

1252 series Electric Forklift Truck

Operating Instructions

E20, E25, E30, E35 X20, X25, X30, X35 North America

1252 series 12528011540 US - 08/2022 - 02



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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 percent lower than those of their competitors.

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Linde trucks are sold in North America by:

KION North America Corporation 2450 West 5th North Street Summerville, S.C. 29483 Phone (843) 875-8000 FAX (843) 875-8329



Parts and service

See your Linde dealer for genuine Linde parts (the only factory-authorized replacements), factory-trained service personnel and manuals for your equipment.

Proposition 65

▲ WARNING

This warning is provided pursuant to California Health & Safety Code Sections 25249.5 et. seq.

This product contains and emits chemicals known to the state of California to cause cancer, birth defects and other reproductive harm.

FCC Compliance

This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by KION North America Corporation could void the user's authority to operate the equipment.

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Introduction

Unde Material Handling Linde

Scope

Scope

This manual contains operating and periodic maintenance instructions as well as specifications for the industrial truck to which it applies. If this manual applies to a trailer or other towed equipment, then operation or maintenance of the towing vehicle is outside the scope of this manual. Important safety rules and descriptions of some operating hazards and how to avoid them are also included. The manual is intended to assist the owner and operators in maximizing safety and efficiency in material handling while achieving maximum product life. It describes how to correctly and safely operate and maintain the truck and all standard variants available at the time of printing. Special designs, special attachments, or other custom modifications carried out by the manufacturer to meet specialized customer reguests are not covered in this manual.

This manual is not a training manual and is not to be used as the basis for formal training. It is intended to supplement such training with information specific to this truck as well as applicable good practices and safety rules which may be general in nature. This manual cannot address every possible hazard or potential accident situation. Ultimately it is the re-

sponsibility of the owner and operator(s) of the equipment to avoid or correct such potential dangers.

To assist in keeping the truck in good operating condition, a separate section devoted to maintenance is included in this manual. This section contains a list of items to be checked daily by the operator. It also has a schedule for maintenance procedures to be performed at regular intervals by those responsible for truck maintenance. All of these procedures are essential for safe operation and maximum. service life of the truck. Scheduled maintenance tasks or repairs must only be performed by qualified forklift technicians. Details and instructions for performing such work are outside the scope of this manual. This information is covered in the applicable service manual available from authorized dealers.

The descriptions and specifications included in this manual were in effect at the time of printing. KION North America Corporation reserves the right to make improvements and changes without notice and without incurring obligation. Please check with your authorized dealer for information on possible updates or revisions.

Obligations of the Equipment Owner

The Occupational Safety and Health Administration (O.S.H.A.) requires employers of industrial truck operators to adhere to a number of regulations regarding operation. These regulations are codified in section 1910.178 of title 29 of the Code of Federal Regulations. This section establishes a number of specific rules pertaining to truck operation, inspection and maintenance, and areas of use. It is up to the owner to ensure that use and maintenance of any powered industrial truck is consistent with these rules.

In addition, 29 CFR 1910.178 describes required operator training in detail. It requires employers to establish and maintain a training program to ensure that all operators of powered industrial trucks are competent and

trained in the safe and proper operation of powered industrial trucks.

Many of the rules set forth in 29 CFR 1910.178 are based on the American National Standards Institute's (ANSI/ITSDF) B56 standards. The owner should be familiar with 29 CFR 1910.178 as well as the ANSI/ITSDF B56 standards. Other federal standards may apply depending on specific industry. Owners should also be aware of any state OSHA rules that may differ from the federal rule. This equipment meets all applicable requirements of the ANSI/ITSDF B56 standards at time of manufacture. 29 CFR 1910.178 prohibits any modifications and/or additions which affect capacity or safe operation of industrial trucks without prior written approval of the



Operator Responsibilities

manufacturer. An owner should consult the authorized dealer if the owner's intended application for a truck is inconsistent with the designated performance characteristics of that truck. KION North America Corporation will not assume, and expressly disclaims, any lia-

bility for injuries or damages arising from or caused by unauthorized modification, removal, disconnection or disengagement of any part from any of its trucks. It is recommended that all replacement parts be of OEM (Original Equipment Manufacturer) origin.

Operator Responsibilities

It is the responsibility of the operator to operate any powered industrial truck in a safe manner. In order to do this, all operators must have completed training in the safe operation of powered industrial trucks. Operators must know and understand all general safety rules as well as any safety information specific to the environment in which they will be working. They must then practice these safe operating procedures whenever using a truck.

In addition, all operators must be familiar with the specific truck they use. Therefore they must be familiar with the procedures for correct and safe operation explained in this manual. They must understand the potential hazards and safety precautions covered in the manual. This manual however, cannot cover all possible hazards. Operators must be able to identify any hazards that may exist or arise in their work environment and know how to avoid or correct them

Finally, operators are responsible for identifying and reporting any truck that is in unsafe condition. They must know how to inspect the truck they operate and they must perform this inspection before placing a truck in service each day. Operators must not operate a truck found to be damaged or malfunctioning.

Proper use

The truck is designed for lifting, transporting and stacking palletized or other stable loads. The maximum load to be lifted is specified on the truck data plate. The truck is not designed or intended to lift personnel.

The truck may be operated outdoors or in buildings only on surfaces that are flat and stable. Transporting of loads (in the lowered position) on inclines and ramps is permitted if the incline surface is flat and stable. Lifting of loads or transport of elevated loads is prohibited on inclines and ramps. If the truck is operated on public roads it must be equipped with

lights and any other devices as required by state or local law. If the truck is to be operated in refrigerated storage areas, it must be equipped with an optional cold storage package suitable for the specific application. (Not available on all models.) A truck must not be operated in any hazardous environment unless the truck carries the designation appropriate for that environment per 29 CFR 1910.178. It is the responsibility of the owner to ensure the safety of all operating areas and surfaces and to restrict the truck to the uses and areas for which it is designed and rated.

Hazard messages

Hazard symbols and messages are placed in this manual and on the truck to provide instructions and identify specific areas where potential hazards exist and special precautions should be taken. Operators must understand the meaning of these symbols and messages.

sages. Damage to the truck, as well as serious injury or death to the operator or others may result if the instructions conveyed by these symbols and messages are not followed.

1 Introduction



Hazard messages

A CAUTION

Indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury.

WARNING

Indicates a potentially hazardous situation which if not avoided could result in death or serious injury.

A DANGER

Indicates an imminently hazardous situation which if not avoided will result in death or serious injury.



Indicates further information presented to ensure clarification of a particular item



ENVIRONMENT NOTE

The information contained herein must be observed, otherwise environmental damage may occur.

Safety

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Before Operation

Before Operation

Before using the truck, inspect the work area. It should be neat, well lit, adequately ventilated, and free from hazardous material. Aisles and roadways should be unobstructed and well marked

Operators must know the UL classification for the truck and use the truck only in permissible areas.

Ensure that there are no loose objects on the truck or in the operator compartment, especially on the floor plate where they could interfere with pedal operation (if equipped) or foot room.

Fire extinguishers and other emergency equipment should be visible and easy to reach. Wear safety equipment when required. Don't smoke in "No Smoking" areas, or while charging batteries or refueling combustion engine trucks.

Never operate the truck with greasy hands. This will make the controls slippery and result in loss of truck control.

Any questions or concerns about safety should be brought to the attention of a supervisor. If an accident should occur, it must be reported immediately.

WARNING

Unauthorized modifications to the truck can result in injury or death.

Do not remove, disable or modify any safeguards or other safety devices. These include any alarms, lights, mirrors, overhead guards, and load backrest extensions. If present, an overhead guard is intended to provide protection to the operator from falling objects. but cannot protect from every possible impact.

Operator Daily Checklist

At the beginning of each shift, inspect your truck by using the **Linde Operator's Daily Checklist**. If necessary, refer to the Maintenance section of this manual for details on how to carry out this inspection. Check for damage and maintenance problems. Any necessary repairs must be completed before the truck is operated. In addition to daily inspection, scheduled maintenance is vital to safe operation of the truck. Adhere to the inspection, lubrication and maintenance schedule given in the Maintenance section of this manual.



Any repairs or maintenance to the truck must be performed only by trained and authorized technicians.

Cho	ick iny	Serial Number: Dept / Shift: leter reading: Date: each of the following items before the start of each shift		_	Supervisor:
ofa	rry				
		cordingly. Explain below as necessary.	wards !	the t	r supervisor and/or maintenance department front, and then the right side. After checking, mai Circle problem and explain below.
o K	N R	VISUAL INSPECTION		N R	
П	П	Oil Spots on Floor (check for leaks on truck)		т	Unusual Noise (during any of the operational che-
П	Г	Rear Tire(s) (pressure if applicable, wear, cuts, embedded		Г	Emergency Battery Disconnect) (check operation
Ш		objects, rim damage, loose/missing lug nuts)		Г	Gauges and Instrumentation (check operation)
		Steer Axle (check for damage, debris)			Battery Charge (fully charged)
		Overhead Guard (damage, bends, cracks, looseness)			Seat Switch (If equipped) (check operation)
Ш		Seat & Seat Belt (check operation, damage, worn/torn		┖	Directional Switch (if equipped) (operates freely)
Ш		belt, loose fasteners)			Forward Driving (accelerates, steers, brakes smo
ш	_	Steering Wheel (check for wear, damage)		Ш	Plugging (stops, changes direction smoothly)
ш	_	Hood Latch (check operation, latches securely)		┖	Reverse Driving (accelerates, steers, brakes amo
ш	_	Hydraulic Oil (check level)	\vdash	┺	Service Brake (check operation)
ш	_	Front Tire (left) (tire condition, rim damage, etc)		┺	Parking Brake (check operation)
ш	_	Tilt Cylinder (left) (damage, leaks, loose fittings)		ш	Hydraulic Controls (operate freely, return to neutro
ш	_	Mast (damage, wear, cracks, loose fasteners) Lift Cylinders (damage, leaks, loose fittings)	<u> </u>	┺	out function (if equipped) operates properly)
ш	L	Lift Cylinders (damage, leaks, loose littings) Lift Chains (wear, corrosion, cracks, loose leaves, even	- ⊢	┺	Attachment (if equipped) (check operation)
Ш		Lift Chains (wear, corrosion, cracks, loose leaves, even tension)	\vdash	╄	Mast (extend fully, binding, leaks, roughness, noise
Н	Н	Carriage/Load Backrest (damage, looseness, bends.		ш	Hydraulic Oil (excessive noise when mast is fully is indication of low hydraulic oil)
Ш		cracks)	\vdash	+	Horn (sounds when button pressed)
Н	Н	Forks/Attachment (damage, cracks, excess wear,	\vdash	۰	Backup Alarm (if equipped) (sounds in reverse)
Ш		twisted, bent)	\vdash	+	Travel Alarm (if equipped) (sounds in reverse)
Н	Н	Fork Locking Pins (check operation, holds fork secure)	\vdash	+	Work, Strobe, Flashing Lights (if equipped)
Н	Н	Tilt Cylinder (right) (damage, leaks, loose fittings)		ш	operation)
Н	Н	Front Tire (right) (fire condition, rim damage, etc.)	\vdash	+	
Н	Н	Battery Connectors & Cables (damage, cracks, pitting)	\vdash	۰	
Н	Н	Battery Retention (installed correctly, secure)	\vdash	+	
Н	Т	Battery Case & Vent caps (damage, cracks, loose,	\vdash	1	
Ш		missing)	\vdash	т	
П	П	Warning Decats/Operator's Manual (in place, legible)		т	
	П	Data Plate / Capacity Plate (in place, legible)		Т	
П					



Operating position

Operating position

Face the truck when mounting and dismounting. Maintain a three-point contact, one foot and two hands with the truck when mounting or dismounting. Never exit a moving truck.

The normal operating position is defined as being seated on the seat with the seat belt fastened and hands and feet inside the operator's compartment on or near the controls.

A WARNING

Risk of injury!

Operate the truck only when you are in the normal operating position. Always keep hands and feet inside the operators compartment. during operation. Keep hands, feet and legs out of the upright.

Pedestrians

Watch out for pedestrians. Always yield the right-of-way to pedestrians. Do not drive the truck up to anyone standing in front of a rack or fixed object. Do not pass another truck travelling in the same direction at an intersection, blind spot or other dangerous location. Sound the horn at intersections and other locations where vision is obstructed. Always look in the direction of travel.

Never engage in stunt driving or horseplay. Use lights in dark and dim areas. Always ensure that there are no pedestrians in the truck's rear swing area before turning. Watch for pedestrians around the truck.

A DANGER

Risk of injury!

Watch for people in your work area because they may not watch for you, even if you have lights or alarms.

WARNING

Risk of injury!

Do not place yourself between the mast and the body of the truck. Do not use the mast as a ladder. Do not transport personnel at any time. Do not lift personnel using the forks of the truck, or with a work platform. The truck is not designated to lift personnel.

Travel

WARNING

Risk of injury!

Do not walk under raised forks at any time.



110107 04

WARNING

Risk of injury!

Do not transport personnel at any time. Do not lift personnel using the forks of the truck, or with a work platform. The truck is not designed to lift personnel.



110107 05

Travel

The truck is designed for operation on smooth, dry surfaces such as warehouse and factory floors, loading docks or paved areas. Under all travel conditions operate the truck at a speed that will permit it to be brought to a stop in a safe manner. Avoid running over loose objects on the roadway surface.

A WARNING

Loss of control!

Do not travel at excessive speeds; keep your truck under control at all times.

Travel with the forks near the floor, tilted back to cradle any load whenever possible. Never begin travel before the mast is fully



Lifting and Lowering

lowered and tilted into travel position. Never raise the mast during travel. During travel, always watch for overhead obstructions such as lights, wiring, pipes, sprinkler systems, doorways, etc.

When travelling in reverse, always turn around to face the direction of travel and ensure a direct view in the direction of travel. Do not rely on mirrors when travelling in reverse.

When handling bulky loads that restrict your vision, operate the truck in reverse to improve visibility. Unstable loads are a hazard to you and to your fellow workers. Make certain that all loads are secured and evenly positioned on the forks.

Do not move railroad cars or trailers with this truck, or use it to operate or close railroad car doors.

Lifting and Lowering

Always ensure there is adequate overhead clearance before raising the forks. Before lifting any load or retrieving one from an elevated location, make certain that the load is stable and evenly positioned on the forks. Never lift a load with one fork.

Use extreme care when maneuvering loads into or out of storage locations. Never turn the truck while maneuvering with the forks raised. Always check for mast or carriage hang-up

before manueuvering out of any storage location with or without a load on the forks.

WARNING

Attempting to move the truck if the lift chains become slack can result in injury from carriage free-fall.

Always raise the forks before you move. Watch for slack chain condition. Slack chains indicate that the mast or carriage is hung-up. Do not attempt to repair this yourself, always get a trained mechanic.

Inclines, Ramps, Docks, Elevators

If you must travel on an incline, do so with caution. Do not operate truck on a wet incline.

Keep the forks **upgrade** to maintain control when travelling up or down an incline with a **loaded** truck

Keep the forks **downgrade** when travelling up or down an incline with an **empty** truck.

A DANGER

Tip-over will occur if you turn while travelling on a ramp or travel at an angle other than straight up or straight down a ramp.

Never turn on an incline or ramp either loaded or unloaded. Travel straight up or straight down.

Be aware that when descending an incline your stopping distance will be greater than when on a level surface. Reduce your speed, and ensure that there is adequate clear space at the bottom of the ramp to stop and turn.

To avoid hazards associated with a dock, you should personally check that the trailer brakes

have been applied, wheel chocks are in place, and that any trailer-to-dock locking systems are being utilized. The impact of moving in and out of a trailer may cause the trailer to creep or move. Confirm that the driver will not move the trailer until you are done.

Do not drive the truck onto an elevator without specific authorization. Verify that the capacity of the elevator exceeds the weight of the truck and the weight of the load. Approach elevators slowly and ensure that the elevator car is level with the floor before entering. Enter elevators squarely with the load end leading. Ensure that no part of the truck or load contacts any part of the elevator other than the floor. Once on the elevator, neutralize the truck controls, shut off the power, and set the brakes. Any other personnel should leave the elevator before the truck is allowed to enter or leave.

Be especially cautious when driving the truck on ramps or bridge plates. Be sure to maintain a safe distance from each edge. Before driving the truck over a ramp or bridge plate,



Avoiding Falls and Tip-overs

verify that its position is secured to prevent movement. Never exceed the rated capacity of a ramp or bridge plate.

Avoiding Falls and Tip-overs

Lift truck tip-overs can cause serious injury or death. Following all safety rules when operating a lift truck is the best way to prevent injury.

- Never exceed the lifting capacity listed on the data plate.
- Extreme caution should be taken when working around docks, dock boards and trailers.
- Travel with the load or forks close to the ground and tilted back. Watch for overhead obstructions. Perform all truck movements smoothly and at a speed that will give you time to react in an emergency.
- An unloaded truck can tip over also. Caution must be taken when using an unloaded truck as well as a loaded one.
- · Never travel with mast extended.
- Never turn while travelling on a ramp or incline
- Never travel up or down an incline at an angle to the incline direction. Always travel straight up or straight down any ramp or incline.

Lateral tip-over can occur with a combination of speed and sharpness of turn. This condition of instability is even more likely with an unloaded truck. With the load raised, lateral tip-over can occur while turning and/or braking when travelling in reverse or accelerating and turning while travelling forward. Lateral tip-over can occur loaded or unloaded on a ramp. Longitudinal tip-over can occur with a combination of overloading and load elevated. This condition is even more likely with forward tilt, braking in forward travel, accelerating rearward or mast extended.

A WARNING

Jumping from the truck during a tip-over can result in severe injury or death.

If the truck starts to tip over, DO NOT JUMP!

Stay in the seat, hold onto the steering wheel tightly, brace feet, and lean away from the direction of impact.

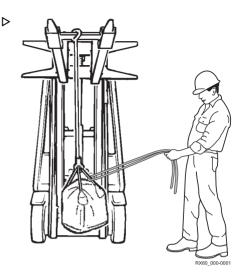


Suspended Loads

Suspended Loads

Traveling with suspended loads on cable or chain can induce swinging.

- · Swinging of loads can cause truck tip over.
- · Avoid suspending loads if possible.
- · If necessary carry suspended loads low.
- Use a partner with a rope or tether to stop swinging.
- · Operate truck slowly.



Parking

When you are finished with the truck, observe proper shutdown procedures.

- · Never park on a grade.
- Always come to a complete stop before leaving truck.
- · Place travel controls in neutral.
- Lower forks fully to the floor. If the forks can be tilted, tilt them forward.
- If the truck has a manual parking brake, apply it.
- · Turn the truck off.
- If the truck has a key switch and the operator is more than 25 ft (7.5 m) away, or out of sight of the truck, the key should be removed

WARNING

Failure to properly shut down the truck may allow inadvertent movement and result in a collision.

Never park on a grade. Ensure the parking brake is applied and turn the truck off. On trucks with a direction switch, always place it in neutral.

WARNING

Improper parking can interfere with emergency response.

Do not block stairways, main passageways or emergency routes. Do not block access to fire or emergency equipment.



Battery Safety

Battery Safety

WARNING

Batteries contain dissolved sulfuric acid, which is poisonous and caustic. Batteries also can produce explosive gases.

Remain aware of the following information.

- Wear protective equipment (protective apron and gloves) and protective glasses when working with battery acid. If clothing, skin or eyes come into contact with battery acid, immediately flush the affected areas with water. If acid contacts the eyes, seek medical attention at once. Clean spilled battery acid immediately with large amounts of water.
- Remove any metal rings, bracelets, bands, or other jewelry before working with or near batteries or electrical components.
- Never expose batteries to open flame or sparks.

- Areas in which batteries are stored or charged must be well ventilated to prevent concentration of explosive gases.
- If a battery is charged while installed in the truck, the battery cover must remain completely open during the entire charging period
- Shorting of battery terminals can cause burns, electrical shock, or explosion. Do not allow metal parts to contact the top surface of the battery. Make sure all terminal caps are in place and in good condition.
- Batteries may only be charged, serviced, or changed by properly trained personnel. Always follow all instructions provided by the manufacturers of the battery, charger, and forklift truck.



Safety During Maintenance

Safety During Maintenance

Personnel Qualifications

Only qualified personnel authorized by the owner are permitted to perform maintenance or repair work. All items listed in the Scheduled Maintenance Charts must be performed by qualified forklift technicians only. They must have knowledge and experience sufficient to assess the condition of a forklift truck and the effectiveness of the protective equipment according to established principles for testing forklift trucks. Any evaluation of safety must

be unaffected by operational and economic conditions and must be conducted solely from a safety standpoint.

Daily inspection procedures and simple maintenance checks, e.g. checking the hydraulic oil level or checking the fluid level in the battery, may be performed by operators. This does not require training as described above.

Hazardous Substances

Oils



WARNING

Oils are flammable!

- Always comply with applicable legal regulations.
- Do not allow oil to come into contact with hot engine parts.
- Do not smoke in areas where oils are used or stored.



WARNING

Oils are toxic!

- Avoid skin contact, inhalation, or ingestion.
- If oil mist or vapors have been inhaled, seek fresh air.
- If oil comes into contact with the eyes, flush thoroughly (at least 10 minutes) with water and then seek medical assistance.
- If oil is swallowed, do not induce vomiting. Seek medical assistance immediately.



▲ WARNING

Prolonged intensive contact with the skin can result in loss of natural skin oils and irritate the skin.

- Avoid skin contact.
- Wear protective gloves, long sleeves, and eye protection.
- If oil contacts the skin, wash the affected area with soap and water.
- Change oil-soaked shoes or clothing immediately.

WARNING

Spilled oil presents a risk of slipping, particularly when combined with water.

Immediately treat spilled oil with an oil binding agent, and then dispose of it according to local regulations.



ENVIRONMENT NOTE

All oils are potent contaminants of water.

- Recycle used oil if possible.
- Always store oil in appropriate containers.
- · Avoid spills.
- Spilled oil should be removed with oil-binding agents at once and disposed of according to local regulations.
- If recycling is not possible, dispose of used oil according to local regulations.



Safety During Maintenance

Pressurized Hydraulic Oil

WARNING

Like other oils, hydraulic oil is flammable, toxic, and a skin irritant.

- > Do not allow hydraulic fluid to come into contact with hot motor parts.
- > Avoid inhalation or skin contact of hydraulic oil.
- Refer to the safety information under "Oils".

WARNING

Hydraulic oil is pressurized during operation of the forklift truck and may remain pressurized after shut down. An escaping stream of pressurized hydraulic oil can cause serious injury.

- > If pressurized hydraulic oil is found to be escaping from the truck, shut down the truck immediately and have the leak repaired before returning the truck to service.
- > Only trained service personnel should attempt to repair any portion of the hydraulic system.
- > Do not allow hydraulic fluid to come into contact with the skin.
- > Avoid inhaling spray or mist created by escaping hydraulic oil.
- > Penetration of pressurized fluids into the skin is particularly dangerous if these fluids escape at high pressure due to leaks in the hydraulic system. In case of such injury, immediate medical assistance is required.
- To help prevent injury, use appropriate personal protective equipment (e.g. protective gloves, long sleeves and industrial goggles).

ENVIRONMENT NOTE

Hydraulic oil is a potent contaminant of water.

- Recycle used hydraulic oil if possible.
- Always store hydraulic oil in appropriate containers.
- Avoid spills.
- Spilled hydraulic oil should be removed with oil-binding agents at once and disposed of according to local regulations.
- If recycling is not possible, dispose of used hydraulic oil according to local regulations.

Battery Acid



WARNING

Battery acid contains dissolved sulfuric acid. This is toxic.

- Avoid contact and consumption.
- In case of injury, seek medical advice immediately.



WARNING

Battery acid contains dissolved sulfuric acid. This is corrosive.

- > When working with battery acid, always wear protective clothing and eye protection.
- > Do not allow any acid to get onto clothing or skin or into the eves: if this does happen, rinse immediately with plenty of clean water.
- > In case of injury, seek medical advice immediately.
- Immediately rinse away spilled battery acid with plenty of water.



ENVIRONMENT NOTE

Dispose of used battery acid according to local regulations.



Operator warning decals

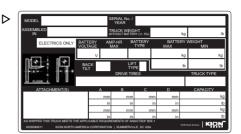
Data plate

The data plate is designed to inform personnel of truck capacity and other important truck specifications. The operator should locate, read, and understand the data plate prior to using the forklift truck.

A DANGER

Risk of tip-over.

Never attempt to lift a load greater than the maximum capacity listed on this plate.



Parking brake warning decal

This decal reminds operators to engage the parking brake lever whenever it is necessary to set the parking brake as it is not automatically applied.



Voltage decals

These decals indicate the proper battery voltage for the truck's electrical system. Using a battery of wrong voltage could damage the truck.

>



Linde Material Handling Linde

Operator warning decals

Operator warning decal

This decal lists a number of fundamental safety points that are crucial to safe operation. Operators must understand these items and remain aware of them during truck operation.

AWARNING

SIT-DOWN RIDER TRUCK OPERATOR WARNINGS

- CHECK YOUR TRUCK The truck should be checked daily before being placed in service. If found to be in need of repair, defective, or in any way unsafe it should be reported immediately to the proper authority and removed from service until restored to a safe operating condition.
- KNOW YOUR TRÜCK Do not operate this truck unless you have been trained and authorized to do so. Read all warnings and instructions in the Operator's manual on this truck; or obtain them from plant Safety Director or the locall inde representative.
- KEEP INSIDE Operate truck only when you are in the normal operating
 position and seated in the operator's seat. Never place any part of your body
 into the mast structure, between the mast and the truck, or outside the truck. Do
 not carry passengers.
- PROTECT YOURSELF Do not operate truck without overhead guard.
 SEAT BELT MAKE SURE YOUR SEAT BELT IS FASTENED BEFORE.
- SEAT BELT MAKE SURE YOUR SEAT BELT IS FASTENED BEFORE OPERATING THE TRUCK.
- 6. LATERAL TIPOVER Can occur loaded or unloaded by a combination of speed and sharpness of turn. SLOW DOWN BEFORE TURNING. With the mast raised, lateral tipover also can occur by turning and/or braking when moving rearward, turning and/or accelerating forward or turning on an incline or ramp. TRAVEL WITH THE MAST LOWERED. The potential for lateral tipover will be further increased by overloading, excessive rearward tilt or off-center positioning of the load. Don't risk injury or death. Drive smart.
- LONGITUDINAL TIPOVER Can occur by driving with the load down slope on an incline or ramp, overloading, excessive forward tilt or aggressive braking when moving forward or accelerating rearward with the mast elevated. TRAVEL WITH THE MAST LOWERED. Don't risk injury or death. Drive smart.
- LATERAL OR LONGITUDINAL TIPÓVÉR Can occur if the truck is driven over objects on the floor or ground, off the edge of improved surfaces, or into potholes, or by impacting overhead obstacles or collision with other objects. Don't risk injury or death. Drive smart.
- DON'T JUMP OFF If your truck begins to tip over, DON'T JUMP. Hold the steering wheel tightly, brace feet, and lean away from tip. Stay in the seat to avoid being trapped between the truck and the ground.
 HIGH LOADS - Do not handle loads which are higher than the load backrest
- HIGH LOADS Do not handle loads which are higher than the load backrest or load backrest extension unless load is secured so that no part of it could fall backward.
- 11. STABILIZE YOUR LOAD Do not handle unstable or loosely stacked loads. Use special care when handling long, high, or wide loads to avoid losing the load, striking bystanders, or tipping truck.

- 12. CENTER YOUR LOAD When using forks, space forks as far apart as load will permit. Before lifting, be sure load is centered and forks are completely under load.
- 13. NEVER OVERLOAD Do not overload truck. Check capacity plate for load weight and load center information.
- 14. AVOID SUDDEN MOVEMENTS Start, stop, travel, steer, and brake smoothly. Sudden movements can endanger yourself and others.
- 15. LOOK OVERHEAD Elevate forks or other lifting mechanism only to pick up or stack a load. Lift and lower with mast vertical or slightly back NEVER FORWARD. Watch out for obstructions, especially overhead.
- 16. MINIMUM TILT Operate tilting mechanism slowly and smoothly. Do not tilt forward when elevated except to pick up or deposit a load. When stacking use only enough backward tilt to stabilize load.
- 17. EYES AHEAD Travel with load or lifting mechanism as low as possible and tilted back. Always look in direction of travel. Keep a clear view, and when load interferes with visibility, travel with lifting mechanism trailing (except when climbing ramps).
- 18. CARE ON RAMPS Use special care when operating on ramps, travel slowly, and do not angle or turn. When truck is loaded, travel with load uphill. When truck is empty, travel with lifting mechanism downhill.
- 19. SLOW DOWN Observe applicable traffic regulations. Yield right-of-way to pedestrians. Slow down & sound horn at cross aisles and whenever vision is obstructed.
- 20. WATCH PEOPLE Do not allow anyone to stand or pass under lifting
- 21. WORK PLATFORMS DO NOT LIFT OR CARRY PERSONNEL USING THE FORKS OF THE TRUCK, not even with a work platform. The truck is designed for transporting, warehousing and stacking of material, not personnel.
- 22. SHUT DOWN COMPLETELY Before getting off truck, neutralize travel control, fully lower lifting mechanism and set the parking brake. Shut off power when leaving truck unattended. Block wheels if truck is parked on an incline.
- ENGINE EXHAUST on gas or diesel trucks contains carbon monoxide (CO). Exposure can cause severe injury or death.

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Failure to comply with these warnings will create an unreasonable risk of injury to yourself and others.

Trained operator warning decal

This decal states the requirement that only trained and authorized personnel are to operate truck.



TRAINED AND AUTHORIZED OPERATORS ONLY.

MISUSE OF THIS TRUCK COULD CAUSE INJURY TO YOURSELF OR OTHERS WORKING WITH YOU.

READ INSTRUCTIONS IN OPERATOR'S MANUAL.

0009384608



Test or service warning decal

This decal gives important safety information for personnel servicing or testing the truck.

AWARNING

>

BEFORE PERFORMING ANY TEST OR SERVICE WHICH CALLS FOR TESTING UNDER POWER, JACK THE DRIVE WHEELS OF THE FRUCK OFF THE FLOOR. THE DRIVE WHEELS MUST BE FREE TO TURN. ENSURE THE TRUCK IS SECURELY BLOCKED.

DO NOT USE TEST DEVICES OR SYSTEMS ANALYZERS IN PLACE OF CONTROL BOARDS OR CONTROL MODULES TO DRIVE THE TRUCK. ATTEMPTS TO DRIVE WITH TEST DEVICES OR ANALYZERS ARE HIGHLY DANGEROUS.

Never stand or walk under forks ▷ warning decal

This decal warns personnel not to stand or walk on, or under, the forks at any time. This applies to operators as well as all others.



Do not lift personnel warning decal

This decal states that the operator should never use the forks for lifting personnel for any reason. Even if special work platforms for lifting personnel are available, they are not to be used with this truck to lift personnel.



DO NOT LIFT PERSONNEL USING THE FORKS OF THE TRUCK, NOT EVEN WITH A WORK PLATFORM. TRUCK IS DESIGNED FOR TRANSPORTING, WAREHOUSING AND STACKING OF MATERIAL, NOT PERSONNEL.

000938460



Crushed fingers warning decal

This decal is placed in areas where parts move close together during normal truck operation. The decal warns personnel to keep hands clear of these areas at all times.



No step warning decal

This decal warns personnel of moving parts that are unsafe to step or stand upon.



 \triangleright

Tip-over warning decal

This decal warns operators that tip-over accidents can be avoided by operating the truck as instructed in the operator's manual. Operators are reminded to fasten the seat belt to minimize the risk of injury if a tip-over does occur. This decal also reminds operators to slow down while turning to avoid tip-over. In case of tip-over, the decal instructs operators to stay in the seat, hold onto the steering wheel tightly, brace feet, and lean away from the direction of impact.

WARNING

Jumping from the truck during a tip-over can result in severe injury or death.

If the truck starts to tip over, DO NOT JUMP!

Stay in the seat, hold onto the steering wheel tightly, brace feet, and lean away from the direction of impact.





Back up alarm warning decal

This decal is present if the truck is equipped with a back-up alarm. The decal reminds the operator that the alarm must sound anytime the truck is moving in reverse. It also warns the operator to maintain a clear view in the direction of travel.



THIS VEHICLE IS EQUIPPED WITH A BACK-UP ALARM.

ALARM MUST SOUND!

FAILURE TO MAINTAIN A CLEAR VIEW IN THE DIRECTION OF TRAVEL COULD RESULT IN SERIOUS INJURY OR DEATH.

THE OPERATOR IS RESPONSIBLE FOR THE SAFE OPERATION OF THIS VEHICLE.

Hood latch warning decal

This decal warns operators to ensure that the hood latch is fully engaged before operating the truck.



2 Safety



Operator warning decals

Overview

Linde Material Handling Linde

Technical Description

Technical Description

General

The 1252 series of forklifts are sit-down rider electric counterbalanced models (ITA class 1). The truck is available in two performance versions. The E type designates the standard performance version. the X type designates the optional high performance version. They are designed for handling loads up to:

4000 lbs for E20 (4400 lbs for E20/600H)

5000 lbs for E25, X25, and E25L (5500 lbs for E25/600H and E25/600HL)

6000 lbs for E30, X30 and E30L (6600 lbs for E30/600H and E30/600HL)

7000 lbs for X35, E35L, and E35HL

These capacities are nominal values and are based on a 600 mm load center. They may be downrated depending on mast height and/or attachments. Exact capacity limits for individual vehicles are found on the data plate. E25, and 30 models are available in either a standard, or long (L), and standard or high (H) chassis. E35 is available in a long standard or long high chassis only. The E30/600HL model is available as a beverage handling variant as well.

Drive axle

The drive axle is comprised of two drive motors and two reduction gear units. Both motors and reduction gear units are oriented transversely on a common axis with the gear units to the outside of each motor. Disc brakes are incorporated into the center of the drive axle. The drive motor armatures are contained in a single transverse housing. Power modules for the drive are mounted directly to the housing. The power modules are cooled by cooling fans controlled by the main control module based on temperature sensor signals.

Drive motors

The drive motors are three-phase synchronous reluctance AC motors. The motor housing forms the center of the drive axle. No brushes are used. In E type trucks, the drive motors are rated at 14.7 hp (11 kW). The drive motors in X type trucks utilize permanent magnets in the rotor and are rated at 16.6 hp (12.4 kW).

Hydraulic system

The hydraulic system utilizes fluid pressurized by a hydraulic pump driven by a synchronous reluctance AC pump motor. The pump motor is mounted vertically to a bracket in the chassis. Pressurized hydraulic fluid from the pump is routed to a priority valve which distributes flow between the steering system and working hydraulics based on demand. Working hydraulics are controlled by a three, four, or fivespool proportional hydraulic valve (depending on options) which diverts fluid to power a given hydraulic function when selected by the operator via controls mounted on the armrest. This system enhances smoothness and precision and also allows programmable control over hydraulic function characteristics.

Steering system

The rear-wheel steering system is hydraulically operated and controls the rear wheel angle through a hydraulic cylinder mounted to the steering axle assembly. Positioning of the cylinder is based on steering wheel movement which actuates a proportional valve at the base of the steering column. A steer angle sensor is mounted on the steering axle to signal the main control unit to reduce speed of the inside drive motor during turns.

Brake system

Electrical and mechanical forms of braking are both present. Electric braking utilizes a regenerative feature that activates whenever the travel pedal is released. This provides faster deceleration than simple coasting and puts energy back into the battery that would otherwise be wasted. More severe slowing through regeneration becomes available by depressing the travel pedal that opposes the direction in which the truck is travelling (or



Technical Description

reversing the directional switch on optional single-pedal trucks). This also occurs whenever the foot brake pedal is depressed thereby providing deceleration to supplement the mechanical brake. The degree of deceleration from the regenerative braking function is adjustable through system programming.

Mechanical braking is accomplished through wet-running multi-disc brakes incorporated into the drive axle. These brakes are hydraulically activated through a foot pedal during operation or as parking brake (via an electrohydraulic valve) when the truck is not in use. The parking brake will engage automatically after the truck is stationary for a period of time. It can also be set manually via a switch on the armrest

Masts

Three styles of masts are available with varying height capabilities - simple, dual, and triple.

The simple mast consists of an inner and outer upright and a fork carriage. A pair of lift cylinders raises and lowers the inner upright during lifting and lowering. Lift chains attached to the fork carriage and anchored to the stationary outer upright are routed over pulleys on the inner upright to raise the carriage. This arrangement results in a telescopic relationship between the carriage and mast uprights.

The dual mast maintains the inner and outer uprights of the simple mast. The carriage chains however are anchored to the inner upright and routed over an additional lift cylinder dedicated to raising and lowering the fork carriage only. Hydraulic fluid does not power the mast lift cylinders until the free lift cylinder has reached maximum extension. This establishes a free-lift function that allows the fork carriage to move independently to the top of the uprights before they begin to move. Once the uprights begin to move, the carriage remains

at the tip of the inner upright throughout the remainder of the lift range. The free-lift function allows lifting through the lower part of the lift range in areas where overhead clearance is limited (such as trailers).

The triple mast maintains the inner and outer uprights of the simple and double masts, but has an intermediate upright added for additional height range. An additional pair of lift chains are routed over pulleys on the intermediate upright to raise the inner upright in the same telescopic relationship as with the simple and double masts. Like the dual mast, the carriage chains are anchored to the inner upright and routed over an additional lift cylinder for a free-lift function.

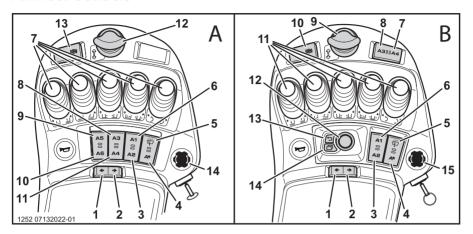
Electrical system

The 1252 utilizes an 80-volt electrical system. E-type trucks utilize a conventional lead-acid industrial battery as standard or can be optionally equipped with a lithium-ion battery. The X type truck requires a Linde lithium-ion battery. Trucks with lithium-ion batteries use 90volt batteries. The components are designed to accommodate the extra voltage. Both drive motors are powered through a dedicated power module. A second power module is dedicated to the hydraulic pump motor. Both power modules regulate current to the motors based on input from a main control unit. The main control unit processes signals from sensors. interlocks, and operator controls and generates the appropriate release and speed signals to the power modules through a CAN bus circuit. A second CAN bus circuit connects the main control unit to the operator display unit as well as a computer connection port. By connecting a laptop computer to this port, vehicle parameters can be set and diagnostic operations performed. A voltage transformer is also present to provide stabilized low voltage as control or reference signals or working power to various devices and sensors.



Armrest Controls

Armrest Controls



A STANDARD DISPLAY

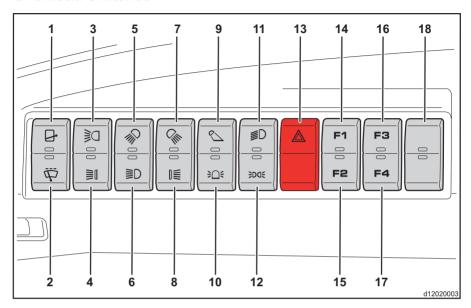
- 1 Left-hand turn signal (optional equipment)
- 2 Right-hand turn signal (optional equipment)
- Push button (A2) for optional equipment
- Push button (A★) for activating combinations of accessory equipment
- 5 Push button for windscreen wiper functions
- 6 Push button (A1) for optional equipment
- 7 Hydraulic control levers
- 8 Push button (A3) for optional equipment
- 9 Push button (A5) for optional equipment
- 10 Push button (A6) for optional equipment
- 11 Push button (A4) for optional equipment
- 12 Direction selector lever (single-pedal trucks only)
- 13 Push button for electric parking brake
- 14 Emergency stop switch

В PREMIUM DISPLAY

- 1 Left-hand turn signal (optional equipment)
- 2 Right-hand turn signal (optional equipment)
- 3 Push button (A2) for optional equipment
- Push button (A★) for activating combinations of accessory equipment
- 5 Push button for windscreen wiper functions
- 6 Push button (A1) for optional equipment
- Push button (A4) for optional equipment 7
- 8 Push button (A3) for optional equipment
- 9 Direction selector lever (single-pedal trucks only)
- 10 Push button for electric parking brake
- 11 Hydraulic control levers
- Rotary-push button for operating the pre-12 mium display unit
- 13 "Back" button for operating the premium display unit
- 14 "Favorite" button for operating the premium display unit
- 15 Emergency stop switch



Overhead Switches



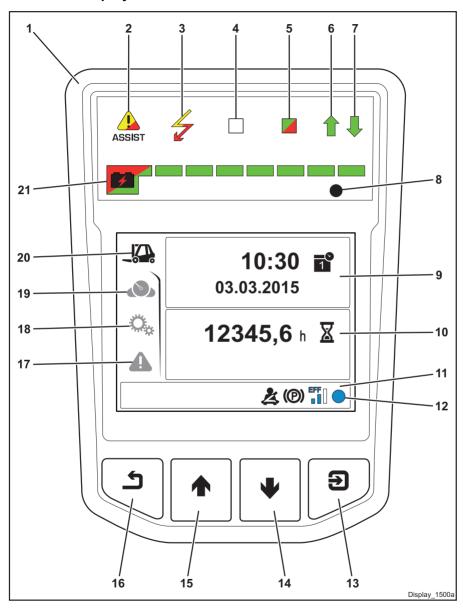
- Push button for windscreen wiper func-
- tions roof panel wiper can be switched on Push button for windscreen wiper func-
- tions speed levels 3 Push button for working spotlights, positions
- 5/6 Push button for front only or front/rear LED 4
- light stripes 5
- Push button for work lights, positions 3/4 6 Push button for work lights, positions 1/2
- Push button for work lights, positions 7/8 Push button for rear LED light stripes

- Push button for floor spot lights
- 10 Not used
- Push button for road lights 11
- Push button for parkign lights (lighting when 12 the truck is switched off)
- 13 Switch for hazard warning lights
- Push button (F1) for optional equipment 14 15
 - Push button (F2) for optional equipment
- 16 Push button (F3) for optional equipment
- 17 Push button (F4) for optional equipment
- 18 Switch for optional equipment



Standard Display Unit

Standard Display Unit





Standard Display Unit

The display unit (1) is mounted on 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.

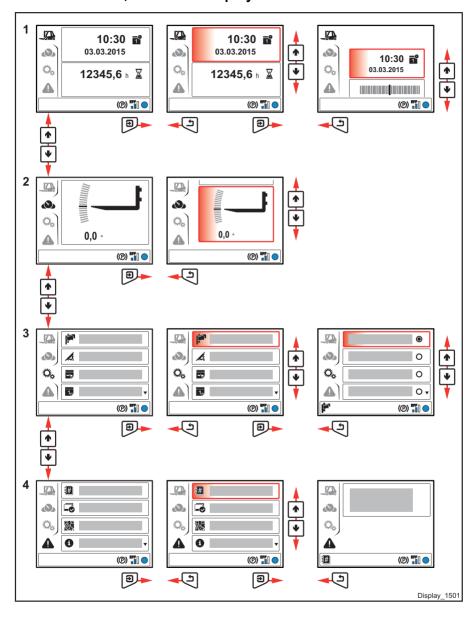
- 1 Display unit
- Warning light for the assistance system (yellow/red)
- Warning light for the truck electrical system (yellow/red)
- 4 Display not operational
- 5 Charging indicator
- 6 Forwards drive direction (single-pedal operation) (green)
- 7 Reverse drive direction (single-pedal operation) (green)
- 8 Brightness sensor
- 9 "Time/date" display

- "Operating hours" display with the "Operating hours active" symbol flashes (only if the engine is running)
- 11 Status bar (information will be displayed via symbols, e.g. "Driving dynamics mode", "Parking brake activated" and "Seat belt not fastened")
- 12 Function display
- 13 "Confirm" button
- 14 "Down" button 15 "Up" button
- "Up" button"Back" button
- 17 Malfunctions and information menu
- 18 Settings menu
- 19 Favorites display menu
- 20 Status display menu
- 21 Battery charge status (green/red)



Menu Structure, Standard Display Unit

Menu Structure, Standard Display Unit





Menu Structure, Standard Display Unit

➤ Use the ♥, ♠, ② and ⑤ push buttons to select the required displays, settings or malfunctions and information.

1	Status display menu (e.g. time/date, steering angle)	
2	Favorites display menu (e.g. tilt angle)	
3	Settings menu (e.g. language, units, date format/hour format, date)	
4	Malfunctions and information menu (e.g. error code, messages, QR code, status icons)	



The **Status display** and the **Favorites display** save the last displayed view and display this view again after the electrical system has been switched back on.



The "Malfunctions and information" symbol is displayed in the following colors depending on the status of the truck:

- "Yellow" means: malfunction or information
- "Red" means: critical malfunction or information
- "+" on the symbol means: multiple malfunctions or items of information

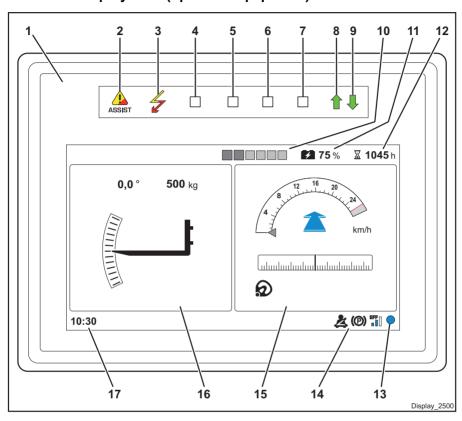
i NOTE

If there are no malfunctions or items of information, the respective "Error code", "Messages" and "Status icons" (displayed only if more than six status icons are active) menu items are hidden.



Premium Display Unit (optional equipment)

Premium Display Unit (optional equipment)









Premium Display Unit (optional equipment)

The display unit (1) is mounted on 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.

- Display unit
- 2 Warning light for assistance system (yellow/
- 3 Warning light for the truck electrical system (yellow/red)
- Display not operational
- Display not operational 5
- 6 Display not operational
- Display not operational
- 8 Forwards drive direction (single-pedal operation) (green)

- Reverse drive direction (single-pedal operation) (green)
- 10 Navigator for favorites in the display
- 11 Small charge status display for the battery
- 12 Small operating hours display
- 13 Function display

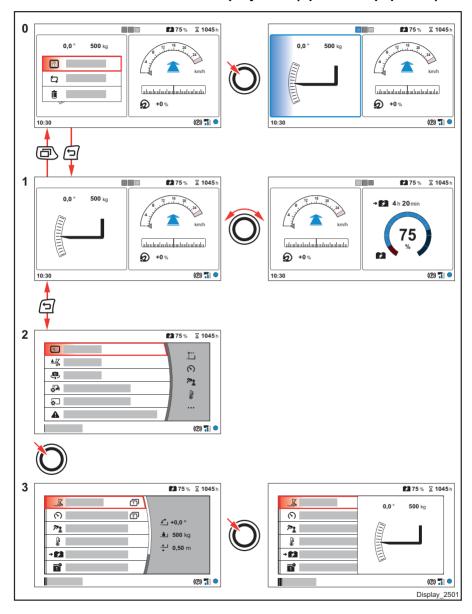
15

- 14 Status bar (information is displayed via symbols: e.g. "Driving dynamics mode" and "Parking brake activated")
 - Speed / steering angle display
- Tilt angle/load weight display (optional 16 equipment)
- 17 Small time display



Menu Structure - Premium Display Unit (optional equipment)

Menu Structure - Premium Display Unit (optional equipment)





Menu Structure - Premium Display Unit (optional equipment)



The menu structure is only an example. The menu structure differs depending on the truck equipment.

➤ Use the "rotary-push button" ①, the "Back" button and the "Favourite" button to select the desired displays and menus.

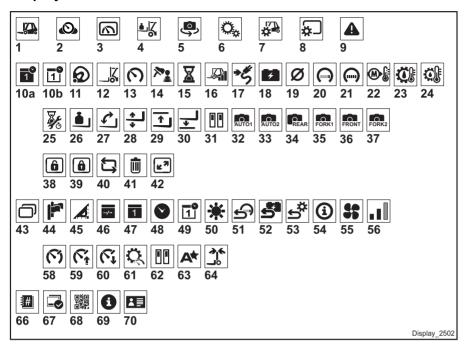
0 Displays:

- Lift mast [tilt angle/load weight (special equipment)] (factory setting)
- Speedometer (incl. steering angle) [driving speed/steering angle] (factory setting)
- Battery indicator (incl. remaining operating time) (factory setting)
- 1 Favorites: Lock/Unlock/Replace/Remove e.g.:
 - Lock the lift mast [tilt angle/load weight (special equipment)]

2 Main menu:

- Display
- Functions (special equipment)
- Camera image (special equipment)
- Truck settings
- System settings
- Malfunctions and information (if there are no malfunctions or available information, the malfunctions and information menu items are hidden)
- 3 Selected menu level, e.g. Display menu:
 - Lift mast [tilt angle/load weight (special equipment)/lift height (special equipment)]
 - Speedometer (incl. steering angle) [driving speed/steering angle]
 - Drive and lift [load weight (special equipment)/tilt angle/driving speed/steering angle]
 - Temperatures [hydraulic oil temperature]
 - Consumption/odometer (special equipment) [current consumption/average consumption/daily trip/total mileage odometer]
 - Time/date
 - Battery charge state (remaining operating time / large charge status display)
 - Service interval





	Symbol	Function
1	Status display menu	Selects the status.
2	Favourites display menu	Selects favourites.
3	Display menu	Selects the display.
4	Functions menu	Selects the functions.
5	Camera Image menu	Selects the camera image.
6	Settings menu	Selects settings.
7	Truck settings menu	Selects the truck settings.
8	System settings menu	Selects the system settings.
9	Malfunctions and information menu	Selects malfunctions and information.
10a	Time/date	Standard display unit: time and date display.
10b	Time/date	Premium display unit: time and date display.
11	Steering angle	Bar display of the steering angle. (center position ≙ straight-ahead driving)
12	Lift mast	Displays the tilt angle/load weight (optional).



	Symbol	Function
13	Speedometer	Displays the driving speed. The driving speed is always displayed as a positive value regardless of the direction of travel.
14	Drive and Lift	Display for tilt angle/driving speed/steering angle.
15	Operating hours	Displays "Operating hours active". Symbol flashes only if the truck is switched on.
16	Consumption/odometer	Displays the current consumption/average consumption/total distance/daily distance.
17	Remaining operating time	Displays the remaining operating time.
18	Current consumption	Displays the current consumption.
19	Average consumption	Displays the average consumption. Can be reset in the "Settings" menu or using the diagnostic program.
20	Daily trip odometer	Displays the distance travelled per day.
21	Total mileage odometer	Displays the total distance travelled.
22	Temperatures	Displays the coolant temperature and hydraulic oil temperature.
23	Coolant temperature	Coolant temperature display.
24	Hydraulic oil temperature	Displays the hydraulic oil temperature.
25	Service interval/operating hours	Displays the service interval/operating hours.
26	Load weight	Displays the weight of the load being carried.
27	Tilt angle	Displays the tilt angle.
28	Lift height	Displays the lift height.
29	Lift limits	Selects the lift limits.
30	Lowering limit	Selects the lowering limit.
31	Push button assignment	Displays/selects the push button assignment.
32	Camera auto mode 1	Displays auto mode 1.
33	Camera auto mode 2	Displays auto mode 2.
34	Rear view camera	Displays the rear view camera.
35	Fork carriage camera	Displays the fork carriage camera.
36	Front view camera	Displays the front view camera.
37	Fork arms camera	Displays the fork arms camera.
38	Unlock	Selects Unlock
39	Lock	Selects Lock
40	Replace	Selects Replace.
41	Remove	Selects Remove.
42	Fullscreen	Selects Fullscreen.
43	Editing favourites	Selects Edit Favourites.
44	Language	Selects available languages.



	Symbol	Function
45	Units	Select the units: • Metric (ISO) units (kg km/h km) or • Imperial units (lbs mph mi) or • Customer-specific units (mixture of metric and imperial using the diagnostic program).
46	Date format and 12/24- hour format	Standard display unit: displays date format and 12/24-hour format. • dd.mm.yyyy/24h or mm/dd/yyyy/12h. • Clock display: am = morning/pm = afternoon.
47	Date	Standard display unit: sets the date.
48	Time	Standard display unit: sets the time.
49	Date/time	Comfort display unit: sets the date, time and 12/24-hour format. • Clock display: am = morning/pm = afternoon.
50	Brightness	Adjusts the brightness of the display.
51	Resetting the trip odometer	Reset the daily trip odometer.
52	Reset consumption average	Resets the average consumption.
53	Restore factory settings	Restores the basic settings.
54	System information	System information about the display unit.
55	Cleaning the radiator	Selects cleaning the radiator with the support of the fan.
56	Driving dynamics	Adjusts the driving dynamics. • "Economy /" • "Efficiency /" • "Performance /" • "Custom"
58	Speed limit	Standard display unit: • Displays the speed limit ("reduction in driving speed"). • Display for forward and backward travel. The reduction is set using the diagnostic program. Premium display unit: • Activates or deactivates the speed limit.
59	Speed limit forward	Premium display unit: sets speed limit forward.
60	Speed limit backward	Premium display unit: sets speed limit backward.
61	Reduced working hydraulic speed	Activates or deactivates reduced working hydraulic speed.
62	Editing the button assignment	Configures the freely programmable push buttons on the arm- rest console and the overhead console.
63	A★ Linde push button configuration	Configures the functions that can be assigned via the push button.
64	Mast vertical	Set the vertical position of the mast.



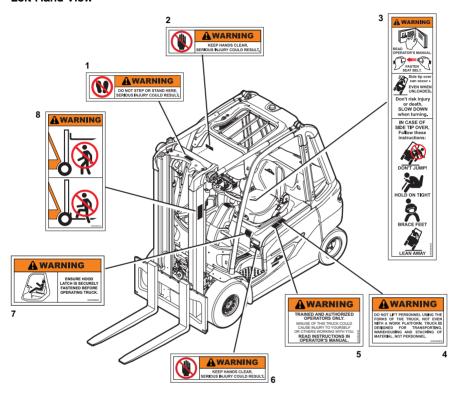
	Symbol	Function
66	Error code	Displays all error codes. If there are no malfunctions, this symbol is hidden.
67	Messages	Displays all messages. If there are no messages, this symbol is hidden.
68	QR code	Displays a QR code as a collection of all malfunctions and contains additional truck-specific information.
69	Display additional status icons	Displayed only if more than six status icons are active.
70	Contact address service partner	Displays the contact address of the service partner.

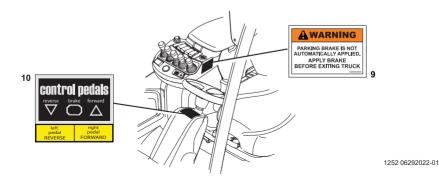


Decal and Data Plate Location

Decal and Data Plate Location

Left-Hand View

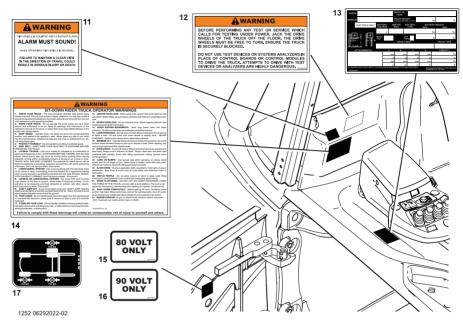






Decal and Data Plate Location

Right-Hand View



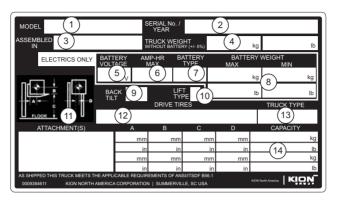
- 1 Warning Decal, No Step
- Warning Decal, Crushed Fingers
- 3 Warning Decal, Tip-Over, Sit-Down Rider Truck
- 4 Warning Decal, Do Not Lift Personnel
- Warning Decal, Trained & Authorized Operator
- 6 Warning Decal, Crushed Fingers
- 7 Warning Decal, Hood Latch
- 8 Warning Decal, Personnel/Forks
- 9 Warning Decal, Parking Brake

- 10 Decal, Control Pedals (dual-pedal only)
- 11 Warning Decal, Backup Alarm
- 12 Warning Decal, Service Work (on fuse box cover)
- 13 Data Plate
- 14 Warning Decal, Sit-Down Rider
- 15 Decal, 80 Volt Only (Lead-acid batteries)
- 16 Decal, 90 Volt Only (Lithium-ion batteries)
- 17 Decal, Air Pressure (Pneumatic tires only; located beside right-hand tire)

Linde Material Handling

Data Plate

Data Plate



- MODEL shows the model designation of the truck.
- (2) SERIAL No./Year shows the serial number and year of manufacture of the individual truck.
- (3) ASSEMBLED IN shows the country in which the truck was originally manufactured.
- (4) TRUCK WEIGHT shows the weight of the truck (in pounds and kilograms) with forks. This weight does not include the battery on electric trucks.
- (5) BATTERY VOLTAGE (electric trucks only) – shows the system voltage of the truck.
- (6) AMP-HR MAX (electric trucks only) – shows the maximum current capacity in amp-hrs for any battery to be used in the truck.
- (7) BATTERY TYPE (electric trucks only) shows the required battery designation, as outlined in ANSI B56.1. A battery of the correct designation must be installed in order for the TRUCK TYPE designation to be valid.
- (8) BATTERY WEIGHT (electric trucks only) – shows the allowable weight range (MAX and MIN) for the battery in pounds and kilograms.
- (9) **BACK TILT** shows the maximum angle that the mast can be tilted back.

- (10) LIFT TYPE shows a letter corresponding to the type of mast construction as follows:
 - S for single masts D for double masts T for triple masts Q for guad masts
- (11) (Diagram) illustrates the dimensions A, B, C, and D used in CAPACITY chart (14).
- (12) **DRIVE TIRES** shows the required size and type of drive tire.
- (13) TRUCK TYPE shows the designation of the truck with respect to hazardous environments as outlined in 29CFR1910.178. This designation corresponds to the environment(s) in which the truck is approved for use.
- (14) CAPACITY shows the maximum load weight (in pounds and kilograms) that can be safely lifted for the corresponding devices listed under ATTACHMENT(S). In order to achieve a listed capacity safely, the lift height must be kept within the corresponding value shown in column C and the load center of gravity must be within the corresponding values shown in columns A, B, and D.



Truck Configuration Label

Truck Configuration Label

The truck configuration label is located in the footwell. Information on the label is explained below.

1 Data matrix code

2 Serial number

3 Mast specification with:

Mast series – mast version – lift height in cm or

("ohne / CO" = without mast or with approved non-original mast

Mast variant code:

"S" = standard mast

"D" = duplex mast

"T" = triplex mast

4 Not applicable

5 Maximum tilt angle (forwards/backwards)

6 Drive axle tires:

"SE" = super elastic tires

"Luft" = pneumatic tires

"ZW" = twin tires

"Band" = bandage tires

7 Attachment:

"GTR" = fork carriage

"iSS" = integrated sideshifter

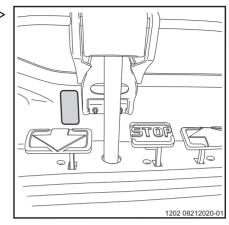
"iZVG" = integrated fork positioner

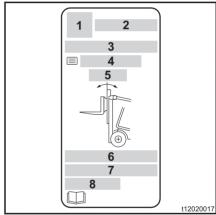
"iZVG View" = integrated fork positioner

with optimized visibility
"ohne / CO" = customized option

8 Restrictions where relevant to the load capacity:

Details regarding reducing the driving speed



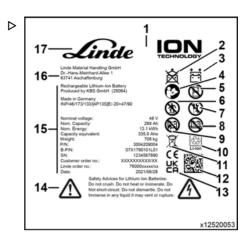




Lithium-Ion Battery Label

Lithium-Ion Battery Label

- 1 Nameplate
- 2 "Do not lift in a manner that allows the battery to tilt to one side"
- 3 "Use a lifting traverse"
- "Read the operating instructions" 4
- 5 "Do not stack"
- 6 "Do not climb on the battery"
- 7 "Do not force open"
- 8 "Do not immerse in water"
- 9 "Do not expose to naked flames"
- 10 "Recycling - recyclable materials"
- 11 "Product must not be disposed of in household waste"
- 12 Data matrix code
- 13 Conformity marking: CE mark for the markets of the EU, the EU candidate countries, the EF-TA States and Switzerland UKCA mark for the United Kingdom market
- Safety information 14
- Data/technical data 15
- Address of manufacturer 16
- Manufacturer 17





Lithium-ion Battery Display

Lithium-ion Battery Display

Lithium-ion batteries have their own display with information on service, temperature and charge state.

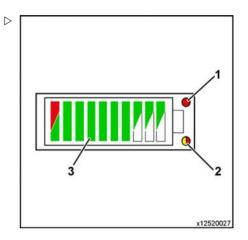
Depending on the battery unit and battery type, the display can be installed in different positions.

The display is switched on when the battery communicates with another device:

- Truck
- · Battery charger
- · Diagnostic device

1 Service LED (red)

If the service LED lights up, the function of the battery is significantly restricted or operation is not possible. The LED goes out as soon as the error is no longer present.



Slight power reduction

2 Temperature LED (yellow/red)

The temperature LED indicates an increased temperature. Battery power is reduced. The LED remains active until the temperature falls to within the normal range.

LED color: Cause: Result:

Increased temperature (> 60°C)

Considerably increased temperature Significant power reduction Red

(> 80°C) and shut-off

Charging state display LEDs

Yellow

The LEDs shows the charge state of the battery.

- ► In red for a charge state from 0% to 10%
- ► In green for a charging state from 10% to 100%



In a dangerous or critical condition, all LEDs on the display flash red.



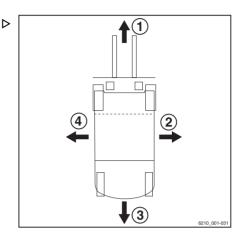
Definition of directions

Definition of directions

(1) Forwards(2) Right(3) Backwards

(4) Left

Directions as seen from the driving position; the load is at the front.



Operation

Linde Material Handing

Initial Commissioning

Initial Commissioning

Unloading and Preparing a New Truck for Operation

When unloading a new truck, it may be necessary or desirable to tow the truck from the delivery vehicle. In this case, the hydraulic brake system must be manually pressurized to release the brakes and allow the truck to roll. See "Towing the Truck".

Before placing a new truck into service, perform the Daily Maintenance Inspection as found in the Maintenance section.

The truck can then be operated at full speed immediately upon being placed in service. However, during the first 50 operating hours, avoid subjecting the drive system or hydraulic system to high continuous loads.

WARNING

Wheel mounting hardware sometimes requires several cycles of tightening before it fully seats. For this reason, wheel mounting screws or nuts will often work loose in the period immediately following initial tightening.

When placing a new truck into service, the wheel mounting screws or nuts must be checked for tightness every 10 hours until no further loosening is detected. See the procedure for checking wheels and tires in the Maintenance section.



Operator Compartment

Adjusting the Standard Seat

The standard seat may be equipped with an optional lumbar support adjustment and an optional heating system.

WARNING

Adjusting the seat while driving can result in an accident due to loss of control.

Do not adjust the seat during operation.

Seat Position

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

Backrest Angle Adjustment

- > Push the lever (2) upwards and hold it up.
- Move the seat backrest forward or back as desired.
- > Release the lever (2).

Seat Suspension Adjustment



NOTE

The relevant driver's weight must be set when the driver's seat is occupied.

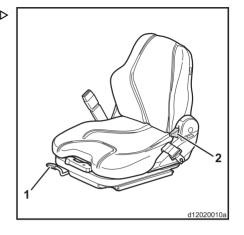
Check the weight setting in the inspection window (4).

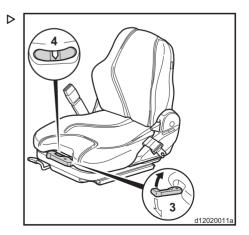
The correct driver's weight has been selected when the arrow is in the center position in the inspection window (4).

Adjust the setting for 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.

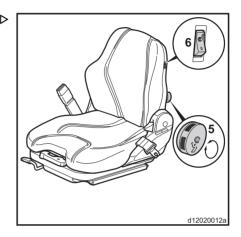
Lumbar Adjustment (optional equipment)



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

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

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



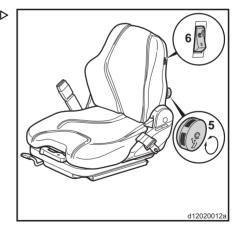
Seat Heating (optional equipment)

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



NOTE

The maximum temperature is predefined.





Adjusting the Premium Seat (optional equipment)

The premium seat may be identified by the presence of a backrest extension. The premium seat includes a seat heater, however, a seat heating and cooling system is available as an option. An adjustable fore/aft suspension system is also available as an option.

A WARNING

Adjusting the seat while driving can result in an accident due to loss of control.

Do not adjust the seat during operation.

Seat Position

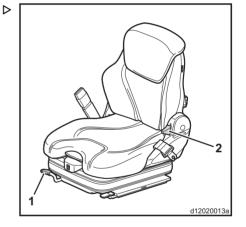
- > Pull the lever (1) upwards.
- Move the driver's seat backwards or forwards on the rails to find the most comfortable position for the driver in relation to the steering wheel and the accelerator pedals.
- > Allow the lever (1) to engage.

Backrest Angle Adjustment

- > 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).

Seat Suspension Adjustment

Seat suspension is automatically adjusted to the driver's weight whenever the electrical system is switched on and the seat is occupied.



Seat Depth Adjustment

> Pull the lever (3) upwards.

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

Seat Height Adjustment

Adjust the seat height as required.

- > Push the lever (4) upwards to move the seat upwards.
- > Push the lever (4) downwards to move the seat downwards.



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

Lumbar Adjustment



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

> Press the push button (6).

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

> Press the push button (7).

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

Seat Heating

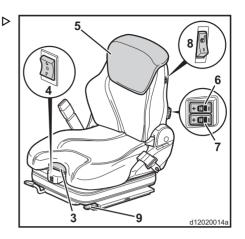
If the seat is equipped with the optional temperature control system, the switch (8) will not be present. (See below.)

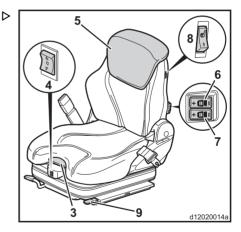
- > Push the switch (8) upwards to activate the seat heater.
- > Push the switch (8) downwards to deactivate the seat heater.



NOTE

The maximum temperature is predefined.







Activating the Horizontal Suspension (optional equipment)

The horizontal suspension system is intended to absorb horizontal (forward/reverse) impact forces in certain rough-duty applications.

- > Push the lever (9) to the left to activate the horizontal suspension.
- ➤ Push the lever (9) to the right and allow it to engage to block the horizontal suspension.

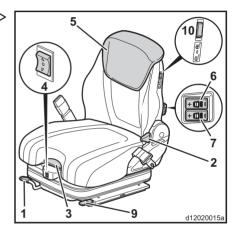
Adjusting the Temperature Control System (optional equipment) →

The premium seat may be equipped with a temperature control system instead of the basic seat heater. In this case, the switch (10) will be present.

- ➤ Push the switch (10) upwards to activate the seat heater.
- ➤ Push the switch (10) to the centre position to deactivate the seat heater.
- ➤ Push the switch (10) downwards to activate the seat cooling.
- ➤ Push the switch (10) to the center position to deactivate the seat cooling.



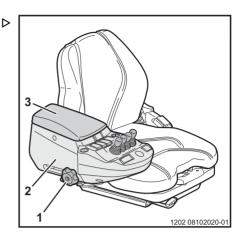
The maximum temperature is predefined.





Armrest Adjustment

- > Occupy the driver's seat and loosen the clamping screw (1).
- Move the armrest console (2) upwards/downwards and forwards/backwards until the arm rest pad (3) is comfortably positioned and the hydraulic control levers can be easily reached.
- > Tighten the clamping screw (1).





Seat Belt

WARNING

Failure to properly wear the seat belt can result in death or serious injury in the event of an accident.

Always wear the seat belt when operating the truck.

A WARNING

A malfunctioning or damaged seat belt can result in death or serious injury in the event of an accident.

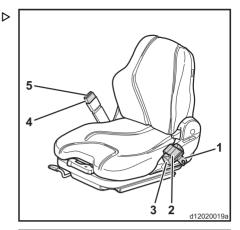
Ensure that the belt always operates correctly. It must not become twisted, trapped or tangled up. The catch and belt retractor must be protected from dirt, damage, or foreign objects. A damaged or frayed seat belt must be repaired or replaced before operating the truck.

The automatic locking mechanism will prevent the belt from being pulled out of the retractor whenever the truck is on a steep slope. To release the locking mechanism, carefully move the truck so that it is no longer positioned at an angle.

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

Buckle monitoring

The truck controller monitors the status of the buckle as well as the sequence in which it is fastened at start-up. If the truck is driven without the seat belt fastened, a tone sounds at speeds above 2.5 mph (4 km/hr). The truck may be further configured with a speed restriction (all the way to zero) if the seat belt is not fastened in the proper sequence. To satisfy the sequence requirement, the seat switch must be activated (driver seated) and the electrical system switched on before the seat belt is fastened. Otherwise the truck will be restricted to the programmed speed.





4 Operation



Operator Compartment

Fastening the seat belt

- Pull the seat belt (2) smoothly from the retractor (3) on the left.
- > Position belt over lap, not over stomach.
- ➤ Ensure that buckle (1) snaps into place in the receiver (4).
- Check seat belt tension.
- Observe the display unit. The seat belt indicator (6) in the status bar should go out when the seat belt is correctly fastened.

The seat belt must fit close to the body.

Releasing the seat belt

- ➤ While holding the buckle, press red button (5) on the receiver(4).
- Hold onto the buckle (1) and slowly allow it to retract into the retractor (3). Do not allow the buckle to snap uncontrolled against the retractor housing.



NOTE

If the belt snaps rapidly into the retractor housing, the automatic locking mechanism may lock the belt with the buckle against the housing. This will prevent the belt from being pulled out with normal force. To free the belt, pull it strenuously until slight movement is detected, then release it slowly. This should unlock the belt and allow it to be withdrawn normally from the retractor housing.



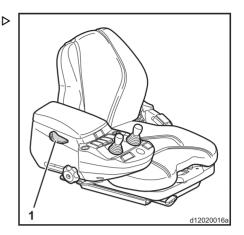
Swivel Seat (optional equipment)

A swivel seat is available as an option for optimal ergonomics in applications requiring extended periods of reverse operation. If equipped, this option allows the seat position to be rotated slightly. Trucks with this option will have a locking lever (1) on the armrest.

A WARNING

Adjusting the swivel seat position while driving can result in an accident due to loss of control.

Do not operate the truck unless the swivel seat is locked into position. Do not adjust the seat during operation. Always return the seat to the straight-ahead position before commencing forward travel.



Rotating the Seat

> Lift the locking lever (1) upwards.

The swivel mechanism is unlocked and allows the seat to be rotated to the right.

- > Allow the locking bolt to snap audibly into place.
- > Repeat the above procedure to return the seat to the straight-ahead position.



Steering Column Adjustment

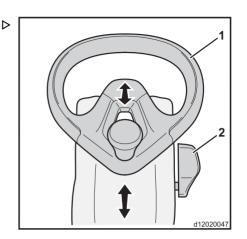
▲ WARNING

Driving with the tilt angle locking knob loose can cause a collision due to loss of control.

Adjust the steering column tilt angle only when the vehicle is stationary.

The angle of the steering column can be adjusted to suit the operator. In addition, a height adjustment is available as an option. Both adjustments are made with the locking knob (2).

- ➤ Loosen the locking knob (2) by turning it counter-clockwise.
- > Push the steering wheel (1) forward or pull it back into the desired position.
- If the truck is equipped with the optional height adjustment, pull upward or push downward axially on the steering wheel until the desired height is reached.
- Tighten the locking knob by turning it clockwise.





Standard Display Unit

Standard Display Unit

System Startup

Switching on the display unit

After the electrical system is switched on, the display unit (1) performs the following actions:

- Self-testing of the lights: All displays (2) light up for approx. 2 seconds.
- Display (3) displays the number of operating hours for approx. 5 seconds (example: 1045,0 h)
- Display (4) displays the remaining operating hours (example: 1000 h) and operating days (example: 365 d) until the next service for approx. 5 seconds



The displays (3) and (4) can be changed using the diagnostic program:

- Time span of displays: 2 to 10 seconds
- · Displayed only when a service is required
- Display not active

The display then switches to the status display (5) (factory setting).

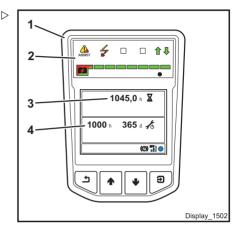
Status display (5):

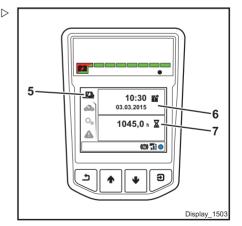
- · Time/date (6) (factory setting)
- · Operating hours (7) (factory setting)

See the section entitled "Switching the truck on and off" for details of how to proceed.



The display saves the most recently displayed view and displays this again after the truck has been switched back on.





Linde Material Handling Linde

Standard Display Unit

"Service interval" indicator

"Service interval" message

If the symbol (1) appears with the message "Service interval" (2), service work must be performed in the near future in accordance with the preset service interval.

- > To switch off the "Service interval" message, press the button (3).
- > The due service work must be performed. Contact your service partner.

"Service interval exceeded" message

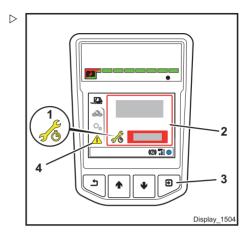
If the symbol (1) appears with the message "Service interval exceeded" (2), the preset service interval has been exceeded.

- > To switch off the "Service interval exceeded" message, press the button (3).
- ➤ The servicing work that is due must be performed. Contact your service partner.



The message must be confirmed when it first appears and then the first time that the truck is switched on each day. Each subsequent time the truck is switched on on the same day, the message is displayed for 30 seconds.

The relevant text message can be displayed via the "Notifications" menu item in the Malfunctions and information menu (4).



Standard Display Unit

Control buttons

The display unit has four control buttons.

▲ Back button (1)

Briefly press the "Back" button to perform the following action:

· Move back one level

Press and hold down the "Back" button to perform the following action:

· Move back to the status display menu

↑ Up button (2)

Briefly press the "Up" button to perform the following action:

· Move up by one row

Down button (3)

Briefly press the "Down" button to perform the following action:

· Move down by one row

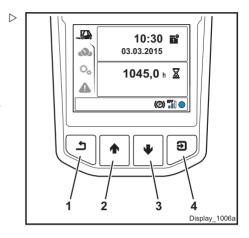
∃ Confirm button (4)

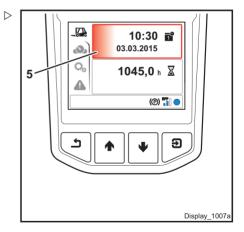
Briefly press the "Confirm" button to perform the following actions:

- Activate the menu item (5) shown on the display (marked in red)
- · Confirm entry
- · Confirm the message

i NOTE

Button tones are deactivated as default in the factory settings. They can be activated using the diagnostic program.





4 Operation

Linde Material Handling Linde

Standard Display Unit

Status Menu

- > Press the button.
- ➤ Use the ♥ or ♠ buttons to select the upper or lower status display(1).
- ➤ Press the **1** button.
- ➤ Use the ♥ or ♠ buttons to select the desired status display.
- > Press the 1 button to confirm.

The following status displays can be selected:

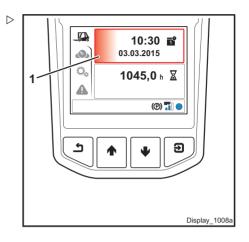
- · Time/date (factory setting)
- · Steering angle
- · Driving speed
- · Steering angle/driving speed
- · Service interval
- · Operating hours (factory setting)
- · Current consumption/average consumption
- · Coolant temperature
- · Hydraulic oil temperature
- Tilt angle/load weight (optional equipment)
- · Lift height (optional equipment)
- · Daily trip/total mileage odometer
- Freely programmable buttons on the armrest console and overhead console (special equipment)



The **Status display** saves the last displayed view and displays this view again after the electrical system has been switched back on.



If a value of 0° is displayed for the **tilt angle**, the fork arms are not necessarily horizontal. Deviations may occur due to uneven ground, use of the truck on slopes, deflection in the mast and fork arms caused by heavy loads, tire wear or tire deflection.





Standard Display Unit

Favorites Menu

- ➤ Press the **1** button.
- ➤ Use the up or ph buttons to select the desired favourites display (1).
- > Press the 1 button to confirm.

The following favourites can be selected:

- · Steering angle/time/operating hours
- · Steering angle/time/driving speed
- · Driving speed/steering angle
- · Steering angle/tilt angle/load weight (special equipment)
- · Tilt angle (factory setting)/load weight (special equipment)

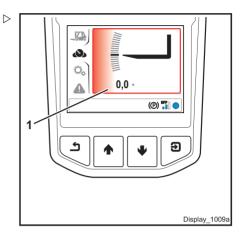


The Favorites display saves the last displayed view and displays this view again after the electrical system has been switched back on.



NOTE

If a value of 0° is displayed for the tilt angle. the fork arms are not necessarily horizontal. Deviations may occur due to uneven ground, use of the truck on slopes, deflection in the mast and fork arms caused by heavy loads. tire wear or tire deflection.





Standard Display Unit

Settings Menu

Setting the language

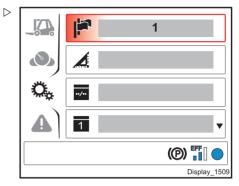
➤ Press the **1** button.

The "Language" menu item (1) is selected.

> Press the button.



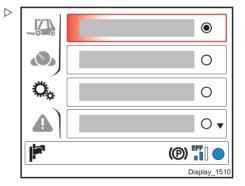
The "Language" symbol appears at the bottom left of the display.



- ➤ Use the ♥ or ♠ buttons to select the desired language.
- ➤ Press the **1** button to confirm.



The "Set language" menu item can be disabled or enabled via the diagnostic program.

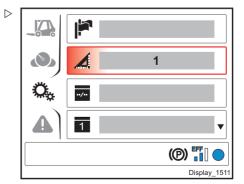


Setting the units

- ➤ Press the button and then press the button to select the "Units" (1) menu item.
- ➤ Press the **1** button.



The "Units" symbol appears at the bottom left of the display.

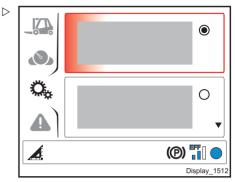




- ➤ Use the ♥ or ♠ buttons to select the desired units
- > Press the 1 button to confirm.



A custom combination of units can be specified via the diagnostic program.



Setting the date format and hour format

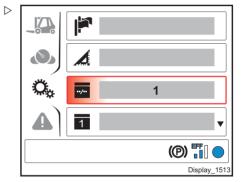
- ➤ Press the

 button and then press the

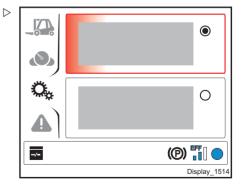
 human button to select the "Date format" (1) menu item
- ➤ Press the **3** button.



The "Date format" symbol appears at the bottom left of the display.



- ➤ Use the ♥ or ♠ buttons to select the desired date and hour format.
- > Press the 1 button to confirm.



Linde Material Handling Linde

Standard Display Unit

Setting the date

- ➤ Press the → button then press the → button to select the "Date" (1) menu item.
- > Press the button.

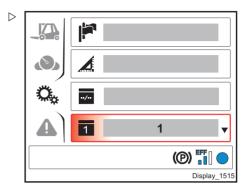


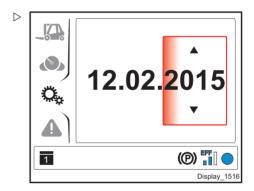
The "Date" symbol appears at the bottom left of the display.

- ➤ Use the **Ψ** or **♠** buttons to select the desired day.
- ➤ Press the **1** button.
- ➤ Use the ♥ or ♠ buttons to select the desired month.
- ➤ Press the **1** button.
- ➤ Use the **Ψ** or **♠** buttons to select the desired year.
- > Press the 1 button to confirm.



To toggle between the year, month and day, press the **೨** or **೨** button.





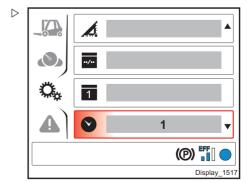
Adjusting the time

- ➤ Press the **3** button then press the **4** button to select the "Time" (1) menu item.
- ➤ Press the **3** button.



The "Time" symbol appears at the bottom left of the display.

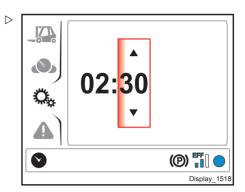
➤ Use the ♥ or ♠ buttons to select the desired hour.



- ➤ Press the **1** button.
- ➤ Use the **Ψ** or **♠** buttons to select the desired minutes.
- > Press the button to confirm.



To toggle between minutes and hours, press the for button.



Adjusting the brightness

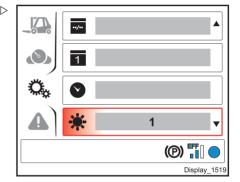
- ➤ Press the

 button then press the

 button to select the "Brightness" (1) menu item.
- ➤ Press the **3** button.



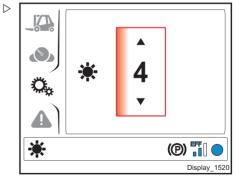
The "Brightness" symbol appears at the bottom left of the display.



- ➤ Use the ♥ or ♠ buttons to select the desired brightness.
- > Press the 1 button to confirm.
- Push the back button <u>1</u>.



The brightness of the display is also regulated by a light sensor. This means that the display remains at a level of brightness comfortable for the human eye even under pronounced changes in lighting (e.g. when driving into the hall).





Resetting the trip odometer

- ➤ Press the

 button and then press the

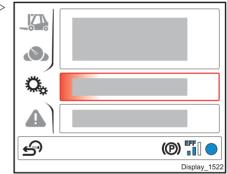
 human button to select the "Reset trip odometer" (1) menu item.
- ➤ Press the **1** button.



played at the bottom left of the display.



- ➤ Use the **Ψ** and **♠** buttons to choose between "Reset" or "Back" (cancel the process).
- > Press the 2 button to confirm your selec-



1

Reset consumption average

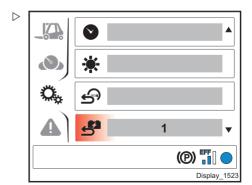
- ➤ Press the

 button then press the

 button to select the "Reset consumption average" (1) menu item.
- > Press the button.



The "Reset consumption" symbol appears at the bottom left of the display.

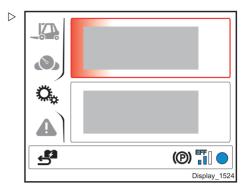




Variant 1

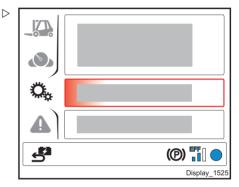
- ➤ Use the **\P** and **\P** buttons to choose between "Reset Consumption Average" or "Back" (cancel the process).
- ➤ Push the

 button to confirm your selec-



Variant 2

- ➤ Use the **Ψ** and **♠** buttons to choose between "Reset" or "Back" (cancel the process).
- > Press the 1 button to confirm your selection



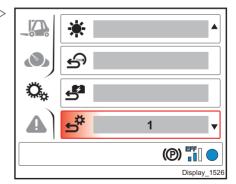
Restore factory settings

- ➤ Press the

 button then press the button to select the "Restore factory settings" (1) menu item.
- > Press the 1 button.



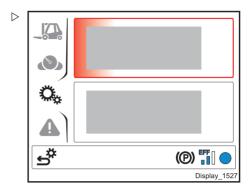
The "Restore factory settings" symbol appears at the bottom left of the display.





Variant 1

- ➤ Press the **3** button to confirm your selection



Variant 2

- ➤ Use the

 and

 buttons to choose between "Restore" or "Back" (cancel the process).
- > Push the **1** button to confirm your selection.



The "factory settings" are:

• Units: kg | km/h | km

· Date format: dd/mm/yyyy/24h

· Language: German

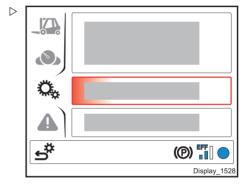
· Briahtness: 4

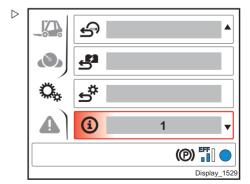
System information

- ➤ Press the button then press the button to select the "System information" (1) menu item.
- ➤ Press the **1** button.



The "System information" symbol appears at the bottom left of the display.

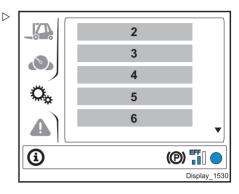






The "System information" menu item displays the following information:

- Part number (2)
- · Software version (3)
- · Operating system version (4)
- · Hardware version (5)
- Serial number (6)
- Licensing
- > To finish, press the 1 button.



Cleaning the radiator

- ➤ Press the

 button and then press the

 human button to select the "Clean radiator" (1) menu item
- ➤ Press the **3** button.

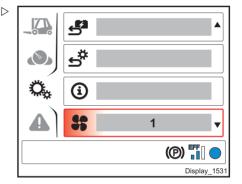


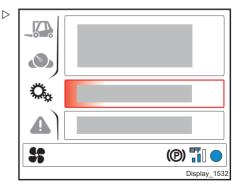
The "Cleaning the radiator" symbol appears at the bottom left of the display.

- ➤ Use the **Ψ** and **♠** buttons to choose between "Start" or "Back" (cancel the process).
- ➤ Press the

 button to confirm your selec-

For more information about this process, refer to the section entitled "Cleaning the radiator and checking the radiator for leak tightness".





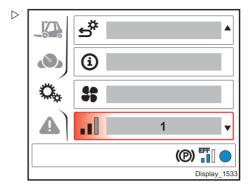


Driving dynamics

- ➤ Press the button and then press the button to select the "Driving dynamics" (1) menu item
- ➤ Press the **1** button.

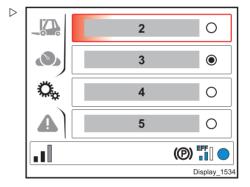


The "Traction dynamics" symbol is displayed at the bottom left of the display.



The "Traction dynamics" menu item displays the following information:

- Economy (2)
- Efficiency (3) (factory setting)
- · Performance (4)
- Custom (5)
- ➤ Use the **** and **** buttons to select the desired "Traction dynamics".
- ➤ Press the **3** button to confirm your selection

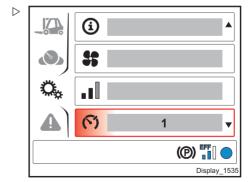


Speed limit

- ➤ Press the
 button then press the
 button to select the "Speed limit" (1) menu item.
- > Press the button.



The "Speed limit" symbol appears at the bottom left of the display.





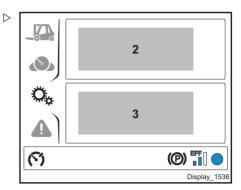
The "reduction in the driving speed" that has been set for forward travel (2) and reverse travel (3) is displayed here.



The "Speed limit" is set using the diagnostic program.

- ➤ To finish, press the

 button.
- Push the back button <u>1</u>.



Editing the button assignment (special equipment)

- > Push the 1 button and then push the button to select the "Edit button assignment" (1) menu item.
- ➤ Press the **1** button.

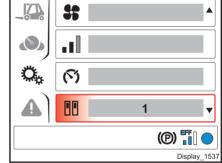


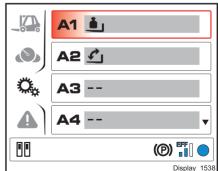
The "Push button assignment" symbol is displayed at the bottom left of the display.

- ➤ Use the **Ψ** and **♠** buttons to select the de-
- sired push button. > Press the 1 button.



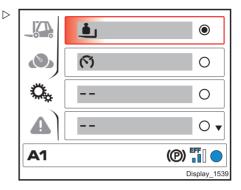
The symbol indicating the selected push button is displayed at the bottom left of the display.







- ➤ Press the **b**utton to confirm your selection.



Configuring the A★ Linde push button (optional equipment)

Available functions (e.g. lighting) can be configured via the A* Linde push button:

- ➤ Press the button and then press the button to select the "A★ Linde push button configuration" (1) menu item.
- ➤ Press the **1** button.

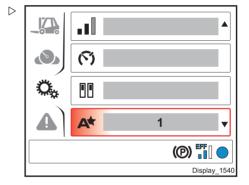


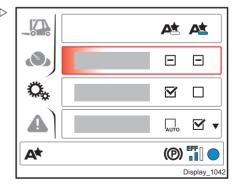
The "A★ Linde push button" symbol is displayed at the bottom left of the display.

- ➤ Use the ♥ or ♠ buttons to select the required function.
- > Press the **3** button to confirm the required function.



To jump between the functions, press the relevant button: $(\mathbf{1}, \mathbf{1}, \mathbf{1}, \mathbf{1})$







➤ Use the **Ψ** or **♠** buttons to select the required configuration.

Configuration options

- · Status maintained (2)
- · Function activated (3)
- · Function deactivated (4)
- · Automatic mode (5)



Not all of the configuration options can be selected, depending on the function.

- > Press the 1 button to confirm the required configuration.
- ➤ Use the ♥ or ♠ buttons to select the second required configuration.
- > Press the 1 button to confirm the second required configuration.

For more information, refer to the section entitled "A★ Linde push button".

Mast vertical

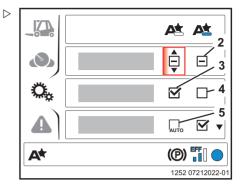
The tilt angle display can be calibrated using the "Mast vertical" (1) function.

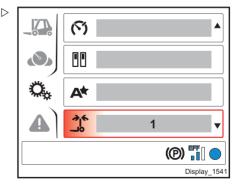
Push the Dutton then push the button to select the "Mast vertical" (28) menu item.

> Press the 1 button.



The "Mast vertical" symbol appears at the bottom left of the display.







The calculated value(2) and the current value (3) are displayed.

- ➤ Use the

 and

 buttons to choose between "Calibrate" or "Back" (cancel the process).
- ➤ Press the **3** button to confirm your selection.

Performing the calibration procedure

- Apply the parking brake as described in the "Parking brake" section of the "Brake system" chapter.
- > Switch on the truck.
- > Move the lift mast to a vertical position.
- > Select the corresponding option to start the calibration procedure.

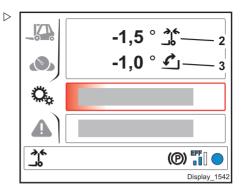
i NOTE

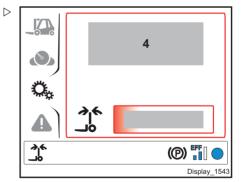
The value for calibration is limited to $\pm 2^{\circ}$.

After calibration has been completed, the message "Calibration successful" (4) appears.

i NOTE

If calibration was not successful, repeat.







Malfunction and Information Menu

- ➤ Press the **1** button.
- ➤ Select the desired menu item using the or buttons.

If malfunctions or items of information are present, each of the following menu items can be selected:

- Error code (1)
- Messages (2)
- Status icons (4): indicated by a symbol (6) and displayed only if more than six status icons are active

Menu item that can always be selected:

- QR code (3)
- · Service partner contact address (5)



The symbol for the selected menu item is shown at the bottom left of the display.

> Press the 1 button to confirm.

i NOTE

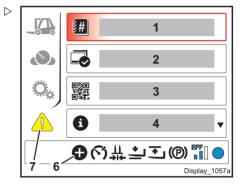
If there are multiple messages, scroll through the messages using the \P or \P buttons.

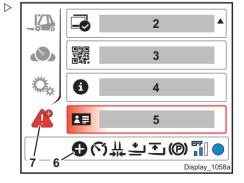
The symbol (7) is displayed in the following colours depending on the status of the truck:

- "Yellow" means: malfunction or information
- "Red" means: critical malfunction or information
- "+" on the symbol (7) means: multiple malfunctions or items of information



Invalid values or error values are displayed as "--".







Premium Display Unit (optional equipment)

System Startup

Switching on the display unit

After the electrical system is switched on, the display unit (1) performs the following actions:

- Self-testing of the lights: All displays light up for approx. 2 seconds.
- Display (2) displays the number of operating hours for approx. 5 seconds (example: 1045,0 h)
- Display (3) displays the remaining operating hours (example: 1000 h) and operating days (example: 365 d) until the next service for approx. 5 seconds



The displays (2) and (3) can be changed using the diagnostic program:

- · Time span of displays: 2 to 10 seconds
- · Displayed only when a service is required
- Display not active

Subsequently, the display switches to the usual display. \triangleright

Display:

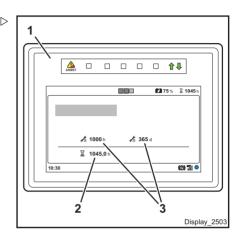
- · Lift mast [tilt angle] (4)
- Speedometer (incl. steering angle) [driving speed/steering angle] (5)

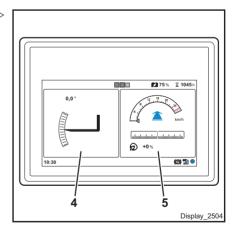
See the section entitled "Switching on and off " for details of how to proceed.



NOTE

The display saves the last displayed view and displays this again after the electrical system has been switched back on.







"Service interval" indicator

"Service interval" message

If the symbol (6) appears with the message "Service interval", service work must be performed in the near future in accordance with the preset service interval.

- > To switch off the "Service interval" message, press the rotary-push button O.
- > The due service work must be performed. Contact your service partner.

"Service interval exceeded" message

If the symbol (6) appears with the message "Service interval exceeded", the preset service interval has been exceeded

- > To switch off the "Service interval exceeded" message, press the rotary-push button **O**.
- > The servicing work that is due must be performed. Contact your service partner.



The message must be confirmed when it first appears and then the first time that the truck is started per day. Each subsequent time the truck is started on the same day, the message is displayed for 30 seconds.

The relevant text message can be displayed via the "Notifications" menu item in the Malfunctions and information menu





Operating Controls

The rotary-push button and two control buttons are required to operate the display unit.

O Rotary-push button (1)

Briefly press the "rotary-push button" to perform the following actions:

- · Dock, remove, clear or replace favorites
- · Select the highlighted menu level
- · Select/activate the highlighted menu item
- · Switch on or off, activate or start functions
- · Confirm an entry
- Jump back to the menu level from the display menu
- Activate the camera full screen (special equipment)
- · Confirm a message

Press and hold down the "rotary-push button" to perform the following action:

• Open the context menu at the bottom menu level (optional in the "Functions" menu)

Turn the "rotary-push button" to the right or left to perform the following actions:

- · Scroll between displays
- · Scroll between menu items
- · Scroll through the context menu
- Select/change settings (e.g. digits, numeric values and brightness)

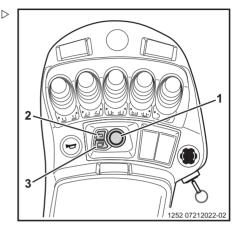
☐ Back button (2)

Briefly press the "Back" button to perform the following action:

- · Jump to the main menu
- · Exit the main menu
- Jump from the bottom menu level back to the next higher menu level
- Jump back to the menu level from the display menu
- Jump back to the menu level from the context menu
- Deactivate the camera full screen (special equipment)

Press and hold down the "Back" button to perform the following action:

- Variant 1: Jump to the first position in the main menu
- Variant 2: Jump to the displays





Favorite button (3)

Briefly press the "Favorite" button to perform the following action:

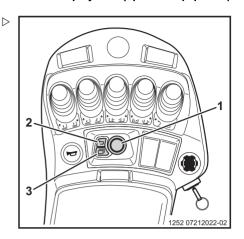
· Open the context menu for favorites

Press and hold down the "Favorite" button to perform the following action:

Add the selected display, function or camera (special equipment) as a favorite in the display



Button tones are deactivated by default in the factory settings. They can be activated using the diagnostic program.





Displaying Favorites

Users can carry out the following actions for favorites:

- · Lock or Unlock
- Replace
- Remove
- Fdit
- Activate, deactivate or change the camera fullscreen (special equipment)



To cancel a selected operation, press the button.

Locking a favorite

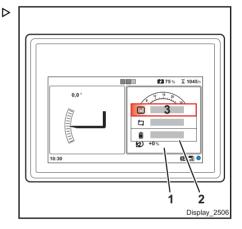


Only favorites in the "Display" menu area can be locked. In addition, only one display can be locked at a time (two displays cannot be locked simultaneously). The left or right display screen can be used.

- > Select display (1) by turning the rotary-push button **(O**).
- ➤ Press the □ button.

The context menu (2) for the favorites is opened.

> Press the rotary-push button (2) to confirm the "Lock" selection (3).





The display (1) is locked. The navigator (2) turns blue



Locking a display means that the display (1) will stay in position when scrolling through the other displays.

Unlocking a favorite



A locked favorite can no longer be selected. The favorite must therefore be unlocked using the context menu on the adiacent display.

> Press the button.

The context menu (2) for the favorites is opened.

> Press the rotary-push button (1) to confirm the "Unlock" selection (3).

Replacing a favorite

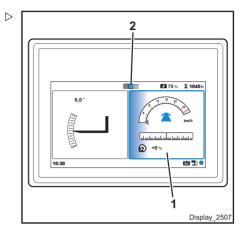


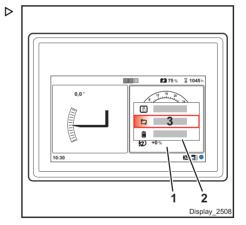
The "lift mast [tilt angle/load weight (special equipment)]" and "Push button assignment (special equipment)" display cannot be replaced.

- > Select display (1) by turning the rotary-push button O.
- > Press the button.

The context menu (2) for the favorites is opened.

> Turn the rotary-push button (and press it to confirm the "Replace" selection (3).







The main menu (4) is opened.

> Turn the rotary-push button (1) to the relevant position and press it to confirm the Display (5), "Functions (special equipment)" or "Camera Image (special equipment)" selection.

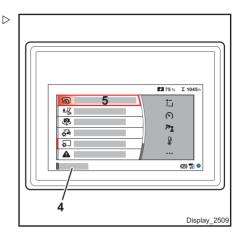


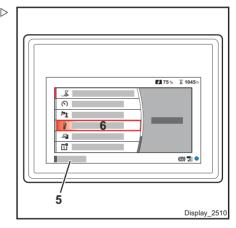
Favorites can only be saved in the "Display", "Functions (special equipment)" or "Camera Image (special equipment)" menu areas. Two of the same favorites cannot be displayed. Only one favorite can be saved to the "Camera Image (special equipment)" menu area if no other favorite (e.g. "Rear view camera") has been saved.

The first menu level, e.g. "Display" (5) is opened.

> Turn the rotary-push button (1) to the relevant position and press it to confirm the selection, e.g. "Temperatures" (6).

The display (1) is replaced according to the selection. A confirmation message appears on the display unit.





Removing a favorite



The "Lift mast ftilt angle/load weight (special equipment)]" and "Push button assignment (special equipment)" display cannot be removed.

> Select display (1) by turning the rotary-push button **O**.

The context menu (2) for the favorites is opened.

> Turn the rotary-push button (1) to the relevant position and press it to confirm the "Remove" selection (3).

The display (1) is removed according to the selection

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Saving a favorite



A minimum of two and a maximum of six displays can be selected as favorites.

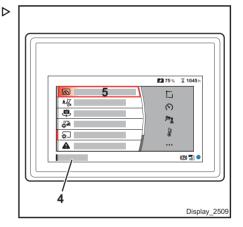
> Press the button.

The main menu (4) is opened.

> Turn the rotary-push button (1) to the relevant position and press it to confirm the Display (5), "Functions (special equipment)" or "Camera Image (special equipment)" selection.



Favorites can only be saved in the "Display", "Functions (special equipment)" or "Camera Image (special equipment)" menu areas. Two of the same favorites cannot be displayed. Only one favorite can be saved to the "Camera Image (special equipment)" menu area if no other favorite (e.g. "Rear view camera") has been saved





The first menu level, e.g. "Display" (5) is opened.

➤ Turn the rotary-push button

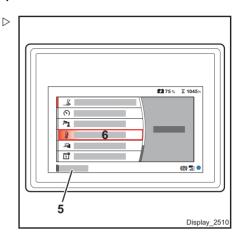
according to the desired display, e.g. "Temperatures" (6).

Saving a favorite instantly

> Press and hold the button.

According to your selection, the display is instantly saved as a favorite. A confirmation message appears on the display unit.

> To return to the displays, press the button twice.



Saving a favorite via the context menu

> Briefly press the button.

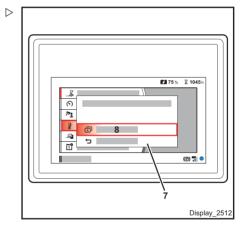
The context menu (7) for the favorites is opened.

Turn the rotary-push button **()** to select "Save" or "Back" (cancel the process).

➤ Press the rotary-push button ② to confirm the "Save" selection (8).

According to your selection, the display is saved as a favorite. A confirmation message appears on the display unit.

> To return to the displays, press the button twice.





Editing favorites

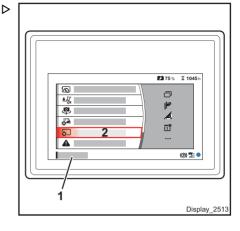


The "Lift mast [tilt angle / load weight (special equipment)]" display cannot be edited.

> Press the button.

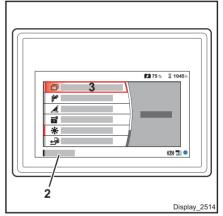
The main menu (1) is opened.

> Turn the rotary-push button (1) to the relevant position and press it to confirm the "System settings" selection (2).



The first menu level "System settings" (2) is opened.

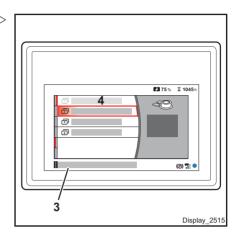
> Press the rotary-push button (1) to confirm the "Edit Favorites" selection (3).



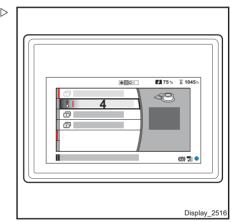


The second menu level "Edit Favorites" (3) is opened.

➤ Press the rotary-push button ② to confirm the selection, e.g. Edit second favourite (4).



- > Turn the rotary-push button ① to the desired sequence.
- ➤ Press the rotary-push button ② to confirm the desired sequence.
- > To return to the displays, press the button three times.





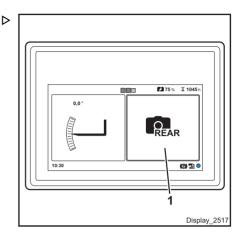
Activating the camera fullscreen (special equipment)

➤ Turn the rotary-push button ② to select the display, e.g. "Rear view camera" (1).

Activating fullscreen instantly

> Press the rotary-push button **(O)**.

The fullscreen mode of the display, e.g. "Rear view camera" is activated.

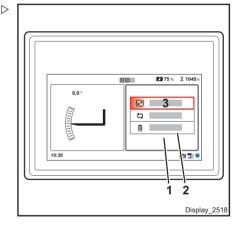


Activating fullscreen via the context menu

- ➤ Turn the rotary-push button ② to select the display, e.g. "Rear view camera" (1).
- > Briefly press the button.

The context menu (2) for the favourites is opened.

➤ Press the rotary-push button ② to confirm the "Fullscreen" selection (3).



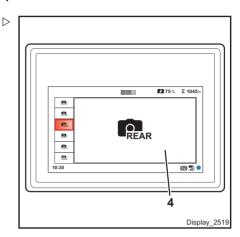


The fullscreen mode (18) of the display, e.g. "Rear view camera", is activated.

Deactivating the camera fullscreen (special equipment)

> Press the button.

The fullscreen mode of the display, e.g. "Rear view camera", is deactivated.



Changing the camera fullscreen (special equipment)

- > Activating the camera fullscreen.
- ➤ Turn the rotary-push button

 to the desired display, e.g. from "Rear view camera" to "Auto mode 1".

The "Auto mode 1" fullscreen appears on the display.

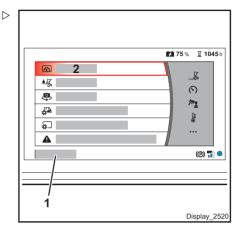


Display Menu

> Press the button.

The main menu (1) is opened.

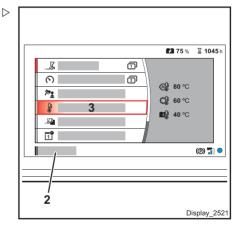
➤ Press the rotary-push button ② to confirm the "Display" selection (2).



The first menu level "Display" (2) is opened.

- ➤ Turn the rotary-push button

 according to the desired display, e.g. "Temperatures" (3).
- ➤ Press the rotary-push button ② to confirm the "Temperatures" selection (3).





The second menu level, e.g. "Temperatures" (4) is opened.

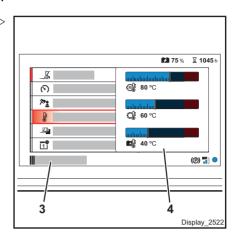
> To return to the displays, press the button three times

The following displays can be selected:

- Lift mast [tilt angle/load weight (special equipment)]
- Speedometer (incl. steering angle) [driving speed/steering angle]
- Drive and lift [tilt angle/driving speed/steering angle]
- Temperatures [coolant temperature / hydraulic oil temperature]
- Consumption / odometer [current consumption / average consumption / daily trip / total mileage odometer]
- · Time/date
- Drive battery charge state [remaining operating time / large charge status display]
- · Service interval / operating hours

i NOTE

If a value of 0° is displayed for the **tilt angle**, the fork arms are not necessarily horizontal. Deviations may occur due to uneven ground, use of the truck on slopes, bends in the lift mast and fork arms caused by heavy loads, tire wear or the tire deflection.



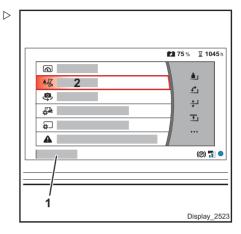


Functions Menu

> Press the button.

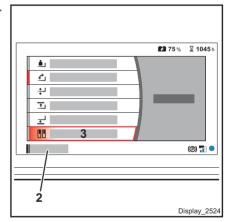
The main menu (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Functions" selection (2).



The first menu level "Functions" (2) is opened. ▷

- ➤ Turn the rotary-push button ℚ according to the desired display, e.g. "Push button assignment" (3).
- ➤ Press the rotary-push button ② to confirm the "Push button assignment" selection (3).



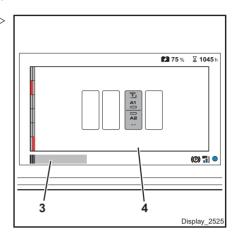


The second menu level, e.g. "Push button assignment" (4) is opened.

> To return to the displays, press the button three times

The following functions can be selected:

- Load weighing [load weight/weigh load/ zeroing (special equipment)]
- Tilt angle preselector multiple (special equipment)
- Lift height preselector multiple (special equipment)
- Lift limits multiple (special equipment)
- Lowering limit variable (special equipment)
- Push button assignment (special equipment) (Editing the assignment is done in the Truck Settings menu.)





Camera Image Menu



NOTE

The camera images support the driver in handling the truck. The responsibility and control for operating the truck in a safe manner always lies with the driver.

The camera images are used to detect other trucks, people and objects.

The driver must familiarise themselves with the camera images before starting work.

WARNING

Risk of accident!

If a camera position is changed or if a camera is damaged, the camera image is no longer guaranteed.

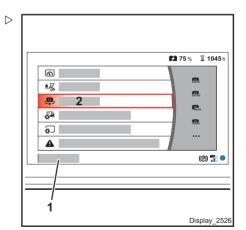
The driver must always check the area shown on the display unit by making direct visual contact.

> Push the button.

The main menu (1) is opened.

➤ Turn the rotary-push button

to the relevant position and press it to confirm the "Camera image" selection (2).

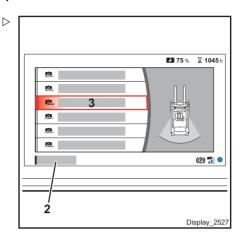




The first menu level "Camera image" (2) is opened.

- ➤ Turn the rotary-push button

 according to the desired display, e.g. "Rear view camera" (3).
- ➤ Press the rotary-push button ② to confirm the "Rear view camera" selection (3).



The second menu level, e.g. "Rear view camera" (4) is opened.

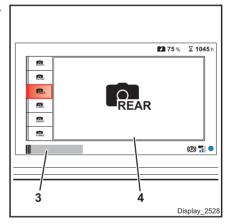
To return to the displays, press the button three times.

The following camera images can be selected:

- Auto mode 1 (special equipment)
- Auto mode 2 (special equipment)
- Rear view camera (special equipment)
- Fork carriage camera (special equipment)
- · Front view camera (special equipment)
- Fork arms camera (special equipment)

i NOTE

- The "Auto mode 1" and "Auto mode 2" camera images can be customised using the diagnostic program. Contact your service partner.
- In "Auto mode 1", the cameras are switched on depending on the direction of travel.
- In "Auto mode 2", the cameras are switched on depending on the direction of travel and the lift height.





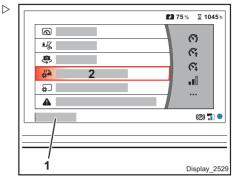
Truck Settings Menu

Selecting the truck settings menu

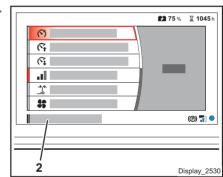
> Press the button.

The main menu (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Truck settings" selection (2).



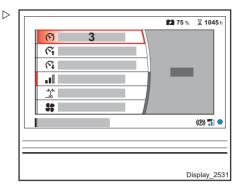
The first menu level "Truck settings" (2) is opened.





Setting the speed limit (optional equipment)

➤ Press the rotary-push button ② to confirm the "Speed limit" selection (3).

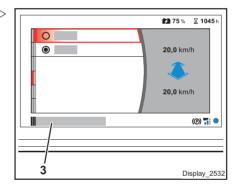


The second menu level "Speed limit" (3) is opened.

➤ Turn the rotary-push button

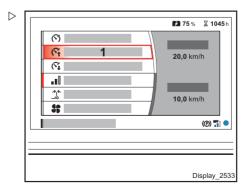
to the relevant position and press it to confirm the "ON" or "OFF" selection.

For more information about this process, refer to the section entitled "Reducing the driving speed".



Setting the speed limit forward (optional equipment)

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Speed limit forward" selection (1).

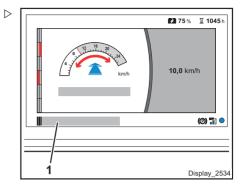




The second menu level "Speed limit forward" (1) is opened.

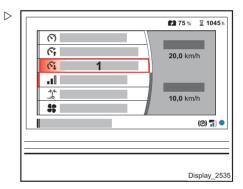
➤ Turn the rotary-push button

to the relevant position and press it to confirm the desired driving speed.



Setting the speed limit backward (optional equipment)

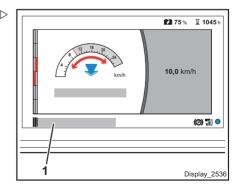
➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Speed limit backward" selection (1).



The second menu level "Speed limit backward" (1) is opened.

➤ Turn the rotary-push button

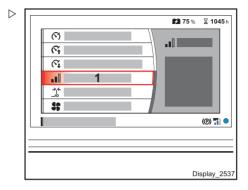
to the relevant position and press it to confirm the desired driving speed.





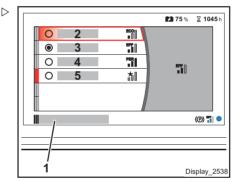
Adjusting the driving dynamics (optional equipment)

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Driving dynamics" selection (1).



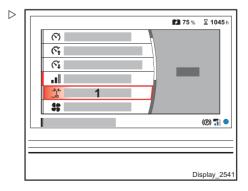
The second menu level "Driving dynamics" (1) is opened and the following items are displayed:

- Economy (2)
- Efficiency (3) (factory setting)
- · Performance (4)
- Custom (5)
- > Turn the rotary-push button © to the relevant position and press it to confirm the desired driving dynamics.



Mast vertical

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Mast vertical" selection (1).





The second menu level "Mast vertical" (1) is opened.

The calculated value (2) and the current value (3) are displayed.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Back" selection (cancel the process) or the "Start calibration procedure" selection.

Performing the calibration procedure

- Apply the parking brake as described in the "Parking brake" section of the "Brake system" chapter.
- > Switch on the truck.
- > Move the lift mast to a vertical position.
- > Select the corresponding option to start the calibration procedure.



The value for calibration is limited to $\pm 2^{\circ}$.

After calibration has been completed, the "Calibration successful" message appears.

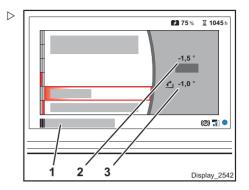


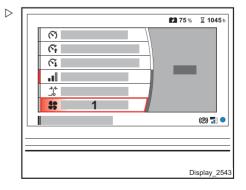
If calibration was not successful, repeat the procedure.

Cleaning the radiator

➤ Turn the rotary-push button

to the relevant position and press it to confirm the "Clean radiator" selection (1).



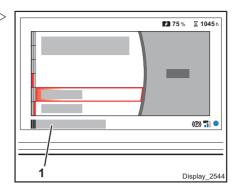




The second menu level "Clean radiator" (1) is \triangleright opened.

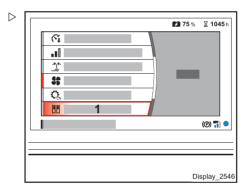
➤ Turn the rotary-push button ② to the relevant position and press it to confirm the "Back" selection (cancel the process) or "Activate" selection.

For more information about this process, refer to the section entitled "Cleaning the radiator and checking the radiator for leak tightness".



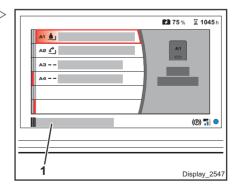
Editing the button assignment (optional equipment)

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Edit button assignment" selection (1).



The second menu level "Edit button assignment" (1) is opened.

> Turn the rotary-push button © to the relevant position and press it to confirm the desired push button.





The third menu level (2) is opened.

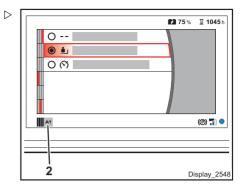
➤ Turn the rotary-push button

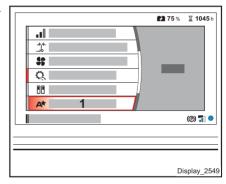
to the relevant position and press it to confirm the desired selection

Configuring the A★ button (optional equipment)

Use the "A★ button configuration" (1) to configure the available functions (e.g. lighting).

➤ Turn the rotary-push button
 to the relevant position and press it to confirm the "A★ button configuration" selection (1).





The second menu level "A★ button configuration" (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the required selection and configuration.

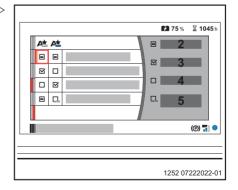
Configuration options

- Status maintained (2) (dash)
- Function activated (3) (check)
- Function deactivated (4) (empty box)
- Automatic mode (5) ("auto")



Not all of the configuration options can be selected, depending on the function.

> Press the button to confirm the selection and configuration.





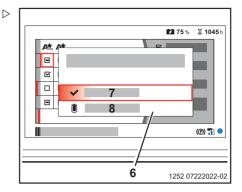
The context menu (6) opens.

Turn the rotary-push button **(**) to select "Save" (7) or "Discard" (8).

> Turn the rotary-push button

to the relevant position and press it to confirm the required selection.

For more information, refer to the section entitled "A★ button".



Exiting the truck settings menu

> To return to the displays, press the button twice.



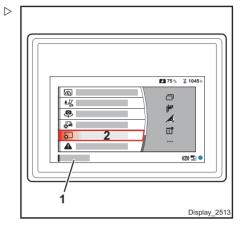
System Settings Menu

Selecting the system settings menu

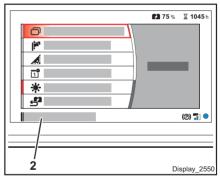
> Press the button.

The main menu (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "System settings" selection (2).



The first menu level "System settings" (2) is opened.

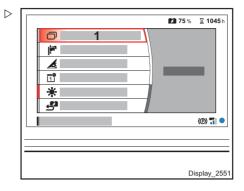




Editing favorites

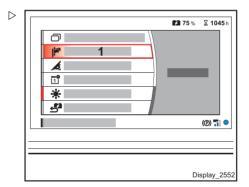
➤ Press the rotary-push button ② to confirm the "Edit Favorites" selection (1).

See the section entitled "Displaying favorites" and the subsection entitled "Editing favorites" for details of how to proceed.



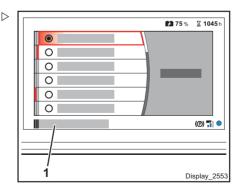
Setting the language

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Language" selection (1).



The second menu level "Language" (1) is opened.

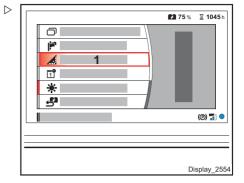
➤ Turn the rotary-push button ② to the relevant position and press it to confirm the desired language.





Setting the units

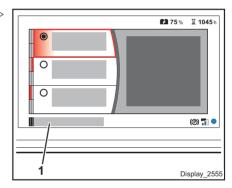
➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Units" selection (1).



The second menu level "Units" (1) is opened.

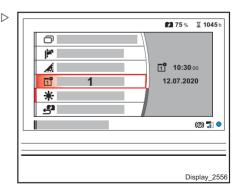
➤ Turn the rotary-push button

to the relevant position and press it to confirm the desired units.



Setting the time/date

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Time/date" selection (1).





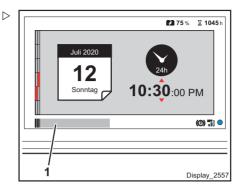
The second menu level "Time/date" (1) is opened.

➤ Turn the rotary-push button

to to the relevant position and press it to confirm the desired time/date.

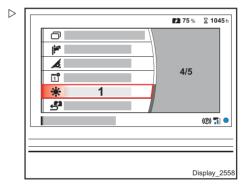


To jump between seconds, minutes, hours, 12/24 hour format, day and month/year, press the button or the rotary-push button o.



Setting the display brightness

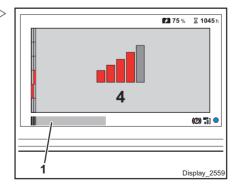
➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Brightness" selection (1).



The second menu level "Brightness" (1) is opened.

➤ Turn the rotary-push button

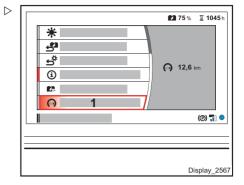
to the relevant position and press it to confirm the desired brightness.





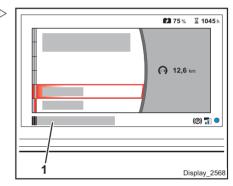
Resetting the trip odometer

> Turn the rotary-push button (1) to the relevant position and press it to confirm the "Reset trip odometer" selection (1).



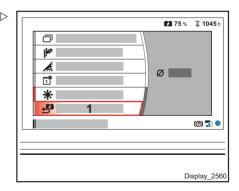
The second menu level "Reset trip odometer" (1) is opened.

> Turn the rotary-push button (1) to the relevant position and press it to confirm the "Back" selection (cancel the process) or the "Reset consumption" selection.



Reset consumption average

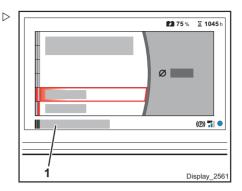
> Turn the rotary-push button (1) to the relevant position and press it to confirm the "Reset consumption average" selection (8).





The second menu level "Reset consumption average" (1) is opened.

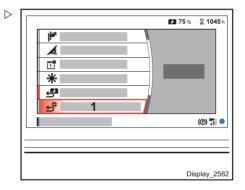
➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Back" selection (cancel the process) or the "Reset consumption" selection.



Restoring the factory settings

➤ Turn the rotary-push button

to the relevant position and press it to confirm the "Restore factory settings" selection (1).



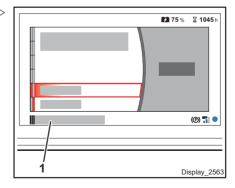
The second menu level "Restore factory settings" (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Back" selection (cancel the process) or the "Reset consumption" selection.



The "factory settings" are:

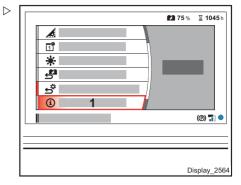
- Units: kg | km/h | km
- Date format: dd/mm/yyyy/24h
- · Language: German
- · Brightness: 4





System information

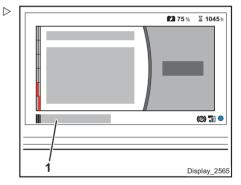
➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "System information" selection (1).



The second menu level "System information" (1) is opened.

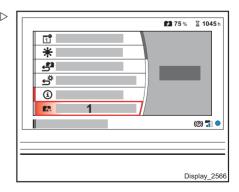
The "System information" menu item displays the following information:

- · Part number
- · Software version
- · Operating system version
- · Hardware version
- Serial number
- · Licensing



Battery ID

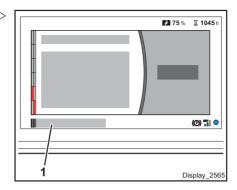
➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Battery ID" selection (1).





The second menu level "Reset trip odometer" (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Back" selection (cancel the process) or the "Reset consumption" selection.



Exiting the system settings menu

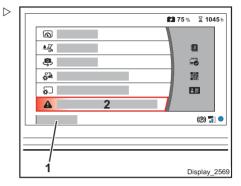
> To return to the displays, press the button twice.

Malfunctions and Information Menu

> Press the button.

The main menu (1) is opened.

➤ Turn the rotary-push button ℚ to the relevant position and press it to confirm the "Malfunctions and information" selection (2).



The first menu level "Malfunctions and information" (2) opens.

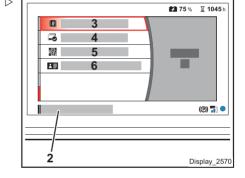
If malfunctions or items of information are present, each of the following menu items can be selected:

- · Error code (3)
- · Messages (4)

Menu item that can always be selected:

- QR code (5)
- Service partner contact address (6)
- ➤ Turn the rotary-push button

 to the relevant position and press it to confirm the desired selection.



i NOTE

If several messages are present, you can scroll through them by turning the rotary-push button \bigcirc .

> To return to the displays, push the button two or three times.



Soft Keys

The push buttons A1 to A4, F1 to F4 and S1 to S8 (1) are represented graphically as soft keys on the premium display unit. They can be used to switch the available functions on and off.

All soft key buttons except S1 to S8 may have physical counterparts on the overhead console or armrest, depending on options.

The soft key buttons S1 to S8 are only available as "virtual" buttons in the premium display unit. No physical buttons with these designations are installed in the overhead console or in the armrest console

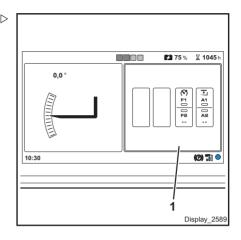
Switching on

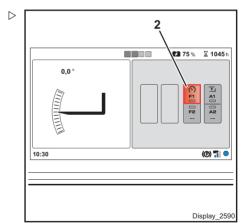
- ➤ Select the display of the push button assignment (1) by turning the rotary-push button

 (In Image of the push button (In Image).
- > Press the rotary-push button O.
- ➤ Select the required function by turning the rotary-push button **②**.

Example: Reducing the driving speed (2).

Press the rotary-push button O.







The LED (3) illuminates in green and the symbol (4) appears in the status bar. In the example: The "Reducing the driving speed" function is switched on.

> To return to the displays, press the 🔁 button.

Switching off

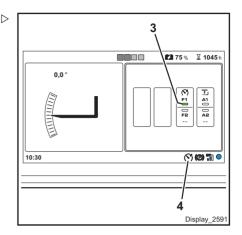
- ➤ Select the display of the push button assignment (1) by turning the rotary-push button
 (a).
- > Press the rotary-push button O.
- ➤ Select the required function by turning the rotary-push button ②.

Example: Reducing the driving speed (2).

> Press the rotary-push button O.

The LED (3) goes out and the symbol (4) is no longer displayed. In the example: The "Reducing the driving speed" function is switched off.

> To return to the displays, press the button.



Operation

Turning the Truck On and Off

Switching on the truck

- > Sit in the driver's seat.
- > Pull the emergency off switch (1) if neces-
- > Fasten the seat belt.
- > On single pedal trucks only, move the drive direction selection lever (3) to the neutral position.



The truck can be switched on only when the accelerator pedals and joysticks are in neutral position.

➤ Insert the key (2) into the key switch. Turn the key clockwise from the zero position to switch setting "I".

The truck is switched on and operational.

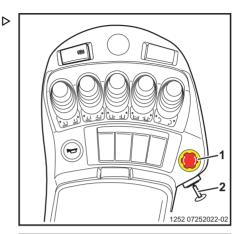
Observe the display unit.

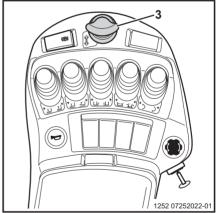
After the electrical system is switched on, the display unit performs the following actions:

- · Self-testing of the lights as described in the "System start-up" section of the chapter entitled "Display unit"
- · Displays the remaining operating time until the next service, as described in the "System start-up" section of the chapter entitled "Display unit"

The following displays remain visible on the display unit after self-testing has been performed:

- · When the parking brake is activated, the symbol (3) lights up in the status bar
- · After a few seconds, the charge state of the drive battery can be read.









The accelerator pedals and joysticks must not be actuated until all indicator lights apart from "Parking brake applied" (3) have gone out. Otherwise, the truck will not function. To restart, switch the truck off and on again.

Switching off the truck

- > Release the accelerator pedal.
- > On single pedal trucks only, move the drive direction selection lever (3) to the neutral position.



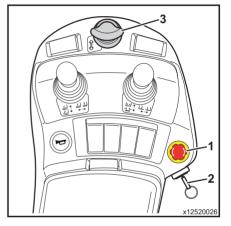


i NOTE

Messages providing assistance may appear on the display unit during operation.

- > Apply the parking brake as described in the "Parking brake" section of the "Brake system" chapter.
- > Turn the switch key (2) anti-clockwise to the zero position "0".

The truck is switched off. The automatic brake is activated.

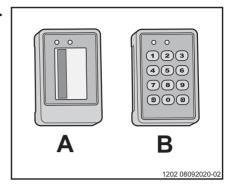


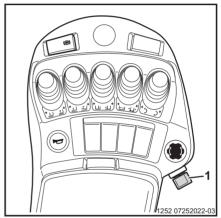
Access Control Systems (option- ▷ al equipment)

An access control system may be present. Use of the system is incorporated into the engine starting and shut-down procedures. The truck is available with two types of access control other than a conventional ignition key:

- RFID access (A)
- · PIN code access (B)

If one of these systems is present, the corresponding access control unit (A) or (B) will be mounted to the right-hand overhead guard leg and the key switch is replaced with a knob (1). The procedures below will enable the access control system. Refer to the Turning the Truck On and Off section for additional information





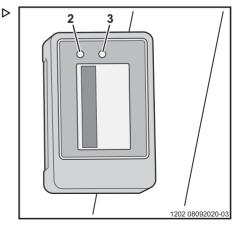
RFID Access

A card or fob containing an RFID chip is used to enable starting.

- > Ensure that the drive pedals are released. For single pedal trucks, the direction selector must be in neutral
- > Ensure the knob (1) is turned to its clockwise position.

The system will change from stand-by mode to log-in mode The two LED's (2) and (3) will flash green alternately to confirm this.

> Pass the card or fob over the face of the unit.





Both LED's will stop flashing and remain green continuously. The truck may now be started



NOTE

If an invalid RFID is used, the LED's will 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 invalid card is used.

PIN Code Access

A 5 to 8 digit PIN code is used to log in and enable starting.

- > Ensure the knob (1) is turned to its clockwise position.
- > Ensure that the drive pedals are released. For single pedal trucks, the direction selector must be in neutral.
- > Enter the first digit of a valid PIN or press either of the function buttons (reset (4) or log-in/out button (5)).

The system will change from stand-by mode to log-in mode The two LED's (2) and (3) will flash green alternately to confirm this.

> Enter the remaining PIN digits (or the entire PIN if no number key has been used yet.)

Both LED's will stop flashing and remain green continuously. The truck may now be started.

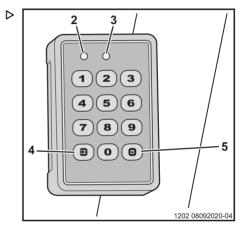


NOTE

If an incorrect PIN is entered, the LED's will 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. a mistake occurs when entering the PIN, the PIN entry process may be aborted by pushing the Reset button (4).

Restarting

With both types of access systems, the truck may be restarted within a time delay. If the truck does not start properly the first time, the





Operation

starting procedure can be repeated until the knob (1) is returned to the off position and a time delay expires. Log-out will occur automatically after the time delay. This also applies to restarting after intentional shutdown.



Driving - Dual Pedal Version

A WARNING

Operators must be familiar with all safety procedures that apply to forklift operation before driving.

Read and understand all safety information in Section 2 before operating the truck.

- > Turn the truck on.
- Elevate the forks slightly and tilt the mast back.
- Ensure that the parking brake switch is off.

Forward Travel

Carefully press the right-hand drive pedal (1). Truck speed depends on how far the pedal is pressed.

i NOTE

Quick flooring of the accelerator pedal will have no effect as the maximum acceleration rate is controlled automatically.

If the pedal is released, the drive system will automatically slow the truck.

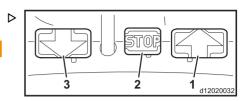
Reverse Travel

> Carefully press the left-hand drive pedal (3).

Control of speed and braking in reverse is the same as for forward motion

Changing Direction

- Release the actuated drive pedal. The drive system will dynamically brake the truck and begin slowing it depending on how fast the pedal is released.
- Press the drive pedal for the opposite direction of travel. The truck will accelerate in the new direction.
- The drive pedals can be operated from forward to reverse travel directly while the truck is still moving. If this is done, the drive system will brake the truck to a standstill at the same rate as above, and then accelerate in the new direction.





Operation

> During travel, keep both feet on the drive pedals for optimum speed control.

Stopping

- Release the actuated drive pedal. The drive system will dynamically brake the truck and bring it to rest. Easing off the drive pedal will give responsive, controlled braking. Complete release of the drive pedal will provide maximum regenerative braking. If quicker stopping is required (as in emergencies), depress the brake pedal (2).
- Always apply the parking brake if leaving the truck briefly while switched on. The parking brake will engage automatically after a delay. Switching the parking brake on will apply it immediately.

Starting on an Incline

- Release the parking brake if the switch is on.
- Actuate the appropriate drive pedal (1) or (3). The parking brake will disengage. The drive system will prevent roll-back.

If stopping on an incline, the drive system will prevent roll-back until the parking brake automatically engages after the delay. The brake may be set sooner using the switch.



Driving - Single Pedal Version

A WARNING

Operators must be familiar with all safety procedures that apply to forklift operation before driving.

Read and understand all safety information in Section 2 before operating the truck.



NOTE

The truck will not travel unless the seat is occupied. If the seat becomes unoccupied while the truck is on, the directional lever (1) must be returned to the neutral position, then to the desired drive direction again after the seat is occupied, before the truck will move.

- > Turn the truck on.
- Elevate the forks slightly and tilt the mast back.
- > Ensure that the parking brake switch is off.

Forward Travel

- > Move the directional lever (1) forwards.
- Verify that the forward direction symbol (4) appears in the display.
- Carefully press the right-hand drive pedal (1). Truck speed depends on how far the pedal is pressed.



I NOTE

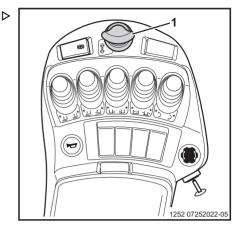
Quick flooring of the accelerator pedal will have no effect as the maximum acceleration rate is controlled automatically.

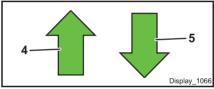
If the pedal is released, the drive system will automatically slow the truck.

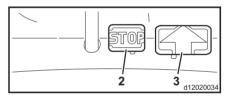
Reverse Travel

- > Move the directional lever (1) backwards.
- Verify that the reverse direction symbol (5) appears in the display.
- Carefully press the left-hand drive pedal (3).

Control of speed and braking in reverse is the same as for forward motion









Operation

Changing Direction

- Release the drive pedal. The drive system will dynamically brake the truck and begin slowing it depending on how fast the pedal is released
- > Move the directional control lever through neutral to the opposite direction of travel.
- Press the drive pedal again. The truck will accelerate in the new direction
- If desired, the lever can be moved without releasing the drive pedal and/or while the truck is still moving. If this is done, the drive system will brake the truck to a standstill at the same rate as above, and then accelerate the truck in the new direction without having to release the pedal.

Stopping

- ➤ Release the drive pedal. The drive system will dynamically brake the truck and bring it to rest. Easing off the drive pedal will give responsive, controlled braking. Complete release of the drive pedal will provide maximum regenerative braking. If quicker stopping is required (as in emergencies), depress the brake pedal (2).
- Always apply the parking brake if leaving the truck briefly while switched on. The parking brake will engage automatically after a delay. Switching the parking brake on will apply it immediately.

Starting on an Incline

- Release the parking brake if the switch is on.
- Move the directional lever (1) to the desired direction.
- Actuate the drive pedal (1) or (3). The parking brake will disengage. The drive system will prevent roll-back.

If stopping on an incline, the drive system will prevent roll-back until the parking brake automatically engages after the delay. The brake may be set sooner using the switch.



Travel Speed Reduction (optional equipment)

The following types of speed reduction are available:

- · via mast switch
- · via push button
- · via radar (indoor/outdoor)
- · via the optional premium display

If the symbol (1) lights up in the status bar on the display unit, the reduction in the driving speed is enabled.



NOTE

The reduction in the driving speed is an assistance system 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.

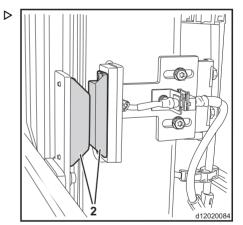


Operating via a switch on the lift mast Function

The reduction in the driving speed is linked to a defined lift height. The required lift height is detected by means of a switch (2) fitted on the lift mast.

Switching on

The reduction in the driving speed is enabled via the switch (2) if the preset lift height is exceeded.



The symbol (1) is displayed in the status bar on the display unit. The reduction in the driving speed is switched on.

Switching off

The reduction in the driving speed is disabled if the lift height falls below the preset lift height.

The symbol (1) is no longer displayed. The reduction in the driving speed is switched off.

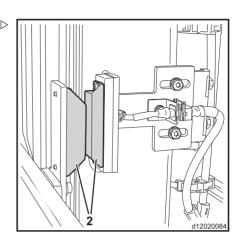


Daily testing

> Check the switch (2) for contamination and damage before starting each shift. Clean as required.

If any damage is detected, have the switch replaced.

> Check for correct function: When the preset lift height is exceeded, the driving speed must be limited.



Operating via a push button



NOTE

The operating procedure using the relevant push button in the armrest console or in the switch panel is described here by way of example. The assignment of the push buttons can be changed. See the "Settings menu" section in the chapter entitled "Standard display unit" or the "Truck settings" section in the chapter entitled "Comfort display unit".

The reduction in the driving speed is enabled via the push button (3).

> Briefly push the push button (3).

The push button assignment is indicated by the symbol (1) on the display unit.

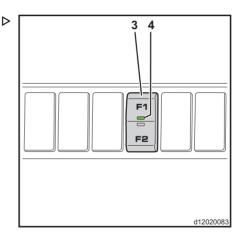


If the push button assignment is already shown on the display unit, the reduction in the driving speed can be switched on immediately via the push button (3).

Switching on

> Briefly push the push button (3).

The LED (4) illuminates in green. The reduction in the driving speed is switched on.







The symbol (1) is displayed in the status bar on the display unit.

Switching off

> Briefly push the push button (3).

The LED (4) goes out and the symbol (1) is no longer displayed. The reduction in the driving speed is switched off.



NOTE

The function for reducing the driving speed can also be switched on or off directly using the rotary-push button in conjunction with the comfort display unit. Further information regarding the sequence is described in the chapter entitled "Driver's compartment" in the section entitled "Push buttons on the comfort display unit".

Operating via a radar sensor (Speed-Assist)

The radar sensor (5) is used to reduce the maximum speed automatically when the truck moves from an outdoor area to an indoor area



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 (5) monitors the area above the truck using a club-shaped radar beam.

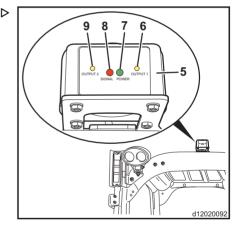
If an object such as the ceiling of a hall is detected, the maximum driving speed is reduced to a set value.

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. Contact your service partner.

Daily testing

Check the housing of the radar sensor (5) for contamination and damage before starting each 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:

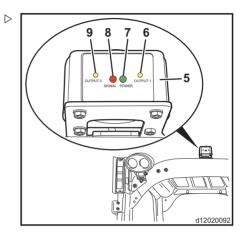
- Range of the radar sensor between 2 m and 24 m
- Sensitivity of the sensor: At a higher sensitivity, smaller objects are detected
- Delay time (entry: up to 3 s; exit: up to 0.75 s)
- Contact your service partner.

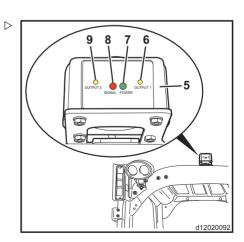
LED indicators on the radar sensor

If the supply voltage is present, the green "Power" LED (7) lights up.

If an object is detected by the radar sensor, the red "Signal" LED (8) flashes depending on the signal strength of the radar beam.

If no object is detected by the radar sensor, the yellow "Output" LEDs (6) and (9) light up.

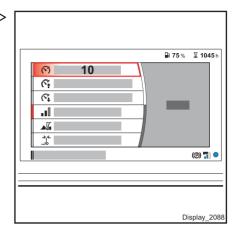






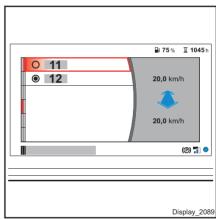
Operating via the premium display unit Switching on

➤ Select the "Speed limit" (10) menu item on the display unit.



- ➤ Either "On" (11) or "Off" (12) can be selected.
- > Select "On" (11).

The speed limit is switched on.



The symbol (1) is displayed in the status bar on the display unit.

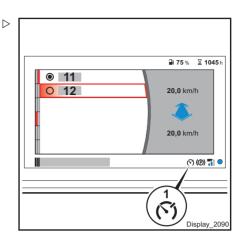




Switching off

- > Select the "Speed limit" (10) menu item on the display unit.
- ➤ Either "On" (11) or "Off" (12) can be selected.
- > Select "Off" (12).

The symbol (1) is no longer displayed. The speed limit is switched off.





Steering System

The hydrostatic steering assistance is available whenever the engine is running. Turning the steering wheel will steer the truck via the rear wheels. The steering will still function when the engine is off, but significantly more force is required at the steering wheel.

Turn the steering wheel clockwise to turn the truck to the right. Turn the steering wheel counter-clockwise to turn the truck to the left.





Operation

Braking

The truck has two forms of braking available. They are regenerative braking and mechanical braking. Regenerative braking is provided by the drive system and automatically occurs to slow the truck whenever a drive pedal is released. Mechanical braking is provided by brake discs in the drive axle. Normally the mechanical brake is only used as a parking brake. During hard application of the brake pedal (such as emergency stopping), the mechanical brake will also engage to supplement regenerative braking.

Regenerative Braking

Regenerative braking is adequate for all braking required during normal operation. It is controlled proportionately depending on how fast the drive pedal is released. Slowly easing off the drive pedal will give a gentle deceleration. If the drive pedal is suddenly and completely released, then maximum regenerative braking will occur, giving aggressive deceleration. Depressing the drive pedal opposite that of current vehicle motion (on dual pedal trucks) or moving the direction selector to the direction opposite current motion (on single pedal trucks), will also give maximum regenerative braking.

Mechanical Braking

The primary use of the mechanical brake is to provide a parking brake when the truck is stationary. The mechanical brake is applied by spring forces acting on the brake discs. When the truck is started and the parking brake is switched off, hydraulic pressure from the working hydraulic circuit is used to overcome the spring force and release the brake.

When the truck is in operation, all normal braking requirements can be handled by the regenerative drive system. The mechanical brake however, will be applied if the brake pedal is pressed all the way down. The brake pedal operates a separate isolated hydraulic circuit with a dedicated master cylinder. When the pedal is pressed, hydraulic pressure from



this separate circuit is used to overcome the spring force and release the brake.

The parking brake is controlled by an electrically operated brake valve, which applies or removes hydraulic pressure from the brake circuit. This valve is operated by the truck control system so that the brake is applied whenever the truck becomes stationary (after a brief delay). The brake valve can also be directly actuated by the operator using a switch on the armrest console

Parking Brake Operation

The parking brake is semi-automatic. It will engage after a brief delay any time the truck becomes stationary. It will disengage as soon as the drive pedal is pressed. This behavior can be overridden by the operator using the parking brake switch (1). The parking brake can be engaged immediately by the operator if desired by pressing the switch. As long as the switch is on, the parking brake will remain engaged regardless of drive pedal movement.

The parking brake will engage immediately when the truck is switched off

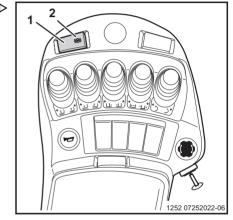
Press the parking brake switch(1) to engage the parking brake. The LED (2) will illuminate.

The "P" symbol (3) will appear in the status bar of the display unit.

WARNING

Failure to apply the parking brake can result in unintended vehicle movement. The parking brake is not immediately applied when the truck is stopped.

If it is necessary to exit the truck while it is switched on (for example to perform some brief action in close vicinity to the truck such as opening a gate, unhitching a trailer, etc.), always apply the parking brake. Shut down the truck if making a longer stop.





Emergency Stop Switch

Pushing the emergency stop button (1) in will interrupt drive and hydraulic function. Also, increased effort will be required to turn the steering wheel. The emergency stop switch will open and the truck will be electrically braked to a stop. The foot brake is not affected and will continue to function normally. If the foot brake is applied, the truck will stop faster.

WARNING

If the emergency stop switch is operated while in motion, the truck will decelerate without power assisted steering. More effort will be required for steering. Stopping distance may be longer than normal. For these reasons there may be an increased risk of collision.

Always be prepared to stop the truck with the brake pedal and increase the steering effort if the emergency stop button is pressed.

WARNING

The emergency stop switch will not isolate the entire electrical system. In order to remove power from the entire truck electrical system, the battery must be disconnected at the battery connector.

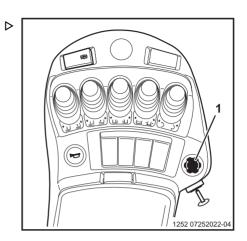
Always disconnect the battery at the battery connector before any maintenance, repair or other activity requiring a completely de-energized truck.

Emergency Stop Procedure

> To stop the truck in an emergency, push in the emergency stop button (1).

The button will lock into the pressed position with an audible click. The emergency stop switch will open and the forklift truck will be switched off.

To resume operation, release the drive pedal and switch the truck off. Pull the emergency stop button out and restart normally. For single pedal trucks, the directional lever must be moved to neutral before the truck will operate.





Horn

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

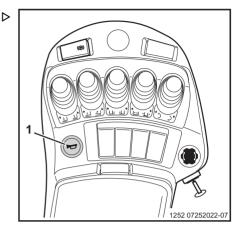
> Press the horn button (1) on the armrest to sound the horn.

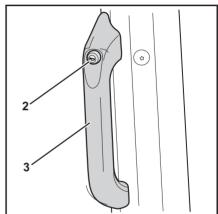
Additional Horn Locations (optional equipment)

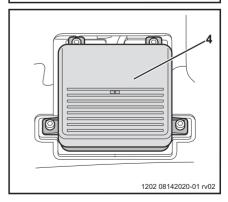
For use while reversing, an auxiliary horn button (2) is available as an option at a handle (3) on the right rear overhead guard leg.

Single-pedal trucks may have an optional footoperated horn button (4) on the floor plate.

> Press any of these horn buttons to sound the horn.







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Operation

Hydraulic Controls

A WARNING

Operators must be familiar with all safety procedures that apply to forklift operation before operating hydraulic functions.

Read and understand all safety information in Section 2 before operating the truck.

All trucks are equipped with lift and tilt. In addition up to three additional functions may be installed.

Actuating levers should always be operated smoothly. Function speed is proportional to lever movement. When released, levers automatically return to the neutral position.

Note the function symbols on the control lever decals.



NOTE

The lifting system will only function with the truck switched on and the operator's seat occupied.

Raising the mast

> Pull actuating lever (1) backward.

Lowering the mast

> Push actuating lever (1) forward.

Tilting the mast forwards

> Push actuating lever (2) forward.

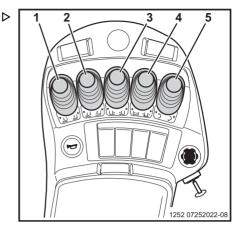
Tilting the mast backwards.

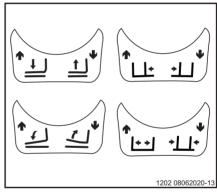
> Pull actuating lever (2) backward.

Attachments (optional equipment)

Third-, fourth-, and fifth-function attachments can be fitted to the truck as optional equipment (e.g. sideshifter, clamps etc.). In this case additional actuating levers (3, 4, 5) are provided.

Many different attachment types are possible. Note the symbols on the lever decals.







Operating the sideshifter or other thirdfunction (optional equipment)

> Push actuating lever (3) forward.

Sideshifter moves to the left. (Third-function other than sideshifter operates according to the symbol arrows on the lever decal.)

> Pull actuating lever (3) backward.

Sideshifter moves to the right. (Third-function other than sideshifter operates according to the symbol arrows on the lever decal.)

Operating the fourth- or fifth-function (optional equipment)

For a clamp or similar attachment equipped with a locking lever, the lever must be unlocked before it will operate the attachment. See the Operating a Clamp below.

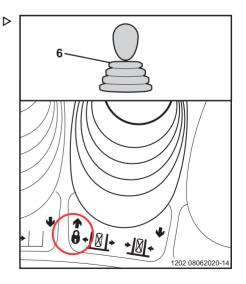
Move actuating lever (4) or (5) forward or backward

The fourth- or fifth-function operates according to the symbol arrows on the lever decal.

Operating a Clamp (or other locked lev- > er attachment)

For a clamp or similar attachment that holds a load by exerting pressure on it, a locking lever is used. Such a lever will be identified by a padlock symbol (red circle) on the lever decal. The lever must be unlocked before it will open the attachment. The locking condition is intended to prevent accidental operation of the attachment.

To unlock the lever, push it forward at least 40% and release it. The lever will be unlocked for approximately one second and symbol (6) will appear in the status bar of the display unit. Moving the lever forward will then open the attachment. If the lever is not moved to open the attachment within this time, it will lock again.





Fork Position Adjustment

WARNING

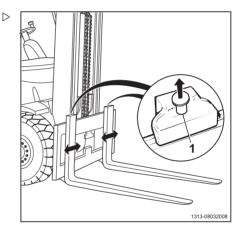
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Incorrect fork position can result in an unstable or unbalanced load.

Always position the forks so that the center of gravity of the load is centered between the forks. Both forks must be the same distance from the centerline of the truck.

The base of the latch pin knob is bevelled to facilitate the locking and unlocking process.

- > Lift the forks slightly off the floor.
- ➤ Lift the fork latch pin knob(1) and twist it to hold the latch pin up.
- Slide the fork arms inwards or outwards until the latch pins align with the position notches that best fit the load.
- Lift and twist the knob and allow it to spring back down along its bevelled edge and seat fully. Ensure that each latch pin is engaged securely in a notch on the fork carriage. If the knob will not go back down, then the fork is not aligned with a notch or the bevelled edge is not twisted into the correct position. Wiggle the fork slightly if necessary until the latch pin seats fully.





Load Assistance System

All models are equipped with the load assistance system. This system reduces the risk of tipping and increases the stability of the truck by actively intervening in the lifting and tilting movements if a critical load-dependent situation is detected. In addition, there is the option to intervene in the driving speed.



NOTE

Messages providing assistance may appear on the display unit during operation.



Stability risk.

If the warning light for the assistance system (1) appears in the display unit, the mast must be lowered or tilted back to alleviate the critical situation.



NOTE

Assistance systems are only designed to offer a supporting function and do not guarantee safety. The responsibility for operating the truck in a safe manner always lies with the driver. Even in the event of a potential malfunction, the driver must have full control of the truck at all times.

Assistance System Functions

- "Overload protection"
- "Lifting and tilting limitation"
- "Load-dependant reduction of driving speed" (optional)

Description of "overload protection"

"Overload protection" reduces the lifting speed in critical load situations, to the extent of stopping the movement if necessary. This function is active throughout the entire lift range.

Effect on the truck:

To prevent the truck from tipping over, the overload protection intervenes in the lifting movement if the load is too great. The lifting movement is reduced or stopped regardless of the lift height and tilt angle.



For a multi-stage lift mast, the overload protection intervenes with a more pronounced effect above the first stage of the lift mast so that an excessive load cannot be raised beyond this first stage.

During the intervention, the red warning light for the assistance system (1) flashes. In addition, the buzzer sounds.

The intervention will persist until the load is reduced

Operation after triggering:

Lowering is possible at any time without restriction.

> Lower the fork carriage.

The red warning light for the assistance system (1) goes out.

Reduce the load in accordance with the capacity rating plate.



NOTE

If lifting was stopped, the load can be raised out of a critical area for approx. one second. To do this, move the joystick to the neutral position. Repeat the process as many times as necessary.

Description of "lifting and tilting limitation"

"Lifting and tilting limitation" reduces the lifting and tilting speed in critical situations that could cause the truck to tip over. For a standard lift mast, the lifting and tilting limitation is active above a preset lift height (between 1.80 m and 2.20 m). For duplex or triplex lift masts, the lifting and tilting limitation function is active above the first stage of the lift mast.







If the truck is switched off immediately after an intervention or with a load support raised above the preset lift height (key switch off or emergency stop switch pressed), the load-dependent assistance system may fail if the truck is switched on again. Therefore, after switching the truck on, perform a lifting procedure without any load to above the preset lift height or to above the first stage of the lift mast.

Effect on the truck:

To prevent the truck from tipping over, the lifting and tilting limitation function intervenes in the lifting and tilting speed if the load is too great. Depending on the raised load, the lift height and the tilt angle, the lifting and tilting speed is reduced or stopped.



Loading:	Functions		
Level I	- The message is shown on the display unit The yellow warning light for the assistance system (1) lights up Reduction in the lifting speed Reduction in the tilting speed The buzzer sounds briefly.		
Level II	- The message is shown on the display unit The red warning light for the assistance system (1) lights up Reduction in the lifting speed Creep speed when tilting forwards The buzzer sounds at short intervals.		
Level III	- The message is shown on the display unit The red warning light for the assistance system (1) lights up Creep speed when lifting The forwards tilting speed is reduced to a stop The buzzer sounds at short intervals.		

Operation after triggering:

After triggering, leave the critical area:

> Move the joystick to the neutral position.

The buzzer is silenced. The warning light for the assistance system (1) continues to flash.

Leave the critical area by slowly tilting backwards and lowering the load.

The warning light for the assistance system (1) goes out.

> Move the joystick to the neutral position.



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Operation

> Reduce the load in accordance with the capacity rating plate.

Description of "load-dependent reduction of driving speed" (optional)

"Load-dependent reduction of driving speed" reduces the driving speed in critical situations that could cause the truck to tip over.

This function can be activated by the service partner using the diagnostic program and adjusted according to the type of application.

Effect on the truck:

The driving speed of the truck is reduced, depending on the raised load. In this case, the message "Reduction of driving speed due to high load" is displayed. In addition, the symbol (2) is displayed in the status bar.



NOTE

Only the driving speed of the truck is reduced. The acceleration and deceleration properties remain unchanged.

Operation after triggering:

The truck can still be operated at a reduced driving speed according to the specifications that are saved in the controller.



NOTE

If the function fails, the driving speed is permanently limited to the lowest value. Contact your service partner.

Malfunctions

Possible malfunctions are described in the "Malfunction displays" section.





Tilt Memory (optional equip-

ment) The tilt memory option allows the mast to be

rapidly and consistently tilted to a pre-set anale.

Whenever tilt memory is active, symbol (1) on the display will illuminate.

Control of tilt memory is assigned at the factory to button switch A4 (2) on the armrest. This assignment may be changed in the field per customer wishes.



To ensure safety, the tilt memory function does not automatically tilt the mast. Instead it automatically stops the tilting motion when the pre-set angle is reached. Tilt motion must still be initiated and maintained by the operator using the tilt lever as during normal tilting. Tilt motion is therefore under operator control at all times.

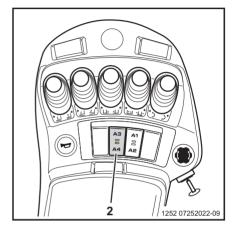
Setting the Tilt Reference Angle

The tilt angle sensor allows any mast angle to be stored into the system memory as the pre-set reference angle.

- > Tilt the mast to the desired angle.
- > Press the A4 button briefly to engage the tilt memory function. This step is unnecessary if the function is already engaged (A4 LED is green and symbol (1) visible in the status bar of the display).
- > Press and hold the A4 button. The LED will turn vellow. Hold the button until an audible tone is heard and the message "Value saved" appears in the display.

The angle of tilt is now stored in the system memory.





4

Operation



Operation

WARNING

The tilt reference angle is set relative to the vehicle. The tilt of the mast in relation to the ground depends on various factors such as tire wear, tire inflation pressure (if applicable), load, and unevenness and gradient of the ground.

Do not rely on the same pre-set angle for all conditions.

Operation with Tilt Memory

WARNING

The tilt memory feature is designed to increase efficiency and reduce operator fatigue during repetitive operations only. The operator always has the responsibility to ensure correct tilt angle.

Do not rely on the same pre-set angle for all conditions.

Three modes of operation are available depending on how the truck is programmed. The function of the A4 button will vary accordingly. The mode is programmed in the diagnostic software.

- Single use tilt memory is not active until the A4 button is pressed. The button must be pressed each time tilt memory assistance is desired.
- Continuous use tilt memory can be engaged continuously with the A4 button to allow repeated use, or turned off completely when not needed.
- Permanent use tilt memory is always active.



NOTE

On trucks equipped with the optional premium display, the A4 button can also be activated virtually in the display using the rotary knob. Further information regarding the sequence is described in the section entitled Push buttons in the premium display unit.

Single Use

With this mode, the tilt memory system becomes available for a single use by pressing the A4 button. Once the reference angle is reached, the system will deactivate. The A4 button must be pressed again for any subsequent use.



- Briefly depress the A4 button. The LED in the button will appear green and the symbol (1) will appear in the display. The tilt memory function is now active. Do not hold the button down or the reference angle will be reset.
- Operate the tilt lever in the direction of the pre-set reference angle. When the mast reaches the pre-set reference angle, tilting will stop automatically and an audible tone will sound
- Release the tilt lever. The tilt memory function is deactivated and the green LED in the button and the display symbol will go out.
- The mast can now be tilted normally with the tilt lever.
- Briefly depress the A4 button again to reactivate the tilt memory function as required.

Continuous Use

With this mode, the tilt memory system may toggled on or off as desired by pressing the A4 button. The system will remain on and will not deactivate until the A4 button is pressed again.

- ➤ Briefly depress the A4 button. The LED in the button will appear green and the symbol (1) will appear in the display. The tilt memory function is now active. Do not hold the button down or the reference angle will be reset.
- Operate the tilt lever in the direction of the pre-set reference angle. When the mast reaches the pre-set reference angle, tilting will stop automatically and an audible tone will sound.
- Release the tilt lever. The tilt memory function remains active. The LED in the button will remain green and the symbol (1) will remain present in the display. The mast can be tilted in the opposite direction and back again up to the stored reference angle.
- If tilting past the stored reference angle becomes necessary, press the A4 button to turn the system off. The mast will now tilt through its entire mechanical range.

Permanent Use



Operation

With this mode, the tilt memory system is active whenever the truck is on. The mast will always stop at the pre-set reference angle during tilting.



Load Weight Indication (optional equipment)

If the truck is equipped with this option, the weight of the load being carried can be displayed on the display unit.

To ensure an accurate measurement, the following requirements must be met:

- The truck must be on a flat, level surface and must be at a standstill
- · The mast must be in a vertical position
- The fork carriage must not be raised more than 5.5 feet (1.70 m) above the ground The load weight indicator does not show reliable values at heights above this.
- Before the measurement, the load must be lowered by 4 inches (10 cm).
- · The raised load must be stationary



NOTE

Reliable display of the load weight cannot be guaranteed for light loads of less than 220 lbs (100 kg).

Operation with Standard Display Unit

Control of load weight indication is assigned at the factory to button switch A6 (1) on the armrest

- ➤ I ift the load
- > Lower the load by 4 inches (10 cm).
- > Select the load weight indicator on the display.
- > Briefly press the A6 button (1).

The load weight (example: 450 kg) is shown on the display (2) for a duration of five seconds.

Zero Adjustment:

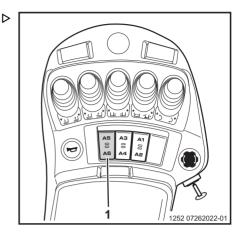
Using the zero adjustment feature, the current load weight can be set to zero. This can be used to identify deviations from a known reference weight or establish the tare weight of containers

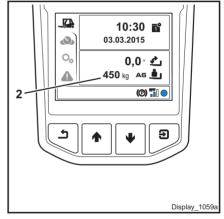
- Lift the load.
- > Lower the load by 4 inches (10 cm).
- > Select the load weight indicator on the dis-
- > Press and hold the A6 button (1).

The zero value is saved. In addition, the buzzer sounds.

The load weight indicator shows a value of 0 kg.

The zero value remains saved even when the truck is switched off and switched back on.







Operation with Premium Display Unit (optional equipment)

Control of load weight indication is assigned at the factory to button switch A2 (4) on the armrest. This assignment may be changed in the field per customer wishes. The push button assignment is indicated by the load weight indicator symbol (3) on the display.

The A2 button can also be activated virtually in the display using the rotary knob. See the section entitled Soft Keys.

- ➤ Lift the load
- > Lower the load by 4 inches (10 cm).
- > Briefly press the A2 button (4).

The load weight (example: 450 kg) is shown on the display (5) for a duration of five seconds.

Zero adjustment:

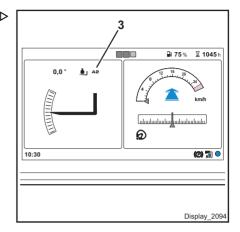
Using the zero adjustment feature, the currently determined load weight can be set to zero.

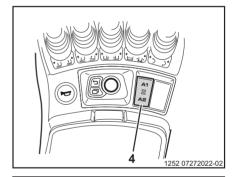
- ➤ Lift the load
- > Lower the load by 4 inches (10 cm).
- > Press and hold the A2 button (4).

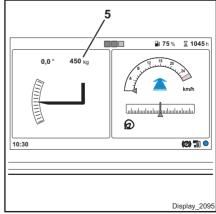
The zero value is saved. In addition, the buzzer sounds.

The load weight indicator shows a value of 0 kg.

The zero value remains saved even when the truck is switched off and switched back on









Fork Wear Protection (optional equipment)

Fork wear protection is available as an option. There are two basic variants - mechanical or electrical

Fork Wear Protection- Mechanical Variant

With this option, a mechanical stop is installed and the lowering height of the mast is always limited by the dimensions of the stop.

Fork Wear Protection - Electrical Variant

This feature relies on a switch installed on the mast to limit lowering of the fork carriage so that forks do not contact the floor. This feature is available with three different modes of operation:

- · Always active with override the feature is always enabled, but can be overridden as needed using the F2 button on the overhead guard switch panel.
- · Selectable on/off- the entire feature can be enabled or disabled as required using the F2 button on the overhead guard switch panel.
- · Permanently active the feature is always enabled and cannot be overridden.

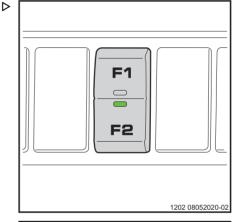
The mode is programmed in the diagnostic software.

When the forks are lowered to the limit, the message "Lowering limit reached" appears in the display. The confirm button 2 on the display is used to clear the message. For trucks equipped with the optional premium display, the rotary knob is pushed to clear the message.

WARNING

The fork wear protection system is a convenience feature only. It does not relieve the operator of the responsibility to ensure fork position is correct for any given task.

Always ensure fork position is correct for any given task.







Always Active with Override

If the truck is programmed with this mode, the carriage will always stop at the level determined by the mast switch. When the truck is started, LED in the F2 button will appear green. The fork wear protection symbol (1) will appear in the status bar of the display. This indicates that fork wear protection is enabled.

If it is necessary to lower the forks further, the system can be temporarily overridden as follows:

> Briefly press the F2 button.

The LED in the F2 button and the fork wear protection symbol in the status bar of the display will both go out. The system is now overridden and the forks may be lowered further. The system will automatically enable again afterwards.

Selectable On/Off

If the truck is programmed with this mode, the feature can be toggled on or off using the F2 button. When the feature is on, the LED in the F2 button will appear green and the fork wear protection symbol (1) will appear in the status bar of the display. The carriage will then stop at the level determined by the mast switch.

Further lowering is possible only by switching the system off via the F2 button. The green LED in the button and symbol in the display will go out. The system will then remain off until turned on again with the F2 button.

Permanently Active

If the truck is programmed with this mode, the carriage cannot be lowered below the level determined by the mast switch.



Hydraulic Depressurization System (optional equipment)

If this system is present, the truck's auxiliary hydraulic functions can be immediately depressurized. This is convenient for applications where hydraulic attachments are changed often. This system can not depressurize the lift or tilt circuits

▲ WARNING

Pressurized hydraulic oil can cause severe injury.

Always use care when disconnecting hydraulic components. Disconnect slowly in case unexpected pressure is present.

- To activate the depressurization system, make sure the engine is off and turn the key to the on position without starting the engine.
- Move the control lever of the function to be depressurized fully in both directions. If both auxiliary functions are to be depressurized, both levers must be moved fully in both directions. Repeat the movement several times
- > To restore hydraulic function, turn the key off and then start the engine normally.



Quick-disconnect Couplings for Auxiliary Hydraulics (optional equipment)

WARNING

Attachments alter the load capacity and stability of the truck.

Attachments that are not supplied with the truck must only be used if their use does not exceed load capacity and stability. Contact your authorized dealer if necessary to confirm attachment safety.

A WARNING

Pressurized hydraulic oil can cause severe injury.

Always use care when disconnecting hydraulic components. Disconnect slowly in case unexpected pressure is present.

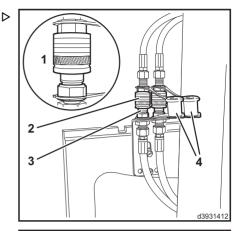
Quick-disconnect couplings (1) must only be used in conjunction with the depressurisation system.

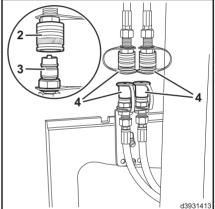
Disconnection

- ➤ Depressurise the hydraulic lines as described in the "Depressurisation" section.
- ➤ Thoroughly clean the quick-release couplings (1) and protective caps (4).
- ➤ Pull back the collar (2) and remove the fitting from the plug (3).
- Install the protective caps onto the loose couplings.

Reconnection

- ➤ Thoroughly clean the couplings and remove the protective caps (4).
- ➤ Pull back the collar (2) and push the fitting onto the plug (3).
- Secure the protective caps.





A★ Button (optional equipment)

The A★ button (1) allows rapid activation of a number of truck functions with one switch. Two preset combinations of functions (e.g. lights) and status (e.g. on, off, unchanged, auto) are available. One combination is active with the white LED. The other with the blue LED. This switch is used to conveniently activate a number of functions that are routinely used in a certain status without having to switch them independently. Combinations are configured via the display unit. See the section for the corresponding display unit for the configuration procedure.

Switching on the A★ button

➤ Push the A★ button (1) one or two times.

The LED (2) illuminates in white (first push) or blue (second push).

The selected functions are switched on and off

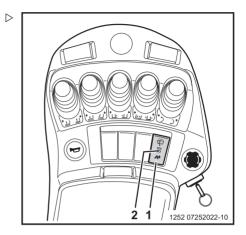
Switching off the A★ button

 On the armrest console or on the switch panel, push the corresponding button for any active function. The status is "off" and the LED (2) goes out.

Functions for the A★ Button

The following functions are available:

- Dipped beam
- · Working spotlights, position 1/2
- · Working spotlights, position 3/4
- Working spotlights, position 5/6
- Working spotlights, position 7/8
- · Front LED light stripes
- · Rear LED light stripes
- · Front/rear LED light stripes
- · Rotating beacon
- · Flashing beacon
- BlueSpotTM
- TruckSpotTM
- · Warning lines
- · Windscreen wiper functions
- Roof panel wiper
- · Reducing the driving speed
- Lift limits basic





- Lowering limitation basic
- Tilt angle preselection basic
- Forks wear protection



Operation

Lighting (optional equipment)

Lighting is generally controlled with button switches in the overhead guard switch panel.



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

The truck is available with the following types of lighting options:

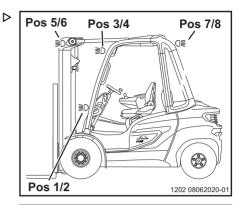
- · Work lights
- · LED light strips
- · Floor spot lights
- · Interior lighting
- · Road lights

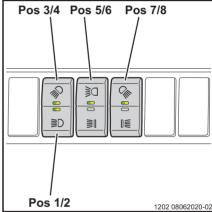


Work Lights

Work lights may be installed as options in the positions shown. They are controlled by the corresponding button switches in the overhead guard switch panel. The buttons can be used to switch the lights into one of three status conditions. As the button is pressed successive times, it will cycle through the three conditions. An LED in the button will change color with each condition.

- On LED appears green; work lights are switched on
- Auto LED appears yellow; work lights switch on depending on drive direction
- · Off LED off; work lights off

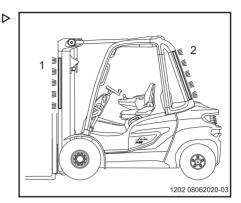


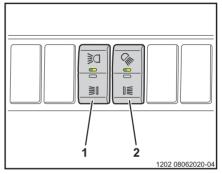


LED Light Strips

Front/rear LED light strips may be installed in pairs on the mast (1) and/or the rear overhead guard legs (2) as shown. They are controlled by the corresponding button switches (1) or (2) in the overhead guard switch panel. The buttons can be used to switch the lights into one of three status conditions. As the button is pressed successive times, it will cycle through the three conditions. An LED in the button will change color with each condition.

- On LED appears green; light strips are switched on
- Auto LED appears yellow; light strips switch on depending on drive direction
- · Off LED off; light strips off





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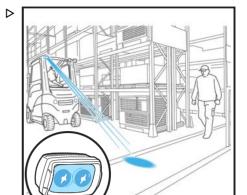


Floor Spot Lights

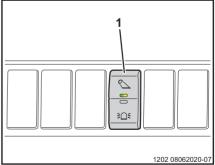
Floor spot lights are available to provide a visual signal to alert others that the truck is in their vicinity. Several models of these lights are available to cast certain spot colors or images onto the floor. These lights may be configured to work whenever the truck is on, whenever a certain direction (forward or reverse) is selected, or they may be configured to operate via a button switch in the overhead guard switch panel.

If a button is used, it will have the floor spot symbol (1). This button will switch the lights into one of three status conditions. As the button is pressed successive times, it will cycle through the three conditions. An LED in the button will change color with each condition.

- On LED appears green; floor spot light is switched on
- Auto LED appears yellow; floor spot light switches on depending on drive direction
- · Off LED off; floor spot light is off







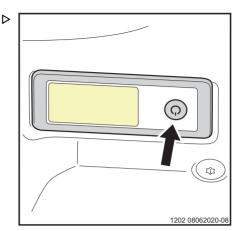


Interior Lighting

The truck may be equipped with a cab light and/or an illuminated clip board holder. These items have control buttons (arrow) built into them. As the button is pushed successively, it will cycle the light from off to on to dim and back off again.



If the truck is equipped with doors and configured with door monitoring, the button on the cab light will switch the light between on, off, and automatic with door opening. In this last case, the light will come on when the door is opened and dim when the door is closed.







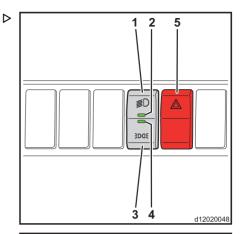
Road Lights

A road light package is available for trucks that may require operation in areas with other types of vehicular or public traffic. This package includes headlights/tail lights/ brake lights, side (parking) lights, turn signals, and hazard lights.

Button (1) will turn on the head lights/ tail lights/ brake lights and the side lights. LED's (2) and (4) will appear green. Pressing button (3) a second time will switch the headlights off and leave the remaining lights on.

Button (5) will engage the hazard lights. The turn signal indicator will flash in the display.

Switch positions (6) and (7) will engage the left or right turn signal respectively. The turn signal indicator will flash in the display.





Cabin (optional equipment)

An enclosed cabin with side doors, and front, rear, and top glass is available as an option. A climate control system is available as a further option. Front, rear, and top glass are also available separately. A washer/wiper system is available as a further option.

Opening the left-hand cab door

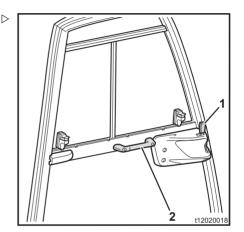
- > Pull the lever (1) backwards.
- > Open the cab door outwards.

Closing the left-hand cab door



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

> Using the handle (2), close the cab door all the way to the point that the interlock engages.

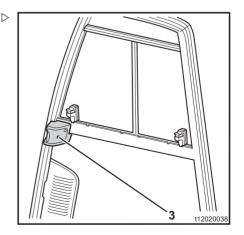


Opening the right-hand cab door

- > Open the interlock by pushing a suitable object into the bore (3).
- > Open the cab door outwards.

Closing the right-hand cab door

> From the outside, close the cab door all the way to the point that the lock engages.





Opening/closing the front side window

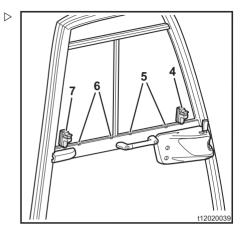
- > Push the interlock (4) upwards.
- > Press and hold down the interlock and slide the side window into the required position so that it engages in one of the grooves (5).

Follow the same procedure to close the side window

Opening/closing the rear side window

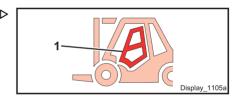
- > Push the interlock (7) upwards.
- > Press and hold down the interlock and slide the side window into the required position so that it engages in one of the grooves (6).

Follow the same procedure to close the side window.



Door Interlock (optional equipment)

The truck may have a door interlock feature. If so the symbol (1) will appear in the status bar of the display if the door is open with the truck switched on. A tone will sound during driving and the truck will be limited to creep speed or the truck may be prevented from driving completely depending on the configuration.



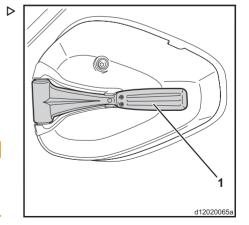
Emergency Exit via Rear Window

On trucks equipped with rear glazing (including full cabin models), an operator may be unable to exit the truck to the side in the event the truck becomes immobilized in a confined space such as narrow aisles. If danger is imminent, an emergency hammer (1) is provided to break the glass and allow escape through the rear window.

WARNING

Risk of injury from glass.

Shield eyes when using the emergency hammer. Proceed carefully afterwards to avoid laceration from glass remnants.



Linde Material Handling Linde

Operation

Wiper/Washer System (optional equipment)

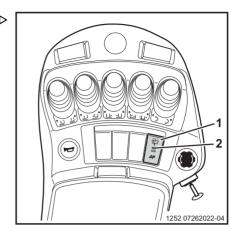
Wiper/washer systems are available for the front, rear, or roof glass, if installed.

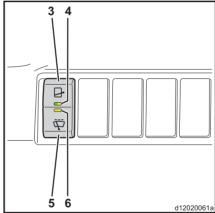
The wiper washer system is controlled using buttons in the armrest and the overhead guard switch panel. Front/rear wiper on/off is controlled with button (1) in the armrest. Roof glass wiper operation can be engaged or disengaged separately with the button (3) as long as the front/rear wipers are operating. The LED's (2) and (4) will appear green when the corresponding system is operating. The roof wiper will not operate unless the front/rear wipers are operating.

The truck may be configured so that roof wiper operation can be locked in by pressing the button (3) while the front/rear wipers are off. The LED (4) will then appear yellow. This will lock the roof wiper with the front/rear wipers so that all will start or stop using only the button (1). The LED (4) will toggle from yellow to green as button (1) is pressed. Press button (3) again to unlock the roof wiper from the front/rear wipers.

Wiper Speed

The wipers will operate according to the selected speed level and the travel status of the truck (forward, stationary, or reverse). The various wiper speed combinations are explained in the table. The speed level is selected with button (5). Briefly press the button (5) and observe the display unit to scroll through the three speed levels. Any of the three speed levels can be selected as default by pressing and holding the button (5). The LED (6) will appear yellow. The default speed level will automatically be active whenever the system is turned on.







Overview of the speed levels

	Forward travel	Stationary	Reverse travel
	Front windscreen wiper: intermittent mode, long intervals	Front windscreen wip- er: intermittent mode, long intervals	Front windscreen wiper: off
Speed level 1	Rear window wiper: off	Rear window wiper: off	Rear window wiper: intermittent mode, long intervals
	Roof panel wiper: intermittent mode, long intervals	Roof panel wiper: intermittent mode, long intervals	Roof panel wiper: intermittent mode, long intervals
	Front windscreen wiper: intermittent mode, short intervals	Front windscreen wip- er: intermittent mode, short intervals	Front windscreen wiper: intermittent mode, long intervals
Speed level 2	Rear window wiper: intermittent mode, long intervals	Rear window wiper: intermittent mode, long intervals	Rear window wiper: intermittent mode, short intervals
	Roof panel wiper: intermittent mode, short intervals	Roof panel wiper: intermittent mode, short intervals	Roof panel wiper: intermittent mode, short intervals
	-		
	Front windscreen wiper: continuous mode	Front windscreen wip- er: continuous mode	Front windscreen wiper: intermittent mode, short intervals
Speed level 3	Rear window wiper: intermittent mode, short intervals	Rear window wiper: intermittent mode, short intervals	Rear window wiper: continuous mode
	Roof panel wiper: continuous mode	Roof panel wiper: continuous mode	Roof panel wiper: continuous mode

Washer System

Front/rear washers are activated by pressing and holding the button (1). The roof glass washer is activated by pressing and holding the button (3). For either system, the washer pump will operate as long as the button is held up to a maximum of 20 seconds.



Heating and Air Conditioning (optional equipment)

If the truck is equipped with an enclosed cabin, a heating system is available as a further option. If the heater is present, an air conditioning system is available as a further option. Trucks equipped with heating only will not have the switch (4) and marking (5).

Heating System

Use the knob (1) for temperature control (more or less heat).

Use the knob (2) to adjust the blower speed.

Use the knob (3) to divert the heated air to the windows or the foot well.

Additionally, heated air will be available at the nozzle (6).

To defrost the windows, turn the knob (3) counter-clockwise. Open the outlet nozzle (6) and the left and right cabin vents (not shown) and direct their fins towards the windows.

Air Conditioning

The engine must be running and the blower switched on with knob (2) before the air conditioning will operate.

Press the button (4) to engage the air conditioning. Use knob (1) for temperature control.

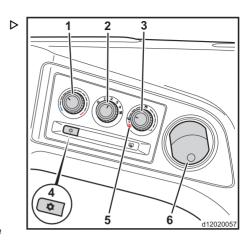
Blower speed and air flow are adjusted as with the heating system.

To defrost the windows, turn the knob (3) counter-clockwise to position (5). The blower speed will automatically increase to maximum. Open the outlet nozzle (6) and the left and right cabin vents (not shown) and direct their fins towards the windows.



NOTE

To prevent a musty odor from developing, run the blower for ten minutes after switching off the air conditioning to dry any water remaining on the evaporator.







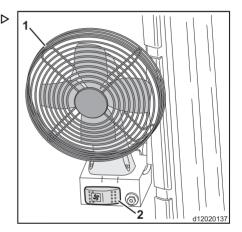
The condenser fans on the roof will operate periodically.



The air conditioning system should be operated at least ten minutes every four weeks to maintain lubrication on the compressor bearings.

Fan (optional equipment)

A cooling fan (1) for the operator is available as an option. The standard location for the fan is the front right-hand leg of the overhead guard. Use toggle switch (2) to turn the fan on or off.



Linde Material Handling Linde

Operation

Sockets (optional equipment)

12-V Socket

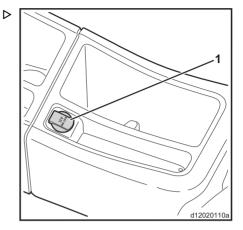
If equipped, the 12-V socket (1) will be installed in the right-hand compartment.

The following power outputs are protected:

· Nominal voltage: 12 V

· Current strength: maximum 10 A

• Power consumption: maximum 120 W



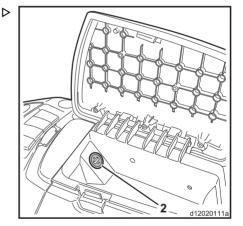
USB Socket

If equipped, the USB socket (2) will be installed in the compartment of the armrest console.

The following power outputs are protected:

· Nominal voltage: 5 V

· Current strength: maximum 1.5 A





Towing Loads

The towing pin can be used to secure light loads for occasional towing by the forklift truck

Towed load capacity is limited by the maximum rated towing force listed in section 6. No load may be towed that exceeds the maximum towing force, regardless of weight. Contact the factory for towed weight capacity if necessary.

A CAUTION

Exceeding the maximum rated towing force can damage the truck.

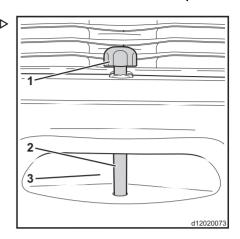
Refer to the specifications in section 6 for the maximum towing force. Do not tow any type of load that will exceed the maximum towing force. This specification only applies to loads towed on level surfaces (+/- 1%). If towing on gradients is required, contact the factory for load specifications.

WARNING

Incorrect attachment of towed loads can damage the truck and cause serious injury.

Never attach a load to any part of the truck other than the towing pin.

- > Push down slightly on the handle (1) and turn it to release the towing pin (2).
- > Lift the towing pin up with the handle.
- > Insert the tongue of the towed load into the coupling space (3).
- > Allow the towing pin to drop back into place through the tongue of the towed load. Ensure that the towing pin engages its lower bore.
- > Push down on the handle and turn to lock it into position.
- > Reverse the above procedure to uncouple loads from the truck.



Linde Material Handling Linde

Battery Operations

Battery Operations

Reading Battery Charge Level

The display unit will display the battery charge level.

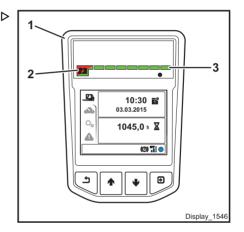
▲ CAUTION

Batteries can be damaged or ruined by deep discharging.

Never continue to operate on a battery nearing its discharge level.

Standard Display

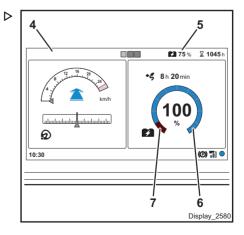
A few seconds after the ignition is switched on, the battery charge level is shown in the display (1) by a row of indicators (2) and (3). When the battery is fully charged, all of the square lights (3) and the "battery" symbol (2) appear green. As the battery discharges, the square lights extinguish, starting from the right. When the charge level drops to 25% (10% for lithium ion batteries) the "battery" symbol (2) will turn red. As the battery is discharged further, travel and hydraulic power is reduced. When the charge level drops to 20% (2% for lithium ion) the red battery symbol will begin flashing and a warning tone will sound.



Premium Display (optional equipment)

A few seconds after the ignition is switched on, the battery charge level is shown in the display (4) by a symbol (5) a few seconds after the ignition is switched on. The level is displayed here continuously, but a dedicated window is also available with a detailed graphic (6). The charge level is displayed as a percentage in both places. The battery is fully charged when all nine illuminated fields (6) light up light blue and the illuminated field (7) lights up dark red.

As the battery discharges, the illuminated fields go out.





Battery Operations

When the charge level drops to 25% (10% for lithium ion) the illuminated field (7) gradually turns bright red. The symbol (5) will also turn red.

As the battery is discharged further, travel and hydraulic power is reduced. When the charge level drops to 20% (2% for lithium ion) the illuminated field (7) will be completely red. The red battery symbol (5) will flash at this point.

Opening and Closing the Battery Cover

Opening

- Remove any loose items from the battery cover or from under the driver's seat. Also ensure the operator's manual pouch flap is closed.
- > Unlock the battery cover at the latch on the front left edge.
- > Slowly swing the battery cover until it is completely open.

Closing

- Push the battery cover against the pressure of the support struts and push it closed until the locking lever engages with an audible click.
- ➤ Ensure the battery cover is securely locked in the closed position.

Linde Material Handling Linde

Battery Operations

External Battery Charging - Side ▷

For side charging, the charging process is the same for lead acid or lithium ion batteries.

WARNING

Specialized training is required to charge batteries safely.

Batteries may only be charged by properly trained personnel in accordance with the instructions of the charger manufacturer and the following procedure.

WARNING

Explosive gases are released during battery charging.

Charge batteries only in well ventilated areas.

- > Park the truck safely.
- > Fully lower the fork carriage.
- > Tilt the lift mast forwards

The fork arms must touch the ground. This will electrically ground the truck.

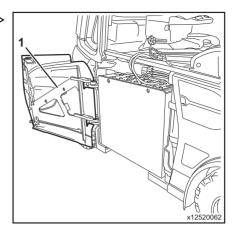
- > Apply the parking brake.
- Switch off the key switch.
- > Press the emergency stop button.
- Open the battery cover.

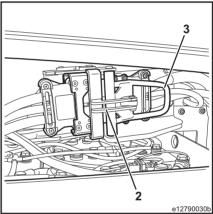
WARNING

Dangerous concentrations of explosive gases can occur during battery charging if the battery cover is not open.

The battery cover must be left completely open during the entire charging period to allow ventilation.

- > Open the battery door.
- Remove the battery plug (1) from the connecting socket (2).
- Attach the connector plug of the external battery charger to the battery plug.
- > Switch on the battery charger.







Battery Operations

WARNING

Disconnecting the battery during charging can cause injury or damage.

Never disconnect the battery during charging. If necessary to interrupt the charging process, always do so by switching the external charger off first.

- > When charging is complete, switch off the charger and unplug it from the wall outlet.
- Disconnect the battery plug from the charger and reconnect it to the truck.

Battery Operations



battery Operations

External Battery Charging - Rear (optional equipment)

Trucks equipped with this option may be connected to an external charger through a battery plug in the rear compartment.

WARNING

Specialized training is required to charge batteries safely.

Batteries may only be charged by properly trained personnel in accordance with the instructions of the charger manufacturer and the following procedure.

Lead-Acid Batteries

Trucks with lead-acid batteries that are equipped for rear charging have an active ventilation system to extract dangerous gases produced during charging from the truck.

- > Park the truck safely.
- > Fully lower the fork carriage.
- > Tilt the lift mast forwards

The fork arms must touch the ground. This will electrically ground the truck.

- > Apply the parking brake.
- > Switch off the key switch.
- > Press the emergency stop button.
- Open the rear compartment cover.



NOTE

The rear cover must be completely open during the entire charging process. The cover position is monitored by sensors. In order to prevent unintentional drive-off while the charger is connected, all traction and hydraulic functions are deactivated when the rear cover is open.

- ➤ Lift the battery plug in the rear compartment up into position if necessary.
- Attach the connector plug of the external battery charger to the battery plug.
- > Switch on the battery charger.
- > Press the button (1)



Battery Operations



NOTE

On deeply discharged batteries, the button must be pressed and held for approximately five seconds.

After actuating the push button, the red and green LEDs illuminate simultaneously for 2 seconds. The system performs self-testing during this short period of time. The fan is activated at the same time. The charging process then starts automatically and the green LED in the push button illuminates. At the end of charging, the fan remains active until either the push button is actuated or the emergency off switch is pulled. At this time a fan run-on period of 15 minutes begins in order to extract the remaining charge gases from the truck. During the run-on time, the green LED in the push button flashes.

WARNING

The rear cover must remain open to allow the fan to extract dangerous gases.

The rear cover must remain open throughout the charging process and until the end of the run-on period.

If the fan malfunctions, the charging process will not start or will terminate if already in progress.

WARNING

Disconnecting the battery during charging can cause injury or damage.

Never disconnect the battery during charging. If necessary to interrupt the charging process, always do so by switching the external charger off first. Do not press the button (1) to interrupt the charging process.

- When charging is complete, switch off the charger and unplug it from the wall outlet.
- > Press the button (1) to begin the fan run-on period.
- > Disconnect the battery plug from the charger.
- Close the rear cover.



Battery Operations

Lithium-Ion Batteries

- > Park the truck safely.
- > Fully lower the fork carriage.
- > Tilt the lift mast forwards

The fork arms must touch the ground. This will electrically ground the truck.

- > Apply the parking brake.
- > Switch off the key switch.
- Press the emergency stop button.
- Open the rear compartment cover.



The rear cover must be completely open during the entire charging process. The cover position is monitored by sensors. In order to prevent unintentional drive-off while the charger is connected, all traction and hydraulic functions are deactivated when the rear cover is open.

- Lift the battery plug (1) in the rear compartment up into position if necessary.
- ➤ Attach the connector plug of the external battery charger to the battery plug.
- > Switch on the battery charger.

WARNING

Disconnecting the battery during charging can cause injury or damage.

Never disconnect the battery during charging. If necessary to interrupt the charging process, always do so by switching the external charger off first.

- When charging is complete, switch off the charger and unplug it from the wall outlet.
- Disconnect the battery plug from the charger
- Close the rear cover.



Battery Operations

Changing the Battery

A WARNING

Specialized training is required to handle batteries safely.

Batteries may only be changed by properly trained personnel in accordance with the instructions of the battery manufacturer and the following procedure.

The battery is changed from the right-hand side using an additional forklift.

A WARNING

If any lifting equipment (forklift trucks or other lifting equipment) used to change a battery has insufficient load carrying capability and/or forks whose length is too short, there is a risk of accidental injury or death.

Use only equipment of sufficient size and load carrying capability to change batteries.

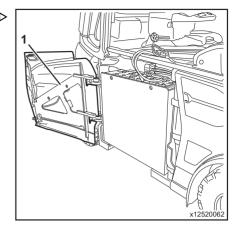
WARNING

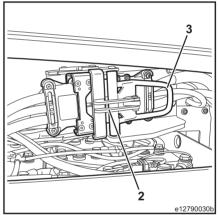
Batteries must not be changed if the truck is bearing any load. The weight of the battery affects truck stability so there is a risk of the truck tipping over with injury to operators or bystanders if a battery is changed while the truck is loaded.

Always lower the forks fully so they are resting on the ground before changing a battery.

Removing the Battery

- > Park the truck safely.
- > Fully lower the fork carriage.
- Tilt the lift mast forwards until the fork arms touch the ground. This will help ensure electrical grounding of the truck.
- Apply the parking brake.
- > Switch off the key switch.
- Press the emergency stop button.
- > Open the battery door (1).
- > Open the battery cover.
- Pull the battery plug (2) out of the battery socket (3). Ensure that the battery cable is secure and will not become entangled or damaged during battery removal.









Battery Operations

▲ WARNING

Shorting of battery terminals can cause burns, electrical shock, or explosion.

Do not allow metal parts to contact the top surface of the battery. Make sure all terminal caps are in place and in good condition.

- Carefully position the forks of the additional forklift in the fork pockets beneath the battery.
- Lift the battery slightly until it can be moved freely.
- > Slowly remove the battery from the truck.
- Check the battery for damage.
- Check that the battery plug and cable are in good condition and leave the battery in a safe place.

WARNING

Batteries produce explosive gases.

Always store batteries in well ventilated areas.

Installing the Battery

WARNING

Batteries of incorrect size or weight will affect truck stability and cause the risk of tip-over.

Install only batteries whose weight meets the specification listed on the truck data plate.

WARNING

Use of a fuel cell can affect truck stability and cause the risk of tip-over.

Contact the factory for written approval for use of a fuel cell with the truck. Do not install a fuel cell in the truck without written approval.

- Carefully pick up the new battery so that it will be properly oriented for installation. Lithiuim ion batteries must be positioned with their electrical compartment to the outside.
- Position the battery cable on top of the battery securely so that it will not become pinched or damaged during installation.



- > Carefully position the replacement battery in the truck.
- > Disconnect and remove all lifting equipment.
- > Inspect the battery plug and cable for damage. Repair or replaced any damaged components before proceeding further.
- > Plug the battery plug into the battery connector socket.
- > Close the battery door.
- > Close the battery cover.
- > Pull out the emergency stop button and the truck is ready for service.

Linde Material Handling Linde

Additional Procedures

Additional Procedures

Manual Lowering of Fork Carriage

If a malfunction occurs in the hydraulic system, the fork carriage can be lowered manually.

For this purpose, a manual lowering screw (2) is located on the control valve block (1).



▲ DANGER

Injury or death will occur if personnel are beneath the fork arms during the manual lowering process.

All personnel must remain clear of the area beneath the fork arms while the fork carriage is being manually lowered.

Always leave the wrench on the screw(2) throughout the manual lowering process to enable lowering to be quickly interrupted at any time.

The manual lowering screw is accessible with or without the floor plate in place. If the floor plate is in place, the screw is accessible through a cutout.

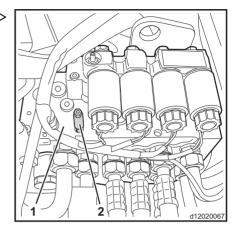
- If the floor plate is in place, remove the floor mat.
- Using an 8 mm socket, slowly turn the threaded stud (2) approximately 2 turns counter-clockwise. The carriage will begin to lower slowly. Do not unscrew the stud more than two complete turns. Unscrewing the stud further will not increase the lowering speed.

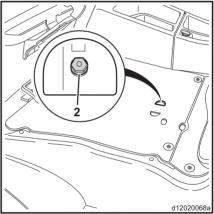
A CAUTION

If the lowering stud (2) is unscrewed too much, it will come completely out under pressure. If the stud comes out, it is impossible to re-install it against the flow of escaping hydraulic oil. If this occurs, the carriage will still not lower any faster, but hydraulic oil will be lost in an uncontrolled manner.

Do not unscrew the stud more than two complete turns.

After the carriage has lowered to the desired position, screw the threaded stud (2) back in clockwise and tighten to 11.1 ft-lb







Additional Procedures

(15 Nm). This must be done or the lift function will not operate.

Tilt Sensor Override

If the tilt angle sensor malfunctions, the mast may be tilted by continuous cycling of the tilt lever. The truck will be limited to creep speed if such a malfunction occurs.

> Move the tilt lever in the desired direction. The tilt function will operate for one second. Repeat this motion as many times as necessary until the mast is at the desired angle.



Additional Procedures

Towing the Truck

Overview

If the truck must be towed, the brake springs in the drive axle must be overridden to release the parking brake. This is done by manually pressurizing the parking brake circuit in the drive axle. The service brake is separate from the parking brake circuit. It is irrelevant to towing and will remain available during towing if the stop pedal is pressed.

The procedure is explained below.

A WARNING

Do not rely on the service brake during towing even though it is available for emergency use.

Towing the truck requires a towing vehicle with sufficient tractive power and braking force for the truck mass. Towing must be carried out using a fixed connection (towing bar).



NOTE

The power-assisted steering will not function if the truck cannot be switched on or the hydraulic system is faulty. Increased effort will then be required for steering.

Before Towing

- Remove any load from the forks and lower the mast to a point where the forks will not drag during towing. If necessary, remove the forks
- Attach the towing vehicle (ensure sufficient tractive power and braking force) to the towing pin of the truck using a towing bar.

Additional Procedures

Pressurizing the Parking Brake Circuit

If the truck can be switched on and the hydraulic system is functional, the parking brake should release when the drive pedal is tapped (as long as the parking brake switch is off). In this case the pressurization procedure is not necessary. The brake will reset however, if the truck becomes stationary for three seconds during towing. In this case, the operator would have to tap the drive pedal again.

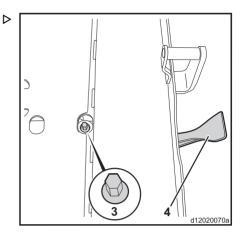
The brake valve is located under the floor plate on the left-hand side of the truck chassis.

- > Switch the truck off.
- If the truck has a parking brake switch (standard configuration), place it in the off position.
- > Remove the floor mat.
- > Remove the floor plate.
- Measure the distance dimension (Z) with a slide gauge or depth gauge. This will facilitate the subsequent adjustment of the correct pressure setting.
- Loosen the lock nut (2) and turn the threaded stud(1) of the pressure relief valve clockwise to the stop. Tighten to 3 ft-lb (4 Nm). It may be necessary to hold the pressure relief valve (3) in place by placing another wrench on its flats
- Disconnect the plug from the solenoid valve (1Y21).
- Pump the plunger (4) in and out approximately 30 cycles to release the brake.
- > Install the floor plate and floor mat.



Leave the parking brake switch in the off position until the brake circuit is restored. An error message may occur when the seat switch is activated due to the solenoid disconnection. It can be ignored.

> Tow the truck.





Additional Procedures



NOTE

The brake will remain released for approximately 25 minutes due to leakage in the brake valve. If necessary, the brake must then be released again using the plunger (4).

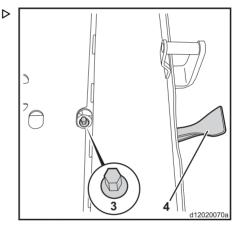
After Towing

After all towing is complete, secure the truck with chocks. The towing procedures must be reversed before operating the truck:

Restoring the Parking Brake Circuit

The pressure used to override the parking brake springs must be relieved to restore normal function. This pressure must be confirmed in the diagnostic program.

- > Remove the floor mat and floor plate.
- Unscrew the threaded stud (1) counterclockwise until it reaches the dimension Z previously measured. Run the lock nut down but do not tighten it yet.
- Connect the plug to the solenoid valve (1Y21).
- Switch the truck on and start the diagnostic program and select the pressure gauge for pressure sensor 3B1.
- Bleed the brake circuit by barely pressing the drive pedal just enough to release the brake and then release the drive pedal. Wait three seconds for the brake to re-engage and then tap the drive pedal again. Repeat this process five times to bleed the system.
- After the bleeding process, note the setpoint value for the pressure setting. Tap the drive pedal and release it. The setpoint pressure should drop from 30 to 17 bar (within 2 to 10 seconds of releasing the drive pedal. This value will only be shown for a brief period before dropping to zero.
- The pressure may be adjusted to 17 bar if necessary with the threaded stud (1). Turning it clockwise will increase the pressure by 0.4 bar with each 1/4 turn.





Additional Procedures

- > When the pressure is correct, tighten the lock nut (2) to 7.5 ft-lbs (10 Nm) against the relief valve (3)
- > Install the floor plate and floor mat.
- > Apply the parking brake.

A WARNING

The forklift truck must not be driven if the brake system is defective or not fully restored.

Always confirm correct operation of the brake after restoring braking at the brake valve. The truck must not be driven until proper braking ability is confirmed.

Loading/transportation

Loading/transportation Securing the Truck for Transport

This procedure explains the attachment of equipment to the truck for the purpose of securing it for ground transport by tractor-trailer or other vehicle. Securing the truck for transport must be performed by personnel experienced in rigging loads for transport.

WARNING

Transport vehicles, loading ramps, or other equipment of insufficient capacity can fail and cause severe injury or death.

Ensure that the transport vehicle as well as any loading ramps or other equipment has sufficient capacity to carry the weight of the truck. Refer to the truck data plate for truck weight.

Ensure that all surfaces on which the truck will be driven or carried can support the wheel load of the truck. Contact the factory for wheel load values if necessary.

WARNING

If the truck is to be driven onto the transport vehicle, the operator must be familiar with all safety procedures that apply to forklift operation before driving. Be aware that the truck has rear steering and that the rear end will move out during a turn. Failure to carefully monitor truck position while turning could cause the truck to fall during the loading process.

Read and understand all safety information in Section 2 before driving the truck onto a transport vehicle. Remain aware of truck position at all times especially if turning. If possible, align the truck with the transport vehicle so that it can be driven straight onto it without turning. Drive very slowly during the entire loading process.

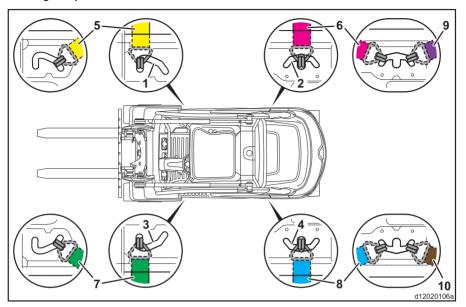
Preparation

- > Once the truck is in position, lower the mast completely.
- > Apply the parking brake.
- Switch the truck off.

The truck has four slots in the underside of the chassis for use with lashing straps that have hooks at their ends. These slots are used with method 1 below. If straps with hooks are not available, method 2 may be used.



Lashing Strap Placement - Method 1



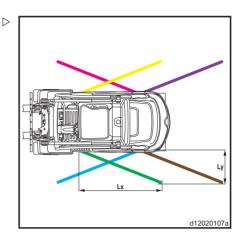
The truck has four slots (1 to 4) cut into the underside of the chassis. The slots are designed to accept lashing straps that have hooks at their ends.

- Insert the hooks of lashing straps (5), (6), (7) and (8) into the slots at a right angle to the truck.
- > Engage the lashing strap hooks by turning them in the tensioning direction. This will prevent the hooks from accidentally slipping out of the slots.
- > For trucks with the optional raised driver's compartment, also insert the lashing straps (9) and (10) into the holding fixtures at a right angle to the truck.

 \triangleright

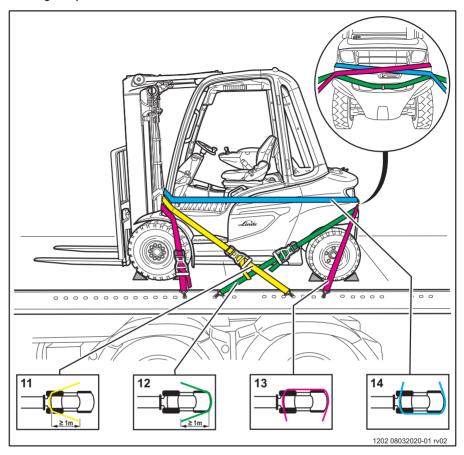


- Attach the lashing straps to the transport vehicle. Ensure that the distance Lx is between 60 inches and 72 inches (1500 mm to 1800 mm) and the distance Ly is between 28 inches and 32 inches (700 mm to 800 mm).
- Ensure that all lashing straps or tie-downs are tight and securely attached to the transport vehicle.
- > Chock the wheels.





Lashing Strap Placement - Method 2



- > Position lashing straps around the truck as shown.
- Pass the strap in position (12) behind the towing pin. Ensure that the towing pin is fully inserted through both of its bores in the counterweight.
- Ensure that all lashing straps or tie-downs are tight and securely attached to the transport vehicle.
- > Chock the wheels.

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Loading/transportation

Hoisting the Truck

This section explains the attachment of lifting equipment to the truck for the purpose of hoisting it. Many methods of rigging to a crane or hoist are possible. Explanation of such methods as well as operation of lifting equipment is outside the scope of this manual. Both the attachment of lifting equipment to the truck and the hoisting operation itself must be performed by personnel experienced in rigging.

WARNING

Lifting equipment of insufficient capacity can fail and cause severe injury or death.

Ensure that all lifting slings, hardware, or other equipment has sufficient capacity to carry the weight of the truck. Refer to the truck data plate for truck weight.

Two lifting eyes (1) on the lift mast and two lifting eyes (2) on the counterweight are available as an option for crane loading.

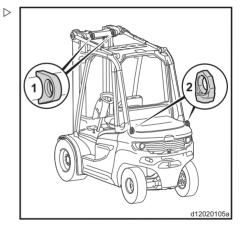
Lifting Eyes

WARNING

Improper use can result in damage to the lifting eyes. Damaged or worn lifting eyes can fail and cause severe injury or death.

Follow the guidelines below to avoid damage to the lifting eyes.

- Do not use the lifting eyes to tow the truck or to lash the truck for transportation purposes.
- Do not use the lifting eyes on the lift mast to lift the lift mast, e.g. for service work.
- Following noteworthy incidents, such as the lifting eyes colliding with objects, crane loading must not be carried out. The lifting eyes must be checked by an authorised technician.
- Bent or damaged lifting eyes must be repaired or replaced only by an authorised technician.
- Do not allow the lifting eyes to come into contact with aggressive chemicals, acids or their vapours.





Preparatory tasks

Park the truck securely. To do so:

- Remove the load from the fork arms or attachment.
- > Completely lower the load support.
- > Move the lift mast to a vertical position.
- > Apply the parking brake.
- > Switch the truck off.
- Remove any loose objects from the driver's cab.
- > Close the cab doors securely.
- > Determine the loading weight.

The loading weight is the sum of the

- · Tare weight of the truck with battery
- · Tare weight of the attachment, if fitted

Attaching Slings

- Crane loading using lifting eyes is only permitted using equipment specifically intended for lifting.
- Slings must lead vertically upwards from the lifting eyes.
- A compensating device must be used to avoid uneven load distribution. The compensating device must distribute the load of the truck symmetrically to the left and right at the front and rear (e.g. an H-shaped load beam with compensating rocker on the lifting gear).
- Check the lifting eyes for damage: secure positioning, heavy corrosion, wear and deformation.

WARNING

Damaged, worn, or loose lifting eyes can fail and cause severe injury or death.

Do not hoist the truck if problems with a lifting eye are found. Have the lifting eyes repaired or replaced before hoisting the truck.

Adjust the lifting gear to the distances between the lifting eyes on the truck.



- Adjust the length of the slings from the horizontally suspended lifting gear to the position of the lifting eyes.
- > Always attach the slings to all four lifting eyes on the truck.

When connecting the slings, make sure that there are no points at which hands could be crushed, trapped, cut or impacted.

Slings must be free to move in the lifting eye.

Make sure that all safety locks on the crane and lifting gear are closed.

Hoisting the Truck

Adjust the slings and lifting device so that they will not contact the overhead guard during the lifting process.

A WARNING

The overhead guard will be damaged if it is contacted by lifting equipment that is under tension from lifting. This can result in later failure of the overhead quard and the risk of severe injury or death.

Ensure that no part of any lifting equipment contacts the overhead guard during lifting.

Slowly perform a test lift.



NOTE

Permissible angle of the slings to the vertical:

 All slings must remain within a maximum (x) and (y) angle of ±10° from the vertical reference point.

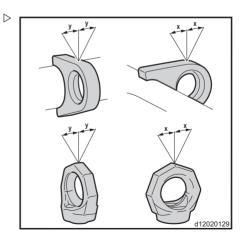
All four wheels must leave the ground at the same time and the truck must be horizontal when suspended.

- If necessary, adjust the alignment of the lifting gear.
- Slowly lift the truck and set it down again.

Servicing work on the lifting eyes

Servicing work every 1000 operating hours but at least every 12 months:

Check the lifting eyes on the lift mast for wear.





> Check that the lifting eyes on the counterweight are secure and check for wear.



Loading/transportation

Maintenance



Personnel Qualifications

Personnel Qualifications

Only qualified personnel authorized by the owner are permitted to perform maintenance or repair work. All items listed in the Scheduled Maintenance Charts must be performed by qualified forklift technicians only. They must have knowledge and experience sufficient to assess the condition of a forklift truck and the effectiveness of the protective equipment according to established principles for testing forklift trucks. Any evaluation of safety must

be unaffected by operational and economic conditions and must be conducted solely from a safety standpoint.

Daily inspection procedures and simple maintenance checks, e.g. checking the hydraulic oil level or checking the fluid level in the battery, may be performed by operators. This does not require training as described above.



Cleaning

Cleaning

Cleaning the Truck

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

Hot steam or cleaning materials with a powerful degreasing effect should only be used with great caution as this will affect the grease filling of bearings with lifetime lubrication, causing it to escape. As re-lubrication is not possible, the bearings will be irreparably damaged.

When using compressed air for cleaning, remove stubborn soiling with cold cleaner.

During cleaning pay special attention to cooling fins on drive axles or electric motors. On motors or other electric components, remove caked deposits from cooling fins and heat sinks with a cloth

Clean all oil filler openings and the surrounding areas. Always clean grease fittings prior to greasing.

Run the truck immediately after cleaning to aid in drying and check operation.

Cleaning the Lift Chains

If the lift chains are so dirty that lubricant penetration is not assured, the chains must be cleaned.

A WARNING

Lift chains are safety elements. Incorrect cleaning materials can damage them.

Do not use cold/chemical cleaners or fluids that are corrosive or contain acid or chlorine. Note the manufacturer's safety information. When cleaning with a steam jet, do not use additives.

- > Place a collection vessel under the mast.
- Clean lift chains with a paraffin derivative such as petroleum ether.

▲ CAUTION

Never wash truck when switched on.

Switch the truck off before any cleaning operations.

A CAUTION

When cleaning with a water jet (high-pressure or steam cleaner etc.), it should not be applied directly to the area of the drive unit, electric and electronic components, connector plugs or insulating material. Water should not be used for cleaning in the area of the central electrical system and switch console.

If this is unavoidable, the parts concerned should be covered up beforehand or only cleaned with a dry cloth or clean compressed air.



NOTE

If the truck is equipped with a sideshifter, its top and bottom bearings should be greased after the truck is washed. Use lubricating grease complying with the recommendations for working materials.

- Immediately after cleaning, dry the chains with compressed air to remove any water remaining on the surface and in the chain joints. Flex the chains while drying to ensure thorough moisture removal.
- Immediately apply chain lubricant to the chains. Flex the chains while applying the chain lubricant to ensure lubricant penetration



NOTE

Lift chains on trucks used in the food industry must be lubricated with an oil approved for the food industry.



Cleaning

Cleaning Fans and Heat Sinks

Description

Depending on the variant and equipment, a number of fans can be found in the truck:

- Two fans on the drive axle for cooling the power modules (KPC) of the traction motors (only with E version)
- One fan on the pump-motor unit for cooling the power module (KPC) pump motor (only for E version)
- One fan on the front right-hand side of the truck to dissipate hot air from the control compartment
- One fan on the radiator in the counterweight for cooling the coolant of the power modules and the hydraulic oil (only on the X version)
- One fan for sucking off the charge gases in trucks with the "integrated charger" or "battery charging at the rear" special equipment (only for lead acid batteries)
- Two fans used on trucks with the "integrated charger" special equipment for cooling the battery charger

The best medium for cleaning fans is oil-free compressed air and/or cold cleaning solvent.

Particular care must be taken to clean the spaces between the heat sink and the fan blade to ensure efficient cooling of the components

▲ CAUTION

Damage to the fans due to an excessively high speed.

Hold fan impellers in place using a suitable tool when cleaning using compressed air.



ENVIRONMENT NOTE

Observe the information regarding the use of consumables.

Cleaning the fans for the power modules of the traction motors

The fans for cooling the power modules of the traction motors are located on the air duct



Cleaning

at the rear of the drive axle (only for the E version).

- > Switch off the truck.
- > Pull out the cover of the heat sink.
- > Clean the fan with compressed air.

Cleaning the fan for the power module of the pump motor

The fan for cooling the power module of the pump motor is located on the heat sink of the power module (KPC) of the pump motor (only for the E version).

> Clean the fan with compressed air and/or cold cleaning solvent.

Cleaning the fan for the control compartment

The fan for the control compartment is mounted behind the front right-hand side panel.

- ➤ Loosen and unscrew the mounting screw on the side panel.
- > Lift and remove the side panel.
- Clean the fan with compressed air and/or cold cleaning solvent.

Cleaning the "active ventilation" fan

An additional fan for sucking off the charge gases is installed under the rear cover on trucks with the following special equipment: "battery charging at the rear" or "integrated charger".

"Active ventilation" fan for battery charging at the rear

- "Active ventilation" fan for the integrated charger.
- > Open the rear cover.
- Clean the fan with compressed air and/or cold cleaning solvent.



Operator Inspection and Maintenance

Daily Inspection Overview

The following inspection tasks in this section should be carried out by the operator or designated service personnel before each shift or at least daily. This inspection is not part of the regularly scheduled maintenance listed elsewhere in this chapter and is not intended to replace any of it. Regularly scheduled maintenance must be performed by a qualified forklift technician at the intervals indicated.

If any problem affecting safety is noted, it must be repaired immediately by a trained forklift technician. The truck must not be operated until such repairs are complete. This list does not cover attachments or other truck modifications not manufactured by Linde. Refer to the respective manufacturer's documentation for maintenance information pertaining to such items

WARNING

To prevent accidents during maintenance activities, the truck must be secured against unintentional movement or start-up. Before beginning any maintenance, the mast should be fully lowered, the parking brake should be on and the key switch turned off. The truck must remain in this state throughout the maintenance process except for individual maintenance activities that specifically require otherwise.



Daily Inspection Checklist

Γru Ηοι		ELECTRIC SIT-DOWN LIFT TRUCK OPERATOR'S DAILY CHECKLIST								
Hou	ick S	Serial Number: Dept / Shift:			Operator:					
	ur m	Serial Number: Dept / Shift: neter reading: Date:			Supervisor:					
of a	any	each of the following items before the start of each shif problem. Start at the left rear of the lift truck and work to coordingly. Explain below as necessary. Check boxes as follows: OK NR, Need	wards t	he f						
o K	N R	VISUAL INSPECTION		N R	OPERATIONAL INSPECTION					
		Oil Spots on Floor (check for leaks on truck)			Unusual Noise (during any of the operational checks)					
		Rear Tire(s) (pressure if applicable, wear, cuts, embedded			Emergency Battery Disconnect) (check operation)					
		objects, rim damage, loose/missing lug nuts)			Gauges and Instrumentation (check operation)					
		Steer Axle (check for damage, debris)			Battery Charge (fully charged)					
		Overhead Guard (damage, bends, cracks, looseness)			Seat Switch (If equipped) (check operation)					
		Seat & Seat Belt (check operation, damage, worn/torn			Directional Switch (if equipped) (operates freely)					
		belt, loose fasteners)			Forward Driving (accelerates, steers, brakes smoothly)					
		Steering Wheel (check for wear, damage)			Plugging (stops, changes direction smoothly)					
		Hood Latch (check operation, latches securely)			Reverse Driving (accelerates, steers, brakes smoothly)					
		Hydraulic Oil (check level)			Service Brake (check operation)					
		Front Tire (left) (tire condition, rim damage, etc)			Parking Brake (check operation)					
		Tilt Cylinder (left) (damage, leaks, loose fittings)			Hydraulic Controls (operate freely, return to neutral, lock					
		Mast (damage, wear, cracks, loose fasteners)			out function (if equipped) operates properly)					
		Lift Cylinders (damage, leaks, loose fittings)			Attachment (if equipped) (check operation)					
		Lift Chains (wear, corrosion, cracks, loose leaves, even			Mast (extend fully, binding, leaks, roughness, noise)					
		tension)			Hydraulic Oil (excessive noise when mast is fully raised					
		Carriage/Load Backrest (damage, looseness, bends,			is indication of low hydraulic oil)					
		cracks)			Horn (sounds when button pressed)					
		Forks/Attachment (damage, cracks, excess wear,			Backup Alarm (if equipped) (sounds in reverse)					
		twisted, bent)			Travel Alarm (if equipped) (sounds with vehicle in motion					
		Fork Locking Pins (check operation, holds fork secure)			Work, Strobe, Flashing Lights (if equipped) (chec					
		Tilt Cylinder (right) (damage, leaks, loose fittings)			operation)					
		Front Tire (right) (tire condition, rim damage, etc)								
		Battery Connectors & Cables (damage, cracks, pitting)								
		Battery Retention (installed correctly, secure)								
		Battery Case & Vent caps (damage, cracks, loose, missing)								
		Warning Decals/Operator's Manual (in place, legible)								
		Data Plate / Capacity Plate (in place, legible)		\vdash						

OSHA 1910.178 (p) (1) requires a truck to be taken out of service any time it is found to be in need of repair, or is in any way defective or unsafe. Place a "Do Not Operate" tag on the truck, remove the key and alert your supervisor. The Truck may not be placed back into service until necessary repairs are made.

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Explanation of problems marked above (use back of this form if needed):



Check for fluid leakage

Check the entire truck as well as the surface beneath it for signs of fluid leakage.

Check overhead guard

Check the condition of the overhead guard for deformity, looseness, or other obvious damage.

Any safety glass incorporated into the overhead guard must be checked for chips or cracks. If any such damage to the glass is found, the truck must be taken out of service until the glass is replaced.

Check hydraulic cylinders

Inspect lift, tilt, and any attachment cylinders for damage or leakage.

Check lift chains

Inspect the mast lift chains for broken link plates, broken or deformed pins, rust, and stiffness. Inspect the chain anchor and hardware for damage as well.

Check fork carriage

Inspect the forks, carriage and load backrest for deformity, cracks, or other damage. Check fork latch pins for correct operation. (Trucks equipped with a fork positioner will not have fork latch pins.)

Check the steering axle

Check for any debris entangled or wrapped around the steer wheels and remove it.

Check the steering cylinder for leakage at its seals and fittings.



Check hydraulic oil level

- > Park the truck on level ground.
- > Lower the fork carriage completely.
- > A dipstick (2) is attached to the underside of the breather filter cap (1) on the hydraulic oil tank. Unscrew the cap and withdraw the dipstick from the tank.
- > Wipe the dipstick with a clean cloth.

The dipstick has two level segments built into it. These segments correspond to the mast type installed on the truck as follows:

Mast Type	Dipstick seg- ment
Masts with lift stroke (h3) less than 189 inches (4805 mm)	4 (lower seg- ment)
Masts with lift stroke (h3) greater than or equal to 189 inches (4805 mm)	3 (upper seg- ment)



Refer to the Mast Heights section in Chapter 6 to identify masts installed on specific trucks.

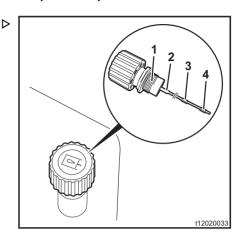
- > Insert the dipstick back into the tank tube and screw the breather cap in fully.
- > Remove it again and observe the oil level. It should be between the upper and lower edges of the appropriate segment. If necessary, add hydraulic oil through the dipstick tube until the level is correct.

WARNING

Hydraulic oil is flammable.

Do not allow hydraulic oil to contact hot engine components. Use care when adding oil to avoid spilling.

> Reinstall the dipstick when finished and tighten the breather cap.





Check wheels and tires

WARNING

Uneven wear or excessive damage to the tires can reduce stability as well as brake performance. On pneumatic tires, this can also result from insufficient air pressure as well. Reduced stability can cause tip-over. Reduced brake performance can cause collisions.

Have worn or damaged tires changed immediately. Ensure pneumatic tires have the correct inflation pressure.

A WARNING

This truck may be equipped with pneumatic tires. If handled incorrectly, pneumatic tires on heavy equipment present an explosion hazard due to high inflation pressures.

Pneumatic tires must only be inflated or changed by personnel trained in handling pneumatic heavy equipment tires and then only when the proper protective equipment is used. Always deflate tires before wheel or tire removal or disassembly. Always use protective equipment when inflating tires.

Tires

All tires must be inspected for damage and excessive wear. On pneumatic tires, the inflation pressure must also be checked.

Wear Limits

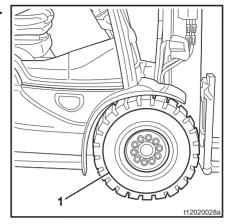
For solid treaded tires, the upper edge of the wear mark (1) is the maximum limit for wear and re-grooving.

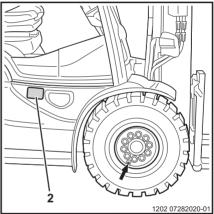
Inflation Pressure

If the truck is equipped with pneumatic tires, their pressure must be checked with a gauge. Tires must be inflated to the correct pressure. For trucks equipped with pneumatic tires, correct pressures are listed on the decal (2) on the right-hand side of the truck.

Wheel Fasteners

Check wheel mounting hardware for looseness. This is especially important if a wheel has recently been removed and reinstalled for repairs, replacement, or any other reason. Have any loose wheel mounting hardware







tightened to the following torque before operation.

A WARNING

Wheel mounting hardware sometimes requires several cycles of tightening before it fully seats. For this reason, wheel mounting screws or nuts will often work loose in the period immediately following initial tightening.

Whenever a wheel is removed and replaced for any reason, the wheel mounting screws or nuts must be checked for tightness every 10 hours thereafter until no further loosening is detected.

	Fastener torque
Front wheels	314 ft-lbs (425 Nm)
Rear wheels	314 ft-lbs (425 Nm)

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Operator Inspection and Maintenance

Check coolant level (X models only)

X models are equipped with a liquid cooling system for the power modules. The coolant expansion reservoir (3) for this system is located in the rear compartment.

Follow these steps to check the coolant level:

Open the rear cover.

WARNING

The fan may start and run at any time.

Always remain clear of the fan when working in the rear compartment.

- Observe the expansion reservoir. The coolant level must be not fall below the mark (4). If the level is too low, coolant must be added
- If necessary to add coolant, remove the cap (2) from the expansion tank and add coolant until the level reaches the upper mark.



A WARNING

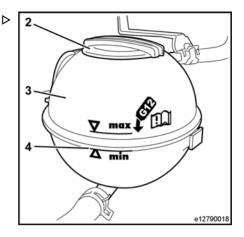
If heat is still present in the cooling system, the expansion tank could be under pressure and its contents will be hot. Removing the expansion tank cap while the system is still warm can result in serious burns due to hot, pressurized coolant.

Do not attempt to add coolant while the system is still hot. Always carefully feel the temperature of the expansion tank before removing its cap. Remove the cap only when the tank is cool.

- > Fit the filler cap and turn to tighten.
- Close the rear cover.

Anti-static strap (optional equipment)

An anti-static strap is typically installed on trucks with non-marking tires that are more prone to static electricity build-up. An anti-static strap may also be installed on trucks that operate in certain applications regardless of tires. If equipped, inspect the anti-static strap





for wear or damage. The strap must maintain continuous contact with the driving surface. If any wear or damage preventing this contact is present, the strap must be replaced. Also check that the strap mounting is secure. Correct as required.

Check decal condition

Inspect all decals and the data/capacity plate for condition and legibility. Decal locations are given in the Overview section of this manual. Refer to the decal descriptions in the Safety section of this manual if necessary. Any damaged or unreadable decals must be replaced.

Check the seat and seat belt

Check the seat condition and mounting. Verify that seat mounting hardware is tight and that the seat is stable

Pull the seat belt completely out and inspect it for fraying or damage. Buckle the belt and check that the buckle holds securely and that it releases easily and completely when the release button is pressed. With the truck on a horizontal surface, quickly pull the belt out of its retractor and verify that the locking mechanism prevents rapid extension.

WARNING

A malfunctioning or defective seat belt can result in injury or death in case of accident.

Do not use the truck if the seat belt is defective. If any defect in the function of the seat or seat belt is noticed, the truck must be removed from service until the cause is corrected.

The seat belt must be replaced after an accident. For seat belts integrated into the driver's seat, the seat and its fastening must also be checked by trained technicians after an accident.

Check control lever bellows

Inspect the flexible bellows on each hydraulic control lever for correct position and condition. Torn or otherwise damaged bellows must be replaced.

5 Maintenance



Operator Inspection and Maintenance

Operational checks

Before returning the truck to service, conduct an operational check of the following items:

- · Emergency stop button
- · Parking brake
- · Seat switch
- Multi-function display/battery discharge indicator
- · Working lights
- Horn
- · Forward and reverse travel
- · Back-up alarm if equipped
- · Service brake
- · Electric braking (if applicable)
- Mast, tilt, and any other hydraulic functions (operate through complete range of motion)

A CAUTION

Excessive noise during hydraulic function operation indicates low hydraulic fluid.

This condition must be checked and corrected immediately to avoid damage to the hydraulic pump.



Routine Lubrication and Inspection

Routine Lubrication and Inspection Intervals

The items in this section must be performed based on usage and environment. They do not need to be performed daily but may require completion more frequently than the major scheduled maintenance intervals. These intervals can often be based on maintenance experience by those familiar with equipment in the given environment. Intervals given herein for specific items however must not be exceeded in any case. Your Linde dealer will be able to provide application-specific interval recommendations if required.

Cleaning the Radiator (X models ▷ only)

The radiator fins (1) should be cleaned periodically to remove trapped dirt or debris. The truck control system provides a radiator cleaning function that runs the fan at maximum speed to assist in cleaning. The radiator may be cleaned with or without the use of this function, however the procedures differ. Each is outlined below.

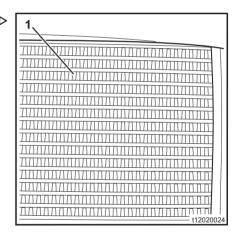
WARNING

The fan may start and run at any time, regardless of whether the cleaning mode is active or not.

Always remain clear of the fan when working in the rear compartment.

Cleaning Without Using the Engine Fan

- > Open the rear cover.
- ➤ Blow out the radiator fins (1) from the counterweight side using compressed air.
- If necessary, spray the radiator fins with a commercially available cold cleaning solvent and allow it to work for ten minutes.
- Spray the radiator fins from the counterweight side with a direct water jet until the radiator is clean





Cleaning With Engine Fan Assistance

i NOTE

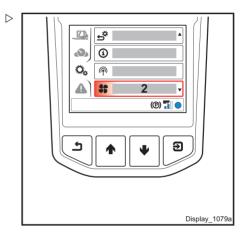
- The fan can be activated to support radiator cleaning even while the truck is switched on.
- The radiator cleaning function may not be available if components are hot. The "Unable to carry out radiator cleaning" display appears on the display unit.

Fan Control (Standard Display Unit)

- > Switch on the electrical system.
- > Open the rear cover.
- > Select the "Clean the radiator" (2) menu item in the display unit.



The "Clean the radiator" symbol appears at the bottom left of the display.

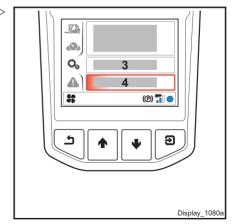


It is possible to select either "Back" (3) (cancels the process) or "Start" (4).

> Select "Start" (4).

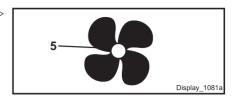
The "Radiator cleaning active" message appears on the display unit.

The fan is activated and runs for three minutes at maximum speed.



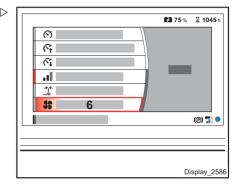


During this time, the symbol (5) is displayed in \triangleright the status bar on the display unit.



Fan Control (Premium Display Unit)

- > Switch on the truck.
- Open the rear cover.
- > Select the "Clean the radiator" (6) menu item in the display unit.

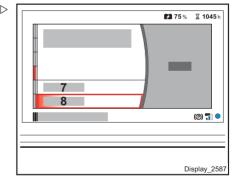


It is possible to select either "Back" (7) (cancel ▷ the process) or "Activate" (8).

> Select "Activate" (8).

The "Radiator cleaning active" message appears on the display unit.

The fan is activated and runs for three minutes at maximum speed.



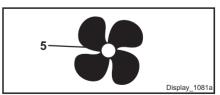
During this time, the symbol (5) is displayed in ▷ the status bar on the display unit.

Cleaning Procedure

> Start the fan using the above procedure.

The fan can be switched off in an emergency by switching the electrical system off and on again.

- > Blow out the radiator fins (1) from the counterweight side using compressed air.
- > If necessary, spray the radiator fins with a commercially available cold cleaning



solvent after the fan has stopped. Allow it to work for ten minutes before switching on the fan again.

- > Switch on the fan again (if not still running).
- > Spray the radiator (1) from the counterweight side with a direct water jet until the radiator is clean.

Automatic Fan Switch-off

After three minutes, the fan is automatically switched off and "Radiator cleaning successful" appears on the display. The symbol (5) goes out.



The fan may overrun if components are warm.

Deactivating the Fan Early

Standard Display Unit

- > To switch off the "Radiator cleaning active" message, push the button (9).
- > Select the "Clean radiator" (2) menu item in the display unit.

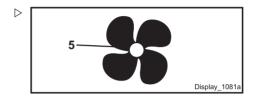


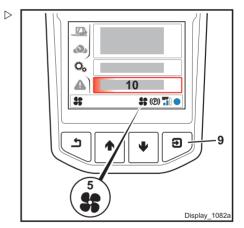
NOTE

The "Clean the radiator" symbol appears at the bottom left of the display.

> Select "Stop" (cancel the process) (10).

The "Radiator cleaning cancelled" message appears on the display unit. The symbol (5) is no longer displayed in the status bar.

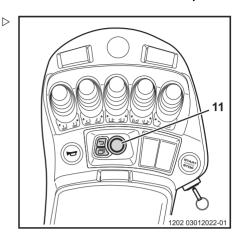






Premium Display Unit

- ➤ To switch off the "Radiator cleaning active" message, push the rotary-push button (11).
- > Select the "Clean radiator" (6) menu item in the display unit.



➤ Select "Deactivate" (cancel the process) (12).

The "Radiator cleaning cancelled" message appears on the display unit. The symbol (5) is no longer displayed in the status bar.

After Cleaning

- Rinse any dislodged dirt from inside the rear compartment with a water jet.
- Dry the area with compressed air to inhibit corrosion.
- Check the connection screw joints, coolant hoses and pipe lines on the radiator for leak tightness.
- Replace any damaged hoses and re-tighten the hose clips.
- Close the rear cover.

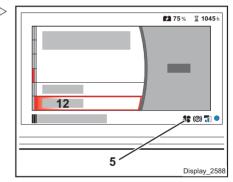
Steering Axle Lubrication

Check for any debris entangled or wrapped around the steer wheels and remove it.

Check the steering cylinder for leakage at its seals and fittings.

Clean the steering axle thoroughly.

Lubricate the tie rod bearings and stub axle bearings at their grease fittings. Frequency of tie rod and axle bearing lubrication will





vary depending on severity of the application. At a minimum, this lubrication must occur at least every 500 hours. The rear of the truck should be supported on jacks to unload steer axle bearings during lubrication. This will allow more effective penetration of the grease.

Hydraulic Tank Pressure Valve Testing

The breather filter (1) for the hydraulic tank is equipped with a bleeder valve that permits a slight over-pressure in the tank. The filter must be seated securely on the tank for the test to be effective. Check tightness if necessary before testing.

- > Switch the truck on.
- Extend the lift mast to the stop and lower it again; repeat this step several times.
- > Switch the truck off.
- > Open the hood.
- Release the breather filter by slowly unscrewing the dipstick assembly.

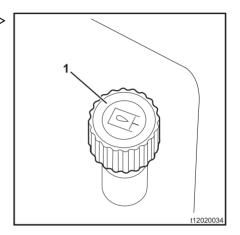
It must be possible to hear air escaping from the tank.

If air cannot be heard escaping, the breather filter must be replaced.

Lubricate Operator Chassis Components

Check and lubricate as necessary the following points on the chassis:

- · Driver's seat guide rails
- · Hood hinge pins and latch
- Battery door hinges and latch
- · Windshield wiper bearings (if equipped)
- Cabin door latches and hinges (if equipped)

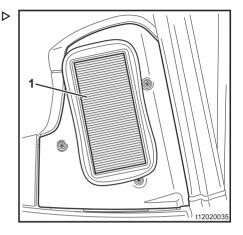




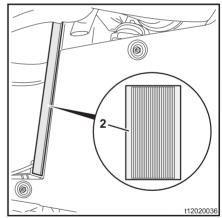
Check HVAC System (optional equipment)

Check HVAC Filters

- ➤ Open the right-hand driver's door and prevent the door from closing.
- > Remove the filter (1) and clean or replace.
- > Reinstall the filter.



- > Remove the filter (2) and clean or replace.
- > Reinstall the filter.



Maintaining the Air Conditioning

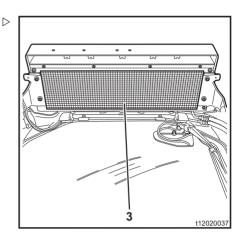
The following maintenance work must be carried out at the beginning, middle and end of a season:



> Clean the condenser (3).

The condenser fins must be cleaned gently without applying high levels of pressure. Otherwise, the fins will be damaged and impair the air flow.

> Check the belt tension on the compressor and check the condition of the belt.





Check Brake Oil Level

The service brake system utilizes a master cylinder with a reservoir. It is located beneath the floor plate near the base of the steering column

Follow these steps to check the brake oil level:

- > Switch the truck off.
- > Open the floor plate and support it.
- Locate the master cylinder and observe the level in the reservoir. The level should be between the marks on the reservoir.
- > Add brake oil if necessary.

A CAUTION

Do not use automotive (DOT) brake fluid or hydraulic oil in the master cylinder.

Use of any fluid other than that specified in the Fluid and Lubricants section will damage the service brake system.



Check and Lubricate Lift Chains

Single masts have two carriage chains, one on each side of the mast. Double masts have a single carriage chain over the primary cylinder. Triple masts have a carriage chain over the primary cylinder as well as a mast chain on each side for the inner upright.

Lift Chain Length Inspection

As chains operate, clearances will gradually open in the chain pins and the chain will elongate. As long as total elongation is less than 3 percent of original chain length, the chain may be used, but the working length of the chain may need to be adjusted at the chain anchors to compensate for the wear. Chain length should be checked every 500 hours.

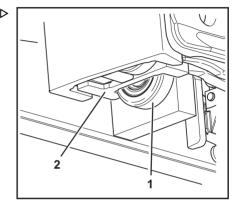
The inspection is performed at the base of the mast with the mast fully lowered. Chain wear will result in an increasingly lower carriage roller position (and inner upright rollers on triple masts). When the mast is fully lowered, rollers may protrude from the bottom of their channel. Carriage rollers (1) or inner upright rollers (3) (for triple masts) can protrude up to a maximum of half the roller diameter. If roller protrusion is approaching this limit, then the chains must be adjusted to compensate for chain wear. This procedure is covered in the service manual.

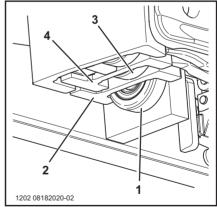
WARNING

Chain adjustment must never be used to compensate for chains worn to their limit. If chains are approaching their wear limit, they must be replaced.

Always measure lift chain stretch whenever chains appear to require adjustment.

- > Fully lower the mast and tilt it back.
- > Switch off the truck, remove the key (if applicable) and set the parking brake.
- ➤ Measure protrusion of carriage roller (1) relative to inner upright (2).
- On triple masts, also measure protrusion of inner upright roller (3) relative to intermediate upright (4).







Model	Roller diameter	Protrusion limit
E20; E20/600, E25, E25L (1532 series masts)	3.1 in (80 mm)	1.5 in (40 mm)
Models other than above (1533 series masts)	3.5 in (90 mm)	1.75 in (45 mm)

Lift Chain Lubrication



NOTE

Lift chains on trucks used in the food industry must be lubricated with an oil approved for the food industry.

> Apply Linde chain spray to each chain and guide surfaces. This should be done every 100 hours or as necessary to maintain a light film of lubricant on the chains at all times.

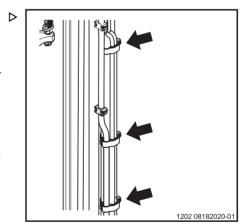
Check Reeving Hose Preload (optional equipment)

Preload tension must be maintained in any section of hose which operates over a sheave. Proper tension is necessary to prevent hoses from jumping the sheave. The reeving hoses should be preloaded 0.2 - 0.4 in (5-10 mm) per meter of original length.

> Loosen the retaining clips, tension the hoses to obtain the required preload, and then secure the clips. Start at the top and work excess slack toward the chassis.



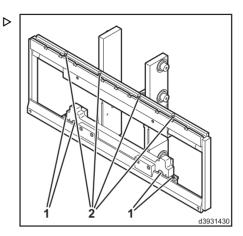
For double or triple masts, set preload for hoses over the primary cylinder using the clip on the rear side of the cylinder before setting preload at the mast hoses.





Lubricating the Sideshifter (optional equipment)

- > Check cylinders and fittings for leakage and have repairs made as necessary.
- > Clean the sideshifter according to the section "Cleaning the Truck".
- > Check hydraulic hoses for abrasion.
- > Adjust the forks so that the lower grease fittings (1) and the grease fittings on the top rail (2) are accessible.
- > Lower the mast fully so the forks are resting on the ground to unload the sideshifter bearings.
- > Lubricate the sideshifter at all of the grease fittings.



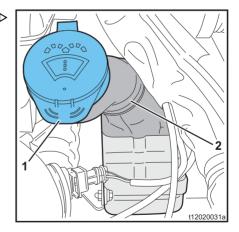


The sideshifter must always be lubricated after any cleaning.

Check Washer Fluid Level (optional equipment)

If the truck is equipped with an optional wiper/washer system for any glazing, then the washer fluid level will need to be replenished occasionally.

- > Open the rear cover on the counterweight.
- > Open the filler cap (1) on the filler neck (2).
- > Top up with washer fluid until the washer fluid is visible in the filling opening.
- > Close the filler cap.
- Close the hood





Scheduled Maintenance

General Maintenance Information

This section contains all information required to determine when the truck must be serviced and what must be done. This information is presented as scheduled maintenance charts on the following pages. Be sure to perform maintenance within the time limit given in the maintenance charts. Proper and timely maintenance is essential to obtain the full operability, performance and service life from the truck, and is a prerequisite for any warranty claims.

Maintenance Intervals

Maintenance intervals are based on operating hours but are also subject to the maximum intervals (based on years in service) listed at the top of each chart.

All lubrication and service intervals must be reduced for dusty conditions, large temperature fluctuations or intensive use.

Scheduled Maintenance Charts

The scheduled maintenance charts provide a list of maintenance tasks and associated time intervals at which they must be carried out. Tasks listed under successive intervals are not cumulative; only the additional tasks required are listed under successive intervals.

Use only high-quality lubricants or other materials meeting the specifications listed in Fluid and Lubricant Specifications. All work must be performed only by qualified forklift technicians. Custom-fitted equipment is not covered by the scheduled maintenance charts. If such equipment is installed, refer to the manufacturer's documentation for maintenance requirements.



Scheduled Maintenance Chart

Maintenance every 1000 hours, but at least every 3 years (Exceptions in brackets)

Running gear and drive train

Check the mounting of the axle clamp

Check the wheels for damage, foreign objects and wear

Check the condition of the antistatic belt

Check the oil level in the planetary transmission and check for leak tightness

Change the oil in the planetary transmission

(Once after 1000 hours, then at 3000 hours and then every 3000 hours)

Brake master cylinder. Check for filling level, correct function and leak tightness

Check that the service brake is working correctly

Check that the parking brake is working correctly

Lubricate the steering axle

Check the mountings of the steering axle

Chassis and bodywork

Check and lubricate the bearing points and joints

Lubricate the battery door

Visually inspect the mountings of the chassis/counterweight/ballast weight

Check lifting eyes (if equipped) for wear and tightness

Driver's compartment

Check the condition of the seat belt and check that it is working correctly

Service the heating system and air conditioning

Electrics/electronics

Check the condition of electric cables and connections, and check that they are securely attached

(Once after 1000 hours, then at 3000 hours and then every 3000 hours)

Check the heat sink on the power modules for contamination

Clean electrical components on the contactor carrier

Clean all fans

Check the condition of the drive battery

Check the cables and plugs on the drive battery

(Once after 1000 hours, then at 3000 hours and then every 3000 hours)

Check that the integrated charger is working correctly

Clean the integrated charger

Check the filter for the circulating pump on the integrated charger

Check the axle load sensor

Check the load pressure sensor

Check the lift height sensor

Cooling System for Power Modules (X models only)



Maintenance every 1000 hours, but at least every 3 years (Exceptions in brackets)

Clean the radiator

Check the radiator for leak tightness

Check the filling level of the coolant

Check the coolant concentration

Hvdraulics

Check the oil level in the hydraulic system

Check the hydraulic system for leak tightness

Check that the bleeder valve on the hydraulic tank is working correctly

Check the mounting of the tilt cylinders

Check the pre-load of the hose lines

Lifting system

Check the mounting of the mast

Check that lift cylinders, lifting chain, chain rollers and end stops are securely attached and working correctly

Clean and adjust the lifting chain, and apply chain spray

Check the fork arms and fork arm locking devices

Check and lubricate the sideshift

Check and lubricate the fork positioner



Additional maintenance every 3000 hours, but at least every 3 years (Exceptions in brackets)

Running gear and drive train

Check the mounting of the planetary transmission

(Only once after 3000 hours)

Change the oil in the planetary transmission

Check the drive axle bearings for wear

Check the side stops of the drive axle

Chassis and bodywork

Check the battery door

Check the gas spring on the battery hood

Electrics/electronics

Check the condition of electric cables and connections, and check that they are securely attached

Check the cables and plugs on the drive battery

Check the swivel bearing of the tilt angle sensor

Calibrate the axle load sensor

Calibrate the load pressure sensor

Cooling System for Power Modules (X models only)

Change the coolant. (At least every two years)

Lifting system

Check the sideshift for wear

Check the fork prong positioner for wear

Additional maintenance every 6000 hours, but at least every 6 years (Exceptions in brackets)

Hydraulics

Replace all filters in the hydraulic system

Change the oil in the hydraulic system

Final tasks (After each service interval)

Carry out a functional test, including a test drive

Attach the service sticker



Fluids and Lubricants

Fluids and Lubricants

Capacities

Assembly	Fluid or Lubricant	Capacity
Planetary transmission	Gear oil	HP axle:0.41 qt (0.39 l) per side
r lanetary transmission	Geal oil	SP axle:0.37 qt (0.35 l) per side
Service brake	ATF	6.8 fl oz (0.2 l)
Hydraulic system	Hydraulic oil	Lift height up to 4105 mm:
		Approx. 19 qts (18.0 l)
		Lift height from 4105 mm:
		Approx. 25.4 qts (24.0 l)
Cooling system (X mod-	Coolant (antifreeze mix-	Approx. 2.1 qts (2.0 l)
els only)	ture)	Αρριολ. 2.1 qts (2.01)
Air conditioning (option)	Refrigerant	370 oz (1050 g)

Fluid and Lubricant Specifications

Hydraulic Oil

Standard (average constant oil temperature 40°C - 60°C)

ISO-L-HM 46 as per ISO 6743-4

Heavy duty (average constant oil temperature above 60°C)

ISO-L-HM 68 as per ISO 6743-4

Light duty (average constant oil temperature below 40°C)

ISO-L-HM 32 as per ISO 6743-4



i NOTE

Operation across one or more of the above ranges can be covered by one of the following multi-grade hydraulic oil (ie oils having a high viscosity index).

ISO-L-HV 46 as per ISO 6743-4

A CAUTION

If incorrect hydraulic oils are used or mixed, damage to hydraulic components can result.

Use only oils meeting the above specifications.

Bio-hydraulic oil

Highly biodegradable hydraulic fluid Castrol Carelube© HFS46 or Panolin HLP Synth 46.

A CAUTION

Bio-hydraulic oil must not be mixed with mineral oils.

Recommendations for biodegradable fluids/bio-hydraulic oils from other manufacturers cannot be provided at the present time.

Transmission Oil

Binding specification: Aral EP Plus SAE 80W-90 API GL4 or GL5, or BP Energear HT 80W-90 or Castrol Syntrax Universal 80W-90

Service Brake Oil

Shell Spirax S4 ATF HDX or equivalent

A CAUTION

Do not use automotive (DOT) brake fluid or hydraulic oil in the master cylinder.

Use of any fluid other than that specified above will damage the service brake system.



Fluids and Lubricants

Lubricating Grease

Grease for the lift mast, sideshift, steering axle, joints and other lubrication points

Linde heavy-duty grease. lithium-saponified with EP agents and MoS2 KPF2N-20 as per DIN 51825

Grease for wheel bearings, shaft seals Lithium-saponified lubricating grease KPF2K-30 as per DIN 51825

Linde low-temperature grease AeroShell



NOTE

Mixing with soap-based types of lubricating grease other than lithium-saponified is not permitted.

Chain Spray

Use a high-quality commercially available penetrating chain spray specifically intended for forklift mast chains. Chains may also be lubricated with SAE 30 motor oil

Refrigerant for Air Conditioning

R 134a

Coolant (X models only)

VW standard TL 774-F (G12+)

Coolant must be mixed with potable 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 addi- tive	Potable water
-25°C	40 %	60 %
-30°C	45%	55 %
-35 °C	50 %	50 %
-40 °C	60 %	40 %



NOTE

If potable water is not available, distilled water must be used



Troubleshooting

Fuses

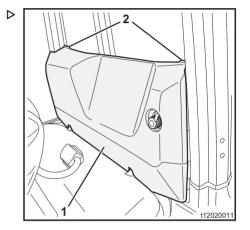
Fuses are located in the following groups:

- · Control Fuses
- Main Current Fuses
- Basic Fuses
- · HVAC Fuses (optional equipment)

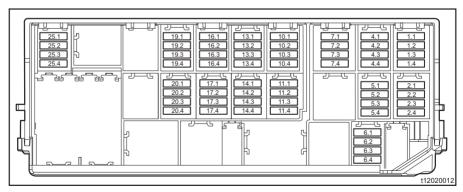
Control Fuses

These are located in a plastic fuse box on the right-hand side of the compartment behind the seat. The cover (1) behind the seat must be removed to access these fuses.

- Slide the driver's seat as far forwards as possible and fold the seat backrest forwards.
- Release the cover (1) by pulling the cover tabs (2) out of the latches, folding the cover forwards slightly and then removing it.
- ➤ Gently press the upper part of the two clips on the fuse box cover and lift it off.



Control fuse arrangement



- 1.1 Control unit for the traction function/operating function (KMC) (terminal 30) (F6), 15 A
- 1.2 Control unit for basic functions (KBC) (terminal 30) (F7), 15 A
- 1.3 Control unit for the armrest (KAE)/key switch (terminal 30) (F8), 5 A
- 1.4 Control unit for the traction function/operating function (KMC) (F26), 10 A



- 2.1 Sensor system of the truck (F17), 15 A
- 2.2 Adaptor connector for supplying power to the lift mast X22 (F19), 15 A
- 2.3 Adaptor connector for supplying power to the lift mast X24 (F20), 5 A
- 2.4 Adaptor connector for supplying power to the lift mast X24 (F21), 15 A
- 4.1 Control unit for the traction function/operating function (KMC) (terminal 15) (F10), 10 A
- Control unit for basic functions (KBC)/CAN amplifier for the lift mast (terminal 15) (F11),
- 4.3 Control unit for the armrest (KAE) (terminal 15) (F12), 10 A
- 4.4 Automation interface/sensor for rear area monitoring (8F2)*, 5 A
- 5.1 Horn (4F1), 15 Å
- 5.2 Disconnection point for the armrest (F22), 5 A
- 5.3 Operating unit for the heating system/air conditioning (9F10)*, 5 A
- 5.4 Control unit for active noise suppression (7F1)*, 5 A
- 6.1 12-V socket (9F9)*, 15 A
- 6.2 Not assigned
- 6.4 Interface for rear area monitoring (8F1)*, 10 A
- 7.1 Key switch (F30), 25 A
- 7.2 Relay for enabling the driver's seat (9F6), 25 A
- 7.3 Relay for enabling the truck (1F1), 25 A
- 7.4 Not assigned
- 10.1 Control unit for the LPP washer system (9F1)*, 25 A
- 10.2 Control unit for the LPP lighting (5F1)*, 25 A
- 10.3 Control unit for LPP work lighting 1 (5F2)*, 25 A
- 10.4 Control unit for LPP work lighting 2 (5F3)*, 25 A
- 11.1 Linde diagnostics (F14), 5 A
- 11.2 Standard display unit or comfort display unit (6F1). 5 A
- 11.3 Interior lighting / push button or switch on the overhead console (5F5), 5 A

- 11.4 Radar sensor (interior/exterior)/Linde Safety Guard (F18)*, 10 A
- 13.1 Back-up fuse for the truck sensor system (terminal 22) (F15), 25 A
- 13.2 Back-up fuse for adaptor to the lift mast (terminal 22) (F16), 25 A
- 13.3 Control unit for work lighting 3 (5F4)*, 15 A
- 13.4 Control unit for the external management system (F23)*, 10 A
- 14.1 Relay for terminal 22 (F13), 5 A
- 14.2 Control unit for the KCU communication unit (6F2)*, 10 A
- 14.3 Power supply for the external access system connect: CAN (F28)*, 5 A
- 14.4 External management system (F29)*, 5 A
- 16.1 Front windscreen wiper motor (9F2)*, 15 A
- 16.2 Roof windscreen wiper motor (9F3)*, 7.5 A
- 16.3 Rear windscreen wiper motor (9F4)*, 7.5 A
- 16.4 Rear window heating (9F5)*, 25 A
- 17.1 Analogue/DAB+ digital radio (terminal 30) (9F7)*, 10 A
- 17.2 Analogue/DAB+ digital radio (terminal 15) (9F8)*, 5 A
- 17.3 Connection assembly for the additional display (terminal 30) (6F3)*, 10 A
- 17.4 Connection assembly for the additional display (terminal 15) (6F4)*, 10 A
- 19.1 Red/blue strip light (4F3)*, 5 A
- 19.2 Clipboard board light (5F7)*, 5 A
- 19.3 Buzzer for reverse travel, optional variant (4F2)*, 5 A
- 19.4 Interface for the camera system (9F13)*, 5 A
- 20.1 Control unit for auxiliary heating system (9F14)*, 20 A
- 20.2 Not assigned
- 20.3 Not assigned
- 20.4 Not assigned
- 25.1 Customised option
- 25.2 Customised option
- 25.3 Customised option
- 25.4 Customised option

Main Current Fuses

The two main current fuses for the traction motors and the pump motor are located on the main contactor.

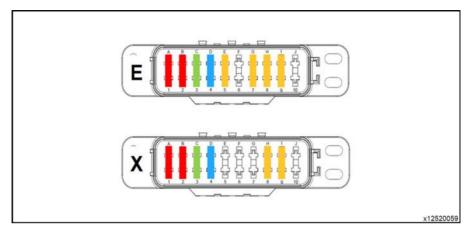
Assignment of the current circuits:

- 1F1 fuse for KPC traction motors, 355 A
- · 2F1 Fuse for KPC pump motor, 250 A

^{*} Optional equipment



Basic Fuses



- 1 F43 charging circuit, 10 A
- 2 F64 voltage transformer U1 for basic equipment, 10 A
- 3 F40 voltage transformer for special equipment, 30 A
- 4 F46 measuring voltage for KPC for driving, 15 A
- 5 Charging a lead-acid battery at the rear (E version only)
- 6 Reserve

7

- Fan for traction motor/pump motor (E version only)
- 8 F35 charging circuit, 5 A
 - F34 charging circuit, 5 A
- 10 Reserve

The basic fuses are located in a holder mounted at the contactor bracket.

HVAC Fuses (optional equipment)

The HVAC system has control fuses and main fuses

HVAC Control Fuses

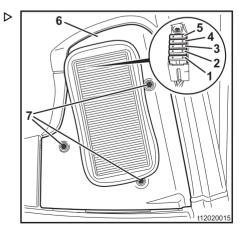
Open the right-hand cabin door and prevent the door from closing.

The fuses for the heating system and for the air conditioning are behind side cover (6).

➤ Unscrew the screws (7) and remove the cover (6) to access the fuses.

Assignment of the current circuits:

- Fuse (1) for the blower motor (9F15), 25 A
- Fuse (2) for the operating unit for the heating system (9F16), 5 A, or the operating unit for the air conditioning (9F16), 15 A
- Fuse (3) for condenser fan 2 (9F18), 15 A



- Fuse (4) for condenser fan 3 (9F19), 15 A
- Fuse (5) for condenser fan 1 (9F17), 15 A

HVAC Main Fuses

These fuses are mounted near the contactor bracket

Assignment of the current circuits:

- · F33 Heating system, 50 A
- · F61 Air conditioning, 60 A

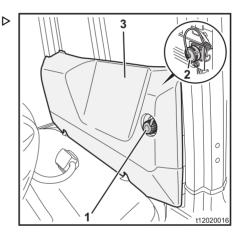
Diagnostic Connector

The diagnostic connectors (1) and (2) provide an interface with diagnostic software on a laptop computer. The software allows review/editing of performance parameters, truck diagnostics, engine diagnostics, and resetting of maintenance intervals.

To use a laptop computer, a diagnostic cable must be connected from the computer to the diagnostic connector.



The engine diagnostic connector (2) is accessible once the cover (3) for the electrical system has been removed.





Lithium-ion Battery: Diagnostic Connector

> Open the battery door.

The diagnostic connector (1) for the lithium-ion battery is located on the front left-hand side of the battery housing.

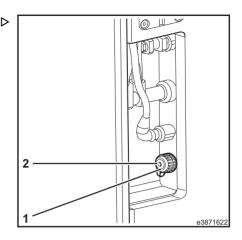
- Unscrew the cap in a counter-clockwise direction.
- > Connect the laptop.

The diagnostic connector (1) can be used to enter and read out battery data with a laptop and the diagnostic program.



NOTE

After completing diagnostics, always screw the cap onto the diagnostic connector (1) to prevent moisture intrusion.





Fault Indicator Lights

Error codes may be displayed with fault indicator lights. Explanations for these are listed in the service manual.

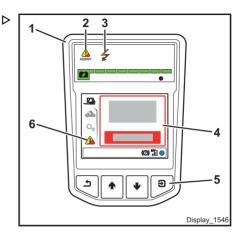
Standard Display Unit

A CAUTION

Damage to or destruction of truck components!

If one of the following indicator lights illuminates in the display unit (1) or a message is displayed (4) and the buzzer sounds during operation, a malfunction has occurred.

- > The engine must be switched off immediately and the malfunction must be rectified.
- > To switch off the buzzer or the message. press the button (5).



(2) Fault in the load-dependent assistance system (color: red)	
Function	Remedy
- Lights up if there is an error in the load-dependant assistance system The error code is stored in the "Malfunctions and information" menu (6).	Contact authorized service personnel.



Lifting and tilting movements or the driving speed may be restricted in the event of a malfunction of the assistance system.

(3) Warning light for the truck electrics (color: yellow or red)		
Function	Remedy	
- Lights up when there is an electrical fault The error code is stored in the "Malfunctions and information" menu (6) The truck moves at creep speed or is at a standstill.	Contact authorized service personnel.	

Malfunctions and Information menu (6):



In addition, the following can be displayed in the "Malfunctions and information" menu (6):

- . In the "Error code" menu item: the error code for the malfunction that has occurred.
- · In the "Error lights" menu item: a text message about the malfunction that has occurred

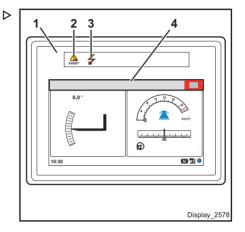
Premium Display Unit

A CAUTION

Damage to or destruction of truck components!

If one of the following indicator lights illuminates in the display unit (1) or a message is displayed (4) and the buzzer sounds during operation, a malfunction has occurred.

- > The engine must be switched off immediately and the malfunction must be rectified.
- > To switch off the buzzer or the message. press the rotary-push button O.



(2) Fault in the load-dependent assistance system (color: red)		
Function	Remedy	
Lights up if there is an error in the load-dependant assistance system. The error code is stored in the "Malfunctions and information" menu.	Contact authorized service personnel.	



Lifting and tilting movements or the driving speed may be restricted in the event of a malfunction of the assistance system.

(3) Warning light for the truck electrics (color: yellow or red)		
Function	Remedy	
 Lights up when there is an electrical fault. The error code is stored in the "Malfunctions and information" menu. The truck moves at creep speed or is at a standstill. 	Contact authorized service personnel.	

Linde Material Handling Linde

Troubleshooting

Malfunctions and Information Menu (5):

In addition, the following can be displayed in the "Malfunctions and information" menu (5):

- In the "Error code" menu item: the error code for the malfunction that has occurred
- In the "Messages" menu item: a text message about the malfunction that has occurred

Status Icons (6):

To further assist you, the status icons (6) are displayed. The information indicated by these icons includes:

- · Hydraulic oil temperature
- Warning symbol with + (displayed if more than four status icons are active)



If more than four status icons are active, the other icons can be displayed via the text message in the "Messages" menu item.

The icons are displayed in the following colors depending on the status of the truck:

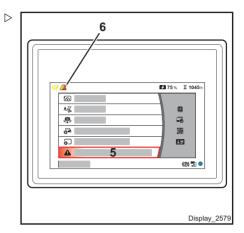
- "No color" means: minor malfunction or information
- · "Yellow" means: malfunction or information
- "Red" means: critical malfunction or information

Lithium-ion Battery: Power Reduction Vibration Fault

In the event of exceptionally strong vibration of the truck, the power may become reduced. Normal operation can be restored by shutting off and restarting the truck.



If the error persists, contact your service partner





Troubleshooting Chart - Hydraulic System

Abnormal noise.	
Possible cause	Remedy
Clogged suction filter.	Change the filter.
Insufficient hydraulic oil.	Add hydraulic oil of proper specification until the correct level is achieved. Have truck inspected for leakage.
Loose suction lines, oil foams.	Have the suction lines inspected and repaired by authorized service personnel. Check the hy- draulic oil, top up if necessary.
Damage to the hydraulic pump; air intake due to defective seals.	Have the hydraulic pump and system inspected and repaired by authorized service personnel.
Incorrect hydraulic oil type.	Change the hydraulic oil. Use only oil meeting specifications given in "Fluid and Lubricant Specifications".

Hydraulic oil too hot; temperature warning is displayed.		
Possible cause	Remedy	
Insufficient hydraulic oil	Add hydraulic oil of proper specification until the correct level is achieved. Have truck inspected for leakage.	
Hydraulic oil cooler fins obstructed by dirt (X models only).	Clean the radiator and hydraulic oil cooler.	
Internal damage to pump or valves	Have the hydrostatic drive unit inspected and repaired by authorized service personnel.	

Sluggish hydraulic performance.		
Possible cause	Remedy	
Insufficient hydraulic oil.	Add hydraulic oil of proper specification until the correct level is achieved. Have truck inspected for leakage.	
Clogged suction filter. (Especially if noise is also heard)	Change the filter.	
Hydraulic oil too thin resulting in power loss due to internal leakage.	Change the hydraulic oil. Use only oil meeting specifications given in "Fluid and Lubricant Specifications."	
Leakage due to loose or damaged hydraulic line, hose, or fitting.	Have all lines inspected and repaired by authorized service personnel.	
Hydraulic oil temperature too high.	See "Hydraulic oil too hot; temperature warning is displayed".	
Defective brake valve.	Have the brake valve inspected and repaired by authorized service personnel.	

5 Maintenance



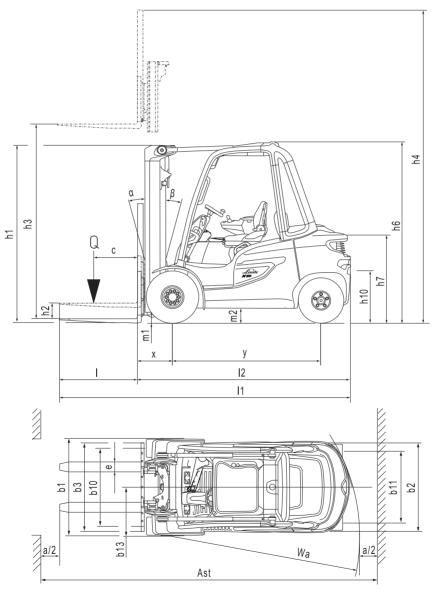
Troubleshooting

Lift operation is sluggish or erratic.		
Possible cause	Remedy	
Insufficient hydraulic oil.	Add hydraulic oil of proper specification until the correct level is achieved. Have truck inspected for leakage.	
Binding at lift or tilt cylinders. Cylinders show friction marks.	Have the cylinders inspected and repaired by authorized service personnel.	
Lift mast will not extend fully or sinks slightly.	Top up hydraulic oil. Bleed the cylinder.	

Mast does not extend fully.		
Possible cause	Remedy	
Insufficient hydraulic oil.	Add hydraulic oil of proper specification until the correct level is achieved. Have truck inspected for leakage.	
Air in lift cylinders. (Mast may also drift downwards).	Have lift cylinders bled by authorized service personnel.	
Binding at lift cylinders. Cylinders show friction marks.	Have the cylinders inspected and repaired by authorized service personnel.	
Binding or damage in mast components.	Have the mast inspected and repaired by authorized service personnel.	

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Specifications





General		
Manufacturer	All models	Linde
Manufacturer's type designation	X20 E20	X20/600 E20, E20H/600
	X25, E25	X25 E25, E25H/600, E25L, E25HL/600
	X30, E30	X30 E30, E30H/600, E30L, E30HL/600, E30HL/600 Beverage
	X35, E35	X35 E35L, E35HL
Drive	All models	Electric
Operation	All models	Seated
_ ·	X20, E20	3960 lbs (1800 kg)
	X25, E25, E25L	4950 lbs (2250 kg)
	X30, E30, E30L	5960 lbs(2710 kg)
	X35, E35, E35L, E35HL	6950 lbs (3160 kg)
Load capacity/load (Q)	E20H/600	4400 lbs (2000 kg)
	E25H/600, E25HL/600	5500 lbs (2500 kg)
	E30H/600, E30HL/ 600, E30HL/600 Beverage	6600 lbs (3000 kg)
Load center of gravity (c)	All models	24 in (nominal) (600 mm)
Load distance (x)	E20 E20H/600 E25 E25L	16.6 in (420.4 mm)
	E25H/600 E25HL/600 X20/600 X25	17.9 in (455.5 mm)
	E30 E30L X30	17.7 in (448.5 mm)



General		
	E30H/600 E30HL/600 E35L E35HL E30HL/600 Bev X35	17.9 in (453.5 mm)
	E20	65 in (1652 mm)
	E20H/600	66.4 in (1686 mm)
	E25	65 in (1652 mm)
	E25H/600	66.4 in (1686 mm)
	E25L	70.7 in (1797 mm)
	E25HL/600	72.1 in (1831 mm)
	E30	67.8 in (1722 mm)
	E30H/600	66.4 in (1686 mm)
Wheelbase (y)	E30L	71.5 in (1817 mm)
	E30HL/600	72.1 in (1831 mm)
	E35L	73.5 in (1867 mm)
	E35HL	72.1 in (1831 mm)
	E30HL/600 Bev	72.1 in (1831 mm)
	X20/600	72.2 in (1835 mm)
	X25	72.2 in (1835 mm)
	X30	73.8 in (1875 mm)
	X35	73.8 in (1875 mm)

Weight	
Net weight	Refer to vehicle data plate

Wheels, chassis frame		
Tires type: (solid rubber, superelastic (SE), or pneumatic)	All models	SE
	E20	23x9-10
	E20H/600	23x9-10
	E25	23x9-10
	E25H/600	23x9-10
	E25L	23x9-10
	E25HL/600	23x9-10
	E30	23x9-10
	E30H/600	23x10-12
Tire size, front	E30L	23x9-10
	E30HL/600	23x10-12
	E35L	315/45-12
	E35HL	315/45-12
	E30HL/600 Bev	315/45-12
	X20/600	27x10-12
	X25	27x10-12
	X30	27x10-12
	X35	28x12.5–15



Wheels, chassis frame		
	E20	180/60-10
	E20H/600	180/60-10
	E25	200/50-10
	E25H/600	200/50-10
	E25L	200/50-10
	E25HL/600	200/50-10
	E30	200/50-10
	E30H/600	200/50-10
Tire size, rear	E30L	200/50-10
	E30HL/600	200/50-10
	E35L	200/50-10
	E35HL	200/50-10
	E30HL/600 Bev	200/50-10
	X20/600	6.50-10
	X25	6.50-10
	X30	23x9-10
	X35	23x9-10
Number of wheels, front / rear (x = driven)	All models	2x / 2



Wheels, chassis frame		
	E20	38.3 in (972.0 mm)
	E20H/600	38.3 in (972.0 mm)
	E25	38.3 in (972.0 mm)
	E25H/600	38.3 in (972.0 mm)
	E25L	38.3 in (972.0 mm)
	E25HL/600	38.3 in (972.0 mm)
	E30	38.3 in (972.0 mm)
	E30H/600	39.2 in (996.0 mm)
Front track width (b ₁₀)	E30L	38.3 in (972.0 mm)
	E30HL/600	39.2 in (996.0 mm)
	E35L	41.3 in (1048.0 mm)
	E35HL	41.3 in (1048.0 mm)
	E30HL/600 Bev	41.3 in (1048.0 mm)
	X20/600	39.7 in (1008.0 mm)
	X25	39.7 in (1008.0 mm)
	X30	39.7 in (1008.0 mm)
	X35	39.7 in (1060.0 mm)
	E20	35.4 in (900.0 mm
	E20H/600	35.4 in (900.0 mm)
	E25	35.4 in (900.0 mm)
	E25H/600	35.4 in (900.0 mm)
	E25L	35.4 in (900.0 mm)
	E25HL/600	35.4 in (900.0 mm)
	E30	34.8 in (884.0 mm)
	E30H/600	34.8 in (884.0 mm)
Track width, rear (b ₁₁)	E30L	34.8 in (884.0 mm)
	E30HL/600	34.8 in (884.0 mm)
	E35L	34.8 in (884.0 mm)
	E35HL	34.8 in (884.0 mm)
	E30HL/600 Bev	34.8 in (884.0 mm)
	X20/600	37.2 in (946.0 mm)
	X25	37.2 in (946.0 mm)
	X30	36.6 in (930.0 mm)
	X35	36.6 in (930.0 mm)

Basic dimensions		
Mast / fork carriage tilt, forwards / backwards (α/β) (other ranges available as options)	All models	5.0° / 8.0° (5.0° / 5.0° for E30HL/600 Beverage)
Height with lift mast retracted (h ₁)	All models	See mast heights tables
Free lift (h ₂)	All models	See mast heights tables
Lift (h ₃)	All models	See mast heights tables
Height with mast extended (h ₄)	All models	See mast heights tables



Basic dimensions		
	E20	85.2 in (2165 mm)
	E20H/600	91.5 in (2325 mm)
	E25	85.2 in (2165 mm)
	E25H/600	91.5 in (2325 mm)
	E25L	85.2 in (2165 mm)
	E25HL/600	91.5 in (2325 mm)
	E30	85.2 in (2165 mm)
Height of according and accord (b.)	E30H/600	91.5 in (2325 mm)
Height of overhead guard (h ₆)	E30L	85.2 in (2165 mm)
Subtract (100 mm) for container version	E30HL/600	91.5 in (2325 mm)
	E35L	85.2 in (2165 mm)
	E35HL	91.5 in (2325 mm)
	E30HL/600 Bev	104.7 in (2660 mm)
	X20/600	87.6 in (2225 mm)
	X25	87.6 in (2225 mm)
	X30	87.6 in (2225 mm)
	X35	87.6 in (2225 mm)
	E20	43.4 in (1102 mm)
	E20H/600	49.6 in (1260 mm)
	E25	43.4 in (1102 mm)
	E25H/600	49.6 in (1260 mm)
	E25L	43.4 in (1102 mm)
	E25HL/600	49.6 in (1260 mm)
	E30	43.4 in (1102 mm)
	E30H/600	49.6 in (1260 mm)
Seat height (h ₇)	E30L	43.4 in (1102 mm)
	E30HL/600	49.6 in (1260 mm)
	E35L	43.4 in (1102 mm)
	E35HL	49.6 in (1260 mm)
	E30HL/600 Bev	63.4 in (1610 mm)
	X20/600	45.5 in (1156 mm)
	X25	45.5 in (1156 mm)
	X30	45.7 in (1162 mm)
	X35	45.7 in (1162 mm)



Basic dimensions		
	E20	23.9 in (608 mm)
	E20H/600	26.4 in (670 mm)
	E25	24.0 in (609 mm)
	E25H/600	26.3 in (668 mm)
	E25L	23.9 in (608 mm)
	E25HL/600	26.3 in (668 mm)
	E30	23.8 in (606 mm)
	E30H/600	26.2 in (665 mm)
Coupling height (h ₁₀)	E30L	23.8 in (606 mm)
	E30HL/600	26.2 in (665 mm)
	E35L	23.8 in (604 mm)
	E35HL	26.2 in (666 mm)
	E30HL/600 Bev	26.2 in (665 mm)
	X20/600	23.1 in (587 mm)
	X25	23.1 in (587 mm)
	X30	23.5 in (598 mm)
	X35	23.6 in (600 mm)
	E20	130.8 in (3320 mm)
	E20H/600	132.1 in (3354 mm)
	E25	130.8 in (3320 mm)
	E25H/600	133.5 in (3390 mm)
	E25L	136.3 in (3461 mm)
	E25HL/600	139.2 in (3535 mm)
	E30	135.5 in (3441 mm)
	E30H/600	133.4 in (3388 mm)
Overall length (I ₁)	E30L	139.3 in (3536 mm)
	E30HL/600	139.1 in (3533 mm)
	E35L	141.4 in (3591 mm)
	E35HL	139.1 in (3533 mm)
	E30HL/600 Bev	139.1 in (3533 mm)
	X20/600	144.6 in (3671 mm)
	X25	144.6 in (3671 mm)
	X30	145.9 in (3704 mm)
	X35	146.1 in (3709 mm)



Basic dimensions			
	E20	91.4 in (2320 mm)	
	E20H/600	92.7 in (2354 mm)	
	E25	91.4 in (2320 mm)	
	E25H/600	94.1 in (2390 mm)	
	E25L	96.9 in (2461 mm)	
	E25HL/600	99.9 in (2535 mm)	
	E30	96.2 in (2441 mm)	
	E30H/600	94.1 in (2388 mm)	
Length including fork back (l ₂)	E30L	99.9 in (2536 mm)	
(2)	E30HL/600	99.8 in (2533 mm)	
	E35L	102.1 in (2591 mm)	
	E35HL	99.8 in (2533 mm)	
	E30HL/600 Bev	99.8 in (2533 mm)	
	X20/600	105.2 in (2671 mm)	
	X25	105.2 in (2671 mm)	
	X30	106.5 in (2704 mm)	
	X35	106.7 in (2709 mm)	
	E20	46.5 in (1179 mm) / -	
	E20H/600	46.5 in (1179 mm) / -	
	E25	46.5 in (1179 mm) / -	
	E25H/600	46.5 in (1179 mm) / -	
	E25L	46.5 in (1179 mm) / -	
	E25HL/600	46.5 in (1180 mm) / -	
	E30	46.5 in (1179 mm) / -	
	E30H/600	49 in (1244 mm) / -	
Total width, single tires/dual tires (b ₁ / b ₂)	E30L	46.5 in (1179 mm) / -	
	E30HL/600	49 in (1244 mm) / -	
	E35L	53 in (1346 mm) / -	
	E35HL	53 in (1346 mm) / -	
	E30HL/600 Bev	49 in (1244 mm) / -	
	X20/600	49.5 in (1256 mm) / -	
	X25	49.5 in (1256 mm) / -	
	X30	49.5 in (1256 mm) / -	
	X35	53.4 in (1356 mm) / -	



Basic dimensions			
	E20	1.8 x 3.9 x 39.4 in	
	220	(45 x 100 x 1000 mm)	
	E20H/600	1.8 x 3.9 x 39.4 in (45 x 100 x 1000 mm)	
		1.8 x 3.9 x 39.4 in	
	E25	(45 x 100 x 1000 mm)	
	F3511/600	1.8 x 3.9 x 39.4 in	
	E25H/600	(45 x 100 x 1000 mm)	
	E25L	1.8 x 3.9 x 39.4 in	
	====	(45 x 100 x 1000 mm)	
	E25HL/600	1.8 x 3.9 x 39.4 in (45 x 100 x 1000 mm)	
		1.8 x 3.9 x 39.4 in	
	E30	(45 x 100 x 1000 mm)	
	E30H/600	2.0 x 4.7 x 39.4 in	
	E30H/000	(50 x 120 x 1000 mm)	
Fork arm dimensions (s/e/l)	E30L	1.8 x 3.9 x 39.4 in	
(5, 5, 7,		(45 x 100 x 1000 mm) 2.0 x 4.7 x 39.4 in	
	E30HL/600	(50 x 120 x 1000 mm)	
		2.0 x 4.7 x 39.4 in	
	E35L	(50 x 120 x 1000 mm)	
	E35HL	2.0 x 4.7 x 39.4 in	
	ESSITE	(50 x 120 x 1000 mm)	
	E30HL/600 Bev	2.0 x 4.7 x 39.4 in	
		(50 x 120 x 1000 mm) 1.8 x 3.9 x 39.4 in	
	X20/600	(45 x 100 x 1000 mm)	
	\.\.	1.8 x 3.9 x 39.4 in	
	X25	(45 x 100 x 1000 mm)	
	X30	1.8 x 3.9 x 39.4 in	
	730	(45 x 100 x 1000 mm)	
	X35	2.0 x 4.7 x 39.4 in	
	1.22	(50 x 120 x 1000 mm)	



Basic dimensions		
ISO 2328 fork carriage, class/model A, B	E20 E20H/600 E25 E25H/600 E35L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev X20/600 X25 X30	2A 2A 2A 2A 2A 2A 3A 3A 3A 3A 3A 3A 3A 3A 3A 3
Fork carriage width (b ₃)	All models	45.3 in (1150 mm)
Ground clearance with load below lift mast (m ₁)	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev X20/600 X25 X30	4.8 in (122 mm) 4.8 in (122 mm) 4.7 in (120 mm) 4.6 in (119 mm) 4.6 in (119 mm) 4.7 in (120 mm) 4.6 in (118 mm) 4.6 in (118 mm) 4.6 in (118 mm) 4.6 in (118 mm) 4.7 in (120 mm) 4.7 in (120 mm) 4.7 in (120 mm) 4.7 in (120 mm) 4.6 in (118 mm) 4.6 in (119 mm) 4.6 in (119 mm) 4.6 in (119 mm) 4.6 in (119 mm) 4.6 in (117 mm) 4.8 in (124 mm)



Basic dimensions			
Ground clearance at the middle of the wheelbase (m_2)	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev		
	X20/600, X25	6.8 in (173 mm)	
	X25	6.8 in (173 mm)	
	X30	7.0 in (178 mm)	
	X35	7.1 in (180 mm)	
Aisle width (A _{st}). Based on 40 inch by 48 inch pallet longways plus 7.8 in (200 mm) of clearance.	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev X20/600 X25 X30 X35	147.4 in (3743 mm) 148.7 in (3777 mm) 147.4 in (3743 mm) 150.1 in (3812 mm) 152.9 in (3884 mm) 155.8 in (3957 mm) 150.1 in (3863 mm) 150 in (3810 mm) 155.7 in (3955 mm) 158 in (4013 mm) 155.7 in (3955 mm) 158.7 in (3955 mm) 168.5 in (4230 mm) 166.5 in (4230 mm) 167.9 in (4265 mm) 168.1 in (4270 mm)	



Basic dimensions			
	E20	74.9 in (1900 mm)	
	E20H/600	76.2 in (1934 mm)	
	E25	74.9 in (1900 mm)	
	E25H/600	76.2 in (1934 mm)	
	E25L	80.4 in (2041 mm)	
	E25HL/600	81.9 in (2079 mm)	
	E30	78.5 in (1992 mm)	
Turning radius (W _a)	E30H/600	76.2 in (1934 mm)	
	E30L	82.2 in (2087 mm)	
	E30HL/600	81.9 in (2079 mm)	
	E35L	84.2 in (2137 mm)	
	E35HL	81.9 in (2079 mm)	
	E30HL/600 Bev	81.9 in (2079 mm)	
	X20/600	165.3 in (4198 mm)	
	X25	165.3 in (4198 mm)	
	X30	167 in (4241 mm)	
	X35	168.4 in (4276 mm)	
	E models	0	
Smallest pivot point distance (b ₁₃)	X20/600 and X25	25.8 in (655 mm)	
	X30 and X35	26.3 in (668 mm)	

Performance data			
Driving speed with/without load	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E35L E35HL E30HL/600 Bev	12.4/12.4 mph (20/20 km/h)	
	X20/600 X25 X30 X35	13.7/13.7 mph (22/22 km/h)	

Unde Material Handling Linde

Performance data		
	F20	110.2/126.0 ft/min
	E20	(0.56/0.64 m/s)
	E20H/600	110.2/126.0 ft/min
	E20H/000	(0.56/0.64 m/s)
	E25	102.4/126.0 ft/min
	23	(0.52/0.64 m/s)
	E25H/600	84.6/106.3 ft/min
	22311/000	(0.43/0.54 m/s)
	E25L	102.4/126.0 ft/min
		(0.52/0.64 m/s)
	E25HL/600	84.6/106.3 ft/min
		(0.43/0.54 m/s)
	E30	78.7/106.3 ft/min
		(0.40 /0.54 m/s)
	E30H/600	78.7/106.3 ft/min
		(0.40 /0.54 m/s) 78.7/106.3 ft/min
Lifting speed with/without load	E30L	(0.40 /0.54 m/s)
		78.7/106.3 ft/min
	E30HL/600	(0.40 /0.54 m/s)
		76.7/106.3 ft/min
	E35L	(0.39/0.54 m/s)
		76.7/106.3 ft/min
	E35HL	(0.39/0.54 m/s)
	E00111 (000 B	78.7/106.3 ft/min
	E30HL/600 Bev	(0.40 /0.54 m/s)
	X20/600	110.2/114.2 ft/min
	X20/600	(0.56/0.58 m/s)
	X25	112.2/114.2 ft/min
	^25	(0.57/0.58 m/s)
	X30	112.2/114.2 ft/min
	730	(0.57/0.58 m/s)
	X35	112.2/114.2 ft/min
	1,000	(0.57/0.58 m/s)



Performance data		
	E20	112.2/112.2 ft/min
	E20	(0.57/0.57 m/s)
	E20H/600	112.2/112.2 ft/min
	E20H/600	(0.57/0.57 m/s)
	E25	112.2/112.2 ft/min
	LZS	(0.57/0.57 m/s)
	E25H/600	114.2/112.2 ft/min
	L231 1/000	(0.58/0.57 m/s)
	E25L	112.2/112.2 ft/min
	2202	(0.57/0.57 m/s)
	E25HL/600	114.2/112.2 ft/min
		(0.58/0.57 m/s)
	E30	114.2/112.2 ft/min
		(0.58/0.57 m/s)
	E30H/600	114.2/112.2 ft/min
		(0.58/0.57 m/s)
Lowering speed with/without load	E30L	114.2/112.2 ft/min
		(0.58/0.57 m/s)
	E30HL/600	114.2/112.2 ft/min
		(0.58/0.57 m/s) 114.2/112.2 ft/min
	E35L	(0.58/0.57 m/s)
		(0.56/0.57 m/s) 114.2/112.2 ft/min
	E35HL	(0.58/0.57 m/s)
		(0.56/0.57 m/s) 114.2/112.2 ft/min
	E30HL/600 Bev	(0.58/0.57 m/s)
		(0.56/0.57 m/s) 114.2/112.2 ft/min
	X20/600	(0.58/0.57 m/s)
		114.2/112.2 ft/min
	X25	(0.58/0.57 m/s)
		114.2/112.2 ft/min
	X30	(0.58/0.57 m/s)
		114.2/112.2 ft/min
	X35	(0.58/0.57 m/s)
	E20	(======================================
	E20H/600	
	E25	
	E25H/600	
Pulling force with / without load	E25L	
	E25HL/600	
	E30	1,506 / 1,506 lbs
	E30H/600	(6,700 / 6,700 N)
	E30L	
	E30HL/600	
	E35L	
	E35HL	
	E30HL/600 Bev	
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Performance data			
	X20/600 X25 X30 X35	1,708 / 1,708 lbs (7,600 / 7,600 N)	
Maximum pulling force with / without load	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev	4,046 / 4,046 lbs (18,000 / 18,000 N)	
	X20/600 X25 X30 X35	4,496 / 4,496 lbs (20,000 / 20,000 N)	
Climbing capability (%) with / without load	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E35HL E30HL/600 Bev X20/600 X25 X30	20.30 / 31.50 18.40 / 27.30 18.10 / 30.10 17.60 / 25.60 18.00 / 29.80 17.60 / 24.60 17.60 / 26.30 17.60 / 23.40 17.60 / 23.60 17.60 / 23.60 17.60 / 23.60 17.60 / 22.40 17.60 / 22.60 22.20 / 33.20 20.50 / 33.20 18.30 / 31.20 17.60 / 27.20	



Performance data			
	E20	26.60 / 41.80	
	E20H/600	24.20 / 36.00	
	E25	23.70 / 39.90	
	E25H/600	21.30 / 33.70	
	E25L	23.60 / 39.40	
	E25HL/600	20.80 / 32.30	
	E30	20.20 / 34.60	
NATIONAL PROBLEM AND	E30H/600	18.80 / 30.70	
Maximum climbing capability (%) with / without	E30L	20.40 / 35.20	
load	E30HL/600	18.90 / 31.00	
	E35L	17.60 / 31.00	
	E35HL	17.60 / 29.40	
	E30HL/600 Bev	18.30 / 29.70	
	X20/600	28.70 / 43.40	
	X25	26.40 / 43.40	
	X30	23.60 / 40.60	
	X35	19.90 / 35.30	
	E20	5.00 / 4.40	
	E20H/600	5.10 / 4.50	
	E25	5.10 / 4.40	
	E25H/600	5.30 / 4.60	
	E25L	5.10 / 4.40	
	E25HL/600	5.40 / 4.60	
	E30	5.40 / 4.60	
	E30H/600	5.50 / 4.70	
Acceleration time (seconds) with / without load	E30L	5.40 / 4.50	
	E30HL/600	5.50 / 4.70	
	E35L	5.60 / 4.70	
	E35HL	5.60 / 4.70	
	E30HL/600 Bev	5.50 / 4.80	
	X20/600	4.80 / 4.30	
	X25	4.90 / 4.30	
	X30	5.10 / 4.30	
	X35	5.30 / 4.40	
Service brake	All models	Hydraulic/mechanical	

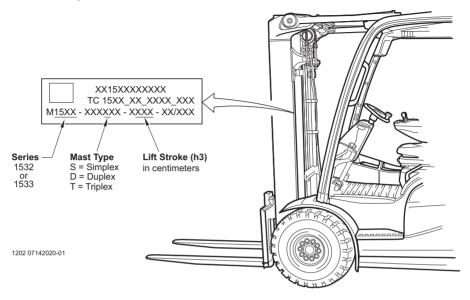


Drive/motor		
Traction motor, power rating at S2: 60 min	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev	14.7 hp (11.0 kW)
	X20/600 X25 X30 X35	16.6 hp (12.4 kW)
Lift motor, power rating at S3: 15%	E20 E20H/600 E25 E25H/600 E25L E25HL/600 E30 E30H/600 E30L E30HL/600 E35L E35HL E30HL/600 Bev X20/600 X25 X30	22.8 hp (17.0 kW) 26.8 hp (20.0 kW)



Mast Heights

Mast Heights



Single, Double, Triple Masts

Mast heights are listed by lift stroke h3. This number is found in the mast identification code as shown above. Note that it is given in centimeters in the code, so a zero must be added to match the table below. Mast height dimensions in inches are rounded. Metric mast height dimensions (mm) are design values.

Mast heights - Simple - 1532 Series masts				
Lift stroke (h3)	Free lift stroke (h2)	Mast height, fully low- ered (h1) See Note 1.	Extended height (h4) (with 48 inch LBR)	Tilt angle forward / back See Note 2.
127.2 in (3230 mm)	N/A	87.1 in (2212 mm)	175.2 in (4450 mm)	5 deg / 8 deg
135.0 in (3430 mm)	N/A	91.0 in (2312 mm)	183.1 in (4650 mm)	5 deg / 8 deg
158.7 in (4030 mm)	N/A	102.8 in (2612 mm)	206.7 in (5250 mm)	5 deg / 8 deg



Mast Heights

Mast heights - Double - 1532 Series masts					
		Mast height,	Extended	Tilt angle	
Lift stroke (h3)	Free lift	fully	height (h4)	forward /	
Lift Stroke (113)	stroke (h2)	low-	(with 48 inch	back	
		ered (h1)	LBR)	See Note 2.	
126.0 in (3200 mm)	58.8 in	86.0 in	174.0 in	5 deg /	
120.0 111 (3200 11111)	(1494 mm)	(2184 mm)	(4420 mm)	5 deg	
133.9 in (3400 mm)	62.8 in	89.9 in	181.9 in	5 deg /	
133.9 11 (3400 11111)	(1594 mm)	(2284 mm)	(4620 mm)	5 deg	
161.4 in (4100 mm)	76.5 in	103.7 in	209.4 in	5 deg /	
161.4 III (4100 IIIII)	(1844 mm)	(2634 mm)	(5320 mm)	5 deg	

Mast heights - Triple - 1532 Series masts					
Lift stroke (h3)	Free lift stroke (h2)	Mast height, fully low- ered (h1)	Extended height (h4) (with 48 inch LBR)	Tilt angle forward / back See Note 2.	
181.5 in (4610 mm)	56.8 in	84.0 in	229.5 in	5 deg /	
	(1444 mm)	(2134 mm)	(5830 mm)	5 deg	
187.4 in (4760 mm)	58.8 in	86.0 in	235.4 in	5 deg /	
	(1494 mm)	(2184 mm)	(5980 mm)	5 deg	
193.3 in (4910 mm)	60.8 in	88.0 in	241.3 in	5 deg /	
	(1544 mm)	(2234 mm)	(6130 mm)	5 deg	
199.2 in (5060 mm)	62.8 in	89.9	247.2 in	5 deg /	
	(1594 mm)	(2284 mm)	(6280 mm)	5 deg	
218.9 in (5560 mm)	70.6 in	97.8 in	266.9 in	5 deg /	
	(1794 mm)	(2484 mm)	(6780 mm)	5 deg	
236.6 in (6010 mm)	76.5 in	103.7 in	284.6 in	5 deg /	
	(1944 mm)	(2634 mm)	(7230 mm)	5 deg	

Mast heights - Simple - 1533 Series masts						
Lift stroke (h3)	Free lift stroke (h2)	Mast height, fully low- ered (h1) See Note 1.	Extended height (h4) (with 48 inch LBR)	Tilt angle forward / back See Note 2.		
125.8 in (3195 mm)	N/A	86.6 in (2199 mm)	173.8 in (4415 mm)	5 deg / 8 deg		
137.6 in (3495 mm)	N/A	92.5 in (2349 mm)	185.6 in (4715 mm)	5 deg / 8 deg		
161.2 in (4095 mm)	N/A	104.2 in (2649 mm)	209.2 in (5315 mm)	5 deg / 8 deg		



Mast Heights

Mast heights - Double - 1533 Series masts						
Lift stroke (h3)	Free lift stroke (h2)	Mast height, fully low- ered (h1)	Extended height (h4) (with 48 inch LBR)	Tilt angle forward / back See Note 2.		
128.5 in (3265 mm)	56.9 in	87.3 in	176.5 in	5 deg /		
	(1444 mm)	(2217 mm)	(4485 mm)	5 deg		
132.5 in (3365 mm)	58.8 in	89.3 in	180.5 in	5 deg /		
	(1494 mm)	(2267 mm)	(4585 mm)	5 deg		
148.2 in (3765 mm)	66.7 in	97.1 in	196.2 in	5 deg /		
	(1694 mm)	(2467 mm)	(4985 mm)	5 deg		
160.0 in (4065 mm)	72.6 in	103.0 in	208.0 in	5 deg /		
	(1844 mm)	(2617 mm)	(5285 mm)	5 deg		

Mast heights - Triple - 1533 Series masts					
Lift stroke (h3)	Free lift stroke (h2)	Mast height, fully low- ered (h1)	Extended height (h4) (with 48 inch LBR)	Tilt angle forward / back See Note 2.	
184.3 in (4680 mm)	54.9 in	85.2 in	232.3 in	5 deg /	
	(1394 mm)	(2165 mm)	(5900 mm)	5 deg	
190.2 in (4830 mm)	56.9 in	87.2 in	235.4 in	5 deg /	
	(1444 mm)	(2215 mm)	(6050 mm)	5 deg	
196.1 in (4980 mm)	58.8 in	89.2 in	244.1 in	5 deg /	
	(1494 mm)	(2265 mm)	(6200 mm)	5 deg	
202.0 in (5130 mm)	60.8 in	91.1 in	250.0 in	5 deg /	
	(1544 mm)	(2315 mm)	(6350 mm)	5 deg	
209.8 in (5330 mm)	64.7 in	95.1 in	257.8 in	5 deg /	
	(1644 mm)	(2415 mm)	(6550 mm)	5 deg	
215.7 in (5480 mm)	66.7 in	97.0 in	263.7 in	5 deg /	
	(1694 mm)	(2465 mm)	(6700 mm)	5 deg	
233.5 in (5930 mm)	72.6 in	103.0 in	281.5 in	5 deg /	
	(1844 mm)	(2615 mm)	(7150 mm)	5 deg	
253.1 in (6430 mm)	80.5 in	110.8 in	301.1 in	5 deg /	
	(2044 mm)	(2815 mm)	(7650 mm)	5 deg	

Note 1. Since forks must be raised slightly to travel and there is no free-lift on a simple mast, this value will increase slightly for travel.

Note 2. Other tilt angles are available as options.



Mast Heights



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