Operating Instructions
Diesel truck

Linde Material Handling

H25D, H30D, H35D

393 807 1001 EN – 08/2008

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.

Linde Material Handling GmbH
Carl-von-Linde-Platz
63743 Aschaffenburg
Telephone +49 (0) 6021 99-0
Fax +49 (0) 6021 99-1570
Mail: info@linde-mh.com
Web: http://www.linde-mh.com

1 Introduction

2 Safety

3 Overview

4 Operation

5 Maintenance

6 Technical data

Annex

7 Circuit diagrams

1

Introduction

Your forklift truck

offers optimum efficiency, safety, reliability and comfort. It is now up to you to maintain these characteristics for as long as possible and to 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.

This operating manual contains everything you need to know about commissioning, driving and maintenance.

A number of special equipment items have their own operating manuals, which are supplied along with this equipment. Please observe the information for operation depending on the version of your forklift truck and carry out the specified work regularly, at the due times and using the working materials envisaged for this purpose according to the inspection and maintenance overview program. Please make sure you record the work performed in the registration document for the industrial truck; only in this manner will you comply with the warranty conditions.

The designations used in the text: front - rear - left - right - always refer to the installation position of the parts described with forwards as the direction of travel (fork arms forwards) for the forklift truck.

In the case of servicing work not described here, specialist knowledge, measuring instruments and frequently also special tools are required. 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:

Forklift truck model:	
Production number / Year of manufacture	
Handover date:	

The production number should 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 stroke:	
Hydraulic variable displacement pump number:	
Drive axle number:	
Steering axle number:	

When taking over the forklift truck, this data should be copied from the rating plates of the units into this operating manual.

NOTE

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

Please address all queries and orders for spare parts relating to your forklift 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/diagrams and technical data are subject to technical modification in terms of form, equipment and know-how in the interest of progress.

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

Proper usage

The forklift truck is intended for transporting and stacking the loads indicated in the load capacity diagram. We expressly draw your attention to:

- The VDMA brochure on "Rules for proper use of industrial trucks", supplied with these operating instructions
- The accident prevention regulations of your employer's liability insurance association
- The special measures for driving on public roads within the scope of the StVZO (Road Traffic Licensing Regulations)
- Other specific national regulations.

Regulations for proper use of industrial trucks must be observed without fail by the personnel responsible, particularly by operating and maintenance personnel.

Before your truck is used for work not listed in the guidelines, and which require it to be converted or retrofitted, please contact your authorised dealer.

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

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

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

Forklift trucks in the 393 series are designed to handle loading and palletising operations for loads up to 2.5 t with H 25, up to 3 t with H 30 and up to 3.5 t with H 35.

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

The trucks are eco-friendly and their quiet operation and low level of emissions benefit both the driver and the environment. They excel on account of their compact design and a small turning radius, and they are fully container compatible. For this reason, the forklift trucks are particularly well-suited for narrow aisles and operational areas where space is at a premium.

Engine

A 4-cylinder, four-stroke diesel engine with turbocharging and state-of-the-art pump/nozzle technology is installed as the drive motor. 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 an expansion tank.

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

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

Hydraulic system

The traction drive consists of a hydraulic variable displacement pump, two hydraulic fixed-displacement wheel motors (assembled as a drive axle unit) and a hydraulic pump (fixed displacement pump) for the working and steering hydraulics. Direction of travel and 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 they power the drive wheels.

Operation

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

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

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

To control the operational movements lifting, lowering and tilting, there is only one actuating lever (joystick). Another joystick is fitted to operate 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) system enables:

- Millimetre-perfect and secure mast 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 system (LTC) provides for:

- Sensitive, smooth driving and reversing
- Automatic regulation of the engine speed to match the respective power required by the hydraulics
- Fast service by means of self-diagnosis
- Optimum operational reliability.

Brakes

The hydrostatic drive is used as a service brake. This means that the service brake is maintenance-free. There are two multi-disc brakes integrated into the wheel motors, which are used as a parking brake. The multi-disc brakes are engaged when the engine is switched off. This gives the truck an automatic braking function. The parking brake must always be activated when the truck is switched off.

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 system can also be operated when the engine has been switched off.

Lift mast

The free-view lift mast enables:

- Ideal visibility through slim mast profiles
- Full load capacity up to maximum lift heights
- Enormous residual lifting capacity
- Maintenance-free bearings for lift mast and tilt cylinders via rubber-cushioned linkage points
- Electric tilt angle limitation.

Electrical system

The electrical system is supplied with 12 V DC by the alternator. A 12 V battery with 88 Ah is installed to start 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.

NOTE

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.

Reception of forklift truck

Before the truck leaves our factory, it is subjected to a careful inspection to ensure that it is in perfect condition and is received by you complete with all equipment according to your order. Your authorised dealer is also obliged to perform another inspection and proper handover.

To avoid subsequent complaints, please be so kind as to carefully check the condition of the truck and the completeness of the equipment yourself and to confirm proper handover/takeover vis-à-vis your dealer.

NOTE

For forklift trucks which leave our works without a lift mast, an additional stop screw for speed restriction can be found under the forwards/reversing accelerator pedal (two-pedal operation) or accelerator pedal (one-pedal operation. This screw must ***be removed after attaching the mast by loosening the screw and removing it along with the aid of a hexagonal nut*** *(see also Driving without lift mast).*

Each forklift truck comes with the following technical documents:

- operating manual for forklift truck
- EC Declaration of Conformity (manufacturer confirms that industrial truck complies with requirements of EC Machinery Directive).
- Safety rules for the use of industrial trucks (VDMA)
- Registration document for the industrial truck, provided on handover by your authorised dealer.

Service plan before initial start-up

	Carried out	
	✓	✖
Engine		
Fill up with fuel		
Check the engine oil level		
Checking the coolant level		
Regenerating the particulate 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.		
Check function and safety system of third auxiliary hydraulics		

2

Safety

Safety regulations

The "Rules for proper use of industrial trucks" enclosed with these operating instructions must be brought to the attention of the persons responsible, in particular to those persons concerned with operating and maintaining the trucks, before working with or on the trucks.

The operating company must ensure that the driver understands all the safety information.

Please comply with the regulations and guidelines, e.g.

- Operation of industrial trucks,
- Driving licence,
- Rules for driveways and the area of operation,
- Rights, duties and rules of behaviour for the driver,
- Special operating areas
- Information regarding setting off, driving and braking,
- Information for maintenance and repair,
- Periodic checks,
- Disposal of greases, oils and battery,
- Residual risks.

As the operating company or responsible person, ensure that all regulations and safety guidelines that are applicable to your industrial trucks are complied with.

When training a forklift truck driver who has already been trained to BGV D27 standard, the following must be practised sufficiently by training, driving, switching and steering, so that they are fully mastered.

- the special features of the Linde forklift truck (dual-pedal control, central joystick, stop pedal),
- any special equipment for attachments,
- peculiarities of the operation and working area

Only then should training exercises in the racking commence.

Safety instructions

⚠ DANGER

The truck must not be used by unauthorised persons.

As the operator, you must ensure that access to the truck is only possible for authorised personnel.

⚠ DANGER

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

Safety devices—of whatever kind—must never be disabled.

⚠ DANGER

When retrofitting a 3rd auxiliary hydraulic system, using solutions other than those recommended by the truck manufacturer will render CE conformity null and void and is therefore expressly forbidden.

Trucks may only be retrofitted with a 3rd auxiliary hydraulic system with the approval of the truck manufacturer.

⚠ DANGER

It is prohibited to connect any safety critical functions such as a bale clamp or the swivel device for a fluid container to any third auxiliary hydraulic system that may be fitted.

To prevent the clamp or swivel opening inadvertently, the additional function should be connected to the first auxiliary hydraulic system.

⚠ DANGER

Any additional drilled holes or welding to the overhead guard will compromise its secure positioning.

It is therefore strictly forbidden 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

For ease of operation, various functions on your truck are gas-spring assisted. Gas springs are complex components which contain high internal pressures (up to 300 bar).

They may under no circumstance be opened unless so directed, and may be removed only when not under compression. Any damage, lateral forces, buckling, temperatures in excess of 80°C and heavy soiling must generally be avoided. Damaged or defective gas springs must be changed immediately. Please contact your authorised dealer. He will, if necessary, depressurise the gas spring in accordance with regulations before dismantling it. Gas springs must be depressurised before recycling.

⚠ WARNING

The following issues must be observed when an accumulator is fitted. Improper handling of the accumulator can lead to serious injuries.

Before working on the accumulator, it must be depressurised. Please contact your authorised dealer.

⚠ WARNING

Depending on the duration of operation and use, components carrying exhaust gases and exhaust air can become hot.

Therefore wear protective clothing.

⚠ WARNING

The forklift truck working area must be adequately lit.

If it is insufficiently lit, work lights must be installed to ensure that the driver can see properly

⚠ CAUTION

Various items of special equipment fitted to your truck have the "speed reduction" special function . It is purely an assistance function. This means that the driver must not rely solely on the "speed reduction" function during operation.

The driver is always responsible for safe operation.

⚠ CAUTION

The functioning of medical equipment, e.g. pace makers or hearing aids, may be impaired when driving.

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

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

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.

Specialist

A specialist is considered to be someone whose technical training, experience and recent professional activities have enabled them to develop a sufficient depth of knowledge regarding industrial trucks and who is sufficiently familiar with the applicable national occupational health and safety regulations, accident prevention regulations, directives and generally recognised technical conventions (DIN standards, VDE regulations, technical regulations of other EU member states or other countries that are signatories to the treaty establishing the European Economic Area) in order to be able to assess the condition of industrial trucks in terms of health and safety.

Operation of industrial trucks in plant area

Many plant areas are so-called limited public traffic areas. In this sense, we would like to advise you to check your company liability insurance coverage, to ensure that possible claims for damages caused by your truck in limited public traffic areas in relation to third parties are included in the insurance coverage.

Regulations

Periodic safety inspection

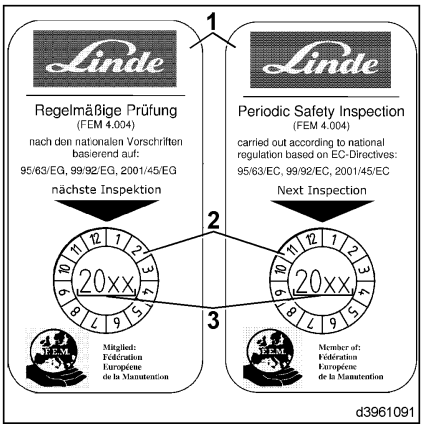
Periodic safety inspections are essential in order to keep your forklift truck/industrial truck safe and in good working order.

Comply with the national regulations for your country.

Europe: National laws based on the Directives 95/63/EC, 99/92/EC and 2001/45/EC require that the forklift truck/industrial truck is checked regularly by a competent person to ensure it is in good condition.

Germany: Ordinance on Industrial Safety and Health (BetrSichV).

There is a recommendation setting out the scope of the inspection, FEM 4.004 of the European Industrial Truck Association, which defines an inspection log to document the current inspection and an inspection sticker for the next inspection. The next inspection is shown by the year number (3) on a sticker (2), the colour of which changes each year, on the label (1). The scope of the inspection is extended by Linde in accordance with the specific truck type. Please ask your authorised dealer to carry out this work.



Diesel engine emissions (DME)

When using trucks with diesel engines in the Federal Republic of Germany, please observe regulation TRGS 554. This classifies DME as 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 should be posted in the working areas (for an example, see the appendix to TRGS 554).

Particulate filter system test

The relevant authorities prescribe that particulate filter systems must be serviced and tested by a competent person every 6 months. The

test results must be entered in a "certificate regarding the analysis of the diesel engine exhaust gases" and enclosed with the report book.

Determination and assessment of hazards from use of industrial trucks

Hazard	Action	Check note X = actioned - = not concerned	Notes
Industrial truck equipment does not comply with local provisions	Check		If in doubt, consult competent factory inspectorate or employers' liability insurance association
Lack of skills and qualification of driver	Driver training (sit-on and stand-on industrial trucks)		UVV-BGV D 27 - § 7, BGG 925 driver permit VDI 3313
Lack of skills and qualification of driver	Instruction for pedestrian-controlled trucks		
Usage by unauthorised persons	Access with key only for appointed staff		
Industrial truck not in a safe condition	Recurrent testing and rectification of defects		UVV-BGV D 27 - §§ 9, 37, BGG 918
Impaired visibility through load	Deployment planning		UVV-BGV D 27 - § 12
Contamination of respiratory air	Assessment of diesel exhaust gases		TRGS 554
Contamination of respiratory air	Assessment of fuel gas exhaust gases		MAK list (maximum work-place concentrations list)
Impermissible usage (improper usage)	Issue of operating instructions		UVV-BGV D 27 - § 5
Impermissible usage (improper usage)	Written notice of instruction to driver		UVV-BGV D 27 - §7
Impermissible usage (improper usage)	UVV-BGV D 27, observe operating manual and VDMA leaflet		
When filling up with a) diesel	UVV-BGV D 27, observe operating manual and VDMA leaflet		

Hazard	Action	Check note X = actioned - = not concerned	Notes
When filling up with b) fuel gas	UVV-BGV D 27, observe operating manual and VDMA leaflet		
When charging traction batteries	UVV-BGV D 27, observe operating manual, VDMA leaflet and VDE 0510		VDE 0510: In particular a) ventilation b) insulation value

In the Federal Republic of Germany the German Law on Health and Safety at Work (ArbSchG) states that it is up to the Employer to assess which hazards are associated with the work of employees and which Health and Safety measures are required (§ 5 ArbSchG). The result must be documented (§ 6 ArbSchG). In the case of industrial truck deployments involving similar hazard situations it is permitted to summarise the results . In countries outside the Federal Republic of Germany the country-specific regulations must be observed. With the list we are helping you to comply with these regulations. The construction and equipment of industrial trucks comply with the Machinery Directive 98/37/EC and are identified by the CE mark accordingly. This means that they do not fall under the scope involved in the assessment of hazards, and nor do attachments due to their own CE marking . The operator must however select the type and equipment of industrial trucks so as to comply with the local provisions for deployment.

In order to ensure the safe usage of industrial trucks we not only supply every industrial truck with a copy of the operating manual but also with the leaflet of the VDMA (German Engineering Federation) specifying the rules for the proper usage of industrial trucks "Rules for the Proper Use of Industrial Trucks".

The list specifies key hazards which are most frequently the cause of accidents in the event of non-compliance. If other major hazards are involved at a specific plant , they must be listed additionally.

In many plants the conditions of use for industrial trucks are by and large similar so that the hazards can be summarised in one list. The pronouncements of the employers' liability insurance association competent in each case as regards this topic should also be taken into account.

Instructions before fitting attachments

To depressurise the oil in the pipes **before** fitting an additional hydraulic attachment to the hydraulic system, an accumulator (special equipment) can be used. .

For this consult the section "Operate attachments".

⚠ WARNING

Improper handling of the accumulator can lead to serious injuries.

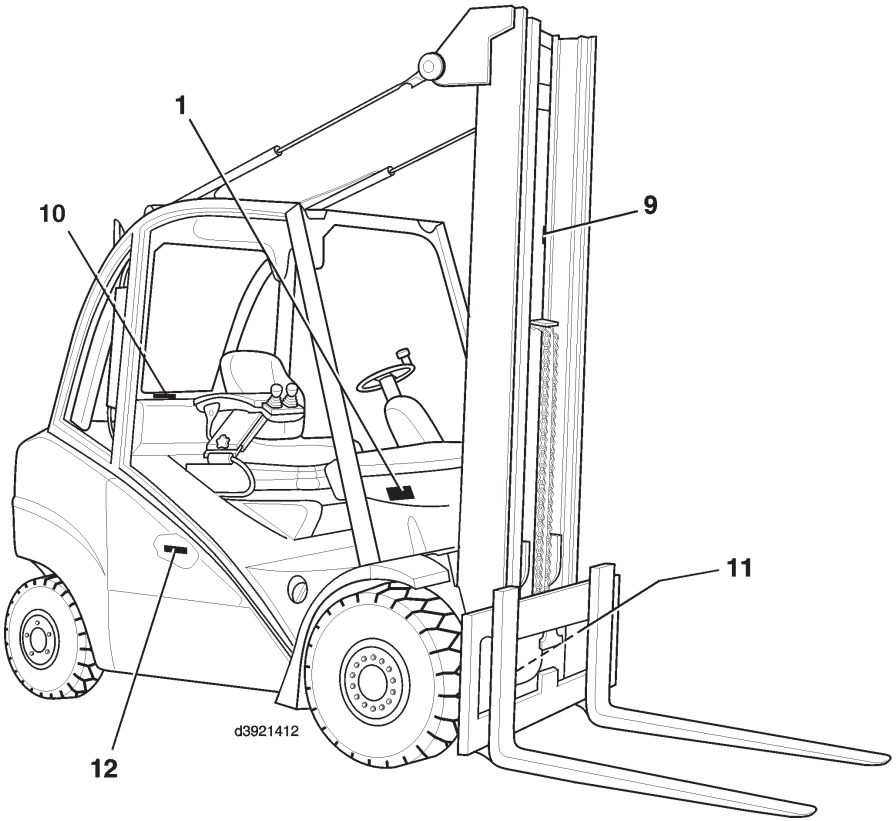
Before starting work on the accumulator it must be depressurised. Please contact your authorised dealer.

Instructions before fitting attachments

3

Overview

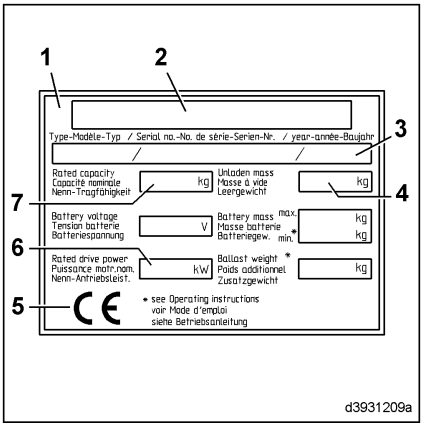
Identification plates



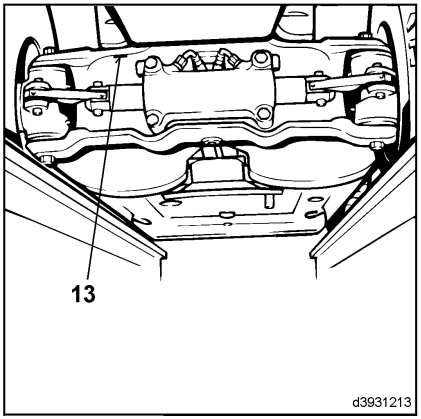
1	Nameplate
9	Lift mast number (stick-on label)
10	Chassis number (stamped into the rear wall of the overhead guard/chassis)
11	Drive axle identification plate
12	Engine identification plate

NOTE

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

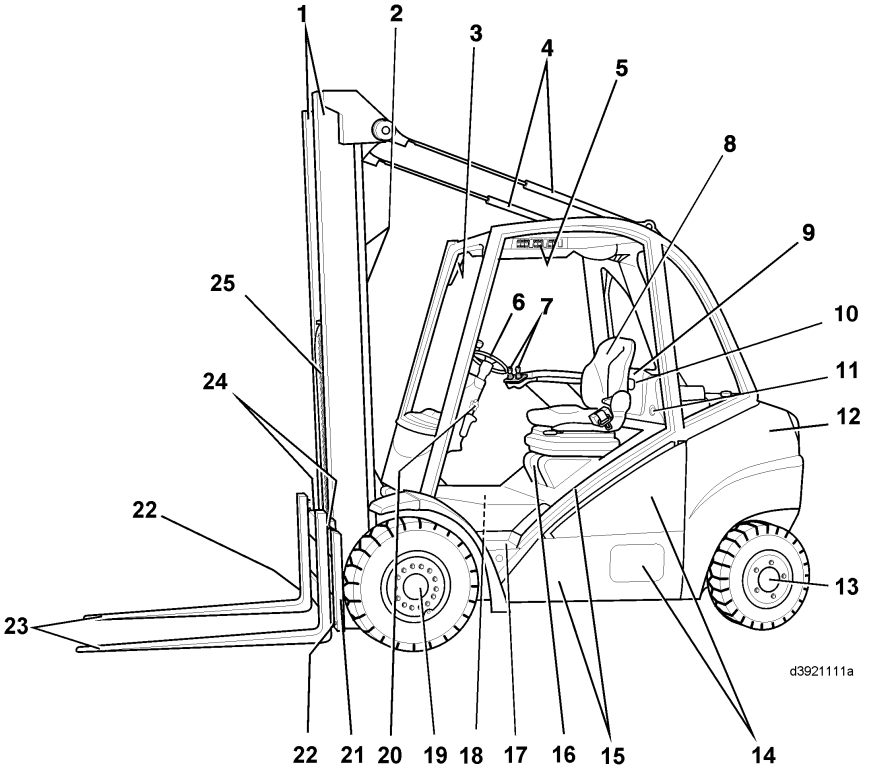


1 Nameplate
2 Manufacturer
3 Model / Production no. / Year of manufacture
4 Tare weight
5 CE mark
6 Nominal driving power
7 Nominal load capacity



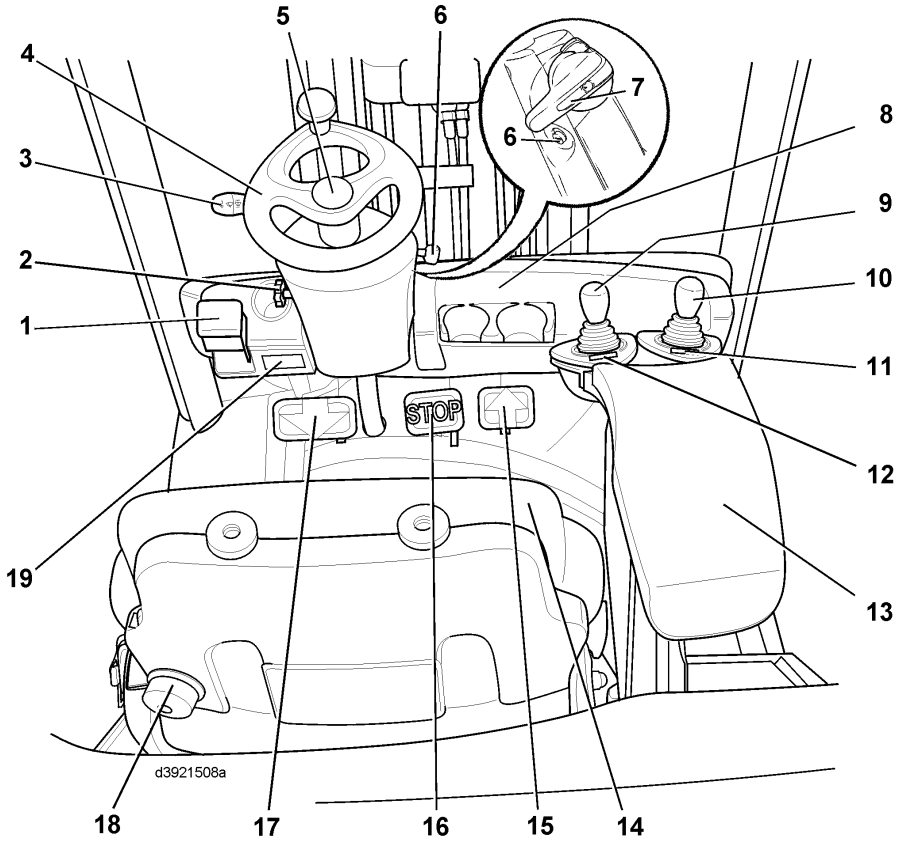
13 Steering axle identification plate

Truck overview



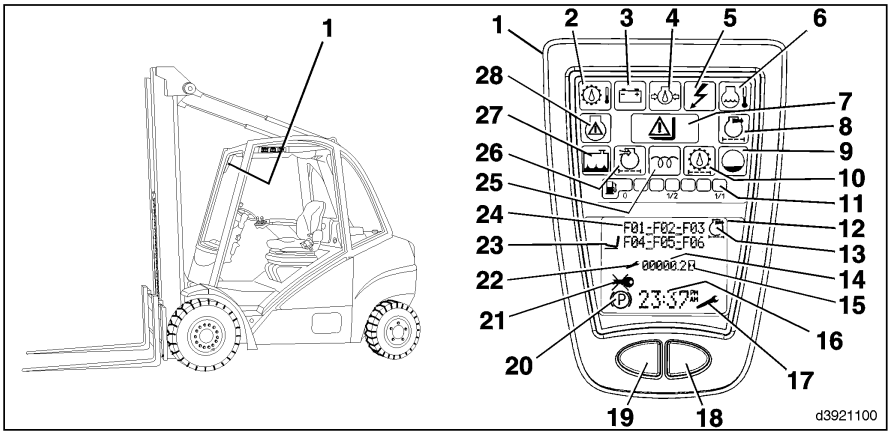
1	Lift mast	14	Maintenance covers
2	Lift cylinder	15	Chassis with overhead guard
3	Indicator unit	16	Bonnet
4	Tilt cylinders	17	Step for entering and exiting the truck
5	Toggle switch for additional functions (special equipment)	18	Fuses (in the engine compartment)
6	Steering wheel / hydrostatic steering	19	Left-hand wheel motor
7	Actuating levers (joystick)	20	Clamping screw for adjusting the steering column
8	Driver's seat	21	Fork carriage
9	Cover for electrical system	22	Fork arm safety devices
10	Fuses (behind the cover)	23	Fork arms
11	Diagnostic connector	24	Fork arm catch
12	Counterweight	25	Lift mast chain (only with duplex or triplex lift masts)
13	Steering axle		

Controls



1	Parking brake handle (version 1)
2	Clamping screw for adjusting the steering column
3	Combi-lever for wiper/washer system and flasher (special equipment)
4	Steering wheel / hydrostatic steering
5	Signal button
6	Starting switch with switch key
7	Parking brake lever (version 2)
8	Storage compartment
9	Operating lever (joystick) for operating hydraulics
10	Actuating lever (joystick) for auxiliary hydraulics (attachments) (special equipment)
11	Icon sticker for additional hydraulics (attachments) (special equipment)
12	Icon sticker for operating hydraulics
13	Armrest on driver's seat
14	Driver's seat
15	Forward travel accelerator pedal
16	Stop pedal
17	Reverse travel accelerator pedal
18	Lumbar support adjustment (special equipment)
19	Plate: "Guaranteed sound power level"

Indicator unit



1	Indicator unit
2	Hydraulic oil temperature indicator
3	Charging indicator
4	Engine oil pressure indicator/engine oil level indicator
5	Electrical control system fault
6	Engine temperature indicator
7	Load/overload indicator (special equipment)
8	Particulate filter alarm
9	Level display (special equipment)
10	Hydraulic oil microfilter indicator (special equipment)
11	Fuel tank level display
12	Display
13	Symbol for Particulate filter
14	Operating hours display
15	Operating hours symbol
16	Time display
17	Service interval exceeded symbol
18	Function button
19	Reset button
20	Symbol for Parking brake applied
21	Symbol "do not start the engine"
22	Symbol for operating hours until next service (shown for only 4 s on display (14))
23	Symbol for Lift mast position sensing
24	Text field
25	Glow plug indicator
26	Air filter vacuum indicator
27	Cooling water level indicator
28	Warning light - gas system

(2) Hydraulic oil temperature indicator (red)

Lights up when the specified temperature limit is reached. A buzzer also sounds when the permissible temperature limit is reached. If the "engine protection"* function is activated, the vehicle only moves at crawling speed (approx. 2 km/h). Error code `X205` is displayed in text field (24).

- Insufficient oil in the hydraulic system
- Incorrect oil used
- Oil filter clogged
- Oil cooler clogged
- Switch off the buzzer with the reset button (19).

(3) Charging indicator (red)

Lights up when there are malfunctions in the electrical system.

- Ribbed V-belt split or ribbed V-belt tension too slack
- Ribbed V-belt tensioner defective
- Cable defective
- Alternator defective
- Charge controller or cut-out relay defective.

(4) Engine oil pressure indicator/engine oil level indicator (red)

When engine lubricating oil pressure is too low, this indicator lights up, and a buzzer sounds. If in addition the text field (24) shows the text `Oil` with a double arrow pointing downwards, the engine 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 motor oil
- Switch off the buzzer with the reset button (19).

If the "engine protection"* function is activated and the oil pressure and/or engine oil level continues to fall, the truck only moves at crawling speed (approx. 2 km/h) and text field (24) displays:

- `Oil` with double downwards arrow and error code `X201` at low oil level,
- error code `X202` at low oil pressure.

(5) Electrical control system fault (red)

Lights up when an electrical control system fault is present, and displays a error code in text field (24).

(6) Engine temperature indicator (red)

Lights up when the specified temperature limit is reached. A buzzer also sounds when the permissible temperature limit is reached. If the "engine protection"* function is activated, the vehicle only moves at crawling speed (approx. 2 km/h). Error code `X204` is displayed in text field (24).

- Fan motor defective
- Thermostatic switch defective
- Water cooler clogged
- Leakage in the coolant circuit
- Coolant level too low
- Switch off the buzzer with the reset button (19).

(7) Load/overload indicator (special equipment)

Symbol lights up yellow when load is normal.

⚠ DANGER

Symbol lights up red when overloaded.

Set down load immediately.

- Consult load diagram.

(8) Particulate filter alarm (red)

Lights up with activated particulate filter control system, if load period of the particulate filter exceeds 8.5 h, or if an error in the particulate filter control system occurs simultaneously with the display of an error code in the text field (24). In addition, the buzzer sounds. The vehicle only moves at crawling speed.

- Regenerate particulate filter as soon as possible.
- Correct error in particulate filter control system.

(9) Level display (yellow) (special equipment)

Lights up when the coolant level is below the minimum.

- Top up the coolant.

Please contact your authorised dealer.

(10) Hydraulic oil microfilter indicator (yellow) (special equipment)

Lights up when the microfilter requires maintenance.

- Microfilter clogged, change it.

(11) Fuel tank level display (colour depending on level, green or red)

- Shows the current fuel level.

(13) Symbol for Particulate filter

Lights up if particulate filter control system is activated.

(14) Operating hours display

Shows the operating hours of the forklift truck. This indicator is evidence of the fork lift truck's operating hours and of the inspection and maintenance work to be performed.

NOTE

If a defective indicator unit is exchanged, the operating hours up to that point must be recorded. Affix the data on an embossed strip near the indicator unit. There is also the option of updating the new indicator unit at a later time. Contact your authorised dealer.

(15) Operating hours symbol

Flashes when operating hours are being counted (only when the ignition is on and the engine speed exceeds 500rpm)

(16) Clock display

24-hour clock display.

Adjustable using the (18) and (19) buttons.

The diagnostics tester can be used to reset the display to a 12-hour clock. Please contact your authorised dealer.

(17) Service interval exceeded symbol

If the number of operating hours until the next service is less than or equal to 0, the symbol flashes for 10 sec every time the vehicle is started, and then lights up continuously.

Adjustment and reset of the intervals can be performed only using the diagnostic device provided for this purpose. Please contact your authorised dealer.

(18) Function button

Assignment depending on version.

(19) Reset button

To adjust the time, switch off the warning buzzer and other functions depending on the version.

(20) Symbol for Parking brake

Lights up when the parking brake is applied.

(21) Symbol for "Do not start engine"

Lights up when the engine has stalled.

NOTE

Always leave the ignition switched on until the symbol goes out (between 15 and 50 seconds depending on the oil temperature). Then try to restart.

(22) Symbol for Operating hours until the next service

After the ignition has been switched on, display field (14) shows the operating hours until the next service (counting backwards).

Symbol (22) lights up. After 5 s, symbol (22) goes out and indicator (14) automatically switches to the operating hours of the truck; the operating hours symbol (15) flashes.

(23) Lift mast position sensing symbol (special equipment)

Lights up when the "Lift mast position detection" function is activated.

(24) Text field

Serves as display field. Please contact your authorised dealer to read out the error codes.

If the particulate filter (additional equipment) is fitted and the particulate filter control system is activated – residual capacity display

The text field display involves 11 symbols:

- 0 symbols blacked out → no particulate filter build-up,
- 6 symbols blacked out → approx. 50% particulate filter build-up,
- 11 symbols blacked out → 100% particulate filter build-up.

(25) Glow plug indicator (yellow)

Lights up whilst the glow plugs are warming up, then goes out.

Flashes when a fault exists in the engine or in the engine control unit. Please contact your authorised dealer.

(26) Air filter vacuum indicator (yellow)

Lights up when the air filter is excessively clogged.

- Air filter clogged, exchange it.

(27) Cooling water level display (yellow)

Lights up when the coolant level is below the minimum. If the "engine protection"* function

is activated, the vehicle only moves at crawling speed (approx. 2 km/h). The error code X203 appears in the text field (24).

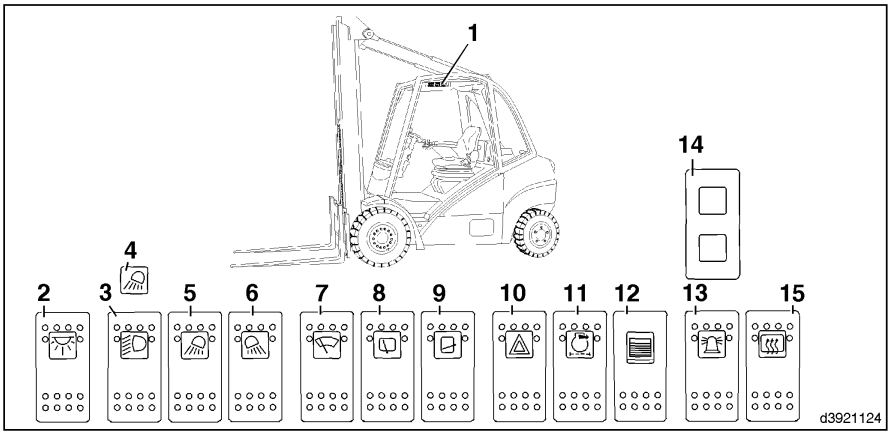
- Top up the coolant.

(28) Warning light - gas system (red)

Only works in LPG vehicles.

* The "engine protection" function can be disabled using the diagnostic device. Please contact your authorised dealer.

Switch panel



1 Switch panel at the top right in the driver's cab with:
2 Interior lighting
3 Standard or higher lighting or (4)
4 Working headlight positions 1 / 2 without higher lighting
5 Working headlight positions 3 / 4 and/or positions 5 / 6 or working headlight positions 1 / 2 with higher lighting
6 Working headlight position 8
7 Front windscreen wiper - interval / on / wipe-wash
8 Rear windscreen wiper - interval / on / wipe-wash
9 Roof windscreen wiper - interval / on / wipe-wash
10 Hazard warning light
11 Particulate filter starting switch
12 Particulate filter emergency stop switch
13 Rotating beacon or (14)
14 Particulate filter error light
15 Window heater or other special switch

NOTE

The assignment of the switch panel and arrangement of individual switches may vary depending on the version. Please note the switch symbols.

4

Operation

Running-in instructions

The lift truck can be operated at full speed directly. Avoid sustained high loads on the working hydraulic system and the travel drive in the first 50 hours of operation. The wheel fasteners must be tightened before the commissioning and after each wheel change. Thereafter at least every 100 operating hours.

Tighten opposite wheel fasteners to a torque of

front:	170 Nm
rear:	460 Nm

Checks before starting work

	Carried out	
	✓	✗
Engine		
Check the fuel level		
Check the engine oil level		
Checking the coolant level		
Chassis frame		
Check the tyre pressure		
Hydraulics		
Hydraulic system: Check the oil level.		

Standard equipment

Adjusting the driver's seat

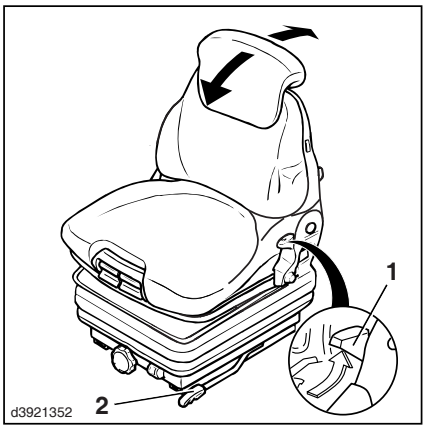
⚠ WARNING

An incorrect adjustment of the seat can cause back injury. Do not operate the seat adjusting devices while operating the truck.

Before each start-up of the truck and with each change in driver, set the weight setting to the individual weight of the driver and check if all settings are correctly engaged. Do not place any objects in the vicinity of the controls.

Horizontal adjustment

- Lift lever (2) up and pull it.
- Move the driver's seat on the slide rails backwards or forwards to give the driver the best position in relation to the steering wheel and the accelerator pedals.
- Re-engage the lever.



Backrest adjustment

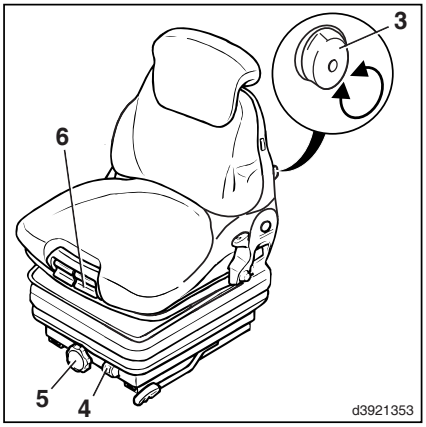
- Push up and hold the backrest adjuster (1).
- Move the backrest forward and back until a comfortable sitting position for the driver is found.
- Release the backrest adjuster (1).

Adjusting the lumbar support (option)

- Turn knob (3) until a comfortable sitting position is achieved.

Turning the knob anticlockwise makes the backrest arch outwards.

Turning the knob clockwise returns the backrest to its original position.



Adjusting for the operator's weight

- Turn the adjusting handwheel (5) to set the cushioning to the weight of the driver.

The adjustment range from 50 kg to 130 kg is visible at the weight range indicator (4).

To reduce the weight, turn the handwheel anticlockwise.

To increase the weight, turn the handwheel clockwise.

Adjusting the seat angle of tilt (option)

➢ Lift the handle (6).

The seat is tilted to the desired position by applying or taking off one's weight simultaneously.

Adjusting the seat position (option)

➢ Lift the handle (9).

The desired position is reached by simultaneously sliding the seat forward or back.

Adjusting the backrest extension (option)

➢ Push the backrest extension (7) up or down for an individual adjustment.

Turning the seat heating on/off (option)

➢ Toggle the switch (8) on or off.

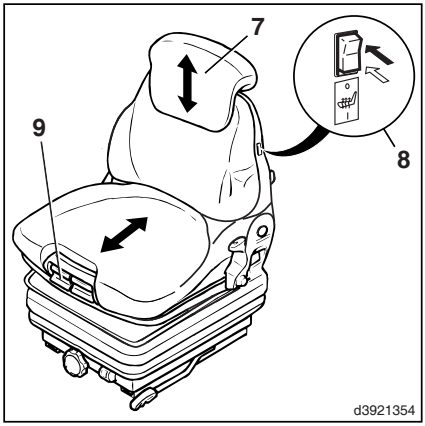
NOTE

Long sitting puts excessive strain on the spinal column. Prevent strain with regular, light exercising.

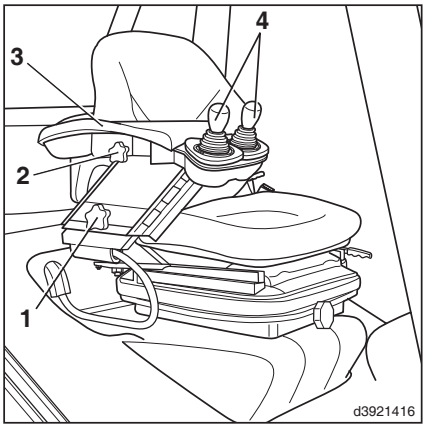
Adjusting the armrest on the operator's seat

NOTE

The armrest on the operator's seat is raised automatically by spring pressure after the handwheel (1) is loosened.



- Sit down on the operator's seat and loosen the handwheel (1).
- Push the armrest (3) down against the force of the spring until a comfortable position for the arm is reached.
- Tighten the handwheel (1).
- Loosen the handwheel (2) and slide the armrest (3) back and forth until the control lever (4) is easily accessible.
- Tighten the handwheel (2).



Adjusting the steering column

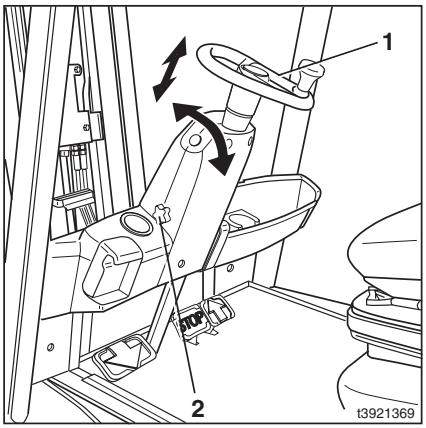
⚠ DANGER

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

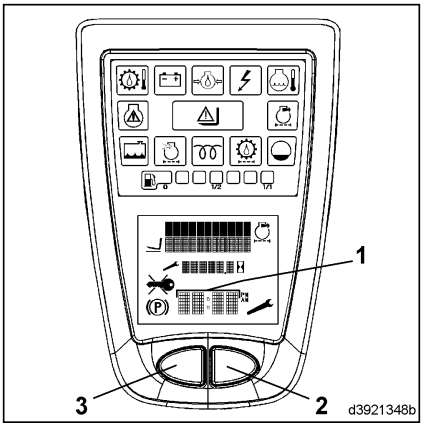
- Undo the clamping screw (2) anticlockwise.
- Move the steering wheel (1) into the required position by pulling it up or pushing it down.
- Tighten the clamping screw (2) clockwise.

Setting the clock

NOTE

The time is shown in the 24 hour mode. Change to 12 hour mode with diagnostic unit. Please contact your authorised dealer for this service.

➢ Depress both buttons (2) and (3) simultaneously for 3 seconds. ▷



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

NOTE

The setting of the hours or minutes can be adjusted slowly with button (2) by tipping it or fast by holding it.

➢ 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

Affix 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

Perfect functioning of the seat belt must be ensured.

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

NOTE

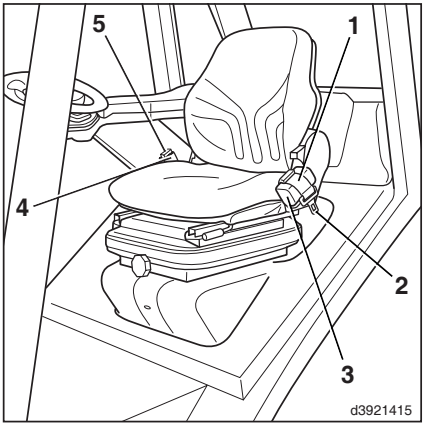
Driver's cabs with fixed closed doors or bracket doors satisfy the safety requirements for driver restraint systems. The seat belt can be used in addition. It must, however, be affixed when driving with doors that are open or have been removed. PVC doors do not constitute an operator restraint system. For trucks with the "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 truck so that it is no longer positioned at an angle.

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 automatic blocking mechanism of the belt retractor offers sufficient freedom of movement on the seat for normal use of the fork-lift truck.

- Draw seat belt (1) smoothly from the retractor on the left. ▷
- Position belt over lap, not over stomach.
- Allow buckle (2) to snap into place in catch lock of belt (4).
- Check seat belt tension.

Belt must fit close to the body.



Open seat belt

- Press the red button (5) on the buckle (4).
- Feed the buckle (2) manually back into the retractor (3).

NOTE

The automatic blocking mechanism may be triggered if the belt runs in too quickly when the buckle strikes the housing. The belt cannot be pulled out with normal force.

Drive engine (two-pedal operation)

Starting the engine

⚠ DANGER

Risk of poisoning!

Do not allow engine to run in unventilated rooms.

NOTE

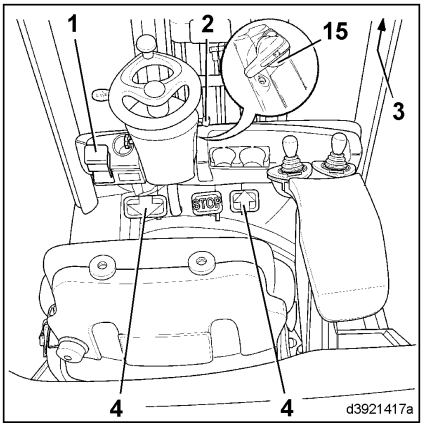
Where possible, avoid frequently starting and stopping the engine over short periods of time, since this prevents the internal combustion engine reaching its operating temperature. Frequent cold starts increase wear.

- The actuating lever (joystick) must be in neutral.
- Sit down on the driver's seat.
- Fasten the seat belt.
- Place both feet on the accelerator pedals (4).
- Parking brake actuated (it is only possible to start the engine with the parking brake actuated).

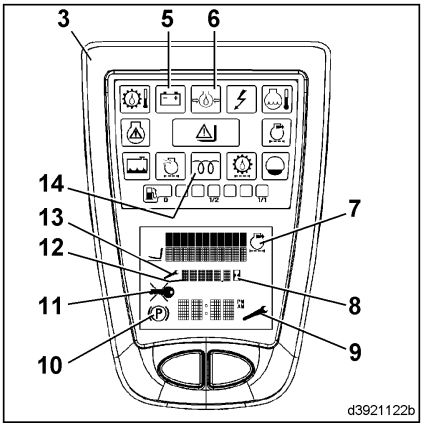
- **Version 1:** Parking brake handle (1) engaged.
- **Version 2:** Parking brake lever (15) turned clockwise until it snaps into place.

- Insert ignition 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 indicator unit (3).



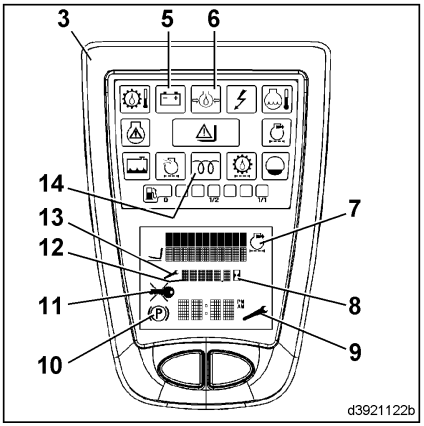
NOTE

After the ignition has been switched on, the indicator 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 indicator unit (3) display field (12). During this time the symbol (13) remains lit. After 5 seconds the display reverts automatically to the operating hours. If the buzzer sounds (particulate filter unit 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 service that is due must be performed. Please contact your authorised dealer.

The following controls light up:

- Parking brake applied symbol (10)
- Engine oil pressure indicator (6)
- Battery charge indicator (5)
- Glow plug indicator (14)
- Particulate filter symbol (7) (only if a particulate filter is fitted and the particulate filter control system is activated).

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



➢ Turn ignition key to position "II".

As soon as the engine starts:

➢ Release the ignition key.

Symbol (8) will flash on and off.

⚠ CAUTION

Only for trucks with particulate filter units. 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 pipe outlet 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 idling speed. Depending on the vehicle, temperature and altitude, this may take more than 1 minute.

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

- Always leave the ignition switched on until the symbol goes out (between 15 and 50 seconds depending on the oil temperature).
- 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 symbols 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 idling 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 engine under full load, but rather allow to run on for a few minutes at low speed.

➢ Take your feet off the accelerator pedals (4).

➢ Turn the ignition key (2) to the zero position.

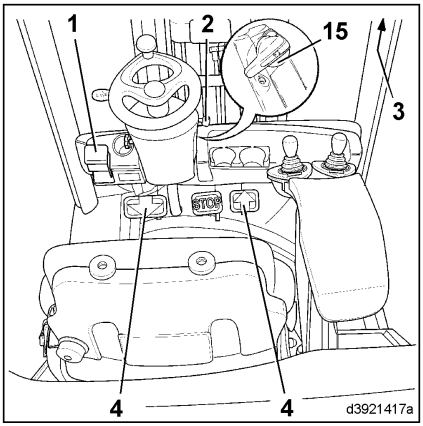
NOTE

The brake is applied when the engine is switched off.

➢ Apply the parking brake.

- **Version 1:** Pull up the parking brake handle (1).
- **Version 2:** Turn the parking brake lever (15) clockwise until it snaps into place.

➢ Remove the ignition key (2) when leaving the truck.



Driving (two-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 carriageway and to short differences in level.

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, ensure that the rear-view mirror is only designed for monitoring the traffic behind the vehicle.

Reversing is therefore only permitted when looking backwards directly.

⚠ CAUTION

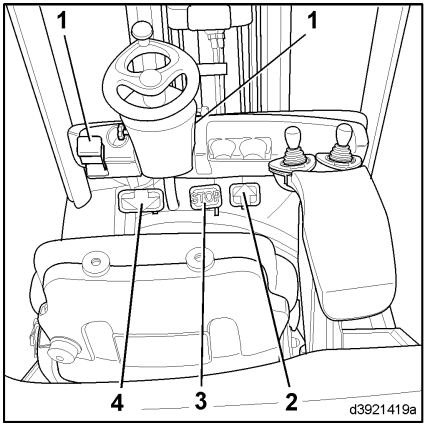
Any side doors attached must be protected from damage when driving.

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.
- Release the parking brake(1), as appropriate to the version.



Forwards travel

- Carefully operate the right accelerator pedal (2).

The driving speed of the truck increases the further the pedal is pressed down.

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 position of the accelerator pedal.

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.

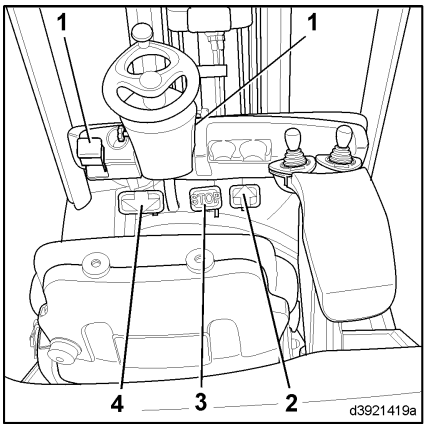
- Both feet should be left on the accelerator pedals so that the truck is easily controlled in every driving movement.

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 direction.

Approaching gradients

- Press the stop pedal (3) all the way down.
- Release the parking brake(1), as appropriate to the version.
- 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.

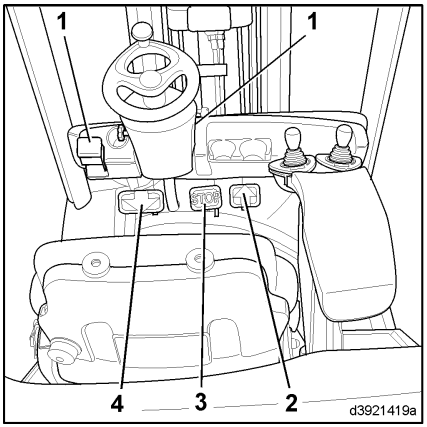


Stopping

- 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" direction of travel 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).
- When getting out of the truck with the engine running, for example to perform short operations in the immediate vicinity of the truck (opening the door, uncoupling the trailer etc.), it is imperative that you apply the parking brake (1) and open the seat belt. If you are leaving the truck for a longer period of time, switch off the engine and activate the parking brake (1).
- When leaving the truck, remove the ignition key.



Drive engine (single-pedal operation)

Starting the engine

⚠ DANGER

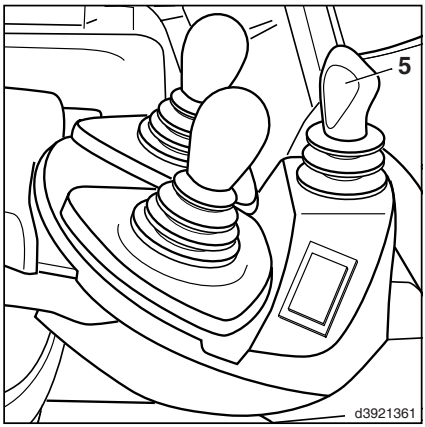
Risk of poisoning!

Do not allow engine to run in unventilated rooms.

NOTE

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

- Sit down on the driver's seat.
- Fasten the seat belt.
- Move the working hydraulics and direction of travel actuating lever (5) into neutral. ▷



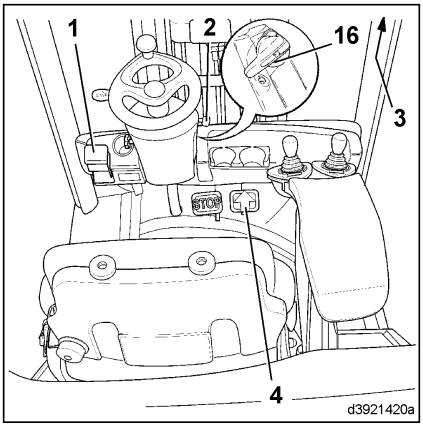
➢ Place your foot on accelerator pedal (4).

➢ Parking brake (1) actuated (it is only possible to start the engine with the parking brake actuated).

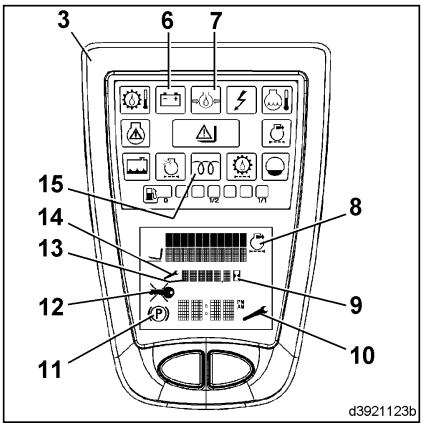
- **Version 1:** Parking brake handle (1) engaged.
- **Version 2:** Parking brake lever (16) turned clockwise until it snaps into place.

➢ Insert ignition 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 indicator unit (3).



NOTE

After the ignition has been switched on, the indicator 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 indicator unit (3) display field (13). During this time the symbol (14) remains lit. After 5 seconds the display reverts automatically to the operating hours. If the buzzer sounds (particulate filter unit 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 (10) flashes or lights up, the set service interval has been exceeded. The service that is due must be performed. Please contact your authorised dealer.

The following controls light up:

- Parking brake applied symbol (11)
- Engine oil pressure indicator (7)
- Battery charge indicator (6)
- Glow plug indicator (15)
- Particulate filter symbol (8) (only if a particulate filter is fitted and the particulate filter control system is activated).

➢ Wait until the glow plug indicator (15) goes out ▷

➢ Turn ignition key to position "II".

As soon as the engine starts:

➢ Release the ignition key.

Symbol (9) will flash on and off.

⚠ CAUTION

Only for trucks with particulate filter units. 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 pipe outlet 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 idling speed. Depending on the vehicle, temperature and altitude, this may take more than 1 minute.

If the engine stalls, the "Do not start the engine" symbol (12) will appear.

➢ Always leave the ignition switched on until the symbol goes out (between 15 and 50 seconds depending on the oil temperature).

➢ Then try to restart.

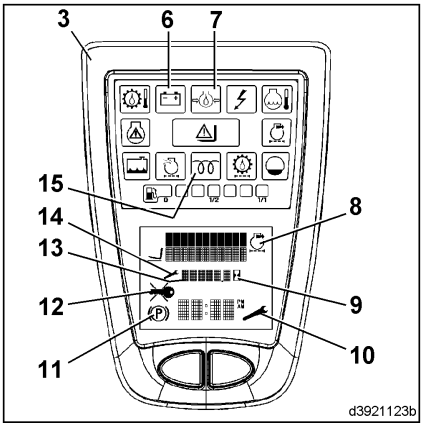
Leave a break of at least 1 minute between each engine start to protect the battery. If the engine still does not start at the third attempt, see: Malfunctions, Causes and Remedies.

The charging and engine oil pressure symbols 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 idling speed. When under load, drive the truck at a brisk speed. The engine will quickly reach normal operating temperature.



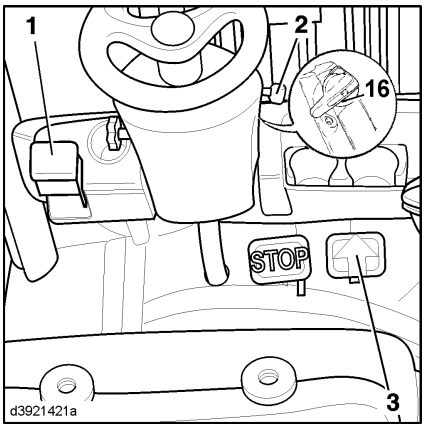
Switching off the engine

⚠ CAUTION

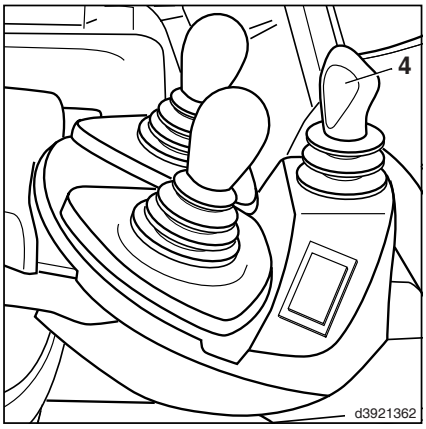
For engines with a turbocharger, the high speed of the turbocharger shaft (approx. 100 000 rpm at full load)could cause the shaft bearing to run dry through lack of lubrication thus damaging it.

Do not switch off engine under full load, but rather allow to run on for a few minutes at low speed.

➢ Remove foot from accelerator pedal (3). ▷



➢ Move the direction of travel lever (4) into the neutral position. ▷



➢ Turn the ignition key (2) to the zero position.

NOTE

The brake is applied when the engine is switched off.

➢ Apply the parking brake.

- **Version 1:** Pull up the parking brake handle (1).
- **Version 2:** Turn the parking brake lever (16) clockwise until it snaps into place.

➢ Remove the ignition 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 carriageway and to short differences in level.

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, ensure that the rear-view mirror is only designed for monitoring the traffic behind the vehicle.

Reversing is therefore only permitted when looking backwards directly.

⚠ CAUTION

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

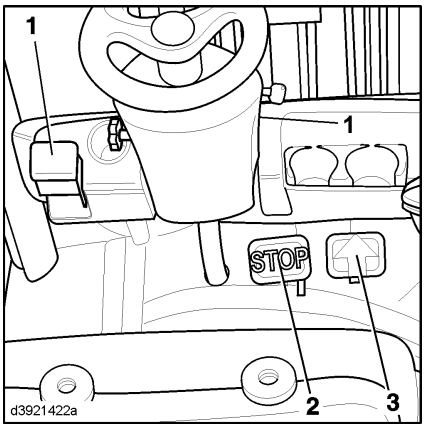
Please therefore ensure that both side doors are closed and locked before setting off.

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.

➢ Release the parking brake(1), as appropriate to the version.



Forwards travel

➢ Move the direction of travel lever (4) forwards.

➢ Press the accelerator pedal (3) carefully.

The driving speed of the truck increases the further the pedal is pressed down.

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.

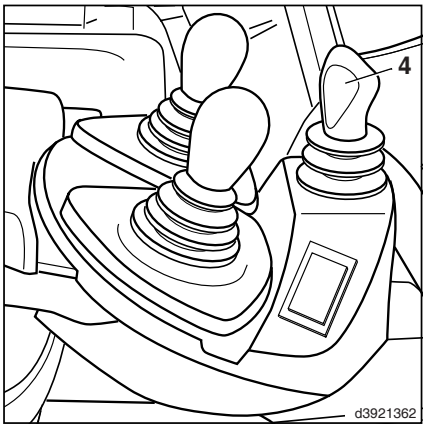
The truck will reverse slowly or quickly depending on the position of the accelerator pedal.

Changing direction of travel

➢ Release accelerator pedal.

The hydrostatic drive will act as a service brake.

➢ Operate the direction of travel lever (4) for the opposite direction of travel.

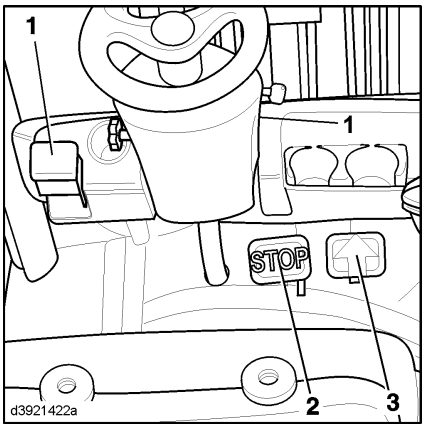


The forklift truck will now accelerate in the specified direction.

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

Approaching gradients

- Press the stop pedal (2) all the way down. ▷
- Release the parking brake(1), as appropriate to the version.
- 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 of travel lever (4) to "uphill" 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).
- When getting out of the truck with the engine running, for example to perform short operations in the immediate vicinity of the truck (opening the door, uncoupling the trailer etc.), it is imperative that you apply the parking brake (1) and open the seat belt. If you are leaving the truck for a longer period of time, switch off the engine and activate the parking brake (1).
- When leaving the truck, remove the ignition key.

Steering system

Steering

The hydrostatic steering system means that the level of effort required to turn the steering wheel is very low. 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.

Apply sufficient force to move the steering wheel beyond the limit stop making sure that the position of the wheels on the steering axle does not change.

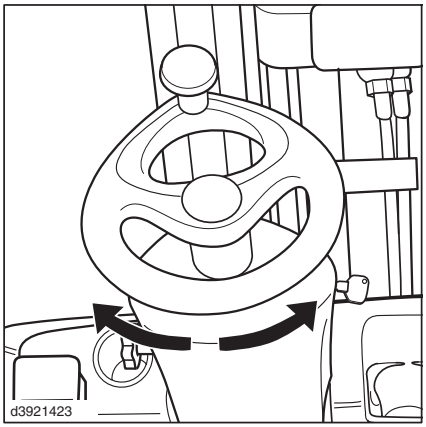
⚠ DANGER

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 local authorised dealer.

Turning radius

H 25	2420 mm
H 30	2444 mm
H 35	2476 mm



Brake system

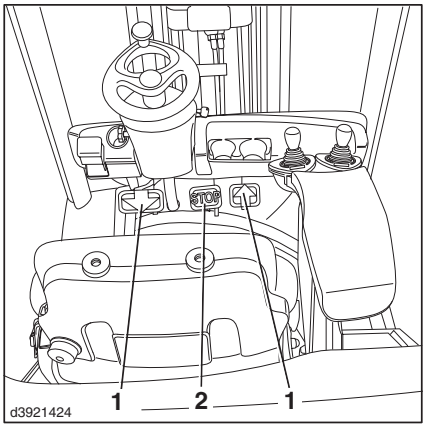
Service brake

➢ Allow the 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 action 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.



Stop pedal

NOTE

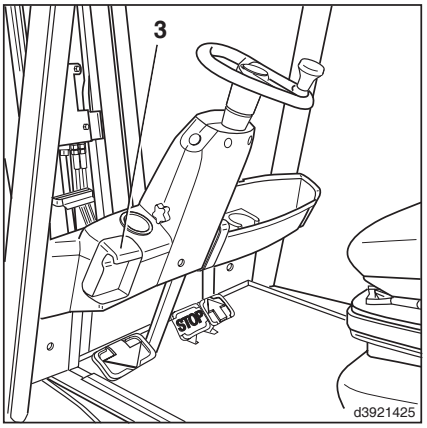
The stop pedal (2) is not a sensitive service brake but a sharply applied parking brake. Its use should be avoided whilst driving, because this can cause the drive wheels to lock and, in certain circumstances, can cause the load to slip from the fork arms. In unfavourable situations, the engine can also stall. The driver should then wait approx. 30 seconds before restarting (until the variable displacement pump of the traction drive is in neutral). It is recommended that drivers familiarise themselves with the function and action of these brakes without any load on the truck. For this purpose they should choose a route with no other traffic, travelling at a low speed.

Parking brake version 1

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

Operating the parking brake

➢ Pull the parking brake handle (3) upwards. ▷



Symbol in indicator unit will light up.

Release parking brake

NOTE

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

➢ Press down the parking brake handle (3).

The symbol on the indicator unit goes out.

DANGER

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

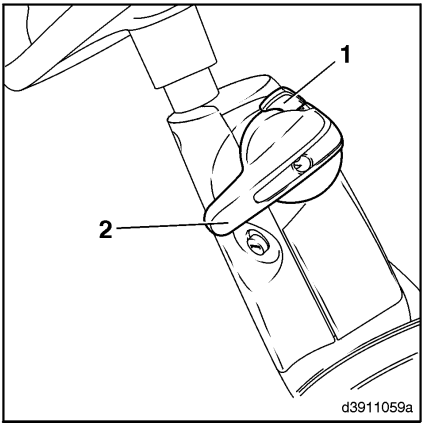
Should there be any defects or wear apparent in the brake system, please contact your authorised dealer at once.

Parking brake version 2

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 lock (1) engages and the icon in the indicator unit lights up.

Release parking brake

NOTE

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

➢ Press button (1).

The parking brake is unlocked.

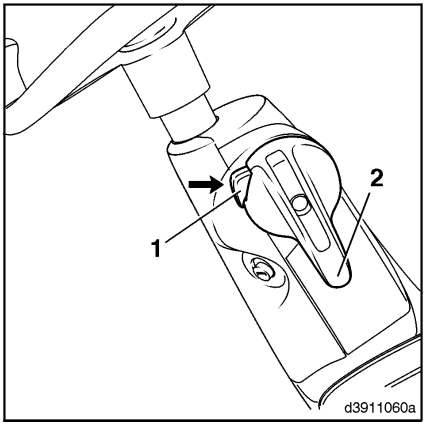
➢ Move the parking brake lever (2) down as far as the stop.

The symbol on the indicator unit goes 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.

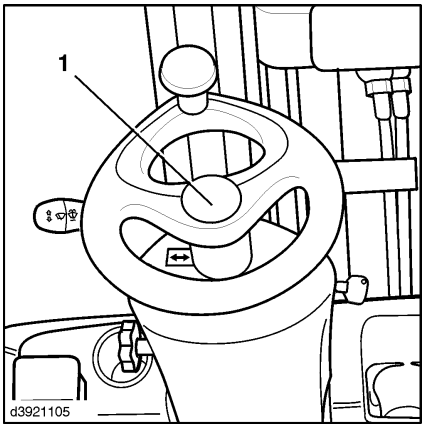


Horn

Operating the horn

When operating at blind corners and junctions, a horn serves as warning signal.

➢ Press the horn button ((1)) on the steering wheel to sound the horn.



Lifting system and attachments (central lever operation)

⚠ WARNING

With the moving lift mast or any attachment there is a risk of the driver getting caught in between.

Therefore never reach or step into the lift mast or the space 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.

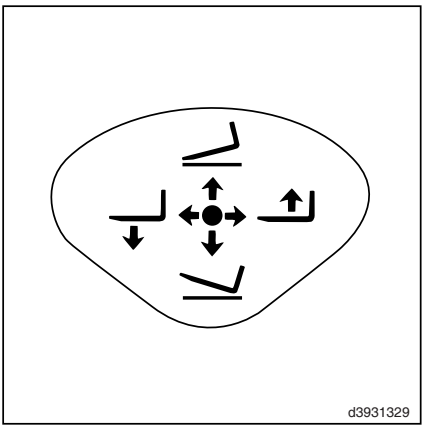
NOTE

When working with a shovel; see "forklift truck operation using a shovel".

NOTE

With the central lever version, use of the actuating lever in 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 actuating lever should always be operated carefully, never jerkily. Moving the actuating lever determines the lifting, lowering and tilt speed. After the actuating lever is released, it automatically returns to its initial position.

NOTE

The lifting system and attachments only function with the engine running and the driver's seat occupied.

Tilting the lift mast forwards

➢ Push actuating lever (1) forwards.

Tilting the lift mast backwards.

➢ Pull actuating lever (1) backwards.

Lifting the fork carriage

⚠ DANGER

When lifting the lift mast there is an increased risk of falling and crushing.

For this reason it is not permitted to step onto the fork arms when lifted without a protective cage.

➢ Push actuating lever (1) to the right.

Lowering the fork carriage

➢ Push actuating lever (1) to the left.

Operating attachments

Attachments can be fitted to the truck as special equipment (e.g. sideshift, clamps, fork positioner etc.). Refer to the working pressure and operating instructions for the attachment. An additional actuating lever (4-way lever) is attached for operation.

⚠ WARNING

For attachments that perform a clamping operation (e.g. bale clamp), a lockable lever (4-way lever or joystick) must be used.

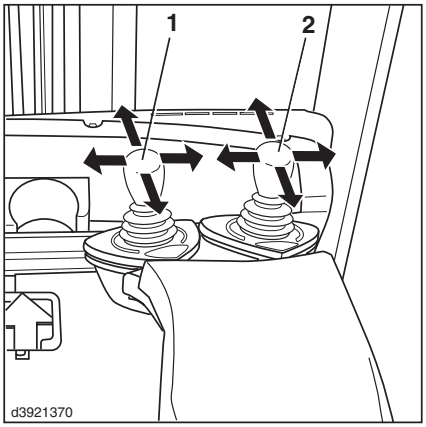
If your truck is not fitted with this equipment, please contact your authorised dealer.

NOTE

Before fitting an attachment, a depressurisation circuit (special equipment) can be used 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.

➢ Switch off the engine.

➢ Switch on the ignition.



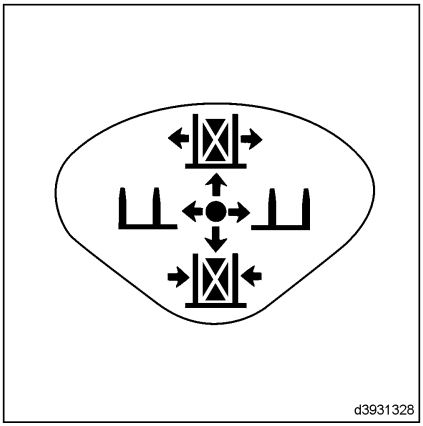
- Operate the actuating lever for the respective auxiliary hydraulics several times.
- Unscrew the union nuts on the fork carriage.
- Screw on hoses for attachment or connect plug connectors.

⚠ CAUTION

Attachments affect the load capacity and stability of the forklift truck.

Attachments which are not supplied with the forklift truck should only be used when the authorised dealer has checked that safe operation is ensured by the allocation in terms of load capacity and stability.

- Take note of the switching symbols with arrows. ▷



NOTE

For every attachment, a plate stating the load capacity of the truck must be affixed beside the load diagram in the top left of the overhead guard, and a symbol label for the relevant attachment must be affixed behind the actuating lever.

Operating the sideshift

NOTE

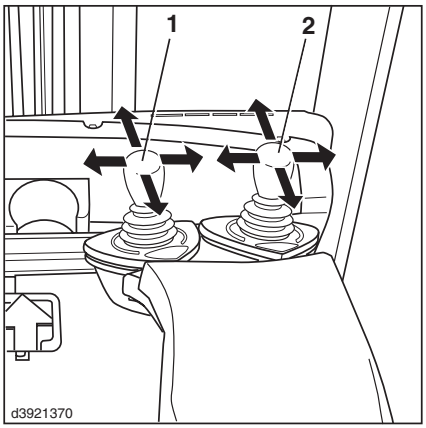
In order to prevent damage, do not activate the sideshift when the fork arms are on the ground.

➢ Push actuating lever (2) to the left.

Sideshift moves to the left.

➢ Push actuating lever (2) to the right.

Sideshift moves to the right.



Operating the clamp

➢ Release the actuating lever (2) by pressing down on the button.

➢ Push actuating lever (2) forwards.

Clamp opens.

➢ Pull actuating lever (2) backwards.

Clamp closes.

Operating the fork positioner

NOTE

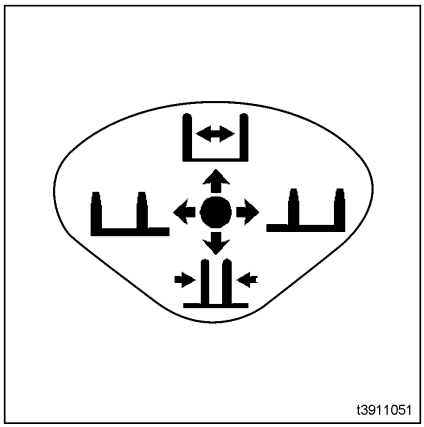
In order to prevent damage, do not activate the fork positioner with a load, or with the fork arms on the ground. Do not use the fork positioner as a clamp.

➢ Push actuating lever (2) forwards.

Fork arms move outwards.

➢ Pull actuating lever (2) backwards.

Fork arms move inwards.



Lifting system and attachments (single lever operation)

⚠ WARNING

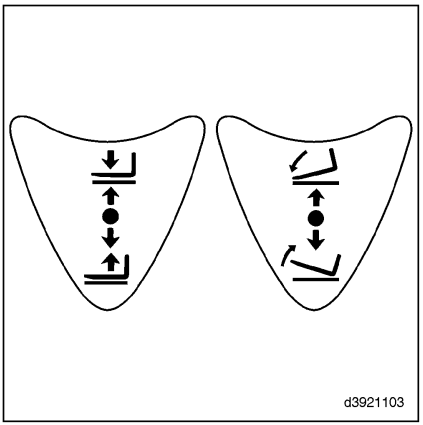
With the moving lift mast or any attachment there is a risk of the driver getting caught in between.

Therefore never reach or step into the lift mast or the space 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.

NOTE

When working with a shovel; see "forklift truck operation using a shovel".

➢ Take note of the switching symbols with arrows. ▷



The actuating lever should always be operated carefully, never jerkily. Moving the actuating lever determines the lifting, lowering and tilt speed. After the actuating lever is released, it automatically returns to its initial position.

NOTE

The lifting system and attachments only function with the engine running and the driver's seat occupied.

Lifting the fork carriage

⚠ DANGER

When lifting the lift mast there is an increased risk of falling and crushing.

For this reason it is not permitted to step onto the fork arms when lifted without a protective cage.

➢ Pull actuating lever (1) backwards.

Lowering the fork carriage

➢ Push actuating lever (1) forwards.

Tilting the lift mast forwards

➢ Push actuating lever (2) forwards.

Tilting the lift mast backwards.

➢ Pull actuating lever (2) backwards.

Operating attachments

Attachments can be fitted to the truck as special equipment (e.g. sideshift, clamps, fork positioner etc.). Refer to the working pressure and operating instructions for the attachment. One or two additional actuating levers are fitted for operating the attachments.

⚠ WARNING

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

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

NOTE

Before fitting an attachment, a depressurisation circuit (special equipment) can be used 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.

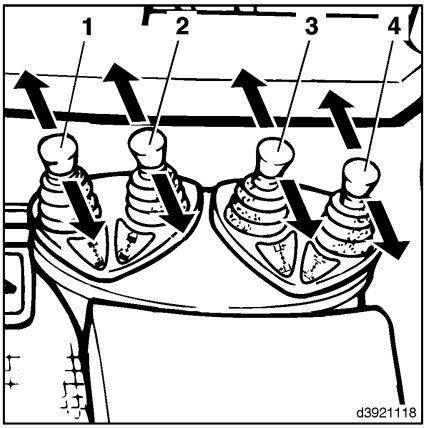
➢ Switch off the engine.

➢ Switch on the ignition.

➢ Operate the actuating lever for the respective auxiliary hydraulics several times.

➢ Unscrew the union nuts on the fork carriage.

➢ Screw on hoses for attachment or connect plug connectors.

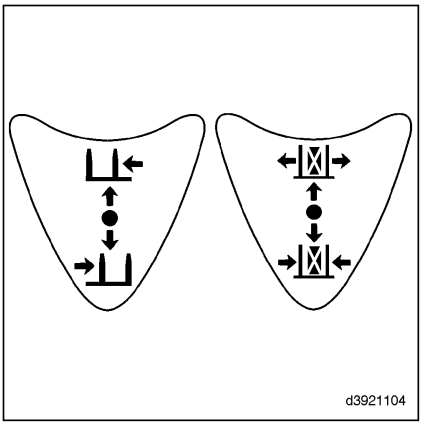


⚠ CAUTION

Attachments affect the load capacity and stability of the forklift truck.

Attachments which are not supplied with the forklift truck should only be used when the authorised dealer has checked that safe operation is ensured by the allocation in terms of load capacity and stability.

➢ Take note of the switching symbols with arrows.



NOTE

For every attachment, a plate stating the load capacity of the truck must be affixed beside the load diagram in the top left of the overhead guard, and a symbol label for the relevant attachment must be affixed behind the actuating lever.

Operating the sideshift

NOTE

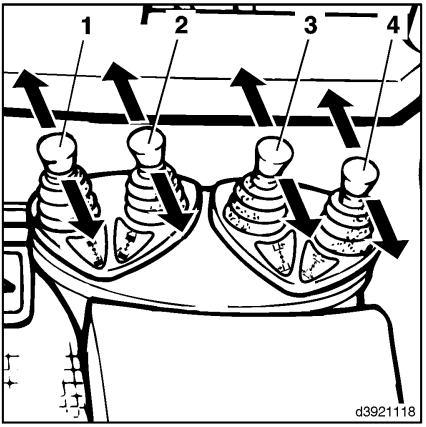
In order to prevent damage, do not activate the sideshift when the fork arms are on the ground.

➢ Push actuating lever (3) forwards.

Sideshift moves to the left.

➢ Pull actuating lever (3) backwards.

Sideshift moves to the right.



Operating the clamp

➢ Release the actuating lever (4) by pressing down on the button.

➢ Push actuating lever (4) forwards.

Clamp opens.

➢ Pull actuating lever (4) backwards.

Clamp closes.

Operating the fork positioner

NOTE

In order to prevent damage, do not activate the fork positioner with a load, or with the fork arms

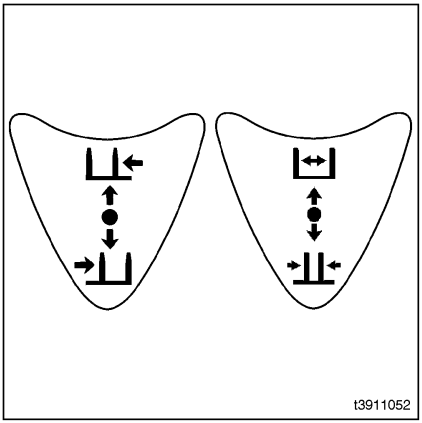
on the ground. Do not use the fork positioner as a clamp.

➢ Push actuating lever (4) forwards.

Fork arms move outwards.

➢ Pull actuating lever (4) backwards.

Fork arms move inwards.



Special equipment

Lifting system and attachments (single lever operation with toggle-switch-controlled third auxiliary hydraulics)

⚠ WARNING

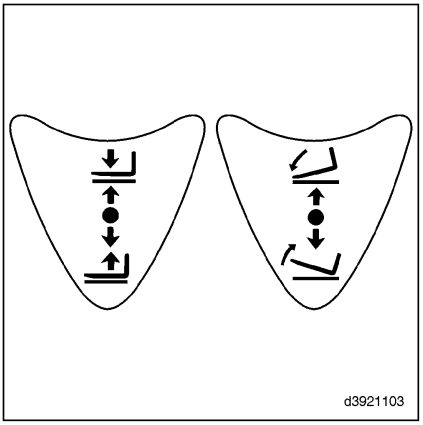
With the moving lift mast or any attachment there is a risk of the driver getting caught in between.

Therefore never reach or step into the lift mast or the space 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.

NOTE

When working with a shovel; see "forklift truck operation using a shovel".

➢ Take note of the switching symbols with arrows. ▷



The actuating lever should always be operated carefully, never jerkily. Moving the actuating lever determines the lifting, lowering and tilt speed. After the actuating lever is released, it automatically returns to its initial position.

NOTE

The lifting system and attachments only function with the engine running and the driver's seat occupied.

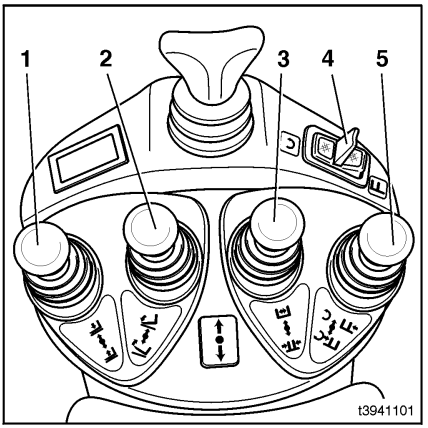
Lifting the fork carriage

DANGER

When lifting the lift mast there is an increased risk of falling and crushing.

For this reason it is not permitted to step onto the fork arms when lifted without a protective cage.

➢ Pull actuating lever (1) backwards. ▷



Lowering the fork carriage

➢ Push actuating lever (1) forwards.

Tilting the lift mast forwards

➢ Push actuating lever (2) forwards.

Tilting the lift mast backwards.

➢ Pull actuating lever (2) backwards.

Operating attachments

The forklift truck is equipped with three additional functions (e.g. fork adjustment, rotating unit, sideshift etc.). Take note of the operating pressure and operating manual for the attachment. Two other actuating levers are then attached for operating the attachments. The actuating lever (5) is used to operate two attachments which are controlled via a toggle switch (4).

⚠ WARNING

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

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

NOTE

Before fitting an attachment, a depressurisation circuit (special equipment) can be used 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.

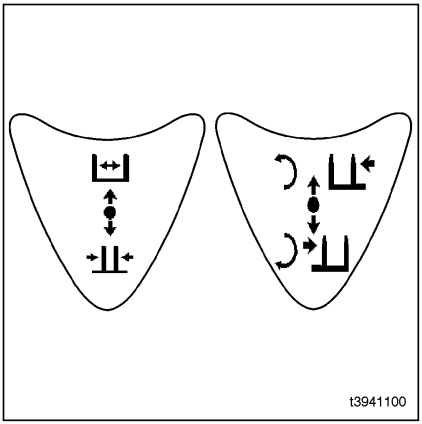
- ➢ Switch off the engine.
- ➢ Switch on the ignition.
- ➢ Operate the actuating lever for the respective auxiliary hydraulics several times.
- ➢ Unscrew the union nuts on the fork carriage.
- ➢ Screw on hoses for attachment or connect plug connectors.

⚠ CAUTION

Attachments affect the load capacity and stability of the forklift truck.

Attachments which are not supplied with the forklift truck should only be used when the authorised dealer has checked that safe operation is ensured by the allocation in terms of load capacity and stability.

- ➢ Take note of the switching symbols with arrows. ▷

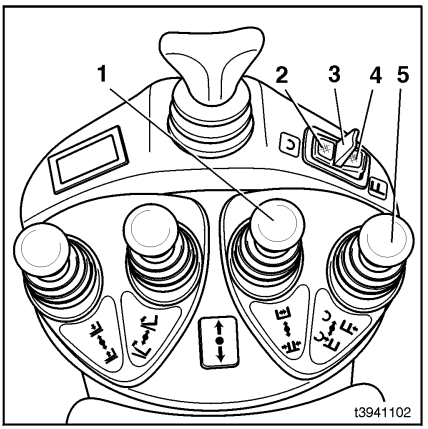


NOTE

For every attachment, a label stating the load capacity of the truck plus attachment must be affixed above the switch console on the top right in the driver's overhead guard and a symbol sticker for the relevant attachment affixed behind the actuating lever or on the left and right next to the toggle switch (4).

Operating fork adjustment

➢ Push actuating lever (1) forwards. ▷



Fork arms move outwards.

➢ Pull actuating lever (1) backwards.

Fork arms move inwards.

Operating the rotating unit

➢ Press left-hand side (2) of toggle switch (3).

Green switch illumination lit up.

➢ Push actuating lever (5) forwards.

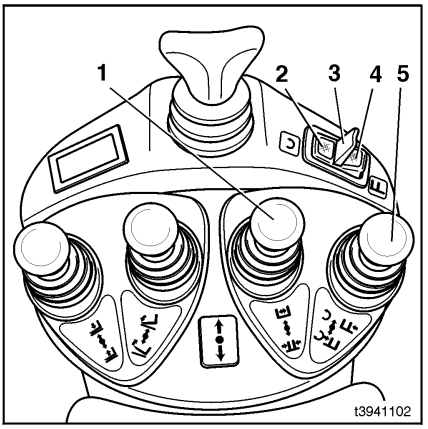
Unit moves anticlockwise.

➢ Pull actuating lever (5) backwards.

Unit moves clockwise.

Operating the sideshift

➢ Press right-hand side (4) of toggle switch (3). ▷



Orange switch illumination lit up.

➢ Push actuating lever (5) forwards.

Sideshift moves to the left.

➢ Pull actuating lever (5) backwards.

Sideshift moves to the right.

Lifting system and attachments with 3rd auxiliary hydraulics without toggle switch

⚠ WARNING

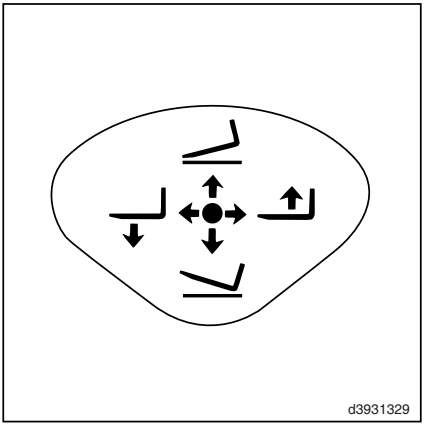
With the moving lift mast or any attachment there is a risk of the driver getting caught in between.

Therefore never reach or step into the lift mast or the space 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.

NOTE

When working with a shovel, see "Truck operation when using a shovel".

➢ Take note of the switching symbols with arrows. ▷



The actuating lever should always be operated carefully, never jerkily. Moving the actuating lever determines the lifting, lowering and tilt speed. After the actuating lever is released, it automatically returns to its initial position.

NOTE

The lifting system and attachments only function with the engine running and the driver's seat occupied.

Tilting the lift mast forwards

➢ Push actuating lever (1) forwards.

Tilting the lift mast backwards.

➢ Pull actuating lever (1) backwards.

Lifting the fork carriage

⚠ DANGER

When lifting the lift mast there is an increased risk of falling and crushing.

For this reason it is not permitted to step onto the fork arms when lifted without a protective cage.

➢ Push actuating lever (1) to the right.

Lowering the fork carriage

➢ Push actuating lever (1) to the left.

Operating attachments

The forklift truck is equipped with three additional functions (e.g. fork adjustment, rotating unit, sideshift etc.). Take note of the operating pressure and operating manual for the attachment. Additional actuating levers are fitted for operation (4-way lever, joystick).

⚠ WARNING

For attachments that perform a clamping operation (e.g. bale clamp), a lockable lever (4-way lever or joystick) must be used.

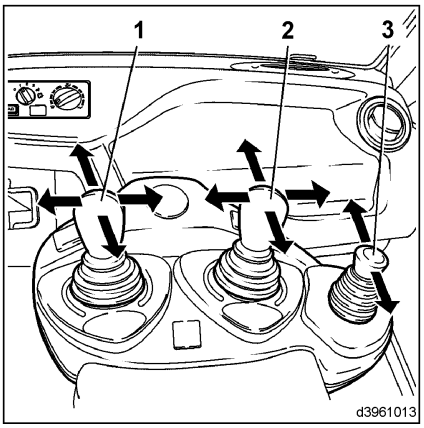
If your truck is not fitted with this equipment, please contact your authorised dealer.

NOTE

Before fitting an attachment, a depressurisation circuit (special equipment) can be used 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.

➢ Switch off the engine.

➢ Switch on the ignition.



➢ Operate the actuating lever for the respective auxiliary hydraulics several times.

➢ Unscrew the union nuts on the fork carriage.

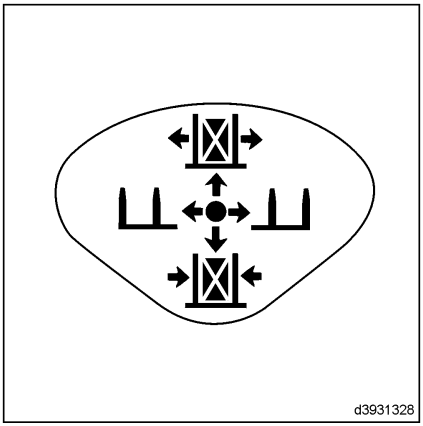
➢ Screw on hoses for attachment or connect plug connectors.

⚠ CAUTION

Attachments affect the load capacity and stability of the forklift truck.

Attachments which are not supplied with the forklift truck should only be used when the authorised dealer has checked that safe operation is ensured by the allocation in terms of load capacity and stability.

➢ Take note of the switching symbols with arrows. ▷



NOTE

For every attachment, a label stating the load capacity of the truck plus attachment must be affixed above the switch console on the top right in the driver's overhead guard and a symbol sticker for the relevant attachment affixed behind the actuating lever or on the left and right next to the toggle switch (4).

Operating the sideshift

NOTE

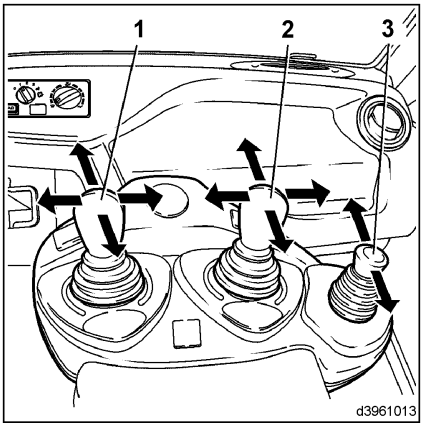
In order to prevent damage, do not activate the sideshift when the fork arms are on the ground.

➢ Push actuating lever (2) to the left.

Sideshift moves to the left.

➢ Push actuating lever (2) to the right.

Sideshift moves to the right.



Operating the clamp

➢ Release the actuating lever (2) by pressing down on the button.

➢ Push actuating lever (2) forwards.

Clamp opens.

➢ Pull actuating lever (2) backwards.

Clamp closes.

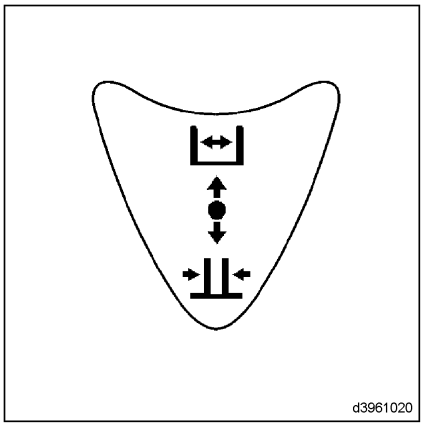
Operating fork adjustment

➢ Push actuating lever (3) forwards.

Fork arms move outwards.

➢ Pull actuating lever (3) backwards.

Fork arms move inwards.



Adjust driver's seat with swivel device

⚠ CAUTION

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

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

The driver's seat with swivel device offers better rear visibility when reversing over long

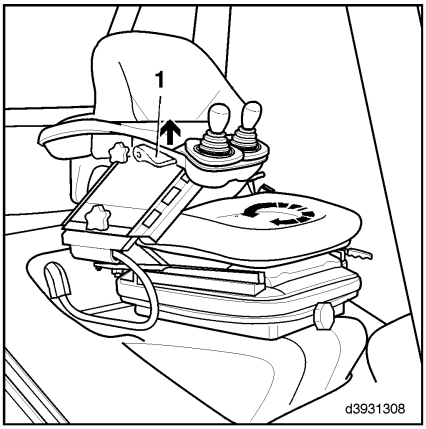
distances. When driving forwards for long distances, it is recommended that you return the seat to the straight position. The swivel is maintenance free.

➢ Lift locking lever (1).

The swivel device is released and allows the seat to be swivelled 17° to the right. It can be locked at 0° and at 17°.

➢ Let the locking bolts engage audibly.

▷



Adjust the driver's air-sprung seat

⚠ WARNING

Incorrect seat adjustment may cause injury to the driver's back. The adjustment controls for the driver's seat should not be used during operation.

On each occasion, before starting up the vehicle and changing drivers adjust for the individual weight of the driver. Adjust the driver's seat only when the vehicle is stationary.

Adjust for the driver's weight

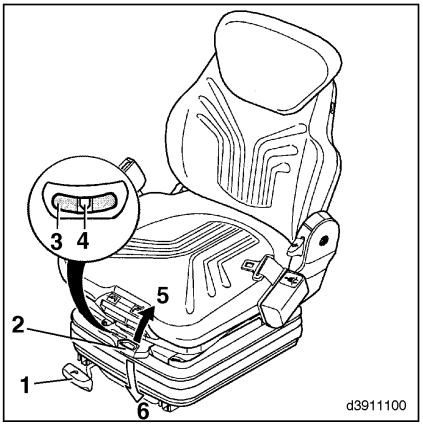
➢ Sit on the driver's seat.

➢ Check the weight adjustment in viewing window (3).

The correct selection of the driver's weight has been made when the arrow (4) is within the centre clear area of the viewing window.

➢ Adjust as necessary for the driver's weight

- Lift lever (2) upwards (5) = increase weight setting
- Push lever (2) downwards (6) = decrease weight setting



Longitudinal adjustment

➢ Lift lever (1) upwards.

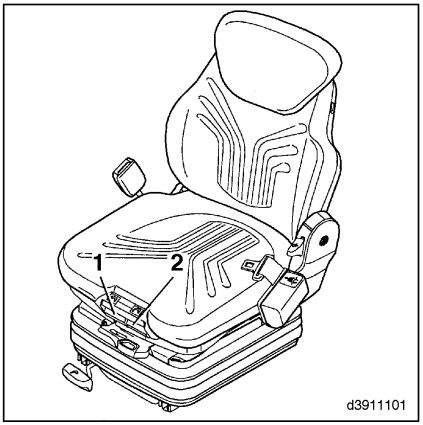
➢ Move the driver's seat on the slide rails backwards or forwards to give the driver the best position in relation to the steering wheel and the accelerator pedals.

➢ Allow lever to click back into place.

Adjust the seat angle

➢ Lift lever 2 and hold it there.

Whilst holding the lever, press on the seat or release it to move the seat to the desired position.



Adjust the seat height

➢ Lift lever 1 and hold it there.

Whilst holding the lever, slide the seat forwards or backwards to move the seat to the desired position.

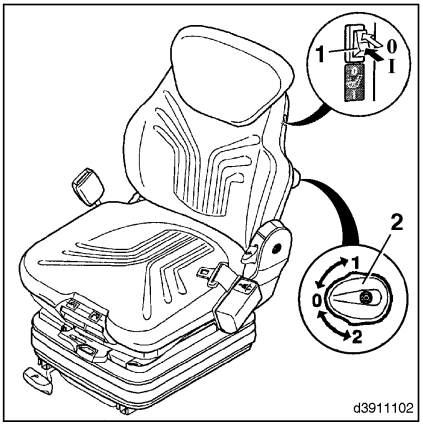
Seat heater

NOTE

The maximum temperature is pre-set.

➢ Switch (1) turns the seat heater ON and OFF.

- 0 = seat heater OFF
- I = seat heater ON



Adjust lumbar support

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

➢ Turn the handwheel (2) upwards.

The convexity of the upper lumbar support can be adjusted individually.

➢ Turn the handwheel (2) downwards.

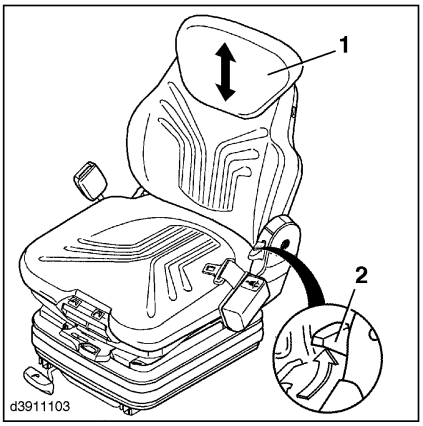
The convexity of the lower lumbar support can be adjusted individually.

Adjust the seat back

➢ Lift lever (2) and hold it there.

➢ Move the seat back backwards and forwards until a comfortable sitting position for the driver is found.

➢ Release lever (2).



Adjust the headrest

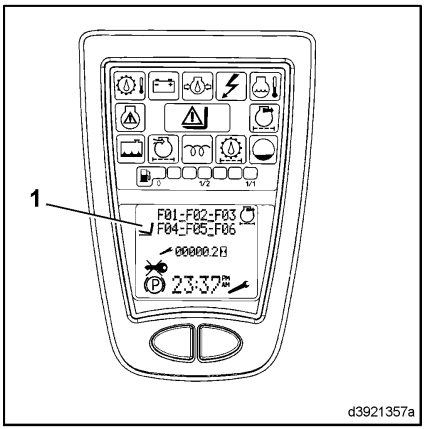
➢ Push in or pull out the headrest (1) and adjust it individually.

Lift mast positioning

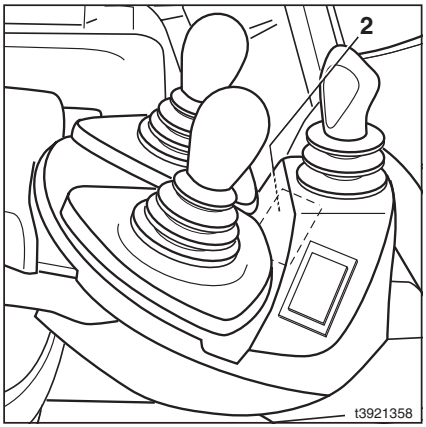
Programming

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

➢ Tilt lift mast to required angle.



➢ Press the button (2) in the front-left position of the armrest for longer than 2 seconds.



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

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

Operation

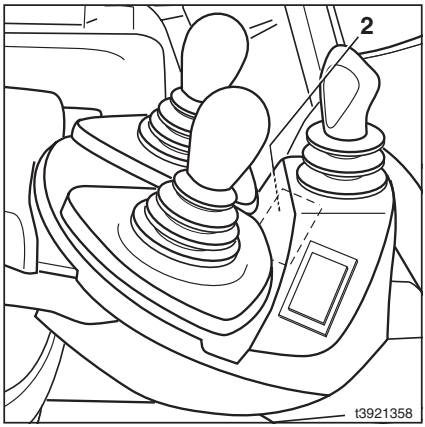
NOTE

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.

- Press the button (2) in the front-left position of the armrest briefly. The lamp in the button lights up and the lift mast positioning detection is switched on.
- Operate joystick and activate 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 is sounded in the indicator unit.

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



Lighting

NOTE

The arrangement of the individual switches on the right hand overhead console may vary depending on the version. Please take note of the symbols for the switches.

Switch on interior lighting

➢ Press toggle switch (1).

Switch on lighting

➢ Move toggle switch (2) to centre position. Side lights and licence plate light are switched on.

➢ Switch toggle switch (2) as far as it will go. Dipped beam, side lights and licence plate lights are switched on.

Switch on working headlights

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

Switch on hazard warning lights

➢ Press toggle switch (8).

Switch on rotating flashing light

Depending on the equipment there are two different versions.

Version 1 (single stage switch):

➢ Press toggle switch (9).

The rotating flashing light is always switched on.

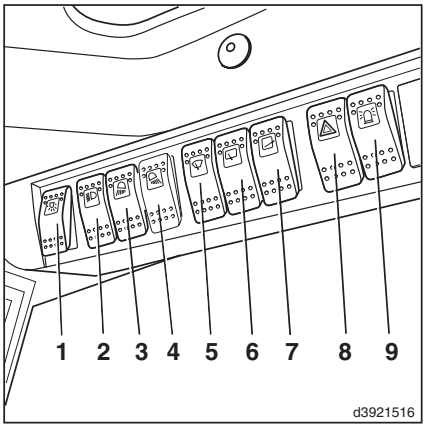
Version 2 (two stage switch):

➢ Move toggle switch (9) to centre position.

The rotating flashing light is switched on only when reversing.

➢ Switch toggle switch (9) as far as it will go.

The rotating flashing light is always switched on.



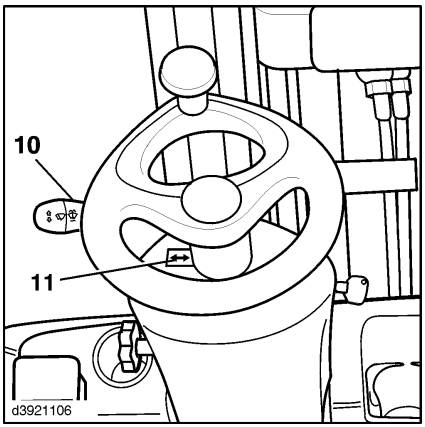
Switch on turn indicator lights

➢ Move operating lever (10) on steering wheel forwards.

The flashing lights flash on the right. Indicator lamp (11) flashes.

➢ Move operating lever (10) on steering wheel backwards.

The flashing lights flash on the left. Indicator lamp (11) flashes.



Attach additional consumers

⚠ DANGER

The driver's protective roof is a safety part.

It is therefore not permitted to perform drilling or welding on the driver's protective roof .

⚠ CAUTION

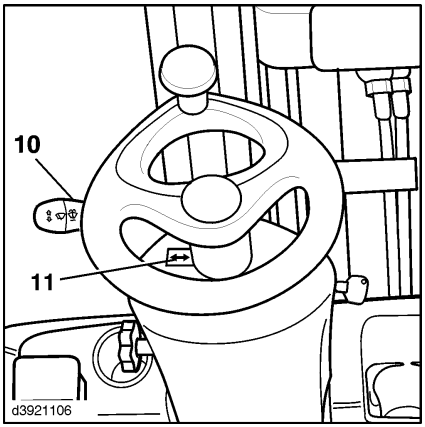
Any additional electrical consumers to be retrofitted (lights, seat heaters etc.) should be installed using the unoccupied connections of the harness provided for this purpose . Other connections going beyond the scope envisaged are only permitted after consultation with your authorised dealer.

Such work should only be carried out by trained competent staff using functional and appropriate materials subject to compliance with the applicable rules and regulations .

Windscreen wiper

Switch on the front windscreen wiper

➢ Move operating lever (10) on steering wheel from centre position upwards. ▷

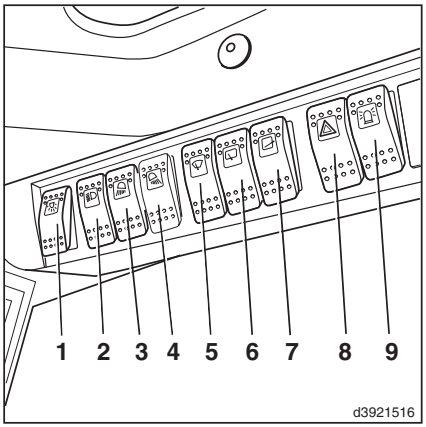


The front windscreen wiper will run as long as the lever is in this position.

➢ Move operating lever (10) on steering wheel from centre position downwards.

The front windscreen wiper will run in intermittent mode.

➢ Switch toggle switch (5) as far as it will go. ▷



➢ Move operating lever (10) on steering wheel from centre position downwards.

The front windscreen wiper will run in continuous mode.

Switch on the rear windscreen wiper

➢ Move toggle switch (6) to centre position.

➢ Move operating lever (10) on steering wheel from centre position upwards.

The rear windscreen wiper will run as long as the lever is in this position.

➢ Move toggle switch (6) to centre position.

➢ Move operating lever (10) on steering wheel from centre position downwards.

The rear windscreen wiper will run in intermittent mode.

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

➢ Move operating lever (10) on steering wheel from centre position downwards.

The rear windscreen wiper will run in continuous mode. The front windscreen wiper will run in intermittent mode.

Switch on the roof windscreen wiper

- Move toggle switch (7) to centre position.
- Move operating lever (10) on steering wheel from centre position upwards.

The roof windscreen wiper will run as long as the lever is in this position.

- Move toggle switch (7) to centre position.
- Move operating lever (10) on steering wheel from centre position downwards.

The roof and front windscreen wipers are in intermittent mode.

- Switch toggle switch (7) as far as it will go.
- Move operating lever (10) on steering wheel from centre position downwards.

The roof windscreen wiper is in continuous mode. The front windscreen wiper is in intermittent mode.

Switch on the wiper/washer system

- Switch on relevant windscreen wiper.
- In addition, push the operating lever (10) in as far as it will go.

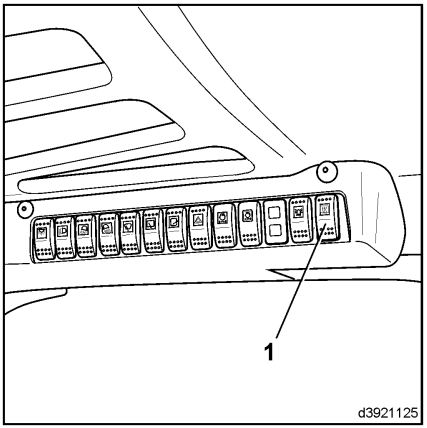
The pre-selected wiper/washer system will run as long as the lever is in this position.

Window heater

Switching on the rear window heater

➢ Press the toggle switch (1).

Rear window heater is in operation.



Driver's cab

Opening the cab door

➢ Push handle (3) upwards.

➢ Open driver's door outwards.

Closing the cab door

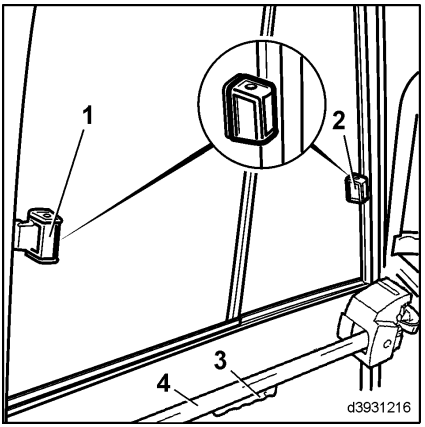
➢ Grip the bar (4) and pull the door towards you until the catch clicks home.

Opening/closing the front side window

➢ Squeeze both handles together on the lever (2).

➢ Keep the handles pressed and push the side window into the desired position.

Follow a similar procedure to close the side window.



Opening/closing the rear side window

➢ Squeeze both handles together on the lever (1).

➢ Keep the handles pressed and push the side window into the desired position.

Follow a similar procedure to close the side window.

Heater, air conditioning

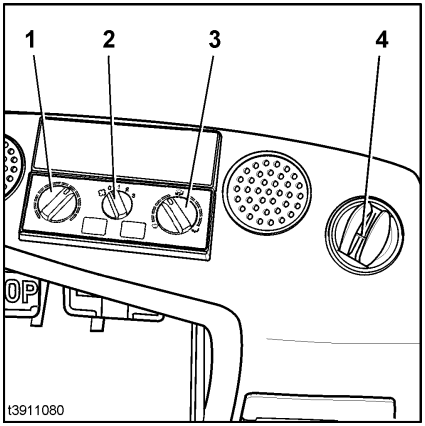
Switching on the heater

Controls

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

➢ Turn switch (2).

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



Windscreen defrosting

➢ For maximum windscreen defrosting, set:

- Knob (1) in the far right position
- Knob (3) in the windscreen defrosting position (far left position)
- Rotary switch (2) to level 3
- Cab air vents (4) to open, fins forwards.

For standard heating mode, the following rules apply:

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

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

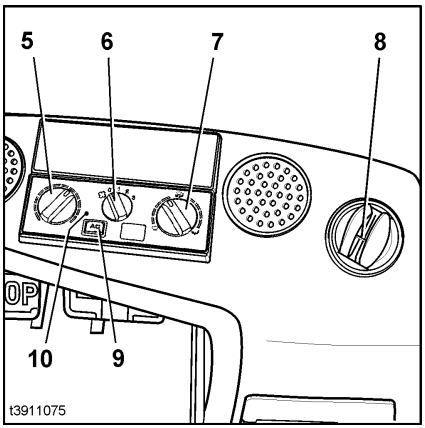
It is normal for condensation to build up in the hoses and under the truck when the air conditioning is in use.

Controls

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

➢ Turn switch (6).

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 to setting 1, 2 or 3. The fan in the roof switches on when necessary. It can come to a standstill from time to time.

➢ Press the push button (9).

The air conditioning is switched on and the indicator light (10) is green.

Raising the temperature in the vehicle interior

➢ Turn knob (5) clockwise and reduce the blower speed using switch (6).

Lowering the temperature in the vehicle interior

➢ Close windows and doors, turn knob (5) anti-clockwise and increase the blower speed using switch (6).

NOTE

To achieve maximum cooling in the vehicle interior:

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

NOTE

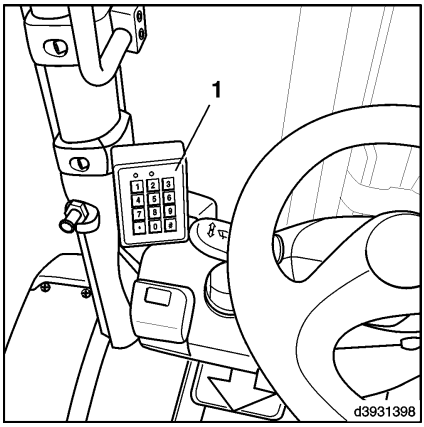
On cool, humid days, the heater and air conditioning can be used to dehumidify the air in the cab (operate the heater and air conditioning simultaneously). The vehicle heater counteracts the cooling effect. This ensures a pleasant temperature inside the cab and prevents the windows misting up.

Linde Forklift Data Management (LFM)

Forklift Data Acquisition

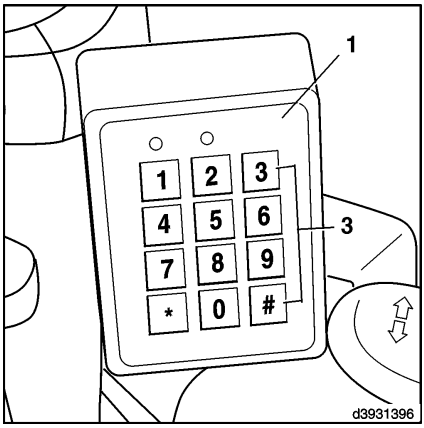
The input device (1) for Forklift Data Acquisition (FDE) is mounted on the front left-hand post of the overhead guard

The input device has a 12-digit keypad (3). In the standard setting the issue of 5-digit PIN numbers to the respective drivers ensures that only authorised personnel can operate the fork-lift truck. The vehicle can only be started after inputting this PIN number and possibly a state code (depending on the setting).



NOTE

The PIN number can be extended from 5 to 8 digits. Before inputting the PIN number please check with your fleet manager about the number of digits for the PIN number and setting of the vehicle.



Status code

NOTE

The code indicates the state of the vehicle.

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

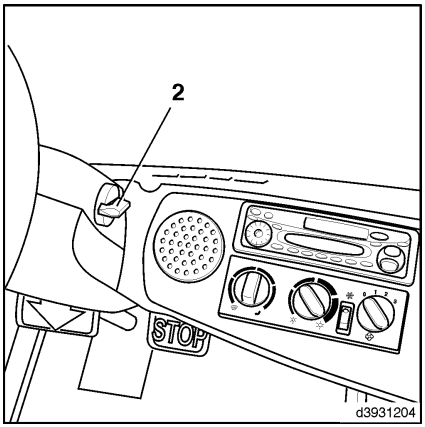
9 = User-defined

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

NOTE

If you notice one of these states (such as a problem with driving) only after you have input the state code 0 (vehicle OK), you have to log off.

- Turn the rotary button 2 anticlockwise as far as it will go. ▷
- Log in again with the status message 3 (problem with driving)



Forklift Data Acquisition - standard setting (PIN number and state code)

Log on and start vehicle:

- Apply the parking brake.

➢ Press any key to start input device.

The green LED (2) flashes.

➢ Enter personal PIN number (factory setting = 0 0 0 0 0) and status code.

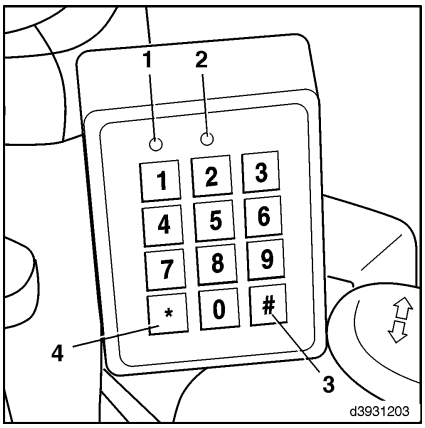
Therefore, for a properly set-up truck, the PIN number should be as follows: 0 0 0 0 0 0.

NOTE

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

➢ Confirm the input with the # button (3).

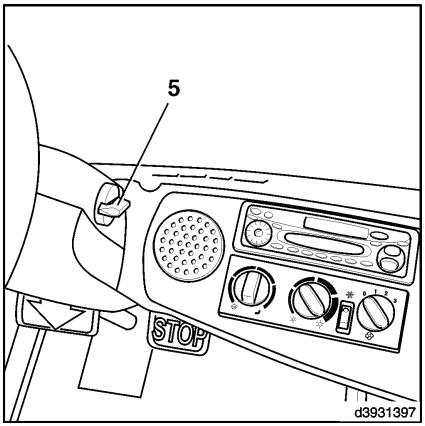
The green LED (2) lights up continuously.



NOTE

*If the red LED (1) lights up, an incorrect PIN number was input. Press the * button (4) and enter it again. If more than three incorrect inputs 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 number. Please contact your fleet manager.*

➢ Turn the rotary knob (5) in a clockwise direction against the stop and start the vehicle.



NOTE

If the vehicle does not start properly the first time, the start procedure can be repeated (5) until the rotary button is returned to the zero position and the PIN number is discarded after expiry of the delay time.

NOTE

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

Switch the vehicle off and log off:

➢ Turn the rotary button (5) anticlockwise as far as it will go.

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 vehicle can be started at any time. The LEDs then go out, and the PIN number 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 number is deleted.

Forklift Data Acquisition - Special setting (PIN number)

Log on and start vehicle:

- Apply the parking brake.
- Press any key to start input device.

The green LED (2) flashes.

- Enter personal PIN number (factory setting = 0 0 0 0 0).

NOTE

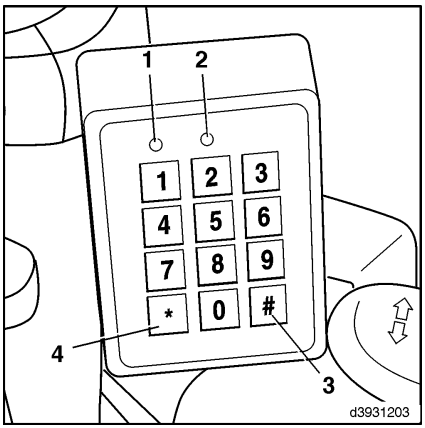
*If the PIN was input incorrectly, press the * button (4) and enter the correct PIN number.*

- Confirm the input with the # button (3).

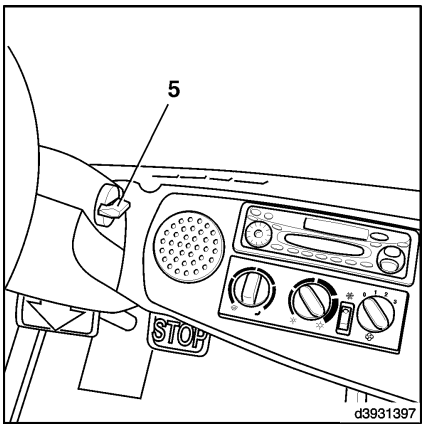
The green LED (2) lights up continuously.

NOTE

*If the red LED (1) lights up, an incorrect PIN number was input. Press the * button (4) and enter it again. If more than three incorrect inputs 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 number. Please contact your fleet manager.*



➢ Turn the rotary knob (5) in a clockwise direction against the stop and start the vehicle. ▷



NOTE

If the vehicle does not start properly the first time, the start procedure can be repeated (5) until the rotary button is returned to the zero position and the PIN number is discarded after expiry of the delay time.

NOTE

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

Switch the vehicle off and log off:

➢ Turn the rotary button (5) anticlockwise as far as it will go.

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 vehicle can be started at any time. The LEDs then go out, and the PIN number 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 number is deleted.

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 driver's protective roof.

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

⚠ DANGER

The values specified in the lifting capacity diagram or plate apply to compact homogeneous loads and must not be exceeded as this will impair the stability of the forklift truck and the strength of the fork arms and lift mast.

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

NOTE

Take the load restriction into account 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 floor*
- *loads involving a large centre of gravity distance*
- *before using attachments and additional equipment*
- *before transporting loads in a wind force of 6 and upwards.*

Example

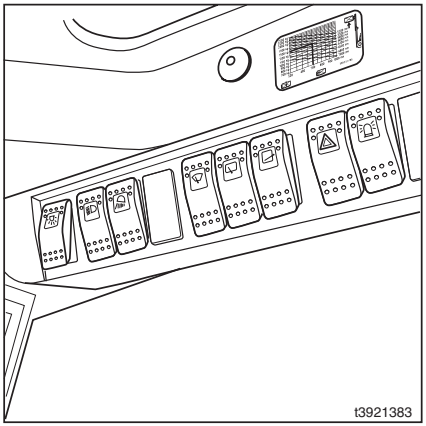
Load centre-of-gravity distance: 650 mm

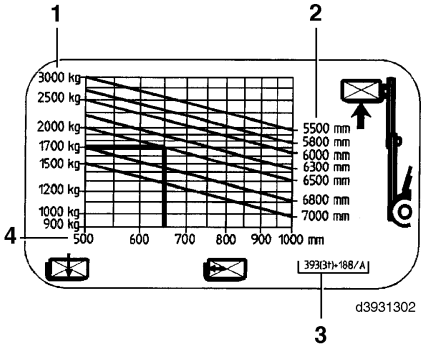
Load height to be lifted: 6500 mm

➢ Trace a vertical line from a load distance of 650 mm to its point of intersection with the line for a lift height of 6500 mm.

➢ At the point of intersection with the horizontal line read off the max. permissible load to the left.

The maximum load in this example is 1700 kg.





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

The same procedure should be followed for other lift heights und centre of gravity distances. The values calculated refer to both fork arms and a uniformly distributed load.

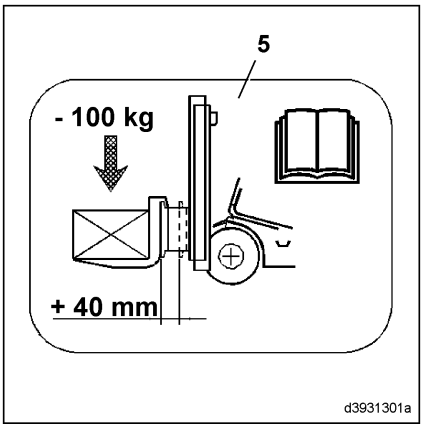
Wheel-slide protection chains

⚠ CAUTION

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

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

➢ In addition, attach plate (5) alongside the basic load capacity diagram. ▷



Adjusting the fork spread

NOTE

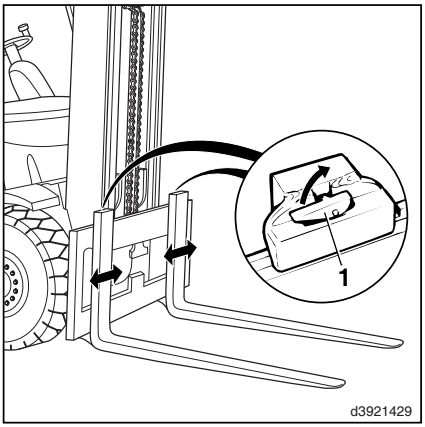
The load centre should be in the centre between the forks.

➢ 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.



Taking up load

⚠ DANGER

When stepping onto the forks when lifted there is an increased risk of falling and crushing.

For this reason it is not permitted to step onto the fork arms when lifted without a protective cage.

⚠ 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).

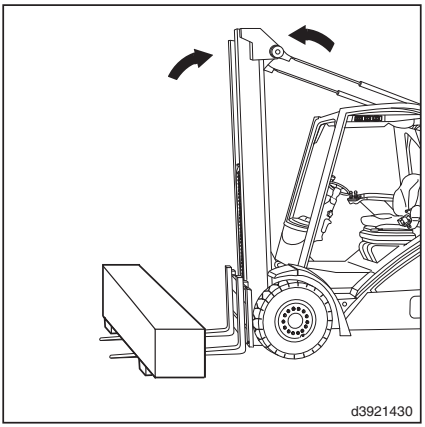
⚠ DANGER

When a load is raised, it is not permitted to stand beneath the suspended cargo.

Forklift trucks should only be driven with the load lowered and the lift mast tilted back.

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

- Position the lift mast so it is vertical.
- Lift or lower the fork carriage to the necessary height.
- Carefully centre the fork carriage and move into 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.

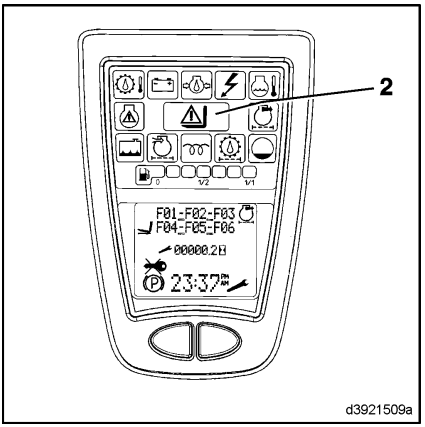


- Check load/overload indicators (special equipment) (2) on indicator unit.

DANGER

If the load/overload indicator lights up red on lifting

- set down load immediately.
- Check permissible weight of load according to load diagram.



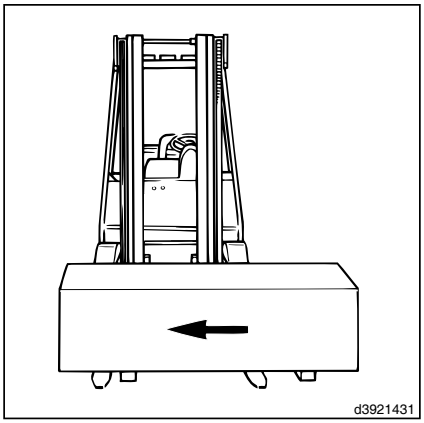
- Reverse the truck until the load is free.
- Tilt the lift mast backwards.

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.



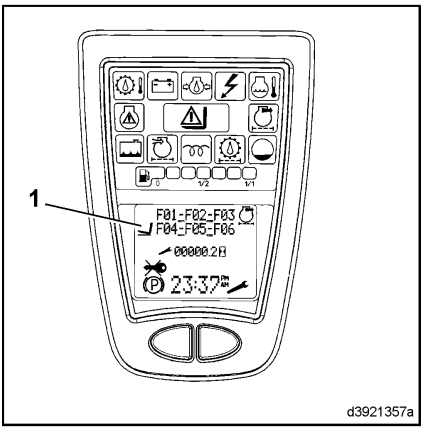
Setting down loads

⚠ 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 so it is vertical (load horizontal).
- Observe the lift mast position identification symbol (1) on the indicator unit if your forklift truck is equipped with automatic lift mast position identification.
- Carefully move the load over the load / storage area.
- Carefully lower the load until the fork arms are clear.
- Back the forklift truck away.

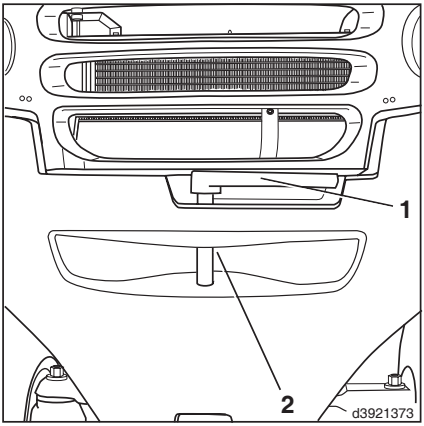


Tow coupling

NOTE

The tow coupling is used only for towing light trailers inside the plant. (Observe the applicable safety guidelines and VDI.)

- Turn the handle ((1)) of the tow pin 90° to the rear and then lift it up.
- Place the drawbar eye into the coupling sleeve (2).
- Press down the tow pin against spring pressure, turn 90° degrees and let engage in the retainer.



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.

This is why they should always be secured against rolling up:

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

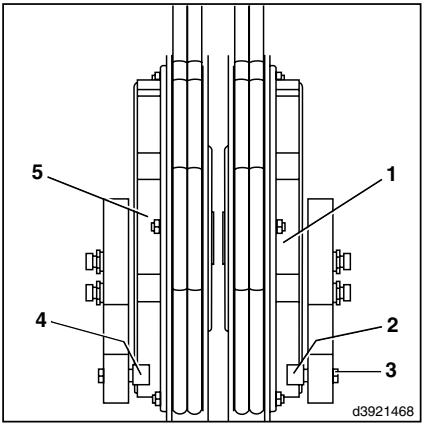
⚠ WARNING

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

If this cannot be avoided, reduce the spring tension to 0 beforehand. Please 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.

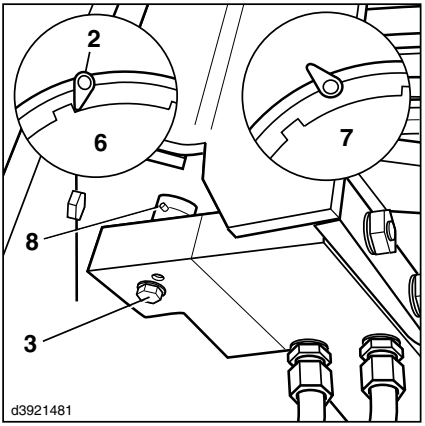


- For double auxiliary hydraulics, turn the safety catch (4) of the second hose pulley (5) to the secure position (6) as well.
- Disconnect the hoses when removing the lift mast.

⚠ CAUTION

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

Only once the lift mast has been refitted (hoses connected again), should the roll-up protection be released. To do so, return the safety catch(es) to the free-wheel setting (7) (safety catch visible).



Dismantling the lift mast

This work should only be performed by specialist staff working for your authorised dealer .

⚠ DANGER

The spring elements on the drive axle are pretensioned.

Before dismantling the tilt cylinders, the lift mast must be tilted back 2 °.

⚠ DANGER

The lift mast may fall off during transport.

Do not move under overhead loads!

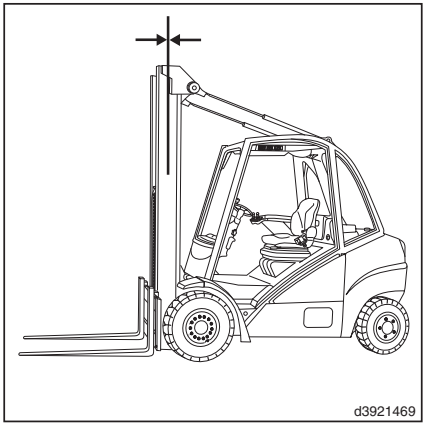
➢ Fix the lifting gear to the traverse on the outer mast of the lift mast at the top.

➢ When dismantling the lift mast, place the tilt cylinders on a suitable piece of timber and secure with a steel strap.

⚠ CAUTION

After dismantling the lift mast or tilt cylinders, the potentiometer for the tilt angle is misaligned.

The potentiometer for the tilt angle thus has to be readjusted after reinstalling the lift mast . When doing so, the parking brake should be applied for safety reasons, and any restriction in terms of the tilt angle taken into account. Please contact your authorised dealer.



Driving without 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 (two-pedal operation) or accelerator pedal (single-pedal operation) to restrict the speed.

➢ Switch off the engine.

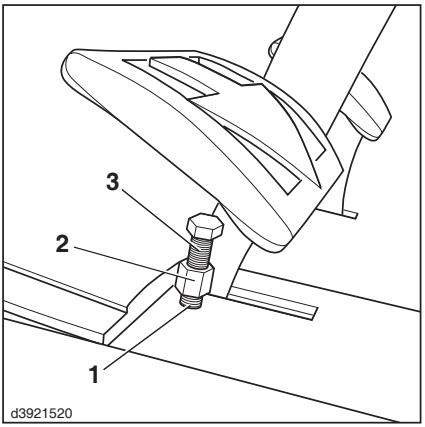
➢ Screw the hexagon head screw M8 x 20 (3) half-way into hexagon nut M8 (2) (DIN 6330, 6331, 6334).

➢ 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 lift mast.

After refitting the lift mast the additional stop should 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 lifting capacity.

⚠ WARNING

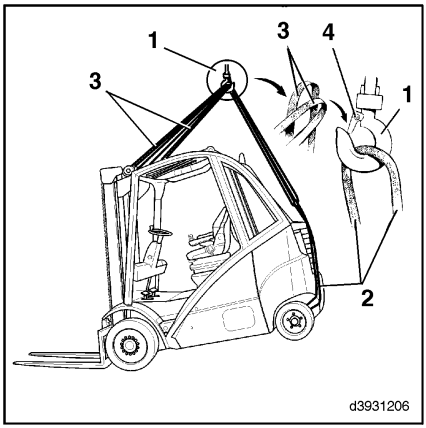
Loading by crane may cause damage to the tilt cylinder and the cover sheet on the counterweight.

Retract the lift mast, retract the tilt cylinder as far as the stop and lift the truck in such a way that it hangs to the front.

➢ Attach round slings to the suspension points.

The suspension positions on the truck are not specially marked.

- Place the round sling (2)(min. lifting capacity: 3000 kg) around the bottom of the counterweight.
- Use edge protectors as a safeguard from sharp edges on the bridge piece.
- Insert round sling (3) (min. lifting capacity: 3000 kg) around bridge piece on outer mast of 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.

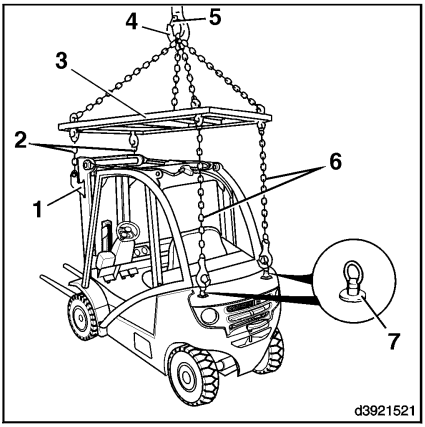
Crane lifting with crane eyes

CAUTION

If the sling is at an angle to the crane eye, the crane eye may break off.

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

- Attach chains (6) (min. lifting capacity: 3000 kg) to the crane eyes (7) on the counterweight.
- Attach chains (2) (min. lifting capacity: 3000 kg) to the crane eyes (1) on the lift mast.
- Make sure that the safety lock (5) is closed.

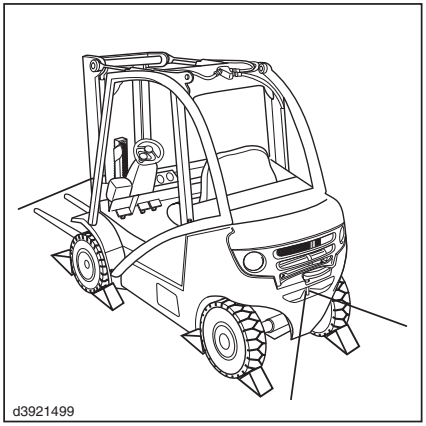


NOTE

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

Transport with lorry or low-bed trailer

- Lower the mast.
- Engage the parking brake.
- Chock the truck.
- Tie the truck down.

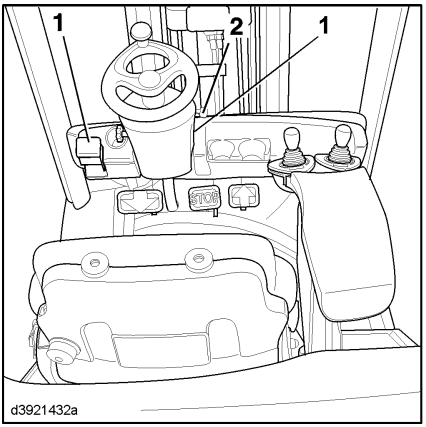


Before leaving the truck

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

The fork arms must touch the ground.

- Actuate the parking brake (1), as appropriate to the version.
- Switch off the engine.
- Remove the ignition key (2).



5

Maintenance

General remarks

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 should be carried out only by qualified staff authorised by Linde. You can agree performance of this work on the basis of a maintenance agreement concluded with your authorised Linde dealer.

If you wish to perform this work yourself, we recommend having at least the first 3 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 should be switched off and the ignition key removed.

If work is to be performed with the fork carriage and/or lift mast lifted, they must be secured to prevent them from accidentally sinking down.

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 and trap staff.

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

⚠ CAUTION

The forklift truck must always display the proper signs/labels/plates.

Missing or damaged rating plates and/or adhesive labels must be replaced. Warehouse or order No. see spare parts list.

ENVIRONMENT NOTE

Observe information regarding working with consumables.

NOTE

When using the truck in extreme conditions (e.g. B. extreme heat or cold, high levels of dust formation etc.), the periods of time indicated in the maintenance overview should be reduced appropriately.

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 heavy-duty conditions we recommend shorter intervals. Please contact your authorised dealer.

Working on Linde lift mast and at the front of the truck

⚠ DANGER

When working on the lift mast there is the risk of staff becoming trapped and/or accidental sinking of the lift mast.

When the lift mast or fork carriage is lifted, no work should be performed on the lift mast and at the front of the forklift truck without the following safety measures! These safety precautions are sufficient only for general maintenance on the forklift truck (inspection and greasing). For repairs (e.g. changing chains, dismantling lift cylinders), additional safety precautions must be taken. Please contact your authorised dealer.

Securing against tilting back

The lift mast must be secured from tilting back accidentally.

- ➢ Tilt lift mast right back.
- ➢ Switch off the engine.
- ➢ Remove the ignition key.

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.

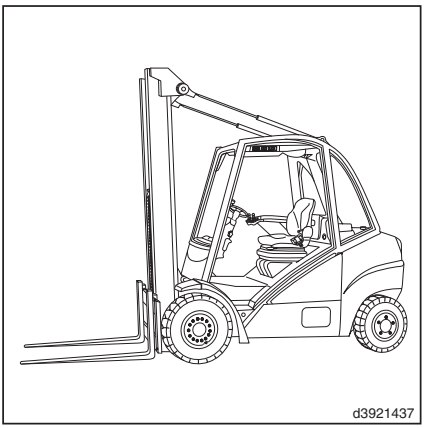
Secure lifted standard lift mast

⚠ DANGER

Check chain load!

Select a safety chain with sufficient load bearing capacity for the lift mast. Take the maximum lift height into account.

- ➢ Extend lift mast.



➢ Connect the chain over the cross traverse of the outer mast (1) and under the cross traverse of the inner mast (2).

➢ Lower inner mast to end of chain.

Duplex lift mast

NOTE

The benefit of this equipment 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 deflection 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.

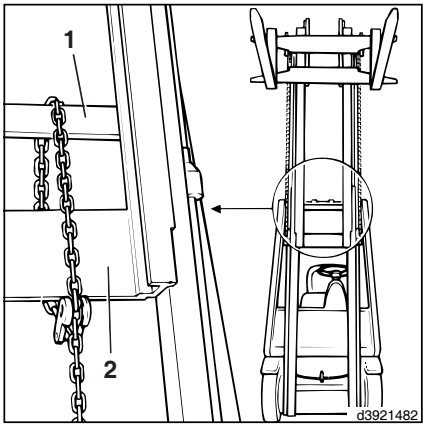
Securing the raised duplex lift mast

DANGER

Check chain load!

Select a safety chain with sufficient load bearing capacity for the lift mast. Take the maximum lift height into account.

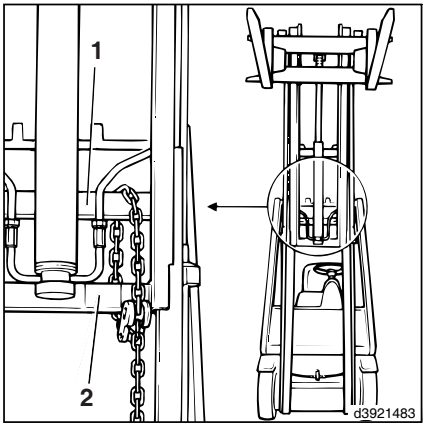
➢ Extend lift mast.



➢ Connect the chain over the cross traverse of the outer mast (1) and under the cross traverse of the inner mast (2).

➢ Lower lift mast to end of 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 deflection 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!

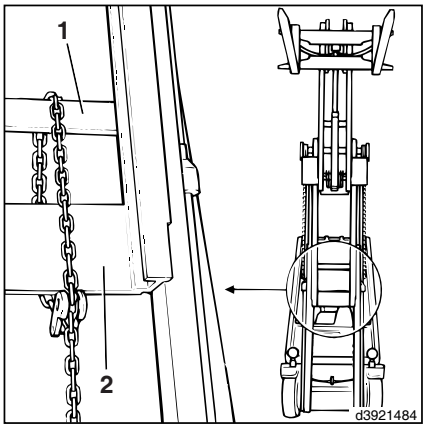
Select a safety chain with sufficient load bearing capacity for the lift mast. Take the maximum lift height into account.

➢ Extend lift mast.

➢ Join the chain over the cross traverse of the outer mast (1) and under the cross traverse of the centre mast (2).

➢ Lower lift mast to end of chain.

➢ Lower fork carriage as far as it will go.



Inspection and maintenance data

No.	Unit	Devices / Consumables	Filling quantity / Set values
1	Engine	Engine oil	approx. 4.5 l
2	Fuel tank	Diesel	Approx. 40.0 l
3	Cooling system	Coolant additive / Drinking water	with heater / air conditioning: approx. 11.0 l
			without heater / air conditioning: approx. 9.0 l
4	Hydraulic equipment	Hydraulic oil	Lift height up to 5000 mm: Approx. 24.0 l
			Lift height from 5000 mm to 6900 mm: Approx. 25.5 l
			Lift height from 6900 mm to 8000 mm: Approx. 28.0 l
5	Battery	Distilled water	As required
6	Tyres	Air	See sticker on inside of overhead guard
7	Wheel fastenings	Tighten	Front: 170 Nm
			Rear: 460 Nm
8	Load chains / Lift mast guides	Linde chain spray	As required
9	Air conditioning	Refrigerant	1500 grams

Consumables recommendations

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 in selecting the correct oil for hydrostatic traction drives. 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** to DIN 51524, T.2 (factory filling) average sustained 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** to DIN 51524, T.2 for heavy-duty and multi-shift use, operation in hot climates or at high ambient temperatures, average sustained 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-based 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. If they are mixed with other hydraulic fluids or other hydraulic fluids are used, highly expensive damage may result.

Lubricating grease

Linde heavy-duty grease, lithium-saponified with EP active ingredients and MOS_2. Designation as per DIN 51825-KPF 2N-20 (order no. see spare parts catalogue).

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

Coolant

⚠ CAUTION

Refer to the coolant specifications!

In trucks with pump injection engines, coolant additive according to VW 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 (terminal 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,
- 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 climatic 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 get into the mains drainage or the ground.

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

Inspection and maintenance overview

50 h Service plan

At operating hours										Carried out	
50										✓	✖
Preparations											
Clean the truck (if necessary)											
Read out error log and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Drain water from the fuel filter											
Chassis frame											
Tighten wheel fastenings											
Check the parking brake for correct operation											
Electrics											
Check the condition and secure positioning of electric cables, cable connectors and connections											
Hydraulics											
Check the hydraulic system, drive axle, hydraulic pumps and cables for leaks (visual inspection)											
Load lift system											
Lift mast, lift mast chain, lift cylinder and end stops: Check condition, secure fastening and function											
Adjust lift mast chain and spray with chain spray											
Subsequent tasks											
Carry out functional test and test drive											
Attach maintenance sticker											

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 particulate filter		
Drain water from the water trap at the exchangeable particulate filter		
Chassis, bodywork and fittings		
Clean the truck		
Service the air conditioning		
Check condition and correct operation of the seat belt		
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, no longer than every 100 operating hours)		
Hydraulics		
Check function and safety system of third auxiliary hydraulics		
Load lift system		
Clean the lift mast chain, adjust and apply chain spray		
Special equipment		
Washer system: Top up the water tank		

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, driving style and operating conditions, but at least after 1, 5, 7, 11, 13, 17 and 19 years of service. Refer also to consumable recommendations.											
Preparations											
Clean the truck if necessary											
Read out error log and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Change engine oil											
Change engine oil filter											
Change the fuel filter											
Check condition and secure positioning of engine cradle and engine mounting											
Check condition of V-ribbed belt											
Check condition and tension of toothed belt											
Clean water and hydraulic oil coolers											
Check the coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the breather for charge air regulation											
Clean the oil bath air filter											
Check suction and exhaust pipes for leaks											
Check particulate filter system											
Clean the pressure control device at the exchangeable particulate filter											
Clean the water trap at the exchangeable particulate filter											
Gearbox											
Axle clamps and wheel motors: Check fastening											
Drive axle: Check the side stops											

Inspection and maintenance overview

At operating hours										Carried out	
1000		2000		4000		5000		7000			
8000		10000		11000		13000		14000			
16000		17000		19000		20000				✓	✗
Chassis, bodywork and fittings											
Chassis, tilt cylinders and steering axle: Check fastening											
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 fastening											
Controls											
Check and oil the pedals											
Electrics											
Check the condition and secure positioning of electric cables, cable connectors and cable connections											
Battery: check condition, acid level and acid density (even for maintenance-free battery)											
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-tension											
Load lift system											
Lift mast, lift mast chain, lift cylinder and end stops: Check condition, secure fastening and function											
Adjust lift mast chain and spray with chain spray											
Check fork arms and arm safety devices											
Clean and grease the sideshift, check fastening											
Clean and grease fork positioner, check fastening											
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, driving style and operating conditions, but at least after 2, 10 and 14 years of service. Refer also to consumables recommendations.											
Preparations											
Clean the truck if necessary											
Read out error log and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Change engine oil											
Change engine oil filter											
Change the fuel filter											
Check condition and secure positioning of engine cradle and engine mounting											
Change V-ribbed belt											
Change toothed belt and tensioner pulley (at latest after 5 years)											
Clean water and hydraulic oil coolers											
Check the coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the safety cartridge in the air filter											
Change the breather for charge air regulation											
Clean the oil bath air filter											
Check suction and exhaust pipes for leaks											
Check particulate filter system											
Clean the pressure control device at the exchangeable particulate filter											
Clean the water trap at the exchangeable particulate filter											
Gearbox											
Axle clamps and wheel motors: Check fastening											
Drive axle: Check the side stops											

Inspection and maintenance overview

At operating hours										Carried out	
3000		15000								✓	✖
Drive axle: Check bearing for wear											
Hydraulic pump on engine: Check fastening											
Chassis, bodywork and fittings											
Chassis, tilt cylinders and steering axle: Check fastening											
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 fastening											
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 cable connections											
Battery: check condition, acid level and acid density (even for maintenance-free battery)											
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 of the hydraulic system											
Check the hydraulic system for leaks											
Check tilt cylinder bearing for wear											
Double hoses: Check the pre-tension											
Load lift system											
Lift mast, lift mast chain, lift cylinder and end stops: Check condition, secure fastening and function											
Adjust lift mast chain and spray with chain spray											
Check fork arms and arm safety devices											
Clean and grease the sideshift, check fastening											
Check slide guides on sideshift for wear											

At operating hours										Carried out	
3000		15000								✓	✖
Check fork positioner for wear											
Clean and grease fork positioner, check fastening											
Subsequent tasks											
Carry out functional test and test drive											
Attach maintenance sticker											

6000 h Service plan

At operating hours										Carried out	
6000		12000								✓	✖
Information on service plan											
Dependent on the consumables used, driving style and operating conditions, but at least after 3, 6, 9, 15 and 18 years of service. Refer also to consumables recommendations.											
Preparations											
Clean the truck if necessary											
Read out error log and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Change engine oil											
Change engine oil filter											
Change the fuel filter											
Check condition and secure positioning of engine cradle and engine mounting											
Change V-ribbed belt											
Change toothed belt and tensioner pulley (at latest after 5 years)											
Clean water and hydraulic oil coolers											
Check the coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the safety cartridge in the air filter											
Change the breather for charge air regulation											
Clean the oil bath air filter											
Check suction and exhaust pipes for leaks											
Check particulate filter system											
Clean the pressure control device at the exchangeable particulate filter											
Clean the water trap at the exchangeable particulate filter											
Gearbox											
Axle clamps and wheel motors: Check fastening											
Drive axle: Check the side stops											

At operating hours										Carried out	
6000		12000								✓	✖
Drive axle: Check bearing for wear											
Hydraulic pump on engine: Check fastening											
Chassis, bodywork and fittings											
Chassis, tilt cylinders and steering axle: Check fastening											
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 fastening											
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 cable connections											
Battery: check condition, acid level and acid density (even for maintenance-free battery)											
Hydraulics											
Change hydraulic oil											
Check the bleeder valve on the hydraulic oil tank for correct operation											
Change feed/pressure/suction filter and breather of the hydraulic system											
Check the hydraulic system for leaks											
Check tilt cylinder bearing for wear											
Double hoses: Check the pre-tension											
Load lift system											
Lift mast, lift mast chain, lift cylinder and end stops: Check condition, secure fastening and function											
Adjust lift mast chain and spray with chain spray											
Check fork arms and arm safety devices											
Clean and grease the sideshift, check fastening											
Check slide guides on sideshift for wear											

Inspection and maintenance overview

At operating hours										Carried out	
6000		12000								✓	✖
Check fork positioner for wear											
Clean and grease fork positioner, check fastening											
Subsequent tasks											
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, driving style and operating conditions, but at least after 4, 8, 12, 16 and 20 years of service. Refer also to consumables recommendations.											
Preparations											
Clean the truck if necessary											
Read out error log and delete											
Calibrate the drive potentiometer and joysticks											
Enter the next maintenance interval											
Engine											
Change engine oil											
Change engine oil filter											
Change the fuel filter											
Check condition and secure positioning of engine cradle and engine mounting											
Change V-ribbed belt											
Change toothed belt and tensioner pulley (at latest after 5 years)											
Change the water pump											
Clean water and hydraulic oil coolers											
Change the coolant											
Check the coolant concentration											
Change air filter cartridge, check vacuum-operated switch											
Change the safety cartridge in the air filter											
Change the breather for charge air regulation											
Clean the oil bath air filter											
Check suction and exhaust pipes for leaks											
Check particulate filter system											
Clean the pressure control device at the exchangeable particulate filter											
Clean the water trap at the exchangeable particulate filter											
Gearbox											

Inspection and maintenance overview

At operating hours										Carried out	
9000		18000								✓	✖
Axle clamps and wheel motors: Check fastening											
Drive axle: Check the side stops											
Drive axle: Check bearing for wear											
Hydraulic pump on engine: Check fastening											
Chassis, bodywork and fittings											
Chassis, tilt cylinders and steering axle: Check fastening											
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 fastening											
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 cable connections											
Battery: check condition, acid level and acid density (even for maintenance-free battery)											
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 of the hydraulic system											
Check the hydraulic system for leaks											
Check tilt cylinder bearing for wear											
Double hoses: Check the pre-tension											
Load lift system											
Lift mast, lift mast chain, lift cylinder and end stops: Check condition, secure fastening and function											
Adjust lift mast chain and spray with chain spray											

At operating hours										Carried out	
9000		18000								✓	✖
Check fork arms and arm safety devices											
Clean and grease the sideshift, check fastening											
Check slide guides on sideshift for wear											
Check fork positioner for wear											
Clean and grease fork positioner, check fastening											
Subsequent tasks											
Carry out functional test and test drive											
Attach maintenance sticker											

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.

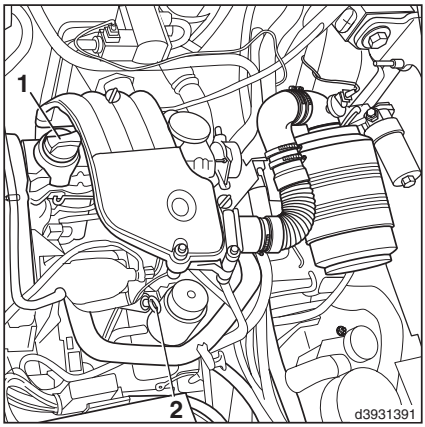
Oil level should be between the marks.

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

Difference in quantity between min. and max. marking: 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.

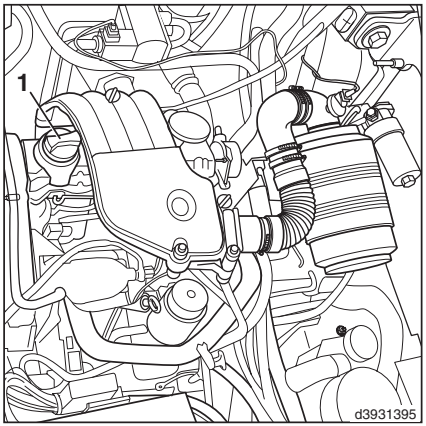
ENVIRONMENT NOTE

Observe information regarding working with consumables.

NOTE

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

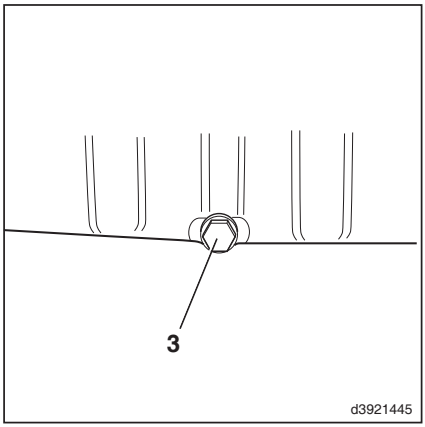
- ➢ Drive truck over pit.
- ➢ Switch off the engine.
- ➢ Place a collection vessel under vehicle chassis.
- ➢ Open the bonnet. Remove the filler cap (1) from the filling opening. ▷
- ➢ Remove cover on floor of frame. Unscrew the engine oil drain plug (3) underneath from the oil sump.
- ➢ Allow all oil 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.

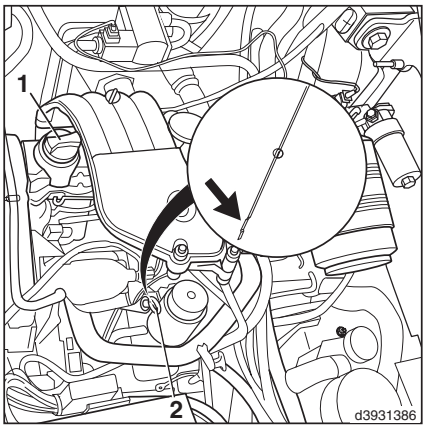
➢ Open the filler cap (1) of the filling opening. ▷

➢ Pour new engine oil into the filling opening according to the recommendations for consumables.

Fill quantity with filter change: max. 4.5 l

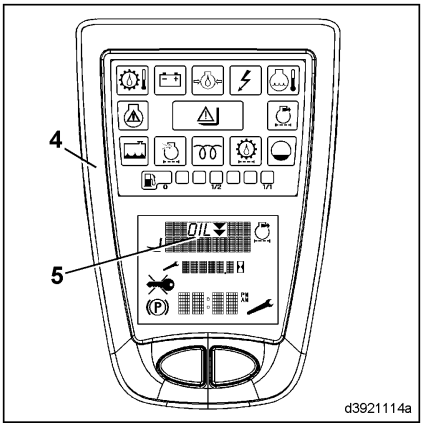
➢ Using the dipstick (2), check the engine oil level after adding oil and top up to max. mark.

➢ Fit filler cap (1) and turn to tighten.



➢ Check the indicator unit (4).

The `Oil` display (5) (special equipment) in the indicator unit must go out. The oil level will not be displayed reliably in the indicator 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 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.

Engine oil filter change

WARNING

When engine oil is hot there is a risk of scalding!

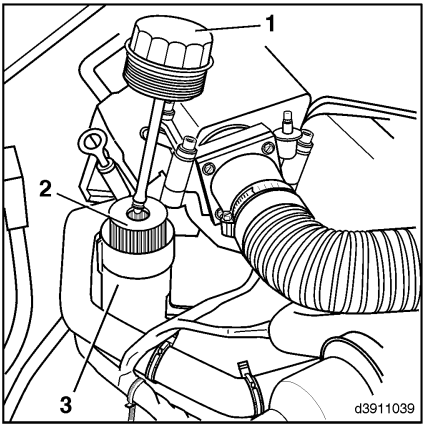
Wear protective clothing

ENVIRONMENT NOTE

Take note of information about working materials.

➢ Open the bonnet.

- Using a filter wrench, slacken the cap (1) of the engine oil filter (3) and undo it by hand.
- Pull the filter cartridge (2) from the casing.
- Catch the oil in a container as it runs out of the oil filter and dispose of it and the oil filter responsibly.
- Insert a new oil filter cartridge.
- Renew the O-ring in the cap.
- Screw on the cap (1) by hand until the O-ring is seated.
- Tighten to 25 Nm.
- Close the bonnet.



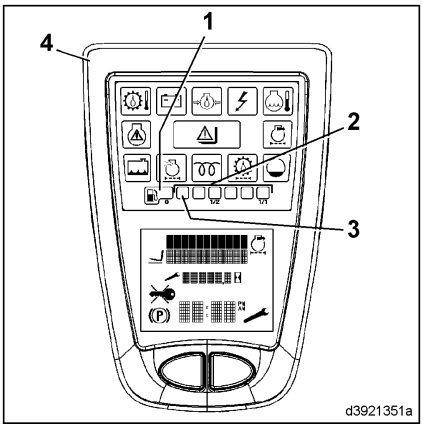
NOTE

After changing the oil and the filter, run the engine, checking the oil pressure indicator and the leaktightness of the drain plug and oil filter. The oil level should now be checked again, especially after changing the oil filter. Switch off the engine and leave it to stand for about a minute before checking the oil level.

Fuel

Check the fuel level

➢ Switch on the ignition.



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

The fuel tank is full when all 6 LEDs (2) and the fuel 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 fuel 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 fuel 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,

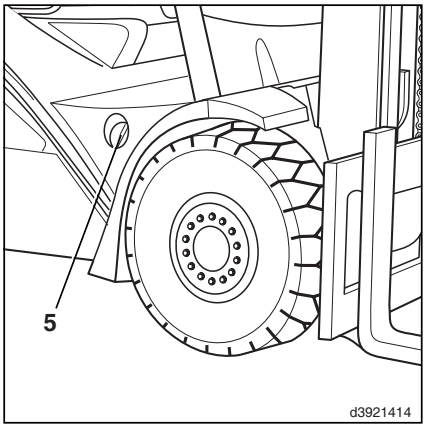
➢ Do not spill any fuel on the ground or on hot parts,

➢ Comply with regulations on handling diesel fuel.

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

Max. filling quantity: 40 l

➢ Fit lid and turn to tighten.



Draining waterfrom 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.

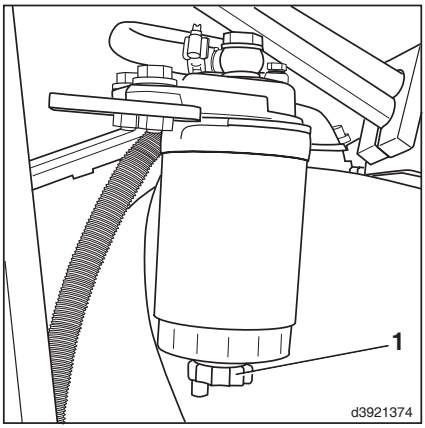
➢ Open the draining screw (1) on the fuel filter and drain approx. 100 cm^3 into a container until clean fuel emerges. ▷

ENVIRONMENT NOTE

Dispose of the liquid in an environmentally friendly manner.

➢ Tighten the draining screw again.

➢ Refit the maintenance cover.



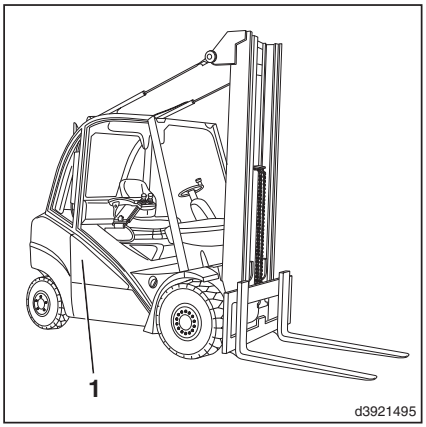
Exchanging the fuel filter

(at the latest after 12 months)

ENVIRONMENT NOTE

Observe information about working with consumables.

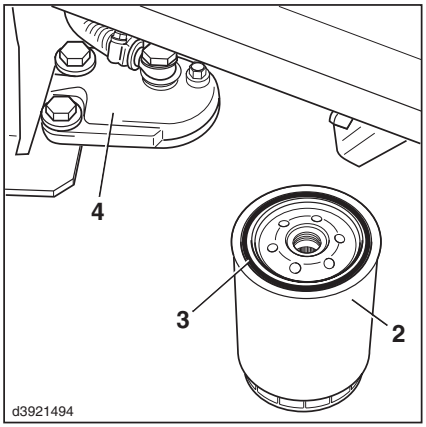
- Unscrew 3 screws from the maintenance cover (1) on the right side of the forklift truck. ▷
- Remove the maintenance cover.



- 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).
- Lightly wet a new sealing ring (3) with fuel.
- Tighten the new filter (2) until the sealing ring (3) lies against 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.

- Refit the maintenance cover.

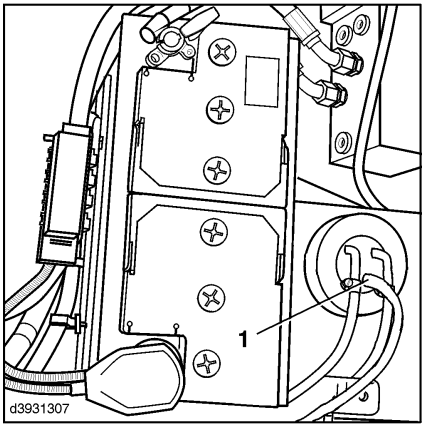


Cleaning the fuel tank ventilation hose

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.

- ➢ 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 lights up (depending on the model) (special equipment) (1) the coolant level is too low and more coolant must be added. If the coolant continues to fall below the min. mark, the truck only moves at crawling speed.

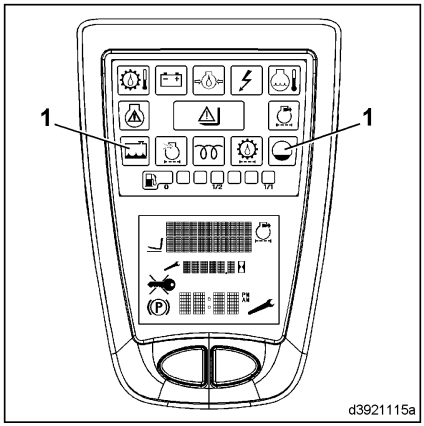
NOTE

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

CAUTION

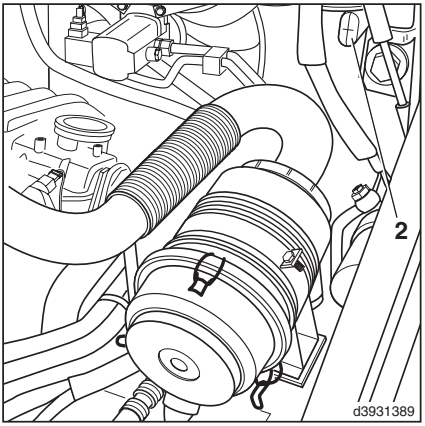
Only use an approved coolant.

Observe the recommendations for consumables.



➢ Open the bonnet.

The coolant level in the viewing window (2) should not be below the mark.

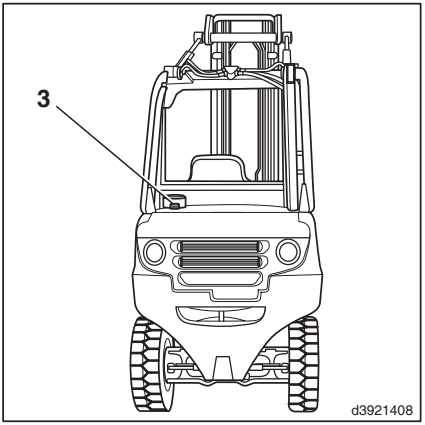


➢ If necessary, top up the coolant. To do this, remove the filler cap (3) at the counterweight.

⚠ WARNING

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

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



➢ Twist the filler cap into position.

➢ Close the bonnet.

Changing 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 the deposit of lime scale and damage caused by frost and corrosion, and to raise the boiling temperature.

⚠ WARNING

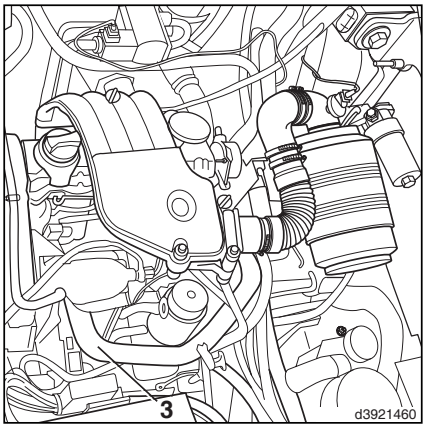
Never open the filler cap (2) when the engine is hot. Risk of scalding!

Wait until the coolant has cooled down.

ENVIRONMENT NOTE

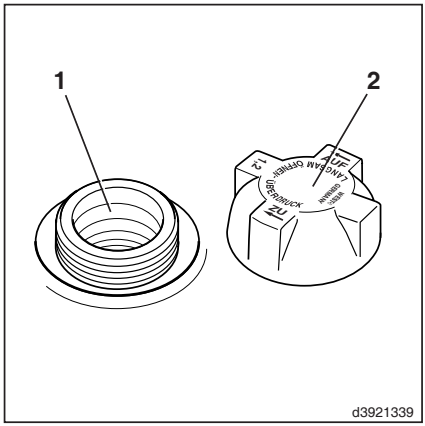
Observe information about working with consumables.

- Open the bonnet.
- Place a collection vessel under the coolant hose (3).
- Disconnect coolant hose at cylinder.
- Drain off all coolant. Dispose of coolant in an environmentally friendly manner.
- Refit the coolant hose (3).



- Add new coolant at filler neck (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 and air conditioning: 9.0 l

with heating and air conditioning: 11.0 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%

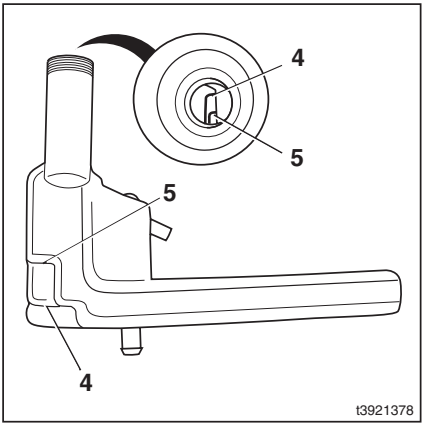
➢ Run motor until cooling system has been bled.

➢ Check coolant level.

➢ Fit filler cap (2) and turn to tighten.

➢ Close the bonnet.

▷



Check coolant concentration

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

⚠ WARNING

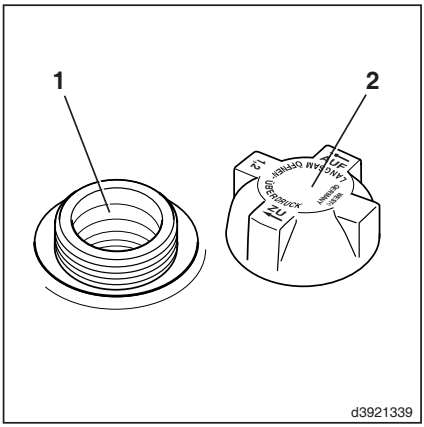
Never open the lid (2) when the motor is hot. Risk of scalding!

Wait until the coolant has cooled down.

ENVIRONMENT NOTE

Observe information on working materials.

➢ Check coolant concentration in filling port (1).



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

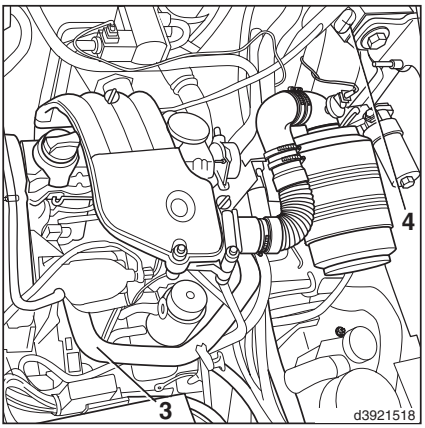
Mixing ratio for lower temperatures:

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 vessel under the coolant hose (3).



➢ Release hose clip from coolant hose at cylinder block.

➢ Remove hose from stub and allow some coolant to drain off.

➢ Push coolant hose back onto stub and fasten with hose clip.

➢ Dispose of removed coolant in an environmentally friendly manner.

➢ Add coolant additive to filling port (1) until right mixing ratio is achieved.

➢ Check coolant level at view window (4).

➢ Fit lid (2) and turn to fix in place.

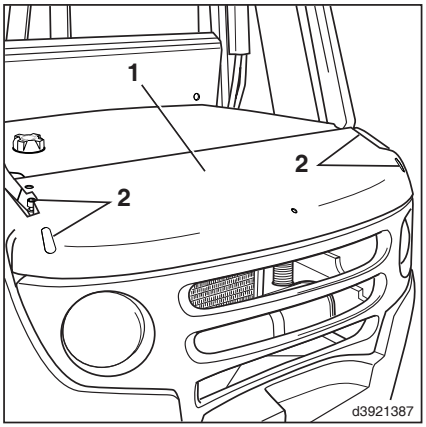
➢ Close the bonnet.

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

NOTE

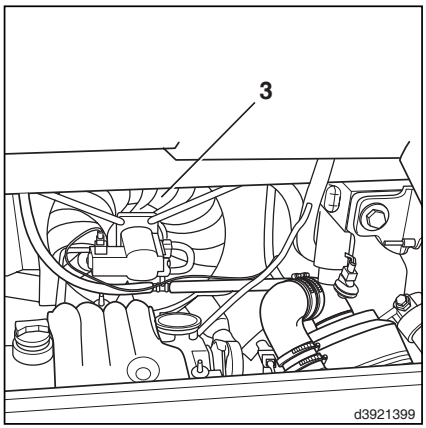
Only clean the water cooler and hydraulic oil cooler when the engine is switched off and has cooled down.

- Open the bonnet.
- Release the 4 screws (2). ▷
- Remove the cover sheet (1) from the rear.



Cleaning with compressed air

- Ventilate the cooler (3) of the engine with compressed air. ▷
- Rinse out the released dirt using a water jet.



Cleaning with cleaner solvent

CAUTION

No humidity must penetrate the three-phase generator.

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 in the engine with a direct jet of water until it is clean.

➢ Warm up the engine.

Vaporise 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.

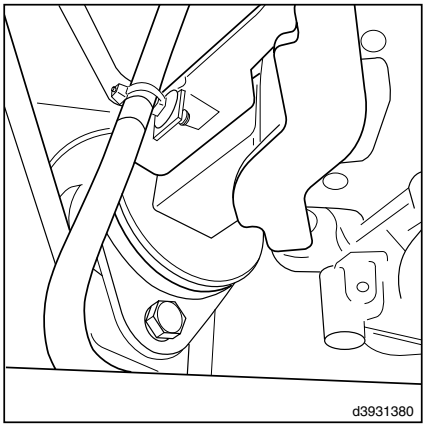
➢ Replace porous hoses. Re-tighten hose clips if necessary.

➢ Refit the cover sheet (1).

Check the condition of the engine mountings and engine suspension; check that they are attached securely

The resilient mountings 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 mount and engine suspension for damage. Check that they are securely attached.

Tightening torques of the fixing screws and nuts:

Pump side:

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

Engine side:

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

top centre:

2 SKS M 12 (spring element)	80 Nm
1 SKM M 12 (bottom)	110 Nm
Spherical collar nut A14 (rod)	110 Nm

Check condition of the ribbed vee belt

⚠ WARNING

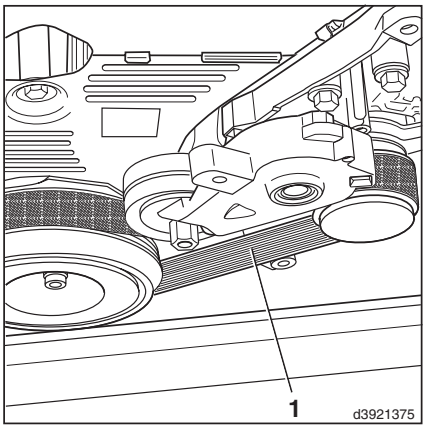
Do not touch rotating parts!

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.

- 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

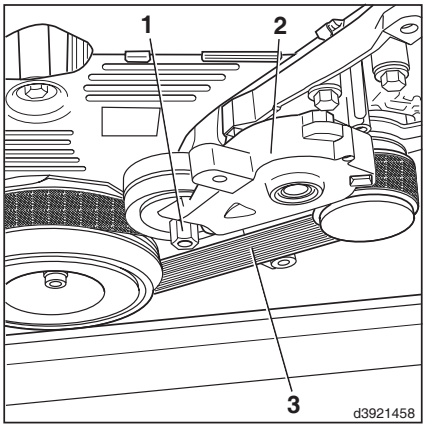
Do not touch rotating parts.

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.



NOTE

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

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

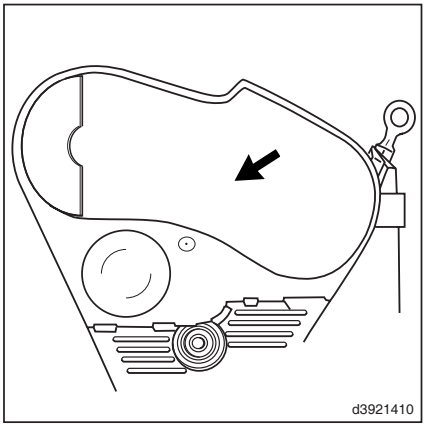
Checking the condition and tension of toothed belt

⚠ WARNING

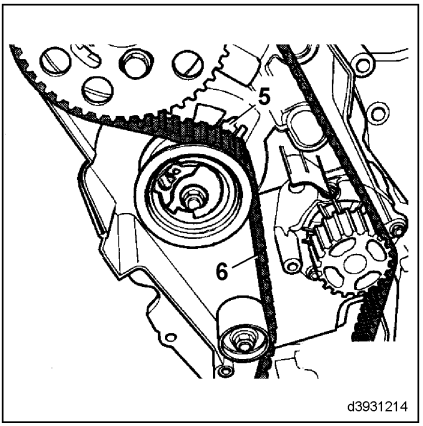
Do not touch rotating parts!

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.



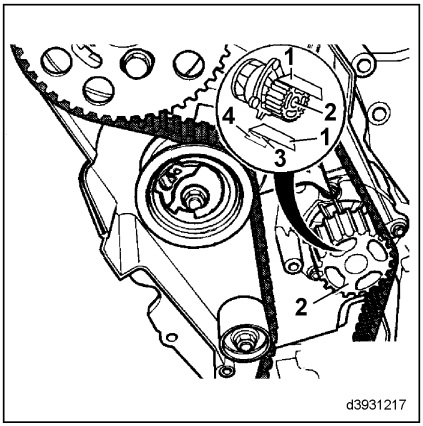
- Check that the pointer (5) is positioned centrally in front of the gap in the baseplate. ▷
- To readjust or change the toothed belt, please contact your authorised dealer



- Check the water pump gear (2) for wear.
- Place a knife edge (1) on the tooth (4) and use a feeler gauge 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.

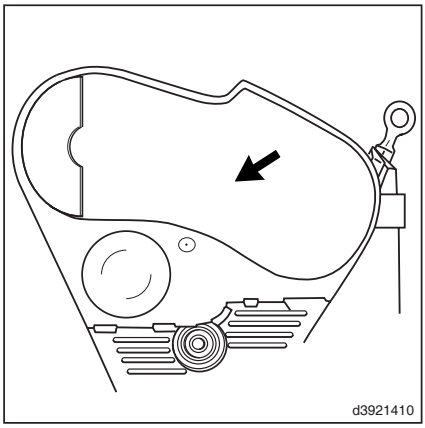
- Refit the engine cover.
- Refit the side maintenance cover.



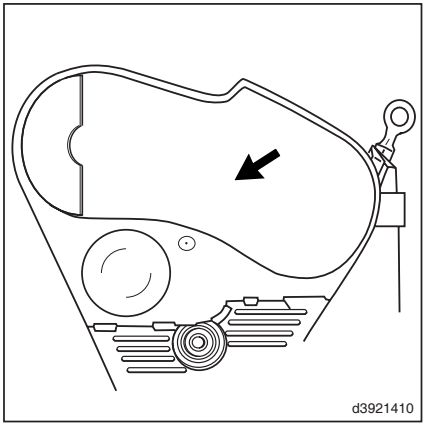
Renew the toothed belt and idler pulley

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.

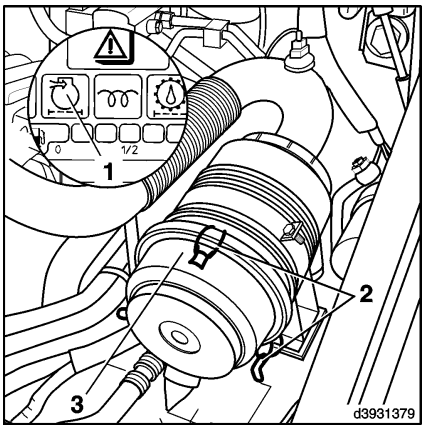
Change air filter cartridge, check vacuum-operated switch

After 100 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 indicator unit.

- 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 filter cartridge is not damaged and that the seal on the filter housing is securely in place.

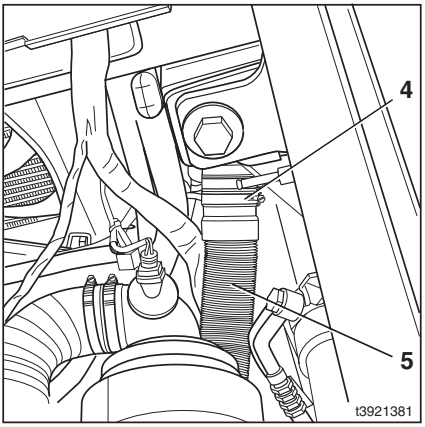
- Fit the air filter cover.

➢ Release the upper clips (4) at the suction hose (5) and remove the hose.

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

In order to avoid damage, the suction 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.

➢ Reattach the hose (5).



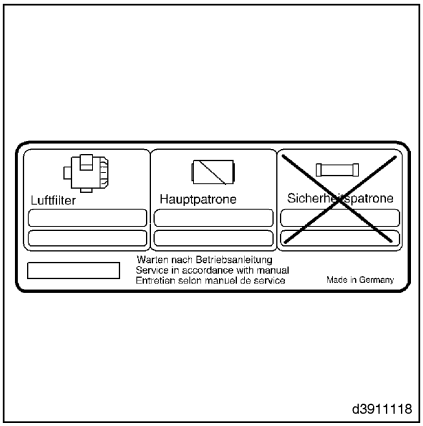
Exchange air filter safety cartridge

NOTE

Read the information on the label on the air filter housing. It indicates whether a safety cartridge is installed in the air filter.

➢ Exchanging the safety cartridge:

- Two years after it has entered operation at the latest.
- If the air filter vacuum display lights up again immediately after the filter cartridge has been serviced.
- If the filter cartridge is faulty.



CAUTION

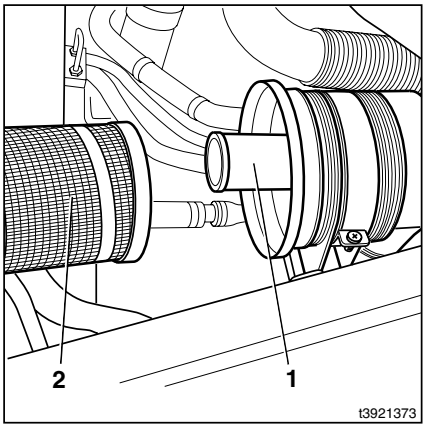
Safety cartridges must not be cleaned or reused. Do not start the engine without an air filter cartridge.

The function of the safety cartridge is to prevent ingress of dust while the main cartridge is being exchanged or inadvertent use of a damaged main cartridge.

➢ Switch off the engine.

➢ Open the bonnet.

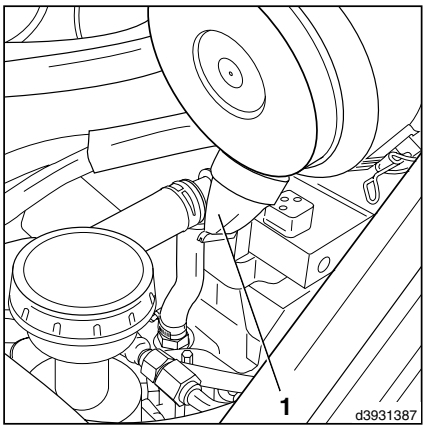
- Take off the air filter cover and remove the filter cartridge (2).
- Pull out the safety cartridge (1).
- Insert the new safety cartridge.
- Fit the filter cartridge and attach the air filter cover.
- Close the bonnet.



Check the dust discharge valve

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

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



Changing the breather 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.

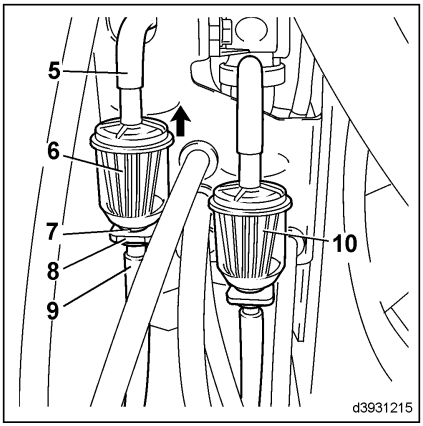
➢ Insert the new filter into the support up to the stop.

➢ Slide on the hose (5) from above as far as the step.

➢ Slide on the hose (9) from below as far as the step.

➢ Check that the filter is properly seated.

➢ Change the second filter (10) in the same way.



Cleaning the prefilter (special equipment)

NOTE

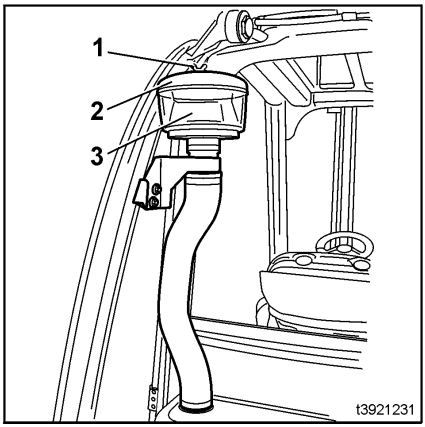
The dust collecting tank must never be more than half full with dust. If there is a heavy accumulation of dust, the tank must be emptied every day.

➢ Unscrew the wing nut (1).

➢ Remove the cover (2).

➢ Remove and empty the dust collecting tank (3).

➢ Refit dust collecting tank and secure with wing nut.



Cleaning the oil bath air filter (special equipment)

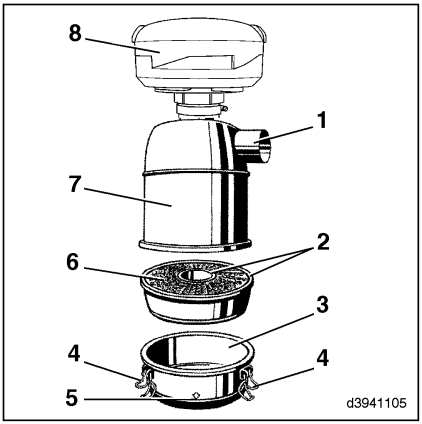
ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Switch off the 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)

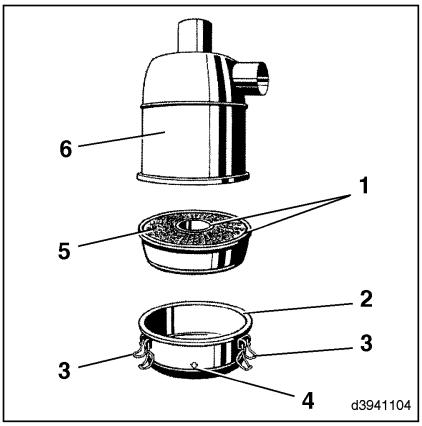
NOTE

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

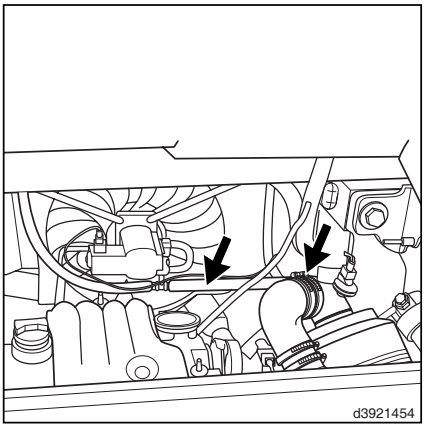
- Check the condition and tightness of the suction air tubes on the air filter.

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.

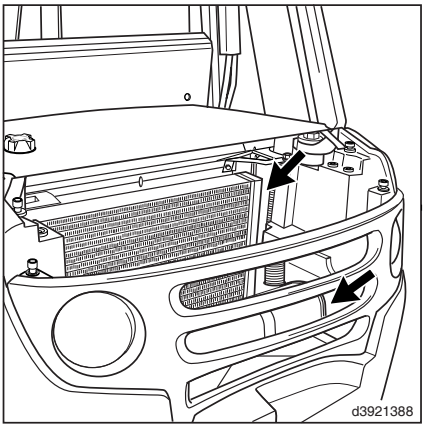
If you discover leaks, re-tighten the fixing screws or change the seals.

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



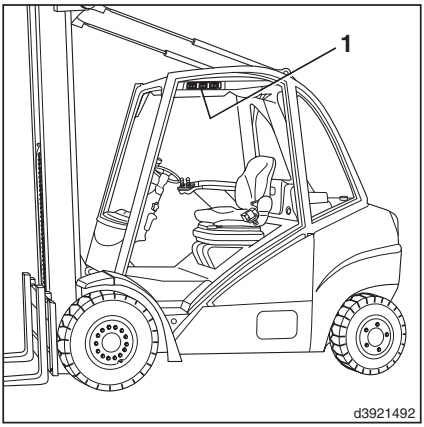
- Remove the cover on the counterweight.
- Check the connections of the exhaust pipe in the counterweight, and ensure that it is securely fastened and there are no leaks. Re-tighten the fixing screws if necessary.
- Refit the covering on the counterweight.

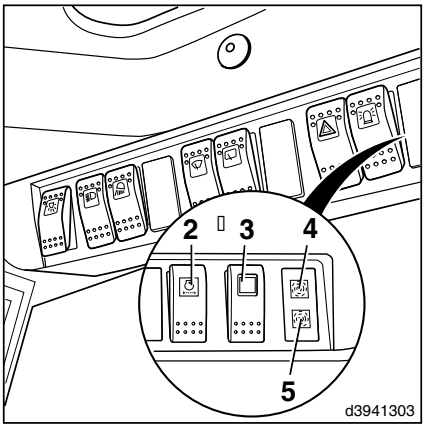
▷



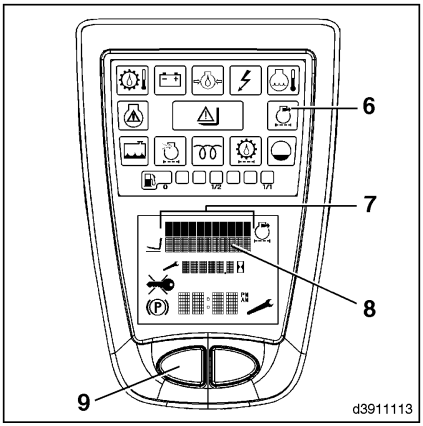
Regenerating the particulate filter ▷

The particulate filter must be regenerated after no more than 8.5 h of engine operation. After 8.0 h of operation, the orange particulate alarm indicator light (5) in the switch panel (1) lights up, or the build-up indicator (7) in the text field of the indicator unit flashes and the buzzer sounds at intervals, depending on the version. The filter must be regenerated within the next 30 minutes.





If this time period is exceeded, the orange indicator light (5) flashes and the buzzer sounds, or the build-up indicator (7) continues to flash and the particulate filter alarm (6) lights up on the indicator unit. In addition, the buzzer sounds continuously and the truck only moves at crawling speed. In this case, switch off the truck engine as quickly as possible and perform filter regeneration. Regeneration can however also be triggered before the maximum build-up 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 particulate 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.

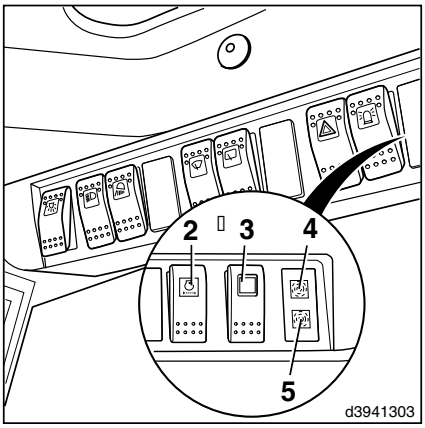
Perform regeneration only in the open air with the engine at operating temperature and away from combustible materials. Anything touching the exhaust system may catch fire.

⚠ CAUTION

The engine cannot be started during regeneration. If the truck has to be moved from a safety area or regeneration interrupted for safety reasons, the stop switch (3) must be unlocked and pressed. The regeneration process will immediately be terminated, and the truck can be started. If regeneration has been interrupted, the particulate 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 switch (3) in the switch panel (1).



NOTE

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

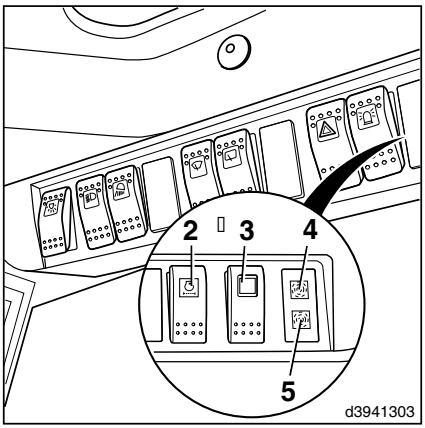
Regeneration is carried out automatically. Once regeneration has been completed successfully, the switch light (operation indicator) goes out and the truck can be operated again.

➢ Clean the exhaust air duct thoroughly.

➢ If more than 30 minutes have elapsed since the engine was switched off, move the glow plug start switch briefly to position I and then back to the zero position (ignition briefly switched on, then off again).

The particulate filter control system will remain active for a further 30 minutes, and regeneration can be started at any time within this period.

➢ Push starting switch (2) downwards and hold down for approx. 3 seconds until the built-in yellow switch light illuminates (operation indicator). The orange indicator light (5) goes out.

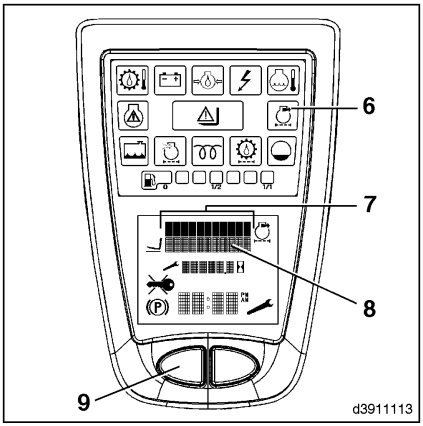


The operation indicator stays lit up until the end of the regeneration process (approx. 23 minutes).

If a particulate alarm was indicated before regeneration is restarted, this remains lit. In this case full regeneration must be performed immediately.

In the event of an error during the regeneration procedure, the orange indicator light (5) and the red indicator light (4) flash alternately, or the particulate filter alarm (6) lights up and text field (8) of the indicator unit displays an error code.

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

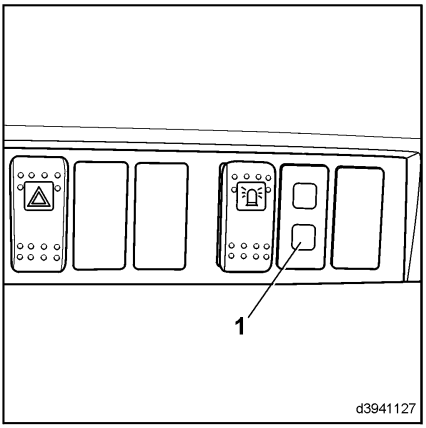


NOTE

To switch off the buzzer, press the reset switch (9). If the buzzer continues to sound, please contact your authorised dealer. Whilst driving, the glow plugs of the regeneration system are cleaned every 1.75 hours by intermediate heating.

Regenerating the particulate filter (exchange filter system)

The particulate filter must be regenerated after a maximum of 8.5 hours' 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.

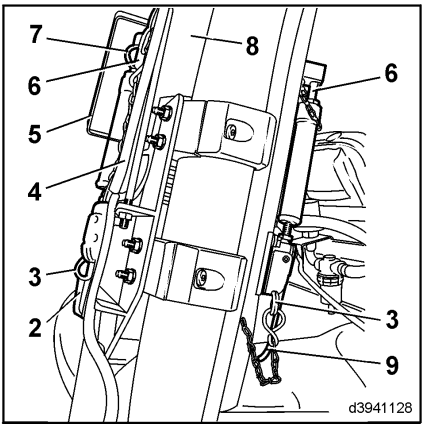
Therefore, in the interest of safety, regenerate the particulate filter immediately.

NOTE

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

Removing the particulate filter

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

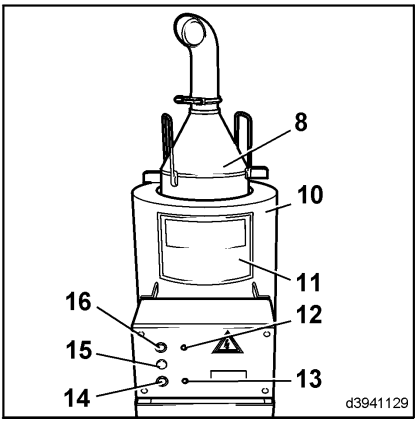
- Remove the particulate filter (8), avoiding impact stress.

Cleaning the particulate filter

- Insert the particulate filter (8) into the regeneration system (10). ▷
- Turn 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.

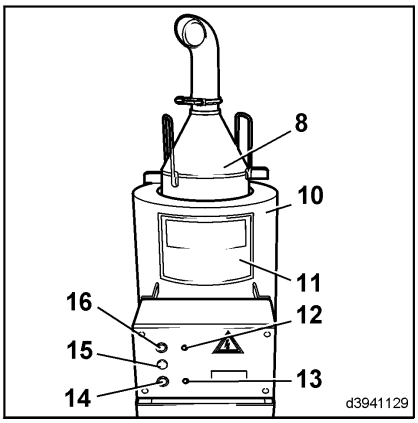
Only press the STOP switch in an emergency! The filter must then be fully regenerated again.

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 particulate filter from the regenerator.
- Reattach the particulate 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.

Checking the particulate 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 (particulate 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.

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.

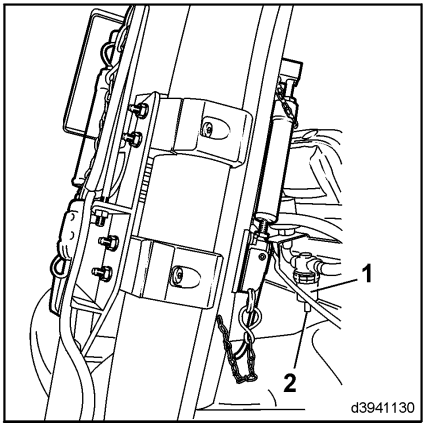
When performing maintenance work, please consult your authorised dealer.

Draining water from the water trap at the exchangeable soot filter (special equipment)

NOTE

Only for soot filter with exchange filter system.

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



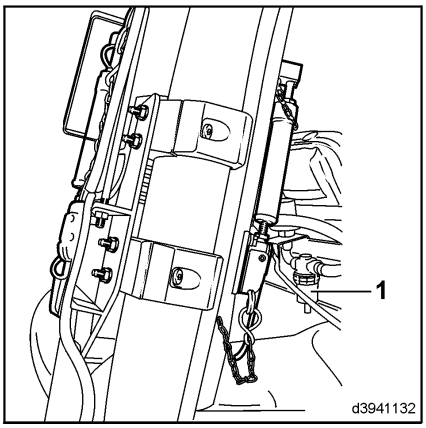
Cleaning the water trap at the exchangeable particulate filter (special equipment)

NOTE

Only for particulate filter with exchange 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 exchangeable particulate filter (special equipment)

NOTE

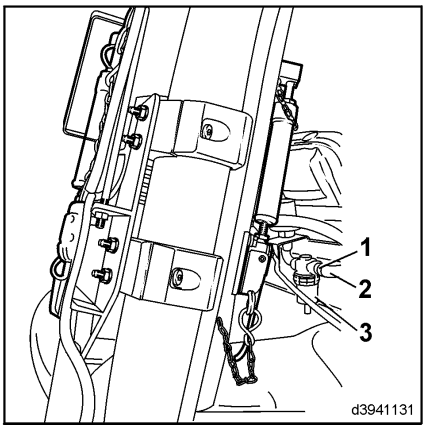
Only for particulate filter with exchange filter system.

➢ 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.

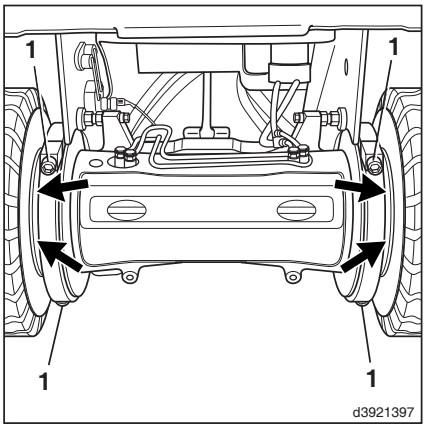


Gearbox

Checking the fastenings of the axle clamps and wheel motors

- Check that the 4 fixing screws (M16) (1) of the axle clamps have a tightening torque of 275 Nm.
- Check that the fixing screws (M12) (arrows) of the wheel motors have a tightening torque of 110 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).

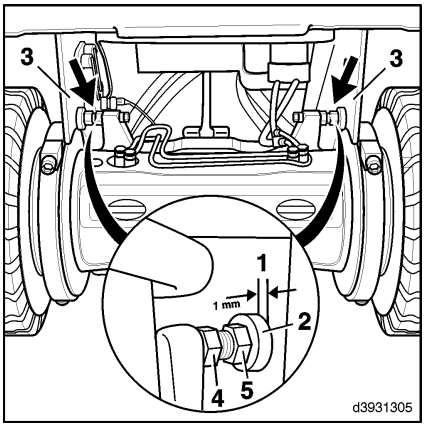
The air gap should not be larger than 1 mm. Check the air gap on the left and right of the axle.

If the air gap is larger, adjust the stop.

- Slacken the hexagonal nut (4).
- Adjust the stop with the hexagonal nut (5) until the air gap is 1 mm.

When 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 hexagonal nut (4).



Checking the drive axle bearings for wear

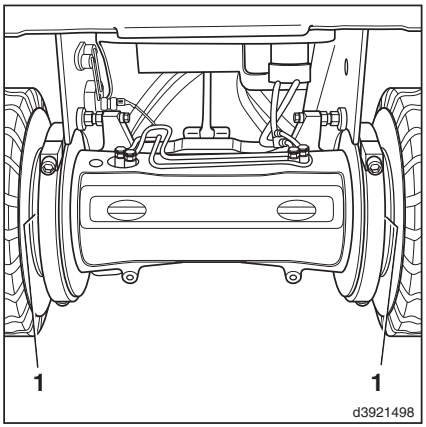
NOTE

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.

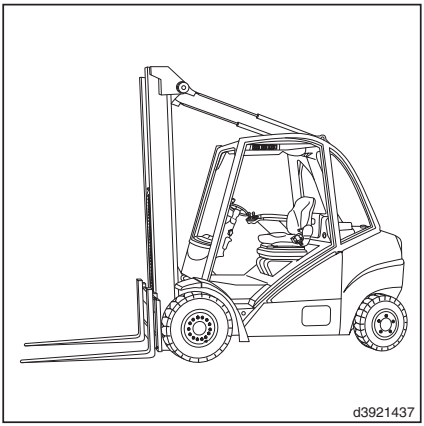


Checking the hydraulic pump's attachment to the engine

- Open the bonnet.
- Tighten the 4 hexagon head screws to the prescribed tightening torque of 80 Nm.
- Close the bonnet.

Chassis, bodywork and fittings

Cleaning the truck



The need for cleaning depends on use of the truck. If highly aggressive media are involved, e.g. salt water, fertiliser, chemicals, cement etc., thorough cleaning is required after finishing the task.

Hot steam or cleaning materials with a powerful degreasing effect should only be used with great caution as this 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 vehicle.

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 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 soiling with a cleaner solvent.

During cleaning pay special attention to the oil filler openings and the surrounding areas as well as the lubricating nipples prior to greasing.

Bonnet

Opening the bonnet.

⚠ WARNING

Always observe the following when opening the bonnet with the engine running: The hydraulic drive and a temperature-dependant 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.

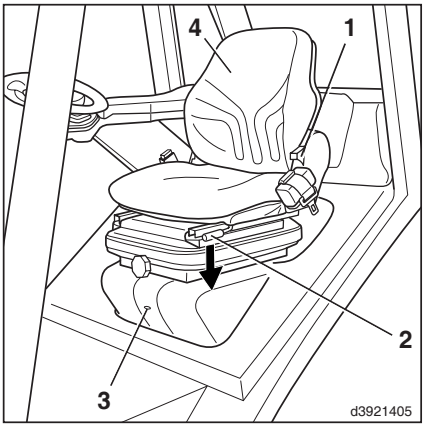
➢ Move steering column all the way forward and clamp in place.

For luxury driver seat only

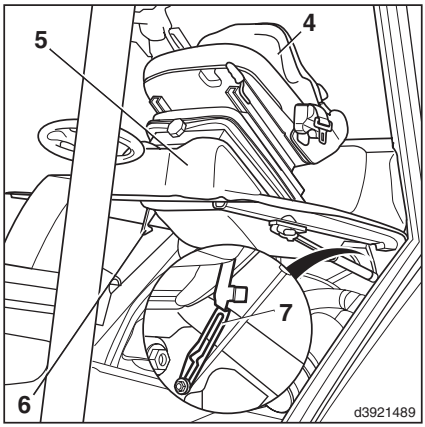
➢ Pull the lever (2) outwards and slide the driver's seat all the way forwards.

➢ Release lever and allow it to engage.

▷



- Push the lever (1) fully upwards, hold it there, push the seat back (4) fully forwards and release the lever (1). (Only where rear window fitted)
- Insert ignition key into the hole (3) and push to release the bonnet catch; whilst so doing, release the pressure on the bonnet catch by pressing the bonnet in the direction of the arrow.
- Open the bonnet (5) to the rear up to the stop.

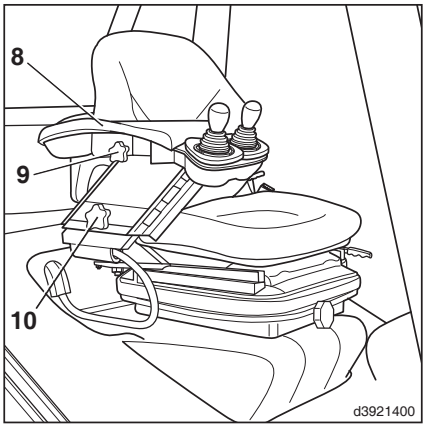


NOTE

The bonnet can be opened further for specific maintenance work. Before opening the bonnet in this way, the armrest must be moved all the way down.

- Undo the clamping screw (10) in the armrest (8), push the armrest fully downwards.
- Retighten clamping screw.
- Release the mounting support (7). Push mounting support to rear.

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. Tighten clamping screw again.



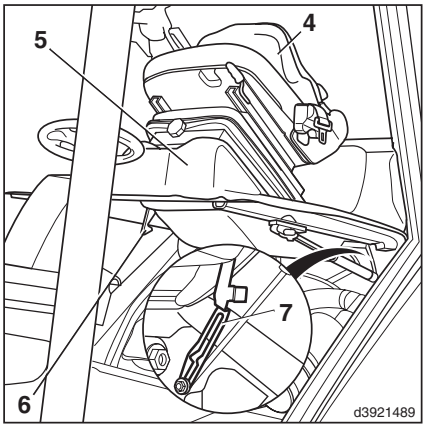
- Open bonnet all the way.

NOTE

The bonnet is held in both open positions by gas springs.

Closing the bonnet

- Release the mounting support (7) by pushing it to the rear. ▷
- Close the bonnet, then press on it until the locking lever (6) engages.

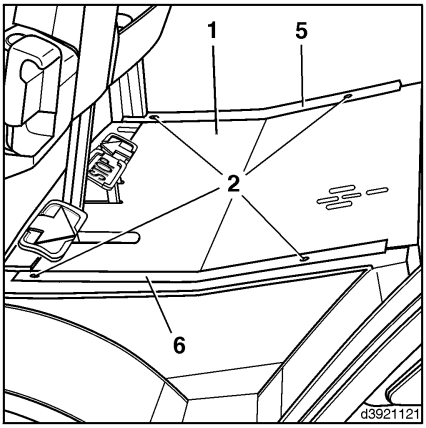


Floorplate

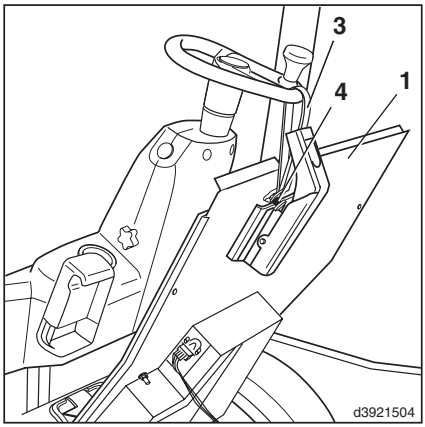
Opening the floorplate

Some maintenance operations require that the floorplate is lifted.

- Open the bonnet.
- Unscrew the fixing screws (2) from the floorplate. ▷
- Remove plates (5) and (6)
- Remove the rubber covering from the floorplate (1).
- Swing the floorplate up.



➢ Feed a restraint strap (3) around the steering wheel and hang it onto the bolt (4).



Closing the floorplate

➢ Lift up the floorplate.

➢ Detach the restraint strap.

➢ Close the floorplate.

➢ Install plates (5) and (6).

➢ Secure the floorplate with the fixing screws (2).

➢ Replace the rubber covering on the floorplate.

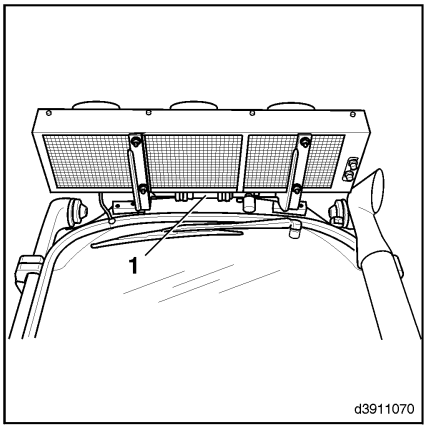
➢ Close the bonnet.

Servicing the air conditioning (special equipment)

The following maintenance work must be carried out at the beginning, middle and end of a season:

➢ Check the belt tension at the compressor.

➢ Check the refrigerant level and moisture content in the system.



The refrigerant must flow, bubble-free, through the sight glass of the dryer (1) when the engine is running.

When changing a component in the cooling circuit, the dryer must be changed before refilling.

➢ Clean the condenser.

When cleaning the condenser fins, do not press hard, otherwise they will be damaged and air will no longer flow properly across them.

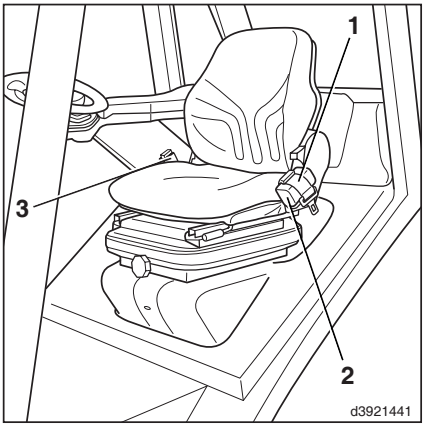
When performing maintenance work, please consult your authorised dealer.

Check the seat belt for condition and proper operation

NOTE

For safety reasons the condition and proper operation of the restraint system should be inspected regularly (monthly). Under extreme operating conditions this check is required daily before taking the truck into operation.

- Pull the belt (1) out fully and inspect for fraying. ▷



- Check the buckle (3) for correct operation and the retractor for proper return of the belt.
- Check the trims for damage.

Check the automatic lock.

- Park the truck on level ground.
- Pull out the belt with a jerk.

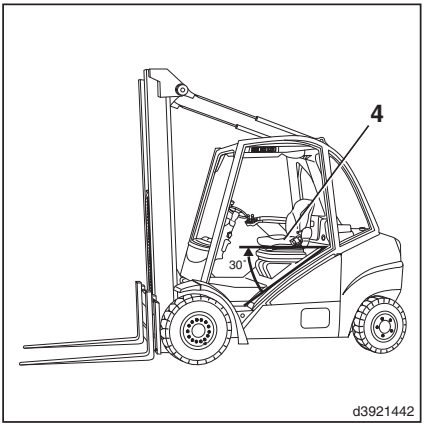
The automatic lock should prevent the belt from unrolling from the retractor (2).

- Slide the seat fully forward.
- Tilt the backrest fully forward.

NOTE

When opening the bonnet, watch out for a possibly installed rear windscreen.

- Unlock the bonnet and open it with the seat (4) about 30°. ▷



The automatic lock should prevent the belt from unrolling from the retractor (2).

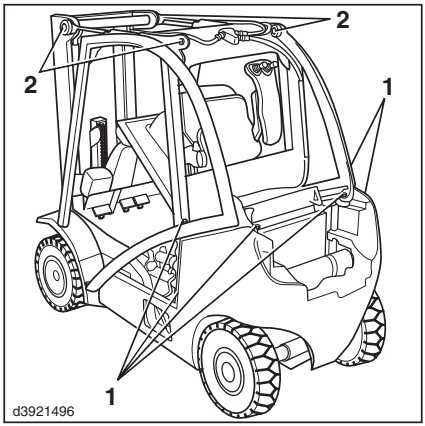
⚠ WARNING

Do not operate the lift truck with a defective seat belt. The seat belt must be renewed after an accident. In the case of seat belts attached to the operator's seat, the seat and mounting of the seat must also be inspected by qualified personnel. Nuts and bolts should be checked regularly for tightness. A wobbling of the seat can indicate loose bolts or other faults. In case of non-observance, you will put your health at risk and increase the risk of accidents.

If malfunctions in the operation of the seat are detected (eg springy seat), contact your authorised dealer immediately to eliminate the cause.

Checking fastening for frame, tilt cylinders and steering axle

- Check 6 fastening bolts (M 24) (1) of frame have a tightening torque of 660 Nm.
- Check the 4 fastening bolts (M16) (2) of the tilt cylinders with a torque of 275 Nm.
- Check the fastening bolts (M16) of the steering axle with a torque of 195 Nm.

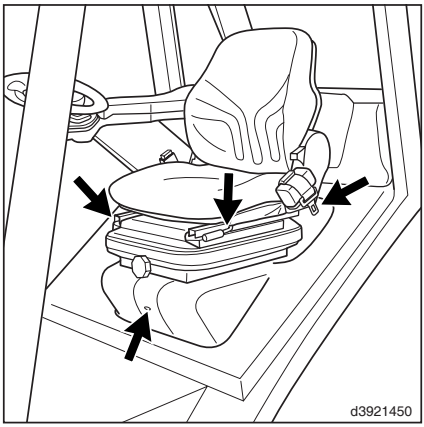


Check and oil other pivots and joints

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.



Chassis frame

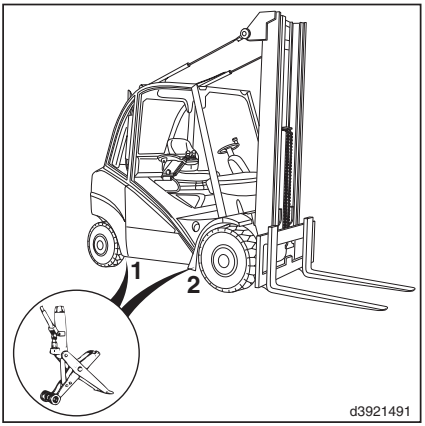
Wheel change

⚠ WARNING

Note truck tare weight.

Only use jacks with a load capacity of at least 3600 kg.

➢ Position the jack at the front edge of the chassis (2) on the left or right or beneath the counterweight (1).



The truck should only be raised at these suspension points on the left and right.

➢ 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	170 Nm
Rear	460 Nm

NOTE

If new wheel screws are used or a new rim is fitted, the front tightening torque on the first occasion should be 195 Nm.

Tighten the wheel bolts

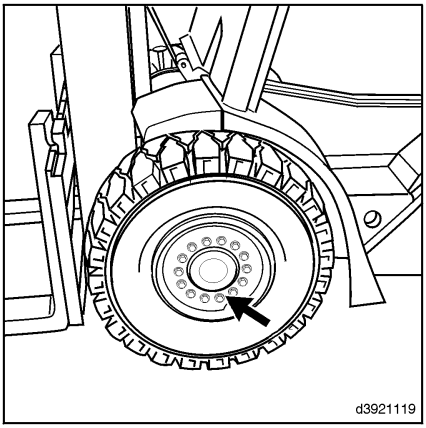
The wheel fastenings should be tightened before initial commissioning and whenever wheels are changed or repairs are made.

After this tightening should be performed after 100 operating hours at the latest.

The wheel fastenings should be tightened crosswise with a torque of:

front	170 Nm
rear	460 Nm

.

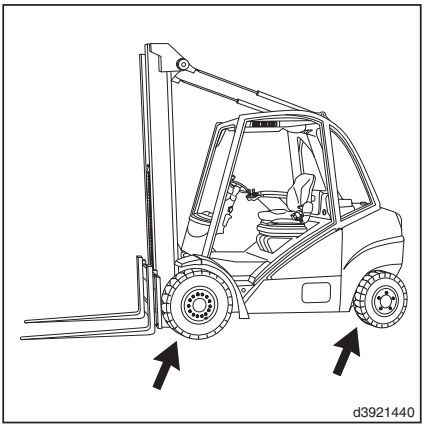


NOTE

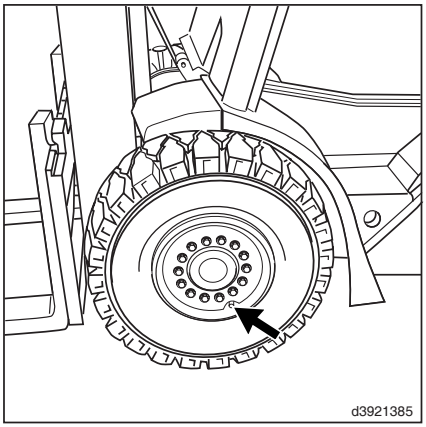
If new wheel bolts are used or a new wheel is fitted the tightening torque on the first occasion only should be 195 Nm

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.



Checking the tyre pressure and tyre sizes ▷



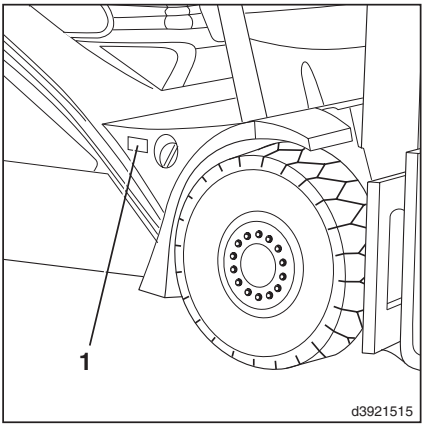
⚠ CAUTION

If tyre pressures are too low, tyre life will be reduced and the stability of the forklift truck will be affected.

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 sticker (1) on the right-hand side of the truck next to the drive wheel: ▷



Drive axle

Single fitment		
H 25, H 30, H 35	27x10-12/20 PR	10.0 bar
	250/75 R12	10.0 bar
	28x12.5-15 SE	--
	27x10-12 SE	--
	23x10-12 SE	--

Dual fitment		
H 25, H 30, H 35	7.00-12/16 PR	7.5 bar
	7.00 R12	7.5 bar
	7.00-12 SE	--

Steering axle

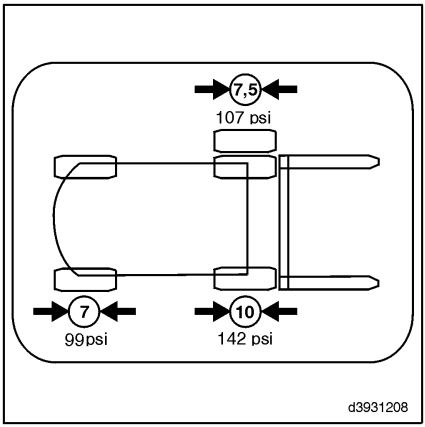
Single fitment		
H 25, H 30, H 35	23x9-10/14 PR	7.0 bar
	6.50-10/14 PR	7.0 bar
	6.50 R10	7.0 bar
	23x9-10/20 PR	7.0 bar
	23x9 R10	7.0 bar
	6.50-10 SE	--
	23x9-10 SE	--
	200/50-10 SE	--

Example

Tyre pressure sticker (1)

Drive axle	
Single fitment	10.0 bar
Dual fitment	7.5 bar

Steering axle	
Single fitment	7.0 bar



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.

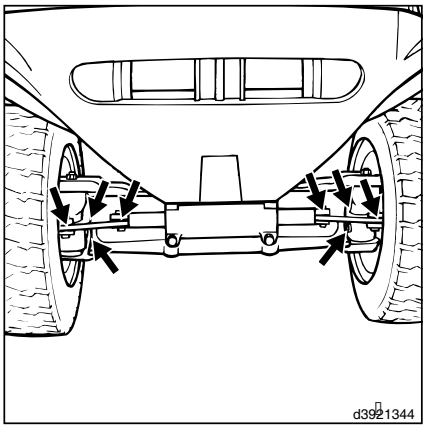
➢ Clean steering axle with water or cleaner solvent.

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.



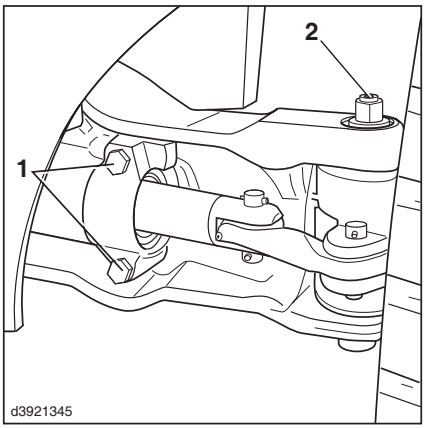
Check the steering cylinder and king pin for security

➢ Check the 4 fastening screws (1) for tightness.

Torque: 210 Nm

➢ Check the nut (2) on the king pin for tightness.

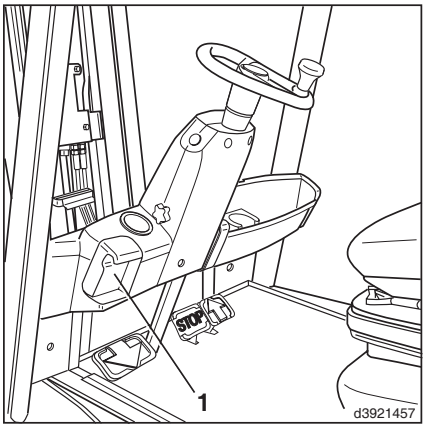
Torque: 250 Nm



Check the parking brake for correct operation

➢ Drive the fork lift truck, carrying its maximum load, up a gradient of 15 %.

➢ Pull the parking brake handle (1) upwards. ▷



The vehicle must remain stationary.

➢ Switch off the engine.

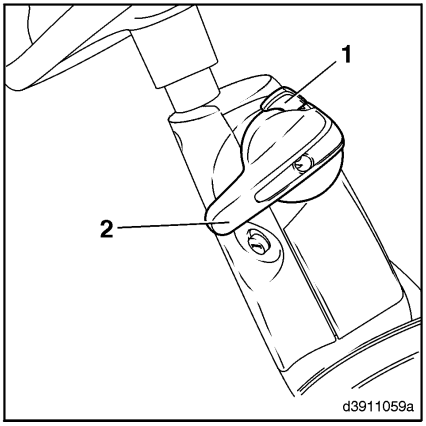
Version 1:

➢ Release the parking brake handle (1).

The vehicle must remain stationary.

Version 2:

➢ Place the parking brake lever (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.

Controls

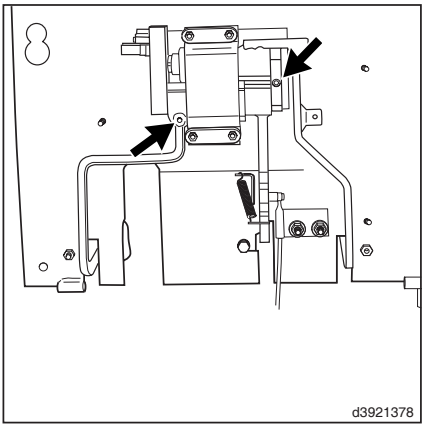
Checking the pedals

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.

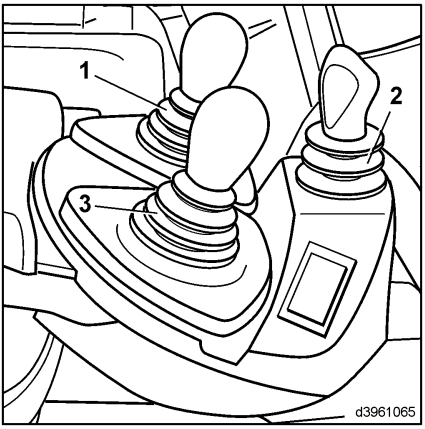
▷



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.

▷



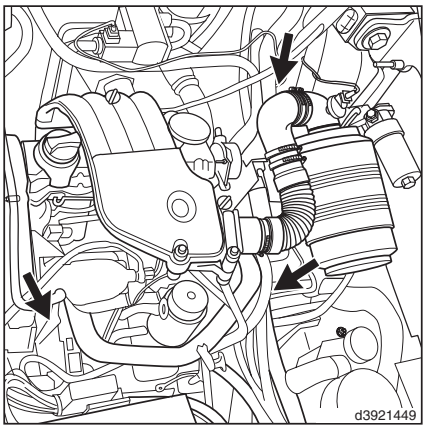
Electrics

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, acid level and acid density

When handling starter batteries, the following should be complied with:

- 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.
- 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

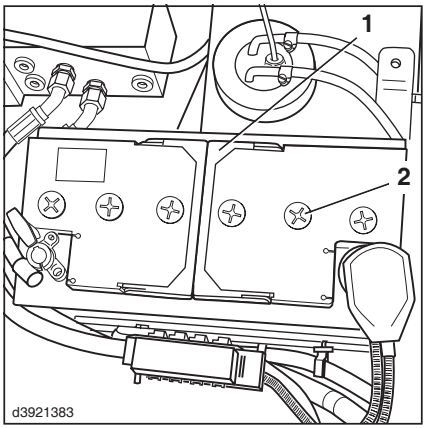
Even in the case of maintenance-free batteries, it is necessary to check the condition and acid density/level.

- 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

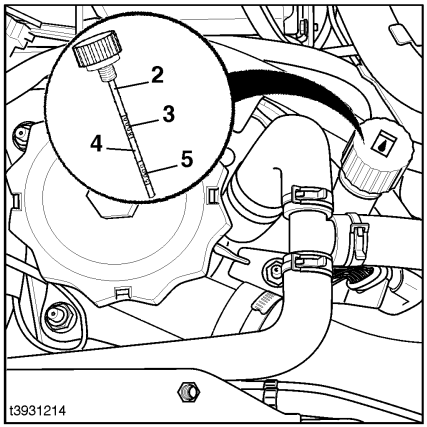
Change hydraulic oil

Drain hydraulic oil

ENVIRONMENT NOTE

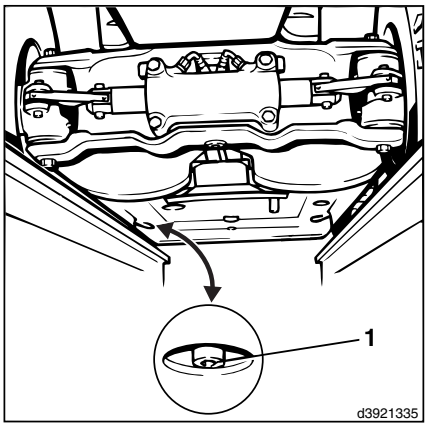
Observe information regarding working with consumables.

- 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 breather filter with oil dipstick (2).



- 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

NOTE

The oil dipstick has markings that apply to the various lift heights.

➢ Add hydraulic oil to filling port.

Total fill quantity:

- for lift heights up to 5000 mm marking potentiometer (5): approx. 24.0 l
- for lift heights 5000 mm - 6900 mm between marking 3 and 5 (4): approx. 25.5 l
- for lift heights 6900 mm - 8000 mm marking (3): approx. 28.0 l

➢ Check oil level with dipstick (2) and top up until upper marking on dipstick for relevant lift height is reached.

➢ 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 oil level

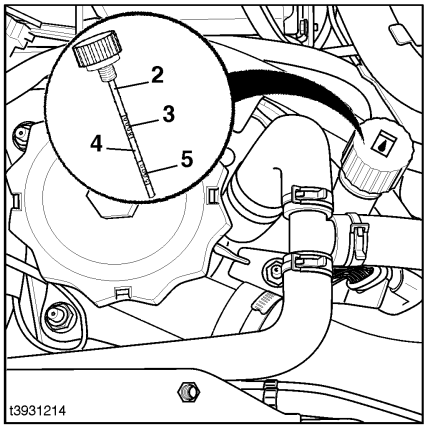
ENVIRONMENT NOTE

Observe information about working with consumables.

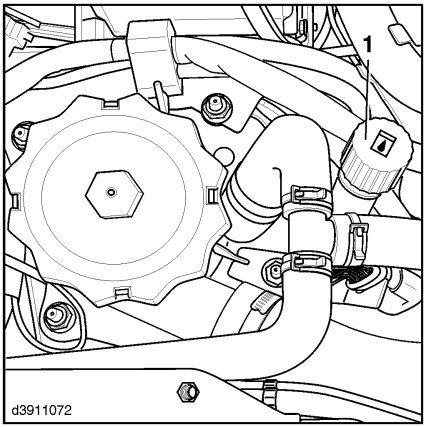
NOTE

Oil specifications: see Recommendations for working materials

➢ Fully lower the fork carriage.



➢ Unscrew the breather filter (1) with oil dipstick on the left side of the vehicle. ▷



NOTE

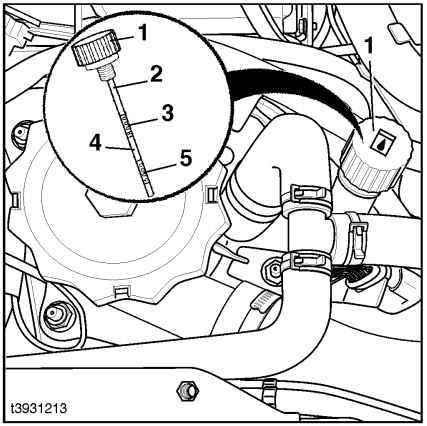
Tank under low pressure. A small amount of air will escape.

➢ Wipe the oil dipstick with a clean cloth.

NOTE

There are 2 markings on the oil dipstick (2) that are used according to the height of the lift mast. The various lift heights are stamped into the dipstick

➢ Only check the marking which applies to your truck. ▷



- Marking (3) for lift heights of 6900 to 8000 mm.
- Marking (5) for lift heights up to 5000 mm.
- Between marking 3 and 5 (4) for lift heights from 5000 mm to 6900 mm.

➢ Screw the breather filter with oil dipstick in completely and then unscrew it again.

The oil level shown on the dipstick should be between the two markings for the relevant lift height.

➢ If necessary, add more hydraulic oil until it reaches the marking for your truck.

The difference in quantity between the max. and min. mark

for all lift heights is approx. 2 l

Hydraulic system: changing the filter

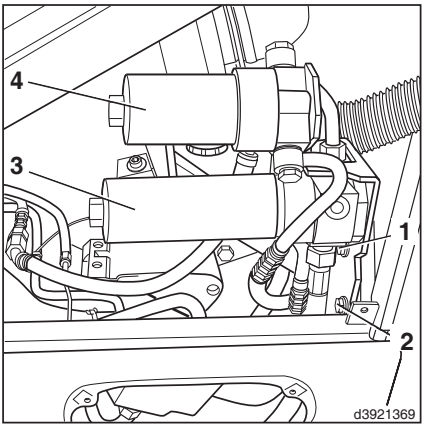
Feed and pressure filter

ENVIRONMENT NOTE

Observe information regarding working with consumables.

➢ Unscrew the side maintenance cover on the left.

- Lower lift mast. Slacken the lower fixing screw (2) and the upper fixing 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 hexagon section.
- Unscrew the filter housing manually and remove the filter cartridges from its 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 head.
- Screw on the filter housing and tighten it hand-tight.

Tightening torque: 10^{+5} Nm; then slack it back ¼ turn.

- Check the filter flange for leaks during a test run.

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.

➢ Open the breather (1).

This allows the air to escape so that the oil will not overflow when the filter cartridge is inserted.

➢ Turn the filter cover (2) in an anti-clockwise direction and unscrew it.

➢ Slowly remove the filter cartridge.

This will allow the oil to flow back into the reservoir.

➢ Pull filter cartridge out entirely.

➢ Carefully insert new filter cartridge in hydraulic tank.

Ensure that it is correctly centred in the filter bottom.

➢ Clean seal of filter cover and wet with oil.

➢ Replace the filter cover (2) and turn it in the clockwise direction.

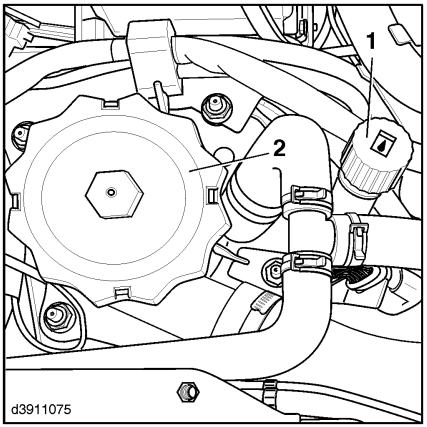
➢ Tighten the filter cover to 25 Nm.

The hydraulic system will vent itself automatically when the motor is running.

➢ Screw breather filter on.

➢ Perform a trial run to check the filter cover for leakage.

➢ Close the bonnet.

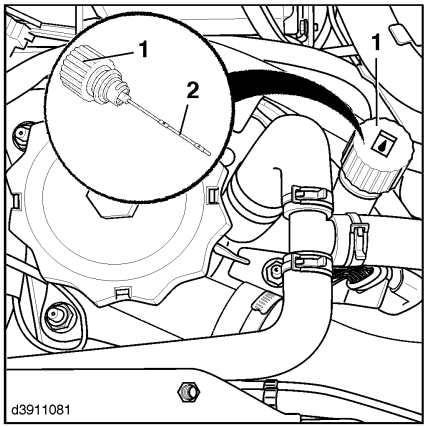


Breather

NOTE

If there are high levels of dust, it may be necessary to change the filter earlier.

- Open the bonnet.
- Unscrew the filter (1) for the hydraulic oil tank from the filler neck.
- Remove the dipstick (2) from the breather and attach it to the new filter.
- Screw in the filter and tighten it.
- Mount the side maintenance cover.
- Close the bonnet.



Check correct operation of breather valve on the hydraulic oil tank

NOTE

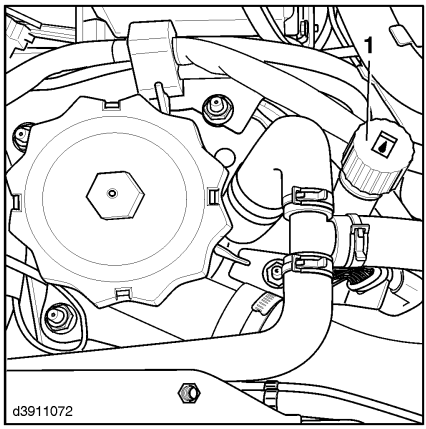
The breather filter on the hydraulic oil tank is fitted with a breather valve, which causes the tank to be at a slight positive pressure.

ENVIRONMENT NOTE

Observe information about working with consumables.

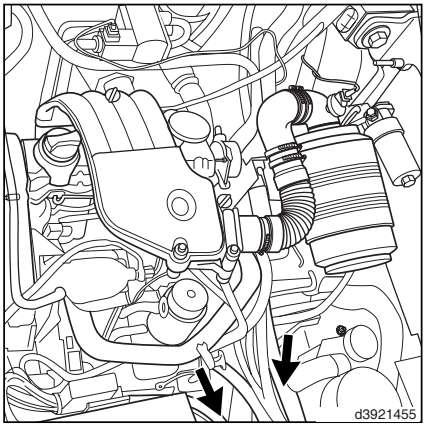
- Close the breather filter (1) and check whether the breather filter is seated correctly.
- Start the engine.
- Extend lift mast several times to the stop and let it return.
- Switch off the engine. Open the breather filter (1) on the hydraulic oil tank.

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

- Raise and secure the floor plate.
- Check all unions between oil reservoir, 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 chaffing and replace, if necessary.
- Close the floor plate.



Check tilt cylinder bearings for wear

NOTE

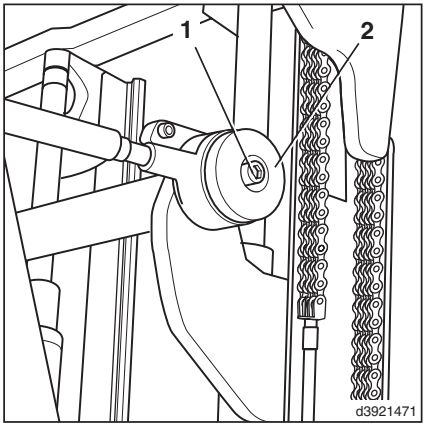
The tilt cylinders are mounted in rubber bearings at both ends.

- Remove the screw (1) at the disc (2). ▷
- Make a visual inspection of the rubber bearings for cracks.

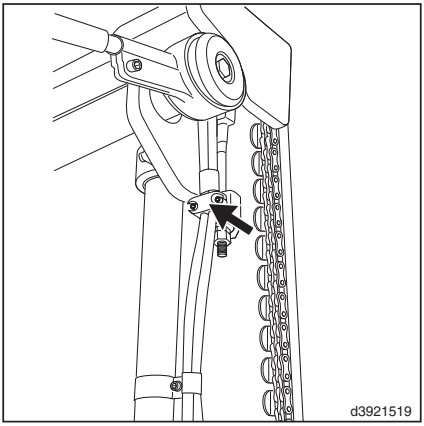
The rubber should not have any cracks.

- 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.

Checking the function and safety system of the third auxiliary hydraulics (special equipment)

NOTE

If a toggle-switch-controlled third auxiliary hydraulics system is fitted, a functional test and safety check must be carried out when performing the initial start-up and after carrying out repairs to the third auxiliary hydraulics system.

Functional test:

➢ Activate all three additional functions one after the other.

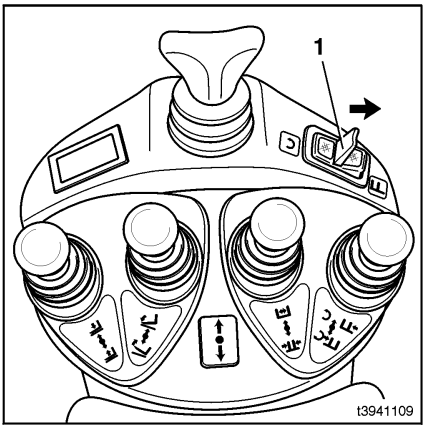
The functions performed by the attachment must comply with the signs on the operating console.

Safety check:

➢ Switch on the ignition.

➢ Remove a cable connector from the solenoid valve on the fork carriage.

➢ Operate the pre-selector (1) from the second to the third auxiliary hydraulic function. ▷



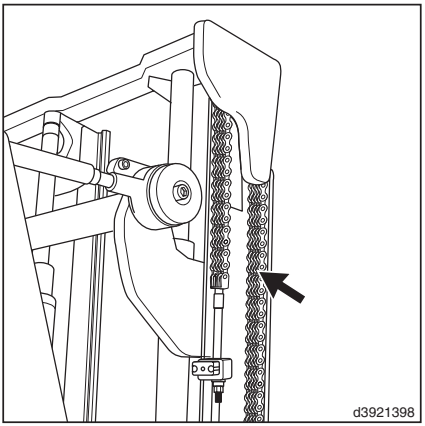
The following safety precautions / warning messages are activated:

- Switchable auxiliary hydraulic function blocked.
- Truck switched to creep mode.
- Error code displayed in text field of indicator unit.
- Buzzer sounds.

If there are any malfunctions, please contact your authorised dealer.

Load lift system

Cleaning the lift mast chain and applying chain spray ▷



⚠ DANGER

Lift mast chains are safety elements. Incorrect cleaning materials may cause direct damage to chains.

Do not use cold / 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 vessel under the lift mast.

➢ Clean lift mast chain with paraffin derivatives such as petroleum ether.

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, also moving chain while doing so.

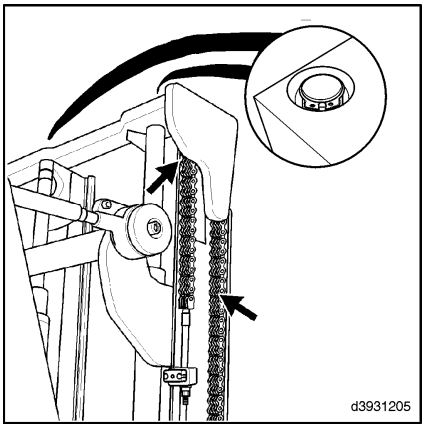
Mast, lift chains, lift cylinders and end stops: Check for security, condition and proper operation

- Clean the mast channels and chains.
- Inspect the chains for condition and wear, especially in the area of the pulleys.
- Check that the chain is attached securely to the chain anchor.
- Replace damaged chains.

NOTE

Single damaged and missing plastic links do not impair the operation and service life of the chain.

- Check mast, channels and rollers for condition and security.
- Check stops for condition, mounting and proper operation.
- Check the lift cylinders for security.
- Check the circlip of the piston rod fastener on the top of the lift mast for security.



Adjust 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.

- Lower the lift mast completely.

➢ Loosen locknut (1).

➢ Adjust chain at adjustment nut (2) of chain anchor.

The lower guide roller of the fork carriage should only protrude max. 25 mm from the guide rail of the inner lift mast.

➢ Tighten the locknut (1).

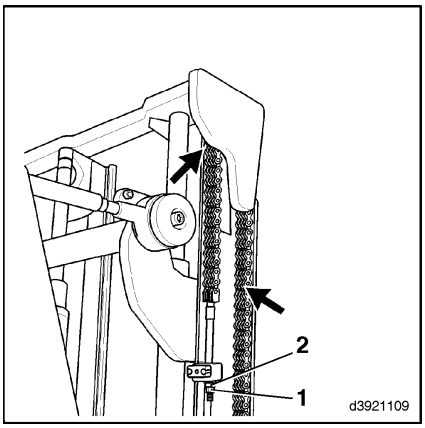
➢ Also adjust second chain.

⚠ CAUTION

When extended, the lift mast should not touch the end stops.

Fully extend 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.

Duplex or triplex lift mast

NOTE

The lift mast chain stretches over time during operation and therefore has to be readjusted.

➢ Lower the lift mast and fork carriage completely.

➢ Loosen locknut (4). Adjust chain at adjustment nut (3) of chain anchor.

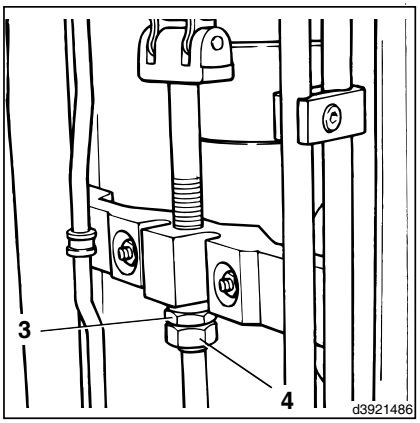
The lower guide roller of the fork carriage should only protrude max. 25 mm from the guide rail of the inner lift mast.

➢ Tighten the locknut (4).

⚠ CAUTION

When extended, the lift mast should not touch the end stops.

Fully extend 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.

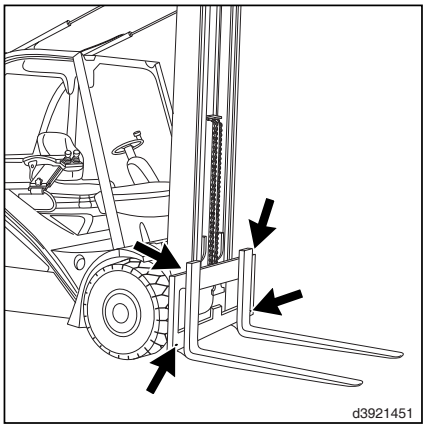
➢ Apply Linde chain spray to guide surfaces and chain.

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

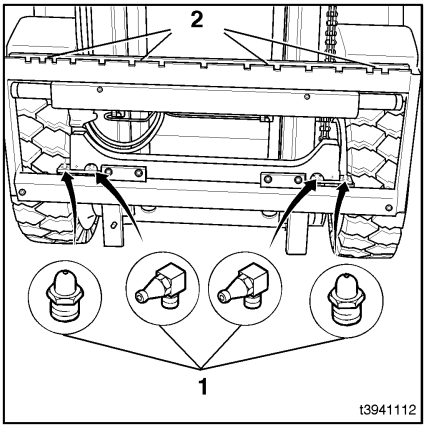
ENVIRONMENT NOTE

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.

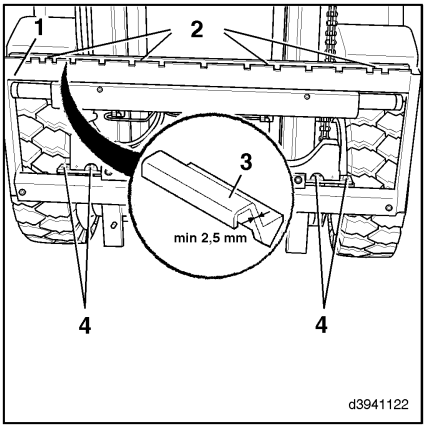


Checking the slide guides on the sideshift (special equipment) for wear

- 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.

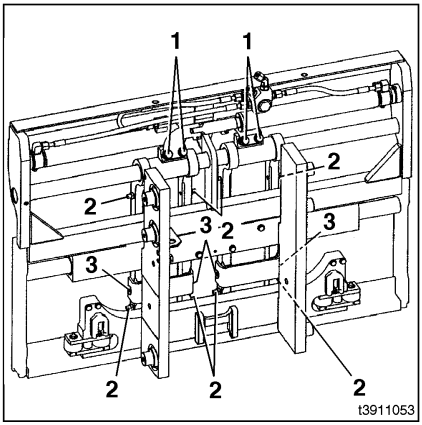
- Lubricate slide guides.
- Reassemble sideshift.
- Tilt lift mast forwards and lower fork arms until they touch the ground, so that sideshift frame is relieved of the weight of forks.
- Lubricate the sideshift at lubricating nipples (2) and (4).



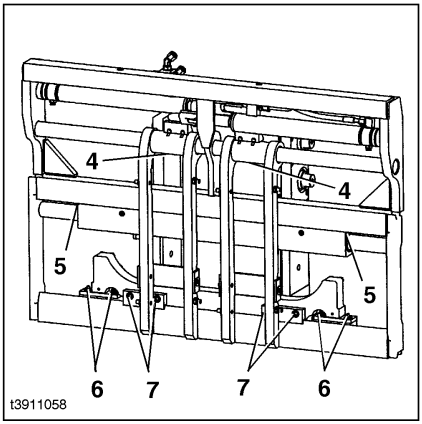
Cleaning and lubricating the fork positioner (special equipment), checking the fastening

- Clean the fork positioner using a steam-jet cleaner.
- Check condition of fork positioner device and look for leaks.
- Check hydraulic lines for chafing and replace if necessary.
- Check hydraulic connections for tightness, replace if necessary.
- Check cylinders for leaks.
- Check piston rods for damage.

- Tighten fixing screws (1) to 85 Nm.
- Tighten fixing screws (2) to 85 Nm.
- Tighten fixing screws (3) to 50 Nm.

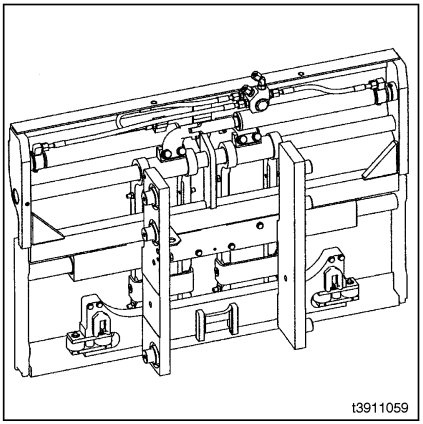


- Tighten fixing screws (7) to 145 Nm (for H 25 forklift trucks with fork carriage load-bearing class 2A).
- Tighten fixing screws (7) to 235 Nm (for H 30 / H 35 forklift trucks with fork carriage load-bearing class 3A).
- Lubricate slide guides (4) with lubricating grease.
- Apply lubricating grease to lubricating nipples (5) of guide shoes until grease escapes at the side.
- Apply lubricating grease to lubricating nipples (6) of guide rollers until grease escapes at the side.



Check fork arm adjustment device (special equipment) for wear and tear

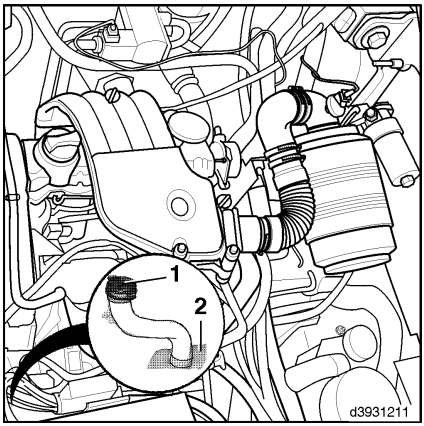
The fork arm adjustment device must only be dismantled by a specialist using special tools. Please contact your authorised dealer. ▷



Special equipment, accessories

Top up the washer system water tank

- Open the bonnet.
- Remove the filler cap (1) from the water tank (2) at the right-hand side at the chassis wall. ▷
- Fill up with water until it is visible in the filling neck.
- Refit the cap.
- Close the bonnet.

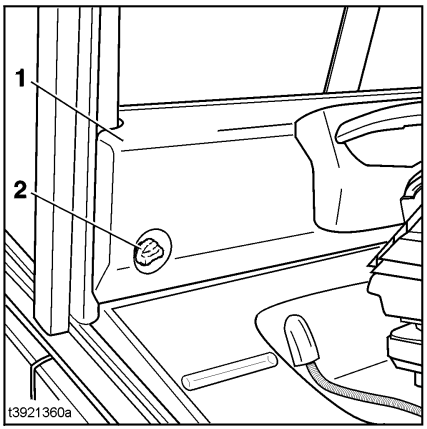


Troubleshooting

Opening the cover to the electrical system

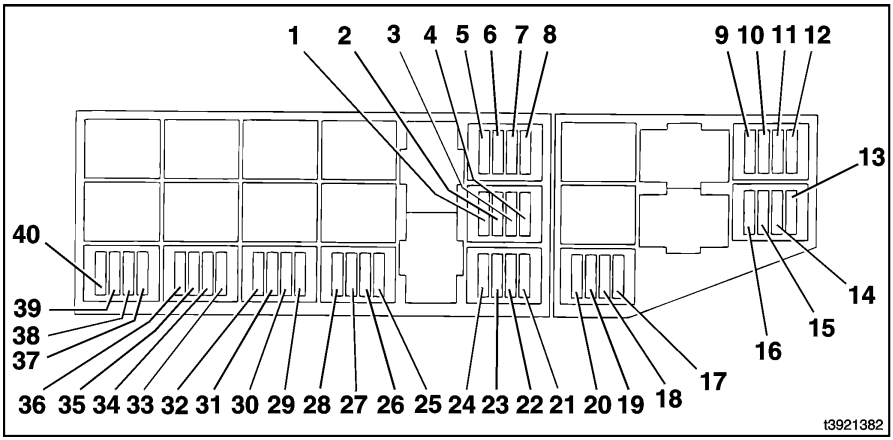
Depending on the set-up, up to 40 fuses may be installed in the electrical system in order to protect it. The fuse box can be accessed after removing the cover of the electrical system.

- 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
2	Heater/air conditioning (9F9)*, 20 A
3	Seat heater (9F6)*, 15 A
4	Warning light and rotating beacon (4F3)*, 7.5 A
5	Working headlight positions 3, 4 (5F2)*, 15 A
6	Working headlight positions 5, 6 (5F3)*, 15 A (with attachment of one 7.5 A headlight)
7	Working headlight positions 7, 8 (5F4)*, 15 A (with attachment of one 7.5 A headlight)
8	Rear window heater (9F5)*, 20 A
9	Indicator unit (terminal 30) (F5), 2 A
10	Indicator unit (terminal 15) (F6), 2 A
11	Alarm horn (F7), 15 A
12	Traction-lift control (terminal 15) (F8), 2 A
13	Engine control unit (F12), 5 A
14	Engine control unit (F11), 20 A
15	Not assigned
16	Traction-lift control (terminal 30) (F9), 15 A
17	3. Auxiliary hydraulics (F16)* 7.5 A
18	Terminal 15 (F15), 10 A
19	Terminal 58 (F14), 2 A
20	Terminal 30 (F13), max. 15 A
21	Toothed belt seal blower (0F1)*, 10 A Time-delayed lighting off (F17)*, 2 A
22	Particulate filter (7F3)*, 30 A
23	Particulate filter (7F2)*, 20 A
24	Particulate filter (7F1)*, 5 A
25	Vehicle Data Management (6F1)*, 5 A
26	Reverse motion (4F1)*, 10 A
27	Radio (terminal 58) (9F8)*, 10 A
28	Radio (terminal 30) (9F7)*, 5 A
29	Washer pumps (9F4)*, 10 A
30	Windscreen wiper rear and roof (9F3)*, 10 A
31	Front windscreen wiper (9F2)*, 10 A
32	Windscreen wiper (9F1)*, 2 A
33	Interior light (5F12)*, 5 A
34	Brake light (5F7)*, 5 A
35	Warning lights (5F6/5F13)*, 10 A
36	Lighting / working headlight positions 1, 2 (5F5/5F1)*, 15 A
37	Right sidelights (5F11)*, 5 A
38	Left sidelights (5F10)*, 5 A
39	Right headlight (5F9)*, 7.5 A
40	Left headlight (5F8)*, 7.5 A

* Special equipment

Main fuses in engine compartment

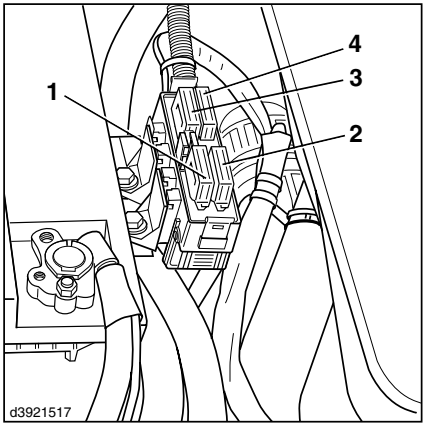
Checking and changing fuses

➢ 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, 30 A
- Main fuse (F3) (3) for complete special equipment, 70 A
- Fuse (F4) (4) for air conditioning, 30 A

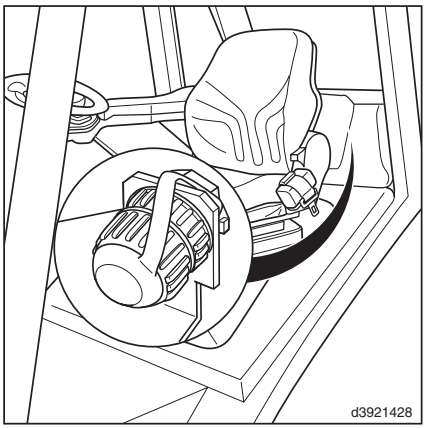


Diagnostic connector

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.



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

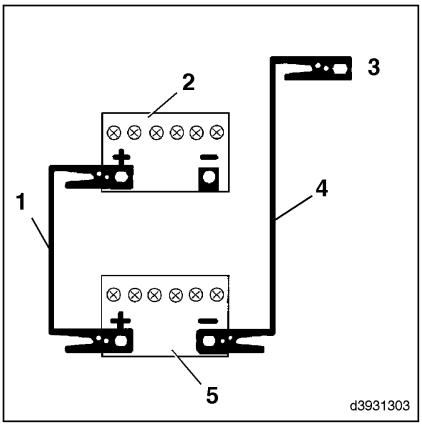
A discharged battery can freeze at temperatures below 0°C. There is then a risk of explosion.

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.

If the engine does not start straightaway, stop 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).

Fork carriage emergency lowering

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

➢ Remove floormat.

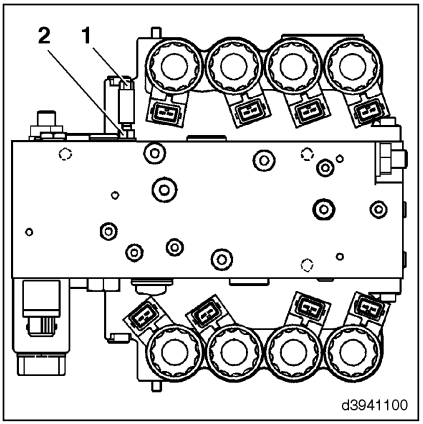
⚠ DANGER

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 screw (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 floor plate.

➢ Slowly rotate the screw (1) using the socket wrench approx. 1.5 turns in an anti-clock-wise direction until the fork carriage has been completely lowered. ▷

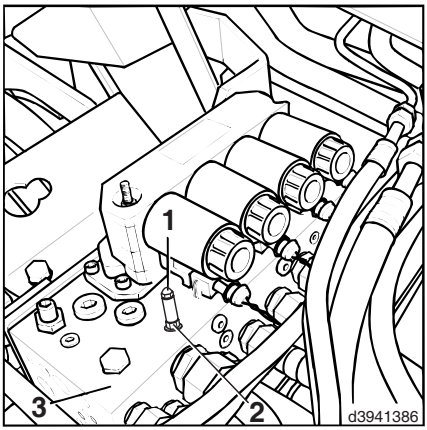


➢ Open the bonnet.

➢ Open floor plate and secure it.

➢ Undo the self-locking nut (2) about 2 turns.

- Turn screw (1) back in again, in a clockwise direction, (tightening torque 2.5 Nm), otherwise the fork carriage cannot be raised using the joystick.
- Tighten the self-locking nut (2) again (tightening torque: 9.5 Nm).
- Close floor plate and bonnet.
- Insert the floormat.



Emergency exit for trucks with rear screen

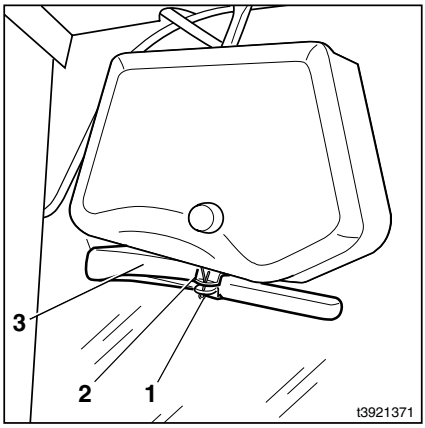
If the truck is fitted with a front and rear windscreen, it may not be possible to dismount at the side if the truck breaks down in a narrow aisle. In the case of a dangerous situation the operator can exit the vehicle at the rear windscreen. For this purpose, the emergency exit hammer must be used to destroy the windscreen.

- Bend up the cotter pin (1) on the mounting (2) underneath the rear wiper motor.

⚠ WARNING

Danger of personal injury from glass splinters.
Carefully remove the glass splinter.

- Remove the emergency exit hammer (3) from the mounting and carefully break the windscreen.
- Carefully dismount to the rear.



Towing instructions

Towing

If the truck needs to be towed away, the following can be brought about by the towing device:

- shortcircuiting of hydraulic oil circuit
- release of multi-disc brakes in drive axle via brake valve and Stop pedal .

⚠ WARNING

Braking of the truck is no longer possible. The parking brake does not function either.

To tow the truck a towing vehicle with sufficient tractive power and braking force for the unbraked towed load is thus required. It is only permitted to tow the truck using a fixed connection (towing rod).

Towing process

➢ Lower load so that fork arms do not scrape on ground during towing .

➢ Remove load.

➢ Attach towing vehicle (ensure sufficient tractive power and braking force) to towing bolt of truck using towing rod .

Open shorting plunger of hydraulics

➢ Open motor hood.

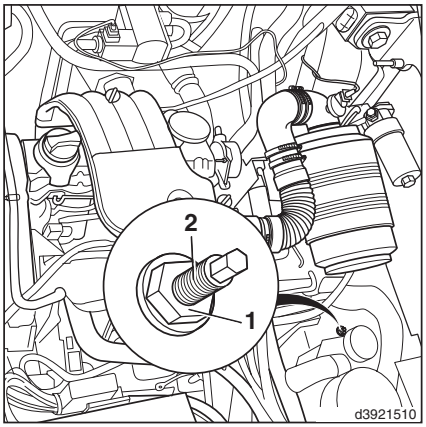
➢ Release sealing collar nut (1) (size SW 19 mm) on left on variable pump with socket at housing.

➢ Unscrew threaded stud (2) (SW 8 mm) 2 turns with socket .

➢ Lock threaded stud with sealing collar nut (1), tighten to 80 Nm.

➢ Close motor hood.

▷



Release multi-disc brake

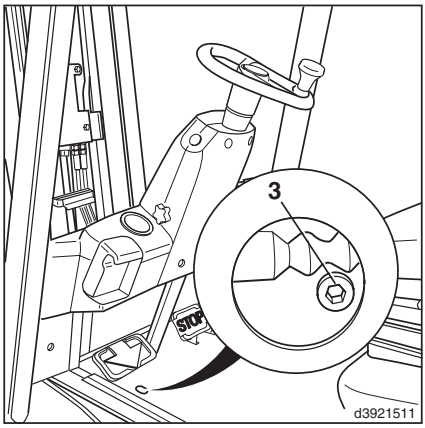
The brake valve can be found under the floor plate on the truck frame on the left.

➢ Remove floormat.

- Insert Allen key (SW 5 mm) through hole in floor plate and unscrew socket head screw (3) about 8 turns.
- Sit on driver's seat.
- Press down handle of parking brake.

Symbol on indicator unit will be extinguished.

- Move Stop pedal several times in easy-movement range until resistance is felt (pump max. 10 strokes) until brake is released .



After towing

- Place chocks underneath on side facing downhill.
- Open motor hood.
- Release sealing collar nut (1) on variable pump.
- Insert threaded stud (2) (SW 8 mm), tighten to 20^{+5} Nm.
- Lock threaded stud with sealing collar nut (1).
- Tighten nut to 80 Nm.

Restore braking

- Insert socket head screw (3) until stop in valve block.
- Replace floormat and close motor hood.

⚠ DANGER

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

After repairs to the braking system check function. If defects in the the braking system occur , contact your authorised dealer.

Placing the forklift truck into storage

Actions prior to placing the forklift truck into storage

If the vehicle is to be placed into storage for more than 2 months e. g. for operational reasons, it should be stored only in a well ventilated, clean and dry room free of frost, and the following measures undertaken beforehand.

- Clean forklift truck thoroughly.
- Raise fork carriage several times to the end stop, move lift mast backwards and forwards a few times and operate any attachments several times.
- 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.
- All unpainted mechanical components should be coated 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 instructions of battery manufacturer.)
- 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 or this will encourage the formation and collection of condensed water.

NOTE

If the vehicle is to be shut down for more than 6 months, further measures should be agreed with your authorised dealer.

Bringing back into service after storage

- 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 condensed water, change if necessary.
- Perform maintenance as before initial commissioning.
- Put forklift truck into service.

Disposal of old vehicles

The disposal of old vehicles is regulated in directive 2000/53/EC of the European Parliament and Council.

We recommend having this work carried out by an authorised salvager. If you want to do this yourself, you must, according to Articles 9, 10 and 11 the directive 75/442/EEC, obtain a permit from the responsible authorities.

The following minimum requirements must also be observed:

- The storage locations for old vehicles before their processing must be suitable areas with an impermeable surface. They must be provided with collecting facilities

and separators for fluids running out and grease-cutting cleaning agents.

- The processing locations must be suitable areas with an impermeable surface. They must be provided with collecting facilities and separators for fluids running out and grease-cutting cleaning agents. Suitable storerooms for removed parts and parts partially smeared with oil 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 conditioners must also be available.
- For the disposal of harmful substances from the old vehicles, the batteries and LPG bottle/tanks must be removed. The following must also be removed, collected and stored separately: fuel, engine oil, coolant, hydraulic oil, fluids from air conditioners.
- The following parts can be collected and recycled separately: catalytic converters, metal parts containing copper and aluminium, tyres, big plastic parts (console, fluid reservoirs), glass.

NOTE

The owner is responsible for the compliance with the directives and further national regulations.

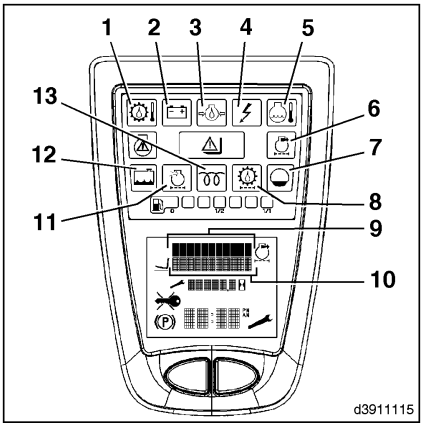
Malfunctions during operation ▷

⚠ CAUTION

If one of the following indicator lights lights up in the indicator unit and the buzzer sounds during operation, a malfunction has occurred.

The engine must be switched off immediately and the malfunction dealt with. (See: Malfunctions, Causes and Remedy)

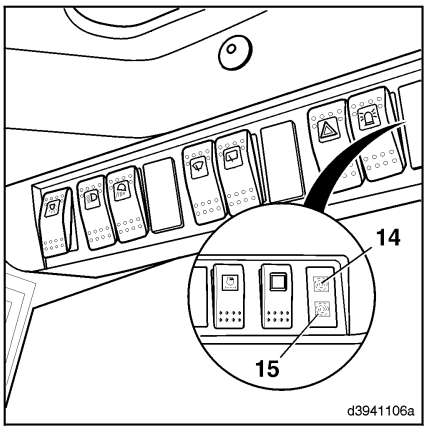
- Hydraulic oil temperature indicator (1) and buzzer
- (2) Battery charge indicator
- Engine oil pressure indicator (3) and/or engine oil level indicator and buzzer
- Indicator light: error in electrical control system (4)
- Engine temperature indicator (5) and buzzer
- Level display (7) (special equipment)
- Coolant level indicator (12) (special equipment)
- Hydraulic oil microfilter (8) (special equipment)



⚠ CAUTION

Only if additional equipment soot filter system is fitted: If, depending on version, the orange indicator light (15) flashes and the buzzer sounds, or the load indicator (9) flashes and the red soot filter alarm (6) lights up and the buzzer sounds, the filter is loaded.

The soot filter must be regenerated immediately.



NOTE

- *Only if additional equipment soot filter is fitted: If, depending on version, the orange indicator light (15) lights up or the soot filter load indicator (9) flashes and the buzzer sounds at intervals, the soot filter must be regenerated within the next 30 minutes.*
- *Only if additional equipment soot filter is fitted: In the event of an error during the regeneration procedure, the orange indicator light (15) and the red indicator light (14) flash alternately, or the soot filter alarm (6) lights up and text field (10) of the indicator unit displays an error code, depending on version. Restart regeneration procedure.*

- *If the indicator light (4) flashes, there is an error in the electrical control system. Depending on the setting and error, it may only be possible to drive the forklift truck at low speed, or not at all. Each error is indicated by a numerical code or symbols in text field (10). Please 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. Please contact your authorised dealer.*
- *If the air filter vacuum indicator (11) lights up on the indicator unit, maintenance must be performed on the air filter.*
- *Only with attachment of a 3rd auxiliary hydraulics: If the switchable additional function is blocked or the forklift truck only travels at crawling speed, or the text field (10) shows error code* `L247` *and the buzzer sounds, a malfunction has occurred in the safety system. Please contact your authorised dealer.*

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 wax 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 shut-off valve.
Immobiliser active.	Contact your authorised dealer.
Leak in fuel line.	Check all fuel line connections for leaks and tighten screw joints.
The indicator unit does not light up.	Tighten connection terminals at the battery, check wiring connections.
Preheating system defective.	Check power supply, wiring and connections to the glow plug start switch. If this does not resolve the defect, please contact your authorised dealer.
Pump/nozzle unit defective. Engine idling speed incorrect.	This defect should be checked and remedied only by a trained technician . Please contact your authorised dealer.

Indicator light is illuminated: "Defect in electrical control system".	
Possible cause	**Remedy**
Defect in electrical control system	Defect can be determined using the diagnostics tester. 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 connection 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 wax segregation.	Renew fuel filter, check fuel line connections for leaks and tighten clamping screws. In cold climates, use winter fuel.
Especially in winter: engine oil used is too viscous.	Use engine oil appropriate to the external temperature.

Particulate filter system fault warning light flashes and buzzer sounds when ignition is switched on.	
Possible cause	**Remedy**
Switch illumination in the start switch or emergency stop switch for the particulate filter system defective.	Check the indicator lamp: switch on the glow plug start switch. Both switches should light up briefly once, if not, exchange the indicator lamp bulb. (Regeneration can still be performed even though the lamp is defective; acknowledge by pressing the start switch)
Fault in particulate filter system.	Please contact your authorised dealer.

"Particulate filter alarm" indicator light illuminates and the truck only moves at crawling speed	
Possible cause	**Remedy**
Load period of the particulate filter exceeds 8.5 h.	Regenerate particulate filter immediately.

Engine runs rough and loses power.	
Possible cause	**Remedy**
Fuel supply insufficient. Blockages or air locks in the fuel system, caused in winter by paraffin wax segregation.	Renew fuel filter, check fuel line connections for leaks and tighten clamping screws. 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 injector lines for leaks.
Engine speed incorrectly set.	The setting should be performed only by a trained technician. Please contact your authorised dealer.

Engine overheating, red indicator light in the indicator unit illuminates. Switch off engine immediately.	
Possible cause	**Remedy**
Insufficient coolant in cooling system.	Check the cooling system for leaks, seal them as required. Top up the coolant fluid.
Coolant pump defective.	Contact your authorised dealer.
Water cooler radiator fins partially clogged by dirt or foreign bodies.	Clean water and hydraulic oil coolers.

Engine oil pressure too low. Switch off engine immediately.	
Possible cause	**Remedy**
Leaks in the lubricating system.	Contact your authorised dealer.
Oil level too low	Top up with engine oil

Charging lamp comes on when truck is in operation.	
Possible cause	**Remedy**
Three-phase alternator speed too low.	Check V-ribbed belt tension.
Alternator fails to charge the battery, alternator or control switch defective.	Contact your authorised dealer

Truck only moves at crawling speed, the buzzer sounds and error code `X201` is displayed in the text field of the indicator unit.	
Possible cause	**Remedy**
Engine oil level too low.	Top up engine oil.

Truck only moves at crawling speed, the buzzer sounds and error code `X202` is displayed in the text field of the indicator 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 crawling speed, the buzzer sounds and error code `X203` is displayed in the text field of the indicator unit.	
Possible cause	**Remedy**
Radiator water level too low.	Top up radiator water.

The truck only moves at crawling speed and the level display lights up in the indicator unit.	
Possible cause	**Remedy**
Radiator water level too low.	Top up radiator water.

Truck only moves at crawling speed, the buzzer sounds and error code X204 is displayed in the text field of the indicator unit.	
Possible cause	**Remedy**
Engine temperature too high.	Top up radiator water. Water pump defective. Clean the water cooler. Adjust the fuel injection system.

Malfunctions, causes, remedies (hydraulic equipment)

Abnormal noises.	
Possible cause	**Correction**
Clogged suction filter.	Replace the filter.
Leaks in the suction pipe line, oil foaming.	Seal the pipe line. Check the hydraulic oil level, top up as necessary.
Hydraulic pump or motor damage, defective seals, causing air to be drawn in.	Have the hydraulic power unit checked by your authorised dealer.
Incorrect oil viscosity, insufficient oil in the tank or hydraulic pump.	Change the hydraulic oil; ensure the oil has the specified viscosity. Top up hydraulic oil.

No pressure or insufficient pressure in the system.	
Possible cause	**Correction**
Suction line damaged, noisy.	Change the hydraulic oil, top up the hydraulic oil.
Defective pump, loss of pressure, pressure valves fail to close, valve seat damaged.	Contact your authorised dealer.
Pipe line broken or leaking.	Replace pipe line or seal it.
Oil too thin, causing excessive leakage losses.	Change the hydraulic oil; ensure the oil has the specified viscosity.
Oil temperature indicator lights up.	Check hydraulic oil level, clean hydraulic oil cooler.

Oil pressure fluctuations.	
Possible cause	**Correction**
Causes as for abnormal noises.	See under abnormal noises.
Pressure relief valve or feed pressure valves jamming.	Please contact your authorised dealer.
Lift and tilt cylinders exhibit chafe points.	Please contact your authorised dealer.
Lift mast does not extend fully, or leans back somewhat.	Top up hydraulic oil. Bleed the cylinders.

No flow or insufficient flow.	
Possible cause	**Correction**
Clogged filters (if noises also occur at the same time).	Clean the filter or replace it.
Defective pump, loss of pressure, pressure valves fail to close, valve seat damaged.	Contact your authorised dealer.
Pipe line broken or leaking.	Replace pipe line or seal it.

No flow or insufficient flow.	
Possible cause	**Correction**
Valves clogged.	Contact your authorised dealer.
Hydraulic system overheats.	Check the hydraulic oil level, use the specified hydraulic oil, clean the hydraulic oil cooler.

Hydraulic oil temperature too high.	
Possible cause	**Correction**
Pump damage, valves leaking.	Contact your authorised dealer.
Insufficient oil in the tank or oil cooler clogged.	Check the hydraulic oil level, top up with hydraulic oil if necessary. Clean the hydraulic oil cooler and check for leaks, if defective contact your authorised dealer.

Truck is still running only at crawling speed, the buzzer sounds and error code X205 is displayed in the text field of the indicator unit	
Possible cause	**Correction**
Hydraulic oil temperature too high.	Check the hydraulic oil level Clean the hydraulic oil cooler.

Malfunction in the third auxiliary hydraulic system (special equipment).	
Possible cause	**Correction**
Truck running in crawler mode. Error code L247 is displayed in the indicator unit and the buzzer sounds. Switchable auxiliary hydraulic functions are blocked.	Solenoid valve slider jamming. Wiring damaged. Short circuit. Please contact your authorised dealer.

6

Technical data

Type sheet H 25, as at 05/2008

1 Identification			
1.1	Manufacturer		Linde
1.2	Manufacturer's model designation		H 25 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity / Load	Q [kg]	2500
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	445
1.9	Wheelbase	y [mm]	1905

2 Weight			
2.1	Tare weight	kg	3870
2.2	Axle weight with front/rear load	kg	5670 / 700
2.3	Axle weight without front/rear load	kg	1930 / 1940

3 Wheels, chassis frame			
3.1	Front/rear tyres: polyurethane, rubber		SE
3.2	Tyre size, front		27x10-12[1]
3.3	Tyre size, rear		23x9-10[2]
3.5	Wheels, number, front/rear (x = driven)		2x (4x)/2[3]
3.6	Front track width	b10 [mm]	1008 (1204)[4,5]
3.7	Track width, rear	b11 [mm]	932

4 Basic dimensions			
4.1	Forward/backward fork tilt	α/β (°)	5.0/8.0[6]
4.2	Lowered mast height	h1 [mm]	2264[7]
4.3	Free lift	h2 [mm]	150

1 Optional: 7.00-12 dual fitment (air/SE). Single tyres air 27x10-12 and SE 28x12.5-15.
2 Optional: air 23x9-10.
3 Bracketed value for dual fitment.
4 1042 mm with tyre size SE 28x12.5–15.
5 Bracketed value for dual fitment.
6 Lift height and equipment can change the backwards tilt.
7 With 150 mm free lift on standard lift mast.

4 Basic dimensions			
4.4	Lift	h3 [mm]	3050
4.5	Raised mast height	h4 [mm]	3840
4.7	Overhead guard height (cab)	h6 [mm]	2210
4.8	Seat height (min/max)	h7 [mm]	1105
4.12	Coupling height	h10 [mm]	698
4.19	Overall length	l1 [mm]	3727
4.20	Length including fork back	l2 [mm]	2727
4.21	Overall width	b1/b2 [mm]	1256[8]
4.22	Fork arm dimensions	s/e/l [mm]	45 x 100 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		2 A
4.24	Fork carriage width	b3 [mm]	1150[9]
4.31	Ground clearance at mast	m1 [mm]	119
4.32	Ground clearance, centre of wheelbase	m2 [mm]	173
4.33	Aisle width for pallet 1000x1200 crosswise	Ast [mm]	4065
4.34	Aisle width for pallet 800x1200 longitudinal	Ast [mm]	4265
4.35	Turning radius	Wa [mm]	2420
4.36	Smallest pivot point distance	b13 [mm]	580

5 Performance data			
5.1	Driving speed with/without load	km/h	22/22
5.2	Lifting speed with/without load	m/s	0.47 / 0.48
5.3	Lowering speed with/without load	m/s	0.52 / 0.54
5.5	Pulling force with/without load	N	19,790 / 15,150
5.7	Climbing capability with/without load	%[10]	32 / 33
5.9	Acceleration with/without load	s	5.6/4.8
5.10	Service brake		Hydrostatic

[8] 1337 mm for SE 28x12.5-15; 1611 mm for SE dual fitment 7.00-12; 1289 mm for air 27x10-12/20 PR; 1337 mm for air 250/75 R12; 1624 mm for air dual fitment 7.00-12.

[9] For dual fitment 1600 mm.

[10] On short slopes, driving over obstacles (see section: Driving)

7 Drive / Engine			
7.1	Engine manufacturer / Type		VW / CBHA (EEC)
7.2	Engine output as per ISO 1585	kW	44
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders / Displacement	cm^3	4 / 1968
7.5	Fuel consumption according to VDI cycle	l/h: kg/h	3.2

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	32
8.4	Noise level at the driver's ear	dB (A)	77
8.5	Towing hook, type/model		DIN 15170-H

Type sheet H 30, as at 05/2008

1 Identification			
1.1	Manufacturer		Linde
1.2	Manufacturer's model designation		H 30 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity / Load	Q [kg]	3000
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	445
1.9	Wheelbase	y [mm]	1930

2 Weight			
2.1	Tare weight	kg	4220
2.2	Axle weight with front/rear load	kg	6420 / 800
2.3	Axle weight without front/rear load	kg	1950 / 2270

3 Wheels, chassis frame			
3.1	Front/rear tyres: polyurethane, rubber		SE
3.2	Tyre size, front		27x10-12[11]
3.3	Tyre size, rear		23x9-10[12]
3.5	Wheels, number, front/rear (x = driven)		2x (4x)/2[13]
3.6	Front track width	b10 [mm]	1008 (1204)[14],[15]
3.7	Track width, rear	b11 [mm]	932

4 Basic dimensions			
4.1	Forward/backward fork tilt	α/β (°)	5.0/8.0[16]
4.2	Lowered mast height	h1 [mm]	2264[17]
4.3	Free lift	h2 [mm]	150

[11] Optional: 7.00-12 dual fitment (air/SE). Single tyres air 27x10-12 and SE 28x12.5-15.
[12] Optional: air 23x9-10.
[13] Bracketed value for dual fitment.
[14] 1042 mm with tyre size SE 28x12.5–15.
[15] Bracketed value for dual fitment.
[16] Lift height and equipment can change the backwards tilt.
[17] With 150 mm free lift on standard lift mast.

4 Basic dimensions			
4.4	Lift	h3 [mm]	3050
4.5	Raised mast height	h4 [mm]	3840
4.7	Overhead guard height (cab)	h6 [mm]	2210
4.8	Seat height (min/max)	h7 [mm]	1105
4.12	Coupling height	h10 [mm]	698
4.19	Overall length	l1 [mm]	3755
4.20	Length including fork back	l2 [mm]	2755
4.21	Overall width	b1/b2 [mm]	1256[18]
4.22	Fork arm dimensions	s/e/l [mm]	45 x 100 x 1000
4.23	Fork carriage DIN 15173, class/form A, B		3 A
4.24	Fork carriage width	b3 [mm]	1150[19]
4.31	Ground clearance at mast	m1 [mm]	119
4.32	Ground clearance, centre of wheelbase	m2 [mm]	173
4.33	Aisle width for pallet 1000x1200 crosswise	Ast [mm]	4089
4.34	Aisle width for pallet 800x1200 longitudinal	Ast [mm]	4289
4.35	Turning radius	Wa [mm]	2444
4.36	Smallest pivot point distance	b13 [mm]	580

5 Performance data			
5.1	Driving speed with/without load	km/h	22/22
5.2	Lifting speed with/without load	m/s	0.47 / 0.48
5.3	Lowering speed with/without load	m/s	0.52 / 0.54
5.5	Pulling force with/without load	N	19,790 / 15,300
5.7	Climbing capability with/without load	%[20]	27 / 30
5.9	Acceleration with/without load	s	5.6/4.8
5.10	Service brake		Hydrostatic

[18] 1337 mm for SE 28x12.5-15; 1611 mm for SE dual fitment 7.00-12; 1289 mm for air 27x10-12/20 PR; 1337 mm for air 250/75 R12; 1624 mm for air dual fitment 7.00-12.

[19] For dual fitment 1600 mm.

[20] On short slopes, driving over obstacles (see section: Driving)

7 Drive / Engine			
7.1	Engine manufacturer / Type		VW / CBHA (EEC)
7.2	Engine output as per ISO 1585	kW	44
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders / Displacement	cm^3	4 / 1968
7.5	Fuel consumption according to VDI cycle	l/h	3.4

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	32
8.4	Noise level at the driver's ear	dB (A)	77
8.5	Towing hook, type/model		DIN 15170-H

Type sheet H 35, as at 05/2008

1 Identification			
1.1	Manufacturer		Linde
1.2	Manufacturer's model designation		H 35 D
1.3	Drive		Diesel
1.4	Operation		Seated
1.5	Load capacity / Load	Q [kg]	3500
1.6	Load centre of gravity	c [mm]	500
1.8	Load distance	x [mm]	450
1.9	Wheelbase	y [mm]	1965

2 Weight			
2.1	Tare weight	kg	4680
2.2	Axle weight with front/rear load	kg	7240 / 940
2.3	Axle weight without front/rear load	kg	2050 / 2630

3 Wheels, chassis frame			
3.1	Front/rear tyres: polyurethane, rubber		SE
3.2	Tyre size, front		27x10-12[21]
3.3	Tyre size, rear		23x9-10[22]
3.5	Wheels, number, front/rear (x = driven)		2x (4x)/2[23]
3.6	Front track width	b10 [mm]	1008 (1204)[24],[25]
3.7	Track width, rear	b11 [mm]	932

4 Basic dimensions			
4.1	Forward/backward fork tilt	α/β (°)	5.0/8.0[26]
4.2	Lowered mast height	h1 [mm]	2264[27]
4.3	Free lift	h2 [mm]	150

[21] Optional: 7.00-12 dual fitment (air/SE). Single tyres air 27x10-12 and SE 28x12.5-15.
[22] Optional: air 23x9-10.
[23] Bracketed value for dual fitment.
[24] 1042 mm with tyre size SE 28 x 12.5 - 15.
[25] Bracketed value for dual fitment.
[26] Lift height and equipment can change the backwards tilt.
[27] With 150 mm free lift on standard lift mast.

4 Basic dimensions			
4.4	Lift	h3 [mm]	3050
4.5	Raised mast height	h4 [mm]	3840
4.7	Overhead guard height (cab)	h6 [mm]	2210
4.8	Seat height (min/max)	h7 [mm]	1105
4.12	Coupling height	h10 [mm]	690
4.19	Overall length	l1 [mm]	3795
4.20	Length including fork back	l2 [mm]	2795
4.21	Overall width	b1/b2 [mm]	1256[28]
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	b3 [mm]	1150[29]
4.31	Ground clearance at mast	m1 [mm]	117
4.32	Ground clearance, centre of wheelbase	m2 [mm]	172
4.33	Aisle width for pallet 1000x1200 crosswise	Ast [mm]	4126
4.34	Aisle width for pallet 800x1200 longitudinal	Ast [mm]	4326
4.35	Turning radius	Wa [mm]	2476
4.36	Smallest pivot point distance	b13 [mm]	580

5 Performance data			
5.1	Driving speed with/without load	km/h	22/22
5.2	Lifting speed with/without load	m/s	0.47 / 0.48
5.3	Lowering speed with/without load	m/s	0.52 / 0.54
5.5	Pulling force with/without load	N	19,790 / 16,090
5.7	Climbing capability with/without load	%[30]	24 / 28
5.9	Acceleration with/without load	s	5.7 / 4.9
5.10	Service brake		Hydrostatic

[28] 1337 mm for SE 28x12.5-15; 1611 mm for SE dual fitment 7.00-12; 1289 mm for air 27x10-12/20 PR; 1337 mm for air 250/75 R12; 1624 mm for air dual fitment 7.00-12.

[29] For dual fitment 1600 mm.

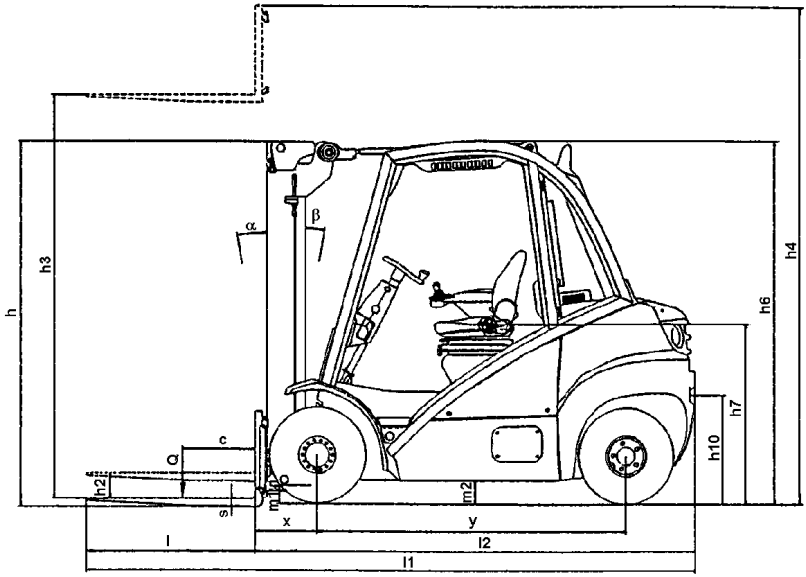
[30] On short slopes, driving over obstacles (see section: Driving)

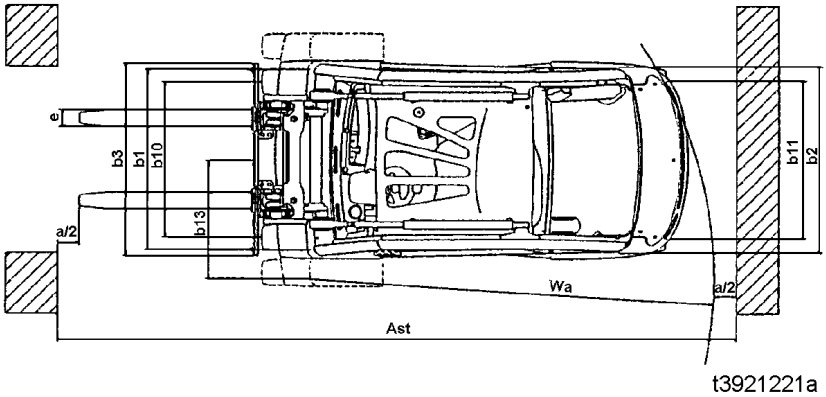
7 Drive / Engine			
7.1	Engine manufacturer / Type		VW / CBHA (EEC)
7.2	Engine output as per ISO 1585	kW	44
7.3	Nominal speed	rpm	2800
7.4	Number of cylinders / Displacement	cm^3	4 / 1968
7.5	Fuel consumption according to VDI cycle	l/h	3.6

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	32
8.4	Noise level at the driver's ear	dB (A)	77
8.5	Towing hook, type/model		DIN 15170-H

Load diagrams and lift mast data as at 05/2008

Main dimensions





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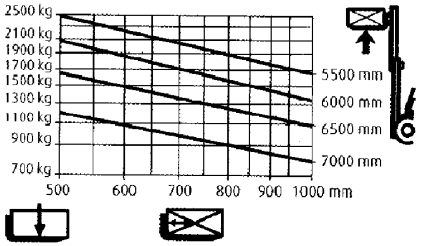
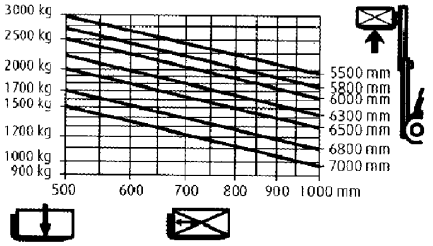
Load diagrams

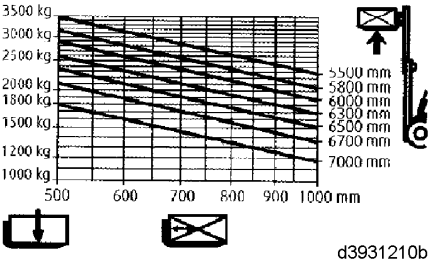
H 25



H 30



H 35



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For standard and duplex masts when fitted as standard.

Lift mast data

Standard lift mast (in mm)							
Overall heights when retracted with specified free lift	h 1	2264	2414	2564	2714	2964	3214
Free lift	h 2	150	150	150	150	150	150
Lift	h 3	3050	3350	3650	3950	4450	4950
Overall height when extended	h 4	3840	4140	4440	4740	5240	5740

Duplex lift mast (in mm)				
Overall heights when retracted with specified free lift	h 1	2190	2490	2640
Free lift	h 2	1424	1724	1874
Lift	h 3	3115	3715	4015
Overall height when extended	h 4	3905	4505	4805

Triplex lift mast (in mm)						
Overall heights when retracted with specified free lift	h 1	2191	2241	2491	2641	2841
Free lift	h 2	1424	1474	1724	1874	2074
Lift	h 3	4655	4805	5505	5955	6455
Overall height when extended	h 4	5445	5595	6295	6745	7245

Noise emission values

Calculated in the test cycle in accordance with EN 12053 from the weighted values for the TRACTION, LIFT and IDLING operating states.

Acoustic pressure level on the driver's compartment			
H 25, H 30, H 35	L_{PAZ}	=	77 dB (A)
in the LIFT operating state	L_{Pa}	=	78 dB (A)
in the IDLE RUNNING operating state	L_{Pb}	=	68 dB (A)
in the DRIVE operating state	L_{Pc}	=	82 dB (A)
Insecurity	K_{PA}	=	4 dB (A)

Sound power level			
H 25, H 30, H 35	L_{WAZ}	=	92 dB (A)
in the LIFT operating state	L_{WA}	=	94 dB (A)
in the IDLE RUNNING operating state	L_{Wb}	=	84 dB (A)

Sound power level			
in the DRIVE operating state	L_{Wc}	=	96 dB (A)
Insecurity	K_{WA}	=	2 dB (A)

Guaranteed sound power level			
in accordance with 2000/14/EC Directive	L_{WA}	=	97 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" operating statuses. It can only be used as a comparative value for different fork lift trucks. The value is less suitable for determining real environmental impact levels, as it is not representative for normal operation, which includes the "Idling" operating status.

NOTE

Lower or higher noise values may occur when using industrial trucks, for instance, due to the method of operation, environmental factors and other sources of noise.

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 as per EN 12096			
Measured vibration characteristic	$a_{w,zs}$	=	0.9 m/s^2
Uncertainty	K	=	0.3 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.

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

R

S

T

V

W

Linde Material Handling GmbH

393 807 1001 EN – 08/2008

Operating Instructions
Diesel truck

Linde Material Handling

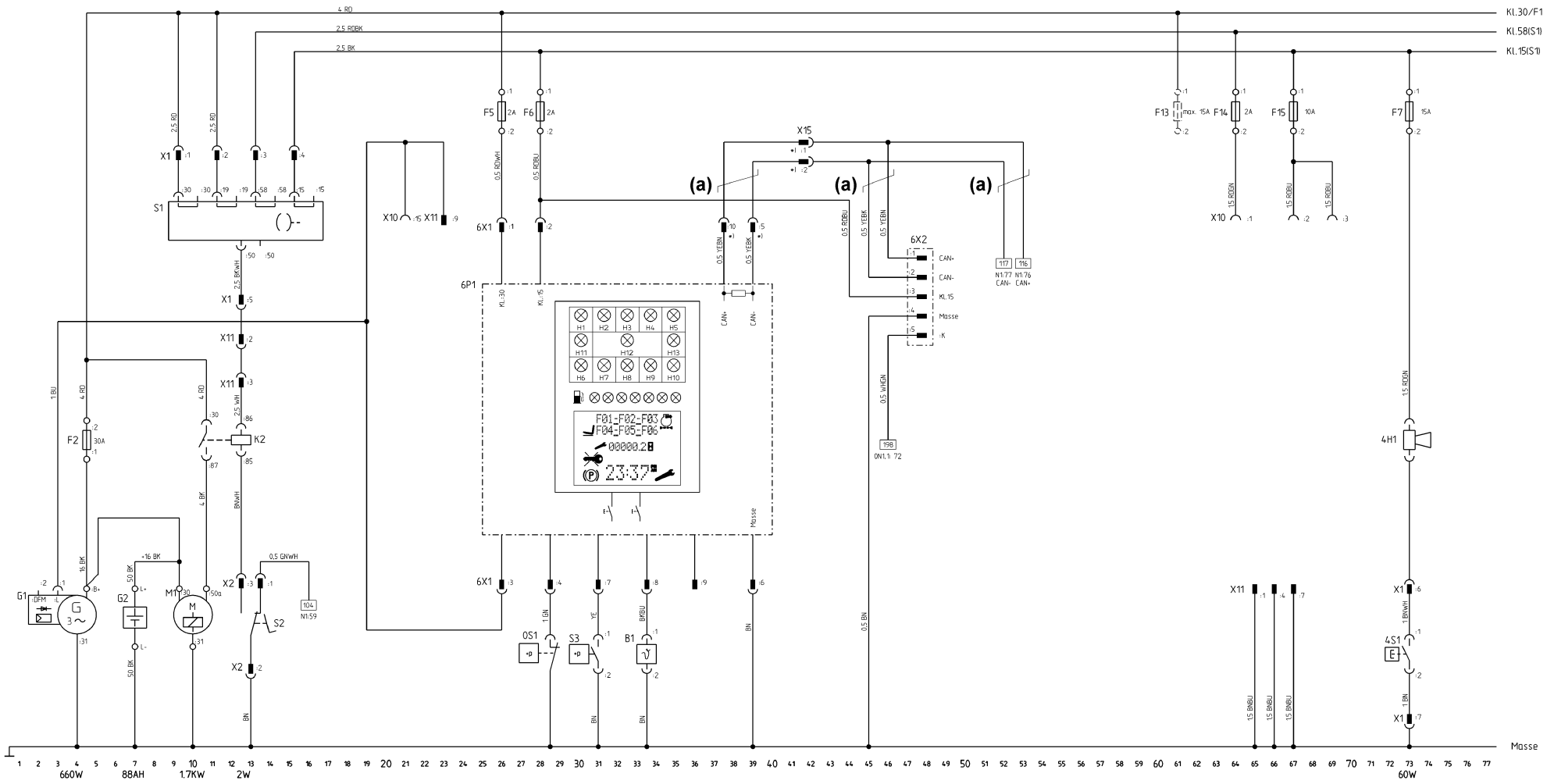
H25D, H30D, H35D

Annex

393 807 1001 EN – 08/2008

Wiring diagram

Basic equipment for diesel with pump injection engine - sheet 1



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Legend

B1	Tank transmitter, 33
F2	30A MTA fuse, 4
F5	2A fuse, 26
F6	2A fuse, 28
F7	15A fuse, 73
F13	Fuse (max. 15A), 61
F14	2A fuse, 64
F15	10A fuse, 67
G1	660 W three-phase alternator with regulator, 1–5
G2	88 Ah battery, 7
4H1	60 W signal horn, 73
K2	Start relay, 10–13
M1	1.7 kW starter motor, 9–11
6P1	Indicator unit, 25–40
	:1 – Terminal 30
	:2 – Terminal 15
	:6 – Earth
S1	Ignition and starting switch, 9–17
S2	Brake pedal switch 2 (start-up prevention), 13-14
S3	Suction filter vacuum-operated switch, 31
0S1	Oil pressure switch, 28
4S1	Horn activation, 73
X1	10-pin plug connector (S1), 9–15, 73
X2	3-pin plug connector (S2), 13. 14
X10	18-pin plug connector (central electrical system), 21, 64–69
X11	9-pin plug connector (central electrical system), 12–67
X15	2-pin plug connector (CAN), 42
6X1	10-pin plug connector (indicator unit), 26–39
6X2	7-pin plug connector (diagnostics), 48
	:3 – Terminal 15
	:4 – Earth

Wire colours

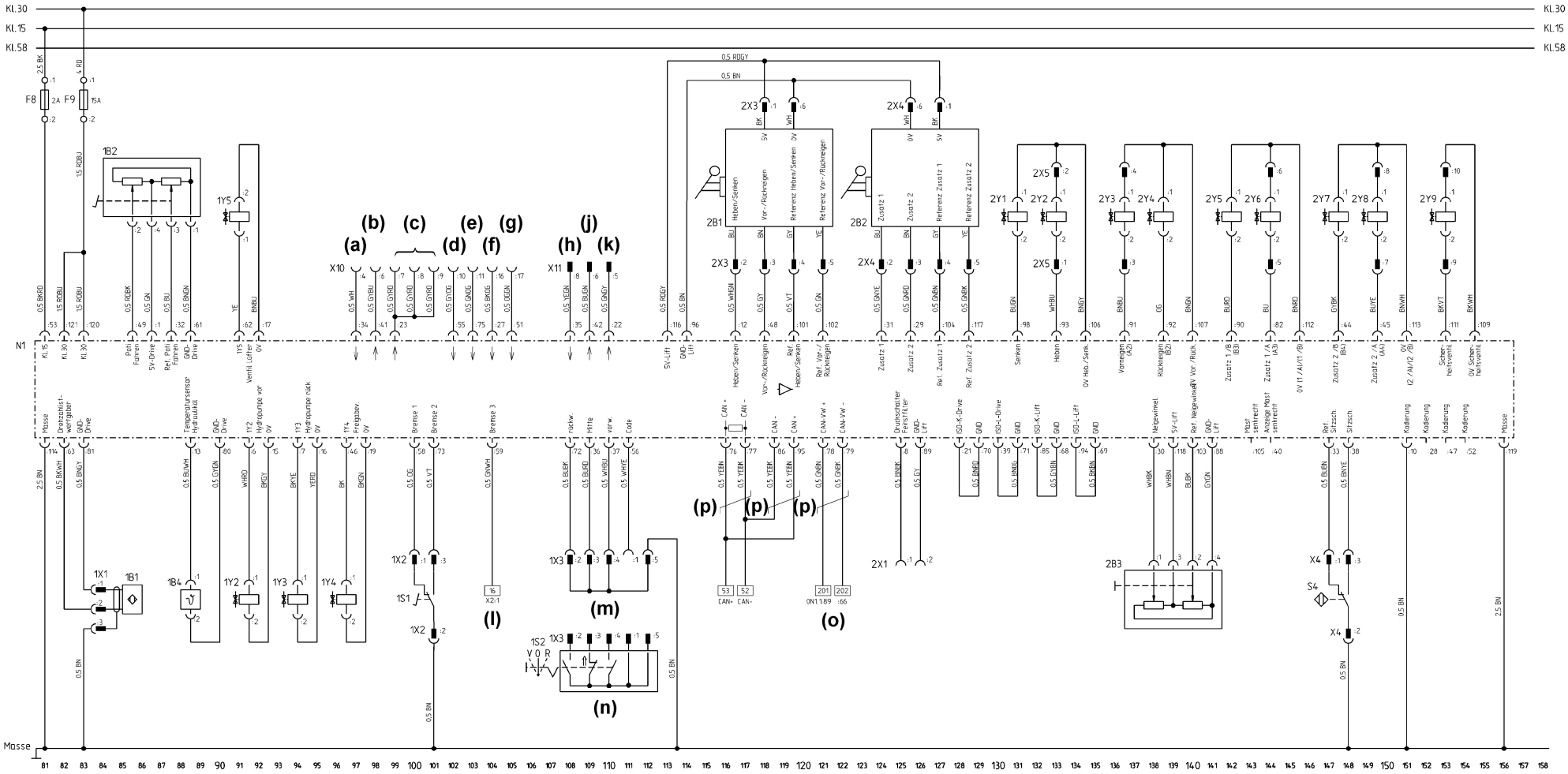
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

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
*)	Gold-plated contacts

Basic equipment for diesel with pump injection engine - sheet 2



Legend

1B1 Speed actual-value transmitter, 85–86
1B2 Dual potentiometer for accelerator, 84–89
1B4 Hydraulic oil temperature sensor, 88
2B1 Joystick basic functions, 116–121
:1 – 5V
:2 – Lift/lower
:3 – Tilt forwards/back
:4 – Lift/lower reference
:5 – Tilt forwards/back reference
:6 – 0V
2B2 Joystick additional functions, 123–129
:1 – 5V
:2 - Auxiliary 1
:3 - Auxiliary 2
:4 - Auxiliary 1 reference
:5 - Auxiliary 2 reference
:6 – 0V
2B3 Dual potentiometer for lift mast tilt angle, 137–141
F8 2A fuse, 81
F9 15A fuse, 83
N1 LHC electronic traction controller, 81–156
:1 – 5V drive sensor
:6 – Forwards hydraulic pump 1Y2
:7 – Reverse hydraulic pump 1Y3
:8 – Microfilter pressure switch
:10 – Coding
:12 – Lift/lower
:13 – Hydraulic oil temperature sensor
:15 – 0V forwards hydraulic pump
:16 – 0V reverse hydraulic pump
:17 – 0V fan valve
:19 – 0V release valve
:21 – ISO K-drive
:28 – Coding
:29 - Auxiliary 2
:30 – Tilt angle
:31 - Auxiliary 1
:32 – Drive potentiometer reference
:33 – Seat switch reference
:36 – Middle
:37 – Forwards
:38 – Seat switch
:39 – ISO L-drive
:40 – Mast vertical indicator
:44 – Auxiliary 2/B (B4)
:45 – Auxiliary 2/A (A4)
:46 – Release valve 1Y4
:47 – Coding
:48 – Tilt forwards/back
:49 – Drive potentiometer
:52 – Coding
:53 – Terminal 15
:56 – Code
:58 – Brake 1
:59 – Brake 3
:61 – Drive earth sensor
:62 – Fan valve 1Y5
:63 – Speed actual-value transmitter
:68 – GND
:69 – GND
:70 – GND
:71 – GND
:72 – Reverse
:73 – Brake 2
:80 – Drive earth sensor
:81 – Drive earth sensor
:82 – Auxiliary 1/A (A3)
:85 – ISO K-lift
:88 – Lift earth sensor
:89 – Lift earth sensor
:90 – Auxiliary 1/B (B3)
:91 – Tilt forwards (A2)
:92 – Tilt backwards (B2)
:93 – Lift
:94 – ISO L-lift
:96 – Lift earth sensor
:98 – Lower
:101 – Lift/lower reference
:102 – Tilt forwards/back reference
:103 – Tilt angle reference
:104 - Auxiliary 1 reference
:105 – Mast vertical
:106 – 0V lift/lower
:107 – 0V tilt forwards/backwards
:109 – 0V safety valve
:111 – Safety valve
:112 – 0V (1/A)/(1/B)
:113 – 0V (2/A)/(2/B)
:114 – Earth
:116 – 5V lift sensor
:117 - Auxiliary 2 reference
:118 – 5V lift sensor
:119 – Earth
:120 – Terminal 30
:121 – Terminal 30
S4 Seat switch, 147–148
1S1 Brake pedal switch 1, 100-101
1S2 Single-pedal travel direction switch, 107-112
X4 3-pin plug connector (seat switch), 147, 148
X10 18-pin plug connector (central electrical system), 97-105
X11 9-pin plug connector (central electrical system), 109–111
1X1 3-pin plug connector (1B1), 84
1X2 3-pin plug connector (1S1), 100, 101
1X3 6-pin plug connector (single-pedal), 108-112
2X1 2-pin plug connector (microfilter), 125, 126
2X3 6-pin plug connector (2B1), 116–121
2X4 6-pin plug connector (2B2), 124-129
2X5 10-pin plug connector (valve block), 133–153
1Y2 Solenoid valve "y" forwards, 91
1Y3 Solenoid valve "z" backwards, 94
1Y4 Release valve, 97
1Y5 Fan valve, 91
2Y1 Lower valve, 131
2Y2 Lift valve, 133
2Y3 Tilt forwards valve, 136
2Y4 Tilt backwards valve, 138
2Y5 Auxiliary valve 1B, 142
2Y6 Auxiliary valve 1A, 144
2Y7 Auxiliary valve 2B, 147
2Y8 Auxiliary valve 2A 149
2Y9 Safety valve, 153

Wire colours

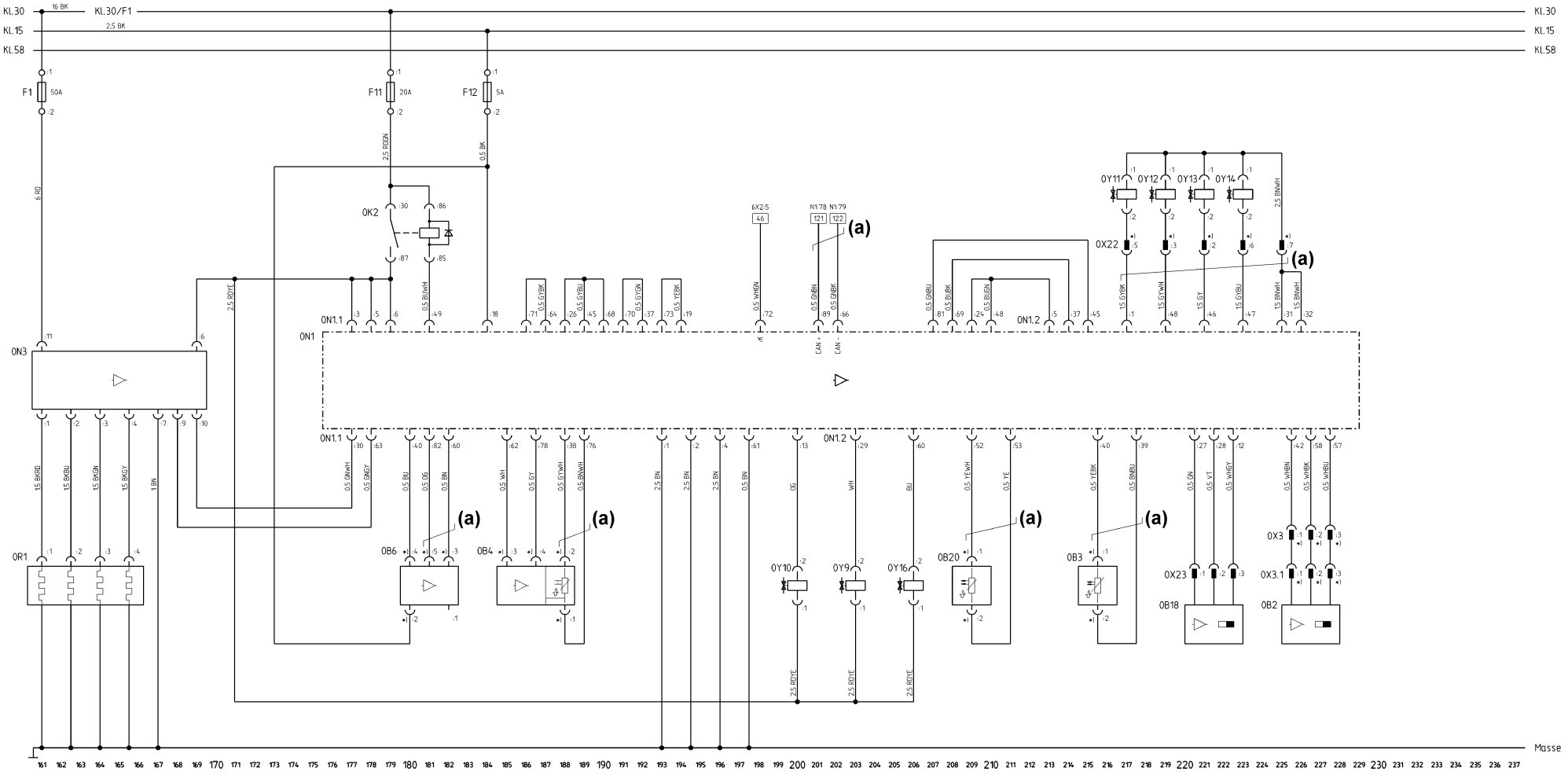
BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

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) Speed restriction
(b) Brake lights
(c) Programmable reversing signal
(d) Not assigned
(e) Shovel operation
(f) Radiator water level
(g) Door locking switch
(h) Air conditioning
(j) Engine switch-off
(k) Air conditioning switch-off
(l) Brake pedal switch 2
(m) Coding plug for double-pedal identification
(n) Travel direction switch for single-pedal
(o) Engine control unit
(p) Wires twisted together

Basic equipment for diesel with pump injectionengine - sheet 3



393 802 6018_02_3

Legend

0B2	Engine speed transmitter, 225-228
0B3	Fuel temperature transmitter, 215
0B4	Suction pipe pressure / suction pipe temperature transmitter, 185-188
0B6	Air volumeter, 180-182
0B18	Camshaft pulse generator, 220-223
0B20	Coolant temperature transmitter, 209
F1	50A fuse, 161
F11	20A fuse, 179
F12	5A fuse, 184
0K2	Terminal 30 relay for engine control unit, 179-181
0N1	Control unit for diesel direct injection system, 176-228
0N1.1	94-pin plug connector, 177-210
0N1.2	60-pin plug connector, 203-228
0N3	Automatic preheating time control unit, 161-169
0R1	Glow plugs, 161-166
0X3	3-pin plug connector, 225-228
0X3.1	3-pin plug connector, 225-228
0X22	8-pin plug connector, 217-225
0X23	3-pin plug connector, 220-223
0Y9	Switch valve for turbocharger, 203
0Y10	Valve for exhaust gas recirculation, 200
0Y11	Pump/nozzle valve for 1st cylinder, 217
0Y12	Pump/nozzle valve for 2nd cylinder, 219
0Y13	Pump/nozzle valve for 3rd cylinder, 221
0Y14	Pump/nozzle valve for 4th cylinder, 223
0Y16	Shut-off flap valve, 206

Wire colours

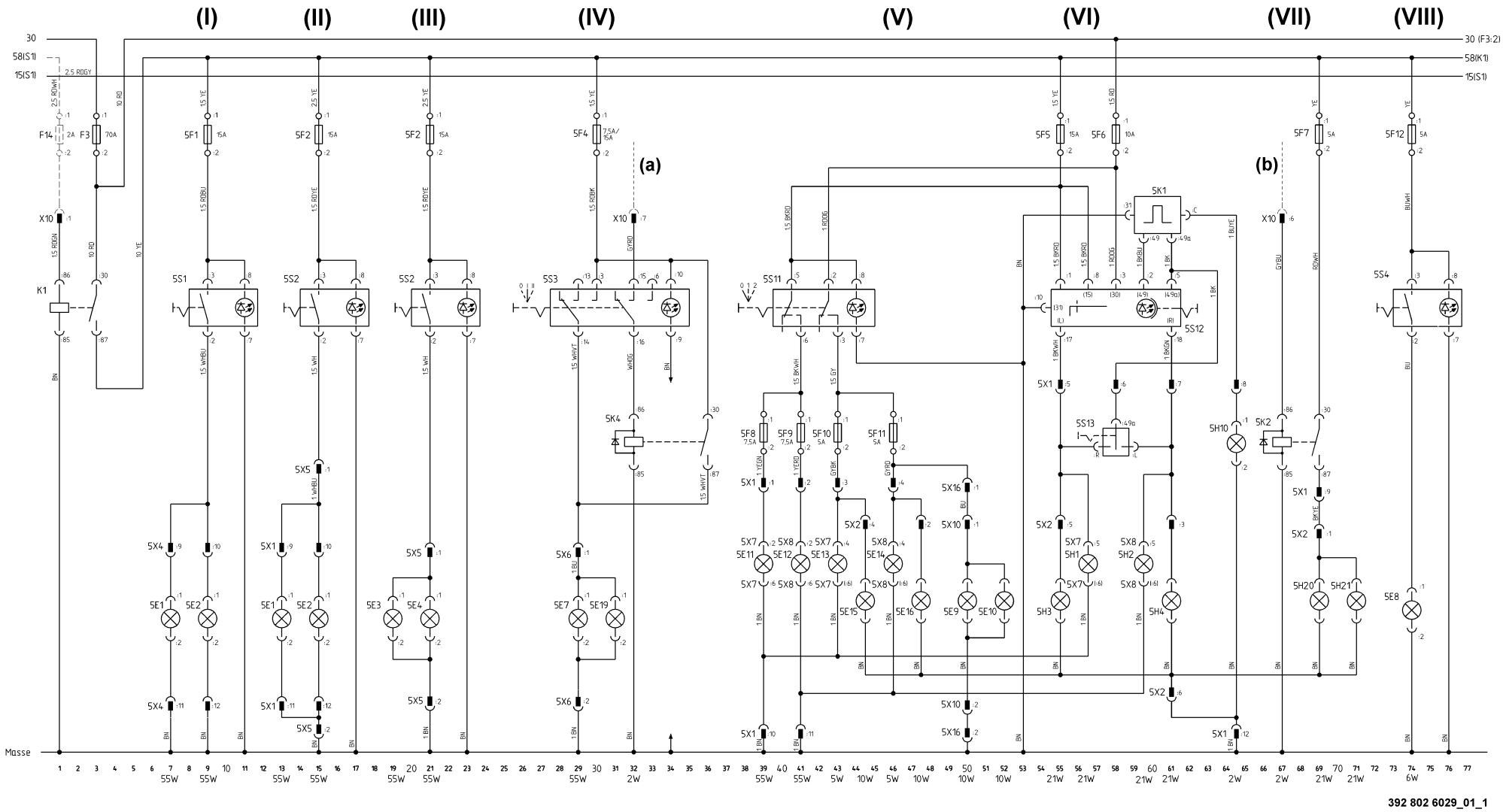
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

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
*)	Gold-plated contacts

Special equipment sheet 1 — working headlights, lighting, direction indicator system, brake light, interior lighting



Legend

5E1 Lower front left working headlight 55 W (position 1), 7, 13
5E2 Lower front right working headlight 55 W (position 2), 9, 15
5E3 Upper front left working headlight 55 W (position 3), 19
5E4 Upper front right working headlight 55 W (position 4), 21
5E7 Upper rear right working headlight 55 W (position 8), 29
5E8 6W interior light, 74
5E9 10W left number plate light, 50
5E10 10W right number plate light, 52
5E11 55W left dipped beam, 39
5E12 55W right dipped beam, 41
5E13 5W left front sidelight, 43
5E14 5W right front sidelight, 46
5E15 10W left rear sidelight, 44
5E16 10W right rear sidelight, 47
5E19 Upper rear left working headlight 55 W (position 7), 31
F3 70A MTA fuse (terminal 58), 3
F14 2A fuse (terminal 58), 1
5F1 15A fuse (working headlight positions 1, 2), 9
5F2 15A fuse (working headlight positions 3, 4), 15, 21
5F4 15A fuse (working headlight positions 7, 8), 30
5F5 15A fuse (lighting terminal 15), 55
5F6 10A fuse (lighting terminal 30), 58
5F7 5A fuse (brake light), 69
5F8 7.5A fuse (left headlight), 39
5F9 7.5A fuse (right headlight), 41
5F10 5A fuse (left sidelight), 43
5F11 5A fuse (right sidelight), 46
5F12 5A fuse (interior lighting), 74
5H1 21W left front direction indicator, 56
5H2 21W right front direction indicator, 59
5H3 21W left rear direction indicator, 55
5H4 21W right rear direction indicator, 61
5H10 2W direction indicator control lamp, 64
5H20 21W right brake light, 69
5H21 21W left brake light, 71
K1 Terminal 58 auxiliary relay, 1-3
5K1 Flasher unit, 59–62
5K2 Brake light relay, 67–69
5K4 Working headlight relay (positions 7, 8), 32–36
5S1 Working headlight switch (positions 1, 2), 9–11
5S2 Working headlight switch (positions 3, 4), 15–23
5S3 Working headlight switch (positions 7, 8), 27–35
5S4 Interior lighting switch, 74–76
5S11 Light switch, 39–45
5S12 Warning light switch, 55–61
5S13 Direction indicator switch, 57–59
X10 18-pin plug connector (for basic equipment), 1, 32, 67
5X1 12-pin plug connector (overhead guard lighting), 13, 15, 39-69
5X2 6-pin plug connector (rear lighting), 44–69
5X4 12-pin plug connector (working headlight positions 1, 2), 7, 9
5X5 2-pin plug connector (working headlight positions 3, 4), 15, 21
5X6 2-pin plug connector (working headlight positions 7, 8), 29
5X7 6-pin plug connector (left headlight), 39, 43, 59
5X8 6-pin plug connector (right headlight), 41, 46, 59
5X10 2-pin plug connector (number plate lighting), 50
5X16 2-pin plug connector (number plate light), 50

Wire colours

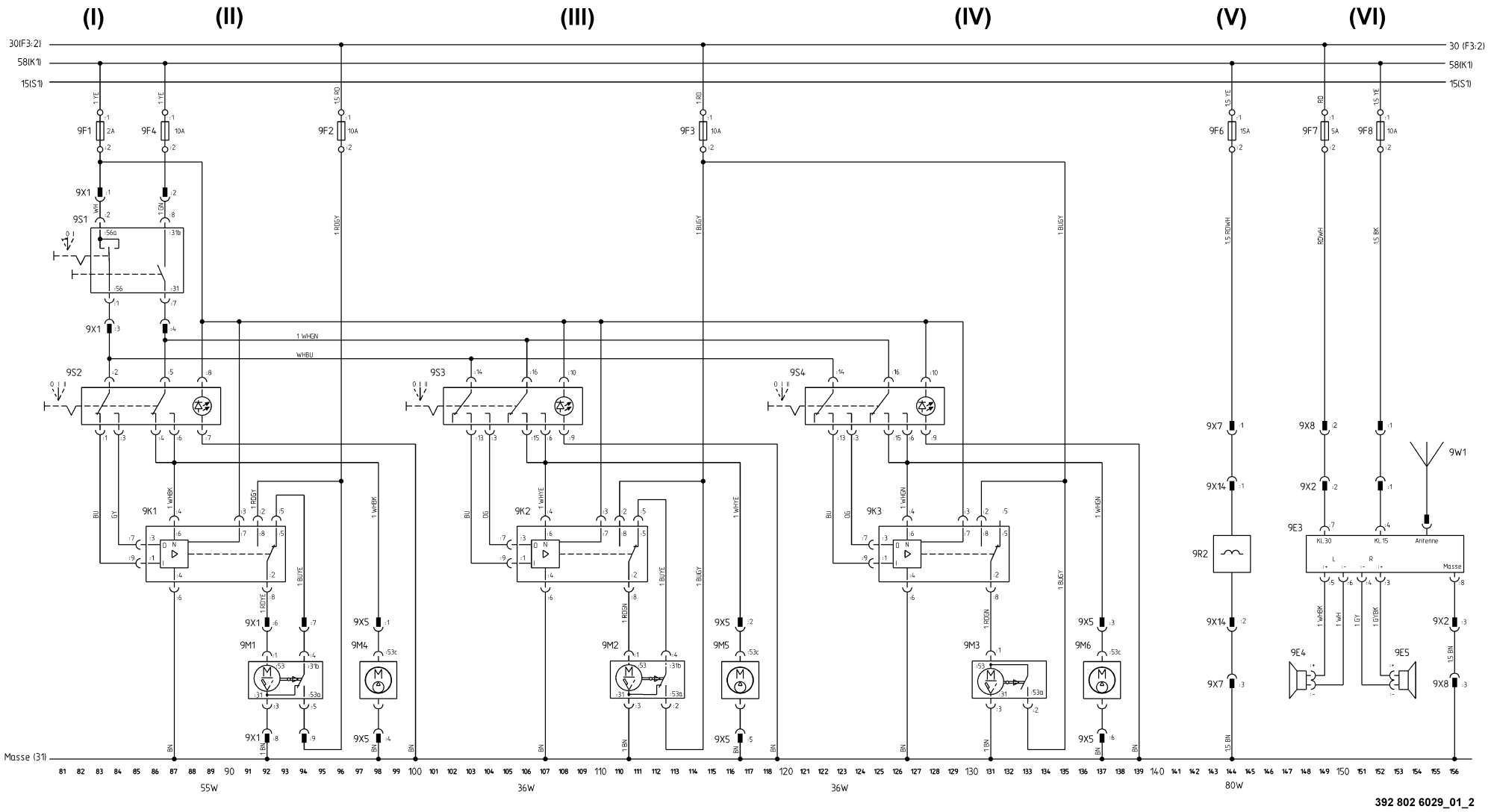
BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I) Working headlights (positions 1, 2)
(II) Working headlights (positions 1, 2 with higher lighting)
(III) Working headlights (positions 3, 4)
(IV) Working headlights (positions 7, 8)
(a) For electronic controller N1:23
(V) Lighting
(VI Direction indicator and hazard warning system
(VII Brake lights
(b) For electronic controller N1:41
(VIII) Interior lighting

Special equipment sheet 2 – Windscreen wiper, seat heater, radio



Legend

9E3 Radio, 148-156
:4 – Terminal 15
:7 – Terminal 30
:8 – Earth
9E4 Left loudspeaker, 147
9E5 Right loudspeaker, 154
9F1 2A fuse (windscreen wipers, general), 83
9F2 10A fuse (front windscreen wiper), 96
9F3 10A fuse (rear and roof windscreen wipers), 114
9F4 10A fuse (wash pumps), 86
9F6 15A fuse (seat heater), 144
9F7 5A fuse (radio terminal 30), 149
9F8 10A fuse (radio terminal 15), 152
9K1 Front windscreen wiper relay, 85–93
9K2 Rear windscreen wiper relay, 106–111
9K3 Roof windscreen wiper relay, 125–132
9M1 Front windscreen wiper motor 55 W, 91–95
9M2 Rear windscreen wiper motor 36 W, 110–113
9M3 Roof windscreen wiper motor 36 W, 130–134
9M4 Front wash pump, 98
9M5 Rear wash pump, 116
9M6 Roof wash pump, 137
9R2 80W seat heater, 144
9S1 Windscreen wiper switch, 82–87
9S2 Front windscreen wiper switch, 82–89
9S3 Rear windscreen wiper switch, 101–109
9S4 Roof windscreen wiper switch, 121–128
9W1 Antenna, 154-155
9X1 9-pin plug connector (windscreen wipers), 83–94
9X2 3-pin plug connector (radio), 149-156
9X5 6-pin plug connector (wash pumps), 98, 116, 137
9X7 3-pin plug connector (seat heater), 144
9X8 3-pin plug connector (radio), 149-156
9X14 2-pin plug connector (seat heater), 144

Wire colours

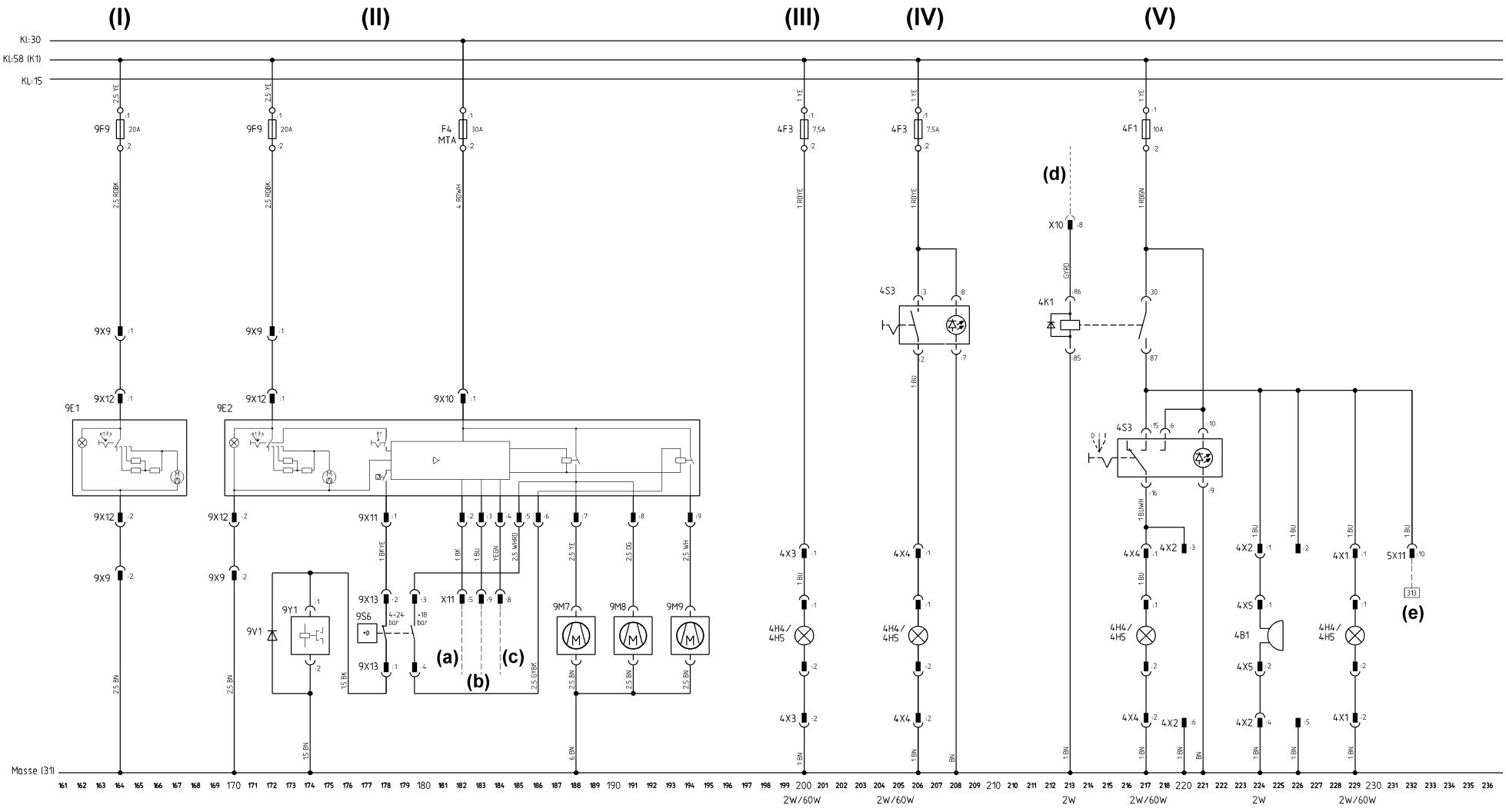
BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I) Windscreen wipers
(II) Front windscreen wiper
(III) Rear windscreen wiper
(IV) Roof windscreen wiper
(V) Seat heater
(VI) Radio

Special equipment sheet 3 – Heater, air conditioning, rotating beacon, reversing signal



392 802 6029_01_3

Legend

4B1	2W buzzer, 224
9E1	Heater, 161–167
9E2	Heater with air conditioning, 170–194
F4	30A fuse (air conditioning), 182
4F1	10A fuse (reversing signal), 217
4F3	7.5A fuse (warning flashing light / rotating beacon), 200, 206
9F9	20A fuse (heater), 164, 172
4H4	Warning flashing light, 200, 206, 217, 229
4H5	Rotating beacon, 200, 206, 217, 229
4K1	Reversing signal relay, 213-217
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	Switch for warning flashing light / rotating beacon, 205-208, 215-222
9S6	Air conditioning pressure switch, 177–179
9V1	Free-wheeling diode (electric clutch), 172
X10	18-pin plug connector (for basic equipment), 213
X11	9-pin plug connector (for basic equipment), 182–184
4X1	2-pin plug connector (warning flashing light / rotating beacon), 229
4X2	6-pin plug connector (buzzer), 220-226
4X3	2-pin plug connector (warning flashing light / rotating beacon), 200
4X4	2-pin plug connector (warning flashing light / rotating beacon), 206, 217
4X5	2-pin plug connector (buzzer), 224
5X11	12-pin plug connector (higher lighting), 232
9X9	2-pin plug connector (heater, 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 (heater), 164, 170, 172
9X13	4-pin plug connector (air-conditioning pressure switch), 178-180
9Y1	Electric clutch for air conditioning, 174

Wire colours

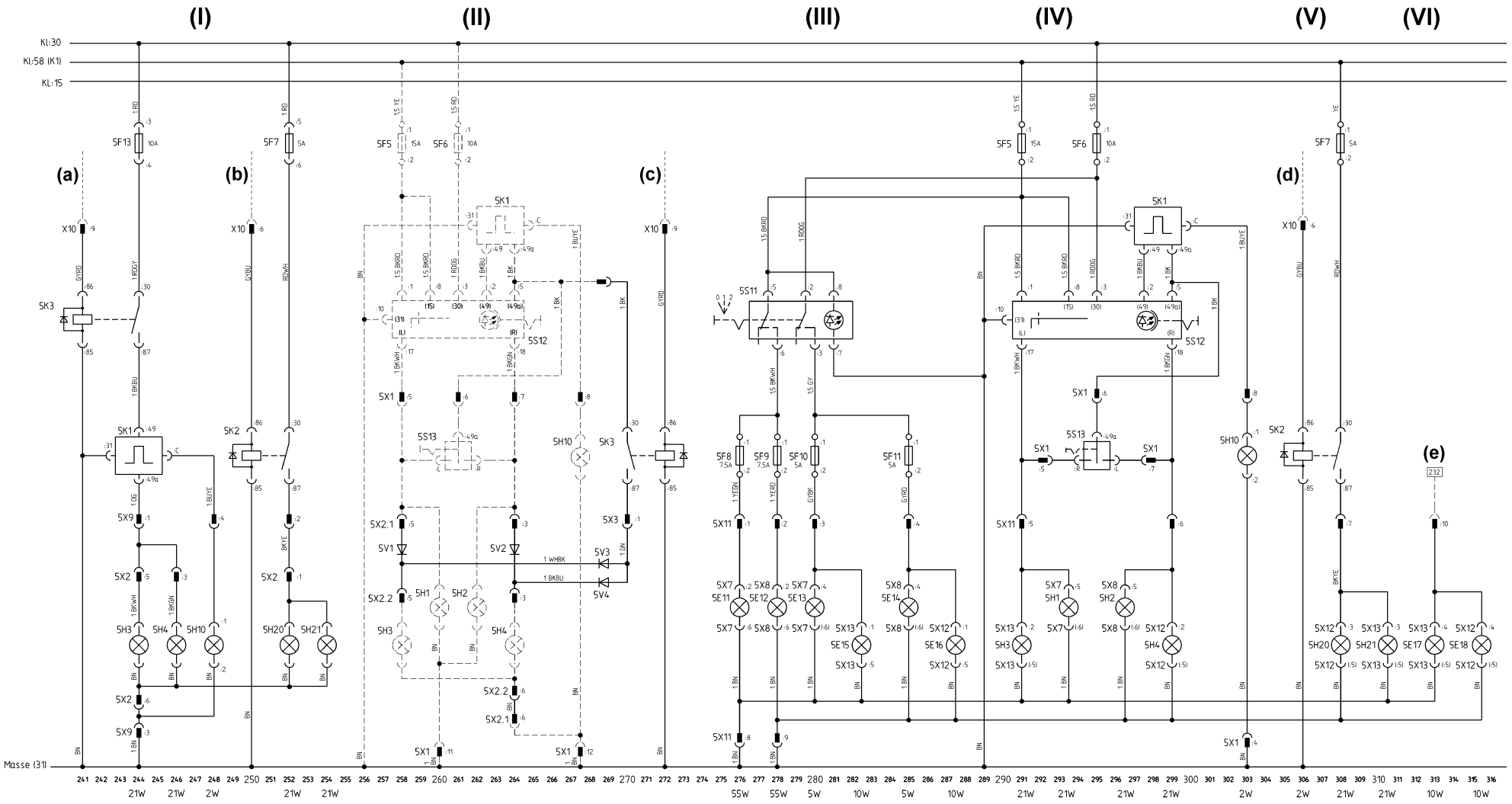
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I)	Heater
(II)	Heater with air conditioning
(a)	LHC controller N1:22
(b)	Alternator G1:L
(c)	LHC controller N1:35
(III)	Flashing beacon / rotating beacon via terminal 58
(IV)	Warning flashing light / rotating beacon via switch
(V)	Constant and switchable reversing signal, reversing OFF / reversing ON
(d)	For electronic controller N1:23
(e)	For higher reversing light special equipment wiring diagram

Special equipment sheet 4 – Hazard warning system for reversing, higher lighting



392 802 6029_01_4

Legend

5E11 55W left dipped beam, 276
5E12 55W right dipped beam, 278
5E13 5W left front side light, 280
5E14 5W right front side light, 285
5E15 10W left rear side light, 282
5E16 10W right rear side light, 287
5E17 10W left reversing light, 313
5E18 10W right reversing light, 315
5F5 15A fuse (lighting terminal 15), 291
5F6 10A fuse (lighting terminal 30), 295
5F7 5A fuse (brake light), 252, 308
5F8 7.5A fuse (left headlight), 276
5F9 7.5A fuse (right headlight), 278
5F10 5A fuse (left side light), 280
5F11 5A fuse (right side light), 285
5F13 10A fuse (warning light), 244
5H1 21W left front direction indicator, 293
5H2 21W right front direction indicator, 296
5H3 21W left rear direction indicator, 244, 291
5H4 21W right rear direction indicator, 246, 299
5H10 2W direction indicator control lamp, 248, 303
5H20 21W right brake light, 252, 308
5H21 21W left brake light, 254, 310
5K1 Flasher unit, 243-245, 297-300
5K2 Brake light relay, 250-252, 306-308
5K3 Hazard warning system relay for reversing, 270-272
5S11 Light switch, 276-282
5S12 Warning light switch, 291-300
5S13 Direction indicator switch, 294-296
5V1 Decoupling diode, 258
5V2 Decoupling diode, 264
5V3 Decoupling diode, 269
5V4 Decoupling diode, 269
X10 18-pin plug connector (for basic equipment), 241, 250, 272, 306
5X1 12-pin plug connector (overhead guard lighting), 292-303
5X2 6-pin plug connector (rear lighting), 244–252
5X2.1 6-pin plug connector (rear lighting), 258, 264
5X2.2 6-pin plug connector (rear lighting), 258, 264
5X3 3-pin plug connector (reversing signal transfer), 270
5X7 6-pin plug connector (left headlight), 276, 280, 293
5X8 6-pin plug connector (right headlight), 278, 285, 296
5X9 6-pin plug connector (warning light), 244, 248, 252
5X11 12-pin plug connector (higher lighting), 276-313
5X12 5-pin plug connector (right rear light), 287, 299, 308, 315
5X13 5-pin plug connector (left rear light), 282, 290, 310, 313

Wire colours

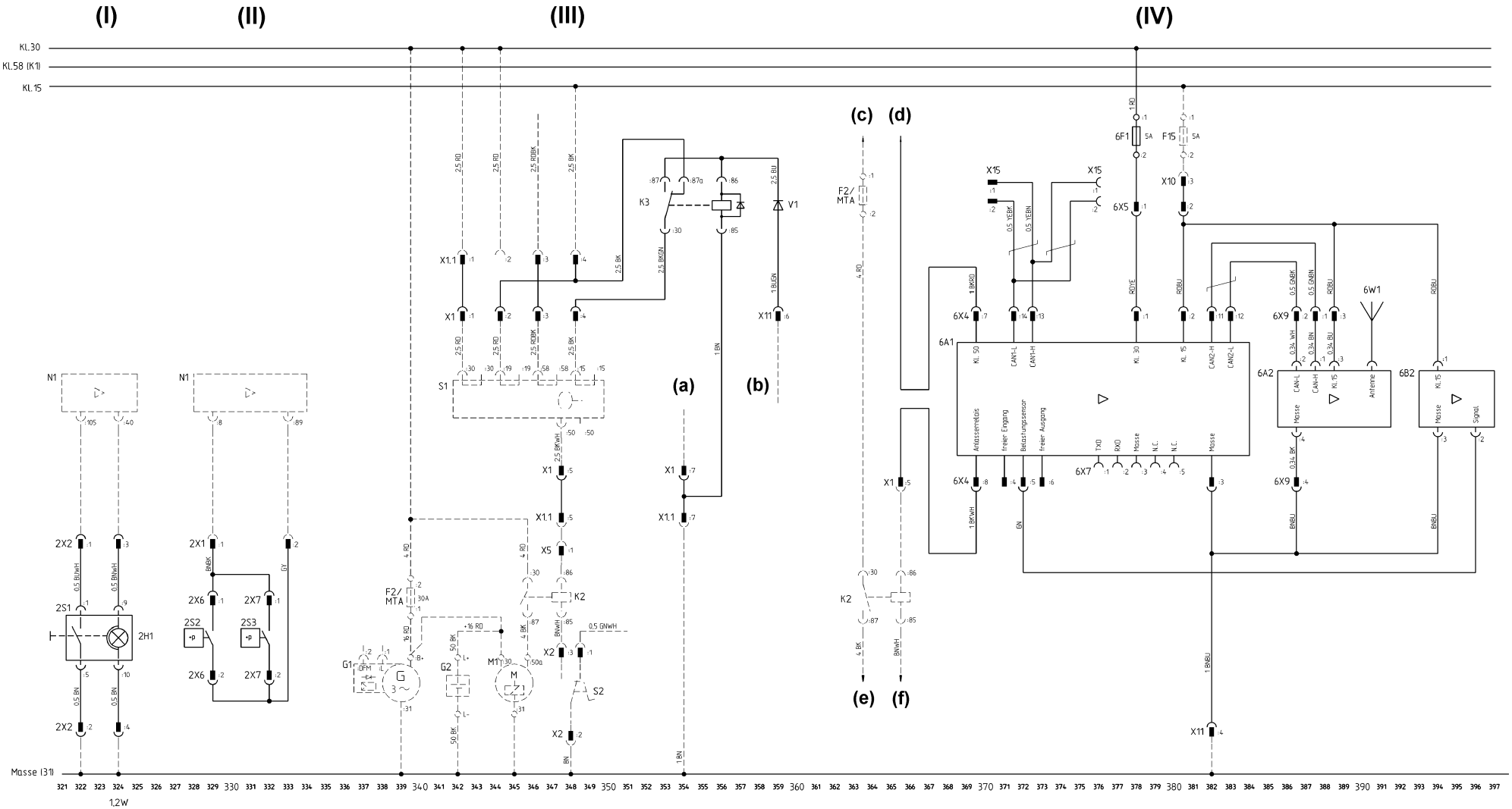
BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I) Warning light when reversing with brake light (without lighting)
(a) For electronic controller N1:23
(b) For electronic controller N1:41
(II) Hazard warning system when reversing (with lights)
(c) For electronic controller N1:23
(III) Higher lighting
(IV) Higher direction indicator and hazard warning system
(V) Higher brake light
(d) For electronic controller N1:41
(VI) Higher reversing light
(e) For reversing signal special equipment wiring diagram

Special equipment sheet 5 – Lift mast positioning, hydraulic oil microfilter indicator, vehicle deactivation, Forklift Data Management



392 802 6029_01_5

Legend

6A1 Data logger with keypad (Linde Forklift Data Management), 369-383
: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, 386-391
:3 – Terminal 15
:4 – Earth

6B2 Load sensor, 393-397
:1 – Terminal 15
:2 – Signal
:3 – Earth

F15 5A fuse, 380

6F1 5A fuse, 378

2H1 1.2W lift mast position preselection warning light, 324

K2 Start relay, 363-366

K3 Engine shutoff relay, 353-356

N1 LHC electronic control system, 321-325, 329-333

S1 Ignition and starting switch, 342-349

2S1 Lift mast position preselection switch, 322-324

2S2 Feed-pressure filter pressure switch, 329

2S3 High-pressure filter pressure switch, 332

V1 Decoupling diode, 359

6W1 Antenna (Linde Forklift Data Management online module), 390

X1 10-pin plug connector, 342-348, 354, 365

X1.1 10-pin plug connector, 342-348, 354

X10 18-pin plug connector (for basic equipment), 380

X11 9-pin plug connector (for basic equipment), 359, 382

X15 2-pin plug connector (CAN connection), 370, 376

2X1 2-pin plug connector (microfilter), 329, 333

2X2 4-pin plug connector (lift mast position), 322, 324

2X6 2-pin plug connector (pressure switch), 329

2X7 2-pin plug connector (pressure switch), 332

6X4 14-pin plug connector (data logger), 369-383

6X5 3-pin plug connector (data logger transfer), 378, 380

6X7 5-pin plug connector (data transfer), 376-380

6X9 4-pin plug connector (Linde Forklift Data Management online module), 386-388

Wire colours

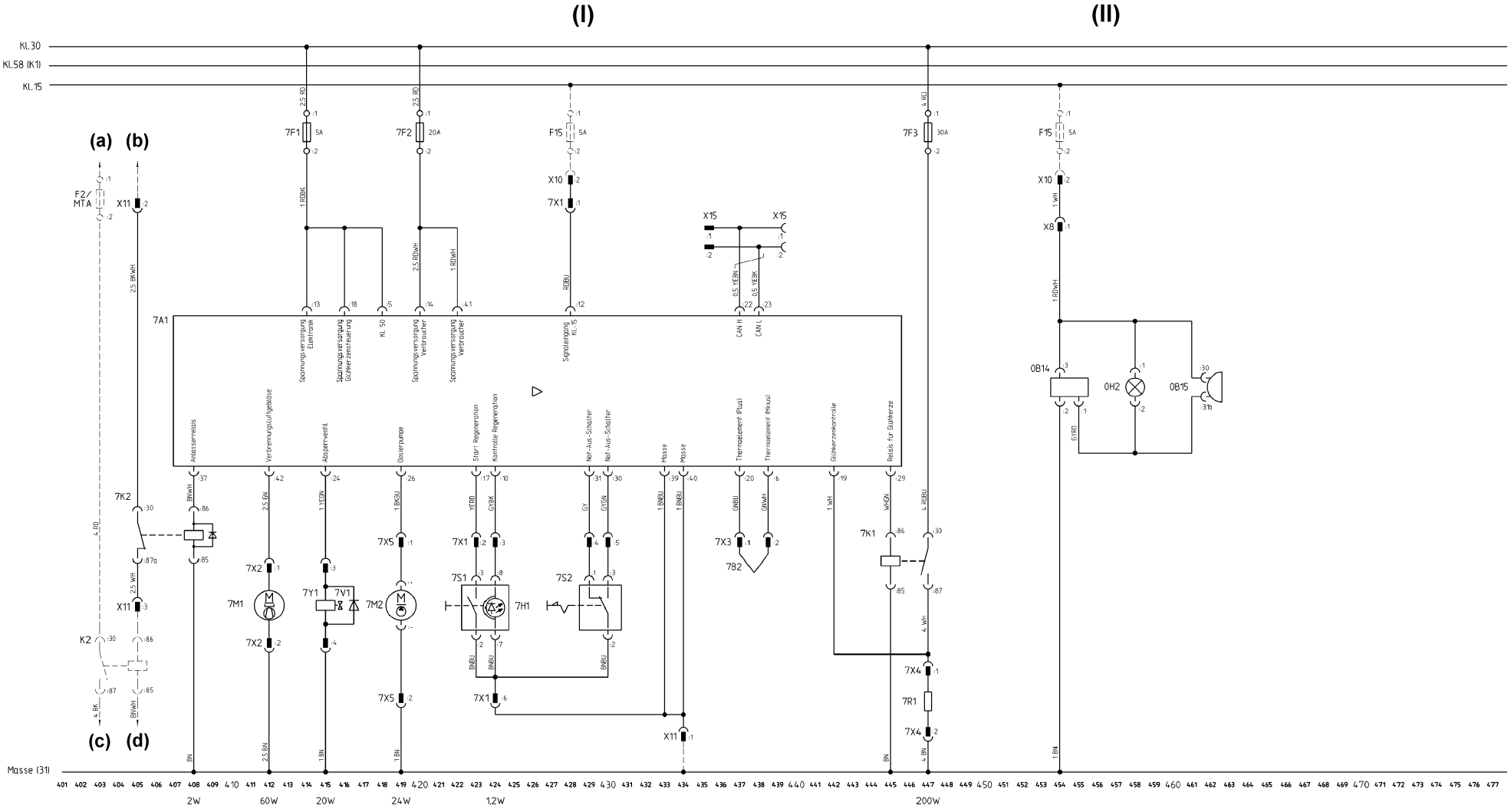
BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I) Lift mast positioning
(II) Hydraulic oil microfilter indicator
(III) Vehicle deactivation via seat switch
(a) For horn activation 4S1 (basic equipment wiring diagram)
(b) For electronic controller N1:42
(IV) Linde Forklift Data Management (LFM)
(c) For generator G1:B+
(d) For ignition and starting switch S1:50
(e) For starter motor M1:50a
(f) For brake pedal switch X2:3

Special equipment sheet 6 – Particulate filter, diesel filter water trap warning



392 802 6029_01_6

Legend

7A1 Particulate filter control unit, 408-455
:5 – Terminal 50
:6 – Thermocouple (negative)
:10 – Regeneration indicator
:12 – Signal input terminal 15
:13 – Electronics voltage supply
:14 – Consumers voltage supply
:17 – Regeneration start
:18 – Glow plug controller voltage supply
:19 – Glow plug indicator
:20 – Thermocouple (positive)
:24 – Shut-off valve
:26 – Metering pump
:29 – Relay for glow plug
:30 – Emergency stop switch
:31 – Emergency stop switch
:37 – Starter relay
:39 – Earth
:40 – Earth
:41 – Consumers voltage supply
:42 – Combustion air blower
0B14 Water trap transmitter, 454-455
0B15 Water trap buzzer, 462
7B2 Flame sensor, 437-438
F15 5A fuse, 428, 454
7F1 5A fuse (particulate filter), 414
7F2 20A fuse (particulate filter), 420
7F3 30A fuse (glow plug), 447
0H2 Water trap warning light, 458
7H1 1.2W regeneration warning light, 424
K2 Start relay, 403-405
7K1 Glow plug relay, 445-447
7K2 Starting aid relay, 405-408
7M1 60W blower, 412
7M2 24W metering pump, 419
7R1 200W glow plug, 447
7S1 Starting switch, 422-424
7S2 Emergency stop switch, 428-430
7V1 Decoupling diode, 416
X8 2-pin plug connector, 454
X10 18-pin plug connector (for main harness), 428, 454
X11 9-pin plug connector (for main harness), 405, 434
X15 2-pin plug connector (CAN), 436, 439
7X1 9-pin plug connector (central electrical system transfer), 423-430
7X2 4-pin plug connector (blower shut-off valve), 412, 415
7X3 2-pin plug connector (flame sensor), 437, 438
7X4 2-pin plug connector (glow plug), 447
7X5 2-pin plug connector (metering pump), 419
7Y1 Shut-off valve, 415

Wire colours

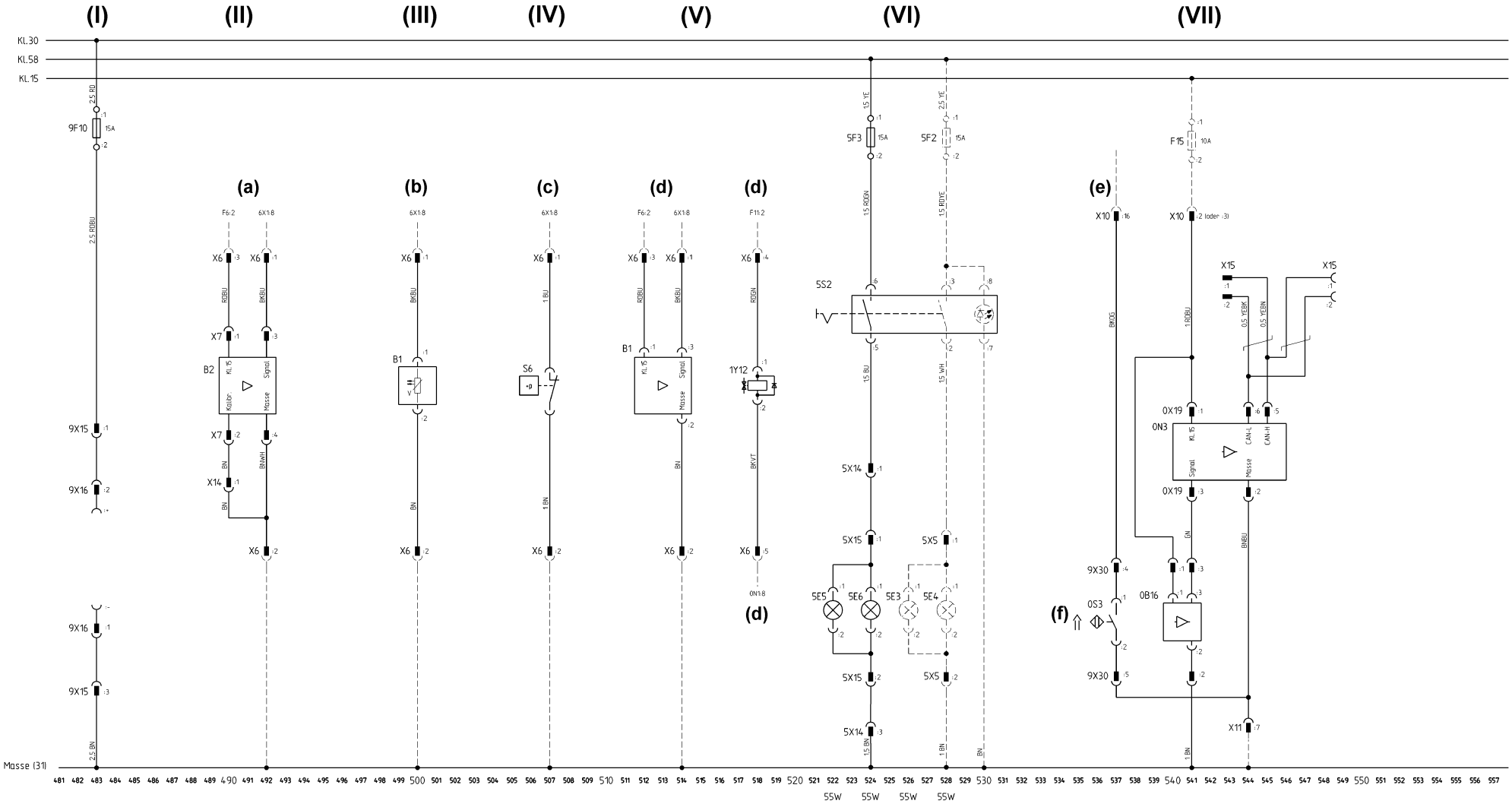
BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I) Particulate filter (only in diesel version)
(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)
(II) Diesel filter water trap warning (diesel version only)

Special equipment sheet 7 – LPG volume display, 12 V socket, working headlights pos. 5 and 6, coolant and engine oil level monitoring



392 802 6029_01_7

Legend

B1 Tank transmitter (volumetric filling), 500, 512-514
:1 – Terminal 15
:2 – Earth
:3 – Signal

B2 Tank transmitter (replacement cylinder), 490-492
:1 – Terminal 15
:2 – Calibration
:3 – Signal
:4 – Earth

0B16 Oil level sensor, 540-541

5E3 Upper front left working headlight 55 W (position 3), 526

5E4 Upper front right working headlight 55 W (position 4), 528

5E5 Lift mast left working headlight 55 W (position 5), 522

5E6 Lift mast right working headlight 55 W (position 6), 524

F15 10A fuse, 541

5F2 15A fuse (working headlight positions 3, 4), 528

5F3 15A fuse (working headlight positions 5, 6), 524

9F10 15A fuse (12V socket), 483

0N3 Evaluation electronics, 541-545
:1 – Terminal 15
:2 – Earth
:3 – Signal

S6 LPG residual volume switch, 507

0S3 Coolant level switch, 537

5S2 Working headlights switch (positions 3, 4, 5, 6), 523-530

X6 5-pin plug connector (for main harness), 490-518

X7 4-pin plug connector (tank transmitter), 490, 492

X10 18-pin plug connector (for basic equipment), 537, 541

X11 9-pin plug connector (for basic equipment), 544

X14 1-pin plug connector (calibration), 490

X15 2-pin plug connector (CAN), 543, 548

0X19 6-pin plug connector (evaluation electronics), 541-545

0X20 3-pin plug connector, 537-541

5X5 2-pin plug connector (working headlight positions 3, 4), 528

5X14 3-pin plug connector (working headlight positions 5, 6), 524

5X15 2-pin plug connector (working headlight position 5), 524

9X15 3-pin plug connector (12 V socket), 483

9X16 2-pin plug connector (12 V socket), 483

9X30 5-pin plug connector (oil and coolant connection), 337-541

1Y12 Natural gas tank shutoff valve, 518

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

(I) 12V socket

(II) LPG volume display for replacement cylinder (only with LPG version)

(a) Wiring diagram basic equipment (only with LPG version)

(III) LPG volume display for volumetric filling (only with LPG version)

(b) Basic equipment wiring diagram (only with LPG version)

(IV) LPG residual volume display (only with LPG version)

(c) Basic equipment wiring diagram (only with LPG version)

(V) Natural gas volume display and tank shutoff valve (with natural gas version only)

(d) Basic equipment wiring diagram (with natural gas version only)

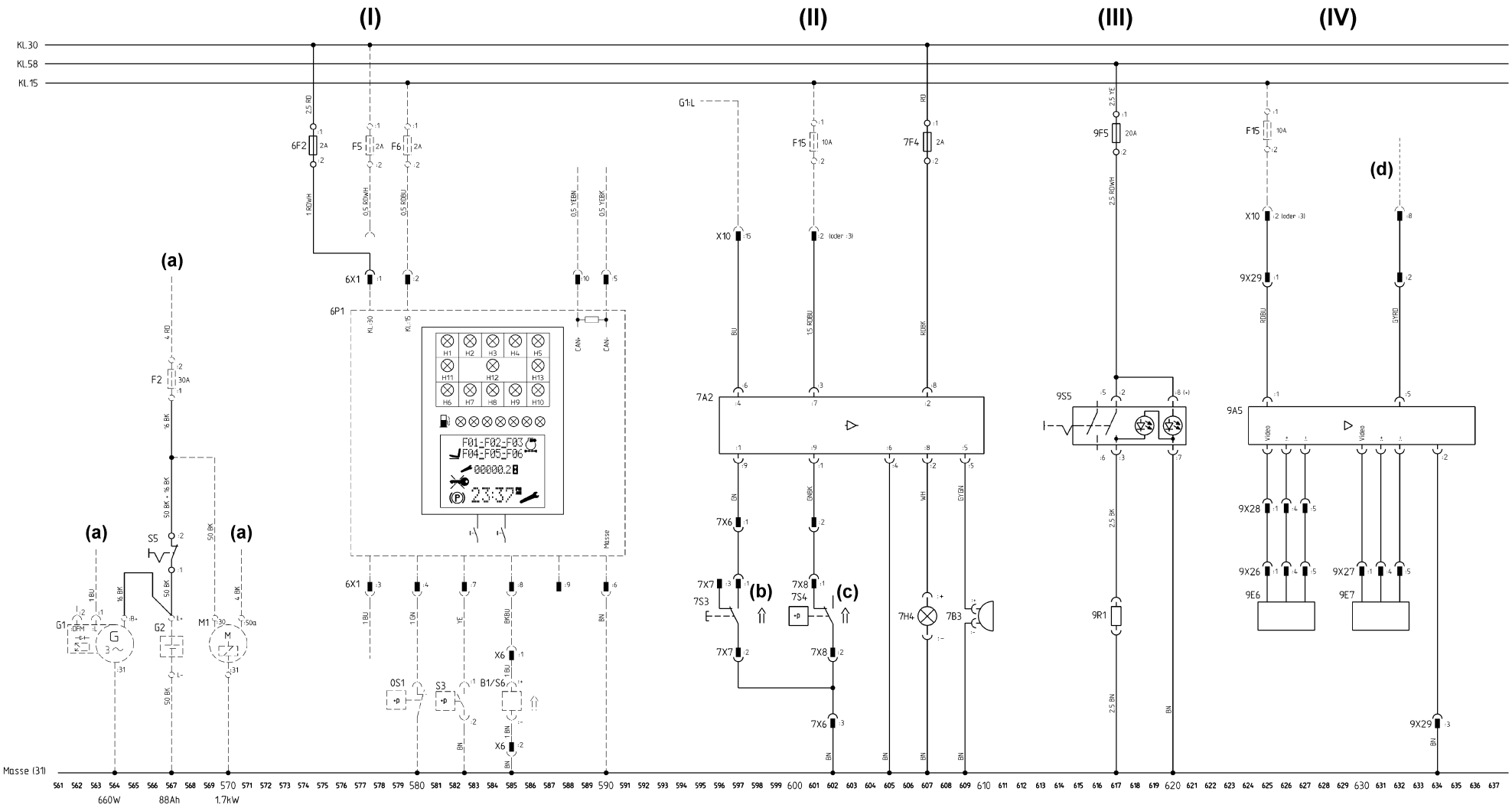
(VI) Working headlights position 5 and 6

(VII) Coolant and engine oil level monitoring

(e) LHC controller (N1:27)

(f) Switch shown in "Coolant level OK" position

Special equipment sheet 8 – Battery main switch with indicator unit voltage supply, exchangeable particulate filter, rear window heater, camera system



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Legend

7A2	Exchangeable particulate filter controller, 597-609
9A5	Monitor, 625-635
7B3	Exchangeable particulate filter buzzer, 610
9E6	Camera 1, 625-627
9E7	Camera 2, 630-632
F2	30A fuse, 567
F15	10A fuse, 601, 625
6F2	2A fuse, 574
7F4	2A fuse, 607
9F5	20A fuse, 617
G1	660W three-phase alternator with regulator, 562-565
G2	88Ah battery, 567
7H4	Indicator light (orange), 607
M1	1.7 kW starter motor, 569-571
9R1	Rear window heater, 617
S5	Battery main switch, 567
7S3	Exchangeable particulate filter switch, 596-597
7S4	Exchangeable particulate filter pressure switch, 601-602
9S5	Rear window heater switch, 614-620
X10	18-pin plug connector (for basic equipment), 597, 601, 625, 632
6X1	10-pin plug connector, 577-590
7X6	9-pin plug connector (exchangeable particulate filter), 597-601
7X7	3-pin plug connector (reset switch), 596, 597
7X8	2-pin plug connector (pressure switch), 601, 602
9X26	5-pin plug connector (camera system), 625-627
9X27	5-pin plug connector (camera system), 630-632
9X28	5-pin plug connector (camera system), 625-627
9X29	3-pinplug connector (camera system), 625-634

Wire colours

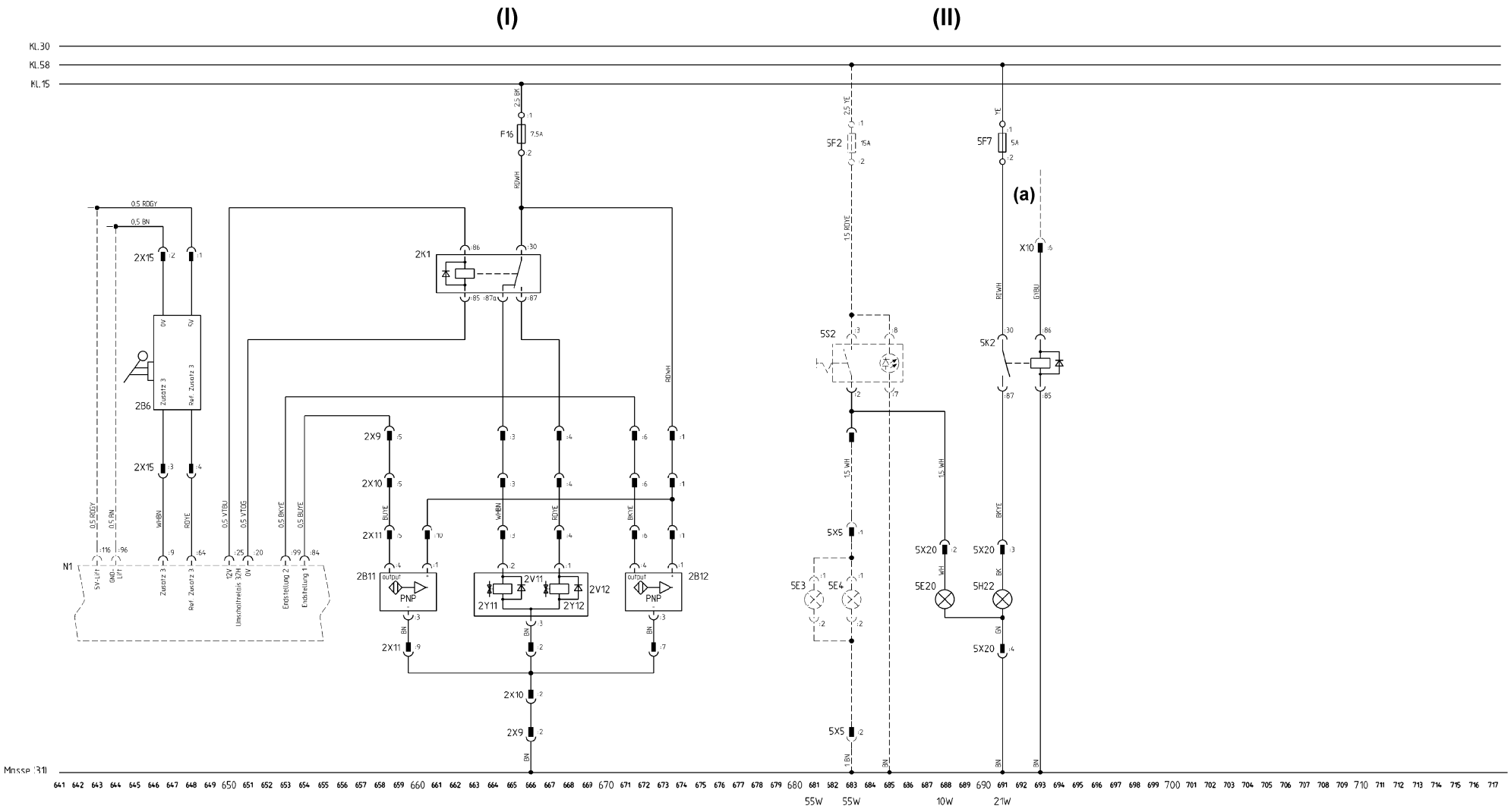
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I)	Battery main switch with indicator unit voltage supply
(a)	to wiring diagram for basic equipment
(II)	Exchangeable particulate filter (fitted only to the diesel version)
(b)	Switch opens when the exchangeable particulate filter is fitted and the cover is closed (fitted only to the diesel version)
(c)	Switch is shown in the pressure differential OK position (fitted only to the diesel version)
(III)	Rear window heater
(IV)	Camera system
(d)	To electronic control N1:22

Special equipment sheet 9– Third auxiliary hydraulics with third joystick, centre rear brake/tail light



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Legend

2B6 Third auxiliary hydraulics joystick, 646-648
:3 – Auxiliary 3
:4 – Auxiliary 3 reference
2B11 End position sensor 1, 658-661
2B12 End position sensor 2, 672-674
5E20 10W centre rear sidelight, 688
F16 7.5A fuse (terminal 15), 666
5F7 5A fuse, 691
5H22 21W centre rear brake light, 691
2K1 Third auxiliary hydraulics changeover relay, 662-666
5K2 Brake light relay, 691-693
N1 LHC electronic control system, 643-655
:9 – auxiliary 3
:20 – 0V third auxiliary hydraulics changeover relay
:25 – 12V third auxiliary hydraulics changeover relay
:64 – Auxiliary 3 reference
:84 – end position 1
:96 – Lift earth sensor
:99 – end position 2
116 – 5V lift sensor
5S2 Switch for working headlights positions 3 and 4, 682-685
2V11 Free-wheeling diode for third auxiliary hydraulics valve, 666
2V12 Free-wheeling diode for third auxiliary hydraulics valve, 669
X10 18-pin plug connector, 693
2X9 6-pin plug connector, 658-674
2X10 6-pin plug connector, 658-674
2X11 10-pin plug connector, 658-674
2X13 6-pin plug connector, 646-648
5X20 4-pin plug connector (brake/tail light), 688, 691
2Y11 Third auxiliary hydraulics valve, 665
2Y12 Third auxiliary hydraulics valve, 668

Wire colours

BK Black
BN Brown
BU Blue
GN Green
GY Grey
OG Orange
RD Red
VT Violet
WH White
YE Yellow

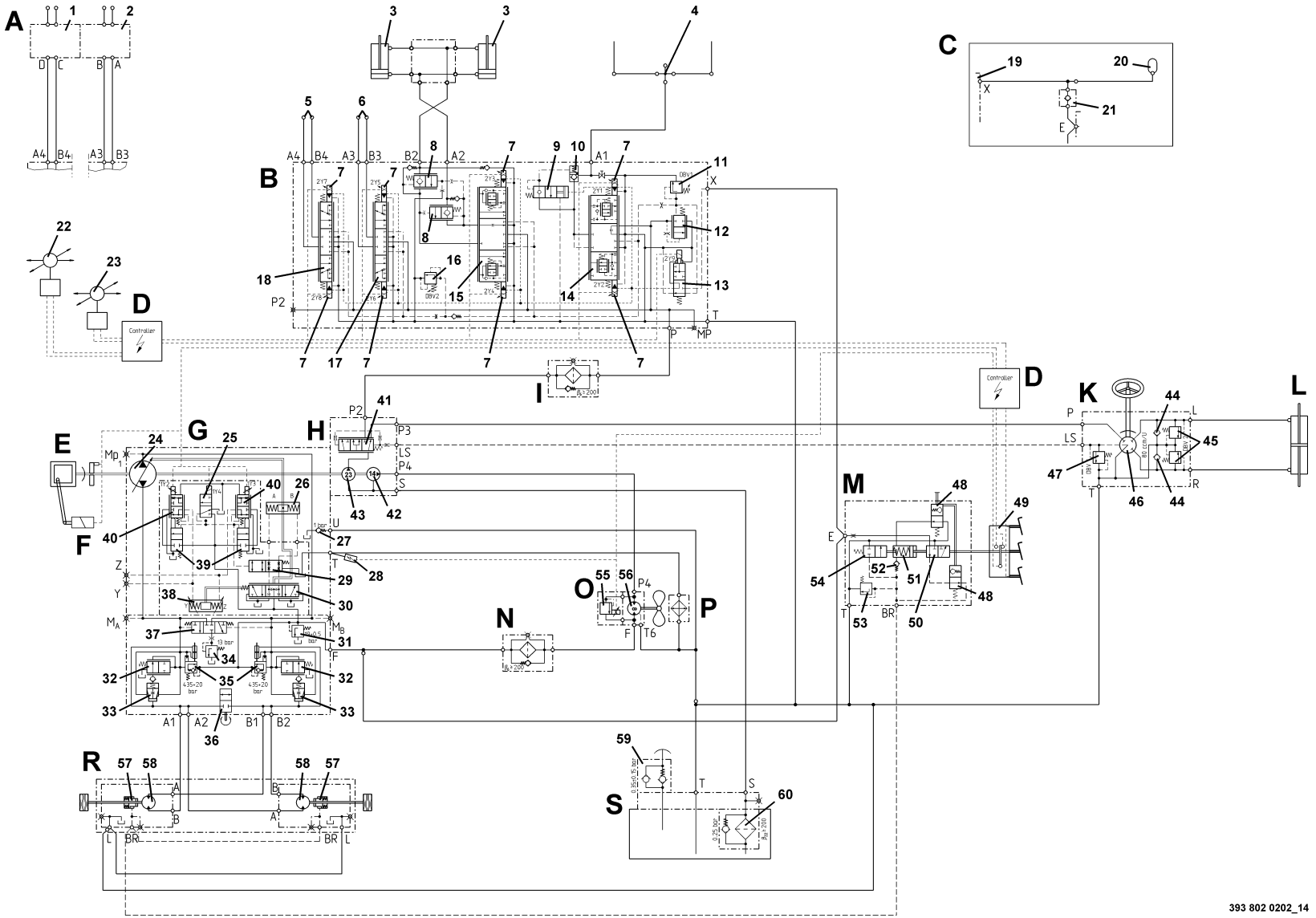
The number in front of the wire colour refers to the wire cross-section.
Wires with unspecified cross-section = 0.75 mm^2

Notes

(I) Third auxiliary hydraulics with third joystick
(II) Centre rear brake/tail light
(a) For electronic controller (N1:41)

Hydraulic circuit diagram

Traction, working and steering hydraulics



A Auxiliary hydraulics with duplex or triplex
1 Left hose pulley (double auxiliary hydraulics)
2 Right hose pulley (single auxiliary hydraulics)

B Working hydraulics
3 Tilt cylinders
4 Standard lift mast BR 188
5 Auxiliary hydraulics connection 2
6 Auxiliary hydraulics connection 1
7 Solenoid valve
8 Tilt brake valve
9 Load holding valve
10 Non-return valve
11 Pressure relief valve 1 (with H 25 standard/duplex/triplex 200^{+5} bar, with H 30 standard/duplex/triplex 225^{+5} bar, with H 35 standard/duplex/triplex 245^{+5} bar)
12 2/2 directional control valve (pressure governor)
13 Release valve (working hydraulics)
14 Directional control valve - lift/lower
15 Directional control valve - tilt
16 Pressure relief valve 2
17 Directional control valve - auxiliary hydraulics 1
18 Directional control valve - auxiliary hydraulics 2

C Depressurisation circuit (special equipment)
19 Control valve
20 Accumulator
21 Non-return valve

D Linde Truck Control
22 Working hydraulics central lever
23 Auxiliary hydraulics central lever 1+2

E Internal combustion engine n = 1000 to 2800 rpm

F Engine speed regulator

G Hydraulic variable pump assembly consisting of:
24 Hydraulic variable pump HPV 75-02
25 Release valve (traction hydraulics)
26 Set piston A→forwards B→backwards
27 Non-return valve 1 bar
28 Sensor (hydraulic oil temperature)
29 4/2 directional control valve
30 Pilot valve
31 Feed pressure valve $19^{+0.5}$ bar
32 Brake valve (main control valve)
33 Brake valve (servo valve)
34 Purge valve 13 bar
35 Combined feed maximum valve 435^{+20} bar
36 Choke plunger (towing unit)
37 Shuttle valve
38 Servo piston Y→forwards Z→backwards
39 2/2 directional control valve
40 Proportional valve (direction of travel)

H Tandem pump
41 3/3 directional control valve (priority valve)
42 Gear pump 14 cm^3
43 Gear pump 23 cm^3

I Working hydraulics pressure filter / microfilter

K Steering control valve with:
44 Suction valve
45 Hose safety valve (H 25, H 30 = 180^{+20} bar, H 35 = 205^{+20} bar)
46 Servostat
47 Maximum valve (H 25, H 30 = 120^{+5} bar, H 35 = 150^{+5} bar)

L Steering cylinder

M Brake air valve
48 Towing unit
49 Pedal group
50 3/2 directional control valve
51 Pump for venting brake
52 Non-return valve
53 Pressure relief valve
54 2/2 directional control valve

N Pressure filter (feed pressure) / microfilter

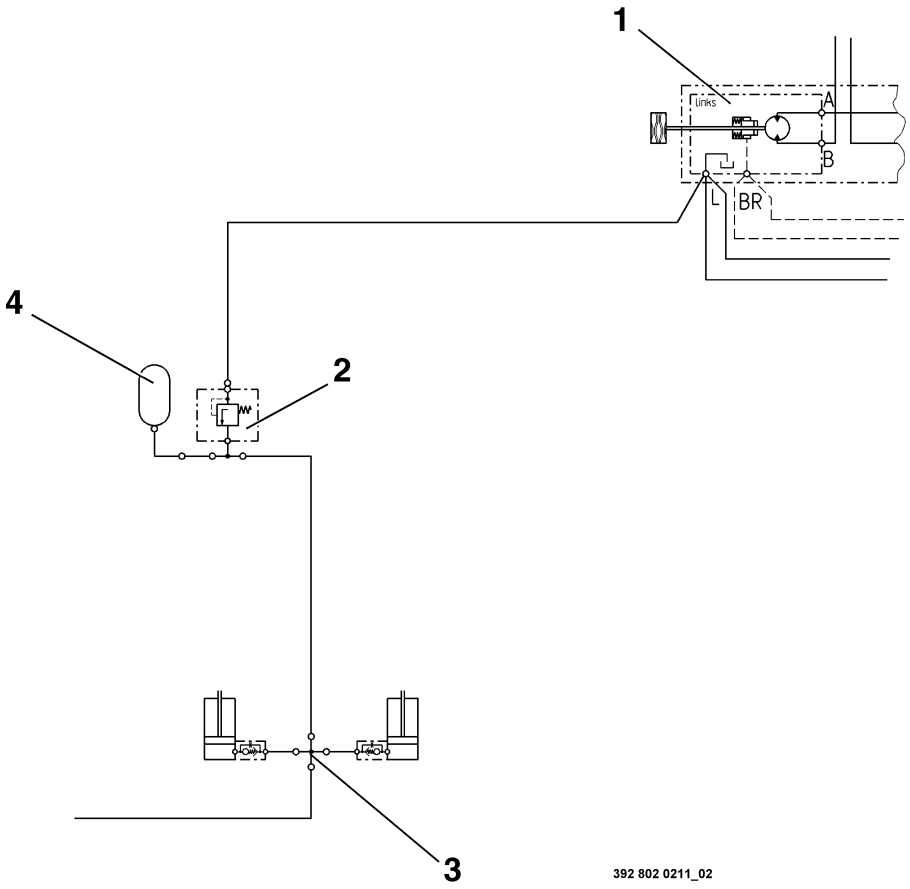
O Fan drive
55 Solenoid valve
56 Hydraulic motor 9 cm^3

P Radiator

R Drive axle AH 35-03 consisting of:
57 Multi-disc brake (brake air min. 16 bar)
58 Hydraulic fixed-displacement motor HMF 550R

S Oil tank consisting of:
59 Breather with suction and counter-balance valve 0.35±0.15 bar
60 Suction filter with by-pass valve 0.25 bar

Accumulator



1	Left drive axle AH35-03	3	Raise/lower junction, (lift mast BR 188)	Nitrogen filling pressure of accumulator	H 30 standard/duplex/triplex 150 bar
2	High-pressure relief valve	4	Accumulator	H 25 standard/duplex/triplex 133 bar	H 35 standard/duplex/triplex 163 bar

Linde Material Handling GmbH

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