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Baoli

A Member of KION Group

Original instructions
D series Forklift Truck

D series

KBD50–70



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Baoli - Your partner



About KION group

The KION Group is a global leader in industrial trucks, related services and supply chain solutions. Across more than 100 countries worldwide, the KION Group designs, builds and supports logistics solutions that optimize material and information flow within factories, warehouses and distribution centers. The Group is the largest manufacturer of industrial trucks in Europe, the second-largest producer of forklifts globally and a leading provider of warehouse automation.

About Baoli forklift

With over 10,000 forklift trucks and warehouse machines sold annually, Baoli is the international, highly competitive material handling manufacturer for the value segment. From 2009 onwards, Baoli has been fully integrated and managed by the KION Group. Baoli's headquarters and production facilities are located in Jingjiang, Jiangsu province (near Shanghai). Baoli provides whole product range including diesel /gasoline/ LPG trucks with load capacities of 1 to 32 tons and electric / warehouse trucks. The company has automated painting line, vehicle assembly line and key components production line, which provides strong base to ensure business growth.

As a brand of the KION Group, our goal is to be one of the leading brands in the mass material handling industry. By combining competitive advantages of KION's operational excellence with Baoli's integrated manufacturing platform, Baoli provides value-for-money products and service to our customers worldwide.

At Baoli, we strive to match the high quality of our products with high quality services. With an extensive network of sales partners, we are at your service round the clock and around the world.

Your local Baoli partner can offer you a complete package from a single source, with expert advice on all aspects of sales and services.

Please contact us:

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Introduction

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Introduction

Your Baoli forklift truck

With maximum economic efficiency, safety and driving comfort. Yet, it is up to you, the forklift truck operator, to take good care when working and use its potential to the fullest.

During the manufacturing process (if affixed with CE mark):

- We adhered to all CE safety requirements.
- We carried out all compliance tests required by law.

This is proven by the CE stamp shown on the identification plates.

The manual provides you important information on activating, driving, operating and maintaining a Baoli forklift truck.

Regularly and promptly complete the maintenance checklists in accordance with the truck operating instructions and use the specified tools, cleaning products etc.

In order to maintain valid warranty service for your forklift truck, please keep and save a complete, detailed record of the maintenance process.

All maintenance procedures must be recorded; otherwise you will lose the warranty.

Users, especially forklift truck drivers and maintenance personnel, must strictly follow "national regulation and guidelines".

User shall be responsible for any loss caused by improper use. Manufacturer Baoli, will not be responsible for such loss.

If you want to use the forklift truck for purposes that are not mentioned in the user manual, please contact dealers accredited by Baoli.

Any modification of your truck, in particular fitting of equipment or conversion of the truck, is prohibited without the permission of the manufacturer.

⚠ CAUTION

Taking into account stability and the specified minimum braking distance, do not carry out stacking/destacking operations on a slope.

The climbing degrees in the model parameters table are ascertained from the forklift truck traction, and only apply when going over small obstacles and driving on relatively flat surfaces.

Technical notes

This user manual must not be copied, translated or sent to a third party without the manufacturer's written consent.

Baoli's business philosophy is to constantly improve its products in terms of design and structure. Hence, Baoli reserves the right to change a forklift truck's design and technical parameters at any time.

Hence, the company may refuse to take responsibility for any complaint with respect to the technical parameters, illustrations, and instructions of this user manual.

Use dedicated work supplies according to checking and maintenance overviews. Perform specified work regularly at the anticipated time. To comply with warranty conditions, please ensure that work carried out is recorded in the registration documents for the industrial forklift truck.

Daily checks has to be performed by the customer. Periodic service/maintenance work will require specialist knowledge, measuring devices and often also special tools. Please contact an authorized dealer to carry out this work.

Service should only be carried out by qualified personnel approved by Baoli (specialists).

For questions about the forklift truck and orders for spare parts, please contact your local Baoli dealer and leave an accurate shipping address.

In order to maintain the original technical efficiency of the forklift truck, please use authentic Baoli spare parts when repairing.

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When ordering spare parts, in addition to part numbers, please provide the following information:

Forklift model number:

Serial number/Year of manufacturing:

Delivery date:

Part numbers should be specified when ordering parts.

Part number of the lift mast:

Lifting height of the lift mast [mm]:

When taking delivery of the forklift truck, copy data from the component identification plates into this user manual.The relevant information can be found on the identification plates on the forklift truck.We recommend you write down this information in the manual for future reference.

Forklift truck handover

Before leaving the factory, every forklift truck is carefully examined so that it is completely up to standard and can be delivered to the user in perfect condition.

In order to guarantee the forklift truck works correctly, Baoli dealers are obliged to check the following items before the handover:

Check whether the driving wheel nuts are tightened
Check the battery status
Checking the hydraulic oil level
Check the braking function
Check the steering function
Check the traction function
Check the mast lift and attachments operating function

To avoid the inconvenience of making a claim after use, check the forklift truck is in perfect condition and repair, and confirm your satisfaction with the vehicle on the manufacturer's product qualification certificate upon handover.

NOTE

Every forklift truck is provided with the following technical documents:

- *Operating instructions for the truck*
- *EC Declaration of Conformity (applicable for CE certified forklift trucks)*

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Intended use

The industrial truck may only be used as permitted.

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

Damages and defects

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

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

Danger areas

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

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

Working areas

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

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

Driving routes

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

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

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

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

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

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

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

Fire protection

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

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Attachments

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

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

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

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

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

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

Trailers

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

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

Impermissible use

⚠ DANGER

High risk of property damage, injury and death.

Avoid impermissible use.

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

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

It is not permitted:

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

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Description of use and climatic conditions

- Indoor and outdoor use
- Ambient temperature of -15°C ~ +45°C

Symbols used

The terms DANGER, WARNING, CAUTION, NOTE and ENVIRONMENT NOTE are used in these operating instructions. They are intended to draw attention to specific dangers or unusual information that needs to be highlighted:

⚠ DANGER

Means that failure to comply can risk the lives of others and/or cause major damage to equipment.

⚠ WARNING

Means that failure to comply can result in the risk of serious physical injury and/or major damage to equipment.

⚠ CAUTION

Means that failure to comply can result in the risk of major damage to equipment or destruction.

NOTE

This means that particular attention must be paid to the specific technical meaning because this may not be obvious, even to a specialist.

ENVIRONMENT NOTE

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



⚠ CAUTION

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

Refer to the appropriate section in these operating instructions.

For your safety, additional symbols are also used. Please take these different symbols into consideration.

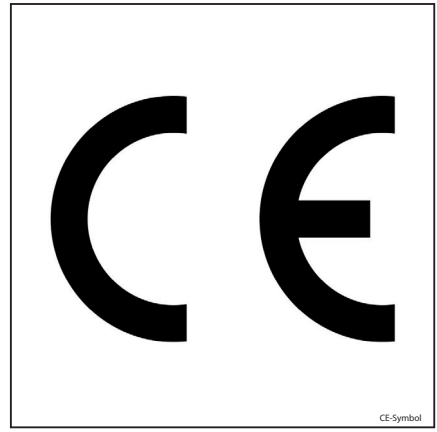
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CE labelling

The manufacturer uses CE labelling to indicate that the truck complies with the standards and regulations valid at the time of marketing. This is confirmed by the issued EC declaration of conformity. The CE labelling is attached to the nameplate.

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

The EC declaration of conformity must be carefully stored and made available to the responsible authorities.


CE-Symbol

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EMC – Electromagnetic compatibility

Electromagnetic compatibility (EMC) is a key quality feature of the truck.

EMC involves

- limiting the emission of electromagnetic interference to a level that ensures the troublefree operation of other equipment in the environment.
- ensuring sufficient resistance to external electromagnetic interference so as to guarantee proper operation at the planned usage location under the electromagnetic interference conditions to be expected there .

An EMC test thus firstly measures the electromagnetic interference emitted by the truck and secondly checks it for sufficient resistance to electromagnetic interference with reference to the planned usage location . A number of electrical measures are taken to ensure the electromagnetic compatibility of the truck .

⚠ CAUTION

The EMC regulations for the truck must be observed.

When replacing truck components the protective EMC components must be installed and connected again.

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EC declaration of conformity in accordance with Machinery Directive

declaration of conformity

(lift trucks with internal combustion engines with a load capacity of≤10.000 kg)

EC / EU declaration of conformity

KION Baoli (Jiangsu) Forklift Co., Ltd.

No.8 Xinzhou Road, Economic Development Zone

214500, Jingjiang,China

We declare herewith that the machine

Industrial truck model:	**IC Counterbalance Forklift Truck**
Model:	**See EC declaration of conformity**
Serial No.:	**See EC declaration of conformity**

conforms to EC Machinery Directive 2006/42/EC in the latest valid version and to EMC Directive 2014/30/EU in the latest valid version, as determined for industrial trucks in the harmonised standard EN 12895: 2015. In addition we declare, that radio equipment , if any, installed in this machine, conforms to RED Directive 2014/53/EU in the latest version.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Person authorised to compile the technical file in accordance with the named directives.

See EC declaration of conformity

In addition, we hereby declare that the equipment conforms to the requirements of the Directive for Noise Emissions 2000/14/EC. The conformity was verified by the conformity assessment procedure described in Annex V.

Measured sound power level	LWA : dB
Guaranteed sound power level	LWA : dB

Jingjiang, (date)

See EC declaration of conformity	See EC declaration of conformity
Product Development Director	Quality Manager

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EC declaration of conformity in accordance with Machinery Directive

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2

Safety

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Definition of terms used for responsible persons

Operating company

The operating company is the natural or legal person or group who operates the truck or on whose authority the truck is used.

The operating company must ensure that the truck is only used for its proper purpose and in compliance with the safety regulations set out in these operating instructions.

The operating company must ensure that all users read and understand the safety information.

The operating company is responsible for the scheduling and correct performance of regular safety checks.

We recommend that the national performance specifications are adhered to.

Specialist

A qualified person is defined as a service engineer or a person who fulfils the following requirements:

- A completed vocational qualification that demonstrably proves their professional expertise. This proof should consist of a vocational qualification or a similar document.
- Professional experience indicating that the qualified person has gained practical experience of industrial trucks over a proven period during their career During this time, this person has become familiar with a wide range of symptoms that require checks to be carried out, such as based on the results of a hazard assessment or a daily inspection
- Recent professional involvement in the field of the industrial truck test in question and an appropriate further qualification are essential. The qualified person must have experience of carrying out the test in question or of carrying out similar tests. Moreover, this person must be aware of the latest technological developments regarding the industrial truck to be tested and the risk being assessed

Competent person

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

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

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

Drivers

This truck may only be driven by suitable persons who are at least 18 years of age, have been trained in driving, have demonstrated their skills in driving and handling loads to the operating company or an authorised representative, and have been specifically instructed to

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drive the truck. Specific knowledge of the truck to be operated is also required.

The training requirements under §3 of the Health and Safety at Work Act and §9 of the plant safety regulations are deemed to have been satisfied if the driver has been trained in accordance with BGG (General Employers' Liability Insurance Association Act) 925. Observe the national regulations for your country.

Driver rights, duties and rules of behaviour

The driver must be trained in his rights and duties.

The driver must be granted the required rights.

The driver must wear protective equipment (protection suit, safety footwear, safety helmet, industrial goggles and gloves) that is appropriate for the conditions, the job and the load to be lifted. Solid footwear should be worn to ensure safe driving and braking.

The driver must be familiar with the operating instructions and have access to them at all times.

The driver must:

- have read and understood the operating manual
- have familiarised himself with safe operation of the truck
- be physically and mentally able to drive the truck safely

⚠ DANGER

The use of drugs, alcohol or medications that affect reactions impair the ability to drive the truck!

Individuals under the influence of the aforementioned substances are not permitted to perform work of any kind on or with the truck.

Prohibition of use by unauthorised persons

The driver is responsible for the truck during working hours. He must not allow unauthorised persons to operate the truck.

When leaving the truck, the driver must secure it against unauthorised use, e.g. by pulling out the key.

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Safety regulations

General safety regulations

- Only allow qualified, trained and authorised personnel to operate the truck.
- Do not install any equipment on the truck that has not been supplied and/or recommended by the manufacturer.
- Ensure the truck is always kept in a condition that guarantees full working efficiency, in order to keep all types of risk to a minimum.
- Do not operate the truck when the hoods or doors are open or if the protective devices have been removed.
- Close the rear window of the driver's cab before moving the truck. When open, the rear window extends beyond the truck contour and may collide with persons or objects.
- The identification plates fitted to the truck must be kept in a good, legible condition, and must be replaced if damaged.
- Carefully read and follow all of the safety information found on the truck.
- Make sure that there is always sufficient overhead clearance above the truck.
- Do not park the truck in front of fire extinguishers, escape routes or anywhere where it would block traffic.
- If the forklift shows signs of defects or damage, or if it appears to be unsafe for any other reason, safely park the truck and notify the authorised service centre.
- Maintain appropriate distances from high voltage overhead cables. Comply with the safety distances established by the competent authorities.
- Never raise loads using just one fork arm.
- Position the load on the fork carriage or in such a way that the centre of gravity of the load is as close as possible to the fork carriage.
- The load must be positioned on the fork arms such that the centre of gravity falls between the fork arms.
- Do not drive with a load that is laterally displaced from the truck's axle beam. Failure to comply with this regulation may adversely affect the stability of the truck.
- Make sure that the surface on which the load rests is able to support its weight.
- Wear a protection suit that is compliant with current national regulations at all times, and use any personal protective equipment that may be necessary for the application in question.
- Do not drive the truck on loose or hilly ground or on steps.
- Do not drive with loads raised more than 300 mm off the ground.
- Do not turn or stack on slopes.
- Reduce the speed on slopes.
- Do not load the truck to the extent that the load capacity limits indicated on the capacity plates are exceeded.
- Always make use of the driver restraint systems present on the truck.

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Exhaust gases

⚠ CAUTION

Risk to health from exhaust gases! Exhaust gases from internal combustion engines are harmful to your health. In particular, the soot particles contained in the diesel exhaust gas can cause cancer. Letting the combustion engine idle runs a risk of poisoning from the CO, CH and NO_x components contained in the exhaust gas

Modern exhaust gas treatment systems (e.g. catalytic converters, particle filters or comparable systems) can clean exhaust gases in a way that reduces the health hazard and risk of poisoning when operating the truck.

- ➢ Observe the national laws and regulations when using trucks with an internal combustion engine in entirely or partially enclosed working areas.
- ➢ Always ensure sufficient ventilation.

Ground condition for using the truck

In order for the truck to be used, suitable ground must have the following characteristics:

- Even and level
- Hard
- Sturdy
- Free of obstacles
- Properly prepared for the purpose

Safety Regulations Relative to Forklift Use

- The operator must familiarize himself with the forklift to be able to better describe any defects and assist maintenance personnel. The operator, trained and authorized to use the forklift, must be familiar with the controls and performances of the forklift.
- Any defect (squeaking, leaks, etc.) must be promptly reported because, if neglected, it could cause more serious failures/defects.
- Carry out the inspections indicated in the chapter on "Daily Inspections".

ENVIRONMENT NOTE

Report any oil and/or battery fluid leaks: they are dangerous and highly polluting.

⚠ CAUTION

If you notice a burning smell, stop the forklift and turn off the engine, then disconnect the battery.

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Residual dangers, residual risks

Despite careful working and compliance with standards and regulations, the occurrence of other risks when using the truck cannot be entirely excluded.

The truck and all other system components comply with current safety requirements. Nevertheless, even when the truck is used for its proper purpose and all instructions are followed, some residual risk cannot be excluded.

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

⚠ WARNING

All persons that are in the vicinity of the truck must be instructed regarding these risks that arise through use of the truck.

In addition, we draw attention to the safety regulations in these operating instructions.

Risks can include:

- Escape of consumables due to leakages, rupture of lines and containers etc.
- Risk of accident when driving over difficult ground such as gradients, smooth or irregular surfaces, or with poor visibility etc.
- Falling, tripping etc. when moving on the truck, especially in wet weather, with leaking consumables or on icy surfaces
- Fire and explosion risks due to batteries and electrical voltages
- Human error resulting from failure to observe the safety regulations,
- Unrepaired damage or defective and worn components,
- Insufficient maintenance and testing
- Use of incorrect consumables
- Exceeding test intervals

The manufacturer is not held responsible for accidents involving the truck caused by the failure of the operating company to comply with these regulations either intentionally or carelessly.

Stability

The stability of the truck has been tested to the latest technological standards and is guaranteed provided that the truck is used properly and according to its intended purpose. These standards only take into account the dynamic and static tipping forces that can arise during specified use in accordance with the operating rules and intended purpose. However, the danger of exceeding the moment of tilt due to improper use or incorrect operation and losing stability can never be excluded.

The loss of stability can be avoided or minimised by the following actions:

- ➢ Always secure the load against slipping, e.g. by lashing.
- ➢ Always transport unstable loads in suitable containers.
- ➢ Always drive slowly when cornering.
- ➢ Drive with the load lowered.
- ➢ Even with sideshifts, align the load as centrally as possible with the truck and transport in this position.
- ➢ Avoid turning and diagonally driving across slopes or gradients.
- ➢ Never have the load facing downhill when travelling on slopes or gradients.
- ➢ Pick up only loads of the approved width.
- ➢ Always take great care when transporting suspended loads.
- ➢ Do not drive over ramp edges or steps.

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Safety regulations when driving

Driving conduct

The driver must follow the public rules of the road when driving in company traffic.

The speed must be appropriate to the local conditions.

For example, the driver must drive slowly around corners, in tight passageways, when driving through swing-doors, at blind spots, or on uneven surfaces.

The driver must always maintain a safe braking distance from vehicles and persons in front, and must always have the truck under control. Stopping suddenly, turning quickly and overtaking at dangerous or blind spots must be avoided.

➢ Initial driving practice must be carried out in an empty space or on a clear roadway.

The following are forbidden during driving:

- Allowing arms and legs to hang outside the truck
- Leaning the body over the outer contour of the truck
- Climbing out of the truck
- Moving the driver's seat
- Adjusting the steering column
- Releasing the seat belt
- Disabling the restraint system
- Raising the load higher than 300 mm above the ground (with the exception of manoeuvring processes during the placement into stock/removal from stock of loads)
- Using electronic devices, for example radios, mobile phones etc.

⚠ WARNING

The use of multimedia and communication equipment as well as playing these devices at an excessive volume during travel or when handling loads can affect the operator's attention. There is a risk of accident!

➢ Do not use devices during travel or when handling loads.

➢ Set the volume so that warning signals can still be heard.

⚠ WARNING

In areas where use of mobile phones is prohibited, use of a mobile phone or radio telephone is not permitted.

➢ Switch off the devices.

Visibility when driving

The driver must look in the drive direction and have a sufficient view of the driving lane.

Particularly for reverse travel, the driver must be sure that the driving lane is clear.

When transporting goods that impair visibility, the driver must drive the truck in reverse.

If this is not possible, a second person acting as a guide must walk in front of the truck.

In this case the driver must only move at walking pace and with extra care. The truck must be stopped immediately if eye contact with the guide is lost.

Rear-view mirrors are only to be used for observing the road area behind the truck and not for reverse travel. If visual aids (mirror, monitor) are necessary to achieve sufficient visibility, it is necessary to practise using them. For reverse travel using visual aids, extra care should be taken.

When using attachments, special conditions apply; see the chapter entitled "Fitting attachments".

Any glass (variant, e.g. windscreen) and mirrors must always be clean and free of ice.

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Safety regulations in case of accidental lateral tipping

If as a result of incorrect manoeuvring the truck appears to be tipping over sideways, carefully follow the instructions below:

a) Do not leave the forklift truck.

b) Tilt your head forward and move your body in the opposite direction to which the forklift is tipping.

c) Remain firmly seated, grip the steering wheel and dig your heels in. Wait until the truck has reached a stable position before leaving the truck.

Exercise caution when handling gas springs and accumulators

⚠ WARNING

Gas springs are under high pressure. Improper removal results in an elevated risk of injury.

For ease of operation, various functions on the truck can be supported by gas springs. Gas springs are complex components that are subject to high internal pressures (up to 300 bar). They may under no circumstances be opened unless instructed to do so, and may be installed only when not under pressure. If required, the authorised service centre will depressurise the gas spring in accordance with the regulations before removal. Gas springs must be depressurised before recycling.

- ➢ Avoid damage, lateral forces, buckling, temperatures over 80°C and heavy contamination.
- ➢ Damaged or defective gas springs must be changed immediately.
- ➢ Contact the authorised service centre.

⚠ WARNING

Accumulators are under high pressure. Improper installation of an accumulator results in an elevated risk of injury.

Before starting work on the accumulator it must be depressurised.

- ➢ Contact the authorised service centre.

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Safety regulations for handling consumables

Permissible consumables

⚠ DANGER

Failure to observe the safety regulations relating to consumables may result in a risk of injury, death or damage to the environment.

- Observe the safety regulations when handling such materials.

The permissible materials required for operation can be found in the supply table in the chapter entitled "Maintenance".

Hydraulic fluid



⚠ WARNING

These fluids are pressurised during operation of the truck and are hazardous to your health.

- Do not spill the fluids.
- Follow the statutory regulations.
- Do not allow the fluids to come into contact with hot engine parts.



⚠ WARNING

These fluids are pressurised during operation of the truck and are hazardous to your health.

- Do not allow the fluids to come into contact with the skin.
- Avoid inhaling spray.
- Penetration of pressurised 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 avoid injury, use appropriate personal protective equipment (e.g. protective gloves, industrial goggles, skin protection and skin care products).

ENVIRONMENT NOTE

Hydraulic fluid is a water-polluting substance.

- *Always store hydraulic fluid in containers that comply with regulations*
- *Avoid spills*
- *Spilt hydraulic fluid should be removed immediately with oil-binding agents and disposed of according to the regulations*
- *Dispose of old hydraulic fluid according to the regulations*

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Oils



⚠ DANGER

Oils are flammable!

- Follow the statutory regulations.
- Do not allow oils to come into contact with hot engine parts.
- No smoking, fires or naked flames!



⚠ DANGER

Oils are toxic!

- Avoid contact and consumption.
- If vapour or fumes are inhaled, move to fresh air immediately.
- In the event of contact with the eyes, rinse thoroughly (for at least 10 minutes) with water and then consult an eye specialist.
- If swallowed, do not induce vomiting. Seek immediate medical attention.



⚠ WARNING

Prolonged intensive contact with the skin can result in dryness and irritate the skin!

- Avoid contact and consumption.
- Wear protective gloves.
- After any contact, wash the skin with soap and water, and then apply a skin care product.
- Immediately change soaked clothing and shoes.

⚠ WARNING

There is a risk of slipping on spilled oil, particularly when combined with water!

- Spilt oil should be removed immediately with oil-binding agents and disposed of according to the regulations.

ENVIRONMENT NOTE

Oil is a water-polluting substance!

- *Always store oil in containers that comply with the applicable regulations.*
- *Avoid spilling oils.*
- *Spilt oil should be removed immediately with oil-binding agents and disposed of according to the regulations.*
- *Dispose of old oils according to the regulations.*

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Battery acid



⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is toxic.

- Avoid touching or swallowing the battery acid at all costs.
- In case of injury, seek medical advice immediately.



⚠ WARNING

Battery acid contains dissolved sulphuric acid. This is corrosive.

- When working with battery acid, use appropriate PSA (rubber gloves, apron, protection goggles).
- When working with battery acid, never wear a watch or jewellery.
- Do not allow any acid to get onto clothing or skin or into the eyes. If this does happen, rinse immediately with plenty of clean water.
- In case of injury, seek medical advice immediately.
- Immediately rinse away spilt battery acid with plenty of water.
- Follow the statutory regulations.

ENVIRONMENT NOTE

- Dispose of used battery acid in line with the applicable regulations.

Disposal of consumables

ENVIRONMENT NOTE

Materials that accumulate during repair, maintenance and cleaning must be collected properly and disposed of in accordance with the national regulations for the country in which the truck is being used. Work must only be carried out in areas designated for the purpose. Care must be taken to minimise any environmental pollution.

- Soak up any spilt fluids such as hydraulic oil, brake fluid or gearbox oil using an oil-binding agent.
- Neutralise any spilt battery acid immediately.
- Always observe national regulations concerning the disposal of used oil.

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Environmental considerations

Disposal of components and batteries

The truck is composed of different materials. If components or batteries need to be replaced and disposed of, they must be:

- disposed of,
- treated or
- recycled in accordance with regional and national regulations.

NOTE

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

ENVIRONMENT NOTE

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

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Packaging

During delivery of the truck, certain parts are packaged to provide protection during transport. This packaging must be removed completely prior to initial start-up.

ENVIRONMENT NOTE

The packaging material must be disposed of properly after delivery of the truck.

Emissions

The values specified apply to a standard truck (compare the specifications in the "Technical data" chapter). Different tyres, lift masts, additional units etc. may produce different values.

Noise emissions

The values were determined based on measuring procedures from the standard EN 12053 "Safety of industrial trucks.

This machine emits the following sound pressure level:

Continuous sound pressure level in the driver's compartment

Model	Continuous sound pressure level in the driver's compartment		Measured sound power level	Guaranteed sound power level
	LpAZ	Measurement uncertainty KpA	EN12053	2000/14/EC
KBD 50	85 dB(A)	4 dB(A)	109 dB(A)	111 dB(A)
KBD 60	85 dB(A)	4 dB(A)	110 dB(A)	111 dB(A)
KBD 70	86 dB(A)	4 dB(A)	110 dB(A)	111 dB(A)

The values were determined in the test cycle on an identical machine from the weighted values for operating statuses and idling.

However, the indicated noise levels at the truck cannot be used to determine the noise emissions at workplaces according to the most recent version of Directive 2003/10/EC (daily personal noise pollution). If required, these noise emissions must be determined

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directly at the workplaces under the actual conditions present (further sources of noise, particular application conditions, sound reflections) by the operating company.

NOTE

Please note the definition of "operating company" in the sense of responsible persons!

Vibrations

The vibrations of the machine have been determined on an identical machine in accordance with the standards DIN EN 13059 "Safety of industrial trucks - Test methods for measuring vibration" and DIN EN 12096 "Mechanical vibration - Declaration and verification of vibration emission values".

Frequency-weighted effective value of acceleration on the seat

	Weighted effective value of acceleration to which the body (feet or seat surface) is subjected	Measurement uncertainty
KBD 50-70	Seat < 0.9 m/s2	0.3 m/s2

Tests have indicated that the amplitude of the hand and arm vibrations on the steering wheel or the operating devices in trucks is less than 2.5 m/s2. There are therefore no measurement guidelines for these measurements.

The personal vibration load on the driver over a working day must be determined by the operating company at the actual place of use in accordance with Directive 2002/44/EC, in order to consider all additional influences, such as driving route, intensity of use etc. are considered.

NOTE

Please note the definition of "operating company" in the sense of responsible persons!

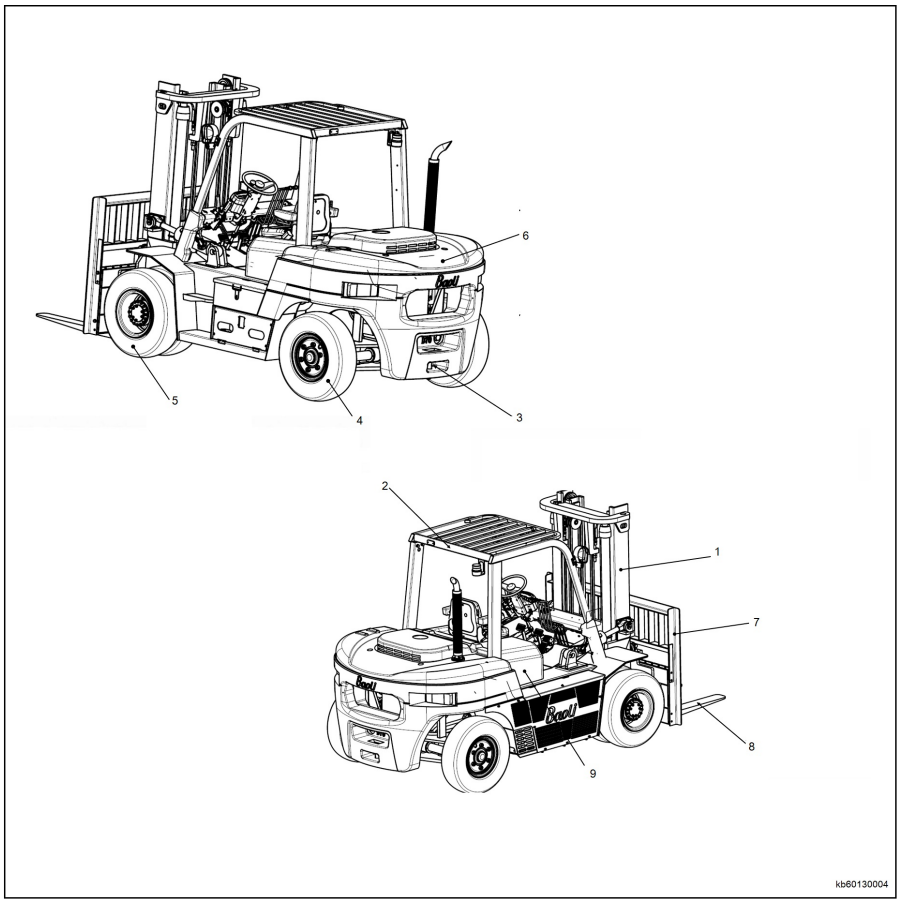
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3

Overview

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General View

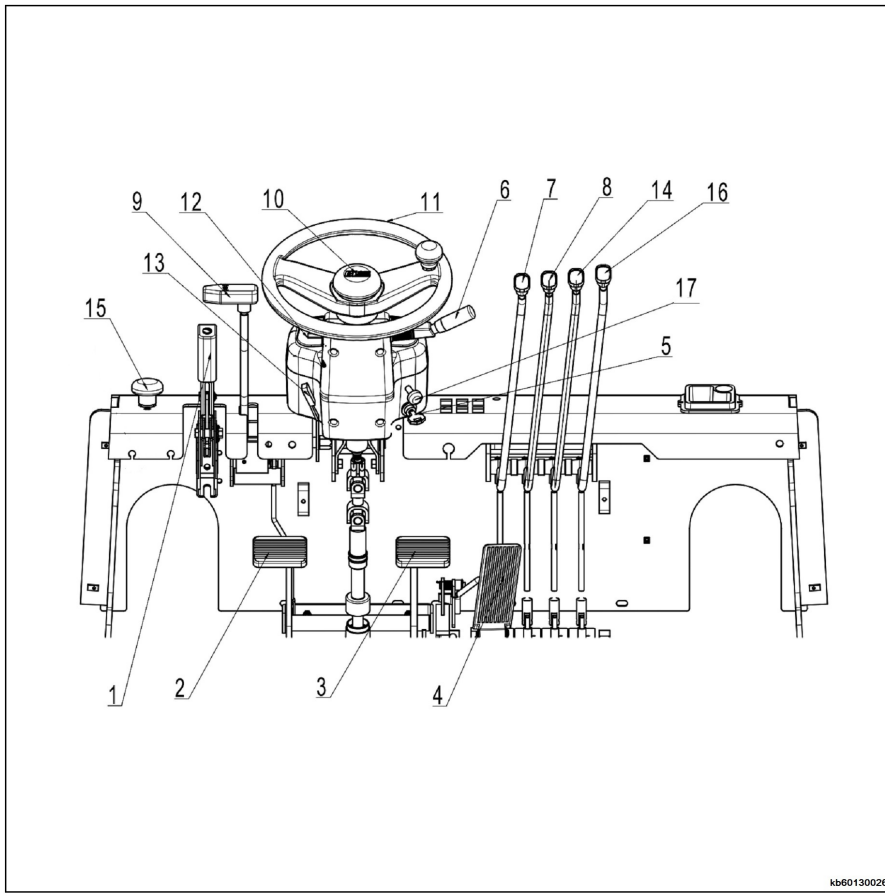


1	Mast	6	Counterweight
2	Overhead guard	7	Load backrest
3	Towing pin	8	Forks
4	Steering wheels	9	Engine hood
5	Driving wheels		

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Operating controls

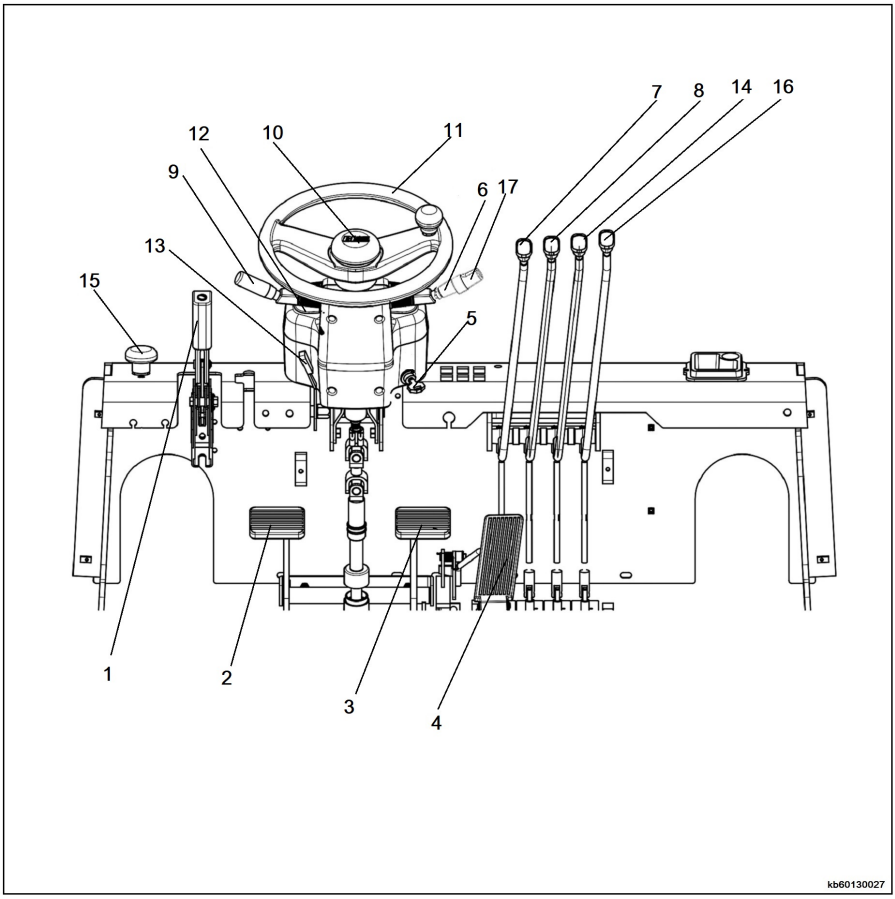
Hydraulic torque convertor with manual lever



1	Parking brake lever
2	Inching pedal
3	Brake pedal
4	Accelerator pedal
5	Ignition switch
6	Direction indicator switch
7	Lifting/lowering operating lever
8	Forward tilting/back tilting operating lever
9	Direction control switch
10	Horn button
11	steering wheel
12	Display instrument
13	Steering column adjusting lever
14	Side shift operating lever
15	Button to stop the engine
16	Fixtures operating lever
17	Lamp switch

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Hydraulic torque convertor with powershift

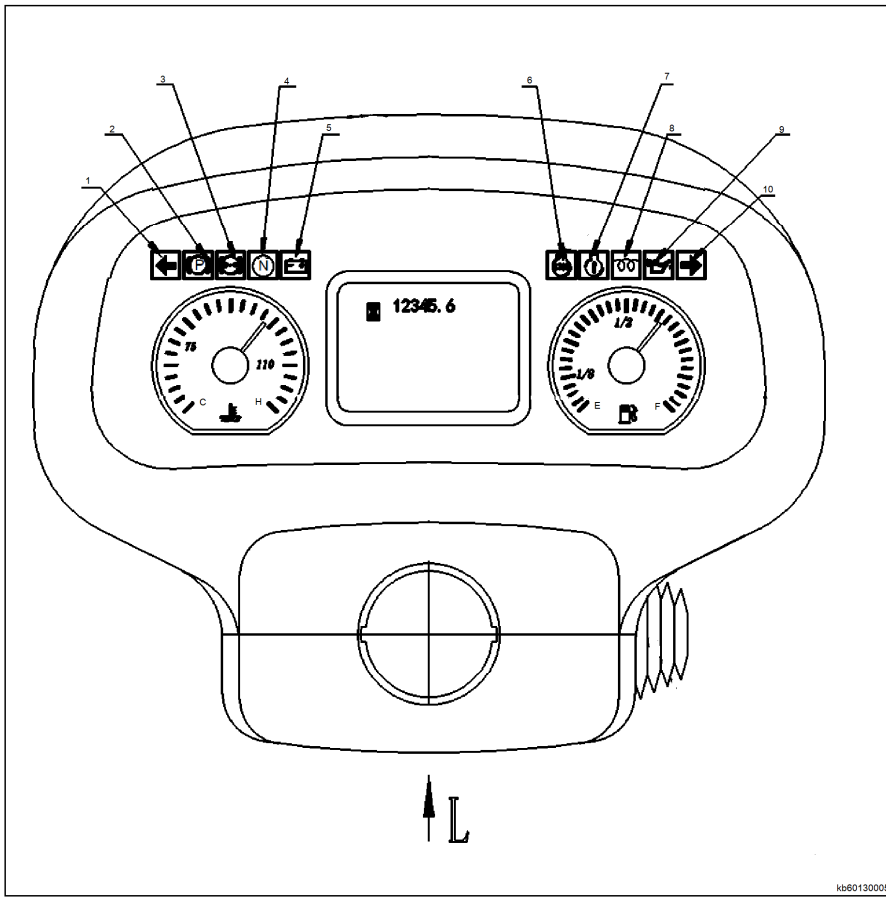


1	Parking brake lever	10	Horn button
2	Inching pedal	11	steering wheel
3	Brake pedal	12	Display instrument
4	Accelerator pedal	13	Steering column adjusting lever
5	Ignition switch	14	Side shift operating lever
6	Direction indicator switch	15	Button to stop the engine
7	Lifting/lowering operating lever	16	Fixtures operating lever
8	Forward tilting/back tilting operating lever	17	Lamp switch
9	Direction control switch		

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Display instrument

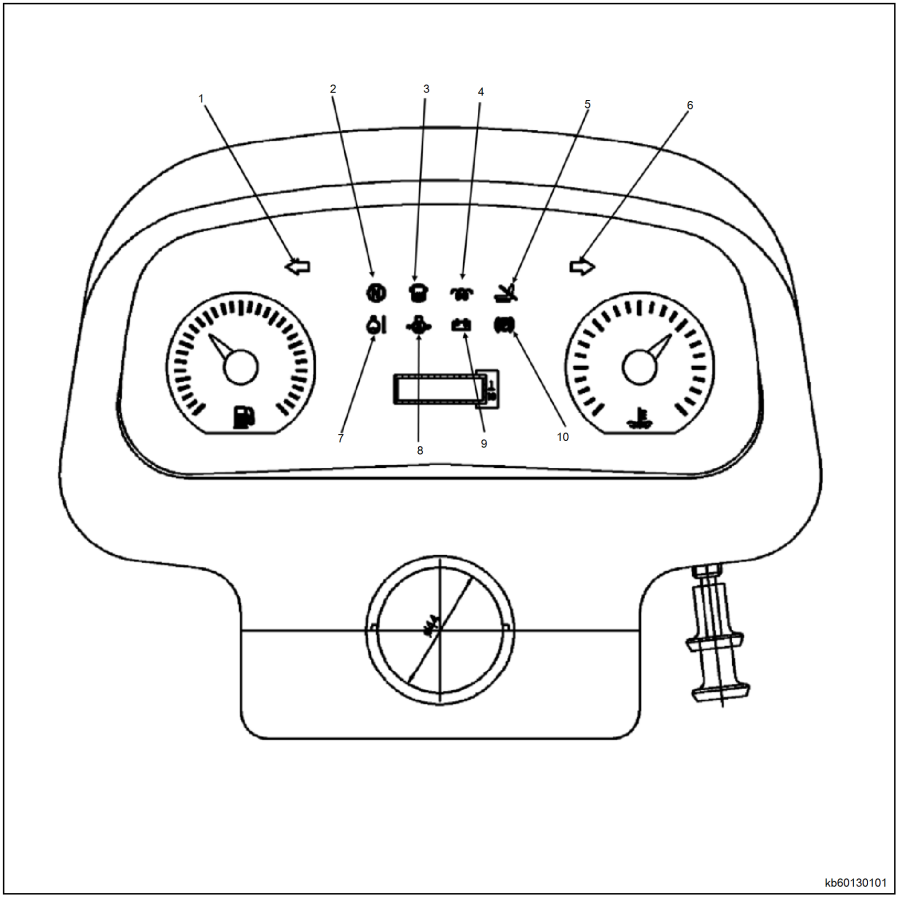
Display instrument - WP4.1G125E 302



1	Left-turn indicator	6	Engine breakdown indicator
2	Hand brake indicator	7	Fault indicator
3	Tyre pressure alarm indicator	8	Glow indicator
4	Neutral position indicator	9	Oil pressure indicator
5	Battery charging indicator	10	Right-turn indicator

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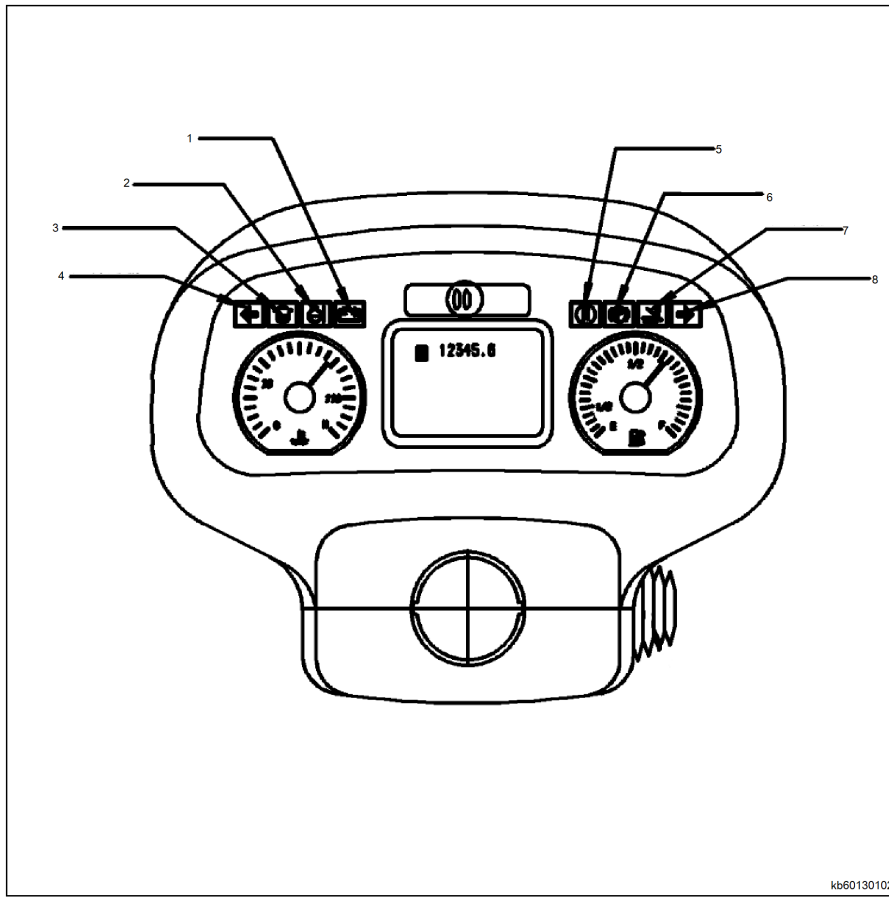
Display instrument - Isuzu 6BG1QC-02



1	Left-turn indicator	6	Right-turn indicator
2	Neutral position indicator	7	Torque converter oil temperature indicator
3	“Water separator light” indicator light	8	Engine oil pressure indicator
4	Glow indicator	9	”Battery charging“ indicator light
5	Seat indicator light	10	”Parking brake“ indicator light

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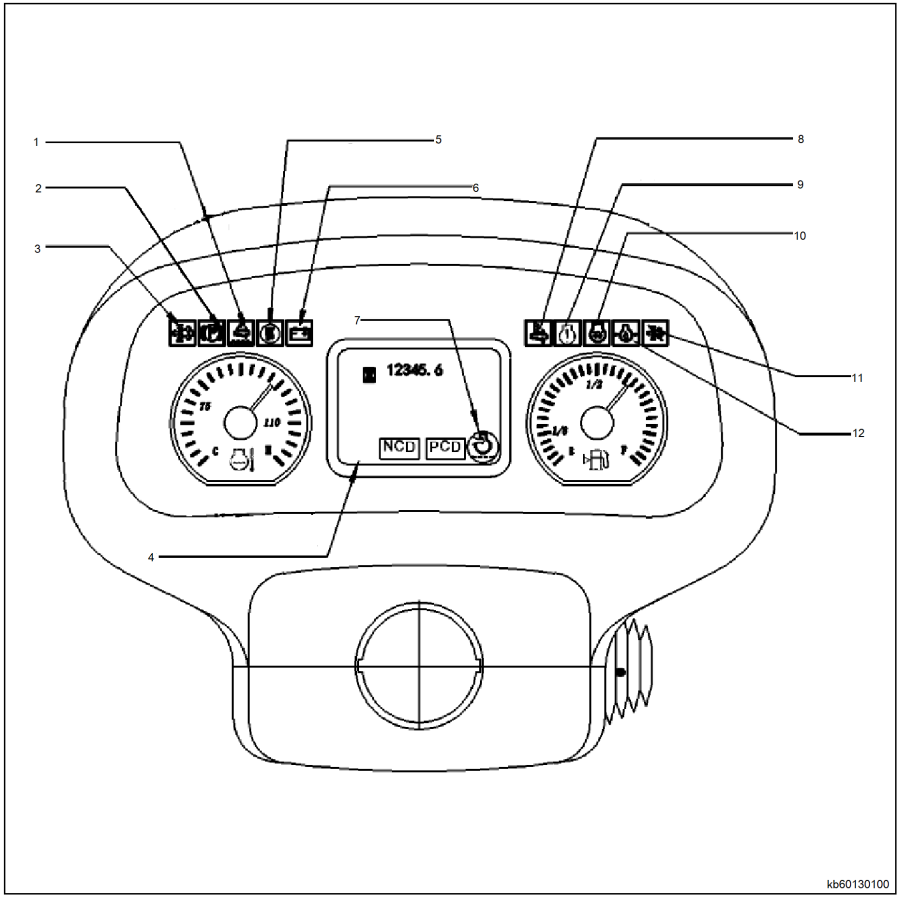
Display instrument - Cummins QSB4.5



1	Battery charging indicator	5	Neutral position indicator
2	Torque converter oil temperature indicator	6	”Parking brake“ indicator light
3	“Water separator light” indicator light	7	Seat indicator light
4	Left-turn indicator	8	Right-turn indicator

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Display instrument - Doosan D34



1	“SCR error” indicator light
2	“Parking brake“ indicator light
3	“DPF reprocessing request” indicator light(Yellow light)
4	DPF fault indicator
5	Neutral Position indicator
6	“Battery charging“ indicator light
7	“Clogged air filter” indicator light
8	DPF reprocessing indicator light/High Exhaust System Temperature warning light(Yellow light)
9	Fault indicator
10	Glow indicator
11	Engine oil pressure indicator
12	“DPF reprocessing stop” indicator light(Red light)

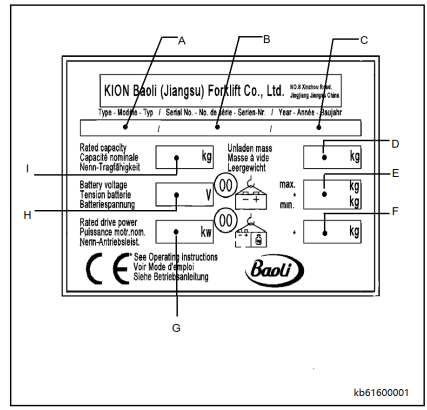
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Truck identification

Forklift Identification Plate

➢ The identification plate indicates the following data: ▷

- **A** = Type of forklift
- **B** = Serial number
- **C** = Year of manufacture
- **D** = Empty mass without traction battery
- **E** = Min - Max mass - traction battery
- **F** = Indication of added weight only in the case of traction batteries that are too lightweight to guarantee stability.
- **G** =Traction motor power
- **H** = Traction battery voltage
- **I** = Nominal capacity



Production number ▷

NOTE

The production number is used to identify the truck. It can be found on the nameplate and must be referred to in all technical questions.

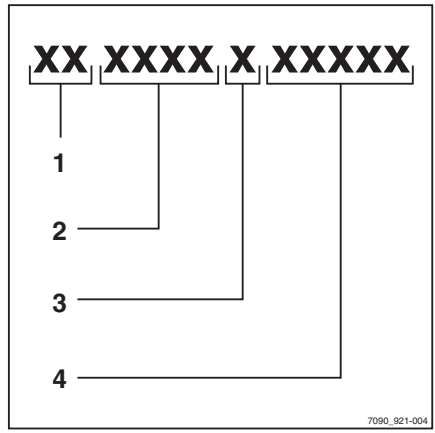
The production number contains the following coded information:

(1) Production location

(2) Model

(3) Year of manufacture

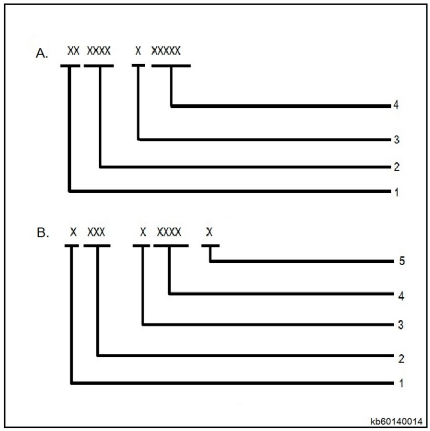
(4) Sequential number



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Mast serial numbers

The serial numbers of mast contain following coded information:



Line A

(1)Production location

(2)Product number of mast

(3)Year of manufacture

(4)Sequential number

Line B

(1)Mast information

(2)Truck capacity

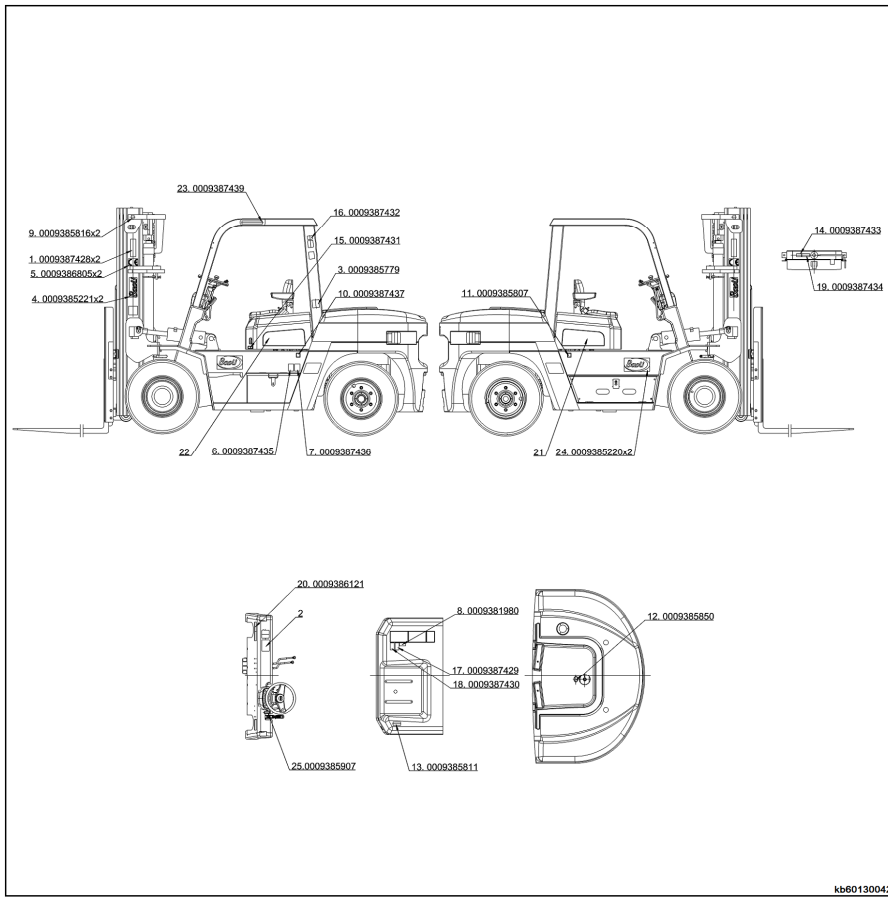
(3)Mast type

(4)Lifting height

(5)Truck model

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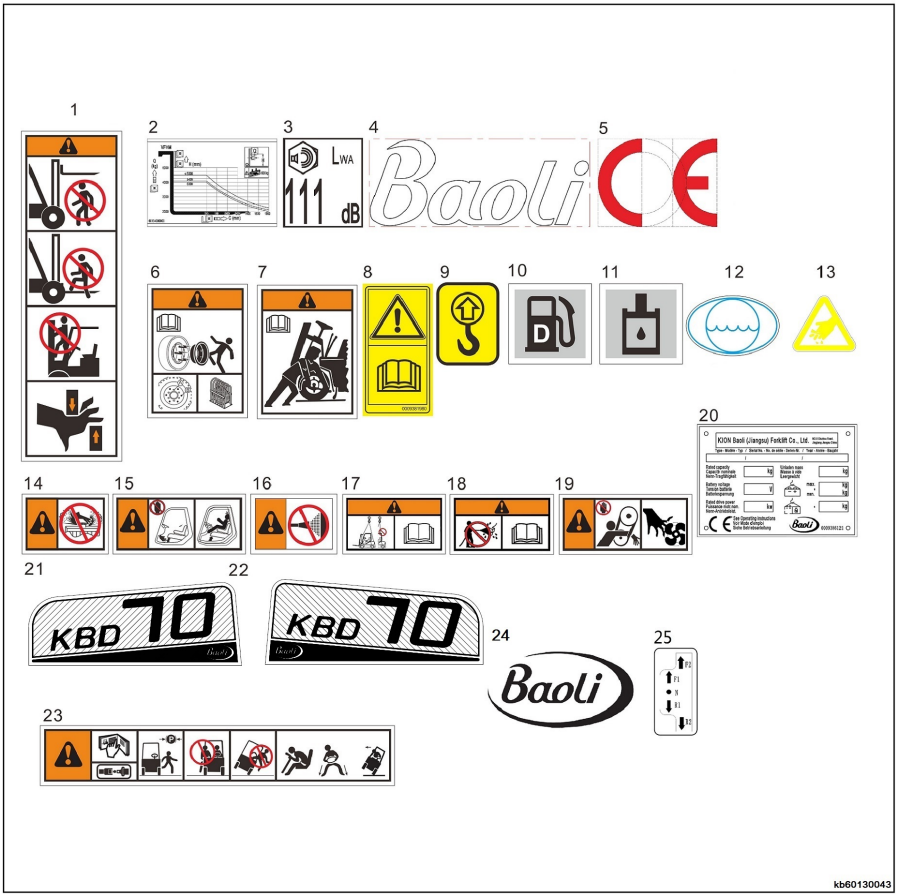
Location of decals



NOTE

The labels mentioned below are only for illustration purposes, please rely on the decals adhering to your own truck.

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1 Warning sign: Do not stand underneath the fork/Do not stand on the fork/Do not enter space behind the mast/ Injury to hand
2 Decal information: Capacity rating plate
3 Sound pressure level
4 Manufacturer's name
5 CE label
6 Decal information: Caution / Loosen and inflate the wheel according to the instruction
7 Decal information: Caution / Fasten the wheel
8 Decal information: Caution / Read the operating instruction
9 Decal information: Lifting gear attachment point
10 Decal information: Filling in gasoline or diesel
11 Decal information: Hydraulic oil tank
12 Decal information: Adding coolant
13 Decal information: Caution / Danger due to shearing
14 Warning sign: Danger due to overheating of radiator
15 Warning sign: Danger due to shearing / Danger to the driver's head with engine hood not fully closed.
16 Warning sign: Do not allow water to inlet
17 Warning sign: Always lifting by lifting gear attachment point
18 Warning sign: Preventing water into the electrical parts
19 Warning sign: Danger due to shearing
20 Nameplate
21 Model information
22 Model information
23 Decal information: Caution/Read the operating instructions/Fasten the seat belt/Apply the parking brake when leaving the truck/

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Passengers are not allowed/Do not jump off if the truck is tipping over/Brace feet/Hold on tight/Lean in the opposite direction to which the truck is tipping	
24	Manufacturer's name
25	Decal information: Forward/Reverse

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4

Operation

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Instructions for running-in

The truck can be operated quickly immediately.

However, when driving during the first 100 operating hours, avoid subjecting both the working hydraulics and the drive unit to high continuous loads.

The wheel screws must be tightened before starting the truck prior to testing and after each wheel replacement.

The wheel nuts should be tightened at least once every 100 operating hours. The wheel screws must be tightened in a diagonal sequence.

Tightening torque:

Front tyres(double front tyres): Ball nut (M30x1.5), 1844 ±5% Nm ; Column nut (M20x1.5), 525 ±5% Nm

Rear tyres: Ball nut (M20x1.5), 525 ±5% Nm

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Checks and inspection

Pre-shift checks

Carrying out the following checks as part of your daily routine will help to keep the forklift truck in good condition. These checks are supplemental and do not replace periodic maintenance work.

NOTE

If, when carrying out the daily checks, you discover a defect or you are unsure whether the truck will function properly, do not use the truck and contact the technical service department.

Daily checks before use

The following checks must be performed on a daily basis in order to keep your truck in good condition and to operate safely. These checks supplement and do not replace the scheduled maintenance operations.

- Check the correct position and fastening, intactness and operation of the various safety components installed on the truck.
- Make sure that "seat switch" is working correctly.
- Check that the brakes work correctly, checking their travel and efficiency.
- Check the tyre pressure and wear conditions.
- Visually inspect wheels for correct tightness.
- Make sure that the lights work correctly (if applicable).
- Visually check that the chains are taut.
- Make sure that the start/stop key works correctly.
- Check that the fork arms are in good condition;
- Check that the fork arm control levers work correctly
- Check the fuel filter water trap
- Check engine coolant level.
- Check brake oil level.
- Check transmission oil level.
- Check axle oil level.
- Engine oil level checking procedure
- Check the area under the forklift truck for leaking consumables.

⚠ CAUTION

DO NOT use the truck, but call the technical service department, if you notice any malfunctions or if you have any doubts about its correct operation.

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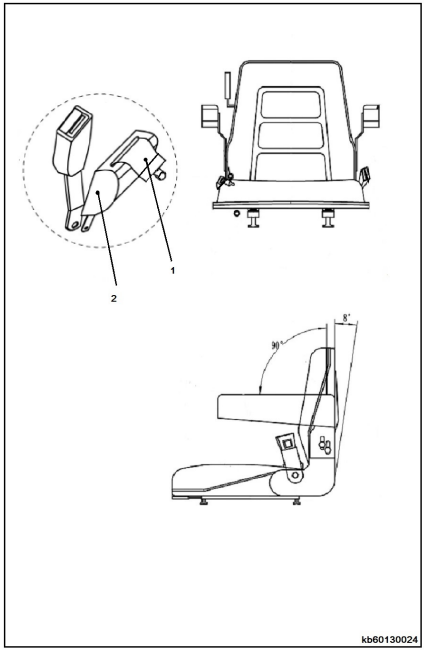
Seat belt status and performance checks

⚠ DANGER

For safety reasons, the condition and protective ability of the seat belt must be checked on a daily basis.

Do not operate the vehicle with the seat belt removed.

➢ Check the condition of the belt: pull the seat belt(1) all the way out of the retractor(2) and check the seat belt for damage. ▷



⚠ CAUTION

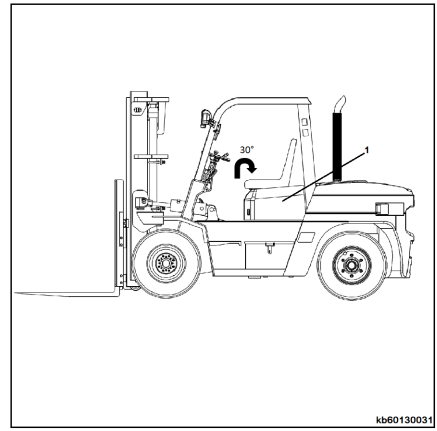
The seat belt must be replaced if it is cracked, worn or has been damaged in an accident.

➢ Carefully check the connection between the seat belt and the seat.

➢ Carefully check the connection between the seat and the panel cover below.

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Seat with 3691-1 function (European standard)



NOTE

Only when the driver sits on the seat, the fork-lift can be operated.

- Release the bonnet (1)and raise it about 30°.
- Try to pull the belt. The automatic blocking mechanism must not allow the belt to come out of the retractor .

⚠ CAUTION

Operator out of seat without parking brake activated (power on or off), the forklift will be alarming in 3 seconds.

Check the wheel nuts for correct tightness



- Visually check the markings in the wheel nuts and rims are correctly attached, re-tighten with torque spanner if necessary.

Tightening torque:

Front tyres(double front tyres): Ball nut(M30X1.5) 1844± 5%N.m, Column nut(M20X1.5),525± 5%N.m

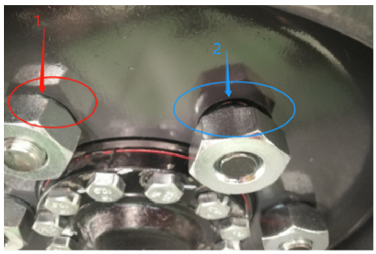
Rear tyres: Column nut(M20X1.5),525± 5%N.m

- Visually check if the column is deformed or whether the hole for the rim is larger, re-tighten with torque spanner if yes. Replace the rim when there is serious deformation.

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- If the markings are difficult to recognize, check if there is any gap (As the arrows show) between the joint face of the rims and nuts. Re-tighten with torque spanner if gap exits.
- Check the wheels and rims for wear and deformation, change the tyres if there is any deformation.

▷

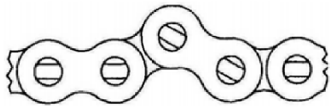


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Check the condition and operation of chain

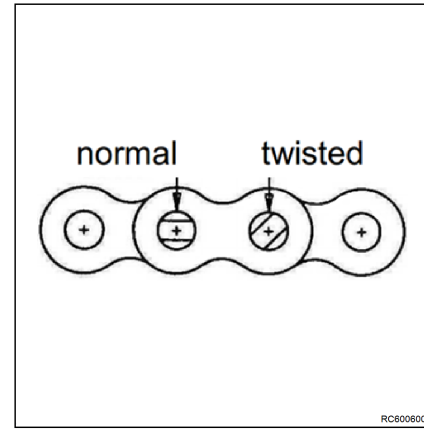
- Check load chains for any distortion before operation.

▷

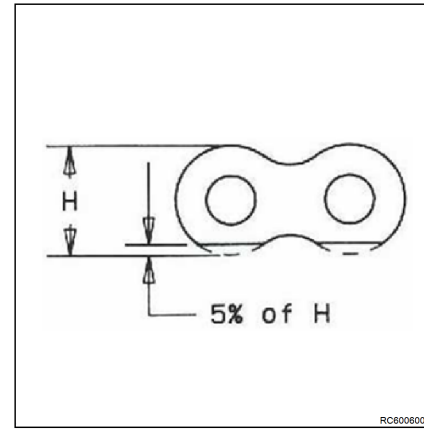

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- Stop using the forklift immediately when the hinge pins of chain rotate before operation.
- Lift and lower the lifting mast without load for one round to check the operation of lifting chain for any abnormal sound or block.

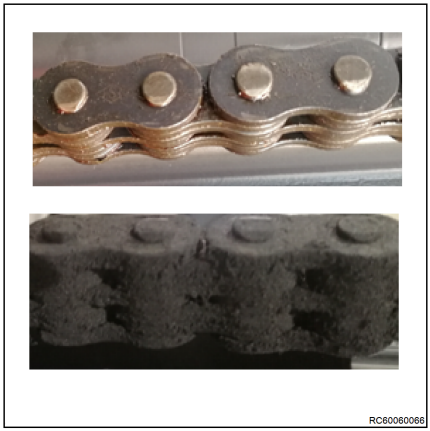


- Contact your service center if chains are suffering abnormal force.



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➢ Keep the chains clean, ensure no excessive dust exits; Immediately lubricate the chains with specified chain spay if chain surfaces are dry.

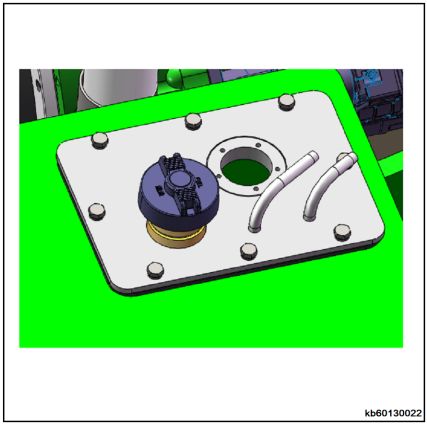


NOTE

If the truck is used in the food industry, please use lubricating grease in place of spray.

➢ During operation or maintenance, stop using the forklift if there is any crack of chain plate.

Refuelling



⚠ DANGER

Turn off the engine before refuelling. Do not smoke or use naked flames while refuelling.

➢ Open the engine hood.

➢ Remove the fuel tank cap(1) and refuel.

➢ Close the fuel tank cap (1).

➢ Close the engine hood.

Diesel fuel - Specifications

⚠ CAUTION

Risk of component damage if non-approved fuels are used!

Use only approved fuels with the following specifications.

If non-approved fuels are used, compliance with specified emission values and the service life of the engine cannot be guaranteed!

Diesel fuel should comply with the following specifications. The table lists several world-wide specifications for diesel fuels.

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Diesel Fuel Specification	Location
ASTM D975 No.1D S15,S500 No.2D S15,S500	USA
EN590:96	European Union
ISO 8217 DMX	International
BS 2869–A1 or A2	United kingdom
JIS K2204 Grade No.2	Japan
KSM-2610	Korea
GB252	China

NOTE

Use of products with specifications lower than those shown in the table could cause damage to the truck not covered by the warranty.

Additional Technical Fuel Requirements

- The fuel cetane number should be equal to 45 or higher.
- The sulfur content must not exceed 0.5% by volume.Less than 0.05% is preferred.Especially in U.S.A. and Canada, Low Sulfur (300–500mg/kg sulfur content) or Ultra Low Sulfur fuel should be used.
- NEVER mix kerosene,used engine oil, or residual fuels with the diesel fuel.
- Water and sediment in the fuel should not exceed 0.05% by volume.
- Keep the fuel tank and fuel-handling equipment clean at all times.
- Poor quality fuel can reduce engine performance and / or cause engine damage.
- Fuel additives are not recommended. Some fuel additives may cause poor engine performance.
- Ash content not to exceed 0.01% by volume.
- Carbon residue content not to exceed 0.35% by volume. Less than 0.1% is preferred.
- Total aromatics content should not exceed 35% by volume. Less than 30% is preferred.
- PAH (polycyclic aromatic hydrocarbons) content should be below 10% by volume.
- Metal content of Na, Mg, Si, and Al should be equal to or lower than 1 mass ppm. (Test analysis method JPI-5S-44–95).
- Lubricity : Wear mark of WS 1.4 should be Max.0.018 in (460 μ m) at HFRR test.

NOTE

Bio-Diesel fuels technical requirements , please contact your authorised dealer .

Winter operation with diesel fuel

⚠ CAUTION

Adding petrol can lead to malfunctions in the fuel injection system!

- ➢ Do not add petrol.
- ➢ Do not add petroleum, kerosene or additional fluidity additives.
- ➢ If necessary, query with the authorised service centre.

In winter operation, special demands are placed on the low-temperature performance of fuels. Generally, diesel fuels that can be used at temperatures down to -44 C are available on the open market. Therefore, it is not necessary to add additives to improve the fluidity. Adding petrol can lead to the formation of vapour pockets (cavitation) in the fuel system. This disrupts the function of the fuel injection system and, if continued over a long period of time, can lead to component damage.

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Engine coolant - Specifications

⚠ DANGER

Scald hazard !

- NEVER remove the radiator cap if the engine is hot. Steam and hot engine coolant will spurt out and seriously burn you. Allow the engine to cool down before you attempt to remove the radiator cap.
- Securely tighten the radiator cap after you check the radiator. Steam can spurt our during engine operation if the cap is loose.
- ALWAYS check the level of engine coolant by observing the reserve tank.
- Failure to comply will result in death or serious injury.

⚠ WARNING

Burn hazard !

- Wait until the engine cools before you drain the engine coolant. Hot engine coolant may splash and burn you.
- Failure to comply will result in death or serious injury.



⚠ CAUTION

Coolant hazard !

- Wear eye protection and rubber gloves when you handle Long Life or Extended Life engine coolant. If contact with the eyes or skin should occur, wash with clean water.
- Failure to comply may result in minor or moderate injury.

NOTE

- *Only use the engine coolant specified. Other engine coolants may affect warranty coverage, cause an internal build up of rust and scale and / or shorten engine life.*
- *Prevent dirt and debris from contaminating engine coolant. Carefully clean the radiator cap and the surrounding area before you remove the cap.*
- *NEVER mix different types of engine coolants. This may adversely affect the properties of the engine coolant.*

Engine coolant specifications

Use a Long Life Coolant (LLC) or an Extended Life Coolant (ELC) that meets or exceeds the following guidelines and specifications.

Alternative engine coolant

If an Extended or Long Life Coolant is not available, alternatively ,you may use an ethylene glycol or propylene glycol based conventional coolant (green).

Notes:

1 ALWAYS use a mix of coolant and water.NEVER use water only.
2 Mix coolant and water per the mixing instructions on the coolant container.
3 Water quality is important to coolant performance. We recommends that soft, distilled, or demineralized water be used to mix with coolants.
4 NEVER mix extended or long life coolants and conventional (green) coolants.
5 NEVER mix different types and / or colors of extended life coolants.
6 Replace the coolant according to "Scheduled maintenance."

Additional technical coolant specifications:

- ASTM D6210,D4985 (US)
- JIS K-2234 (Japan)
- SAE J814C, J1941, J1034 or J2036 (International)

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Climbing on/off the forklift



⚠ CAUTION

Always face the vehicle when dismounting the forklift, in order to prevent injury to the legs and back.

NOTE

Do not grip the steering wheel or joysticks when mounting/dismounting the forklift.

- First place your left foot on the step. Grip the handrail or overhead guard beam and mount the truck from the left-hand side.
- Use the step and handrail or overhead guard beam to dismount from the left-hand side.

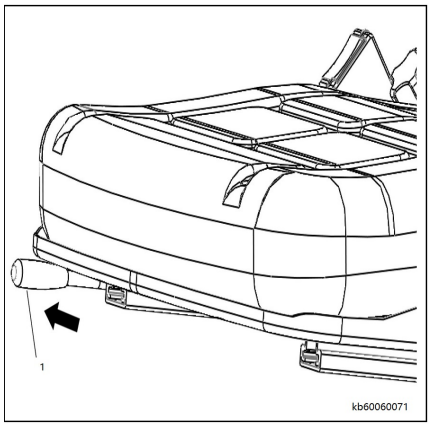
⚠ CAUTION

Do not mount or dismount the truck from the right hand side unless it is an emergency.

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Seat belt

Adjustment of the driver's seat ▷



⚠ CAUTION

Slide the driver's seat to find the best operating position relative to the steering wheel, the accelerator and braking pedals, and the joystick.

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

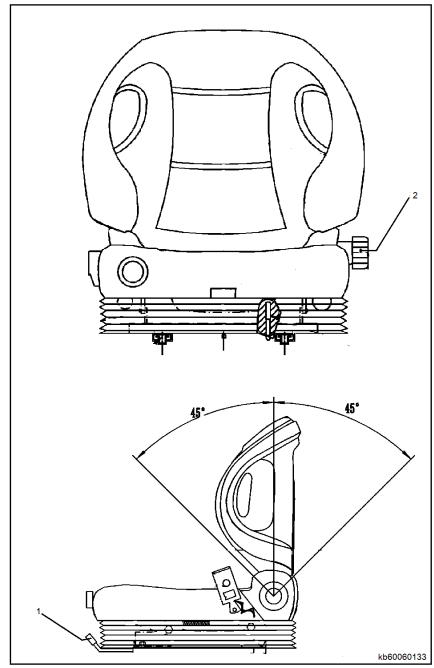
- Pull the handle(1) to make horizontal adjustments to the driver's seat.
- Slide the driver's seat to find the best operating position relative to the steering wheel, the accelerator and braking pedals, and the joystick.

NOTE

Remaining in a sitting position for long periods of time puts a great amount of pressure on the spine. Make sure this pressure is reduced by bending forwards frequently.

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Adjustment of the driver's seat* ▷



Moving the driver's seat

- ➢ Lift the lever(1)and hold.
- ➢ Push the driver's seat into the desired position.
- ➢ Release the lever.
- ➢ Ensure that the driver's seat is securely engaged.

Adjusting the seat backrest

Do not put pressure on the seat backrest while engaging it.

- ➢ Turn the knob(2)clockwise.
- ➢ Move the backrest forwards and backwards until the driver finds the best sitting position.
- ➢ Release the knob.

*Optional part

Seat belt

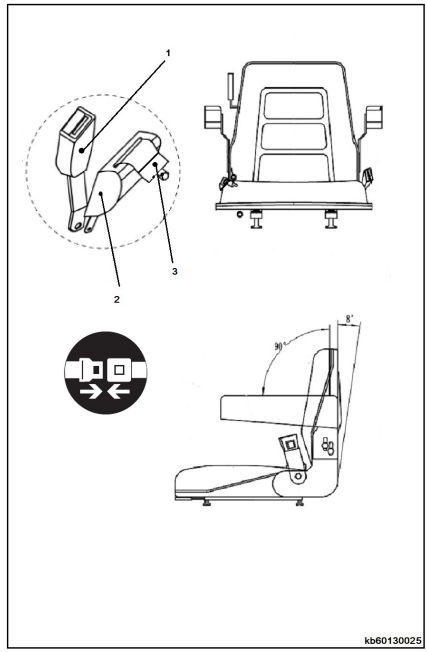
⚠ DANGER

Fasten your seat belt when using the forklift truck! The seat belt may only be used by one person.

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Fastening the seat belt

- Slowly pull the seat belt out from the seat belt retractor(2) on the left.
- Position the seat belt over the groin area and not the abdomen.
- Insert the buckle(3)into the seat belt socket (1).
- Check the tightness of the seat belt. The seat belt should be just tight enough to secure the body.

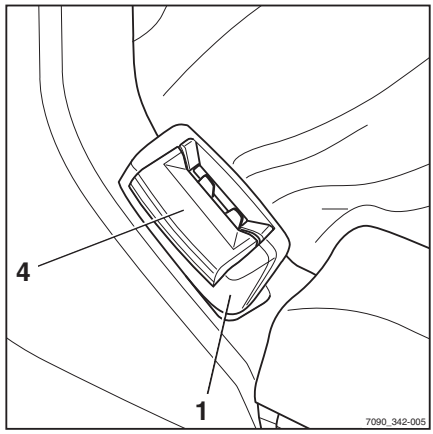


NOTE

When the seat belt is fastened, pull hard on the seat belt to check whether the retractor is locked. If the seat belt is not locked, ask a quality technician to check the problem.

Unfastening the seat belt

- Press the red button(4) on the seat belt socket(1)and release the seat belt buckle.
- Hold the seat belt to make it return to the retractor.



DANGER

Do not fasten the seat belt over hard or fragile items in the driver's pockets as this may result in unexpected accidents. Do not place items between the body and the seat belt.

Malfunction due to cold weather conditions

- If the buckle or belt retractor is frozen, thaw them out and dry them thoroughly to prevent recurrence.

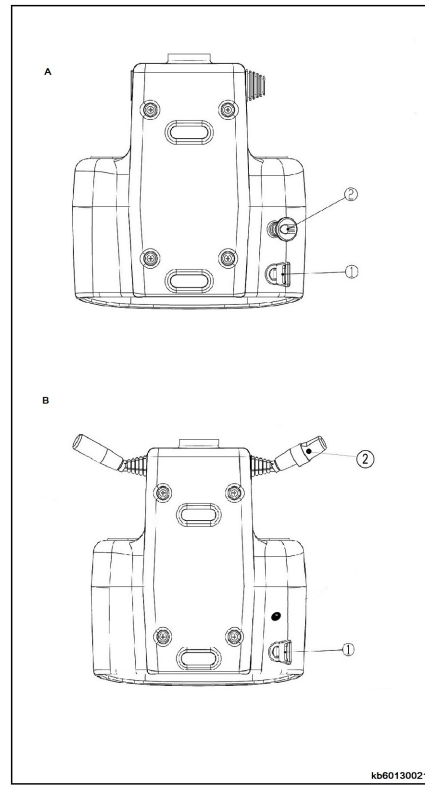
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⚠ CAUTION

Do not subject buckle or belt retractor to excessive heat when thawing out.

- Do not use air warmer than 60 °C when thawing out!

Switches



Ignition switch with starter key(1)

OFF

This position is for key so that it can be inserted or drawn out.

Engine will stop working at this position.

I Position

The circuit is closed when turning the ignition switch to “I”postion. The key should be at this position after starting the engine.

II Position

Insert and turn the starter key to“II” position, starter motor then stops working. The key will automatically return back to“I”postion with the function of spring force when removing hands from key.

⚠ CAUTION

- Do not keep the ignition switch in the “I” position while the engine is shut down. This results in a discharged battery.
- When the engine is working, do not switch the starter switch to the “II” position, otherwise starter motor will be in danger of being damaged.
- Do not keep the switch engaged in for more than 15 seconds. Wait about 20 seconds before re-starting the forklift again.

Lamp switch(2)

Lamp switch can be set in two positions to turn on the related lights.

Lamp switch	0(OFF)	1st	2nd
Clearance lamp	OFF	ON	ON

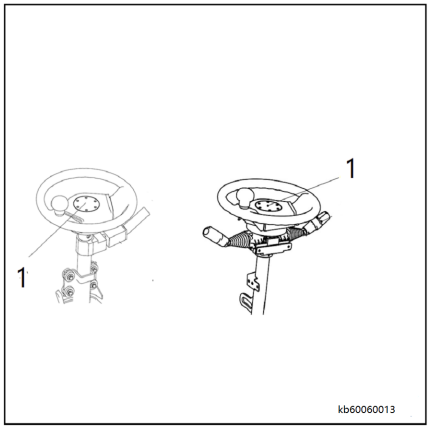
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Front headlights	OFF	OFF	ON
Rear combination lights	OFF	OFF	ON

Horn button

Sound the horn as a warning signal when working on roads or intersections with low visibility.

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

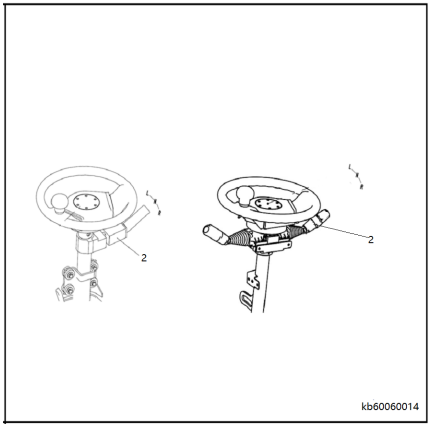


Direction indicator light switch ▷

⚠ CAUTION

Direction indicator light switch cannot automatically return to the Neutral position which is different of general passenger cars. Reset it manually.

R	Turn Right
N	Neutral
L	Turn Left



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DPF light and switch

NOTE

The chapter is only application for forklift with Doosan D34 engine.

The HEST (high exhaust system temperature) light ▷

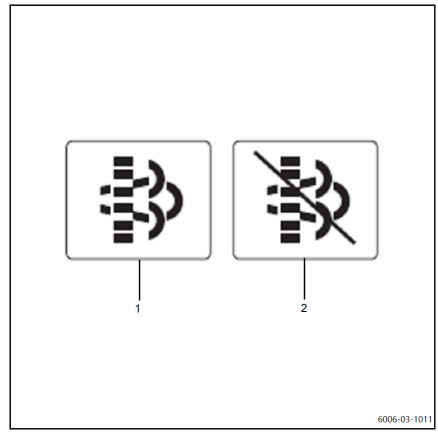
The HEST (high exhaust system temperature) light comes on up during regeneration periods. This light notifies the driver when hot exhaust gas is vented from the engine. Ensure that there is no combustible material around the exhaust pipe.



“DPF reprocessing request” indicator light ▷

The “DPF reprocessing request” indicator light (1)will flash when forced or service regeneration is needed. This light will come on when starting forced or service regeneration.

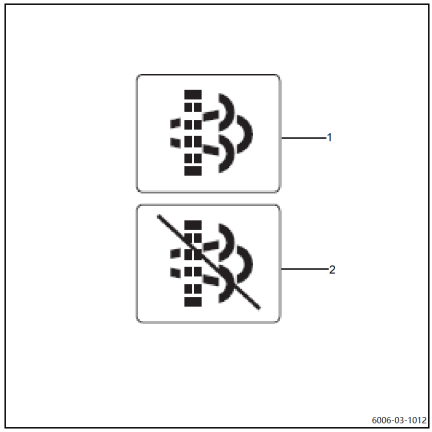
When the driver disables regeneration, this indicator light (2) will appear.



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Forced regeneration (manual regeneration) ▷

The driver can use these switches to activate or disable forced regeneration.



1 DPF forced regeneration switch
2 DPF regeneration disabled switch

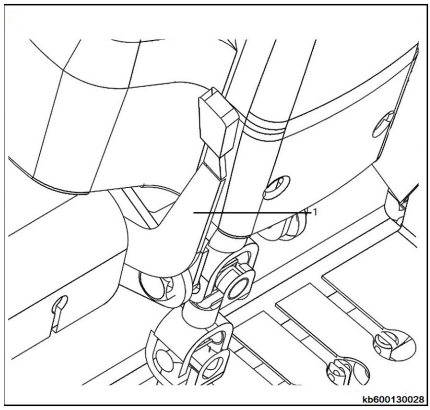
Adjusting the steering column ▷

⚠ DANGER

Only adjust the steering column when the truck is stationary.

Angle adjustment

- ➢ Pull down the handle(1) clockwise.
- ➢ Move the steering column into the required position.
- ➢ Pull back the handle anti-clockwise to its original position.



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Starting the engine

Start the engine

⚠ DANGER

Risk of poisoning!

Do not allow the engine to run in unventilated areas.

NOTE

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

- ➢ Sit down in the driver's seat.
- ➢ Fasten the seat belt.
- ➢ All joysticks and levers must be in the neutral position.
- ➢ Insert the ignition key in the ignition switch and turn it from the "0" to the "I" position.

At this point the electrical system will switch on.

- ➢ Watch the display unit.
  (Refer to Instrument declaration for detailed informat

NOTE

When the ignition switch is turned on, the display unit will perform a self-test, during which the whole of the display screen will illuminate for about 2 seconds.

The following display elements will illuminate:

- the battery charging indicator
- oil pressure warning light

- ➢ Wait until the preheat indicator goes out.
- ➢ Turn the ignition key to the "II" position.

After the engine starts:

Immediately release the ignition key.

Engine shutdown

⚠ CAUTION

Do not stop the engine when it is running at full load, instead let it run at low speed for a few minutes first.

- ➢ Release the accelerator pedal.
- ➢ Depress the brake pedal.
- ➢ Place the direction lever in the neutral position.
- ➢ Turn the ignition key from "II" position to the "0" position.
- ➢ Apply the parking brake.
- ➢ Remove the ignition key when leaving the truck.

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Driving

Driving

⚠ CAUTION

When using mirrors, ensure that the rear-view mirror is only used for monitoring the traffic behind the vehicle. Reverse travel is therefore only permitted when looking directly behind you.

⚠ CAUTION

Always tilt the mast backwards and lower the fork arms to the ground around 300mm-400mm..

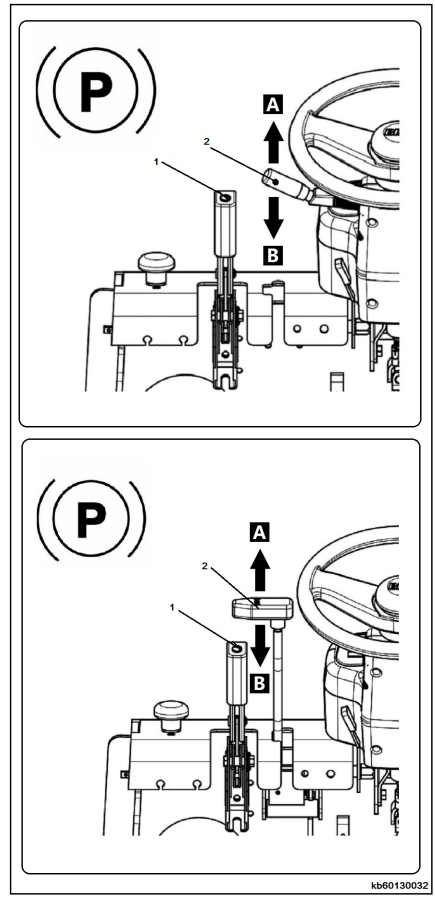
⚠ CAUTION

Check the safety around the forklift and sound the horn before starting the truck.

- Sit in the driver's seat and fasten the safety belt.
- Start the engine.

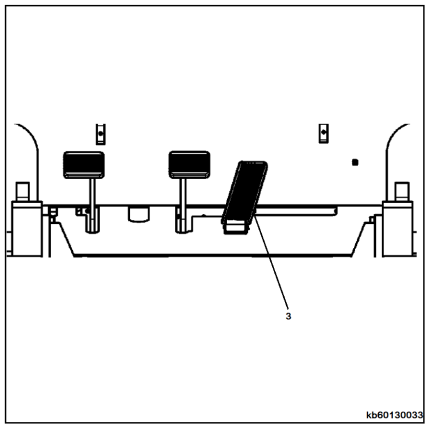
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- Gently open the fork carriage and slightly tilt the lift mast backwards. ▷
- Release the parking brake(1), and the corresponding LED will turn off.
- Move direction selection lever(2)in the required drive direction: (A) FORWARDS, (B) BACKWARDS.



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➢ Depress the accelerator pedal(3)to start the machine ▷



Forward

➢ Put the direction lever into the forward direction.

➢ Smoothly press the accelerator pedal

The speed of the forklift truck accelerates in relation to the increase in pedal travel.

Reversing

➢ Place the direction lever in the reverse direction.

➢ Steadily press the accelerator pedal

The speed of the forklift truck accelerates in relation to the increase in pedal travel.

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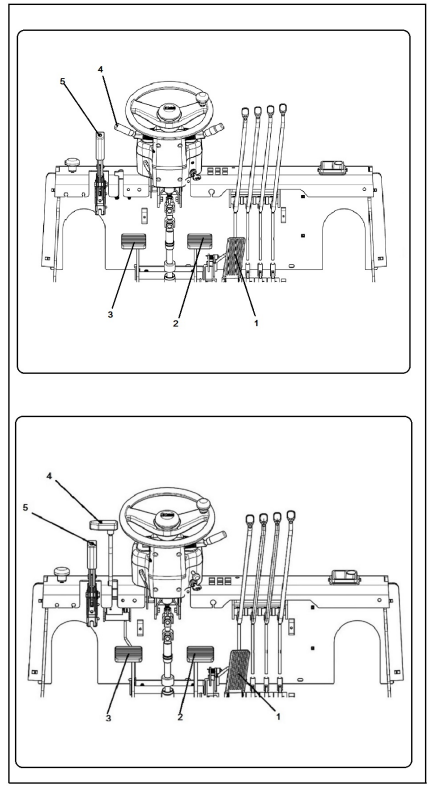
Changing the drive direction

- Put the operating lever(4) into the neutral position.
- Release the accelerator pedal(1)
- Apply the driving brake pedal(2) until the forklift truck comes to a complete stop.
- Move operating lever into the opposite direction, then press the accelerator pedal(1).

The forklift truck will now accelerate in the new drive direction.

DANGER

Using operating lever to directly reverse the operating direction of the forklift truck during operation is strictly prohibited. Reversing direction during operation will result in damage to the forklift truck.



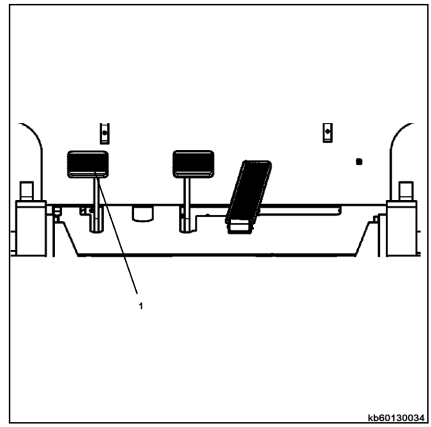
Inching control

NOTE

The inching control is only available for forklift with hydraulic torque convertor drive type.

Used in conjunction with the accelerator pedal, the inching control pedal(1) enables the driver to carry out precise and flexible truck manoeuvres on the driving surface.

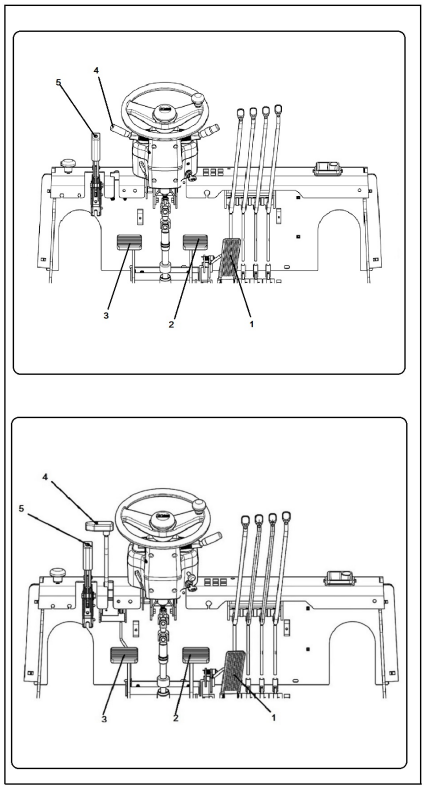
With the inching control pedal, the truck can be driven slowly and carefully towards the load, even if the engine is running at full speed.



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- Steadily depress the inching control pedal (1).
- When fully depressed, the inching control pedal acts like a service brake.

Start on an incline



NOTE

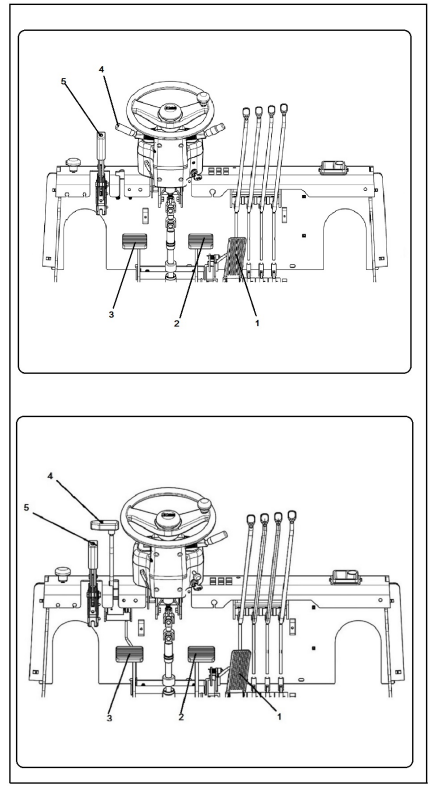
It is recommended not to park a loaded truck on an incline with a gradient of more than 15%. When parking on an incline, apply the parking brake (5).

- Fully depress the drive brake pedal(2).
- Place the direction lever(4) in the neutral direction.
- Apply the parking brake(5).
- Move the direction lever to forward position.
- Smoothly and gradually release the drive brake pedal .
- Release the parking brake and the truck will now move without rolling backwards.

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Parking

- Release the accelerator pedal(1)
- Depress the driving brake pedal(2).
- Move the operating lever(4) to the neutral position.
- Apply the Parking brake(5).
- Remove the ignition key when leaving the truck.

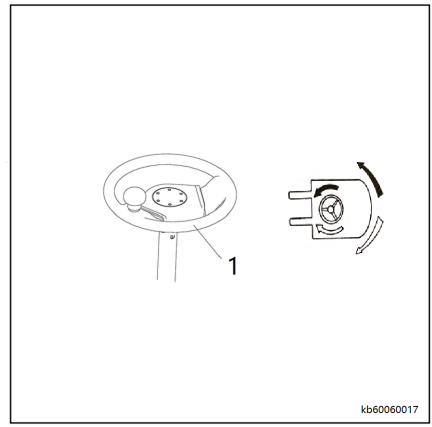


Steering system

The hydraulic steering system enables the steering wheel to be turned with minimum effort. Its advantages are more apparent when operating in narrow aisles.

- Start the engine and switch on the forklift.
- Turn the steering wheel to the limit stop in both directions.

If sufficient force is applied to the steering wheel, the steered wheels can be turned while the truck is stationary, without the position of the wheels changing on the steering axle.



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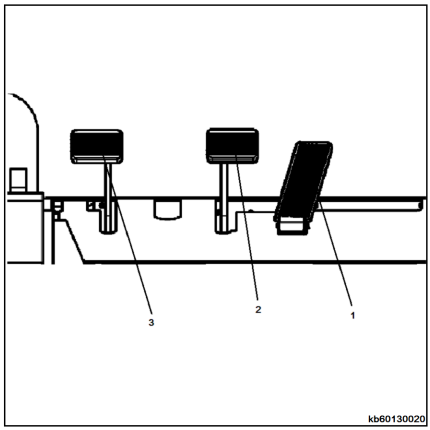
⚠ DANGER

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

If steering is heavy or requires too much space, please contact your authorised BAOLI dealer.

Brake System

Driving brake pedal



NOTE

We recommend that the driver familiarises himself with the efficacy of the braking apparatus when the forklift truck is not carrying a load. Operate the forklift truck slowly on an uncrowded road surface to test travelling functions.

Accelerator pedal

The accelerator pedal(1)increases the engine speed. With this pedal released, the engine runs at idle rpm.

Driving brake pedal

Press the brake pedal(2)to slow or stop the truck. At the same time, the brake lights come on.

Inching pedal

while the inching pedal(3)is pressed, the oil pressure in the hydraulic clutch drops accordingly (the needle of the oil pressure gauge swings to the left) allowing the operator to perform inching operation. Use this pedal to move the truck slowly while operating the hoisting system at a high speed. When completely pressed, the inching pedal serves as a brake pedal.

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Parking brake

The parking brake must be actuated every time the driver exits the truck.

NOTE

We recommend that the driver familiarises himself with the efficacy of the braking apparatus when the forklift truck is not carrying a load. Operate the forklift truck slowly on an uncrowded road surface to test travelling functions.

Actuating the parking brake:

- Pull down the parking brake lever(1) until the lock position is reached and the parking brake indicator light comes on.

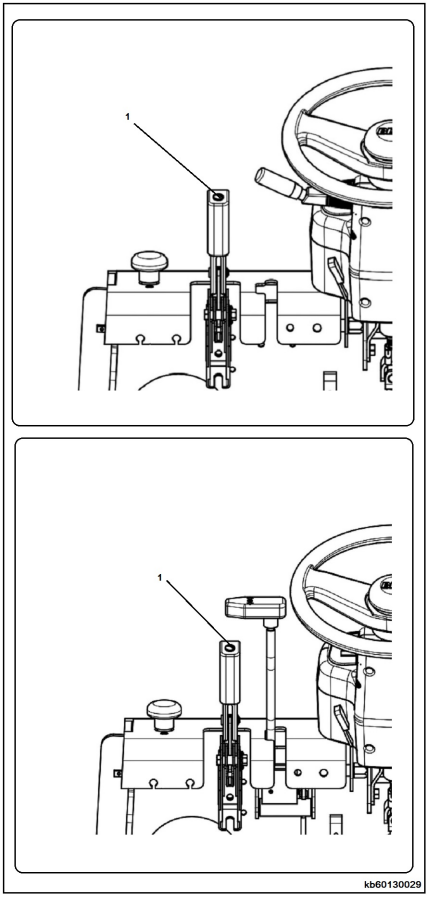
Releasing the parking brake:

- Release the parking brake lever(1).The parking brake will return to its original position and the parking brake indicator light will turn off.

DANGER

The forklift truck must not be operated if there are problems with the braking system.

If there is a fault with the braking system or parts of the system have abraded, please contact your authorised BAOLI dealer.



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lifting system and attachments

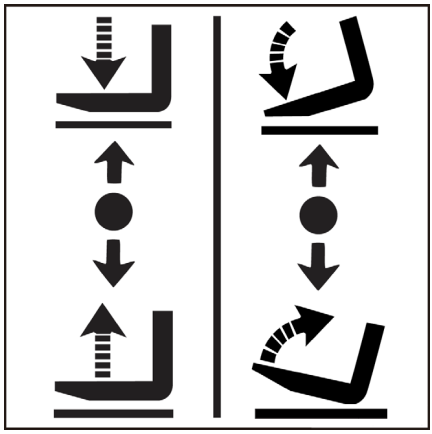
Operating the lifting device

⚠ DANGER

When the lifting device or any attachments are moving, there is a danger the driver will be caught between the lifting device and the forklift truck.

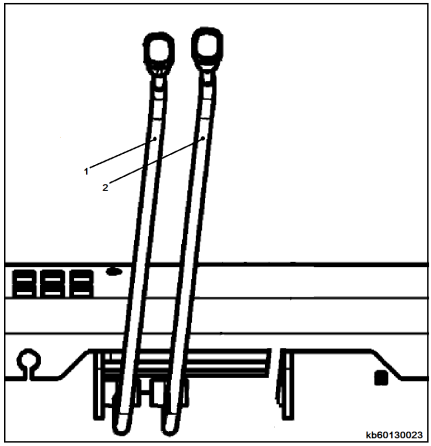
Therefore, the driver must not be located at or enter in between the lifting device and the forklift truck. The lifting device and attachments may only be used for their specified uses. The driver must receive training related to the operation of the lifting system and attachments. Keep in mind the maximum lift height.

➢ Take note of the switching symbols with arrows. ▷



Operation of the control lever must be slow and steady. Lifting, lowering and tilting speeds depend on the range of motion of the control level.The control lever will automatically return to neutral when released.

Lifting the fork carriage ▷



⚠ DANGER

If any danger occurs when raising the lift mast, immediately stop raising the fork arms.

➢ Push the control lever(1))back.

Lower the fork carriage

➢ Push the control lever((1)forward.

Tilting the lift mast forward

➢ Push the control lever(2)forward.

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Tilting the lift mast backward

➢ Push the control lever(2)back.

When transporting a load, tilt the lift mast backwards for better stability.

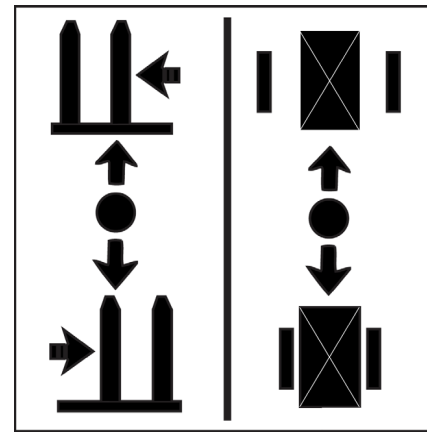
Operating attachments

Attachments are optional pieces of equipment installed on the forklift truck: (such as sideshift forks, rotators, clips, etc.). Please do not exceed the working pressure of attachments during operation, and ensure that operation is in compliance with datasheets. One or two additional control levers can be installed to operate attachments.

NOTE

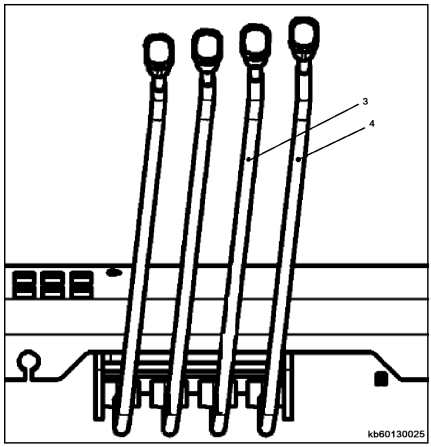
Below is a description of attachment operations. The forklift truck can be configured with different operating levers.

➢ Take note of the switching symbols with arrows ▷



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Sideways movement



NOTE

In order to prevent damage, do not operate in a sideways direction when the fork arms are on the ground.

- Push the control lever(3)forwards and move to the left.
- Push the control lever(3)backwards and move to the right.

Operating fixtures

- Push the control lever(4)forwards to open the jig.
- Push the control lever(4)backwards to clamp the jig.

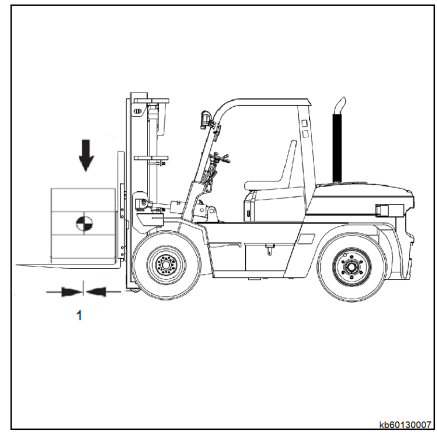
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Handling loads

Load centre distance and load capacity

Before lifting goods, the relationship between the weight, load centre of gravity distance and maximum lift height of the goods must be understood.

Load centre distance refers to the distance between the vertical plane of the fork arms and the centre of gravity of the loads(1). ▷



NOTE

The centre of gravity of a load is not necessarily located at the central point of the load itself. The load capacity refers to the weight of goods able to be lifted to a specified height within a given load centre distance.

NOTE

Check the load limits. In the following circumstances, please contact your authorised Baoli dealer before operating.

- *Before lifting irregular loads or goods that sway.*
- *Where the load centre of gravity distance is excessively long.*
- *Before using attachments.*

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Capacity chart

For example:

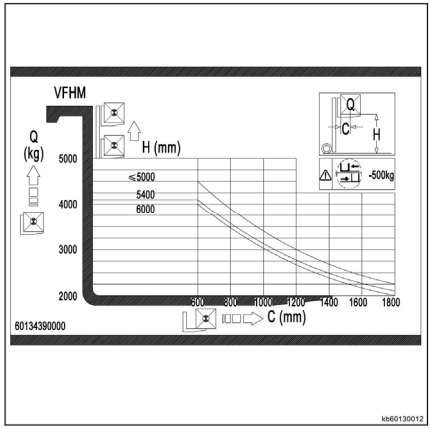
Truck model: KBD50 with double front tyres

Load centre: 600 mm

Lift height: ≤5000 mm

In this case, the maximum load capacity is: 4500 kg

- Before loading, make sure that the dimensions and weight of the load are within the approved standard specified in the “Technical parameters” chapter and on the load rating plate.
- Before operating an attachment, read the load capacity data plate on the attachment.



Picking up a load

⚠ DANGER

Do not use the fork arms or pallet to lift a person.



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⚠ DANGER

No person is allowed to stand or walk underneath lifted loads.

When stacking and destacking, no person is allowed to stand or walk underneath lifted loads.

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

⚠ DANGER

Incorrectly positioned loads pose a risk of falling.

Loads should be arranged so that they do not project beyond the truck loading area and cannot slip, topple over or fall off. If there is a risk of small-sized loads falling between the crossmembers of the overhead guard, use an appropriate load backrest or install a guard grille on the overhead guard.

⚠ DANGER

Overload danger.

Strictly adhere to the permissible load indicated on the load rating plate.

⚠ DANGER

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

Always keep the load lowered and the mast tilted backwards when driving industrial forklift trucks.



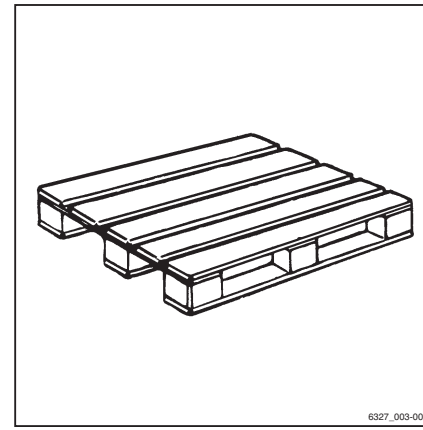
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Transporting pallets

As a rule, loads (e.g. pallets) must be transported individually. Transporting multiple loads at the same time is only permitted:

- when instructed by the supervisor and
- when the technical requirements have been met.

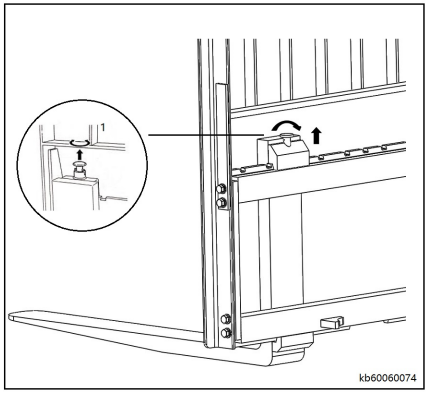
The driver must ensure proper condition of the load. Only safely and carefully positioned loads may be transported.



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Adjusting the fork spacing



- Lift the knob and rotate it(1).
- Adjust the forks based on the dimensions of the load.
- Note that the forks must be equidistant from the centreline of the fork carriage.
- Refit the knob by engaging it in one of the notches on the fork carriage.

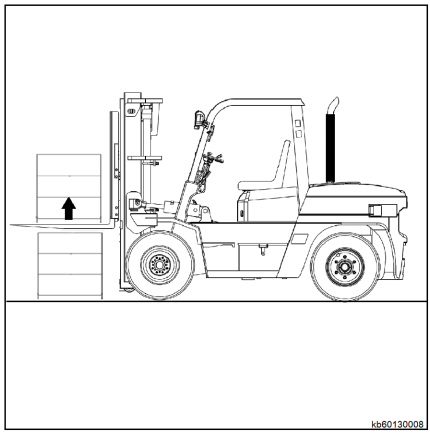
⚠ WARNING

The forks are heavy! Exercise extreme caution when handling them.

NOTE

The load must be centred between the forks.

Loading



- Carefully drive the truck close to the goods using the service brake/inching control pedal.
- Apply the parking brake and set the direction lever to neutral position.
- Place the lift mast in the vertical position.
- Raise or lower the fork carriage to the correct height.
- Operate the sideshift if needed.
- Release the parking brake and at the same time fully depress the service brake/inching control pedal.
- Set the direction lever in the forward direction.
- Using the service brake/inching control pedal, carefully drive the truck forward so that the forks slide under the load. The load should rest against the fork backrest as far as possible.

NOTE

Be careful not to strike other goods.

- Operate the sideshift if needed.

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- Apply the parking brake and set the direction lever to neutral.
- Lift the load off the stack.
- Tilt the mast back.
- Release the parking brake and at the same time fully depress the service brake/inching control pedal.
- Place the direction lever in the reverse position.
- Reverse the truck until the load separates from the rest of the stack.
- Slowly lower the load as close to the ground as possible.

Driving with a load

⚠ WARNING

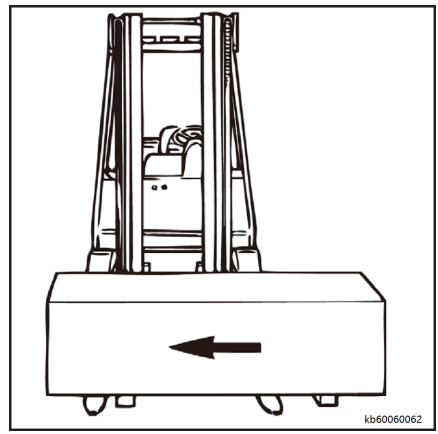
Avoid sudden braking when loaded as this may cause the load to fall.

NOTE

Obtain permission from the manufacturer before handling hot molten loads. Take the following precautions when handling hot molten loads:

- *Drive the truck at low speed and exercise caution when braking, steering and accelerating so as to avoid spilling the hot solution.*
- *Do not drive on slopes when handling a hot molten load.*
- *When necessary, limit the mast lowering speed.*

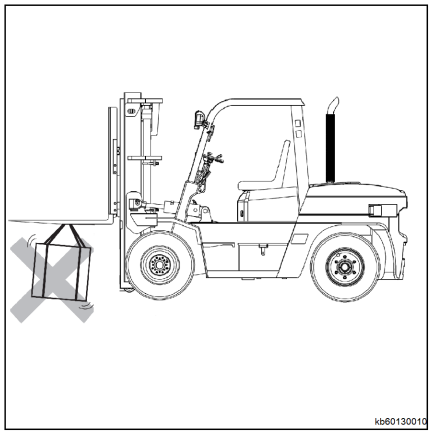
- Travel with the forks tilted back slightly and the load as low as possible to the floor(approximately 30cm). The centre of gravity of the transported goods must be approximately located on the longitudinal centre plane of the truck, and the goods should be evenly distributed on the two fork arms.
- Never drive a forklift over loose surfaces, hilly areas or steps.
- Operating the mast device is prohibited when driving with a load.



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- Keep the load facing uphill when travelling on an incline. Do not turn on or travel across an incline!
- Do not travel with unbalanced loads (e.g. using sideshift).
- If your vision is obstructed, use a spotter.
- Travel in reverse if the load blocks forward vision.

Transport of swinging loads



Before transporting suspended loads, consult the national regulatory authorities.

National regulations may place restrictions on these operations. Contact the relevant authorities.

⚠ DANGER

Suspended loads that begin to swing can result in the following risks:

- Impaired braking and steering action
- Tipping over the load wheels or drive wheels
- Tipping the truck at right angles to the direction of travel
- Risk of crushing of guide persons
- Reduced visibility.

⚠ DANGER

Loss of stability.

Slipping or swinging suspended loads can lead to a loss of stability and cause the truck to tip over.

- When transporting suspended loads, observe the following instructions

Instructions for transporting suspended loads:

- Swinging loads must be prevented by using the proper driving speed and driving style (careful steering, braking)
- Hanging loads must be hooked on to the truck in such a way that the harness cannot shift or release unintentionally and cannot be damaged
- When transporting suspended loads, suitable devices (e.g. guy wires or supporting

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poles) must be available so that accompanying persons can guide suspended loads and prevent the loads from swinging
- Take particular care to ensure that there is no one in the drive direction in the driving lane
- If, despite this, the load begins to swing, ensure that no person is placed at risk

⚠ DANGER

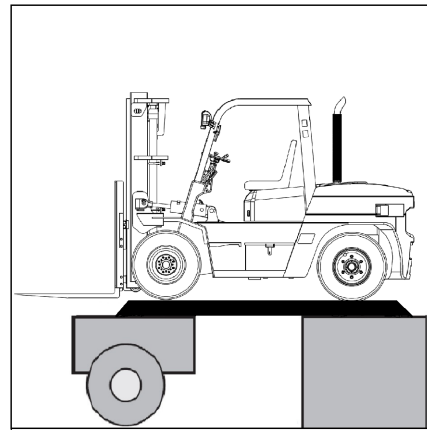
Risk of accidents!

When transporting hanging loads, never perform or end driving and load movements abruptly.

Never drive on slopes with a suspended load.

Transporting containers holding fluids as hanging loads is not permitted.

Driving on loading bridges ▷



⚠ DANGER

Risk of accident if the truck crashes!

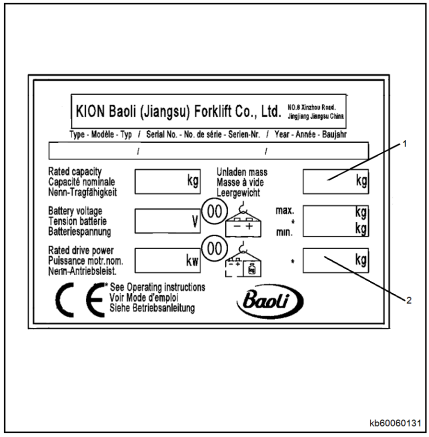
Steering movements can cause the tail end to veer off the loading bridge towards the edge. This may cause the truck to crash.

The lorry driver and the truck driver must agree on the lorry's departure time.

- ➢ Before driving across a loading bridge, ensure that it is properly attached and secured and has a sufficient load capacity (lorry, bridge etc.).
- ➢ Drive slowly and with care on the loading bridge.
- ➢ Ensure that the vehicle onto which you will be driving is secured to prevent it from shifting and that it can support the load of the truck.

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Determining the actual total weight ▷



- ➢ Park the truck securely.
- ➢ Determine the unit weights by reading the truck nameplate and, if necessary, the attachment (variant) nameplate and, if necessary, by weighing the load to be lifted.
- ➢ Add the determined unit weights to obtain the actual total weight of the truck:

  Tare weight (1)

+ Ballast weight (variant) (2)

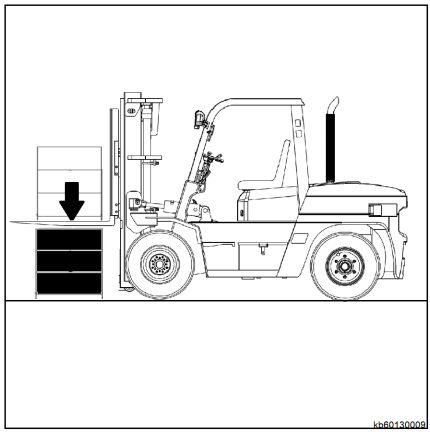
+ Attachment net weight (variant)

+ Weight of the load to be lifted

+ 100 kg allowance for driver

= Actual total weight

Unloading ▷



- ➢ Carefully drive the truck close to the goods using the service brake/inching control pedal.
- ➢ Apply the parking brake and set the manual direction lever to neutral.
- ➢ Place the lift mast in the vertical position.
- ➢ Raise the fork carriage to the correct height.
- ➢ Operate the sideshift if needed.
- ➢ Release the parking brake and at the same time fully depress the service brake/inching control pedal.
- ➢ Set the manual direction lever in the forward direction.
- ➢ Using the service brake/inching control pedal, carefully drive the truck forward so that the load is deposited onto the shelf.
- ➢ Operate the sideshift if needed.
- ➢ Apply the parking brake and set the manual direction lever to neutral.
- ➢ Slowly lower the goods until the fork arms are able to separate from the goods.

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- Release the parking brake and at the same time fully depress the service brake/inching control pedal.
- Set the manual direction lever in the reverse direction.
- Reverse the truck.
- Carefully lower the fork arms until they are just above the ground (approximately 300-400mm).
- Tilt the lift mast backward.

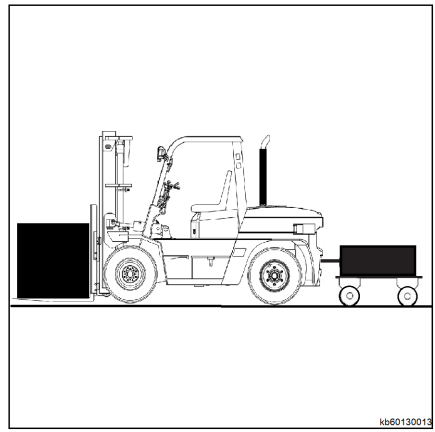
⚠ DANGER

When stacking/destacking, do not attempt to put your hand through the lift mast in order to free snagged goods.

⚠ DANGER

Do not leave the truck while the load is raised.

Towed load ▷



⚠ DANGER

There is an increased risk of accident when using a trailer.

Using a trailer changes the truck handling characteristics. When towing, operate the truck such that the trailer train can be safely driven and braked at all times. The maximum permissible speed when towing is 5 km/h.

- Do not exceed the permissible speed of 5 km/h.
- Do not couple the truck in front of rail vehicles.
- The truck must not be used to push any kind of trolley.
- It must be possible to drive and brake at all times.

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⚠ CAUTION

Risk of damage to components!

The maximum towed load for occasional towing is the rated capacity specified on the nameplate. Overloading can lead to component damage on the truck. The sum of the actual towed load and the actual load on the fork must not exceed the rated capacity. If the existing towed load corresponds to the rated capacity of the truck, no load may be transported on the fork at the same time. The load can be distributed between the fork and the trailer.

- Check the load distribution and adjust it to correspond to the rated capacity.
- Observe the permissible rigidity value of the tow coupling.

⚠ CAUTION

Risk of damage to components!

The maximum towed load only applies when towing unbraked trailers on a level surface (maximum deviation +/- 1%) and on firm ground. The towed load must be reduced if towing on gradients. If necessary, notify the authorised service centre of the application conditions. The service centre will provide the required data.

- Inform the authorised service centre.

⚠ CAUTION

Risk of damage to components!

A support load is not permitted.

- Do not use trailers with tillers supported by the tow coupling.

This truck is suitable for the occasional towing of trailers. If the truck is equipped with a towing device, this occasional towing must not exceed 2% of the daily operating time. If the truck is to be used for towing on a more regular basis, the manufacturer should be consulted.

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Forklift towing

If the truck breaks down, it can be towed using the tow coupling. Before towing, the direction lever must be placed in the neutral position(2). And the parking brake must be released.

NOTE

When towing, the driver must be sitting in the seat to steer the truck, actuate the brakes and operate other controls, and the engine must be running.

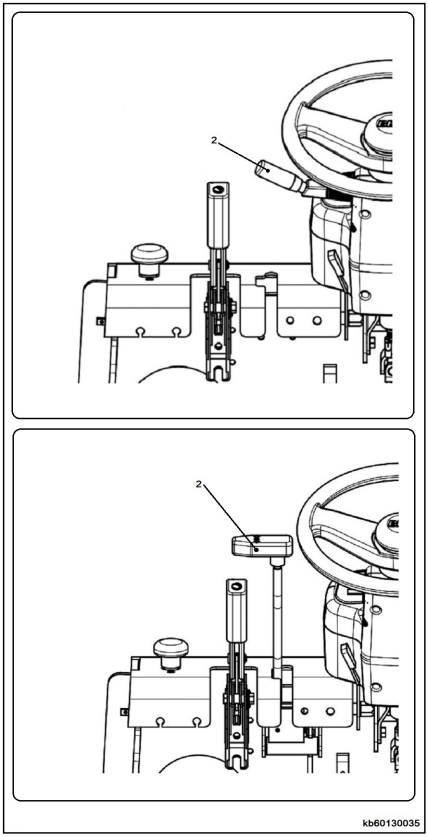
- Remove any load from the forks.
- If the hydraulic system still works, raise the forks if necessary so they will not drag during towing. Otherwise remove the forks from the carriage.
- Attach the towing vehicle to the truck at the coupling pin(1) using a towing bar. After connection, ensure that the coupling pin is fully inserted through both of its bores in the counterweight.
- Release the parking brake.
- A driver must steer the truck during towing.

NOTE

Power assistance will not be available to the steering if the engine is not running. Increased effort will be required for steering if the engine will not run.

- Avoid sudden stops and starts during towing.





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Cleaning

Cleaning the truck

- Park the truck securely.
- Switch the electrical system off before cleaning.



⚠ WARNING

There is a risk of injury due to falling when climbing onto the truck!

When climbing onto the truck, you can get stuck or slip on components and fall. Higher points on the truck should only be accessed using the appropriate equipment.

- Strictly adhere to the following steps.

- Use only the steps provided to climb onto the truck.
- Use equipment such as stepladders or platforms to reach inaccessible areas.

Washing the truck exterior

⚠ CAUTION

There is a risk of short circuit if water penetrates the electrical system!

- Strictly adhere to the following steps.

- Prior to cleaning, switch off the power supply to the electrical system.
- Do not spray electrical components and the covers on these components directly with water.

⚠ WARNING

Failure to follow these instructions could result in damaged components!

The engine must be switched off during washing. Water should not be used to clean the area around the central electrical system; instead, only clean with a dry cloth or clean compressed air.

⚠ WARNING

Excessive water pressure or water and steam that are too hot can damage truck components.

- Strictly adhere to the following steps.

- Only use high-pressure cleaners with a maximum output power of 50 bar and at a maximum temperature of 85°C.
- When using high-pressure cleaners, make sure there is a distance of at least 20 cm between the nozzle and the object being cleaned.
- Do not aim the cleaning jet directly at adhesive labels or information signs.



⚠ DANGER

Risk of fire! Deposits/accumulations of combustible materials may ignite in the vicinity of hot components (e.g. exhaust pipes).

- Strictly adhere to the following steps.

- Regularly remove all deposits/accumulations of foreign materials in the vicinity of hot components.
- Do not place combustible materials in the engine compartment.



⚠ DANGER

Risk of fire! Flammable fluids can be ignited by hot components on the truck.

- Strictly adhere to the following steps.

- Do not use flammable fluids for cleaning.
- Observe the manufacturer's guidelines for working with cleaning materials

⚠ CAUTION

Abrasive cleaning materials can damage component surfaces!

Using abrasive cleaning materials that are unsuitable for plastics may dissolve plastic parts or make them brittle. The screen on the display operating unit may become cloudy.

- The procedures outlined below must be followed in all cases.

- Clean plastic parts only with cleaning materials intended for plastic parts.

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➢ Observe the manufacturer's guidelines for working with cleaning materials

⚠ CAUTION

Excessive water pressure or water and steam that are too hot can damage truck components.

➢ The procedures outlined below must be followed in all cases.

➢ Clean the truck exterior with water-soluble cleaning materials and water (water jet, sponge, cloth).

Cleaning the electrical system



⚠ CAUTION

Cleaning electrical system parts with water can damage the electrical system.

➢ Cleaning electrical system parts with water is forbidden!

➢ Use dry cleaning materials in accordance with the manufacturer's specifications.

➢ Do not remove covers etc.

➢ Clean the electrical system parts with a metal-free brush and blow the dust off with low-pressure compressed air.

Cleaning lifting chains ▷

⚠ WARNING

Risk of accident!

Lifting chains are safety elements.

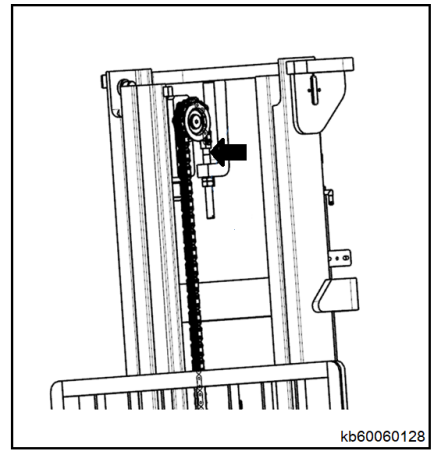
The use of cold/chemical cleaners or fluids that are corrosive or contain acid or chlorine can damage the chains and is forbidden!

➢ Observe the manufacturer's guidelines for working with cleaning materials.

➢ Place a collection vessel under the lift mast.

➢ Clean with paraffin derivatives, such as benzine.

➢ When using a steam jet, do not use additional cleaning agents.



➢ Clean all walk-in areas, the oil filling openings and their surroundings, and the lubricating nipples before lubricating.

NOTE

Please note: The more often the truck is cleaned, the more frequently it must be lubricated.

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Before exiting the truck

- Remove any water in the chain links using compressed air immediately after cleaning. Move the chain several times during this procedure.
- Immediately after drying the chain, spray it with chain spray. Move the chain several times during this procedure.

ENVIRONMENT NOTE

Dispose of any fluid that has been spilled or collected in the collection vessel in an environmentally friendly manner. Follow the statutory regulations.

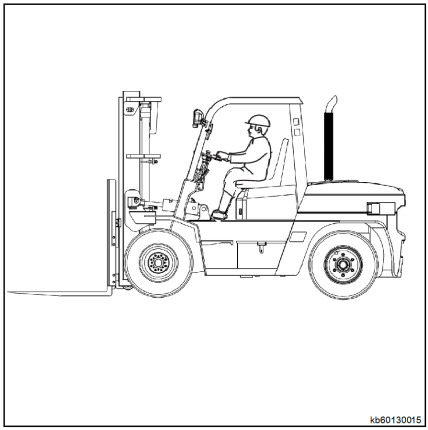
After washing

- Carefully dry the truck (e.g. with compressed air).
- Sit in the driver's seat and start up the truck in accordance with the regulations.

⚠ CAUTION

Risk of short circuits!

- If any moisture has penetrated into the electrical system despite the precautionary measures taken, the system must first be dried using compressed air.



Before exiting the truck

- Before exiting the truck, lower the forks to the ground, tilt the mast forwards.
- Apply the parking brake.
- Switch off the truck by turning the key from “II” position to the “0” position.
- Remove the ignition key .

⚠ DANGER

Do not switch off the truck by turning the key when the truck is moving.

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Truck transport

Use a truck or flatbed trailer to carry the forklift truck

- Lower the lift mast completely.
- Tilt the lift mast forward.

NOTE

The fork arms must be resting on the ground.

- Apply the parking brake.
- Place wedges underneath the forklift truck. ▷
- Use ropes to secure the mast in the case that the mast shall be dismounted during transport.



Hoisting the truck

⚠ DANGER

When lifting the truck with a crane, there is a risk of accident and fatal injury if personnel are in the working area of the crane.

When using a crane to lift the truck, pay particular attention to ensure that no personnel are in the vicinity of the crane. Comply with the load capacity rating marked on the crane nameplate. Never walk under a suspended load!

⚠ CAUTION

Use a spreader and crane with sufficient load capacity to lift the truck. For the weight of the truck, see the manufacturer's nameplate.

NOTE

Before hoisting the truck, fasten the slings to the given lifting points. These lifting points are not specifically marked on the truck.

- Lower the lift mast completely, and tilt it fully backwards.
- Remove the rubber grommets from the openings (6) in the counterweight.
- Remove the counterweight grid(5).
- Attach a sling (2) (able to at least bear the weight of the forklift truck) to the two openings in the counterweight.

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- Attach two shackles (7) to the two openings in the upper beam of the outer lift mast.
- Attach a sling (3) (able to at least bear the weight of the forklift truck) to the two shackles.
- Prevent the slings from rubbing against any sharp edges on the truck.
- Attach the ends of all the slings to the crane hook (1).

⚠ CAUTION

After hanging the slings from the lifting hook, the safety lock (4) must be fastened. The slings must not touch the overhead guard or any other installed equipment when the truck is being lifted.

⚠ DANGER

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 guard and the risk of severe injury or death. Ensure that no part of any lifting equipment contacts the overhead guard during lifting.

Truck Storage

Before storage

Before storing your forklift truck, clean it thoroughly and perform inspection as the following procedures.

- Wipe away grease, oil, etc. covering the body of the truck with waste cloth, if needed
- While washing the body of the truck, check general condition of the truck. Especially check the truck's body for recess or damage and tires for wear and nails or stones in the tread.
- Fill the oil tank with the appointed fuel.
- Check for leakage of hydraulic oil, engine oil, fuel or coolant.
- Apply grease to where needed.
- Check for looseness of hub nuts and cylinder piston rod joints. Check the surface of piston rod for damage.
- Check mast rollers to see that they rotate smoothly.
- Fill up enough oil into the lift cylinders by lifting the lift cylinders fully.
- In winter or cold season, don't drain long-acting antifreeze, while cooling water shall be drained.

Daily storage

- Park the forklift truck at a specified place and block the wheels.
- Place the direction lever in the neutral position and apply the parking brake by depressing the parking brake pedal.

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- Turn the ignition key to “OFF” position and turn off the engine, operate joystick of control valve several times to release residual pressure in the hydraulic system.
- Remove the key and keep it in a safe place.

Long-term storage

Perform the following service and checks in addition to the “Daily storage” service:

- Clean the truck thoroughly.
- Park the truck in a well-ventilated, frost-free, clean and dry place.
- Both raise and lower the fork carriage and tilt the lift mast forwards and backwards several times. If equipped with attachments, operate the attachments several times.
- Lower the fork onto a support mounting so that the lift chain does not continue to experience stress.
- Apply a light film of oil or grease to exposed unpainted parts such as piston rods and mast rollers.
- Lubricate the truck per the scheduled maintenance procedure.
- The truck should be operated at least once a week. Check coolant level and replenish if necessary. Start the engine and warm up thoroughly. Move the truck slowly forwards and backwards. Operate the hydraulic controls several times.

Start-up after storage

- Clean the truck thoroughly.
- Change the engine oil, transmission oil, and gear lubricant.
- Discharge foreign matter and water from the hydraulic reservoir and fuel tank.
- Remove the cylinder cap, the valves and the rocker shafts, check for the clearance in normal data.
- Add cooling fluid to specified level.
- Perform pre-operation checks carefully.
- Check coolant level and replenish if necessary. Start the engine and warm up thoroughly before operation.

⚠ WARNING

At any time your lift truck is found to be in need of repair, defective, or in any way unsafe, the condition should be reported to be supervisor immediately, and the truck should be taken out of service until it has been restored to safe operating condition.

Disposal of old trucks

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

We therefore recommend having this work carried out in an approved recycling plant. If you would like to carry out this work yourself, you must obtain approval from the relevant authorities as per articles 9, 10 and 11 of directive 75/442/EEC.

In addition, the following minimum requirements must be observed:

- The locations in which old trucks are stored before treatment must be areas suited to this task with impervious surfaces. These areas are also to be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials
- The locations for treatment must be areas suited to this task with impervious surfaces. These areas must also be equipped with collection devices and separators for leaking fluids and degreasing cleaning materials. Suitable storage areas must be available for disassembled and partially oil-smeared parts, as well as for tyres including fire protection measures. Suitable storage tanks for fluids such as fuel, AdBlue® (urea

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solution), engine oil, hydraulic oil, cooling fluid and fluids from air conditioning systems must also be provided

- In order to dispose of harmful substances from the old trucks, the batteries and LPG container must be removed. The following must also be removed, collected and stored separately: fuel, AdBlue® (urea solution), engine oil, cooling fluid, hydraulic oil and fluids from air conditioning systems
- The following parts are to be collected separately and recycled: catalytic converters, metal components containing copper and aluminium, tyres, large plastic components (consoles, fluid containers) and glass

NOTE

The operating company is responsible for adherence to the directives as well as additional country-specific regulations.

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5

Maintenance

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Summary

Following the instructions in the user manual and conducting regular checks and maintenance are essential for ensuring that the forklift truck remains in proper working order. Maintenance should only be carried out by Baoli-accredited technicians, or by authorised Baoli dealers in accordance with a signed maintenance contract.

Modifying or installing additional equipment on the forklift truck is prohibited without the agreement of the manufacturer.

NOTE

If the data plates or affixed labels are incomplete or damaged, they should be replaced with new ones. For locations and reference numbers, please see the spare parts catalogue.

General information

In order to keep the forklift truck in good working condition, it must undergo regular service and maintenance. All service and maintenance operations, such as oil changes, must be performed strictly in accordance with the indications below. Maintenance work must be recorded in the warranty booklet. Please retain maintenance records in order to ensure the validity of the warranty.

⚠ DANGER

Maintenance must be carried out by professional technical personnel authorised by the manufacturer, in order to guarantee the operating performance of the truck as well as compliance with all technical specifications.

⚠ CAUTION

The manufacture shall assume no liability for the consequences of maintenance carried out by unauthorised personnel.

The forklift must undergo functional testing and a trial run after each inspection.

⚠ CAUTION

If the forklift truck is used in an extreme environment (such as excessive heat, excessive cold or areas with high dust concentrations), the time intervals given in the maintenance tables should be reduced accordingly.

ENVIRONMENT NOTE

Please comply with regulations regarding the use, handling and disposal of fuel and lubricating oil.

NOTE

In order to meet your specific needs you may sign a maintenance contract with an authorised service centre.

⚠ CAUTION

If the forklift truck is used in an extreme environment (such as excessive heat, excessive cold or areas with high dust concentration), the time intervals given in the maintenance tables should be reduced accordingly.

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Pre-service preparatory work

- Before commencing maintenance work, the forklift truck should be stopped on a flat surface. A wedge should also be placed in front of the wheels to prevent accidental movement.
- Lower the fork arms to the ground.
- Apply the parking brake.
- Turn off the power supply to the forklift truck and remove the ignition key.
- When maintenance needs to be carried out under the lifted fork carriage and mast, measures must be taken to prevent the fork carriage or mast from accidentally falling.
- When work needs to be carried out at the front end of the forklift truck, the mast should be secured to prevent backwards tilting.

⚠ DANGER

The negative electrode of the rechargeable battery must be disconnected before working on the electrical system.

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Supply table

Unit	Operating material	International standard	Remark	Recommended Quantity
Engine	Engine oil	SAE10W30	Weichai WP4.1	14L
			Cummins QSB4.5	12L
			ISUZU 6BG1QC-02	12L
			Doosan D34	12L
Hydraulic system	Hydraulic oil	L-HM46		125L for mast below 4500mm mast 130L for mast exceeding 4500mm mast
		L-HV32	For cold regions	
Hydraulic transmission gear	Transmis-sion oil	Dexron III/ Mobile ATF		30L
Braking sys-tem	Brake fluid		Hydraulic brake, so hydraulic oil ok.	
Bearings, lu-bricating grease fit-tings	Lubricating grease	NLGL 2# lithium grease		0.07KG
Cooling sys-tem	Coolant fluid	LLC PD-2A See section "En-gine coolant-Specifications"	Weichai WP4.1	Radiator water tank: 26L
			Cummins QSB4.5	Radiator water tank: 24L
			ISUZU 6BG1QC-02	Radiator water tank: 24L Compensation box: 2.5L
			Doosan D34	Radiator water tank: 26L
Drive axle	gear oil	GL-5 85W-90		8.00L
		GL-5 80W-90	For cold regions	
Fuel	Diesel	See section "Die-sel fuel- Specifi-cations		As required

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Preventive maintenance service schedule

Service schedule for Weichai WP4.1 engine

Inspection items	First Maintenance (50-100h)	Regular Maintenance	Every 500 hours	Every 1000 hours	Every 2,000 hours	Every 4,000 hours
Replace lubricating oil (at least once a year)	•	•	•	•	•	•
Replace oil filter or filter element	•	Every time when replacing lubricating oil				
Check and adjust valve clearance	•		•	•	•	•
Clean fuel primary filter or replace filter element			•	•	•	•
Check the coolant and add enough capacity	•	•	•	•	•	•
Replace coolant		Once a year				
Fasten cooling pipe clamp	•					
Fasten the air intake pipe, hose and flange connector	•		•	•	•	•
Check air filter maintenance lamp or indicator			•	•	•	•
Clean the air filter dust cup (automatic dust discharge type excepted)		•	•	•	•	•
Change air filter main element		See vehicle manual for details				
Change air filter safety element		After the main filter element is cleaned 5 times				
Check the tightening belt	•	•	•	•	•	•
Inspect and adjust clutch stroke and steel wire rope	•	•	•	•	•	•

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Service schedule for ISUZU 6BG1-02 engine

○: Inspection and Adjustment, ●: Replacement)

No.	Service Required	Daily	Operation hours						
			50	250	500	750	1000	1250	1500
1	oil level and oil fouling	○							
2	oil leakage check	○							
3	oil pressure gauge registration	○							
4	oil pressure warning lamp	○							
5	Engine oil and oil filter element replacement (without partial oil filter)		● First time	●	●	●	●	●	●
6	Engine oil and oil filter element replacement (with partial oil filter)		● First time		●		●		●
7	Partial oil filter replacement				●		●		●
8	Water pump grease change								
9	Fuel leakage check	○							
10	Draining water in fuel filter	○							
11	Fuel filter element replacement				○		○		○
12	Feed pump strainer cleaning				○		○		○
13	injection nozzle check(*)				○		○		○
14	Coolant level and fouling check	○							
15	Coolant leakage check	○							
16	Radiator filler cap fitting condition	○							
17	Fan belt tension check (Replace if necessary)	○							
18	Coolant temperature registration	○							
19	Coolant replacement	every 6 months							
20	Radiator external face cleaning				○		○		○
21	Cooling system circuit cleaning								
22	Radiator filler cap function check(*)								
23	Electrolyte level check	○							
24	Battery cleaning	○							
25	Battery charge condition(Ammeter registration and charge warning lamp)	○							
26	Electrolyte gravity check	20 degrees Celsius, less than 1.22							
27	Starter and alternator check and cleaning(*)						○		
28	Wiring and connection check								

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29	Preheating condition check	○							
30	Air filter element replacement				●		●		●
31	Engine starting conditions and noise conditions	○							
32	Exhaust smoke condition	○							
33	Cylinder compression pressure(*)							○	
34	Valve clearance check(*)							○	

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Preventive maintenance service schedule

Maintenance table for Cummins QSB4.5 engine

At operating hours										Carried out	
Daily Interval		250 Hours or 3 Months		500 Hours or 6 Months		1000 Hours or 1 Year		2000 Hours or 2 Years			
2000 Hours		5000 Hours or 4 Years								✓	✖
Maintenance Procedures at Daily Interval											
Air Tank and Reservoirs - Drain											
Crankcase Breather Tube - Check											
Fuel-Water Separator - Drain											
Air Cleaner Restriction - Check											
Lubricating Oil Level - Check											
Fan, Cooling - Check											
Coolant Level - Check											
Aftertreatment Exhaust Piping - Check											
Air Intake Piping - Check											
Maintenance Procedures at 250 Hours or 3 Months											
Radiator Hoses - Check											
Air Intake Piping - Check											
Radiator - Check											
Charge Air Cooler - Check											
Charge Air Piping - Check											
Maintenance Procedures at 500 Hours or 6 Months											
Fuel Filter (Spin-On Type) - Change											
Lubricating Oil and Filters - Change											
Engine Coolant Antifreeze - Check											
Batteries - Check											
Battery Cables and Connections - Check											
Radiator Pressure Cap - Check											
Maintenance Procedures 1000 Hours or 1 Year											
Radiator Hoses - Check											
Air Intake Piping - Check											
Radiator - Check											
Charge Air Cooler - Check											

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At operating hours										Carried out	
Daily Interval		250 Hours or 3 Months		500 Hours or 6 Months		1000 Hours or 1 Year		2000 Hours or 2 Years		✓	✘
2000 Hours		5000 Hours or 4 Years									
Charge Air Piping - Check											
Maintenance Procedures at 2000 Hours or 2 Years											
Vibration Damper, Viscous - Check											
Vibration Damper, Rubber - Check											
Engine Steam Cleaning - Clean											
Crankcase Breather (External) - Check											
Cooling System - Flush											
Maintenance Procedures at 2000 Hours											
Crankcase Ventilation Filter - Change											
Maintenance Procedures at 5000 Hours or 4 Years											
Overhead Set - Adjust											

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Maintenance table for Doosan D34 engine

NOTE

Regular inspection and replacement according to the recommended regular inspection table allows you to maintain the engine with optimum conditions and best performance for a long period and prevent unexpected accidents in advance.

○: Inspection and Adjustment, ●: Replacement)

Check Points		Daily	Inspection interval (x 1,000 hours)										Remarks
			0.5	1.0	1.5	2.0	2.5	3.0	6.5	4.0	4.5	5.0	
Coolant system													
State of connection between cooler and coolant hose		○											
Capacity and state of coolant Note 2)	Note 1)	○	General genuine coolant: replace every 1,200 hours Genuine LLC coolant: replace every 6,000 hours										
Cooling fan belt tension		○	Inspect every 1,000 hrs (or 6 months) and replace if required Replace every 3,000 hrs (or 3 years)										
Lubrication syste													
Lubricating device and oil leakage		○											
Capacity and condition of engine oil		○											
Engine oil filter			●	●	●	●	●	●	●	●	●	●	
Engine oil	API CJ-4		●	●	●	●	●	●	●	●	●	●	
Fuel system													
Fuel line and connection unit		○											
Fuel volume		○											
Water draining from water separator		○											
Fuel injection time			Inspect and adjust if required										
Injector			Inspect and adjust if required										
Compression pressure			Inspect and adjust if required										
Intake/Exhaust system													
Air cleaner			Clean and replace if required										
Throttle body cleaning			Clean and replace if required										
Intake line and connection unit			Clean and replace if required										
Exhaust line and connection unit			Clean and replace if required										
Emission state													

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Cylinder head												
Head cover injectors oil seal		Inspect and replace if required (Replace when replacing injectors)										
Electric system												
Battery charging state	○											
Various electric units	○											

NOTE

- *(1)Replenish coolant if required.*
- *(2)Check coolant every 500 hours to maintain the concentration of antifreeze and additives.*

NOTE

Service interval varies depending on engine oil, diesel fuel quality and operation conditions. Determine service intervals by analyzing the engine oil properties under working conditions after analyzing the result of the test. 1,000 hr interval is only for the customer who get the confirmation from DI for the machine usage profile.

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Checking list for IC Truck

Checking List - IC Truck	Maintenance Interval				Faults		Advice
Chassis Frame	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Check if panel, cover, cabin door (if fitted) are damaged and correctly installed.		○	○	○			
Check the chassis and supporting parts for abrasion and damage.			○	○			
Check the correct operation of seat, and the seat belt for condition and assembly.	○	○	○	○			
Check the fastening condition of overhead guard.			○	○			
Check the fastening condition of counterbalance weight, and towing status.			○	○			
Check if all the labels are legible, and correctly located.			○	○			
Check the attachment for correct installation.		○	○	○			
Check the antiskid device of the whole truck, replace if necessary.	○	○	○	○			

Driving power system	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Check the abnormal noise of the transmission and driving wheel, and if any oil leakage.	○	○	○	○			
Check the gearbox oil level of the driving wheel, re-fill or change if necessary.		○	○	●			
Check the mechanical linkage of brake assy is tightly fitted, and without any abrasion.			○	○			
Check and inspect if the return spring is operating normally.		○	○	○			
Check the thickness of friction plate (mechanical transmission), replace if necessary.			○	○			
Check the free movement of the clutch pedal, and make adjustment while necessary.		○	○	○			
Check the transmission oil, adding or replacing when necessary.		○	○	●			
Check gear-linkage of the hydraulic transmission is functioning normally			○	○			

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Braking system & tyres	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No
Check the operation condition of driving brake pedal and parking brake, make adjustment if necessary.	○	○	○	○		
Check the brake pipe for damage and leakage.			○	○		
Check the condition of brake assembly linkage, adjust and lubricate if necessary.			○	○		
Check the brake fluid level, replace if necessary.				●		
Check the tyres for any abrasion and damage, replace if necessary.			○	○		
Check the tightening torque of bolts and nuts of the tyres and rims.	○		○	○		

Electric system	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No
Check the status of the display unit, and fault code if any.		○	○	○		
Check the battery voltage, and the condition, tightness of cables and connections.			○	○		
Check if the engine starts normally.		○	○	○		
Check if the operation condition of alternator is normally.		○	○	○		
Check the tightness of fuses and connections.		○	○	○		
Check if emergency power off switch is functioning properly.	○	○	○	○		
Check the warning light, horn, headlights, signal lamp are operating correctly.	○	○	○	○		

Steering system	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No
Check if steering is functioning properly. (steering torque)	○	○	○	○		
Check the steering unit for oil leaks.		○	○	○		
Inspect the clearance of steering column.			○	○		
Check if the adjustment operation of the steering wheel is properly.			○	○		

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Check the steering cylinder, and pipes for looseness and oil leaks.			○	○			
Check the steering knuckle, steering king pin, connecting rod for looseness and abrasion.			○	○			

Hydraulic system	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Check the operation condition of lifting, lowering, and tilting.		○	○	○			
Check the cylinders, piston for damage and leakage, ensuring correct installation.			○	○			
Check the oil pipes and connections for looseness, leakage, or damage.			○	○			
Check the pipe rollers are operating normally.			○	○			
Check the quality and level of hydraulic oil, adding and replacing if necessary.			○	●			
Replace the hydraulic oil filter and respirator (if fitted).			○	●			
Check the gear pump for correct assembly, any damage or oil leaks.			○	○			
Check valve for proper function and oil leakage.			○	○			

Load lifting system	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Check the mast for abrasion and deformation, replace if necessary.			○	○			
Check forks and fork carriage for abrasion and damage.				○			
Check the load backrest for correct installation and damage.		○	○	○			
Check the fastening condition of mast bearing pad.			○	○			
Check the condition of rollers, bearings, slider, and also the blocking limit.			○	○			
Check the gaps of the mast and carriage, make adjustment if necessary.			○	○			
Inspect if movement of the cylinders are synchronous, adjust if necessary.			○	○			
Check the tilt angle of the mast, adjust if necessary.		○	○	○			

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Check the junction plate, pin, and rivet head for abrasion, cracks, damage, rust and corrosion.			○	○			
Adjusting the length of lifting chains (if necessary), and lubricating using chain spay.	●	●	●	●			

Attachment	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Check the operation condition of all attachments.	○	○	○	○			
Check the guiding element and blocking limit for abrasion and damage.			○	○			
Check the fastening of attachments and fittings.		○	○	○			
Check hydraulic pipes and connection of the attachments.		○	○	○			
Lubricate the attachments.	●	●	●	●			

Lubrication and Cleaning	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Lubricate the forklift according to the lubrication chart.	●	●	●	●			
Clean the forklift thoroughly.	○	○	○	○			

Testing	First 50H	Every 250H	Every 500H	Every 1000H	Yes	No	
Carry out a functional test and test drive.							

NOTE

The maintenance work should be performed more frequently if the vehicle is being used in dusty and dirty environments.

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Preparations

Cleaning the truck

The length of truck cleaning intervals depends on what the truck is used for and where it is used. For example, in environments where the truck comes into contact with irritants such as salt water, fertilizer or chemical products, it needs to be thoroughly cleaned after each use.

Compressed air and a mixture of cold water and detergent may be used for cleaning.

⚠ CAUTION

Do not direct water jets at the truck. Do not use solvents or petrol-based fluids for cleaning, as this may damage electrical components or plastic parts.

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Weichai WP4.1 Engine

Changing the engine oil

⚠ WARNING

Danger of burn injury!

If it is necessary to bleed the engine oil when the oil is still hot, avoid contact with the oil and wear eye protection to avoid burn injuries.

Failure to comply with regulations may result in death or serious injury.

⚠ CAUTION

Only use designated oil. Other types of oil may affect quality of use and shorten the service life of the engine or internal parts.

Avoid contamination of the engine by dirt or dust. Before removing the oil cap, carefully clean the oil cap/ dipstick and surrounding areas.

Avoid mixing different brands of oil. Mixing different brands of oil will seriously affect lubrication.

Avoid overfilling. Overfilling may result in white smoke, overspeed or internal damage.

⚠ CAUTION

Please pay attention to environmental protection. Dispose of used oil according to related laws and regulations. Failure to comply with laws and regulations will result in serious damage to the environment.

Comply with EPA guidelines or government measures for the correct handling of hazardous materials (such as oil, diesel and engine coolant).

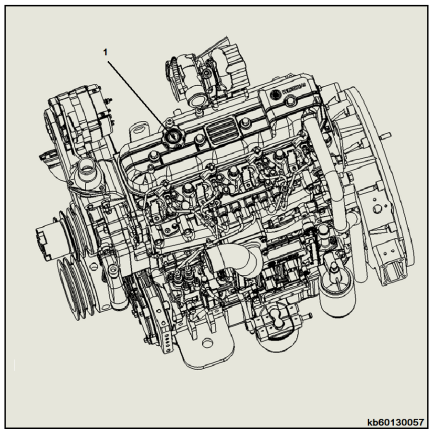
Irresponsible handling of hazardous materials, such as dumping hazardous waste into water channels, on the ground, into groundwater or drainage ditches, is prohibited.

Drain the oil using the following steps:

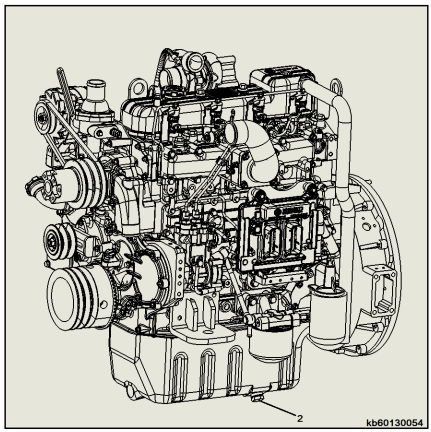
- Ensure that the engine is in a horizontal position.
- Start the engine and run until it reaches operating temperature.
- Stop the engine.

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- Remove the oil cap(1) to ventilate the crankcase. This is beneficial for bleeding the oil.
- Place an oil pan under the engine to collect the used oil.



- Remove the oil drainage plug(2) and allow the oil to flow into the collection container. When the oil has been drained completely, replace the oil drainage plug
- Dispose of the used oil properly.



Filling up with engine oil

- Ensure that the engine is in a horizontal position.
- Remove the oil cap(1).
- Add the specified amount of oil into the oil filler on the side of the upper part of the engine.
- Wait three minutes and check the oil level.
- Add more oil as necessary.
- Replace the oil cap and tighten by hand. Over-tightening may damage the cap.

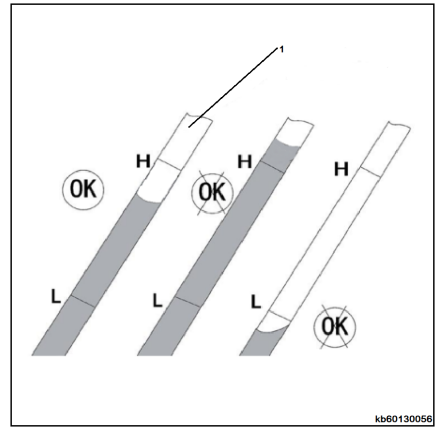
Check the engine oil level

NOTE

The oil level must be checked before starting the engine, or at least 10 or 20 minutes after the engine is shut down. When the oil level is necessary while the engine is running, stop the engine and keep it stationary 10 or 20 mins until the oil thoroughly flows down to the crankcase,

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- Ensure that the truck is parked in a horizontal position.
- Open the bonnet.
- Take out the dipstick(1)and wipe with a clean cloth.
- Fully re-insert the dipstick.
- Remove the dipstick. The oil level should be between the Max level and Min level on the dipstick.



⚠ CAUTION

Risk of engine damage!

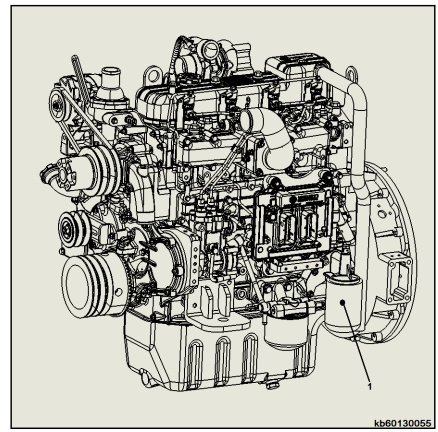
Insufficient engine lubrication can cause engine damage. An insufficient oil level or the use of engine oil with different specifications can lead to the failure of engine lubrication.

- – Only use engine oil in line with the maintenance data table.

- Add Oil to the max oil level if the oil level is below the Min level.
- Fully re-insert the dipstick.
- Close the bonnet.

Changing the engine oil filter

- Remove the oil filter(1) anti-clockwise with a filter wrench.
- Clean the mounting surface of the engine oil filter.
- Lightly coat the new filter sealing ring with a thin layer of engine oil.
- Hand-fit the new filter to the filter cover and turn clockwise until the mounting surface comes into contact with the surface of the filter cover; then tighten the filter with filter wrench.



NOTE

Please refer to the engine spare parts manual to find the part number of usable engine oil filters.

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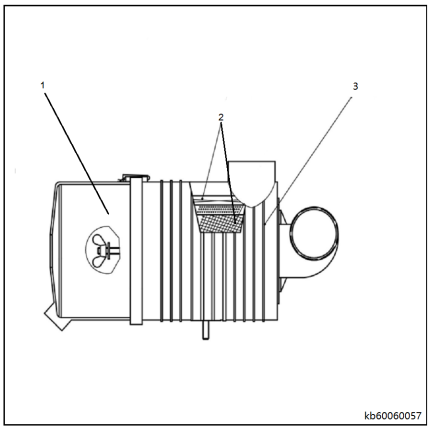
➢ Fill the engine with engine oil according to the detailed instructions in "Filling up with engine oil".

Change air filter insert

Please note that the air filter shown in the figure is for illustration purposes only.

➢ Open the bonnet.

➢ Loosen the screw nuts and remove the filter cover(1). ▷



➢ Pull out the air filter insert(2)

NOTE

Clean the inside of the air filter head cover

➢ Ensure that the filter is not damaged during installation and that it is installed in the correct direction.

➢ Install the filter insert back into the air filter housing(3).

➢ Reinstall the air filter cover.

NOTE

Make sure to replace the air filter insert every 12 months or after 6 cleanings.

Cleaning the air filter insert

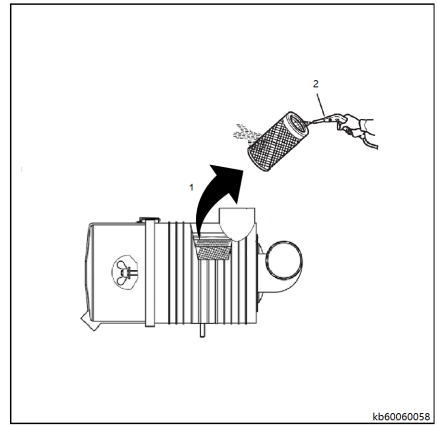
Please note that the air filter shown in the figure is for illustration purposes only.

Clogged filter inserts may have an adverse impact on engine performance. Make sure to periodically clean the air filter insert.

➢ Loosen the nut and remove the air filter head cover.

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- Pull out the air filter insert (1)
- Remove dust from the filter by blowing outward through the filter using compressed air (2). Remove dust using minimum air pressure in order to avoiding damaging the insert



⚠ CAUTION

Flying object hazard!

Wear eye protection when carrying out maintenance on the engine and using compressed air or pressurised water jets, in order to prevent dust, flying debris, compressed air or pressurised water or gas from damaging your eyes.

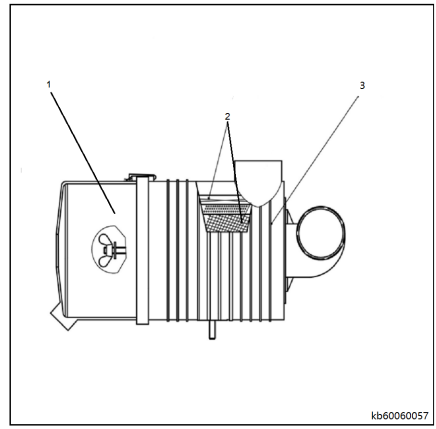
Failure to follow this instruction may result in injury.

- If the filter insert is damaged, heavily soiled or oily, replace it with a new insert.

⚠ CAUTION

The air filter insert requires more frequent cleaning when the engine is running in dusty environments.

- Clean the inside of the air filter head cover (1).
- Fit the filter insert(2)in the air filter housing (3).
- Refit the air filter cover, and tighten the air filter head cover onto the air filter housing.



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Emptying water separator

⚠ DANGER

High pressure hazard!

Avoid fuel spraying onto the skin due to fuel system leakages, such as a ruptured fuel injection line. Fuel sprayed onto the skin can cause serious injury. In the event of spray injuries, seek medical attention immediately. Do not check for fuel leaks with your hands; instead use a wooden board or cardboard.

Failure to comply with regulations may result in death or serious injury.

⚠ CAUTION

Please pay attention to environmental protection. Dispose of used oil according to related laws and regulations. Failure to comply with laws and regulations will result in serious damage to the environment.

Comply with EPA guidelines or government measures for the correct handling of hazardous materials (such as oil, diesel and engine coolant).

Irresponsible handling of hazardous materials, such as dumping hazardous waste into water channels, on the ground, into groundwater or drainage ditches, is prohibited.

Carry out the following steps to drain water in the fuel filter

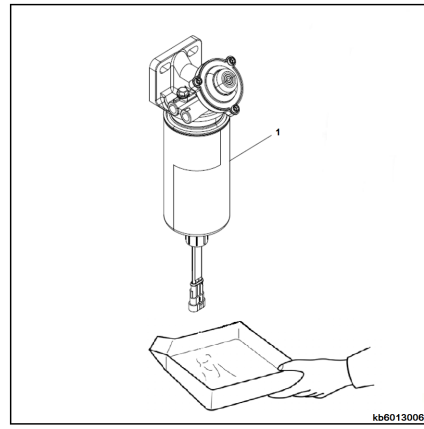
NOTE

The fuel filter/water trap in the below content is for illustration purpose only.

The water trap contains a sensor that detects the quantity of water and pollutants. The sensor will transmit a signal to the indicator in order to alert the operator.

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- Open the engine hood, place an oil pan under the water separator(1).
- Loosen the drain plug and operate the priming pump up and down until water is drained fully.
- After draining, securely tighten the drain plug and operate the priming pump manually up and down several times, make sure that there is no fuel leak from the drain plug.
- After starting the engine, check to see that the fuel filter indicator light in the instrument has turned off.

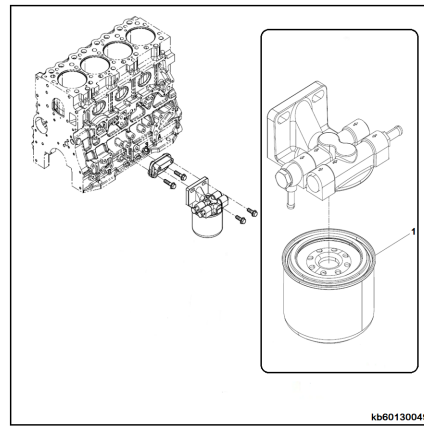


⚠ CAUTION

Perform the Fuel system air bleeding after the water in the fuel is drained.

Replacing the fine fuel filter

- Remove the old fuel filter element(1).
- Apply lubricating oil on the sealing port.
- Tighten the filter by hand until the sealing surface is secured with the interface.
- Continue tighten the filter by hand until the filter is securely installed (about 3/4 turn).
- Conduct the leakage test.



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Fuel system air bleeding

The entry of air into the fuel system will cause hard engine starting or engine malfunction.

⚠ WARNING

Risk of fire and explosion!

Diesel fuel is highly flammable and explosive under certain conditions.

When air bleeding, place an oil pan underneath the vent port. Avoid using workshop rags to collect fuel. Wipe away droplets of fuel immediately. After air bleeding, close the vent port.

Wear eye protection. The fuel system is pressurised, which means that fuel may spray out when you open the vent port.

Conduct the air bleeding until the fuel coming out of the vent port contains no bubbles, which indicates that the system is fully charged.

Failure to comply with safety precautions could result in death or serious injury.

⚠ CAUTION

Please pay attention to environmental protection. Waste engine oil should be disposed of in accordance with relevant laws and regulations. Non-compliance may cause serious damage to the environment.

Comply with EPA guidelines or other government measures for correct disposal of hazardous materials (such as engine oil, diesel and coolant). Please contact your local authority or recycling facility.

Irresponsible disposal of hazardous materials, such as pouring hazardous waste down drains, onto the ground or into groundwater or drainage ditches, is prohibited.

The fuel system requires air bleeding under the following circumstances:

- Before starting the engine for the first time.
- After running out of fuel and adding fuel to the tank.
- After carrying out maintenance on the fuel system, such as changing the fuel filter/ water trap, or replacing fuel system components.

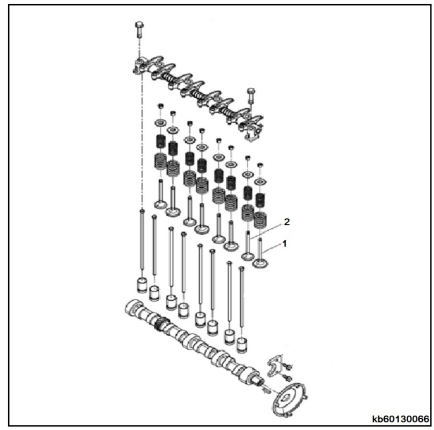
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Adjustment of valve clearance

The adjustment of valve clearance is very important. If the valve clearance is too small, when the engine is running, the length of valve rod will increase, causing gas leakage and engine power drop. If the valve clearance is too large, the opening time of intake/exhaust valve will be shortened, causing insufficient air intake or exhaust and engine power drop, and the intake/exhaust valve, rocker arm and camshaft will be exposed to intense impact.

The intake valve(1) clearance: (0.3±0.03) mm;

The exhaust valve(2) clearance: (0.3±0.03) mm



NOTE

The adjustment of valve clearance should be carried out in the cold state.

Clean and check the injection nozzle

- Visually inspect the injector and nozzle protection for clogging or damage. Clean or replace if necessary.

If necessary, use an injection nozzle tester to check the static injection starting pressure and the fuel spray conditions.

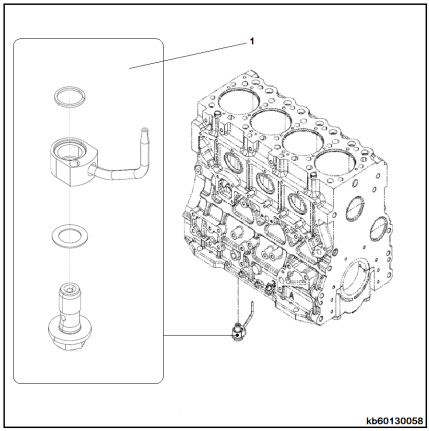
When the injection starting pressure is too high or too low or the fuel spray pattern is improper, an abnormal fuel combustion take place in the engine leading a lowered output and blackish exhaust smoke. Further, it causes a piston seizure or piston damage etc. In such cases, the injection nozzle test or the nozzle replacement is required.

⚠ WARNING

While using a nozzle tester, it may happen that high pressure blow off the fuel oil and injure the .Keep off the nozzle end,

https://truckmanualshub.com/

Clean the injection nozzle—— Weichai WP4.1 engine ▷



- Clean the exterior of the nozzle(1), being careful not to damage the valve needle.
- Remove the valve needle and clean it thoroughly and carefully to avoid damage. Do not use hard metal tools to clean the valve needle.
- Check for burrs, damage, rust and wear, paying attention to the body and seat of the valve needle.
- After thoroughly cleaning the valve needle, insert it into the nozzle body, checking whether the valve needle is able to slide down by its own gravity.

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Isuzu 6BG1 Engine

Changing the engine oil

⚠ WARNING

Danger of burn injury!

If it is necessary to bleed the engine oil when the oil is still hot, avoid contact with the oil and wear eye protection to avoid burn injuries.

Failure to comply with regulations may result in death or serious injury.

⚠ CAUTION

Only use designated oil. Other types of oil may affect quality of use and shorten the service life of the engine or internal parts.

Avoid contamination of the engine by dirt or dust. Before removing the oil cap, carefully clean the oil cap/dipstick and surrounding areas.

Avoid mixing different brands of oil. Mixing different brands of oil will seriously affect lubrication.

Avoid overfilling. Overfilling may result in white smoke, over speed or internal damage.

⚠ CAUTION

Please pay attention to environmental protection. Dispose of used oil according to related laws and regulations. Failure to comply with laws and regulations will result in serious damage to the environment.

Comply with EPA guidelines or government measures for the correct handling of hazardous materials (such as oil, diesel and engine coolant).

Irresponsible handling of hazardous materials, such as dumping hazardous waste into water channels, on the ground, into groundwater or drainage ditches, is prohibited.

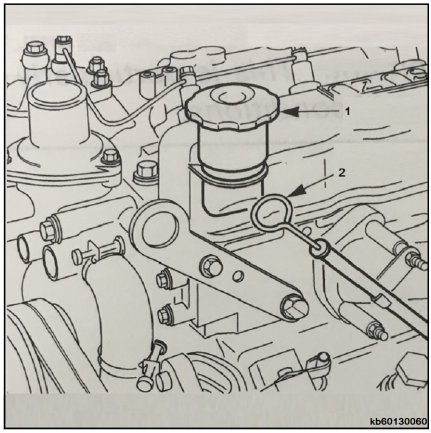
Drain the oil using the following steps:

- Ensure that the engine is in a horizontal position.
- Start the engine and run until it reaches operating temperature.
- Stop the engine.

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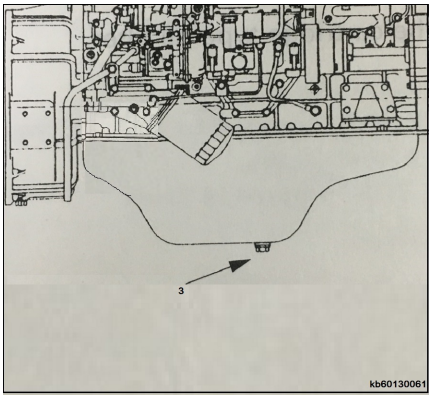
- Remove the oil cap(1) to ventilate the crankcase. This is beneficial for bleeding the oil.
- Place an oil pan under the engine to collect the used oil.

▷



- Remove the oil drainage plug(3) and allow the oil to flow into the collection container. When the oil has been drained completely, replace the oil drainage plug
- Dispose of the used oil properly.

▷



Filling up with engine oil

- Ensure that the engine is in a horizontal position.
- Remove the oil cap(1).
- Add the specified amount of oil into the oil filler on the side of the upper part of the engine.
- Wait three minutes and check the oil level.
- Add more oil as necessary.
- Replace the oil cap and tighten by hand. Over-tightening may damage the cap.

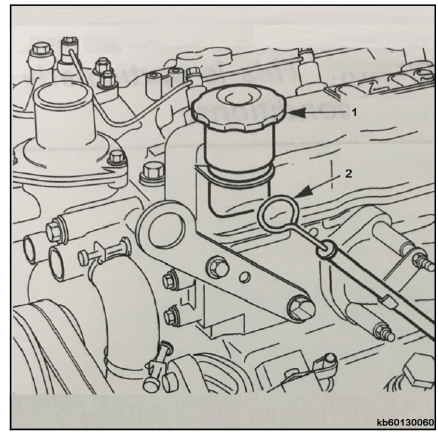
Check the engine oil level

NOTE

The oil level must be checked before starting the engine, or at least 10 or 20 minutes after the engine is shut down. When the oil level is necessary while the engine is running, stop the engine and keep it stationary 10 or 20 mins until the oil thoroughly flows down to the crankcase,

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- Ensure that the truck is parked in a horizontal position.
- Open the bonnet.
- Take out the dipstick(2)and wipe with a clean cloth.
- Fully re-insert the dipstick.
- Remove the dipstick. The oil level should be between the Max level and Min level on the dipstick.



⚠ CAUTION

Risk of engine damage!

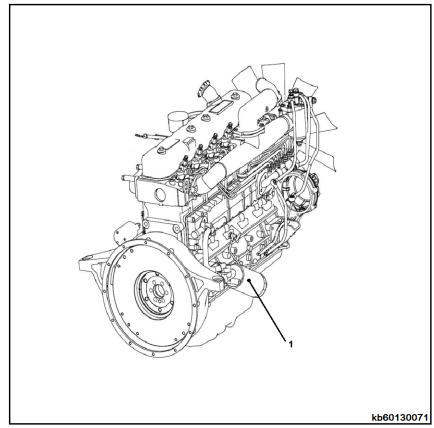
Insufficient engine lubrication can cause engine damage. An insufficient oil level or the use of engine oil with different specifications can lead to the failure of engine lubrication.

- – Only use engine oil in line with the maintenance data table.

- Add Oil to the max oil level if the oil level is below the Min level.
- Fully re-insert the dipstick.
- Close the bonnet.

Changing the engine oil filter

- Remove the oil filter(1) anti-clockwise with a filter wrench.
- Clean the mounting surface of the engine oil filter.
- Lightly coat the new filter sealing ring with a thin layer of engine oil.
- Hand-fit the new filter to the filter cover and turn clockwise until the mounting surface comes into contact with the surface of the filter cover; then tighten the filter with filter wrench.



NOTE

Please refer to the engine spare parts manual to find the part number of usable engine oil filters.

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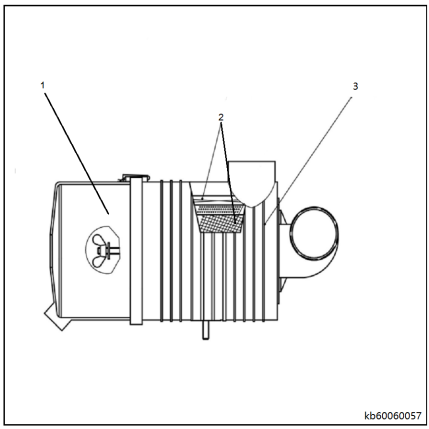
➢ Fill the engine with engine oil according to the detailed instructions in "Filling up with engine oil".

Change air filter insert

Please note that the air filter shown in the figure is for illustration purposes only.

➢ Open the bonnet.

➢ Loosen the screw nuts and remove the filter cover(1). ▷



➢ Pull out the air filter insert(2)

NOTE

Clean the inside of the air filter head cover

➢ Ensure that the filter is not damaged during installation and that it is installed in the correct direction.

➢ Install the filter insert back into the air filter housing(3).

➢ Reinstall the air filter cover.

NOTE

Make sure to replace the air filter insert every 12 months or after 6 cleanings.

Cleaning the air filter insert

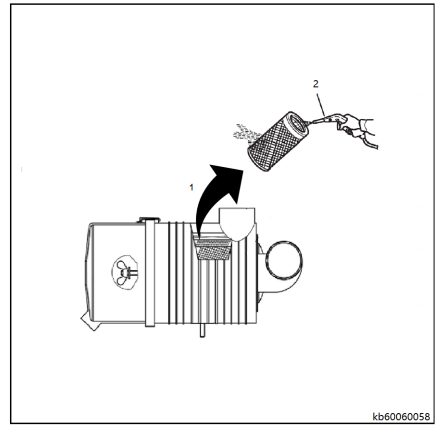
Please note that the air filter shown in the figure is for illustration purposes only.

Clogged filter inserts may have an adverse impact on engine performance. Make sure to periodically clean the air filter insert.

➢ Loosen the nut and remove the air filter head cover.

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- Pull out the air filter insert (1)
- Remove dust from the filter by blowing outward through the filter using compressed air (2). Remove dust using minimum air pressure in order to avoiding damaging the insert



⚠ CAUTION

Flying object hazard!

Wear eye protection when carrying out maintenance on the engine and using compressed air or pressurised water jets, in order to prevent dust, flying debris, compressed air or pressurised water or gas from damaging your eyes.

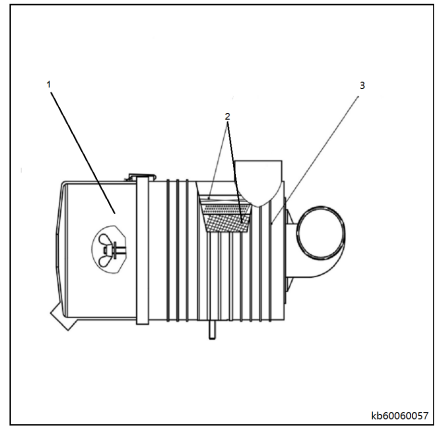
Failure to follow this instruction may result in injury.

- If the filter insert is damaged, heavily soiled or oily, replace it with a new insert.

⚠ CAUTION

The air filter insert requires more frequent cleaning when the engine is running in dusty environments.

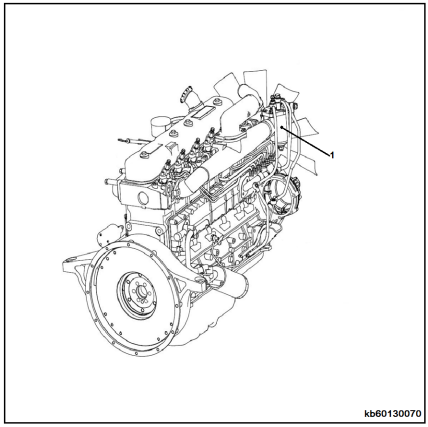
- Clean the inside of the air filter head cover (1).
- Fit the filter insert(2)in the air filter housing (3).
- Refit the air filter cover, and tighten the air filter head cover onto the air filter housing.



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Replacing the fine fuel filter

- Remove the old fuel filter element(1).
- Apply lubricating oil on the sealing port.
- Tighten the filter by hand until the sealing surface is secured with the interface.
- Continue tighten the filter by hand until the filter is securely installed.
- Conduct the leakage test.



Removal of water from the fuel

The water separator is provided to separate the water contained in the fuel.

Carry out the following steps to drain water in the fuel filter:

- Loosen the drain plug and drain the sedimented water.
- Be sure to tighten the drain plug on completion of draining.

⚠ CAUTION

Perform the Fuel system air bleeding after the water in the fuel is drained.

Fuel system air bleeding

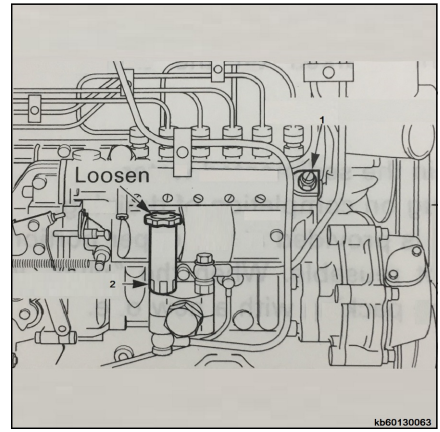
The entry of air into the fuel system will cause hard engine starting or engine malfunction.

When once the servicing such as emptying the fuel tank, draining for the water sedimenter, and the fuel filter element change is done, be sure to air bleeding.

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Air bleeding procedure

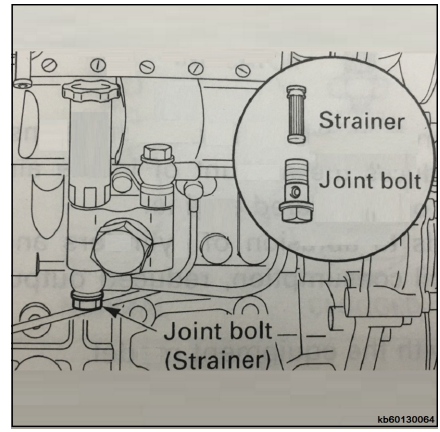
- Loosen the bleeding screws (1)on the fuel injection pump.
- Turn the feed pump knob (2)counterclockwise until the pump knob is forced up by spring.
- Depressing the pump knob will cause to drain out the air mixed fuel from the loosened bleeding screws.
- Repeat the pumping action until no bubbles are visible in the flowing fuel. No More bubble in the fuel indicates that are bleeding is completed.
- Tighten the bleeding screws and the feed pump knob on the completion of bleeding.
- Start the engine and check the fuel system for fuel leak.



Feed pump strainer cleaning

The strainer is incorporated in the feed pump inlet side joint bolt.

Clean the stainer with the compressed air and rinse it in the fuel.

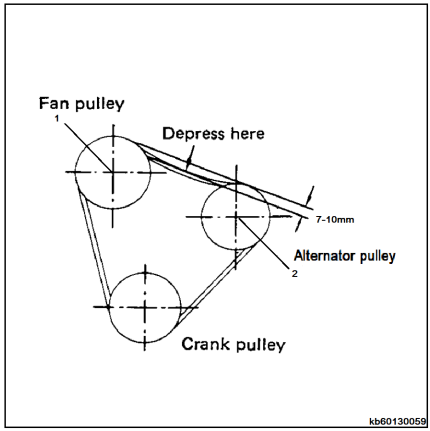


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Checking and adjusting the radiator fan V-belt

Belt tension

➢ When the belt is depressed about 7 to 10 mm(0.28 to 0.39 in) with the thumb, about 100N pressure((10 kg, 22 lb), at midway between the fan pulley (1)and alternator pulley (2), the belt tension is correct. ▷



When the belt tension is too high, it will result in alternator failure. Contrarily, loose belt will cause belt slipage which may result in damaged belt and abnormal noise.

➢ Check the belts, replace them if any damage is found.

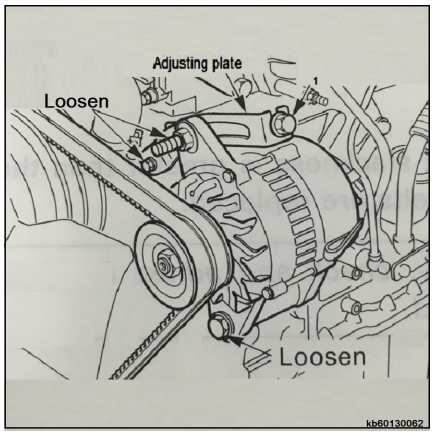
⚠ CAUTION

Replace all belts as a set even when one is not usable .Single belt of similar size must not be used a substitute for a matched belt set. Otherwise, premature belt wear would result because of uneven belt length.

Adjusting procedure

Belt tension adjustment is made by pivoting the alternator at the alternator mounting bolt.

➢ Loosen the alternator adjusting plate bolt(1) and the alternator mounting bolt. ▷



➢ Pivot the alternator at the mounting bolt toward the engine left or right hand side as required.

➢ Tighten the mounting bolt and adjusting bolt.

⚠ CAUTION

Belt tension may vary slightly after the alternator is fixed. Therefore, recheck the belt tension after tightening the bolts.

➢ After the adjustment, operate the engine about five minutes at a low idle speed and recheck the belt tension. Particularly, pay attention to this matter when installing new belts. Belt tension may vary due to the initial belt confirming.

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Fan belt change

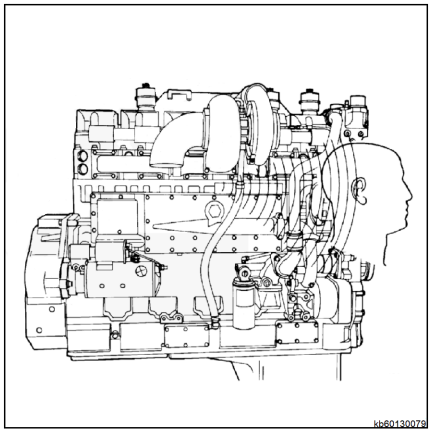
Use of fan belt with poor quality will result in premature belt wear or belt elongation leading to engine damage such as overheat. Therefore use of genuine fan belts are highly recommended.

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Cummins QSB4.5 Engine

Unusual System Noise

➢ During daily maintenance checks, listen for any unusual system noise(s) that can indicate that service is required. ▷



Changing the engine oil

⚠ WARNING

Danger of burn injury!

If it is necessary to bleed the engine oil when the oil is still hot, avoid contact with the oil and wear eye protection to avoid burn injuries.

Failure to comply with regulations may result in death or serious injury.

⚠ CAUTION

Only use designated oil. Other types of oil may affect quality of use and shorten the service life of the engine or internal parts.

Avoid contamination of the engine by dirt or dust. Before removing the oil cap, carefully clean the oil cap/ dipstick and surrounding areas.

Avoid mixing different brands of oil. Mixing different brands of oil will seriously affect lubrication.

Avoid overfilling. Overfilling may result in white smoke, overspeed or internal damage.

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⚠ CAUTION

Please pay attention to environmental protection. Dispose of used oil according to related laws and regulations. Failure to comply with laws and regulations will result in serious damage to the environment.

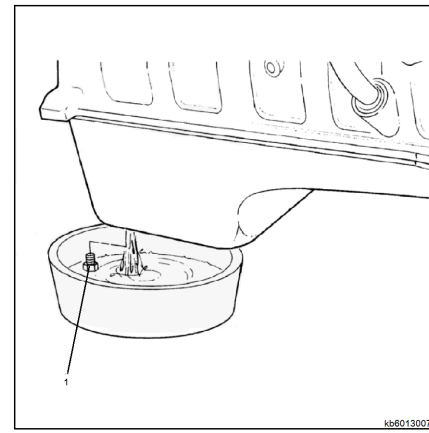
Comply with EPA guidelines or government measures for the correct handling of hazardous materials (such as oil, diesel and engine coolant).

Irresponsible handling of hazardous materials, such as dumping hazardous waste into water channels, on the ground, into groundwater or drainage ditches, is prohibited.

Drain the oil using the following steps:

- Ensure that the engine is in a horizontal position.
- Start the engine and run until it reaches operating temperature.
- Stop the engine.
- Remove the oil cap to ventilate the crankcase. This is beneficial for bleeding the oil.
- Place an oil pan under the engine to collect the used oil.
- Remove the oil drainage plug(1) and allow the oil to flow into the collection container. When the oil has been drained completely, replace the oil drainage plug
- Dispose of the used oil properly.

▷



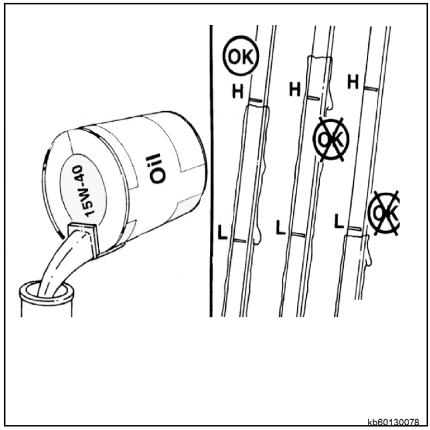
Filling up with engine oil

- Ensure that the engine is in a horizontal position.
- Remove the oil cap.

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- Add the specified amount of oil into the oil filler on the side of the upper part of the engine.
- Wait three minutes and check the oil level.
- Add more oil as necessary.
- Replace the oil cap and tighten by hand. Over-tightening may damage the cap.

▷



Check the engine oil level

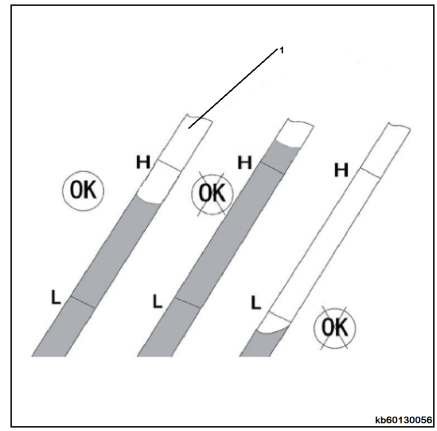
NOTE

The oil level must be checked before starting the engine, or at least 10 or 20 minutes after the engine is shut down. When the oil level is necessary while the engine is running, stop the engine and keep it stationary 10 or 20 mins until the oil thoroughly flows down to the crankcase,

- Ensure that the truck is parked in a horizontal position.
- Open the bonnet.

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- Take out the dipstick(1)and wipe with a clean cloth.
- Fully re-insert the dipstick.
- Remove the dipstick. The oil level should be between the Max level and Min level on the dipstick.



⚠ CAUTION

Risk of engine damage!

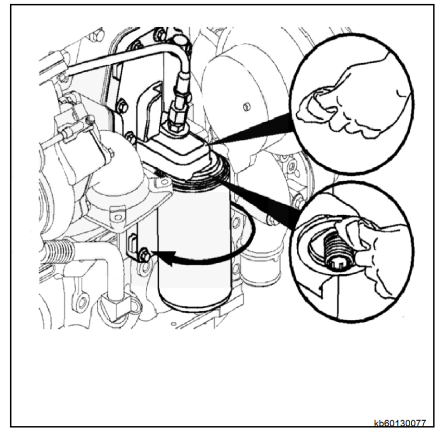
Insufficient engine lubrication can cause engine damage. An insufficient oil level or the use of engine oil with different specifications can lead to the failure of engine lubrication.

- – Only use engine oil in line with the maintenance data table.

- Add Oil to the max oil level if the oil level is below the Min level.
- Fully re-insert the dipstick.
- Close the bonnet.

Changing the engine oil filter

Remove



- Clean the area around the lubricating oil filter head.
- Use oil filter wrench, to remove the filter.
- Clean the gasket surface of the filter head.

NOTE

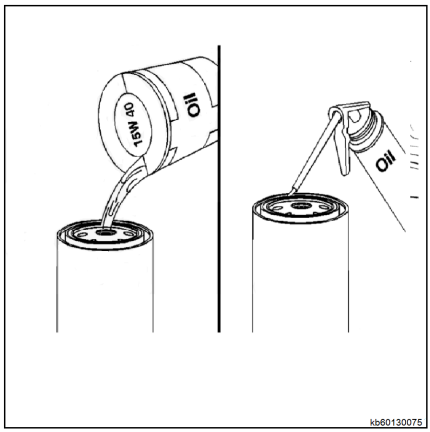
The O-ring can stick on the filter head. Be sure it is removed before installing the new filter.

Install

- Use the correct oil filter.

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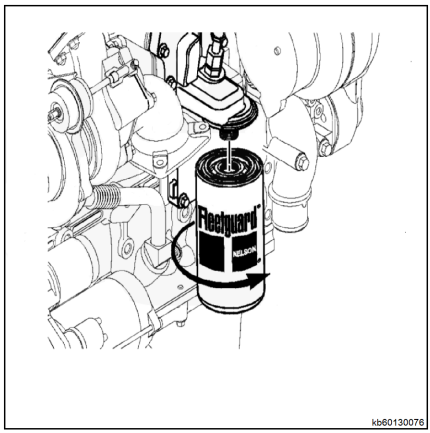
- Use clean 15W-40 oil to coat the gasket surface of the filter. ▷
- Fill the filter with clean 15W-40 oil.
- Apply a light film of lubricating oil to the gasket sealing surface before installing the filter.



NOTE

Be careful that no debris is poured into the filter. If using an oil supply with a metallic or plastic seal under the cap, be careful to peel the seal back. Puncturing the seal with a knife or sharp object can create debris in the oil container.

- Install the filter on the oil filter head. Tighten the filter until the gasket contacts the filter head surface. ▷
- Tighten 3/4 to 1 turn after the gasket makes contact with the filter head.



Change air filter insert

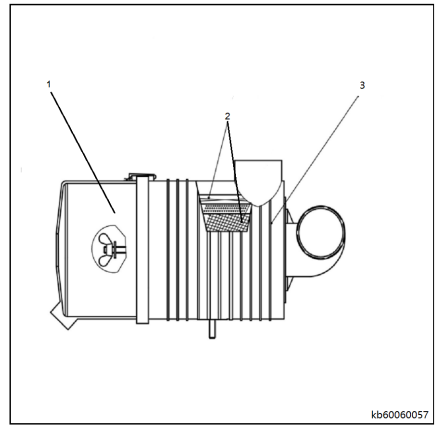
Please note that the air filter shown in the figure is for illustration purposes only.

- Open the bonnet.

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➢ Loosen the screw nuts and remove the filter cover(1).

➢ Pull out the air filter insert(2)



NOTE

Clean the inside of the air filter head cover

➢ Ensure that the filter is not damaged during installation and that it is installed in the correct direction.

➢ Install the filter insert back into the air filter housing(3).

➢ Reinstall the air filter cover.

NOTE

Make sure to replace the air filter insert every 12 months or after 6 cleanings.

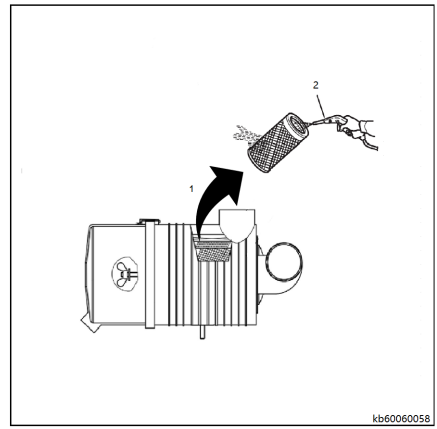
Cleaning the air filter insert

Please note that the air filter shown in the figure is for illustration purposes only.

Clogged filter inserts may have an adverse impact on engine performance. Make sure to periodically clean the air filter insert.

➢ Loosen the nut and remove the air filter head cover.

➢ Pull out the air filter insert (1)



➢ Remove dust from the filter by blowing outward through the filter using compressed air (2). Remove dust using minimum air pressure in order to avoiding damaging the insert

⚠ CAUTION

Flying object hazard!

Wear eye protection when carrying out maintenance on the engine and using compressed air or pressurised water jets, in order to prevent dust, flying debris, compressed air or pressurised water or gas from damaging your eyes.

Failure to follow this instruction may result in injury.

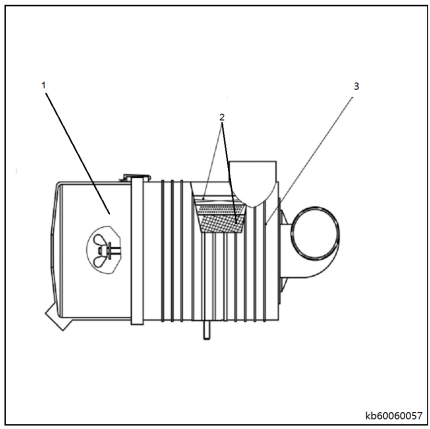
➢ If the filter insert is damaged, heavily soiled or oily, replace it with a new insert.

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⚠ CAUTION

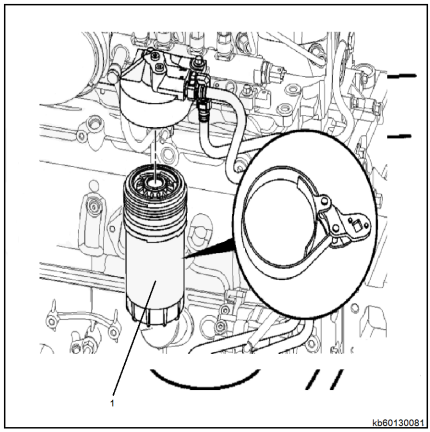
The air filter insert requires more frequent cleaning when the engine is running in dusty environments.

- Clean the inside of the air filter head cover (1).
- Fit the filter insert(2)in the air filter housing (3).
- Refit the air filter cover, and tighten the air filter head cover onto the air filter housing.



Replacing the fine fuel filter

- Remove the old fuel filter element(1).



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- Lubricate the fuel filter o-ring with clean lubricating oil.
- Install the filter on the filter head. Tighten the filter until the gasket contacts the filter head surface.
- Tighten the fuel filter an additional 3/4 turn after contact or follow the filter manufacturer's instructions.



Removal of water from the fuel

⚠ WARNING

Drain the water-fuel separator into a container and dispose of in accordance with local environmental regulations.

Cummins Inc. requires a fuel-water separator or fuel filter be installed in the fuel supply system。

Drain the water and sediment from the separator daily.

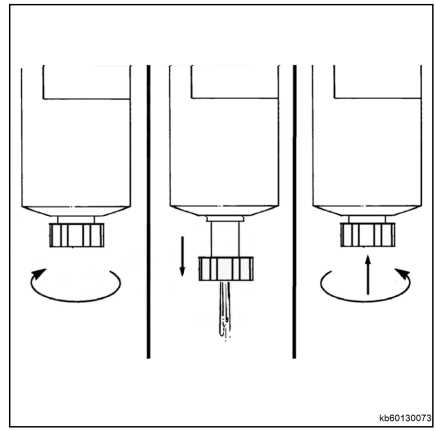
Spin-on Type

- Shut off the engine.
- Use your hand to open the drain valve. Turn the valve counterclockwise approximately 3½ turns until the valve drops down 25.4mm [1 in] and draining occurs.
- Drain the filter sump until clear fuel is visible.

⚠ CAUTION

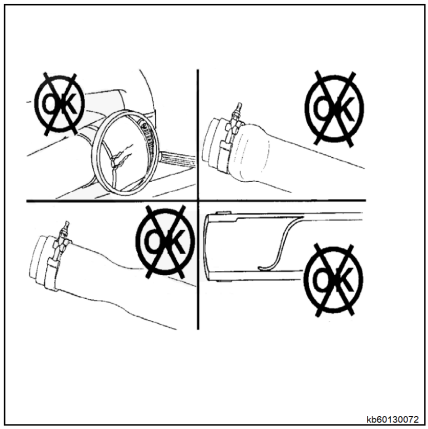
When closing the drain valve, do not overtighten the valve. Overtightening can damage the threads.

- To close the valve, lift the valve and turn clockwise until it is hand-tight.



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Inspect the intake piping



- Inspect the intake piping daily for wear points and damage to piping, loose clamps, and punctures that can damage the engine.
- Replace damaged pipes and tighten loose clamps, as necessary, to prevent the air system from leaking.

Torque Value: 8 n•m [71 in-lb]

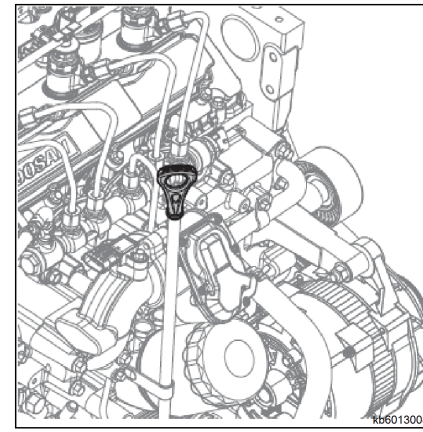
- Check for corrosion under the clamps and hoses of the intake system piping. Corrosion can allow corrosive products and dirt to enter the intake system. Disassemble and clean, as required.

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Doosan D34 Engine

Checking the Engine Oil

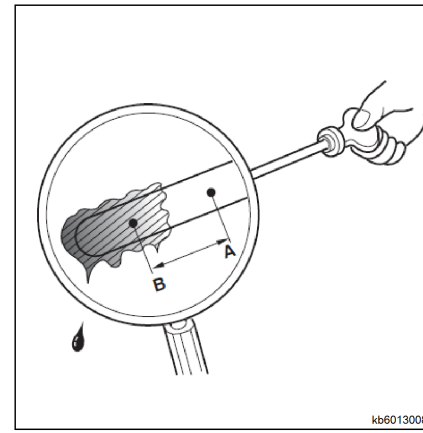
- Move to level ground so that the engine is horizontal.
- After starting the engine, stop the engine when the engine reaches the normal temperature.
- Wait 5 to 10 minutes.
- Pull the oil level gauge upwards to remove it.
- Check the position of the oil level gauge.
- The oil level gauge is next to the oil filter on the side of the engine.
- Insert your finger into the loop on the oil level gauge and pull it.
- Use a clean cloth to wipe the part of the oil level gauge with the reference line.
- Insert the oil level gauge again.



⚠ CAUTION

Wiping the engine oil gauge with a dirty cloth causes foreign matter to enter the engine and may lead to engine faults.

- Remove the oil level gauge again and check the level and condition of the oil.
- Check whether there is engine oil smeared between the upper limit (A) and lower limit (B) on the oil level gauge.
- If the engine oil is below the lower limit (B) or there is none on the gauge, the engine oil must be added.
- Check the condition of the engine oil. If contaminated, the engine oil must be replaced.
-



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Replacing Engine Oil

Draining the engine oil

⚠ DANGER

If engine oil makes repeated contact with skin over a long period of time, the skin can become contracted and dry, causing inflammation.

Do not repeatedly make contact with used engine oil over a long period of time.

Wear work clothes and gloves.

If you spill engine oil on your skin, quickly use water and soap or hand cleaner to wipe it off completely.

Do not use gasoline, fuel, thinner or solvents to clean your skin.

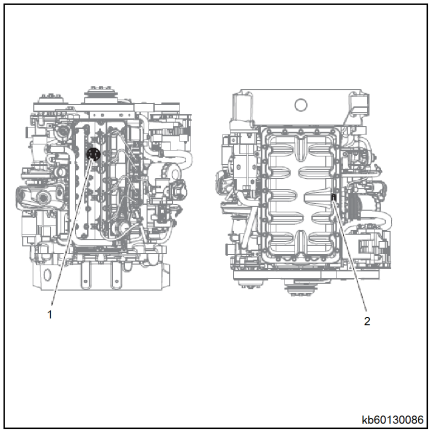
After cleaning off the oil, apply a protective skin cream.

Do not keep oil-stained gloves or rags in your pockets, etc.

ENVIRONMENT NOTE

Follow the regulations of the public institutions in your area when disposing of used oil. Dumping engine oil on the ground, in sewers, drains, rivers and seas, etc. can cause severe environmental contamination. Disposing of engine oil incorrectly without complying with treatment regulations can be punished as a violation of treatment regulations.

- Remove the oil filler cap (1) to ventilate the crankcase. This is beneficial for bleeding the oil. ▷
- Place a container for draining the engine oil below the engine.
- Remove the drain plug (2) and drain the engine oil.



Tightening Torque:

Component	Tightening Torque
Drain plug	3 kgf·m

- Dispose of the used oil properly.

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Filling up with engine oil

⚠ CAUTION

When removing the oil filler cap for work, be careful not to allow any foreign matter to enter the engine.

➢ Remove the oil filler cap on the top of the engine.

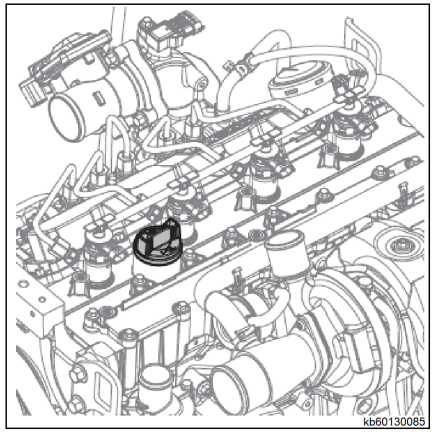
➢ Add the oil using genuine oil as suggested in supply table.

➢ Wait around one or two minutes and then check the engine oil.

➢ Check whether there is engine oil smeared between the upper limit and lower limit on the oil level gauge.

➢ Repeat until the engine oil reaches a suitable level.

▷



⚠ CAUTION

When adding engine oil, be careful not to allow any foreign matter to enter the engine.

⚠ CAUTION

Overfilling engine oil past the upper limit on the oil level gauge can cause faults in the engine. If the engine oil has been overfilled past the upper limit, the engine oil must be drained until the engine oil is between the upper and lower limits on the oil level gauge.

⚠ CAUTION

Do not use unspecified engine oil additives.

➢ Install the oil filler cap after adding the engine oil.

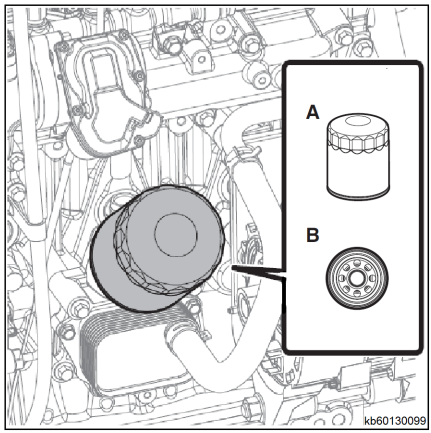
➢ Perform a final inspection after completing the work.

- Check for any engine oil leaks after starting the engine.
- After starting the engine, stop the engine when the engine reaches the normal temperature.
- Wait 5 to 10 minutes.
- Use the oil level gauge to check the engine oil level.

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Replacing the engine oil filter

➢ Use a filter wrench to remove the oil filter (A). ▷



⚠ CAUTION

When removing the oil filter, oil inside the filter may leak out of the filter so use a cloth to avoid contaminating nearby parts. After replacing the oil filter, be sure to completely wipe off any oil spilled nearby.

➢ Wipe the mounting surface of the oil filter thoroughly.

➢ Apply a thin layer of engine oil to the rubber packing (B) in the new oil filter (A).

➢ Temporarily mount the oil filter by turning it by hand.

➢ Use a filter wrench to tighten the oil filter to a tightening torque of 16 ~ 20 N·m.

Clean the air filter insert

Clogged filter inserts may have an adverse impact on engine performance. Make sure to periodically clean the air filter insert.

➢ Loosen the nut (1) anti-clockwise and remove the air filter head cover(2). ▷



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➢ Remove the screw(3) with a spanner. ▷



kb60130105

➢ Pull out the outer air filter(4). ▷

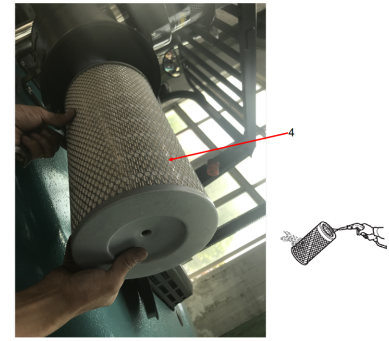
➢ Remove dust from the filter by blowing outward through the outer filter using compressed air. Remove dust using minimum air pressure in order to avoiding damaging the insert.

⚠ CAUTION

Flying object hazard!

Wear eye protection when carrying out maintenance on the engine and using compressed air or pressurised water jets, in order to prevent dust, flying debris, compressed air or pressurised water or gas from damaging your eyes.

Failure to follow this instruction may result in injury.



kb60130104

➢ Clean the air filter element every 200 hours.

➢ If the filter insert is damaged, heavily soiled or oily, replace it with a new insert.

⚠ CAUTION

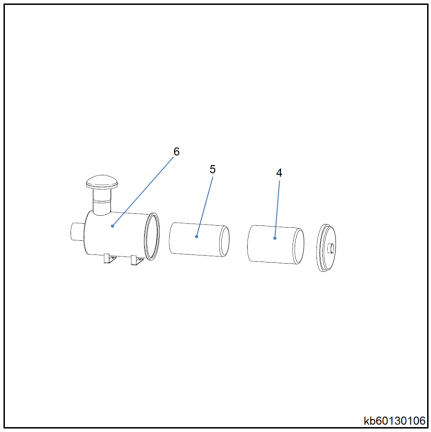
The air filter requires more frequent cleaning when the engine is running in dusty environments.

➢ Clean the inside of the air filter head cover (2).

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➢ Fit the outer air filter(4)in the air filter housing(6).

➢ Refit the air filter cover, and tighten the air filter head cover onto the air filter housing.



Change the air filter

➢ Loosen the nut (1) anti-clockwise and remove the air filter head cover(2).

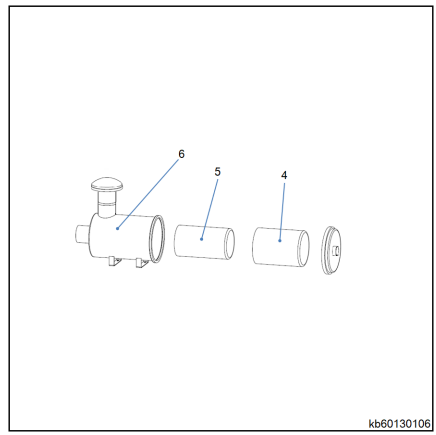


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➢ Remove the nut(3) with a spanner. ▷



➢ Pull out the outer air filter(4) and inner filter insert (5) in sequence. ▷



NOTE

Thoroughly clean the inside of the filter casing. Do not use compressed air to clean the filter casing.

➢ Ensure that the filter is not damaged during installation and that it is installed in the correct direction.

➢ Install the outer air filter (4) and inner air filter insert (5) back into the air filter housing (6).

➢ Reinstall the air filter head cover.

➢ Disconnect the inlet hose form the air inlet.

➢ When the engine is running, cover the intake opening (e.g. using cardboard or a metal plate). The air filter blockage warning light in the display should light up. To prevent damage, do not continue to block the intake opening after the warning light illuminates.

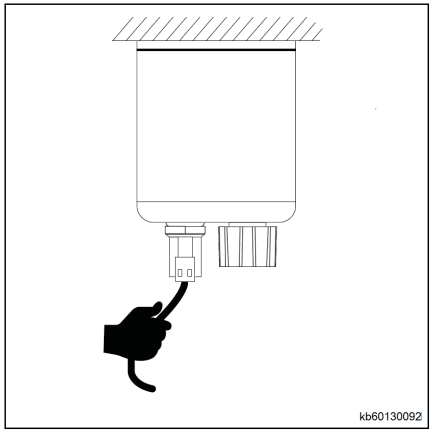
NOTE

Make sure to replace the air filter insert every 1000 hours or after 5 cleanings.

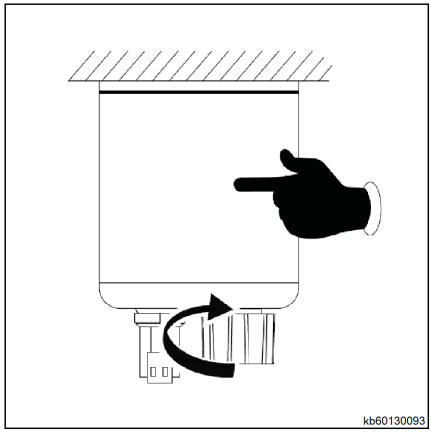
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Replacing the Fuel Filter

- Keep the area around the fuel filter clear to prevent interference.
- Remove the water in fuel sensor connector from the fuel filter. ▷



- Turn the fuel filter counterclockwise to loosen it. ▷
- Replace with a new fuel filter.



⚠ CAUTION

We recommend using the recommended genuine fuel filter. Using imitation or recycled parts may cause severe engine faults and damage.

⚠ CAUTION

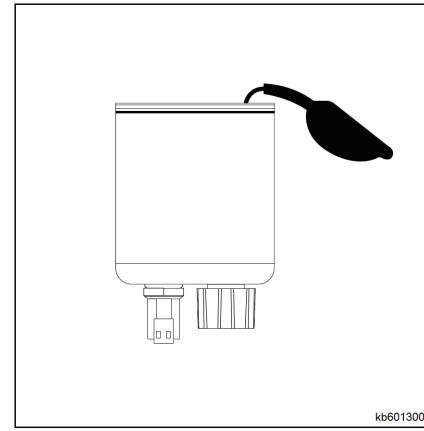
Do not reuse the remaining fuel which was used in the previous fuel filter or fuel in the tank in the new fuel filter.

⚠ CAUTION

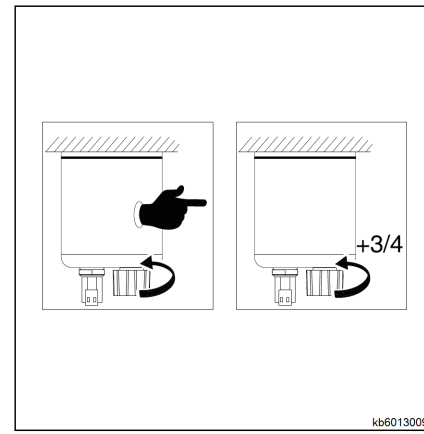
New fuel filters must be assembled without any fuel in them.

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- Apply oil to the gasket.
- Turn the fuel filter clockwise until the fuel filter gasket makes contact with the fuel filter cap.



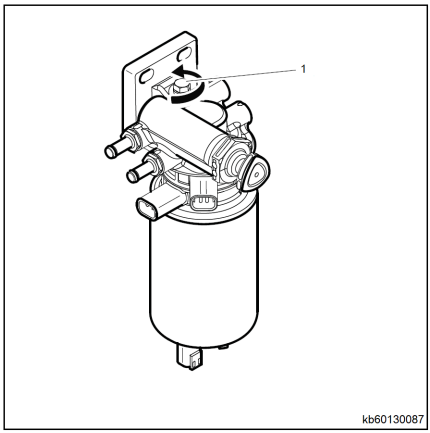
- Turn the fuel filter 3/4 to tighten it.
- Connect the water in fuel sensor connector to the fuel filter.
- Keep the area around the fuel filter clean and free of foreign matter such as fuel.
- Bleed the air from the fuel supply line.



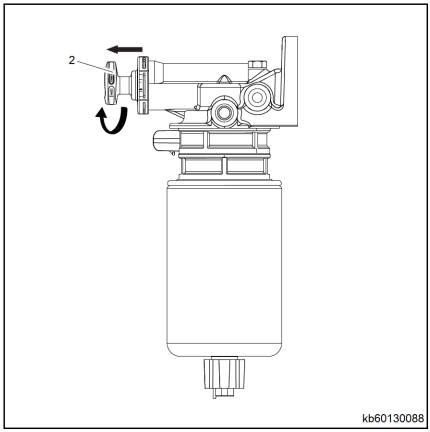
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Bleeding Air From the Fuel Delivery Line

- Turn the air bleed valve (1) on the top of the fuel filter counterclockwise to loosen it. ▷



- Turn the pump handle (2) counterclockwise to loosen it. ▷
- Pump the pump handle until fuel comes out of the air bleed valve.
- Fix the pump handle in place.
- Turn the air bleed valve (1) clockwise to tighten it.



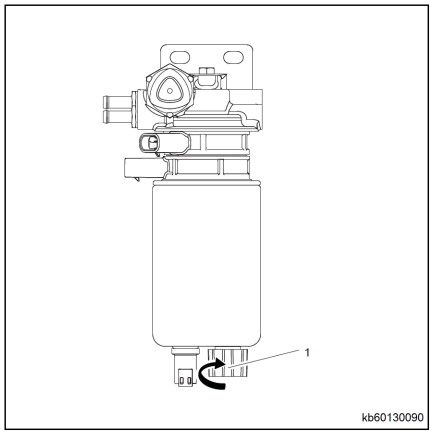
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Draining Water From the Fuel Filter

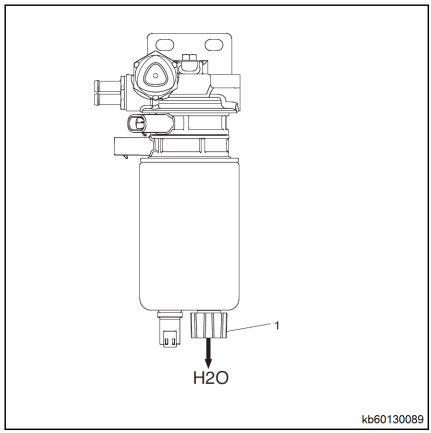
➢ Turn the drain valve (1) at the bottom of the fuel filter to loosen it. ▷

⚠ CAUTION

Do not use a tool to loosen the drain valve. Otherwise, the drain valve may be damaged.

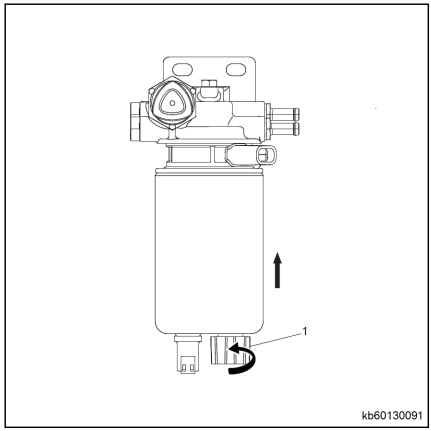


➢ Drain the water in the fuel filter with the drain valve (1) for around 10 seconds. ▷



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➢ Turn the drain valve at the bottom of the fuel filter (1) to tighten it.



Checking the belt tension

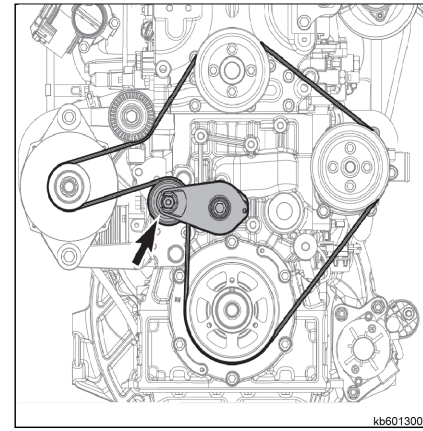
The belt is equipped with an auto tensioner which automatically adjusts the belt tension so there is no need for extra adjustment of the tension.

During daily inspections, be sure to inspect whether the pointer on the auto tensioner is indicating that it is time for a replacement, as well as whether there is any damage to the belt due to external factors.

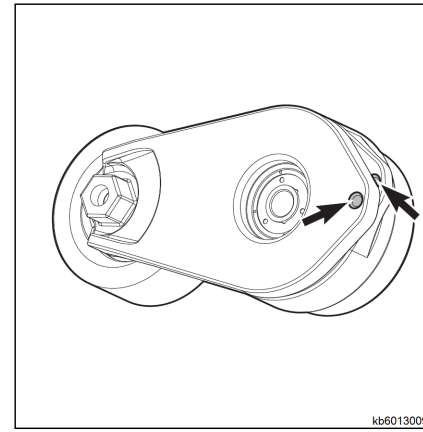
Replace the belt set in the event that the pointer on the auto tensioner indicates that it is time for a replacement, or cases where damage to the belt from external factors has been confirmed and there are concerns of severe damage occurring.

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➢ Inspect the Micro V-belt for cracks, oil, overheating and wear. ▷



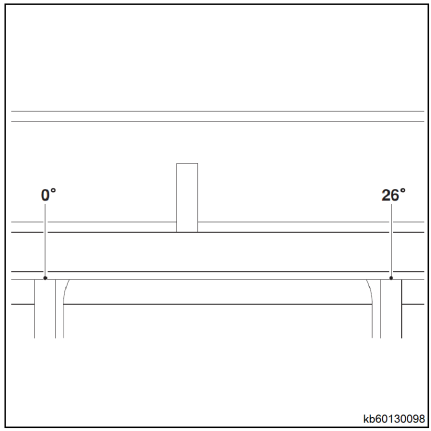
➢ The PIN HOLE shown by the arrow is the "pointer" and the belt replacement period is indicated when this "pointer" enters the horizontal range. ▷



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➢ The minimum/maximum range indication is a reference value; the belt must be inspected according to its maintenance schedule.

▷



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Cooling system

Checking and cleaning the cooling fins

⚠ CAUTION

Flying object hazard!

Wear eye protection when carrying out maintenance on the engine and using compressed air or pressurised water jets, in order to prevent dust, flying debris, compressed air or pressurised water or gas from damaging your eyes.

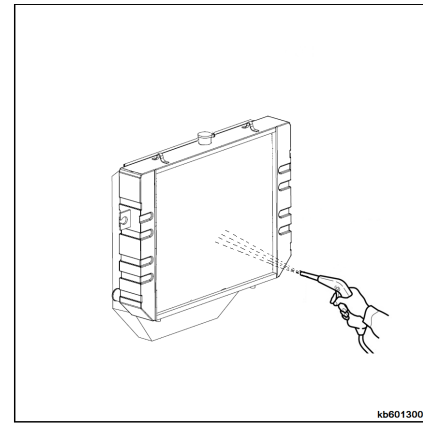
Failure to follow this instruction may result in injury.

Dust and dirt on the cooling fins of the cooling water tank will impair the cooling function, leading to overheating. Please formulate rules for daily checking and periodic cleaning of the cooling fins.

NOTE

Please note that the air filter shown in the figure is for illustration purposes only.

- Carefully remove the radiator from the counterweight assembly. Use or compressed air to blow dust and dirt from the radiator and cooling fins.
- If the cooling fins are very dirty, wipe with detergent, clean thoroughly and rinse with clean water.



NOTE

Never use pressurised water jets or compressed air at greater than 28 psi or wire brushes to clean the cooling fins, as they are easily damaged.

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Changing the coolant

⚠ DANGER

Risk of burn injury!

When the engine is at working temperature, please do not open the radiator water tank cover. Steam and hot engine coolant will spray out and cause burn injuries. Please only open the radiator water tank cover after the engine has cooled down. After checking the radiator water tank, tighten the radiator water tank cover until secure. If the radiator water tank cover is loose, steam may spray out when the engine is running.

Check the engine coolant level via the compensation box.

Failure to comply with the above operating guidance may result in death or serious injury.

⚠ CAUTION

Risk of freezing injury!

When handling long-life or premium grade coolant, please wear eye protection and rubber gloves. If coolant accidentally makes contact with eyes or skin, please rinse with clean water.

Failure to comply with the above operating guidance may result in minor injuries.

ENVIRONMENT NOTE

Please pay attention to environmental protection. Please comply with these procedures when handling hazardous waste. Failure to comply with these procedures may result in serious damage to the environment.

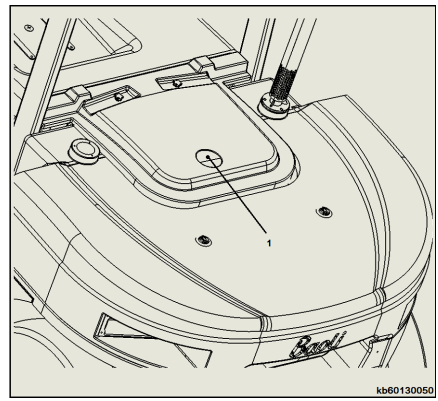
- *Handle hazardous waste such as engine oil, diesel or engine coolant appropriately according to guidelines from the Environmental Protection Agency or other government organizations. Please contact your local authorities or recycling organization.*
- *Irresponsible handling of hazardous materials, such as dumping hazardous waste into water channels, on the ground, or into groundwater or drainage ditches, is prohibited.*

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NOTE

Engine coolant contaminated with rust or scale will be less effective. Coolant quality will deteriorate over time and even appropriately-prepared premium grade engine coolant will become contaminated. Drain the coolant, clean the coolant tank and add new coolant when necessary. Please refer to the service instructions of different engines for correct time interval.

- Remove the cap(1).
- Remove the drain plug from under the engine cylinder block and the radiator water tank, drain the coolant.
- After draining the engine coolant, clean the radiator water tank cover and engine cylinder block to remove any rust, scale and dirt. Reinstall and tighten the drain plug.
- Fill the radiator water tank with coolant.



Fill the radiator water tank with coolant

Fill the radiator water tank with coolant according to the following steps. These procedures are suitable for filling radiator water tanks for the first time or refilling after cleaning. Please note, the following steps are based on the example of a typical compensation box.

- Check to ensure that the engine cylinder block drain plug and the radiator water tank drain plug have been installed and tightened.
- Open the radiator cover cap (1).
- Slowly pour the engine coolant into radiator water tank until the coolant reaches the same level as the edge of the filling inlet. Check that there are no bubbles when adding the coolant.
- Reinstall the radiator cap (1).
- Open the compensation box cover and fill coolant until it reaches the lower marking. Reinstall the cover.

NOTE

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- Check the hose connecting the compensation box to the radiator. Ensure that the fasteners are connected and are not torn or damaged. If the hose is damaged, engine coolant will leak our and will not flow into the compensation box.
- Start the engine and run until it reaches operating temperature. Check the engine coolant level in the compensation box. When the engine is running and the engine coolant is at normal temperature, the coolant level should be at the level of the upper marking. If the coolant level is not at the upper marking, add more coolant to the compensation box until the coolant level reaches the upper marking.

Checking the coolant level

Frequently check the engine coolant level by observing the compensation box. Fill the compensation box with coolant when necessary.

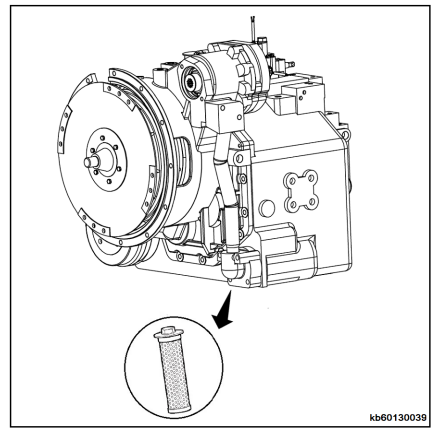
NOTE

Only use coolant with the recommended specifications.

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Transmission system

Changing the hydraulic transmission oil filter ▷



ENVIRONMENT NOTE

Please follow the instructions for disposal of fluids and lubricants.

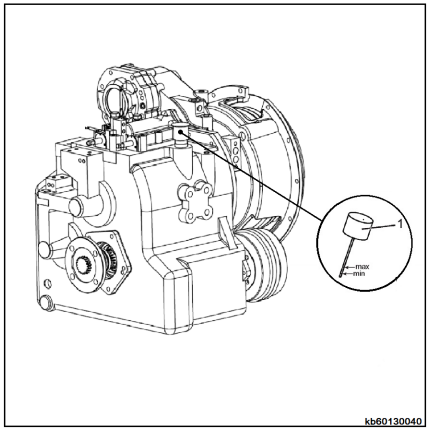
NOTE

Place a container under the crude oil filter to collect oil flowing out of the transmission.

- Remove the floorplate.
- Unscrew the fastening screws and washers on the the crude oil filter.
- Slowly pull out the crude oil filter so that the oil flows into the container.
- Unscrew the crude oil filter from the oil filter seat.
- Unscrew the fastening nut on the crude oil filter; then remove the filter insert.
- Replace it with a new crude oil filter insert. Fit the filter insert followed by the bottom cover onto the filter spindle; then tighten the nut.
- Refit the crude oil filter to the gearbox using the fastening screws.
- Refit the floorplate.

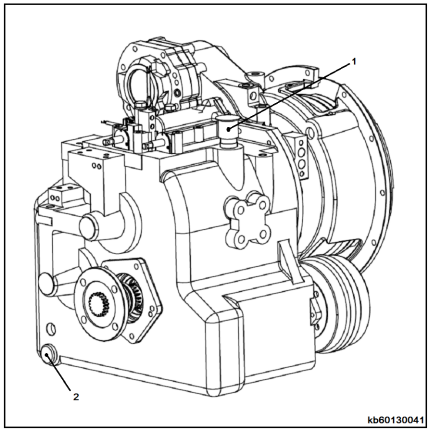
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Checking the oil level of the hydraulic transmission



- Ensure the forklift truck is stopped on a level surface.
- Remove the bottom plate.
- Run the truck in neutral for 3-5 minutes.
- Take out the dipstick(1)and wipe with a clean cloth.
- Fully reinsert the dipstick.
- Take out the dipstick. The oil level should be between the upper and lower marks on the dipstick scale. If necessary, add transmission oil via the oil inlet.
- Fully reinsert the dipstick.

Changing the oil of the hydraulic transmission



ENVIRONMENT NOTE

Observe precautions for handling fuel and lubricants

- Place a container under the right side of the truck chassis.
- Remove the floor plate.
- Unscrew the oil drain plug (2).
- Fully drain the oil of the gearbox transmission gear.
- Wipe the drain plug area clean.
- Refit the drain plug and washer.

ENVIRONMENT NOTE

Properly dispose of the waste hydraulic oil.

- Unscrew the filler cap (1).
- Add transmission oil through a filler pipe.
- Use the dipstick to check the transmission oil level, which should reach the upper mark on the dipstick.
- Reinstall the floor plate.

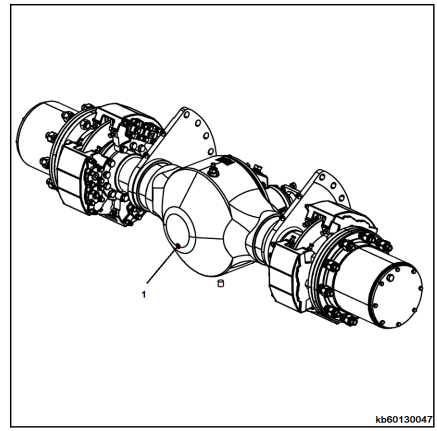
https://truckmanualshub.com/

➢ Start the engine and run it in neutral for a while. After the engine stops running, re-check the oil level, which should be between the upper and lower marks on the dipstick. Also check the leak resistance of the oil tank.

NOTE

The filler cap also functions as a vent cap.

Checking the drive axle gearbox oil ▷



➢ Unscrew the oil plug at the oil level aperture (1).

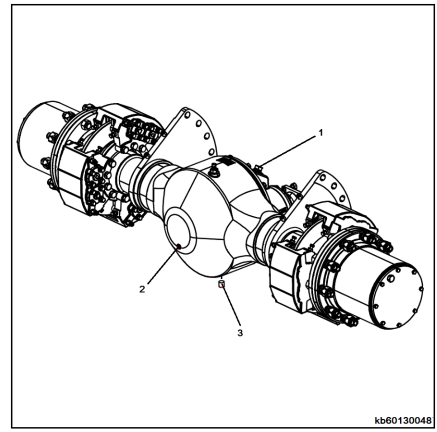
➢ Check the gear shaft oil level to ensure it is near the observation aperture position(around 15mm).

➢ If necessary, fill the gearbox with gear oil until oil flows out of the oil level aperture.

NOTE

Please refer to the chapter on replacing the drive axle gearbox oil for steps to take when adding gear oil.

Changing the drive axle gearbox oil ▷



Emptying the gear oil

➢ Ensure the forklift truck is stopped on a level surface.

➢ Unscrew the plug of the oil filler port(1) so that the gear oil is easier to discharge.

➢ Place a container under the drive axle gearbox to collect the waste transmission oil.

➢ Remove the plug(3) and drain the gear oil. After all of the gear oil has been discharged from the gearbox, refit the plug.

ENVIRONMENT NOTE

Appropriately dispose of used gear oil.

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Filling gear oil

➢ Unscrew the plugs of the oil filler port(1) and oil level hole(2).

➢ Fill the gearbox with new gear oil, until oil flows out of the oil level hole..

NOTE

- *The high viscosity of gear oil means that it takes time for new oil to fill the gaps in the gearing. It is therefore preferable to use a pressurised filling tool; otherwise the filling process will take a relatively long time. Even when oil flows out of the filler port, this does not mean that the oil level is full; wait 5-8 minutes until the gear oil fills the gaps in the gearing.*
- *Use gear oil in accordance with the referred instructions only.*

➢ Refit the plugs of the filler port and oil level hole.

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Steering axle and wheels

Cleaning and lubricating the steering axle ▷



➢ Clean the steering axle thoroughly with water or a cold water detergent.

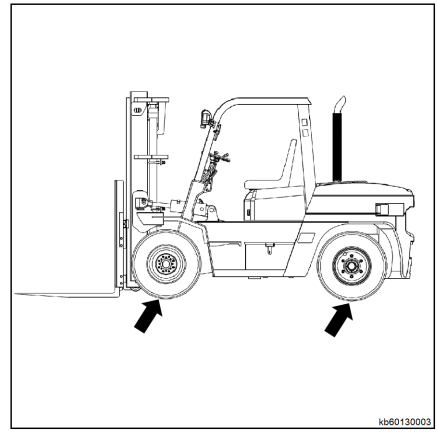
NOTE

Lubricate with grease.

➢ Lubricate the connecting rods and steering knuckles by adding grease via the grease nipples(indicated by the arrows).

➢ Lubricate using a grease gun until fresh grease comes out of the bearings.

Checking the tyres for damage and foreign matter ▷



➢ Secure the forklift truck to prevent the wheels from turning (apply the parking brake).

➢ Place wedges under the tyres that have not yet been raised.

➢ Raise truck with jack until wheels are off the ground.

➢ Prop up with square timber.

➢ Check that the wheels are able to turn freely and remove all obstructions.

➢ Change abraded or damaged tyres.

Check the tyre inflation pressure

NOTE

Low pneumatic pressure will reduce the service life of the tyres and the stability of the forklift.

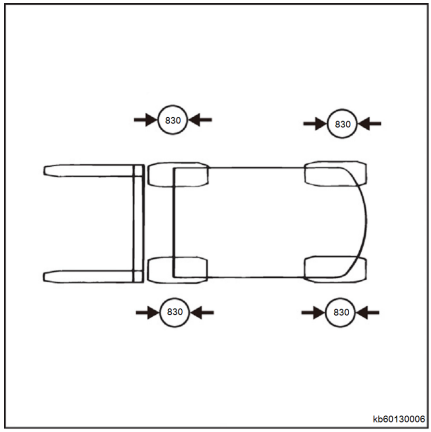
➢ Check the specific inflation pressures of the tyres.

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➢ When necessary, inflate or deflate using the inflation valve.

➢ Inflate or deflate the tyres to the specified air pressure.

Capacity	5T-7T
Front tyres	8.25-15-14PR
Correct tyre pressure	830kPa
Rear tyres	8.25-15-14PR
Correct tyre pressure	830kPa



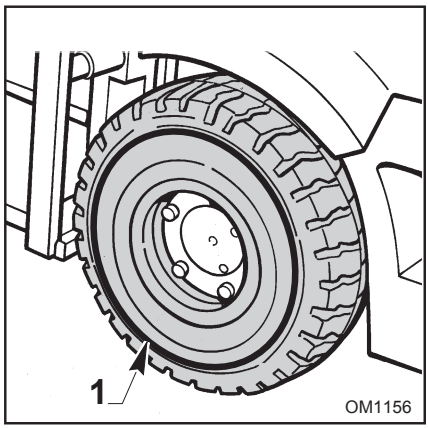
NOTE

Due to different manufacturers' standards, correct tyre pressure shall refer to different configurations and requirements of tyres.

Checking the condition of the tyres

Superelastic tyres

Superelastic tyres must be changed before the profile reaches the maximum wear allowed. The maximum wear of the tyre manufacturer is indicated by a line on the side (1) along the circumference of the tyre.



DANGER

If the forklift truck is used on wet or slippery surfaces, replace the tyres before the thickness of the tread drops below 1 mm.

Tighten the tyre nuts

➢ Check the specific torque for the tyre hook-up:

Front tyres(double front tyres): Column nut : 1844 ±5% Nm ; Ball nut: 525 ±5% Nm

Rear tyres: Ball nut : 525 ±5% Nm

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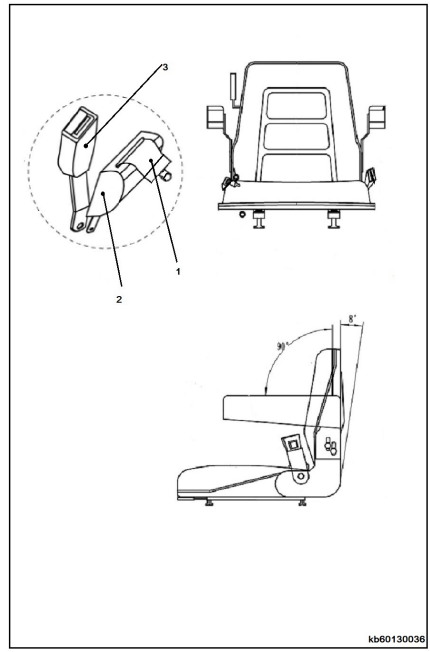
Chassis frame

Check the seat belt for condition and correct operation

NOTE

For safety, regular checks should be performed on seat belt equipment (once a month). Under extreme operating conditions, checks should be performed on seat belt equipment every day before commencing operation.

- Press the button and pull the seat belt (1) out from the retractor(2)completely. Check the seat belt for damage.
- Check that the seat belt socket(3) is working properly and that the seat belt is able to retract smoothly.



CAUTION

Do not use any forklift truck with a faulty seat belt. If there is a problem with the seat belt, please contact your authorised Baoli dealer as soon as possible for a replacement.

CAUTION

To avoid back injuries, the seat should be adjusted to the weight of the driver.

To avoid injury, please do not stack objects in the reclining range of the seat.

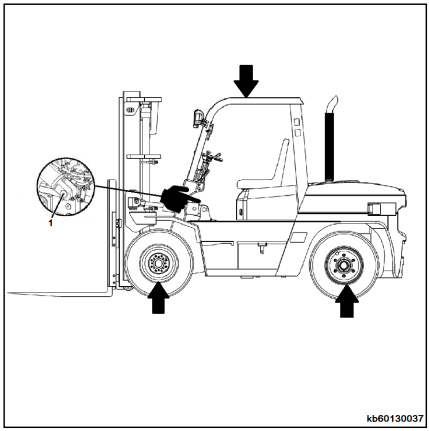
To avoid accidents, check all adjustments before commencing operation.

The seat belt should be fastened before the forklift truck is used. The seat belt must be replaced after an accident has occurred. If the seat belt is tangled around the driver's seat, the seat and seat stability must be checked by a specialist.

The tightness of corresponding screws and bolts must be checked periodically. If the seat rocks slightly, it may be indicative of a loose screw or other fault. If a problem with the functioning of the seat is discovered (such as with the elasticity of the cushions), an authorised Baoli dealer should be contacted so the fault can be resolved. Failure to comply with related safety regulations puts your health in danger and increases the probability of an accident occurring.

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Checking the fastening of the engine bracket, overhead guard, tilt cylinder, steering axle and wheel drive ▷



- Check the fastening and wear condition of the engine bracket elements, tilt cylinder, counterweight, wheel drive, overhead guard and steering axle.
- Tighten all loose screws, bolts and nuts.
- Replace damaged parts.
- Touch up the paint work where necessary.

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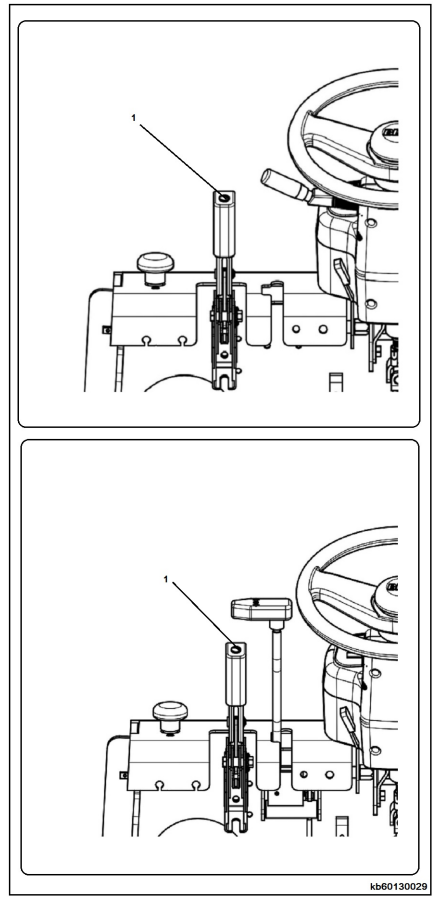
Control system

Checking the operation of the parking brake ▷

- Pull down the parking brake lever(1)); the truck should remain stationary.
- Release the parking brake lever, which should return to its initial position.
- Turn off the engine and pull down the parking brake lever(1); the truck should remain stationary.

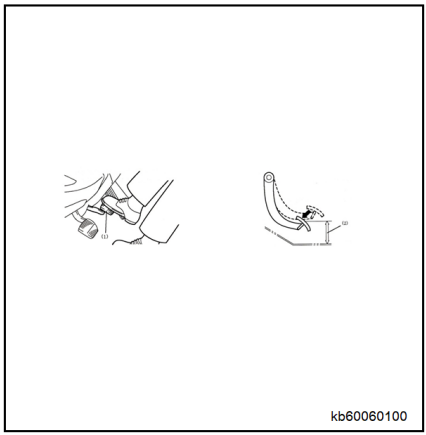
NOTE

If the parking brake is defective, please contact an authorised Baoli dealer.



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Checking that the driving brake is operating normally ▷



- Check for abnormalities in the depression and return of the(1)driving brake pedal.
- When the driving brake pedal is fully depressed, the forklift truck should remain still and not move.

NOTE

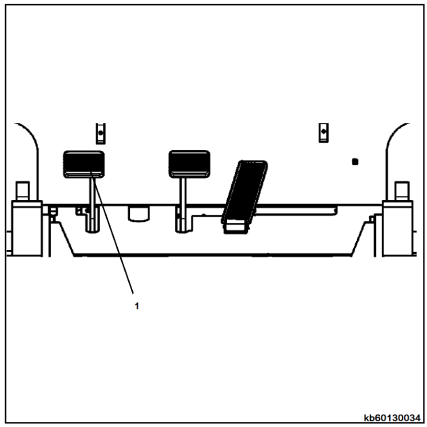
While fully depressing the brake pedal, the clearance between the floor and the pedal shall be ≥ 110mm

- Press the brake pedal until felt resistance.

NOTE

Check the free movement: around 5mm -8mm.

Checking that the inching controls are operating normally ▷



- Check for abnormalities in the depression and return of the inching control pedal(3).
- Check the free movement of the inching control pedal by pushing it with your hand until resistance is felt.

Checking the driving brake and adjusting if necessary

NOTE

Please contact an authorized Baoli dealer for more information about this service.

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Electrics

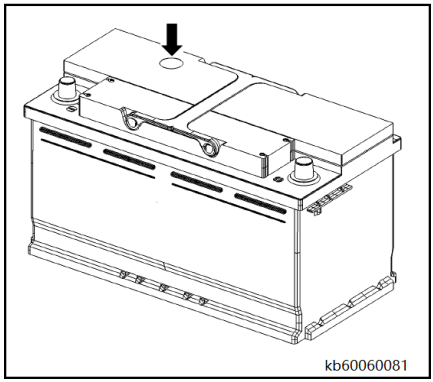
Checking battery charging status

Maintenance-free battery:

NOTE

Before checking, actuate the parking brake and switch off the key switch.

- Open the engine cover.
- Check that the battery is properly secured to the truck, and that its outer casing is not dented or damaged.
- Check that the battery cable connection is reliable.
- Check that the vent holes are free from grime.
- If the battery is equipped with a charge indicator (magic eye), you can check the charge state and quality of the battery by means of the magic eye on top of the battery. For an explanation of indicator states, see the markings on the battery. For example: green indicates good, black indicates charging required and white indicates that the battery is damaged and needs replacing ▷
- Refit the bonnet.



NOTE

If the truck is not used for a long time, check the battery on a monthly basis and recharge as required.

⚠ CAUTION

If the battery must be removed from the forklift, first disconnect the negative terminal.

⚠ WARNING

Batteries should be maintained and used in wellventilated areas away from open flames.

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Check the control box

If a lamp doesn't come on or an electrical device does not function, the corresponding fuse may be burnt. Check the fuses accordingly.

Check and replace the fuses as the following schedule:

- Set the ignition switch to the OFF position.
- Remove the fuse box cover and check the fuse.
- If the fuse is burnt, replace it with a new fuse.

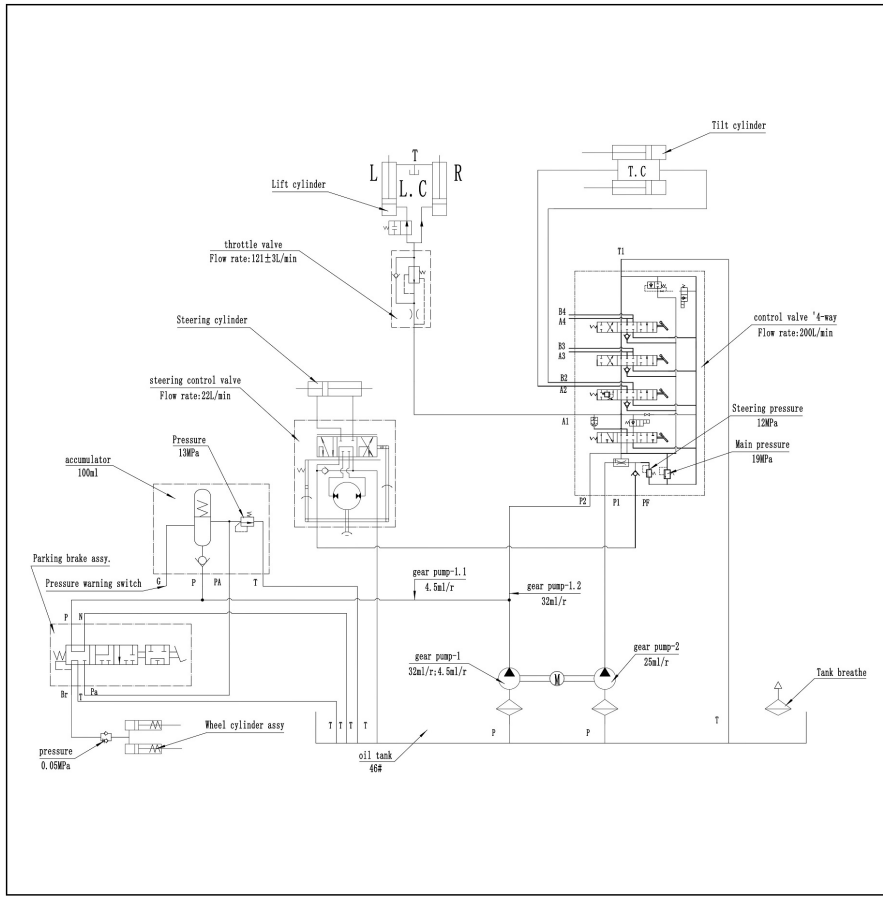
⚠ CAUTION

Use the fuse of the same specification as the original one.

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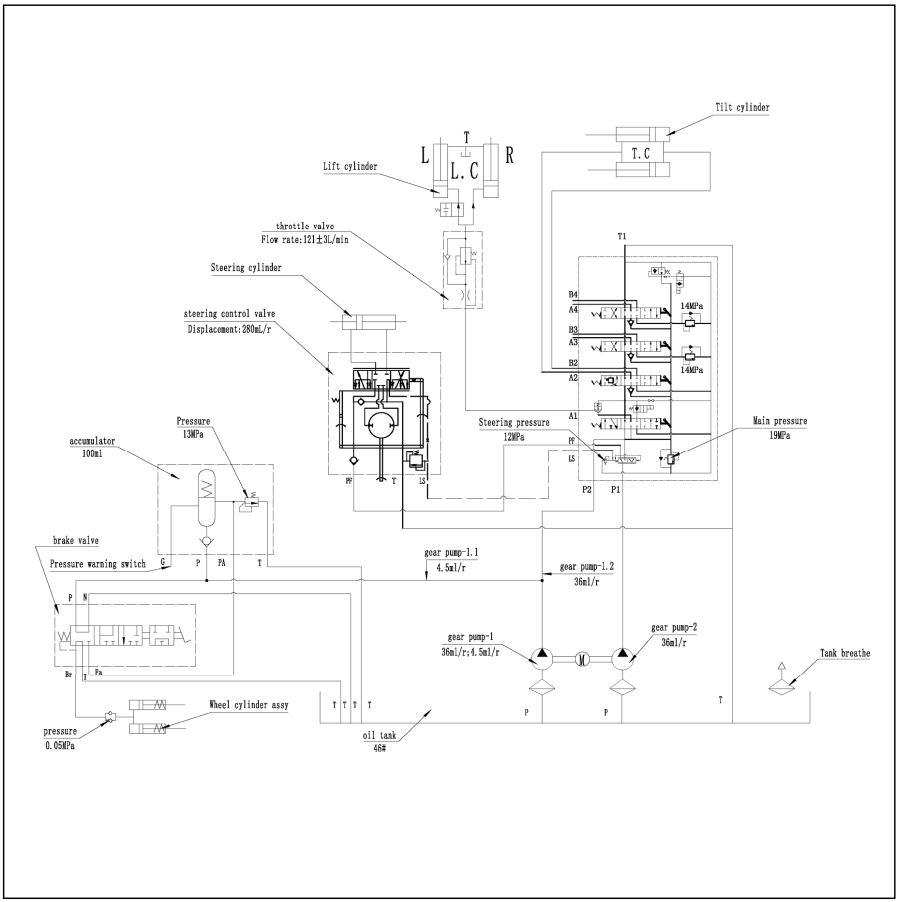
Hydraulics

Hydraulic diagram-with 3691 function



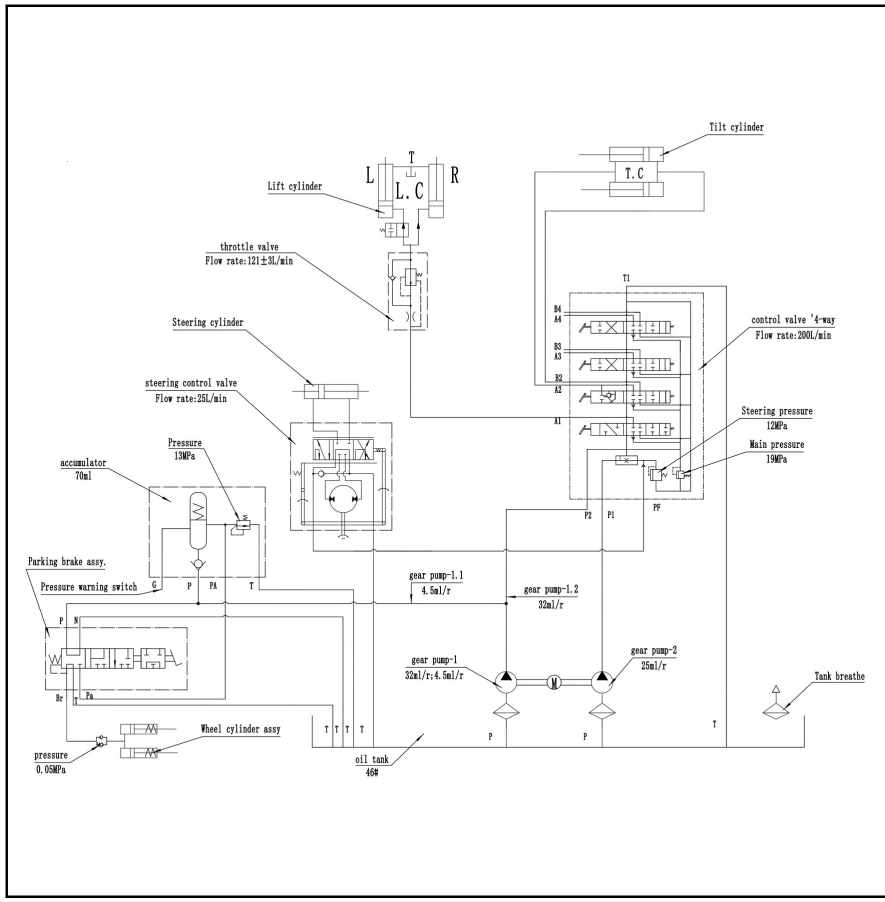
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Hydraulic diagram-priority valve with 3691 function for Doosan D34 engine



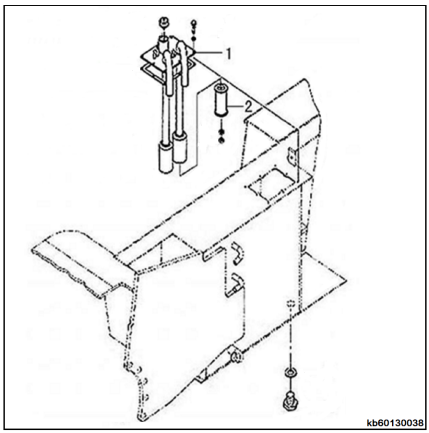
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Hydraulic diagram-without 3691 function



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Changing the crude filter



ENVIRONMENT NOTE

Please follow the instructions for disposal of fluids and lubricants.

NOTE

The hydraulic oil will flow out. Place an oil pan under the filter.

- Open the engine cover.
- Remove the pedal pad and bracket.
- Slacken off the fastening bolts and washers on the cover assembly(1), then remove the cover assembly.
- Slowly pull out the cover assembly so that the oil flows back into the tank.
- Unscrew the suction filter (2) from the cover assembly.
- Screw in the new filter until tightened.
- Refit the cover assembly to the frame using the fastening screws.
- Refit the bracket and pedal pad.
- Refit the engine cover.

Replacing the breather filter

ENVIRONMENT NOTE

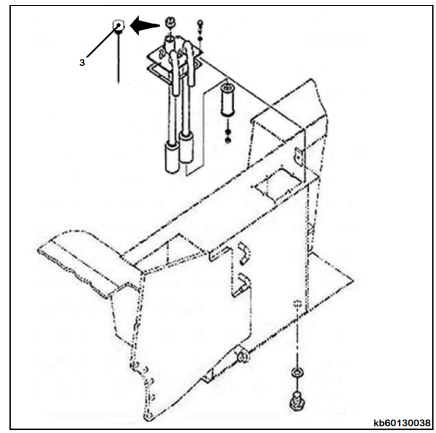
Please handle liquids and lubricating oil in accordance with instructions.

- Open the bonnet.

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- Unscrew the breather filter (3) and dipstick and remove.
- Remove the dipstick and balls on the dipstick base from the breather filter and mount onto the new the breather filter.
- Screw the breather filter and dipstick back into position.
- Close the bonnet.

▷



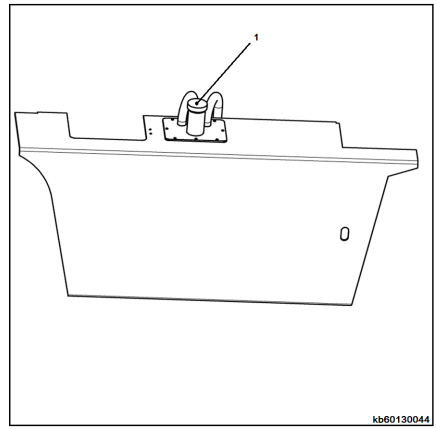
NOTE

Respirators may need to be replaced more frequently in dusty environments.

Fill up the hydraulic oil

- Unscrew the oil cap(1)assembly.
- Fill up with hydraulic oil through the oil inlet

▷



Oil volume: approximately 120L for mast below 4500mm; 125L for mast exceeding 4500mm.

- Use the dipstick to check the oil level. The oil level should reach the upper marking on the dipstick.
- Close the bonnet.
- Start the engine and run it for a while. Check the oil level again. Check the seals.

Checking the hydraulic oil level

ENVIRONMENT NOTE

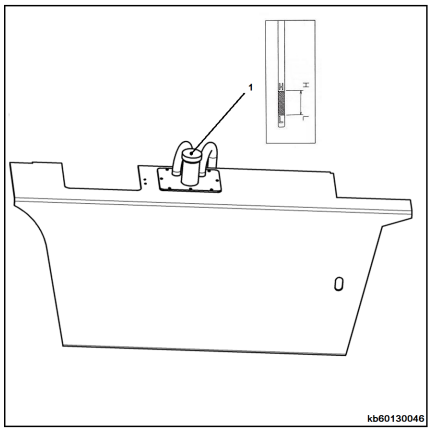
Please follow the instructions for handling/ disposal of fluids and lubricants.

NOTE

The oil level should only be checked with the lift mast vertical and the fork carriage lowered.

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- Apply the parking brake.
- Open the engine cover.
- Screw the oil cap with dipstick.
- Use a clean cloth to dry the dipstick(1)
- The oil level should be between the upper and lower markings on the dipstick.



⚠ WARNING

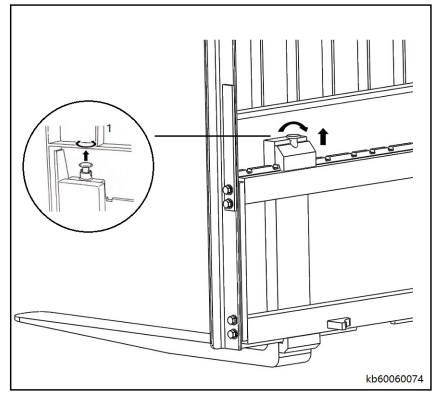
The hydraulic oil must be checked while the engine is stopped and the forklift is in horizontal level,

- When required, fill the hydraulic oil up to the upper marking.
- Re-fit the oil dipstick.
- Safely refit the engine cover.

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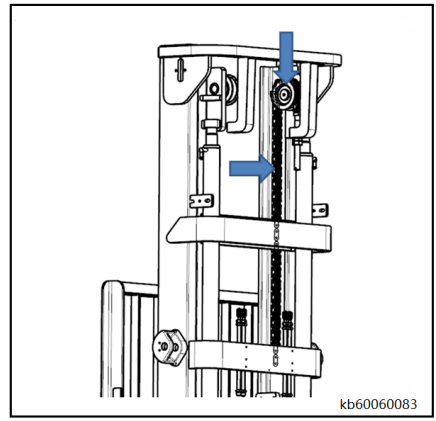
Load lifting system

Checking the fork arms and the fork arm quick release apparatus ▷



- Check the fork arms for serious deformation, abrasion and damage.
- Check that the fork arm quick release apparatus is positioned correctly and not damaged.
- Replace damaged parts if necessary.

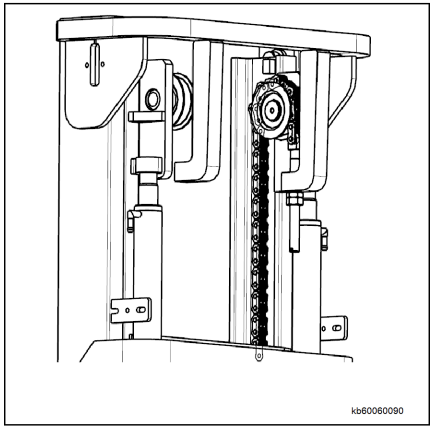
Checking the operation and installation of the lift mast, lifting chain and limit block ▷



- Clean the mast channel and lifting chains.
- Check the working status of the lifting chains, along with any signs of abrasion, paying particular attention to the area around the chain wheels.
- Check that the chain fixed pins are secure.
- Replace damaged lifting chains.
- Check the status and tightness of the lift mast column, mast channel surfaces and roller.
- Check the status and working condition of the limit block.
- Check the tightness of the elastic retaining rings at the piston rod connections on top of the lift mast.

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Lubricate the lift mast and chains with chain spray ▷



NOTE

If there is excessive dust on the chain affecting the ability of the lubricant to permeate the chain, the lifting chain must be cleaned.

- Place an oil collecting trough under the lift mast
- Carry out cleaning with an alkyl derivative such as an industrial diesel fuel cleaning agent (please comply with the manufacturer's safety instructions).
- Additives may not be used if using a steam nozzle.
- Immediately blow the chain dry after cleaning to remove water both on the chain surface and inside the hinge pins. Move the chain several times during the blow-drying process.
- Immediately apply chain spray and keep the chain moving while doing so.

NOTE

The lifting chains are a safety component. The use of cold cleaning agents, chemical cleaning agents, corrosive liquids or liquids containing acid or chlorine will cause direct damage to the chains.

Lubricating the lift mast and tilt cylinder bearings

NOTE

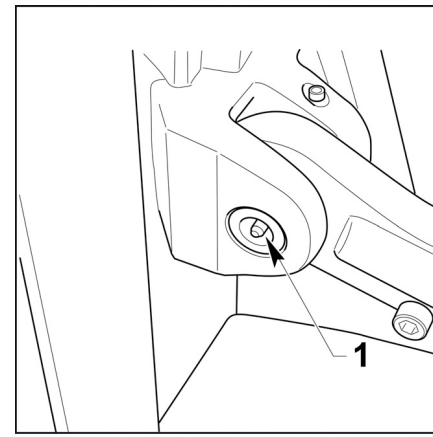
Lubricate using lubricating grease only.

- Lower the fork carriage fully.

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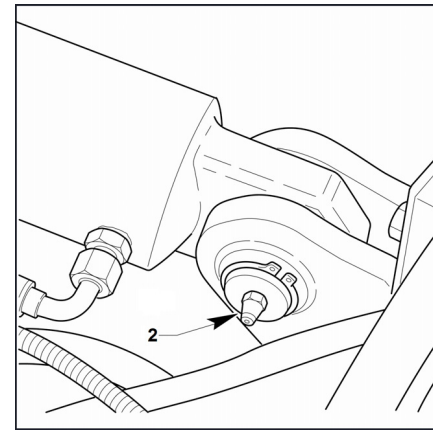
➢ Using lubricating grease, lubricate the grease nipples (1)on the left and right tilt cylinder pivots at the drive axle from above.

▷



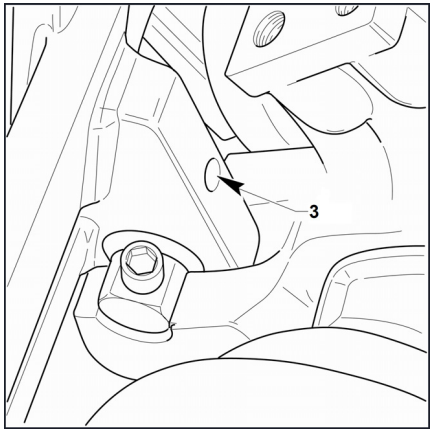
➢ Using lubricating grease, lubricate the grease nipples (2)on the left and right tilt cylinder pivots at the chassis from above.

▷



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- Inject grease into the lift mast grease nozzles on the left and right sides of the frame (3).
- Lubricate using a grease gun until fresh grease comes out of the bearings.
- Refit the floor plate and then the engine cover.



Adjusting the length of the lift chains, and lubricating using chain spray

Adjusting the length of the lift chains*

NOTE

As lift chains stretch with use, they must be adjusted, both on the left and right hand side.

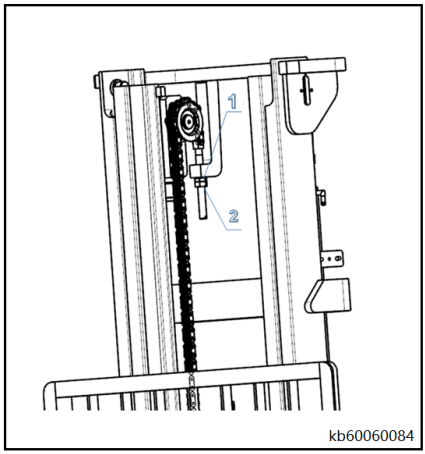
- Completely lower the mast.
- Loosen the locknut (2).
- Adjust chain length with the adjusting nut (1) at the chain anchor.

NOTE

While the mast is in vertical position, and the forks is lowered to the ground, ensure the lifting chain is in tight state. If not, adjust it until rectified.

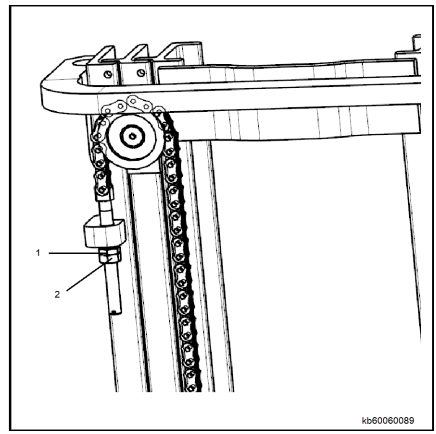
- Tighten the locknut (2).
- Also adjust the second chain.

* Standard mast only



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Adjusting the length of the lift chains* ▷



NOTE

Use over time will cause the lift chains to stretch, therefore it is necessary to check and adjust their lengths.

- Completely lower the mast.
- Loosen the locknut (2).
- Adjust chain length with the adjusting nut (1) at the chain anchor.

NOTE

While the mast is in vertical position, and the forks is lowered to the ground, ensure the lifting chain is in tight state. If not, adjust it until rectified.

- Tighten the locknut (2).

* Completely free lifting and triple masts only

Lubricating the chains with chain spray

- Use specified chain spray to coat the chains and channel surfaces.

NOTE

If the truck is used in the food industry, please use lubricating grease in place of spray.

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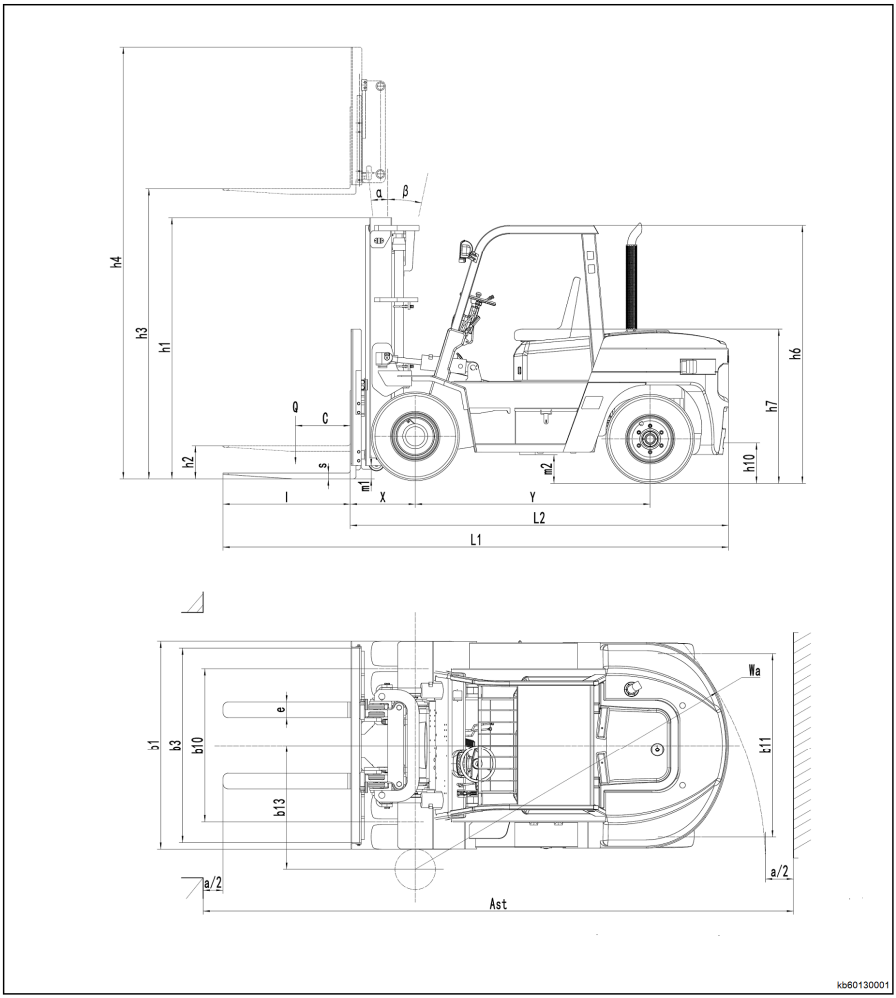
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Technical data

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Dimensions



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Datasheet for KBD50

NOTE

This VDI data sheet specifies only the technical values of the truck version with standard equipment. Different tyres, lift masts, additional units etc. may produce different values.

Characteristics					
Manufacturer		BAOLI	BAOLI	BAOLI	BAOLI
Model		KBD50	KBD50	KBD50	KBD50
Power type：Electric-Diesel-Petrol-LPG-Network Power (Electric)		Diesel	Diesel	Diesel	Diesel
Operation Type:Hand-stand on-Driver seated		Seated	Seated	Seated	Seated
Load Capacity	Q (kg)	5000	5000	5000	5000
Load centre of gravity distance	c (mm)	600	600	600	600
Axle centre to fork face	x (mm)	622	622	622	622
Wheel Base	y (mm)	2250	2250	2250	2250
Weights					
Service Weight	Kg	8400	8400	8400	8815
Axle loading, laden front/rear	Kg	12080/1420	12080/1420	12080/1420	12295/1520
Axle loading, unladen front/rear	Kg	4220/4260	4220/4260	4220/4260	3720/5095
Wheels, chassis frame					
Tyres:SE-Super elastic PN-Pneumatic		PN	PN	PN	SE
Front Tyres Size		8.25-15-14PR			
Rear Tyres Size		8.25-15-14PR			
Front Track Width	b10 (mm)	1470	1470	1470	1470
Rear Track Width	b11 (mm)	1700	1700	1700	1700
Dimension and overall sizes					
Mast lift, forward/backward	α/β	6°/12°	6°/12°	6°/12°	6°/12°
Mast Minimum Overall Height	h1 (mm)	2500	2500	2500	2500
Free lift	h2 (mm)	205	205	205	205
Lift height	h3 (mm)	3000	3000	3000	3000

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Mast Maximum Overall Height	h4 (mm)	4429	4429	4429	4275
Overhead Guard Height	h6 (mm)	2445	2445	2445	2445
Seat Height	h7 (mm)	1395	1395	1395	1495
Drawbar Height	h10 (mm)	356	356	356	356
Overall Length	l1 (mm)	4737	4737	4737	4737
Lenght to Face of Forks	l2 (mm)	3517	3517	3517	3517
Overall Width	b1 (mm)	1995	1995	1995	1995
Fork Arm Dimensions	s/e/l (mm)	55/150/1220			
Fork Carriage in Compliance with ISO 2328 Class/Form A,B		A	A	A	A
Fork Carriage Width	b3 (mm)	1845	1845	1845	1845
Ground Clearance below Mast(laden)	m1 (mm)	160	160	160	160
Ground Clearance at Centre of Wheelbase(laden)	m2 (mm)	190	190	190	190
Working aisle width with pallet 1000 x 1200 crossways****	Ast (mm)	5162	5162	5162	5162
Working aisle width with pallet 800 x 1200 crossways****	Ast (mm)	5362	5362	5362	5362
Turning Radius	Wa (mm)	3340	3340	3340	3340
Turning Point Minimum Distance from the Truck Center Line	b13 (mm)	1095	1095	1095	1095
Performance data					
Driving speed (with/without load)	km/h	27/29	27/29	27/29	24/24
Lifting speed (with/without load)	mm/s	400/560	400/560	400/560	480/650
Lowering speed (with/without load)	mm/s	480/380	480/380	480/380	460/410
Pulling force (at 2km/h) with/without load	KN	53	53	53	45/27
Gradeability (at 2km/h) laden/unladen	%	20/20	20/20	20/20	20/20

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Service Brake		hydraulic	hydraulic	hydraulic	hydraulic
Engine					
Engine Type		Isuzu 6BG1QC-02	WP4.1G125E 302	Cummins QSB4.5	Doosan D34
Engine Power in compliance with ISO 1585	kW	82.5	92	82	85.8
Rated Number of Revolutions	rpm	2000	2200	2200	2300
Cylinder Number/Displacement	cm^3	6/6494	4/4090	4/4500	4/3400
On-board voltage		24	24	24	24
Others					
Drive Control Type		Hydraulic torque converter	Hydraulic torque converter	Hydraulic torque converter	Hydraulic torque converter
Noise at Operator's Ear	dB(A)	100	100	100	88
Volume fuel tank	L/Kg	140/117	140/117	140/117	125/104
Towing coupling, type DIN		Pin	Pin	Pin	Pin

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Datasheet for KBD60

Characteristics					
Manufacturer		BAOLI	BAOLI	BAOLI	BAOLI
Model		KBD60	KBD60	KBD60	KBD60
Power type：Electric-Diesel-Petrol-LPG-Network Power (Electric)		Diesel	Diesel	Diesel	Diesel
Operation Type:Hand-stand on-Driver seated		Seated	Seated	Seated	Seated
Load Capacity	Q (kg)	6000	6000	6000	6000
Load centre of gravity distance	c (mm)	600	600	600	600
Axle centre to fork face	x (mm)	627	627	627	627
Wheel Base	y (mm)	2250	2250	2250	2250
Weights					
Service Weight	Kg	9000	9000	9000	9320
Axle loading, laden front/rear	Kg	13450/1590	13450/1590	13450/1590	13650/1685
Axle loading, unladen front/rear	Kg	4080/4960	4080/4960	4080/4960	3933/5387
Wheels, chassis frame					
Tyres:SE-Super elastic PN-Pneumatic		PN	PN	PN	SE
Front Tyres Size		8.25-15-14PR			
Rear Tyres Size		8.25-15-14PR			
Front Track Width	b10 (mm)	1470	1470	1470	1470
Rear Track Width	b11 (mm)	1700	1700	1700	1700
Dimension and overall sizes					
Mast lift, forward/backward	Graus	6°/12°	6°/12°	6°/12°	6°/12°
Mast Minimum Overall Height	h1 (mm)	2500	2500	2500	2500
Free lift	h2 (mm)	210	210	210	210
Lift height	h3 (mm)	3000	3000	3000	3000
Mast Maximum Overall Height	h4 (mm)	4429	4429	4429	4275
Overhead Guard Height	h6 (mm)	2445	2445	2445	2445
Seat Height	h7 (mm)	1395	1395	1395	1495

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Drawbar Height	h10 (mm)	356	356	356	356
Overall Length	l1 (mm)	4767	4767	4767	4767
Lenght to Face of Forks	l2 (mm)	3547	3547	3547	3547
Overall Width	b1 (mm)	1995	1995	1995	1995
Fork Arm Dimensions	s/e/ l (mm)	60/150/1220			
Fork Carriage in Compliance with ISO 2328 Class/Form A,B		A	A	A	A
Fork Carriage Width	b3 (mm)	1845	1845	1845	1845
Ground Clearance below Mast(laden)	m1 (mm)	160	160	160	160
Ground Clearance at Centre of Wheelbase(laden)	m2 (mm)	190	190	190	190
Working aisle width with pallet 1000 x 1200 cross-ways****	Ast (m m)	5287	5287	5287	5287
Working aisle width with pallet 800 x 1200 crossways****	Ast (m m)	5487	5487	5487	5487
Turning Radius	Wa (mm)	3460	3460	3460	3460
Turning Point Minimum Distance from the Truck Center Line	b13 (mm)	1095	1095	1095	1095
Performance data					
Driving speed (with/without load)	km/h	22/27	22/27	22/27	24/24
Lifting speed (with/without load)	mm/s	420/555	420/555	420/555	480/650
Lowering speed (with/without load)	mm/s	350/285	350/285	350/285	460/410
Pulling force (at 2km/h) with/ without load	KN	51	51	51	45/27
Gradeability (at 2km/h) laden/ unladen	%	20/20	20/20	20/20	20/20
Service Brake		Hydraulic	Hydraulic	Hydraulic	Hydraulic
Engine					
Engine Type		Isuzu 6BG1QC-02	WP4.1G125 E302	Cummins QSB4.5	Doosan D34
Engine Power in compliance with ISO 1585	kW	82.5	92	82	85.8

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Datasheet for KBD60

Rated Number of Revolutions	rpm	2000	2200	2200	2300
Cylinder Number/Displacement	cm^3	6/6494	4/4090	4/4500	4/3400
On-board voltage		24	24	24	24
Others					
Drive Control Type		Hydraulic torque converter	Hydraulic torque converter	Hydraulic torque converter	Hydraulic torque converter
Noise at Operator's Ear	dB(A)	100	100	100	88
Volume fuel tank	L/Kg	140/117	140/117	140/117	125/104
Towing coupling, type DIN		Pin	Pin	Pin	Pin

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Datasheet for KBD70

Characteristics					
Manufacturer		BAOLI	BAOLI	BAOLI	BAOLI
Model		KBD70	KBD70	KBD70	KBD70
Power type：Electric-Diesel-Petrol-LPG-Network Power (Electric)		Diesel	Diesel	Diesel	Diesel
Operation Type:Hand-stand on-Driver seated		Seated	Seated	Seated	Seated
Load Capacity	Q (kg)	7000	7000	7000	7000
Load centre of gravity distance	c (mm)	600	600	600	600
Axle centre to fork face	x (mm)	632	632	632	632
Wheel Base	y (mm)	2250	2250	2250	2250
Weights					
Service Weight	Kg	9600	9600	9600	10000
Axle loading, laden front/rear	Kg	14820/1760	14820/1760	14820/1760	15080/1860
Axle loading, unladen front/rear	Kg	3960/5640	3960/5640	3960/5640	4220/5780
Wheels, chassis frame					
Tyres:SE-Super elastic PN-Pneumatic		PN	PN	PN	SE
Front Tyres Size		8.25-15-14PR			
Rear Tyres Size		8.25-15-14PR			
Front Track Width	b10 (mm)	1470	1470	1470	1470
Rear Track Width	b11 (mm)	1700	1700	1700	1700
Dimension and overall sizes					
Mast lift, forward/backward	Graus	6°/12°	6°/12°	6°/12°	6°/12°
Mast Minimum Overall Height	h1 (mm)	2500	2500	2500	2500
Free lift	h2 (mm)	215	215	215	215
Lift height	h3 (mm)	3000	3000	3000	3000
Mast Maximum Overall Height	h4 (mm)	4429	4429	4429	4275
Overhead Guard Height	h6 (mm)	2445	2445	2445	2445
Seat Height	h7 (mm)	1395	1395	1395	1495

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Drawbar Height	h10 (mm)	356	356	356	356
Overall Length	l1 (mm)	4852	4852	4852	4852
Lenght to Face of Forks	l2 (mm)	3632	3632	3632	3632
Overall Width	b1 (mm)	1995	1995	1995	1995
Fork Arm Dimensions	s/e/ l (mm)	65/150/1220			
Fork Carriage in Compliance with ISO 2328 Class/Form A,B		A	A	A	A
Fork Carriage Width	b3 (mm)	1845	1845	1845	1845
Ground Clearance below Mast(laden)	m1 (mm)	160	160	160	160
Ground Clearance at Centre of Wheelbase(laden)	m2 (mm)	190	190	190	190
Working aisle width with pallet 1000 x 1200 crossways****	Ast (mm)	5292	5292	5292	5292
Working aisle width with pallet 800 x 1200 crossways****	Ast (mm)	5492	5492	5492	5492
Turning Radius	Wa (mm)	3460	3460	3460	3460
Turning Point Minimum Distance from the Truck Center Line	b13 (mm)	1095	1095	1095	1095
Performance data					
Driving speed (with/without load)	km/h	22/27	22/27	22/27	24/24
Lifting speed (with/without load)	mm/s	420/555	420/555	420/555	480/650
Lowering speed (with/without load)	mm/s	350/285	350/285	350/285	460/410
Pulling force (at 2km/h) with/ without load	KN	51	51	51	45/27
Gradeability (at 2km/h) laden/ unladen	%	20/20	20/20	20/20	20/20
Service Brake		hydraulic	hydraulic	hydraulic	hydraulic
Engine					
Engine Type		Isuzu 6BG1QC-02	WP4.1G125 E302	Cummins QSB4.5	Doosan D34
Engine Power in compliance with ISO 1585	kW	82.5	92	82	85.8

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Rated Number of Revolutions	rpm	2000	2200	2200	2300
Cylinder Number/Displacement	cm^3	6/6494	4/4090	4/4500	4/3400
On-board voltage		24	24	24	24
Others					
Drive Control Type		Hydraulic torque converter	Hydraulic torque converter	Hydraulic torque converter	Hydraulic torque converter
Noise at Operator's Ear	dB(A)	100	100	100	88
Volume fuel tank	L/Kg	140/117	140/117	140/117	125/104
Towing coupling, type DIN		Pin	Pin	Pin	Pin

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Mast specification

Mast type	Max. height	Rated capacity load center 500mm			height		free-lift height		mast angle
		5T	6T	7T	closed height	height with carriage	without carriage	with carriage	front/ back
VM Standard wide-view	2500	5000	6000	7000	2250	3929	210	210	6/12
	2700				2350	4129	210	210	
	2750				2375	4179	210	210	
	3000				2500	4429	210	210	
	3250				2625	4679	210	210	
	3300				2650	4729	210	210	
	3500				2750	4929	210	210	
	3750				2875	5179	210	210	
	4000				3050	5429	210	210	
	4250				3175	5679	210	210	
	4500				3300	5929	210	210	
	4750	4900	5900	6800	3425	6179	210	210	6/6
	5000	4800	5800	6800	3550	6429	210	210	
	5500	4500	5500	6400	3850	6929	210	210	3/6
	6000	4300	5200	6100	4100	7429	210	210	
VFM Full free duplex	2500	5000	6000	7000	2195	3929	1279	826	6/12
	2700				2310	4129	1394	941	
	2750				2335	4179	1419	966	
	3000				2460	4429	1544	1091	
	3250				2585	4679	1669	1216	
	3300				2610	4729	1694	1241	
	3500				2710	4929	1794	1341	
	3750				2835	5179	1919	1466	
	4000				3010	5429	2094	1641	
	4250				3135	5679	2219	1766	
	4500				3260	5929	2344	1891	
	4750	4900	5900	6800	3385	6179	2469	2016	6/6
VFHM Full free triplex	3600	4500	5600	6000	2355	4875	1439	986	6/6
	4000				2490	5275	1574	1121	
	4250				2555	5525	1639	1186	
	4350				2605	5625	1689	1236	
	4500				2655	5775	1739	1286	
	4800				2760	6075	1844	1391	
	5000				2825	6275	1909	1456	3/6
	5400	4200	5300	5500	2960	6675	2044	1591	

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	6000	4000	5000	5300	3160	7275	2244	1791	

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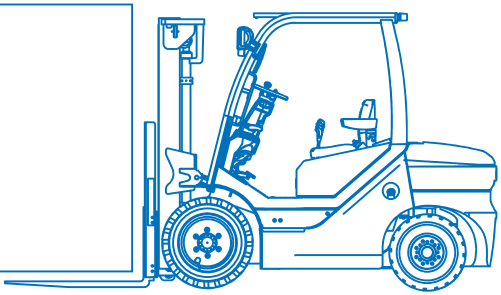
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Original instructions
D series Forklift Truck

D series

KBD50–70



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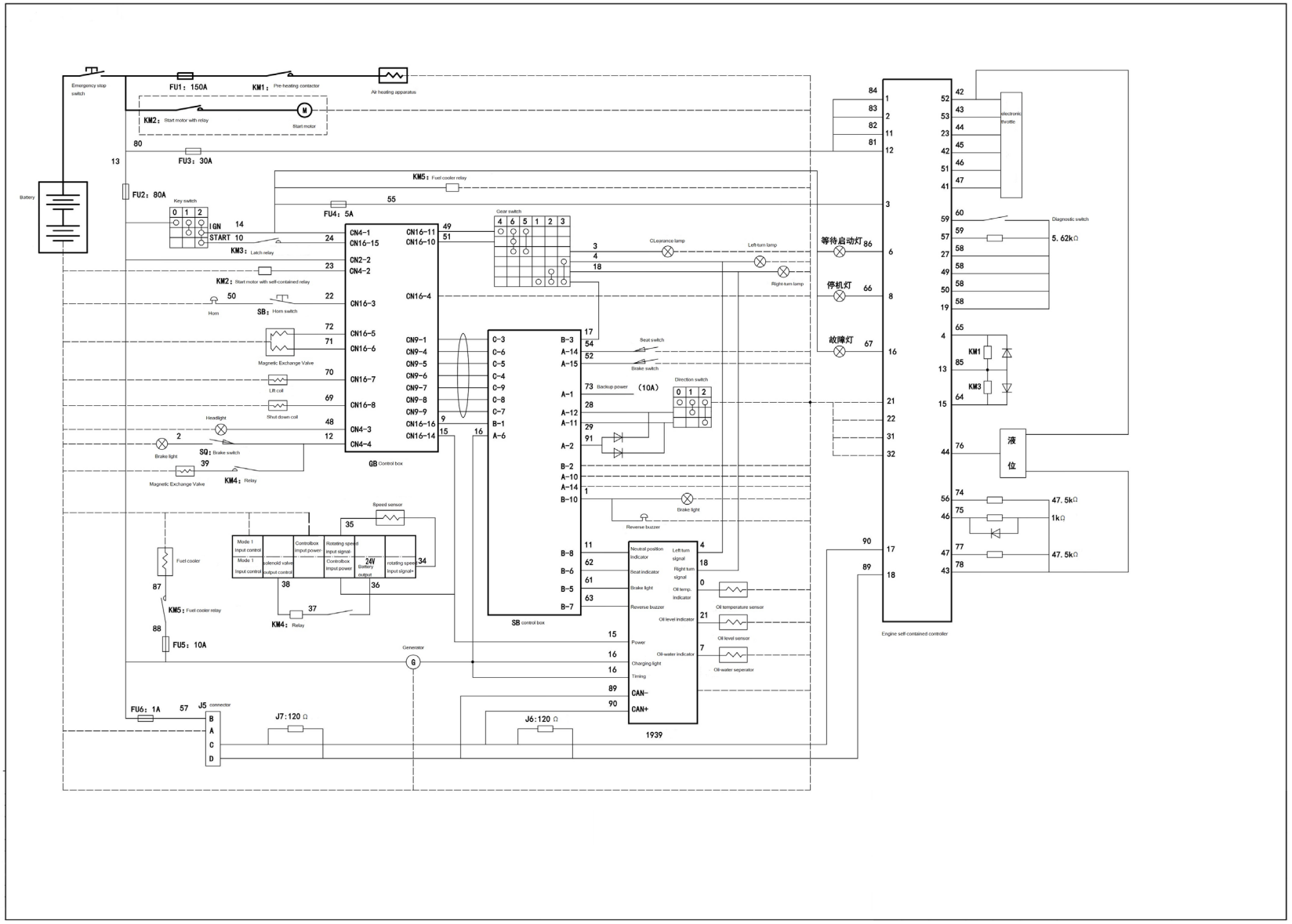
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Electrical diagrams

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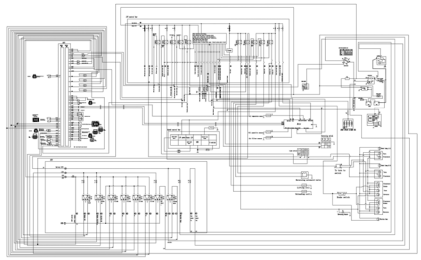
with ISO3691 function

Electric schematic diagram - Cummins QSB4.5 with ISO3691



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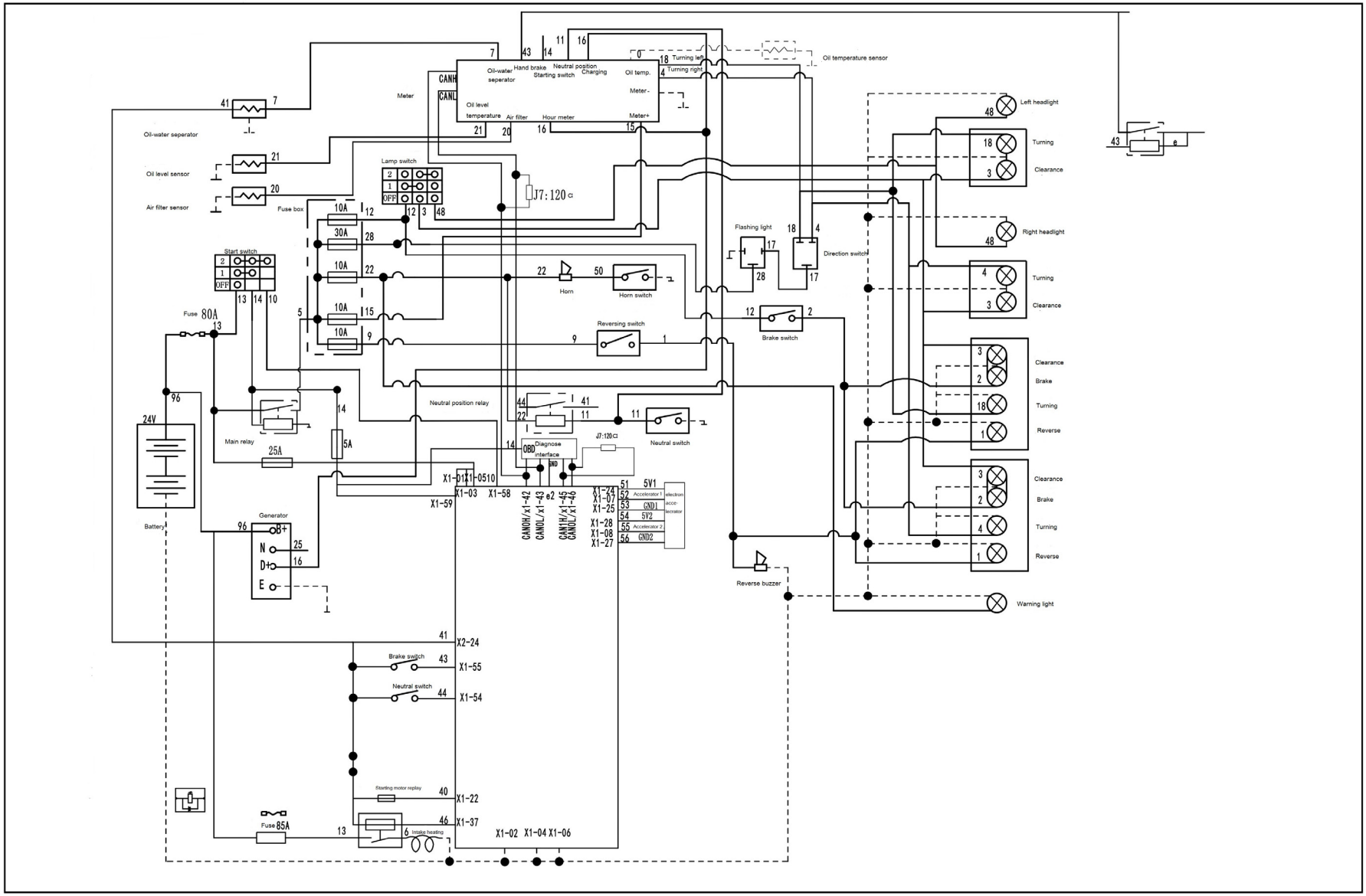
Electric schematic diagram-Doosan D24 with ISO3691 function



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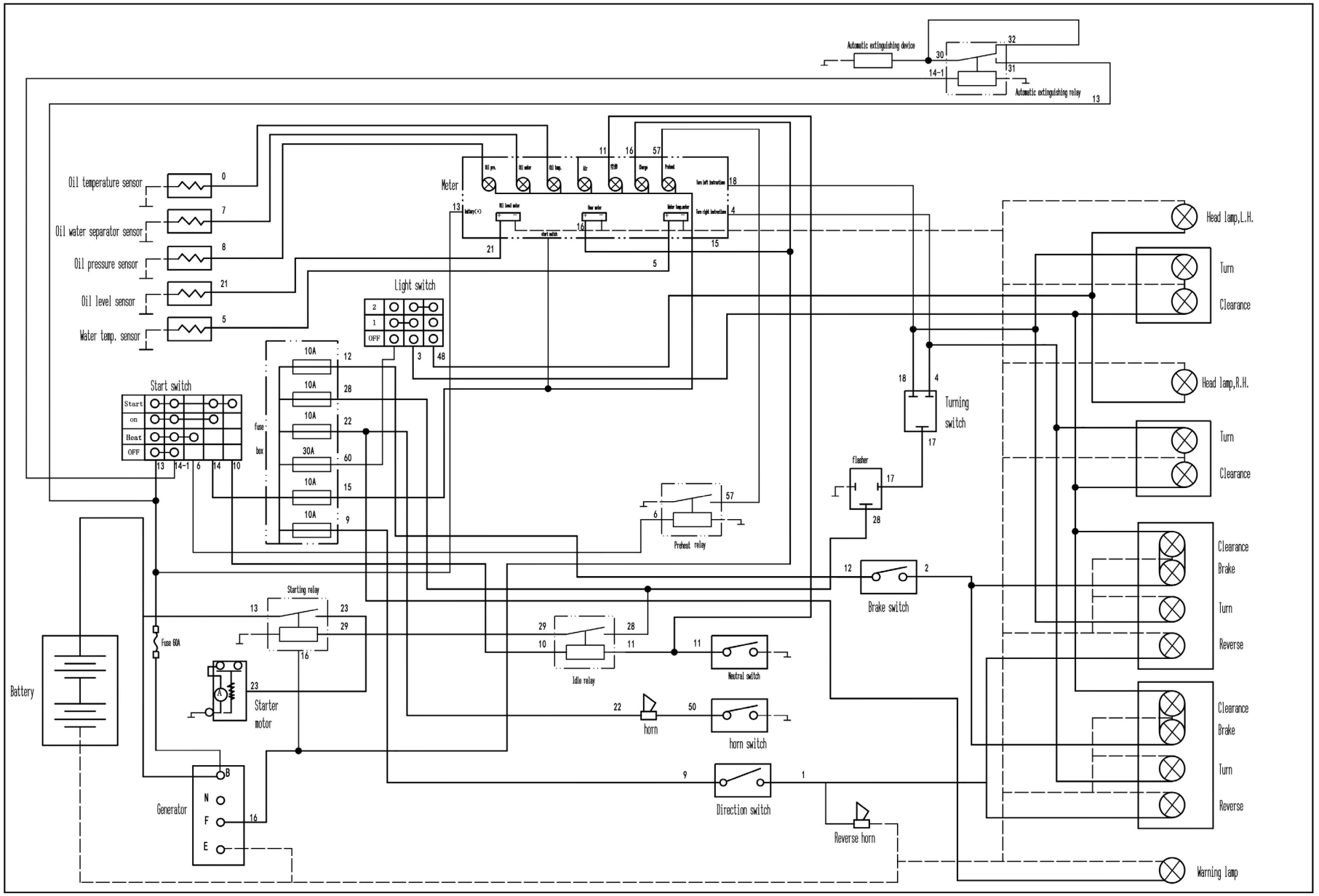
without ISO3691 function

Electric schematic diagram-Weichai WP4.1 w/o ISO3691



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Electric schematic diagram - Isuzu 6BG1QC-02 w/o ISO3691



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