – Auxiliary 1 reference	
	:5 – Auxiliary 2 reference	
	:6 – 0 V	
2B3	Lift mast tilt angle dual potentiometer, 142–146	
F8	5 A fuse, 85	
F9	15 A fuse, 83	
N1	LHC electronic traction controller, 81–158	
	:A01 — Retarder 1Y1	
	:A02 — Reverse hydraulic pump 1Y3	
	:A03 — Fan valve 1Y5	
	:A04 — Forwards hydraulic pump 1Y2	
	:A05 — Terminal 15	
	:A06 — GND sensor, lift	
	:A07 — GND sensor, lift	
	:A08 — GND sensor, lift	
	:A10 — GND sensor, drive	
	:A11 — GND sensor, drive	
	:A13 — 5 V sensor, drive	
	:A15 — Exhaust valve	
	:A17 — Remote control working pump 1Y15	
	:A24 — Drive potentiometer reference	
	:A26 — Brake 2	
	:A32 — Auxiliary 1/B (B1)	
	:A33 — Auxiliary 1/A (A1)	
	:A34 — Tilt forwards (A2)	
	:A35 — Tilt backwards (B2)	
	:A36 — Lower	
	:A39 — Seat switch reference	
	:A45 — 0 V (2/A)/(2/B)	
	:A48 — 0 V reverse hydraulic pump	
	:A49 — 0 V fan valve	
	:A50 — 0 V remote control working pump	
	:A51 — Lift	
	:A52 — 0 V lift/lower	
	:A53 — 0 V tilt forwards/backwards	
	:A58 — Auxiliary 2/B (B3)	
	:A59 — Auxiliary 2/A (A3)	
	:A60 — 0 V (1/A)/(1/B)	
	:K01 — Terminal 30	
	:K02 — GND sensor, drive	
	:K03 — Terminal 30	
	:K04 — GND sensor, lift	
	:K05 — Terminal 30	
	:K06 — Earth	
	:K11 — Speed actual-value transmitter	
	:K16 — Code	
	:K18 — Middle	
	:K20 — Brake 3	
	:K23 — Seat switch	
	:K27 — Hydraulic oil temperature sensor	
	:K39 — Forwards	
	:K40 — Backwards	
	:K41 — Drive potentiometer	
	:K43 — Brake 1	
	:K60 — Coding 1	
	:K62 — Coding 2	
	:K66 — Suction filter vacuum	
	:K74 — Exhaust valve 1Y4	
	:K75 — GND sensor, drive	
	:K76 — Tilt angle	
	:K77 — Microfilter pressure switch	
	:K81 — Tilt angle reference	
	:K83 — Coding 3	
	:K86 — Coding 4	
	:K90 — Terminal 50	
	:K93 — 5 V sensor, lift	
	:K94 — 5 V sensor, lift	
ON1:K	:66 — Engine control unit, 120	
ON1:K	:89 — Engine control unit, 119	
S3	Suction filter vacuum-operated switch, 100	
S4	Seat switch, 149–150	
1S1	Brake pedal switch 1, 102–103	
1S2	Single-pedal drive direction switch, 107–112	
X2:1	Brake pedal switch 2, 105	
X4	3-pin plug connector (seat switch), 149, 150	
X10	18-pin plug connector (central electrical system), 107–114	
	:4 — Speed limitation 1	
	:6 — Brake light	
	:7 — Continuous reversing signal	
	:8 — Continuous reversing signal	
	:9 — Continuous reversing signal	
	:10 — Flashing reversing signal	
	:11 — Shovel operation	
	:12 — Continuous reversing signal	
	:13 — Driving signal	
	:14 — Sweeper	
	:16 — Sweeper indicator light	
	:17 — Door locking switch, buckle	
X11	9-pin plug connector (central electrical system), 119	
	:6 — Engine switch-off	
	:9 — Water trap	
1X1	3-pin plug connector (1B1), 83–85	
1X2	3-pin plug connector (1S1), 102, 103	
1X3	6-pin plug connector, coded plug for dual pedal identification, 107–111	
1X3 + 1S2	6-pin plug connector, drive direction switch for single pedal, 105–111	
2X1	2-pin plug connector (microfilter), 121, 122	
2X5	10-pin plug connector (valve block), 138–157	
1Y1	Retarder only with H 45/50, 98	
1Y2	Solenoid valve "y" forwards, 103	
1Y3	Solenoid valve "z" backwards, 105	
1Y4	Exhaust valve, 95	
1Y5	Fan valve, 100	
1Y15	Remote control working pump, 97	
2Y1	Lower valve, 135	
2Y2	Lift valve, 137	
2Y3	Tilt forwards valve, 141	
2Y4	Tilt backwards valve, 143	
2Y5	Auxiliary valve 1B, 146	
2Y6	Auxiliary valve 1A, 148	
2Y7	Auxiliary valve 2B, 152	
2Y8	Auxiliary valve 2A, 154	
2Y9	Exhaust valve, 158	
Wire colours		
BK	Black	
BN	Brown	
BU	Blue	
GN	Green	
GY	Grey	
OG	Orange	
RD	Red	
VT	Violet	
WH	White	
YE	Yellow	
The number in front of the wire colour refers to the wire cross-section.		
Wires with unspecified cross-section = 0.75 mm ²		
Notes		
(a)	Wires twisted together	
(b)	Screened wires	
*1)	Coding	
	:60 — H 45/50	
	:62 — H 40	
	:83 — H 40/45/50	
	:86 — H 45/50	

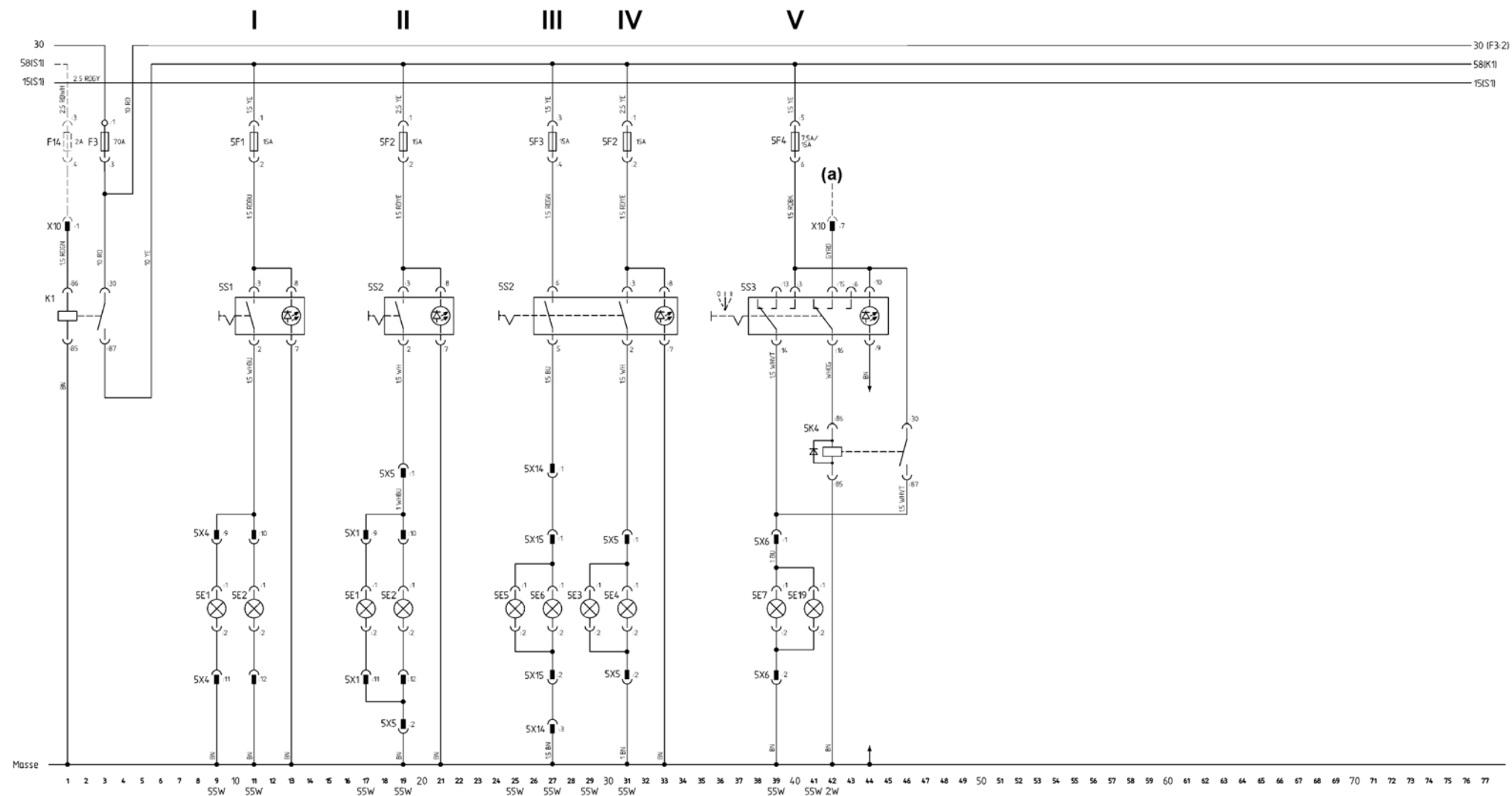
Basic equipment for diesel with pump injection engine — sheet 03



394 802 6028_00_03

Legend	0N1	Control unit for diesel direct injection system, 176-228	0Y13	Pump/nozzle valve for 3rd cylinder, 221	WH	White
0B2	Engine speed transmitter, 225-228		0Y14	Pump/nozzle valve for 4th cylinder, 223	YE	Yellow
0B3	Fuel temperature transmitter, 215	0N3	Automatic preheating time control unit, 161-169	0Y16		The number in front of the wire colour refers to the wire cross-section. Wires with unspecified cross-section = 0.75 mm ²
0B4	Suction pipe pressure / suction pipe temperature transmitter, 185-188	0R1	Glow plugs, 161-166	Wire colours		
0B6	Air volumeter, 180-182	0X3	3-pin plug connector, 225-228	BK	Black	
0B18	Camshaft pulse generator, 220-223	0X3.1	3-pin plug connector, 225-228	BN	Brown	Notes (a) Wires twisted together) Gold-plated contacts
0B20	Coolant temperature transmitter, 209	0X22	8-pin plug connector, 217-225	BU	Blue	
F1	50 A fuse, 161	0X23	3-pin plug connector, 220-223	GN	Green	
F11	20A fuse, 179	0Y9	Switch valve for turbocharger, 203	GY	Grey	
F12	5A fuse, 184	0Y10	Exhaust gas recirculation valve, 200	OG	Orange	
0K2	Terminal 30 relay for engine control unit, 179-181	0Y11	Pump/nozzle valve for 1st cylinder, 217	RD	Red	
		0Y12	Pump/nozzle valve for 2nd cylinder, 219	VT	Violet	

Special equipment sheet 01 — working spotlight



394 802 6031_00_01

Arrangement

- I Working spotlight positions 1, 2
- II Working spotlight positions 1, 2 with higher lighting
- III Working spotlight positions 5, 6
- IV Working spotlight positions 3, 4
- V Working spotlight positions 7, 8

Legend

- 5E1 Lower front left working spotlight 55 W (position 1), 9, 17
- 5E2 Lower front right working spotlight 55 W (position 2), 11, 19
- 5E3 Upper front left working spotlight 55 W (position 3), 29
- 5E4 Upper front right working spotlight 55 W (position 4), 31
- 5E5 Left lift mast working spotlight, 55 W (position 5), 28

- 5E6 Right lift mast working spotlight, 55 W (position 6), 27
- 5E7 Upper rear right working spotlight 55 W (position 8), 39
- 5E19 Upper rear left working spotlight 55 W (position 7), 41
- F3 70A MTA fuse (terminal 58), 3
- F14 2A fuse (terminal 58), 1
- 5F1 15 A fuse (working spotlight positions 1, 2), 11
- 5F2 15 A fuse (working spotlight positions 3, 4), 19, 31
- 5F3 15 A fuse (working spotlight positions 5, 6), 27
- 5F4 15 A fuse (working spotlight positions 7, 8), 40
- 5F4 7.5 A fuse (working spotlight position 8), 40
- K1 Terminal 58 auxiliary relay, 1-3
- 5K4 Working spotlight relay (positions 7, 8) 42-46

- 5S1 Working spotlight switch (positions 1, 2), 10-13
- 5S2 Working spotlight switch (positions 3, 4, 5, 6), 18-33
- 5S3 Working spotlight switch (positions 7, 8), 37-45
- X10 18-pin plug connector (for basic equipment), 1, 42
- 5X1 12-pin plug connector (overhead guard lighting), 17, 19
- 5X4 12-pin plug connector (working spotlight positions 1, 2), 9, 11
- 5X5 2-pin plug connector (working spotlight positions 3, 4), 19, 31
- 5X6 2-pin plug connector (working spotlight positions 7, 8), 39
- 5X14 3-pin plug connector (working spotlight positions 5, 6), 27
- 5X15 2-pin plug connector (working spotlight positions 5, 6), 27

Wire colours

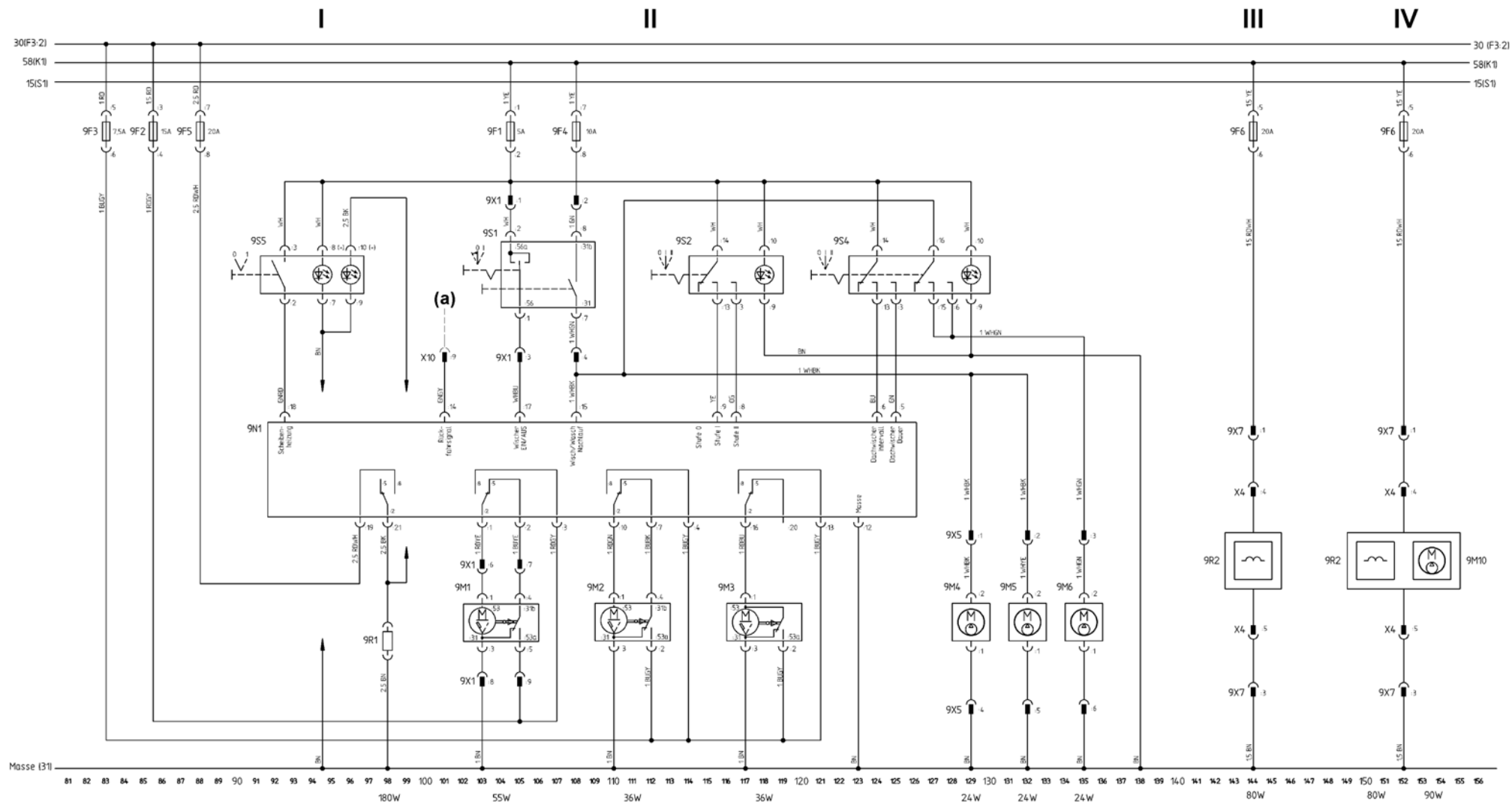
- BK Black
- BN Brown
- BU Blue
- GN Green
- GY Grey
- OG Orange
- RD Red
- VT Violet
- WH White
- YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) For electronic controller N1:K29

Special equipment sheet 02 — Windscreen wipers, seat heater, seat with air suspension



394 802 6031_00_02

Arrangement

I	Rear window heating
II	Windscreen wipers
III	Seat with seat heater
IV	Seat with seat heater and air suspension

Legend

9F1	5 A fuse (windscreen wiper, general), 104
9F2	15 A fuse (front windscreen wiper), 85
9F3	7.5 A fuse (rear and roof windscreen wipers), 83
9F4	10 A fuse (wash pumps), 108
9F5	20 A fuse (rear window heating), 88
9F6	20A fuse (seat heater), 144, 152
9M1	55 W front windscreen wiper motor, 103–106
9M2	36 W rear windscreen wiper motor, 110–112
9M3	36 W roof windscreen wiper motor, 116–118
9M4	24 W front wash pump, 129

9M5	24 W rear wash pump, 132
9M6	24 W roof wash pump, 135
9M10	Compressor motor for seat with air suspension 90 W
9N1	Wiper/rear window heating controller, 92–125
	:5 — Continuous roof wiper
	:6 — Intermittent roof wiper
	:8 — Level II
	:9 — Level I
	:12 — Earth
	:14 — Reversing signal
	:15 — Wipe/wash run-on
	:17 — Wiper on/off
	:18 — Screen heating
9R1	180 W rear window heating, 98
9R2	Seat heater 80 W, 144, 151

9S1	Windscreen wiper central on/off switch, 103–108
9S2	Front/rear windscreen wiper program selection switch, 112–117
9S4	Roof windscreen wiper switch, 122–129
9S5	Rear window heating push button, 91–96
X4	5-pin plug connector (seat heater, seat switch), 144, 152
X10	21-pin plug connector (transfer from basic equipment to special equipment), 101
9X1	9-pin plug connector (windscreen wiper), 103–108
9X5	6-pin plug connector (wash pumps), 129–135
9X7	3-pin plug connector (seat heater) 144, 152

Wire colours

BK	Black
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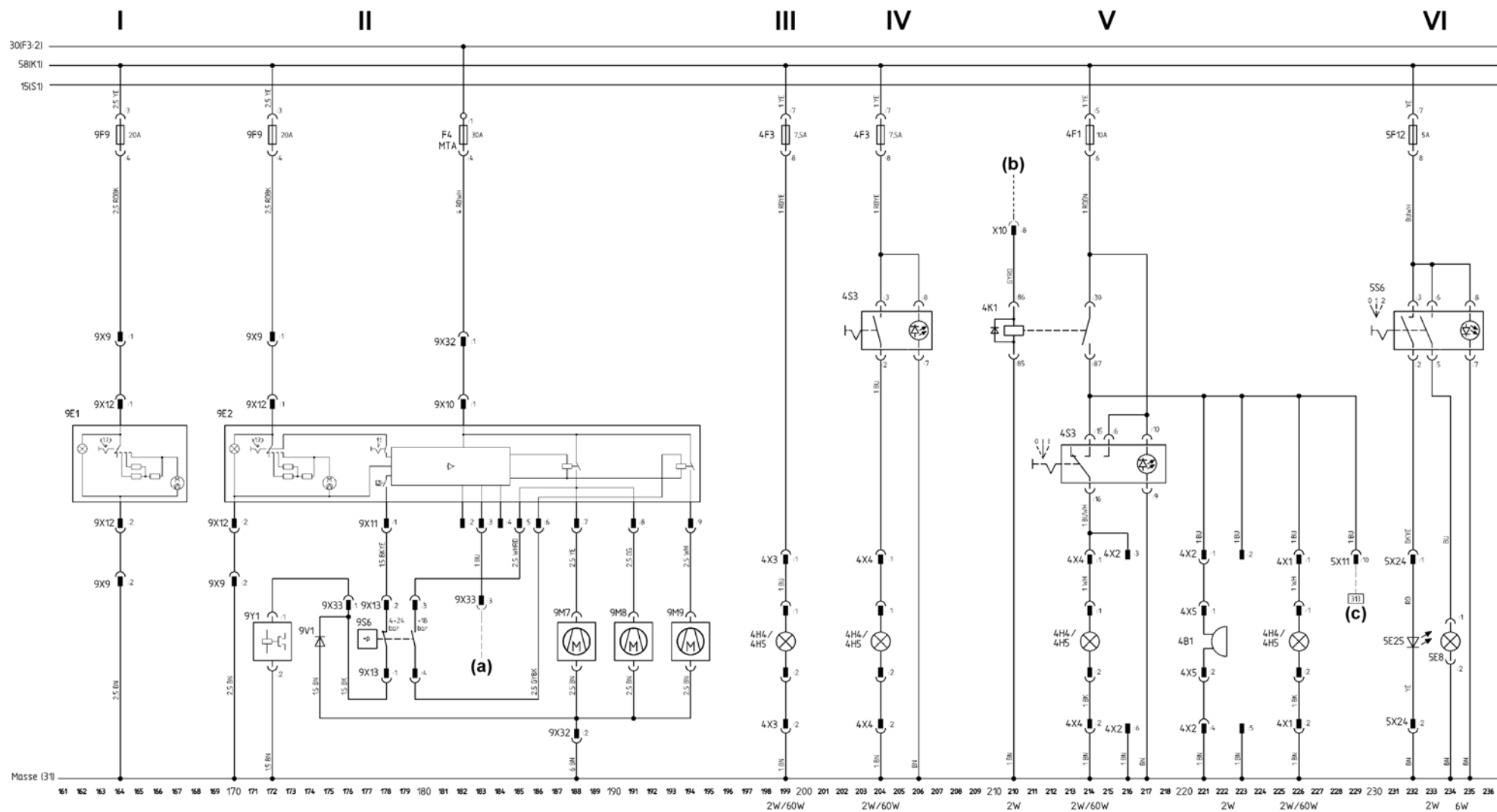
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Notes

(a)	For electronic controller N1:A18
-----	----------------------------------

Special equipment sheet 03 — Heating system, air conditioning, flashing/rotating beacon, reversing signal, interior lighting/clipboard lighting



394 802 6031_00_03

Arrangement

I	Heating system
II	Heating system with air conditioning
III	Flashing beacon/rotating beacon via terminal 58
IV	Flashing beacon / rotating beacon via switch
V	Reversing signal duration and switchable Off/Reverse travel/On
VI	Interior/clipboard lighting

Legend

4B1	Buzzer, 222
5E8	6 W interior light, 235
5E25	2 W clipboard light, 233
9E1	Heating, 161–167
9E2	Heating with air conditioning, 170–194
F4	30 A fuse (air conditioning), 182
4F1	10 A fuse (reversing signal), 214
4F3	7.5 A fuse (flashing beacon / rotating beacon), 199, 204
5F12	5 A fuse, (interior light), 233

9F9	20 A fuse (heating), 164, 172
4H4	Flashing beacon 2 W, 199, 204, 214, 226
4H5	Rotating beacon 60 W, 199, 204, 214, 226
4K1	Reversing signal relay, 210–214
9M7	Fan motor 1 for air conditioning, 188
9M8	Fan motor 2 for air conditioning, 191
9M9	Fan motor 3 for air conditioning, 194
4S3	Flashing beacon / rotating beacon switch, 204–206, 212–217
5S6	Interior/clipboard light switch, 231–236
9S6	Air conditioning pressure switch, 177–179
9V1	Free-wheeling diode (E-coupling), 174
X10	18-pin plug connector (for basic equipment), 210
4X1	2-pin plug connector (flashing beacon / rotating beacon), 226
4X2	6-pin plug connector (buzzer), 216–223
4X3	2-pin plug connector (flashing beacon / rotating beacon), 199

4X4	2-pin plug connector (flashing beacon/rotating beacon), 204, 214
4X5	2-pin plug connector (buzzer), 221
5X11	12-pin plug connector (higher lighting), 229
5X24	2-pin plug connector (clipboard light), 233
9X9	2-pin plug connector (heating system, air conditioning), 164, 170, 172
9X10	1-pin plug connector (air conditioning), 182
9X11	6-pin plug connector (air conditioning), 178–194
9X12	2-pin plug connector (heating), 164, 170, 172
9X13	4-pin plug connector (air conditioning pressure switch), 178–180
9X32	2-pin plug connector (transfer to air conditioning), 182, 188
9X33	4-pin plug connector (transfer to air conditioning), 176–184
9Y1	Air conditioning E-coupling, 172

Wire colours

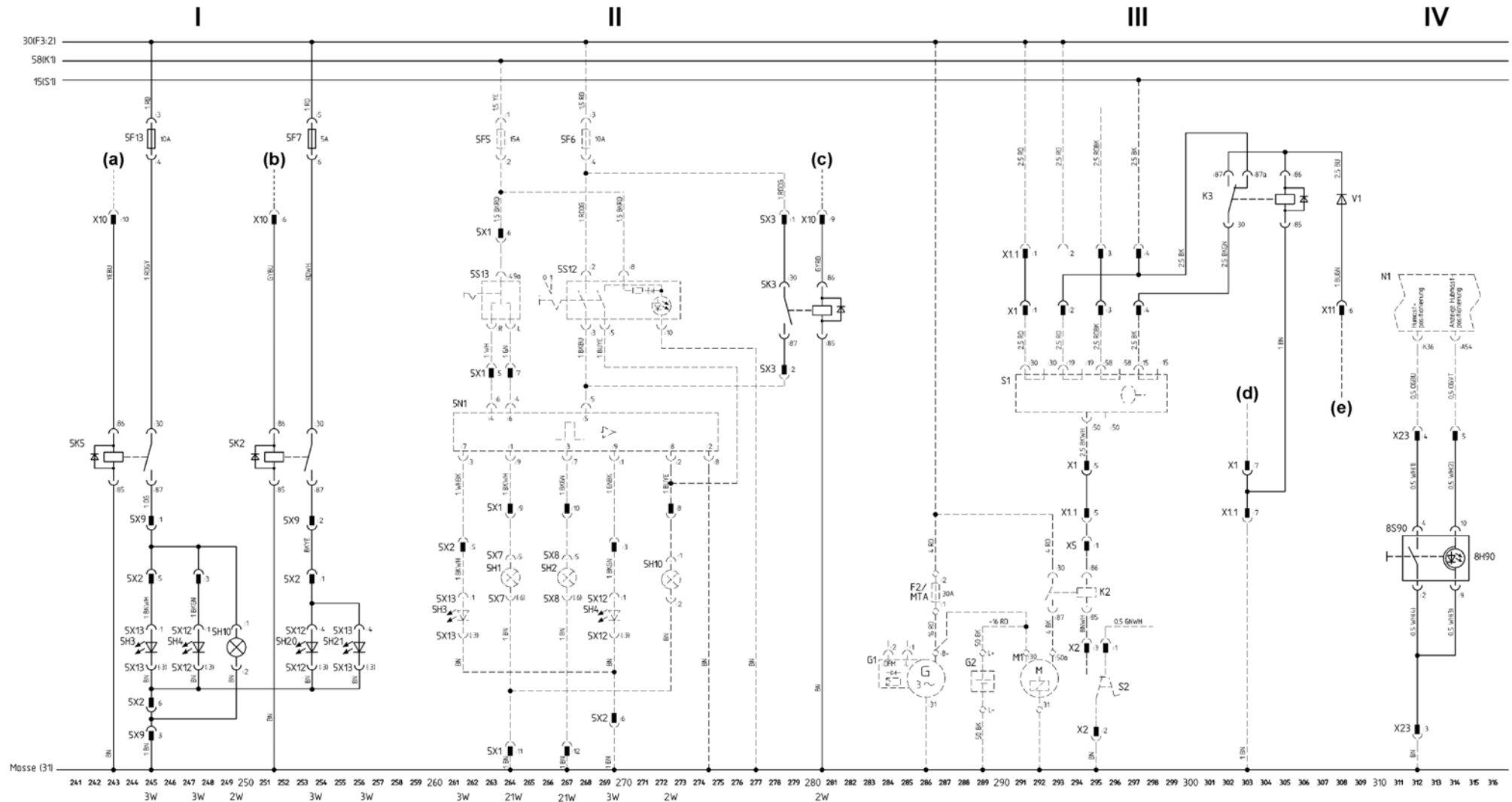
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) Alternator G1:L
- (b) For electronic controller N1:K29
- (c) For higher reversing light special equipment wiring diagram

Special equipment sheet 04 — hazard warning system for reverse travel, truck deactivation, mast positioning



394 802 6031_00_04

Arrangement

I	Hazard warning system for reverse travel with brake light (without lighting)
II	Warning light for reverse travel (with lighting)
III	Truck deactivation via seat switch
IV	Mast positioning

Legend

5F7	5 A fuse (brake light), 253
5F13	10 A fuse (hazard warning system), 245
5H3	Left rear direction indicator, 3 W, 245
5H4	Right rear direction indicator, 3 W, 247
5H10	Direction indicator light 2 W, 249
5H20	Right brake light, 3 W, 253
5H21	Left brake light, 3 W, 256
8H90	Mast positioning preselection warning light, 314
K2	Start relay, 293–295

K3	Engine switch-off relay, 302–305
5K2	Brake light relay, 251–253
5K3	Hazard warning system relay for reverse travel, 278–281
5K5	Hazard warning system relay for reverse travel, 243–245
N1	LHC electronic control, 311–315 :A54 — mast positioning display :K36 — Mast positioning
S1	Ignition and starting switch, 291–298
8S90	Mast position preselection switch, 311–314
V1	Decoupling diode, 308
X1	10-pin plug connector, 291–303
X1.1	10-pin plug connector, 291–303
X10	18-pin plug connector (for basic equipment), 243, 251, 280
X11	9-pin plug connector (for basic equipment), 308

X23	10-pin plug connector (armrest), 312, 314
5X2	6-pin plug connector (rear lighting), 245–253
5X3	2-pin plug connector (reversing signal transfer), 278
5X9	3-pin plug connector (hazard warning system), 245, 253
5X12	4-pin plug connector (right rear light), 247, 253
5X13	4-pin plug connector (left rear light), 245, 256

Wire colours

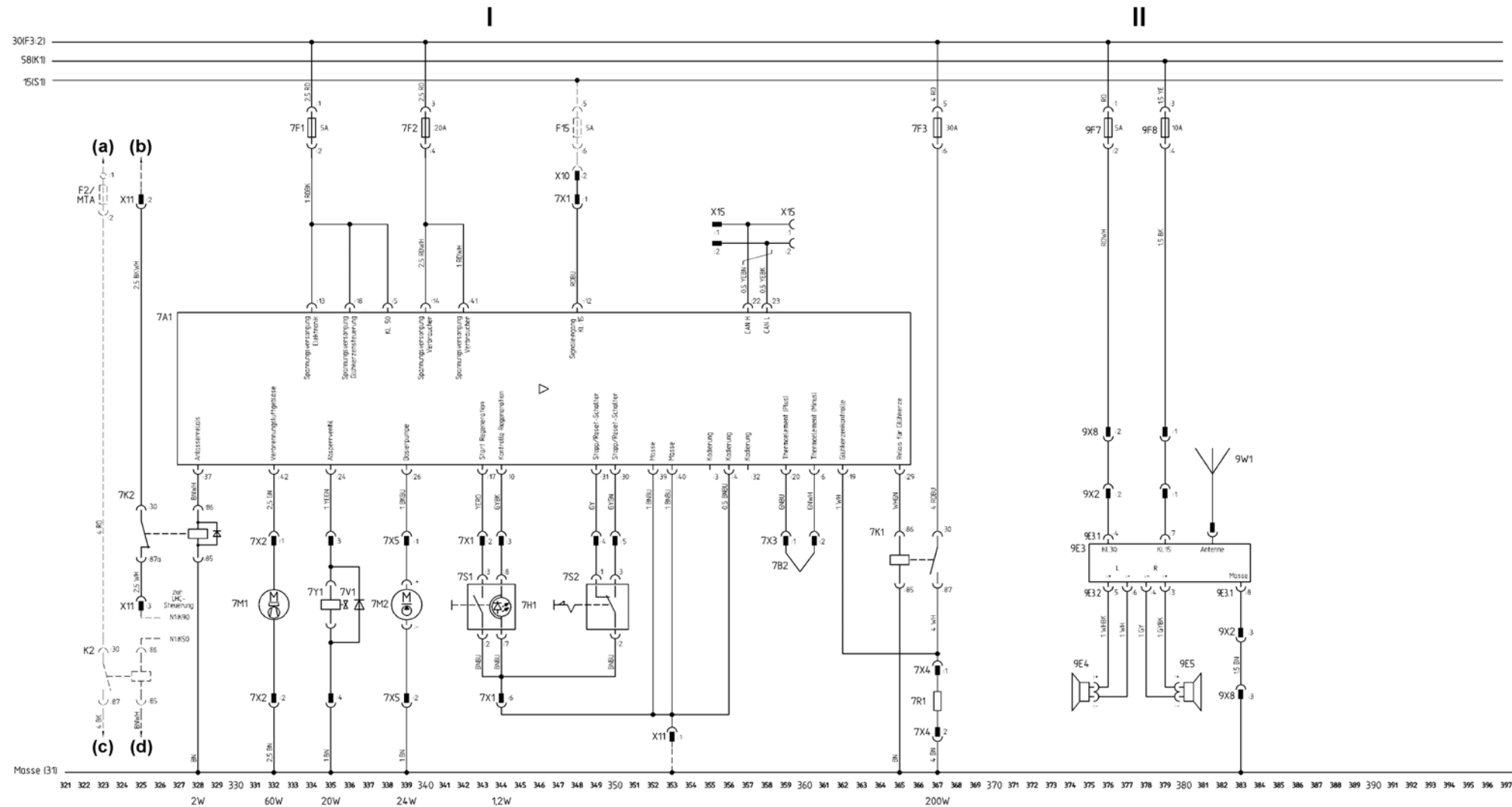
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange

RD	Red
VT	Violet
WH	White
YE	Yellow
The number in front of the wire colour refers to the wire cross-section.	
Wires with unspecified cross-section = 0.75 mm ²	

Notes

- (a) For electronic controller N1:K07
- (b) For electronic controller N1:K51
- (c) For electronic controller N1:K29
- (d) For horn activation 4S1 (basic equipment wiring diagram)
- (e) For electronic controller N1:A19

Special equipment sheet 05 — particle filter, radio



394 802 6031_00_05

Arrangement

- I Particle filter (only with diesel version)
 II Radio

Legend

- 7A1 Particle filter control unit, 328-365
 :3 – Coding
 :4 – Coding
 :5 – Terminal 50
 :6 – Thermocouple (negative)
 :10 – Regeneration indicator
 :12 – Signal input terminal 15
 :13 – Electronics power supply
 :14 – Consumer power supply
 :17 – Regeneration start
 :18 – Glow plug controller power supply
 :19 – Glow plug indicator
 :20 – Thermocouple (positive)
 :24 – Shut-off valve
 :26 – Metering pump
 :29 – Relay for glow plug
 :30 — Stop/reset switch
 :31 — Stop/reset switch
 :32 — Coding

- :37 – Starter relay
 :39 – Earth
 :40 – Earth
 :41 – Consumer power supply
 :42 – Combustion air blower
 7B2 Flame sensor, 359–361
 9E3 Radio, 376-383
 :4 – Terminal 30
 :7 – Terminal 15
 :8 – Earth
 9E4 Left loudspeaker, 375
 9E5 Right loudspeaker, 380
 F15 5 A fuse, 348
 7F1 5 A fuse (particle filter), 334
 7F2 20 A fuse (particle filter), 340
 7F3 30 A fuse (glow plug), 367
 9F7 5 A fuse (radio terminal 30), 376
 9F8 10 A fuse (radio terminal 15), 379
 7H1 Regeneration warning light, 344
 K2 Start relay, 323–325
 7K1 Glow plug current regulator, 365-367
 7K2 Starting aid relay, 325–328
 7M1 60 W blower, 332
 7M2 24 W metering pump, 339

- 7R1 200 W glow plug, 367
 7S1 Starting switch, 342-344
 7S2 Stop/reset switch, 348–350
 7V1 Decoupling diode, 336
 9W1 Antenna, 382
 X10 18-pin plug connector (to main harness), 348
 X11 9-pin plug connector (to main harness), 325, 354
 X15 2-pin plug connector (CAN), 356, 359
 7X1 9-pin plug connector (central electrical system transfer), 343-350
 7X2 4-pin plug connector (blower shut-off valve), 332, 335
 7X3 2-pin plug connector (flame sensor), 359, 361
 7X4 2-pin plug connector (glow plug), 367
 7X5 2-pin plug connector (metering pump), 339
 9X2 3-pin plug connector (radio), 376-383
 9X8 3-pin plug connector (radio), 376-383
 7Y1 Shut-off valve, 335

Wire colours

- BK Black

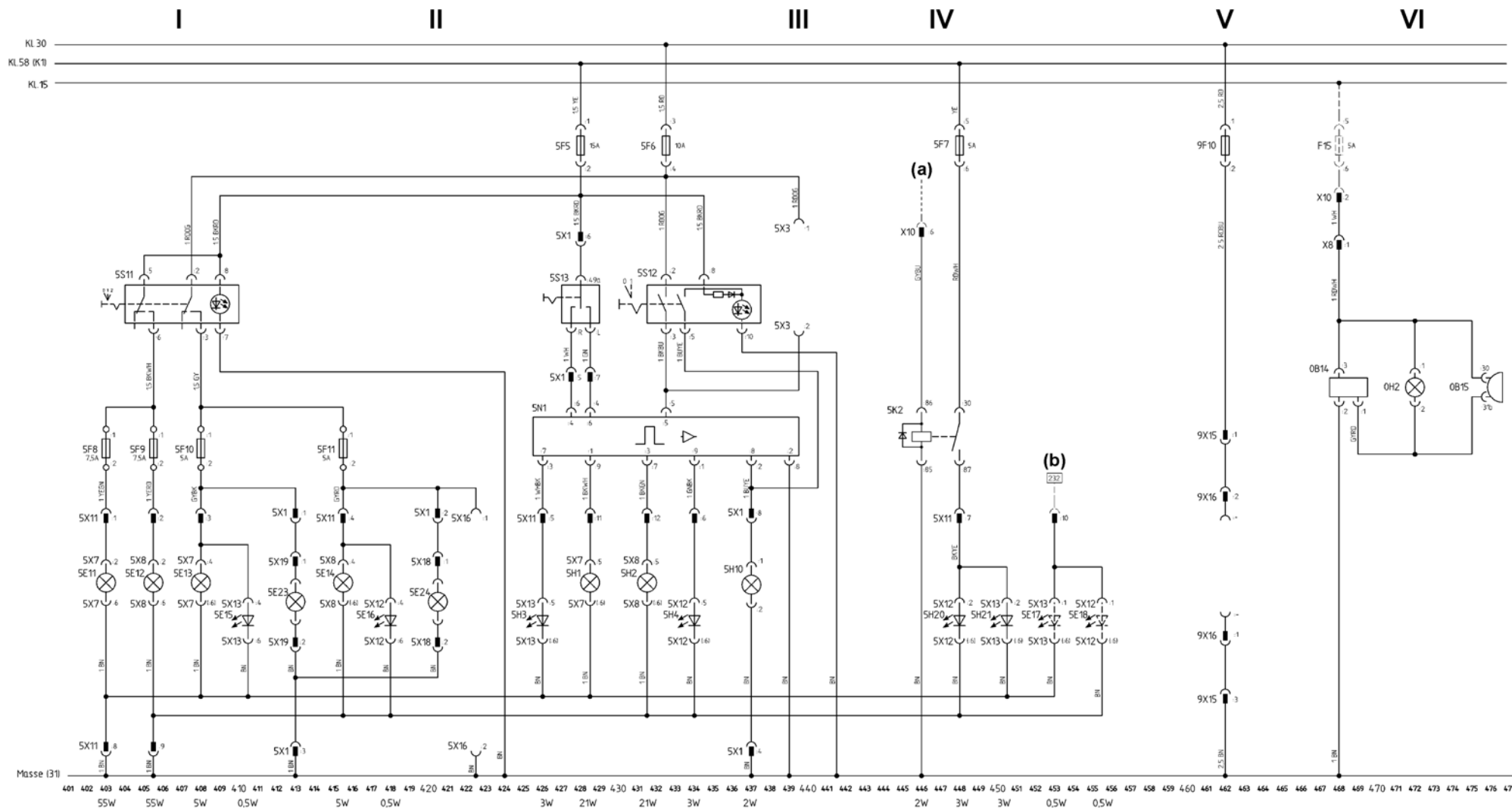
- BN Brown
 BU Blue
 GN Green
 GY Grey
 OG Orange
 RD Red
 VT Violet
 WH White
 YE Yellow

The number in front of the wire colour refers to the wire cross-section.
 Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) For generator G1:B+ (only in diesel version)
 (b) For ignition and starting switch S1:50 (only in diesel version)
 (c) For starter motor M1:50a (only in diesel version)
 (d) For brake pedal switch X2:3 (only in diesel version)

Special equipment sheet 06 — Higher lighting, 12 V socket, diesel filter water trap warning



394 802 6031_00_06

Arrangement

I	Higher lighting
II	Higher direction indicator and hazard warning system
III	Higher brake light
IV	Higher reversing light
V	12V socket
VI	Diesel filter water trap warning (diesel version only)

Legend

0B14	Water trap sensor, 468-469
0B15	Water trap buzzer, 476
5E11	Left dipped beam, 55 W, 403
5E12	Right dipped beam, 55 W, 405
5E13	5 W front left sidelight, 408
5E14	Right front sidelight 5 W, 415
5E15	0.5 W left rear sidelight, 410
5E16	0.5 W right rear sidelight, 418
5E17	0.5 W left reversing light, 453
5E18	0.5 W right reversing light, 455
5E23	Left side light, 413

5E24	Right side light, 420
F15	5 A fuse, 468
5F5	15 A fuse (lighting terminal 15), 428
5F6	10 A fuse (lighting terminal 30), 433
5F7	5 A fuse (brake light), 448
5F8	7.5 A fuse (left headlight), 403
5F9	7.5 A fuse (right headlight), 405
5F10	5 A fuse (left sidelight), 408
5F11	5 A fuse (right sidelight), 415
9F10	15 A fuse (12 V socket), 462
0H2	Water trap warning light, 472
5H1	Front left direction indicator, 21 W, 428
5H2	Front right direction indicator, 21 W, 431
5H3	Rear left direction indicator, 3 W, 426
5H4	Rear right direction indicator, 3 W, 434
5H10	2 W direction indicator light, 437
5H20	Right brake light, 3 W, 448
5H21	Left brake light, 3 W, 450
5K2	Brake light relay, 446-448
5N1	Flasher unit, 426-439
5S11	Light switch, 403-409
5S12	Warning light switch, 429-437

5S13	Turn indicator switch, 427-429
X8	2-pin plug connector, 468
X10	18-pin plug connector (for basic equipment), 446, 468
5X1	12-pin plug connector (overhead guard lighting), 413, 421, 427-434
5X7	6-pin plug connector (left headlight), 403, 408, 428
5X8	6-pin plug connector (right headlight), 405, 415, 431
5X11	12-pin plug connector (higher lighting), 403-453
5X12	5-pin plug connector (right rear light), 418, 434, 448, 455
5X13	5-pin plug connector (left rear light), 410, 426, 450, 453
5X16	2-pin plug connector (licence plate lighting), 420
5X18	2-pin plug connector (right side light), 420
5X19	2-pin plug connector (left side light), 413
9X15	3-pin plug connector (12 V socket), 462
9X16	2-pin plug connector (12 V socket), 462

Wire colours

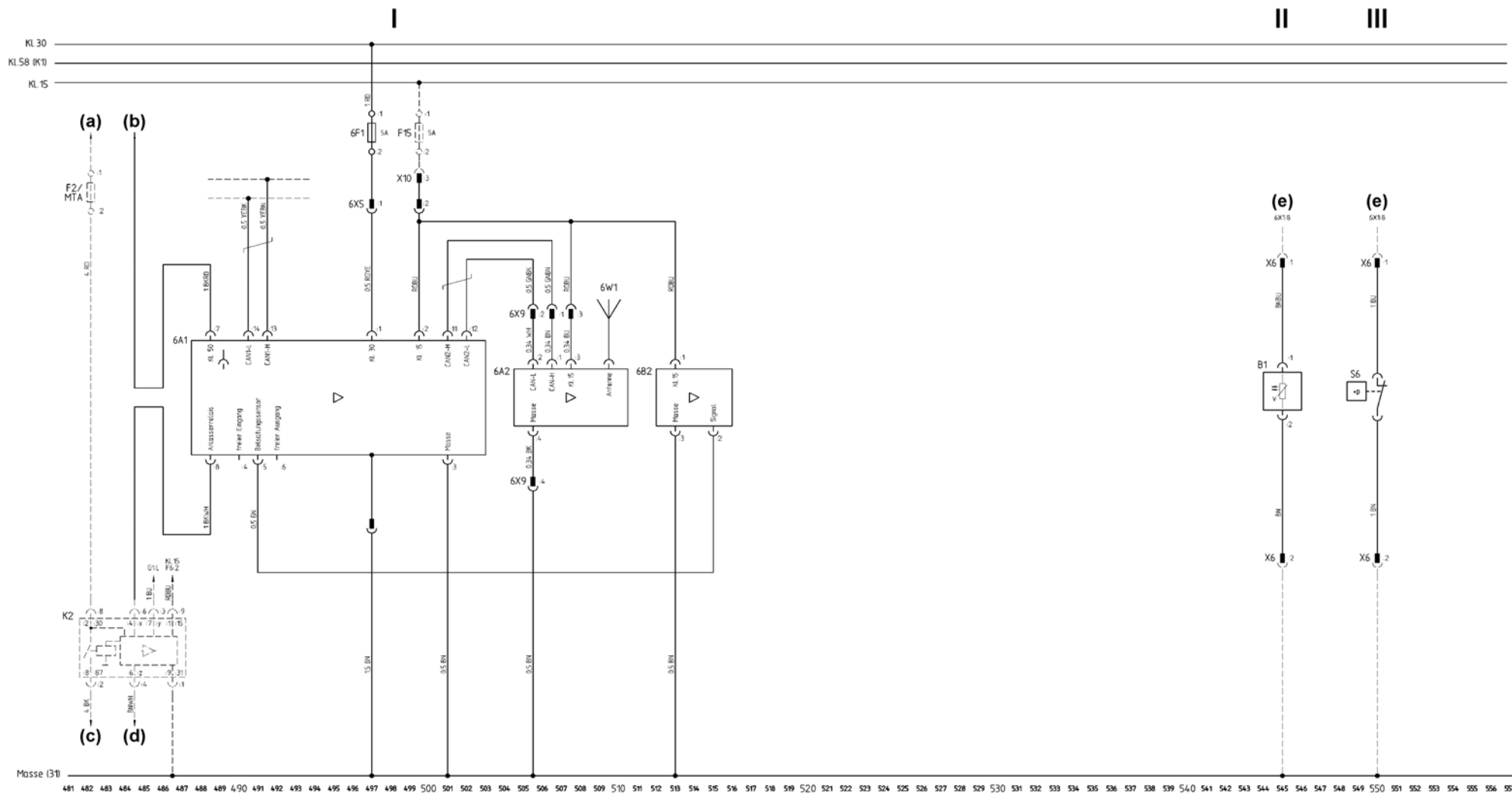
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) For electronic controller N1:K51
(b) For reversing signal special equipment wiring diagram

Special equipment sheet 07 – Truck data management, LPG volume display



394 802 6031_00_07

Arrangement

- I Linde Forklift Data Management (LFM)
 II LPG volume display for volumetric filling (LPG version only)
 III LPG residual volume display (only with LPG version)

Legend

- 6A1 Truck data acquisition unit (FDE), 488–502
 :1 – Terminal 30
 :2 – Terminal 15
 :3 – Earth
 :4 – Free input
 :5 – Load sensor
 :6 – Free output
 :7 – Terminal 50

- :8 – Starter relay
 6A2 Linde Forklift Data Management online module, 505–510
 :4 – Earth
 B1 Tank transmitter (volumetric filling), 545
 6B2 Load sensor, 512–516
 :1 – Terminal 15
 :2 – Signal
 :3 – Earth
 F15 5 A fuse, 499
 6F1 Fuse 5 A, 497
 K2 Start relay, 482–485
 S6 LPG residual volume switch, 550
 6W1 Antenna (Linde Forklift Data Management online module), 510

- X6 Five-pin plug connector (for main harness), 545, 550
 X10 18-pin plug connector (for basic equipment), 499
 6X5 3-pin plug connector (transfer to FDE), 497, 499
 6X9 4-pin plug connector (Linde Forklift Data Management online module), 505–508

Wire colours

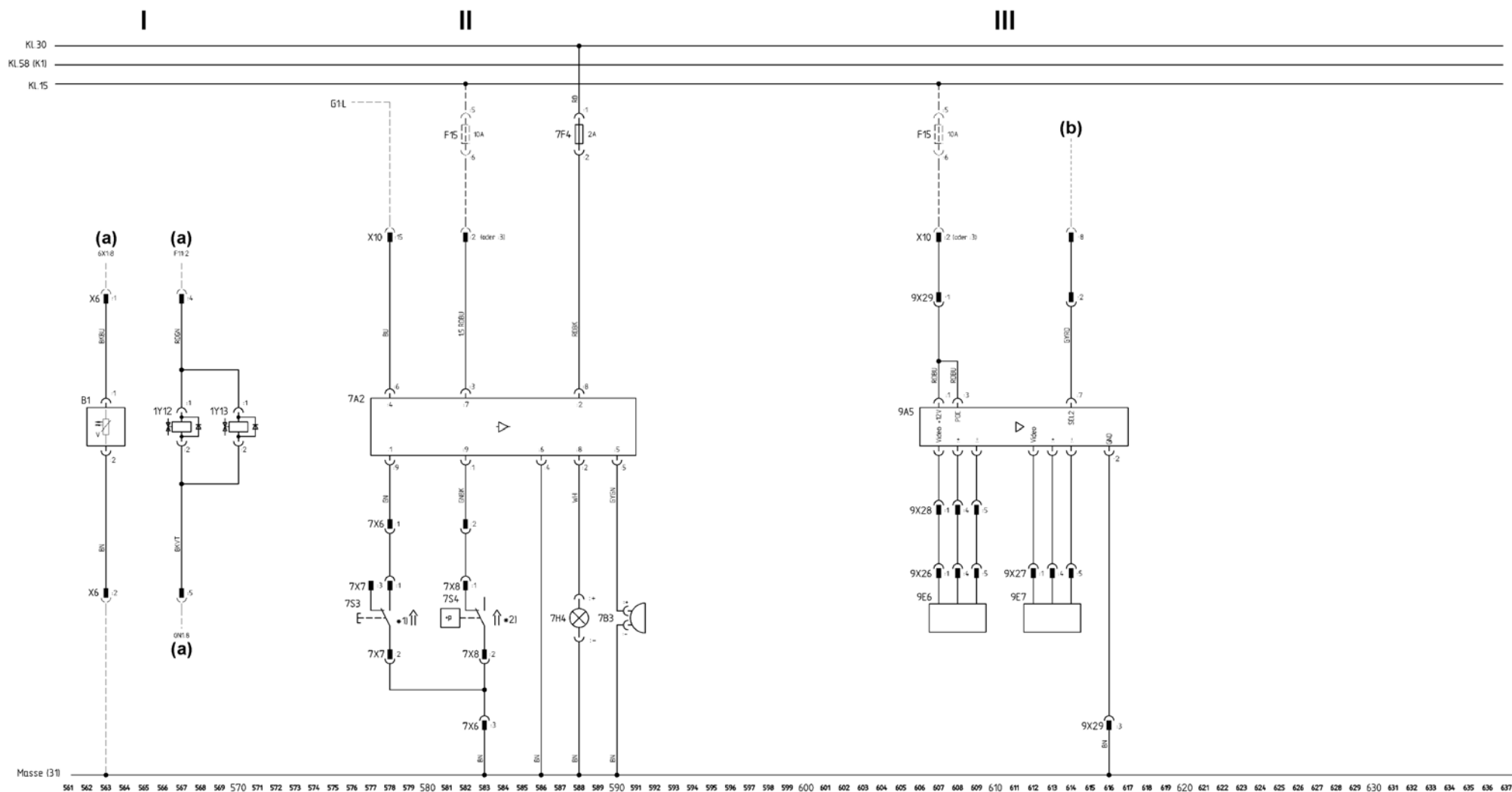
- BK Black
 BN Brown
 BU Blue
 GN Green
 GY Grey
 OG Orange

- RD Red
 VT Violet
 WH White
 YE Yellow
 The number in front of the wire colour refers to the wire cross-section.
 Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) For generator G1:B+
 (b) For ignition and starting switch S1:50
 (c) For starter motor M1:50a
 (d) For brake pedal switch X2:3
 (e) Wiring diagram basic equipment (only with LPG version)

Special equipment sheet 08 – LPG volume display for volumetric filling with shut-off valve, changing particle filter, camera system



394 802 6031_00_08

Arrangement

- I LPG volume display for volumetric filling (2 x 36 l) with shut-off valve (only with LPG version)
- II Changing particle filter (diesel version only)
- III Camera system

Legend

- 7A2 Changing particle filter controller, 578–590
- 9A5 Monitor, 607-617
- B1 Tank transmitter (volumetric filling), 563
- 7B3 Changing particle filter buzzer, 591
- 9E6 Camera 1, 607-609
- 9E7 Camera 2, 612-614
- F15 10 A fuse, 582, 607
- 7F4 2 A fuse, 588
- 7H4 Indicator light (orange), 588

- 7S3 Changing particle filter, switch 577–578
- 7S4 Changing particle filter pressure switch, 582–583
- X6 5-pin plug connector (for main harness), 563, 567
- X10 18-pin plug connector (for basic equipment), 578, 582, 607, 614
- 7X6 9-pin plug connector (changing particle filter), 578, 582
- 7X7 3-pin plug connector (reset switch), 577, 578
- 7X8 2-pin plug connector (pressure switch), 582, 583
- 9X26 5-pin plug connector (camera system), 607-609
- 9X27 5-pin plug connector (camera system), 612-614

- 9X28 5-pin plug connector (camera system), 607-609
- 9X29 5-pin plug connector (camera system), 607-616
- 1Y12 Tank shut-off valve, 567
- 1Y13 Tank shut-off valve, 570

Wire colours

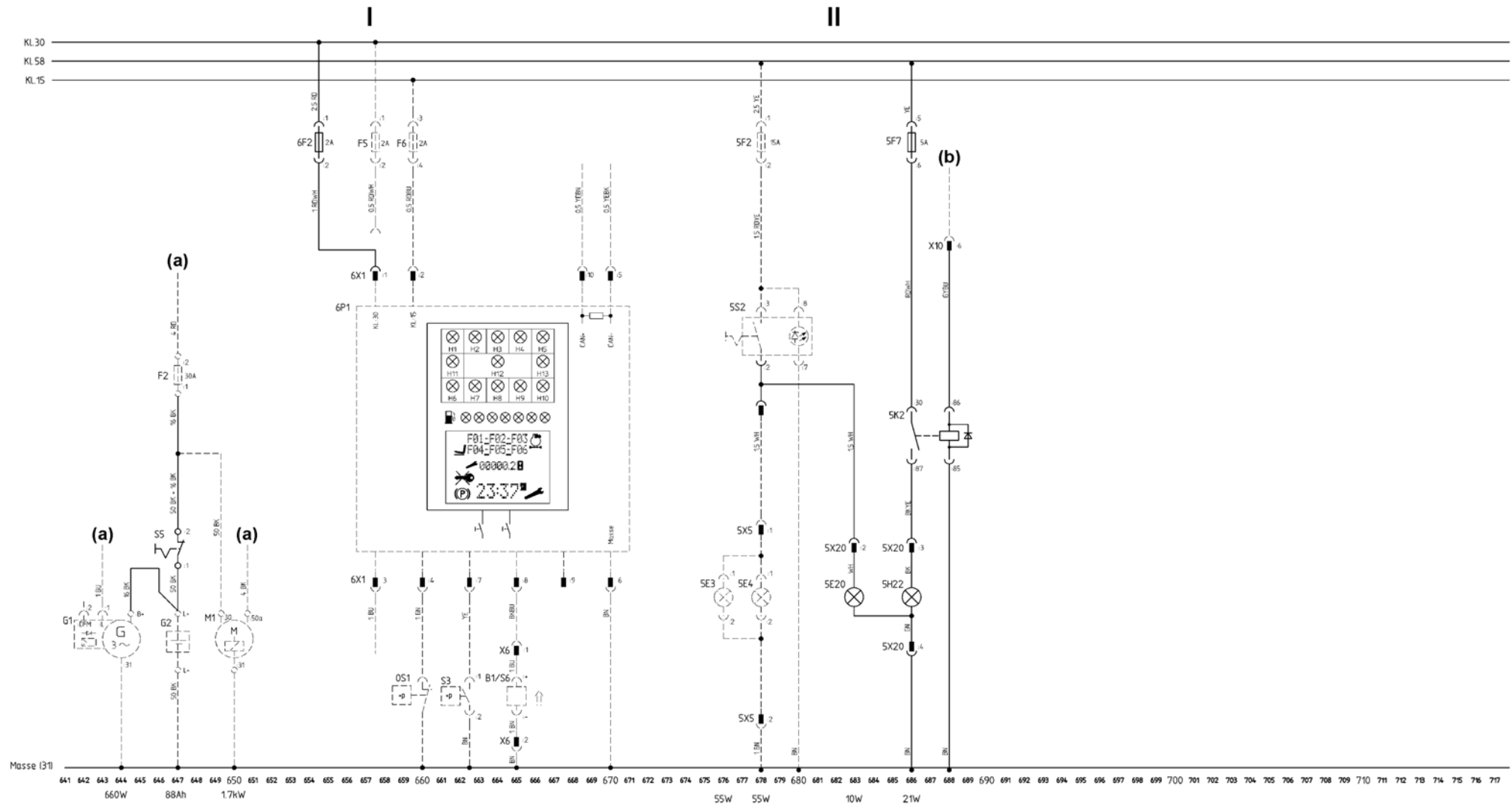
- BK Black
- BN Brown
- BU Blue
- GN Green
- GY Grey
- OG Orange
- RD Red
- VT Violet
- WH White

- YE Yellow
- The number in front of the wire colour refers to the wire cross-section.
- Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) Wiring diagram basic equipment (only with LPG version)
- (b) For electronic controller N1:K29
- *1) Switch opens when the changing particle filter is fitted and the cover is closed (diesel version only)
- *2) Switch is shown in the pressure differential OK position (only with diesel version).

Special equipment sheet 09 — battery main switch with display unit power supply, rear centre brake/tail light



394 802 6031_00_09

Arrangement

- I Battery main switch with power supply display unit
- II Centre rear brake/tail light

Legend

- 5E20 10 W centre rear sidelight, 688
- F2 30 A fuse, 647
- 5F7 5 A fuse, 686
- 6F2 2 A fuse, 654
- G1 Three-phase alternator with regulator 660 W, 642-645
- G2 Battery 88 Ah, 647
- 5H22 21 W centre rear brake light, 691

- 5K2 Brake light relay, 686-688
- M1 Starter motor 1.7 kW, 649-651
- S5 Battery main switch, 647
- 5S2 Working spotlight switch (position 3, 4), 677-680
- X10 18-pin plug connector, 688
- 5X20 4-pin plug connector (brake/tail light), 683, 686
- 6X1 10-pin plug connector, 657-670

Wire colours

- BK Black
- BN Brown
- BU Blue

- GN Green
- GY Grey
- OG Orange
- RD Red
- VT Violet
- WH White
- YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Notes

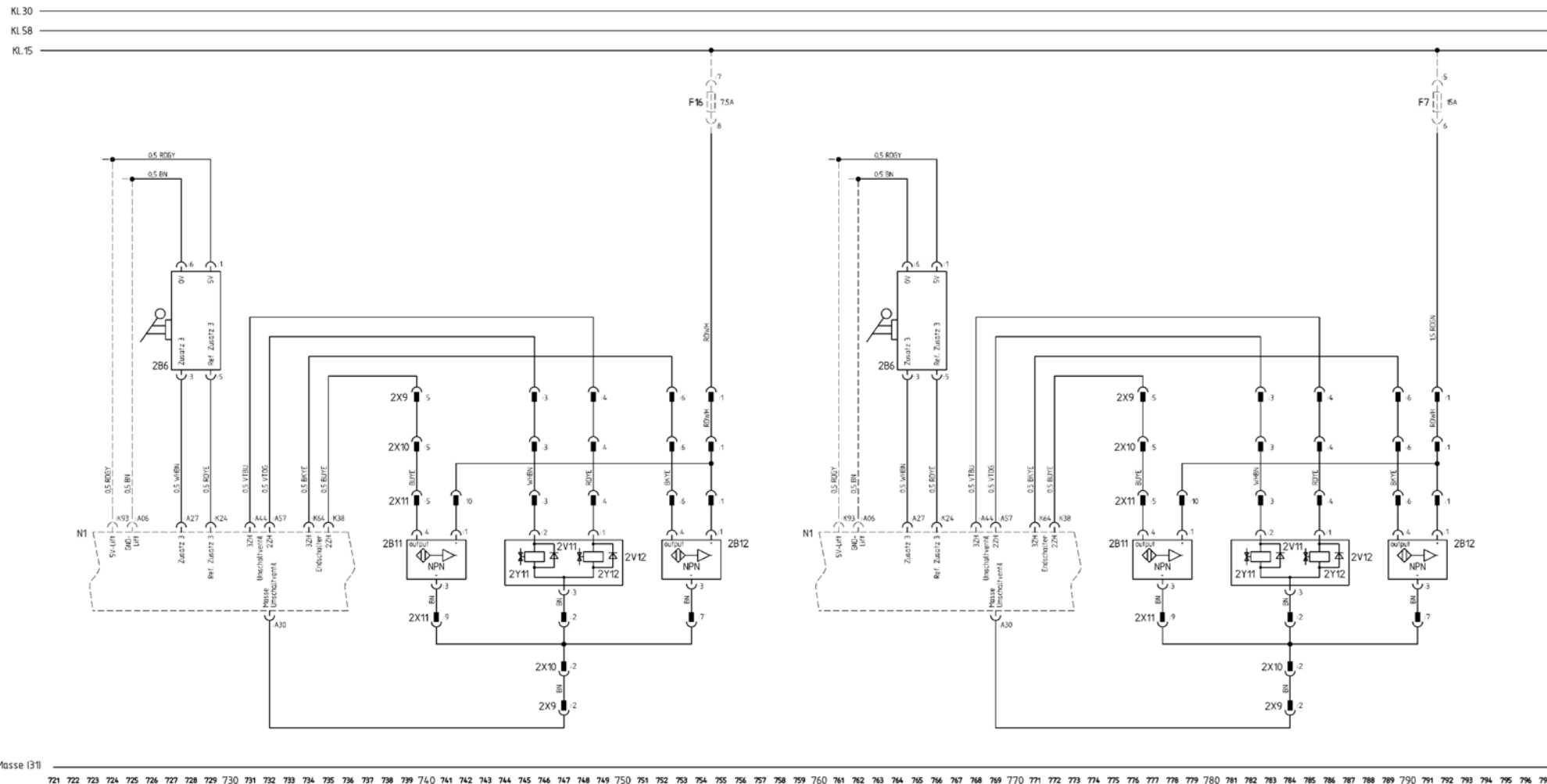
- (a) to wiring diagram for basic equipment

- (b) For electronic controller N1:K51

Special equipment sheet 10 — third auxiliary hydraulics with third joystick

I

II



394 802 6031_00_10

Arrangement

- I Third auxiliary hydraulics with third joystick (diesel version only)
- II Third auxiliary hydraulics with third joystick (LPG version only)

Legend

- 2B6 Joystick (third auxiliary hydraulics), 726-729, 763-766
:1 – 5 V
:3 – Auxiliary 3
:5 – Auxiliary 3 reference
:6 – 0 V
- 2B11 End position sensor 1, 739-742, 776-779

- 2B12 End position sensor 2, 752-755, 789-792
- F7 15 A fuse (terminal 15), 792
- F16 7.5 A fuse (terminal 15), 754
- N1 LHC electronic controller, 723-735, 760-773
:A06 — GND sensor, lift
:A27 — Auxiliary 3
:A30 — Earth, switch valve
:A44 — Auxiliary hydraulics 3 switch valve
:A57 — Auxiliary hydraulics 2 switch valve
:K24 — Auxiliary reference 3
:K38 — Auxiliary hydraulics 2 limit switch
:K64 — Auxiliary hydraulics 3 limit switch
:K93 — 5 V sensor, lift

- 2V11 Free-wheeling diode (third auxiliary hydraulics valve), 747, 783
- 2V12 Free-wheeling diode (third auxiliary hydraulics valve), 749, 786
- 2X9 6-pin plug connector, 740-755, 777-792
- 2X10 6-pin plug connector, 740-755, 777-792
- 2X11 10-pin plug connector, 740-755, 777-792
- 2X15 6-pin plug connector, 727-729, 764-766
- 2Y11 Third auxiliary hydraulics valve, 746, 782
- 2Y12 Third auxiliary hydraulics valve, 749, 786

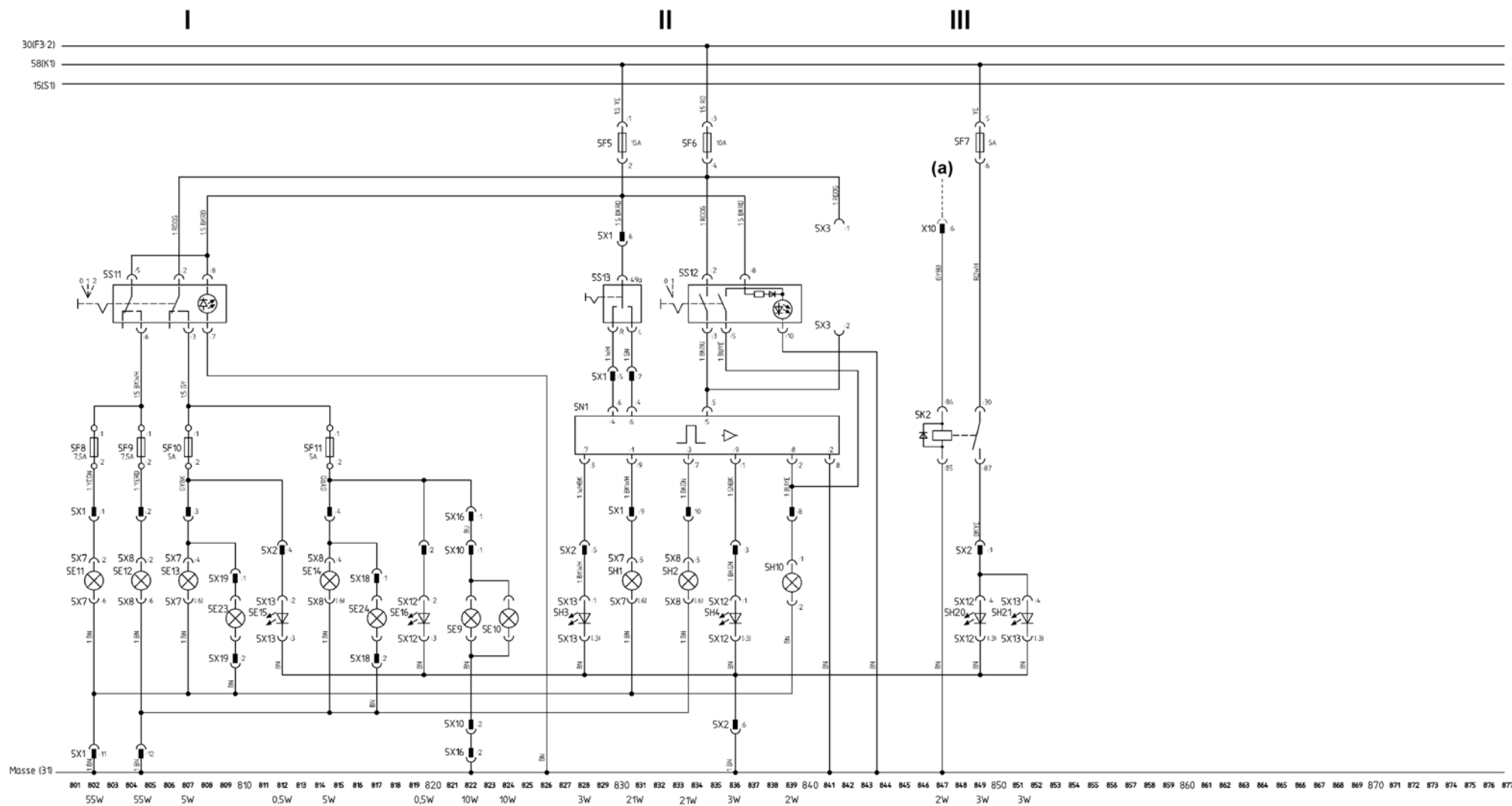
Wire colours

- BK Black
- BN Brown

- BU Blue
- GN Green
- GY Grey
- OG Orange
- RD Red
- VT Violet
- WH White
- YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Special equipment sheet 11 — Lighting, direction indicator and hazard warning system, brake light



394 802 6031_00_11

Arrangement

- I Lighting
- II Direction indicator and hazard warning system
- III Brake light

Legend

- 5E9 10 W left licence plate lamp, 822
- 5E10 10 W right licence plate lamp, 824
- 5E11 55 W left dipped beam, 802
- 5E12 55 W right dipped beam, 804
- 5E13 5 W front left sidelight, 807
- 5E14 5 W front right sidelight, 814
- 5E15 0.5 W rear left sidelight, 812
- 5E16 0.5 W rear right sidelight, 819
- 5E23 5 W left side light (only available with twin tyres), 809
- 5E24 5 W right side light (only available with twin tyres), 817
- 5F5 15 A fuse (lighting terminal 15), 830
- 5F6 10 A fuse (lighting terminal 30), 835

- 5F7 5 A fuse (brake light), 849
- 5F8 7.5 A fuse (left headlight), 802
- 5F9 7.5 A fuse (right headlight), 804
- 5F10 5 A fuse (left sidelight), 807
- 5F11 5 A fuse (right sidelight), 814
- 5H1 21 W front left direction indicator, 830
- 5H2 21 W front right direction indicator, 833
- 5H3 3 W rear left direction indicator, 828
- 5H4 3 W rear right direction indicator, 836
- 5H10 2 W direction indicator light, 839
- 5H20 3 W right brake light, 849
- 5H21 3 W left brake light, 852
- 5K2 Brake light relay, 847–849
- 5N1 Flasher unit, 828–841
- 5S11 Light switch, 802–808
- 5S12 Warning light switch, 833–839
- 5S13 Turn indicator switch, 829–831
- X10 18-pin plug connector (for basic equipment), 847

- 5X1 12-pin plug connector (overhead guard lighting), 802–839
- 5X2 6-pin plug connector (rear lighting), 812–849
- 5X3 2-pin plug connector (transfer to reversing signal), 841
- 5X7 6-pin plug connector (left headlight), 802, 807, 830
- 5X8 6-pin plug connector (right headlight), 804, 814, 833
- 5X10 2-pin plug connector (licence plate lighting), 822
- 5X12 4-pin plug connector (right rear light), 819, 836, 849
- 5X13 4-pin plug connector (left rear light), 812, 828, 851
- 5X16 2-pin plug connector (licence plate lamp), 822
- 5X18 2-pin plug connector (right side light), 817
- 5X19 2-pin plug connector (left side light), 809

Wire colours

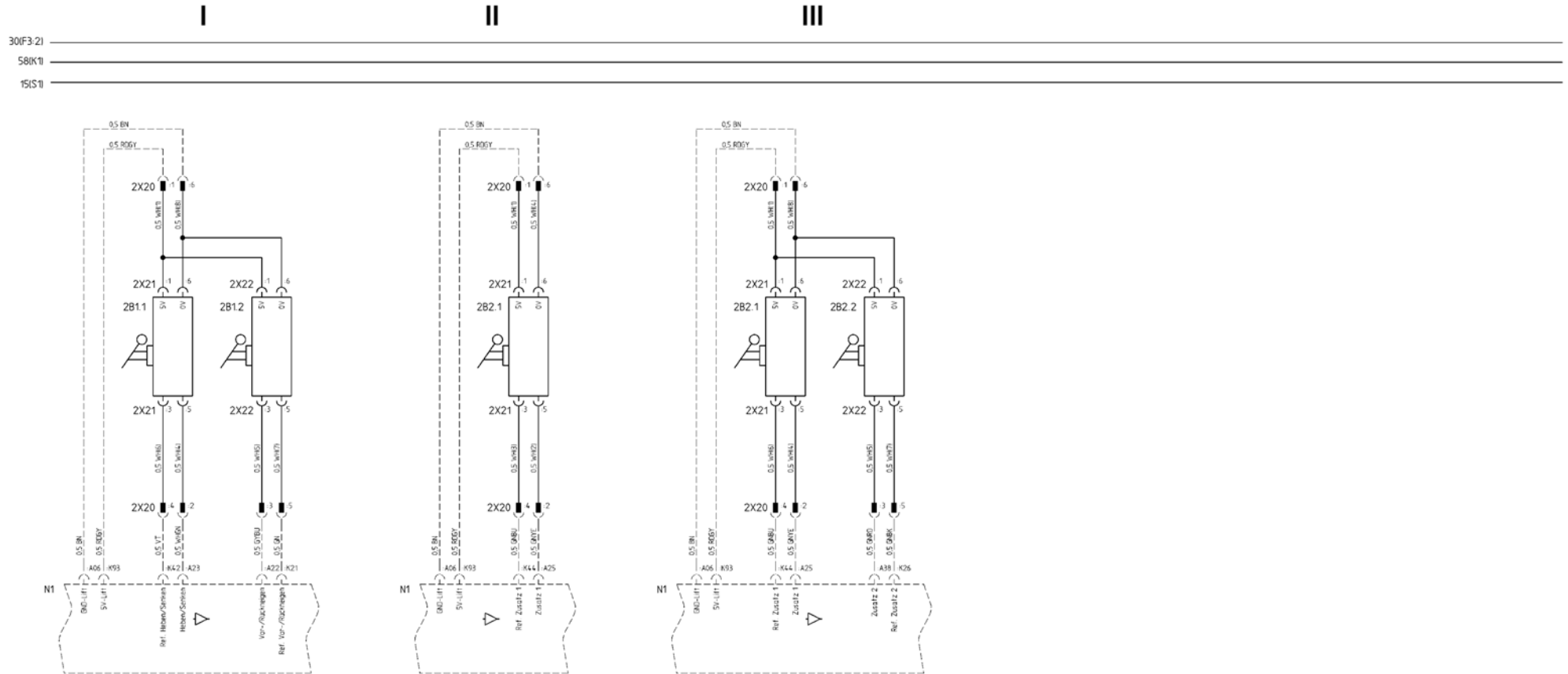
- BK Black
- BN Brown
- BU Blue
- GN Green
- GY Grey
- OG Orange
- RD Red
- VT Violet
- WH White
- YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm²

Notes

- (a) For electronic controller (N1:K51)

Special equipment sheet 12 — single lever for lifting/lowering, tilting, single auxiliary hydraulics and double auxiliary hydraulics



Masse (31) _____
881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957

394 802 6031_00_12

Arrangement

- I Two single levers for lifting/lowering and tilting
- II One single lever for single auxiliary hydraulics
- III Two single levers for single and double auxiliary hydraulics

Legend

- 2B1.1 Joystick for lifting/lowering, 885–887
:1 — 5 V
:3 — Lifting/lowering reference
:5 — Lifting/lowering
:6 — 0 V
- 2B1.2 Joystick for tilting, 889–892
:1 — 5 V

:3 — Tilting forwards/backwards

:5 — Tilting forwards/backwards reference

:6 — 0 V

- 2B2.1 Joystick for 1st auxiliary hydraulics (single auxiliary hydraulics), 902–905, 915–918

:1 — 5 V

:3 — Auxiliary 1 reference

:5 — Auxiliary 1

:6 — 0 V

- 2B2.2 Joystick for 2nd auxiliary hydraulics (double auxiliary hydraulics), 920–923

:1 — 5 V

:3 — Auxiliary 2

:5 — Auxiliary 2 reference

:6 — 0 V

- N1 Electronic LHC controller, 881–925

:A06 — GND sensor, lift

:A22 — Tilting forwards/backwards

:A23 — Lifting/lowering

:A25 — Auxiliary 1

:A38 — Auxiliary 2

:K21 — Tilting forwards/backwards reference

:K26 — Auxiliary 2 reference

:K42 — Lifting/lowering reference

:K44 — Auxiliary 1 reference

:K93 — 5 V sensor, lift

- 2X20 6-pin plug connector, 886–918

- 2x21 6-pin plug connector, 886–918

- 2x22 6-pin plug connector, 891, 892, 922, 923

Wire colours

BK Black

BN Brown

BU Blue

GN Green

GY Grey

OG Orange

RD Red

VT Violet

WH White

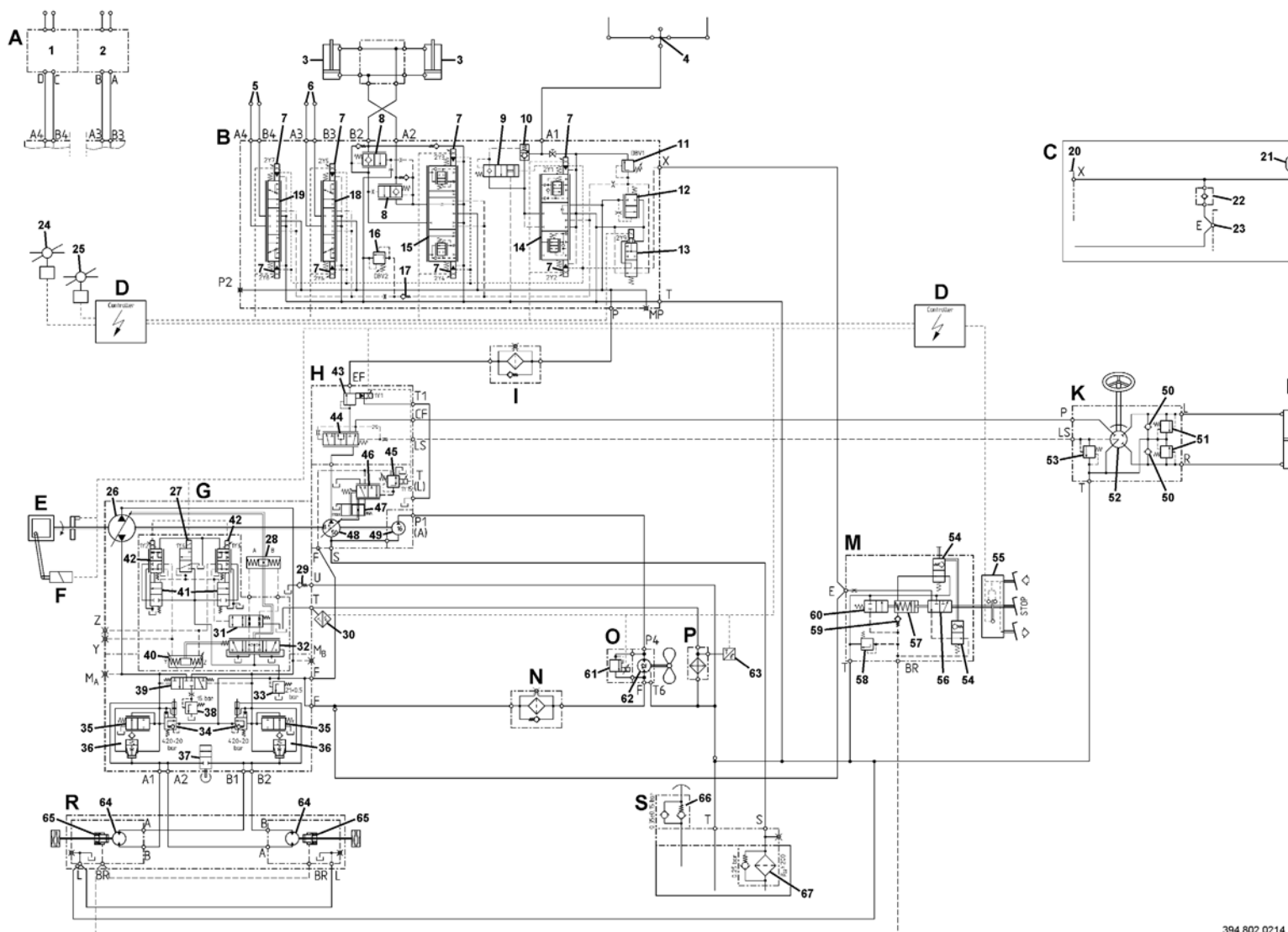
YE Yellow

The number in front of the wire colour refers to the wire cross-section.

Wires with unspecified cross-section = 0.75 mm²

Hydraulic circuit diagram

Traction, working and steering hydraulics



394 802 0214_01

A Auxiliary hydraulics with duplex or triplex lift mast

- 1 Left hose pulley
- 2 Right hose pulley

B Working hydraulics

- 3 Tilt cylinder
- 4 Standard lift mast
- 5 Auxiliary hydraulics connection 2
- 6 Connection for auxiliary hydraulics 1
- 7 Solenoid valve
- 8 Tilt brake valve
- 9 Load Hold Valve
- 10 Non-return valve
- 11 Pressure relief valve 1 (with 250⁺⁵ bar H 40 standard/duplex/triplex lift mast, with 275⁺⁵ bar H 45 standard/duplex/triplex lift mast, with 275⁺⁵ bar H 50 standard/duplex/triplex lift mast)
- 12 2/2 solenoid valve (pressure governor)
- 13 Release valve (working hydraulics)
- 14 Solenoid valve - lift/lower
- 15 Solenoid valve - tilt
- 16 Pressure relief valve 2
- 17 Non-return valve
- 18 Solenoid valve - auxiliary hydraulics 1
- 19 Solenoid valve - auxiliary hydraulics 2

C Depressurisation (special equipment)

- 20 Control valve

- 21 Accumulator
- 22 Non-return valve
- 23 Brake valve

D Linde Truck Control

- 24 Working hydraulics central lever
- 25 Auxiliary hydraulics central lever 1+2

E Internal combustion engine**F Engine speed regulator****G Complete hydraulic variable pump consisting of:**

- 26 Hydraulic variable pump HPV 105-02 R
- 27 Exhaust valve
- 28 Set piston A→forwards B→reverse
- 29 Non-return valve 1 bar
- 30 Hydraulic oil temperature sensor (only in diesel version)
- 31 4/2 solenoid valve
- 32 Pilot valve
- 33 Supply pressure valve 21^{+0.5} bar
- 34 420⁺²⁰ bar combined feed + maximum valve
- 35 2/2 solenoid valve
- 35 Integrated brake valves
- 37 Choke plunger (towing unit)
- 38 15 bar output valve
- 39 Shuttle valve
- 40 Servo piston Y→forwards Z→backwards
- 41 2/2 solenoid valve

- 42 Proportional valve

H working hydraulics pumps

- 43 Solenoid valve (retarder only in H45/50 version)
- 44 3/3 solenoid valve (priority valve)
- 45 Pressure regulating valve and solenoid valve
- 46 Pilot valve
- 47 Actuator piston for cradle
- 48 Mean pressure piston pump (adjustable) MPR
- 49 16 cm³ gear pump (feed pump)

I Working hydraulics pressure filter/microfilter**K Steering control valve with**

- 50 Suction valve
- 51 Hose safety valve 220⁺¹⁰ bar
- 52 Servostat
- 53 Maximum valve 120⁺⁵ bar

L Steering cylinder**M Brake release valve**

- 54 Towing unit
- 55 Pedal group
- 56 3/2 solenoid valve
- 57 Pump for venting brake
- 58 Pressure relief valve

- 59 Non-return valve
- 60 2/2 solenoid valve

N Pressure filter (feed pressure)/microfilter**O Fan drive**

- 61 Solenoid valve
- 62 Hydraulic motor 12 cm³

P Radiator

- 63 Hydraulic oil temperature sensor (only in LPG version)

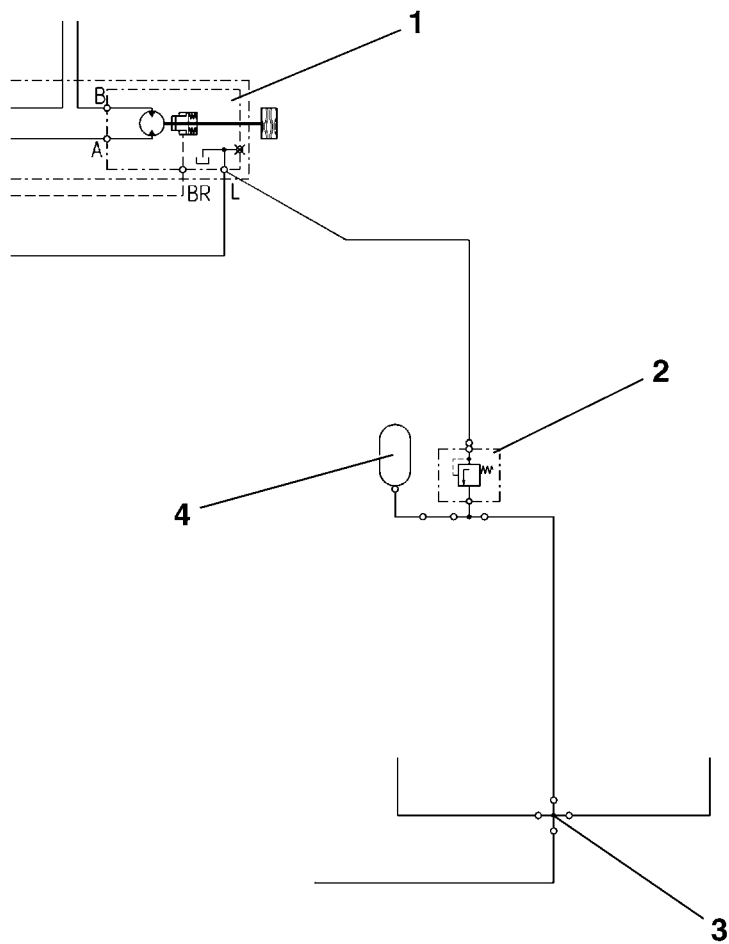
R drive axle AH 40, AH 45, AH 50, consisting of:

- 64 Hydraulic fixed displacement motor HMF 900 R
- 65 Multi-disc brake (brake air pressure min. 13 bar)

S Oil tank consisting of:

- 66 Breather with suction and counter-balance valve 0.35±0.15 bar
- 67 Suction filter with by-pass valve 0.25 bar

Accumulator



394 802 0210

- | | | | | |
|---|---|---|---------------------------------------|---------------------------------------|
| 1 | Drive axle, right | 4 | Accumulator | H 50 standard/duplex/triplex, 175 bar |
| 2 | Overpressure valve | | Nitrogen fill pressure of accumulator | |
| 3 | Lifting/lowering junction, (lift mast series 189) | | H 40 standard/duplex/triplex 160 bar | |
| | | | H 45 standard/duplex/triplex 175 bar | |

