LPG truck, CNG truck

Original instructions

391-01 EVO® series

H14T, H16T, H16CNG, H18T, H18CNG, H20T, H20CNG

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Linde – Your Partner

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

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

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

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Rules for the operating company of industrial trucks

In addition to these operating instructions, a code of practice containing additional information for the operating companies of industrial trucks is also available.

This guide provides information for handling industrial trucks:

- Information on how to select suitable industrial trucks for a particular area of application
- Prerequisites for the safe operation of industrial trucks
- Information on the use of industrial trucks
- Information on transport, initial commissioning and storage of industrial trucks

Internet address and QR code

By entering the address
www.linde-mh.com/VDMA
in a web browser or by scanning the QR code, information can be accessed at any time.

4 Operation

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Introduction

Your truck

Your truck offers optimum efficiency, safety and driving comfort. It is primarily down to you to maintain these properties for a long time 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 confirmed by the CE mark on the nameplate.

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

Carry out the work specified in the service plan at regular intervals, in good time and using the consumables intended for this purpose.

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

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

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

When ordering parts, the following details must be specified in addition to the part numbers:

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

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

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

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

NOTE

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

Please address all queries and spare part orders for your truck exclusively to your service partner, stating your mailing address.

Linde is constantly engaged in the further development of its products. We ask for your understanding that, in the interest of progress, illustrations and technical data are subject to technical modifications in terms of form, equipment and expertise.

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

These operating instructions must not be reproduced, translated or made accessible to third parties, even in part, except with the express written approval of the manufacturer.

Intended use

The industrial truck may only be used as permitted.

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

Damages and defects

Damages and other defects to industrial trucks or to attachments must be reported to the Supervisor immediately. Industrial trucks and attachments which are not safe to operate may not be used until they have been properly repaired.

Safety installations and switches may not be removed or rendered unusable. Specified settings may only be changed with the approval of the manufacturer.

Danger areas

Danger areas are those areas in which persons are in danger as a result of the movements of industrial trucks, their operating equipment, their load carrying devices (e.g. their attachments) or the loaded goods. This also includes the area which can be reached by falling goods or lowering or falling operating equipment and devices.

People must not stand in the danger area of an industrial truck.

Working areas

Only the areas approved by the operating company or its representative may be used for transportation purposes. Loads may only be deposited or stored at the intended places.

In operating areas with magnetic fields that have a magnetic flux density greater than 5 mT, unintentional truck and lift mast movements cannot be entirely excluded under unfavourable circumstances. In this case components developed especially for this purpose must be used.

Driving routes

Driving routes shall be sufficiently paved, level and free of objects. Drain channels and railways crossings, etc., shall be levelled and, if necessary, covered with ramps in such a way that they can be driven over without bumps as far as possible.

Industrial trucks shall only be used on routes without sharp curves, excessive slopes and gates which are too narrow or too low.

Inclines used by industrial trucks shall not exceed the limits specified by the manufacturer and must have an adequately rough surface. Level and smooth transitions at the upper and lower end shall prevent the load from touching the floor or causing damages to the chassis.

The admissible area and point load of driving lanes or routes may not be exceeded. There shall be an adequate clearance between the highest parts of industrial trucks or the load and the fixed parts of the surrounding areas.

The EU Directive 89/654/EEC (Minimum Regulations for Health and Safety at Work) shall be observed. The respective national regulations apply for non-EU countries.

Danger points on driving lanes or routes shall be secured or marked by the customary road traffic signs and by additional warning signs, if necessary.

When driving on public roads, the corresponding regulations must be observed, as well as country-specific restrictions for winter road conditions.

Fire protection

The operating company is responsible for adequate fire protection in the vicinity of the industrial truck. Depending on the form of use, it is responsible for additional fire protection on the industrial truck. Enquiries should be directed to the responsible supervisory authority in case of doubt.

Attachments

Attachments shall only be used as permitted. The driver shall be instructed in the handling of attachments.

The attachment operating instructions are enclosed for trucks that are delivered from the

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

If attachments are not supplied with the industrial truck, the specifications of the industrial truck manufacturer and the attachment manufacturer must be observed.

The attachments and the connection of power supplies for powered attachments may only be made by specialists in accordance with the specifications of the manufacturer. The proper functioning of the attachments shall be checked after each installation before initial use.

The permissible carrying capacity of the attachments and the permitted load of the industrial truck (carrying capacity and load moment) combined with the attachments shall not be exceeded., refer to additional capacity rating plate.

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

Trailers

Industrial trucks may only be used to tow trailers if they are intended for this purpose by the manufacturer and if they are fitted with the appropriate trailer coupling. The maximum towed load specified in the operating instructions for unbraked or braked trailers must not be exceeded.

The towing industrial truck must be operated in such away that safe driving and braking of the towed vehicle is ensured for all driving movements.

Impermissible use

⚠ DANGER

High risk of property damage, injury and death.

Avoid impermissible use.

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

The following list is exemplary and is not intended to be exhaustive.

It is not permitted:

- To use the truck to transport people (if the truck is not designed for this purpose)
- in areas where there is a risk of fire of explosion
- for stacking/unstacking operations on slopes
- To stand on the fork arms when raised
- To exceed the truck's maximum load capacity
- To increase the truck's load capacity, e.g. by attaching an additional weight.

Description of use and climatic conditions

Normal use

- Indoor and outdoor use
- Ambient temperature in Nordic and tropical regions ranging from -20°C to 45°C
- Start capability at -15°C to +45°C
- Maximum start time of 20 seconds
- Use at up to 2000 metres above sea level.

Special use (partly with special measures)

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

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 391 series are designed to handle loading and palletising operations for loads up to 1.4 t for H 14, up to 1.6 t for H 16, up to 1.8 t for H 18 and up to 2.0 t for H 20 at a load distance of 500 mm.

The H 20-600 forklift truck supports loading and palletising of 2.0 t, given a load distance of 600 mm.

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

The trucks are eco-friendly and their quiet operational noise and low emission levels benefit both the driver and the environment. They are compact in design and have a small turning radius, and are therefore particularly suitable for narrow passageways or operational areas.

Engine

A four-cylinder, four-stroke engine is installed as a 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 cooling fluid circuit with expansion tank.

Forced circulation lubrication with an oil pump in the oil sump is used for engine lubrication. The combustion air is cleaned by means of a dry air filter with a paper insert.

Internal combustion engines with ultra-modern engine technology are used for:

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

Hydraulic system

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

The hydraulic fixed displacement wheel motors in the drive axle are supplied by the hydraulic variable displacement pump; these motors power the drive wheels.

Operation

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

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

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

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

Linde Load Control

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

- Millimetre-precise and safe load handling
- Effortless finger-tip control of all lift mast functions
- Entirely separate drive and lifting functions

Linde Truck Control

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

- 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

Linde Curve Assist

The truck is equipped with Linde Curve Assist (LCA). It reduces the driving speed on bends according to the steering angle. This improves the stability of the truck.

Braking

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

Steering

The steering is a hydrostatic steering system, in 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 due to the slim lift mast profiles
- Full load capacity up to maximum lift heights
- Enormous residual load capacity
- Maintenance-free storage of the lift mast and tilt cylinder via rubber-cushioned linkage points
- Electric tilt angle limitation.

Electrical system

The electrical system is supplied with 12-V DC voltage by the three-phase generator. A 12-V battery is installed for starting the engine. It is located beneath the bottom plate in the engine compartment.

Receiving the industrial truck

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

To prevent complaints from occurring at a later date, the exact condition of the industrial truck must be checked and the presence of all equipment must be ascertained. The proper handover/acceptance of the truck must also be confirmed to the service partner.

NOTE

When trucks leave our factory without a lift mast, the drive axle is secured by means of a support on the right-hand side to prevent the truck from tilting. This support must be removed ***after the lift mast has been fitted****; see the section entitled "Driving without the lift mast".*

The following technical documents come with each industrial truck:

- Operating instructions for the truck
- Operating instructions for the attachment (only applies to trucks delivered from the factory with an attachment)
- EC/EU declaration of conformity

Customised options

There are separate operating instructions for the customised options.

NOTE

These separate operating instructions can be found at the back of the technical information folder.

Legal requirements for marketing

Declaration

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

We declare that the machine

Industrial truck	**according to these operating instructions**
Model	**according to these operating instructions**

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

Personnel authorised to compile the technical documents:

See EC/EU declaration of conformity

Linde Material Handling GmbH

EC/EU declaration of conformity

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

The EC/EU declaration of conformity document is supplied with the industrial truck. The declaration shown explains the conformity with the provisions of the EC machinery directive.

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

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

Disposing of components and batteries

The truck is composed of different materials. If components or batteries need to be replaced and disposed of, the national regulations must be observed with regard to:

- Disposal
- Treatment
- Recycling

NOTE

The documentation provided by the battery manufacturer must be observed when disposing of batteries.

ENVIRONMENT NOTE

We recommend working with a waste management company for disposal requirements.

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Safety

Safety guidelines

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

During training, drivers must familiarise themselves with the following:

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

Driving, control and steering operations should be practised with an unloaded industrial truck until they are completely mastered. Only then may a loaded industrial truck be used for practice.

Safety information

⚠ DANGER

The industrial truck must not be used by unauthorised persons.

Only persons who are trained and authorised to operate the industrial truck may have access to the industrial truck.

⚠ DANGER

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

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

Contact your service partner.

⚠ DANGER

Safety systems (e.g. the seat switch) are in place to ensure safety.

Under no circumstances may any safety systems be disabled.

⚠ DANGER

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

It is therefore strictly prohibited to drill holes in the overhead guard or to perform welding work on it.

⚠ CAUTION

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

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

⚠ CAUTION

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

Gas springs may only be removed when they are not under pressure, and must never be opened without prior instruction. Any kind of damage, lateral forces, buckling, temperatures in excess of 80°C and heavy contamination must be avoided under all circumstances.

Damaged or defective gas springs must be replaced immediately.

Contact your service partner.

⚠ WARNING

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

Before starting work on the accumulator, it must be depressurised.

Contact your service partner.

⚠ WARNING

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

Protective equipment must therefore be worn.

⚠ WARNING

The truck working area must be sufficiently lit.

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

⚠ WARNING

Health risk due to non-ionising radiation from retrofitted devices (e.g. radio transmitter).

Always ensure that the manufacturer's instructions are observed and that no persons with active or non-active implantable medical devices are harmed.

If non-ionising radiation is present, affix a warning sign within the driver's field of vision.

⚠ CAUTION

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

The driver is always responsible for safe operation.

⚠ CAUTION

If the driver relies on active medical equipment, e.g. pace makers or hearing aids, the functionality of these devices may be impaired when driving.

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

NOTE

If the truck is equipped with a fire extinguisher, make sure that you familiarise yourself with how to use it in the event of an emergency. Information on its use is provided on the fire extinguisher.

Residual risks

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

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

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

⚠ DANGER

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

These operating instructions also contain additional safety regulations.

Residual dangers can include:

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

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

Stability

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

Stability will not be guaranteed in the event of:

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

In the case of tip-over

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

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

Handling consumables

ENVIRONMENT NOTE

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

- Consumables should only be stored in containers complying with applicable regulations and at the locations stipulated.
- Do not bring flammable consumables into contact with hot objects or a naked flame.
- When topping up consumables, use only clean containers.
- Observe the manufacturer's instructions relating to safety and disposal.
- Avoid spilling.
- Spilt liquids should be taken up with binding agents at once and disposed of according to the regulations.
- Old and contaminated consumables should be disposed of according to applicable 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.

⚠ DANGER

LPG becomes gaseous as soon as it escapes; this means that a hazardous explosive atmosphere will occur immediately.

Ensure adequate ventilation.

⚠ CAUTION

LPG will cause frostbite on bare skin!

Protective equipment must be worn without fail.

⚠ WARNING

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

Protective equipment must be worn.

⚠ WARNING

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

Observe the manufacturer's instructions without fail.

Competent person

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

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

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

Periodic safety inspection

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

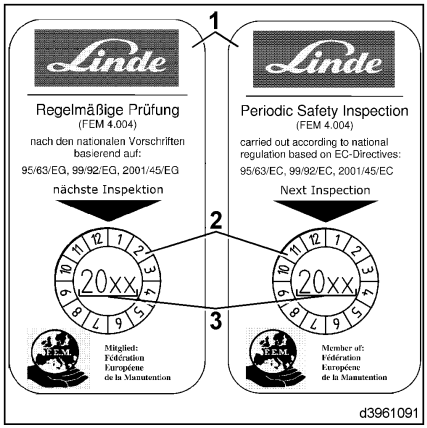
The national regulations must be observed without fail.

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

Safety information on the LPG system

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

The scope of the inspection is extended by the manufacturer in accordance with the specific truck type. Please contact your service partner for this work.



Natural gas system checks (special equipment)

The CNG system is subject to Pressure Equipment Directive 2014/68/EU. It is a system for which monitoring and regular testing are required.

The operating company must ensure that the stipulated periodic safety inspections are carried out within the required deadlines. The periodic safety inspections must be carried out by an approved inspection agency.

NOTE

The national regulations must be observed without fail.

Safety information on the LPG system

DANGER

When liquefied petroleum gas escapes, there is an immediate danger of explosion and thus also the risk of burns. This is especially the case with leaks in the LPG system and with the engine either starting not at all or starting poorly.

It is therefore absolutely forbidden to manipulate the LPG system or to continue to operate the truck if any malfunctions occur.

Safety guidelines for LPG (extract)

Always observe the accident prevention regulations "Use of LPG" (BGV D34) published by the main trade association, or the national guidelines.

LPG includes the flammable gases PROPANE, BUTANE and mixtures of these substances. LPG is stored in LPG cylinders or LPG tanks to drive internal combustion engines. The pressure of these gases in the container depends on the outside temperature and may reach up to 25 bar or more.

⚠ DANGER

LPG becomes gaseous as soon as it escapes; this means that a hazardous, potentially-explosive atmosphere will be created immediately.

No open flames (stoves, storm lanterns, spark-forming activities etc.); do not smoke in storage rooms and when working on the LPG system!

Obligations of the owner and employees

The owner must ensure that industrial trucks are only operated or maintained by persons trained in the operation or maintenance of such industrial trucks and who can be expected to perform their duties reliably. The truck LPG systems may only be operated if they are in perfect condition.

The owner must draw up operating instructions for industrial trucks in an understandable form and language, containing all information required for safe operation. The operating instructions must be made known to operators and maintenance staff.

They must be accessible to operators and maintenance staff at the site of operation at all times and be observed by such persons.

A. In operation

1. Before pipe or hose connections are released, the cylinder and main shut-off valves should be closed. The connecting nuts on cylinders should only be released slowly and only very little at first, as the gas still in the line will squirt out.

⚠ CAUTION

LPG will cause frostbite on bare skin!
Use personal protective equipment.

Pipework and its accessories for gas in the liquid phase and LPG containers must not be exposed to an impermissible level of heat.

2. Removable LPG containers (LPG cylinders) must be positioned on the truck in such a way that they are horizontal and the collar opening faces downwards. Upon installation and removal, the gas outlet connection of the cylinder valve must be sealed off by a lock nut securely tightened with a wrench.

Before LPG cylinders are connected, their pipe connections must be checked for perfect condition.

After removal, the cap of the cylinder must be immediately screwed onto cylinders provided with a lock nut.

3. The valves must be opened slowly. Striking tools should not be used for opening/closing. Risk of explosion from spark discharge.

NOTE

In the event of fires involving LPG, use only carbon dioxide dry-powder fire extinguishers or carbon dioxide gas extinguishers. In the United Kingdom, only carbon dioxide dry-powder fire extinguishers may be used to extinguish fires.

4. Leaking gas cylinders may not be reused. They must be emptied immediately by being released outside, taking all precautions into account, and marked as leaking. If damaged gas cylinders are supplied, the provider or his representative (service-station attendant etc.) must be immediately notified of the damage present, where possible in writing.

5. The condition of the entire LPG system must be kept under constant surveillance to

ensure safety of operation, in particular in terms of leak tightness. It is not permitted to use trucks if the LPG system has leaks. When checking for leaks, soapy water, a solution of Nekal or other foaming products should be used. It is not permitted to inspect the gas system using a naked flame for illumination.

6. Make sure that the LPG system is adjusted so that the level of harmful substances in the exhaust gases is kept as low as possible.

7. Frozen system parts should only be thawed out with hot water, hot sand bags or the like. Open flames, red-hot objects etc. may cause explosions.

8. When individual system parts are changed, the manufacturers' installation instructions must be observed. Cylinder and main shut-off valves should be closed when doing so.

9. The condition of the electrical system of industrial trucks running on LPG must be kept under constant surveillance. Sparks may cause explosions if system parts containing gas are leaking. After an industrial truck running on LPG has been shut down for a lengthy period, the storage room must be ventilated thoroughly before the truck or its electrical system is started up.

10. Explosions involving gas cylinders or LPG systems must be immediately reported to the employers' liability insurance association and the industrial inspectorate responsible, even if no injuries occur. Damaged parts must be kept until conclusion of the investigation.

11. It must be ensured that trucks with LPG systems are only operated in rooms that are entirely or partially enclosed if no hazardous concentrations of exhaust constituents harmful to health can be produced in the room air.

B. In storage rooms and maintenance workshops

1. The cylinder and main shut-off valves should be closed as soon as the truck is shut down.

2. Industrial trucks fuelled by LPG should only be parked in areas that are above ground level and have adequate ventilation. They must not be parked near openings to areas below ground level. Sufficient space must be left around trucks that have been parked; such areas must not include cellar openings or access points, pits or similar cavities, drains without liquid traps, ventilation shafts and light wells or combustible material.

3. Removable LPG containers may only be changed in storage rooms if there is no possibility of a hazardous explosive atmosphere being produced.

4. The special regulations governing the storage of pressurised-gas vessels must be observed without fail, as well as specific national regulations where appropriate. For example, pressurised-gas vessels must not be stored:

- in rooms below ground level
- on stairwells
- in hallways/landings
- in confined yards or passageways/thoroughfares or in their immediate vicinity
- on steps of outdoor installations
- on specially marked escape routes
- in garages
- in workrooms.

Please also take into account the section "General requirements for pressure gas containers; Using pressure gas containers" in the Pressure Equipment Directive 2014/68/EU or corresponding national regulations.

5. Electric hand lamps used in these areas must be fitted with an enclosed sealed cover and a strong basket guard.

6. When work is performed in maintenance workshops, cylinder and main shut-off valves should be closed and the LPG cylinders protected from the impact of heat. Before breaks in operation and the end of operation, the person responsible should check whether all valves, in particular cylinder valves, are closed. Work involving fire, specifically welding and cutting, should not be carried out in the vicinity of LPG cylinders. LPG

cylinders, even when empty, must not be stored in workshops.

7. Storage rooms and maintenance workshops must be well ventilated. It is important to keep in mind that LPG is heavier than air. It collects at floor level, in work pits and other depressions in the ground where hazardous explosive mixtures of gas and air may be produced.

⚠ DANGER

The exhaust gases are poisonous.

Ensure adequate ventilation of storage rooms!

Safety measures when working on ignition systems

To prevent personal injury and/or destruction of the ignition system, please comply with the following when working on ignition system units:

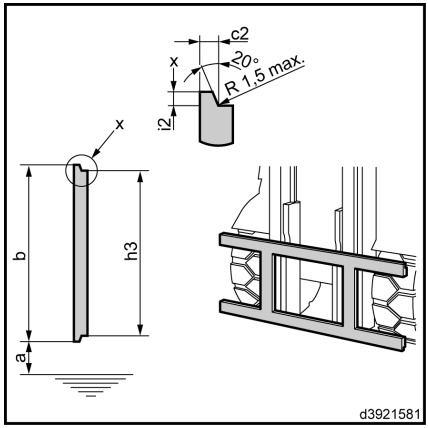
- Ignition system lines — including high-voltage cables and test equipment leads — should only be connected and disconnected with the ignition system switched off.
- If the system is supposed to crank at starting speed but not actually start (e.g. for a compression pressure test), disconnect the high-voltage cable (terminal 4) from the ignition distributor and connect it to earth.
- Use of a quick charger to jump start the engine is only permitted for up to 1 minute at a maximum of 16.5 volts.
- The engine should only be washed with the ignition switched off.
- Before carrying out any electric or spot welding, the battery and connections to the control units must be completely disconnected. The earth electrode must be as close as possible to the welding point.

Fit attachments

Only specialists are permitted to fit the attachment and connect the energy supply for power-driven attachments.

Mechanical connection

For **hung** attachments, the attachment and fork carriage must be of the same class.



Class As per ISO 2328	Load capacity Truck kg	Load centre of gravity mm	Design	a mm	b mm	c2 mm	i2 mm	h3 mm
1	0 - 999	400 and 600	A	76	331	16	13	305
			B	114				
2	1000 - 2500	500 and 600	A	76	407	16	13	381
			B	152				
3	2501 - 4999	500 and 600	A	76	508	21.5	16	476
			B	203				
4	5000 - 8000	600	A	127	635	25.5	19	597
			B	254				
5	8001 - 10999	600	A	127	728	34	25	678
			B	257				

Integrated attachments are made to match the installed lift mast. When fitting attachments retroactively, the correct attachment and all necessary parts from the industrial truck manufacturer—especially lift mast rollers and chain holders—must be available.

Contact your Service-partner.

Hydraulic connection

⚠ WARNING

Hydraulic system is under pressure. Risk of injury.

Wear protective equipment.

⚠ CAUTION

Damage to the hydraulic system through contamination.

When connecting hydraulic lines, ensure they are clean.

Before connecting hydraulic lines or hydraulic couplings, the hydraulic system must be depressurised.

Without depressurisation:

- ➢ Place a collection container underneath.
- ➢ Carefully release connection of the hydraulic lines.

When the pressure is reduced, hydraulic oil escapes.

- ➢ Disconnect hydraulic lines.
- ➢ Connect hydraulic lines to attachment.

With depressurisation: (special equipment)

- ➢ Depressurise the hydraulic lines as described in section "Depressurisation".
- ➢ Disconnect hydraulic lines.
- ➢ Connect hydraulic lines to attachment.

Additional capacity rating plate

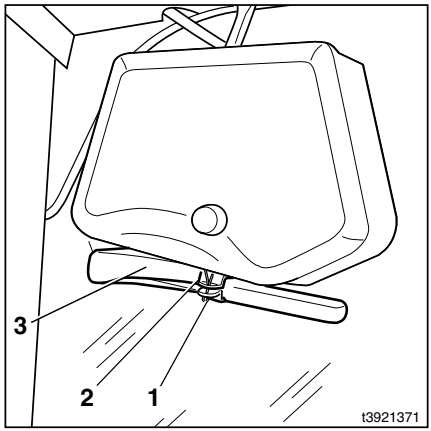
Attachments alter the load capacity and stability of the truck. For each attachment, an additional capacity rating plate must be mounted where the driver can see it that indicates the load capacity of the truck with attachment; see section "Additional capacity rating plate for attachments".

A symbol sticker for the relevant attachment must be affixed behind the actuating lever.

Emergency exit with built-in rear window

If a truck with a built-in front and rear window breaks down in a narrow aisle, the driver may be unable to exit the truck at the side in some circumstances. In the event of acute danger, the driver can exit the truck via the rear window. To do so, the rear window must be broken with an emergency hammer.

➢ Bend open split pin (1) from the support mounting (2) below the rear wiper motor. ▷



⚠ WARNING

Glass splinters may cause injuries.

Remove glass splinters carefully.

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

➢ Climb out carefully.

Emergency lowering

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

⚠ DANGER

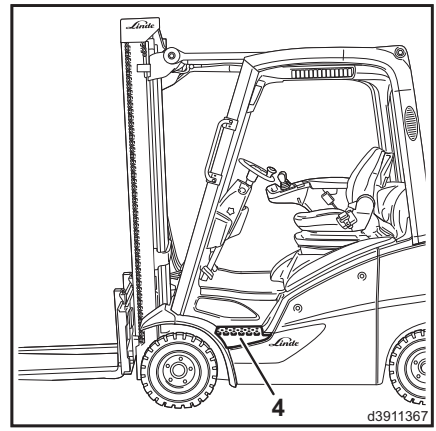
Risk of accident or danger to life when lowering the fork carriage with fork arms.

People must not stand near the fork arms when they are being lowered.

During the lowering process, leave the socket wrench on the threaded stud (1) or (5) on the valve block (3) or (6) to ensure that the lowering process can be interrupted at any time.

- ➢ Unscrew the two screws from the anti-slip panelling in the left-hand step tread (4).
- ➢ Remove the panelling.

▷



Emergency lowering

Variant 1: with self-locking nut

- Slowly rotate the threaded stud (1) by approx. three rotations in an anti-clockwise direction using an 8 mm AF socket wrench until the fork carriage is fully lowered.
- Loosen the self-locking nut (2) by approx. two rotations.
- Screw in the threaded stud (1) again in a clockwise direction. Otherwise it will not be possible to lift the fork carriage using the joystick.

Tightening torque: 10 Nm.

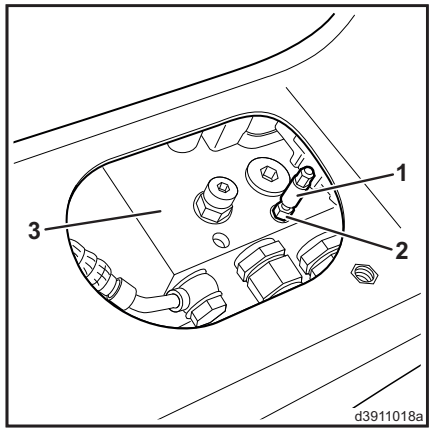
- Retighten the self-locking nut (2).

Tightening torque: 9.5 Nm.

NOTE

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

- Secure the anti-slip panelling in the left-hand step tread using two screws.

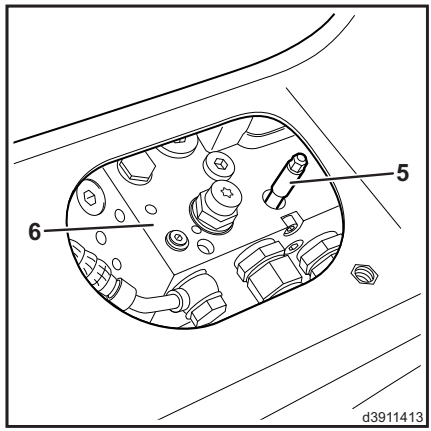


Variant 2: without self-locking nut

- Slowly rotate the threaded stud (5) by approx. two rotations in an anti-clockwise direction using an 8 mm AF socket wrench until the fork carriage is fully lowered.
- Screw in the threaded stud (5) again in a clockwise direction. Otherwise it will not be possible to lift the fork carriage using the joystick.

Tightening torque: 15 Nm.

- Secure the anti-slip panelling in the left-hand step tread using two screws.



Towing

If the truck needs to be towed away in an emergency, the towing unit can:

- Short-circuit the hydraulic oil circuit
- Release the multi-disc brakes in the drive axle via the brake valve and stop pedal

⚠ WARNING

Risk of accident and risk of fatal injury! It is no longer possible to brake the truck. The parking brake will not function either.

To tow the truck, a towing vehicle with sufficient tractive force and braking force for the unbraked towed load is required. The truck may only be towed using a fixed connection (tow bar).

Towing procedure

➢ Lower the load to a height at which the fork arms will not scrape along the ground during towing.

➢ Remove the load

➢ Attach a towing vehicle (with sufficient tractive and braking force) to the towing pin on the truck using the tow bar.

Opening the choke plunger of the hydraulics

➢ Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

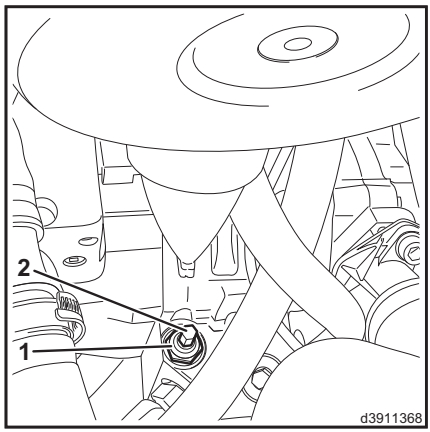
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

- Use a socket to release the self-locking nut (1) (19 mm AF) on the left-hand side of the variable displacement pump housing.
- Unscrew the threaded stud (2) (8 mm AF) by two rotations using the socket.
- Lock the threaded stud with the self-locking nut (1) and tighten.

Tightening torque: 50 Nm.



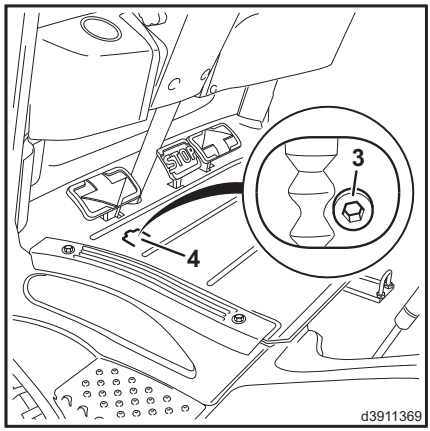
Releasing the multi-disc brake

The brake valve is located under the bottom plate on the left-hand side of the truck chassis.

- Fold up section (4) of the floormat.
- Insert a hexagon socket wrench (5 mm AF) through the opening in the bottom plate and unscrew the socket head screw (3) by approx. 8 rotations.
- Close the bonnet.
- Sit on the driver's seat.
- Move the parking brake lever downwards.

The symbol on the display unit goes out.

- Move the stop pedal back and forth several times in the easy-movement range until resistance is felt (approximately 10 strokes) and the brake is released.



After towing

- Use wheel chocks on the side of the truck facing downhill.
- Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

- Loosen the self-locking nut (1) on the variable displacement pump.
- Screw in the threaded stud (2) (8 mm AF) and tighten.

Tightening torque: 20^{+5} Nm

- Lock the threaded stud with the self-locking nut (1).
- Tighten the self-locking nut.

Tightening torque: 50 Nm.

Establishing braking readiness

- Screw the socket head screw (3) as far as it will go into the valve block.
- Close section (4) of the floormat firmly and close the bonnet.

⚠ DANGER

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

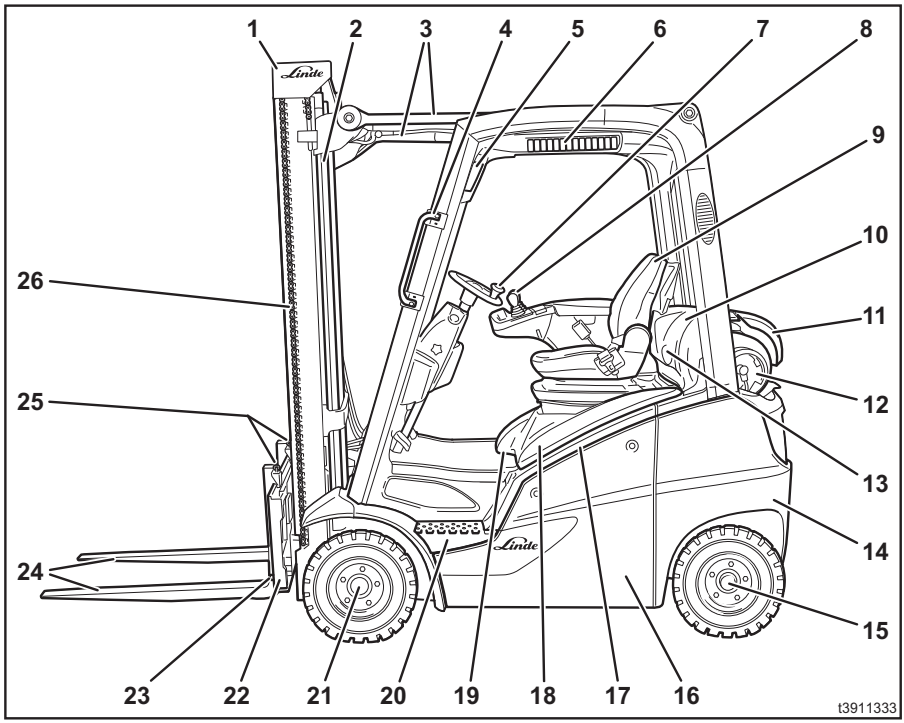
After repairs have been made to the brake system, check for correct operation. If there are any defects in the brake system, contact your service partner.

Towing

3

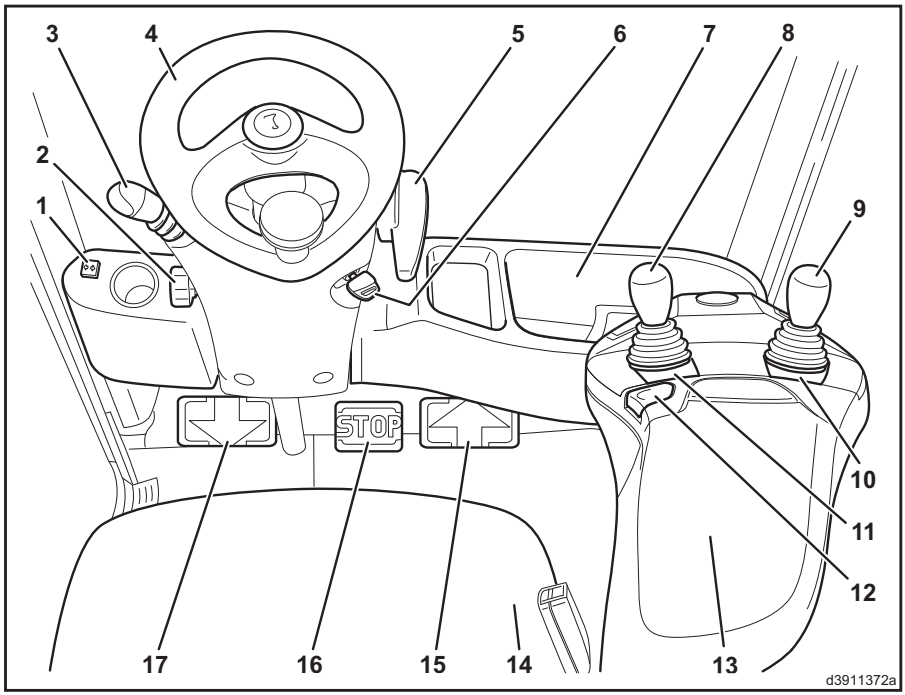
Overview

Truck overview



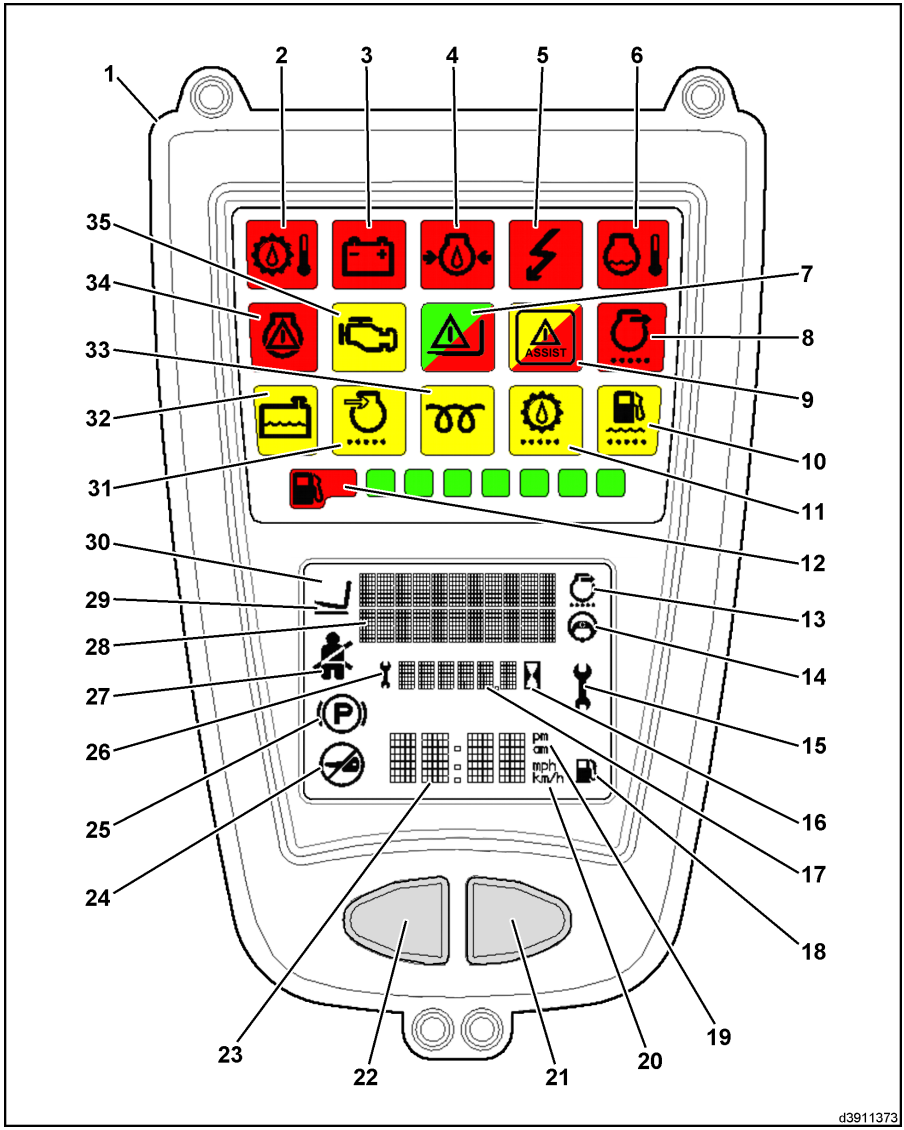
1	Lift mast	13	Fuses (behind the cover)
2	Lift cylinder	14	Counterweight
3	Tilt cylinder	15	Steering axle
4	Handhold for entering and exiting the truck (special equipment)	16	Maintenance cover
5	Display unit	17	Chassis with overhead guard
6	Switch panel for toggle switch (special equipment)	18	Bonnet
7	Steering wheel/hydrostatic steering	19	Fuses (in the engine compartment)
8	Joystick	20	Step for entering and exiting the truck
9	Driver's seat	21	Left-hand drive unit
10	Cover for electrical system	22	Fork carriage
11	Cover for LPG cylinder	23	Fork arm locking devices
12	LPG cylinder	24	Fork arms
		25	Fork arm latch
		26	Lift mast chain

Operating devices



1	Indicator light for direction indicator and hazard warning system (green) (special equipment)
2	Clamping screw for adjusting the steering column
3	Multifunction lever for wiper/washer system and turn indicator (special equipment)
4	Steering wheel/hydrostatic steering
5	Parking brake lever
6	Starting switch with switch key
7	Compartment
8	Joystick for working hydraulics
9	Joystick for auxiliary hydraulics (attachments) (special equipment)
10	Symbol sticker for auxiliary hydraulics (attachments) (special equipment)
11	Symbol sticker for working hydraulics
12	Signal button
13	Armrest on driver's seat
14	Driver's seat
15	Forward travel accelerator pedal
16	Stop pedal
17	Reverse travel accelerator pedal

Display unit



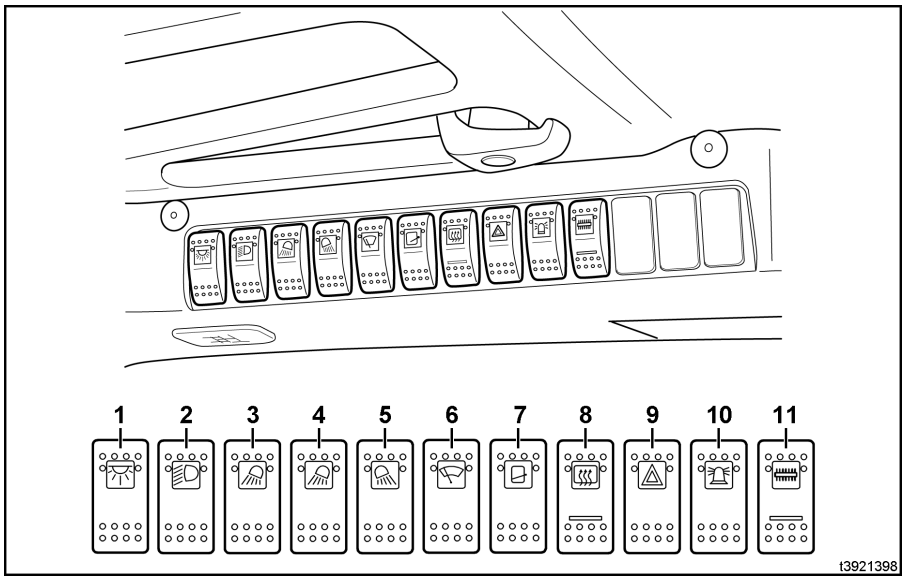
1 Display unit
2 Hydraulic oil temperature indicator H1
3 Charging indicator H2
4 Engine oil pressure indicator/engine oil level indicator H3
5 Electrical controller fault H4
6 Engine coolant temperature indicator H5
7 Display for when joystick is electronically unlocked H12 **or** Lift height restriction (function/warning) (special equipment) H12
8 Particle filter warning H13
9 Assistance system warning light (special equipment) H15
10 Water in the fuel filter H10
11 Hydraulic oil microfilter indicator (special equipment) H9
12 Level display for diesel tank, LPG tank/replacement cylinders or CNG tank
13 "Active particle filter regeneration" symbol
14 Symbol for "Steering position display active" (display in text field (28)) (special equipment)
15 Symbol for "Service interval exceeded" (for a description, see the section entitled "Starting internal combustion engine")
16 Symbol for "Operating hours active" flashes (only if internal combustion engine is running)
17 Operating hours display (evidence of the truck's operating time and of the servicing work to be performed)
18 Symbol has no function
19 Symbol for 12-hour display "Clock display: am = morning/pm = afternoon"
20 Symbol has no function
21 Function key
22 Reset button
23 Time display
24 Symbol for "Do not start the engine"
25 Symbol for "Parking brake applied"
26 Symbol for "Operating time until next service" (for a description, refer to the section entitled "Starting internal combustion engine")
27 Symbol for "Seat belt not fastened" (special equipment)
28 Text field
29 Symbol for "Lift mast positioning active" (special equipment)
30 Display
31 Air filter vacuum indicator H7
32 Coolant filling level indicator H6
33 Indicator light: preheating or malfunction (function only available on diesel trucks) H8
34 Gas system warning light (function only available on gas trucks) H11
35 Engine malfunction error light (function only available on gas trucks) H14

The display unit (1) is mounted to the top right-hand side of the overhead guard. The display unit is located within the driver's field of vision and is the central information point for all truck functions. A self-test of the display unit takes place after the key switch has been switched on. During the self-test, all indicator lights and the displays are activated.

NOTE

If a faulty display unit is replaced, the operating hours that have been incurred up to that point must be recorded. Add the information to an embossed strip affixed near the display unit. There is also the option of updating the new display unit at a later time.

Switch panel



The switch panel is mounted in the top right-hand area of the overhead guard.

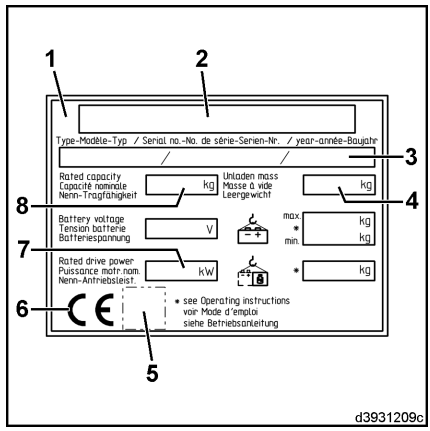
1 Light for terminal board and interior lighting
2 Standard lighting or higher lighting
3 Working spotlight, position 1 / 2
4 Working spotlight, position 3 / 4 or
Working spotlight, position 5 / 6 or
Front LED light stripes, light colour: white, or front / rear LED light stripes, light colour: white / red
5 Working spotlight, position 7 / 8 and / or
Rear LED light stripes, light colour: white
6 Front windscreen wiper and rear windscreen wiper – continuous operation on/off (intermittent mode depending on the drive direction; the washer system is always activated)
7 Roof panel wiper – intermittent mode or continuous operation on/off (washer system is activated)
8 Rear window heating
9 Hazard warning light
10 Rotating beacon, flashing beacon, BlueSpot™ or TruckSpot™
11 Sweeper function

NOTE

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

Labelling

Nameplate

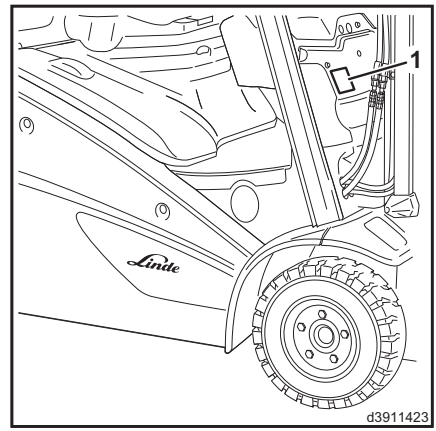


1 Nameplate
2 Manufacturer
3 Model/serial number/year of manufacture
4 Tare weight
5 Placeholder for "data matrix code"
6 CE mark
7 Rated drive power
8 Rated load capacity

NOTE

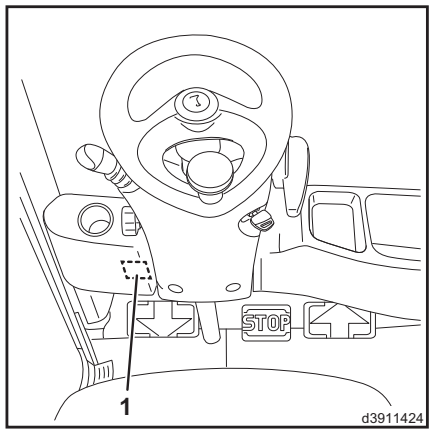
The CE mark confirms compliance with the EC machinery directive and with all regulations applicable to the truck.

Nameplate (1), attachment position 1 (until 04/2017):

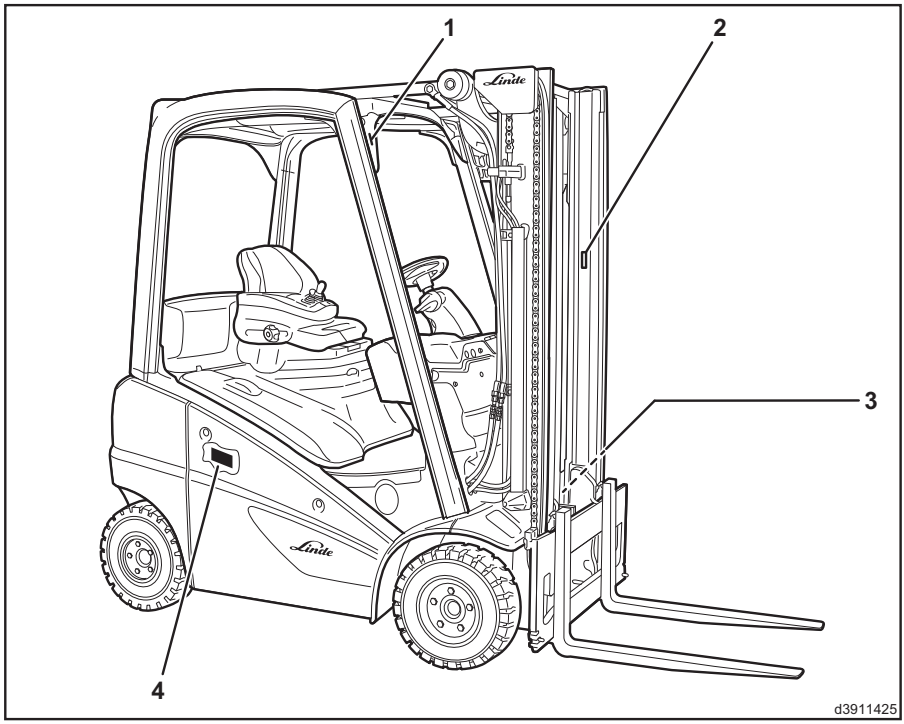


Labelling

Nameplate (1), attachment position 2 (from 05/2017): ▷



Truck numbers and identification plates



1 Serial number (stamped)

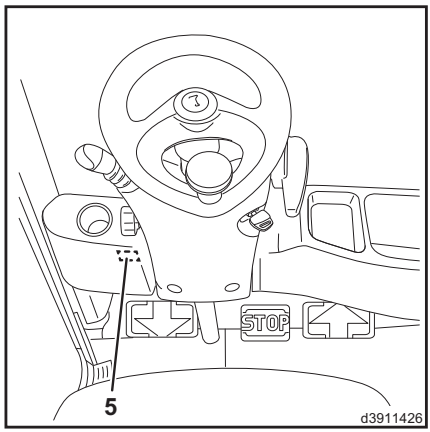
2 Lift mast number (adhesive label)

3 Identification plate for the drive axle

4 Identification plate for the engine

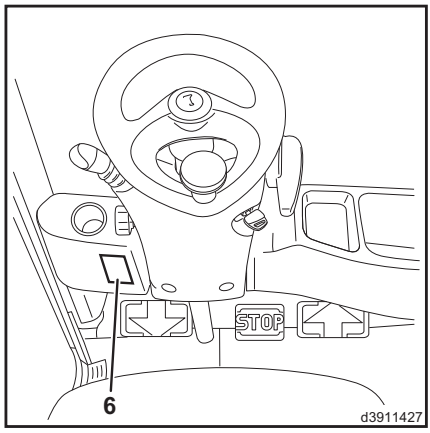
Additional lift mast number ▷

5 Additional label for the lift mast number (from 05/2017)



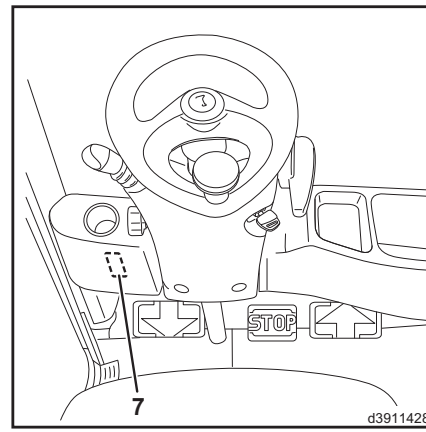
"Guaranteed sound power level" label ▷

6 "Guaranteed sound power level" label



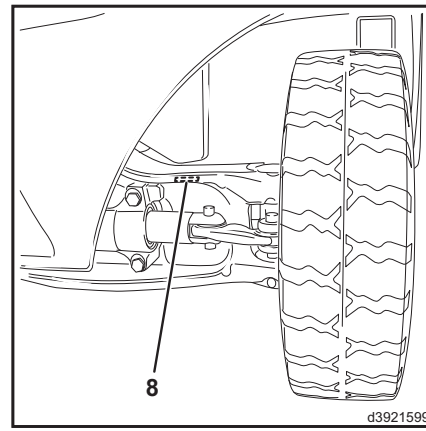
"Truck configuration" label ▷

7 "Truck configuration" label (for a description, see "Truck configuration label")



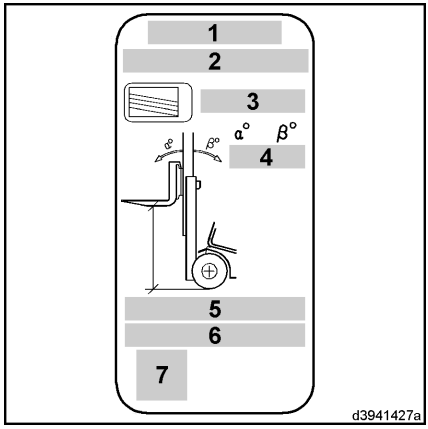
Identification plate for the steering axle ▷

8 Identification plate for the steering axle



Truck configuration

"Truck configuration" sign ▷



NOTE

If attachments and conversions are required, please contact your service partner. A new "truck configuration" label must then be created and attached to the truck by the service partner.

1 **Chassis serial number**

2 **Identification plate designation for lift mast** with:
Lift mast series – lift mast version – lift height in cm or
Identification: "ohne / CO"*****
Lift mast version — variants:
"S" means standard lift mast
"D" means duplex lift mast
"T" means triplex lift mast

3 **Number of capacity rating plate**

4 Maximum permissible forwards/backwards **tilt angle**

5 **Drive axle tyres:**
"SE" means solid rubber tyres
"Luft" means pneumatic tyres
"ZW" means twin tyres
"Band" means bandage tyres

6 **Attachment:**
"GTR" means fork carriage
"ISS" means integrated sideshift
"IZVG" means integrated fork prong positioner
"ohne / CO" means customer-specific option

7 Placeholder for "**data matrix code**"

"ohne / CO"***** means customer-specific option (without lift mast or with released non-original lift mast)

4

Operation

Service plan before initial commissioning

Engine
Check the filling level in the gas system
Check the gas system for damage and leaks
Check the engine oil level
Check the cooling fluid level
Chassis frame
Tighten the wheel fastenings
Check the tyre pressure
Check the brake system
Check the steering system
Electrics
Check the condition of the battery
Hydraulics
Check the oil level in the hydraulic system
Check the lifting system and attachments

Instructions for running-in

The forklift truck can be run at high speeds straight away. However, in the first 50 operating hours avoid subjecting either the operating hydraulics or the traction drive to high continuous loads. The wheel fastenings should be tightened before initial commissioning and whenever wheels are changed. 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:	210 Nm
rear:	210 Nm

Pre-shift checks

Engine
Check the filling level in the gas system
Carry out a visual inspection and odour inspection on the LPG system
Check the high-pressure relief valve of the CNG system
Check the engine oil level
Check the cooling fluid level
Check the truck for leaks (visual inspection)
Chassis, bodywork and fittings
Check that the adjusting mechanism on the steering column is secure
Check the condition of the driver's seat and seat belt (visual inspection)
Check the filling level in the container of the washer system
Chassis frame
Check the tyres and rims (profile, external damage, air pressure)
Check the condition of the antistatic belt (only when using tyres that are not antistatic)
Test the brake system and parking brake
Electrics
Check the electrical system (e.g. lighting, warning units)
Hydraulics
Check the oil level in the hydraulic system
Check the truck for leaks (visual inspection)
Load lift system
Check the fork arms and arm safety devices

Regular maintenance

Performing the maintenance tasks listed here will increase the availability of your truck and help maintain its value. Carry out this work as frequently as possible in accordance with the application conditions.

- Clean the truck
- Clean the prefilter (special equipment)
- Lubricate the steering axle
- Tighten the wheel fastenings (after each instance of maintenance or repair, and after 100 operating hours at the latest)
- Clean the lift mast chain and apply chain spray
- Lubricate the sideshift (special equipment)
- Lubricate the fork prong positioner (special equipment)

Standard equipment

Entering and exiting the truck

⚠ WARNING

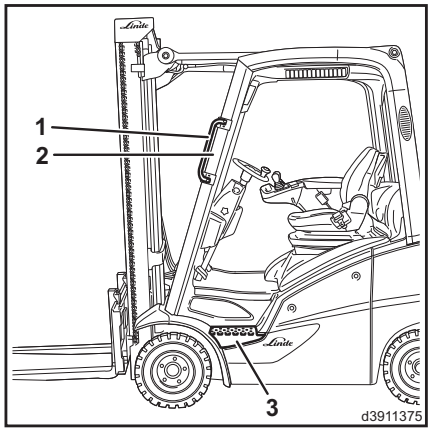
Entering and exiting the truck may result in injuries to the feet or back.

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

NOTE

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

➢ Use the handle (1) (special equipment) or longitudinal member (2) and step (3). ▷



Minimum distance between head and overhead guard

Certain versions (e.g. those with a rotary seat or container roof) have a reduced clearance between the seat and overhead guard.

⚠ WARNING

Risk of head injuries.

The truck may only be used by persons whose normal operating posture is such that there is a minimum distance of 30 mm between their head and the overhead guard.

Standard driver's seat and comfort driver's seat

⚠ WARNING

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

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

NOTE

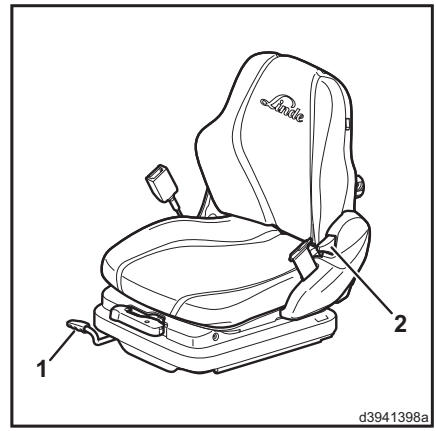
Sitting for long periods of time puts a lot of pressure on the spine. Try to compensate for this by performing regular simple gymnastic movements.

Longitudinal adjustment

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

Adjusting the seat backrest

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



Setting the driver's weight

NOTE

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

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

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

Adjust the driver's weight as necessary.

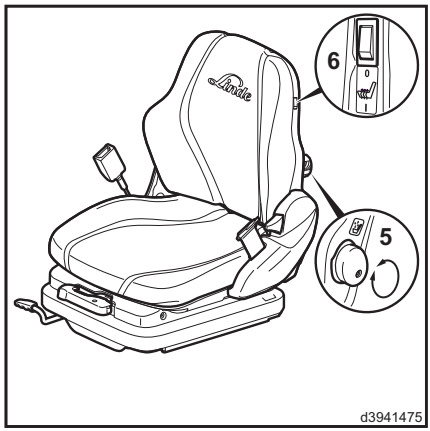
➢ Pull out the lever (3).

Move the lever to set the driver's weight for the suspension.

➢ Move the lever (3) upwards for a heavier weight.

➢ Move the lever (3) downwards for a lighter weight.

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



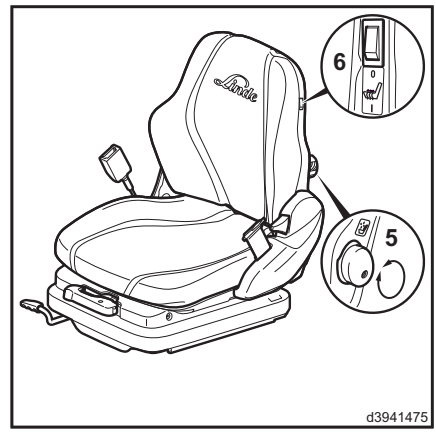
NOTE

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

➢ Turn knob (5) to the left or right.

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

Activating the seat heater (comfort driver's seat only)



- Push the switch (6) downwards to activate the seat heater.
- Push the switch (6) upwards to deactivate the seat heater.

NOTE

The maximum temperature is predefined.

Comfort driver's seat with air suspension

WARNING

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

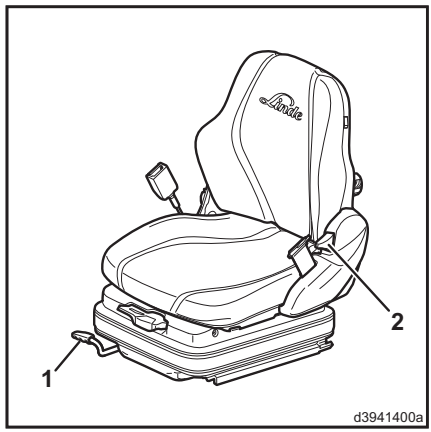
Before starting the truck and whenever changing drivers, adjust the seat to correspond to the driver's weight and make sure that the settings have all engaged properly. Do not place any objects in the driver's rotation range.

NOTE

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

Standard equipment

Longitudinal adjustment

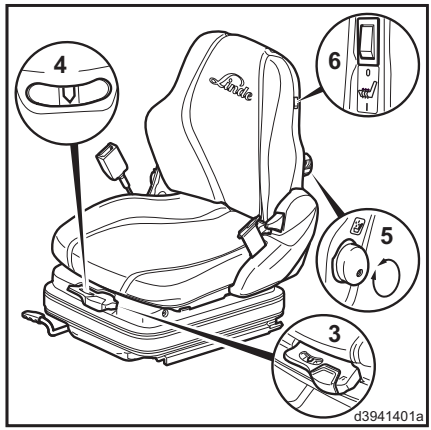


- Pull lever (1) upwards.
- Move the driver's seat backwards or forwards on the runners to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.
- Allow lever (1) to snap into place.

Adjusting the seat backrest

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

Setting the driver's weight



NOTE

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

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

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

Adjust the driver's weight as necessary.

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

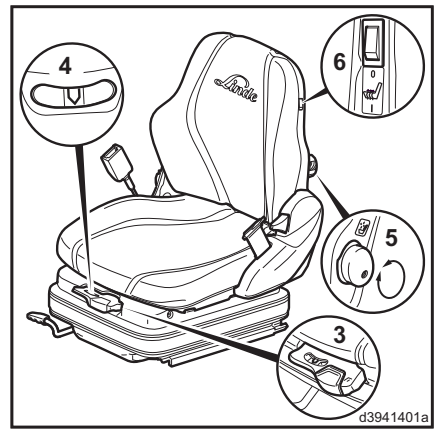
Adjusting the seat height

Adjust the seat height as required.

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

NOTE

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



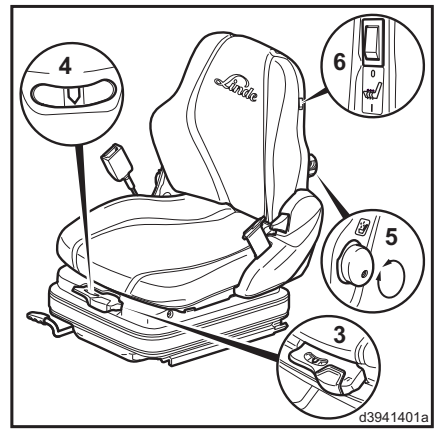
Adjusting the lumbar support

NOTE

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

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

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



Activating the seat heater

- Push the switch (6) downwards to activate the seat heater.
- Push the switch (6) upwards to deactivate the seat heater.

NOTE

The maximum temperature is predefined.

Luxury driver's seat with manual weight adjustment

WARNING

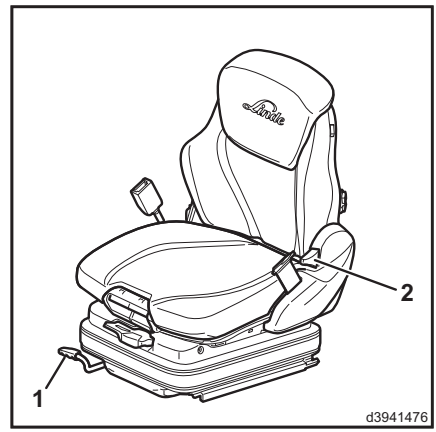
If the seat is not adjusted correctly, this may cause injury to the driver's back. The setting devices for the driver's seat must not be used during operation.

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

NOTE

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

Longitudinal adjustment

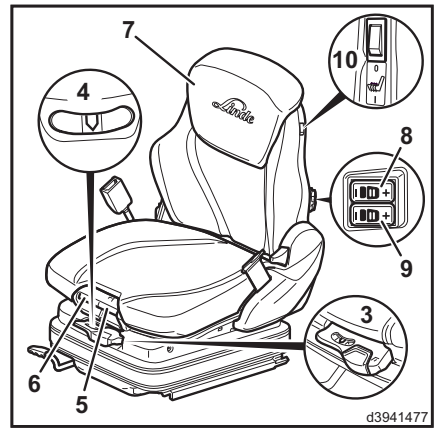


- Pull the lever (1) upwards.
- Move the driver's seat backwards or forwards on the runners to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.
- Allow the lever (1) to snap into place.

Adjusting the seat backrest

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

Setting the driver's weight



NOTE

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

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

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

Adjust the driver's weight as necessary.

- Pull the lever (3) upwards for a higher weight.
- Push the lever (3) downwards for a lower weight.

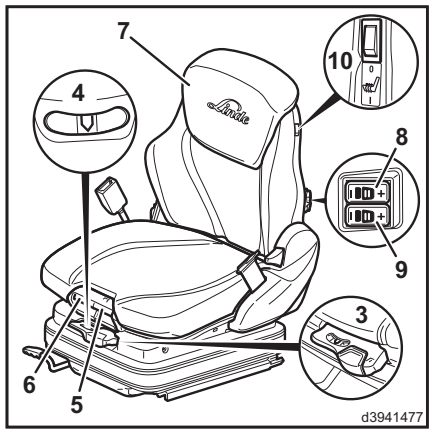
Adjusting the seat height

Adjust the seat height as required.

- Pull the lever (3) upwards to move the seat upwards.
- Push the lever (3) downwards to move the seat downwards.

NOTE

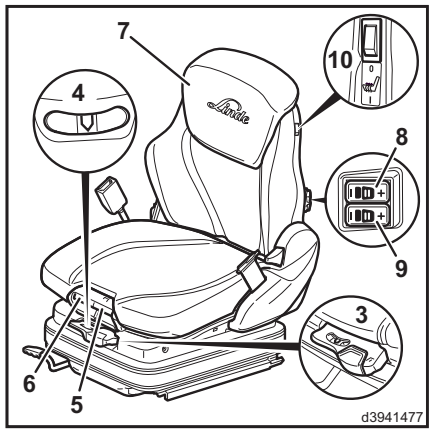
After making the adjustment, the arrow in the inspection window (4) may deviate slightly from the centre position.



Adjusting the seat angle

- Pull the lever (5) upwards.

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



Adjusting the seat depth

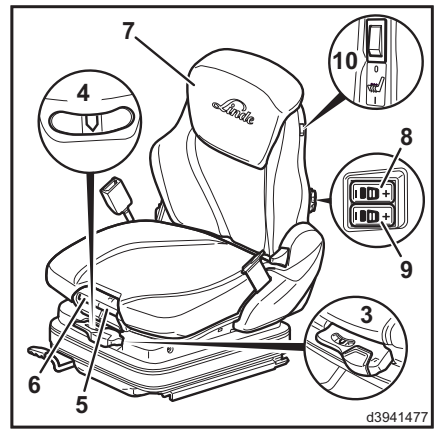
- Pull the lever (6) upwards.

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

Adjusting the backrest extension

- Push the backrest extension (7) in or pull it out for individual adjustment.

Adjusting the lumbar support



NOTE

The lumbar support enables the seat backrest contour to be adapted as effectively as possible to the driver's body.

➢ Press button (8).

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

➢ Press button (9).

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

Activating the seat heater (luxury driver's seat)

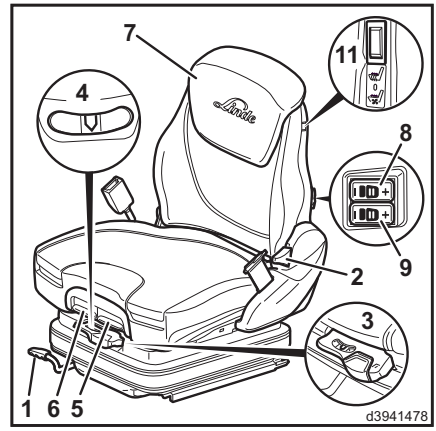
➢ Push the switch (10) downwards to activate the seat heater.

➢ Push the switch (10) upwards to deactivate the seat heater.

NOTE

The maximum temperature is predefined.

Luxury active driver's seat with manual weight adjustment



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

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

➢ Push the switch (11) upwards to activate the seat heater.

➢ Push the switch (11) to the centre position to deactivate the seat heater.

Activating the seat air conditioning (luxury active seat)

➢ Push the switch (11) downwards to activate the seat air conditioning.

➢ Push the switch (11) to the centre position to deactivate the seat air conditioning.

NOTE

The maximum temperature is predefined.

Luxury driver's seat with automatic weight adjustment

⚠ WARNING

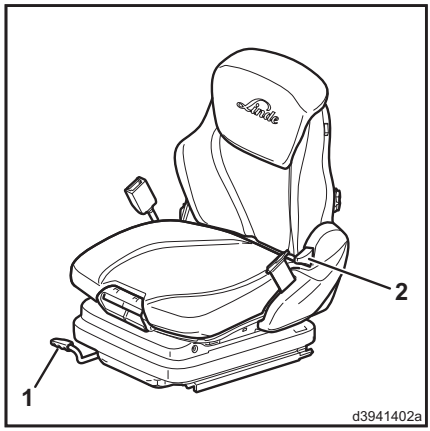
If the seat is not adjusted correctly, this may cause injury to the driver's back. The adjustment controls for the driver's seat should not be used during operation.

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

NOTE

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

Longitudinal adjustment



➢ Pull lever (1) upwards.

➢ Move the driver's seat backwards or forwards on the runners to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.

➢ Allow lever (1) to snap into place.

Adjusting the seat backrest

➢ Push lever (2) upwards and hold in place.

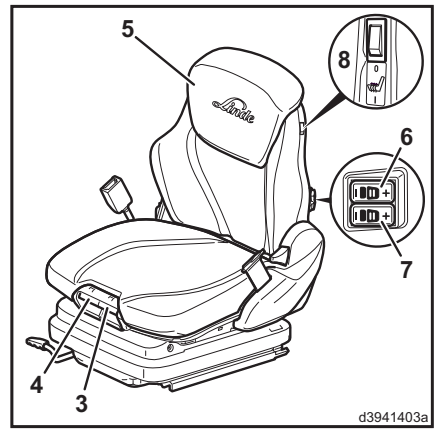
➢ Move the seat backrest forwards or backwards until a comfortable seating position for the driver is found.

➢ Release lever (2).

Setting the driver's weight

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

Adjusting the seat angle ▷



➢ Pull lever (3) upwards.

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

Adjusting the seat depth

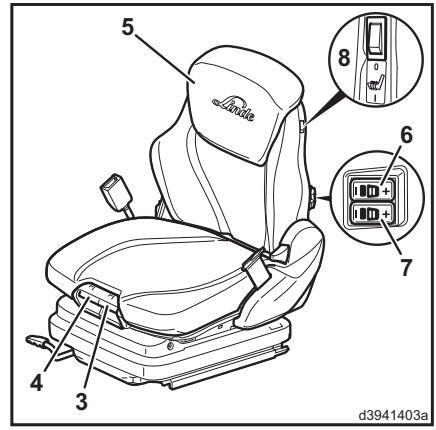
➢ Pull lever (4) upwards.

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

Adjusting the backrest extension

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

Adjusting the lumbar support ▷



NOTE

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

➢ Press button (6).

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

➢ Press button (7).

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

Activating the seat heater (luxury driver's seat)

➢ Push the switch (8) downwards to activate the seat heater.

➢ Push the switch (8) upwards to deactivate the seat heater.

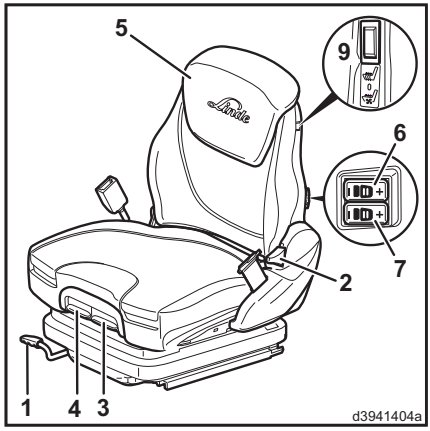
Standard equipment

NOTE

The maximum temperature is predefined.

Luxury active driver's seat with automatic weight adjustment ▷

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



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

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

Activating the seat air conditioning (luxury active seat)

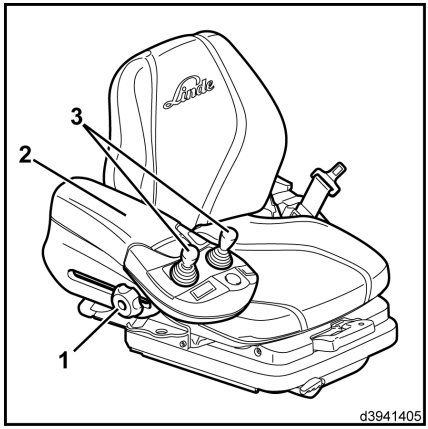
- Push the switch (9) downwards to activate the seat air-conditioning.
- Push the switch (9) to the centre position to deactivate the seat air conditioning.

NOTE

The maximum temperature is predefined.

Adjusting the armrest ▷

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



Adjusting the steering column

⚠ DANGER

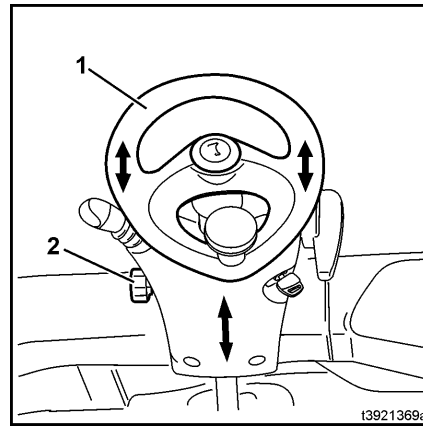
Safe driving is not guaranteed with the clamping screw open.

Only adjust the steering column when the vehicle is stationary.

Before attempting to drive the truck, ensure that the steering column is screwed firmly in place with the clamping screw (2).

Angle adjustment

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



Height adjustment (special equipment)

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

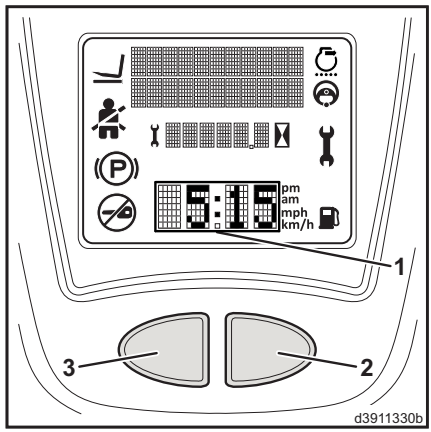
Setting the clock

NOTE

The time is displayed in 24-hour format. It is possible to change to 12-hour format using the diagnostic device. Contact your service partner.

Standard equipment

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



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

NOTE

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

➢ Depress button (2) to set the hours.

➢ Depress button (3) to confirm the hour setting.

Now the minute readout blinks.

➢ Depress button (2) to set the minutes

➢ Depress button (3) to confirm the setting of the minutes.

Opening the gas shut-off valve

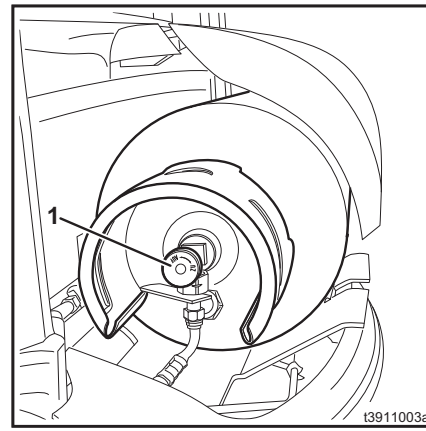
Opening the LPG cylinder shut-off valve

DANGER

After a truck has been kept at a standstill in an enclosed space for a prolonged period, there is a risk of explosion.

Before switching on the electrical system, first ensure the area is sufficiently ventilated.

➢ Open the shut-off valve (1) on the LPG cylinder slowly and carefully.



Opening the shut-off valve of an LPG tank (special equipment)

DANGER

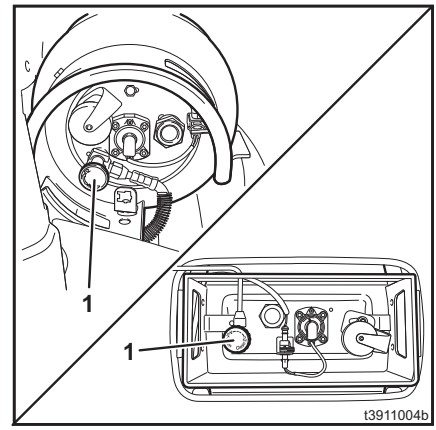
After a truck has been kept at a standstill in an enclosed space for a prolonged period, there is a risk of explosion.

Before switching on the electrical system, first ensure the area is sufficiently ventilated.

➢ Open the shut-off valve (1) on the LPG tank (depending on the version) slowly and carefully.

NOTE

If the truck is equipped with an electromagnetic shut-off valve on the gas tank, no action needs to be taken.



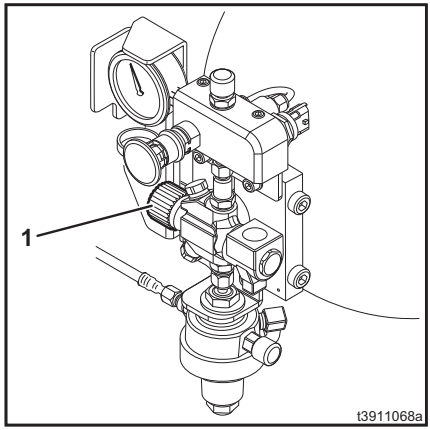
Opening the shut-off valve for the CNG version (special equipment)

⚠ DANGER

After a truck has been kept at a standstill in an enclosed space for a prolonged period, there is a risk of explosion.

Before switching on the electrical system, first ensure the area is sufficiently ventilated.

➢ Open shut-off valve (1) on the CNG tank slowly and carefully.



NOTE

The truck versions with CNG have an electromagnetic shut-off valve on the CNG module, which closes automatically when the internal combustion is stopped. The shut-off valve on the CNG tank can be open, and does not necessarily need to be closed.

Seat belt

⚠ DANGER

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

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

⚠ WARNING

The seat belt must function perfectly.

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

NOTE

Driver's cabs with fixed closed doors or bracket doors meet the safety requirements for driver restraint systems. The seat belt may also be used. It must, however, be fastened when driving with doors that are open or have

been removed. PVC doors do not constitute a driver restraint system. For trucks with the "speed reduction" special function, the seat belt must be worn even at the reduced speed.

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

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

Fastening the seat belt

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

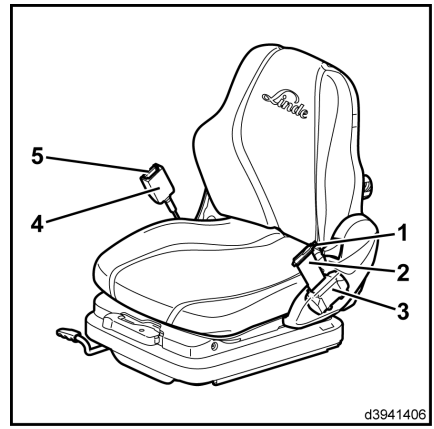
The belt must fit close to the body.

Unfastening the seat belt

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

NOTE

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



Standard equipment

Starting and stopping the internal combustion engine (dual-pedal operation)

Starting the engine

⚠ DANGER

Risk of poisoning!

Do not leave the engine running in unventilated areas.

NOTE

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

NOTE

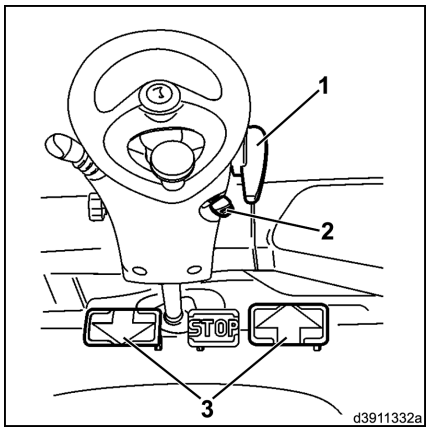
When outside temperatures are low (below 10°C), allow the engine to run for at least 1–2 minutes between starting up and switching off to prevent the gas system from malfunctioning.

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

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

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

The electrical system is switched on.



➢ Observe the display unit (4).

After the electrical system is switched on, the display unit (4) performs the following actions:

Self testing of lights:

- All displays light up for approx. 2 seconds

Display of the remaining operating time until the next service:

- The operating hours (example: **H 480**) are displayed for 5 seconds in the display field (9)
- The operating days* (example: **D 120**) are displayed for 5 seconds in the display field (9) (* This function can also be activated using the diagnostic program)
- The symbol (12) illuminates simultaneously during this time

After this time has passed, the display reverts to the operating hours.

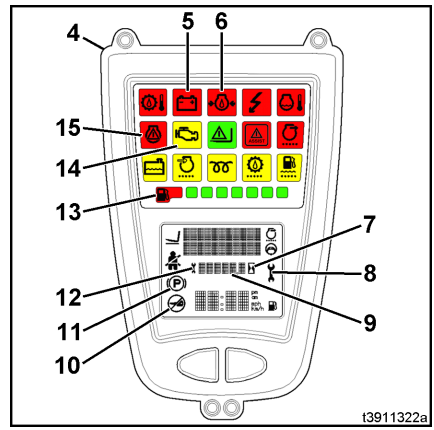
NOTE

If the symbol (8) flashes or illuminates, the preset service interval has been exceeded. The due service work must be carried out. Contact your service partner.

The following displays remain visible after self testing has been performed:

- Parking brake applied symbol (11)
- Engine oil pressure indicator (6)
- Charging indicator (5)
- Error light (14)
- After a few seconds, the level of the gas cylinder or gas tank can be read off on the luminous bar (13) in the display unit.

▷



Standard equipment

➢ Rotate the switch key to position "II".

As soon as the engine starts:

➢ Release the switch key

Symbol (7) flashes

If the engine fails to start:

➢ Stop trying to start the engine, wait for a while and then repeat the starting procedure.

If the engine stalls, the "Do not start the engine"(10) symbol will appear.

NOTE

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

➢ Always leave the ignition switched on until the symbol goes out.

➢ Then try to restart.

To protect the battery, wait at least one minute between each starting procedure.
If the engine still does not start after a third attempt to start it, refer to the section entitled "Malfunctions, causes and remedies".

DANGER

There is a risk of explosion if LPG leaks out in an uncontrolled manner.

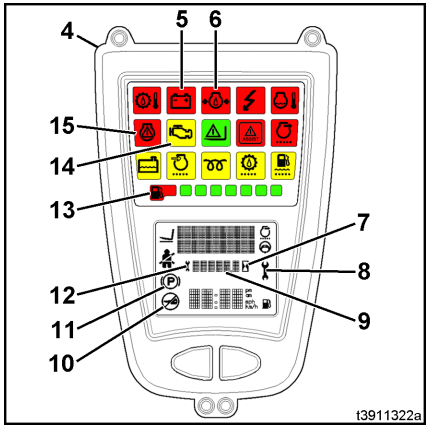
In the event of any malfunctions or starting problems on your truck, the gas system must be inspected by a qualified person with specialist knowledge of this system.

The charging and engine oil pressure indicator symbols and the error light 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.



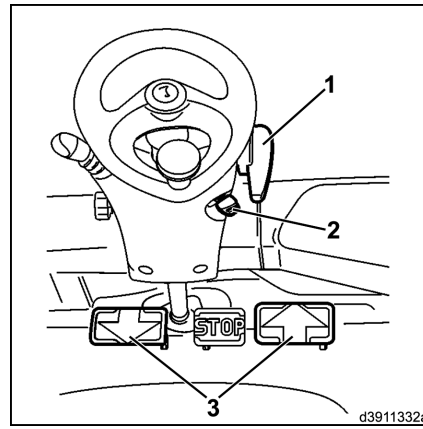
Switching off the engine

NOTE

Do not switch off the engine when under full load.

➢ Take your feet off the accelerator pedals (3). ▷

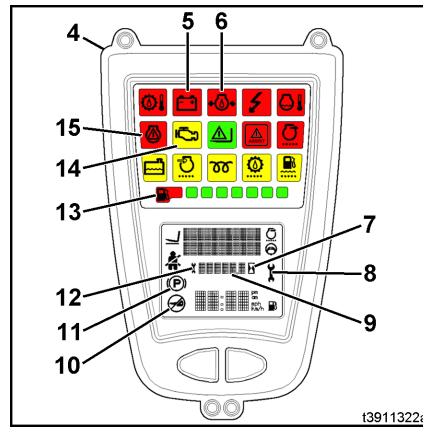
➢ Turn the switch key (2) to the zero position.



➢ Observe the display unit (4). ▷

NOTE

*The truck is equipped with a gas shortage shut-down device. This causes the engine to run on for up to eight seconds. While the engine is running on, control units (pedals and joystick) must not be operated. The driver must remain with the truck until the engine has switched off. If the engine runs on for more than 20 seconds, there is an error in the gas shortage shut-down device. In this case, the driver must immediately close the gas shut-off valve on the gas cylinder or gas tank and wait until the engine stops. After switching on the ignition, error light (14) flashes and warning light (15) illuminates. Do **not** continue to operate the truck. Contact your service partner to have the error corrected.*



NOTE

The brake is applied when the engine is switched off.

➢ Turn the parking brake lever (1) clockwise until it engages.

The parking brake is now applied.

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

⚠ DANGER

It must be borne in mind that LPG is heavier than air. It collects at floor level, in workshop pits and other cavities in the ground, where it may produce hazardous explosive mixtures of gas and air (see German accident prevention regulations for LPG, BGV D34, and German accident prevention regulations for industrial trucks, BGV D27).

Storage rooms and maintenance workshops must be well ventilated.

Closing the gas shut-off valve

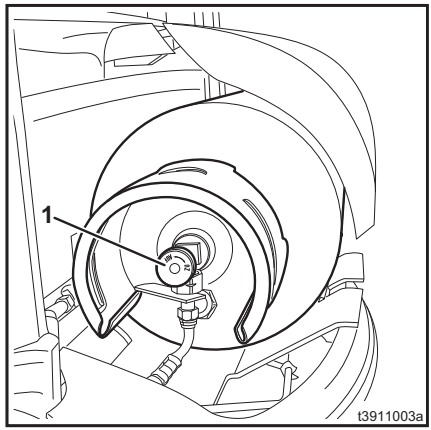
Closing the shut-off valve of an LPG cylinder, LPG tank or CNG tank

⚠ DANGER

Risk of fire and explosion.

The shut-off valve on the LPG cylinder or the gas tank must be closed.

➢ Firmly close the shut-off valve (1) of the LPG cylinder or gas tank (special equipment) as soon as the engine is switched off.



NOTE

If the truck is equipped with an electromagnetic shut-off valve on the gas tank, no action needs to be taken.

➢ Remove the switch key when leaving the truck.

➢ In frosty conditions, the truck should be left in an enclosed space where possible, as LPG only undergoes sufficient evaporation to start the engine at temperatures above -5°C (propane) and up to +5°C (propane/butane).

DANGER

If there is a high level of heat radiation, there is a risk of fire or explosion.

Do not leave trucks in halls or garages in the immediate vicinity of radiators or equipment radiating heat.

Driving (dual-pedal operation)

WARNING

It is generally not permitted to drive on long inclines with a gradient greater than 15 % due to the specified minimum braking and stability values. Please contact your service partner before negotiating steeper gradients. The climbing capability values specified in the type sheet have been determined from the pulling force and apply only when overcoming obstacles on the roadway and for small height differences.

You must adapt your driving style to the conditions on the route in use (unevenness etc.), and in particular to hazardous work areas and the load.

WARNING

Risk of accident and injury as a result of drivers being distracted.

The use of electrical devices (such as mobile phones) is prohibited while the truck is in motion.

WARNING

Rear-view mirrors must not be used for reverse travel.

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

CAUTION

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

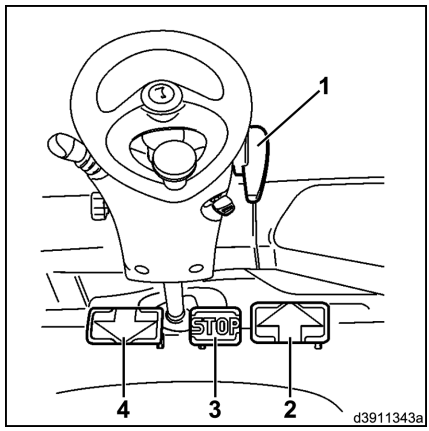
Please therefore ensure that both side doors are closed and locked before setting off.

NOTE

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

➢ Start the engine.

- Raise the fork arms slightly and tilt the lift mast backwards.
- Release the parking brake (unlock the parking brake lever (1) and move it downwards as far as the stop). ▷



Forwards travel

- Carefully operate the right accelerator pedal (2).

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

NOTE

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

Reverse travel

- Carefully operate the left accelerator pedal (4).

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

Changing direction of travel

- Release accelerator pedal pressed.

The hydrostatic drive will act as a service brake.

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

The forklift truck will now accelerate in the specified direction.

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

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

Approaching gradients

➢ Press the stop pedal (3) all the way down. ▷

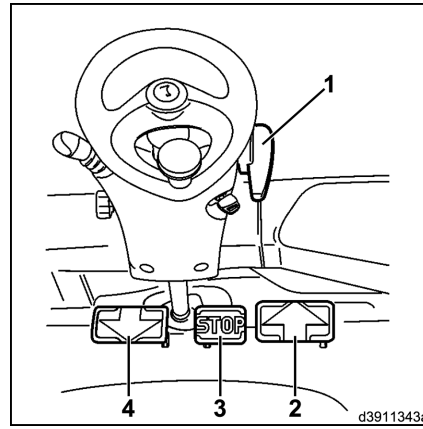
➢ Release the parking brake lever (1) and move it downwards as far as the stop.

➢ Take your foot half way off the stop pedal.

➢ Actuate accelerator pedal (2) or (4).

➢ Slowly take your foot completely off the stop pedal.

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



Stopping

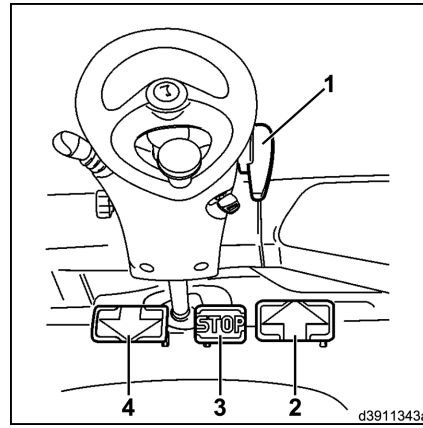
➢ Slowly release the accelerator pedal after pressing it.

The hydrostatic drive will act as a service brake.

➢ When stopping on inclines, leave both feet on the pedals and press the pedal in the "uphill" drive direction down slightly to counterbalance the slip of the drive. This slip is caused by technical factors.

➢ If stopping for an extended period of time, press the stop pedal (3). ▷

If you briefly leave the truck with the engine running in order to carry out minor jobs in the direct vicinity, e.g. picking work, opening doors or coupling trailers, the following must be observed:



➢ Lower the fork carriage.

⚠ CAUTION

The truck must not be allowed to roll away.

Actuate the parking brake.

➢ Turn the parking brake lever (1) clockwise until it engages.

The parking brake is now applied.

Standard equipment

NOTE

When leaving the truck briefly, the truck must always be supervised.

- If stopping for an extended period, switch off the engine.
- When leaving the truck, remove the ignition key.

Starting and stopping the internal combustion engine (single-pedal operation)

Starting the engine

⚠ DANGER

Risk of poisoning!

Do not leave the engine running in unventilated areas.

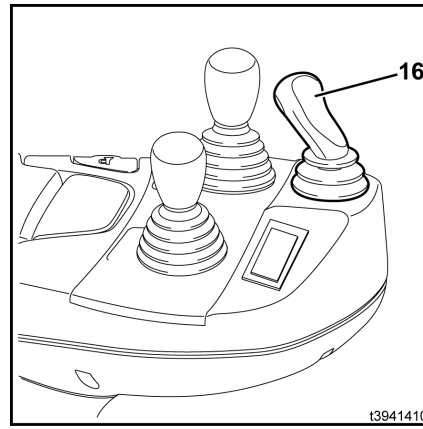
NOTE

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

NOTE

When outside temperatures are low (below 10 °C), allow the engine to run for at least 1–2 minutes between starting up and switching off to prevent the gas system from malfunctioning.

- ➢ Sit down on the driver's seat.
- ➢ Fasten the seat belt.
- ➢ Move the actuating lever (joystick and drive direction (16)) into the neutral position. ▷



Standard equipment

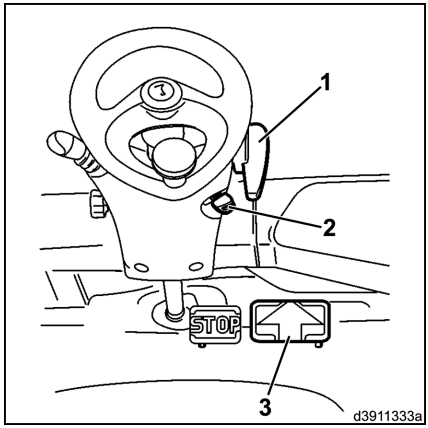
➢ Place your foot on the accelerator pedal (3). ▷

➢ Turn the parking brake lever (1) clockwise until it engages.

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

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

The electrical system is switched on.



➢ Observe the display unit (4). ▷

After the electrical system is switched on, the display unit (4) performs the following actions:

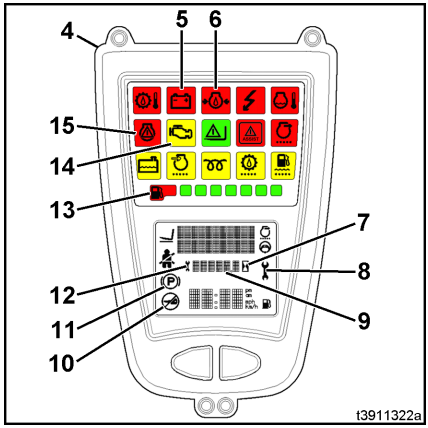
Self testing of lights:

- All displays light up for approx. 2 seconds

Display of the remaining operating time until the next service:

- The operating hours (example: `H 480`) are displayed for 5 seconds in the display field (9)
- The operating days* (example: `D 120`) are displayed for 5 seconds in the display field (9) (* This function can also be activated using the diagnostic program)
- The symbol (12) illuminates simultaneously during this time

After this time has passed, the display reverts to the operating hours.



NOTE

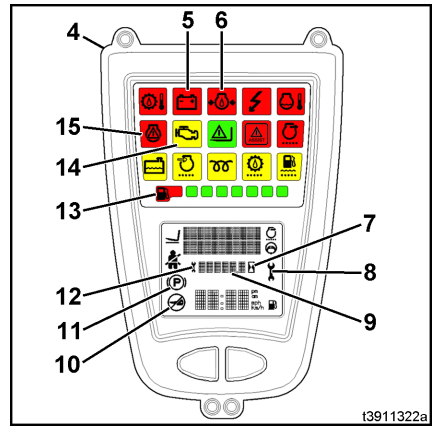
If the symbol (8) flashes or illuminates, the preset service interval has been exceeded. The due service work must be carried out. Contact your service partner.

The following displays remain visible after self testing has been performed:

- Parking brake applied symbol (11)
- Engine oil pressure indicator (6)

- Charging indicator (5)
- Error light (14)
- After a few seconds, the level of the gas cylinder or gas tank can be read off on the luminous bar (13) in the display unit.

➢ Rotate the switch key to position "II".



As soon as the engine starts:

➢ Release the switch key

Symbol (7) flashes

If the engine fails to start:

➢ Stop trying to start the engine, wait for a while and then repeat the starting procedure.

If the engine stalls, the "Do not start the engine"(10) symbol will appear.

NOTE

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

➢ Always leave the ignition switched on until the symbol goes out.

➢ Then try to restart.

To protect the battery, wait at least one minute between each starting procedure. If the engine still does not start after a third attempt to start it, refer to the section entitled "Malfunctions, causes and remedies".

DANGER

There is a risk of explosion if LPG leaks out in an uncontrolled manner.

In the event of any malfunctions or starting problems on your truck, the gas system must be inspected by a qualified person with specialist knowledge of this system.

The charging and engine oil pressure indicator symbols and the error light must go out as soon as the engine is running smoothly.

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

Standard equipment

NOTE

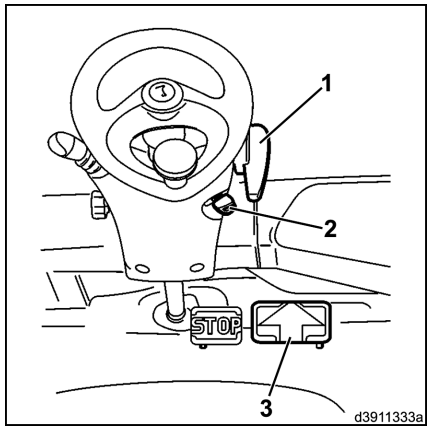
Do not allow the engine to warm up at idling speed. When under load, drive the truck at a brisk speed. The engine will quickly reach its operating temperature.

Switching off the engine

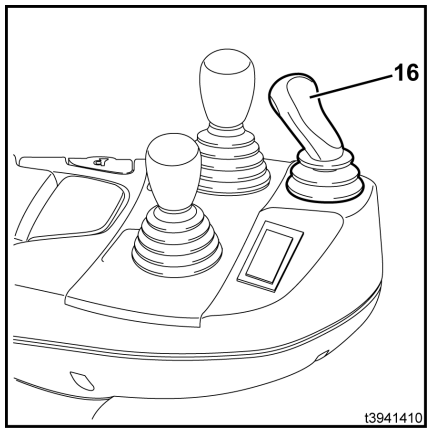
NOTE

Do not switch off the engine when under full load.

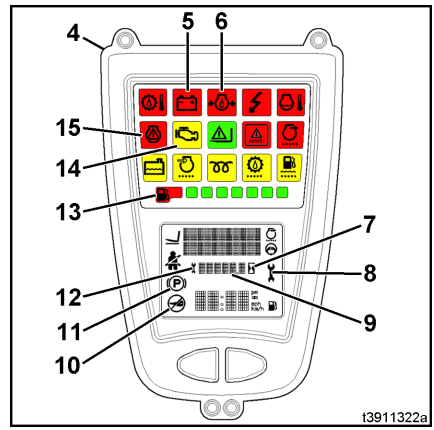
- Remove your foot from the accelerator pedal (3). ▷



- Move the direction selection lever (16) to the neutral position. ▷
- Turn the switch key (2) to the zero position.



➢ Observe the display unit (4).



NOTE

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NOTE

The brake is applied when the engine is switched off.

➢ Turn the parking brake lever (1) clockwise until it engages.

The parking brake is now applied

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

DANGER

It must be borne in mind that LPG is heavier than air. It collects at floor level, in workshop pits and other cavities in the ground, where it may produce hazardous explosive mixtures of gas and air (see German accident prevention regulations for LPG, BGV D34, and German accident prevention regulations for industrial trucks, BGV D27).

Storage rooms and maintenance workshops must be well ventilated.

Closing the gas shut-off valve

Closing the shut-off valve of an LPG cylinder, LPG tank or CNG tank

⚠ DANGER

Risk of fire and explosion.

The shut-off valve on the LPG cylinder or the gas tank must be closed.

➢ Firmly close the shut-off valve (1) of the LPG cylinder or gas tank (special equipment) as soon as the engine is switched off.

NOTE

If the truck is equipped with an electromagnetic shut-off valve on the gas tank, no action needs to be taken.

➢ Remove the switch key when leaving the truck.

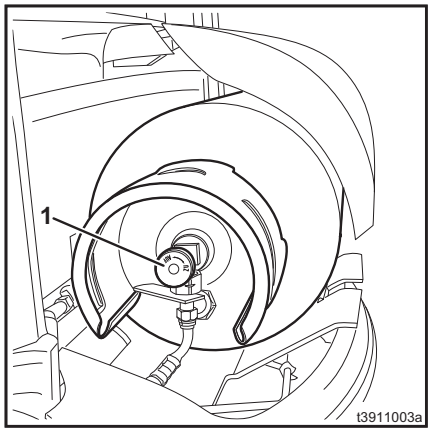
➢ In frosty conditions, the truck should be left in an enclosed space where possible, as LPG only undergoes sufficient evaporation to start the engine at temperatures above -5°C (propane) and up to +5°C (propane/butane).

⚠ DANGER

If there is a high level of heat radiation, there is a risk of fire or explosion.

Do not leave trucks in halls or garages in the immediate vicinity of radiators or equipment radiating heat.

▷



Driving (single-pedal operation)

⚠ WARNING

It is generally not permitted to drive on long inclines with a gradient greater than 15% due to the specified minimum braking and stability values. Please contact your service partner before negotiating steeper gradients. The climbing capability values specified in the type sheet have been determined from the pulling force and apply only when overcoming obstacles on the roadway and for small height differences.

You must adapt your driving style to the conditions on the route in use (unevenness etc.), and in particular to hazardous work areas and the load.

⚠ WARNING

Risk of accident and injury as a result of drivers being distracted.

The use of electrical devices (such as mobile phones) is prohibited while the truck is in motion.

⚠ WARNING

Rear-view mirrors must not be used for reverse travel.

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

⚠ CAUTION

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

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

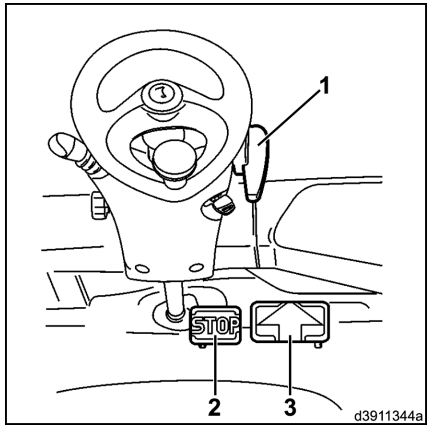
NOTE

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

- Start the engine.
- Raise the fork arms slightly and tilt the lift mast backwards.

Standard equipment

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



Forwards travel

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

➢ Press the accelerator pedal (3) carefully.

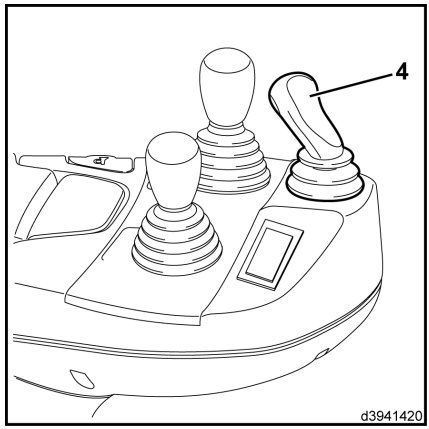
The driving speed of the truck increases as the actuation distance of the pedal increases.

NOTE

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

Reverse travel

➢ Move the direction of travel lever (4) backwards. ▷



➢ Press the accelerator pedal (3) carefully.

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

Changing direction of travel

➢ Release accelerator pedal.

The hydrostatic drive will act as a service brake.

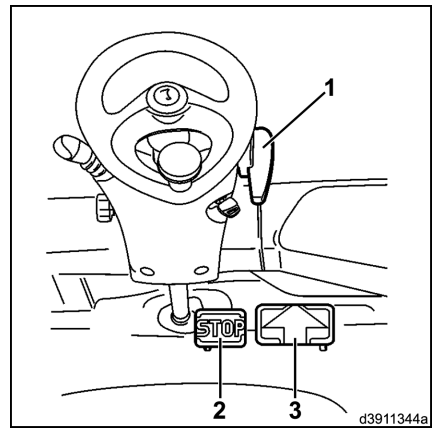
➢ Operate direction selection lever (4) for the opposite drive direction.

The forklift truck will now accelerate in the specified direction.

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

Approaching gradients

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



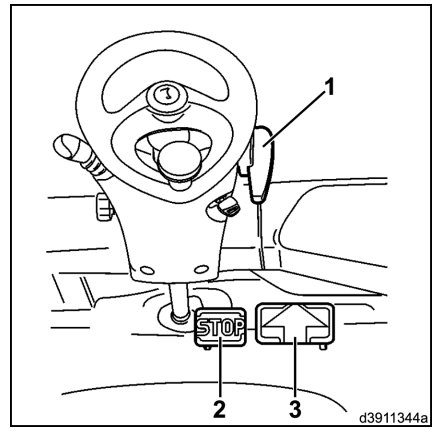
The brake has been released and the truck will now move without rolling backwards.

Stopping

- Slowly release the accelerator pedal.

The hydrostatic drive will act as a service brake.

- When stopping on inclines, leave your foot on the accelerator pedal, switch the direction selection lever (4) to "uphill" drive direction and press the pedal down slightly to counterbalance the slip of the drive. This slip is caused by technical factors.
- If stopping for an extended period of time, press the stop pedal (2). ▷



If you briefly leave the truck with the engine running in order to carry out minor jobs in the direct vicinity, e.g. picking work, opening doors or coupling trailers, the following must be observed:

- Lower the fork carriage.

⚠ CAUTION

The truck must not be allowed to roll away.

Actuate the parking brake.

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

The parking brake is now applied.

Standard equipment

NOTE

When leaving the truck briefly, the truck must always be supervised.

- If stopping for an extended period, switch off the engine.
- When leaving the truck, remove the ignition key.

Briefly leaving the truck

If you briefly leave the truck with the engine running in order to carry out minor jobs in the direct vicinity, e.g. picking work, opening doors or coupling trailers, the following must be observed:

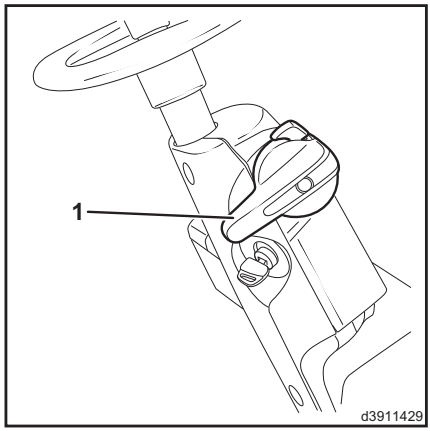
- Lower the fork carriage.

CAUTION

The truck must not be allowed to roll away.

Actuate the parking brake.

- Turn the parking brake lever (1) clockwise until it engages. ▷



The parking brake is now applied.

NOTE

When leaving the truck briefly, the truck must always be supervised.

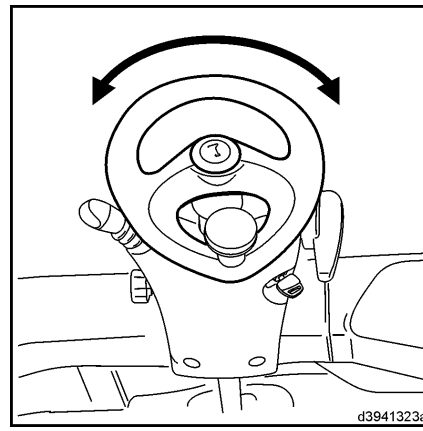
Steering system

Steering

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

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

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



⚠ DANGER

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

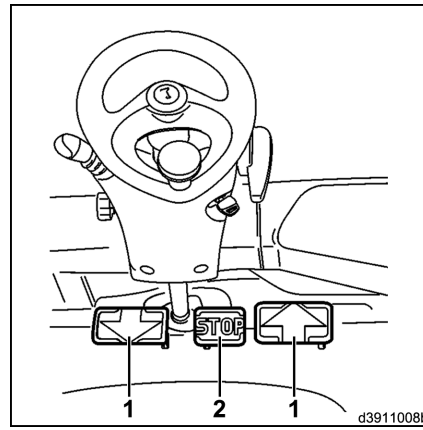
If the steering is stiff or has too much play, contact your service partner.

Brake system

Service brake

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

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



NOTE

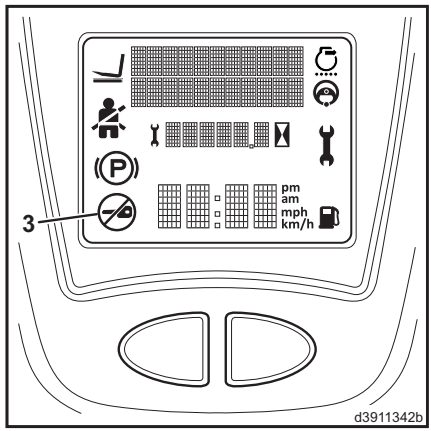
For emergency braking, press the stop pedal (2) positioned between the accelerator pedals. This will result in full application of the brake.

Stop pedal

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

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

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



NOTE

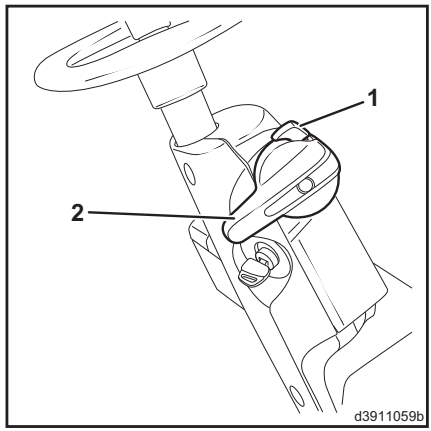
It is recommended that drivers familiarise themselves with the function and effect of this brake when there is no load on the truck. For this purpose they should choose a route with no other traffic, travelling at a low speed.

Parking brake

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

Operating the parking brake

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



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

Releasing the parking brake

NOTE

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

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

➢ Press the button (1).

The parking brake is unlocked.

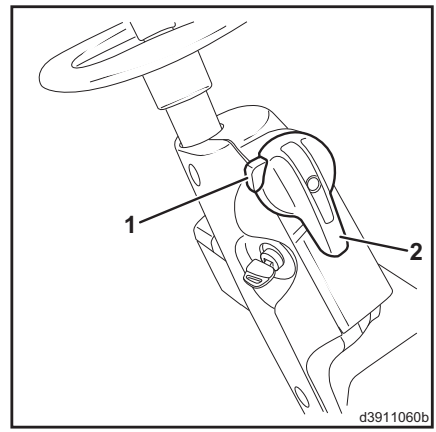
➢ Move the parking brake (2) down as far as the stop.

The symbol on the indicator unit will go out.

⚠ DANGER

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

If there are any defects or wear apparent in the brake system, please contact your service partner.

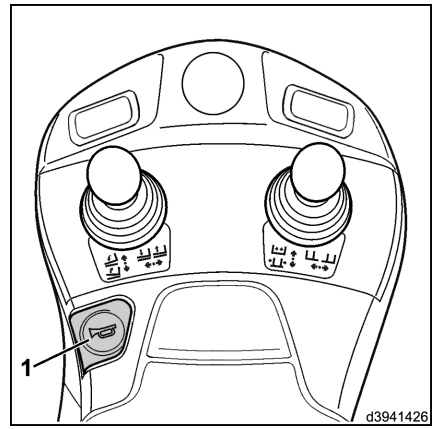


Signal horn

Operating the horn

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

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



Standard equipment

Joystick with central lever operation

⚠ WARNING

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

For this reason, never reach into or enter the lift mast or the area between the lift mast and the truck.

The lifting system and attachments must only ever be used for their intended purpose.

Drivers must be trained in how to operate the lifting system and attachments.

Take note of the maximum lift height.

NOTE

Extreme loading of the internal combustion engine leads to a slight delay in executing the working hydraulics due to the associated decrease in the number of revolutions. Where the engine is loaded for an extended period, the joystick must be switched to the neutral position in order to release the working hydraulics again.

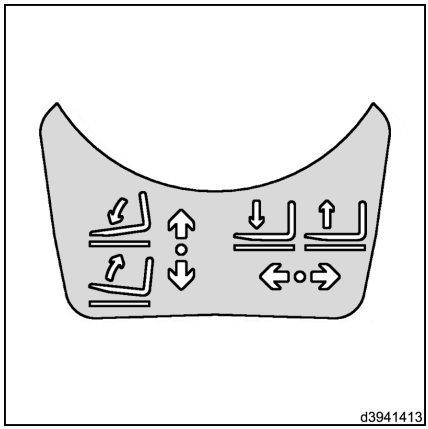
Operating the lifting and tilting equipment ▷

NOTE

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

➢ Take note of the switching symbols with directional arrows.

The joystick must always be operated gently, and never in a jerking motion. The deflection of the joystick is used to determine the lifting/lowering and tilting speed. Once the joystick is released, it automatically returns to its initial position.



NOTE

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

Lifting the fork carriage

DANGER

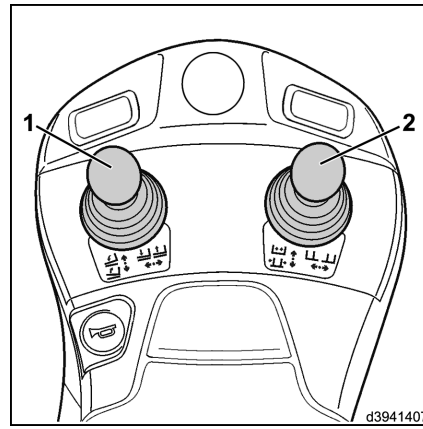
When lifting the fork arms, there is an increased risk of falling and crushing.

For this reason, do not step onto the raised fork arms.

➢ Push the joystick (1) to the right.

Lowering the fork carriage

➢ Push the joystick (1) to the left.



Tilting the lift mast forwards

➢ Push the joystick (1) forwards.

Tilting the lift mast backwards

➢ Pull the joystick (1) backwards.

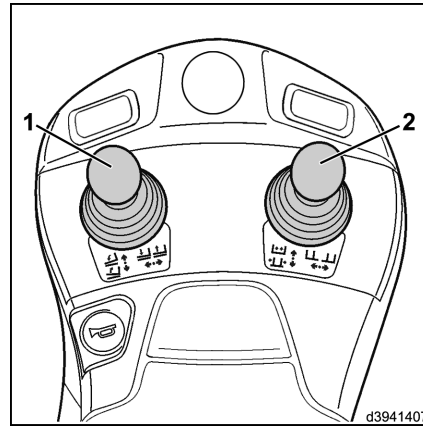
Operating attachments

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

CAUTION

Attachments alter the load capacity and stability of the truck.

Attachments that are not supplied with the truck may only be used if the service partner has confirmed that the arrangement in terms of load capacity and stability ensures safe operation.

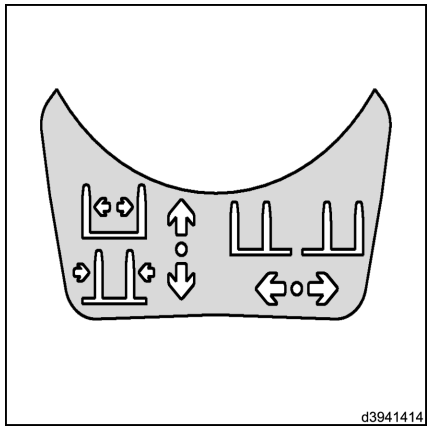


Standard equipment

NOTE

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

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



Operating the sideshift ▷

NOTE

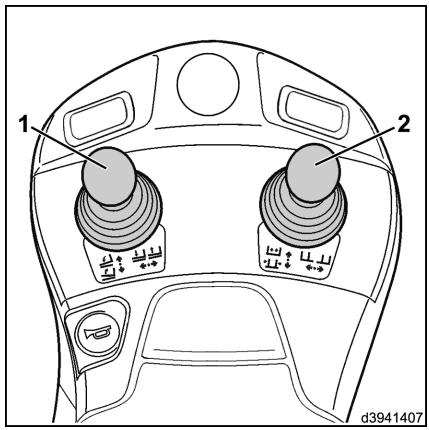
To prevent damage, do not operate the sideshift when the fork arms are on the ground.

➢ Push the joystick (2) to the left.

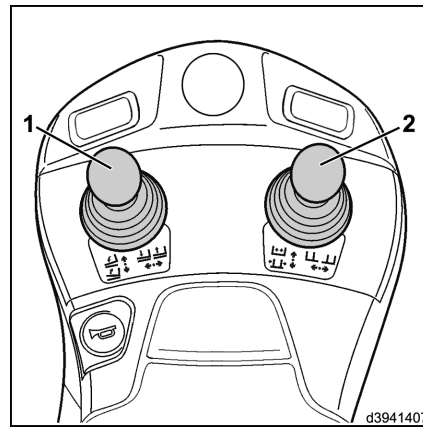
The sideshift moves to the left.

➢ Push the joystick (2) to the right.

The sideshift moves to the right.



Operating the fork prong positioner



NOTE

To prevent damage, do not operate the fork prong positioner with a load or when the fork arms are on the ground. Do not use the fork prong positioner as a clamp.

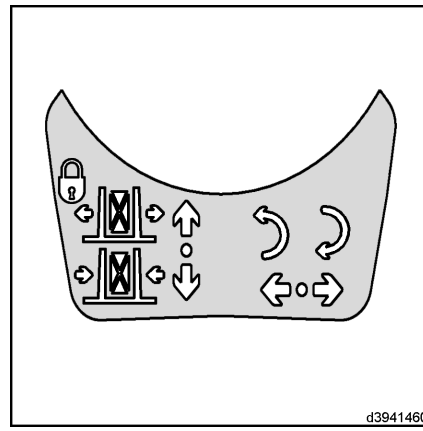
➢ Push the joystick (2) forwards.

The fork arms move outwards.

➢ Pull the joystick (2) backwards.

The fork arms move inwards.

Operating the rotator



DANGER

Stability jeopardised.

Only pick up loads such that they can be turned in the load centre of gravity.

If loads are picked up off-centre, the residual load capacity may be exceeded when making a turning movement.

When turning, the actual centre of gravity of the load must therefore not be more than 100 mm (truck rated capacity below 6300 kg) or 150 mm (truck rated capacity between 6300 kg and 10,000 kg) outside the pivot point!

NOTE

Ensure that there is sufficient distance when turning to prevent damage.

➢ Take note of the switching symbols with directional arrows.

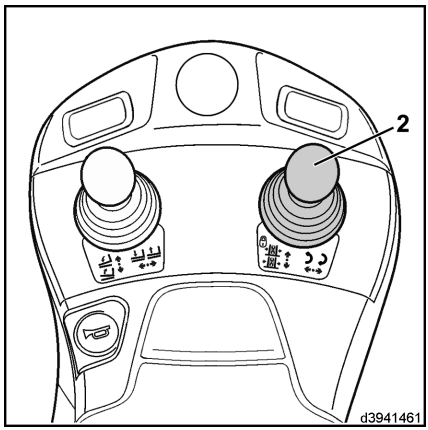
Standard equipment

➢ Push the joystick (2) to the left. ▷

The truck moves anti-clockwise.

➢ Push the joystick (2) to the right.

The truck moves clockwise.



Operating the clamp ▷

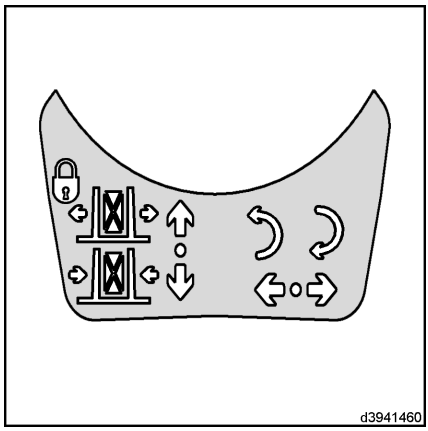
⚠ DANGER

Increased risk of accident from a falling load.

For attachments that hold a load by exerting pressure on it (e.g. a bale clamp), a lockable joystick must be used.

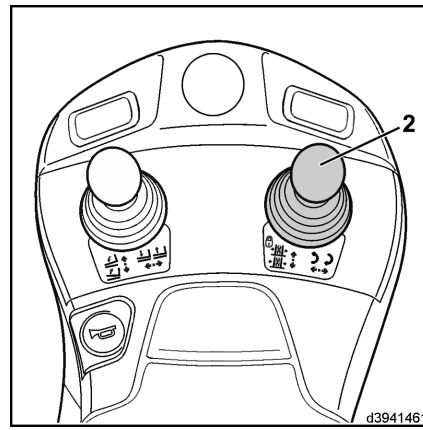
If your truck is not fitted with this equipment, please contact your service partner.

➢ Take note of the switching symbols with directional arrows.

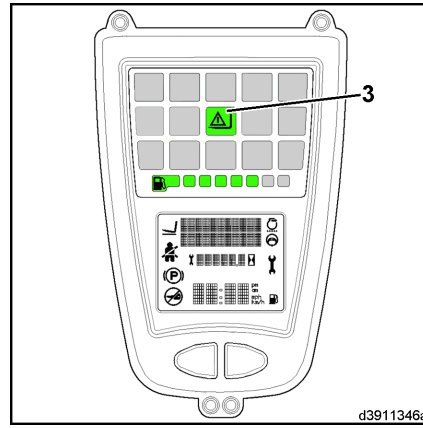


Electronically locked

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



The joystick is unlocked for approximately one second and the display (3) lights up in the display unit.



NOTE

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

➢ Push the joystick (2) forwards.

The clamp opens.

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

➢ Pull the joystick (2) backwards.

The clamp closes.

Standard equipment

Joystick with single lever operation

⚠ WARNING

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

For this reason, never reach into or enter the lift mast or the area between the lift mast and the truck.

The lifting system and attachments must only ever be used for their intended purpose.

Drivers must be trained in how to operate the lifting system and attachments.

Take note of the maximum lift height.

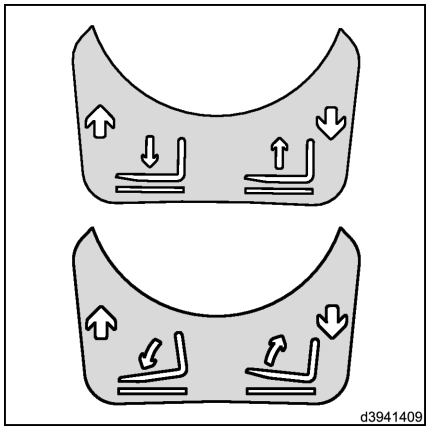
NOTE

Extreme loading of the internal combustion engine leads to a slight delay in executing the working hydraulics due to the associated decrease in the number of revolutions. Where the engine is loaded for an extended period, the joystick must be switched to the neutral position in order to release the working hydraulics again.

Operating the lifting and tilting equipment ▷

➢ Take note of the switching symbols with directional arrows.

The joystick must always be operated gently, and never in a jerking motion. The deflection of the joystick is used to determine the lifting/lowering and tilting speed. Once the joystick is released, it automatically returns to its initial position.



NOTE

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

Lifting the fork carriage

⚠ DANGER

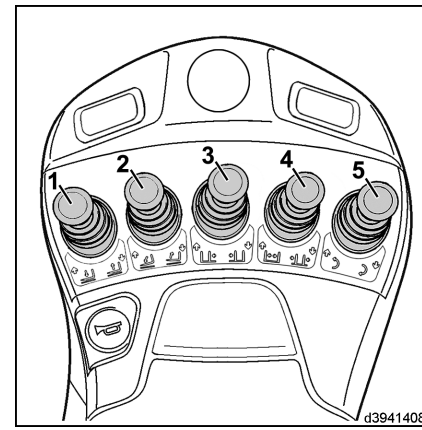
When lifting the fork arms, there is an increased risk of falling and crushing.

For this reason, do not step onto the raised fork arms.

➢ Pull the joystick (1) backwards.

Lowering the fork carriage

➢ Push the joystick (1) forwards.

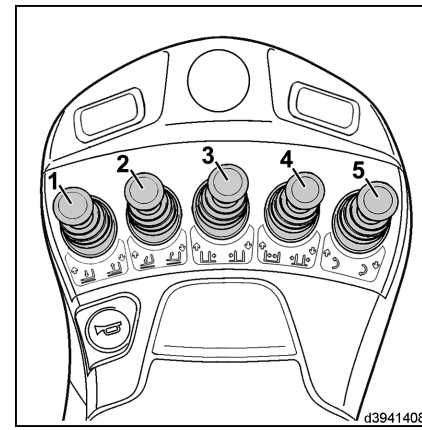


Tilting the lift mast forwards

➢ Push the joystick (2) forwards.

Tilting the lift mast backwards

➢ Pull the joystick (2) backwards.



Operating attachments

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

⚠ CAUTION

Attachments alter the load capacity and stability of the truck.

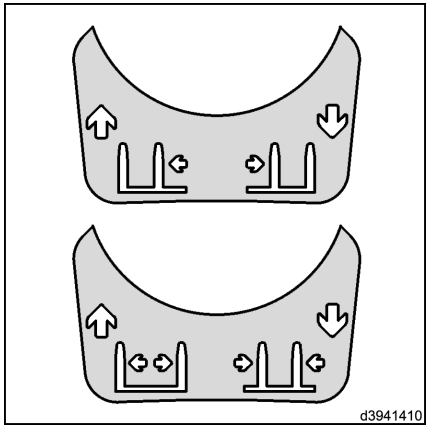
Attachments that are not supplied with the truck may only be used if the service partner has confirmed that the arrangement in terms of load capacity and stability ensures safe operation.

NOTE

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

Standard equipment

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



Operating the sideshift ▷

NOTE

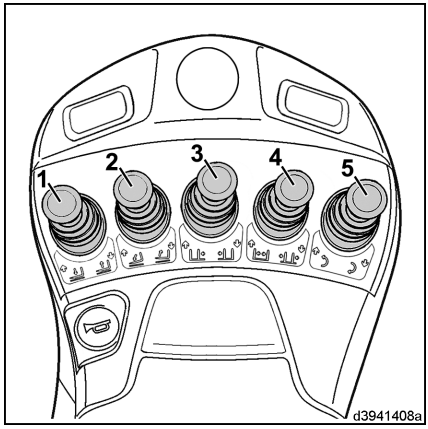
To prevent damage, do not operate the sideshift when the fork arms are on the ground.

➢ Push the joystick (3) forwards.

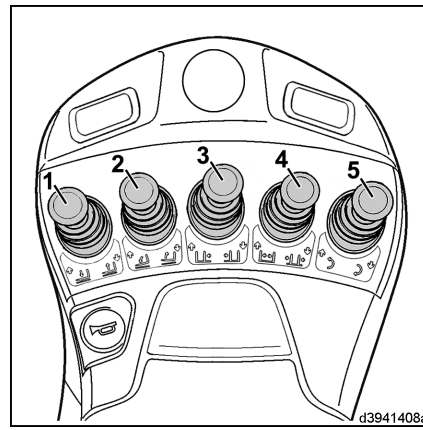
The sideshift moves to the left.

➢ Pull the joystick (3) backwards.

The sideshift moves to the right.



Operating the fork prong positioner



NOTE

To prevent damage, do not operate the fork prong positioner with a load or when the fork arms are on the ground. Do not use the fork prong positioner as a clamp.

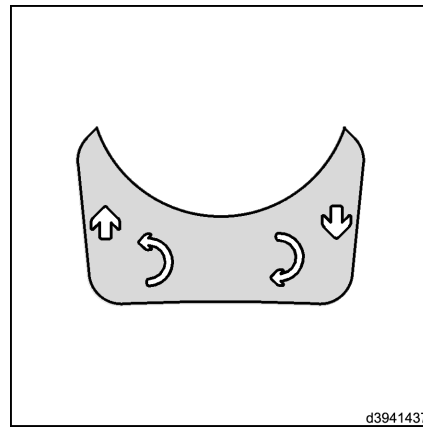
➢ Push the joystick (4) forwards.

The fork arms move outwards.

➢ Pull the joystick (4) backwards.

The fork arms move inwards.

Operating the rotator



DANGER

Stability jeopardised.

Only pick up loads such that they can be turned in the load centre of gravity.

If loads are picked up off-centre, the residual load capacity may be exceeded when making a turning movement.

When turning, the actual centre of gravity of the load must therefore not be more than 100 mm (truck rated capacity below 6300 kg) or 150 mm (truck rated capacity between 6300 kg and 10,000 kg) outside the pivot point!

NOTE

Ensure that there is sufficient distance when turning to prevent damage.

➢ Take note of the switching symbols with directional arrows.

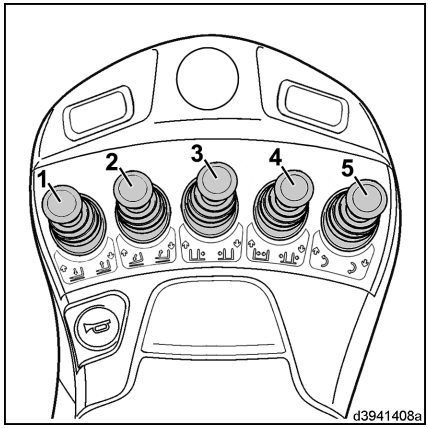
Standard equipment

➢ Push the joystick (5) forwards. ▷

The truck moves anti-clockwise.

➢ Pull the joystick (5) backwards.

The truck moves clockwise.



Operating the clamp ▷

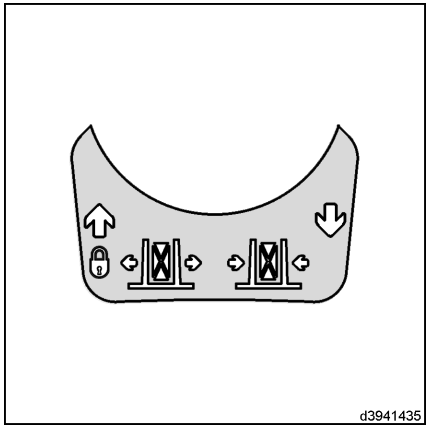
⚠ DANGER

Increased risk of accident from a falling load.

For attachments that hold a load by exerting pressure on it (e.g. a bale clamp), a lockable joystick must be used.

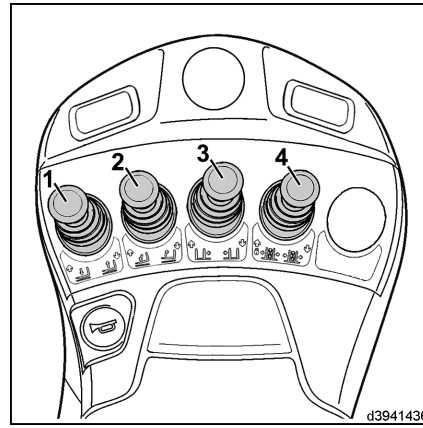
If your truck is not fitted with this equipment, please contact your service partner.

➢ Take note of the switching symbols with directional arrows.

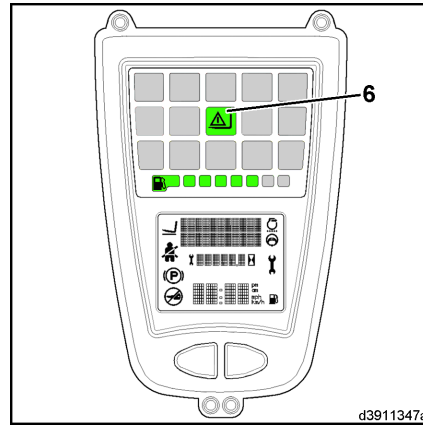


Electronically locked

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



The joystick is unlocked for approximately one second and the display (6) lights up in the display unit.



NOTE

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

➢ Push the joystick (4) forwards.

The clamp opens.

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

➢ Pull the joystick (4) backwards.

The clamp closes.

Special equipment

Depressurisation

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

- Switch off the engine.
- Switch on the ignition.
- Actuate the joystick of the corresponding auxiliary hydraulics repeatedly.

NOTE

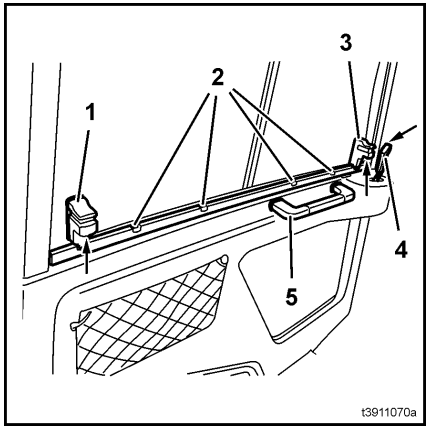
When the directional control valve is mounted on the lift mast for the third or fourth auxiliary hydraulics, the following applies: Depressurise all connections to this directional control valve by actuating the corresponding joystick.

- Unscrew the union nuts on the fork carriage.
- Screw on the lines from the attachment or connect the plug connectors.

Driver's cabin

Opening the cab door

- Pull the lever (4) backwards. ▷
- Open driver's door outwards.



Closing the cab door

NOTE

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

- Pull cab door by handle (5) until latch engages.

Opening/closing the front side window

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

Follow a similar procedure to close the side window.

Opening/closing the rear side window

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

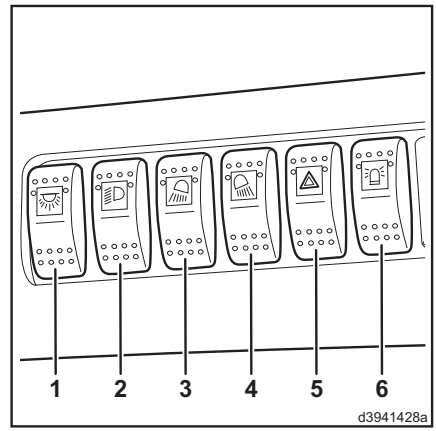
Follow a similar procedure to close the side window.

Lighting

NOTE

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

Switching on the terminal board and interior lighting



- Move the toggle switch (1) to the centre position.

The terminal board lighting is switched on.

- Move the toggle switch (1) as far as it will go.

The interior lighting switched on.

Switching on the lighting

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

The sidelights and licence plate lamp are switched on.

- Move the toggle switch (2) as far as it will go.

The dipped beams, sidelights and licence plate lamps are switched on.

Switching on the working spotlight

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

The working spotlights are switched on.

Special equipment

NOTE

The number of toggle switches may vary depending on the version.

Switching on the hazard warning system

➢ Actuate toggle switch (5).

The hazard warning system is switched on.

Switching on the rotating beacon / flashing beacon

Depending on the equipment, there are three different versions.

Version 1

➢ Move the toggle switch (6).

Switch settings for the toggle switch (6):
- Setting 0: light "OFF"
- Setting 1: light "ON" for reverse travel
- Setting 2: light in continuous operation

Version 2

➢ Switch on the key switch.

The light is permanently switched on.

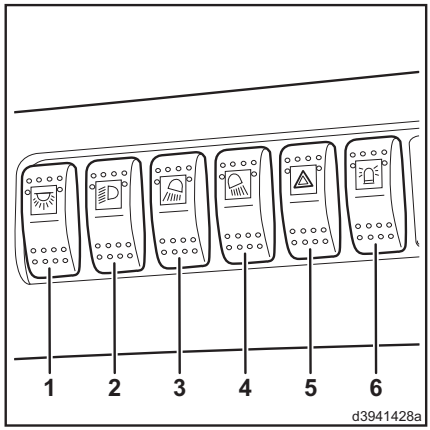
Version 3

➢ Switch on the key switch and actuate the reverse pedal.

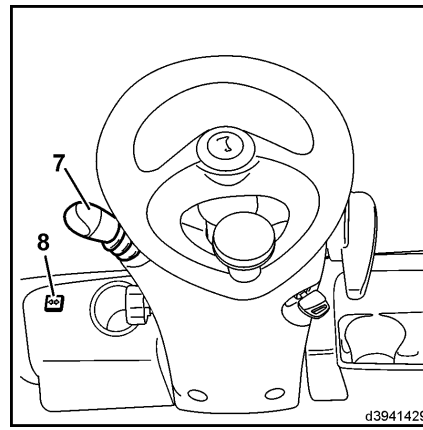
The light is switched on during reverse travel only.

NOTE

If the truck is to be operated on public roads, the rotating beacon / flashing beacon must be switched off.



Switching on the direction indicators ▷



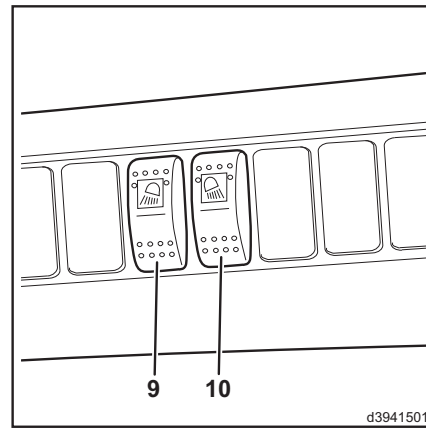
➢ Move the actuating lever (7) on the steering wheel forwards.

The direction indicators on the right flash. The indicator light (8) flashes.

➢ Move the actuating lever (7) on the steering wheel backwards.

The direction indicators on the left flash. The indicator light (8) flashes.

Switching on the LED light stripes ▷



Depending on the equipment, there are three different versions.

Version 1: Front LED light stripes, light colour: white

➢ Actuate toggle switch (9).

The front LED light stripes are switched on.

Version 2: Rear LED light stripes, light colour: white

➢ Actuate toggle switch (10).

The rear LED light stripes are switched on.

Version 3: Front / rear LED light stripes, light colour: white / red

➢ Actuate toggle switch (9).

The LED light stripes are switched on. Depending on the drive direction, the colour of the light changes from white (in the drive direction) to red (opposite to the drive direction).

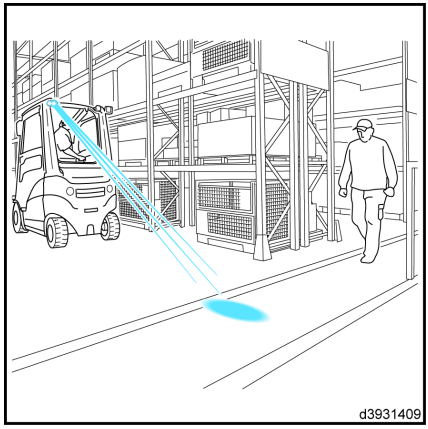
The following settings can be configured by your service partner:

- Switching point of the LED light stripes for the drive direction

Special equipment

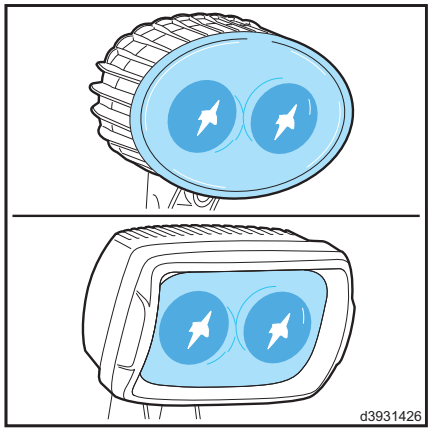
BlueSpot™

"BlueSpot™" is a visual warning unit that enables the early detection of trucks in driving areas with low visibility (such as drive lanes and high racks), as well as at blind junctions. ▷



The "BlueSpot™" is mounted on top of the truck with a support. It projects a high-power dot of light or arrow (LED technology) onto the ground. It is not affected by jolts and vibrations. The system allows pedestrians to notice an approaching truck at an early stage. ▷

"BlueSpot™" is assigned to risk group 2 in accordance with DIN EN 62471.



NOTE

"BlueSpot™" can be installed for forwards and reverse travel.

⚠ WARNING

Eye irritation.

Do not look directly into the Blue-Spot™.

Switching on BlueSpot™

Depending on the equipment fitted, there are three different ways to activate BlueSpot™:

Version 1

➢ Activate the toggle switch (1).

Set the toggle switch (1):
- Level 0: BlueSpot™ "OFF"
- Level 1: BlueSpot™ "ON" for reverse travel
- Level 2: BlueSpot™ in continuous operation

Version 2

➢ Switch on the key switch.

BlueSpot™ is permanently in operation.

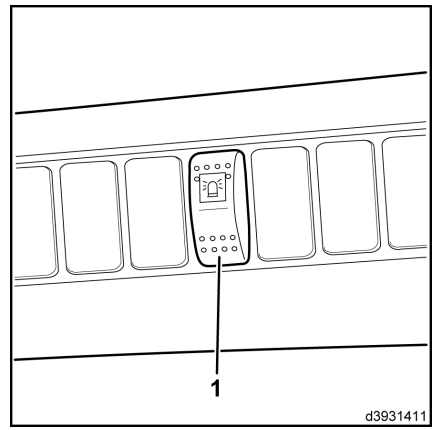
Version 3

➢ Turn the key switch and press the reverse pedal.

BlueSpot™ is operational only in reverse travel.

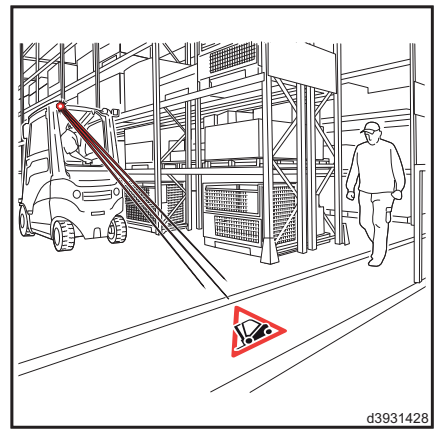
NOTE

If the truck is to be operated on public roads, the BlueSpot™ must be switched off.



TruckSpot™

The "TruckSpot™" comprises a visual warning unit that enables the early detection of trucks in driving areas with low visibility (such as drive lanes and high racks), as well as at blind junctions.

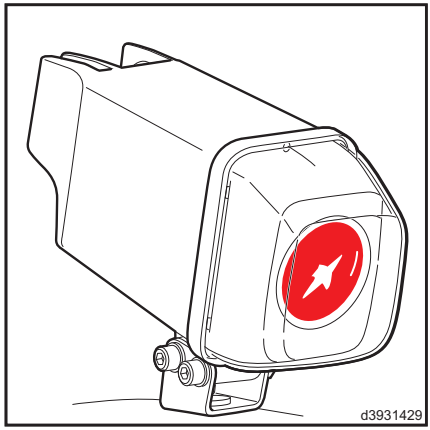


Special equipment

The "TruckSpot^{TM}" is mounted on top of the truck with a support. With a highly powerful light source, it projects a truck with a red triangle (LED technology) onto the ground. It is not affected by jolts and vibrations. The system alerts pedestrians to an approaching truck in good time.

"TruckSpot^{TM}" is assigned to risk group 1 in accordance with DIN EN 62471.

▷



NOTE

"TruckSpot^{TM}" can be installed for forwards and reverse travel.

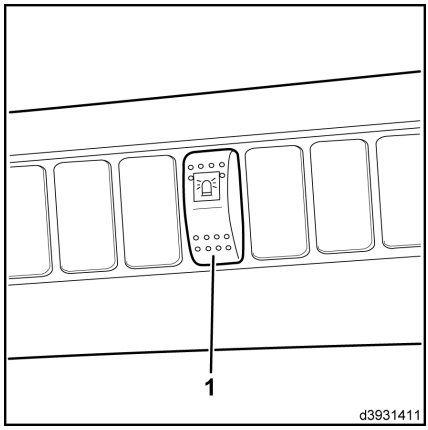
⚠ WARNING

Eye irritation!

Do not look directly into the Truck-Spot^{TM}.

Switching on TruckSpot^{TM}

▷



Depending on the equipment fitted, there are three different ways to activate TruckSpot^{TM}:

Version 1

➢ Move the toggle switch (1).

Switch settings for the toggle switch (1):

- Level 0: TruckSpot^{TM} "OFF"
- Level 1: TruckSpot^{TM} "ON" for reverse travel
- Level 2: TruckSpot^{TM} in continuous operation

Version 2

➢ Switch on the key switch.

TruckSpot^{TM} is permanently in operation.

Version 3

➢ Switch on the key switch and actuate the reverse pedal.

TruckSpot^{TM} is only operational in reverse travel.

NOTE

If the truck is to be operated on public roads, the TruckSpot™ must be switched off.

Windscreen wiper

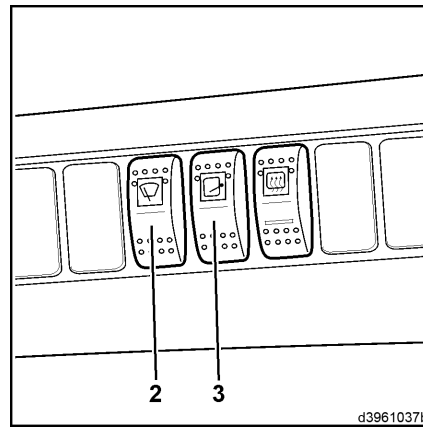
NOTE

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

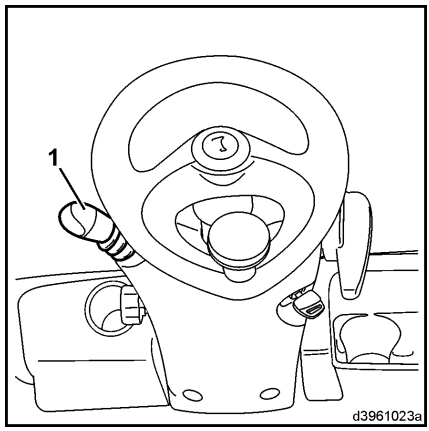
Switching on the front windscreen wiper

Truck at a standstill or in forwards travel:

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



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



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

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

The front windscreen wiper is in intermittent mode.

Switching on the rear window wiper

Truck in reverse travel:

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

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

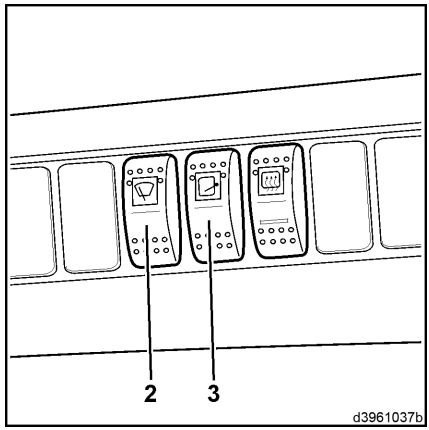
The rear window wiper remains in intermittent mode as long as the lever is actuated.

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

The rear window wiper is in intermittent mode.

Switching on the front windscreen wiper and rear window wiper

➢ Move toggle switch (2) to centre position. ▷



Truck at a standstill or in forwards travel:

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

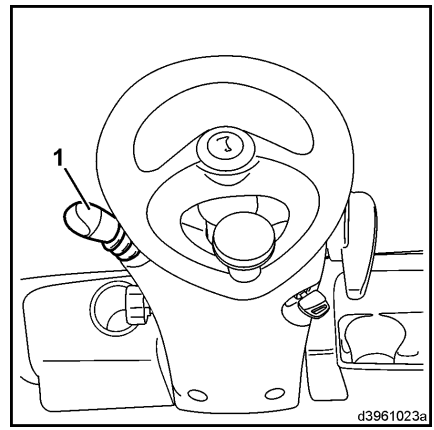
As long as the lever is actuated, the front windscreen wiper remains in continuous mode and the rear window wiper remains in intermittent mode.

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

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

Truck in reverse travel:

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



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

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

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

Truck at a standstill or in forwards/reverse travel:

➢ Switch toggle switch (2) as far as it will go.

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

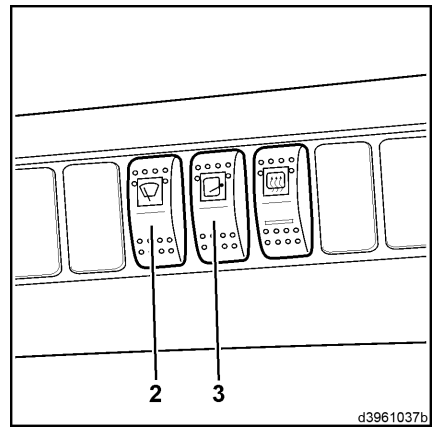
As long as the lever is actuated, the front windscreen wiper and rear window wiper remain in continuous mode.

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

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

Switching on the front windscreen wiper and roof panel wiper

➢ Move toggle switch (3) to centre position. ▷



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

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

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

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

➢ Switch toggle switch (3) as far as it will go.

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

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

mode and the roof panel wiper remains in continuous mode.

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

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

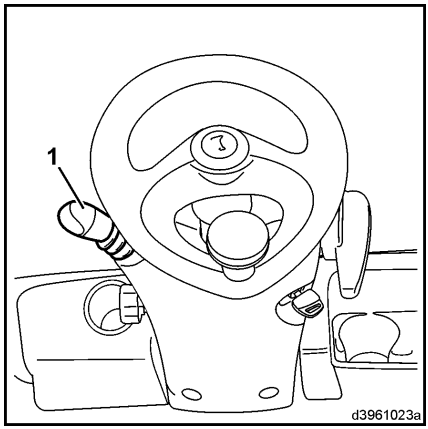
Switching on the wiper/washer system

➢ Press the actuating lever (1) fully in. ▷

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

➢ Switch on the toggle switch (3).

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



Window heater

Switching on the rear window heating

➢ Press push button (1). ▷

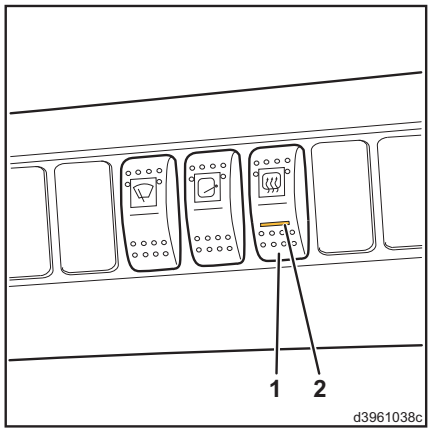
Dummy (2) test.

➢ Dummy (1) test.

The rear window heating is switched off.

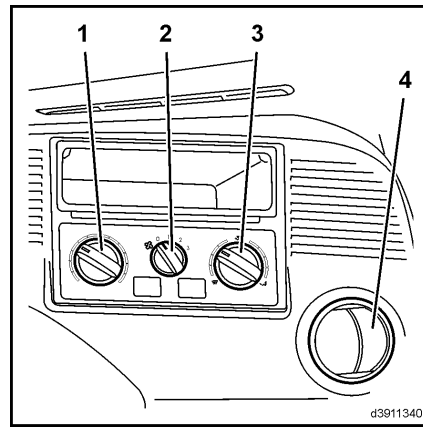
➢ Dummy (1) test.

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



Heating system, air conditioning

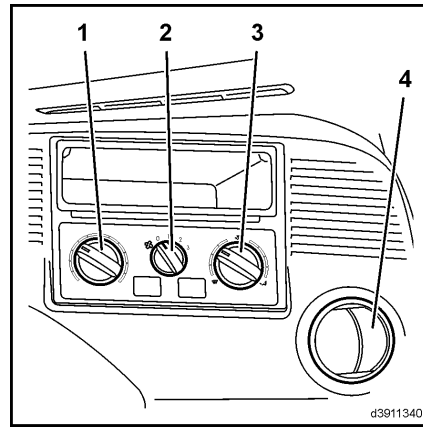
Heating system operating devices



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

Switching on the heating system

➢ Turn switch (2).



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

Demisting the windows

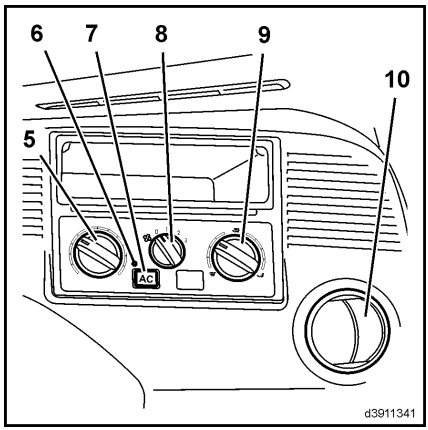
➢ For maximum demisting performance:

- Set the turning knob (1) to the far right position
- Set the turning knob (3) to the windscreen defrosting position (far left position)
- Set the rotary switch (2) to level 3
- Open the cab air nozzles (4), with the fins facing forwards

For normal heating operation, the following rules apply:

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

Air conditioning operating devices



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

Switching on the air conditioning

⚠ CAUTION

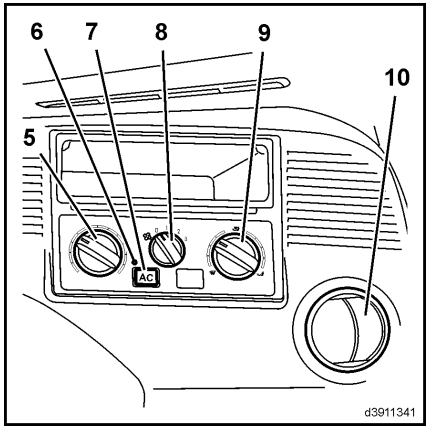
The moving parts must be lubricated and the compressor prevented from seizing.

For this reason, the air conditioning must be switched on briefly every 3 months. In addition, the air conditioning must be serviced once a year by your service partner, preferably before the season starts, and a record must be kept of the servicing. Otherwise, the warranty will be void.

NOTE

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

➢ Turn switch (8).



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

NOTE

The air conditioning only works when the engine is running and the blower switch is switched on (level 1, 2 or 3). The fans in the roof are switched on as and when required. It is possible for these fans to come to a standstill from time to time.

➢ Switch on push-button (7).

The function display (6) lights up green.

To raise the temperature in the cab:

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

To lower the temperature in the cab:

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

NOTE

To achieve maximum cooling in the cab:

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

NOTE

On cool, humid days, the heater and air conditioning can be used to dehumidify the air in the cab (operate the heating system and air conditioning simultaneously). The heating system is used to counteract the cooling effect. This ensures a more pleasant temperature inside the cab and prevents the windows from fogging.

Radio

NOTE

You will find the description for the radio in the attached manufacturer's operating instructions.

Access system connect: (LFM)

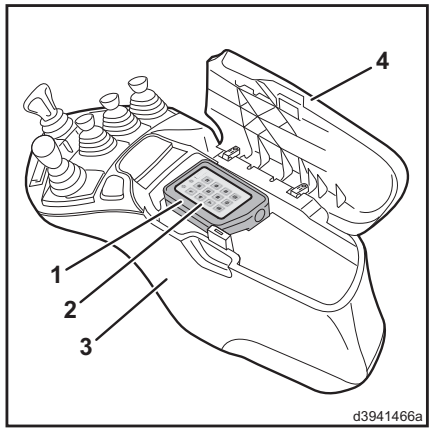
The access system **connect:** enables the truck to be commissioned via the input unit (keypad or transponder) and monitors operating statuses and usage.

Keypad input

The input device (1) is located in the armrest console (3), and has a 12-digit keypad (2).

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

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

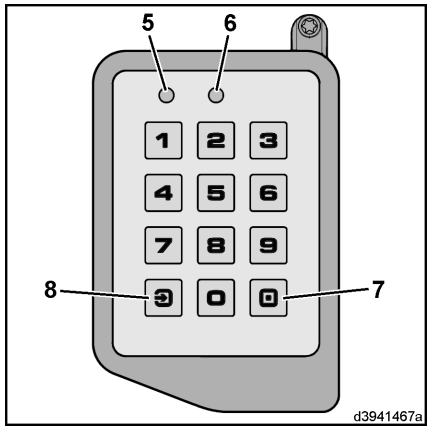


NOTE

The fleet manager can extend the PIN from 5 to 8 digits. The fleet manager can also activate a 1-digit status code (pre-operational check). This code indicates the status of the truck.

Log in and start the engine:

- Actuate the parking brake.
- Open the armrest support (4) sideways to the right.
- Press the Reset button (8) (or any other button) to activate the input unit from standby mode.



NOTE

If a number button is pushed to activate the device, this number is registered as the first digit of the PIN.

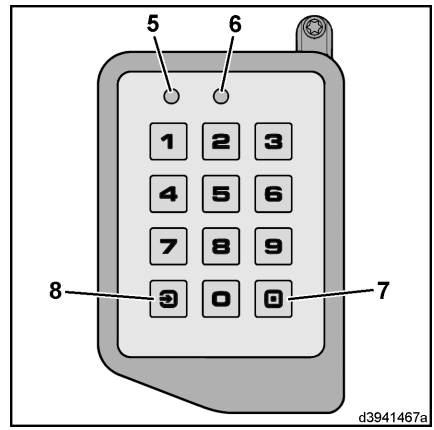
LED (5) and LED (6) flash green alternately.

NOTE

If no PIN is entered, the input unit reverts to standby mode after 60 seconds (factory setting). This delay time can be changed by the fleet manager.

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

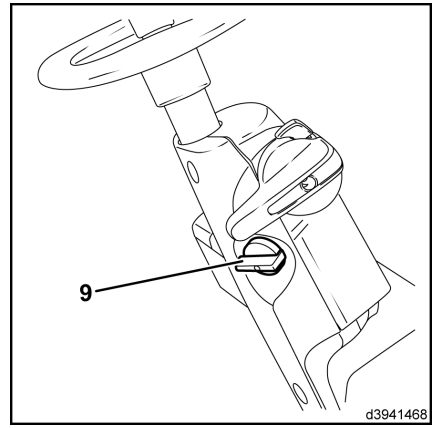
LED (5) and LED (6) both illuminate green. ▷



NOTE

If an incorrect PIN is entered, LED (5) and LED (6) flash red. After a delay time, the input unit reverts to login mode and both LEDs alternately flash green. The delay time increases each time an incorrect PIN is entered. If you make a mistake when entering the PIN, the PIN entry can be aborted by pressing the Reset button (8).

➢ Turn turning knob (9) to switch setting "II" and start the engine. ▷



NOTE

If the truck does not start properly the first time, the starting procedure can be repeated until the turning knob (9) is returned to the zero position and the PIN is no longer saved after the delay time has elapsed.

NOTE

If the LED (5) illuminates red and the LED (6) illuminates green, the data must be read out by the fleet manager.

➢ Close the armrest support (4).

Special equipment

Switch off the engine and log out:

⚠ CAUTION

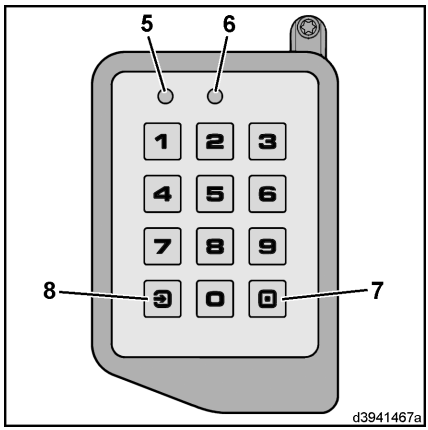
Unwarranted use by unauthorised personnel.

When parking and leaving the truck, the driver must log out.

- Actuate the parking brake.
- Open the armrest support (4) sideways to the right.
- Press the Log IN/OUT button (7).

The engine is switched off and the LEDs (5) and (6) go out.

- Close the armrest support (4).
- Turn turning knob (9) to switch setting "0".



NOTE

If the driver leaves the driver's seat, the engine and power supply are switched off after a delay time elapses. If the driver switches off the engine using the turning knob (9), the truck can be started during a delay time without re-entering the PIN. This delay time can be changed by the fleet manager.

Activating the power supply:

- Press and hold the Log IN/OUT button (7) for longer than 2 seconds.

LED (5) lights up yellow and LED (6) flashes green.

NOTE

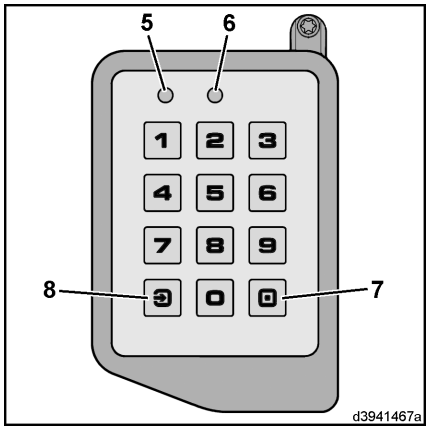
Depending on the software version, the colours of the LED (5) and (6) may vary.

- Turn turning knob (9) to switch setting "0".

The engine is switched off.

- Turn turning knob (9) to switch setting "I".

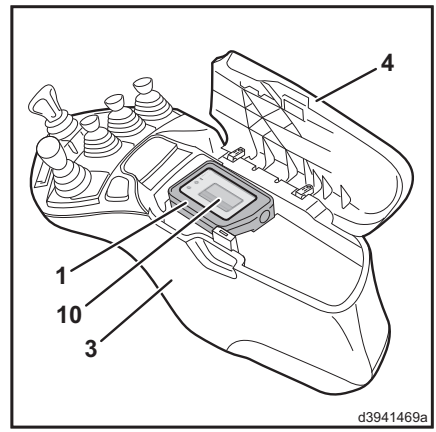
The power supply remains switched on for approx. 60 seconds (e.g. for lighting).



Input via transponder (chip or chip card) ▷

The input unit (1) is located in the armrest console (3) and features a reading area (10) onto which the corresponding transponder (chip or chip card) must be placed.

The requirement to place a valid transponder on the reading area ensures that only authorised personnel can operate the truck. The truck can be started only once the transponder has been placed onto the reading area.



NOTE

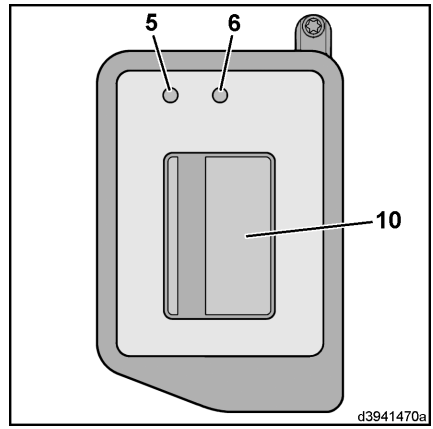
A status check (pre-operational check) can be performed using a valid transponder. This status check can be activated by the fleet manager.

Log in and start the engine: ▷

- Actuate the parking brake.
- Open the armrest support (4) sideways to the right.
- Place a valid transponder onto the reading area (10).

Data is read in, and LED (5) and LED (6) both illuminate green.

- Remove the transponder.

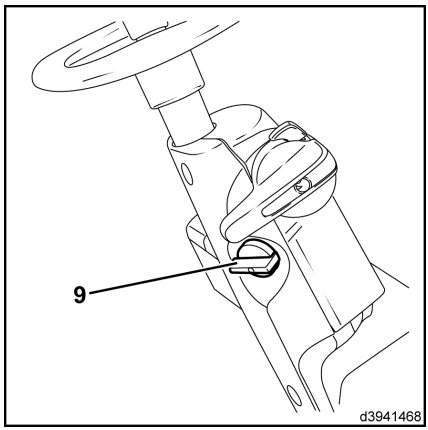


NOTE

If LED (5) and LED (6) flash red, it indicates that the transponder was invalid or there was a reading error. After a delay time, the input unit reverts to login mode and both LEDs alternately flash green. The delay time increases each time an invalid transponder is used. The input unit is reactivated automatically when a valid transponder is placed on the reading area and is read in again. LED (5) and LED (6) both illuminate green.

Special equipment

➢ Turn turning knob (9) to switch setting "II" and start the engine.



NOTE

If the truck does not start properly the first time, the starting procedure can be repeated until the turning knob (9) is returned to the zero position and the engine can no longer be started after the delay time has elapsed.

NOTE

If the LED (5) illuminates red and the LED (6) illuminates green, the data must be read out by the fleet manager.

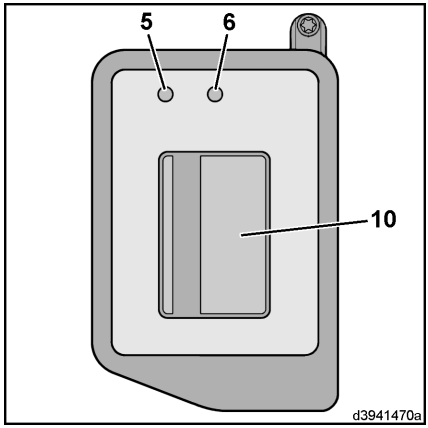
➢ Close the armrest support (4).

Switch off the engine and log out:

CAUTION

Unwarranted use by unauthorised personnel.

When parking and leaving the truck, the driver must log out.



➢ Actuate the parking brake.

➢ Open the armrest support (4) sideways to the right.

➢ Place a valid transponder onto the reading area (10).

The engine is switched off and the LEDs (5) and (6) go out.

➢ Remove the transponder.

➢ Close the armrest support (4).

➢ Turn turning knob (9) to switch setting "0".

NOTE

If the driver leaves the driver's seat, the engine and power supply are switched off after a delay time elapses. If the driver switches off the engine using turning knob (9), the truck can be started during a delay time without placing a valid transponder on the reading area again. This delay time can be changed by the fleet manager.

Activating the power supply:

➢ Place a valid transponder on the reading area (10) and hold it there for longer than 2 seconds.

LED (5) lights up yellow and LED (6) flashes green.

NOTE

Depending on the software version, the colours of the LED (5) and (6) may vary.

➢ Turn turning knob (9) to switch setting "0".

The engine is switched off.

➢ Turn turning knob (9) to switch setting "I".

The power supply remains switched on for approx. 60 seconds (e.g. for lighting).

NOTE

If another valid transponder is placed on the reading area within 60 seconds, the engine can be started again.

Status checking via smartphone

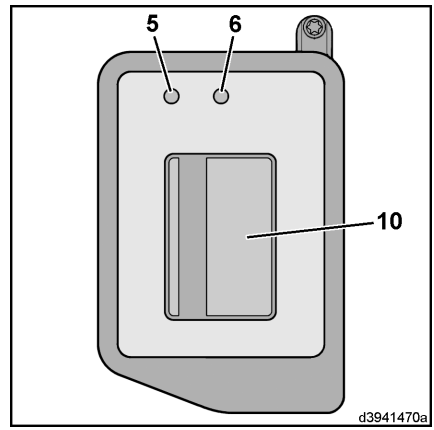
After logging in via a keypad or transponder, a status check (pre-operational check) can be performed via smartphone.

The truck can only be started after a successful check.

NOTE

The status check can be activated by the fleet manager.

▷



Special equipment

LED condition display		
Function:	**LED (5)**	**LED (6)**
Standby mode	Off	Off
Input prompt: PIN/transponder	Flashes green alternately with LED (6)	Flashes green alternately with LED (5)
No error when reading in PIN/transponder; engine can be started	Illuminates green	Illuminates green
Error when reading in PIN/transponder; engine cannot be started	Flashes red	Flashes red
Transition to stand-by mode	Illuminates red once	Illuminates green once
Data readout required - memory 90% full	Flashes red	Illuminates green
Data readout required - memory 100% full	Illuminates red	Illuminates green
Power supply active for 60 seconds ***)**	Lights up yellow	Flashes green

***)** Depending on the software version, the colours of the LED may vary. These LED colours and additional LED status displays can be checked with the fleet manager.

Adjusting the driver's seat with rotating device

⚠ CAUTION

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

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

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

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

The rotating device is maintenance free.

⚠ WARNING

Increased risk of accident when travelling on public roads.

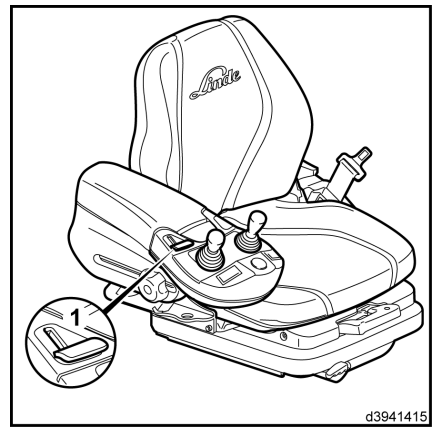
When driving forwards on public roads, the driver's seat must be in the straight-ahead position.

➢ Pull the locking lever (1) backwards.

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

➢ Allow the locking bolt to snap audibly into place.

▷



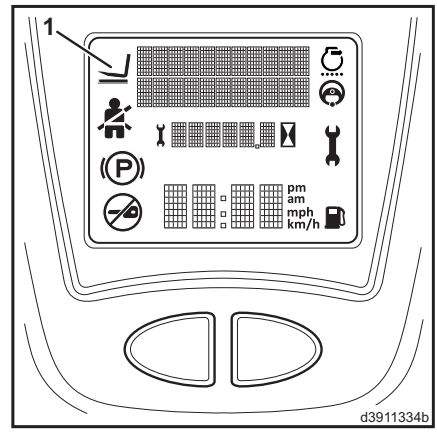
Lift mast positioning

Programming

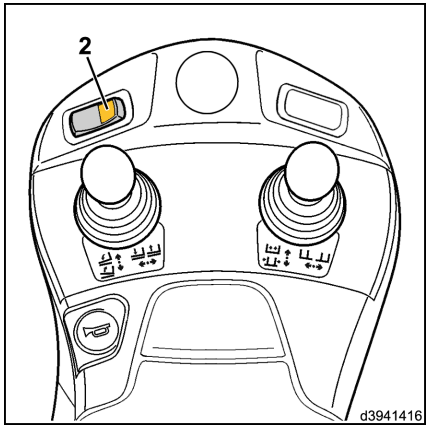
The tilt angle sensor system allows a specific lift mast tilt angle to be programmed. When this function is enabled, symbol (1) lights up in the display unit.

➢ Tilt lift mast to required angle.

▷



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



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

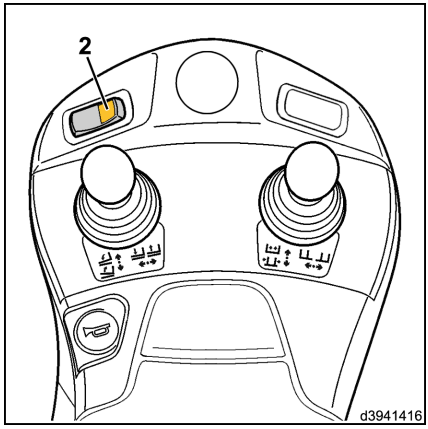
The lift mast tilt angle is stored in relation to the truck. The lift mast tilt angle in relation to the ground depends on a variety of influencing factors, such as the tyre wear, the tyre pressure of pneumatic tyres, the load, and the unevenness and gradient of the ground.

Operation

NOTE

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

➢ Briefly press button (2) at the front left-hand side of the armrest. The lamp in the button lights up and the lift mast positioning detection is switched on. ▷



➢ Operate the joystick and move to the stored tilt angle. (For safety reasons, tilting is permitted only in the direction of the stored tilt angle, and must be reactivated with each lift mast positioning).

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

➢ Release the joystick or press button (2) again briefly. The light in the push button goes out, and the lift mast positioning is switched off.

➢ The lift mast can now be operated normally using the joystick.

➢ Briefly press push button (2) again. Lift mast position identification is switched on again.

Camera system

NOTE

You will find the description for the camera system in the attached manufacturer's operating instructions.

Sweeper function

DANGER

High risk of property damage, injury and death.

The sweeper function must not be used for other attachments.

WARNING

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

For this reason, never reach into or enter the lift mast or the area between the lift mast and the truck.

The lifting system and attachments must only ever be used for their intended purpose.

Drivers must be trained in how to operate the lifting system and attachments.

Take note of the maximum lift height.

Operating attachments

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

NOTE

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

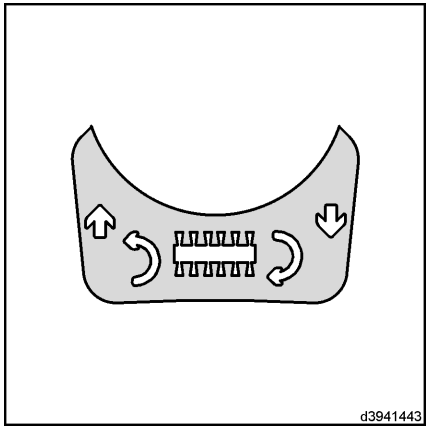
Special equipment

⚠ CAUTION

Attachments alter the load capacity and stability of the truck.

Attachments that are not supplied with the truck may only be used if the service partner has confirmed that the arrangement in terms of load capacity and stability ensures safe operation.

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



Continuous operation: Activating the sweeper function ▷

➢ Release the parking brake (unlock the parking brake lever and move it downwards to the stop).

NOTE

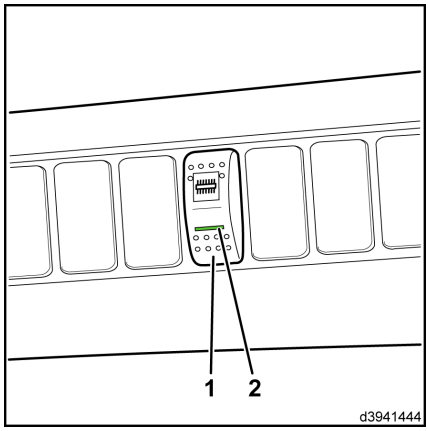
It is only possible to switch on the sweeper function if the parking brake is released and the stop pedal is not actuated.

➢ Press push button (1) in the switch panel.

The green LED in the push button (2) flashes.

NOTE

The sweeper function can only be activated via the joystick (3) as long as the green LED is flashing.

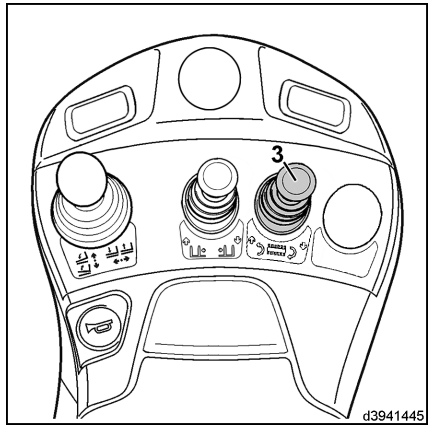


➢ Move the joystick (3) to the stop in both directions (in any order), then move to the zero position.

The sweeper is set in rotation with a slowly increasing speed.

The green LED in the switch (2) lights up.

▷



Continuous operation: Deactivating the sweeper function

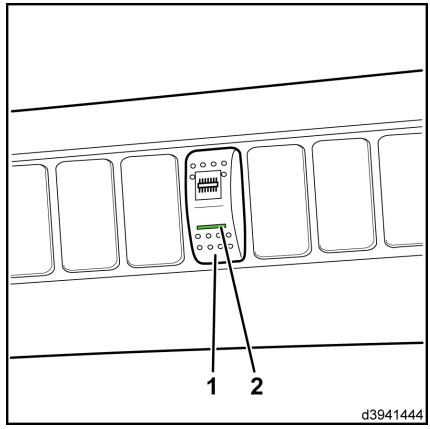
▷

The sweeper can be deactivated by performing one of the following actions:

➢ Press the push button (1) or move the joystick (3) out of the zero position.

For safety reasons, the sweeper is also deactivated by performing one of the following actions:

➢ Pressing the stop pedal, turning the parking brake lever clockwise until it engages, leaving the driver's seat and turning off the truck via the switch key.



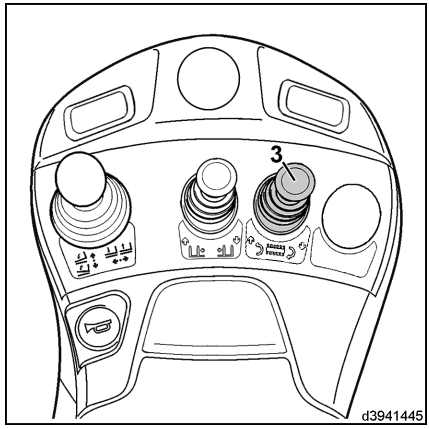
Short-time operation: Activating the sweeper function

➢ Push the joystick (3) forwards. ▷

The sweeper turns to the front.

➢ Pull the joystick (3) backwards.

The sweeper turns to the rear.



Load push operation and shovel operation

During load push operation and shovel operation, the internal combustion engine is subjected to increased loads. For this reason, an increased number of revolutions can be activated in the internal combustion engine at low and medium speeds.

NOTE

Extreme loading of the internal combustion engine leads to a slight delay in executing the working hydraulics due to the associated decrease in the number of revolutions. Where the engine is loaded for an extended period, the joystick must be switched to the zero position in order to release the working hydraulics again.

Activating/deactivating the increase in number of revolutions

A laptop, diagnostic program and specialist knowledge are required to perform the activation/deactivation.

Contact your service partner.

Switching off the internal combustion engine via the seat switch

After the truck is vacated, the internal combustion engine and electrical equipment are switched off via the seat switch once a certain amount of time has passed. This function avoids the release of emissions and lowers fuel consumption.

The truck may only be left for a brief period, for example to check or scan the load.

⚠ DANGER

It must be borne in mind that LPG is heavier than air. It collects at floor level, in workshop pits and other cavities in the ground, where it may produce hazardous explosive mixtures of gas and air (see German accident prevention regulations for LPG, BGV D34 and German accident prevention regulations for industrial trucks, BGV D27).

Storage spaces and maintenance workshops must be well ventilated.

⚠ DANGER

If there is a high level of heat radiation, there is a risk of fire or explosion.

Do not leave trucks in halls or garages in the immediate vicinity of heating devices or equipment radiating heat.

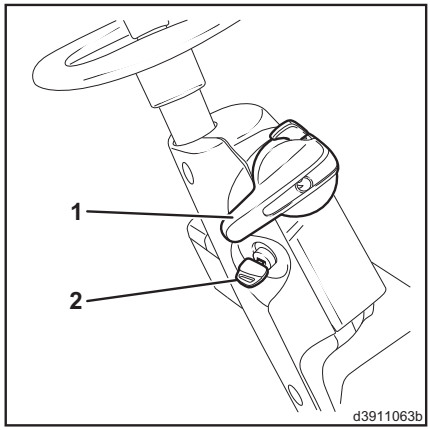
⚠ CAUTION

The truck must not be allowed to roll away.

Apply the parking brake.

Special equipment

➢ Turn the parking brake lever (1) clockwise until it engages. ▷



The parking brake is now applied.

➢ Vacate the driver's seat.

After a preset amount of time has passed, the engine and the electrical equipment are switched off.

NOTE

It is possible to change the preset amount of time. Contact your service partner.

➢ Sit on the driver's seat and start the engine using the switch key (2).

The truck is ready for operation again.

⚠ CAUTION

Unauthorised use.

Never leave switch key (2) unattended.

⚠ DANGER

Risk of fire and explosion.

If the truck is to be left unattended, the shut-off valve on the LPG cylinder or the gas tank must also be closed.

NOTE

If the truck is equipped with an electromagnetic shut-off valve on the gas tank, no action needs to be taken.

Linde Safety Pilot (LSP) assistance system

NOTE

The description of the assistance system can be found in the separate accompanying operating instructions.

Buckle monitoring on seat belt

DANGER

Falling out of a truck can be fatal.

For this reason, the seat belt must always be worn when operating the truck! The seat belt must only be worn by one person. National regulations must also be strictly observed.

WARNING

The seat belt must function perfectly.

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

The automatic blocking mechanism prevents the belt from extending when the 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 on a slope.

While using the truck (e.g. driving, operating the lift mast etc.), the driver should adopt a seat position as far back as possible so that his or her back rests against the seat backrest. The automatic blocking mechanism for the belt retractor offers sufficient freedom of movement on the seat when using the truck under normal circumstances.

Fastening the seat belt

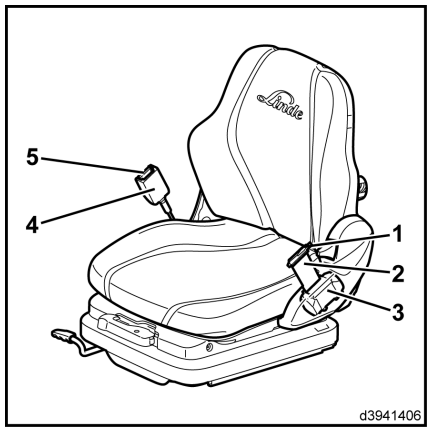
NOTE

In trucks with buckle monitoring, the system not only monitors whether the belt buckle is in use, but also the actuation sequence of the seat switch and belt buckle.

➢ Sit on the driver's seat.

The seat switch is actuated.

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



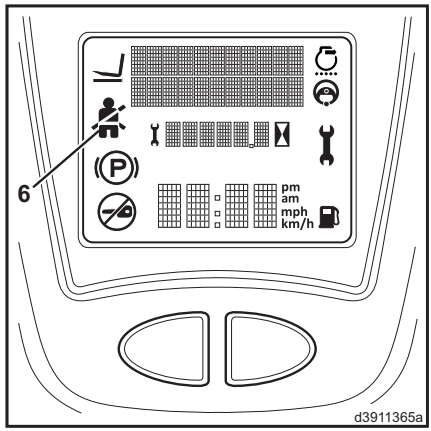
Buckle monitoring is activated. The (6)"Safety belt not fastened" symbol goes out. ▷

- Check seat belt tension.

The belt must sit close to the body.

NOTE

If the seat switch is not actuated and the seat belt is not fastened, the truck will not move at all or will only move at creep speed. Symbol (6) lights up.



Releasing the seat belt

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

NOTE

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

Settings

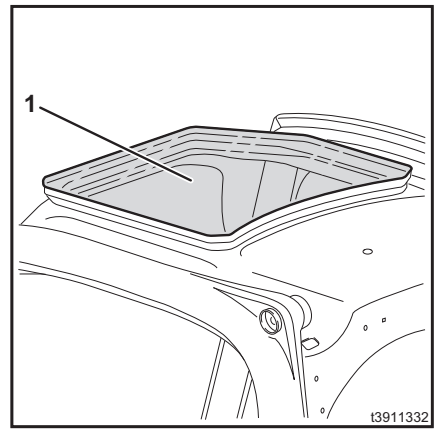
The following settings can be configured by your service partner:

- Truck response: movement prevented or travel at creep speed
- Switch off buckle monitoring

➢ Contact your service partner.

Overhead guard with optimised visibility

On overhead guards with optimised visibility, bracing struts as protection for a falling load are not fitted across the viewing range in the roof panel. For this reason, a roof panel made of safety glass (1) is installed. ▷



⚠ DANGER

Risk of fatal injury in the event of a damaged roof panel.

If the roof panel becomes damaged in any way (cracks, splintering), the truck must be taken out of service immediately. The roof panel must then be replaced (component that is relevant to safety).

Roof panel repairs:

⚠ WARNING

A special tool and specialist knowledge is required for this work.

Contact your service partner.

➢ Check the roof panel (1) for damage every day before starting work.

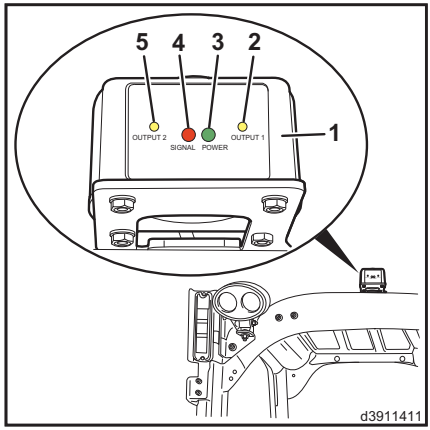
Reducing the driving speed using a radar sensor (SpeedAssist)

NOTE

An assistance system reduces the driving speed and helps the driver to handle the truck. The responsibility and control for safe operation and for maintaining the required driving speed always lie with the driver.

Special equipment

The radar sensor (1) is used to automatically reduce the maximum speed when the truck moves from an outdoor area to an indoor area. ▷



NOTE

The national regulations for using radar sensors must be observed without fail. For this reason, the operating company must perform a risk assessment before using the radar sensor.

Function

The radar sensor (1) monitors the area above the truck using a club-shaped radar beam.

If an object such as the ceiling of a hall is detected, the maximum driving speed is reduced to a set value.

As soon as no objects are detected, the reduction in the driving speed is cancelled.

Reflections on walls may also lead to a reduction in the driving speed.

If the distance between an object and the radar sensor is less than 1 m, the function of the radar sensor may be restricted under certain circumstances.

NOTE

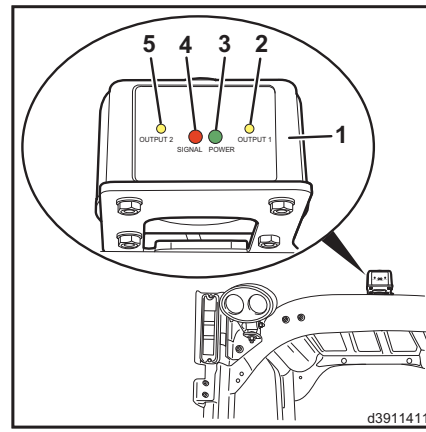
In the event of a fault, the maximum speed of the truck remains reduced. In this case, contact your service partner.

Daily testing:

➢ Check the housing of the radar sensor (1) for contamination and damage at the start of every shift. Clean as required.

If any damage is detected, have the radar sensor replaced.

➢ Check for correct function: When driving from an outdoor area into an indoor area, the driving speed must be reduced.



Settings

The following settings can be configured by your service partner:

- Range of the radar sensor between 2 m and 24 m
- Sensitivity of the sensor: At a higher sensitivity, smaller objects are detected
- Delay time (entry: up to 3 s; exit: up to 0.75 s)

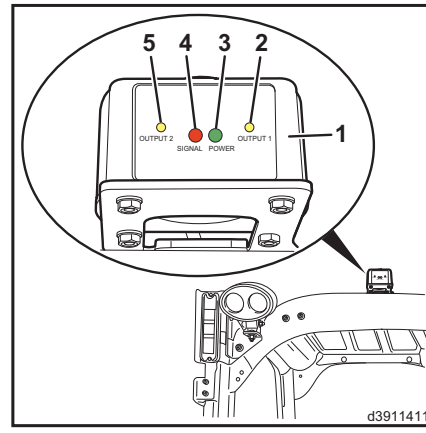
➢ Contact your service partner.

LED indicators on the radar sensor

If the supply voltage is present, the green "Power" LED (3) illuminates.

If an object is detected by the radar sensor, the red "Signal" LED (4) flashes depending on the signal strength of the radar beam.

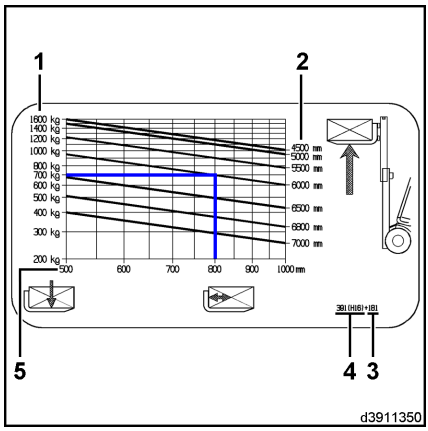
If no object is detected by the radar sensor, the yellow "Output" LEDs (2) and (5) illuminate.



Working with a load

Load capacity diagram

Before picking up the load, note the information on the load capacity diagram on the top left of the overhead guard.



1 Maximum weight of permissible loads in kg
2 Lift height in mm
3 Lift mast series
4 Series designation of the truck with maximum load capacity
5 Distance between load centre of gravity and fork back in mm

DANGER

Risk to stability

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

When using attachments, observe the additional capacity rating plate for each attachment (for an explanation, see the chapter entitled "Additional capacity rating plate for attachments").

The load capacity of a truck is determined by:

- The lift mast type (standard, duplex, triplex)
- The lift height of the installed lift mast
- The tyres on the front axle
- The use of attachments or additional equipment
- The backwards tilt restriction

If one of these parameters is changed, this can have a considerable effect on the load capacity.

NOTE

The load capacity is also limited when:

- *Transporting off-centre or swinging loads*
- *Transporting loads with the lift mast tilted forwards or the load not close to the ground*

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

In the event of conversions, the new load capacity of the truck must be determined and the load capacity diagram must be changed as necessary.

Contact your service partner.

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

Example:

Load centre of gravity distance: 800 mm

Load height to be lifted: 6000 mm

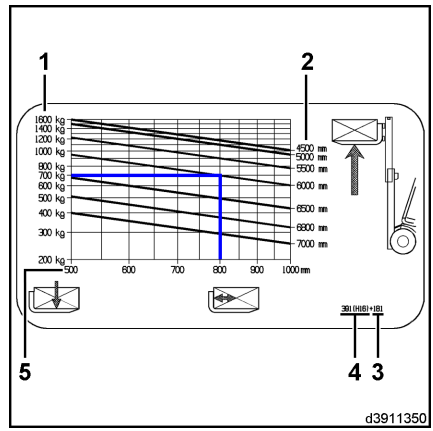
➢ Trace a vertical line from a load distance of 800 mm to its point of intersection with the line for a lift height of 6000 mm.

➢ Read off the maximum permissible load to the left of the point of intersection with the horizontal line.

The maximum load in this example is 700 kg

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

▷



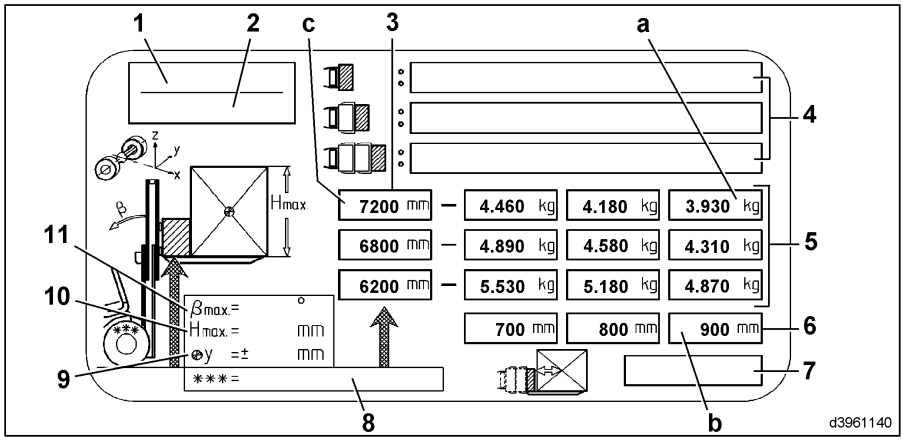
Additional capacity rating plate for attachments

DANGER

The entries in the following capacity rating plates are examples. The information will vary depending on the truck series, lift mast series, truck equipment and attachment. If an attachment is fitted, an additional capacity rating plate must be attached to your truck within the driver's field of vision.

If the label is missing or if the specified information about the truck equipment, attachments, load data etc. is not accurate, please contact your service partner, who will calculate the data using a program authorised by Linde.

Additional capacity rating plate for attachments with loads that are not clamped



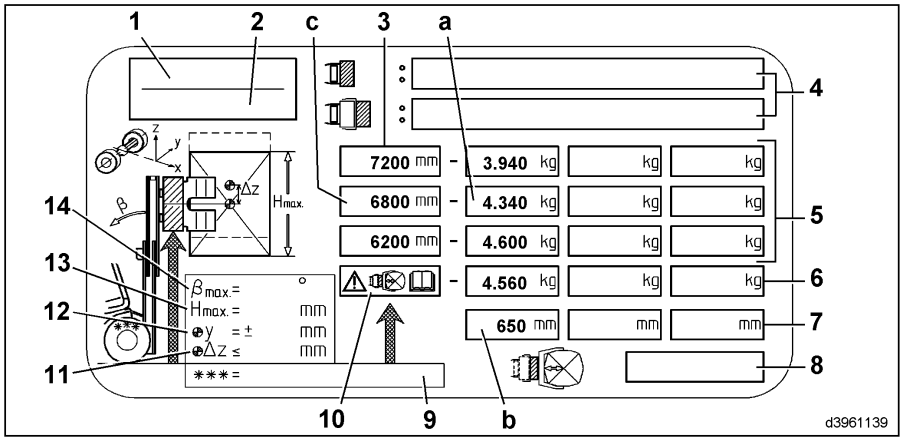
1	Truck series (year of manufacture, from - to)	7	Reference number and note about person calculating the load capacity
2	Lift mast type (series)	8	Front tyres
3	Lift heights	9	Maximum permissible centre offset of load
4	Attachments	10	Maximum permissible load height
5	Load capacities	11	Maximum permissible lift mast backwards tilt
6	Load centres of gravity		

NOTE

Example for reading the load capacity:

- *a = 3930 kg at load centre of gravity b = 900 mm to lift height c = 7200 mm.*

Additional capacity rating plate for attachments with loads that are fixed or clamped



1 Truck series (year of manufacture, from - to)
2 Lift mast type (series)
3 Lift heights
4 Attachments
5 Load capacities
6 Reduced load capacities
7 Load centres of gravity
8 Reference number and note about person calculating the load capacity
9 Front tyres
10 Note — If there is sufficient visibility for forwards travel when transporting loads, we recommend that the calculated residual load capacity based on the roller height / load height (value = maximum permissible load height (13)) is limited to the following in order to achieve a more dynamic driving behaviour: at a load centre of gravity 650 mm = 4,560 kg.
11 Specifies in mm how much the load centre of gravity is offset vertically upwards to the centre of the attachment (e.g. roller / bale taken off).
Also applicable for attachments with a rotate function: The actual centre of gravity of the load during rotation must not lie outside the pivot point by more than 100 mm (truck rated capacity ≤ 6300 kg) or 150 mm (truck rated capacity > 6300 kg and ≤ 10,000 kg)!
12 Maximum permissible centre offset of load
13 Maximum permissible load height
14 Maximum permissible lift mast backwards tilt

NOTE

Example for reading the load capacity:

- *a = 4340 kg at load centre of gravity b = 650 mm to lift height c = 6800 mm.*

Adjusting the fork arm distance

⚠ WARNING

Risk of injury from heavy fork arms.

Use supporting equipment.

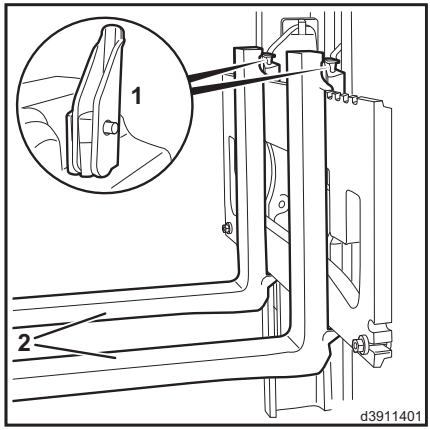
NOTE

The load centre of gravity must be midway between the fork arms.

- ➢ Raise the fork quick-release levers(1).
- ➢ Adjust the fork arms (2) inwards or outwards according to the load to be lifted.

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

- ➢ Allow the stopping lever (1) to snap into place in a groove on the fork carriage.



Picking up a load

⚠ DANGER

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

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

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

⚠ DANGER

Risk of falling and crushing.

Never lift persons on the forks or using a pallet on the forks.

If the truck is to be used for lifting persons, it must be fitted with a specially designed working platform. The working platform, its mountings and interlocks must be approved for the truck.

Contact your service partner.

⚠ DANGER

Danger of falling load when load is picked up incorrectly.

Loads must 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 backrest (special equipment).

⚠ DANGER

Risk of tipping.

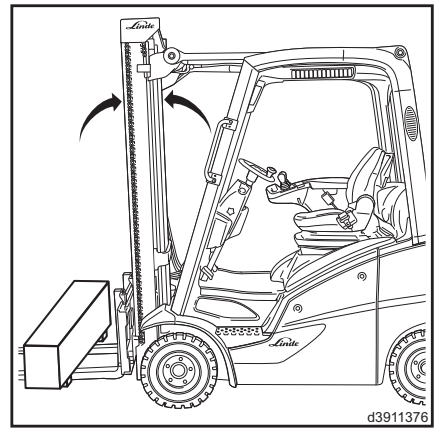
Before picking up the load, refer to the load capacity diagram. (For a description, see the section entitled "Special equipment").

⚠ CAUTION

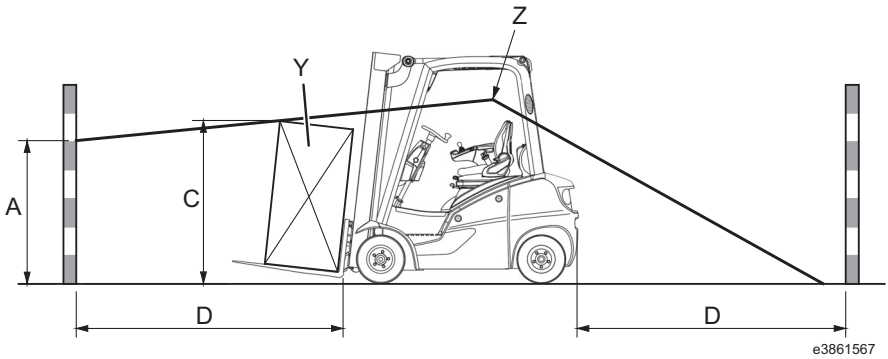
Cold hydraulic oil can cause variations in the extension sequence for duplex and triplex lift masts. This increases the truck height at the lift mast.

Ensure that there is sufficient space above the lift mast.

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



Determining visibility conditions when driving with a load



A Area that is not visible (max. 1085 mm)
C Load height (in driving position)
D 4000 mm (distance to the front from the rear corner of the load when it is positioned on the fork carriage in the driving position)
Y Load (varies depending on operator)
Z Driver's eye level

The driver's field of vision can be severely limited when driving with a larger load or with attachments fitted. In this case, safe operation is no longer guaranteed.

Visibility conditions can be evaluated by determining the size of the area that is not visible (A).

If the area that is not visible exceeds 1085 mm (EN16842-2/A3), the visibility conditions are inadequate.

Procedure:

- The driver moves into position in his seat.
- The area that is not visible (A) is determined based on the load (Y) and the length of the route (D).

In the case of inadequate visibility conditions, the following measures are possible:

- Reverse travel (see illustration)
- Splitting the loads
- Optimising the transport routes
- Using support staff, e.g. as a guide

The operating company must complete a risk analysis in order to evaluate visibility obstructions that may be encountered during operation.

During this analysis, the following risks must be considered:

- Poor visibility due to the load
- Health-related consequences resulting from turning the upper body when reversing

A rotary seat can be used to assist the driver when reversing. For further assistance, contact your service partner.

NOTE

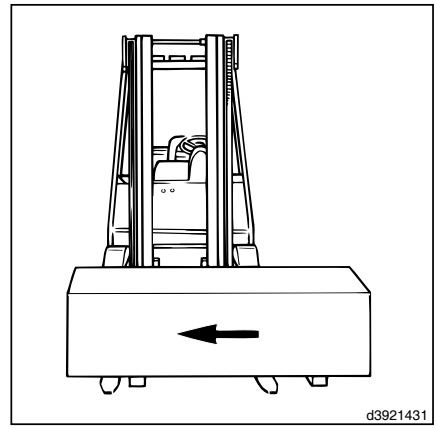
Observe the national regulations for your country.

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

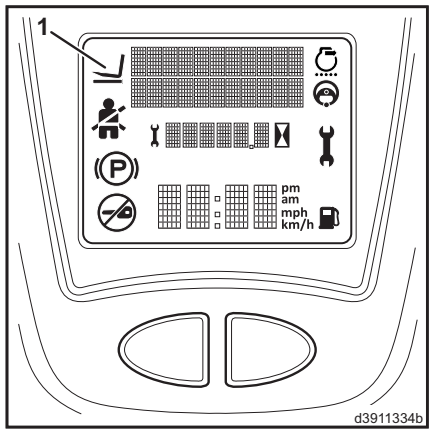
Danger caused by a falling load.

Never park the truck and leave it with a raised load.

- Carefully move the truck to the loading and storage area.
- Position the lift mast vertically (load horizontal).

Working with a load

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

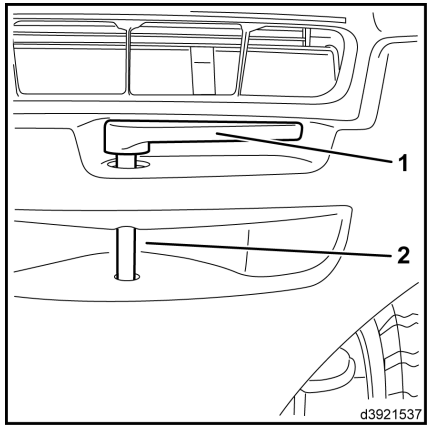


Towing device

NOTE

The towing device is only used for on-site towing operations. The national regulations for the use of unbraked trailers on industrial trucks must be observed.

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



Before leaving the truck

➢ Set down the load and lower the fork carriage.

➢ Tilt the lift mast forwards slightly.

The fork arms must touch the ground.

⚠ CAUTION

Do not allow the truck to roll away.

Apply the parking brake.

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

The parking brake is now applied.

➢ Switch off the engine.

➢ Remove the switch key (2).

NOTE

Switch off the engine and log off using the access system connect:; see the section entitled "Access system connect:".

⚠ DANGER

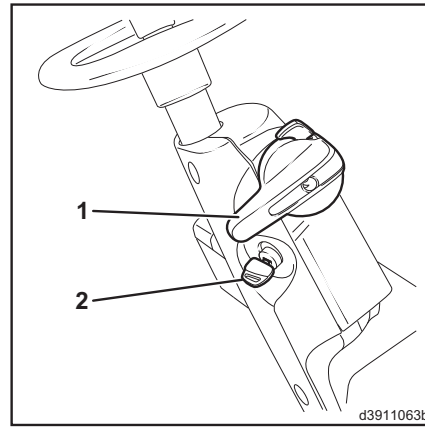
Risk of fire and explosion.

The shut-off valve on the LPG cylinder or the gas tank must be closed.

➢ Close gas shut-off valve.

NOTE

If the truck is equipped with an electromagnetic shut-off valve on the gas tank, no action needs to be taken.



Loading/transporting

Removing/attaching the lift mast

⚠ WARNING

A special tool and specialist knowledge is required for this work.

Contact your service partner.

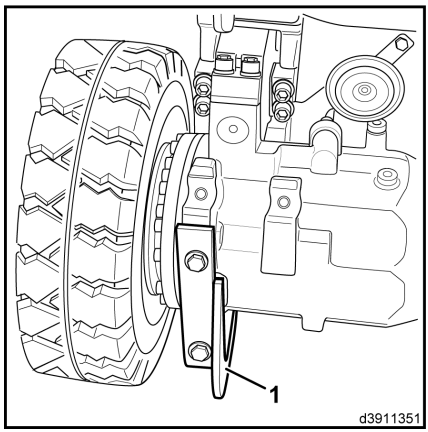
Driving without the lift mast

NOTE

Driving the truck without a lift mast is permissible only for transfer purposes and the speed must be adjusted as appropriate.

When driving the truck without a lift mast, the drive axle is secured to the chassis with a support (1). ▷

The support (1) must be removed before attaching the lift mast.



⚠ WARNING

A special tool and specialist knowledge is required for this work.

Contact your service partner.

Transporting the truck using a lorry or flat-bed trailer

NOTE

- *The driver is responsible for his means of transport, the transportation safety device and for the transportation of the truck*
- *Observe the national regulations for your country.*

⚠ DANGER

Risk to life caused by overloading and material damage!

- ➢ Only load the truck if the load capacity of the means of transport, ramps and loading bridges is greater than the total actual weight of the truck.
- ➢ Note the loading weight on the nameplate.

Loading

⚠ DANGER

Risk of accident from the truck falling!

To prevent the truck from tipping over the edge or corners, avoid steering movements on narrow loading bridges/ramps.

Requirements for loading:

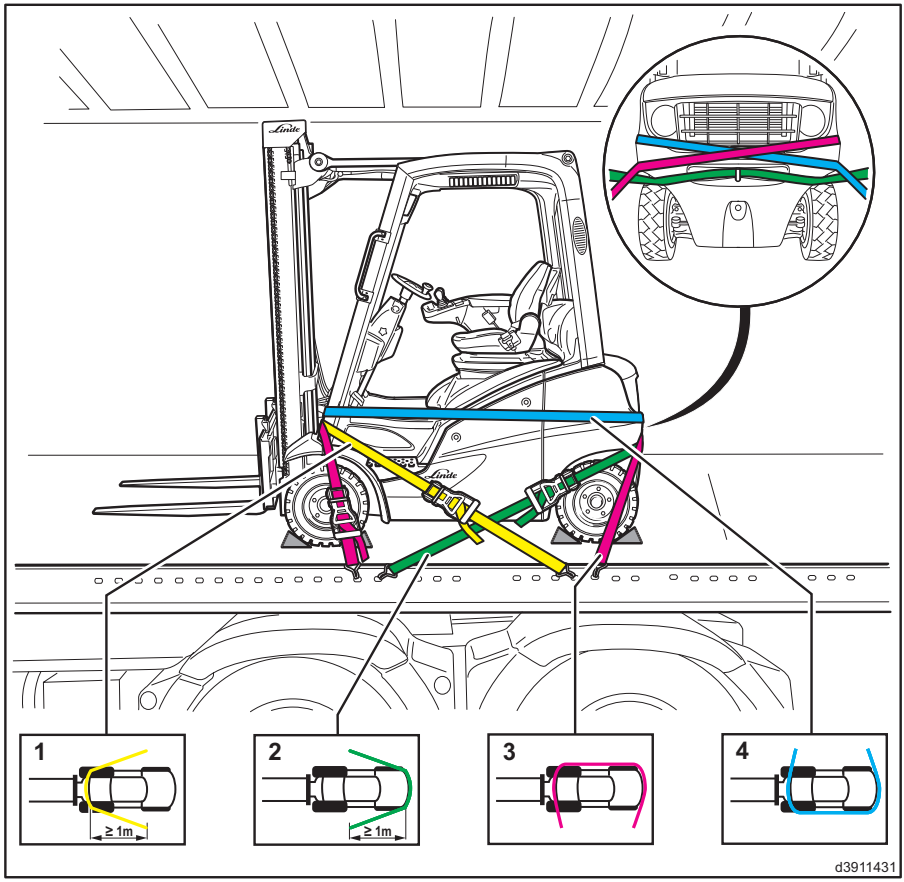
- The loading surface of the transport vehicle must be dry and swept clean
- The tyres on the truck must be clean

- ➢ Before driving across a loading bridge, ensure that the loading bridge is properly attached and secured.
- ➢ Ensure that the transport vehicle onto which the truck is to be driven has been sufficiently secured against moving.
- ➢ Drive slowly and carefully onto the transport vehicle.
- ➢ Lower the lift mast and tilt the lift mast forwards.

The fork arms must be resting fully on the ground.

- ➢ Actuate the parking brake, switch off the engine and perform the other relevant tasks; see the section entitled "Before leaving the truck".
- ➢ Place and secure wedges underneath the wheels, or drive the truck against a fixed stop so that the truck faces the fixed stop.

Lashing down



Requirements for lashing:

- The transport vehicle must be equipped with lashing points with a load capacity of at least 2000 daN
- 50-mm polyester lashing straps with a load capacity of at least 2500 daN must be used to secure the load

⚠ CAUTION

Damage to components.

Components (e.g. lights, hose lines) must **not** be tensioned using the lashing straps.

- Lash the truck securely on the right-hand and left-hand side as shown in the image. Use edge and surface protection.
- For belt (1) and belt (2), select lashing points that are at least 1 m in front of or behind the point where the strap loops around the truck.

⚠ DANGER

The truck may slip if the lashing straps slip!

The truck must be lashed securely so that it cannot move during transportation.

- Make sure that the lashing straps are tightened securely and that the pads cannot slip off.

5

Servicing

Safety information regarding servicing work

Your truck will only remain ready for operation at all times if the small number of servicing tasks are performed at regular intervals and in accordance with the information in the operating instructions.

Only qualified persons authorised by the manufacturer may carry out servicing work.

You can agree to have this work performed on the basis of a contract with your service partner.

⚠ DANGER

There is a risk of explosion if gas systems are not handled properly.

Inspection, service work and maintenance on the gas system may be carried out only by competent persons familiar with the testing and setting data for this system. Special testing equipment and tools are required for these tasks. Contact your service partner. The performance of inspection and servicing work on the gas system must be documented by a test report (e.g. test certificate BGG 936). If repairs are performed, only use genuine spare parts. This is the only way to guarantee the safety of the system.

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

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

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

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

All work on the truck must be followed by a function check and a test run.

⚠ WARNING

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

Open doors fully and prevent them from closing.

⚠ CAUTION

The truck must always be properly labelled.

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

ENVIRONMENT NOTE

Observe information regarding the use of consumables.

Service intervals

The specified service intervals are subject to the operating conditions and application conditions, as well as the consumables in use. In certain circumstances, the service intervals can be changed.

In all cases, the "Regular Service" must be performed once per year.

In the case of operation in extreme conditions (e.g. heat, cold or dust), the service intervals must be reduced.

Contact your service partner.

Overview of the filling quantities and set values

Unit	Devices / Consumables	Filling quantity / Set values
Engine	Engine oil	With filter change: approx. 4.0 l
Cooling system	Coolant additive / drinking water	Without heating system: approx. 6.0 l
		With heating system: approx. 8.0 l
Spark plugs	NGK BKUR 6 ET–10	Electrode gap: $1.0^{\pm 0.1}$ mm
		Tightening torque 30^{-5} Nm
Hydraulic system	Hydraulic oil	Standard lift mast: lift height up to 5410 mm Duplex lift mast: all lift heights Triplex lift mast: lift height up to 4775 mm: approx. 13.0 l
		Standard lift mast: lift height from 5510 mm Triplex lift mast: lift height between 4925 mm and 7475 mm: approx. 16.5 l
Oil bath air filter	Engine oil	Approx. 0.75 l
Tyres	Pneumatic	See information on adhesive label
Wheel fastenings	Tighten	front: 210 Nm
		rear: 210 Nm
Lift mast chains/lift mast guides	Linde chain spray	As required
Air conditioning	Refrigerant	1520 g
LPG cylinder	LPG	Approx. 11 kg
Refillable LPG tank (special equipment)	LPG	Version "1": approx. 36.0 l
		Version "2": approx. 45.0 l
Refillable CNG tank (special equipment)	CNG	Filling volume: approx. 50.0 l
		Max. filling quantity, depending on gas composition: 7.1 to 8.5 kg

Recommendations for consumables

LPG

Approved for the VW engine:

LPG of 95% propane with the remaining 5% other gas up to 80% butane with 20% propane and other gas fed through a suitable ignition map.

Use only LPG cylinders filled with LPG to DIN 51622 or LPG to EN 589 (automotive gas); gas withdrawal in the liquid phase.

NOTE

The use of domestic gas cylinders is absolutely prohibited.

CNG

NOTE

The quality of the CNG varies from region to region; consult your CNG supplier for details. In its delivered state, the truck is configured for H-gas quality. If L-gas is used, the truck settings must be adjusted accordingly. Contact your service partner.

Permitted fuels:

The only fuel permitted is compressed, odorised CNG (L-gas or H-gas) to the following specification:

Dry CNG

Steam content	< 32 mg/m^3
Dew point	-9 °C at 20MPa

Limit values for components:

Hydrogen sulphide or other soluble sulphides	Max. 23 mg/m^3
Oxygen	Max. 1 Vol-%
Hydrogen	Max. 2 Vol-%

Hydraulic oil

NOTE

The working temperature is the critical factor to be considered when selecting the correct oil for hydrostatic drive units. The recommendations for oils given below can only be 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 constant oil temperature 60 °C – 80 °C.

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

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

Hydraulic oil recommendations for normal and heavy-duty use:

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

Bio-hydraulic oil

Highly biodegradable hydraulic fluid

CASTROL Carelube HFS 46
or
Panolin HLP Synth 46

⚠ CAUTION

Bio-oils must not be mixed with mineral oils.

No recommendations for other fluids from other manufacturers can be made at the present time.

NOTE

If in doubt, we recommend obtaining the advice of your authorised service partner. Re-

commendations made by representatives from the mineral oil industry must also be discussed with your service partner. Manufacturer's approval only exists for the oils specified above. Mixing with or using other hydraulic fluids may result in costly damage.

Lubricating grease

Linde heavy-duty grease, lithium-saponified with EP active ingredients and MoS_2. Designation according to DIN 51825-KPF 2N-20 (order no.: see spare parts catalogue).

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

Coolant

⚠ CAUTION

Refer to the coolant specifications!

Use only coolant additive that complies with VW standard TL 774-D (G12), TL 774-F (G12+), TL 774-G (G12++) or TL 774-J (G13).

Coolant additive "TL 774-F (G12+) "is added at the factory.

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 %

NOTE

If no drinking water is available, distilled water must be used.

Refrigerant for air conditioning

R 134a

Battery grease

Acid-free lubricating grease (battery grease).

Chain spray

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

Engine oil

When the engine is running, not only is some of the engine oil for piston lubrication burnt off ("consumed"), but the temperature stress and the fuel combustion products that enter the oil lead to "wear", especially affecting 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 not exceeding 12 months.

Only engine oils that conform to the following standards are approved for use in the engine:

- VW standard 502 00.
- VW standard "Longlife" 503 00 with viscosity SAE 0W-30.
- VW standard "Longlife 3" 504 00 (factory filling) with viscosity SAE 5W-30.
- VW standard 507 00 with viscosity SAE 5W-30, if VW standard 504 00 is met.

Depending on the oil quality, different oil change intervals must be observed.

Engine oil according to VW standard 503 00, 504 00 or 507 00

- Oil change every 1000 operating hours or every 12 months.

Engine oil according to VW standard 502 00

- Oil change every 500 operating hours.

Recommendations for consumables

NOTE

API or ACEA oils are only permitted if they conform to the VW standards for the engine mentioned above.

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

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

NOTE

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

ENVIRONMENT NOTE

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

Due to disposal problems and the special tools and knowledge required, engine oil and filter changes may be performed only by your service partner.

Service plan

Note regarding service work
Specialist knowledge is required for servicing work. Special tools may also be required. Contact your service partner.

Preparatory tasks
Clean the truck
Read out and clear the error memory
Calibrate the drive potentiometer and the joysticks
Enter the next service interval

Regular Service, at least every 12 months
Engine
Change the engine oil and engine oil filter
Replace the gas filter
Mount the evaporator using a new repair kit or replace the evaporator
Check the gas system settings and control
Check the CO level in the exhaust system
Check the LPG system for damage and leak tightness
Check the CNG system for damage and leak tightness
Visually inspect the condition of the engine support and engine mount, and check that they are securely attached
Check the condition of the V-ribbed belt
Check the toothed belt drive
Clean the radiator and check it for leak tightness
Check the coolant concentration
Check the dust discharge valve
Clean the oil bath air filter and change the oil
Check the leak tightness of the intake lines and of the exhaust lines
Chassis, bodywork and fittings
Check the condition of the seat belt and check that it is working correctly
Check and lubricate the bearing points and joints
Chassis frame

Service plan

Regular Service, at least every 12 months
Check the wheels for damage, foreign objects and wear
Lubricate the steering axle
Check the condition of the antistatic belt
Operating devices
Check that the parking brake is working correctly
Check the pedal group
Electrics
Check the condition of the electrical connections and check that they are securely attached
Hydraulics
Check the oil level in the hydraulic system
Check that the bleeder valve on the hydraulic tank is working correctly
Check the hydraulic system for leak tightness
Check the pre-load of the hose lines
Load lift system
Check the condition of the lift mast
Clean and adjust the lift mast chain and apply chain spray
Check and lubricate the sideshift
Check and lubricate the fork prong positioner

Service work every 1000 hours, but at least every 3 years (exceptions in brackets)
Engine
Change the engine oil and engine oil filter
Change the spark plugs
Replace the gas filter
Mount the evaporator using a new repair kit or replace the evaporator
Check the gas system settings and control
Check the CO level in the exhaust system
Check the LPG system for damage and leak tightness
Check the CNG system for damage and leak tightness
Carry out the "system service" on the CNG system (only every 10,000 hours or every 5 years)

Service work every 1000 hours, but at least every 3 years (exceptions in brackets)
Visually inspect the condition of the engine support and engine mount, and check that they are securely attached
Check the condition of the V-ribbed belt
Check the toothed belt drive
Clean the radiator and check it for leak tightness
Check the coolant concentration
Replace the cartridge in the air filter
Check the dust discharge valve
Clean the oil bath air filter and change the oil
Check the leak tightness of the intake lines and of the exhaust lines
Gearbox
Check the mounting of the drive axle
Check the side stops of the drive axle
Check the mounting of the hydraulic pump on the engine (visual inspection)
Chassis, bodywork and fittings
Check the condition of the seat belt and check that it is working correctly
Visually inspect the mounting of the chassis/counterweight
Check and lubricate the bearing points and joints
Service the heating system and air conditioning
Chassis frame
Check the wheels for damage, foreign objects and wear
Lubricate the steering axle
Check the steering axle mounting
Check the condition of the antistatic belt
Operating devices
Check that the parking brake is working correctly
Check the pedal group
Electrics
Check the condition of the electrical connections and check that they are securely attached
Check the condition of the starter battery
Check the axle load sensor

Service plan

Service work every 1000 hours, but at least every 3 years (exceptions in brackets)
Check the load pressure sensor
Check the lift height sensor
Hydraulics
Check the oil level in the hydraulic system
Check that the bleeder valve on the hydraulic tank is working correctly
Check the hydraulic system for leak tightness
Check the tilt cylinder mounting
Check the pre-load of the hose lines
Check the hose carriage on the auxiliary hydraulics
Load lift system
Check the condition and mounting of the lift cylinders, lift mast chain, chain rollers and end stops, and check that they are working correctly
Check the mounting of the lift mast
Clean and adjust the lift mast chain and apply chain spray
Check fork arms and arm safety devices
Check and lubricate the sideshift
Check and lubricate the fork prong positioner

Additional service work every 3000 hours, but at least every 3 years (exceptions in brackets)
Engine
Replace the pressure hoses in the gas system
Change the V-ribbed belt
Change the toothed belt and the tensioning pulley (after 5 years at the latest)
Replace the safety cartridge in the air filter
Gearbox
Wheel motors: check mounting (only once after 3000 hours)
Check the drive axle bearings for wear
Operating devices
Tilt angle sensor: check swivel bearing (fitted as of H2X391H00177)
Electrics
Calibrate the axle load sensor

Additional service work every 3000 hours, but at least every 3 years (exceptions in brackets)
Calibrate the load pressure sensor
Hydraulics
Replace all filters in the hydraulic system
Check the tilt cylinder bearings for wear
Load lift system
Check the sideshift for wear
Check the fork prong positioner for wear

Additional service work every 6000 hours, but at least every 3 years
Hydraulics
Change the oil in the hydraulic system

Additional service work every 9000 hours; no limitation by year
Engine
Replace the coolant pump
Change the cooling fluid

Final tasks
Carry out a functional test, including a test drive
Attach the service adhesive label

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.

⚠ WARNING

Beware of hot engine and exhaust components.

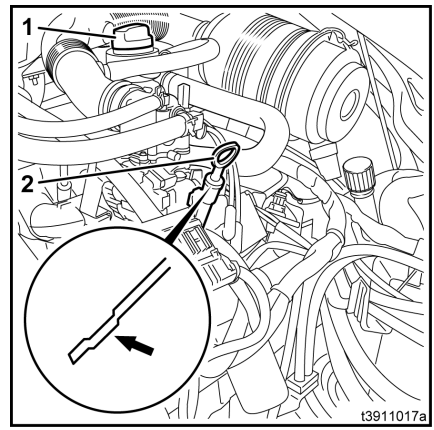
Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

➢ Take the oil dipstick (2) out of the engine. ▷



➢ Wipe the oil dipstick with a clean cloth.

➢ Push the oil dipstick fully back in and remove it again.

Oil level should be between the marks.

➢ If necessary, pour in engine oil through the filling opening until it reaches the upper mark.

➢ To do so, remove filler cap (1) from the filler neck.

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

➢ Fit filler cap and turn to tighten.

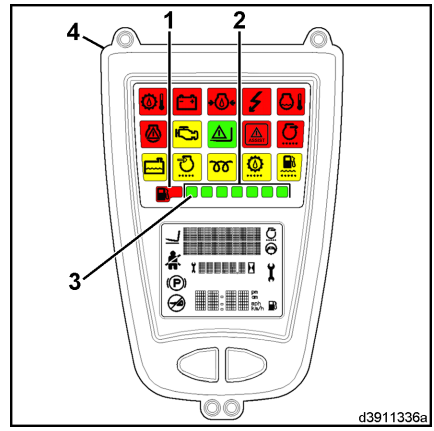
➢ Close the bonnet.

Gas system: Checking the level

The truck is equipped with a sensor that monitors the level of the LPG cylinder, LPG tank or CNG tank.

The level is shown in the display unit (4) by illuminated fields.

➢ Switch on the ignition. ▷



The level is displayed after a few seconds. The LPG cylinder, the LPG tank or the CNG tank is full when all 7 LEDs (2) and the "petrol pump" illuminated field (1) light up green. As the cylinder or tank empties, the LEDs are extinguished, starting from the right. If only the "petrol pump" illuminated field (1) is lit up red, the cylinder must be changed or the tank must be filled in the next 5 – 25 minutes depending on the driving style and ambient temperature.

Changing the LPG cylinder

NOTE

The sensor for monitoring the filling level is located underneath the LPG cylinder and is calibrated for LPG cylinders with a full weight of 11 kg in accordance with EN 1442 and a gas mixture in accordance with DIN 51622. The sensor must be recalibrated for different cylinder diameters and gas mixtures (with a propane level below 90%). Contact your service partner. If partially filled LPG cylinders are used, the filling level may not be shown correctly.

DANGER

Check that the LPG cylinders are approved. LPG cylinders with an expired inspection date must not be used.

The inspection intervals specified in Pressure Equipment Directive 2014/68/EU must be strictly observed. National regulations must also be strictly observed. The most recent inspection date marked on the LPG cylinder is the date that applies.

Observe the safety guidelines for LPG trucks! Cylinders must only be changed by trained personnel.

DANGER

There is a risk of explosion if LPG escapes.

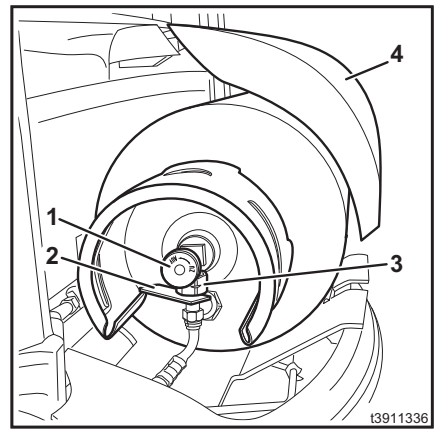
When changing cylinders, do not smoke or use an open flame. Only change LPG cylinders in well-ventilated spaces, away from openings in the ground. Switch off the internal combustion engine and, if fitted, the combustion heater. Allow these to cool down.

WARNING

A small amount of LPG will escape when the LPG hose is disconnected. The escaping LPG can cause frostbite on the skin.

Therefore, protective gloves should always be worn.

- Firmly close the shut-off valve (1) on the LPG cylinder.
- Securely grip the connection nipple using the handhold (2) and carefully loosen the union nut (3), by only a small amount to begin with (pressure reduction).



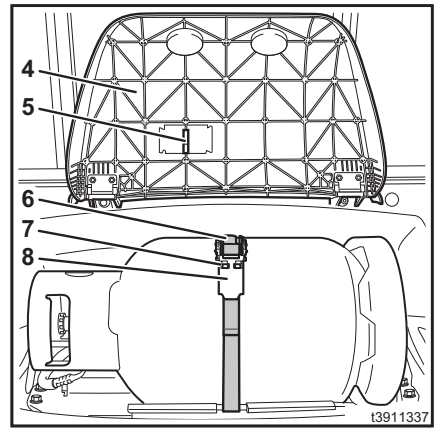
NOTE

The union nut has a left-hand thread. – The US version of the union nut has a right-hand thread.

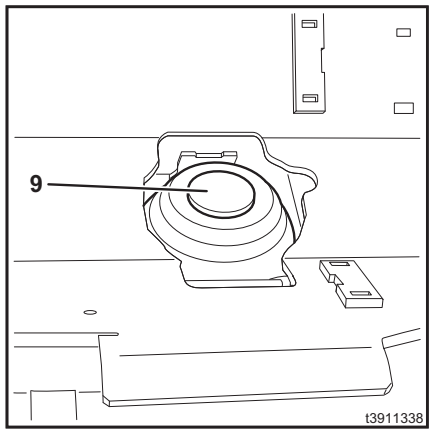
- Unscrew the union nut (3) fully.
- Remove the hose.
- Screw a plastic sealing nut onto the pipe connection.
- Swivel the cover (4) of the LPG cylinder upwards.

The cover is fitted with friction hinges. These keep the cover open once it has been opened.

- Release the clamp (7) on the ratchet (8). Remove the tensioning belt (6) from the ratchet.
- Hook the tensioning belt (6) in the support (5) onto the cover. Doing so will make it easier to find the belt once the cylinder has been changed.
- Remove LPG cylinder.



➢ If necessary, clean the contact surface of the sensor (9) carefully using water or soapy water and a soft cloth. ▷



NOTE

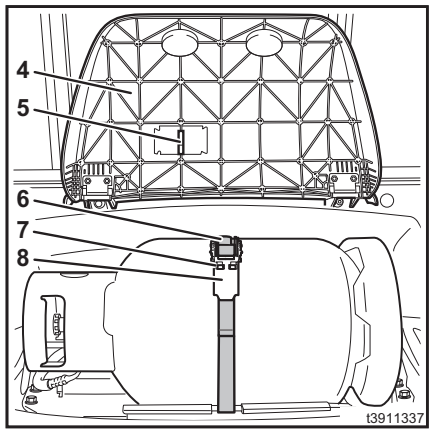
Replacement cylinders must be made of steel and comply with the specifications of EN 1442.

➢ Gently place a new LPG cylinder in position, taking care not to damage the sensor.

In order to avoid wear to the sensor and to prevent the sensor from malfunctioning, do not rotate or drag the LPG cylinder over the contact surface of the sensor.

Secure the LPG cylinder in the support mounting in such a way that the hose connection for the LPG cylinder points vertically downwards. In the version with the stop knob, the recess in the LPG cylinder must be aligned to the stop knob. Doing so ensures that fuel is withdrawn only from the liquid phase, thereby preventing the engine from malfunctioning.

➢ Insert the tensioning belt (6) into the ratchet (8). Tension the belt using the ratchet lever. ▷



When doing so, check that the cylinder is in the correct position on the contact surface of the sensor (with a pre-load of approx. 9 mm).

➢ Swivel the LPG cylinder panelling completely downwards.

➢ Reattach the hose connection to the LPG cylinder in accordance with regulations.

➢ Perform a leak test using leak spray and a gas detector in accordance with the inspection and maintenance guidelines.

Filling the LPG tank (special equipment)

⚠ DANGER

The inspection intervals specified in Pressure Equipment Directive 2014/68/EU must be strictly observed. National regulations must also be strictly observed. The most recent inspection date marked on the container is the date that applies. Containers with an expired inspection date must not be used. Containers must not be filled if major defects are identified or if the inspection interval has been exceeded.

Before connecting the pistol-type nozzle, check whether the LPG tank or fittings show any defects and ensure that the inspection interval specified on the container has not expired.

⚠ DANGER

There is a risk of explosion if LPG escapes.

When filling the LPG tank, do not smoke or use an open flame.

Observe the safety guidelines for the use of LPG and observe the safety information for the filling station. The LPG tank may only be filled by trained personnel.

⚠ WARNING

A small amount of LPG will escape when removing the pistol-type nozzle. The escaping LPG can cause frostbite on the skin.

Therefore, protective gloves should always be worn.

NOTE

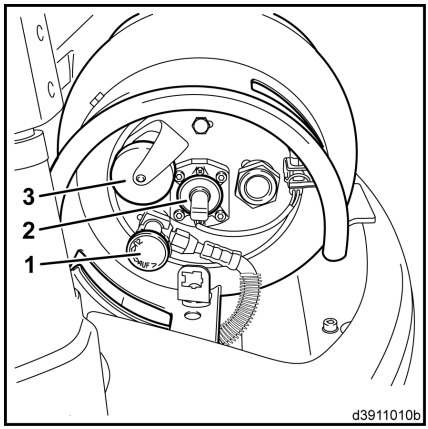
We recommend filling the tank before starting work, when the engine is still cold. If there is a major difference in temperature between the storage tank out in the open and the tank on the truck, the delivery pressure of the pump may no longer be sufficient to ensure that filling occurs properly.

Engine

NOTE

The LPG tank fitted can vary depending on the model (model "1" or model "2").

- Switch off the internal combustion engine and, if installed, the combustion heater.
- Put on protective gloves.
- Close the (1) shut-off valve. ▷



NOTE

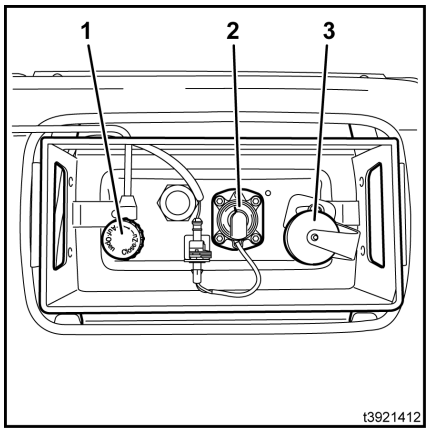
If the truck is equipped with an electromagnetic shut-off valve on the gas tank, no action needs to be taken.

- Unscrew the locking cap from the filling valve (3).
- Check that connecting thread of the pistol-type nozzle is clean.
- Securely connect the pistol-type nozzle to the filling valve (3).
- Open the main shut-off valve at the LPG filling station and activate the pump motor or the pistol-type nozzle until the valve installed in the tank stops the refilling process.

Filling quantity

Version "1" = approx. 36 l

Version "2" = approx. 45 l ▷



- Release the actuating lever of the pistol-type nozzle immediately after the tank valve shuts off. Then stop the filling process.
- Switch off the pump motor and close the main shut-off valve on the LPG filling station.

⚠ CAUTION

Do not overfill the LPG tank.

The LPG tank may be filled independently of the level display (2), but only until the tank valve switches off.

- Carefully unscrew the pistol-type nozzle from the filling valve (3).
- Screw the locking cap onto the filling valve.

⚠ CAUTION

Carefully observe the entire filling process.

If any irregularities or noteworthy incidents occur during the filling process, notify the departments responsible immediately and rectify any defects.

➢ Perform a leak test using leak spray and a gas detector in accordance with the inspection and maintenance guidelines.

Filling the CNG tank (special equipment)

⚠ DANGER

The inspection intervals specified in Pressure Equipment Directive 2014/68/EU must be strictly observed. National regulations must also be strictly observed. The most recent inspection date marked on the container is the date that applies. Containers with an expired inspection date must not be used.

Before connecting the filler coupling, check whether the CNG tank or fittings are defective, and that the permitted utilisation period and specified inspection interval have not been exceeded.

If major defects are observed, or the maximum permitted utilisation period or specified inspection interval have been exceeded:

- ➢ the gas tank must not be filled
- ➢ the truck must no longer be operated
- ➢ the truck must be switched off safely
- ➢ the gas system must be checked.

Contact your service partner.

NOTE

Observe safety guidelines when using CNG and observe the safety instructions for the CNG filling station. CNG tanks may only be filled by personnel who have undergone appropriate training. For CNG quality, see the "Recommendations for consumables" section.

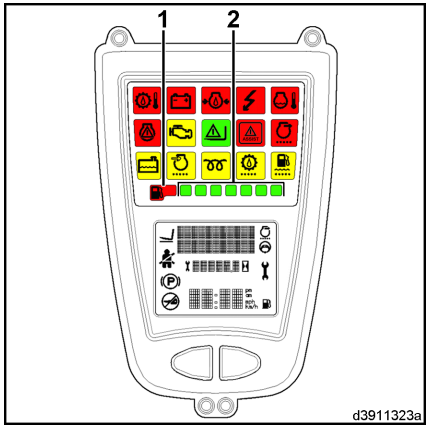
⚠ DANGER

There is a risk of explosion when filling the CNG tank

Do not smoke or use a naked flame/fire

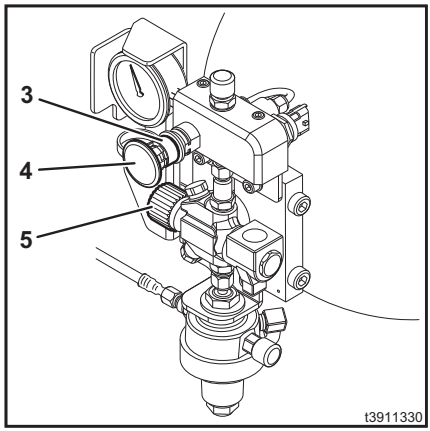
Engine

If the "petrol pump" field (1) lights up, the CNG tank is empty and must be filled. ▷



- ➢ Switch off the internal combustion engine and, if installed, the combustion heater.
- ➢ Switch off ignition.
- ➢ Chock the truck to prevent it from rolling.

- ➢ The shut-off valve (5) must be open ("ON" position). ▷
- ➢ Disconnect the locking cap (4) from the filling nipple.
- ➢ Check that the O-ring in the filling nipple is properly seated.
- ➢ Check that the filling nipple (3) and filler coupling of the filling station are clean.
- ➢ Fit the filler coupling to the filling nipple (3) until the sliding sleeve engages.
- ➢ Open the filler coupling shut-off valve and fill the tank until the filling process switches off automatically.



Filling pressure	200 bar at 15°C
Filling volume	50.0 l
Max. filling quantity, depending on CNG composition	7.1–8.5 kg

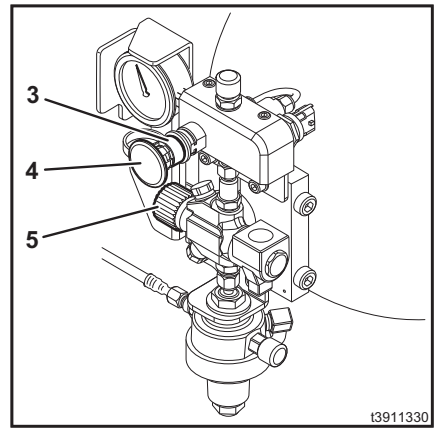
- ➢ Terminate filling process immediately after switching off.
- ➢ Close the filler coupling shut-off valve.
- ➢ Push back the sliding sleeve and disconnect the filler coupling.

⚠ CAUTION

Do not remove the filler coupling until the filling pressure has dropped! This may take several seconds, depending on the filling system. Please observe the instructions for your filling system.

If the coupling is removed under pressure, the filler connection O-ring may be damaged or blown out. The O-ring should therefore be checked again after the filling process to ensure that it is properly seated.

➢ Refit the lid (4) on the filling nipple (3). ▷



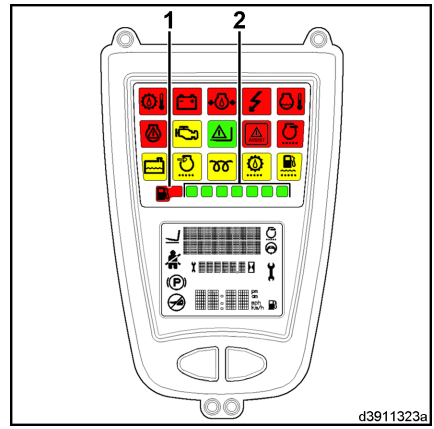
⚠ CAUTION

If irregularities or noteworthy incidents occur during the filling process,

➢ discontinue filling
➢ the truck must no longer be operated
➢ the truck must be switched off safely
➢ the gas system must be checked.

Contact your service partner.

➢ Perform a leak test using leak spray and a gas detector in accordance with the inspection and maintenance guidelines (for further instructions, see the operating and maintenance instructions provided by the gas system manufacturer). ▷



NOTE

The tank is full when all 7 LEDs (2) and the "petrol pump" illuminated field (1) in the display unit light up green when the engine is running. (The tank content is only displayed correctly when the engine is running.)

Checking the CO level in the exhaust system

National regulations must be strictly observed for testing.

In Germany, the employers' liability insurance association ordinance (BGV D34) stipulates that the level of CO present in the exhaust gas must be checked every 500 operating hours, but at the latest after six months.

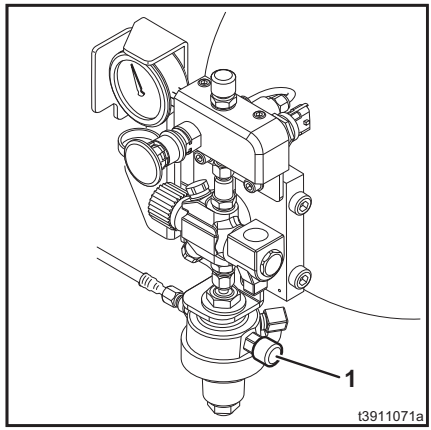
Specialist knowledge and special tools are required to perform the testing.

Contact your service partner.

CNG system: Checking the high-pressure relief valve (special equipment)

A plastic cap (1) must be fitted on the high-pressure relief valve.

If no cap is fitted, there may be a defect in the gas system. If this is the case, contact your service partner.



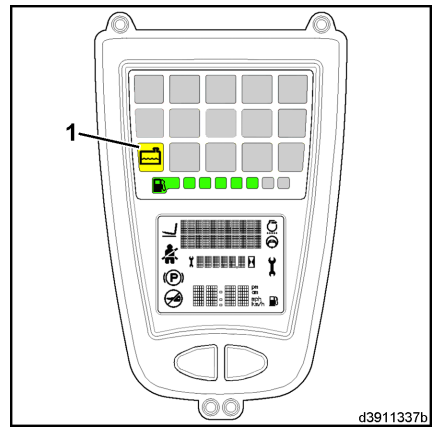
LPG system: Visual inspection and odour inspection

A high-pressure relief valve in the gas pipe protects the gas cylinder or gas tank against over pressure. If you discover any abnormalities, contact your service partner.

NOTE

The driver must perform a visual and odour inspection of the LPG system each day before beginning work. If problems occur, the truck must not be operated. Report any problems to a qualified person immediately.

Check the coolant level



ENVIRONMENT NOTE

Observe information regarding working with consumables.

NOTE

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

NOTE

The coolant level can also be checked at the expansion reservoir (3), without having to refer to display (1).

⚠ CAUTION

Only use an approved coolant.

Observe the recommendations for consumables.

➢ Open the bonnet

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

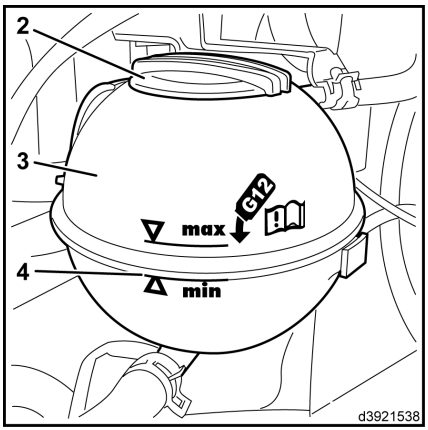
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

The coolant level must not fall below marking (4) on expansion reservoir (3).

➢ If necessary, top up the coolant. To do this, twist and remove the filler cap (2). ▷



⚠ WARNING

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

Unscrew the filler cap (2) slowly, and only if the expansion reservoir is not hot.

➢ Fit filler cap and turn to tighten.

➢ Close the bonnet

Cleaning the radiator and checking the radiator for leak tightness

NOTE

Only clean the radiator once the engine has been switched off and allowed to cool.

➢ Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

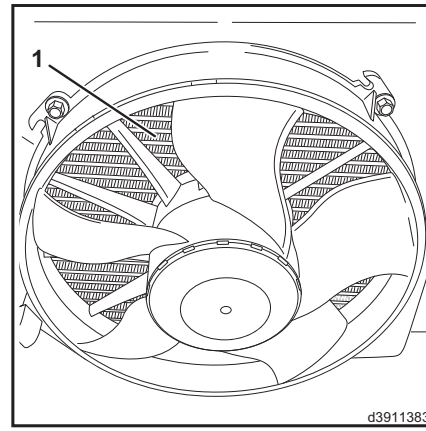
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

Cleaning the radiator without the support of the fan

Cleaning with compressed air



- Blow out the radiator (1) from the engine side using compressed air.
- Rinse out the released dirt using a water jet.

Cleaning with cold cleaning solvent

⚠ CAUTION

Moisture must not penetrate the three-phase generator.

For this reason, protect it from direct contact with the water jet.

- Spray the radiator (1) with a conventional cold cleaning solvent and leave it to work for approx. 10 minutes.
- Spray the radiator from the engine side with a direct water jet until it is clean.
- Warm up the engine.

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

Cleaning the radiator with the support of the fan

NOTE

Anticlockwise rotation of the fan:

- *The starter battery must be charged fully.*
- *The fan can also be activated while the engine is running.*
- *It is not possible to activate the fan when the engine is hot.*

Switch on the fan.

- Turn the ignition and starting switch to the switch setting "I".

➢ Press the push button (4) on the display unit for 4 to 7 seconds.

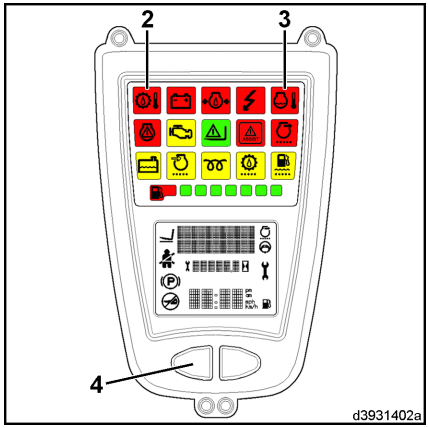
The warning lights (2) and (3) illuminate within this time period.

NOTE

If this time period is not adhered to, the fan will not run.

Anticlockwise rotation of the fan is activated and runs for three minutes at maximum speed.

The warning lights (2) and (3) flash alternately.



Cleaning with compressed air

➢ Blow out the radiator (1) from the counterweight side using compressed air.

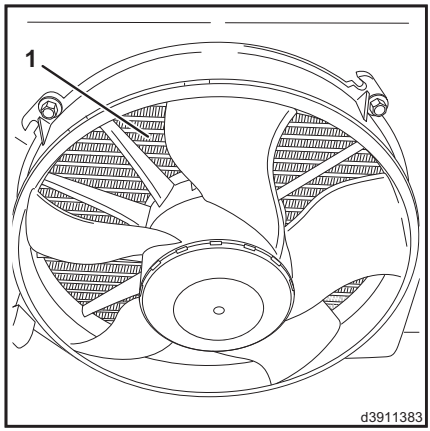
➢ Rinse out the released dirt using a water jet.

Cleaning with cold cleaning solvent

CAUTION

Moisture must not penetrate the three-phase generator.

For this reason, protect it from direct contact with the water jet.



➢ Spray the radiator (1) with a conventional cold cleaning solvent and leave to work for approx. ten minutes (before the fan is activated).

➢ Switch on the fan.

➢ Spray the radiator from the counterweight side with a direct water jet until the radiator is clean.

Turning off the fan

The fan can be turned off by one of the following actions:

➢ Press push button (4).

➢ Turn the ignition and starting switch to the switch setting "0" and then back to the switch setting "I".

NOTE

The fan may overrun if the engine is warm.

Residual cleaning

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

➢ Rinse out the released dirt in the engine compartment using a water jet.

➢ Warm up the engine.

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

Checking the radiator for leak tightness

➢ Check the connection screw joints, the coolant hoses and the pipe lines on the radiator for leak tightness.

➢ Replace porous hoses and re-tighten hose clips.

➢ Close the bonnet.

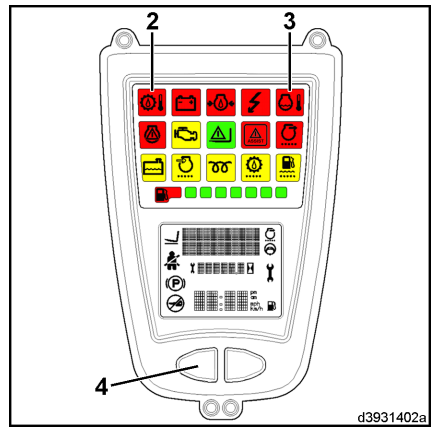
Check the condition of the V-ribbed belt

⚠ WARNING

Rotating parts!

Stop the engine and remove the switch key.

▷



Engine

NOTE

A defective or loose V-ribbed belt will affect the on-board power supply.

➢ Open the bonnet

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

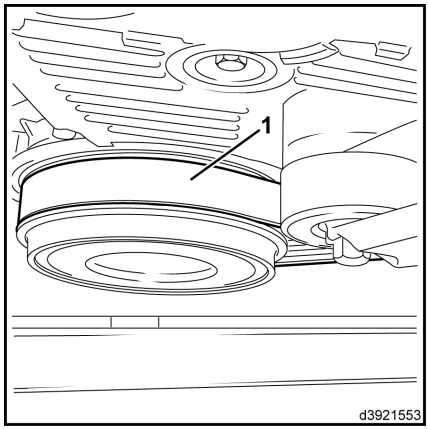
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

➢ Remove the maintenance cover on the right-hand side.

➢ Check the V-ribbed belt (1) for excessive wear, frayed edges, cracks across the belt and traces of oil. ▷



➢ Replace the damaged V-ribbed belt.

⚠ CAUTION

A special tool and specialist knowledge is required for this work.

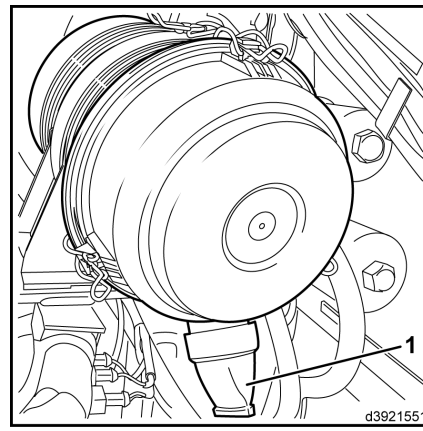
Contact your service partner.

➢ Refit the side maintenance cover.

➢ Close the bonnet

Check the dust discharge valve

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



➢ Open the bonnet

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

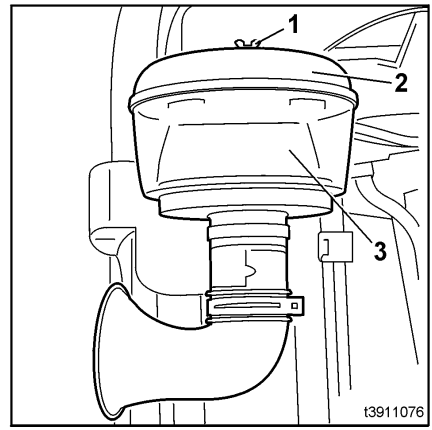
Do not touch rotating parts.

➢ Squeeze the valve (1) and remove the dust residue.

➢ If the valve is damaged, replace it.

➢ Close the bonnet

Clean the prefilter (special equipment) ▷



NOTE

The dust collecting tank (1) 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.

Checking the leak tightness of the intake lines and the exhaust lines

➢ Open the bonnet.

Engine

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

➢ Check the condition of the intake air hoses on the air filter and check the intake air hoses for leak tightness.

In the event of leakage, contact your service partner.

➢ Check the inlet manifold and the exhaust manifold on the cylinder head for leak tightness.

In the event of leakage, contact your service partner.

➢ Check the exhaust-pipe connection on the manifold for leak tightness.

In the event of leakage, contact your service partner.

➢ Close the bonnet.

➢ Remove the cover on the counterweight.

➢ Check the mounting and the connections of the exhaust pipe in the counterweight and check this exhaust pipe for leak tightness.

In the event of leakage, contact your service partner.

➢ Refit the cover on the counterweight.

Gearbox

Checking and adjusting the side stops on the drive axle

➢ Check the air gap between the spring element (1) and the chassis (2).

The air gap must be no more than 3 mm. Check the air gap on both the left and right of the axle.

If the air gap is larger than 3 mm, the spring element must be adjusted.

➢ To do this, support the chassis securely using hardwood supports and remove the drive wheels.

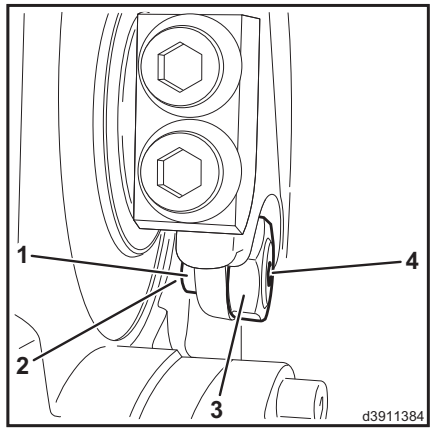
➢ Loosen the hexagon nut (3).

➢ Adjust the stop (4) using a hexagon socket wrench until the air gap is 3 mm in size.

➢ Tighten the hexagon nut (3).

➢ Fit the drive wheels.

▷



NOTE

If it is no longer possible to adjust the air gap, it means that the spring element of the axle is worn. The spring element must be replaced.

Chassis, bodywork and fittings

Cleaning the truck

The frequency of cleaning depends on the application conditions of the truck. If highly abrasive materials, e.g. salt water, fertiliser, chemicals or cement are used, the truck must be thoroughly cleaned after each assignment.

Deposits and accumulations of combustible materials on or in the vicinity of hot parts (e.g. exhaust pipes) must be removed immediately.

Before performing service work, clean the oil filler openings and their surroundings, as well as the lubricating nipples.

When cleaning, note the following:

- Wear protective equipment
- Never wash the truck while the engine is running or while the engine is hot
- When using high-pressure cleaners, maintain a minimum distance of 300 mm between the spray pipe and the truck
- Cleaning materials that contain strong solvents can permanently damage painted and plastic surfaces
- Hot steam or cleaning materials with a powerful degreasing effect must be used with extreme caution, because these will affect the grease filling of bearings with lifetime lubrication, causing them to leak.
  Relubrication is not possible. The bearing will be destroyed

When cleaning with compressed air, remove stubborn contamination with a cold cleaning solvent.

⚠ CAUTION

Damage to or destruction of truck components!

Water must not be used for cleaning in the area of the central electrical system or switch console. Only use a dry cloth or clean compressed air for cleaning in this area.

The following areas must also **not** be subjected to a direct water jet when cleaning (e.g. using high-pressure cleaning equipment or steam cleaners):

- Electrical and electronic components
- Plug connectors
- Plastic pipes for the air duct
- Any of the hydraulic and coolant hoses
- The areas around hose clips
- Damping mats

NOTE

If cleaning using a water jet cannot be avoided, the affected areas must be covered beforehand.

Bonnet

Opening the bonnet

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

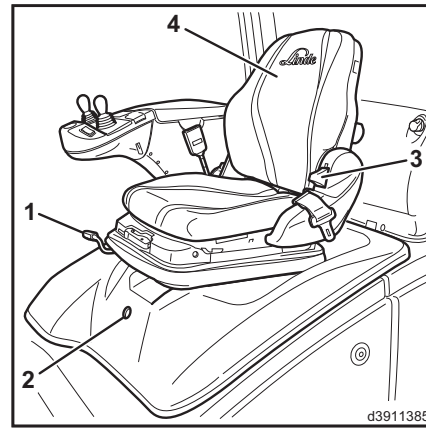
When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

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

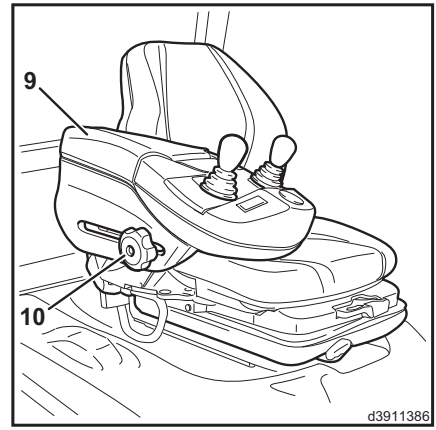
➢ Pull the lever (1) upwards and push the driver's seat all the way forwards. ▷

➢ Release the lever (1) and allow it to engage.

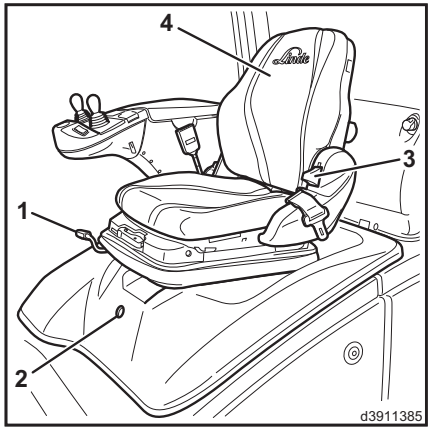


The following actions must also be performed depending on the equipment fitted: ▷

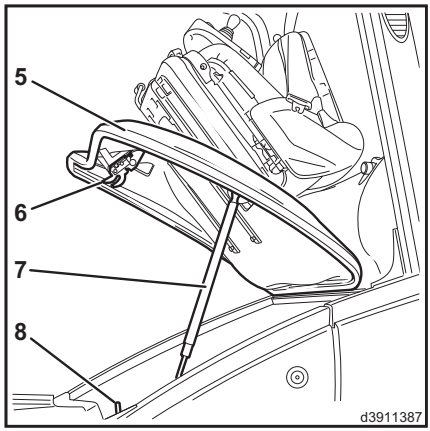
- For single-pedal operation, loosen the clamping screw (10) in the armrest (9), push the armrest all the way down, then re-tighten the clamping screw.
- If a rear window is installed, push the lever (3) upwards and hold, fold the seat backrest (4) all the way forwards and release the lever (3).
- If a driver's seat with adjustable seat depth is installed, push the seat base all the way back.



➢ Push a suitable object into the bore (2) to release the bonnet catch; while doing so, release the pressure on the bonnet catch by pressing the bonnet downwards. ▷



➢ Open the bonnet (5) and swing it back as far as it will go. ▷



NOTE

The bonnet is kept open by a gas spring (7).

Closing the bonnet

➢ Close the bonnet by pressing it down against the pressure of the gas spring (7) and push it closed until the locking lever (6) engages in the fastener (8).

Floorplate

Opening the floorplate

Some maintenance operations require that the bottom plate is lifted.

➢ Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

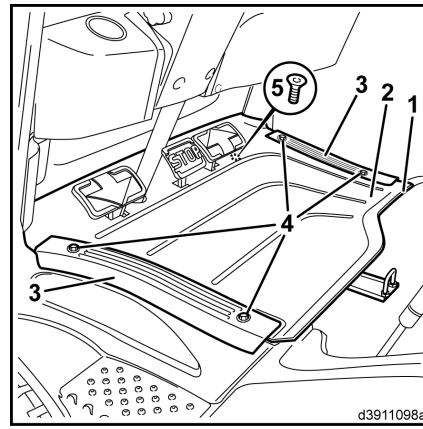
Wear protective equipment.

⚠ WARNING

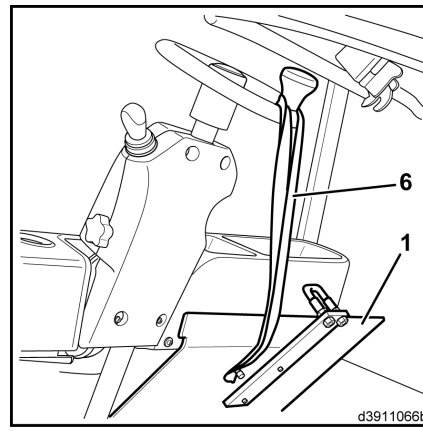
When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

- Unscrew the mounting screws (4) from the bottom plate. ▷
- Remove the metal sheets (3).
- Remove the rubber covering from the bottom plate (2).
- Unscrew the mounting screw (5).
- Fold the floorplate (1) up.



- Place the restraint strap (6) around the knob on the steering wheel. ▷



Closing the floorplate

- Lift up the floorplate (1).
- Detach the restraint strap (6).
- Close the floorplate.
- Fit the mounting screw (5).
- Place the rubber covering on the floorplate.
- Fit the metal sheets (3) and bottom plate (1) using mounting screws (4).
- Close the bonnet.

Maintaining the heating system and air conditioning (special equipment)

Maintaining the heating system and air conditioning console

- Open the right-hand driver's doors and secure in place.

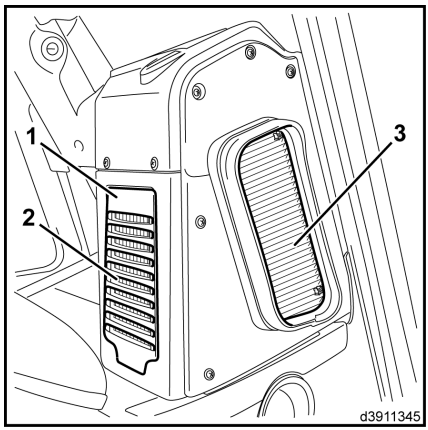
➢ Remove the cover (1).

➢ Remove the filter (2) and clean or replace.

➢ Reinsert the filter and fit the cover.

➢ Remove the filter (3) and clean or replace.

➢ Reinstall filter.



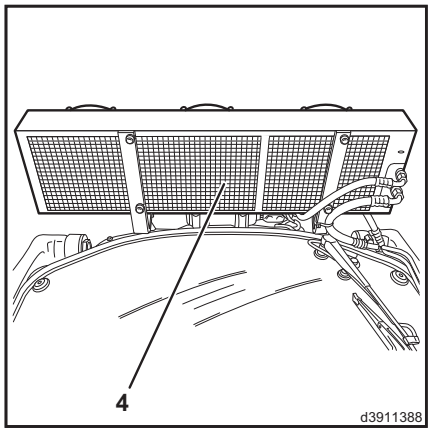
Servicing the air conditioning

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

➢ Clean the condenser (4).

The condenser fins must be cleaned gently without any high pressure being applied. Otherwise, they will be damaged and impair the air flow.

➢ Check the belt tension on the compressor, and check for good condition.



NOTE

Specialist knowledge and special tools are required for carrying out further maintenance work. Contact your service partner.

Checking the condition and function of the seat belt

DANGER

Risk of accident or danger to life if the restraint system is faulty

Do not operate the industrial truck if the restraint system is faulty.

NOTE

For safety reasons, check the condition and function of the restraint system on a regular basis (once a month).

Screw connections must be checked on a regular basis to make sure that they are secure.

After an accident, the seat belt must be replaced.

The driver's seat and the driver's seat mounting must also be checked after an accident by an authorised technician.

If you notice any irregularities in the functioning of the seat (e.g. seat suspension) or the seat belt, contact your service partner immediately for help with eliminating the cause.

NOTE

In extreme conditions, the function and condition of the restraint system must be checked on a daily basis prior to starting up the truck.

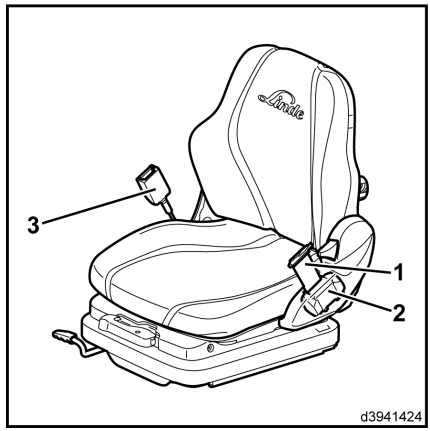
- Pull out the belt (1) completely and check for fraying and torn stitching.
- Check that the buckle (3) functions correctly and that the belt retracts properly.
- Check the covers and fixing points for damage.

Test the automatic blocking mechanism.

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

The automatic mechanism must stop the belt being extended out of the belt retractor (2).

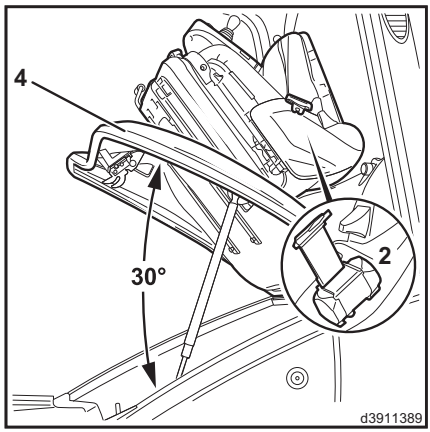
- Push the driver's seat all the way forwards.
- Fold the seat backrest all the way forwards.



NOTE

When opening the bonnet, be careful with the rear window and single-pedal switch on the armrest.

➢ Unlock the bonnet (4) and open the bonnet with the driver's seat at an angle of approx. 30°. ▷



⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

The automatic mechanism must stop the belt being extended out of the belt retractor (2).

➢ Close the bonnet.

Checking and lubricating the bearing points and joints

ENVIRONMENT NOTE

Observe information regarding working with consumables.

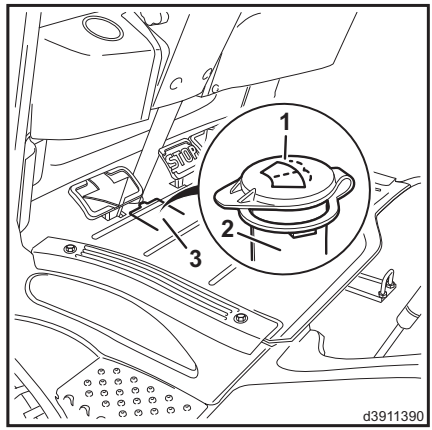
➢ Check and lubricate the following bearings and mountings:

- Driver's seat guide
- Bearing bolts for the bonnet
- Windscreen wiper bearings (special equipment)
- Door locks and hinges on the weather protection cab (special equipment)
- Bonnet lock

Topping up the washer system container (special equipment)

- Fold up section (3) of the floormat.
- Remove the filler cap (1) from the container (1) through the opening in the bottom plate.(2)
- Top up the container with washer fluid until the fluid is visible in the filling opening.
- Close the filler cap (1).
- Fold down section (3) of the floormat.

▷



Chassis frame

Wheel change

⚠ DANGER

Risk of tipping.

All tyres on any one axle must be of the same dimensions, from the same manufacturer and of the same type and profile.

⚠ WARNING

Note truck tare weight.

Only use hydraulic jacks with a load capacity of at least 3000 kg.

⚠ CAUTION

Electrostatic charge.

When using non-marking tyres (light-coloured tyres), the electrical potential equalisation must be ensured with an antistatic belt

The antistatic belt must always be in contact with the ground.

- Only position the rear hydraulic jack centrally under the counterweight.
- Position the front hydraulic jack on the left or right edge of the chassis or on the lift mast.

The truck may only be jacked up at these lifting points at the front left or front right, and at the rear centre.

- Release the wheel fastenings on the wheel in question.
- Raise truck with jack until wheels are off the ground.
- Support securely using hardwood supports on the chassis or counterweight (removing the load from the hydraulic jacks).
- Unscrew the wheel fastenings.
- Change the wheel.
- Position wheel fastenings and tighten them manually.
- Lower truck.
- Tighten the wheel fastenings crosswise.

Tightening torque:

Front	210 Nm
Rear	210 Nm

Tightening the wheel fastenings

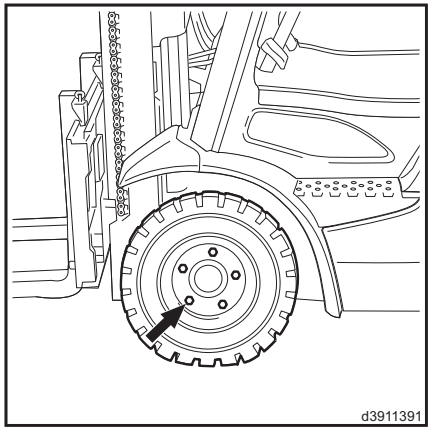
The wheel fastenings must be tightened before initial commissioning and whenever wheels are changed or repairs are performed.

Subsequently, this operation must be performed after 100 operating hours at the latest.

Tighten the wheel fastenings crosswise.

Tightening torque:

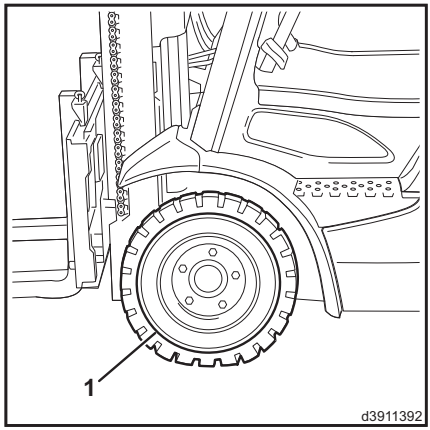
Front	210 Nm
Rear	210 Nm



Checking the wheels for damage, foreign objects and wear

- Secure the truck against rolling (apply the parking brake).
- Place a wheel chock under a wheel that will not be raised.
- Lift the truck using a hydraulic jack until the wheels are off the ground.
- Place a hardwood block underneath the truck.
- Check that the wheels can rotate freely and remove anything hindering their movement.

The upper edge of the 60 Joule indicator (1) is the maximum limit for wear and regrooving. The decision about whether to regroove the tyres must be based on the application conditions. ▷

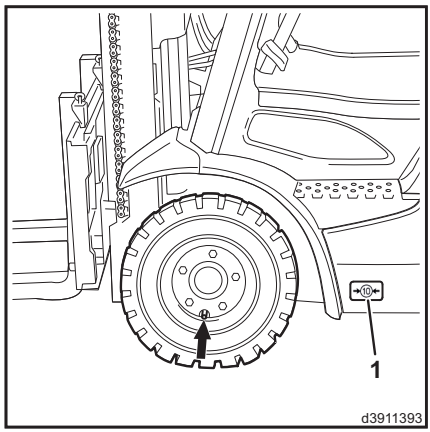


A minimum tread depth is not required with solid rubber tyres.

It must be ensured that the degree of wear on the tyres on one axle is the same.

- Change worn or damaged tyres.

Checking the tyre pressure



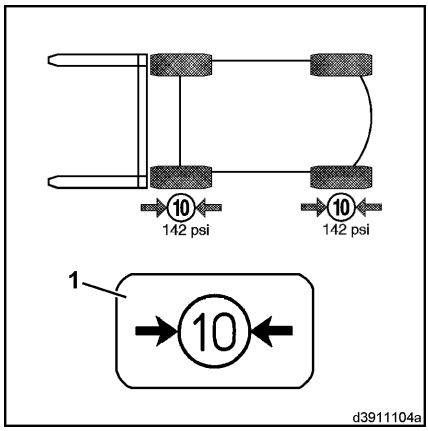
⚠ CAUTION

If the air pressure is too low, the service life of the tyres will be reduced and the stability of the truck will be compromised.

Therefore, check the air pressure on a regular basis.

- ➢ Check that the tyres have the prescribed air pressure.
- ➢ If necessary, adjust the tyre pressure in accordance with the information on the adhesive labels (1) on the left-hand side of the truck at the front and back next to the wheels:

Example:



Tyre pressure adhesive label (1)

Drive axle	
Single tyre	10.0 bar

Steering axle	
Single tyre	10.0 bar

Checking the condition of the antistatic belt

⚠ DANGER

Risk of fire and explosion possible with electrostatic discharging.

Safety warning: Tyres are not electrically conductive.

The truck must always be earthed using an antistatic belt.

The antistatic belt must be in permanent contact with the ground.

NOTE

Under certain circumstances, the truck may become electrostatically charged.

- *The charging level depends on a number of factors such as type of tyre, air humidity, floor covering etc.*
- *Excessive electrostatic charge is noticeable when the electrostatic charge is discharged to the ground via the body of a person who touches the truck (electric shock) or when a spark passes from the truck to an earthed part (e.g. a metal shelf)*
- *With standard types of tyre (black pneumatic or solid rubber tyres), the high graphite content means that electrostatic charging is relatively rare.*
- *However, if non-marking tyres (light-coloured tyres) are used and the truck is driven in an area with a sealed floor, this electrostatic charge effect will frequently occur*
- *Non-scrubbing tyres are identified by the safety information on the tyre wall.*

For this scenario, an antistatic belt made from non-conducting plastic is fitted to the underside of the truck and is connected to the truck chassis.

➢ **Check that the antistatic belt is securely seated on the frame floor and check for wear.**

➢ **Change the antistatic belt if it is damaged.**

Lubricating the steering axle

ENVIRONMENT NOTE

Observe information regarding the use of consumables.

NOTE

It is better to apply a little grease to the bearings frequently than a lot of grease infrequently.

If used in areas with constant exposure to dust, dirt water and, if applicable, road salt or chemicals, weekly lubrication will considerably lengthen the service life of the spherical bearings.

NOTE

For lubrication, use lubricating grease in accordance with the recommendation for consumables. First lubricate the axle stub bearings at the top and then at the bottom.

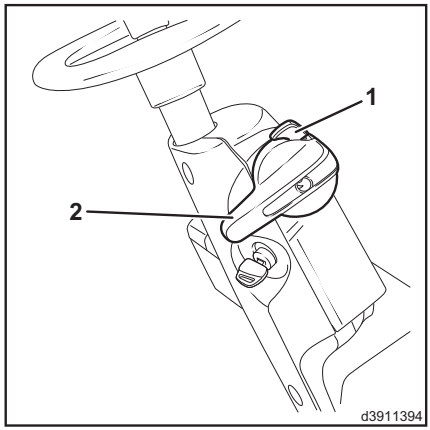
➢ Lubricate the tie rod and axle stub with lubricating grease at the lubricating nipples.

➢ Lubricate using a grease gun until fresh lubricating grease leaks from the bearing points.

Operating devices

Checking the parking brake for correct operation

- Drive the truck with the maximum lift load up a gradient of 15%.
- Place the parking brake (2) in a horizontal position. ▷



The vehicle must remain stationary.

- Switch off the engine.
- Press the button (1) and unlock the parking brake lever (2).
- Move the parking brake 90° downwards.

The vehicle must remain stationary.

NOTE

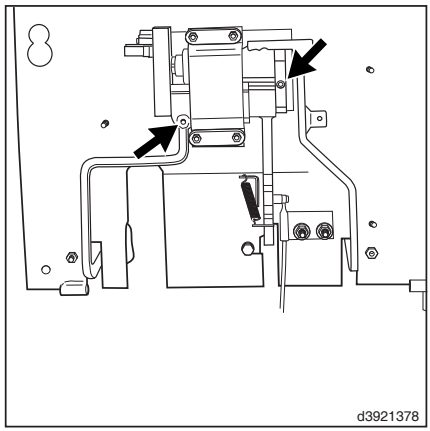
If the parking brake fails this test, contact your service partner.

Checking the pedal group

ENVIRONMENT NOTE

Observe information regarding working with consumables.

- Lift up the bottom plate and secure in place. ▷
- Unscrew the 4 nuts on the pedal box.
- Check the pedals for ease of movement.
- If necessary, grease the bearings slightly.
- Refit the pedal box.



Electrics

Checking the condition of the electric connections and checking that they are securely attached

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.

Checking the condition and disposing of the starter battery

When handling starter batteries, the following instructions should be observed:

- Wear industrial goggles and a protection suit.
- Before touching the battery, first touch conductive parts of the chassis to discharge any static charge.
- Avoid spark formation when connecting/disconnecting.

DANGER

Possible risk of explosion when charging the battery in unventilated areas due to flammable gases.

The battery must only be charged at the charging stations and locations provided for this purpose and in accordance with regulations.

These stations and locations must fulfil certain criteria, such as ensuring sufficient ventilation during the charging process.

- After charging the battery, leave it standing for at least eight hours before reconnecting, if possible.
- When filling up or recharging, remove any packaging film beforehand to ensure gas extraction.
- The gas release openings must not be sealed, otherwise there is a risk of explosion.
- Do not use plastic adhesive tape, especially in the area surrounding the gas release openings.
- Before recharging, first check the battery without electric load to ensure that only intact batteries are charged.
- Avoid rubbing textiles against the battery.
- Do not open batteries. Electrolyte level correction not necessary.
- Due to the possibility of static charges, do not rub batteries with dry cloths. Use damp or antistatic cloths instead.

Checking the condition

WARNING

Battery acid is highly corrosive.

Wear protective equipment. Avoid all contact with battery acid. Any spilt battery acid should be neutralised immediately!

If clothing, skin or eyes come into contact with battery acid, the affected areas should be rinsed with water immediately. In the event of contact with the eyes, consult a doctor immediately!

- Open the bonnet

WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

- Inspect battery for cracked housing and acid leaks.
- Remove any oxidation residues on the battery terminals and then apply acid-free grease.
- Check that the battery-terminal clips are securely fitted.
- Close the bonnet

Disposal

Hand in old batteries at the collection point. Never dispose of old batteries in the household waste!

Ensure that all batteries are stored and transported upright and safe from short-circuiting or tipping to prevent acid escaping. Leave protective cap on positive terminal for transport.

Transport damaged batteries in suitable, acid-resistant containers.

Hydraulics

Checking the oil level in the hydraulic system

ENVIRONMENT NOTE

Take note of information about working materials.

NOTE

Oil specifications: see Recommendations for working materials

➢ Fully lower fork carriage.

➢ Open the bonnet.

WARNING

Beware of hot engine and exhaust components.

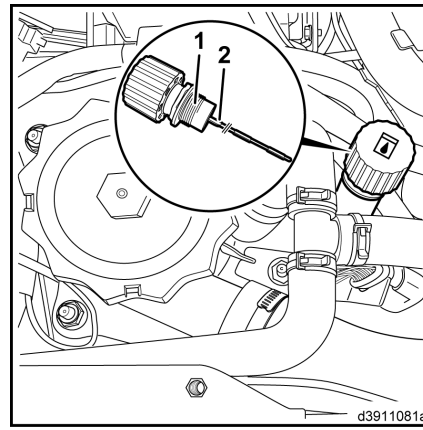
Wear protective equipment.

WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

➢ Unscrew the breather filter (1) with the oil dipstick (2) on the left-hand side of the truck. ▷



NOTE

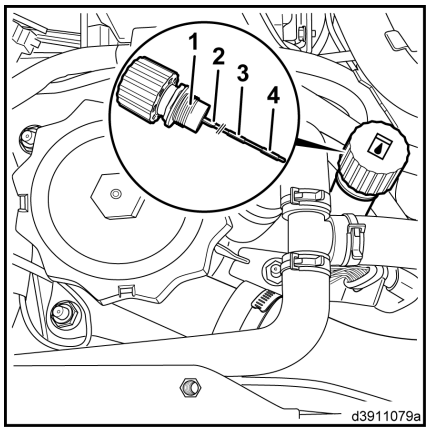
Tank is pressurised. A small amount of air will escape.

➢ Wipe oil dipstick with a clean cloth.

NOTE

There are two marks ("1" and "2") on the oil dipstick (2). These apply to the various lift mast heights.

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



Mark "1"(4)

- Standard lift mast up to a lift height of 5410 mm
- Duplex lift mast: all lift heights
- Triplex lift mast up to a lift height of 4775 mm

Mark "2"(3)

- Standard lift mast from a lift height of 5510 mm
- Triplex lift mast from a lift height of 4925 mm up to 7475 mm

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

The oil level on the dipstick should be between the marks for the corresponding lift height.

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

Difference in quantity between max. and min. marks:

for all stroke heights: approx. 0.8 l

Difference in quantity between mark "1" and mark "2": approx. 3.5 l

➢ Close the bonnet.

Checking the bleeder valve on the hydraulic tank for correct function

NOTE

The breather filter for the hydraulic oil tank is fitted with a bleeder valve that allows a small amount of pressure in the tank.

ENVIRONMENT NOTE

Take note of information about working materials.

➢ Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

⚠ WARNING

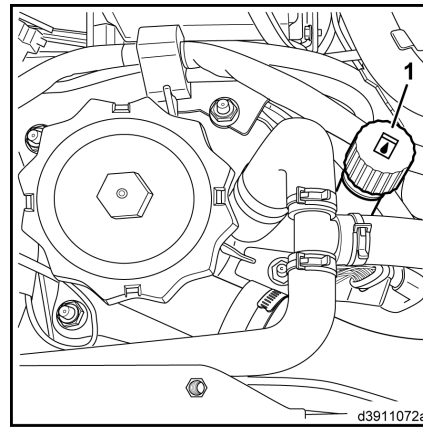
When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

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

It must be possible to hear air escaping from the tank. If air cannot be heard escaping, replace the breather filter.

- Close the bonnet.



Checking the hydraulic system for leak tightness

- Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

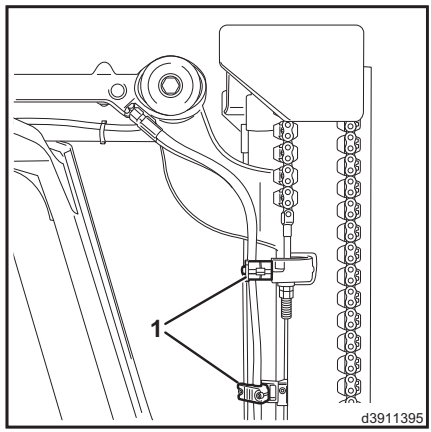
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

- Raise and secure the floor plate.
- Check all connections between the oil tank, the drive motors, the pumps and the control valves for leak tightness.
- Tighten connections if necessary.
- Check the lift cylinder, tilt cylinder and steering cylinder for leak tightness.
- Replace any porous hoses.
- Inspect the lines for chafing and replace, if necessary.
- Close the floor plate.
- Close the bonnet.

Checking the pre-load of the hose lines



The pre-load of the double hoses should be 5–10 mm per metre, based on the initial length.

➢ Adjust the pre-load by sliding the hoses in the retaining clips (1) to the specified point.

Load lift system

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

⚠ DANGER

When working in the area of the lift mast, there is a risk of becoming trapped and/or the lift mast accidentally lowering.

If the lift mast or fork carriage is raised, no work may be performed on the lift mast or at the front of the truck unless the following safety measures are observed! These safety precautions are sufficient only for general maintenance on the truck (testing and lubrication work). For repairs (e.g. changing chains, dismantling lift cylinders), additional safety precautions must be taken. Contact your service partner.

Securing the lift mast against tilting backwards

The lift mast must be secured against accidentally tilting backwards.

- ➢ Tilt the lift mast all the way back.
- ➢ Switch off the engine.
- ➢ Remove the ignition key.
- ➢ Operate parking brake.

Standard lift mast

FUNCTION: When raising the inner mast, the chain rollers are moved up with the chains. Due to the chain deflection, the fork carriage is lifted with a transmission ratio of 2:1.

Securing the raised standard lift mast

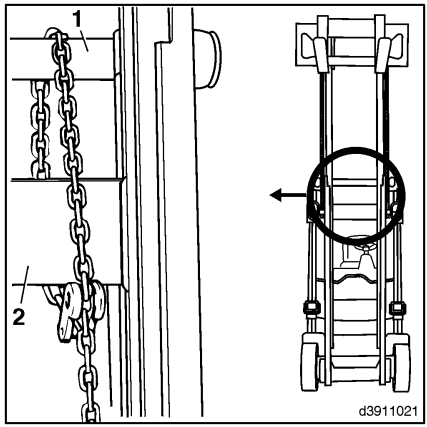
⚠ DANGER

Check chain load!

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

- ➢ Extend the lift mast.

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



Remember that there are hose lines on the cross traverse for the outer mast.

➢ Lower inner mast to end of chain.

Duplex lift mast

NOTE

The benefit of this design is that full advantage is taken of the special free lift height even in very low spaces (cellars, wagons, ships).

FUNCTION: The fork carriage is raised to the special free lift height by the chain guide pulley of the centre cylinder. Here it moves twice as fast as the centre cylinder. The inner mast is then lifted by 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

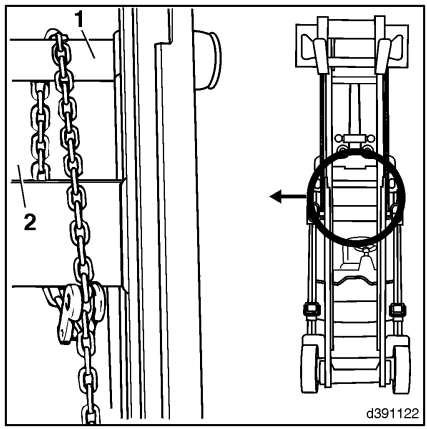
DANGER

Check chain load!

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

➢ Extend the lift mast.

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



Remember that there are hose lines on the cross traverse for the outer mast.

➢ Lower the lift mast to the end of the chain.

➢ Lower fork carriage as far as it will go.

Triplex lift mast

FUNCTION: The fork carriage is raised to the special free lift height by the chain guide pulley of the centre cylinder. Two lift cylinders then raise the inner mast. Once the inner mast is fully extended, two additional lift cylinders raise the middle 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

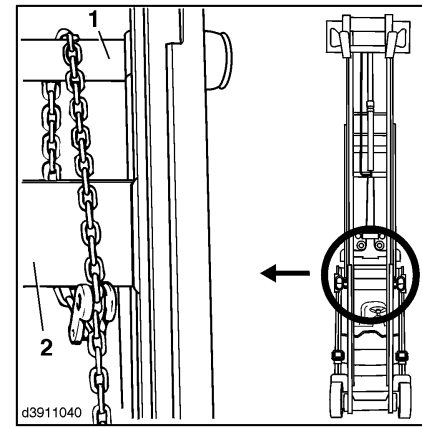
Check chain load!

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

- Extend the lift mast.
- Connect the chain over the cross beam of the outer mast (1) and under the cross beam of the middle mast (2).

Remember that there are hose lines on the cross traverse for the outer mast.

- Lower the lift mast to the end of the chain.
- Lower fork carriage as far as it will go.



Cleaning and spraying the lift mast chain

⚠ DANGER

Lift mast chains are safety elements. Using the incorrect cleaning materials may damage the chains.

Do not use cleaner solvent, chemical cleaners, or fluids that are corrosive or contain acid or chlorine.

If the lift mast chain is so dusty that penetration of the lubricating oil cannot be guaranteed, the chain must be cleaned.

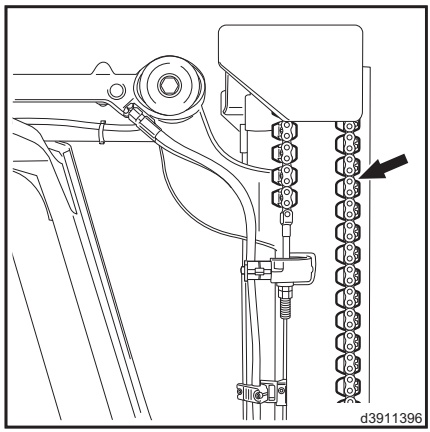
- Place a collection container under the lift mast. ▷
- Clean the lift mast chain with paraffin derivatives, such as benzine.

Take note of the manufacturer's safety information. When cleaning with a steam jet, do not use additives.

- After cleaning, immediately apply compressed air to the chain to remove any water that remains on the surface and in the chain joints.

The chain should be moved several times during this process.

- Immediately apply Linde chain spray to the chain, moving the chain while doing so.



Adjusting the lift mast chain

Standard lift mast

NOTE

The lift mast chain stretches during operation and therefore must be readjusted on the right-hand and left-hand sides.

- Fully lower the lift mast.

➢ Loosen the lock nut (2).

➢ Adjust the chain using the adjustment nut (1) of the chain anchor.

The lower guide roller of the fork carriage must only protrude a maximum of 25 mm from the inner mast guide rail.

➢ Tighten the locknut (2).

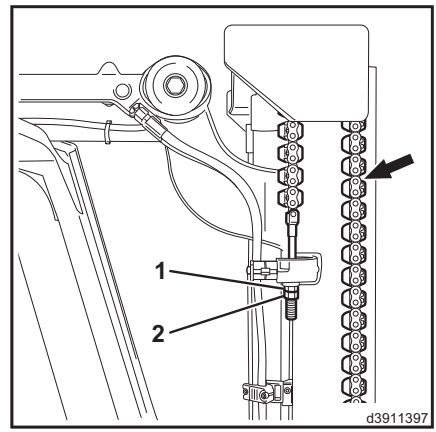
➢ Also adjust second chain.

⚠ CAUTION

When extending the lift mast, it must not touch the end stops.

Fully extend the lift mast and check the clearance to the end stops.

▷



Applying chain spray

NOTE

Chain spray must not be used on trucks that are used in the food production sector. Instead, use a low-viscosity oil approved for use in the food industry.

➢ Apply Linde chain spray to the guide surfaces and chain.

Duplex lift mast or triplex lift mast

NOTE

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

➢ Lower the lift mast and fork carriage completely.

➢ Loosen the lock nut (4). Adjust the chain using the adjustment nut (3) of the chain anchor.

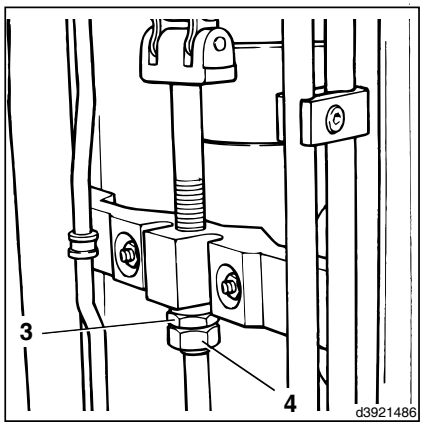
The lower guide roller of the fork carriage must only protrude a maximum of 25 mm from the inner mast guide rail.

➢ Tighten the locknut (4).

⚠ CAUTION

When extending the lift mast, it must not touch the end stops.

Fully extend the lift mast and check the clearance to the end stops.



Applying chain spray

NOTE

Chain spray must not be used on trucks that are used in the food production sector. Instead, use a low-viscosity oil approved for use in the food industry.

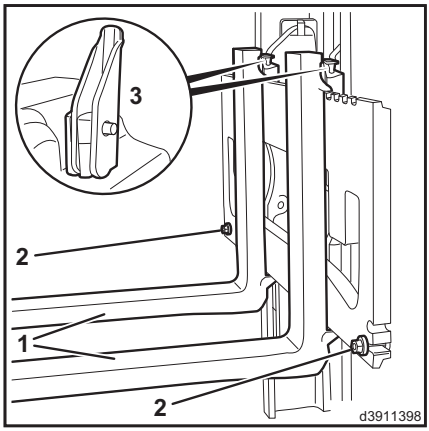
➢ Apply Linde chain spray to the guide surfaces and chain.

Checking the fork arms and arm safety devices

➢ Check the fork arms (1) for visible deformation, wear and damage.

➢ Check that the screws (2) on the arm safety device and fork arm latch (3) are properly positioned and show no signs of damage.

➢ Replace faulty parts.



Checking and lubricating the sideshift (special equipment)

ENVIRONMENT NOTE

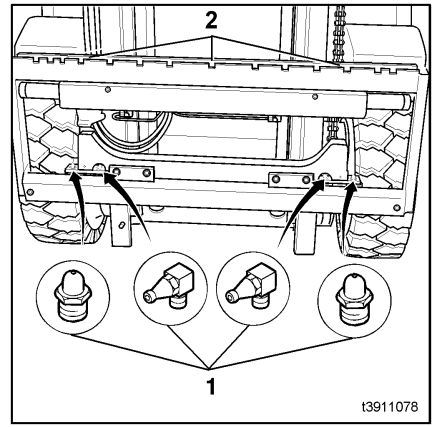
Observe information regarding the use of consumables.

- Check the hydraulic lines for abrasion spots and replace them if necessary.
- Check the hydraulic connections and mounting elements for secure attachment and wear. Tighten or replace them as necessary.
- Check the cylinder for damage and leak tightness.

NOTE

Grease the sideshift after each cleaning procedure. Use lubricating grease as set out in the recommendation for consumables. It is better to apply a little grease to the bearing points frequently than a lot of grease infrequently.

- Move the fork arms so that the four lubricating nipples (1) can be accessed.
- Lower the sideshift until the fork arms touch the ground.
- Apply lubricating grease to the lubricating nipples (1) for the support rollers on the fork carriage, until grease escapes at the side.
- Apply lubricating grease to the lubricating nipples (2) for the wear strips on the fork carriage at the top until grease escapes at the side.



Checking and lubricating the fork prong positioner (special equipment)

ENVIRONMENT NOTE

Observe information regarding the use of consumables.

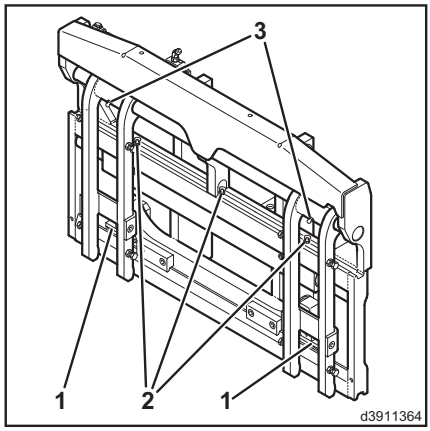
- Check the hydraulic lines for abrasion spots and replace them if necessary.
- Check the hydraulic connections and mounting elements for secure attachment and wear. Tighten or replace them as necessary.
- Check the cylinder for damage and leak tightness.

NOTE

Grease the fork prong positioner after each cleaning procedure. Use lubricating grease as set out in the recommendation for consumables. It is better to apply a little grease to the sliding blocks frequently than to apply a lot of grease infrequently.

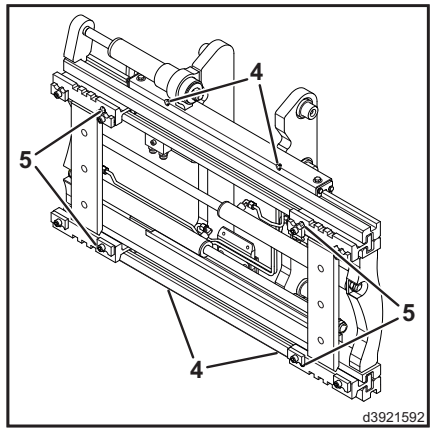
Variant 1:

- Move the fork arms so that the lubricating nipples can be accessed.
- Lower the fork prong positioner until the fork arms touch the ground.
- Apply lubricating grease to the lubricating nipples (1) for the support rollers on the fork carriage, until grease escapes at the side. ▷
- Apply lubricating grease to the lubricating nipples (2) for the wear strips on the fork carriage at the top until grease escapes at the side.
- Apply lubricating grease to the lubricating nipples (3) for the slide guides until grease escapes at the side.



Variant 2:

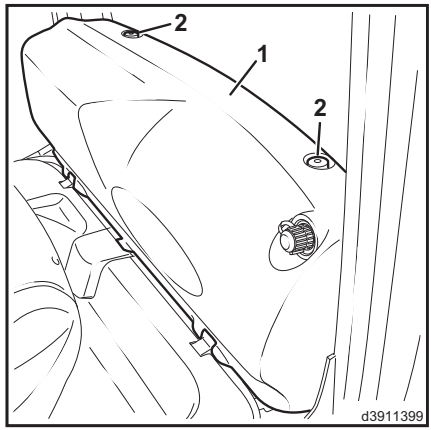
- Move the fork arms so that the lubricating nipples (4) can be accessed. ▷
- Lower the fork prong positioner until the fork arms touch the ground.
- Apply lubricating grease to the lubricating nipples (4) for the wear strips on the fork carriage at the top and bottom until grease escapes at the side.
- Apply lubricating grease to the lubricating nipples (5) for the wear strips on the guides at the top and bottom until grease escapes at the side.



Self-help

Opening the cover to the electrical system

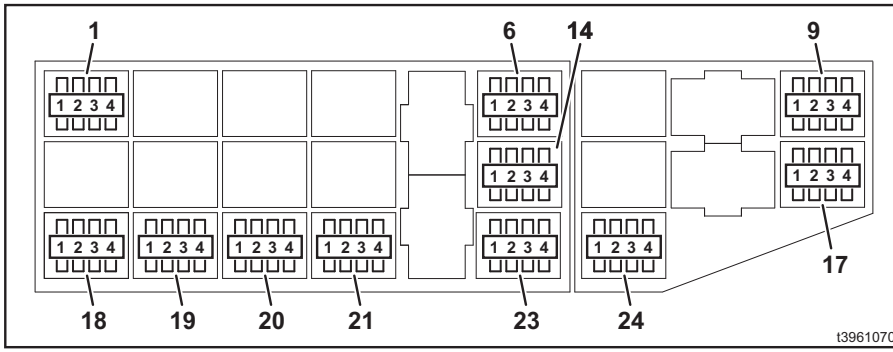
Fuses are fitted to protect the electrical system. The fuse box can be accessed once the cover (1) to the electrical system has been removed. ▷



- Unscrew the two hexagon socket screws (2) from the top of the cover.
- Remove the cover (1).
- Open the cover on the fuse box.

Fuses for basic equipment and for special equipment

Checking or replacing fuses



1.1 Terminal connection (6F3)*, 10 A
1.2 External weighing system (terminal 30) (6F4)*, 10 A
1.3 Camera system (terminal 15) (9F101)*, 5 A
1.4 Front LED light stripes, light colour: white (5F46)*, 10 A or
front / rear LED light stripes, light colour: white / red (5F47)*, 10 A
6.1 Working spotlight positions 3 and 4 (5F2)*, 15 A (when one 7.5-A headlight is fitted)
6.2 Working spotlight positions 5 and 6 (5F3)*, 15 A (when one 7.5-A headlight is fitted)
6.3 Working spotlight, position 7 and 8 (5F4)*, 15 A (when one 7.5 A headlight is fitted) and / or
rear LED light stripes, light colour: white (5F4)*, 15 A
6.4 Rear window heating (9F5)*, 20 A
9.1 Display unit (terminal 30) (F5), 5 A
9.2 Display unit (terminal 15) (F6), 5 A
9.3 Signal horn (F7), 15 A
9.4 Traction control/lift control (terminal 15) (F8), 5 A
14.1 12-V socket (9F10)*, 15 A
14.2 Heating system/air conditioning (9F9)*, 20 A
14.3 Seat heater (9F6)*, 20 A
14.4 Flashing beacon, rotating beacon, BlueSpot™ and TruckSpot™ (4F3)*, 7.5 A
17.1 Traction control/lift control (terminal 30) (F9), 15 A
17.2 Terminal 50 (F10), 5 A
17.3 Engine control unit (F11), 7.5 A
17.4 Engine control unit (F12), 10 A
18.1 Left-hand headlight (5F8)*, 7.5 A
18.2 Right-hand headlight (5F9)*, 7.5 A
18.3 Left-hand sidelights (5F10)*, 5 A
18.4 Right-hand sidelights (5F11)*, 5 A
19.1 Lighting/working spotlight, positions 1 and 2 (5F5/5F1)*, 15 A
19.2 Hazard warning system (5F6/5F13)*, 10 A
19.3 Brake light (5F7)*, 5 A
19.4 Interior light (5F12)*, 5 A
20.1 Windscreen wiper (9F1)*, 5 A
20.2 Front windscreen wiper (9F2)*, 10 A
20.3 Rear and roof windscreen wiper (9F3)*, 10 A
20.4 Wash pumps (9F4)*, 10 A
21.1 Radio (terminal 30) (9F7)*, 5 A
21.2 Radio (terminal 58) (9F8)*, 10 A
21.3 Reverse travel (4F1)*, 10 A
21.4 Truck data management (6F1)*, 5 A
23.1 Not assigned
23.2 Not assigned
23.3 Not assigned
23.4 Blower for toothed belt sealing (0F1)*, 10 A or
Time-delayed lighting off (F17)*, 5 A
24.1 Linde Safety Pilot (LSP) assistance system (F13)*, 5 A
24.2 Terminal 58 (F14), 5 A
24.3 Terminal 15 (F15), 10 A
24.4 3. Auxiliary hydraulics (F16)*, 5 A

* Special equipment

Main fuses in the engine compartment

Checking or replacing fuses

➢ Open the bonnet.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

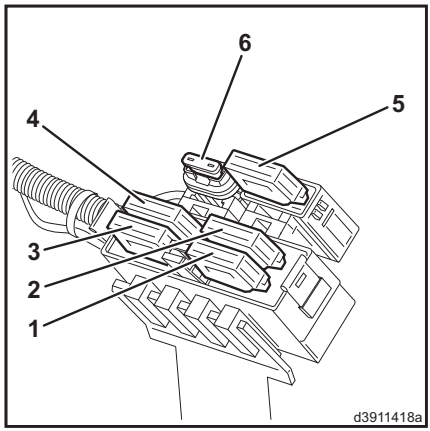
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

➢ Open the fuse box covers.

▷



In the engine compartment, fuses protect the following current circuits:

- Fuse (F1) (1) for ignition system supply, 20 A
- Main fuse (F2) (2) for entire electrical system, 40 A
- Main fuse (F3) (3) for all special equipment, 70 A
- Fuse (F4) (4) for fan motor, 30 A
- Fuse (9F11) (5) for air conditioning (special equipment), 30 A
- Fuse (6F2) (6) for battery main switch (special equipment), 2 A

➢ Close the covers and bonnet.

Diagnostic connector

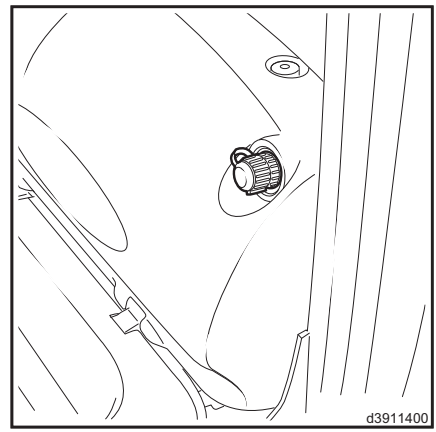
The purpose of the diagnostic connector is to:

- Carry out truck diagnostics
- Read in and read out truck data
- Change settings
- Reset or change maintenance intervals

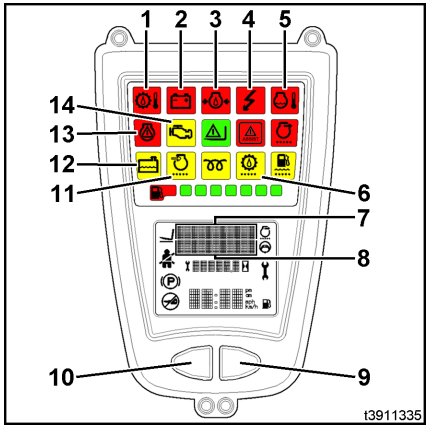
⚠ CAUTION

A laptop, diagnostic program and specialist knowledge are required for this work.

Contact your service partner.



Fault displays



⚠ CAUTION

Damage to or destruction of truck components!

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

➢ The engine must be switched off immediately and the fault must be dealt with.

To scroll through error messages, press the function key (9) or the reset button (10).

To switch off the buzzer, press the reset button (10).

(1) Hydraulic oil temperature indicator H1 (red)	
Function	**Remedy**
- Lights up if the maximum permissible temperature is reached. A buzzer also sounds if the temperature limit is exceeded. When the "Engine protection"***)** function is activated: - Truck moves at creep speed (approx. 2 km/h). - Display: error code in the text field (7) or (8).	Insufficient oil in the hydraulic oil circuit. Check the hydraulic oil level. Top up as necessary.
	Incorrect oil used. Contact your service partner.
	Oil filter clogged. Contact your service partner.
	Radiator dirty. Clean the radiator.

(2) Charging indicator H2 (red)	
Function	**Remedy**
- Lights up if there are generator malfunctions.	V-ribbed belt tension too slack or v-ribbed belt torn. Contact your service partner.
	Cable faulty. Contact your service partner.
	Three-phase generator or cut-out relay faulty. Contact your service partner.
	Short circuit at output D+ of the display unit. Contact your service partner.

(3) Engine oil pressure indicator/engine oil level indicator H3 (red)	
Function	**Remedy**
- Lights up and buzzer sounds when the oil pressure is too low. - If the oil level is too low, the text field (7) or (8) also shows `Oil` with a double arrow pointing downwards. When the "Engine protection"***)** function is activated: - Truck moves at creep speed (approx. 2 km/h) - Display: error code in the text field (7) or (8) when the oil pressure is too low. - Display: error code in the text field (7) or (8) and `Oil` with double arrow pointing downwards when the oil level is too low.	Engine oil level too low. Top up engine oil.
	Engine oil pressure too low. Top up engine oil. If the problem persists, contact your service partner.
	Incorrect engine oil used. Contact your service partner.
	Engine too hot. Contact your service partner.
	Leaks in lubrication system. Contact your service partner.

(4) Electrical controller fault H4 (red)	
Function	**Remedy**
- Lights up when an electrical fault is present. - Display: error code in the text field (7) or (8). - Truck moves at creep speed (approx. 2 km/h) or is at a standstill.	Contact your service partner.

(5) Engine coolant temperature indicator H5 (red)	
Function	**Remedy**
- Lights up if the maximum permissible temperature is reached. A buzzer also sounds if the temperature limit is exceeded. When the "Engine protection"***)** function is activated: - Truck moves at creep speed (approx. 2 km/h) - Display: error code in the text field (7) or (8).	Cooling fluid level too low. Top up the cooling fluid.
	Radiator dirty. Clean the radiator.
	Fan motor faulty. Contact your service partner.
	Thermal switch or coolant pump faulty. Contact your service partner.
	Leaks in the cooling circuit. Contact your service partner.

(6) Hydraulic oil microfilter indicator H9 (yellow) (special equipment)	
Function	**Remedy**
- Lights up when the pressure filter is excessively clogged.	Contact your service partner.

Self-help

(11) Air filter vacuum indicator H7 (yellow)	
Function	**Remedy**
- Lights up when the air filter is excessively clogged. When the "Engine protection"***)** function is activated: - Truck moves at creep speed (approx. 2 km/h) - Display: error code in the text field (7) or (8).	Contact your service partner.

(12) Coolant level indicator H6 (yellow)	
Function	**Remedy**
- Lights up when the coolant level is below the minimum. When the "Engine protection"***)** function is activated: - Truck moves at creep speed (approx. 2 km/h) - Display: error code in the text field (7) or (8).	Top up coolant.

(13) Warning light for gas system H11 (red)	
Function	**Remedy**
- Lights up if an error is detected in the gas shortage shut-down device.	Close the gas shut-off valve on the gas cylinder or gas tank and wait until the engine stops running. Do **not** continue to operate the truck. Contact your service partner.

NOTE

- *If the warning light (13) illuminates after the ignition is switched on and the error light (14) flashes at the same time, an error has occurred in the gas shortage shut-down device. Close the gas shut-off valve on the gas cylinder or on the gas tank. Do **not** continue to operate the truck. Contact your service partner.*
- *If the warning light (13) and error light (14) are simultaneously illuminated after the engine has been started, an error has occurred in the gas shortage shut-down device. Close the gas shut-off valve on the gas cylinder or on the gas tank. Do **not** continue to operate the truck. Contact your service partner.*

(14) Engine malfunction error light H14 (yellow)	
Function	**Remedy**
- Lights up if, after starting the engine, an error is detected by or stored in the engine control unit. - Flashes when the ignition is "ON" and the engine is "OFF" if there is an error stored in the engine control unit.	Contact your service partner.

***) The "Engine protection" function can be switched off using the diagnostic program.** Contact your service partner.

Malfunctions, causes and remedies: Gas engine

Engine fails to start	
Possible cause	**Remedy**
The shut-off valve on the LPG cylinder or on the gas tank is closed.	Open the shutoff valve.
The LPG cylinder or gas tank is empty.	Change the LPG cylinder and fill the gas tank.
Temperature of LPG in tank too low.	Warm the gas system and lines with hot water. Do not use open flame or hot air.
Electromagnetic gas shut-off valve does not open.	Fuse defective, replace fuse. If the problem persists, contact your service partner.
Gas filter blocked.	Contact your service partner.
The display unit does not light up.	Contact your service partner.
Break in ignition circuit. Spark plugs damp (condensation water). Spark plugs defective, electrode gap too large. Spark plugs oily due to defective piston rings or worn pistons.	Contact your service partner.

Engine starts but does not run smoothly at idling speed.	
Possible cause	**Remedy**
Engine oil level too high.	Drain oil until oil level is at upper dipstick mark.
Electric speed control adjusted.	Contact your service partner.
Engine components worn.	Contact your service partner.

Engine oil pressure too low. Switch off engine immediately.	
Possible cause	**Remedy**
Oil level too low	Top up with engine oil.
Leaks in lubrication system.	Contact your service partner.

Engine does not run smoothly or misfires.	
Possible cause	**Remedy**
Spark plugs failing to fire.	Contact your service partner.
Spark plug connectors defective.	Contact your service partner.
Gas supply too low or blocked.	Contact your service partner.
Gas-air mixture is too lean.	Contact your service partner.

Once warmed up, engine does not run smoothly at idling speed.	
Possible cause	**Remedy**
Idling speed set incorrectly.	Contact your service partner.

Engine pinks under load.	
Possible cause	**Remedy**
Unsuitable LPG.	Use LPG specified.
Ignition timing too early.	Contact your service partner.

Malfunctions, causes, remedies: ultrasonic sensor

No display possible.	
Possible cause	**Remedy**
Supporting surface dirty.	Carefully clean the supporting surface.
No display at the fuel gauge.	Position the LPG cylinder correctly or check the LPG cylinder to establish whether there is a welding seam or adhesive label near the sensor; remove if necessary.

Incorrect value displayed.	
Possible cause	**Remedy**
Maximum forklift truck tilt exceeded.	Drive the forklift truck away from the sloping ground. Switch the ignition on and off.
Partially filled gas bottle fitted.	Fit a full gas bottle.
Different bottle diameter or gas mixture used.	Either use the correct bottle or recalibrate the sensor.

Engine cuts out although the fuel gauge shows there is still fuel.	
Possible cause	**Remedy**
Gas bottle mounted crookedly.	Place the gas bottle in the correct position and secure it
Partially filled gas bottle fitted.	Fit a full gas bottle.

Malfunctions, causes and remedies: Hydraulic system

Abnormal noise	
Possible cause	**Remedy**
Leaking suction lines, oil foaming.	Seal the lines. Check the hydraulic oil level, top up if necessary.
Incorrect oil viscosity, too little oil in tank.	Note the specified viscosity. Top up hydraulic oil. Replace the hydraulic oil.
Clogged suction filter.	Change the filter.
Hydraulic pump damage or engine damage and faulty seals causing air intake.	Contact your service partner.

No pressure or too little pressure in the system.	
Possible cause	**Remedy**
Hose line or pipe line broken or leaking.	Replace the line or seal the line.
Oil temperature warning is displayed.	Check the hydraulic oil level, clean the hydraulic oil cooler.
Pump faulty, leakage loss, pressure valves do not close, valve seat damaged.	Contact your service partner.

Oil pressure fluctuation.	
Possible cause	**Remedy**
Lift mast does not extend completely.	Top up hydraulic oil.
For cause, see Abnormal noise.	See: Abnormal noise.
Pressure relief valve or feed pressure valves seized up.	Contact your service partner.
Lift cylinders and tilt cylinders show friction points.	Contact your service partner.

No or too little supply flow.	
Possible cause	**Remedy**
Hose line or pipe line broken or leaking.	Replace the line or seal the line.
Hydraulic system overheating.	Check hydraulic oil level, use prescribed hydraulic oil if necessary, clean the hydraulic oil cooler.
Pump faulty, leakage loss, pressure valves do not close, valves damaged.	Contact your service partner.

Self-help

Hydraulic oil temperature too high.	
Possible cause	**Remedy**
Too little oil in the tank or oil cooler clogged.	Check the hydraulic oil level; top up the hydraulic oil if necessary. Clean the hydraulic oil cooler and check for leakages; if faults are found, contact your service partner.
Pump damage.	Contact your service partner.

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.

⚠ WARNING

Beware of hot engine and exhaust components.

Wear protective equipment.

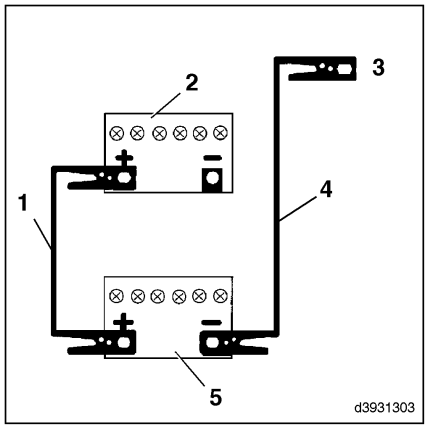
⚠ WARNING

When the engine is hot, the fan may start automatically.

Do not touch rotating parts.

Self-help

- 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, abort the starting process after 10 seconds and try again after around 30 seconds.

- Once the engine is running, first disconnect the negative cable (4) from the engine block (3), and then from the current-giving battery (5).
- First disconnect the positive cable (1) from the current-giving battery (5), then from the discharged battery (2).
- Close the bonnet.

Switching off

Placing the forklift truck into storage

Measures to be implemented before shutdown

If the truck is to be shut down for a period longer than two months, e.g. for operational reasons, it must only be stored in a well-ventilated, clean and dry room that is free of frost. The following measures must be implemented:

- Clean forklift truck thoroughly.
- Raise the fork carriage several times to the end stop.
- Tilt the lift mast forwards and backwards repeatedly and actuate the attachment repeatedly, if applicable.
- 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.
- Tightly close the shut-off valve on the LPG cylinder or gas tank.
- Empty the gas pipes by starting the engine.
- Remove the gas bottle.
- Coat all unpainted mechanical components with a thin film of oil or grease.
- Lubricate the truck.
- Disconnect the battery.
- Check the condition of the battery.
- Lubricate battery terminals with acid-free grease. (Follow the battery manufacturer's instructions.)
- Spray all exposed electrical contacts with a suitable contact spray.
- Jack up the truck so that all wheels are off the ground.

This will prevent permanent deformation of the tyres.

NOTE

Do not cover with plastic film, as this will encourage water condensation to form and collect.

NOTE

If the truck is to be decommissioned for more than six months, further measures must be agreed with your service partner.

Recommissioning after storage

- Clean forklift truck thoroughly.
- Lubricate the truck.
- Connect the battery.
- Clean the battery and lubricate battery terminals with acid-free grease
- Check the condition of the battery and recharge if necessary.
- Check the engine oil for condensation water and replace if necessary.
- Check the hydraulic oil for condensation water and replace if necessary.
- Perform the same service work as when the truck was first commissioned.
- Fit the gas bottle and connect it in accordance with instructions.
- Put forklift truck into service.

Disposal of old trucks

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

We therefore recommend having this work carried out in an approved recycling plant. If you would like to carry out this work yourself, you must obtain approval from the relevant authorities as per articles 9, 10 and 11 of directive 75/442/EEC.

In addition, the following minimum requirements must be observed:

- The locations in which old trucks are stored before treatment must be areas suited to this task with impervious surfaces. These areas are also to be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials
- The locations for treatment must be areas suited to this task with impervious surfaces. These areas must also be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials. Suitable storage areas must be available for disassembled and partially oil-smeared parts, as well as for tyres including fire protection measures. Suitable storage tanks for fluids such as fuel, AdBlue® (urea solution), engine oil, hydraulic oil, cooling fluid and fluids from air conditioning systems must also be provided
- In order to dispose of harmful substances from the old trucks, the batteries and LPG container must be removed. The following must also be removed, collected and stored separately: fuel, AdBlue® (urea solution), engine oil, cooling fluid, hydraulic oil and fluids from air conditioning systems
- The following parts are to be collected separately and recycled: catalytic converters, metal components containing copper and aluminium, tyres, large plastic components (consoles, fluid containers) and glass

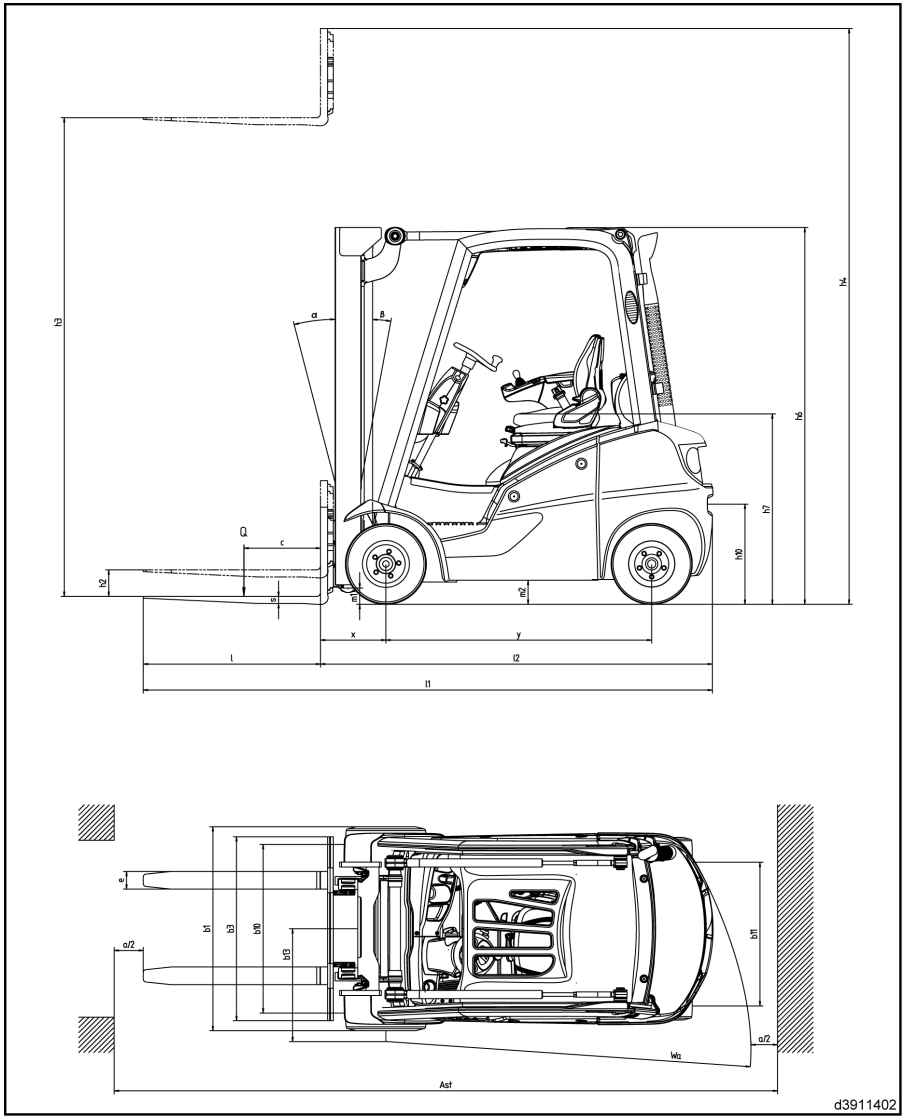
NOTE

The operating company is responsible for adherence to the directives as well as additional country-specific regulations.

6

Technical data

Overview of dimensions



Overview of type sheets (LPG)

All data refers to standard equipment with standard lift masts.
All data must be observed without fail.

1 Key data				
1.1	Manufacturer			Linde
1.2	Manufacturer's type designation	H14		H14T
		H16		H16T
		H18		H18T
		H20		H20T
		H20/600		H20T-CT/600
1.3	Drive			LPG
1.4	Operation			Seated
1.5	Load capacity/load	H14	Q [kg]	1400
		H16	Q [kg]	1600
		H18	Q [kg]	1800
		H20, H20/600	Q [kg]	2000
1.6	Load centre of gravity	H14, H16, H18, H20	c [mm]	500
		H20/600	c [mm]	610
1.8	Load distance	H14, H16	x [mm]	365
		H18	x [mm]	370
		H20, H20/600	x [mm]	374
1.9	Wheelbase	H14, H16	y [mm]	1500
		H18	y [mm]	1540
		H20, H20/600	y [mm]	1600

2 Weight				
2.1	Net weight	H14	kg	2565
		H16	kg	2725
		H18	kg	2895
		H20	kg	3085
		H20/600	kg	3175

Overview of type sheets (LPG)

2 Weight				
2.2	Axle load with front/rear load	H14	kg	3450 / 515
		H16	kg	3780 / 545
		H18	kg	4120 / 575
		H20	kg	4440 / 645
		H20/600	kg	4575 / 600
2.3	Axle load without front/rear load	H14	kg	1240 / 1325
		H16	kg	1255 / 1470
		H18	kg	1300 / 1595
		H20	kg	1350 / 1735
		H20/600	kg	1355 / 1820

3 Wheels, chassis frame				
3.1	Tyres: solid rubber, super elastic, pneumatic, polyurethane	H14, H16, H18, H20		Super elastic
		H20/600		Super elastic cushion tyres
3.2	Front tyre size	H14, H16, H18		18x7-8
		H20		200/50-10
		H20/600		18x7x12 1/8
3.3	Rear tyre size	H14, H16, H18, H20		18x7-8
		H20/600		18x6x12 1/8
3.5	Number of wheels, front/rear (x = driven)			2x / 2
3.6	Front track width[1]	H14, H16, H18	b_{10} [mm]	930
		H20	b_{10} [mm]	945
		H20/600	b_{10} [mm]	914
3.7	Rear track width	H14, H16, H18, H20	b_{11} [mm]	873
		H20/600	b_{11} [mm]	851

[1] Depending on the tyre variant, the track width may deviate from the specified value.

4 Basic dimensions				
4.1	Lift mast/fork carriage tilt, forwards/backwards[2]		α/β (°)	6.0 / 9.0
4.2	Height with lift mast retracted[3]		h_1 [mm]	2197
4.3	Free lift		h_2 [mm]	150
4.4	Lift		h_3 [mm]	3150
4.5	Height with lift mast extended		h_4 [mm]	3755
4.7	Height above overhead guard (cab)		h_6 [mm]	≈2125
4.8	Seated height/standing height		h_7 [mm]	1067
4.12	Coupling height		h_{10} [mm]	≈550
4.19	Total length	H14, H16	l_1 [mm]	3112
		H18	l_1 [mm]	3152
		H20, H20/600	l_1 [mm]	3231
4.20	Length including fork back	H14, H16	l_2 [mm]	2212
		H18	l_2 [mm]	2252
		H20, H20/600	l_2 [mm]	2331
4.21	Total width	H14, H16, H18	b_1/b_2 [mm]	1086
		H20	b_1/b_2 [mm]	1152
		H20/600	b_1/b_2 [mm]	1092
4.22	Fork arm dimensions	H14, H16	s/e/l [mm]	40 x 80 x 900
		H18, H20, H20/600	s/e/l [mm]	45 x 100 x 900
4.23	Fork carriage according to ISO 2328, class/form A, B			2 A
4.24	Fork carriage width		b_3 [mm]	980
4.31	Ground clearance with load under lift mast		m_1 [mm]	≈95
4.32	Ground clearance at centre of wheelbase		m_2 [mm]	≈120
4.33	Aisle width for pallet 1000x1200 cross-wise	H14, H16	A_{st} [mm]	3570
		H18	A_{st} [mm]	3611
		H20, H20/600	A_{st} [mm]	3695

[2] The lift height and equipment may change the backwards tilt.

[3] With 150 mm free lift on standard lift mast.

Overview of type sheets (LPG)

4 Basic dimensions				
4.34	Aisle width for pallet 800x1200 length-wise	H14, H16	A_{st} [mm]	3770
		H18	A_{st} [mm]	3811
		H20, H20/600	A_{st} [mm]	3895
4.35	Turning radius	H14, H16	W_a [mm]	2005
		H18	W_a [mm]	2041
		H20, H20/600	W_a [mm]	2121
4.36	Smallest pivot point distance	H14, H16, H18	b_{13} [mm]	600
		H20, H20/600	b_{13} [mm]	638

5 Performance data				
5.1	Driving speed with/without load		km/h	20 / 20
5.2	Lifting speed with/without load	H14, H16, H18	m/s	0.60 / 0.63
		H20, H20/600	m/s	0.54 / 0.57
5.3	Lowering speed with/without load		m/s	0.57 / 0.57
5.5	Pulling force with/without load	H14	N	12,900 / 9500
		H16	N	12,900 / 9600
		H18	N	12,900 / 10,000
		H20, H20/600	N	12,900 / 10,400
5.7	Climbing capability with/without load	H14	%	35 / 38
		H16	%	32 / 36
		H18	%	29 / 35
		H20	%	27 / 35
		H20/600	%	26 / 34
5.9	Acceleration time with/without load	H14	s	4.7 / 4.2
		H16	s	4.9 / 4.3
		H18	s	5.0 / 4.5
		H20	s	5.1 / 4.6
		H20/600	s	5.2 / 4.7
5.10	Service brake			Hydrostatic

7 Drive/engine				
7.1	Engine manufacturer/model			VW/BEF
7.2	Engine power rating in accordance with ISO 1585		kW	28
7.3	Nominal speed		rpm	2100
7.4	Number of cylinders/displacement		cm^3	4 / 1984
7.5	Fuel consumption in accordance with VDI cycle	H14	kg/h	2.0
		H16	kg/h	2.1
		H18	kg/h	2.2
		H20	kg/h	2.3
		H20/600	kg/h	2.4

8 Other			
8.1	Traction controller type		Hydrostatic/continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	38
8.4	Noise level at the driver's ear	dB (A)	73
8.5	Tow coupling, type/model		DIN 15170-H

Overview of type sheets (CNG)

All data refers to standard equipment with standard lift masts.
All data must be observed without fail.

1 Key data				
1.1	Manufacturer			Linde
		H16		H16CNG
		H18		H18CNG
		H20		H20CNG
		H20/600		H20CNG-CT/600
1.3	Drive			CNG
1.4	Operation			Seated
		H16	Q [kg]	1600
		H18	Q [kg]	1800
		H20, H20/600	Q [kg]	2000
1.6	Load centre of gravity	H16, H18, H20	c [mm]	500
		H20/600	c [mm]	610
1.8	Load distance	H16	x [mm]	365
		H18	x [mm]	370
		H20, H20/600	x [mm]	374
1.9	Wheelbase		y [mm]	1600

2 Weight				
		H16	kg	2815
		H18	kg	2930
		H20	kg	3125
		H20/600	kg	3215
		H16	kg	3720 / 695
		H18	kg	4080 / 650
		H20	kg	4440 / 685
		H20/600	kg	4575 / 640

2 Weight				
		H16	kg	1255 / 1560
		H18	kg	1300 / 1630
		H20	kg	1350 / 1775
		H20/600	kg	1355 / 1860

3 Wheels, chassis frame				
3.1	Tyres: solid rubber, super elastic, pneumatic, polyurethane	H16, H18, H20		Super elastic
		H20/600		Super elastic cushion tyres
3.2	Front tyre size	H16, H18		18x7-8
		H20		200/50-10
		H20/600		18x7x12 1/8
3.3	Rear tyre size	H16, H18, H20		18x7-8
		H20/600		18x6x12 1/8
3.5	Number of wheels, front/rear (x = driven)			2x / 2
3.6	Front track width[4]	H16, H18	b_{10} [mm]	930
		H20	b_{10} [mm]	945
		H20/600	b_{10} [mm]	914
3.7	Rear track width	H16, H18, H20	b_{11} [mm]	873
		H20/600	b_{11} [mm]	851

4 Basic dimensions			
4.1	Lift mast/fork carriage tilt, forwards/backwards[5]	α/β (°)	6.0 / 9.0
4.2	Height with lift mast retracted[6]	h_1 [mm]	2197
4.3	Free lift	h_2 [mm]	150
4.4	Lift	h_3 [mm]	3150
4.5	Height with lift mast extended	h_4 [mm]	3755
4.7	Height above overhead guard (cab)	h_6 [mm]	≈2125
4.8	Seated height/standing height	h_7 [mm]	1067
4.12	Coupling height	h_{10} [mm]	≈550

4 Depending on the tyre variant, the track width may deviate from the specified value.

5 The lift height and equipment may change the backwards tilt.

6 With 150 mm free lift on standard lift mast.

Overview of type sheets (CNG)

4 Basic dimensions				
4.19	Total length	H16	l_1 [mm]	3222
		H18	l_1 [mm]	3227
		H20, H20/600	l_1 [mm]	3231
4.20	Length including fork back	H16	l_2 [mm]	2322
		H18	l_2 [mm]	2327
		H20, H20/600	l_2 [mm]	2331
4.21	Total width	H16, H18	b_1/b_2 [mm]	1086
		H20	b_1/b_2 [mm]	1152
		H20/600	b_1/b_2 [mm]	1092
4.22	Fork arm dimensions	H16	s/e/l [mm]	40 x 80 x 900
		H18, H20, H20/600	s/e/l [mm]	45 x 100 x 900
4.23	Fork carriage according to ISO 2328, class/form A, B			2 A
4.24	Fork carriage width		b_3 [mm]	980
4.31	Ground clearance with load under lift mast		m_1 [mm]	≈95
4.32	Ground clearance at centre of wheelbase		m_2 [mm]	≈120
4.33	Aisle width for pallet 1000x1200 cross-wise	H16	A_{st} [mm]	3686
		H18	A_{st} [mm]	3691
		H20, H20/600	A_{st} [mm]	3695
4.34	Aisle width for pallet 800x1200 length-wise	H16	A_{st} [mm]	3886
		H18	A_{st} [mm]	3891
		H20, H20/600	A_{st} [mm]	3895
4.35	Turning radius		W_a [mm]	2121
4.36	Smallest pivot point distance		b_{13} [mm]	638

5 Performance data				
5.1	Driving speed with/without load		km/h	20 / 20
5.2	Lifting speed with/without load	H16, H18	m/s	0.60 / 0.63
		H20, H20/600	m/s	0.54 / 0.57
5.3	Lowering speed with/without load		m/s	0.57 / 0.57

5 Performance data				
		H16	N	12,900 / 9600
		H18	N	12,900 / 10,000
		H20, H20/600	N	12,900 / 10,400
		H16	%	32 / 36
		H18	%	29 / 35
		H20	%	27 / 35
		H20/600	%	26 / 34
		H16	s	4.9 / 4.3
		H18	s	5.0 / 4.5
		H20	s	5.1 / 4.6
		H20/600	s	5.2 / 4.7
5.10	Service brake			Hydrostatic

7 Drive/engine				
7.1	Engine manufacturer/model			VW/CBSA
7.2	Engine power rating in accordance with ISO 1585		kW	30
7.3	Nominal speed		rpm	2100
7.4	Number of cylinders/displacement		cm^3	4 / 1984
		H16	m^3/h of H-gas	2.9
		H18	m^3/h of H-gas	3.05
		H20	m^3/h of H-gas	3.2
		H20/600	m^3/h of H-gas	3.3

8 Other			
8.1	Traction controller type		Hydrostatic/continuously variable
8.2	Working pressure for attachments	bar	170
8.3	Oil volume for attachments	l/min	38
8.4	Noise level at the driver's ear	dB (A)	73
8.5	Tow coupling, type/model		DIN 15170-H

Lift mast data model 181

The lift mast data applies to standard equipment with solid rubber tyres and a fork carriage. All data must be observed without fail.

Standard lift mast (in mm)					
Overall heights when retracted with specified free lift	h 1	H 14/16/18/20	2196	2546	2746
Free lift	h 2	H 14/16/18/20	150	150	150
Lift	h 3	H 14/16/18/20	3150	3850	4250
Overall height when extended	h 4	H 14/16/18/20	3713	4413	4813

Duplex lift mast (in mm)					
Overall heights when retracted with specified free lift	h 1	H 14/16/18/20	2121	2471	—
Free lift	h 2	H 14/16/18/20	1518	1868	—
Lift	h 3	H 14/16/18/20	3145	3845	—
Overall height when extended	h 4	H 14/16/18/20	3727	4427	—

Triplex lift mast (in mm)					
Overall heights when retracted with specified free lift	h 1	H 14/16/18/20	2121	2471	—
Free lift	h 2	H 14/16/18/20	1518	1781	—
Lift	h 3	H 14/16/18/20	4625	5475	—
Overall height when extended	h 4	H 14/16/18/20	5227	6077	—

Tyre variants and rim sizes

⚠ WARNING

Effect on load capacity.

Only the tyres and rims named here may be used. The specified air pressure must be maintained in pneumatic tyres.

Tyre variants

Single tyre on the drive axle					
	Super-elastic solid rubber tyres			**Pneumatic tyres**	
H 14 / 16 / 18	18x7-8 (180x70 R8)	Supere-lastic		18x7-8 /16 PR (180x70 R8/16 PR)	10.0 bar
	18x7x12 1/8	Solid cushion		18x7 R8-XZM (180x70 R8-XZM)	10.0 bar
H 14 / 16 / 18 / 20	200/50-10	Supere-lastic			
	18x7x12 1/8	Solid cushion			

Steering axle tyres					
	Super-elastic solid rubber tyres			**Pneumatic tyres**	
H 14 / 16 / 18	18x7-8 (180x70 R8)	Supere-lastic		18x7-8 /16 PR (180x70 R8/16 PR)	10.0 bar
	18x6x12 1/8	Solid cushion		18x7 R8-XZM (180x70 R8-XZM)	10.0 bar
H 14 / 16 / 18 / 20	18x7-8 (180x70 R8)	Supere-lastic			
	18x6x12 1/8	Solid cushion			

Rim sizes

Rim size	Tyre size
4.33R-8	18x7-8 (180x70 R8)
308	18x6x12 1/8
308	18x7x12 1/8
6.50F-10	200/50-10

Noise emission values

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

Sound pressure level in the driver's compartment			
H 14 T, H 16 T, H 16 CNG, H 18 T, H 18 CNG, H 20 T, H 20 CNG	L_{PAZ}	=	73.0 dB (A)
In the LIFT operating status	L_{Pa}	=	74.4 dB (A)
In the IDLING operating status	L_{Pb}	=	61.3 dB (A)
In the DRIVE operating status	L_{Pc}	=	77.5 dB (A)
Uncertainty	K_{PA}	=	4 dB (A)

Sound power level			
H 14 T, H 16 T, H 16 CNG, H 18 T, H 18 CNG, H 20 T, H 20 CNG	L_{WAZ}	=	88.1 dB (A)
In the LIFT operating status	L_{WA}	=	88.9 dB (A)
In the IDLING operating status	L_{Wb}	=	73.0 dB (A)

Sound power level			
In the DRIVE operating status	L_{Wc}	=	93.0 dB (A)
Uncertainty	K_{WA}	=	4 dB (A)

Guaranteed sound power level			
In accordance with 2000/14/EC Directive	L_{WA}	=	95.3 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 comparison value for different fork lift trucks. The value is less suitable for determining real environmental impact levels, as it is not representative for normal truck 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.

Characteristic values for body vibrations

The values were determined according to EN 13059 using trucks with standard equipment according to the data sheet (driving over test course with humps).

Specified vibration characteristic in accordance with EN 12096		
Measured vibration characteristic	$a_{W,ZS}$	< 0.5 m/s^2

Specified vibration characteristic for hand-arm vibrations	
Vibration characteristic	< 2.5 m/s^2

NOTE

The characteristic value for body vibrations cannot be used to determine the actual vibration load during operation. This depends on the application conditions (state of the roadway, method of operation etc.) and must therefore be determined on site, where appropriate. The hand-arm vibrations must be specified even if the values do not indicate any hazard, as in this case.

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Linde Material Handling GmbH

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